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UNITED STATES PATENT AND TRADEMARK OFFICE

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Trademark
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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

CONSOLIDATED LISTING OF OFFICIAL GAZETTE NOTICES RE PATENT AND TRADEMARK OFFICE PRACTICES AND PROCEDURES

PATENT NOTICES

The following is a compilation of the more important notices and rule changes which have been published in the Official Gazette from July 1, 1964, through December 31, 1985. These notices and rule changes are currently in effect unless otherwise noted.

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INFORMATION AND CORRESPONDENCE

(1) **Official Patent Office Mailing Address Remains Washington, D.C.**

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

(Office name change per Public Law 93-596, Jan. 2, 1975)

[860 O.G. 662]

(2) **Group Number on all Communications Going to the Examining Groups**

Applicants and their attorneys or agents are reminded that the Group number should be typed on amendments and other communications relating to matters handled in the examining groups in order to expedite the processing of mail. The number of the Group should be placed on right-hand side, opposite the serial number or name of the applicant.

This reminder does not apply to notices and reasons of appeal to the United States Court of Appeals for the Federal Circuit. These communications should be sent to the Solicitor at the address below:

Solicitor
Box 8
U.S. Patent and Trademark Office
Washington, D.C. 20231

Attention to these details will improve the efficiency and reduce the time necessary to process incoming mail.

THERESA A. BRELSFORD,
Nov. 23, 1983. *Assistant Commissioner for Administration.*

[1037 OG 25]

(3) **Mailing of Papers to the PTO in Patent Interference Proceedings**

Effective immediately, attorneys and agents are requested to address all papers mailed to the Patent and Trademark Office in connection with an interference proceeding, and any patent or application involved in an interference proceeding, as follows:

BOX INTERFERENCE
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Use of this address will considerably assist the Board in its administration of patent interference proceedings.

DONALD J. QUIGG,
Nov. 28, 1983. *Deputy Commissioner of Patents and Trademarks.*

[1037 OG 25]

(4) **Identification for Application Correspondence**

The Office is continuing to experience difficulty in matching incoming papers with the corresponding application files. This applies especially to responses to Office Actions, powers of attorney, changes of address, status letters, requests for extensions of time, and petitions.

A very necessary part of a complete identification of a pending application is the three-digit Group or Art Unit number, e.g., 110 or 111. Frequently, the Group Art Unit number is entirely omitted, or there are errors in this number. In the latter situation the error often occurs as a result of the case having been reassigned within the Office, and the communication is directed to an Examining Group other than that indicated in the most recent Office Action.

Where the Group Art Unit number is entirely omitted, the routine operations of the Application Branch must be interrupted solely for the purpose of determining the location of the application so that the communication can be properly routed. Under these circumstances the efficiency of the Application Branch is impaired and the incoming paper is delayed in reaching its proper destination. Where such papers are not essential to compliance with a statutory period or time limit for response, they may be returned for completion to identify the location of the files.

To assist the Office in expediting its business, it is requested that ALL papers relating to a pending application include the following information:

1. Serial number (checked for accuracy),
2. Group Art Unit number (copied from filing receipt or most recent Office Action),
3. Filing date,
4. Name of the Examiner who prepared the most recent Office Action.
5. Title of the invention.

To further reduce the burden on Application Branch and the Examining Groups, it is also requested that the submission of additional or supplemental papers on a newly filed application be deferred until a filing receipt has been received. In the same vein, it would be appreciated if the filing of additional papers, relating to an allowed application were deferred until a notice of allowance (POL-85) was received.

If the above suggestions are adopted the processing of both new and allowed applications could proceed more efficiently and promptly through the Patent Office.

RICHARD A. WAHL,
Mar. 5, 1971. *Assistant Commissioner.*

[885 O.G. 2]

(5) Identifying Application Correspondence With Issue Batch Number

Applicants or their attorney or agent can facilitate matching incoming papers with the corresponding application file by indicating the Issue Batch Number on all papers filed in the Office after receiving the Notice of Allowance and before the time the Issue Fee Receipt is received.

The Issue Batch Number is printed on the Notice of Allowance form in Box 4 in the lower left-hand corner below the address. The Issue Batch Number consists of a capital letter followed by two digits, for example; "A03," "D18," "F42," "J79." Any lower case letters before the Issue Batch Number should be ignored since they are the typist's initials. Use of the Issue Batch Numbers is important since the allowed applications are filed by these numbers.

Any paper filed after receiving the Issue Fee Receipt should include the indicated patent number rather than the Issue Batch Number. At this time in the processing, the Issue Batch Number is no longer useful since the application has been removed from the batch at the time the patent number was assigned.

RICHARD J. SHAKMAN,
Jan. 16, 1976. *Assistant Commissioner for Administration.*

[943 O.G. 519]

(6) Hand Delivery of Papers

The notices of November 10, 1969 (869 O.G. 345) and September 8, 1970 (879 O.G. 667), regarding "Hand Delivery of Papers," are superseded and the practice indicated below is hereby made effective.

Any paper which relates to a pending application may be personally delivered to an Examining Group. However, the Examining Group will accept the paper only if: (1) the paper is accompanied by some form of receipt which can be handed back to the person delivering the paper; and (2) the Examining Group being asked to receive the paper is responsible for acting on the paper.

The receipt may take the form of a duplicate copy of such paper or a card identifying the paper. The identifying data on the card should be so complete as to leave no uncertainty as to the paper filed. For example, the card should contain the applicant's name(s), Serial No., filing date and a description of the paper being filed. If more than one paper is being filed for the same application, the card should contain a description of each paper or item.

Under this procedure, the paper and receipt will be date stamped with the Group date stamp. The receipt will be handed back to the person hand delivering the paper. The paper will be correlated with the application and made an official paper in the file, thereby avoiding the necessity of processing and forwarding the paper to the Examining Group via the Mail Room.

The Examining Group will accept and date stamp a paper even though the paper is accompanied by a check or the paper contains an authorization to charge a Deposit Account. However, in such an instance, the paper will be hand carried by Group personnel to the Office of Finance for processing and then made an official paper in the file.

WILLIAM FELDMAN,
Jan. 29, 1974. *Deputy Assistant Commissioner for Patents.*

[919 O.G. 1070]

(7) Post Card Receipt Reminder

Applicants and their attorneys or agents are reminded of the provision in Section 717.01(a) (now Section 503) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz, affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for *each* document for which a receipt is desired.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 667]

(8) Acknowledgement of Receipt of a Patent or Trademark Application

When early notification of the serial number of newly filed application papers is desired, a *stamped, self-adressed post card* should be submitted with each application. Immediately after the mail has been opened in the Patent and Trademark Office, the post card will be stamped with both the receipt date and the serial number, and then returned to the addressee.

Within recent months, hundreds of cards could not be successfully returned because of insufficient postage or incomplete or nonexistent forwarding addresses. Accurate and complete addresses, including ZIP codes, are necessary to ensure prompt acknowledgement of the receipt of patent and trademark applications.

To assist in easy identification once the post card has been returned, it is suggested that the post card include applicant's names and title of invention.

When more than one set of application papers is filed under one cover, a return post card should be attached to each set of papers for which a receipt is desired.

THERESA A. BRELSFORD,
July 19, 1982. *Acting Assistant Commissioner for Administration.*

[1021 O.G. 96]

(9) Status Inquiries

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL-327 in *every* case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL-327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL-85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL-327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the *Official Gazette* are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,
Nov. 24, 1971. *Assistant Commissioner of Patents.*

[893 O.G. 810]

(10) Change of Address

There recently has been an increased incidence in the number of applications suffering from disruptions in communications stemming from failure to notify the Patent and Trademark Office of a change of address on the part of applicant's representative (attorney or agent of record) in each application wherein he holds an active power of attorney. Applications have become abandoned as a result of an Office action being mailed to the old, uncorrected address and thereby failing to reach the representative at his new address sufficiently early to permit him to file a timely response. Accordingly, the requirement set out below is published as a reminder and is designed to ameliorate this problem.

Where an attorney or agent of record (or applicant, if he is prosecuting his application pro se) changes his correspondence address, he is responsible for promptly notifying the Patent and Trademark Office of his new correspondence address (including ZIP code number). A separate notification must be filed in *each application* for which he is intended to receive communications from the Office. The notification should also include his telephone number.

While the notification need take no particular form, it should be provided in a manner calling attention to the fact that a change of address is being made. Thus, the mere inclusion, in a paper being filed for another purpose, of an address different from the previously provided correspondence address, without mention of the fact that an address change is being made, would not ordinarily be recognized or deemed as instructions to change the address on the file record.

It is emphasized that the above-delineated responsibility is *additional* to the separate obligation (see 37 CFR 1.347) of a registered attorney or agent to notify the Attorney's Roster of any change of his address for entry on the register, which must be done in a letter separate from any notice or change of address filed in individual applications. That obligation continues without change.

The degree of care exercised in adhering to the foregoing requirement for notification of change of address in each concerned application will be a factor for consideration in deciding petitions filed under 37 CFR 1.137 to revive applications which have become abandoned because of a failure to timely receive an Office action addressed to the old address. In such instances, the showing of the cause of unavoidable delay must include an adequate showing that a timely notification of the

change of address was filed in the concerned application, in a manner reasonably calculated to call attention to the fact that it was a change of address. If no such notification was made, or was made belatedly, the showing must include an adequate explanation of that failure or delay. A showing that notification was made on a paper filed in the Patent and Trademark Office listing *plural* applications as being affected will not be considered a proper notification.

WILLIAM FELDMAN,
May 28, 1975. *Deputy Assistant Commissioner for Patents.*

[935 O.G. 1352]

(11) **Change of Address or Practitioner in a Plurality of Patent Applications**

Change of Address

This notice is supplemental to the Notice of May 28, 1975, 935 O.G. 1352.

In those instances where a change in the correspondence address of a registered attorney or agent is necessary in a plurality of applications, and the number of applications is such as to cause undue hardship, the notification filed in each application may be a reproduction of a properly executed, original notification. The original notice may be sent to the Office of the Solicitor as notification to the Attorney's Roster of the change of address, or may be filed in one of the applications affected, provided that the notice includes an authorization for the public to inspect and copy the original notice in the event one of the applications containing a copy matures into a patent and the application containing the original paper is either pending or has become abandoned. The copies submitted in each affected application must identify where the original paper is located. Otherwise, the practice governing the filing of notifications of change of address remains the same.

Powers of Attorney

In the event of a need to file a change in the power of attorney in a plurality of applications of a common assignee or inventive entity, and the number of applications is such as to cause undue hardship, a single, original paper may be used provided that a reproduction of this original paper is supplied in each of the affected applications. The copy of the original paper must identify in which application the original paper is located and authorize the public to inspect and copy the original paper in the event one of the applications containing a copy matures into a patent and the application containing the original paper is pending or has become abandoned. The procedures and usual prerequisites for the filing of grants and/or revocations or power of attorney otherwise remain the same.

WILLIAM FELDMAN,
Sept. 9, 1976. *Deputy Assistant Commissioner for Patents.*

[951 O.G. 454]

(12) **Express Mail**

This notice is in response to a number of inquiries received in the Patent and Trademark Office regarding the notice on Express Mail of February 11, 1975, published in the *Official Gazette* of March 11, 1975 (932 O.G. 340).

There are two types of Express Mail delivery offered by the U.S. Postal Service—"Post Office to Addressee" and "Post Office to Post Office." The only type of service which can be used for Express Mail directed to the Patent and Trademark Office is "Post Office to Addressee." This service provides for delivery to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C., no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility with an Express Mail window.

The only address that should be used for Express Mail sent to the Patent and Trademark Office is:

"Commissioner of Patents and Trademarks
Washington, D.C. 20231."

"Post Office to Post Office" Express Mail *does not* provide for delivery but instead is retained at the postal facility of the addressee for pickup. The Postal Service *does not* notify the addressee that this type of Express Mail has been received and is awaiting pickup. If not picked up, this mail is held for 15 days and then returned to the sender.

Therefore, since the Patent and Trademark Office does not have resources for picking up any mail, including Express Mail, the "Post Office to Post Office" Express Mail will not reach the Patent and Trademark Office.

WILLIAM I. MERKIN,
May 15, 1975. *Acting Assistant Commissioner for Administration.*

[936 O.G. 1554]

(13) **Certificate of Mailing Procedures**

On November 1, 1976, the Patent and Trademark Office instituted the Certificate of Mailing Procedure by promulgating 37 CFR 1.8 in an attempt to reduce the number of problems resulting from late receipt of responses due to mail delays. This notice was published in the *Official Gazette* on October 26, 1976 (951 O.G. 1342 and TM 210). Guidelines relative to this procedure were published in the *Official Gazette* on November 16, 1976 (952 O.G. 918 and TM 174).

Although the new procedure has gained wide acceptance, it has not been entirely without problems. One major problem involves the correlation of the certification with the appropriate papers when presented on a separate sheet. In order to curtail this problem and other minor ones, the guidelines published on November 16, 1976, are superseded by the following guidelines. They are applicable to responses in both patent and trademark matters, as permitted by 37 CFR 1.8.

Guidelines

A) The certification requires a signature. Specifically, if the certification appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification. Although not specifically required by 37 CFR 1.8, it is preferred that the certificate be signed by the applicant, assignee, or registered practitioner.

B) When possible, the certification should appear on a portion of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO-85, the certification should be on a separate sheet securely attached to the paper.

C) When the certification is presented on a separate sheet, the sheet must (1) be signed and (2) fully identify and be securely attached to the paper it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., responses to rejection or refusal, Notice of Appeal, etc. An unsigned certification will not be considered acceptable.

Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.

If the sheet should become detached from the paper and thereafter not associated with the appropriate file, evidence that this sheet was received in the Office can be supported by submitting a copy of a post card receipt specifically identifying this sheet and the paper and by submitting a copy of the sheet as originally mailed. Attention is directed to the notice of November 21, 1968 published in the *Official Gazette* (857 O.G. 667) relative to the use of post cards as receipts.

D) In situations wherein the correspondence includes papers for more than one application (e.g., a single envelope containing separate papers responding to Office actions in different applications) or papers for various parts of the Office (e.g., a patent issue fee transmittal form PTO-85 and an assignment), each paper must have its own certification as a part thereof or attached thereto.

E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a Notice of Appeal), each paper should have its own certification as a part thereof or attached thereto.

Use of Stamped Certification

Some practitioners are placing the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on _____
(Date of Deposit)

_____
Name of applicant, assignee, or Registered Representative

_____
Signature

_____
Date of Signature

Interpretations

The phrase "prior to expiration of the set period" in 37 CFR 1.8(a) includes the last day of the set period, which last day may be the "next succeeding secular or business day" as set out in 35 U.S.C. 21. Also, the filing of a 37 CFR 3.54 form to effect a filing under 37 CFR 1.60 is considered the filing of an application and is, therefore, excluded from the Certificate of Mailing Procedure.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 20]

(14) **Change in Legal Holidays**

The Commissioner's Notice of December 2, 1970, "Change in Legal Holidays" is hereby rescinded, in view of Public Law 94-97, September 18, 1975, 89 Stat. 479, which amended the listing of legal public holidays in 5 USC §6103 by changing the Veterans Day holiday from the fourth Monday in October to November 11 of each year. Section 6103, as amended, reads as follows:

(a) The following are legal public holidays:
New Years Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.
Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, November 11.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

Attention is called to the fact that the above listing of holidays in 5 USC §6103, as amended, should be followed, rather than the listing appearing on page 69 of the June 1979 Patent Laws pamphlet which does not reflect the noted amendment.

LUTRELLE F. PARKER,
Sept. 25, 1979. *Acting Commissioner, U.S. Patent and Trademark Office.*

Editorial Note: Sec. 6103(c) states that January 20 of each fourth year after 1965, Inauguration Day, is also a legal public holiday.

[987 O.G. 30]

(15) **Change in Drafting Practice**

Effective Apr. 12, 1982, the Patent and Trademark Office is terminating its drawing correction service.

In order to effect any changes in the drawings, applicants will be responsible for submitting either new drawings or having the drawings corrected by a bonded commercial draftsman, at applicant's expense, in the manner specified below. The new practice will permit applicants to delay correction of drawings in almost all cases until after the Notice of Allowance is mailed.

The initial list of bonded commercial draftsmen appears below. This list will be expanded as more commercial draftsmen are bonded. Applicants will, at least initially, be supplied with a current list of the bonded draftsmen with all Office actions requiring a drawing change.

The following is a letter which will be supplied, at least initially, to applicants in all Office actions requiring a drawing change. This letter explains the procedures for accomplishing the above, sets forth the time period within which the drawings must be corrected, and lists all of the currently bonded commercial draftsmen.

U.S.Department of Commerce, Patent and Trademark Office	Attachment to Paper Number
	Serial No.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities (Draftsman's objections on PTO–948)

In order to correct any informalities in the drawings, applicants *MUST* comply with options (a) or (b) below. Failure to do so will result in *ABANDONMENT* of the application.

a) File new drawings with the changes incorporated therein. Applicant may delay filing the new drawings until the application is allowed by the examiner. If delayed, the new drawings *MUST* be filed within the *THREE MONTH* statutory period set for payment of the base issue fee in the **"NOTICE OF ALLOWANCE AND BASE ISSUE FEE DUE"** (PTOL–85). Also, if delayed, the drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsman and which indicates the following in the upper right hand corner:

Date of the Notice of Allowance
Issue Batch Number
Serial Number

b) Request a commercial bonded drafting firm (see list below) to make the necessary corrections.

A BONDED DRAFTSMAN MUST BE *AUTHORIZED, THE CORRECTIONS EXECUTED AND THE CORRECTED DRAWINGS RETURNED TO THE OFFICE* DURING THE THREE MONTH STATUTORY PERIOD SET FOR PAYM ENT OF THE BASE ISSUE FEE IN THE "NOTICE OF ALLOWANCE AND BASE ISSUE FEE DUE" (PTOL–85). NOTE THAT THE STATUTE DOES NOT PERMIT EXTENSION OF THE THREE MONTH PERIOD SET TO PAY THE BASE ISSUE FEE.

2. Corrections other than Informalities Noted by the Draftsman on the PTO–948

All changes to the drawings, other than informalities noted by the Draftsman, *MUST* be made in the same manner as above except that, if delayed option (a) is selected, normally, a sketch of the changes to be incoroprated into the new drawings *MUST* be approved by the examiner before the application will be allowed. If option (b) is selected, normally, applicants must submit, in duplicate, a separate paper containing a sketch of the proposed changes before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

3. Listing of Bonded Draftsmen

Graphe-Tech
11301 Rockville Pike
Kensington, Md. 20895
(301) 881-9400

Ultra Graphics, Inc.
Suite 300
3720 Farragut Ave.
Kensington, Md. 20795
(301) 946-1343

Mantech International Corp.
2121 Eisenhower Ave.
4th Fl.
Alexandria, Va. 22301
(703) 548-3879

Ord-Marine Engineering
10315 Kensington Pkwy.
Kensington, Md. 20895
(301) 949-3282

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National Graphic Center
205 W. Jefferson St.
Falls Church, Va. 22046
(703) 533-8700

Kirby Lithograhic Co.
2900 South Eads St.
Arlington, Va. 22202
(703) 684-7600

Mil-R Productions
2107 Mt. Vernon Ave.
Quinn Pat. Drwg. Service Co.
2021 Crystal Plaza Dr.
Arlington, Va. 22202
(703) 521-1650

Technical Illustrator
1911 Jeff. Davis Hwy.
Suite 600-CM1
P.O. Box 2627
Arlington, Va. 22202
(703) 920-8900

IT IS SUGGESTED THAT APPLICANTS DETACH THIS LETTER FROM THE OFFICE ACTION AND ATTACH IT TO THE FRONT OF APPLICANT'S FILE AS A REMINDER THAT, IN ORDER TO AVOID ABANDONMENT, A BONDED DRAFTSMAN MUST BE *AUTHORIZED, THE CORRECTIONS EXECUTED AND THE CORRECTED DRAWINGS RETURNED TO THE OFFICE,* OR NEW DRAWINGS SUBMITTED, DURING THE THREE MONTH STATUTORY PERIOD SET FOR PAYMENT OF THE BASE ISSUE FEE. NOTE THAT THE STATUTE DOES NOT PERMIT EXTENSION OF THE THREE MONTH PERIOD SET TO PAY THE BASE ISSUE FEE.

Currently there is a large backlog of applications pending before the Office draftsmen. Applicants whose applications are part of this backlog are strongly encouraged to have the necessary drawing corrections made by one of the bonded commercial draftsmen to expedite the issuance of their applications. If there has been authorization to charge a deposit account for these corrections, the authorization will not be processed. If a fee has been paid with cash, a refund will be processed.

The requirement of 37 CFR §§1.85, 1.86(b) and 1.123(a), specifying that drawings, or corrections to the drawings, may or must be made by the Office, is hereby waived.

Mar. 16, 1982. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1017 O.G. 4]

(16) **Submission of Drawings**

As further clarification of the O.G. Notice of Oct. 29, 1985, drawings for patent applications do *not* need to be submitted on bristol board.

Since corrections are now the responsibility of applicants, it is more convenient for the original drawings to be kept in their possession. Copies only need to be supplied to the Patent and Trademark Office. Whether or not bristol board is used for the copies is the applicant's choice. However, the copies that are submitted to the Office must be on strong, white, smooth, and non-shiny paper. High quality copies are necessary not only for the patent examination process, but for printing purposes.

If corrections are necessary, they should be made to the original drawings. Either a good copy of the corrected drawings or the corrected original can then be submitted after the Notice of Allowability is mailed.

We will be revising 37 CFR to clarify the requirements for drawing submissions.

This change is being made for the convenience of applicants and attorneys.

Nov. 25, 1985. THERESA A. BRELSFORD,
Assistant Commissioner, for Administration.

[1061 OG 12]

(17) **Discontinuation of Drawing Comparison Fee**

The Patent and Trademark Office no longer requires a $10 (ten dollar) comparison fee payment with the submission of formal sheets of drawings to replace originally filed informal drawings. Accordingly, no fee should be submitted, and all existing requirements for a drawing comparison fee are hereby rescinded.

June 9, 1982. THERESA A. BRELSFORD,
Acting Assistant Commissioner for Administration.

[1020 O.G. 10]

(18) **New Patent Drawing Correction Procedures**

Drawings charged out from the Patent and Trademark Office, for the purpose of making changes or corrections, will be released from the Drafting Branch after the mailing of the Notice of Allowance. Most drawings should be available for charge out one week to ten days after the Notice of Allowance mail date. The major exception to this procedure will be when the examiner requires that drafting corrections be made prior to the Notice of Allowance issuance. We anticipate that this exception requirement will occur only for Design applications being appealed.

Unless a duplicate copy of the Drafting Letter has been filed by the attorney/applicant, the Office will not normally provide the commercial bonded draftsman with copies of either examiner approved drawing correction letters or a copy of the Patent and Trademark Office draftsman's noted informalities. It is the applicant's responsibility to provide copies of the necessary drawing corrections and the noted informalities. When drawings are borrowed from the Office draftsman, the serial number, batch number, and Notice of Allowance mailing date should be identified.

If for any reason a corrected and/or substitute drawing is not acceptable, a letter will be sent to the attorney/applicant. A bonded commercial draftsman must present a copy of this letter in order to borrow the unacceptable drawings.

June 28, 1982. THERESA A. BRELSFORD,
Acting Assistant Commissioner for Administration.

[1020 O.G. 18]

(19) **Listing of Commercial Bonded Draftsmen**

The following listing of bonded draftsmen supersedes the listing published on Apr. 10, 1984, at 1041 O.G. 11:

American Future Design Co.
P.O. Box 365
1400 Ramsey Dr.
Mayo, Md. 21106
(301) 261-4975

John A. Ballard
432 Harry S. Truman Dr.
Largo, Md. 20772
(301) 336-7312

Anthony L. Costantino
12006 Lafayette Ct.
Silver Spring, Md. 20902

Draft-Art, Inc.
South Square
Woodstock, Va. 22664
(703) 459-2080

Fleit & Jacobson, Cohn & Price
1217 E St., N.W.
Washington, D.C. 20004
(202) 638-6666

Graphics By Gallo
1800 B. Swann St., N.W.
Washington, D.C. 20009
(202) 234-7700

John A. Haigh
9513 Brunett Ave.
Silver Spring, Md. 20901
(301) 588-6739

Ellsworth G. Jackson
101 Rittenhouse St., N.E.
Washington, D.C. 20011
(202) 726-0908

Kostolnik Associates
2575 S. Shirlington Rd.
Arlington, Va. 22202
(703) 920-8155

Robert MacCollum
Patent Drafting Service
1911 Jefferson Davis Hwy.
Suite 700
Arlington, Va. 22202
(703) 521-1115

Mil-R Production
2107 Mt. Vernon Ave.
Alexandria, Va. 22301
(703) 548-3879

Gerald M. Murphy
P.O. Box 2098
Eads St. Station
Arlington, Va. 22202

Suzanne Nahmias
701 S. 23rd St.
Arlington, Va. 22202
(703) 521-7802

Oliver Patent Drafting Service
1205 Darlington St.
Forestville, Md. 20747
(301) 336-0351

Patent Reproduction Co.
26 N St., S.E.
Washington, D.C. 20003
(202) 488-7096

Quality Patent Printing
P.O. Box 2404
556 S. 22nd St.
Arlington, Va. 22202
(703) 892-6212

Quinn Patent Drawing Service Co.
P.O. Box 1435
Alexandria, Va. 22313
(703) 548-3766

Karen L. Robertson
P.O. Box 1098
Eads St. Station
Arlington, Va. 22202

Campbell Philip Sweet
1755 S. Jefferson Davis Hwy.
Crystal Sq. 5, Suite 400
Arlington, Va. 22202
(703)521-5940

W. R. Taggert
9801 S. A1A, Lot 795-2
Jensen Beach, Fla. 33457

Aug. 23, 1985. THERESA A. BRELSFORD,
Assistant Commissioner, for Administration.

[1058 OG 27]

(20) **Submission of Corrected Drawings in Allowed Applications**

When drawings need to be corrected in an allowed application, the applicant is *required* to submit *acceptable* corrected drawings within a three-month shortened statutory period. Within that three-month period, two weeks should be allowed for review of the correction by the Office. If a correction is determined to be unacceptable by the Office, the applicant must arrange to have an acceptable correction re-submitted within the original three-month period to avoid the necessity of obtaining an extension of time and of paying the extension fee. Therefore, the applicant should file corrected drawings as soon as possible following the setting of the three-month shortened statutory period.

Jan. 14, 1985. THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

[1051 OG 3]

(21) **Regulations for the Use of the Facilities of the Patent and Trademark Office**

Revision of Regulations

Agency: Patent and Trademark Office, Commerce.
Action: Notice.
Summary: The Patent and Trademark Office gives notice of a revision of its "Regulations for the Public Use of Records in the Public Search Room for Patents of the Patent and Trademark Office," published in the Federal Register of July 14, 1976, 41 FR 29009. The regulations published in the Federal Register of July 14, 1976, are limited to the use of the Public Search Room for Patents. The revision is intended to allow public use of

other Patent and Trademark Office record facilities with minimum risk to the security of Patent and Trademark Office personnel and government property.

Effective Date: June 26, 1979.

For Further Information Contact: Bradford R. Huther, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, 703-557-2290.

Supplementary Information: This revision is an extension of the present regulations, published in the Federal Register of July 14, 1976, 41 FR 29009, to allow public use of Patent Examining Group Facilities and the Scientific Library under conditions which are as nearly as possible the same as those which apply to the Public Search Room for Patents.

All persons seeking use of the Public Search Room for Patents and/or the Patent Examining Group Facilities must obtain a User Pass. The guards at the entrances to the Public Search Room for Patents can direct prospective users to the pass issuance desk. User Passes will be issued to persons not under prohibition from using the facilities who agree to abide by the regulations of the Public Search Room for Patents and the Patent Examining Group Facilities.

The use of the Group facilities for search purposes by members of the public is strictly limited to the search of materials not available in the Public Search Room for Patents or the Scientific Library and when it does not conflict with the regular business of Patent and Trademark personnel and only between the hours of 8:45 a.m. and 4:45 p.m. on regular business days.

The Public Search Room for Patents is open 8:00 a.m.–8:00 p.m., Monday through Friday except on legal holidays. The hours of the Record Room are 8:00 a.m.–5:00 p.m. on the days the Public Search Room for Patents is open.

The revised regulations appear below:

Regulations

Regulations for members of the public using the facilities of the U.S. Patent and Trademark Office, including but not limited to the Public Search Room for Patents.

The Public Search Room for Patents is defined as that area comprising the foyers of the lobbies of Buildings 3 and 4 of Crystal Plaza; the offices; Microfilm Center; restrooms and telephone areas off these foyers; the stacks; Record Room public reception area; study and copier areas between the foyers; and the Mezzanine.

The facilities of the Patent Examining Groups are defined as those areas in Buildings 3, 34 and 4 of Crystal Plaza designating Examining Groups.

With the respect to the Group Facilities, authorized personnel under these Regulations, include Supervisory Patent Examiners and Examining Group Directors.

The Scientific Library is located on the second floor of Building 34 of Crystal Plaza.

To maintain and protect the patents and related records located in the Public Search Room for Patents and the Patent Examining Group Facilities, it is necessary to establish and to enforce certain rules and regulations pertaining to the use thereof. Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR Subpart 101-20.3; and appropriate Sections of Department Organization Orders 30-3A and 30-3B of the Department of Commerce, the regulations appearing below are established for those using the facilities of the Patent and Trademark Office.

These regulations supersede all previous regulations on the subject.

1. All persons using the facilities of the Patent and Trademark Office are subject to the regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101-20.3 [41 CFR §§101-20.300 through 101-20.314].
2. All posted Official Notices are to be complied with.
3. Smoking is not permitted except in designated areas.
4. No food or beverages in any form are to be consumed except in designated areas.
5. Loud talking, use of radios, and any other forms of activity which may disturb other members of the public and/or Patent and Trademark Office personnel are forbidden.
6. Children brought into the Patent and Trademark Office must not be allowed to disturb others.
7. Users of the facilities may not give the Patent and Trademark Office as a mailing address or otherwise suggest that mail may be received at the Patent and Trademark Office; nor may correspondence be conducted on official Patent and Trademark Office stationery.
8. Messages shall not be affixed to walls, desks, phone booths, or other public property, except designated message boards.
9. Patent records and any other property of the Patent and Trademark Office shall not be removed from their normal location without permission from an authorized official; nor shall such records or property be mutilated. Authorization will not be given to remove from any Group Facility, U.S. patents or any other material readily available through the Scientific Library.
10. The use of equipment such as reproducing machines, typewriters and photographic equipment is prohibited without prior permission from an authorized official. Relative to the Public Search Room, the use of dictation equipment is prohibited except in designated areas. Whenever permission is obtained, the use of such equipment must not conflict with Regulation 5.
11. In the Public Search Room for Patents, library trucks or carts are to be used for transporting bundles only. The trucks or carts are not to be used for storage while making searches.
12. In the Public Search Room for Patents, patents temporarily removed from bundles for any purpose must be returned to the proper place in the appropriate bundle.
13. In the Public Search Room for Patents, all bundles of patents must be promptly and properly replaced in the stacks by the user.
14. The reserving of seats and/or working areas is prohibited.
15. Users of the Public Search Room for Patents are not permitted to use Patent and Trademark Office facilities beyond the Public Search Room for Patents after 5:00 p.m.
16. The front portion of the Public Search Room for patents, i.e., that portion facing Crystal Plaza Drive and having a high ceiling shall not be occupied by users after 6:00 p.m.
17. A valid User Pass must be worn and visible at all times when Patent and Trademark Office facilities are being used. In addition, all persons holding User Passes must register with the designated representative in each Examining Group where they search and must sign a log (sign-in, sign-out sheet) indicating time-in, time-out, name, User Pass number, class(es) and subclass(es) users after 6:00 p.m.
18. User Passes are nontransferable and must be surrendered to authorized Patent and Trademark personnel upon request for cause.
19. Packages, briefcases or other personal effects brought into the Public Search Room for Patents or the Group Facilities are subject to search by authorized Patent and Trademark Office personnel upon request.
20. All packages, briefcases or other personal effects brought into the Group Search Rooms must be removed when leaving the Group Search Room areas.
21. Patents and other documents must not be removed from the Group patent shoes for any reason other than for cursory study thereof while kept in close proximity with the shoe and must not be moved out of their normal sequence.

22. All patent shoes must be promptly replaced in their proper location in the shoe cases.
23. All textbooks, journals and the like must be returned to their proper location.
24. All persons using the facilities of the Patent and Trademark Office are to refrain from engaging in any conduct which (1) is criminal in nature or (2) which causes or appears to cause an employee of the Patent and Trademark Office to violate the conflicts of interest regulations of the Department of Commerce [15 CFR §§0.735-1 through 0.735-41].
25. All verbal requests for compliance with these regulations or other posted Patent and Trademark Office Notices pertaining to activity in the Public Search Room for Patents and the Group Facilities, when made by authorized Patent and Trademark Office personnel, must be promptly complied with.

These regulations will be enforced in accordance with the Procedures for Enforcement published in the Federal Register of May 17, 1978, 43 FR 21345 (970 O.G. 114, published May 30, 1978).

Persons violating these regulations may be denied the use of the facilities in the Public Search Room for Patents and the Patent Examining Group Facilities and may further be subjected to prosecution under the Criminal Code. Additionally, the name of any person violating these regulations who is registered to practice before the Patent and Trademark Office may be forwarded to the Solicitor for appropriate action under 37 CFR 1.348.

These Regulations have been instituted in order to maintain high quality and completeness of patent files and to provide, an orderly environment for exploring, or studying in depth, the wealth of scientific and technological information contained in United States Patents. Although the Regulations may cause some inconvenience, the understanding and cooperation of users will insure that, for future users, the knowledge contained in United States Patents will be available in an environment conducive to study in the Public Search Room for Patents and the Patent Examining Group Facilities.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

June 20, 1979.

[984 O.G. 26]

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(22) **Regulations Relating to the Use of Patent and Trademark Office Records Facilities**

Establishment of Enforcement Procedures

Agency: Patent and Trademark Office, Commerce.

Action: Notice.

Summary: The Patent and Trademark Office is adopting procedures for enforcing existing regulations governing the use of the Public Search Room for Patents and the Patent Examining Group Search Facilities by members of the public. Enforcement of the existing regulations is necessary, and is intended by these procedures, to carry out the commitment of the Office to the public to promote an atmosphere conducive to research and maintain the integrity of the files in the Public Search Room for Patents and in the Examining Group Search Facilities.

Effective Date: 6-30-78.

For Further Information Contact: Bradford R. Huther, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, (703) 557-2290.

Supplementary Information: The procedures will apply in enforcing the regulations for the public use of records of the Public Search Room for Patents and the Patent Examining Group Search Facilities. The regulations of the Public Search Room for Patents were published in the Federal Register for July 14, 1976, 41 F.R. 29009, and incorporated in a Search Room User Agreement entered into by each person who is issued a User Pass. Regulations for Users of the Patent Examining Group Search Facilities were established under Rule 2 of the regulations of the Public Search Room for Patents and were published in the OFFICIAL GAZETTE of March 22, 1977, 956 O.G. 1118. The procedures appear below.

PROCEDURES FOR ENFORCEMENT OF THE REGULATIONS FOR THE PUBLIC USE OF RECORDS IN THE PUBLIC SEARCH ROOM FOR PATENTS AND THE PATENT EXAMINING GROUP SEARCH FACILITIES

Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR 101-20.3; and appropriate sections of Department Organization Orders 30-3A and 30-3B of the Department of Commerce, the procedures appearing below are established.

Violation Involving the Security System

1. *Unauthorized removal of government property.*

(a) The Public Search Room for Patents is equipped with a security system designed to sound an alarm when an attempt to remove government property from the Public Search Room is detected. Each alarm signal triggered by a person passing through an exit to the Public Search Room will be investigated by security guards stationed at the Public Search Room exits. The person involved will be required to stop and allow the security guards to determine the cause of the alarm. If non-government property is the cause for the alarm, the person will be allowed to proceed without further delay. If unauthorized possession of government property is found to be the cause of the alarm, the person in whose possession the property is found will be advised that a violation has occurred and will be required to surrender the property to the Manager of the Public Search Room. An oral explanation for the possession of such property will be requested by the Manager.

(b) The Manager of the Public Search Room will immediately report each incident involving unauthorized possession of government property to the Deputy Assistant Commissioner for Administration by telephone, and if requested submit a written report, together with the government property and User Pass involved to the Deputy Assistant Commissioner for Administration.

(3) If it shall appear to the Deputy Assistant Commissioner for Administration that unauthorized possession of government property, detected by the security system, was inadvertent or otherwise unintentional, no further action will be taken. Otherwise, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

Other Violations of the Public Search Room Regulations

2. *All other violations of the Public Search Room Regulations.*

(a) Each observed or reported violation will be investigated by the Manager of the Public Search Room. If a violation has occurred and is not denied, the person involved will be verbally requested by the Manager to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request of the Manager to comply with the regulations, or violates the regulations after having agreed to comply with them, the person will be required to surrender his or her User Pass to the Manager of the Public Search Room.

(b) The Manager of the Public Search Room will submit a written report of each violation, and the User

Pass, if surrendered, to the Deputy Assistant Commissioner for Administration.

(c) If the Deputy Assistant Commissioner for Administration is satisfied that a reported violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no furt er action will be taken. In all other cases, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

Violations of the Patent Examining Group Search Facilities Regulations

3. *Violations of the Regulations for Users of the Patent Examining Group Search Facilities.*

(a) Each observed or reported violation will be investigated by Authorized Official. If a violation has occurred, and is not denied, the person involved will be verbally requested to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request to comply with regulations, or violates the regulations after having agreed to comply with them, the person involved will be required to surrender his or her User Pass to the Authorized Official.

(b) The Authorized Official will submit a written report of each violation, and the User Pass, if surrendered, to the Deputy Assistant Commissioner for Patents.

(c) If the Deputy Assistant Commissioner for Patents is satisfied that violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no further action will be taken. In all other cases, the Deputy Assistant Commissioner for Patents will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked. A written decision will be rendered by the Deputy Assistant Commissioner for Patents after consideration of any timely submitted response.

Penalties

4. *Factors to be Considered in Assessing Penalties.*

(a) Penalties will be determined on a case-by-case basis. A record of penalties imposed for given violations will be kept and made available to the public upon request.

(b) Due weight may be given to prior violations of the regulations in assessing whether any given violation is willful, deliberate or intentional.

(c) Prior violations of the regulations will be considered in determining any specific penalty to be imposed. Depending upon the circumstances, the penalty for a first offense may range from an oral or written warning to a 60-day suspension of the User Pass. For a second offense, the penalty may be a suspension of from 5 days to 1 year. For a third offense, the penalty may range from a 30-day suspension to revocation of the User Pass.

General Provisions

5. *Use of Search Facilities During Suspension or After Revocation of User Pass.*

No individual will be permitted to use the Public Search Room for Patents or the Patent Examining Group Search Facilities while his or her User Pass is suspended or revoked.

6. *Temporary User Pass.*

Any person whose User Pass was surrendered, but not suspended or revoked, may be issued a temporary User Pass which shall be valid until the User Pass is returned or a decision is rendered pursuant to paragraph 1(c), 2(c), 3(c).

7. *Absence of the Deputy Assistant Commissioner for Administration.*

In the absence of the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services will carry out the functions and responsibilities assigned to the Deputy Assistant Commissioner for Administration in paragraph 1(b) and (c) and 2(b) and (c).

8. *Absence of the Manager of the Public Search Room.*

In the absence of the Manager of the Public Search Room, the Acting Manager will carry out the duties and responsibilities assigned to the Manager in paragraphs 1(a), 1(b), 2(a) and 2(b).

9. *Assistance.*

The Manager of the Public Search Room and the Authorized Official may, when necessary request the Security Officer of the Patent and Trademark Office or the GSA to provide assistance in carrying out their function in paragraphs 1(a), 2(a), and 3(a).

10. *Petitions.*

A decision rendered by the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services, or the Deputy Assistant Commissioner for Patents may be reviewed on petition to the Commissioner.

LUTRELLE F. PARKER,
May 5, 1978. *Acting Commissioner of Patents and Trademarks.*

[970 O.G. 114]

(23) **Revised Regulations and Procedures for Visitors to the Patent and Trademark Office**

Effective Oct. 1, 1982, all visitors to the Patent and Trademark Office (PTO) will be required to obtain and display a visitor pass while using PTO facilities. Passes will be available in building CP3, Room 1A01.

The current User Agreement will be replaced by the following Regulations for Visitors to the PTO:

These regulations are established for members of the public using the facilities of the PTO and will be enforced by designated officials of the PTO.

All persons using the facilities of the PTO are subject to regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101–20.3 (41 CFR §§101–20.300 through 101–20.314).

Packages, briefcases and other personal effects brought into the PTO are subject to search by authorized personnel for reasonable cause.

All persons must comply with posted Official Notices.

User Passes

1. Individuals visiting any area of the PTO must obtain and display a valid, non-transferable User Pass at all times while on the premises.
2. Permanent User Passes may be obtained from the Manager of the Patent Public Search Room. The first User Pass is issued at no charge. Duplicate or replacement User Passes will be provided at a cost of $5.00 per Pass. Temporary User Passes may be obtained at no cost and are valid through the expiration date stamped thereon.
3. Permanent and Temporary User Passes must be surrendered to authorized PTO officials upon request for cause.

Use of Search Areas

4. When searching in a patent examining organization, visitors must register with the designated representative and sign a log indicating time entering and leaving the area, User Pass number, and class(es) and subclass(es) searched.
5. Documents removed from the files must be promptly returned to their proper location after use. No documents may be removed from the area in which they were obtained without specific authorization from a Group Director or a Supervisory Patent Examiner.
6. Use of Patent Examining Group search areas is strictly limited to searching materials unavailable in the Patent Public Search Room or the Scientific Library. Examining Group search areas may be used only when such use does not conflict with the regular business of the organization.
7. Trademark registrations may not be removed from the secured bundles in the registered file. Photocopying from bound volumes of trademarks is prohibited.

Prohibitions

8. Smoking and consumption of food or beverages in other than designated areas.
9. Loud talking or any conduct which is disruptive to others.
10. Use of radios, typewriters, photographic equipment, dictation equipment, and like items without permission from a designated official of the PTO.
11. Improper use, mutilation, destruction or removal of patent or trademark records or government property.
12. Reserving seats or work areas.
13. Affixing messages to walls, telephone booths or other government property, except designated message boards.
14. Use of the PTO as a mailing address, and use of PTO stationery.

Hours of Operations

15. Use of PTO facilities is limited to the following hours on regular business days:

Patent Public Search Room, High Ceiling Area	8:00 am–6:00 pm
Low Ceiling Area and Mezzanine	8:00 am–8:00 pm
Trademark Search Library	8:00 am–5:30 pm
Scientific Library, Assignment Search Room, Microfilm Center, Patent Examining Organizations, and all other public access areas of the PTO	8:45 am–4:45 pm

THERESA A. BRELSFORD,
Sept. 8, 1982. *Acting Assistant Commissioner for Administration.*

[1023 O.G. 3]

(24) **Unlawful Removal of Labels**

We have found a large number of security labels, torn from Search Room patent copies, in stack areas of the Public Search Room. We remind persons removing security labels or otherwise mutilating Search Room patent copies, or removing Search Room patent copies from the Search Room without authorization, that such acts are criminal offenses punishable by fine, imprisonment or both.

You should be aware that engaging in such acts violates the prohibition against "the willful destruction of or damage to property; the theft of property." 41 Code of Federal Regulations §101-20.303. Violations are punishable by "a fine of not more than $50 or imprisonment of not more than 30 days, or both." 41 Code of Federal Regulations §101-20.315.

You should also be aware that engaging in such acts subjects you to punishment under the following criminal provision in Title 18 U.S. Code, §2071:

> (a) Whoever willfully and unlawfully conceals, removes, mutilates, obliterates, or destroys, or attempts to do so, or, with intent to do so takes and carries away any record, proceeding, map, book, paper, document or other thing * * * shall be fined not more than $2,000 or imprisoned not more than three years, or both.
>
> (b) Whoever, having custody of any such record, proceeding, map, book, document, paper, or other thing, willfully and unlawfully conceals, removes, mutilates, obliterates, falsifies, or destroys the same, shall be fined not more than $2,000 or imprisoned not more than three years, or both; and shall forfeit his office and be disqualified from holding any office under the United States.

UNLESS THE REMOVAL OF SECURITY LABELS FROM SEARCH ROOM PATENT COPIES CEASES, THE OFFICE WILL TAKE APPROPRIATE ACTION, SUCH AS EXERCISING ITS AUTHORITY UNDER 41 CODE OF FEDERAL REGULATIONS§101-20.301 TO INSPECT PACKAGES, BRIEFCASES AND OTHER CONTAINERS BROUGHT INTO, WHILE ON, OR BEING REMOVED FROM THE SEARCH ROOM.

GERALD J. MOSSINGHOFF,
Mar. 28, 1983. *Commissioner of Patents and Trademarks.*

[1029 OG 136]

(25) **Out-of-Town Request for Files**

Delays are being experienced in receiving files ordered from the Federal Records Center in Suitland, Md. Therefore, more time must be allowed when out-of-town requestors are ordering patented files or abandoned or registered trademark files in advance of their arrival in the area. Until recently, a five-day notice was sufficient to obtain a file located in the Federal Records Center. Now we are suggesting that ten days be allowed when ordering Suitland files. A 24-hour notice is still normally adequate when the file is located in the PTO File Repository in Crystal City. Out-of-town requests for files should be directed to Ms. Jacqueline Waldo on (703) 557-2977. Requestors will be notified by phone, prior to planned arrival date, whether or not the requested file will be available.

THERESA A. BRELSFORD,
July 10, 1984 *Assistant Commissioner for Administration.*

[1045 O.G. 3]

(26) **Use of Certificate of Correction Forms**

The purpose of this notice is, to once again, remind patentees and their attorneys and agents to submit the text of any correction under 37 CFR 1.322 and 1.323 on the Certificate of Correction form, PTO-1050, which is available free of charge from the Patent and Trademark

Office. The presentation of all corrections on this form permits its use as camera copy for prompt, direct offset printing of the Certificate of Correction.

Instructions for use of Form PTO-1050 are printed on the top portion thereof, and are also set forth, in further detail, in Section 1402.02 of the Manual of Patent Examining Procedures. It is especially important that the typing be clean and clear. Both thin, light type and heavy, smudged type should be avoided. Changes and corrections are preferably made by use of white opaque correction fluid.

The typing should be within the borders printed on the form and a two-inch blank space should be left at the bottom of the last page of the form for the placement of the signature of the Attesting Officer.

Both sheets of the printed form should be forwarded to the Office. The copies should be stapled together only at the upper left-hand margin at the indicated location.

Copies of form PTO-1050 may be obtained, as needed, from either the Correspondence and Mail Division in Building 2, or from the receptionist in the lobby of Building 3, Crystal Plaza, Arlington, Va.

RICHARD J. SHAKMAN,
May 10, 1977. *Assistant Commissioner for Administration.*

[959 O.G. 3]

(27) **ARS Patent Culture Collection Initiation of Fees**

As a result of recent policy changes, the ARS Culture Collection (NRRL) henceforth will charge a user fee for deposit and distribution of microbial cultures maintained in conjunction with U.S. and foreign patent applications. User fees apply to patent cultures only; as it has in the past, the ARS Culture Collection will continue to exchange other microbial germplasm with the scientific community without charge. The fee schedule will apply to all patent cultures deposited after Sept. 30, 1983. A fee of $500.00 will be charged for each strain, payable at the time of deposit. A $20.00 fee will be charged for the distribution of all released patent cultures that have been deposited after Sept. 30, 1983. There will be no charge for distribution of patent cultures already on deposit or for others received before this date. Checks, in U.S. dollars, should be made payable to the Agricultural Research Service, USDA. USDA laboratories and designated cooperators will be exempt from fee assessment. The types of microorganisms accepted by the ARS Culture Collection are the same as announced in the past and include industrially important bacteria, yeasts, molds, and *Actinomycetales*. Viruses and highly pathogenic or especially fastidious microorganisms are not accepted. Further information on types of microorganisms accepted and conditions for deposit may be obtained by contacting A. J. Lyons, Curator, ARS Patent Culture Collection, Northern Regional Research Center, USDA-ARS-NCR, 1815 N. University St., Peoria, Ill. 61604 (Tel. 309/685-4011).

[1033 OG 26]

(28) **Notice to Subscribers**

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the Official Gazette, Manual of Patent Examining Procedures Revisions, Annual Indices, or other patent and trademark publications. All correspondence and inquiries concerning subscription services including requests for reinstatement or renewal of subscriptions should be directed to:

Mr. Michael F. DiMario
Assistant Public Printer
Superintendent of Documents (SD)
U.S. Government Printing Office
Washington, D.C. 20401

Furthermore, the Superintendent of Documents advises that expiration notices are sent out approximately three months before the expiration date. However, subscribers should not rely on this schedule. If a notice is not received within two months of the expiration date, the subscriber should renew the subscription with the Superintendent of Documents. Attach a label from the envelope in which the publication is received, together with a check covering the amount of the subscription. If a deposit account with the Superintendent of Documents is to be used, include the deposit account number with the renewal.

This notice is effective with the publication date and supersedes the notice published on this subject in 969 O.G. 2, dated Mar. 14, 1978.

THERESA A. BRELSFORD,
Aug. 3, 1984. *Assistant Commissioner for Administration.*

[1045 O.G. 28]

(29) **Subscription Pricing Information**

The subscription prices on the following publications have been changed as indicated below:

Title: Official Gazette, Patent Section

First-class domestic mailing	$375.00
Fourth-class domestic mailing	270.00
Fourth-class foreign mailing	337.50
Single copies each, domestic	13.00
Single copies each, foreign	16.25

Back copies will not be furnished.

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Summer, 1984.

Foreign first-class mailing rates will be furnished upon request. Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
Sept. 11, 1984. *Assistant Commissioner for Administration.*

[1047 O.G. 11]

(30) **Subscription Pricing Information**

The annual subscription prices on the following publication have been changed as indicated below:

Title: Patent and Trademark Office Notices

First-class domestic mailing	$ 71.00
First-class foreign mailing	not available
Third-class domestic mailing	57.00
Third-class foreign mailing	71.25

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Summer 1984.

Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
May 7, 1984. *Assistant Commissioner for Administration.*

[1042 O.G. 58]

(31) **Rules Service Company Address Change**

The Patent and Trademark Office has been notified of a change in the address and telephone number of the Rules Service Company which publishes a looseleaf Rules of Practice in Patent and Trademark Cases with a revision service. The new address and telephone numbers are:

Rules Service Company
4341 Montgomery Avenue
Bethesda, Maryland 20014
(301) 656-4660

SIDNEY A. DIAMOND,
Apr. 7, 1980. *Commissioner of Patents and Trademarks.*

[994 O.G. 10]

(32) **Patent and Trademark Office Services**

The Patent and Trademark Office is making every effort to utilize its resources as effectively and efficiently as possible. However, delays in some services are being experienced. To improve services, the PTO is taking the following steps:

Beginning with the issue of January 1, 1980, the original formal drawing which is supplied by the patent applicant and is 8 1/2 by 14 inches (21.0 by 29.7 cm.) is being stored within the patented file in the Patent Search Division. This is a change from the earlier practice under which the drawing is stored in a separate location from the patent file wrappers. The new procedure will simplify obtaining the complete patented file. This procedure will be used for a three month trial period and then reevaluated for its effectiveness.

Effective December 3, 1979, sale of tokens and maintenance of all token operated photocopy and microfilm reader-printer equipment throughout the Patent and Trademark Office are being performed by a private contractor, T S Info Systems, Inc. (TSI). Improved quality and timeliness of copy service to the public are anticipated.

All token sales are made between the hours of 8:30 A.M. and 5:00 P.M. at the token sales booth in the Record Room located in Building CP-4. When purchasing tokens by check, please make the check payable to "TSI" rather than "Commissioner of Patents and Trademarks." Tokens will not be sold at the cashier's window in CP2.

Effective February 1, 1980, charges for tokens to PTO customer deposit accounts will no longer be accepted.

Effective immediately, no requests for new patent or trademark drawings will be accepted by the Patent and Trademark Office. New drawings will be prepared only for requests already received. All currently available drafting time and facilities are required to correct the backlog of drawings needing correction prior to issue. When this backlog has been eliminated, a notice will be issued to that effect and new drawings can again be prepared for the public.

Effective immediately, three additional special mail room boxes will be established in the PTO:

Box 4 will be used for all mail for the Office of Legislation and International Affairs.

Box 5 will be used for documents which are related to trademarks and for which *no fee* is required at the time of filing; e.g., amendments to applications and requests for extensions of time to file an opposition. For mail directed to the Trademark Trial and Appeal Board, put "Attention TTAB" on the envelope in addition to "Box 5."

Box 7 will be used for reissue applications which are involved in litigation and any subsequently filed papers for these applications.

Mail appropriately addressed will be sorted and forwarded on a more timely basis.

Applicants and other users of the PTO services can assist in improving the efficiency of office by doing the following:

Use the following special PTO box numbers for forwarding particular types of mail. The boxes should be used only for the specified purpose.

Box 2—Replenishment of funds in deposit accounts.

Box 4—Mail for the Office of Legislation and International Affairs.

Box 5—"No fee" mail related to trademarks.

Box 7—Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.

Box 8—All papers for the Office of the Solicitor.

Box 9—Coupon orders for U.S. patent and trademark copies.

Box 10—Orders for certified copies of patent and trademark applications.

Box PCT—Mail related to applications filed under the Patent Cooperation Treaty.

Only that material for which the special box was established should be enclosed.

The special box numbers have been established to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Therefore, if any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they were intended.

Envelopes should be addressed:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Consider the fact that some PTO services are experiencing delays, and allow sufficient lead time for services requested of the Office. Where possible, urgent items which require no fee should be hand delivered to the appropriate area.

Minimize the number of inquiries to the PTO regarding acknowledgment of receipt of applications, fee papers, orders for patent copies, etc.

Include a self addressed return post card with newly filed applications. The serial number assigned the application will be stamped on the post card, which will constitute the means by which the application can be identified.

Use commercial services for preparation of new patent and trademark application drawings.

On all papers which are filed in patent and trademark applications and are being sent to an examining group, include the appropriate identifying data, such as examining group number, examiner's name, and the number of the application paper to which the response is directed. The paper should also identify the type of document being presented (e.g., response to Office action #___, amendment, etc.). The name and telephone num-

ber of the individual representing the applicant also should appear on all papers.

These steps have been devised in an effort to minimize delays in services. We solicit the help and cooperation of the public.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Jan. 4, 1980.

[990 O.G. 184]

(33) Service of Court Papers on the Commissioner of Patents and Trademarks

Those having occasion to serve papers associated with court proceedings by mail are reminded that a special mailing address has been established to provide prompt forwarding to the Office of the Solicitor. The use of this address will ensure that the papers will not be delayed in dispatch. In court proceedings in which the Commissioner is a party, the notices of appeal to the U.S. Court of Appeals for the Federal Circuit and all service copies of papers filed in courts should be addressed:

Solicitor
Box 8
U.S. Patent and Trademark Office
Washington, D.C. 20231

Service copies of briefs and papers hand-carried to the Mail Room of the Patent and Trademark Office should likewise be addressed as shown above.

Joseph Nakamura,
Solicitor.

Sept. 10, 1982.

[1023 O.G. 3]

(34) Sale of Copies of Reexamination Requests

Copies of reexamination requests, all cited references, and the file wrapper and contents of the patent file for which reexamination is requested are available at a charge of $0.30 per page. Orders for such copies must indicate the control number assigned the reexamination request. Orders should be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Customer Services Division.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

July 31, 1981.

[1010 O.G. 4]

(35) Electronic Patent Data Dissemination Guidelines

Introduction

The U.S. Patent and Trademark Office (PTO) has undertaken a program to fully automate its operations. As a result of the automation, new forms of patent data will be created and new techniques will become available to facilitate the end use of one of the largest technical information resources of the nation, the files of U.S. and foreign patents. To fulfill its mission to disseminate such information and to aid in the management of the electronic information resources, the PTO has formulated the following general principles and guidelines regarding electronic, digital patent data dissemination and distribution.

To the extent that formal regulations will be necessary to carry out these guidelines, separate formal rulemaking procedures will be undertaken. The purpose of this notice is to inform the public as early as possible of the PTO's present policies in automating its patent operations.

The public is urged to consider and submit comments on these guidelines. Please address comments to:

J. Howard Bryant
Administrator for Automation
U.S. Patent and Trademark Office
Washington, D.C. 20231

Background

In response to P.L. 96–517, the PTO prepared and submitted to Congress on Dec. 13, 1982, its plan for the complete automation of its operations by 1990. The mandate to develop the plan stemmed from the recognition that problems of increasing magnitude threaten the effectiveness of the U.S. patent system. These problems relate to the increasing difficulty of maintaining the integrity of the all-paper hand-file and retrieval search files on which patent examination depends. Surveys indicate that at any one time, about seven percent of the search files are missing or misfiled. The process of matching the 20,000 documents of correspondence and other items that arrive in the PTO daily to the 240,000 pending patent applications is prone to a high rate of error. The already enormous data base in the patent examining search files alone — more than 25,000,000 documents— is projected to double by the end of the century. The solution to these problems is the application of computer technology to the functions of the PTO. The automation plan was developed around the concept of an essentially paperless office, using computer processable, electronic data bases to replace the existing paper files. Data will be converted to computer processable form from applications and patent search files using a variety of technical methods — optical character recognition, digital facsimile scanning, and word processing. Once the electronic data base is created, patent examiners and other PTO personnel will use it to perform searches, conduct examinations, and prepare office actions. A specially configured electronic workstation will be used to support these functions. The electronic data base also will provide the data to print the *Official Gazette* and to make copies of patents for sale to the public.

Automation is being accomplished in three stages, beginning with the installation of a proof-of-concept system to prove and refine the application of the technology to the patent process. Once proven, the test installation will be expanded in the second stage to support all of the internal functions of the PTO. In the third stage, public access to patent information will be expanded, and electronic interconnections between cooperating foreign patent offices will be established.

Considerable progress has been made in implementing the automation plan. A $300 million contract has been awarded to the Planning Research Corp., teamed with the Chemical Abstracts Service (a not-for-profit arm of the American Chemical Society) to provide computer software and equipment, together with supporting services, for an Automated Patent System (APS). Installation of the Automated Patent System for Stage 1 will begin late in 1984 and its evaluation will be completed in the summer of 1985. Part of the electronic data base — the text of patents from 1970 to the present — is available as a by-product of patent printing. Two pending procurement actions will provide for the conversion into computer processable form of the remainder of the backfile of U.S. patents and all future applications. Agreements have been reached with the European and Japanese Patent Offices to exchange electronic patent data bases. In brief, the most significant initial steps leading to the automation of the PTO have been carried out as planned.

As a result of the automation program, the PTO plans

to create or obtain and maintain the following electronic data bases in its Automated Patent System(APS):

1. All U.S. patents, patent application files, and releated patent data such as bibliographic, classification, status, and ownership information;
2. A comprehensive collection of foreign patent documents and related patent data such as bibliographic and classification information, captured by the PTO or obtained through exchanges with other patent offices, intergovernmental organizations, or other entities.
3. A collection of selected non-patent technical literature.

These data bases will be accessed using electronic workstations with dual, high-resolution displays, and software that provides the capability to use index and full text search techniques. These search techniques include the ability to search according to the current U.S. Patent Classification System, and an international patent classification system. The patent examiners will also be provided with access to selected commercial search data bases using their electronic workstations.

The PTO considered several approaches to the dissemination of patent data, and adopted the following general principles and guidelines.

I. Dissemination Goals and Objectives

It is the goal of the PTO to achieve effective, widespread dissemination of patent information to all segments of the U.S. public.

A. This will be accomplished directly by providing electronic data base search and retrieval services in public search facilities located in the PTO and other locations which may be established by the Government. To the extent technically feasible and economically viable, services also will be provided in cooperation with Patent Depository Libraries (PDLs), under provisions of 35 U.S.C. 13. PDLs are Federal, state and local government or non-commercial university libraries designated by the PTO to offer public, nonprofit access to patent collections.
B. The PTO will pursue its dissemination goal indirectly by encouraging the private sector to offer commercial patent search and retrieval services outside the public search facilities and PDLs. The PTO will seek to avoid competition with private sector firms in providing such services to the public.

II. Direct Dissemination to the Public

A. The PTO will seek to provide the following in the public search facilities:
   1. Electronic access to all the capabilities of the Automated Patent System (APS) that will be available to patent examiners, excluding pending and abandoned applications not accessible under 35 U.S.C. 122, at user fee rates based on the marginal cost of providing the access; and
   2. Access at commercial rates, to commercial data bases that are available to the patent examiners.
B. To the extent that it is technically feasible and economically viable, the PTO will seek to provide in the PDLs access to the capabilities of the Automated Patent System, excluding pending and abandoned applications not accessible under 35 U.S.C. 122, at user fee rates based on the marginal cost of providing those services.

III. Distribution to Commercial Data Base Vendors

The PTO will pursue its dissemination goals indirectly by making its electronic patent data available to commercial data base vendors that provide commercial search and retrieval services to the public. The PTO will provide its data to such commercial data base vendors under the following conditions:

A. All U.S. patent data created by the PTO will be made available in bulk form, that is on magnetic tape or another suitable medium.
B. In general, the PTO will not distribute the data received from another patent office but will seek to have contractual arrangements established directly between the other patent office and the commercial data base vendor. The PTO will not act as a service agent or representative of another office unless there is a special need that cannot be met otherwise.
C. Fees charged to commercial data base vendors for bulk U.S. patent data will be based on the marginal cost of providing such distribution services plus a fair market value charge for the data, as set by the PTO.
D. Normally, arrangements with commercial data base vendors will be non-exclusive. Bulk resale of PTO data by commercial data base vendors will be prohibited by the terms of the bulk sale agreement.

IV. Exchange of International Data

International electronic patent data exchanges between the PTO and other patent offices will be made when deemed to be advantageous. Dissemination of data obtained through data exchanges will be based on the following guideline: all data obtained by exchanges from other patent offices will be obtained under agreements that will permit the data to be incorporated into the Automated Patent System (APS). If the data cannot be incorporated into the Automated Patent System (APS), it will be governed by these guidelines as they apply to commercial data bases.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

June 8, 1984.

[1044 O.G. 11]

(36) Computer Aided Search for Class 364 Subclasses 200 and 900

In 1975 the Patent and Trademark Office installed an experimental computer search system for searching the computer and digital data processing system arts classified in Class 364/200 and 900. This system, known as Computer Controlled Microform Search System (CCMSS), functioned until 1983 when it could no longer be kept operational.

A new computer aided search system, Computer Aided Search and Patent Image Retrieval (CASPIR), has been installed and is available to the public. The new system possesses features similar to the previous system in that each subclass is searchable using a topic index list of approximately 400 terms, which may be combined with Boolean logic into a search question. The user is able to view from 5 to 12 pages of documents meeting the search strategy under computer control of a microfilm viewer.

CASPIR has all of the original data base of the CCMSS (which covered patents dated 1950–1981). In addition, its data base, coded and filmed, has been updated through Sept., 1984.

It is anticipated that CASPIR will be updated according to the following schedule. Once a month the codes assigned to new documents will be entered into the data base by Patent and Trademark Office personnel. Documents thus entered will not be available on the microfilm viewer but will show up on the data terminal in response to search questions. Users would need to consult search room paper files to see the documents. To assure efficient filming and maximum use of the film strips, the filming of coded documents will take place on a quarterly basis — Jan., Apr., July and Oct. Following this procedure, the coded data base should not be more than one to two months behind current patent issue dates and the filmed copies of coded documents should not be more than three to four months behind current patent issue dates.

Terminals are currently available for public use in Crystal Plz. 2, Room 5C–22. Reservations for terminal use may be made by calling 703–557–3651 during normal business hours. Patent and Trademark Office personnel are available to assist the user in terminal operation. Effective Mar. 11, 1985 these public terminals will be moved to the Public Search Room in Crystal Plz.

CP3–1A–3. Reservations for use may then be made by contacting Mr. Bernard Thomas at 703–557–2276.

EARL LEVY,
Feb. 5, 1985. *Director, Group 230*
Patent and Trademark Office.

[1052 OG 56]

(37) **Availability of Concordance — Fifth Edition**

The Patent and Trademark Office announces the availability of the "Concordance Fifth Edition-1985 United States Patent Classification to International Patent Classification" which relates the U.S. Patent Classification, as revised through Feb. 29, 1984, (Classification Order No. 929) to the Fourth Edition of the International Patent Classification, 1984, as published for the World Intellectual Property Organizations by Carl Heymanns Verlag K. G., Munich.

Copies of the Concordance are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, Stock Number 003-004-00611-1. The price for this publication is $6.50 for U.S. and $8.15 for foreign mailing.

WILLIAM S. LAWSON,
July 3, 1985. *Administrator for*
Documentation.

[1057 OG 20]

(38) **Availability of Copies of the Magnetic Tape of the Fourth Edition of the International Patent Classification (IPC)**

The Assembly of the IPC Union has decided to make available copies of the magnetic tapes of the IPC through the International Bureau of the World Intellectual Property Organization.

The IPC Assembly made the following decisions:

"The International Bureau should put at the disposal of the Industrial Property Offices of any country member of the IPC Union which so wishes the magnetic tape. . .of the IPC *at cost*, provided that any such Office receiving a tape accepts the three conditions set forth. . .below:

(i) the tape is used by those Offices. . .for the purposes of carrying out their functions,

(ii) no reproduction of the tape or its contents, in whole or in part, is made in the form of paper copies or microfiches, except in the case of on-line printouts, and

(iii) the tapes or copies thereof, in whole or in part, are not made available to any third party."

The Committee of Experts of the IPC Union decided that the tape (in English *or* French language) would be made available to Industrial Property Offices of countries being members of the IPC Union at the price of 1,000 Swiss francs.

In order to carry out its function of disseminating patent information contained on IPC tapes, the U.S. Patent and Trademark Office may need the assistance of qualified U.S. public organizations or private companies. Accordingly, the Office will consider requests from such organizations or companies interested in disseminating such information.

The Committee also decided that, subject to the conditions enumerated in (ii) and (iii) above, the tapes would be made available for the following prices to any public organization or private company authorized by its government:

- for internal use only, at the price of 5,000 Swiss francs; and
- for exploitation of the tape on a commercial basis, at the price of 30,000 Swiss francs.

The Patent and Trademark Office will authorize United States public organizations and private companies to purchase the tape under these conditions and at the agreed upon prices quoted.

For further information contact:

Office of International Patent Classification
Crystal Square, Bldg. 4, Room 108
U.S. Patent and Trademark Office
Washington, D.C. 20231
Tel: (703) 557-3756

WILLIAM S. LAWSON,
Feb. 1, 1985. *Administrator for*
Documentation.

[1052 OG 56]

(39) **Simultaneous Issue of Patents**

Applicants and their attorneys who desire the simultaneous issue of allowed applications must submit the request to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of Publications
CP-2, Room 5C26

The request must contain the following information about *each* allowed application for which simultaneous issue is requested:

(1) serial number
(2) filing date
(3) name(s) of inventor(s)
(4) title of invention
(5) date of allowance

Separate copies of the request must accompany *each* Issue Fee Transmittal (PTO-85b).

Questions concerning this practice may be directed to Mr. Stanley J. Bania, Director, Office of Publications, Area Code (703) 557-3794.

RICHARD J. SHAKMAN,
Aug. 25, 1978. *Assistant Commissioner*
for Administration.

[974 O.G. 16]

RECORDS AND FILES

(40) **Assignee Names**

Effective April 1, 1976, only the first appearing name of an assignee will be printed on the patent where multiple names for the *same* party are identified on the Base Issue Fee Transmittal form, POL-85b. Such multiple names may occur when both a legal name and an "also known as" or "doing business as" name is also included. This printing practice will not, however, affect the existing practice of recording assignments with the Office in the Assignment Division. The assignee entry on form POL-85b should still be completed to indicate the assignment data as recorded in the Office. For example, the assignment filed in the Office and therefore the POL-85b assignee entry might read "Smith Company doing business as (d.b.a.) Jones Company." The assignee entry on the printed patent will read "Smith Company."

For purposes of compiling and publishing the 1976 Annual Index of Patentees, this change will be retroactive to patents issuing on January 6, 1976.

RICHARD J. SHAKMAN,
Dec. 17, 1975. *Assistant Commissioner*
for Administration.

[942 O.G. 186]

(41) **Submission of Uniform Assignee Names on the Issue Fee Payment Form PTOL-85b**

The Patent and Trademark Office is experiencing problems when computer-sorting assignee names for the Patentee Index because of the non-uniform use of the names of certain companies and corporations on the issue fee payment form PTOL-85b. The use of different spellings or nomenclature for the same company requires the Office to expend time and effort to determine whether the various name forms are in fact for the same company. If such inconsistencies are not corrected, patents to the same company will appear in different locations in the Patentee Index. An example of inconsistent use is "ABC Company, Ltd." and "ABC Co., Limited."

Therefore, persons who list assignee names on issue fee payment form PTOL-85b should ensure that the same company name form is used for all patents issuing to a particular company.

RICHARD J. SHAKMAN,
Nov. 17, 1977. *Assistant Commissioner*
for Administration.

[965 O.G. 8]

(42) **Assignments Affecting Applications of Joint Inventors**

Over the past several years, the Assignment Branch of the Patent and Trademark Office has been charging a single fee for recording the assignment of a patent or patent application of joint inventors when separate assignment documents are executed by the joint inventors and then filed together for recording.

This practice is in error because it conflicts with 37 CFR 1.21 Miscellaneous Fees and Charges (h) Recording of Documents which states:

(1)For recording each assignment, agreement or other paper relating to the property in a patent or applications . . . . . $20.00.

Effective Nov. 1, 1984, the Assignment Branch will charge in accordance with the above regulation, the fee of $20.00 for each assignment document of the joint inventors which relates to the patent or patent applications.

THERESA A. BRELSFORD,
Oct. 1, 1984. *Assistant Commissioner*
for Administration.

[1047 O.G. 49]

(43) **Title of Invention Carried on Office Records**

The Patent and Trademark Office is experiencing an increased incidence in the number of newly filed applications in which the title of the invention is inconsistent within the papers. This has resulted in applicants requesting correction of the official filing receipt in many instances to indicate the title preferred by applicants.

Hereafter, whenever the title of the invention appears inconsistent within the papers of a newly filed application for patent, the records of the Office will carry the title as indicated on the first page of the specification and no corrected filing receipt will be issued to indicate another title. Note that 37 CFR 1.72(a) indicates that the title of the invention should appear as a heading on the first page of the specification.

It should also be noted that applicant may amend the title under 37 CFR 1.115 if any changes are subsequently desired before issuance of a patent.

BRADFORD R. HUTHER,
Aug. 31, 1977. *Acting Assistant Commissioner*
for Administration.

[962 O.G. 23]

(44) **Notice to Patent Owners and Parties Responsible for Paying Maintenance Fees Concerning Fee Address and Payor Number**

37 CFR 1.363, effective Nov. 1, 1984, provides for a "fee address" to be entered in the Office patent file records for use in all correspondence relating to maintenance fees. The "fee address" is in addition to the "correspondence address" under 37 CFR 1.33 which will continue to be used for all reexamination and interference purposes. If no separate "fee address" is specified, the "correspondence address" will also be used for maintenance fee correspondence.

In order to simplify changes in address by patent owners having several patents, and data input by the Patent and Trademark Office, a "payor number" will be assigned to each "fee address" when a "fee address" is presented to the Office in a patent or earlier upon request. A request for a "payor number" before a maintenance fee is paid or due will permit a patent owner to request that the "fee address" or "payor number" be recorded in the Office records of the patents owned on which maintenance fees are due so that all notices relating to maintenance fees will be sent to the "fee address".

The Patent and Trademark Office has established a procedure for assigning a "payor number" upon request by a patent owner or a party responsible for paying maintenance fees. Such a party may be, for example, the finance office of a corporation or of a separate organization specializing in maintenance fee payments. Under the procedure, a patent owner or other party may request a "payor number" for a particular "fee address" by writing to: Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231. Each request for a "payor number" should include:

— the "fee address" to be used by the Office, and
— the telephone number of the fee addressee to be used to resolve problems.

After receipt of a "payor number", it may be used to indicate to the Patent and Trademark Office the "fee address" to be used in particular patents on which maintenance fees will become due and in applications in which issue fees have been or are being paid. Any request for entry of a "payor number" or "fee address" in the Office records of a patent, however, must be signed by the patent owner or his or her attorney or agent of record.

After a "payor number" has been assigned, it should be used in all future maintenance fee payments and related correspondence. However, where a "payor number" has not been previously entered in the Office records for a patent, the mere indication of a "payor number" at the time of payment of the maintenance fee, without the signature of the patent owner or the owner's attorney or agent of record, will not serve to make the "payor number" of record in the Office for that patent.

THERESA A. BRELSFORD,
Oct. 19, 1984. *Assistant Commissioner*
for Administration.

[1048 O.G. 48]

(45) **New System To Monitor Patent Applications**

During this summer the Patent and Trademark Office will begin implementation of a new office-wide computer system, the Patent Application Locator and Monitor System (PALM 3), for monitoring the location and status of pending patent applications. The system will also have the ability to print data on certain form letters such as the Notice of Allowance, using computer-controlled printers located in the Examining Groups. This will permit the Notice of Allowance to be printed and mailed by the Groups shortly after the Examiner has decided that an application is in condition for allowance. Under the new system, the Notice of Allowance will be mailed prior to completion of final issue revision by the Group clerical staff. In those applications where an Examiner's

Amendment is required, it will normally be mailed as an attachment to the Notice of Allowance.

When existing printing backlogs have been eliminated, this accelerated mailing should reduce the time between allowance by the examiner and issuance of the patent grant in most cases. The nature and/or extent of the revisions or processing requirements subsequent to mailing of the Notice of Allowance may result in little or no reduction in the time required for the printing of a few patents. In addition, it is possible that, as a result of this additional processing, withdrawal or correction of the Notice for a given application may be required. For instance, prosecution might be reopened as a result of the Quality Review Program. In situations where the Base Issue Fee has been paid and the Notice of Allowance is subsequently withdrawn, the applicant may request that a refund be made or that the fee be credited to a Deposit Account.

Applicants will continue to receive a three part Notice of Allowance packet, but, as a result of automated printing, the Notice will be produced in a slightly revised format. This new format will have the following application data printed thereon:

—Serial Number
—Filing Date
—Total Claims Allowed
—Date of Mailing
—Examiner Name and Group Art Unit
—First Named Applicant
—Title of the Invention
—Base Issue Fee Due (Utility Applications Only)
—Attorney's Docket Number
—Class and Subclass Where Issued

Copy (a) of the new Notice of Allowance will be used as applicant's record copy in the current manner. Copy (b) will continue to be used as a transmittal for the fee with copy (c) required when a charge to a deposit account is authorized. The new version of copy (c) will also have a section to notify the Office of a change in an inventor's address. Note that this address change need not be signed by the inventor. This procedure eliminates the need for the separate Inventor's Address Change form (PTOL-231) now in use.

One other change to current practice will also be implemented as a result of the new system. Beginning with patents issuing in the late fall of this year, advance orders for patent copies will only be sent to the correspondence address of record in the application. This practice will permit computer generation of mailing labels for the orders and thereby eliminate the need for the separate, pink Advance Order form (PTO-721) now in use. Requests for advance orders will now be made in a special section of copy (b) of the Notice of Allowance. During the transition from the old order method to the new, it will be necessary to send some advance orders to the correspondence address of record in the application rather than some other address as has been requested on an earlier submitted Advance Order Form.

While the major impacts on the public will be limited to those discussed above, one other minor matter should be mentioned. It is anticipated that, due to the absence of data in the master data base, some information occasionally may not be printed on the Notice of Allowance or on other form correspondence. However, this does not necessarily mean that a corrected Notice or form letter is required. Furthermore, since the data base is not used for printing of the patent grant, the missing information should appear on the final issued patent if it is in the application file wrapper. This problem is expected to diminish as the implementation of the system proceeds and the data base becomes more complete. The cooperation of applicants and their representatives during this system implementation is sincerely appreciated by the Patent and Trademark Office.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

June 16, 1980.

[997 O.G. 9]

(46) **Policy Regarding Storage, Retention and Availability of the Foreign Patent Documents in the Numeric Collection of the Patent & Trademark Office***

The U.S. Patent and Trademark Office (PTO) maintains the largest collection of foreign patent documents in the United States. This collection is a major technical information resource that supports the patent examination function as well as the PTO's mission of disseminating technical information. The collection is divided into two parts—the classified collection which is distributed among the examiners' search files, and the numeric collection which is maintained by the PTO's Scientific Library. A large portion of the numeric collection is in paper form, but it also includes considerable microfilm with some overlap between the two forms. Some of the documents are republished versions of earlier publications (e.g., unexamined and examined applications). One of the PTO's objectives has been to reduce the bulky paper foreign patent files in the numeric collection by replacing them, where possible, with good quality microfilm and by eliminating duplicates. A number of other considerations bear on the management of this collection. Because of the importance of the collection, the PTO has established a policy intended to ensure the effective storage, retention, and availability of the foreign patent documents in its numeric collection. The purpose of this notice is to inform the public of this policy which is set forth below.

The public is invited to consider and submit comments on the policy. Please address comments to:

William S. Lawson
Administrator for Documentation
U.S. Patent and Trademark Office
Washington, D.C. 20231

General Policy

The U.S. Patent and Trademark Office (1) is the National repository for all foreign patent documents, except design patents; (2) will maintain, in numerically retrievable collections, as many as possible of these documents for which there is or may be a reasonable level of need, and (3) will make these documents conveniently accessible to the PTO and to the public.

Implementation

1. The Scientific Library is responsible for policy implementation.

2. At least all post-1920 foreign patent documents needed to meet "Minimum Documentation" requirements of the Patent Cooperation Treaty will be housed in the Scientific Library in either paper or microfilm form.

3. All paper copies of foreign patent documents not needed to meet "Minimum Documentation" requirements will be housed either in the Scientific Library or other storage space in accordance with usage activity. The documents with greater activity will be housed in the Scientific Library until space therein is exhausted and the remaining documents will be housed in the other storage space.

4. All foreign journals (official gazettes) will be housed in the Scientific Library.

5. All paper copies of foreign patent documents needed for copy request fulfillment will be stored in a form accessible for prompt retrieval.

6. Whenever feasible, paper copies of foreign patent documents will be replaced by good quality microfilm.

7. 16mm roll microfilm will be the microform preferred for PTO use and archival storage. If 16mm microfilm is not available or is unacceptable, the Library may decide, on a case-by-case basis, whether a different microform should be obtained.

8. All microfilm of foreign patent documents intended for use by the PTO and the public will be housed in the Scientific Library. All archival microfilm will be housed in a facility that is suitable for the preservation and protection of the microfilm and for needed access.

9. Paper copies of foreign patent documents will be disposed of if good quality microfilm of the corresponding documents is available in the Library, good quality *archival* microfilm is available in the PTO, and the PTO has the legal rights to sell paper copies made from the microfilm and to reproduce the microfilm for internal use; paper copies for which there is little or no demand may be disposed of despite the availability of only marginal-quality microfilm. Paper copies for which good quality microfilm is available in the Library, but for which the other conditions noted above are not met, will be retained, although they need not be stored in a form accessible for prompt retrieval. However, such documents will be stored in accordance with a procedure designed to ensure preservation of the documents, adequate records of stored material and efficient utilization of space.

10. Where an application has been republished, a decision will be made on a "country-by-country" basis as to whether the duplicate version or versions of the initial document will be retained. The basis for this decision will be the current or anticipated utility of the duplicate documents to the PTO and the public.

11. Collections of paper copies that are not needed by the PTO will be disposed of promptly. Such collections will first be offered, for a limited time, to developing countries through the World Intellectual Property Organization. Collections which cannot be disposed of in this manner may then be disposed of, preferably by offering them for sale, as part of some exchange, or as gifts. However, if unneeded paper copy collections cannot be disposed of in a beneficial manner within a reasonable period of time, they will be discarded.

12. Requests for copies of foreign patent documents from within the PTO and from the public will be fulfilled promptly.

13. Fees to the public for copies of foreign patent documents will be set at a level commensurate with full cost recovery and with the provision of prompt, efficient copy service.

14. As the complete text of foreign patent documents is captured in electronic form and becomes retrievable, numerically and otherwise, to the PTO and to the public, in the automated patent system, paper copies will be disposed of and the retention of microfilm reconsidered.

15. It is recognized that this policy does not provide for all possible circumstances regarding the foreign patent document collection and there may be limited instances where some deviation from the policy is justified. In such cases, the deviation will be justified in writing by the Program Manager of the Scientific Library and approved by the Administrator for Documentation and the Assistant Commissioner for Patents.

WILLIAM S. LAWSON,
Administrator for Documentation.

Nov. 26, 1984.

[1052 OG 3]

*The PTO also maintains a very large, technologically classified collection of foreign patent documents. This policy *does not* apply to the classified collection.

FEES AND PAYMENT OF MONEY

(47) **DEPARTMENT OF COMMERCE**
Patent and Trademark Office
37 CFR Parts 1 and 2

Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish fee related procedures and fees in amounts which would comply with the requirements of either Public Law 96-517 or H.R. 6260, dependent upon which is effective on Oct. 1, 1982. This action is necessary at this time in view of the requirements to establish fees and procedures contained in Public Law 96-517 and the requirements which would also be present under H.R. 6260 enacted as a Public Law. This final rule is being issued in two sections with the first section relating to patent fees and the second section relating to trademark fees. This final rule is also being issued in alternative form so that the proper fees and procedures will become effective on Oct. 1, 1982, under either Public Law 96-517 or the Public Law which results from enactment of H.R. 6260. Thus, if Public Law 96-517 remains fully effective on Oct. 1, 1982, the rule changes contained herein which are common to Public Law 96-517 and H.R. 6260, as well as those specific to Public Law 96-517, contained in Alternative A of each section, will become effective. Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, the rule changes contained herein which are common to Public Law 96-517 and H.R. 6260, as well as those specific to H.R. 6260, contained in Alternative B of each section, will become effective. Thus, the intended effect of this action is to adopt rules which will be effective on Oct. 1, 1982, establishing patent and trademark fees and procedures regardless of whether Public Law 96-517 remains fully effective or whether H.R. 6260 has been enacted.
Effective Date: Oct. 1, 1982. However, prior to Oct. 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.
For Further Information Contact: As to the patent rules contact R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231.
For Further Information Contact: As to the trademark rules contact Miss Maude Williams by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D.C. 20231.
Supplementary Information:

SECTION I—REVISION OF PATENT FEES

Background

A notice of proposed rulemaking was published in the *Federal Register* on June 28, 1982, at 47 FR 28042-28063 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57-120. An oral hearing was held on July 9, 1982. Fourteen written letters and statements were submitted. Five persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These rule changes are designed primarily to implement the Patent and Trademark Office fees which are provided for by Public Law 96-517, or which would be set in, or provided for by, the Public Law resulting from H.R. 6260.

Public Law 96-517

Public Law 96-517 presently requires that fees be established by the Commissioner for the processing of patent applications from filing through issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. Public Law 96-517 requires that by Oct. 1, 1982, fees for the processing of patent applications, other than design patents, be set by the Commissioner to recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. Similarly, fees for processing design patents are to be set to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. By Oct. 1, 1982, fees for all

other services or materials related to patents are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

Public Law 96-517 also requires that fees be set for maintaining all patents filed on or after Dec. 12, 1980, other than design patents, in force. It also requires that maintenance fees must recover 25 per centum of the estimated cost to the Office of processing patent applications, other than design patent applications, by the fifteenth fiscal year following Dec. 12, 1980. Under Public Law 96-517, the maintenance fees are due 3½, 7½, and 11½ years after grant of the patent.

Public Law 96-517 is presently effective and this rule change is designed to implement the fee provisions of that law if it remains fully effective on Oct. 1, 1982. The changes which will become effective on Oct. 1, 1982, under Public Law 96-517 (without enactment of H.R. 6260) are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under only Public Law 96-517, which appear in Alternative A.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. H.R. 6260 would establish a number of statutory fees which the Commissioner is required to charge. Among the more significant of these are fees for filing a patent application, issuing, and maintaining a patent in force. The fees for filing a patent application and issuing a patent would be set forth in §41(a) of Title 35, United States Code, as proposed to be amended by H.R. 6260. Certain other fees, such as appeal fees, the fee for filing a disclaimer, and fees for filing petitions seeking to revive an abandoned application and for extensions of time, would also be set in §41(a) of Title 35, United States Code. Section 41(b) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would set forth the fees for maintaining a patent in force. These fees would be due 3½, 7½, and 11½ years after grant of the patent or within a grace period of six months thereafter. Section 41(c) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would provide for the acceptance of maintenance fees after the statutory grace period under certain conditions and with certain effects.

H.R. 6260 would also provide for the reduction by 50 per centum in the fees paid under §41(a) and (b) of Title 35, United States Code, by independent inventors, small business concerns, and nonprofit organizations, who meet the definitions established, and to be established therefor.

Section 41(d) of Title 35, Untied States Code, as proposed to be amended by H.R. 6260, would also provide that the Commissioner establish fees for all other processing, services, or materials related to patents which are not covered in §41(a)–(c) of Title 35, United States Code, to recover the estimated average cost to the Office of the processing, services, or materials.

The changes which will become effective on Oct. 1, 1982, *upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982*, are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. H.R. 6260 includes other provisions which would be the subject of other proposals for rulemaking.

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a patent application, or during the term of a patent. A number of significant changes are made in order to implement either Public Law 96-517 or H.R. 6260.

Under H.R. 6260, and Alternative B of this rule making, fees under §41(a) and (b) of Title 35, United States Code, would be reduced by 50 per centum for independent inventors, small business concerns, and nonprofit organizations. H.R. 6260 would give the Commissioner authority to establish regulations defining independent inventors and nonprofit organizations. H.R. 6260 defines small business concerns by reference to §3 of the Small Business Act and regulations established by the Small Business Administration. This rulemaking, in Alternative B, implements the fee system which would be established by H.R. 6260 and lists all applicable fees.

* * * * *

Another significant change relates to fees established under Public Law 96-517 and which would be established by H.R. 6260 for petitions for extensions of time to take actions required by the Commissioner in an application. H.R. 6260 would establish a fee of $50 for filing a petition for a first one-month extension of time, an additional fee of $100 for filing a petition for a second one-month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of $200 for filing a petition for a third one-month extension of time which would expire three months after the end of the time period set for taking action. A fourth one-month extension with an additional fee of $200 could be requested if additional time was available under the statute. Under H.R. 6260, the Commissioner would have authority to issue regulations providing when, within any maximum time period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. The Commissioner would also not be precluded by H.R. 6260 from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause. This rulemaking implements the extension of time provisions of H.R. 6260 by permitting applicants in the majority of situations to file the petition for an extension of time and the fee at the time of and along with the filing of the response for which a non-statutory or shortened statutory time period has been set. This will reduce the amount of paperwork involved and should significantly reduce the expenses of applicants and the Office since resources now devoted to the separate processing of petitions for extensions of time will no longer be required to be expended thereon. The fees are set to provide a proper control on the number of extensions of time given. The same procedures relating to extensions of time which would be established under Alternative B and H.R. 6260 will also be established under Alternative A and Public Law 96-517. Thus, whether the rules are effective on Oct. 1, 1982, under Public Law 96-517 and Alternative A, or under H.R. 6260 and Alternative B, the same procedures for obtaining extensions of time will be in effect with the only differences being in the amount of the fees.

Another significant change relates to the implementation of the fee for revival of an unintentionally abandoned application which would be authorized under H.R. 6260. H.R. 6260 would establish two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees would be applicable to petitions to accept the delayed payment of the fee for issuing a patent. Under H.R. 6260, a fee of $50 is established in §1.17(l) for filing a petition for revival under §§133 or 151 of Title 35, United States Code, in accordance with standards presently in effect where the delay resulting in the abandonment, or the delay in payment of the issue fee, was unavoidable. Under H.R. 6260, a fee of $500 is established in §1.17(m) for filing each petition for revival, or for acceptance of the delayed payment of an issue fee, where the abandonment or the failure to pay the issue fee was unintentional. A mere statement that abandonment was unintentional plus the $500 fee is all that is required in this case for this purpose. Under H.R. 6260 and this rulemaking an applicant would have a choice of which petition and fee to file seeking revival depending on the circumstances involved. The changes discussed in this paragraph cannot be made effective without enactment of H.R. 6260 as a Public Law.

The rulemaking also provides for fees for filing certain petitions which have, in some cases, heretofore, been decided without a charge. These fees are established under Public Law 96-517 and are provided for by the amendment of §41(d) of Title 35, United States Code, which would be introduced by H.R. 6260. Under §41 of Title 35, United States Code, as amended by Public Law 96-517 or as it would be amended by H.R. 6260, fees are authorized for the processing of various petitions desiring certain actions to be taken regarding patent applications, for the recording of assignments, for reexamination of patents, and for the processing of international applications under the Patent Cooperation Treaty. In general, fees are not being required for those petitions which are supervisory in nature. For example, where applicants are petitioning from an allegedly improper action of the examiner, it is felt that such petitions should be processed and decided without charge since they are not asking for any special privilege but are attempting to correct an allegedly incorrect Office holding. The changes discussed in this paragraph will be in effect on Oct. 1, 1982, whether the rules become effective under Public Law 96-517 and Alternative A, or under H.R. 6260 and Alternative B.

Many of the fees currently set forth in §1.21 are being increased to reflect the cost of currently performing that service.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this proposal under three different categories. Those changes which are common to Public Law 96-517 and H.R. 6260 appear first and are numbered 1–54. Those changes which relate only to Public Law 96-517 appear as Alternative A and are numbered 55–62. Those changes which are dependent upon enactment of H.R. 6260 appear as Alternative B and are numbered 63–71. The changes common to Public Law 96-517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, Alternative B will become effective on Oct. 1, 1982, in which case Alternative A will not become effective.

Rule Changes Common To Public Law 96-517 and H.R. 6260

The following sections are changed, effective Oct. 1, 1982, under either Public Law 96-517 or H.R. 6260:

Section 1.11 is amended to change the reference for the reexamination request fee to §1.20(c).

Section 1.12 is amended to break the section into four paragraphs. Paragraph (a) maintains current practice but adds specific reference to §1.19(a)(5) which sets the cost of copies.

Paragraph (b) maintains current wording except for inserting "patent" after "abandoned" and changing "his" to "applicant's". Paragraph (c) includes new language relating to obtaining copies of assignment records not open to the public. Access can be obtained only with the applicant's permission or by petition with fee to the Commissioner for such access in particular situations. No change in the showing required by petition to obtain access is intended by this amendment. Paragraph (d) contains present language except for reference to the specific rule which sets forth the charge for time consumed in making assignment searches.

New paragraph (e) of §1.14, sets forth the two ways in which access can be obtained to patent applications which are not open to the public. The two ways are (1) by petitioning and paying the petition fee and approval of the Commissioner of such petition and (2) by obtaining written approval from the applicant.

New §1.19 provides fees for copies of various documents supplied by the Office. The fees have been grouped into 5 paragraphs. New paragraph (a) provides fees for uncertified copies. Subparagraphs (a)(1) and (2) indicate the prices of printed patent copies. Subparagraph (a)(3) provides a single fee for a copy of an application, as filed, for each 50 pages, or fraction thereof. This practice should make it much easier to determine the amount of the required fee. Subparagraph (a)(4) sets a single fee for a copy of each 100 pages, or fraction thereof, of a patent file wrapper. Subparagraph (a)(5) provides for a charge of 30 cents per page for copies of Office records other than those covered by subparagraphs (a)(1) through (4). Subparagraph (a)(6) provides a fee for a microfiche copy of a microfiche.

Paragraph (b) of §1.19 sets fees for certified copies of Office documents. Subparagraph (b)(1) sets a fee for certifying Office records. Subparagraph (b)(2) provides a single fee for searching assignment records, preparing an abstract of the title and certification thereof. Subparagraph (b)(3) provides a fee for comparing copies not prepared by the Office prior to certification in order to provide basis for certification. Paragraph 1.19(c) sets the fees for subscribing to all of the patents issued annually in particular subclasses. This charge is in addition to the normal copy charge under §1.19(a)(1) and (2). Paragraph 1.19(d) sets the fee for providing patent copies to libraries under 35 U.S.C. 13. Paragraph 1.19(e) provides fees for lists of United States patents in particular subclasses.

Section 1.21 is amended to contain those miscellaneous fees which do not relate to the topics covered in §§1.16–1.20. All of the fees in §1.21 are established under the authority given the Commissioner by 35 U.S.C. 41(d) as amended by Public Law 96-517 or as proposed in H.R. 6260. Paragraph 1.21(a) establishes fees for admission to the examination for registration to practice, registration, reinstatement and issuance of certificates of good standing of patent attorneys and agents. Subparagraph 1.21(b)(1) sets forth the fee for establishing and reinstating deposit accounts, while subparagraph 1.21(b)(2) sets forth the fee due when the balance at the end of each month is below $40. Paragraph 1.21(c) sets the fee for filing a disclosure document. Paragraph 1.21(d) sets the fee for renting a delivery box. Paragraph 1.21(e) sets the fee for an international-type search report. Although all national applications now receive what is known as an international-type search, if a report thereof is desired in addition to an Office action, the fee set in §1.21(e) is required. Paragraph 1.21(f) sets a fee for searching Office records for purposes not otherwise specified. Paragraph 1.21(g) sets the fee for tokens for copying machines. Paragraph 1.21(h) sets the fee for recording assignments, agreements, and other documents. Paragraph 1.21(i) sets forth the fee for publishing a notice of availability of a patent for licensing or sale in the *Official Gazette*. Paragraph 1.21(j) sets the fee for the Office providing a duplicate or replacement of a permanent Office user pass. Paragraph 1.21(k) indicates that the Commissioner may specify charges for items and services not otherwise specified at a level to recover the actual cost of providing such an item or service by the Office.

Section 1.24 is revised so that the denomination of coupons sold by the Office will be in more convenient amounts.

Section 1.25 is amended to provide, in paragraph (a), a reference to the fee for establishing a deposit account and a service charge if the end of the month balance is below $40.00. Paragraph (b) is amended by revising the present sentence to refer to post-issuance fees and by adding a second sentence which would specifically provide in the regulations for the possibility of an applicant giving a general authorization to charge any fee due under §§1.16–1.18 in a particular application to a deposit account during the entire pendency of the application. This general authorization would not apply after the patent issues, e.g., to maintenance fees. The last sentence of paragraph (b) permits fees during reexamination to be charged to a deposit account by filing an authorization with the request for reexamination.

Section 1.26 is amended to provide in paragraph (a) that a withdrawal of a request for an oral hearing will not entitle appellant to a refund. Paragraph 1.26(a) raises the amount which will not be refunded without specific request from fifty cents to one dollar. Paragraph (b) relating to refunds of international search fees during subsequent examination of a national application is deleted since such refunds are now covered by reductions in the appropriate fees paid under §1.445 rather than solely by direct refunds. Paragraph (c) is amended to bring the spelling of "requester" into conformance with that used in other sections of the regulations.

Section 1.45 is amended to provide in paragraphs (b) and (c) for a petition and petition fee to be filed to correct misjoinder of inventorship situations in pending applications. The fee will cover the additional time required by the Office to process such applications.

Section 1.47 is amended to provide for petitions and fees for filing applications signed by less than all inventors, or a person not the inventor.

Section 1.51 is amended to refer to the filing fees in new §1.16 and to add a new paragraph (c) indicating that applicants may file authorizations to charge fees required under any of §§1.16–1.18 to deposit accounts.

Section 1.52 is amended to add a reference in paragraph (a) to new paragraph (d). New paragraph (d) provides in the rules for filing an application in a language other than English if a verified English translation and fee under §1.17(k) are timely submitted.

Section 1.55 is amended in paragraph (b) to require a petition and fee for processing priority papers submitted after the issue fee is paid.

Section 1.75 is amended to add a reference to §1.16 and a sentence referring to the fee for multiple dependent claims set forth in §1.16(d).

Section 1.85 is amended to delete the sentence relating to mounting of informal drawings.

Section 1.86 is removed to delete the reference to the Office draftsman making drawings since such service is no longer available.

Section 1.102 is amended by revising paragraph (a) and adding new paragraphs (c) and (d). Revised paragraph (a) refers to paragraph (b) and added paragraphs (c) and (d). Paragraph (c) requires a petition but no fee where the basis for the petition to make special is the applicant's age or health or the impact of the invention on improving the environment or conservation of energy. Paragraph (d) requires a petition and the fee set forth in §1.17(i) for petitions to make special on grounds other than those above.

Section 1.103 is amended in paragraph (a) to provide for filing a petition and the fee set forth in §1.17(i) for a suspension of action except that no fee would be required where the reason for the suspension is the fault of the Patent and Trademark Office. Paragraph (b) is amended to clearly indicate that suspensions are directed to actions by the Office and not responses by the applicant.

Section 1.104, paragraph (d) is amended to change the fee reference to correspond to §1.21(e).

Section 1.134 is added to indicate that unless applicant is notified of any non-statutory or shortened statutory period in an Office action, a maximum period for response of six months is allowed.

Section 1.135 is amended to provide that if no response is filed within the time set in the Office action under §1.134 or as it may be extended under §1.136, the application will be abandoned unless an Office action indicates that another consequence, such as disclaimer, will take place. Paragraph (b) is amended to include a reference to paragraph (a). Paragraph (c) is amended to add that applicant's reply must be a bona fide attempt to respond as well as to advance the case to final action in order for applicant to be given an opportunity to supply any omission.

Section 1.136 is amended to revise the title and provide for two distinct procedures to extend the period for action or response in particular situations. The procedure which is available for use in a particular situation will depend upon the circumstances. Paragraph 1.136(a) permits an applicant to file a petition for extension of time and a fee as in §1.17(a), (b), (c), or (d) up to four months after the end of the time period set to take action except (1) where prohibited by statute, (2) in interference proceedings, or (3) where applicant has been notified otherwise in an Office action. The petition and fee can be filed prior to or with the response. The filing of the petition and fee will extend the time period to take action up to four months dependent on the amount of the fee paid except in those circumstances noted above. Paragraph 1.136(a) will effectively reduce the amount of paperwork required by applicants and the Office since the extension will be effective upon filing of the petition and payment of the appropriate fee and without acknowledgment or action by the Office and since the petition and fee can be filed with the response. Paragraph (b) provides for requests for extensions of time upon a showing of sufficient cause when the procedure of paragraph (a) is not available. Although the petition and fee procedure of §1.136(a) will normally be available within 4 months after a set period for response has expired, an extension request for cause under §1.136(b) must be filed during the set period for response. The sentence in paragraph (b) relating to who may grant an extension under paragraph (b) is eliminated thereby providing additional flexibility to designate persons to act on requests under paragraph (b). Extensions of time in interference proceedings are governed by §1.245.

Section 1.165, paragraph (b) is amended to delete therefrom the last sentence which refers to a fee for mounting copies. Since little or no need has been found for this provision in the rules, it is deleted.

Section 1.171, as amended, adds a reference to §1.19 (b)(2) which sets forth the fee for title reports.

Section 1.177 is amended to require a petition and fee as set forth in §1.17(i) where it is desired that divisions of a reissue issue on different dates.

Section 1.181 is amended to indicate in paragraph (d) that if a petition to the Commissioner is filed under the provisions of a section which requires a petition fee and the required fee is not paid, the petition will be dismissed. The amendment to paragraph (g) deletes the reference to §1.183.

Section 1.182 is amended to add a sentence requiring any petition filed under this section to be accompanied by the petition fee set forth in §1.17(h).

Section 1.183 is amended to specifically refer to the inherent authority of the Commissioner to suspend or waive the rules at the Commissioner's initiative. The amendment also indicates the Commissioner's authority to designate others to act for the Commissioner in appropriate circumstances. The rule language also requires the payment of the petition fee set forth in §1.17(h) if a petition to suspend or waive the rules is filed.

Section 1.191 is amended to change the fee reference for filing a notice of appeal to §1.17(e) and delete the word "primary" since some actions which are subject to appeal are not made by a "primary" examiner.

Section 1.192, paragraph (a), is amended to refer to the fee for filing an appeal brief set forth in §1.17(f). The present language requiring a showing of sufficient cause for extensions of time for filing the brief and an indication that an oral hearing is desired at the time of filing the brief are removed from paragraph 1.192(a). Under the amendment to paragraph 1.192(a), the provisions of §1.136 will apply to extensions of time for filing the brief. The time for requesting an oral hearing is now set in §1.194(b).

Section 1.194 is amended to revise paragraphs (b) and (c) to refer to the fee for oral hearing in §1.17(g) and to indicate in paragraph (b) that any request for an oral hearing must be made within one month after the mailing date of the examiner's answer.

Section 1.197, paragraph (b), is amended to modify the last sentence relating to extensions of time to make the provisions of §1.136 applicable thereto. Paragraph 1.197(b) is also amended to limit requests for rehearing, reconsideration or modification of a Board decision to

one. This will not significantly change present practice since such requests are now required to be filed within thirty days from the date of the original decision.

Section 1.231, paragraph (a)(1), is amended to change the reference to the fee for filing a request for reexamination to §1.20(c).

Sections 1.245 and 1.246 are amended to indicate that the provisions of §1.136 do not apply to time periods in interferences.

Section 1.263 is amended to add a reference to the fee for filing a disclaimer contained in §1.20(d).

New section 1.268 is added to provide a rule relating to the filing of interference settlement agreements. The rule generally follows 35 U.S.C. 135(c) and provides for filing of petitions and fees in paragraphs 1.268(b) and (c).

Section 1.292, paragraph (a), is amended to require the payment of the fee set forth in §1.17(j) with any petition for the institution of public use proceedings.

Section 1.304, paragraph (a), is amended to provide for extension of the time period for filing an appeal or civil action to be subject to the provisions of §1.136 and refer to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals.

Section 1.311 is amended to designate the present section as paragraph (a) and revise it in several ways. Paragraph (a) indicates that the notice of allowance will be sent to the correspondence address as indicated under §1.33. The issue fee (§1.18) is indicated as being due 3 months from the date of mailing of the notice of allowance. Paragraph 1.311(b) permits an authorization to be filed either before or after the mailing of the notice of allowance to charge the issue fee to a deposit account.

Section 1.312 is amended to divide the section into two paragraphs and require a petition and payment of the fee under §1.17(i) for any amendment filed after payment of the issue fee.

Section 1.313 is amended to provide in paragraph (a) clear basis for the Office withdrawing applications from issue on its own initiative or upon petition by applicant accompanied by the petition fee set forth in §1.17(i). Any accompanying amendment must comply with the requirements of §1.312. Paragraph (b) clarifies when an application will be withdrawn from issue after assignment of the issue date and patent number.

Section 1.314 is amended to revise the wording to eliminate reference to a portion of the issue fee and adds reference to the possibility that an application in which the issue fee was paid can be withdrawn from issue under§1.313 or the issuance thereof deferred pursuant to a petition by the applicant and the payment of the petition fee under §1.17(i).

Section 1.321 is amended to include references in both paragraphs (a) and (b) to the statutory disclaimer fee in §1.20(d) and delete the reference to §1.21.

Section 1.324 is amended to include reference to the fee in §1.20(b) and change the word "application" to "petition".

Section 1.331, paragraph (a), is amended to add a new sentence which gives the citation of the fee for recording assignments and to indicate that instruments recorded on the Government register under Part 7 of Title 37, Code of Federal Regulations, do not require payment of such fee.

Section 1.332 is amended to refer to the fee in §1.21 (h) for recording an assignment.

Section 1.334 is amended to divide the rule into three paragraphs and also require an address of the assignee so that correspondence can be directed to the assignee if required. New paragraph (c) provides for filing a petition and the fee set in §1.17(i) seeking to have the patent issue to the assignee where such assignment has not been recorded at the time the issue fee is paid.

Section 1.341, paragraph (h), is amended to refer to the fee set forth in §1.21(a)(2) for registration of an attorney or agent.

Section 1.347 is amended to add a sentence referring to the fee set forth in §1.21(a)(3) for reinstatement of an attorney or agent.

Section 1.445 is amended to increase the PCT transmittal fee and search fee to a level needed to cover the cost of performing the required functions. Paragraph 1.445(a)(2) is also amended to provide, in effect, for a reduction in the international search fee due to the United States Patent and Trademark Office as an International Searching Authority where a corresponding United States national application with fee has been filed. In addition, paragraph 1.445(a)(4) is amended to credit the national fee required under §1.16(a)–(d) where an international search fee has been paid on the corresponding international application to the United States as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. The supplemental search fee for inventions in addition to the first, where lack of unity of invention has been found, is reduced since the present fee is more than is required to cover the costs. The national fee amount is the same as the national application filing fees in §1.16(a)–(d).

Section 1.446(b) is revised to permit a refund of a portion of the search fee to the extent set forth in §1.445(a)(4), if such refund is requested at the time of paying the national fee.

Section 1.451 is amended in paragraph (b) to revise the citation of the fees for a certified copy.

Section 1.510 is amended to cite the section which sets forth the fee for requesting reexamination. There is no change in the amount of this fee.

* * * * *

Alternative B—Rule Changes Under H.R. 6260

The following sections will become effective on Oct. 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to that date:

Section 1.16 in Alternative B establishes in the regulations those statutory fees which would be charged by the Commissioner for filing patent applications under H.R. 6260. Section 1.16 also includes additional filing fees set in 35 U.S.C. 41(a)(1) to cover the cost of examining complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. Section 1.16 also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under 35 U.S.C. 41(a) as it would be amended by H.R. 6260, the filing fee for an original patent, except in design or plant cases, is $300. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of three, $10 is due for each claim (whether independent or dependent) which is in excess of twenty, and $100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in §112 of Title 35, United States Code, or any claim depending therefrom, is considered as separate dependent claims in accordance with the number of claims to which reference is made.

The fees in §1.16 are reduced by 50 per centum for applications filed by small entities, i.e., independent inventors, nonprofit organizations and small business concerns, in accordance with H.R. 6260. Therefore, two fees are listed under each paragraph.

New§1.16 relates to application filing fees. Paragraph (a) sets a basic filing fee of $300 which will be required in all original patent applications. The term "original" as used in the regulations means "non-reissue". An "original" application can be a first filing, a division, a continuation, or a continuation-in-part application. Paragraph 1.16(b) provides for an additional fee of $30 for each independent claim in excess of 3 in an original application. New paragraph 1.16(c) provides for an additional fee of

$10 for each claim in excess of 20, whether independent or dependent. A multiple dependent claim is considered to be that number of claims to which direct reference is made. Also, any claim which refers to a multiple dependent claim is considered for fee calculation purposes to be the number of claims to which direct reference is made in the multiple dependent claim. Paragraph 1.16(d) provides for a new fee of $100 in each application which contains one or more multiple dependent claims. The note following paragraph 1.16(d) is intended to clearly indicate that the applicant, attorney, or agent may pay any additional fees required under paragraphs (b), (c) and (d) of §1.16, or cancel such claims without payment of such additional fees, either at the time of filing or by the time a response is due to any notice of fee deficiency mailed by the Office. If the fees are not paid or the claims cancelled by the end of the period set for response to the notice of fee deficiency, the application will be held abandoned. New paragraph 1.16(e) establishes the amount of the surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application. This fee is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. New paragraph 1.16(f) provides for a filing fee of $125.00 for a design application.

Paragraphs 1.16(g) and (h) incorporate into the regulations the filing fees for plant and reissue applications.

Paragraphs 1.16(i) and (j) set forth the additional claim fees required in reissue applications based on claims in excess of those in the original patent.

New §1.17 relates to patent application processing fees which are normally due during the time a patent application is pending. New paragraphs (a), (b), (c) and (d) provide for the payment of an extension fee for obtaining an automatic extension of time upon filing a petition as provided for in §1.136(a). The extension fee can be paid during the period for which an extension of time to respond is desired, or after the original period for response has expired, provided that any maximum statutory period which may apply has not expired. The fees set forth in §1.17 are the total fees required under §1.136(a) for the periods indicated and any extension fee previously paid to extend a particular period is credited toward the total extension fee required. Paragraph (e) sets forth the fee for filing a notice of appeal to the Board of Appeals. Paragraph (f) sets forth the fee for filing an appeal brief for appellant. Paragraph (g) provides for a new fee for requesting an oral hearing before the Board of Appeals. Paragraphs (h) and (i) set forth fees which will be required with petitions to the Commissioner under those sections of the regulations which specifically indicate that such petition fees are required. The amount of the fees are set at two levels based on the degree of complexity of the petitions in order to recover the estimated average cost to the Office of processing the petitions. Paragraph (j) provides for a fee to be paid with any petition for institution of a public use proceeding to cover the estimated average cost of such a proceeding. Paragraph (k) sets forth a new fee for processing an application filed with a non-English language specification. The fee will cover the additional processing costs involved in such applications. New paragraph (l) incorporates into the regulations the fee which will be charged for filing a petition to revive or to accept late payment of the issue fee where the delay was unavoidable. New paragraph (m) incorporates into the regulations the fee which will be established in 35 U.S.C. 41(a)7, as amended by H.R. 6260, to be charged for a petition for the revival of an unintentionally abandoned application for patent or for the unintentionally delayed payment of an issue fee.

Since paragraphs 1.17(h), (i), (j) and (k) are established under the authority given the Commissioner under 35 U.S.C. 41(d) as it would be amended by H.R. 6260, only one level of fee is set. H.R. 6260 only provides for the reduction of fees charged to small entities of those fees established in 35 U.S.C. 41(a) and (b).

New §1.18 sets the amount of the issue fees specified by H.R. 6260. New paragraph (a) establishes an issue fee of $500.00 for all original and reissue patents except for designs and plants. New paragraph (b) sets the amount of the issue fee for a design patent. New paragraph (c) sets forth the issue fee for a plant patent. All fees in §1.18 will be reduced by 50 per centum for small entities.

New §1.20 sets fees for various post-issuance functions performed by the Office. New paragraph (a) sets forth a fee for providing a certificate of correction of an applicant's mistake. New paragraph (b) sets a fee to accompany a petition to correct inventorship in a patent under §1.324. New paragraph (c) transfers the $1,500.00 fee for requesting reexamination from present §1.21(x) to this new section. New paragraph (d) provides for a fee for filing a disclaimer under §1.321. Maintenance fees required by Public Law 96-517 and which would be set in H.R. 6260 are placed in this section. Specific maintenance fees, which are required by Public Law 96-517, for those patents resulting from applications filed on and after Dec. 12, 1980 and up to the date of enactment of H.R. 6260 are being established at this time in paragraphs 1.20(e)–(g). New paragraphs 1.20(h)–(j) incorporate into the regulations the maintenance fees which would be provided in 35 U.S.C. 41(b) by H.R. 6260. The fees in paragraphs 1.20(a)–(c) are only set at one level because they are established under 35 U.S.C. 41(d). The fees in paragraphs 1.20(e)–(g) are only set at one level because they are established under Public Law 96-517 and are not subject to reduction for small entities. The details implementing the payment of maintenance fees are not being established at this time.

Section 1.66 is amended to provide for the use of an apostille of a foreign official to attest to oaths or affirmations made in foreign countries in accordance with 35 U.S.C. 115 and 261, as amended by H.R. 6260.

Section 1.137, as amended, designates the existing section as part of paragraph (a), adds a reference to the new fee under §1.17(l) for a petition for revival where the delay which resulted in abandonment was unavoidable, indicates that the petition must be promptly filed, and states when the showing that the delay was unavoidable must be verified. New paragraph 1.137(b) provides for filing a statement and a fee under §1.17(m) for revival of an application which was unintentionally abandoned, and also indicates when such petitions can be filed. Paragraph (c) requires that any petition for revival under paragraph (a) of §1.137 be promptly filed and that a terminal disclaimer, equivalent to the period of abandonment of the application, be filed with any petition under paragraph (a) filed more than six months after the date of abandonment.

Section 1.155 is amended to refer in paragraph (a) to §1.18(b) which sets forth the issue fee for a design application. Paragraph 1.155(b), as amended, includes a reference to the fee for delayed payment of the issue fee set forth in §1.71(l) where the delay in payment was unavoidable, indicates that the petition must be promptly filed, and states when showings that the delay was unavoidable must be verified. New paragraph 1.155(c) provides for acceptance of the late payment of the issue fee where the delay was unintentional upon petition and payment of the fee set forth in §1.17(m). New paragraph 1.155(c) also indicates when such petitions can be filed. Paragraph 1.155(d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where petition under paragraph (b) of §1.155 is not filed within six months of the date of abandonment.

Section 1.316 is amended to implement the statutory provisions of 35 U.S.C 41(a) with regard to petition fees for revival of applications abandoned for failure to pay the issue fee. Paragraph (b) is amended to provide for petitions for revival with the fee in §1.17(l) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions for revival with the fee in §1.17(m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where a petition under paragraph (b) of §1.316 is not filed within six months of the date of abandonment.

Section 1.317 is amended to implement the statutory provisions of 35 U.S.C. 41(a) with regard to petition fees for patents lapsed for failure to pay the remaining balance of the issue fee. Paragraph (a) is amended to show that it applies only to patents in which the issue fee was paid prior to Oct. 1, 1982. Issue fees paid on or after that date will be in accordance with §1.18. Paragraph (b) is amended to provide for petitions with the fee in §1.17(l) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions with the fee in §1.17 (m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of lapse of the patent where a petition under paragraph (b) of §1.317 is not filed within six months of the date of lapse.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony, were considered in adopting the changes set forth herein.

Written comments were received from three patent law groups and eleven individuals. The three patent law groups were (1) the American Patent Law Association whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office; (2) the Patent, Trademark and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of The Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups and by 3 individuals on their own behalf.

These comments appear below along with responses thereto.

Comments received relating to §§1.9, 1.27 and 1.28 and the forms of Part 3 are not discussed in substance in this rule change since additional time for submitting written comments is provided until Aug. 13, 1982. All comments presented to these rules will be discussed in a later rule promulgation.

Comment:

One person argued that it is unreasonable to require fees to lengthen a shortened statutory period.

Reply:

A shortened statutory time is provided for by statute. The shortened period helps reduce patent pendency time and speed the disclosure of technology and information about patent rights. Many applicants can reply within the present three month shortened period which has been in effect for over fifteen years. The fee for extending the time provides a positive method for applicants to obtain an extension of time while still expediting the prosecution of their applications.

Comment:

Another person commented that H.R. 6260 should be rejected in that the fee levels are too high.

Reply:

The consideration of the merits of H.R. 6260 is not before the Office in this rule change.

Comment:

Three patent bar groups and two individuals presented comments relating to the effect of the new extension of time fees in §1.17 and the effect thereof on the current practice of granting an automatic one-month extension of time if a timely first response to a final rejection is filed by the applicant.

Reply:

The Office plans to terminate the automatic one-month extension of time practice on Oct. 1, 1982. It is felt that the extensions of time which are readily available under §§1.17 and 1.136 will meet the needs of applicants. The amount of the fees required to obtain an extension will be the same for periods of response before and after final rejection.

Comment:

One suggestion was made to permit the filing of an appeal without the appeal fee where the Office has not acted on a timely response after final rejection by applicant.

Reply:

Such a procedure is not possible under the provisions of H.R. 6260 since it calls for the appeal fee "On filing an appeal" in §41(a)6.

Comment:

Two comments were received requesting that the rules be changed to make the due date for paying the fee for an oral hearing on appeal after the examiner's answer on appeal.

Reply:

A change in the rules has been made to provide that the fee for an oral hearing is due no later than one month after the date of mailing of the examiner's answer.

Comment:

Two comments were received requesting that no charge for revival of an abandoned application be made where the abandonment resulted from the non-receipt of an Office action by the applicant.

Reply:

It is present Office practice to remail any Office action which is not received at applicant's correspondence address and start anew the response period. This procedure will continue in the future under the revised rules.

Comment:

Three patent bar groups and two individuals indicated that the proposed deletion of the refund provisions due to PCT search reports in §1.26(b) and §1.446(b) would make the cost of filing under the Patent Cooperation Treaty prohibitively high and does not recognize the benefit of an earlier search on a corresponding application.

Reply:

In view of these comments, proposed §1.445(a) (2) and (4) and §1.446(b) have been amended to provide a credit of $250 where there is a corresponding application.

Comment:

One individual requested that the multiple dependent claim practice set forth in §1.75(c) be changed to permit one multiple dependent claim to refer to another multiple dependent claim as permitted under European practice.

Reply:

This suggestion cannot be adopted since it is contrary to 35 U.S.C. 112 and cannot therefore be changed by rule.

Comment:

One suggestion was made to change "official" to "Office" in §1.135(b).

Reply:

The suggestion has been adopted.

Comment:

One suggestion was made to allow refund of the oral hearing fee if an oral hearing is not held.

Reply:

This suggestion was not adopted since such refund is not appropriate in view of the fact that the fee is stated to be "for requesting an oral hearing" and not the actual conduct thereof.

Comment:

Three patent bar groups raised the question as to whether an applicant would be permitted to revive an unintentionally abandoned application under §1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a) and suggested that this be made clear when the proposed rules are promulgated.

Reply:

Yes, an applicant under certain conditions could use

§1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a).

Comment:

Several comments related to the possibility of reviving applications unintentionally abandoned up to 15 years ago.

Reply:

In view of the comments received, §1.137(b) is being implemented to provide only for the revival of applications which were unintentionally abandoned for a reasonable but limited period of time. This should create no substantial problems in regard to intervening rights situations. It would permit some greater flexibility than that originally proposed but should have no significant effect on the current case backlog, pendency or number of interferences pending.

Comment:

One comment was received pointing out that the availability of an "unintentional abandonment" revival under §1.137(b) should not result in stricter holdings in "unavoidable abandonment" revival petitions under §1.137(a).

Reply:

The Office plans to continue to use the current criteria used to decide petitions to revive applications unavoidably abandoned.

Comment:

One written comment questioned whether the Commissioner has statutory authority to revive unintentionally abandoned applications.

Reply:

If Congress did not intend the Commissioner to have such authority there would have been no reason to establish fees in §41(a)7 in H.R. 6260. The legislative history of H.R. 6260, House Report No. 97–542 (Committee on the Judiciary), also makes the Congressional intent clear. The provisions in H.R. 6260 relating to unintentional abandonment are substantive in addition to setting the fee.

Comment:

One letter questioned what is intended by the statement in §1.137(b) that the Commissioner may require additional information where there is a question whether the abandonment was unintentional.

Reply:

Additional information would be required only where there is an indication that the abandonment was intentional, for example, where an express abandonment has been filed. The record should be clear how such an express abandonment was unintentional if the petition is to be granted.

Comment:

One comment raised the question as to whether in a petition to revive on grounds that the delay was unavoidable under §1.137(a), it would be sufficient that a registered attorney's statement be submitted which merely recites facts as related to him or her by another.

Reply:

Statements must be made, where possible, by the person having direct personal knowledge of the facts. No change in the "showing" required or the persons making them is intended in such petitions. The rule merely clarifies that a statement by a registered attorney or agent need not be in the form of an oath or declaration.

Comment:

One comment suggested that §1.317 be changed to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.

Reply:

Section 1.317 has now been changed to provide for this lapse situation.

Comment:

Three patent bar groups and one individual indicated that a full credit of the amount equal to the international search fee be made where both a U.S. national and international seach are made by the United States Patent and Trademark Office.

Reply:

While a complete credit is not considered proper in view of additional processing work (including searching) required in the second application, a credit of $250 has been provided in revising §1.445(a) (2) and (4).

Comment:

One person commented that the term "patent" should be inserted after "abandoned" in §1.12(b).

Reply:

The suggestion has been adopted.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of other changes which have been made as a result of the comments received and further review of the proposed rulemaking are identified below.

Implementation of the changes to §1.9, new §§1.27 and 1.28, and the deletion of Part 3 are being deferred for further comments by Aug. 13, 1982. See the discussion below.

Subparagraph (a) (5) of §1.19 has been changed from that proposed by referring to subparagraphs (1) through (4) rather than (3) and (4) in order to clarify that copies of patents cannot be ordered at the rate set in subparagraph (a) (5). Instead, copies of patents must be ordered under paragraphs (a) (1) and (2) of §1.19.

Section 1.24 has been changed from that proposed to provide for the sale of 40-cent coupons. Coupons in this denomination may be useful in view of the charge of forty cents for a printed copy of a registered mark in §2.6(m) of Alternative A of the trademark rules.

Sections 1.137, 1.155 and 1.316 have been changed from that proposed in Alternative B to further specify the conditions under which unintentionally abandoned applications can be revived.

Sections 1.192 and 1.194 have been changed from that proposed so as to allow a request for an oral hearing and the payment of the required fee therefor to be made one month after the date of the examiner's answer. Previously, appellant was required to indicate a desire for an oral hearing at the time of filing the brief. The sections will now permit appellant to consider the examiner's answer before deciding whether to request an oral hearing and pay the required fee.

Section 1.317 has been changed in Alternative B to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.

Section 1.445(a) (2) and (4) have been changed from that proposed to provide for a reduction in the international search fee where there has been a corresponding United States national application and a credit to the national fee where an international search fee has been paid in a corresponding international application and the international search has been made by the United States Patent and Trademark Office.

Section 1.446(b) has been changed from that proposed to permit a refund of a portion of the search fee to the extent set forth in §1.445(a) (4), if such refund is requested at the time of paying the national fee.

IMPLEMENTATION OF PATENT FEE REVISION

The effective date of the patent fee revisions contained in this rulemaking is Oct. 1, 1982.

* * * * *

The changes which will become effective on Oct. 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, are (1) the rule changes common to Public Law 96–517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96–517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to Oct. 1, 1982.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, the rule changes in Alternative B will become effective on Oct. 1, 1982, in which case the rule changes in Alternative A will not become effective on Oct. 1, 1982.

Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of specific sections is set forth below:

IMPLEMENTATION OF SPECIFIC SECTIONS

The various sections will be implemented in the manner set forth below:

§1.16 National application filing fees.

Any national patent application filing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section. Any additional fees which become due under §1.16 in pending applications on or after Oct. 1, 1982, or which have not been paid prior to Oct. 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to Oct. 1, 1982. For example, if an application filed prior to Oct. 1, 1982, is amended on or after Oct. 1, 1982, to include a multiple dependent claim for the first time, the fee set forth in §1.16(d) must be paid.

The surcharge in §1.16(e) of Alternative B is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. The statutory authority for the late filing of the fee or the oath or declaration becomes effective six months after enactment of H.R. 6260 as a Public Law.

§1.17 Patent application processing fees.

Any patent application processing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section.

The extension fees which must accompany a petition for an extension of time become effective on Oct. 1, 1982, and apply to any application for which the period for responding, i.e., taking action, expires on Oct. 1, 1982, or thereafter. If a response or action by the applicant was due before Oct. 1, 1982, and was not filed timely or an extension of time until Oct. 1, 1982, or thereafter, was not obtained, then §1.136(a) cannot be used to obtain an extension. *Any response or action required before Oct. 1, 1982, cannot have its time extended by using §1.136(a).* If one or more previous extensions have been granted prior to Oct. 1, 1982, extending the time for taking action unitl Oct. 1, 1982, or thereafter, the fees which are due for additional extensions under §1.136(a) will be as set forth in §1.17(a)–(d) under either Alternative A or B.

* * * * *

The previous practice of extending the shortened statutory period an additional month upon the filing of a timely first response to a final rejection is being discontinued effective with any first response to a final rejection filed on or after Oct. 1, 1982. Applicants can obtain additional time for response after that date by paying the appropriate fee for the same. An object of the previous practice, as expressed in §714.13 of the Manual of Patent Examining Procedure, was to obviate the necessity for appeal or filing a continuing application merely to gain time to consider the examiner's position in reply to a response timely filed after final rejection. Under §1.136(a) the object of the previous practice can be achieved without continuing the previous practice. Thus, under §1.136(a) an applicant can file a timely first response to a final rejection within the initial period without having to file an appeal or a continuing application if the examiner's response is not received prior to the expiration of the initial period for response. If the timely first response places the application in condition for allowance no additional response and no extension fee from applicant is required. If the examiner's advisory action indicates the timely first response did not place the application in condition for allowance the applicant may then consider the examiner's position to determine whether further prosecution is desirable. If further prosecution is not desired the application can be abandoned without further response or expense. If further prosecution is desired, the applicant can petition and pay the necessary fee to extend the time to the extent appropriate up to the maximum permitted by statute. The availability of this flexibility under §1.136(a) eliminates the necessity for the previous practice. Further, under H.R. 6260 extensions of time would be granted in most instances by virtue of the payment of fees rather than without fees as in the previous practice. The elimination of the previous practice after final rejection is thus consistent with the letter and spirit of H.R. 6260.

After an applicant has petitioned and paid the extension fees of $550 for response within the fourth month pursuant to §1.136(a), any further extensions which are permitted under the statute must be obtained under §1.136(b).

A petition for extension of time under §1.136(a) may incorporate by reference a previously filed response without including an additional copy of the response in circumstances where the response was received late and the petition is filed to extend the time so that the response will be considered timely.

The appeal fees set forth in §1.17(e)–(g) are due for notices of appeal or briefs filed, or requests for oral hearings filed, on or after Oct. 1, 1982. If more than one appeal occurs in an application, the fees are due for each notice of appeal, each brief, and each request filed for an oral hearing as long as a decision on the merits by the Board of Appeals resulted from the first notice of appeal, brief, and request for an oral hearing. If the examiner reopens prosecution in the application after appeal and prior to the decision by the Board of Appeals then the fee for the notice of appeal, brief, and request for an oral hearing will apply to a later appeal which does result in a decision by the Board of Appeals. No refund of any appeal fees is permitted since such are due on filing or on requesting an oral hearing. No fee is required for a reply brief.

The fees for petitions set forth in §1.17(h)–(j) and (1) apply to any such petition filed on or after Oct. 1, 1982. The fee set forth in §1.17(m) of Alternative B would apply, with enactment of H.R. 6260 prior to Oct. 1, 1982, to petitions (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent. Section 1.137(b) of Alternative B would apply to applications unintentionally abandoned by failure to prosecute, e.g., failure to respond to an Office action. Sections 1.155(c) and 1.316(c) of Alternative B would apply to applications in which the payment of the fee for issuing a patent is unintentionally delayed. These sections would be implemented, with enactment of H.R. 6260 prior to Oct. 1, 1982, by making them effective as to any applications which would be covered by the literal language of the sections. In addition, and for a transition period between Oct. 1, 1982, and Dec. 31, 1982, a petition to revive an unintentionally abandoned application would be granted if (i) the application received a decision on a petition to revive the application on or after Oct. 1, 1981, and before July 30, 1982, or (ii) a petition was filed or renewed on or after Oct. 1, 1981, and before July 30, 1982, provided in the case of both (i) and (ii) that a petition to revive was filed within one year of the date of abandonment. The dates in question were chosen so as to permit this remedial provision to be given as wide an application as possible to benefit applicants whose applications have previously been unintentionally abandoned, but who could not meet the previous requirements for a

showing that the delay resulting in the abandonment was unavoidable. The dates were also chosen to prevent an applicant whose application has been abandoned for an unduly long period from attempting to take advantage of this new provision, possibly to the detriment of individuals or companies who had begun to make, use, or sell the subject matter of the application after the date of abandonment of the application. By using these dates the possibility of reviving the application of an applicant who has, in effect, abandoned the invention under 35 U.S.C. 102(c) is minimized. Implementing these sections in the manner set forth would be appropriate and proper in view of the legislative history of H.R. 6260, contained in House Report No. 97–542 (Committee on the Judiciary), which indicates that the Commissioner can establish time limits within which petitions to revive or to accept late payment of issue fees can be filed. Thus, it is entirely proper to limit such petitions in the manner set forth in order to prevent abuses from occurring. To ensure that abuses do not occur, §§1.137(b), 1.155(c), 1.316(c), and 1.317(c) specifically indicate that waivers of the time periods involved will not be considered via petitions under §1.183.

The fee set forth in §1.17(k) is required for any application filed on or after Oct. 1, 1982, with a specification in a non-English language.

§1.18 Patent issue fees.

Any patent issue fee paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section even if the notice of allowance was mailed prior to Oct. 1, 1982, and indicates different amounts due. If the issue fee is paid prior to Oct. 1, 1982, any balance of issue fee due must be paid in accordance with §1.317.

§1.19 Document supply fees.

The document supply fees set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after Oct. 1, 1982.

§1.20 Post-issuance fees.

The post-issuance fees set forth in §1.20(a)–(d) apply to any petitions, requests, or actions filed on or after Oct. 1, 1982. The amounts of the maintenance fees are included in §1.20.

Maintenance fees will be required for any patent actually applied for on or after Dec. 12, 1980, whether or not the patent is entitled to the benefit of an earlier filing date under 35 U.S.C. 120 or a right of priority under 35 U.S.C. 119. For reissue patents, the controlling date would be the filing date of the original patent. For example, maintenance fees would only be required where the application for the original patent was filed on or after Dec. 12, 1980. As to patents resulting from international applications filed under the Patent Cooperation Treaty, maintenance fees will be required on all patents resulting from international applications having PCT filing dates on or after Dec. 12, 1980.

The details implementing payment of the maintenance fees are not being established at this time since such fees will not be due for some time and additional consideration of the problems thereof is required.

§1.21 Miscellaneous fees and charges.

The miscellaneous fees and charges set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after Oct. 1, 1982.

§1.445 International application filing and processing fees.

Any international application filing and processing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section.

Implementation Of Certain Sections Deferred For Further Comments

In view of the comments and the recommendations received at the hearing on July 9, 1982, the period for written comments on §1.9(c), (d), (e), and (f), and on §§ 1.27 and 1.28, has been extended until Aug. 13, 1982 (see 47 FR 32458, July 27, 1982). Comments received at the hearing on July 9, 1982, expressed the view that there is no necessity to publish final rules on §1.9(c), (d), (e), and (f), and on §§1.27 and 1.28, by August 2, 1982, and that further time for consideration and comment was necessary. Persons commenting stated a belief that the pressure of time does not apply to §§1.27 and 1.28 as it does apply to the fee rulemaking. Accordingly, the period for written comments on these sections is extended until Aug. 13, 1982. After receiving written comments by Aug. 13, 1982, the changes to §1.9 and proposed §§1.27 and 1.28 will be adopted as final rules with such modifications as are found to be appropriate after review of the comments. These rule changes, with any appropriate modifications thereof, must become effective on Oct. 1, 1982, with enactment of H.R. 6260 prior to Oct. 1, 1982. Accordingly, adoption of the changes to §1.9 and new §§1.27 and 1.28 is being deferred at this time to permit additional written comments by Aug. 13, 1982. However, these rule changes will be adopted, with any appropriate modifications, as soon as possible after receipt of the additional written comments. No additional proposal will be published and no additional hearing will be held prior to adoption of final rules on the changes to §1.9 and on new §§1.27 and 1.28.

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 3 was also extended until Aug. 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change. Since it is not essential that this deletion be published by Aug. 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 3 as proposed.

SECTION II—REVISION OF TRADEMARK FEES

Background

A notice of proposed rulemaking was published in the *Federal Register* on June 28, 1982, at 47 FR 28063–28065 and in the *Official Gazette* on June 29, 1982, at 1019 TMOG 110–119. An oral hearing was held on July 9, 1982. Three written letters and statements were submitted. Three persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These amendments establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks.

Public Law 96–517

Public Law 96–517 authorizes the Commissioner to establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks. Public Law 96–517 requires that by Oct. 1, 1982, fees for the filing and processing of an application for the registration of a trademark or other mark be set to recover in the aggregate 50 percent of the estimated average cost to the Office of such processing. Also by Oct. 1, 1982, fees for providing all other services and materials relating to trademarks and other marks are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. This bill would amend the fee provisions to be implemented on Oct. 1, 1982. H.R. 6260 would repeal the provisions in Public Law 96–517 requiring that filing and processing fees be set to recover in the aggregate 50 percent of the estimated average cost of such processing to the Office, and that fees for providing all other services and materials relating to trademarks and other marks be set to recover the estimated average cost to the Office of performing the service or furnishing the material. In passing H.R. 6260, the House of Representatives recommended a fee schedule to the Commissioner for fiscal year 1983. The fees set in Alternative B adopt the House recommendation.

This rule change, therefore, is also designed in the alternative to implement the fee provisions as they would be amended by H.R. 6260. The rule change contains changes which are common to Public Law 96–517 and H.R. 6260, as well as alternative rule changes which are specific to Public Law 96–517 (Alternative A) and to H.R. 6260 (Alternative B).

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a trademark application, or during the life of a registration.

Rule changes for implementing provisions of Public Law 96–517 or H.R. 6260 other than the fee provisions have not been included. Rule changes for implementing provisions other than the fee provisions will be published in a later rulemaking proposal.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this document under three different categories. Those changes which are common to Public Law 96–517 and H.R. 6260 appear first and are numbered 72–76. The change which relates only to Public Law 96–517 appears as Alternative A and is numbered 77. The change which is dependent upon enactment of H.R. 6260 appears as Alternative B and is numbered 78. The changes common to Public Law 96–517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law. * * * * * Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, Alternative B will become effective on Oct. 1, 1982, in which case Alternative A will not become effective.

The specific rules for which changes are made are §§2.6, 2.85, 2.101, 2.146, 2.162 and 2.167.

Rule Changes Common to Public Law 96–517 and H.R. 6260

Section 2.85, paragraph (e), is amended to delete reference to late filed fees for oppositions and affidavits. The manner in which such fees shall be handled is described in the pertinent sections for affidavits and oppositions.

Section 2.101, paragraph (c), is amended to delete the reference to a service charge which will no longer be charged for late-filed fees for oppositions.

Section 2.146, paragraph (b), is amended to add a fee for filing a petition to the Commissioner. Paragraph (f) of this section which indicates that no fee is required is deleted.

Section 2.162, paragraph (d), is amended to remove the reference to a service charge for late-filed fees on §8 affidavits.

Section 2.167, paragraph (g), is added to establish procedures relating to the fee for affidavits under §15, 15 U.S.C. 1065, and to state the Office's action when no fee or an insufficient fee is filed.

* * * * *

Alternative B—Rule Change Only Under H.R. 6260

Section 2.6 is revised to establish the fees recommended by the House of Representatives under H.R. 6260 for filing and processing applications for the registration of trademarks or other marks and for providing services and materials relating to trademarks or other marks. The $10 fee recommended by the House for certified copies appears in paragraphs (n) and (o) as a fee of $6.50 for a copy of a registered mark showing title and/or status and a fee of $3.50 for certification.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on several of the sections. All of the comments included in the written submissions and the oral testimony were considered in adopting the changes set forth herein.

Written comments were received from three individuals. Oral comments were presented at the hearing on behalf of a patent and trademark law group, the American Patent Law Association, and an organization of trademark owners and lawyers, the United States Trademark Association. One individual spoke on behalf of a law firm and expanded upon the points raised in his previously submitted written comments.

These comments appear below along with responses thereto, where appropriate.

Comment: The representative of the trademark association spoke favorably about the proposal presented. The organization opposed 100% recovery of trademark costs from user fees. It was felt that such an approach reflected a misconception that trademarks benefit only their owners and not consumers and the economy as a whole. The speaker solicited the assistance of the Patent and Trademark Office in altering this viewpoint.

Comment: The representative of the bar group questioned the fairness of the Office in establishing the fees under Alternative B. It appeared that the Office had accepted the USTA proposals only where they were higher. In all cases where the USTA recommendations were lower than those proposed, the difference was split. The filing fee was singled out as the most unfair fee.

Reply: In Alternative B, the rules adopt the fee levels recommended by the House Committee on the Judiciary in House Report No. 97–542. The Report recognizes that the Office needs to recover a certain amount of fee income over the next three years. The application filing fee is expected to furnish more than 60% of the estimated annual income. It could not be reduced further without endangering operations. The reduction from $200.00 to $175.00 per class was covered to a large extent by higher fees for other services.

Comment: The philosophy of H.R. 6260 is to recover no more than 100%. Final fees should recover this level and no more.

Reply: Projecting processing costs three years in advance can never be absolutely accurate. The Office must have sufficient funds to process anticipated workloads under the fees set during fiscal years 1983–1985 when costs are expected to be somewhat higher than present costs.

Comment: One suggestion involved retaining Part 4 of 37 CFR, at least for the present. Occasional users of the registration system find it to be a readily available reference. Certain information in the forms is available from no other source. The speaker believed the time pressures to implement the fee changes precluded proper consideration of the merits of Part 4.

Reply: The period for comment on deletion of Part 4 has been extended to August 13, 1982 to allow for additional public comment and internal consideration.

Comment: The suggestion was made that references to

affidavits and oppositions should be eliminated from § 2.85(e) as the handling of late filed fees for these items is already covered directly in §§2.101(c), 2.162(d) and 2.167(g).
Reply: This suggestion was implemented.
Comment: A suggestion was made that §§2.101(c), 2.162(d) and 2.167(g) dealing with oppositions and affidavits under Section 8 and Section 15 be amended to require payment of all late filed fees within the time period specified in the notification by the Office.
Reply: All of the sections state that the affidavit or opposition "will not be refused if the required fee(s) . . . are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office." This language is considered sufficient to require payment of all fees or have the opposition, affidavit or declaration refused.
Comment: One suggestion was made to either cite §2.6 in all sections being changed relative to fees or to cite it in none.
Reply: Citations of §2.6 have been added to §2.101(c) and §2.146(b) to conform to §2.162(d) and §2.167(g).
Comment: It was suggested that the fee for a combined section 8 and 15 affidavit needed to be specified in the rules.
Reply: Section 2.6 has been changed to provide this combined fee.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of changes which were made as a result of the comments received and further review of the proposed rulemaking are identified below.

Deletion of Part 4 has been deferred for further comments by Aug. 13, 1982 (see 47 FR 32458, July 27, 1982). As elimination of Part 4 is not essential to the setting of fees, and does not have to be in place 60 days before implementation, it was decided to ask for further public comment.

Section 2.85(e) has been revised to eliminate the references to oppositions and affidavits. Because the handling of late filed fees for these items is specified elsewhere, these references in §2.85(e) were redundant and confusing.

Both alternatives of §2.6 have been revised to add a fee for a combined affidavit under sections 8 and 15 of the Act. In order to prevent possible confusion by users of the Trademark system, it was included separately.

IMPLEMENTATION OF TRADEMARK FEE REVISION

The effective date of the trademark fee revisions contained in this rulemaking is Oct. 1, 1982.

* * * * *

The changes which will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, are (1) the rule changes common to Public Law 96–517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96–517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to Oct. 1, 1982.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, the rule changes in Alternative B will become effective on Oct. 1, 1982, in which case the rule changes in Alternative A will not become effective on Oct. 1, 1982.

Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of Section 2.6 is set forth below:

IMPLEMENTATION OF SECTION 2.6

Fees set forth in Section 2.6 must be paid in the amounts set forth in this section on or after Oct. 1, 1982. Any additional fees which become due under §2.6 in pending applications on or after Oct. 1, 1982, or which have not been paid prior to Oct. 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to Oct. 1, 1982. For example, if an application filed prior to Oct. 1, 1982, is amended on or after Oct. 1, 1982, to include additional classes, the fee set forth in §2.6(a) must be paid per class added.

IMPLEMENTATION OF CERTAIN SECTIONS DEFERRED FOR FURTHER COMMENTS

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 4 has also been extended until August 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change (see 47 FR 32458, July 27, 1982). Since it is not essential that this deletion be published by Aug. 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 4 as proposed.

OTHER CONSIDERATIONS RELATING TO PATENT AND TRADEMARK FEE REVISIONS

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et. seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) for several reasons. Public Law 96–517 and H.R. 6260 have both taken into consideration the impact they may have on small entities. The fees under Public Law 96–517 are set to recover 50% of patent and trademark processing costs rather than full costs and generally the rate of increase in the fees is less than that of inflation since the last increase in fees in 1965. Further, the rules implementing Public Law 96–517 take into consideration small entities by setting a lower patent filing fee than issue fee to recover the required level of patent processing costs. The lower filing fee permits a small entity to file a patent application for a relatively low cost and not have to pay the higher balance of fees required to achieve Public Law 96–517 recovery levels until examination is complete and it is known that a patent will issue. Under H.R. 6260 and this rulemaking, small entities would be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to requests for extensions of time, will be reduced.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Nonprofit organizations, Small businesses, Trademarks.

AMENDMENT OF REGULATIONS

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and under Sections 31 and 41 of the Trademark Act of July 5, 1946, 15 U.S.C. §§1113, and 1123, Parts 1 and 2 of Title 37, Code of Federal Regulations, are amended as set forth below.

July 14, 1982. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

* * * * *

[Note: H.R. 6260 became Public Law 97–247 on Aug. 27, 1982. Rules that became effective Oct. 1, 1982 are those rules common to Public Law 96–517 and H.R. 6260 and those set forth in Alternative B. The adopted rules are reproduced in the notice entitled "Revision of Patent and Trademark Fees Confirmation," published at 1022 O.G. 21, which is reprinted immediately following this notice.]

[1021 O.G. 19]

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(48) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1 and 2
[Docket No. 2714–129]

Revision of Patent and Trademark Fees Confirmation

Agency: Patent and Trademark Office, Commerce.
Action: Confirmation of rules.
Summary: This document confirms certain rule changes for patent and trademark fees and fee-related procedures which take effect on Oct. 1, 1982. These rule changes implement H.R. 6260 which was enacted as Public Law 97–247 on Aug. 27, 1982.
Effective Date: Oct. 1, 1982.
For Further Information Contact: As to the patent rules contact: R. Franklin Burnett, by telephone at (703) 557–3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Rm 3–11A13, Washington, D.C. 20231.

As to the trademark rules contact: Miss Maude Williams, by telephone at (703) 557–2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Rm. 3–11C17, Washington, D.C. 20231.
Supplementary Information: The Patent and Trademark Office is required by law to publish a notice in the Federal Register of its fees at least 60 days before the effective date thereof (35 U.S.C. 41(g)). Thus, on July 30, 1982 a final rule document was published at 47 FR 33086 setting forth rule changes for patent and trademark fees and procedures which take effect on Oct. 1, 1982. The document was based on the public law in effect at that time, Public Law 96–517, and on H.R. 6260, which was then pending but is now Public Law 97–247. The final rule document published on July 30, 1982, in the Federal Register sets out—

(1) rules that are common to both Pub. L. 96–517 and H.R. 6260 (now Pub. L. 97–247);
(2) Alternative A which contains rule changes implementing Pub. L. 96–517 alone; and
(3) Alternative B which contains rule changes implementing H.R. 6260 (now Pub. L. 97–247).

H.R. 6260 was enacted as Public Law 97–247 on Aug. 27, 1982, and the Patent and Trademark Office hereby confirms that the rule changes common to both Pub. L. 96–517 and H.R. 6260 and Alternative B are those which go into effect on Oct. 1, 1982. The rules under Alternative A are hereby withdrawn. Additional rule changes required by Public Law 97–247 will be made the subject of separate rulemakings.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Nonprofit organizations, Small businesses, Trademarks.

AMENDMENT OF REGULATIONS

For the reasons set out in the preamble, 37 CFR Parts 1 and 2 are confirmed as being amended by the final rule published on July 30, 1982 at 47 FR 33086 as set forth below.

Sept. 14, 1982. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

1. The rule changes made in Alternative A relating to patents which begin at 47 FR 33107 and in Alternative A relating to trademarks which begin at 47 FR 33112 are hereby withdrawn.
2. Confirmed as effective Oct. 1, 1982 are the rule changes published July 30, 1982 common to Public Law 96–517 and H.R. 6260 (now Public Law 97–247) and Alternatives B. The rule changes relating to patents common to Public Law 96–517 and H.R. 6260 (now Public Law 97–247) were published on July 30, 1982 at 47 FR 33099. The rule changes relating to patents under Alternative B were published at 47 FR 33108. The rule changes relating to trademarks common to Public Law 96–517 and H.R. 6260 (now Public Law 97–247) were published on July 30, 1982 at 47 FR 33111. The rule changes relating to trademarks under Alternative B were published at 47 FR 33112. Corrections to the July 30, 1982 publication were published on Aug. 4 and 5, 1982 at 47 FR 33688 and 33959.

(Text of adopted rules appears in 37 CFR, revised July 1, 1983.)

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(49) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1, 3 and 4
[Docket No. 2827–167]

Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish procedures for the payment of fees under §41 (a) and (b) of Title 35, United States Code, which are reduced by 50 per centum for independent inventors and nonprofit organizations as required by the public law resulting from H.R. 6260. This action is necessary at this time in order that the procedures for paying the reduced fees will be effective on Oct. 1, 1982, the effective date of the changes in the amounts of Patent and Trademark

Office fees established by the public law resulting from H.R. 6260. This final rule also deletes Parts 3 and 4 which contain outdated sample forms and corrects a reference to a section which appears in §1.451.

Effective Date: Oct. 1, 1982.

For Further Information Contact: As to the patent rules contact R. Franklin Burnett by telephone at (703) 557–3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Rm. 3–11A13, Washington, D.C. 20231.

As to the trademark rules contact Miss Maude Williams by telephone at (703) 557–2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3–11C17, Washington, D.C. 20231

Supplementary Information: Notices of proposed rulemaking relating to the revision of patent and trademark fees were published in the *Federal Register* on June 28, 1982, at 47 FR 28042-28065 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57–120. Oral hearings were held on July 9, 1982. Full consideration has been given to all of the letters, statements, and testimony received at the time. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086–33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and Aug. 5, 1982, at 47 FR 33959. The final rule was also published in the Official Gazette on Aug. 10, 1982, at 1021 O.G. 19–94. In view of comments received at the hearings, additional time for comment on the rules covered by this change was given until Aug. 13, 1982. The notice extending the time for comment was published on July 27, 1982 at 47 FR 32458.

This final rule is being adopted as soon as possible after the enactment of the public law resulting from H.R. 6260. The Patent and Trademark Office has determined that the requirement of 5 U.S.C. 553 (d) for publication not less than 30 days before its effective date does not apply to this final rule since it will reduce patent fees for independent inventors and nonprofit organizations.

Objectives of Rule Changes

These rule changes are designed to implement the Patent and Trademark Office fees and procedures which are provided for by the public law resulting from H.R. 6260.

Public Law Resulting From H.R. 6260

The public law resulting from H.R. 6260 provides that funds available under the act "shall be used to reduce by 50 per centum the payment of fees under section 41 (a) and (b) of Title 35, United States Code" by independent inventors, small business concerns, and nonprofit organizations. The public law resulting from H.R. 6260 gives the Commissioner authority to establish regulations defining independent inventors and nonprofit organizations. The public law resulting from H.R. 6260 defines small business concerns by reference to §3 of the Small Business Act and regulations established by the Small Business Administration. This rulemaking establishes regulations defining independent inventors and nonprofit organizations. The Small Business Administration is establishing the definition of a small business concern for the purpose of paying reduced fees under the public law resulting from H.R. 6260. This rulemaking also establishes the procedures which will be followed by independent inventors and nonprofit organizations when paying the reduced fees.The procedures to be followed by small business concerns when paying the reduced fees will be established in a separate final rule.

Discussion of Specific Sections

The following sections are changed by this final rule, effective Oct. 1, 1982:

Section 1.9, as amended, adds paragraphs (c), (e), and (f) which define "independent inventor" and "nonprofit organizations" as used in Title 37, Code of Federal Regulations, Chapter I. Each of these along with "small business concern" is identified as a "small entity" for purposes of paying fees which are set under §41 (a) and (b) of Title 35, United States Code, as amended by the public law resulting from H.R. 6260. Paragraph (d) of §1.9 relates to the definition of small business concern which is being established by the Small Business Administration. Accordingly, proposed paragraph 1.9(d) is not being promulgated at this time.

The public law resulting from H.R. 6260 authorizes the Commissioner to establish regulations defining independent inventors and nonprofit organizations. Section 1.9(c) defines an independent inventor as any inventor who (1) has not assigned, granted, conveyed, or licensed, and (2) is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not likewise be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization. Once an individual sole inventor, or one of several joint inventors, has assigned, granted, conveyed, or licensed, or comes under an obligation to assign, grant, convey, or license, any rights to the invention to anyone who could not likewise obtain status as a small entity, the inventor(s) will no longer be entitled to pay fees in the amounts established for an independent inventor (§1.9(c)). Section 1.9 (c) will permit an individual inventor to make an assignment, grant, conveyance, or license of partial rights in the invention to another individual or individuals who could qualify as an independent inventor or inventors if they had made the invention. In addition,§1.9 (c) will permit an individual inventor to make an assignment, grant, conveyance, or license of partial rights in the invention to a small business concern or nonprofit organization. Under the circumstances described in the previous two sentences the individual inventor could still qualify as an independent inventor. However, if the independent inventor assigned, granted, conveyed, or licensed, or came under an obligation to assign, grant, convey, or license, any rights to the invention to any individual or organization which could not qualify as a small entity (§1.9 (f)), then the inventor would no longer qualify as an independent inventor.

Proposed section 1.9 (d) relating to the definition of a small business concern is not being promulgated at this time.

Section 1.9(e) defines a nonprofit organization by utilizing and broadening the definition contained in 35 U.S.C. 201 (i). The term "university or other institution of higher education" as used in §1.9 (e) means an educational institution which (1) admits as regular students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such a certificate, (2) is legally authorized within the jurisdiction in which it operates to provide a program of education beyond secondary education, (3) provides an educational program for which it awards a bachelor's degree or provides not less than a two-year program which is acceptable for full credit toward such a degree, (4) is a public or other nonprofit institution, and (5) is accredited by a nationally recognized accrediting agency or association. The definition of "university or other institution of higher education" as set forth herein essentially follows the definition of "institution of higher education" contained in 20 U.S.C. 1141(a). Institutions which are strictly research facilities, manufacturing facilities, service organizations, etc., are not intended to be included within the term "other institution of higher education" even though such institutions may perform an educational function or publish the results of their work.

Section 1.9(f) identifies an independent inventor, a small business concern, or a nonprofit organization as a "small entity" for purposes of paying fees set under §41 (a) and (b) of Title 35, United States Code, as amended by the public law resulting from H.R. 6260. Fees established under §41 (c) or (d) of Title 35, United States Code, will not be reduced for small entities since such a reduction is not permitted or authorized by the public law resulting from H.R. 6260. Paragraphs (c), (e), and (f) of §1.9 should be read together with §§1.27 and 1.28 which deal with establishing status as a small entity and the effect thereof.

New §1.27 provides in paragraph (a) that any person seeking to establish as a small entity, as defined in §1.9 (f) for the purpose of paying reduced fees, must file a statement to that small entity. Paragraph 1.27(b) provides specifically for inventors filing statements claiming status as independent inventors. Paragraph 1.27 (c) relating to claiming status as a small business concern is not being promulgated at this time, but will be subject of a separate final rule. Paragraph 1.27 (d) provides for claiming status as a nonprofit organization. Under §1.27, as long as all of the rights remain in small entities, the fees established for a small entity can be paid. This includes circumstances where the rights were divided between an independent inventor, a small business concern and a nonprofit organization or any combination thereof.

New §1.28 provides guidance as to the effect of failure to establish, or notify the Office of any change from, small entity status. Paragraph 1.28 (a) provides that once status as a small entity has been established in an application or patent, without the filing of a further verified statement pursuant to §1.27, unless the Office is notified of a change in status. Under paragraph 1.28 (a), status as a small entity in one application or patent does not affect any other application or patent except in applications filed under §1.60 where a reference is made to a verified statement in a parent application. Paragraph 1.28 (b) requires that notification of any change in status resulting in loss of entitlement to small entity status be filed in the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. Section 1.28 also provides guidance as to the effect of improperly establishing status as a small entity. The intent of the reduced fees for small entities is to soften the impact of the fee increases under §41(a) and (b) of Title 35, United States Code, as such sections are amended by the public law resulting from H.R. 6260, upon those who are least able to absorb the increased fees without overall damage to their ability to participate in the patent system through the filing, issuing and maintaining of patents. Accordingly, any attempt to improperly establish status as a small entity will be viewed as a serious matter by the office and paragraph 1.28(d) indicates that any attempt to fraudulently establish status as a small entity or pay fees as a small entity will be considered as a fraud practiced or attempted on the Office. In addition, improperly and through gross negligence establishing status as a small entity or paying fees as a small entity will be considered as a fraud practiced or attempted on the Office. Normally, the Office will not question a claim to status as a small entity. However, if the Office must resolve such an issue in a question arising before it, the Office will look to the actual or practical status ot the individual or oganization claiming status as a small entity rather than the professed or apparent status.

Section 1.451, paragraph (b), is amended to correct a reference to another section of the regulations.

Parts 3 and 4 are removed to eliminate all of the patent and trademark forms from the Code of Federal Regulations. The Patent and Trademark Office has prepared a booklet entitled "Patent and Trademark Forms Booklet" which is available for sale to the public from the Superintendent of Documents and which includes full size copies of substantially all the forms in the Code of Federal Regulations in view of the difficulty of keeping such forms is not mandatory.

Discussion of Significant Differences Between Proposed and Final Rules

A number of changes which have been made to §§1.9, 1.27 and 1.28 as a result of the comments received and further review of the proposed rulemaking are identified below.

Paragraph (c) of §1.9 has been changed from that proposed to simplify the definition by removing the words "including (i) the right to make, use, or sell the invention, and (ii) the right to exclude others from making, using, or selling the invention". No change in substance is intended by removing these words since the phrase "any rights in the invention" obviously is inclusive of all rights regardless of how they are, or would be, transferred. The words "or otherwise" have also been removed to simplify the definition without a change in substance.

Paragraph (d) of §1.9 is not being promulgated by this rule change.

Paragraph (e) of §1.9 is changed from that proposed by adding the words "located in any country" in item (e) (1) to clarify the fact that a university or other institution of higher education can qualify regardless of location. Paragraph (e) is also changed from that proposed by adding an item (4) to clarify that a nonprofit organization if it could qualify as a nonprofit organization under item (2) or (3) of paragraph (e) "if it were located in this country." Thus, under paragraph (e) of §1.9 nonprofit organizations will be treated the same for purposes of paying fees regardless of location.

Paragraph (a) of §1.27 has been changed from that proposed by substituting the words "any fee paid as a small entity". This change is intended to clarify the fact that a verified statement is not required with every fee.

Paragraph (b) of §1.27 has been changed from that proposed to clarify who is to file the verified statement. The verified statement for a small business concern or nonprofit organization is to be filed by "the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization . . ." The term "official" as used in paragraph (b) is intended to include any officer, employee, or part-owner empowered to act on behalf of a small business concern or nonprofit organization.For example, an officer or employee of a corporation empowered to act for the corporation by its board of directors would be qualified to sign such a verified statement.

Paragraph (c) of §1.27 relating to claiming status as a small business concern is not being promulgated at this time, but will be the subject of a separate final rule.

Paragraph (d) of §1.27 has been changed from that proposed in the same manner as paragraph (b) of §1.27 has also been changed from that proposed by adding a reference to §1.9 (e)(4).

Paragraph (a) of §1.28 has been changed from that proposed by adding the words "or patent" in the first and third sentences since the failure to establish status as a small entity could occur in a patent as well as in an application. An exception to the requirement for a verified statement has also been inserted into paragraph (a) of §1.28 for applications filed under §1.60 where the status as a small entity has been established in a parent application and is still proper. Under this change in paragraph (a) of proposed §1.28, the application filed under §1.60 "must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired."

Paragraph (b) of §1.28 has been completely rewritten from that proposed to remove the requirement that the notification of a change in status resulting in loss of entitlement to small entity status must be filed prior to paying the next fee due. Instead, paraggraph (b) of §1.28 provides that after establishment of small entity status, "fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue is due or any maintenance fee is due." Paragraph (b) of §1.28 is also changed from that proposed by removing the sentence stating that payment of any fee as a small entity serves "as a representation that such payment as a small entity is proper at the time the payment is made." This change does not sanction the payment of improper fees, but is no longer necessary in view of another change in paragraph (b) which specifically provides that notification of any change in status

resulting in loss of entitlement to small entity status "must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to §1.9." The effect of the changes to paragraph (b) of §1.28 is to permit status to be established and then checked only (1) at the payment of the issue fee and (2) at the time of payment of each maintenance fee. This means that only four checks are required during the pendency and term of a patent after initial establishment of small entity status if such establishment was prior to payment of the issue fee. The last sentence of paragraph (b) has been changed from that proposed by inserting the words "of change in status" after "notification" for clarity.

Paragraph (c) of §1.28 has been changed from that proposed to require a verified statement explaining how the error in good faith occurred only in situations where the error occurred. This change from paragraph (c) as proposed will reduce paperwork and will provide a three-month grace period to correct errors with no explanations required for correction during that three-month period. The change has also been made to alleviate concerns about paragraph (d) of §1.28 which is being adopted as proposed.

Response to Comments on the Patent Rules

Specific comments were received on a number of the sections. All of the comments, including the oral testimony and the written comments, were considered in adopting the changes set forth herein.

Written comments on the patent rules and forms affected by this final rule were received from three patent law groups and thirteen individuals. The three patent law groups were (1) the American Patent Law Association; (2) the Patent, Trademark, and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups.

The comments appear below along with replies thereto.

Comment:

One comment suggested that the definition of "independent inventor" be simplified.

Reply:

The definition of "independent inventor" has been simplified without a change in substance by removing the words "including (i) the right to make, use, or sell the invention, and (ii) the right to exclude others from making, using, or selling the invention."

Comment:

One comment suggested that there is no need to include any more than a simplified statement that a "nonprofit organization includes a university or other institution of higher education"

Reply:

The suggestion has not been adopted since it is the intent of the rules to delireate as clearly as possible what organizations can qualify as nonprofit organizations without having to expend undue resources deciding each request on a case-by-case basis.

Comment:

One comment suggested that §1.9(e) discriminates against foreigners and thus violates the principle of national equality set forth in the Stockholm text of the Paris Convention for the Protection of Industrial Property.

Reply:

Section 1.9(e), as promulgated, defines a nonprofit organization in such a way that it is clear that foreigners are not excluded.

Comment:

One comment questioned whether or not government organizations can qualify as nonprofit organizations and more specifically, whether or not a government research facility can qualify under the broad definition of a nonprofit scientific or educational organization. Another comment recommended that §1.9(e) be expanded to include the U.S. Government in the definition of a "nonprofit organization."

Reply:

Government organizations as such, whether domestic or foreign, cannot qualify as nonprofit organizations as defined in §1.9(e). Section 1.9(e) was based upon 35 U.S.C. 201(i), as established by Public Law 96-517. The limitation to "an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)(3)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a))" would by its nature exclude the U.S. government and its agencies and facilities, including research facilities and government corporations. State and foreign governments and governmental agencies and facilities would be similarly excluded. Section 1.9(e) is not intended to include within the definition of a nonprofit organization government organizations of any kind located in any country. A university or other institution of higher education located in any country would qualify, however, as a "nonprofit organization" under §1.9(e) even though it has some government affiliation since such institutions are specifically included.

Comment:

One comment was directed to, and opposed, Public Law 96-517 and H.R. 6260 rather than the specific provisions of §§1.9, 1.27 and 1.28 on the ground that the concept of a self-supporting agency is ill-conceived, shortsighted and wrong.

Reply:

Public Law 96-517 and H.R. 6260 are not issues for consideration in this rule change.

Comment:

One comment asserted that the imposition of different fees depending upon the status of an applicant is unwise, unworkable, and will not "improve the efficiency of the Patent Office", while another comment urged the Office to "disavow the proposal for a two-tier fee system and adopt a different approach to assuring that patent and trademark fees are set so that individual inventors and small businesses can continue to obtain the protection of the patent and trademark system." Another comment supported the two-tier fee system, particularly as related to universities.

Reply:

The imposition of different fees is a legislative mandate imposed by the public law resulting from H.R. 6260 and is not an issue for consideration in this rule change.

Comment:

Four comments expressed concern that small entity status is required to be confirmed each time a fee as a small entity is paid. Alternative procedures which involve (1) confirming status at the time of filing and at the time the issue fee is paid, or (2) allowing a statement of status to hold for a period of time were recommended.

Reply:

The last sentence in §1.27(a) states that "[s]uch a verified statement need only be filed once in an application or patent and remains in effect until changed." It was not intended that such statements would be required each time a fee is paid. In order to clarify §1.27(a), the first sentence has been changed to require the statement prior to or with the first fee paid as a small entity. Thereafter, notice is only required where a change in status occurs. In addition, §1.28(b) has been rewritten to provide that "[o]nce status as a small entity has been established in an application or patent, fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue fee is due or any maintenance fee is due."

Comment:

One comment suggested that a paragraph 1.27(e) be added which would require confirmation of small entity status at the time of paying the patent issue fee and each maintenance fee and that this be done by a statement

which designates the applicant's small entity status as of the close of the last fiscal year next preceding the date of the statement.

Reply:

The suggested paragraph has not been added. However, paragraph (b) of §1.29 has been completely rewritten to permit status to be established and then checked only (1) at the payment of the issue fee and (2) at the time of payment of each maintenance fee. Instead of requiring papers to be filed confirming status as suggested in the comment, the rules as adopted require that "[n]otification of any change in status resulting in loss of entitlement to small entity status must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to §1.9." Paragraph (b) of §1.28, as promulgated, is considered preferable to the suggested paragraph (e) of §1.27 since it will eliminate the filing of a confirming statement where there has been no change in status as a small entity. This reduces unnecessary paperwork.

Comment:

One comment suggested that verified statements of small entity status need not be filed in Rule 60 applications.

Reply:

The suggestion was adopted and is reflected by the change in §1.28(a). In such applications, it will be sufficient to include a reference to a verified statement establishing small entity status in a parent application if status as a small entity is still proper and desired.

Comment:

One comment suggested that proposed paragraph 1.28(b) be amended by inserting the words "believed to be" after "small entity is" in the second sentence.

Reply:

Paragraph (b) of §1.28 as promulgated does not contain the sentence to which the suggestion is directed.

Comment:

One comment suggested that paragraph (c) of §1.28 be amended by deleting the word "verified" so that a statement explaining how an error in good faith occurred can be made "on the basis of information and belief."

Reply:

The suggestion has not been adopted. However, paragraph (c) of §1.28 as promulgated permits the correction of errors without a verified statement if the correction is accomplished within three months after the date the error occurred.

Comment:

Three comments expressed concern about the provision dealing with fraud on the Patent and Trademark Office because of some questionable act in connection with paying fees as a small entity and indicated that some persons have raised a question as to the Office's authority to designate the payment of a lesser fee as fraud. The comments suggested that proposed §1.28 be withdrawn and turned over to an ad hoc group of Patent and Trademark Office officials and practitioners for immediate examination and timely comment.

Reply:

The period for comments was extended until Aug. 13, 1982, as an alternative to, and in response to, the suggestion that §1.28 be withdrawn and turned over to an ad hoc committee. The extended period for comments has now expired and all comments which have been received have been carefully considered. In response to the statement that some persons have raised a question regarding the Office's authority to designate payment of a lesser fee as fraud, no authority has been cited which would establish or suggest that the Office does not have the authority to adopt this section. Paragraph (d) of §1.28 has been strictly limited to those situations in which there is an attempt to fraudulently establish entity, or improperly and through gross negligence establish status or pay fees as a small entity. Paragraph (d) of § 1.28 is clearly within the rule-making authority provided to the Commissioner pursuant to 35 U.S.C. 6 to protect the integrity of the system established by the public law resulting from H.R. 6260, whereby fees are reduced for small entities. In order to alleviate the concerns expressed about paragraph (d) of §1.28, paragraph (c) of §1.28 has been changed from that proposed to require a verified statement explaining how the error in good faith occurred only in situations where the error is not corrected within three months of the date on which the error occurred. This three-month grace period to correct errors with no explanations required for correction during that three-month period should reduce the concern about paragraph (d) of §1.28.

Comment:

One comment by an attorney (1) objected to and requested removal of the second sentence of §1.28(d) because he has to rely on the information provided by the client and does not have the facilities to check the reliability of information the client provides relating to the client's status as a small entity, and (2) raised the question as to how much investigation any attorney or other individual must make in order to avoid being guilty of "gross negligence" under §1.28(d).

Reply:

The rules do not authorize an attorney to sign a verified statement establishing status as a small entity on behalf of a client. The client has to sign the verified statement. Paragraph (b) of §1.27 requires that any verified statement filed on behalf of an independent inventor must be signed by the independent inventor except as provided in §§1.42, 1.43, or 1.47. Paragraph (d) of §1.27 requires that any verified statement filed on behalf of a nonprofit organization must be signed by an official of the nonprofit organization empowered to act on behalf of the organization. The intent of paragraphs (b) and (d) of §1.27 is that the verified statement be signed by the person in the best position to know the facts as to whether or not status as a small entity can be properly established. Insofar as the attorney's irresponsibilities and duty to investigate are concerned, these do not differ from those presently owed the Office under §§1.56, 1.346, and 1.555.

Comment:

One comment suggested that paragraph (d) of §1.28 be replaced by a provision under which a "stiff fine" would be assessed against "a wrongdoer who has not paid fees in good faith."

Reply:

The suggestion has not been adopted. Assessing a fine as the only penalty against "a wrongdoer who has not paid fees in good faith" might tend to encourage the payment of incorrect fees on the theory that it is unlikely that such a matter would be brought to the attention of the Office.

Comment:

Three comments opposed the proposed deletion of Part 3 for the reasons that (1) it is useful to have an up-to-date set of forms and (2) there does not seem to be a pressing need to delete the forms.

Reply:

The Patent and Trademark Office has prepared a booklet entitled "Patent and Trademark Forms Booklet" which includes full size copies of substantially all of the forms in Part 3. Since the forms currently in Part 3 are not "up-to-date" as was suggested in the comment, no present need is seen to maintain Part 3.

Response to Comments on the Trademark Rules

Specific comments were received on the proposed deletions of Part 4. All of the comments included in the written submissions and the oral testimony were considered.

Written comments were received from four individuals. Oral comments restating previously submitted written comments on Part 4 were presented by one individual on behalf of his law firm.

These comments appear below along with replies thereto.

Comment:

One comment stated that there are rules in Part 4 which are not set forth elsewhere. Such guidelines and information include, among others, the types of commerce on which an application may be based and a requirement for the use of bond paper for typed drawings.

Reply:

Part 4 does not really carry the effect of rules because the forms are not mandatory, but are merely illustrative. The information referred to by this individual can be found elsewhere, such as in the Trademark Manual of Examining Procedure. Furthermore, despite the fact that the forms do not carry the force of rules, any correction or modification to them requires the cumbersome and time-consuming processes that are associated with a rules change.

Comment:

Several comments reflected the opinion that some attorneys, particularly those who do not specialize in trademark matters, may rely on the forms that appear in Part 4. It was believed that these individuals may not have or be aware of the compilation of forms identified as the "Patent and Trademark Office Forms Booklet." In the absence of such forms in Part 4, these individuals may devise their own application formats. Such a practice would result in increased informalities which, in turn, would result in unnecessary correspondence and delayed prosecution. In addition, the commenters believed that the number of written and oral inquiries to the Office of the Director of the Trademark Examining Operation would increase dramatically.

Reply:

The Office of the Director of the Trademark Examining Operation currently has a general information telephone line to answer inquiries and to accept requests for trademark application forms and related literature. While the Office of the Director indicates the availability of the forms booklet to many callers, copies of the appropriate trademark application form are sent to those individuals who request them. It is more likely that an individual who is unaware of the trademark application form would call the Office of the Director to request an application form than create one for the particular purpose.

Comment:

One individual, aware of the Office's plans for automation of the trademark program, saw the present deletion of the forms to be inappropriate. This individual felt that the deletion of the forms at this point would signal to the user community that the Office no longer had any interest in receiving applications in any particular format. To take such a position within a year or two of the introduction of a rigidly standardized application format was, in the opinion of this commenter, unwise. The adoption of a machine-readable application form would require greater, rather than diminished, reliance on a prescribed format.

Reply:

Within the next year or two, the Office will begin experimenting with the use of optical character recognition (OCR) equipment to automate the current data capture processes. Trademark application formats that are compatible with this equipment are likely to require special sizing and printing and, as such, are not acceptable for reduced size printing in the Code of Federal Regulations. If the existing forms were to be maintained in Part 4, they would remain available for use by applicants. As a result, the implementation of the new standardized application formats would be made more difficult.

Comment:

One commenter believed that since the next reprinting of Volume 37 of the Code of Federal Regulations will be in July, 1983, there is no pressing need to eliminate Part 4 at this time. This individual felt that users of the trademark registration system should be given additional opportunity to consider the significance of removing Part 4.

Reply:

Only four comments have been received on the deletion of Part 4. The elimination of Part 4 at this time will guarantee that the forms do not appear in the 1983 reprinting of the CFR. Of course, they will appear in the 1982 version of the CFR booklet and will be available until the new edition is published. In this matter, future access to these forms will be limited and those requiring help may contact the Office and receive the proper trademark forms.

Implementation of §§1.9, 1.27, and 1.28

Status as a small entity can be established in any application or patent for which a fee is due on or after Oct. 1, 1982, and in which small entity status is available and desired.

Other Considerations Relating to Patent and Trademark Fee Revisions

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conversation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et. seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L 96–354) for several reasons. The public law resulting from H.R. 6260 has taken into consideration the impact the increase in fees may have on small entities. Under the public law resulting from H.R. 6260 and this rulemaking, small entities will be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse ju effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are place upon the public.

List of Subjects in 37 CFR Parts 1, 3 and 4

Administrative practice and procedure, Colleges and universities, Courts, Fraud, Inventions and patents, Nonprofit organizations, Small businesses, Trademarks.

(Text of adopted rules appears in 37 CFR, revised July 1, 1983.)

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Aug. 26, 1982.

[1022 OG 29]

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(50) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 2909-187]

Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce
Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish a definition and procedures for the payment of fees under section 41(a) and (b) of Title 35, United States Code, by small business concerns as required by Pub. L. 97–247. This action adopts the definition of a "small business concern" for purposes of paying patent fees established by the Small Business Administration and is necessary at this time in order that the procedures for paying reduced fees will be effective on Oct. 1, 1982, the effective date of the changes in the amounts of Patent and Trademark Office fees established by Pub. L. 97–247.

Effective Date: Oct. 1, 1982

For Further Information Contact: R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231.

Supplementary Information: A notice of proposed rulemaking was published in the Federal Register on June 28, 1982, at 47 FR 28042–28063 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57-120. Oral hearings were held on July 9, 1982. Full consideration has been given to all of the letters, statements, and testimony received at the time. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086–33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982 at 47 FR 33959. The final rule was also published in the *Official Gazette* on Aug. 10, 1982, at 1021 O.G. 19–94. In view of comments received at the hearings, additional time for comment on certain rules, including those covered by this change, was given until Aug. 13, 1982. The notice extending the time for comment was published on July 27, 1982 at 47 FR 32458. A final rule relating to definitions of "independent inventor" and "nonprofit organizations" was published on Sept. 10, 1982 at 47 FR 40134–40140.

Objectives of Rule Changes

These rule changes are designed to implement the Patent and Trademark Office fees and procedures which are provided for by Pub. L. 97–247.

Public Law 97–247

Pub. L. 97–247, signed Aug. 27, 1982, provides that funds available under the act "shall be used to reduce by 50 per centum the payment of fees under section 41(a) and (b) of title 35, United States Code" by independent inventors, small business concerns, and nonprofit organizations. The Commissioner has established regulations defining independent inventors and nonprofit organizations. Pub. L. 97–247 defines small business concerns by reference to Section 3 of the Small Business Act and regulations established by the Small Business Administration. The Small Business Administration has now established the definition of a small business concern for the purpose of paying reduced fees under Pub. L. 97–247. That definition is hereby incorporated into the patent rules of practice in §1.9(d). This rulemaking also establishes the procedures which will be followed by small business concerns when paying the reduced fees.

Discussion of Specific Sections

The following sections are changed by this final rule, effective Oct. 1, 1982:

Section 1.9, as amended, adds paragraph (d) which defines small business concern as used in Title 37, Code of Federal Regulations, Chapter I. A small business concern is identified as a "small entity" for purposes of paying fees which are set under section 41(a) and (b) of Title 35, United States Code, as amended by Pub. L. 97–247.

Section 1.9(d) defines a small business concern by reference to and incorporation of §121.3–18 of Title 13, Code of Federal Regulations. A small business concern is defined therein as any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. The section further defines affiliates of concerns and defines also the terms "employees" and "number of employees." Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees a business concern has is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Business concerns located in any country which meet the small business definition and which comply with the applicable procedures can qualify as a "small business concern". Under the definition, a small business concern would no longer qualify as a small business concern if any rights were assigned to any individual or concern which could not qualify as a small entity pursuant to §1.9(f), or if the concern came under an obligation to assign any rights to any individual or concern which could not qualify as a small entity.

Section 1.9(d) also incorporates paragraph (b) of 13 CFR 121.3–18 which provides for appeals to the Small Business Administration from Patent and Trademark Office adverse initial size determinations.

Paragraph 1.27(c) provides for claiming status as a small business concern. Any person seeking to establish status as a small entity, for the purpose of paying reduced fees, must file a statement to that effect prior to or with the payment of the first fee paid as a small entity. Under §1.27, as long as all of the rights remain in small entities, the fees established for a small entity can be paid. This includes circumstances where the rights were divided between an independent inventor, a small business concern and a nonprofit organization or any combination thereof.

A number of changes which have been made to §§1.9 and 1.27 as a result of the comments received and further review of the proposed rulemaking are identified below.

Paragraph (d) of §1.9 has been changed from that proposed so as to incorporate into §1.9(d), the definition established by the Small Business Administration in §121.3–18 of Title 13, Code of Federal Regulations. The definition differs from that proposed in specifying the number of employees constituting a small business concern and specifying that the concern must be one which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license any rights in the invention to any person or concern which could not be classified as an independent inventor, small business concern, or nonprofit organization.

Paragraph (c) of §1.27 has been changed from that proposed to clarify who is to file the verified statement. The verified statement for a small business concern is to be signed by "the owner or an official of the small business concern empowered to act on behalf of the concern." The term "official" as used in paragraph (c) is intended to include any officer, employee, or part-owner empowered to act on behalf of a small business concern. For example, an officer or employee of a corporation empowered to act for the corporation by its board of directors would be qualified to sign such a verified statement.

Response to Comments on the Patent Rules

Specific comments were received on a number of the sections. All of the comments, including the oral testimony and the written comments, were considered in adopting the changes set forth herein.

Written comments on the rules affected by this final rule were received from three patent law groups and a number of individuals. The three patent law groups were (1) the American Patent Law Association; (2) the Patent, Trademark, and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups.

The comments appear below along with replies thereto.

Comment

Two comments urged that in view of the "exceedingly complex" definitions of a "small business" in 13 CFR 121.3, the patent system and those associated with it would be best served by setting forth clear guidelines as to whether or not a business qualifies as a small business without reference to the Small Business Act and without incorporation by reference of "the too many pages of SBA regulatory definition."

Reply

Pub. L. 97–247 specifically refers to section 3 of the Small Business Act and regulations established by the Small Business Administration for determining whether or not a business concern qualifies as a small business concern. Pub. L. 97–247 therefore does not permit the establishment of guidelines without reference to the Small Business Act and regulations established by the Small Business Administration. Section 1.9(d), however, does incorporate the definition as established in §121.3–18 of Title 13, Code of Federal Regulations. This will enable persons to utilize §1.9(d) without also referring to a copy of Title 13, CFR.

Comment

One comment argued that §1.27 should be corrected or clarified to indicate that a small business concern would be entitled to the 50 percent fee reduction even though it may grant a non-exclusive or even an exclusive license to some non-small entity.

Reply

The suggestion has not been adopted. Section 1.27 requires that the concern qualify as a small business concern as defined in §1.9(d). Section 1.9(d) defines a small business concern by incorporating 13 CFR 121.3–18, which in turn defines a small business concern as one not exceeding a particular size "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section." The intent of both 13 CFR 121.3–18 and 37 CFR 1.9(d) and 1.27(c) is to limit the payment of reduced fees under section 41 (a) and (b) of Title 35, United States Code, to those situations in which all of the rights in the invention are owned by small entities, i.e., independent inventors, small business concerns, or nonprofit organizations. To do otherwise would be clearly contrary to the intended purpose of the legislation which contains no indication that fees are to be reduced in circumstances where rights are owned by non-small entities. Adopting the suggestion might, for example, permit a non-small entity to transfer patent rights to a small business concern which would pay the reduced fees and grant an exclusive license to the non-small entity.

Comment

One comment suggested that the specific Small Business Administration regulations which are applicable be specified in §1.9(d).

Reply

The definition of a small business concern as established by the Small Business Administration is now incorporated into §1.9(d).

Implementation of §§1.9 and 1.27

Status as a small entity can be established in any application or patent for which a fee is due on or after Oct. 1, 1982, and in which the individual inventor, small business concern, or nonprofit organization meets the qualifications established for small entity status.

Other Considerations Relating to Patent and Trademark Fee Revisions

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) for several reasons. Pub. L. 97–247 has taken into consideration the impact the increase in fees may have on small entities. Under Pub. L. 97–247 and this rulemaking, small entities will be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Small businesses.

Amendment of Regulations

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and Pub. L. 97–247, Part 1 of Title 37, Code of Federal Regulations, is amended as set forth below.

PART 1—RULES OF PRACTICE IN PATENT CASES

1. Section 1.9 is amended by adding a new paragraph (d) to read as follows:

§1.9 Definitions.

* * * * *

(d) A small business concern as used in this chapter means any business concern as defined by the Small Business Administration in 13 CFR 121.3–18, published on September 30, 1982 at 47 FR 43273. For the convenience of the users of these regulations, that definition states:

§121.3–18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code

(a) Pursuant to Pub. L. 97–247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error; and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

2. Section 1.27 is amended by adding a new paragraph (c) to read as follows:

§1.27 Statement of status as small entity.

* * * * *

(c) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a small business concern must (1) be signed by the owner or an official of the small business concern empowered to act on behalf of the concern; (2) aver that the concern qualifies as a small business concern as defined in §1.9(d); and (3) aver that exclusive rights to the invention have been conveyed to and remain with the small business concern, or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9. Where the rights of the small business concern as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such.

Sept. 23, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[FR Doc.82-26941 Filed 9-29-82; 8:45 am]
BILLING CODE 3610-16-M

SMALL BUSINESS ADMINISTRATION
13 CFR Part 121

Definition of Small Business for Paying Reduced Patent Fees Under Title 35, United States Code

Agency: Small Business Administration.
Action: Final rule.
Summary: The Small Business Administration in conjunction with the Patent and Trademark Office is establishing a definition of small business for the purpose of paying patent fees under section 41 (a) and (b) of Title 35, United States Code, which are reduced by 50 per centum for small business concerns as required by Pub. L. 97–247. The definition would be implemented by the Patent and Trademark Office, which has recently published its regulations on the fee reduction procedures (47 FR 40134, Sept. 10, 1982).
Effective Date: Oct. 1, 1982.
For Further Information Contact:
R. Franklin Burnett (703) 557–3054.
Harvey Bronstein (202) 653–6373.
Supplementary Information: Pub. L. 97–247 provides that funds available under the Act to the Patent and Trademark Office "shall be used to reduce by 50 per centum the payment of fees under Section 41 (a) and (b) of Title 35, United States Code, by small business concerns as defined in Section 3 of the Small Business Act and by regulations established by the Small Business Administration."

A notice of proposed rulemaking relating to the definition of a small business was published in the **Federal Register** on Aug. 31, 1982 (47 FR 38331). The regulation being issued is the same as that which was proposed. In order to be a small business, the number of employees of the concern, including those of its affiliates, may not exceed 500 persons. Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of a business concern is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year.

The definition also requires a small business for this purpose to be one "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section."

Discussion of Comments

One comment from the American Patent Law Association, whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office, expressed "no comment regarding the definition" and expressed "[t]hanks for all that's been done toward a hopefully workable definition." The remaining comments were from individual patent attorneys rather than comments on behalf of any organization.

Two comments raised questions about the intended scope of the term "license." It was suggested that clarification is needed as to what is included within the scope of the term. One comment susggested that, "[a]t the very least, the record should reflect that the definition is not intended to reach implied licenses to use and resell patented articles purchased from a small business." The comment is correct insofar as it suggests that such "implied licenses" are not intended to be included within the scope of the term. Likewise, an order by the applicant to a firm to build a proto-type machine or product for the applicant's own use is not considered to constitute a license for purposes of the definition.

Another suggestion was that the regulation be reworded to deny small business status where revenue above a certain dollar amount was received from licensing rights under the invention to a concern which could not qualify as a small entity. It was also suggested that the term "exclusive license of any of the rights in the in-

vention" be used instead of the term "license." The latter two suggestions have not been adopted. Adoption of these suggestions would cause the regulation to become more complicated, and does not appear necessary to aid small concerns in accord with the purposes of the legislation. In addition, it could substantially broaden the number of concerns which could qualify with a resulting excessive loss of revenue to the Patent and Trademark Office. It is not seen likely that the restriction on licensing would unduly or adversely affect the ability of the small business concern to participate in the patent system.

Another comment which was made related to a firm which is a subsidiary of a university or other nonprofit organization. The suggestion was made that the number of employees of the university or other nonprofit affiliate be excluded from consideration in determining whether or not the business concern qualifies as a small business concern. The suggestion has not been adopted since the situation raised is already treated under the definition of nonprofit organization established by the Patent and Trademark Office on Sept. 10, 1982, at 47 FR 40134–40140. Under that Patent and Trademark Office regulation, a wholly owned subsidiary of a nonprofit or university is considered a part of the university or nonprofit and thus is already eligible for the fee reduction.

One comment suggested that the regulation contain language specifying that concerns meeting its requirements are also independently owned and operated and not dominant in their field of operation under the Small Business Act. It is not necessary to include this language since this regulation already contains an affiliation test for this purpose; and it is generally unlikely that a small concern would be found to be dominant. The legislative history of the Small Business Act indicates that "The mere fact that a small business makes a particular product or item and is dominant in its field with respect to the particular product or item is not intended to disqualify it from the benefits of this Act * * * "(House Report 494, 83rd Congress, 1st Session 1953). SBA Size Appeals Board precedents have consistently stated that dominance under the Act and the SBA regulations is not viewed in narrow industry subdivisions. It, therefore, does not appear that concerns defined as small business under this provision would be dominant within the meaning of the Small Business Act.

Another comment suggested that foreign concerns should not be eligible as small business under this provision. Since this patent legislation was enacted by the Congress with knowledge of the Paris Convention for the Protection of Industrial Property, there is no indication that Congress intended that foreign small business not be eligible for the fee reduction. It is the view of the Patent and Trademark Office that excluding foreign small concerns would violate U.S. treaties in the patent area.

This comment also questioned whether the Patent and Trademark Office should make initial size determinations, or whether they could more appropriately be made by SBA. Since the fee reduction procedure is part of the patent application and of other Patent and Trademark Office actions and may involve Patent law questions, it would be administratively infeasible to have initial size determinations made by the SBA. The Patent and Trademark Office recently issued regulations (Sept. 10, 1982, 47 FR 40134) which set forth the fee reduction procedures.

Other Considerations Relating to the Rulemaking

Environmental, energy, and other considerations: The rule will not have a significant impact on the quality of the human environment or the conservation of energy resources.

Small business concerns will be benefited by the rule. The proposed rule will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). Public Law 97–247 has taken into consideration the impact it may have on small entities and has reduced the fees, therefore, by 50 per centum.

The Small Business Administration has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 13 CFR Part 121

Small businesses, Inventions and patents.

PART 121—SMALL BUSINESS SIZE STANDARDS

Accordingly, pursuant to Section 3 of the Small Business Act and Pub. L. 97–247, Part 121 of Title 13 of the Code of Federal Regulations is amended by adding §121.3–18 to read as follows:

§121.3–18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code.

(a) Pursuant to Pub. L. 97–247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

ROBERT B. WEBBER,
Acting Administrator.

Sept. 23, 1982.

[FR Doc. 82-20940 Filed 9-29-82; 8:45 am]
BILLING CODE 8025-01-M

[1023 O.G. 23]

(51) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 31-201-229]

Revision of Patent Practice

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part 1 of 37 CFR, to clarify the practice under certain sections of Public Law 97-247 of 1982 and to make certain other changes and clarifications in practice which have been found desirable after some experience. The rulemaking changes the practice under §§1.27 and 1.28 with regard to subsequently establishing small entity status and qualifying for a refund of fees paid in full. The changes in other rules clarify and improve the practice in certain areas.
Effective Date: Apr. 1, 1984
For Further Information Contact: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to 1) clarify the small entity status of independent inventors, small business concerns and nonprofit organizations having funding agreements with a federal governmental agency as defined in 35 U.S.C. 202(c) (4); 2) rewrite §1.28 to provide a system for obtaining a refund of a portion of a fee paid in full when small entity status is established within two months of the date of such payment; 3) provide that a separate statement establishing small entity status is not required in an application filed under §1.62 when such status has been established in the parent application; and 4) modify certain other rules to clarify practice.

New §1.21(1) establishes a fee for processing and retaining any application which is abandoned for failing to complete the application pursuant to §1.53(d). This new paragraph, as well as the changes to §§1.53 and 1.78, indicate that in order to obtain benefit of a prior U.S. application, either the basic filing fee or the processing and retention fee of §1.21(1) must be paid. Section 1.53(d) further establishes that the application will be disposed of if the required fee is not paid within a set period. Section 1.56(b) requires submission of copies of foreign patent documents, non-patent publications, or other non-patent items of information disclosed pursuant to the duty to disclose. New §1.191(d) clarifies that §1.136 applies in patent applications and that §1.550(c) applies in reexamination proceedings to all time periods set forth in §§1.191-1.194, 1.196 and 1.197.

Discussion of Specific Rules and Significant Differences Between Proposed and Final Rules: Section 1.5, paragraph (a) is amended to remove a reference to §1.55, which is no longer appropriate and to clarify how letters to the Office are to be identified.

Section 1.6 is amended as proposed to clarify the manner in which letters and papers, including fees, filed in accordance with §1.10 by "Express Mail" are date stamped when received in the Patent and Trademark Office. Such letters and papers, which comply with §1.10, will be stamped with the date of deposit as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday or federal holiday within the District of Columbia, in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or a federal holiday within the District of Columbia. No papers are received in the Patent and Trademark Office on Saturdays, Sundays, or federal holidays within the District of Columbia.

Section 1.10, paragraphs (a) and (c), are amended to clarify that papers deposited as "Express Mail" on a Saturday, Sunday, or a federal holiday within the District of Columbia will be stamped with the date of the next succeeding day which is not a Saturday, Sunday, or a federal holiday within the District of Columbia. A cross reference to §1.6(a) has also been added to the rule. This change was not contained in the notice of proposed rulemaking but is being made to avoid confusion and to ensure that the Office's practice in date-stamping of papers is clearly understood. The change was suggested by a comment received on the proposed rules.

Section 1.14 is amended as proposed to revise paragraph (b) to clarify that only complete patent applications as defined in §1.51(a) which become abandoned will be retained for a period of twenty years from the filing date. Incomplete applications will be retained as provided in §§1.21 and 1.53.

Section 1.19, paragraph (b)(3), is amended as proposed to clarify that only copies made from Office records, but not prepared by the Office, will be compared with the original prior to certification of the copies. The Office will not compare copies made from some other copy or record with Office records for purposes of certification. The stated charge of ten cents per page would not be sufficient to make a word-by-word comparison. The requirements of the public appear to still be served by limiting the use of the comparison fee to Office records.

Section 1.21 is amended as proposed to revise paragraph (b) (2) and establish a new paragraph (1). The change in paragraph (b) (2) is in accord with the change in §1.25 (a). New paragraph (1) provides a fee for processing and retaining any application which is abandoned pursuant to §1.53(d). Such applications have received a filing date pursuant to 35 U.S.C. 111 but have been abandoned for failure to complete the application by filing the oath or declaration, filing fee or surcharge (§1.16(e)). The fee covers the handling, filming, processing, data input and storage required to retain an application. The fee is not due in any application in which the basic filing fee was paid.

Section 1.25 is amended as proposed to revise paragraph (a) to set the minimum deposit for a deposit account at $1000 and to clarify that an amount sufficient to cover all fees as well as services, copies, etc., requested must always be on deposit. This minimum amount is considered necessary and proper in view of the substantial increase in the amounts of fees being charged to deposit accounts and the processing costs of handling overdrawn accounts. Paragraph (b) clarifies that fees may be charged against a deposit account only where sufficient funds are on deposit to cover the entire amount of the fees. Paragraph (b) also clarifies that an authorization to charge a fee to a deposit account will not be considered payment on the date the authorization to charge is effective as to that fee unless sufficient funds are present in the account to cover the fee.

Section 1.27 is amended as proposed to revise paragraphs (b), (c) and (d) to provide clearly that an independent inventor, small business concern, or nonprofit organization, which is otherwise qualified as a small entity for purposes of paying reduced patent fees under 37 CFR 1.9 and 1.27, is not disqualified therefrom because of a license to a federal agency pursuant to 35 U.S.C. 202(c) (4). Section 1.27 is amended to state that such a license does not constitute a license or a conveyance of rights which would preclude qualifying for small entity status. The amendment is necessary for clarification and to avoid frustrating the intent of Public Law 97-247 and Public Law 96-517 when taken together.

The text of Title 35, United States Code, §202(c) (4) reads as follows:

§202. Disposition of rights

(c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following:

* * * * *

(4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention

throughout the world, and may, if provided in the funding agreement, have additional rights to sublicense any foreign government or international organization pursuant to any existing or future treaty or agreement.

Section 1.28 is amended as proposed to revise paragraph (a) to clarify that a separate verified statement is not required to be filed in a file wrapper continuing application filed pursuant to §1.62, if status as a small entity has been established in the parent application and is still proper. Section 1.28(a) also permits a refund of a fee timely paid in the full amount if within two months of the date of the full timely payment: (1) small entity status is properly established, and (2) a refund is requested. Under §1.28(a), no request for a refund filed later than two months after the date on which a full fee has been paid will be entertained even if additional time is sought to file the request. The two-month period referred to in §1.28(a) is not a period for response under §1.136 and cannot be extended. Section 1.28(a) provides for, in somewhat modified form, the practice presently in effect pursuant to a waiver of §1.28 published at 1023 O.G. 77 on Oct. 26, 1982 and extended at 1027 O.G. 115 on Feb. 15, 1983. The revised refund procedures in §1.28(a) will apply to any fees timely paid in full on or after the effective date of the final rule. The refund procedures set forth in the Patent and Trademark Office *Official Gazette* Notice entitled "Filing of Verified Statements Claiming Small Entity Status" published at 1023 O.G. 77 on October 26, 1982, and the *Official Gazette* Notice entitled "Requirement for Filing Verified Statements Claiming Small Entity Status" published at 1027 O.G. 115 on Feb. 15, 1983, continue in effect until the effective date of the final rule.

Section 1.52(d) is amended as proposed to clarify that the verified English translation of a non-English language application and the fee set forth in §1.17(k) can be filed with the application or within such time as may be set by the Office.

Section 1.53, paragraphs (b) and (d), are amended to clarify in paragraph (b) that the application for patent must be filed in the name of the actual inventor or inventors by giving all their names as required by §1.41. Paragraph 1.53(d) states that if a correspondence address is provided, notice will be provided to that address where the appropriate filing fee or oath or declaration does not accompany the application. Paragraph 1.53(d) also provides that if the required filing fee is not paid, or the processing and retention fee is not paid, within one year of the date of mailing of notification pursuant to paragraph 1.53(d) or within one year from the filing date if no correspondence address is included in the application, the application will be disposed of. The paragraph further indicates that no copies will be provided or certified by the Office of an application which has been disposed of or in which neither the basic filing fee nor the processing fee has been paid. Finally, paragraph 1.53(d) specifies that if no correspondence address is included in the application, applicant will have two months from the filing date to file the fee, oath or declaration and to pay the surcharge set forth in §1.16(e) in order to prevent abandonment of the application.

Section 1.55, paragraph (b), is amended as proposed to correct an error in referring to paragraph (a) of this section.

Section 1.56 is amended as proposed to revise paragraph (b) and add a new paragraph (j). Paragraph 1.56(b) requires that a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form being disclosed pursuant to §1.56 accompany such disclosures unless the copy is not in the possession of the person making the disclosure. In such a situation, a statement to that effect is required. Paragraph 1.56(b) also adds "or her" to refer to both genders. New paragraph 1.56(j) states that applicant will be notified if a copy or statement required pursuant to §1.56(b) is not submitted and that applicant will be given a time period within which to file the copy or a statement that the copy is not in the possession of the person making the disclosure. Such a time period would be extendable under §1.136. Failure to respond in a proper and timely manner would result in abandonment of the application.

Section 1.59 is amended as proposed to clarify that the Office will furnish copies of papers received in the Office at the usual cost only if the basic filing fee or the processing and retention fee has been paid.

Section 1.60 is amended to break the section into paragraph (a) and new paragraph (b). Paragraph (a) adds a reference to amended §1.78(a) to clarify the conditions under which continuation or divisional applications may be filed. New paragraph 1.60(b) provides that the signing of the oath or declaration can be omitted if the prior application was complete as set forth in §1.51(a). New paragraph 1.60(b) also requires that a true copy of the prior complete application be filed. The final rule also clarifies that the copy of the oath or declaration filed must show the applicant's signature or contain an indication it was signed. Paragraph 1.60(b) also provides that only amendments reducing the number of claims or adding a reference to the prior application will be entered before calculating the filing fee and granting the filing date.

Section 1.62 is amended as proposed to revise paragraphs (a) and (d). Paragraph 1.62(a) provides that the file wrapper continuing procedure is applicable only to prior complete applications under §1.51(a). Paragraph 1.62(d) clarifies that the filing fee referred to is the basic filing fee.

Section 1.78 is amended as proposed to change the title to more explicitly define the contents of the section. Paragraph 1.78(a) specifies that in order for an application to claim the benefit of a prior filed copending national application, the prior application must be complete as set forth in §1.51(a) or be entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16, or be entitled to a filing date as set forth in §1.53(b) and have paid the processing and retention fee set forth in §1.21(l) within the time period set forth in §1.53(d).

Section 1.121 is amended as proposed to revise paragraph (e) to specify how amendments to the description and claims are to be made in reissue applications.

Section 1.123 is amended as proposed to clarify that the sketch showing proposed amendments to the drawing with its cover letter should be a separate paper.

Section 1.135 is amended as proposed to remove paragraph (d) since it is not necessary in view of the ability to obtain extensions of time under §1.136(a) by petition and payment of fee.

Section 1.136 is amended as proposed to clarify in paragraphs (a) and (b) that the extension of time practice under this section does not apply in interference proceedings or in reexamination proceedings. Extension of time practice in interference proceedings, including extension of time for appeal or civil action (§1.304), is subject to §1.245. Extension of time practice in reexamination proceedings, including extension of time for appeal or civil action (§1.304), is subject to §1.550(c).

Section 1.191 is amended as proposed to add a new paragraph (d) to provide that the time periods for appeal and review set forth in §§1.191-1.194, 1.196 and 1.197 are subject to the provisions of §1.136 for patent applications or §1.550(c) for reexamination proceedings.

Section 1.192 is amended as proposed to revise paragraph (a) to delete the reference to §1.136 since it is provided for in new §1.191(d).

Section 1.197 is amended as proposed to revise paragraph (b) to delete the reference to §1.136 since it is provided for in new §1.191(d).

Section 1.304 is amended as proposed to clarify that extensions of time periods set forth therein are subject to the provisions of §1.245 for interferences or §1.550(c) where reexamination proceedings are involved rather than to §1.136 which applies in all other cases.

Section 1.550 is amended as proposed to revise paragraph (c) to clarify that the time for taking any action, including appeal, by a patent owner in a reexamination proceeding is governed solely by this section.

Section 1.555 is amended to revise paragraphs (a) and (b). In paragraph 1.555(a) "prior art" statement has been changed to "information disclosure" statement to conform to the language of §1.98. Paragraph 1.555(b) requires that disclosures pursuant to this paragraph be accompanied by a copy of each foreign patent document or non-patent printed publication which is being disclosed and which is in the possession of the person making the disclosure.

Responses to Comments on the Rules

Specific comments were received on a number of the sections. Thirty-five letters presenting written comments were received. No oral testimony was presented at the public hearing conducted on Oct. 18, 1983. All of the comments were considered in adopting the changes set forth herein. Comments appear below with responses thereto.

Comments from Associations

Comment:

The American Patent Law Association commented that they were in full accord with most of the proposed changes. They submitted comments and suggestions from some members. The Patent, Trademark and Copyright Section of the American Bar Association did not render an official section position on the proposed rule changes but polled its members and found the majority of the member responding either to favor the proposed rule changes or to view them as acceptable. They also submitted comments and suggestions from some members. The United States Trademark Association commented on the proposed rules concerning deposit accounts.

Reply:

The efforts and input of these organizations are appreciated. Specific comments and suggestions from individual members of the organizations are covered below.

Comments from Individuals

Comment:

One comment was received that the proposed amendment to §1.6 was unnecessary and possibly improper.

Reply:

The amendment to §1.6 has been adopted as proposed. The amended rule sets out the Patent and Trademark Office practice which has been in effect. No papers are stamped as having arrived in the Office on Saturday, Sunday, or a federal holiday within the District of Columbia no matter how the papers are filed. Article 4, C(3) of the Paris Convention says that the period of priority shall be extended until the first following working day "when the Office is not open for the filing of applications in the country where protection is claimed". To accept papers through use of "Express Mail" or some other way on Saturdays, Sundays or federal holidays within the District of Columbia would raise the possibility that the Office would be viewed as open for the filing of papers on such days and thereby remove the current ability to file a priority claiming application on the first working day if the priority year ended on a nonworking day. The final rule avoids this implication.

Comment: .

One comment indicated that the change to §1.6 should not be applied retroactively to papers filed before the clarifying language was placed in the rule.

Reply:

Any such fact situation will be reviewed through the normal petition procedure.

Comment:

One comment suggested that §1.10 be amended rather than §1.6 with regard to papers deposited as "Express Mail" on a Saturday, Sunday, or federal holiday within the District of Columbia.

Reply:

This comment has been adopted in that both §§1.6 and 1.10 have been amended to avoid any possible confusion.

Comment:

One comment suggested that §1.19(b) (3) be changed to permit the Office to certify material not copied from the records of the Office when reproduction of Office records is not feasible or possible.

Reply:

This comment has not been adopted. The Office will only certify that material is a copy of an Office record if, in fact, the material was reproduced from the Office record.

Comment:

One person commented that the $100 processing and retention fee under §1.21 was excessive and unnecessary.

Reply:

The fee is considered proper and necessary in view of the cost to the Office in handling, filming, processing and storage required to retain an application which has a filing date but in which no basic filing fee has been paid. If this expense is not covered by the applicant, it must be recovered from other sources.

Comment:

Twenty-seven comments were received on the proposal to amend §1.25 to raise to $1000 the minimum balance required in a deposit account. The amount is also referred to in §1.21(b) (2). These comments generally suggested that the $1000 amount was too high for account holders who did not use their accounts for charges other than small fees such as for patent copies. Several comments received acknowledged that the minimum balance for deposit accounts should be raised and suggested various amounts less than the proposed $1000. Several comments suggested a separate account category for persons who do not use their accounts for other than small fees. Two comments suggested that the Office accept credit cards for payment of fees.

Reply:

These comments and suggestions have not been adopted. The fees for filing, processing and issuing of patent and trademark applications have increased so as to make the present $40 minimum balance for deposit accounts totally inadequate. A number of persons objecting to the $1000 minimum balance acknowledged that they used their deposit accounts as a safeguard against failure to calculate or to submit proper fees by a check. An account with a very low balance obviously cannot be effective as a safeguard when a patent filing fee is $300 and a patent issue fee is $500. Dealing with overdrawn accounts causes administrative problems for the Patent and Trademark Office. An authorization to charge an account without sufficient funds to cover a charge will not be effective as payment and may result in loss of rights to an applicant. Also, unnecessary expense will be incurred by an applicant if an insufficient balance in an account results in abandonment of an application and the necessity of filing a petition to revive under 37 CFR 1.137(b) with the requisite $500 fee. Experience has shown that many single practitioners and small firms have failed to have sufficient funds in their accounts when needed. The increase of the minimum balance in deposit accounts to $1000 is seen to be necessary and proper. A failure to raise the minimum balance in deposit accounts to $1000 would serve as an incorrect indication that the Patent and Trademark Office views a minimum balance of less than $1000 as acceptable. If it is not possible for a small firm or individual to maintain a minimum balance of $1000, the deposit account could still be retained and used by paying the service charge set forth in §1.21(b) (2) for any month in which the balance at the end of the month is below $1000. The use of credit cards is not considered viable since legislation would be required to do so.

Comment:

Two comments were received suggesting that a license to a federal agency in an invention made by a federal employee should not preclude the employee from qualifying as a small entity and that §1.27 should be amended to cover this situation.

Reply:

These comments have not been adopted. Such an amendment was not proposed and the public has not had an opportunity to comment on it.

Comment:
One comment suggested that the time for filing a verified statement claiming small entity status to obtain a refund of a filing fee pursuant to §1.28 should run from the date of mailing of the filing receipt due to difficulty in identifying the new application before the filing receipt is received. Three persons suggested that the period for establishing small entity status and requesting a refund should be three months rather than two months as proposed.
Reply:
These comments have not been adopted. An application may be identified before the filing receipt is issued in a number of ways including title, inventor's name, filing date and attorney docket number. Also, a postcard may be included with filing of the application to learn the application serial number. The two month period for obtaining a refund is seen to be adequate since the small entity practice is no longer new and the public has had time to become familiar with it. It allows sufficient time to have a small entity statement executed and sent to the Patent and Trademark Office.
Comment:
One comment suggested that it should be made clear that an application filed in a foreign language (§1.52(d)) without including a signed oath or declaration can receive a filing date under the provisions of §1.53(b).
Reply:
The regulations permit and this reply makes it clear that an application filed in a language other than English can receive a filing date by complying with §1.53(b).
Comment:
Three comments were received suggesting that the proposed language not be added to §1.53(b). One comment alleged that the requirement to name the inventors upon filing a patent application is not required or even authorized by statute.
Reply:
35 U.S.C. 111 says that application for patent "shall be made, or authorized to be made, by the inventor". The rules of practice (§1.41(a)) contain the same requirement. The amendment to §1.53(b) is only clarifying the rules by also placing the requirement in that section. Further, United States patent practice has long required that the inventors be named at the time of filing.
Comment:
One person commented that the language of §1.53(d) should be changed to reflect that only one of the filing fee or processing and retention fee must be paid to prevent the application being disposed of.
Reply:
The language of the rule is seen to be unambiguous in this regard.
Comment:
One person commented that the language of §1.53(d) should be changed to establish a time within which the processing and retention fee may be paid to prevent the application being disposed of when no correspondence address has been provided.
Reply:
The suggestion has been adopted.
Comment:
One person suggested that §1.56(b) which states that copies of disclosed documents must be filed is inconsistent with §1.56(j) which provides that such copies must be filed unless they are not in the possession of the person making the disclosure.
Reply:
The language of §1.56(b) has been modified to clarify this point.
Comment:
Three persons commented that the requirement of § 1.56(b) that copies of disclosed documents be supplied was an unnecessary burden. One person commented similarly on the requirement of §1.555 that copies of disclosed documents be supplied. Another person suggested that the proposed amendment to §1.56(b) would require submission of a complete document even if only a small portion were relevant.
Reply:
The Office agrees with another person who commented that the "requirement that disclosers in application and reexamination proceedings provide copies of disclosed documents which they have is fair and reasonable and should aid the Examiner in making an informed as possible decision in any given proceeding". The portion of a document required to be submitted under §1.56(b) is the portion which is material to the examination of the application under §1.56(a).
Comment:
One person commented that the proposed amendment to §1.78(a) would appear to require that a petition for correction of inventorship under §1.48 be filed in a parent application as well as in the continuing application in which the inventorship was corrected.
Reply:
The amendment to §1.78 does not change the practice regarding the filing of petitions under §1.48.
Comment:
One person commented that §1.123 is unclear as amended in not referring to the paper requesting that amendments to the drawing be made.
Reply:
The Patent and Trademark Office no longer makes amendments to the drawings. Applicants must submit new drawings with the changes or use bonded draftsmen to make the amendments. A paper requesting that the Office make the amendments is therefore inappropriate.
Comment:
Four persons commented that §1.135(d) should not be deleted since they thought it desirable to be able to ratify unsigned papers without paying any fee.
Reply:
The statute and rules now provide for obtaining extensions of time through simple petition and payment of fee and for revival through a simple statement that the abandonment was unintentional and the payment of a fee. Further, a filing date can now be obtained on filing an application without the oath or declaration. The handling of unsigned papers by the Patent and Trademark Office causes administrative problems and expense to the Office and delays the processing of applications. The emergency-type situations involving loss of rights which the previous practice was intended to cover have been substantially eliminated by the changes in the law and rules.
Comment:
One person commented that §1.191(d) was undecipherable in that it refers to a number of other rules.
Reply:
This section was intended to serve as a point of summarization for the applicable extension of time rules in appeals before the Board of Appeals. The section is seen to adequately serve that purpose.
Comment:
One person commented that the final sentence of §1.555(b) needs clarification.
Reply:
This sentence was not changed by the proposed rules and is seen to be clear as written.
Comment:
One person commented that proposed §1.555(b) requires copies and does not make any exceptions or qualifications on this requirement.
Reply:
The language of §1.555(b) has been clarified to require filing of a copy of each foreign patent document or nonpatent printed publication which is being disclosed and which is in the possession of the person making the disclosure.
Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.
The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*
The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354). Public Laws 96-517 and 97-247 have both taken into consideration the impact they may have on small entities.
The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.
This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to filing of small entity statements in applications filed under §1.62 will be reduced.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.
Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and Public Law 97-247, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

37 CFR, Part 1, is amended as follows:
1. Section 1.5 is amended by revising paragraph (a) to read as follows:

§1.5 Identification of application, patent or registration.

(a) When a letter concerns an application for patent, it should state the name of the applicant, the title of the invention, the serial number or international application number of the application, the date of filing the same, and, if known, the group art unit or other unit within the Patent and Trademark Office responsible for considering the letter and the name of the examiner or other person to which it has been assigned.

* * * * *

2. Section 1.6 is amended by revising paragraph (a) to read as follows:

§1.6 Receipt of letters and papers.

(a) Letters and other papers received in the Patent and Trademark Office are stamped with the date of receipt except where such letters and papers are filed in accordance with §1.10. Any such letters and papers filed in accordance with §1.10 will be stamped with the date of deposit as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday, or federal holiday within the District of Columbia in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or federal holiday within the District of Columbia. No papers are received in the Patent and Trademark Office on Saturdays, Sundays or federal holidays within the District of Columbia.

* * * * *

3. Section 1.10 is amended by revising paragraphs (a) and (c) to read as follows:

§1.10 Filing of papers and fees by "Express Mail" with certificate.

(a) Any paper or fee to be filed in the Patent and Trademark Office can be filed utilizing the "Express Mail Post Office to Addressee" service of the United States Postal Service and be considered as having been filed in the Office on the date the paper or fee is shown to have been deposited as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday, or federal holiday within the District of Columbia. See §1.6(a).

* * * * *

(c) The Patent and Trademark Office will accept the certificate of mailing by "Express Mail" and accord the paper or fee the certificate date under 35 U.S.C. 21(a) (unless the certificate date is a Saturday, Sunday, or federal holiday within the District of Columbia—see §1.6(a)) without further proof of the date on which the mailing by "Express Mail" occurred unless a question is present regarding the date of mailing. If more than a reasonable time has elapsed between the certificate date and the Patent and Trademark Office receipt date or if other questions regarding the date of mailing are present, the person mailing the paper or fee may be required to file a copy of the "Express Mail" receipt showing the actual date of mailing and a statement from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.
4. Section 1.14 is amended by revising paragraph (b) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(b) Except as provided in §1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application which is open to inspection pursuant to §1.139, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant. Complete applications (§1.51(a)) which are abandoned may be destroyed after 20 years from their filing date, except those to which particular attention has been called and which have been marked for preservation. Abandoned applications will not be returned.

* * * * *

5. Section 1.19 is amended by revising paragraph (b) (3) to read as follows:

§1.19 Document supply fees.

* * * * *

(b) * * *

(3) For comparing copies, made from Patent and Trademark Office records but not prepared by the Patent and Trademark Office, with the original, prior to certification of the copies, per page	$0.10

* * * * *

6. Section 1.21 is amended by revising paragraph (b) (2) and by adding a new paragraph (1) to read as follows:

§1.21 Miscellaneous fees and charges.

* * * * *

(b) * * *

(2) Service charge for each month when the balance at the end of the month is below $1000	$2.00

* * * * *

(1) For processing and retaining any application abandoned pursuant to §1.53(d) unless the required basic filing fee has been paid	$100.00.

7. Section 1.25 is revised to read as follows:

§1.25 Deposit accounts.

(a) For the convenience of attorneys, agents, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee for establishing a deposit account (§1.21(b)(1)). A minimum deposit of $1000 or more, depending on the activity of the individual account, is required. At the close of each month's business, a statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit value. An amount sufficient to cover all fees, services, copies, etc., requested must always be on deposit. A service charge (§1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $1000.

(b) Filing, issue, appeal, international-type search report, international application processing, petition, and post-issuance fees may be charged against these accounts if sufficient funds are on deposit to cover such fees. A general authorization to charge all fees, or only certain fees, set forth in §§1.16 to 1.18 to a deposit account containing sufficient funds may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed. An authorization to charge to a deposit account the fee for a request for reexamination pursuant to §1.510 and any other fees required in a reexamination proceeding in a patent may also be filed with the request for reexamination. An authorization to charge a fee to a deposit account will not be considered payment of the fee on the date the authorization to charge the fee is effective as to the particular fee to be charged unless sufficient funds are present in the account to cover the fee.

8. Section 1.27 is amended by revising paragraphs (b), (c) and (d) to read as follows:

§1.27 Statement of status as small entity.

* * * * *

(b) Any verified statement filed pursuant to paragraph (a) of this section on behalf of an independent inventor must be signed by the independent inventor except as provided in §§1.42, 1.43, or 1.47 of this part, and must aver that the inventor qualifies as an independent inventor in accordance with §1.9(c) of this part. Where there are joint inventors in an application, each inventor must file a verified statement establishing status as an independent inventor in order to qualify as a small entity. Where any rights have been assigned, granted, conveyed, or licensed, or there is an obligation to assign, grant, convey, or license, any rights to a small business concern, a nonprofit organization, or any other individual, a verified statement must be filed by the individual, the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization averring to their status. For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a license as set forth in §1.9 of this part.

(c) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a small business concern must (1) be signed by the owner or an official of the small business concern empowered to act on behalf of the concern; (2) aver that the concern qualifies as a small business concern as defined in §1.9(d); and (3) aver that exclusive rights to the invention have been conveyed to and remain with the small business concern, or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9. Where the rights of the small business concern as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such. For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a license as set forth in §1.9 of this part.

(d) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a nonprofit organization must (1) be signed by an official of the nonprofit organization empowered to act on behalf of the organization; (2) aver that the organization qualifies as a nonprofit organization as defined in §1.9(e) of this part specifying under which one of §1.9(e)(1), (e)(2), (e)(3), or (e)(4) of this part the organization qualifies; and (3) aver that exclusive rights to the invention have been conveyed to and remain with the organization or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9 of this part. Where the rights of the nonprofit organization as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such. For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a conveyance of rights as set forth in this paragraph.

9. Section 1.28 is amended by revising paragraph (a) to read as follows:

§1.28 Effect on fees of failure to establish status, or change status, as a small entity.

(a) The failure to establish status as a small entity (§§1.9(f) and 1.27 of this part) in any application or patent prior to paying, or at the time of paying, any fee precludes payment of the fee in the amount established for small entities. A refund pursuant to §1.26 of this part, based on establishment of small entity status, of a portion of fees timely paid in full prior to establishing status as a small entity may only be obtained if a verified statement under §1.27 and a request for a refund of the excess amount are filed within two months of the date of the timely payment of the full fee. The two-month time period is not extendable under §1.136. Status as a small entity is waived for any fee by the failure to establish the status prior to paying, at the time of paying, or within two months of the date of payment of, the fee. Status as a small entity must be specifically established by a verified statement filed in each application or patent in which the status is available and desired, except those applications filed under §1.60 or §1.62 of this part where the status as a small entity has been established in a parent application and is still proper. Once status as a small entity has been established in an application or patent, the status remains in that application or patent without the filing of a further verified statement pursuant to §1.27 of this part unless the Office is notified of a change in status. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established, except those filed under §1.60 or §1.62 of this part. Applications filed under §1.60 or §1.62 of this part must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired.

* * * * *

10. Section 1.52 is amended by revising paragraph (d) to read as follows:

§1.52 Language, paper, writing, margins.

* * * * *

(d) An application may be filed in a language other than English. A verified English translation of the non-English language application and the fee set forth in §1.17(k) are required to be filed with the application or within such time as may be set by the Office.

11. Section 1.53 is amended by revising paragraphs (b) and (d) to read as follows:

§1.53 Serial number, filing date, and completion of application.

* * * * *

(b) The filing date of an application for patent is the date on which (1) a specification containing a description pursuant to §1.71 and at least one claim pursuant to §1.75, and (2) any drawing required by §1.81(a), are filed in the Patent and Trademark Office in the name of the actual inventor or inventors as required by §1.41. No new matter may be introduced into an application after its filing date (§1.118).

* * * * *

(d) If the application which has been accorded a filing date pursuant to paragraph (b) of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified, if a correspondence address has been provided, and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. If the required filing fee is not timely paid, or if the processing and retention fee set forth in §1.21(1) is not paid within one year of the date of mailing of the notification required by this paragraph, the application will be disposed of. No copies will be provided or certified by the Office of an application which has been disposed of or in which neither the required basic filing fee nor the processing and retention fee has been paid. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section. If no correspondence address is included in the application, applicant has two months from the filing date to file the fee, oath or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application or one year from the filing date to pay the processing and retention fee set forth in §1.21(1) to prevent disposal of the application.

* * * * *

12. Section 1.55 is amended by revising paragraph (b) to read as follows:

§1.55 Claim for foreign priority.

* * * * *

(b) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his or her attorney or agent, when submitting a claim for such right as specified in paragraph (a) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he or she has satisfied himself or herself that to the best of his or her knowledge the applicant, when filing his or her application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

13. Section 1.56 is amended by revising paragraph (b) and by adding a new paragraph (j) to read as follows:

§1.56 Duty of disclosure; fraud; striking or rejection of applications.

* * * * *

(b) Disclosures pursuant to this section must be accompanied by a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form which is being disclosed or by a statement that the copy is not in the possession of the person making the disclosure and may be made to the Office through an attorney or agent having responsibility for the preparation or prosecution of the application or through an inventor who is acting in his or her own behalf. Disclosure to such an attorney, agent or inventor shall satisfy the duty, with respect to the information disclosed, of any other individual. Such an attorney, agent or inventor has no duty to transmit information which is not material to the examination of the application.

* * * * *

(j) If any disclosure pursuant to this section does not include a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form which is being disclosed or a statement that a copy thereof is not in the possession of the person making the disclosure, applicant will be so notified and given a period of time within which to file the copy or a statement that a copy is not in the possession of the person making the disclosure. The time period set may be extended under §1.136.

14. Section 1.59 is revised to read as follows:

§1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to §1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost of any application in which either the required basic filing fee (§1.16) or the processing and retention fee (§1.21(1)) has been paid.

15. Section 1.60 is revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

(a) A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121 and §1.78(a)), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application.

(b) An applicant may omit signing of the oath or declaration in a continuation or divisional application if (1) the prior application was a complete application as set forth in §1.51(a) and (2) applicant files a true copy of the prior complete application as filed including the specification (including claims), drawings, oath or declaration

showing the applicant's signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date.

16. Section 1.62 is amended by revising paragraphs (a) and (d) to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification, drawings and oath or declaration from a prior complete application (§1.51(a)) to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior complete application.

* * * * *

(d) If an application which has been accorded a filing date pursuant to paragraph (a) of this section does not include the appropriate basic filing fee pursuant to paragraph (b) of this section, or an oath or declaration by the applicant in the case of a continuation-in-part application pursuant to paragraph (c) of this section, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification of a defect pursuant to paragraph (a) of this section.

* * * * *

17. Section 1.78 is amended by revising the title and paragraph (a) to read as follows:

§1.78 Claiming benefit of earlier filing date and cross-references to other applications.

(a) An application may claim an invention disclosed in the same applicant's prior filed copending national application or international application designating the United States of America. In order for an application to claim the benefit of a prior filed copending national application, the prior application must be (1) complete as set forth in §1.51, or (2) entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16; or (3) entitled to a filing date as set forth in §1.53(b) and have paid therein the processing and retention fee set forth in §1.21(l) within the time period set forth in §1.53(d). Any application claiming the benefit of a prior filed copending national or international application must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by serial number and filing date or international application number and international filing date and indicating the relationship of the applications. Cross-references to other related applications may be made when appropriate. (See §1.14(b)).

* * * * *

18. Section 1.121 is amended by revising paragraph (e) to read as follows:

§1.121 Manner of making amendments.

* * * * *

(e) In reissue applications, both the descriptive portion and the claims are to be amended by either (1) submitting a copy of a portion of the description or an entire claim with all matter to be deleted from the patent being placed between brackets and all matter to be added to the patent being underlined, or (2) indicating the exact word or words to be stricken out or inserted and the precise point where the deletion or insertion is to be made. Any word or words to be inserted must be underlined. See §1.173.

* * * * *

19. Section 1.123 is revised to read as follows:

§1.123 Amendments to the drawing.

No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by bonded draftsmen, at applicant's expense, or by the submission of substitute drawings by applicant. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed for approval by the examiner and should be a separate paper.

20. Section 1.135 is amended by removing paragraph (d).

21. Section 1.136 is revised to read as follows:

§1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a) If an applicant is required to respond within a nonstatutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in §1.17 are filed prior to or with the response, unless (1) applicant is notified otherwise in an Office action or (2) the application is involved in an interference declared pursuant to §1.207. The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available. See §1.245 for extension of time in interference proceedings and §1.550(c) for extension of time in reexamination proceedings.

(b) When a response with petition and fee for extension of time cannot be filed pursuant to paragraph (a) of this section, the time for response will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. In no case can any extension carry the date on which response to an Office action is due beyond the maximum time period set by statute or be granted when the provisions of paragraph (a) of this section are available. See §1.245 for extension of time in interference proceedings and §1.550(c) for extension of time in reexamination proceedings.

22. Section 1.191 is amended by adding a new paragraph (d) to read as follows:

§1.191 Appeal to Board of Appeals.

* * * * *

(d) The time periods set forth in §§1.191 through 1.194, 1.196 and 1.197 are subject to the provisions of §1.136 for patent applications or §1.550(c) for reexamination proceedings.

23. Section 1.192 is amended by revising paragraph (a) to read as follows:

§1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under §1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in §1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. The brief must include a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved.

* * * * *

24. Section 1.197 is amended by revising paragraph (b) to read as follows:

§1.197 Action following decision.

* * * * *

(b) A single request for rehearing or reconsideration, or modification of the decision, may be made if filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states.

* * * * *

25. Section 1.304 is amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time provided pursuant to §1.197(b) or §1.256(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. The time periods set forth herein are subject to the provisions of §1.136 or §1.550(c) as to decisions of the Board of Appeals, or §1.245 as to decisions of the Board of Patent Interferences.

* * * * *

26. Section 1.550 is amended by revising paragraph (c) to read as follows:

§1.550 Conduct of reexamination proceedings.

* * * * *

(c) The time for taking any action by a patent owner in a reexamination proceeding will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the patent owner is due, but in no case will the mere filing of the request effect any extension.

* * * * *

27. Section 1.555 is amended by revising paragraphs (a) and (b) to read as follows:

§1.555 Duty of disclosure in reexamination proceedings.

(a) A duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. All such individuals who are aware, or become aware, of patents or printed publications material to the reexamination which have not been previously made of record in the patent file must bring such patents or printed publications to the attention of the Office. An information disclosure statement, preferably in accordance with §1.98, should be filed wihin two months of the date of the order for reexamination, or as soon thereafter as possible in order to bring such patents or printed publications to the attention of the Office.

(b) Disclosures pursuant to this section must be accompanied by a copy of each foreign patent document or non-patent printed publication which is being disclosed or by a statement that the copy is not in the possession of the person making the disclosure and may be made to the Office through an attorney or agent having responsibility on behalf of the patent owner for the reexamination proceeding or through a patent owner acting in his or her own behalf. Disclosure to such an attorney, agent or patent owner shall satisfy the duty of any other individual. Such an attorney, agent or patent owner has no duty to transmit information which is not material to the reexamination.

* * * * *

Nov. 30, 1983.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1038 O.G. 275]

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(52) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 40442-49092]

Final Rules for Patent Maintenance Fees

Agency: Patent and Trademark Office, Commerce
Action: Notice of final rulemaking
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part I of Title 37, Code of Federal Regulations, to provide rules and procedures for the payment of patent maintenance fees. Public Law 96–517, enacted on Dec. 12, 1980 and Public Law 97–247, enacted on Aug. 27, 1982, provided for the payment of maintenance fees at intervals of 3½, 7½ and 11½ years from the date of grant of the patent for maintaining in force an original patent, a reissue patent of an invention, and under Public Law 96–517, a plant patent and reissues thereof. The changes provide specific rules and procedures which will assist patentees in avoiding the inadvertent expiration of a patent for failure to pay the appropriate maintenance fee.
Effective Date: Nov. 1, 1984
For Further Information Contact: R. Franklin Burnett by telephone at (703) 557-3054 or by mail to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to 1) establish a set of rules and procedures for the payment of patent maintenance fees; and 2) effect the provisions of Public Laws 96–517 and 97–247 with respect to payment of maintenance fees. The proposed rules were published on Apr. 24, 1984, in Vol. 49 of the *Federal Register,* pages 17692 through 17698; and on May 8, 1984, at Vol. 1042 of the *Official Gazette,* pages

22 through 38. A public hearing was held on the proposed rule changes on June 26, 1984.

A public briefing on the Office's maintenance fee payment plans was announced at 49 *Federal Register* 2806 on Jan. 23, 1984, and at 1038 *Official Gazette* 293 on Jan. 31, 1984. The public briefing was held on Feb. 22, 1984.

Discussion of Specific Rules

Section 1.1., is amended as proposed to add a new paragraph (d) to provide a "Box M. Fee" in the Patent and Trademark Office to which all maintenance fee correspondence and payments should be directed. Changes in small entity status in patents and changes in the "fee address" under §1.363, as well as payments of maintenance fees should be directed to "Box M. Fee".

Section 1.9, paragraph (d) is amended as proposed to make a change in citation and title of the rule of the Small Business Administration which relates to the small business size standard for paying reduced patent fees. This change was published in the Federal Register as a final rule on Feb. 9, 1984 at 49 Fed. Reg. 5024–5048. The wording of the rule itself was not changed. This change is made to bring the wording of title 37, Code of Federal Regulations into conformance with title 13, Code of Federal Regulations.

Section 1.17, is amended as proposed to establish in paragraph (h) a fee of $120 for review of a decision refusing to accept and record payment of a maintenance fee filed prior to the expiration of a patent. Paragraph (h) of §1.17 is also amended to establish a fee of $120 for reconsideration of a decision on petition refusing to accept the delayed payment of a maintenance fee in an expired patent.

Section 1.19, is amended as proposed to add new paragraphs (f) and (g). New paragraph (f) provides for a $10.00 fee for a microfiche copy of a patent file wrapper record. Microfiche copies of these patent files have recently become available for patents issued after Jan. 1, 1984. No fee had previously been set by rule for this service. This fee is not directly related to maintenance fees but is set at this time for convenience. New paragraph (g) establishes a $3.00 fee for providing an uncertified statement indicating either the status of payment of maintenance fees due on a patent or the expiration of a patent. This charge does not apply to any receipt normally provided to the fee addressee as a result of the payment of a maintenance fee, but does apply in any other instance when written evidence of the status of payment of maintenance fees on a patent is requested, whether by the patentee or a member of the public.

Section 1.20, is amended as proposed to add new paragraphs (k), (l) and (m). New paragraph (k) provides for a $100.00 surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982. Since Public Law 96–517 did not provide for small entities, the surcharge amount of $100 applies to all such patents. New paragraph (l) provides for a $100 surcharge for patentees other than a small entity and a $50 surcharge for small entity patentees when paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant based on an application filed on or after Aug. 27, 1982. This surcharge of $100 is subject to a 50% reduction for small entities pursuant to Public Law 97–247. New paragraph (m) provides for a $500 surcharge for accepting payment of a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee. This $500 surcharge applies only under Public Law 97–247 where the patent is based on an application filed on or after Aug. 27, 1982 and where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable. The requirement that the delay be "unavoidable" is the same as that for reviving an abandoned application under 35 U.S.C. 133. However, the amount of evidence required will depend upon when the showing that the delay was "unavoidable" is made. This surcharge does not apply to patents based on applications filed prior to Aug. 27, 1982 since acceptance of a maintenance fee after expiration of a patent for non-timely payment is not possible under Public Law 96–517. Since this surcharge is provided for under 35 U.S.C. 41(c), it is not subject to a 50% reduction for small entities. The surcharge in paragraph (m) is not in addition to the surcharge in paragraph (l), but is in lieu thereof.

Section 1.33 is amended as proposed to add a new paragraph (d) which allows a "correspondence address" or change thereto to be filed during the enforceable life of the patent. The "correspondence address" will be used in correspondence relating to maintenance fees unless a separate "fee address" has been specified. Paragraph (d) also includes a reference to §1.363 relating to the "fee address" to be used for maintenance fee purposes.

New §1.362 is added to provide for times for payment of maintenance fees. New paragraph (a) sets forth the requirement that maintenance fees as set forth in §1.20(e)-(j) must be paid in order to maintain a patent in force if the application maturing into a patent was filed on or after Dec. 12, 1980 and is subject to the payment of maintenance fees. The maintenance fee amounts set in §1.20(e)-(g) are subject to adjustment in accordance with the provisions of Public Law 96–517. The maintenance fee amounts set in §1.20(h)-(j) are subject to adjustment in accordance with the provisions of Public Law 97–247 on Oct. 1, 1985, and every third year thereafter, to reflect fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Other patent fees are also subject to similar adjustments.

New paragraph (b) of §1.362 stipulates that no maintenance fees are due for plant patents if the plant patent application was filed on or after Aug. 27, 1982 or for any design patents. Maintenance fees are not required for a reissue patent if the patent being reissued did not require maintenance fees. New paragraph (c) defines the pertinent application filing dates for purposes of determining whether maintenance fees are applicable. Paragraph (c) (1) establishes that for national applications not claiming benefit of an earlier application, the actual United States filing date controls. Paragraph (c) (2) establishes that for national applications claiming benefit of an earlier foreign application under 35 U.S.C. 119, the United States filing date controls. Paragraph (c) (3) provides that for continuing national applications claiming benefit of a prior application under 35 U.S.C. 120, the actual United States filing date of the continuing application is the controlling date. Paragraph (c) (4) provides that for a reissue application, the United States filing date of the application which matured into the original patent upon which the reissue application is based will control. Paragraph (c) (5) establishes that for an international application which has entered the United States as a Designated Office under 35 U.S.C. 371, the international filing date granted under Article 11(1) of the Patent Cooperation Treaty controls. This is consistent with 35 U.S.C. 363.

Paragraph (d) of new §1.362 sets forth the time periods when maintenance fees can be paid without a surcharge. Those periods, referred to generally as the "window period," are the six-month periods preceding each due date, i.e., 3 years through 3 years and six months, 7 years through 7 years and six months, and 11 years through 11 years and six months after grant of the patent. The "due dates" are defined in 35 U.S.C. 41(b). A maintenance fee paid on the last day of a window period can be paid without surcharge. The last day of a window period is the same date (anniversary date) the patent was granted 3 years and six months, 7 years and six months, or 11 years and six months after grant of the patent. Paragraph (d) has been modified from the proposal to add "and" between items (2) and (3) and change the comma at the end of the paragraph to a period.

Paragraph (e) of new §1.362 sets forth the grace periods during which maintenance fees, under either Public Law 96–517 or Public Law 97–247, may be paid with the surcharge under §1.20(k) or (l). The grace periods are the six-month periods immediately following each due date, i.e., after 3 years and six months and up to 4 years, after 7 years and six months and up to 8 years, and after 11 years and six months and up to 12 years after grant of the patent. A maintenance fee may be paid with the surcharge on the same date (anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant to prevent the patent from expiring.

Paragraph (f) of new §1.362 specifies that where the last day for paying a maintenance fee falls on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee may be paid on the next succeeding day which is not a Saturday, Sunday, or federal holiday. For example, if the "window period" provided by paragraph (d) for paying a maintenance fee without surcharge ended on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee can be paid without surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday. Likewise, if the grace period provided by paragraph (e) for paying a maintenance fee with surcharge ended on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee could be paid with surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday. In the latter situation, the failure to pay the maintenance fee and surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday will result in the patent expiring on a date (4, 8, or 12 years after the date of grant) earlier than the last date on which the maintenance fee and surcharge could be paid. This situation results from the provisions of 35 U.S.C. 21, but those provisions do not extend the expiration date of the patent if the maintenance fee and any required surcharge are not paid when required. For example, if the grace period ended on Saturday, the maintenance fee and surcharge could be paid on the next succeeding business day, e.g. Monday, but the patent will have expired at midnight on Saturday if the maintenance fee and surcharge were not paid on the following Monday. Paragraph (f) has been modified from the proposal to explicitly refer to "any necessary surcharge" for clarity since the ability to pay on the next succeeding day which is not a Saturday, Sunday, or federal holiday within the District of Columbia applies to the maintenance fee, including any necessary surcharge.

Paragraph (g) of new §1.362 establishes that if the proper fees are not received within the time period specified in paragraphs (d), (e), or (f) the patent expires at the end of the grace period set forth in paragraph (e). Paragraph (g) also specifies that a patent which expires for the failure to pay the maintenance fee will expire at the end of the same date (anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant.

New §1.363 is added as proposed to provide for a "fee address" for maintenance fee purposes. New paragraph (a) specifies that the correspondence address used during prosecution of the application will be used unless 1) a "fee address" is provided for maintenance fee purposes when submitting the issue fee, 2) a correspondence address change for all purposes is filed after payment of the issue fee, or 3) a "fee address" or a change in the "fee address" is filed after payment of the issue fee.

Paragraph (b) of new §1.363 specifies that an assignment does not result in a change of address for maintenance fee purposes. Due to the possible expiration of a patent for failure to timely pay the appropriate maintenance fee, patentees should ensure that the Patent and Trademark Office is properly notified of the proper "fee address" to which all maintenance fee communications are to be directed. Under both Public Law 96–517 and Public Law 97–247 the burden is on the patentee to timely pay maintenance fees. The Patent and Trademark Office will attempt to assist patentees through appropriate courtesy notices. However, the failure to receive one or more notices will not relieve the patentee of the obligation to timely pay the appropriate maintenance fee to prevent the patent from expiring by operation of law if the maintenance fee is not paid. Section 1.363 does not provide for maintenance fee correspondence to be directed to more than one address.

New §1.366 is added to establish the guidelines and procedures for submission of maintenance fees, including any necessary surcharges. New paragraph (a) states that the patentee may pay maintenance fees and any necessary surcharges or any person or organization may pay maintenance fees and any necessary surcharges on behalf of the patentee without filing in the Patent and Trademark Office evidence of authorization by the patentee to pay maintenance fees. This will enable patentees to pay the maintenance fees and any necessary surcharges themselves or authorize some person or organization to pay maintenance fees and any necessary surcharges on their behalf. No verification of the authority to pay maintenance fees and any necessary surcharges in a particular patent will be made by the Patent and Trademark Office. While anyone may pay the maintenance fees and any necessary surcharges on a patent, any Patent and Trademark Office notices relating to maintenance fees will be mailed to the "fee address" set forth in §1.363. Paragraph (a) has been modified from the proposal to explicitly refer to "any necessary surcharges" for clarity.

Paragraph (b) of new §1.366 specifies that a maintenance fee and any necessary surcharge for a patent must be submitted in the amount due on the date the maintenance fee and any necessary surcharge are paid, and at the proper time, i.e., within the periods set forth in §1.362. Paragraph (b) has been modified from the proposal by changing "proper amount" to "amount due on the date the maintenance fee and any necessary surcharge are paid." This change results from adoption of a suggestion that a maintenance fee payment made during the window period should not require adjustment if the maintenance fees are thereafter increased to reflect increases in the Consumer Price Index. Under paragraph (b) as adopted herein, if the amount of the maintenance fee is correct on the date it is paid and credited to the patent, a later change in the maintenance fees to reflect changes in the Consumer Price Index will not require a modification in the amount paid. However, in order for the maintenance fee to be considered paid it must be submitted in accordance with §1.366. Paragraph (b) has also been modified from the proposal to explicitly refer to §1.362(f) for purposes of clarity where the last day for paying a maintenance fee with or without a surcharge falls on a Saturday, Sunday, or a federal holiday within the District of Columbia. In such circumstances, the fee with any necessary surcharge may be paid on the next succeeding day which is not a Saturday, Sunday, or federal holiday. The maintenance fee and any necessary surcharge may be paid in the manner set forth in §1.23, i.e., it should be in United States specie, Treasury notes, national bank notes, post office money orders, or by certified check. As indicated in §1.23, if the maintenance fee payment is sent in any other form, the Office may delay or cancel the credit until collection is made. For example, a personal or other uncertified check drawn on a United States bank which is not immediately negotiable, e.g., because of lack of signature or insufficient funds, will not constitute payment of a maintenance fee. However, a personal check drawn on a United States bank can be used if it is immediately negotiable. Any remittance from foreign countries must be payable and immediately negotiable in the United States for the full amount of the maintenance fee required.

Paragraph (b) of new §1.366 also provides that maintenance fees may be paid by an authorization to charge a deposit account established pursuant to §1.25. The authorization to charge the deposit account must be submitted within the periods set forth in §1.362 and must be limited to maintenance fees payable on the date of submission. The authorization to charge the deposit account can not, under paragraph (b), be submitted prior to the third, seventh, or eleventh year after the grant of the patent. If an authorization to charge a deposit account were submitted to pay the maintenance fee due at three years and six months after grant, a new authorization to

charge a deposit account or other form of payment will have to be submitted at the appropriate time for each of the maintenance fees due at 7 years and six months and 11 years and six months. Paragraph (b) also specifies that any payment or authorization filed at any time other than that set forth in §1.362(d), (e) or (f) will not serve as a payment of the maintenance fee, except insofar as a delayed payment of the maintenance fee is accepted by the Commissioner pursuant to §1.378. Paragraph (b) also specifies that a payment of less than the required amount, a payment in a manner other than that set forth in §1.23, or the filing of an authorization to charge a deposit account having insufficient funds, will not constitute payment of a maintenance fee on a patent. The authorization is required to authorize the immediate charging of the fee to the deposit account. An authorization would be improper if it only authorized the fee to be charged at a later date, e.g., on the last possible day of payment without surcharge. Such an authorization would not serve as payment of the maintenance fee. Any payment which fails to result in the entire proper amount of the maintenance fee being present on the due date will not constitute payment of the maintenance fee. Paragraph (b) also specifies that the certificate of mailing procedures of §1.8 or the mailing by "Express Mail" provisions of §1.10 may be utilized in paying maintenance fees. The specific requirements of either §1.8 or §1.10 must be fully complied with if either is used.

Paragraph (c) of new §1.366 establishes the data necessary and desired when submitting maintenance fee payments and any necessary surcharges. New paragraph (c) specifies that maintenance fee payments and any necessary surcharges must include at least the 1) patent number and 2) United States application serial number. Paragraph (c) has been modified from the proposal to explicitly refer to "any necessary surcharges" for clarity since the identifying information must also be supplied when submitting surcharges. The wording of §1.366(c) has also been changed from the proposal to clarify that the required application serial number is that of the application upon which the patent issued. This change from the proposal makes clear that the serial number required to be submitted is not that of a prior parent application but rather, the actual application which matured into the patent for which maintenance fees are to be paid. If the maintenance fee is being paid on a reissue patent, the serial number required is that of the reissue application. Since this required information will be used as a cross-check to ensure that the maintenance fee is properly credited, the application serial number must correspond to the patent which issued therefrom. If less than the required information is submitted, the Office will not credit the payment. Additionally, if notice is required that the proper identifying data has not been submitted, it would result in requiring the payment of a surcharge if the necessary data is submitted after the "window period" closes. If the required information is not submitted until after the end of the grace period, the patent would have expired because of the failure to properly identify the patent to which the maintenance fee payment is to be credited prior to the expiration of the grace period. The patentee in such a circumstance could proceed under §1.378, if appropriate, or could file a petition under §1.377 within the period set therein seeking to have the maintenance fee accepted as timely even though all of the proper identifying data was not present prior to the expiration of the grace period.

Paragraph (d) of new §1.366 specifies that the following information should also be submitted for each patent on which a maintenance fee or surcharge is paid: 1) whether it is the 3½, 7½, or 11½ year fee, 2) whether small entity status is being changed or claimed with the payment, 3) the amount of the maintenance fee and any surcharge being submitted, 4) any assigned payor number, 5) patent issue date and 6) United States application filing date. Paragraph (d) has been modified from the proposal to explicitly refer to "any necessary surcharges" for clarity. Paragraph (d) has also been changed from the proposal to emphasize that when the payment is being made on a reissue patent the required patent number and application serial number are those of the reissue patent and reissue application. Where the payment is a maintenance fee and any necessary surcharge on a reissue patent, in addition to the information requested for all payments, paragraph (d) as adopted herein also requests certain identifying data relating to the original patent, i.e., original patent number, original patent issue date, and original United States application filing date. The reason for requesting the original patent number, original patent issue date, and original United States application filing date is that the original filing and issue dates are the dates which control if and when maintenance fees must be paid to prevent the reissue patent from expiring. The reference to a payor number has been added. A payor number will be assigned to each "fee address" in order to facilitate data input and subsequent changes in the location of the "fee address." Details of the "payor number" system will be announced to the public in a future *Official Gazette* notice. Although the submission of the information requested in paragraph (d) is not mandatory, it would expedite the processing of the maintenance fee payments.

The final rule thus requires less mandatory information, i.e., the patent number and U.S. application serial number, than would have been required by the proposed rule. The required information is considered to be the least that is required to make a cross-check and thus assure that the maintenance fee is being credited to the proper patent. The patent issue date and the application filing date, which were included in the proposed rule as mandatory information, are included in the final rule as desirable, but not mandatory, information The effect of this change is that an error in either the patent issue date or the application filing date, or both, by the person paying the maintenance fee would not result in a refusal to accept the maintenance fee and to credit the payment thereof to the patent, if the patent number and United States application serial number were correct, i.e., in agreement. However, if any error included either the patent number or the United States application serial number such that they were not in agreement the payment would not be accepted and credited until correction was made. The date of the correction would be the date the maintenance fee payment is credited as being made.

Paragraph (e) of new §1.366 specifies that maintenance fee payments and any surcharges relating thereto must be submitted separate from any other payments for fees or charges, whether submitted in the manner set forth in §1.23 or by an authorization to charge a deposit account. Maintenance fee payments and surcharge payments relating thereto which are co-mingled with payments for other fees or charges, e.g., application filing fees, issue fees, petition fees, document supply fees, etc., will not be accepted. The maintenance fees require processing by a separate area of the Office and are not processed in the same manner as other fees and charges. Maintenance fees for a number of patents can be submitted together in one submission and one payment. Paragraph (e) specifies that if maintenance fee payments for more than one patent are submitted together, they should be submitted on as few sheets as possible, listing the patent numbers in increasing patent number order. If the payment submitted, which can be made as a single payment, is insufficient to cover the maintenance fees and any surcharges for all the listed patents, the payment will be applied in the order the patents are listed. In such a circumstance where the fees are insufficient, the maintenance fee and any surcharge for one or more of the last listed patents will not be paid.

Paragraph (f) of new §1.366 serves as a reminder to patentees of the necessity to check for the loss of small entity status prior to paying each maintenance fee on a patent. This is already a requirement of §1.28(b). Paragraph (f) provides that notification of any change in status resulting in loss of entitlement to small entity status must be filed in a patent prior to paying, or at the time of paying, the earliest maintenance fee due after the date on which status as a small entity is no longer appropriate. If status as a small entity has been previously established by filing a statement and such status is checked

and is found to be proper, no notification is required. It is not necessary to file new verified statements claiming small entity status at this point if the status as a small entity has been established and is still proper even if rights have been transferred to a small entity who has not previously filed a verified statement. The requirement is to notify the Patent and Trademark Office of the loss of entitlement and to pay the maintenance fee in the proper amount for other than a small entity where appropriate. The refund provisions of §1.28(a) for later submitted small entity statements will apply to maintenance fees.

Paragraph (g) of new §1.366 provides that maintenance fees and surcharges relating thereto will not be refunded except in accordance with §§1.26 and 1.28(a). A patentee cannot obtain a refund of a maintenance fee which was due and payable on the patent. Any duplicate payment will be refunded to the fee address.

New §1.377 is added as proposed to provide a mechanism for review of a decision refusing to accept and record payment of a maintenance fee filed prior to the expiration of a patent. Paragraph (a) of new §1.377 specifies that a patentee who is dissatisfied with the refusal of the Patent and Trademark Office to accept and record a maintenance fee which was filed prior to the expiration of the patent may petition the Commissioner to accept and record the maintenance fee. This petition may be used, for example, in situations where an error is present in the identifying data required by §1.366(c) with the maintenance fee payment, i.e., either the patent number or the application serial number are incorrect. A petition under §1.377 would not be appropriate where there is a complete failure to include at least one correct mandatory identifier as required by §1.366(c) for the patent since no evidence would be present as to the patent on which the maintenance fee was intended to be paid. If the maintenance fee payment with an incorrect mandatory identifier was made near the end of the grace period, the patent might expire since the Office would not credit the fee to a patent. For patents based on applications filed between Dec. 12, 1980 and Aug. 27, 1982, there is no provision for acceptance of a maintenance fee after the grace period such as in §1.378 and so the filing of a petition under §1.377 would provide an avenue for seeking relief. A petition under §1.377 would not be appropriate where the patentee paid a maintenance fee on one patent when the patentee intended to pay the maintenance fee on a different patent but through error identified the wrong patent by patent number and application serial number. Likewise, a petition under §1.377 would not be appropriate where the entire maintenance fee payment, including any necessary surcharge, was not filed prior to expiration of the patent.

Paragraph (b) of new §1.377 specifies that any petition under new §1.377 must be filed within 2 months of the action complained of, or within such other time as may be set in the action complained of. The petition must be accompanied by the petition fee of $120 provided for in the amendment to §1.17(h). Paragraph (b) also provides that the petition may include a request that the petition fee be refunded if the refusal to accept and record the maintenance fee is determined to have resulted from an error by the Patent and Trademark Office.

Paragraph (c) of new §1.377 specifies that any petition filed under the section must comply with the requirements of paragraph (b) of §1.181 and must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. A person or organization whose only responsibility insofar as the patent is concerned is the payment of a maintenance fee is not a party in interest for purposes of paragraph (c) of §1.377. The petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office. If the petition is signed by a person not registered to practice before the Patent and Trademark Office, the petition must include the authority of the person signing the petition as patentee, assignee, or other party in interest.

New §1.378 is added as proposed to establish the procedure for acceptance of the delayed payment of a maintenance fee in an expired patent in order to reinstate that patent. This procedure is only available under Public Law 97–247 where the application on which the patent is based was filed on or after Aug. 27, 1982. If the maintenance fee is due under Public Law 96–517, i.e., the application on which the patent is based was filed on or after Dec. 12, 1980, and before Aug. 27, 1982, the delayed payment of the maintenance fee is not provided for by statute and cannot be accepted after expiration of the patent, and the patent cannot be reinstated.

Paragraph (a) of new §1.378 provides that the Commissioner may accept the payment of any maintenance fee due on a patent based on an application filed on or after Aug. 27, 1982, after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable. The surcharge set forth in §1.20(m) must be paid as a condition of accepting payment of the maintenance fee. No separate petition fee is required for this petition. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the intervening rights provisions of 35 U.S.C. 41(c) (2).

Paragraph (b) of new §1.378 specifies the requirements of a petition for acceptance of the delayed payment of a maintenance fee filed within six months of the expiration of the patent. Under paragraph (b), the petition must include the required maintenance fee set forth in §1.20(h)-(j); the surcharge set forth in §1.20(m); and a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee. In view of the requirement to enumerate the steps taken to ensure timely payment of the maintenance fee, an argument that the patentee was ignorant of the requirement to pay maintenance fees will not constitute a showing of unavoidable delay. Evidence that despite reasonable care on behalf of the patentee and/or the patentee's agents, and reasonable steps to ensure timely payment, the maintenance fee was unavoidably not paid, could be submitted in support of an argument that the delay in payment was unavoidable. For example, an error in a docketing system could possibly result in a finding that a delay in payment was unavoidable if it were shown that reasonable care was exercised in designing and operating the system and if it were shown that the patentee took reasonable steps to ensure that the patent was entered into the system to ensure timely payment of the maintenance fees.

Paragraph (c) of new §1.378 specifies the requirements of a petition for acceptance of the delayed payment of a maintenance fee filed more than six months after the expiration of a patent. These requirements are much more stringent in view of the heavy burden of proof that the delay was unavoidable. The legislative history of Public Law 97–247, House Report No. 97–542 (Committee on the Judiciary), indicates that "[a]fter the expiration of a reasonable period of time, the patentee would bear a heavy burden of proof that the delay was unavoidable." The six month period provided for petition under paragraph (b) is considered to be a reasonable period of time within which to seek reinstatement of a patent which expired for failure to pay the maintenance fee. Any petition filed more than six months after expiration must meet the more stringent requirements of paragraph (c). Under paragraph (c), the petition must include the same elements as in paragraph (b) and, in addition, must demonstrate that the failure to pay the maintenance fee was unavoidable due to circumstances outside of the control of the patentee and those acting on behalf of the patentee in paying the maintenance fee. The showing in a petition under paragraph (c) must be sufficient in scope and content to meet the heavy burden of proof required to show that a delay in payment of the maintenance fee of more than six months after expiration of the patent was unavoidable. In contrast to a petition under paragraph (b), a showing in a petition under paragraph (c) of

an error in a docketing system will not be sufficient to find that the delay was unavoidable. Instead, a petition filed under paragraph (c) must demonstrate that the circumstances resulting in the delay were entirely outside the control of the patentee and those acting on behalf of the patentee in paying the maintenance fee, e.g., serious efforts without success to raise the funds required to pay the maintenance fee.

Paragraph (d) of new §1.378 requires that a petition filed under §1.378 be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. A person or organization whose only responsibility insofar as the patent is concerned is the payment of a maintenance fee is not a party in interest for purposes of paragraph (d) of §1.378. Under paragraph (d), the petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office. If the petition is signed by a person not registered to practice before the Patent and Trademark Office, the petition must include the authority of the person signing the petition as patentee, assignee, or other party in interest.

Paragraph (e) of new §1.378 provides a mechanism for obtaining reconsideration of a decision refusing to accept a maintenance fee upon petition filed pursuant to paragraph (a). This mechanism is a petition for reconsideration which may be filed within two months of, or such other time as set in the decision refusing to accept the delayed payment of the maintenance fee. In contrast to petitions filed under paragraph (a), the petition for reconsideration filed under paragraph (e) of new §1.378 will require the separate petition fee set forth in the amendment to §1.17(h). Paragraph (e) also provides that after the decision on the petition for reconsideration, no further reconsideration or review of the matter will be undertaken by the Commissioner. Paragraph (e) also provides for refund of the maintenance fee and the surcharge set forth in §1.20(m) if the delayed payment of the maintenance fee is not accepted. The refund will be made following the decision on the petition for reconsideration, or after the expiration of the time for filing such a petition for reconsideration, if none is filed. Paragraph (e) specifies that the fee for filing the petition for reconsideration will not be refunded unless the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

Response to Comments on the Rules

Specific comments were received on a number of the proposed rule changes. Eight letters submitting written comments were received. Oral testimony was presented by two persons (one person testified on behalf of the American Intellectual Property Law Association) at the public hearing conducted on June 26, 1984. All of the written and oral comments were considered in adopting the changes set forth herein. The comments submitted appear below along with responses thereto.

Comment:

One comment suggested that the surcharge set at 37 CFR 1.20(m) for accepting a maintenance fee after expiration of the patent should be reduced from $500.00 to $50.00 and that this amount should be reduced by 50 percent for small entities.

Reply:

The suggestion has not been adopted. The surcharge set at 37 CFR 1.20(m) is considered to be appropriate in view of the importance of the relief being obtained. Before a surcharge under 37 CFR 1.20(m) is due the patent will have already expired due to the failure to pay a maintenance fee within a one-year period provided for the payment. Setting a lower amount as the surcharge would tend to denigrate the importance of the relief obtained by the acceptance of a maintenance fee after expiration of a patent. Further, a lower surcharge amount is not justified in view of the ample opportunity for payment of the maintenance fee which is presented by the one-year period in which payment can be made and the fact that the public is now on notice that maintenance fees are due and payable. Further, the Patent and Trademark Office will provide courtesy notices regarding the need to pay maintenance fees at a plurality of points in time before the patent expires. Such a notice now appears on the patent grant and presently plans are to print such a courtesy notice on the Notice of Allowance and the Issue Fee Receipt. Notices will be printed in the *Official Gazette* listing the patent number ranges of patents on which maintenance fees can be paid and a notice will be mailed to the patentee during the grace period if the maintenance fee is not paid. Therefore, relatively few patentees should fail to pay the maintenance fee before expiration of the patent due to unavoidable circumstances. The surcharge set at 37 CFR 1.20(m) is established pursuant to 35 U.S.C. 41(c) and therefore the small entity provisions of Public Law 97–247 do not apply to this fee. Also, Public Law 97–247 provides that the surcharge set at 37 CFR 1.20(m) could be in addition to any surcharge established for payment of the maintenance fee during the grace period as set at 37 CFR 1.20(1). The Patent and Trademark Office has established a separate surcharge set at 37 CFR 1.20(m) not in addition to the surcharge set at 37 CFR 1.20(1), but in lieu thereof. The amount set at 37 CFR 1.20(m) is not seen to be excessive.

Comment:

Two comments suggested that the small entity reduced fee provisions of Public Law 97–247 should have been applied to maintenance fees required under Public Law 96–517.

Reply:

The maintenance fee amounts under Public Law 96–517 set at 37 CFR 1.20(e)-(g) were previously set and are not part of the present rulemaking. It should be noted, however, that Public Law 96–517 did not provide for reduction of fees for small entities. Reductions of fees for small entities were established in Public Law 97–247 only for fees under 35 U.S.C. 41(a) and (b) thereof. The maintenance fee levels in 37 CFR 1.20(e)-(g), however, were established under 35 U.S.C. 41(c) of Public Law 96–517 rather than 35 U.S.C. 41(a) or (b) of Public Law 97–247. Therefore, the fee amounts previously set at 37 CFR 1.20(e)-(g) are not seen to be subject to reduction for small entities.

Comment:

One comment suggested that the Office permit any of the maintenance fees to be paid in advance, either at the time of paying the issue fee or during any of the window periods. Another comment suggested that the Office should accept a fee payment earlier than the window period if the fee has no possibility of being changed due to changes in the Consumer Price Index.

Reply:

These suggestions have not been adopted. The second comment listed above points out the problem with regard to the suggestion in the first comment. Public Law 97–247 provided for adjustments of the maintenance fees every third year to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Allowing maintenance fees to be paid in advance would preclude such adjustments to these maintenance fees unless very burdensome administrative steps were implemented to require adjustments in the fee amount previously paid when the maintenance fees are adjusted at a later time. Requiring maintenance fees to be paid in a consistently time-ordered basis as in §1.362 will also be helpful administratively and for budgeting purposes. As to the second comment above, it is not seen that there would be substantial benefit to the public since the period would be short during which a maintenance fee could not change due to changes in the Consumer Price Index. Thus, the patentee would only be able to make the maintenance fee payment a short time before the period during which payment may be made pursuant to §1.362.

Comment:

Two comments suggested that a maintenance fee payment made during the window period should not require adjustment if the maintenance fees are thereafter increased to reflect increases in the Consumer Price Index.

Reply:

These comments have been adopted by an appropriate change in paragraph (b) of §1.366. Maintenance fees which are paid during the window period in the amount required on the date of payment will be accepted as proper and full payment. If the maintenance fees change after such a proper payment, no adjustment in the amount will be required or permitted. Thus, if the maintenance fee increases before the close of the window period, the patentee will not be required to make up any deficiency between the amount properly paid during the window period and the new increased fee. Likewise, if the maintenance fee decreases before the close of the window period, no refund will be permitted of part of the maintenance fee properly paid in the amount due when the payment was made. Payments must be made in the amount proper on the date of payment. For example, if payment is made during the grace period, the payment must be made in the amount then required irrespective of the amount of the maintenance fee which would have been due if payment had been made during the window period.

Comment:

Three comments were directed to the proposed requirements in §1.366(c) for data identifying the patent upon which maintenance fee payments are being made. One comment indicated that many computer annuity systems now existing have a data base designed to accept only two identifying numbers. This comment and one other comment suggested that the patent number and issue date be required to be submitted with the maintenance fee to identify the patent number. Another comment suggested that the required identifying data be the patent number, issue date, name of the inventor and title of the invention.

Reply:

The suggested changes to the proposed rule have been adopted in part. The requirement for identifying data to uniquely identify the patent for which maintenance fees are being paid is an important one. The Patent and Trademark Office and the public must be able to determine with certainty which patents are in force and which patents have expired because the maintenance fees were not paid. The comments seem to recognize that at least two identifiers are necessary so that a cross-check can be made to avoid errors. The suggested use of the issue date with the patent number would not provide a reliable cross-check. In excess of one thousand patents usually issue on each issue date. Therefore a mistake in the last four digits in the patent number supplied with the maintenance fee payment would often not be detected by use of the issue date as a cross-check. The Patent and Trademark Office has determined that the two best identifying data units for use as a cross-check are the patent number and the application serial number. These identifiers are unique since each is specific to one patent or application and are thus required to be provided with a maintenance fee payment by the final rule. The application serial number and the patent number are both listed on the issued patent and in the *Official Gazette* and therefore should be readily available to patentees.

Comment:

One comment suggested that no petition fee should be charged for filing a petition under 37 CFR 1.377 seeking review of a decision refusing to accept and record payment of a maintenance fee filed prior to expiration of a patent. The comment further suggested that, if a fee is charged, the filing of a petition thereunder should be presumed to be a request for a return of the petition fee if it is determined that the refusal to accept and record a maintenance fee payment was due to Patent and Trademark Office error.

Reply:

The suggestion that no petition fee be charged has not been adopted. The petition fee, although required in advance, will be retained by the Patent and Trademark Office only in those instances where the refusal to accept and record the fee resulted from an error on the part of someone other than the Patent and Trademark Office. In those instances where the refusal to accept and record the fee resulted from a Patent and Trademark Office error the Office intends to refund the petition fee, either based upon the request included in the petition or upon the initiative of the Office. The reason for including a request for a refund, where appropriate, in the petition is to ensure that such request is not inadvertently overlooked. In view of the expense involved, it would be inappropriate to process a petition without a petition fee where the error necessitating the petition was made by the petitioner or someone acting on behalf of the patentee.

Comment:

One comment suggested that the term "unavoidable" should be more specifically defined in 37 CFR 1.378(b)(3) and (c)(3), if possible.

Reply:

As stated in this rulemaking, the requirement that the delay in payment of the maintenance fee be "unavoidable" is the same as that for reviving an abandoned application under 35 U.S.C. 133. This standard has been in effect for many years and should be well understood by the public. The rule is seen to be adequate as written, especially in view of the discussion in this rulemaking which includes several specific examples based on when the petition to accept the delayed payment of a maintenance fee is filed.

Comment:

One comment suggested that Public Law 97–247 should be "liberally interpreted" to permit acceptance of delayed payments of maintenance fees required under Public Law 96–517. Proposed 37 CFR 1.378 was limited to patents issuing on applications filed on or after Aug. 27, 1982, the effective date of Public Law 97–247.

Reply:

The final rule has not been changed from the proposal. The remedy suggested by the comment cannot be provided in view of the language of 35 U.S.C. 41(c)(1) which applies only to maintenance fees required by 35 U.S.C. 41(b) of Public Law 97–247. Section 17(a) of Public Law 97–247 clearly states "the maintenance fees provided for in section 3(b) of this Act shall not apply to patents applied for prior to the date of enactment of this Act."

Comment:

Several of the comments received were directed to proposed statutory changes which were said to be desirable in the area of maintenance fees.

Reply:

These comments were not suggesting that the proposed rules were not in compliance with the present statutes, but rather that the statutes themselves should be changed. These comments are beyond the scope and purpose of this rule change.

Implementation of Maintenance Fee Payment Procedures

The Patent and Trademark Office is presently developing its internal working procedures for processing maintenance fee payments and for notifying the public as to the status of maintenance fee payments on particular patents. The first maintenance fees become due early in 1985. In order to be as helpful as possible in informing the public as to the Patent and Trademark Office's current plans it is useful to outline the basic procedures the Patent and Trademark Office intends to adopt to process maintenance fees so that the interrelationship with the rules is understood. These basic procedures are subject to change as experience and circumstances dictate.

Notices by the Patent and Trademark Office

Under the statutes, the Patent and Trademark Office has no duty to notify patentees when their maintenance fees are due. It is the responsibility of the patentee to assure that the maintenance fees are paid to prevent expiration of the patent. The Patent and Trademark Office will, however, provide some notices as reminders that maintenance fees are due, but the notices, errors in the

notices, or the lack of notices, will in no way relieve a patentee from the responsibility to make timely payment of each maintenance fee to prevent the patent from expiring by operation of law. The notices provided by the Patent and Trademark Office will be merely courtesy in nature and intended to aid patentees. These notices, errors in these notices, or the lack of notices, will in no way shift the burden of monitoring the time for paying maintenance fees on patents from the patentee to the Patent and Trademark Office.

Preprinted Standard Notice Wording

The patent grant currently includes a reminder that maintenance fees may be due. The Notice of Allowance and Issue Fee Receipt are presently planned to be revised to contain reminder notice wording that maintenance fees may be due.

Official Gazette Notice

A notice will appear in each issue of the *Official Gazette* which will indicate which patents have been granted 3, 7 and 11 years earlier, that the window period has opened and that maintenance fee payments will now be accepted for these patents.

Another *Official Gazette* notice published after expiration of the grace period will indicate any patent which has expired due to non-payment of maintenance fees and any patents which have been revived under 35 U.S.C. 41(c). An annual compilation of such expirations and revivals will also be published.

Courtesy Reminder Notice

Since patentees are expected to maintain their own record systems and since most patentees are expected to pay their maintenance fees during the "window period" to prevent payment of a surcharge, the Office will not send any reminder notices to patentees at the fee address until after the grace period has begun. This will reduce and simplify the mailing of notices but still give patentees an opportunity to pay their maintenance fees with surcharge during the grace period before expiration of their patents. Such notices will be mailed to the fee address as set forth in §1.363.

Action Notices

The Office wil issue a receipt for payment of maintenance fees after entry of the maintenance fee payment. Such a receipt will provide an opportunity for the patentee to check if the Office has properly credited the payment. The original document submitted by the patentee when paying the maintenance fee will also be appropriately marked and returned to the fee address. If actual experience indicates that they are not needed, the receipt notices and/or the return of the original document may be discontinued.

The patentee will also be notified by mail at the fee address as set forth in §1.363 of any expiration or revival of the patent.

Fee Address

The patentee may provide the Patent and Trademark Office with a fee address under §1.363, which address may be different from the correspondence address under §1.33, when submitting the issue fee or in a separate later-filed paper. The fee address will be used by the Office for all correspondence directed to the patentee concerning maintenance fees. If no separate fee address is provided by the patentee under §1.363, the correspondence address under §1.33 will also be used for maintenance fee purposes.

Payment of Maintenance Fees

Transmittals of maintenance fees may be limited to a single patent or may involve several patents. If a transmittal involves several patents they should be listed in increasing numerical order. The following format is suggested for use when paying maintenance fees and any necessary surcharges. Although only the mandatory identification elements consisting of the patent number and United States application serial number, set forth in §1.366(c) are required, the items referred to in §1.366(d) should also be included to expedite processing of maintenance fees and any necessary surcharges. In addition,

February 22, 1987

Commissioner of Patents and Trademarks
Box M. Fee
Washington, D.C. 20231

Dear Sir:

Enclosed is a check drawn for the amount of $1,500 for the payment of the maintenance fees on the following patents.

Patent Number	Serial Number	Patent Date	Application Filing Date	Payment Year	Small Entity	Amount Paid	Surcharge	Fee Code
P.P.5,188	380,062	Feb. 7, 1984	May 20, 1981	4	—	$ 200.00	—	170
Re. 31,522	481,494	Feb. 14, 1984	April 1, 1983	4	—	$ 200.00	$100.00	170/176
*(4,374,741)	—	(Feb. 22, 1983)	(July 21, 1981)	—	—	—	—	—
4,429,419	339,620	Feb. 7, 1984	Jan. 15, 1982	4	—	$ 200.00	—	170
4,429,433	412,101	Feb. 7, 1984	Aug. 27, 1982	4	No	$ 400.00	—	173
4,429,439	458,474	Feb. 7, 1984	Jan. 17, 1983	4	Yes	$ 200.00	—	273
**4,432,000	380,681	Feb. 14, 1984	Aug. 26, 1981	4	—	$ 200.00	—	170
				Subtotals		$ 1,400.00	$100.00	
				Total Amount Paid		$1,500.00		

The Commissioner is hereby authorized to charge any deficiency in the required fee or to credit any overpayment to Account No. 12–3456.
Respectfully submitted,

John Doe
(703) 557–3054
*Note: Information from original patent is included in parenthesis for the reissue patent for which payment is being made.
**Note: Application filing Date is the PCT International Filing Date.

the indication of the fee code used by the Patent and Trademark Office would assist in proper financial crediting within the Office. It is also suggested that the telephone number of the person submitting the payment be supplied.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). Public Law 97-247 has taken into consideration the impact it may have on small entities.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no siginificant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The maintenance fee payment information collection requirement contained in the final rules has been submitted to OMB for review under Section 3504(h) of the Paperwork Reduction Act. Comments relating to this requirement should be directed to the Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for Commerce, Patent and Trademark Office.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Pub. L. 96-517 and Pub. L. 97-247, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

Part I [Amended]

37 CFR, Part I, is amended as follows:

1. Section 1.1 is amended by adding a new paragraph (d) to read as follows:

§1.1 All communications to be addressed to Commissioner of Patents and Trademarks.

* * * * *

(d) Payments of maintenance fees in patents and other communications relating thereto should be additionally marked "Box M. Fee."

§1.9 [Amended]

2. Paragraph (d) of §1.9 is amended by changing the citation "13 CFR 121.3-18, published on Sept. 30, 1982 at 47 FR 43273." to "13 CFR 121.12." and by changing the words "§121.3-18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code" to "§121.12 Small business for paying reduced patent fees."

3. Section 1.17 is amended by adding to the end of paragraph (h) the following:

§1.17 Patent application processing fees.

* * * * *

(h) * * *

- §1.377 - for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent

- §1.378(e) - for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent

4. Section 1.19 is amended by adding new paragraphs (f) and (g) to read as follows:

§1.19 Document supply fees.

* * * * *

(f) Microfiche copy of patent file record $10.00

(g) Uncertified statement as to status of the payment of maintenance fees due on a patent or expiration of a patent . . . . . $ 3.00

5. Section 1.20 is amended by adding new paragraphs (k), (l), and (m) to read as follows:

§1.20 Post-issuance fees.

* * * * *

(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . $100.00

(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9 (f)) . . . . . $ 50.00

By other than a small entity $100.00

(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable $500.00

6. Section 1.33 is amended by adding a new paragraph (d) to read as follows:

§1.33 Correspondence respecting patent applications, reexamination proceedings, and other proceedings.

* * * * *

(d) A "correspondence address" or change thereto may be filed with the Patent and Trademark Office during the enforceable life of the patent. The "correspondence address" will be used in any correspondence relating to maintenance fees unless a separate "fee address" has been specified. See §1.363 for "fee address" used solely for maintenance fee purposes.

7. A new center heading and §1.362 is added to Subpart B to read as follows:

Maintenance Fees

§1.362 Time for payment of maintenance fees.

(a) Maintenance fees as set forth in §1.20(e)-(j) are required to be paid in all patents based on applications filed on or after Dec. 12, 1980, except as noted in paragraph (b) of this section, to maintain a patent in force beyond 4, 8 and 12 years after the date of grant.

(b) Maintenance fees are not required for plant patents

based on applications filed on or after Aug. 27, 1982 or for any design patents. Maintenance fees are not required for a reissue patent if the patent being reissued did not require maintenance fees.

(c) The application filing dates for purposes of payment of maintenance fees are as follows:

(1) For an application not claiming benefit of an earlier application, the actual United States filing date of the application.

(2) For an application claiming benefit of an earlier foreign application under 35 U.S.C. 119, the United States filing date of the application.

(3) For a continuing (continuation, division, continuation-in-part) application claiming the benefit of a prior patent application under 35 U.S.C. 120, the actual United States filing date of the continuing application.

(4) For a reissue application, the United States filing date of the original non-reissue application on which the patent reissued is based.

(5) For an international application which has entered the United States as a Designated Office under 35 U.S.C. 371, the international filing date granted under Article 11(1) of the Patent Cooperation Treaty which is considered to be the United States filing date under 35 U.S.C. 363.

(d) Maintenance fees may be paid in patents without surcharge during the periods extending respectively from:

(1) 3 years through 3 years and 6 months after grant for the first maintenance fee,

(2) 7 years through 7 years and 6 months after grant for the second maintenance fee, and

(3) 11 years through 11 years and 6 months after grant for the third maintenance fee.

(e) Maintenance fees may be paid with the surcharge set forth in §1.20(k) or (l) during the respective grace periods after:

(1) 3 years and 6 months and through the day of the 4th anniversary of the grant for the first maintenance fee,

(2) 7 years and 6 months and through the day of the 8th anniversary of the grant for the second maintenance fee, and

(3) 11 years and 6 months and through the day of the 12th anniversary of the grant for the third maintenance fee.

(f) If the last day for paying a maintenance fee without surcharge set forth in paragraph (d) of this section, or the last day for paying a maintenance fee with surcharge set forth in paragraph (e) of this section, falls on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee and any necessary surcharge may be paid under paragraph (d) or paragraph (e) respectively on the next succeeding day which is not a Saturday, Sunday, or federal holiday.

(g) Unless the maintenance fee and any applicable surcharge is paid within the time periods set forth in paragraphs (d), (e) or (f) of this section, the patent will expire as of the end of the grace period set forth in paragraph (e) of this section. A patent which expires for the failure to pay the maintenance fee will expire at the end of the same date (anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant.

8. A new §1.363 is added to Subpart B to read as follows:

§1.363 Fee address for maintenance fee purposes.

(a) All notices, receipts, refunds, and other communications relating to payment or refund of maintenance fees will be directed to the correspondence address used during prosecution of the application as indicated in §1.33(a) unless:

(1) a "fee address" for purposes of payment of maintenance fees is set forth when submitting the issue fee, or

(2) a change in the correspondence address for all purposes is filed after payment of the issue fee, or

(3) a "fee address" or a change in the "fee address" is filed for purposes of receiving notices, receipts and other correspondence relating to the payment of maintenance fees after the payment of the issue fee, in which instance, the latest such address will be used.

(b) An assignment of a patent application or patent does not result in a change of the "correspondence address" or "fee address" for maintenance fee purposes.

9. A new §1.366 is added to Subpart B to read as follows:

§1.366 Submission of maintenance fees.

(a) The patentee may pay maintenance fees and any necessary surcharges, or any person or organization may pay maintenance fees and any necessary surcharges on behalf of a patentee. Authorization by the patentee need not be filed in the Patent and Trademark Office to pay maintenance fees and any necessary surcharges on behalf of the patentee.

(b) A maintenance fee and any necessary surcharge submitted for a patent must be submitted in the amount due on the date the maintenance fee and any necessary surcharge are paid and may be paid in the manner set forth in §1.23 or by an authorization to charge a deposit account established pursuant to §1.25. Payment of a maintenance fee and any necessary surcharge or the authorization to charge a deposit account must be submitted within the periods set forth in §1.362(d), (e) or (f). Any payment or authorization of maintenance fees and surcharges filed at any other time will not be accepted and will not serve as a payment of the maintenance fee except insofar as a delayed payment of the maintenance fee is accepted by the Commissioner in an expired patent pursuant to a petition filed under §1.378. Any authorization to charge a deposit account must authorize the immediate charging of the maintenance fee and any necessary surcharge to the deposit account. Payment of less than the required amount, payment in a manner other than that set forth in §1.23, or the filing of an authorization to charge a deposit account having insufficient funds will not constitute payment of a maintenance fee or surcharge on a patent. The certificate of mailing procedures of either §1.8 or §1.10 may be utilized in paying maintenance fees and any necessary surcharges.

(c) In submitting maintenance fees and any necessary surcharges, identification of the patents for which maintenance fees are being paid must include the following:

(1) the patent number, and

(2) the serial number of the United States application for the patent on which the maintenance fee is being paid.

(d) Payments of maintenance fees and any surcharges should identify the fee being paid for each patent as to whether it is the 3½, 7½ or 11½ year fee, whether small entity status is being changed or claimed, the amount of the maintenance fee and any surcharge being paid, any assigned payor number, the patent issue date and the United States application filing date. If the maintenance fee and any necessary surcharge is being paid on a reissue patent, the payment must identify the reissue patent by reissue patent number and reissue application serial number as required by paragraph (c) of this section and should also include the original patent number, the original patent issue date and the original United States application filing date.

(e) Maintenance fee payments and surcharge payments relating thereto must be submitted separate from any other payments for fees or charges, whether submitted in the manner set forth in §1.23 or by an authorization to charge a deposit account. If maintenance fee and surcharge payments for more than one patent are submitted together, they should be submitted on as few sheets as possible with the patent numbers listed in increasing patent number order. If the payment submitted is insufficient to cover the maintenance fees and surcharges for all the listed patents, the payment will be applied in the order the patents are listed, beginning at the top of the listing.

(f) Notification of any change in status resulting in loss of entitlement to small entity status must be filed in a patent prior to paying, or at the time of paying, the earliest maintenance fee due after the date on which status as a small entity is no longer appropriate. See §1.28(b).

(g) Maintenance fees and surcharges relating thereto will not be refunded except in accordance with §§1.26 and 1.28(a).

10. A new §1.377 is added to Subpart B to read as follows:

§1.377 Review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent.

(a) Any patentee who is dissatisfied with the refusal of the Patent and Trademark Office to accept and record a maintenance fee which was filed prior to the expiration of the patent may petition the Commissioner to accept and record the maintenance fee.

(b) Any petition under this section must be filed within 2 months of the action complained of, or within such other time as may be set in the action complained of, and must be accompanied by the fee set forth in §1.17(h). The petition may include a request that the petition fee be refunded if the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

(c) Any petition filed under this section must comply with the requirements of paragraph (b) of §1.181 and must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. Such petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

11. A new §1.378 is added to Subpart B to read as follows:

§1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent based on application filed on or after Aug. 27, 1982.

(a) The Commissioner may accept the payment of any maintenance fee due on a patent based on an application filed on or after Aug. 27, 1982, after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable and if the surcharge required by §1.20(m) is paid as a condition of accepting payment of the maintenance fee. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the conditions set forth in 35 U.S.C. 41(c) (2).

(b) Any petition to accept the delayed payment of a maintenance fee filed under paragraph (a) of this section within six months of the expiration of the patent must include:

(1) the required maintenance fee set forth in §1.20(h)-(j);

(2) the surcharge set forth in §1.20(m); and

(3) a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee.

(c) Any petition to accept the delayed payment of a maintenance fee filed under paragraph (a) of this section more than six months after the expiration of the patent must include:

(1) the required maintenance fee set forth in §1.20(h)-(j);

(2) the surcharge set forth in §1.20(m); and

(3) a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely and the failure to timely pay the maintenance fee was due entirely to circumstances outside of the control of the patentee. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee and the circumstances which were outside of the control of the patentee and those acting on behalf of the patentee in paying the maintenance fee. The showing must be sufficient in scope and content to meet the heavy burden of proof required to show that a delay in payment of the maintenance fee of more than six months after expiration of the patent was unavoidable.

(d) Any petition under this section must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. Such petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

(e) Reconsideration of a decision refusing to accept a maintenance fee upon petition filed pursuant to paragraph (a) of this section may be obtained by filing a petition for reconsideration within two months of, or such other time as set in, the decision refusing to accept the delayed payment of the maintenance fee. Any such petition for reconsideration must be accompanied by the petition fee set forth in §1.17(h). After decision on the petition for reconsideration, no further reconsideration or review of the matter will be undertaken by the Commissioner. If the delayed payment of the maintenance fee is not accepted, the maintenance fee and the surcharge set forth in §1.20(m) will be refunded following the decision on the petition for reconsideration, or after the expiration of the time for filing such a petition for reconsideration, if none is filed. The fee set forth in §1.17(h) for filing the petition for reconsideration will not be refunded unless the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

GERALD J. MOSSINGHOFF,
July 30, 1984. *Commissioner of Patents and Trademarks.*

[1046 O.G. 28]

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(53) **Revision of Patent and Trademark Fees**

The purpose of this notice is to remind the public of changes in patent and trademark fees, effective Oct. 1, 1982, pursuant to Public Law 97–247, enacted Aug. 27, 1982. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982, at 47 FR 33086–33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982, at 47 FR 33959. The final rule was also published in the Patent and Trademark Office Official Gazette on Aug. 10, 1982, at 1021 O.G. 19–94. In view of the enactment of Public Law 97–247, the "Alternative A—Rule Changes Under Only Public Law 96–517" relating to both patents and trademarks will *not* become effective. Instead, the "Rule Changes Common To Public Law 96–517 and H.R. 6260" and "Alternative B—Rule Changes Under H.R. 6260" will become effective for other patents and trademarks on Oct. 1, 1982. H.R. 6260 is now Public Law 97–247.

The Patent and Trademark Office has recieved a number of questions regarding the implementation of the changes in fees. The final rule published in the Federal Register on July 30, 1982, and in the Official Gazette on Aug. 10, 1982, contains implementing instructions which should be carefully read and followed. The final rule includes in the implementing instructions the following.

> "*Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amont and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office.*"

A "Certificate of Mailing under §1.8" is *not* "proper"

for items which are specifically excluded from the provisions of §1.8. Section 1.8 of Title 37, Code of Federal Regulations, should be consulted for those items for which a Certificate of Mailing is *not* "proper." Such items include, *inter alia*, the filing of national and international applications for patent and the filing of trademark applications. Any application for patent or trademark filed, i.e., received in the Office, on or after Oct. 1, 1982, must include the fees which are effective on Oct. 1, 1982, since §1.8 does not apply to, and specifically excludes from its provisions, the filing of applications for patents and trademarks.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Sept. 14, 1982.

[1022 O.G. 59]

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(54) **Filing of Verified Statements Claiming Small Entity Status**

In view of the fact that the rules implementing the definition of small business concern were not published in the Federal Register until Sept. 30, 1982, any verified statement claiming small entity status will be accepted as timely filed if (1) the first fee in a patent application has been paid on or after Oct. 1, 1982, but before Feb. 27, 1983, in the amount established for a non-small entity and (2) such verified statement is filed within 3 months of the date of payment of the first fee in a patent application paid on or after Oct. 1, 1982, but before Feb. 27, 1983. If such a verified statement is timely filed within three months of the date of payment of the first fee paid on or after Oct. 1, 1982, but before Feb. 27, 1983, the statement will be treated as though it were present on the date the fee was paid. The correct amount of the fee will be determined and any excess will be refunded upon request. Section 1.28(a) of 37 CFR is waived until Feb. 27, 1983 to the extent it is inconsistent with this practice.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Oct. 15, 1982.

[1023 O.G. 77]

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(55) **Effect on Small Entity Status of License Pursuant to 35 USC 202(c) (4)**

Public Law 96–517 added a new chapter 38 to Title 35 of the United States Code entitled "Patent Rights in Inventions Made With Federal Assistance." Under the provisions of the statute, each funding agreement between a Federal agency and an individual, small business firm or nonprofit organization must provide, inter alia, that ". . . the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid up license to practice or have practiced for or on behalf of the United States any subject invention . . ." See 35 U.S.C. 202(c) (4).

Under provisions of 37 CFR 1.9 and 1.27, an independent inventor, small business concern or nonprofit organization cannot qualify for reduced patent fees if it has assigned, granted, conveyed or licensed or is under an obligation under contract or law to assign, grant, convey or license any rights in the invention to other than an individual who could be classified as an independent inventor if that person had made the invention, a small business concern or a nonprofit organization. The Federal agencies do not qualify as nonprofit organizations for paying reduced patent fees under the rules. Applying this construction to the licensing of an invention to a Federal agency by an independent inventor, small business concern or nonprofit organization pursuant to a funding agreement under 35 U.S.C. 202(c) (4) would preclude their qualifying for paying reduced fees. This, however, would frustrate the intent of Public Law 97–247 and Public Law 96–517 when taken together.

This notice will serve as clarification that an independent inventor, small business concern or nonprofit organization, which is otherwise qualified as a small entity for purposes of paying reduced patent fees under 37 CFR 1.9 and 1.27, is not disqualified therefrom because of a license to a Federal agency pursuant to 35 U.S.C. 202(c) (4). A license to a Federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c) (4) does not constitute a license for purposes of 37 CFR 1.9 or a transfer of rights for purposes of 37 CFR 1.27. Any other license or rights to a Federal agency will, of course, preclude qualification as a small entity for purposes of paying reduced fees.

Applicants who have previously paid fees which were not reduced for small entity status because of a license to a Federal agency pursuant to 35 U.S.C. 202(c) (4) may claim a refund by filing the proper verified statement as required by 37 CFR 1.27 and by making reference to this notice.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 14, 1983.

[1027 OG 71]

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(56) **Department of Commerce**
Patent and Trademark Office
37 CFR Part I
[Docket No. 50725–5025]

Revision of Patent Fees

Agency: Patent and Trademark Office, Commerce
Action: Final Rule
Summary: The Patent and Trademark office is amending the rules of practice in patent cases, Part I of title 37, Code of Federal Regulations to adjust fee amounts. This action is necessary at this time because operating costs have increased over the past three years and the Commissioner is authorized by §41(f) of title 35, United States Code, to adjust fees established in §41 (a) and § 41(b) of title 35, United States Code, on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index. Fees for other processing, services or materials related to patents as provided by § 41(d) and §376 of title 35, United States Code, are being adjusted to recover the estimated average cost to the Office of such processing, services or materials.
Effective Date: Oct. 5, 1985.
For Further Information Contact: Frances Michalkewicz by telephone at (703) 557-1610 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to adjust patent fees because costs have increased and the Commissioner is authorized to (1) adjust statutory patent fees set forth in §41(a) and §41(b) of title 35, United States Code, to reflect fluctuations occurring during the previous three years in the Consumer Price Index (CPI), as authorized by §41(f) of title 35, United States Code, (2) adjust fees for processing, services, or materials related to patents which have been established by the Commissioner in accordance with § 41(d) of title 35, United States Code, to recover the estimated average cost to the Office of such processing, services or materials, and (3) adjust fees for filing and processing an application under the Patent Cooperation Treaty which have been established by the Commissioner to recover the estimated average cost of such processing in accordance with Section 376 of title 35, United States Code.

Adjustments to fees for filing and processing a trademark application and for other processing, services or materials related to trademarks were not proposed at this time, pending review of trademark automation cost requirements.

A notice of proposed rulemaking was published in the *Federal Register* on June 21, 1985, at 50 FR 25896–25902. Corrections of typographical errors were published on July 1, 1985, at 50 FR 27030, and on July 15, 1985, at 50 FR 28596. The notice also was published in the *Official Gazette* on July 2, 1985, at Vol. 1056, pages 6 through 25. An oral hearing was held on July 18, 1985. Fifteen written letters and statements were submitted. One person testified at the oral hearing. Full consideration has been given to all of these letters, statements, and testimony.

Background Information: Patent and Trademark Office fees are authorized by sections 41 and 376 of title 35, United States Code. Section 41(a) of title 35, United States Code, establishes a number of statutory fees. Among the more significant of these are fees for filing a patent application and issuing a patent. Certain other fees, such as appeal fees, the fee for filing a disclaimer, fees for filing petitions seeking to revive an abandoned application and for extensions of time also are set in § 41(a) of title 35, United States Code. Section 41(b) of title 35, United States Code, sets forth the statutory fees for maintaining a patent in force if the application was filed on or after Aug. 27, 1982.

The provisions of Public Law 96–517 also authorize maintenance fees for applications other than design and plant patent applications filed on or after Dec. 12, 1980 and before Aug. 27, 1982. These maintenance fees are to recover 25 percent of the estimated cost to the Office of processing patent applications.

Section 1 of Public Law 97–247 authorized the reduction by 50 percent in the fees paid under §41(a) and §41(b) of title 35, United States Code, by independent inventors, small business concerns, and nonprofit organizations, who meet the definitions established. This authorization will expire on Sept. 30, 1985. Legislation has been introduced to authorize this reduction for an additional three years. If such authority is not continued, the small entity reduction will be rescinded and appropriate amendments to the regulations will be made.

Section 41(f) of title 35, United States Code, provides that fees established in §41(b) of title 35, United States Code, "may be adjusted by the Commissioner on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor." Section 41(f) also provides that changes of less than one percent may be ignored.

Policy for applying the Consumer Price Index: The Department of Labor's Consumer Price Index (CPI) is made public approximately twenty-one days after the end of the month being calculated. The time lag between the initiation and the completion of the rulemaking process dictated that the Mar. through Sept. 1985 inflation rate be projected in the original rulemaking proposal. This estimate resulted in a cumulative three-year CPI of 11.7 percent applied to patent fees.

Based upon actual data through June 1985 and projecting the CPI to Sept. 30, 1985, the Administration's revised projected cumulative CPI for the three-year (1982–1985) period is 11.8 percent. The Patent and Trademark Office has used the 11.8 percent projection in adjusting the fees established in §41(a) and §41(b) of title 35, United States Code. The revised CPI projection has not caused a change from the proposal in any of the §41(a) and §41(b) fees.

After application of the 11.8 percent projected fluctuation in the CPI to fees set forth in §41(a) and §41(b), amounts for all non-small entity fees were rounded by applying standard arithmetical rules so that the amounts rounded would be de minimis and convenient to the user. Fees of $100 or more were rounded to the nearest $10. Fees below $100 were rounded to the nearest even number so that all comparable small entity fees would be in whole numbers. Section 41(d) of title 35, United States Code, provides that the "Commissioner will establish fees for all other processing, services, or materials related to patents" which are not covered in §41(a) and §41(b) of title 35, United States Code, "to recover the estimated average cost to the Office of such processing, services or materials."

Section 376 of title 35, United States Code, authorizes the Commissioner to set fees for patent applications filed under the Patent Cooperation Treaty. The fees under the Patent Cooperation Treaty are keyed to full cost recovery of the processing costs under the Treaty.

The general guidelines used by the Patent and Trademark Office in determining the non-statutory fees are set forth in OMB Circular A-25. Costs were determined from the best available records and included direct and indirect costs to the Office of carrying out the activity.

Since these non-statutory fees are expected to remain in place for the three year fee cycle 1986–1988, the calculated costs were then adjusted by a mid-cycle inflation rate of 6.21 percent derived from the Administration's inflation projection. After application of the projected mid-cycle inflation rate, amounts were rounded by applying standard arithmetical rules so that the amounts rounded would be de minimis and convenient to the user. Fees of $100 or more were rounded to the nearest $10. Fees between $2 and $99 were rounded to the nearest whole number. Fees under $2 were rounded for convenience.

The fees established under §41(d) and §376 of title 35, United States Code have been modified from the proposal. For the first fee cycle (1983–1985), fees established under §41(d) and §376 were set in the aggregate to recover the estimated average cost to the Office of processing, services and materials as defined in PTO budget documents. Because of the significant increase in fees that was instituted on Oct. 1, 1982, as well as the establishment of new fees, the PTO did not have the necessary experience to accurately predict (nor could it control) fee volumes for the first fee cycle. First cycle fees were thus set at levels sufficient to maintain financial solvency despite possible fluctuations in costs or in workload. Fee amounts in most cases also were set at convenient integers (e.g., $5 or $10). For the second fee cycle (1986–1988), the PTO had proposed to set fees established under §41(d) and §376 using the same methodology. Several comments to the proposed rules suggested that the PTO should establish §41(d) and §376 fees to more precisely recover the estimated average cost to the Office of the processing, service or material. The fees have been modified to reflect the following: (1) PTO experience over the past two and one-half years in predicting fee volumes, (2) virtual elimination of the reserve income for fluctuations in cost or workload, and (3) greater reliance upon and use of the individual fee costs developed by the PTO's Office of Finance.

It is intended that the amount of any fee due and payable on or after Oct. 5, 1985 is the amount set in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing, where authorized under § 1.8 of title 37, Code of Federal Regulations, will be considered to be the date of receipt in the Office. A "Certificate of Mailing under §1.8" is *not* "proper" for items which are specifically excluded from the provisions of §1.8. Section 1.8 of title 37, Code of Federal Regulations, should be consulted for those items for which a Certificate of Mailing is *not* "proper". Such items include, *inter alia*, the filing of national and international applications for patents and the filing of trademark applications. The provisions of §1.10 of title 37, Code of Federal Regulations relating to filing of papers and fees by "Express Mail" with certificate, however, do apply to *any paper or fee* (including patent and trademark applications) to be filed in the Office. If an application or fee is filed by "Express Mail" with a certificate of mailing dated on or after Oct. 5, 1985, the amount of the fee to be paid is the fee established herein if a change is being made in the fee.

It is further intended that the amount due and payable for services provided in Fiscal Year 1986 will be the

amount set in this rulemaking even if the fee becomes due prior to Oct. 5, 1985. Such fees include, but are not limited to, the annual service charge for subscription services (§1.19(c)(1)) and the annual rental for a delivery box (§1.21(d)).

In order to ensure clarity in the implementation of the fee proposals, a discussion of specific sections is set forth below:

DISCUSSION OF SPECIFIC RULES

Section 1.16 National application filing fees

Section 1.16 is amended to adjust patent application filing fees established in §41(a) of title 35, United States Code and set forth in paragraphs (a)-(d) and (f)-(j) of this section to reflect fluctuations in the Consumer Price Index.

Section 1.16, paragraph (e) is amended to adjust the patent application surcharge fee authorized by §111 of title 35, United States Code. Paragraph (e) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index.

Section 1.17 Patent application processing fees

Section 1.17 is amended to adjust patent application processing fees established in §41(a) of title 35, United States Code, and set forth in paragraphs (a)-(g), (l) and (m) of this section to reflect fluctuations in the Consumer Price Index. The wording of paragraph (l) has been broadened to include reference to applicaitons abandoned under §371(d) of title 35, United States Code.

Section 1.17, paragraphs (h)-(k) are amended to adjust the patent application processing fees authorized by §41(d) of title 35, United States Code, to recover the estimated average cost to the Office of such processing. Paragraphs (h)-(k) have been modified from the proposal to more precisely recover the estimated average cost to the Office of processing petitions to the Commissioner, public use proceedings, and non-English language specifications.

Section 1.18 Patent issue fees

Section 1.18 is amended to adjust patent issue fees established in §41(a) of title 35, United States Code and set forth in paragraphs (a)-(c) of this section to reflect fluctuations in the Consumer Price Index.

Section 1.19 Document supply fees

Section 1.19 is amended to adjust the fees authorized by §41(d) of title 35, United States Code for services and materials as set forth in paragraphs (a)-(c), (e) and (f) of this section to recover the estimated average cost to the Office of the specified services and materials. Paragraphs (a)-(c) have been modified from the proposal to more precisely recover the estimated average cost to the Office of supplying the documents specified in these paragraphs. Section 1.19 has been modified further to reduce the fees specified in paragraphs (e) and (f), which were not proposed for adjustment to more precisely recover the estimated average cost to the Office of supplying the documents.

Section 1.19, paragraph (a) is amended further to clarify the services and documents provided. It would provide for copies of specific documents at a flat fee. Copies of general Office records would be provided at a per page fee. Paragraph (a)(4) has been modified from the proposal to provide copies of a patent file wrapper and its contents at $75 for each 200 pages or a fraction thereof.

Section 1.19, paragraph (b) is amended further to delete subparagraph (3). A flat fee for comparing and certifying copies of documents made from Office records is provided in new paragraph (i) of this section.

Section 1.19, paragraph (c) is amended further to provide for ten subclasses with the annual service charge.

Section 1.19 is amended to provide in new paragraph (h) a $10 per document flat fee for an uncertified copy of a non-United States patent document. This fee would apply to copies of foreign patent applications such as those which are published at 18 months or when allowable for opposition.

Section 1.19 is amended to provide in new paragraph (i) a flat fee for comparison and certification of each copy of a document made from Office records but not prepared by the Office.

Section 1.19 is amended to provide in new paragraph (j) a fee for duplicate filing receipts and corrected filing receipts due to applicant error.

Paragraphs (i) and (j) have been modified from the proposal to more precisely recover the estimated average cost to the Office of supplying the documents specified.

Section 1.20 Post-issuance fees

Section 1.20, paragraphs (a)-(c) are amended to adjust patent post-issuance fees authorized by §41(d) of title 35, United States Code, to recover the estimated average cost to the Office of such processing. Section 1.20 has been modified from the proposal to more precisely recover the estimated average cost to the Office of the post-issuance fees set forth in paragraphs (b)-(c). Section 1.20 has been modified further to reduce the fee set forth in paragraph (a), which was not proposed for adjustment, to more precisely recover the estimated average cost to the Office of providing a certificate of correction.

Section 1.20, paragraphs (d) and (h)-(j), are amended to adjust patent post-issuance fees established in §41(a) and §41(b) of title 35, United States Code, to reflect fluctuations in the Consumer Price Index.

Section 1.20, paragraphs (e)-(g), are amended to adjust post-issuance fees authorized by Section 2 of Public Law 96–517, as modified by Section 404 of Public Law 98–622. These fees must be set at a level to eventually recover 25 percent of the estimated cost to the Office of processing patent applications. In order to achieve this level of recovery, these maintenance fees are adjusted to reflect fluctuations in the Consumer Price Index.

Section 1.20, paragraph (k), is amended to adjust the patent maintenance surcharge fee authorized by Section 2 of Public Law 96–517. Paragraph (k) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index.

Section 1.20, paragraph (l), is amended to adjust the post-issuance fee authorized by §41(b) of title 35, United States Code. Paragraph (l) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index.

Section 1.21 Miscellaneous fees and charges

Section 1.21 is amended to adjust the miscellaneous fees and charges authorized by §41(d) of title 35, United States Code and set forth in paragraphs (a)-(f), (h) and (i) of this section to recover the estimated average cost to the Office of such processing. Section 1.21 has been modified from the proposal to more precisely recover the estimated average cost to the Office of the miscellaneous services for which fees were set forth in paragraphs (a)(2)-(a)(6), (b)(1), (d)-(f), (h)(1) and (i). Section 1.21 has been modified further to reduce the fees specified in paragraphs (c) and (h)(2), which were not proposed for adjustment, to more precisely recover the estimated average cost to the Office of those services.

Section 1.21, paragraph (g), is modified from the proposal to change the term "copy machine tokens" to "CopiShare card."

Section 1.21, paragraph (k), is amended to change the word "section" to "part" to clarify that any charge not provided for in these rules would be made at actual cost.

Section 1.21 is amended to provide in new paragraph (m) a $20 fee for processing checks returned "unpaid" by a bank.

Section 1.24 Coupons

Section 1.24 is amended to adjust the fee for the purchase of coupons for patents to make it comparable to the fee required for the purchase of U.S. patents.

Section 1.24 is amended to delete reference to forty cent coupons which are no longer sold by the Patent and Trademark Office.

Section 1.25 Deposit accounts

Section 1.25 is amended to establish a restricted subscription deposit account to be used exclusively for subscription orders of patent copies as issued. A minimum deposit of $300 is required to establish and maintain, without payment of a monthly service fee, a restricted subscription deposit account.

Section 1.26 Refunds

Section 1.26 is amended to change paragraph (c) to provide for a refund of $1,300 if the Commissioner decides not to institute reexamination proceedings. The $1,300 refund would apply to those instances where the reexamination fee of $1,770 under §1.20(c) was paid. The current $1,200 refund will be made in those cases where the current $1,500 reexamination fee was paid.

Section 1.53 Serial number, filing date, and completion of application.

Section 1.53 is amended to change paragraph (c) to reduce to $15 the handling fee charged in the event a specification or drawing is not submitted within the time period set by the Office. Section 1.53 has been modified to more precisely recover the estimated average cost to the Office of handling an application with missing parts.

Section 1.297 Publication of statutory invention registration

Section 1.297, paragraph (b), is amended to modify the statement to be printed on each statutory invention registration. The language of the statement is modified so as to be more easily understood.

Section 1.445 International application filing and processing fees

Section 1.445, paragraphs (a)(1)-(a)(4), are amended to adjust the fees authorized by §376 of title 35, United States Code, for international application processing to recover the estimated average cost to the Office of such processing. The cost of the international search fee set forth in paragraph 1.445(a)(2)(i) has been reduced and the amount credited by the Office under paragraph 1.445(a)(2)(ii) is not changed. Paragraphs (a)(1) and (a)(3) have been modified from the proposal to more precisely recover the estimated average cost to the Office of processing international applications. However, the amount of the credit under 1.445(a)(4) is somewhat less than at present and is the same as in the proposed rules.

Section 1.445(a)(5) is amended to adjust the surcharge authorized by §371(d) of title 35, United States Code.

Paragraph (a)(5) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index and to provide for a small and large entity amount to be consistent with §1.16(e).

Section 1.445(a)(6) is amended to adjust the processing fee for an English translation filed after 20 months from the priority date to recover the estimated average cost to the Office of such processing. Paragraph (a)(6) has been modified from the proposal to more precisely recover the estimated average cost to the Office of processing an English translation and to be consistent with §1.17(k).

Section 1.446 Refund of international application filing and processing fees.

Section 1.446 is amended to delete paragraph (b). The substance of the deleted material is included in section 1.445, paragraph (a)(4).

Response to Comments on the Rules

Specific comments were received on a number of the proposed rule changes. Fifteen letters submitting written comments and eight questions by telephone were received. Oral testimony was presented by one person at the public hearing conducted on July 18, 1985. All of the written and oral comments were considered in adopting the changes set forth herein. The comments submitted appear below along with responses thereto.

Comment:

PTO fees are already too high and burdensome to the patent community.

Reply:

There has been no indication that PTO fees are burdensome to the patent community. In 1984, we expected to receive 107,000 patent applications and actually received 109,539. In 1985, we are currently receiving applications at an annual rate of approximately 116,000.

The PTO is adjusting patent processing and patent service fees because costs have increased. The Commissioner may adjust patent statutory fees by changes which have occurred during the past three years in the Consumer Price Index (CPI). This authority is provided by 35 U.S.C. 41(f). The intent of the Congress in indexing the statutory patent fees set in 1982 to the CPI was to assure that a precipitous drop in the level of recovery did not occur due to inflation. Indexing of statutory patent fees was not intended to raise additional revenues beyond the rate of inflation.

The Commissioner also is authorized to adjust nonstatutory patent fees to recover the estimated average cost to the Office of processing, services and materials. This authority is provided by 35 U.S.C. 41(d). As previously discussed, several of the proposed fees have been modified to more precisely recover the estimated average cost to the Office of processing, materials and services.

Comment:

PTO has failed to abide by the provisions of Public Law 96–517 and the accompanying report (House Report 96–1307). Specifically, the PTO has failed to abide by the 50 percent recovery limitation for patent processing fees and the restrictions on the use of fee income.

Reply:

Public Law 96–517, although enacted into law, was never fully implemented because the Congress passed H.R. 6260 which was enacted as Public Law 97–247 on Aug. 27, 1982. Public Law 97–247 provides for an eventual 100 percent cost recovery through processing and maintenance fees except for the subsidy for certain small entities, and contains no restrictions on the use of income from fee revenues.

This rulemaking adjusts, by the Consumer Price Index (CPI), the patent processing (41(a)) and patent maintenance (41(b)) fees established by Public Law 97–247. The CPI adjustment allows the programs supported by §41(a) and (b) fees to keep pace with inflation. Any growth in the aggregate rate of recovery of fees versus costs in this second cycle of fees is due primarily to the first time collection of maintenance fee receipts.

The restrictions on the use of income from fee revenues, which were included in House Report 96–1307 accompanying Public Law 96–517, were based upon a 50 percent recovery of patent costs from user fees. Then-Commissioner Mossinghoff testified before the Subcommittee on Courts, Civil Liberties, and Administration of

Justice, when Congress was considering H.R. 6260, that the Administration's PTO user fee program was proposed to improve the quality of service at the PTO by reducing patent pendency, trademark pendency and automating patent and trademark operations. The Commissioner went on to say that "The major increases in the three program areas will be paid for by the sharp increase in user fees that we are recommending." The Congressional debate on this proposal indicates that the Subcommittee approved these innovative fee provisions in order to improve the level of patent and trademark services provided to users of the Office.

Comment:

Fees should relate to the actual "costs of processing patent applications" and should not include "overhead" expenses.

Reply:

The fees applicable to patent filing, issuance and maintenance fees were established by the Congress and set forth in 35 U.S.C. §41(a) and (b). Regardless if Congress included "overhead" expenses when setting these statutory patent fees, these fees may be adjusted only to reflect the fluctuations in the CPI every three years. Fees for other processing, services or materials related to patents are set by the Commissioner pursuant to 35 U.S.C. 41(d) to recover the Office's estimated average cost. The legislative history of Public Law 97–247, including the accompanying House Report, does not provide guidance regarding how "estimated average cost" was to be determined. These fees were determined under the general guidelines of OMB Circular A-25, entitled "User Charges," which established general policies for developing an equitable and uniform system of charges for certain government services and property. Circular A-25 provides that a reasonable charge should be imposed to recover the full cost to the Government of rendering a service to an identifiable recipient, who receives a substantial benefit not accruing to the general public, e.g., receiving a patent. The concept of full cost recovery includes an appropriate overhead charge. Therefore, the inclusion of overhead expenses in calculating the costs of processing patent applications is appropriate.

Comment:

The PTO does not include a description of any cost containment measure.

Reply:

The PTO has taken all possible measures to contain costs. During fiscal year 1985, a zero-based analysis was conducted of all programs and their associated funding. The purpose of the review was to assure that adequate resources were available to meet the PTO's most important priorities while addressing unanticipated costs such as, the full absorption of the fiscal year 1985 pay raise, new pay scale for patent examiners, higher postal and telephone rates, greater use of PTO services, etc. The PTO's annual budget request is thoroughly reviewed by the Department of Commerce, by the Office of Management and Budget, and by the Congressional Appropriations Committees prior to enactment. The PTO is complying with the President's Deficit Reduction Program. The fiscal year 1986 budget request reflects reductions to travel, printing and consultants as required by the Deficit Reduction Act of 1984; administrative cost savings; and grade reductions and pay cuts. The PTO program to reduce patent pendency, once achieved in 1987, will require less resources than are currently expended. The Automation program, too, as it achieves its major milestones, will deliver cost benefits.

Comment:

The PTO has proposed to adjust fees because costs have increased but they did not include an explanation of how costs were calculated.

Reply:

Patent statutory fees, which are set forth in 35 U.S.C. 41(a) and (b), can be adjusted on Oct. 1, 1985 and every three years thereafter to reflect fluctuations which have occurred in the Consumer Price Index (CPI). The costs of processing a patent application from receipt to issue or abandonment were calculated in 1982 at the time the present fees were set by statute. The most significant elements of processing a patent application are compensation costs, space and the costs incurred for printing the *Official Gazette* and patent grants.

As a result of these increases to the major costs incurred in the processing of a patent application, the PTO is adjusting the statutory 41(a) and (b) patent fees by the full CPI of 11.8 percent in order to recover the projected budgeted collections for patent processing for the years 1986–1988.

Non-statutory patent and patent service fees are being set to recover the estimated average cost to the Office over the next three years (1986–1988) of processing, services and materials. Costs for goods and services were determined under the general guidelines set forth in OMB Circular A-25 entitled "User Charges," which establishes general policies for developing an equitable and uniform system of charges for certain Government services and property. The cost of all processing, services and/or materials associated with each non-statutory (§41(d)) patent fee was determined. Since these fees are expected to remain in place for three years (1986–1988), each cost was adjusted by a mid-cycle inflation rate of 6.21 percent which was derived from the Administration's 1986–1988 inflation projection.

Comment:

The PTO has proposed to set §41(d) fees at a level which exceeds the estimated average cost to the Office. PTO's cost calculations do not support the proposed § 41(d) fees.

Reply:

Fees established pursuant to 35 U.S.C. 41(d) and 376, non-statutory patent and patent service fees, are being set to recover the estimated average cost to the Office over the next three years (1986–1988) of processing, services and materials. Costs for goods and services were determined under the general guidelines set forth in OMB Circular A-25 entitled "User Charges," which establishes general policies for developing an equitable and uniform system of charges for certain Government services and property.

The PTO employed cost-finding techniques for determining the costs of all processing, services and/or materials associated with each non-statutory patent fee. These costs were documented by the Director, Office of Finance and reviewed by each responsible Assistant Commissioner. Since the revised fees are expected to remain in place for the next three years (1986–1988), each cost was adjusted by the mid-cycle inflation rate of 6.21 percent. The fee was then set based upon this inflated cost.

For the first fee cycle (1983–1985), fees established under §41(d) and §376 were set in the aggregate to recover the estimated average cost to the Office of processing, services and materials as defined in PTO budget documents. Because of the significant increase in fees that was instituted on Oct. 1, 1982, as well as the establishment of new fees, the PTO did not have the necessary experience to accurately predict (nor could it control) fee volumes for the first fee cycle. First cycle fees were thus set at levels sufficient to maintain financial solvency despite possible fluctuations in costs or in workload. Fee amounts in most cases also were set at convenient integers (e.g., $5 or $10). For the second fee cycle (1986–1988), the PTO had proposed to set fees established under §41(d) and §376 using the same methodology. Several comments to the proposed rules suggested that the PTO should establish §41(d) and §376 fees to more precisely recover the estimated average cost to the Office of the processing, service or material. The fees have been modified to reflect the following: (1) PTO experience over the past two and one-half years in predicting fee volumes, (2) virtual elimination of the reserve income for fluctuations in cost or in workload, and (3) greater reliance upon and use of the individual fee costs developed by PTO financial analysts.

In modifying the proposed fees, the PTO used the raw cost data derived for each fee, adjusted that amount by the projected mid-cycle inflation rate of 6.21 percent, and rounded the adjusted cost by applying standard arithmetical rules. Fees of $100 or more were rounded to the nearest $10. Fees between $99 and $2 were rounded to the nearest whole number. Fees under $2 were rounded for convenience.

Comment:

The increase in maintenance fees appears to be driven by non-cost considerations. Since they have just begun to be collected, there could be no actual cost histories on which to base the adjustments.

Comment:

The increase in claim fees seem to be proposed without any seemingly real increase in cost specifically attributable to these items.

Reply: Patent statutory fees such as claim and maintenance fees, which are set forth in 35 U.S.C. 41(a) and (b), may be adjusted every three years to reflect changes which have occurred in the Consumer Price Index (CPI) for the prior three years. The costs of processing, issuing and maintaining patents were calculated in 1982 at the time the present fees were set by statute. Patent maintenance fees as set forth in both Public Laws 96–517 and 97–247 are one of several sources of income available to the PTO to cover the costs of processing, issuing and maintaining a patent. The most significant elements of processing, issuing and maintaining patents are personnel compensation, benefits, space and printing costs. Since 1982, these costs have risen in an amount equal to and in some cases, in an amount exceeding, the CPI increase for the individual year.

As a result of these cost increases, the PTO is adjusting §41(a) and §41(b) patent fees and the Public Law 96–517 maintenance fees by the full CPI of 11.8 percent.

Comment:

PTO's proposed adjustments to §41(a) and §41(b) fees are higher than the 11.7 percent fluctuation in the Consumer Price Index because of the rounding principles PTO has applied.

Reply:

The intent of the Congress in indexing the statutory patent fees, 35 U.S.C. 41(a) and (b), to the CPI was to assure that a precipitous drop in the level of recovery did not occur due to inflation with regard to the fees set in 1982. Indexing of statutory patent fees was not intended to be a method of raising additional revenues, nor has the PTO used it for that purpose, but rather for administrative ease. Rounding will ease the administration of these fees by permitting the PTO and users to deal in increments of ten when the adjusted fee is $100 or greater or in even amounts when the fee is below $99. This will ease implementation of the 50 percent reduction in fees for small businesses, non-profit organizations and individuals. Moreover, any surpluses which may result are for the short-term only. By applying routine techniques, there should be a balancing out of shortfalls and surpluses in the long-run.

Comment:

The fee for a deferred declaration under 34 U.S.C. 111 should be changed so that such a fee would only be required if the declaration were filed later than three months from the actual filing date.

Reply:

The suggestion for permitting the declaration to be filed up to three months after the actual filing date without a surcharge has not been adopted. It would place administrative burdens on the Office since it would encourage the late filing of oaths or declaration.

Comment:

There appears to be no justification for the significant increase to the surchage fees.

Reply:

In proposing adjustments to penalty surcharge fees, the PTO considered the costs incurred in providing special handling to certain cases, and proposed to set the fee at a level that would recover costs and preclude unnecessary resort to pertinent procedures but not so high as to be burdensome where resort to these procedures is necessary. In response to several comments received on the proposed surcharge fees, the proposal has been modified to limit the adjustments to surcharge fees set forth in §1.16(e), §1.20(k), §1.20(l) and §1.445 (a)(5) to changes which have occurred during the past three years in the Consumer Price Index.

Comment:

Patent Cooperation Treaty (PCT) fee increases far exceed the 11.7 percent average increase applied to national applications. This increase could seriously affect use of PCT system.

Reply:

The PCT fees set under 35 U.S.C. 376 are based on cost recovery and are not adjusted by the Consumer Price Index. The fees under §1.445 are set to reflect estimated average processing costs. A reduction was made in the amount of the international search fee if performed by the U.S. Patent and Trademark Office. While the credit for a prior U.S. search is unchanged and other PCT fees are increased, the overall adjustment level of PCT fees is generally in line with the CPI.

Comment:

The small entity reduction should be adopted for the PCT surcharge.

Reply:

The final rule has been modified from the proposal to provide for small and large entity amounts in §1.445(a)(5). This is to correspond to a similar fee in §1.16(e).

Comment:

The proposed fees for a copy of a patent file wrapper and its contents (1.19(a)(4)) are unfair at the breakpoint. It would be more equitable to charge $75 for each 200 pages or fraction thereof.

Reply:

In proposing a fee of $75 for up to 200 pages and $350 for 201 pages or more for a copy of a patent file wrapper and its contents, the PTO was attempting to move to a flat fee for this service. Since there were objections to the breakpoint, the final rule has been modified from the proposal to reflect a fee of $75 for each 200 pages or fraction thereof.

Comment:

The proposed increase in §1.20(c) regarding requests for reexamination and the related decrease in §1.26(c) relating to refunds where reexamination is not ordered, appeared to be set from a revenue generating standpoint rather than being cost-driven.

Reply:

While the comment does not suggest what the fees should be, it is noted that the two fees have to be considered together. The notice of proposed rulemaking set a fee of $1,800 for filing a request for reexamination, which was an increase from the previous fee of $1,500. This fee has been modified from the proposal and is now set at $1770. The refund where reexamination is denied was proposed to be raised from $1,200 to $1,300, which raises the refund from the amount previously refunded. The amount refunded has not changed from the proposal. The relative amounts of the initial fee and the refund are set to obtain the necessary recovery of costs from reexamination.

Comment:

A separate schedule of fees should be instituted for interference proceedings, but such fees should apply only to junior parties, since interferences are conducted primarily for their benefit.

Reply:

The rules already provide for certain fees relating to interference proceedings; see §1.644(e) and (f), and §1.666(b) and (c). In general, however, the PTO decided in 1982 that the costs of interference proceedings should be factored into the fees charged in connection with the processing and examination of patent applications, because (1) an interference is a proceeding instituted by the PTO, and (2) it would not be administratively feasible to attempt to provide a fee schedule to cover the myriad of different situations which may occur in the course of an interference. Since these reasons are still considered applicable, the suggestion has not been adopted.

Comment:
The proposed fee for admission to the examination (1.21(a)(1)) for registration to practice is too high for students who often sit for the exam and it is inappropriate because administering the exam is not a service to the public but a cost of operating the PTO.
Reply:
The fee for admission to the examination for registration to practice reflects the costs of conducting the examination twice a year nationwide. The significant increase is due to the fact that the fee had been understated in relation to cost during the 1983–1985 fee cycle. Fees established in this rulemaking will more precisely recover the estimated average cost to the Office of administering and grading the examination and are consistent with the cost recovery principles of OMB Circular A-25.
Comment:
The proposed fee for requesting a regrading of an examination (1.21(a)(6)) should be waived if the regrading request was necessitated by a PTO error.
Reply: Any fee may be refunded if paid by mistake or paid in excess of that required. See 35 U.S.C. 42(d).
Comment:
The PTO should retain the present fee for admission to the examination to practice before the Office (1.21(a)(1)) and increase the fee payable upon registration to practice (1.21(a)(2)).
Reply:
This suggestion has not been adopted in this rulemaking. The fees for admission to the examination and for registration to practice have been set to recover the cost of those services.
Comment:
The proposed fee for reviewing a decision of the Director of Enrollment and Discipline (1.21(a)(5)) appears to be low in view of the significant amount of time and effort involved in a review.
Reply:
The fee for this service, as modified, recovers the estimated average cost to the Office of providing the service.
Comment:
The fees for processing an application filed with a specification in a non-English language (1.17(k)) and for filing an English translation of an international application later than 20 months after the priority date (1.445 (a)(6)) appear to be in excess of cost.
Reply:
The final rules have been modified from the proposed to provide for a fee of $26, the cost of processing applications filed with non-English language specifications in both domestic and international cases.
Comment:
An extension of time to Aug. 16, 1985 for the submission of comments was requested.
Reply:
The PTO is required by 35 U.S.C. 41(g) to publish a notice of fee increases in the *Federal Register* at least 60 days prior to the effective date of the fee increase. In order to have the proposed fee increases become effective near the start of the fiscal year, the extension of time could not be granted.
Comment:
Why were there no proposals to adjust trademark fees?
Reply:
Adjustments to fees for filing and processing a trademark application and for other processing, services or materials related to trademarks were not proposed at this time, pending review of trademark automation cost requirements.
Comment:
Do we plan to verify the inflation rate before publication of the final rules?
Reply:
The projected inflation rate has been verified. The Administration's latest projected annual cumulative Consumer Price Index for the three year period 1982–1985 is 11.8 percent. Application of this index to §41(a) and §41(b) fees results in no change from the proposal.
Other Considerations: The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. There are no information collection requirements relating to patent fee rules.
The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Public Law 96–354). The principal impact of the major patent fees has already been taken into account in Public Law 97–247, which provided small entities with a 50 percent reduction in the major patent fees. Although that legislation will expire on Sept. 30, 1985, legislation has been introduced to reauthorize the 50 percent reduction in patent fees for an additional three years. The rule change adjusts fees to reflect the change in the Consumer Price Index and cost of processing services as provided by statute (35 U.S.C. 41(d) and 41(f)).
The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.
Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 41, 111, 157, 302, and 376 and Public Laws 96–517, 97–247 and 98–622, the Patent and Trademark Office is amending 37 CFR Part 1 as set forth below.

1. The authority citation for 37 CFR Part 1 continues to read as follows:

   Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.16 is revised to read as follows:

   §1.16 National application filing fees:

   (a) Basic fee for filing each application for an original patent, except design or plant cases:

   By a small entity (§1.9(f)) $170.00
   By other than a small entity $340.00

   (b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:

   By a small entity (§1.9(f)) $17.00
   By other than a small entity $34.00

   (c) In addition to the basic filing fee in an original application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20. (Note that §1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes):

   By a small entity (§1.9(f)) $6.00
   By other than a small entity $12.00

   (d) In addition to the basic filing fee in an original application, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

   By a small entity (§1.9(f)) $55.00
   By other than a small entity $110.00

   (If the additional fees required by paragraphs (b), (c) and (d) are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

   (e) Surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application:

   By a small entity (§1.9(f)) $55.00
   By other than a small entity $110.00

   (f) For filing each design application:

   By a small entity (§1.9(f)) $70.00
   By other than a small entity $140.00

   (g) Basic fee for filing each plant application:

   By a small entity (§1.9(f)) $110.00
   By other than a small entity $220.00

   (h) Basic fee for filing each reissue application:

   By a small entity (§1.9(f)) $170.00
   By other than a small entity $340.00

   (i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

   By a small entity (§1.9(f)) $17.00
   By other than a small entity $34.00

   (j) In addition to the basic filing fee in a reissue application; for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the number of claims in the original patent. (Note that §1.75(c) indicates how multiple dependent claims are considered for fee purposes):

   By a small entity (§1.9(f)) $6.00
   By other than a small entity $12.00

   (Note, see §1.445 for international application filing and processing fees).

   (35 U.S.C. 6, 41, 111; Public Law 97–247)

3. Section 1.17 is amended by revising paragraphs (a)-(m) to read as follows:

§1.17 Patent application processing fees.

   (a) Extension fee for response within first month pursuant to §1.136(a):

   By a small entity (§1.9(f)) $28.00
   By other than a small entity $56.00

   (b) Extension fee for response within second month pursuant to §1.136(a):

   By a small entity (§1.9(f)) $85.00
   By other than a small entity $170.00

   (c) Extension fee for response within third month pursuant to §1.136(a):

   By a small entity (§1.9(f)) $195.00
   By other than a small entity $390.00

   (d) Extension fee for response within fourth month pursuant to §1.136(a):

   By a small entity (§1.19(f)) $305.00
   By other than a small entity $610.00

   (e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:

   By a small entity (§1.9(f)) $65.00
   By other than a small entity $130.00

   (f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:

   By a small entity (§1.9(f)) $65.00
   By other than a small entity $130.00

   (g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in appeal under 35 U.S.C. 134:

   By a small entity (§1.9(f)) $55.00
   By other than a small entity $110.00

   (h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph $140.00

   §1.47 — for filing by other than all the inventors or a person not the inventor.
   §1.48 — for correction of inventorship.
   §1.182 — for decision on questions not specifically provided for.
   §1.183 —to suspend the rules.
   §1.295 — for review of refusal to publish a statutory invention registration.
   §1.377 — for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent.
   §1.378(e) — for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent.
   §1.644(e) — for petition in an interference.
   §1.644(f) — for request for reconsideration of a decision on petition in an interference.
   §1.666(c) — for late filing of interference settlement agreement.
   §§5.12, 5.13, & 5.14 — for expedited handling of foreign filing license.
   §5.15 — for changing the scope of a license.
   §5.25 — for retroactive license.

   (i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph $72.00

   §1.12 — for access to an assignment record.
   §1.14 — for access to an application.
   §1.55 — for entry of late priority papers.
   §1.102 — to make application special.
   §1.103 — to suspend action in application.
   §1.177 — for divisional reissues to issue separately.
   §1.312 — for amendment after payment of issue fee.
   §1.313 — to withdraw an application from issue.
   §1.314 — to defer issuance of a patent.
   §1.334 — for patent to issue to assignee, assignment recorded late.
   §1.666(b) — for access to interference settlement agreement.

   (j) For filing a petition to institute a public use proceeding under §1.292 ..... $860.00

   (k) For processing an application filed with a

specification in a non-English language (§1.52(d)) $26.00

(l) For filing a petition (1) for the revival of an unavoidably abandoned application under 35 U.S.C. 133, or 371 or (2) for delayed payment of the issue fee under 35 U.S.C. 151:

By a small entity (§1.9(f)) $28.00
By other than a small entity $56.00

(m) For filing a petition (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent:

By a small entity (§1.19(f)) $280.00
By other than a small entity $560.00

(35 U.S.C. 6, 41, 157, 376; Public Law 97–247)

4. Section 1.18 is revised to read as follows:

§1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (§1.9(f)) $280.00
By other than a small entity $560.00

(b) Issue fee for issuing a design patent:

By a small entity (§1.9(f)) $100.00
By other than a small entity $200.00

(c) Issue fee for issuing a plant patent:

By a small entity (§1.9(f)) $140.00
By other than a small entity $280.00

(35 U.S.C. 6, 41, Public Law 97–247)

5. Section 1.19 is amended by revising paragraphs (a)-(c), (e) and (f), and by adding new paragraphs (a)(7), and (h)-(j) to read as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents:
(1) Printed copy of a patent, including a design patent, statutory invention registration, or defensive publication document, except color plant patent or color statutory invention registration $1.50
(2) Printed copy of a plant patent or statutory invention registration in color $6.00
(3) Copy of patent application as filed ... $9.00
(4) Copy of patent file wrapper and contents, per 200 pages or a fraction thereof . $75.00
(5) Copy of Office records, except as otherwise provided in this section, per page . $.50
(6) Microfiche copy of microfiche, per microfiche ..... $.50
(7) Copy of patent assignment record $1.50

(b) Certified copies of Office documents:
(1) For certifying Office records, per certificate $3.00
(2) For a search of assignment records, abstract of title and certification, per patent . $12.00

(c) Subscription services:
(1) Subscription orders for printed copies of patents as issued, annual service charge for entry of order and ten subclasses $7.00
(2) For annual subscription to each additional subclass in addition to the ten covered by the fee under paragraph (c)(1) of this section, per subclass ..... $.70

* * * * *

(e) List of patents in subclass:
(1) For list of all United States patents and statutory invention registrations in a subclass, per 100 numbers or fraction thereof . $1.00
(2) For list of United States patents and statutory invention registrations in a subclass limited by date or number, per 50 numbers or fraction thereof $1.00

(f) Microfiche copy of patent file record ... $6.00

* * * * *

(h) Uncertified copy of a non-United States patent document, per document $10.00

(i) To compare and certify copies made from Patent and Trademark Office records but not prepared by the Patent and Trademark Office, per copy of document $5.00

(j) Additional filing receipts:

Duplicate $14.00
Corrected due to applicant error $14.00

(35 U.S.C. 6, 41, 157)

6. Section 1.20 is amended by revising paragraphs (a)-(l) to read as follows:

§1.20 Post-Issuance fees.

(a) For providing a certificate of correction of applicant's mistake (§1.323) $29.00

(b) Petition for correction of inventorship in patent (§1.324) $140.00

(c) For filing a request for reexamination (§1.510(a)) $1,770.00

(d) For filing each statutory disclaimer (§1.321):

By a small entity (§1.9(f)) $28.00
By other than a small entity $56.00

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant .. $225.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant .. $445.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant $670.00

(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) $225.00
By other than a small entity $450.00

(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)) $445.00
By other than a small entity $890.00

(j) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§1.9(f)) $670.00
By other than a small entity $1,340.00

(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 $110.00

(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) $55.00
By other than a small entity $110.00

* * * * *

(35 U.S.C. 6, 41, 302; Public Laws 96–517, 97–247, 98–622)

7. Section 1.21 is amended by revising paragraphs (a)-(i) and (k), and adding a new paragraph (m) to read as follows:

§1.21 Miscellaneous fees and charges.

The Patent and Trademark Office has established the following fees for the services indicated:

(a) Registration of attorneys and agents:
(1) For admission to examination for registration to practice, fee payable upon application $250.00
(2) On registration to practice $81.00
(3) For reinstatement to practice $9.00
(4) For certificate of good standing as an attorney or agent $10.00
Suitable for framing $88.00
(5) For review of a decision of the Director of Enrollment and Discipline under §10.2(c) $92.00
(6) For requesting regrading of an examination under §10.7(c) $92.00

(b) Deposit accounts:
(1) For establishing or reinstating a deposit account $8.00
(2) Service charge for each month when the balance at the end of the month is below $1,000 ..... $20.00
(3) Service charge for each month when the balance at the end of the month is below $300 for restricted subscription deposit accounts used exclusively for subscription order of patent copies as issued $20.00

(c) Disclosure document: For filing a disclosure document $6.00

(d) Delivery box: Local delivery box rental, per annum $43.00

(e) International-type search reports: For preparing an international-type search report of an international-type search made at the time of the first action on the merits in a national patent application $28.00

(f) Search of Office records: For searching Patent and Trademark Office records for purposes not otherwise specified, per one-half hour or fraction thereof $14.00

(g) CopiShare card: Cost per copy $0.20

(h) Recording of documents:
(1) For recording each assignment, agreement or other paper relating to the property in a patent or application $7.00
(2) Where a document to be recorded under paragraph (h)(1) of this section refers to more than one patent or application, for each additional patent or application $2.00

(i) Publication in *Official Gazette:* For publication in the *Official Gazette* of a notice of the availability of an application or a patent for licensing or sale, each application or patent $7.00

* * * * *

(k) For items and services, that the Commissioner finds may be supplied, for which fees are not specified by statute or by this part, such charges as may be determined by the Commissioner with respect to each such item or service ..... actual cost

* * * * *

(m) For processing each check returned "unpaid" by a bank $20.00

(35 U.S.C. 6, 41)

8. Section 1.24 is proposed to be revised to read as follows:

§1.24 Coupons.

Coupons in denominations of one dollar for the purchase of trademark registrations and one dollar and fifty cents for the purchase of patents, designs, defensive publications, and statutory invention registrations are sold by the Patent and Trademark Office for the convenience of the general public; these coupons may not be used for any other purpose. The one dollar coupons are sold individually and in books of 50 with stubs for record for $50 and the one dollar and fifty cent coupons are sold individually and in books of 50 with stubs for record for $75. These coupons are good until used; they may be transferred but cannot be redeemed.

(35 U.S.C. 6)

9. Section 1.25, paragraph (a), is revised to read as follows:

§1.25 Deposit accounts.

(a) For the convenience of attorneys, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee

for establishing a deposit account (§1.21(b)(1)). A minimum deposit of $1,000 is required for paying any fees due or in ordering any services offered by the Office. However, a minimum deposit of $300 may be paid to establish a restricted subscription deposit account used exclusively for subscription order of patent copies as issued. At the end of each month, a deposit account statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit. An amount sufficient to cover all fees, services, copies, etc., requested must always be on deposit. Charges to accounts with insufficient funds will not be accepted. A service charge (§1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $1,000. For restricted subscription deposit accounts, a service charge (§1.21(b)(3)) will be assessed for each month that the balance at the end of the month is below $300.

* * * * *

(35 U.S.C. 6)

10. Section 1.26 is amended by revising paragraph (c) to read as follows:

§1.26 Refunds.

* * * * *

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of $1,300 will be made to the requester of the proceeding. Reexamination requesters should indicate whether any refund should be made by check or by credit to a deposit account.

(35 U.S.C. 6, 41)

11. Section 1.53 is amended by revising paragraph (c) to read as follows:

§1.53 Serial number, filing date, and completion of application.

* * * * *

(c) If any application is filed without the specification or drawing required by paragraph (b) of this section, applicant will be so notified and given a time period with which to submit the omitted specification or drawing in order to obtain a filing date as of the date of filing of such submission. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less a $15.00 handling fee.

* * * * *

12. Section 1.297, paragraph (b), is revised to read as follows:

§1.297 Publication of statutory invention registration.

* * * * *

(b) Each statutory invention registration published will include a statement relating to the attributes of a statutory invention registration. The statement will read as follows:

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

(35 U.S.C. 6, 157)

13. Section 1.445 is amended by revising paragraph (a) to read as follows:

§1.445 International application filing and processing fees.

(a) The following fees and charges are established by the Patent and Trademark Office under the authority of 35 U.S.C. 376:

(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14) $170.00

(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:

(i) No corresponding prior United States national application with fee has been filed $420.00
(ii) Corresponding prior United States national application with fee has been filed $250.00

(3) A supplemental search fee when required (see PCT Art. 17(3)(a) and PCT Rule 40.2), per additional invention $140.00

(4) The national fee, that is, the amount set forth as the filing fee under §1.16(a) through (d) credited, if requested at the time of filing, by an amount of $170.00 where an international search fee as required by paragraph (a)(2)(i) of this section has been paid on the corresponding international application to the United States Patent and Trademark Office as an International Searching Authority. Only one such credit is permitted based on a single international search fee.

(5) Surcharge for filing the national fee or oath or declaration later than 20 months from the priority date:

By a small entity (§1.9(f)) $55.00
By other than a small entity $110.00

(6) For filing an English translation of an international application later than 20 months after the priority date (§1.61(b)) $26.00

* * * * *

(35 U.S.C. 6, 376)

14. Section 1.446 is amended by removing paragraph (b):

§1.446 Refund of international application filing and processing fees.

* * * * *

(b) [Reserved]

(35 U.S.C. 6, 376)

July 31, 1985.

DONALD J. QUIGG,
Acting Commissioner
of Patents and Trademarks.

[1057 OG 24]

(57)

Public Law 96–517
96th Congress
An Act

To amend the patent and trademark laws.

Dec. 12, 1980
[H.R. 6933]
Patent and trademark laws, amendment.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 29 the following new chapter 30:

"CHAPTER 30–PRIOR ART CITATIONS TO OFFICE AND REEXAMINATION OF PATENTS

" Sec.
"301. Citation of prior art.
"302. Request for reexamination.
"303. Determination of issue by Commissioner.
"304. Reexamination order by Commissioner.
"305. Conduct of reexamination proceedings.
"306. Appeal.
"307. Certificate of patentability, unpatentability, and claim cancellation.

"§ 301. Citation of prior art 35 USC 301.

Any person at any time may cite to the Office in writing prior art consisting of patents or printed publications which that person believes to have a bearing on the patentability of any claim of a particular patent. If the person explains in writing the pertinency and manner of applying such prior art to at least one claim of the patent, the citation of such prior art and the explanation thereof will become a part of the official file of the patent. At the written request of the person citing the prior art, his or her identity will be excluded from the patent file and kept confidential.

"§ 302. Request for reexamination 35 USC 302.

"Any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art cited under the provisions of section 301 of this title. The request must be in writing and must be accompanie- by payment of a reexamination fee established by the Commissioner of Patents pursuant to the provisions of section 41 of this title. The request must set forth the pertinency and manner of applying cited prior art to every claim for which reexamination is requested. Unless the requesting person is the owner of the patent, the Commissioner promptly will send a copy of the request to the owner of record of the patent. Fee.

"§ 303. Determination of issue by Commissioner 35 USC 303.

"(a) Within three months following the filing of a request for reexamination under the provisions of section 302 of this title, the Commissioner will determine whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request, with or without consideration of other patents or printed publications. On his own initiative, and any time, the Commissioner may determine whether a substantial new question of patentability is raised by patents and publications discovered by him or cited under the provisions of section 301 of this title.

"(b) A record of the Commissioner's determination under subsection (a) of this section will be placed in the official file of the patent and a copy promptly will be given or mailed to the owner of record of the patent and to the person requesting reexamination, if any. Record.

"(c) A determination by the Commissioner pursuant to subsection (a) of this section that no substantial new question of patentability has been raised will be final and nonappealable. Upon such a determination, the Commissioner may refund a portion of the reexamination fee required under section 302 of this title. Refund.

"§ 304. Reexamination order by Commissioner 35 USC 304.

"If, in a determination made under the provisions of subsection 303(a) of this title, the Commissioner finds that a substantial new question of patentability affecting any claim of a patent is raised, the determination will include an order for reexamination of the patent for resolution of the question. The patent owner will be given a reasonable period, not less than two months from the date a copy of the determination is given or mailed to him, within which he may file a statement on such question, including any amendment to his patent and new claim or claims he may wish to propose, for consideration in the reexamination. If the patent owner files such a statement, he promptly will serve a copy of it on the person who has requested reexamination under the provisions of section 302 of this title. Within a period of two months from the date of service, that person may file and have considered in the reexamination a reply to any statement filed by the patent owner. That person promptly will serve on the patent owner a copy of any reply filed. Filing period.

35 USC 305.

"§ 305. Conduct of reexamination proceedings

"After the times for filing the statement and reply provided for by section 304 of this title have expired, reexamination will be conducted according to the procedures established for initial examination under the provisions of sections 132 and 133 of this title. In any reexamination proceeding under this chapter, the patent owner will be permitted to propose any amendment to his patent and a new claim or claims thereto, in order to distinguish the invention as claimed from the prior art cited under the provisions of section 301 of this title, or in response to a decision adverse to the patentability of a claim of a patent. No proposed amended or new claim enlarging the scope of a claim of the patent will be permitted in a reexamination proceeding under this chapter. All reexamination proceedings under this section, including any appeal to the Board of Appeals, will be conducted with special dispatch within the Office.

35 USC 132, 133.

35 USC 306.

"§ 306. Appeal

"The patent owner involved in a reexamination proceeding under this chapter may appeal under the provisions of section 134 of this title, and may seek court review under the provisions of sections 141 to 145 of this title, with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent.

35 USC 134.
35 USC 141–145.

35 USC 307.

"§ 307. Certificate of patentability, unpatentability, and claim cancellation

"(a) In a reexamination proceeding under this chapter, when the time for appeal has expired or any appeal proceeding has terminated, the Commissioner will issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable, confirming any claim of the patent determined to be patentable, and incorporating in the patent any proposed amended or new claim determined to be patentable.

"(b) Any proposed amended or new claim determined to be patentable and incorporated into a patent following a reexamination proceeding will have the same effect as that specified in section 252 of this title for reissued patents on the right of any person who made, purchased, or used anything patented by such proposed amended or new claim, or who made substantial preparation for the same, prior to issuance of a certificate under the provisions of subsection (a) of this section."

35 USC 252.

SEC. 2. Section 41 of title 35, United States Code, is amended to read as follows:

35 USC 41.

"§ 41. Patent fees

"(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

"(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through dispostion by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

" (c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

"(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.

35 USC 13.

Waiver

"(e) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge.

35 USC 132.

"(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three years.

"(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register."

Notice.

SEC. 3. Section 42 of title 35, United States Code, is amended to read as follows:

35 USC 42.

"§ 42. Patent and Trademark Office funding

"(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

"(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

"(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office.

"(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required."

Refund.

SEC. 4. Section 154 of title 35, United States Code, is amended by deleting the word "issue".

SEC. 5. Section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended to read as follows:

"§ 31. Fees

"(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material. However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register.

Notice.

"(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with any occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups."

Waiver.

Indian products, exception.

SEC. 6. (a) Title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 37 the following new chapter 38:

"CHAPTER 38–PATENT RIGHTS IN INVENTIONS MADE WITH FEDERAL ASSISTANCE

"Sec.
"200. Policy and objective.
"201. Definitions.
"202. Disposition of rights.
"203. March-in rights.
"204. Preference for United States industry.
"205. Confidentiality.
"206. Uniform clauses and regulations.
"207. Domestic and foreign protection of federally owned inventions.
"208. Regulations governing Federal licensing.
"209. Restrictions on licensing of federally owned inventions.
"210. Precedence of chapter.
"211. Relationship to antitrust laws.

35 USC 200.

"§200. Policy and objective.

"It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in a manner to promote free competition and enterprise; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.

35 USC 201.

"§201. Definitions

"As used in this chapter—

"(a) The term 'Federal agency' means any executive agency as defined in section 105 of title 5, United States Code, and the military departments as defined by section 102 of title 5, United States Code.

"(b) The term 'funding agreement' means any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government. Such term includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a funding agreement as herein defined.

"(c) The term 'contractor' means any person, small business firm, or nonprofit organization that is a party to a funding agreement.

"(d) The term 'invention' means any invention or discovery which is or may be patentable or otherwise protectable under this title.

"(e) The term 'subject invention' means any invention of the contractor conceived or first actually reduced to practice in the performance of work under a funding agreement.

"(f) The term 'practical application' means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are to the extent permitted by law or Government regulations available to the public on reasonable terms.

"(g) The term 'made' when used in relation to any invention means the conception or first actual reduction to practice of such invention.

"(h) The term 'small business firm' means a small business concern as defined at section 2 of Public Law 85–536 (15 U.S.C 632) and implementing regulations of the Administrator of the Small Business Administration.

"(i) The term 'nonprofit organization' means universities and other institutions of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a State nonprofit organization statute.

35 USC 202.

"§202. Disposition of rights

Funding agreement.

"(a) Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention: *Provided, however,* That a funding agreement may provide otherwise (i) when the funding agreement is for the operation of Government-owned research or production facility, (ii) in exceptional circumstances when it is determined by the agency that restriction or elimination of the right to retain title to any subject invention will better promote the policy and objectives of this chapter or (iii) when it is determined by a Government authority which is authorized by statute or Executive order to conduct foreign intelligence or counterintelligence activities that the restriction or elimination of the right to retain title to any subject invention is necessary to protect the security of such activities. The rights of the nonprofit organization or small business firm shall be subject to the provisions of paragraph (c) of this section and the other provisions of this chapter.

Written determination.

Copy to Comptroller General.

Copy to SBA.

"(b)(1) Any determination under (ii) of paragraph (a) of this section shall be in writing and accompanied by a written statement of facts justifying the determination. A copy of each such determination and justification shall be sent to the Comptroller General of the United States within thirty days after the award of the applicable funding agreement. In the case of determinations applicable to funding agreements with small business firms copies shall also be sent to the Chief Counsel for Advocacy of the Small Business Administration.

Contrary agency determinations.

"(2) If the Comptroller General believes that any pattern of determinations by a Federal agency is contrary to the policy and objectives of this chapter or that an agency's policies or practices are otherwise not in conformance with this chapter, the Comptroller General shall so advise the head of the agency. The head of the agency shall advise the Comptroller General in writing within one hundred and twenty days of what action, if any, the agency has taken or plans to take with respect to the matters raised by the Comptroller General.

Report to congressional committees.

"(3) At least once each year, the Comptroller General shall transmit a report to the Committees on the Judiciary of the Senate and House of Representatives on the manner in which this chapter is being implemented by the agencies and on such other aspects of Government patent policies and practices with respect to federally funded inventions as the Comptroller General believes appropriate.

funding agreement requirements.

"(c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following:

"(1) A requirement that the contractor disclose each subject invention to the Federal agency within a reasonable time after it is made and that the Federal Government may receive title to any subject invention not reported to it within such time.

"(2) A requirement that the contractor make an election to retain title to any subject invention within a reasonable time after disclosure and that the Federal Government may receive title to any subject invention in which the contractor does not elect to retain rights or fails to elect rights within such time.

"(3) A requirement that a contractor electing rights file patent applications within reasonable times and that the Federal Government may receive title to any subject inventions in the United States or other countries in which the contractor has not filed patent applications on the subject invention within such times.

"(4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world, and may, if provided in the funding agreement, have additional rights to sublicense any foreign government or international organization pursuant to any existing or future treaty or agreement.

"(5) The right of the Federal agency to require periodic reporting on the utilization or efforts at obtaining utilization that are being made by the contractor or his licensees or assignees: *Provided,* That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

"(6) An obligation on the part of the contractor, in the event a United States patent application is filed by or on its behalf or by any assignee of the contractor, to include within the specification of such application and any patent issuing thereon, a statement specifying that the invention was made with Government support and that the Government has certain rights in the invention.

"(7) In the case of a nonprofit organization, (A) a prohibition upon the assignment of rights to a subject invention in the United States without the approval of the Federal agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions and which is not, itself, engaged in or does not hold a substantial interest in other organizations engaged in the manufacture or sale of products or the use of processes that might utilize the invention or be in competition with embodiments of the invention (provided that such assignee shall be subject to the same provisions as the contractor); (B) a prohibition against the granting of exclusive licenses under United States Patents or Patent Applications in a subject invention by the contractor to persons other than small business firms for a period in excess of the earlier of five years from first commercial sale or use of the invention or eight years from the date of the exclusive license excepting that time before regulatory agencies necessary to obtain premarket clearance unless, on a case-by-case basis, the Federal agency approves a longer exclusive license. If exclusive field of use licenses are granted, commercial sale or use in one field of use shall not be deemed commercial sale or use as to other fields of use, and a first commercial sale or use with respect to a product of the invention shall not be deemed to end the exclusive period to different subsequent products covered by the invention; (C) a requirement that the contractor share royalties with the inventor; and (D) a requirement that the balance of any royalties or income earned by the contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, be utilized for the support of scientific research or education.

"(8) The requirements of sections 203 and 204 of this chapter.

Rights, retention.

"(d) If a contractor does not elect to retain title to a subject invention in cases subject to this section, the Federal agency may consider and after consultation with the contractor grant requests for retention of rights by the inventor subject to the provisions of this Act and regulations promulgated hereunder.

Rights, transfer or assignment.

"(e) In any case when a Federal employee is a coinventor of any invention made under a funding agreement with a nonprofit organization or small business firm, the Federal agency employing such coinventor is authorized to transfer or assign whatever rights it may acquire in the subject invention from its employee to the contractor subject to the conditions set forth in this chapter.

Third-party licensing, prohibition.

"(f)(1) No funding agreement with a small business firm or nonprofit organization shall contain a provision allowing a Federal agency to require the licensing to third parties of inventions owned by the contractor that are not subject inventions unless such provision has been approved by the head of the agency and a written justification has been signed by the head of the agency. Any such provision shall clearly state whether the licensing may be required in connection with the practice of a subject invention, a specifically identified work object, or both. The head of the agency may not delegate the authority to approve provisions or sign justifications required by this paragraph.

"(2) A Federal agency shall not require the licensing of third parties under any such provision unless the head of the agency determines that the use of the invention by others is necessary for the practice of a subject invention or for the use of a work object of the funding agreement and that such action is necessary to achieve the practical application of the subject invention or work object. Any such determination shall be on the record after an opportunity for an agency hearing. Any action commenced for judicial review of such determination shall be brought within sixty days after notification of such determination.

35 USC 203.

"§203. March-in rights

"With respect to any subject invention in which a small business firm or nonprofit organization has acquired title under this chapter, the Federal agency under

whose funding agreement the subject invention was made shall have the right, in accordance with such procedures as are provided in regulations promulgated hereunder to require the contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the contractor, assignee, or exclusive licensee refuses such request, to grant such a license itself, if the Federal agency determines that such–

"(a) action is necessary because the contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;

"(b) action is necessary to alleviate health or safety needs which are not reasonably satisfied by the contractor, assignee, or their licensees;

"(c) action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the contractor, assignee, or licensees; or

"(d) action is necessary because the agreement required by section 204 has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of its agreement obtained pursuant to section 204.

35 USC 204.

"§204. Preference for United States industry

"Notwithstanding any other provision of this chapter, no small business firm or nonprofit organization which receives title to any subject invention and no assignee of any such small business firm or nonprofit organization shall grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal agency under whose funding agreement the invention was made upon a showing by the small business firm, nonprofit organization, or assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

Waiver.

35 USC 205.

"§205. Confidentiality

"Federal agencies are authorized to withhold from disclosure to the public information disclosing any invention in which the Federal Government owns or may own a right, title, or interest (including a nonexclusive license) for a reasonable time in order for a patent application to be filed. Furthermore, Federal agencies shall not be required to release copies of any document which is part of an application for patent filed with the United States Patent and Trademark Office or with any foreign patent office.

35 USC 206.

"§206. Uniform clauses and regulations

"The Office of Federal Procurement Policy, after receiving recommendations of the Office of Science and Technology Policy, may issue regulations which may be made applicable to Federal agencies implementing the provisions of sections 202 through 204 of this chapter and the Office of Federal Procurement Policy shall establish standard funding agreement provisions required under this chapter.

35 USC 207.

"§207. Domestic and foreign protection of federally owned inventions

"Each Federal agency is authorized to–

"(1) apply for, obtain, and maintain patents or other forms of protection in the United States and in foreign countries on inventions in which the Federal Government owns a right, title, or interest;

"(2) grant nonexclusive, exclusive, or partially exclusive licenses under federally owned patent applications, patents, or other forms of protection obtained, royalty-free or for royalties or other consideration, and on such terms and conditions, including the grant to the licensee of the right of enforcement pursuant to the provisions of chapter 29 of this title as determined appropriate in the public interest;

35 USC 281 *et seq.*

"(3) undertake all other suitable and necessary steps to protect and administer rights to federally owned inventions on behalf of the Federal Government either directly or through contract; and

"(4) transfer custody and administration, in whole or in part, to another Federal agency, of the right, title, or interest in any federally owned invention.

35 USC 208.

"§208. Regulations governing Federal licensing

"The Administrator of General Services is authorized to promulgate regulations specifying the terms and conditions upon which any federally owned invention, other than inventions owned by the Tennessee Valley Authority, may be licensed on a nonexclusive, partially exclusive, or exclusive basis.

35 USC 209.

"§209. Restrictions on licensing of federally owned inventions

Development or marketing plan

"(a) No Federal agency shall grant any license under a patent or patent application on a federally owned invention unless the person requesting the license has supplied the agency with a plan for development and/or marketing of the invention, except that any such plan may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

Manufacture in U.S.

"(b) A Federal agency shall normally grant the right to use or sell any federally owned invention in the United States only to a licensee that agrees that any products embodying the invention or produced through the use of the invention will be manufactured substantially in the United States.

"(c)(1) Each Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a federally owned domestic patent or patent application only if, after public notice and opportunity for filing written objections, it is determined that–

"(A) the interests of the Federal Government and the public will best be served by the proposed license, in view of the applicant's intentions, plans, and ability to bring the invention to practical application or otherwise promote the invention's utilization by the public;

"(B) the desired practical application has not been achieved, or is not likely expeditiously to be achieved, under any nonexclusive license which has been granted, or which may be granted, on the invention,

"(C) exclusive or partially exclusive licensing is a reasonable and necessary incentive to call forth the investment of risk capital and expenditures to bring the invention to practical application or otherwise promote the invention's utilization by the public; and

"(D) the proposed terms and scope of exclusivity are not greater than reasonably necessary to provide the incentive for bringing the invention to practical application or otherwise promote the invention's utilization by the public.

Antitrust factors.

"(2) A Federal agency shall not grant such exclusive or partially exclusive license under paragraph (1) of this subsection if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the country in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with the antitrust laws.

Small business preference.

"(3) First preference in the exclusive or partially exclusive licensing of federally owned inventions shall go to small business firms submitting plans that are determined by the agency to be within the capabilities of the firms and equally likely, if executed, to bring the invention to practical application as any plans submitted by applicants that are not small business firms.

Antitrust factors.

"(d) After consideration of whether the interests of the Federal Government or United States industry in foreign commerce will be enhanced, any Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a foreign patent application or patent, after public notice and opportunity for filing written objections, except that a Federal agency shall not grant such exclusive or partially exclusive license if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the United States in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with antitrust laws.

Record.

"(e) The Federal agency shall maintain a record of determinations to grant exclusive or partially exclusive licenses.

Terms and conditions.

"(f) Any grant of a license shall contain such terms and conditions as the Federal agency determines appropriate for the protection of the interests of the Federal Government and the public, including provisions for the following:

"(1) periodic reporting on the utilization or efforts at obtaining utilization that are being made by the licensee with particular reference to the plan submitted: *Provided,* That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code;

"(2) the right of the Federal agency to terminate such license in whole or in part if it determines that the licensee is not executing the plan submitted with its request for a license and the licensee cannot otherwise demonstrate to the satisfaction of the Federal agency that it has taken or can be expected to take within a reasonable time, effective steps to achieve practical application of the invention;

"(3) the right of the Federal agency to terminate such license in whole or in part if the licensee is in breach of an agreement obtained pursuant to paragraph (b) of this section; and

"(4) the right of the Federal agency to terminate the license in whole or in part if the agency determines that such action is necessary to meet requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by the licensee.

35 USC 210.

"§210. Precedence of chapter

"(a) This chapter shall take precedence over any other Act which would require a disposition of rights in subject inventions of small business firms or nonprofit or-

ganizations contractors in a manner that is inconsistent with this chapter, including but not necessarily limited to the following:

"(1) section 10(a) of the Act of June 29, 1935, as added by title I of the Act of Aug. 14, 1946 (7 U.S.C. 427i(a); 60 Stat. 1085);

"(2) section 205(a) of the Act of Aug. 14, 1946 (7 U.S.C. 1624(a); 60 Stat. 1090);

"(3) section 501(c) of the Federal Mine Safety and Health Act of 1977 (30 U.S.C. 951(c); 83 Stat. 742);

91 Stat. 1320.

"(4) section 106(c) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1395(c); 80 Stat. 721);

"(5) section 12 of the National Science Foundation Act of 1950 (42 U.S.C. 1871(a); 82 Stat. 360);

64 Stat. 154.

"(6) section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182; 68 Stat. 943);

68 Stat. 944.

"(7) section 305 of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457);

"(8) section 6 of the Coal Research Development Act of 1960 (30 U.S.C. 666; 74 Stat. 337);

"(9) section 4 of the Helium Act Amendments of 1960 (50 U.S.C. 167b; 74 Stat. 920);

"(10) section 32 of the Arms Control and Disarmament Act of 1961 (22 U.S.C. 2572; 75 Stat. 634);

"(11) subsection (e) of section 302 of the Appalachian Regional Development Act of 1965 (40 U.S.C. App. 302(e); 79 Stat. 5);

"(12) section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901); 88 Stat. 1878);

88 Stat. 1887.
42 USC 5908.

"(13) section 5(d) of the Consumer Product Safety Act (15 U.S.C. 2054(d); 86 Stat. 1211);

"(14) section 3 of the Act of April 5, 1944 (30 U.S.C. 323; 58 Stat. 191);

"(15) section 8001(c)(3) of the Solid Waste Disposal Act (42 U.S.C. 6981(c); 90 Stat. 2829);

"(16) section 219 of the Foreign Assistance Act of 1961 (22 U.S.C. 2179; 83 Stat. 806);

"(17) section 427(b) of the Federal Mine Health and Safety Act of 1977 (30 U.S.C. 937(b); 86 Stat. 155);

"(18) section 306(d) of the Surface Mining and Reclamation Act of 1977 (30 U.S.C. 1226(d); 91 Stat. 455);

"(19) section 21(d) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2218(d); 88 Stat. 1548);

"(20) section 6(b) of the Solar Photovoltaic Energy Research Development and Demonstration Act of 1978 (42 U.S.C. 5585(b); 92 Stat. 2516);

"(21) section 12 of the Native Latex Commercialization and Economic Development Act of 1978 (7 U.S.C. 178(j); 92 Stat. 2533); and

7 USC 178j.

"(22) section 408 of the Water Resources and Development Act of 1978 (42 U.S.C. 7879; 92 Stat. 1360).

92 Stat. 1316.

The Act creating this chapter shall be construed to take precedence over any future Act unless that Act specifically cites this Act and provides that it shall take precedence over this Act.

"(b) Nothing in this chapter is intended to alter the effect of the laws cited in paragraph (a) of this section or any other laws with respect to the disposition of rights in inventions made in the performance of funding agreements with persons other than nonprofit organizations or small business firms.

Rights, disposition.

"(c) Nothing in this chapter is intended to limit the authority of agencies to agree to the disposition of rights in inventions made in the performance of work under funding agreements with persons other than nonprofit organizations or small business firms in accordance with the Statement of Government Patent Policy issued on Aug. 23, 1971 (36 Fed. Reg. 16887), agency regulations, or other applicable regulations or to otherwise limit the authority of agencies to allow such persons to retain ownership of inventions. Any disposition of rights in inventions made in accordance with the Statement or implementing regulations, including any disposition occurring before enactment of this section, are hereby authorized.

Disclosure.

"(d) Nothing in this chapter shall be construed to require the disclosure of intelligence sources or methods or to otherwise affect the authority granted to the Director of Central Intelligence by statute or Executive order for the protection of intelligence sources or methods.

35 USC 211.

"§211. Relationship to antitrust laws

"Nothing in this chapter shall be deemed to convey to any person immunity from civil or criminal liability, or to create any defenses to actions, under any antitrust law."

(b) The table of chapters for title 35, United States Code, is amended by adding immediately after the item relating to chapter 37 the following:

"38. Patent rights in inventions made with Federal assistance."

SEC. 7. AMENDMENTS TO OTHER ACTS.—The following Acts are amended as follows:

(a) Section 156 of the Atomic Energy Act of 1954 (42 U.S.C. 2186; 68 Stat. 947) is amended by deleting the words "held by the Commission or".

(b) The National Aeronautics and Space Act of 1958 is amended by repealing paragraph (g) of section 305 (42 U.S.C. 2457(g); 72 Stat. 436).

(c) The Federal Nonnuclear Energy Research and Development Act of 1974 is amended by repealing paragraphs (g), (h), and (i) of section 9 (42 U.S.C. 5908 (g), (h), and (i); 88 Stat. 1889–1891).

SEC. 8. (a) Sections 2, 4, and 5 of this Act will take effect upon enactment.

Effective dates.
35 USC 41 note.

(b) Section 1 of this Act will take effect on the first day of the seventh month beginning after its enactment and will apply to patents in force as of that date or issued thereafter.

(c) Section 3 of this Act will take effect on the first day of the first fiscal year beginning on or after one calendar year after enactment. However, until section 3 takes effect, the Commissioner may credit the Patent and Trademark Office appropriation account in the Treasury of the United States with the revenues from collected reexamination fees, which will be available to pay the costs to the Office of reexamination proceedings.

(d) Any fee in effect as of the date of enactment of this Act will remain in effect until a corresponding fee established under section 41 of title 35, United States Code, or section 1113 of title 15, United States Code, takes effect.

(e) Fees for maintaining a patent in force will not be applicable to patents applied for prior to the date of enactment of this Act.

(f) Sections 6 and 7 of this Act will take effect on the first day of the seventh month beginning after its enactment. Implementing regulations may be issued earlier.

(g) Sections 8 and 9 will take effect on the date of enactment of this Act.

Computerized data and retrieval system, report to Congress
35 USC 14 note.

SEC. 9. The Commissioner of Patents and Trademarks shall report to Congress, within two years after the effective date of this Act, a plan to identify, and if necessary develop or have developed, computerized data and retrieval systems equivalent to the latest state of the art which can be applied to all aspects of the operation of the Patent and Trademark Office, and particularly to the patent search file, the patent classification system, and the trademark search file. The report shall specify the cost of implementing the plan, how rapidly the plan can be implemented by the Patent and Trademark Office, without regard to funding which is or which may be available for this purpose in the future.

SEC. 10. (a) Section 101 of title 17 of the United States Code is amended to add at the end thereof the following new language:

"A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."

"Computer program."

(b) Section 117 of title 17 of the United States Code is amended to read as follows:

"§117. Limitations on exclusive rights: Computer programs

17 USC 117.

"Notwithstanding the provisions of section 106, it is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:

17 USC 106.

"(1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or

"(2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.

"Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part of the lease, sale, or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorization of the copyright owner."

Approved Dec. 12, 1980.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 96-1307, Pt. 1 (Comm. on the Judiciary) and No. 96—1307, Pt. 2 (Comm. on Government Operations).
CONGRESSIONAL RECORD, Vol. 126 (1980):
Nov. 17, considered and passed House.
Nov. 20, considered and passed Senate, amended.
Nov. 21, House concurred in Senate amendment.

(58)

Public Law 97-247
97th Congress
An Act

To authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is authorized to be appropriated for the payment of salaries and necessary expenses of the Patent and Trademark Office to

become available for fiscal year 1983, $76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary as well as such additional or supplemental amounts as may be necessary, for increases in salary, pay, retirement, or other employee benefits authorized by law. Funds available under this section shall be used to reduce by 50 per centum the payment of fees under section 41 (a) and (b) of title 35, United States Code, by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by small business concerns as defined in section 3 of the Small Business Act and by regulations established by the Small Business Administration. When so specified and the the extent provided in an appropriation Act, any amount appropriated pursuant to this section and, in addition, such fees as shall be collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), may remain available without fiscal year limitation.

15 USC 632.

SEC. 2. Notwithstanding any other provision of law, there is authorized to be appropriated for the payment of salaries and expenses of the Patent and Trademark Office, $121,461,000 for the fiscal year ending September 30, 1982, and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law.

SEC. 3. (a) Section 41(a) of title 35, United States Code, is amended to read as follows:

Fees.

"(a) The Commissioner shall charge the following fees:

"1. On filing each application for an original patent, except in design or plant cases, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of three, $10 for each claim (whether independent or dependent) which is in excess of twenty, and $100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

35 USC 112.

"2. For issuing each original or reissue patent, except in design or plant cases, $500.

"3. In design and plant cases:

"a. On filing each design application, $125.

"b. On filing each plant application, $200.

"c. On issuing each design patent, $175.

"d. On issuing each plant patent, $250.

"4. On filing each application for the reissue of a patent, $300; in addition, on filing or on presentation at any other time, $30. for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

"5. On filing each disclaimer, $50.

"6. On filing an appeal from the examiner to the Board of Appeals, $115; in addition, on filing a brief in support of the appeal, $115, and on requesting an oral hearing before the Board of Appeals, $100.

"7. On filing each petition for the revival of an unintentionally abondoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, $500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be $50.

35 USC 133, 151.

"8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:

"a. On filing a first petition, $50.

"b. On filing a second petition, $100.

"c. On filing a third or subsequent petition, $200.".

(b) Section 41(b) of title 35, United States Code, is amended to read as follows:

Maintenance fees.

"(b) The Commissioner shall charge the following fees for maintaining a patent in force:

"1. Three years and six months after grant, $400.

"2. Seven years and six months after grant, $800.

"3. Eleven years and six months after grant, $1,200.

Expiration.

Surcharge.

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an application maintenance fee. No fee will be established for maintaining a design or plant patent in force."

(c) Section 41(c) of title 35, United States Code, is amended to read as follows:

Maintenance fee, delayed payment. Surcharge.

"(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period.

"(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection."

(d) Section 41(d) of title 35, United States Code, is amended to read as follows:

Fees.

"(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 113 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50."

35 USC 13.

(e) Section 41(f) of title 35, United States Code, is amended to read as follows:

Adjusted fees.

"(f) The fees established in subsections (a) and (b) of this section may be adjusted by the Commissioner on October 1, 1985, and every third year thereafter, to reflect any fluctuations occuring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored,".

(f) Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended by deleting "Fees will be set and adjusted by the Commissioner to recover the aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or funished the material.".

(g) Section 42(c) of the title 35, United States Code, is amended by adding the following sentence at the end thereof: "Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks.".

SEC. 4. Section 3(a) of title 35, United States Code is amended (1) by deleting the phrase "not more than fifteen"; and (2) by inserting the phrase "appointed under section 7 of this title" immediately after the phrase "examiners-in-chief".

SEC. 5. Section 111 of title 35, United States Code, is amended to read as follows:

Applications.

"SEC. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such prescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.".

35 USC 112.
35 USC 113.
35 USC 115.

Filing date.

SEC. (a) Section 116 of title 35, United States Code, is amended (1) by deleting the phrase "Joint inventors" from the title and inserting in its place "Inventors"; and (2) in the third paragraph, by deleting the phrase "a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error" and inserting in its place the phrase "through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application".

(b) Section 256 of title 35, United States Code, is amended to read as follows:

"§256. Correction of named inventor

"Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

"The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.".

SEC. 7. Section 6 of the title 35, United States Code, is amended by deleting paragraph (d) thereof.

SEC. 8. (a) Section 8(a) of the Trademark Act of 1946, as amended (15 U.S.C.

1058(a)), is amended (a) by deleting the word "still"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

(b) Section 8(b) of the Trademark Act of 1946, as amended (15 U.S.C. 1058(b)), is amended (1) by deleting the word "stille"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

SEC. 9. (a) Section 13 of the Trademark Act of 1946, as amended (15 U.S.C. 1063), is amended (1) by deleting the phrase "a verified" and inserting in its place the word "an"; (2) by adding the phrase "when requested prior to the expiration of an extension" immediately after the word "cause"; and (3) by deleting the fourth sentence.

(b) Section 14 of the Trademark Act of 1946, as amended (15 U.S.C. 1064), is amended by deleting the word "verified".

SEC. 10. Section 15 of the Trademark Act of 1946, as amended (15 U.S.C. 1065), is amended by deleting the phrase "the publication" and inserting in its place the word "registration".

SEC. 11. The first sentence of section 16 of the Trademark Act of 1946, as amended (15 U.S.C. 1066), is amended to read as follows: "Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive.".

SEC. 12. Section 21 of title 35, United States Code, is amended–

(1) by deleting the phrase "Day for taking action falling on Saturday, Sunday, or holiday" from the title and inserting in its place the phrase "Filing date and day for taking action";

(2) by inserting the following as subsection (a):

Filing date.

"(a) The Commissioner may be rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner.";

(3) by designating the existing paragraph as subsection (b); and

(4) by inserting the word "federal" in subsection (b), as designated above, immediately after the word "a".

SEC. 13. Section 6(a) of title 35, United States Code, is amended (1) by deleting the word "and", third occurrence, and inserting in its place a comma; (2) by inserting the phrase ", or exchanges of items or services" immediately after the word "programs"; and (3) by inserting the phrase "or the administration of the Patent and Trademark Office" immediately after the word "law", second occurrence.

SEC. 14. (a) Section 115 of title 35, United States Code, is amended by (1) deleting the phrase "shall be" and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(b) Section 261 of title 35, United States Code, is amended, in the third paragraph, by inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(c) Section 11 of the Trademark Act of 1946, as amended (15 U.S.C. 1061), is amended by (1) deleting the phrase "shall be", first occurrence, and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

SEC. 15. Section 13 of title 35, United States Code, is amended by deleting "(a)9" and inserting in its place "(d)".

SEC. 16. Section 173 of title 35, United States Code, is amended to read as follows: "Patents for designs shall be granted for the term of fourteen years."

Effective dates.
35 USC 41 note.

SEC. 17. (a) Sections 1, 2, 4, 7, and 13 through 15 of this Act shall take effect on the date of enactment of this Act. Sections 3 and 16 of this Act shall take effect on Oct. 1, 1982. The maintenance fees provided for in section 3(b) of this Act shall not apply to patents applied for prior to the date of enactment of this Act. Each patent applied for on or after the date of enactment of this Act shall be subject to the maintenance fees established pursuant to section 3(b) of this Act or to maintenance fees hereafter established by law, as to the amounts paid and the number and timing of the payments.

(b)(1) Title 35, United States Code, is amended by inserting after section 293 the following new section of chapter 29:

§294. Voluntary arbitration

"(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

Awards.
9 USC 1 *et seq.*
35 USC 282.

"(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

Modification.

"(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

Notices.

"(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give notice of such modification to the Commissioner. The Commissioner shall, upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

Modification

"(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner."

(2) The analysis for chapter 29 of title 35 of the United States Code is amended by adding at the end the following:

"294. Voluntary arbitration.".

(c) Sections 5, 6, 8 through 12, and 17(b) of this Act shall take effect six months after enactment.

Approved Aug. 27, 1982.

LEGISLATIVE HISTORY—H.R. 6260

HOUSE REPORT No. 97-542 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 128 (1982):
June 8, considered and passed House.
Aug. 12, considered and passed Senate.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 18, No. 36 (1982):
Aug. 28, Presidential statement.

(59) 97TH CONGRESS HOUSE OF REPRESENTATIVES REPORT
2d Session No. 97-542

PATENT AND TRADEMARK OFFICE AUTHORIZATION

May 17, 1982.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. KASTENMEIER, from the Committee on the Judiciary, submitted the following

REPORT
[To accompany H.R. 6260]

[Including cost estimate of the Congressional Budget Office]

The Committee on the Judiciary, to whom was referred the bill (H.R. 6260) to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

The amendment strikes out all after the enacting clause of the bill and inserts a new text which appears in italic type in the reported bill.

PURPOSE OF THE BILL

The purpose of H.R. 6260 is to authorize appropriations for the Patent and Trademark Office for fiscal years 1983 through 1985.

STATEMENT

The Subcommittee on Courts, Civil Liberties and the Administration of Justice previously held two days of hearings on the legislation, receiving testimony from a representative group of witnesses including the Commissioner of Patents and Trademarks, the American Bar Association Section of Patent, Trademark and Copyright Law, the American Patent Law Association, the Patent, Trademark and Copyright Section of the State Bar of Virginia, the United States Trademark Association and the General Patent Counsel of the General Electric Corporation.

H.R. 6260 reflects the recommendation of the Administration with three modifications as follows. First, the Administration proposal authorized the Commissioner of Patents and Trademarks to establish fees administratively. The subcommittee approved an amendment to set forth specific fees in the statute and limited the Commissioner's authority to raise fees. Second, the Administration recommended that user fees recover 100% of the costs of actual processing of patents and trademarks. The subcommittee amended the bill to reduce by 50% patent filing and maintenance fees for individual inventors, small businesses and not for profit institutions. The effect of the amendment is to increase by $8 million the authorized appropriation which would have been provided under the original Administration request. Third, the subcommittee adopted a recommendation of the Commissioner of Patents and Trademarks, the American Bar Association and a coalition of corporate patent counsel permitting arbitration of patent disputes.

H.R. 6260 was considered by the Full Committee on the Judiciary on May 11, 1982 and was approved as reported by the subcommittee with an amendment offered by Mr. Frank described below.

SYNOPSIS OF H.R. 6260

SECTIONS 1—3

Authorizes the Patent and Trademark Office for fiscal year 1983 at an appropriations level of $76,000,000 and for fiscal years 1984 and 1985 such sums as may be necessary. This would be augmented by additional fee income under the bill of approximately $79 million for a total budget of $155 million. In fiscal year 1982 the Patent and Trademark Office was authorized at a level of $118,961,000 of which $29,600,000 was provided through fee income. Fiscal year 1983 will be the first year in which fee income under P.L. 96-517 will be credited to the Patent and Trademark Office without being counted as part of its authorized appropriation. Had this new accounting procedure been applied to fiscal year 1982 the authorization and appropriation for the Patent and Trademark Office would have been $89 million. This constitutes the actual level of taxpayer support of the Office. Thus, H.R. 6260 authorizes the expenditure of tax revenue in fiscal 1983 to support the Patent and Trademark Office at a level $21 million lower than for fiscal 1982. H.R. 6260 proposes to double current fees as the means of making up for the difference between a lower level of taxpayer support and an increased total budget. Further, maintenance fees which were first authorized in P.L. 96-517 and which will not begin to be collected until fiscal year 1986 (Oct. 1, 1985) will also be doubled over the amounts provided for under P.L. 96-517.

The overall objective of H.R. 6260 is to provide for increased user support for the Patent and Trademark Office costs associated with the actual processing of patent applications by fiscal year 1996. The fee schedule is designed to return to the government 100% of actual costs. However, an amendment to the original Administration proposal adopted by the subcommittee would reduce by half the fees for individuals, small businesses and nonprofit inventors. At the present time less than 25% of the actual costs of processing patent applications are supported by fee revenue and under P.L. 96-517, which becomes effective on Oct. 1, 1982, this amount will gradually begin to rise but will only reach 50% of actual costs in 1996.

The amendment offered by Mr. Frank and approved by the Committee modifies that portion of Section 3 of H.R. 6260 dealing with Trademark fees. Public Law 96-517 (35 United States Code, section 31(a)) provides, "Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost. . .of performing the service or furnishing the material."

The Administration requested that the figure, "50 per centum", be changed to "100 per centum", thus mandating full recovery to the Treasury of all costs associated with processing trademarks.An amendment offered during subcommittee consideration of the legislation proposed to reduce fee generated revenue supporting processing of trademarks to less than the 100 per centum recovery level. The amendment was not agreed to. The author of the amendment, Mr. Frank, then proposed to amend the law to provide a statutory fee schedule which would return revenue to the Patent and Trademark Office at a level designed to recover 100 per centum of costs. However, following consultations with interested parties, Mr. Frank modified his amendment simply to repeal those portions of P.L. 96-517 which mandate a specified level of cost recovery for the processing of trademark registrations. Thus, the level of cost recovery for processing of trademark registrations will be within the discretion of the Commissioner. The Committee is aware of the concerns of users of the Trademark registration system, however, and intends to exercise vigorous oversight with respect to the Commissioner to ensure that fees remain at a reasonable level and that trademark registrations are processed in an efficient and cost effective manner. As part of this oversight, the Committee recommends the following fee structure to the Commissioner for Fiscal Year 1983.

Type of fee:	*Proposed fee*
Application filing fee per class	$175
Renewal fee	300
Late renewal	100
Section 12(c) claim	100
New certificate	100
Certificate of correction	100
Disclaimer to registration	100
Amendment to registration	100
Per class combines section 8 and 15 affidavit	200
Per class section 8 affidavit alone	100
Per class section 15 affidavit alone	100
All petitions to Commissioner	100
Cancellation opposition per class	200
TTAB appeal	100
Certified copies	10
Copies of trademarks	1
Assignments	([1])

[1] 100 plus for each mark in addition to 1.

Section 3(d) also permits the Commissioner of Patents to accept late payment of maintenance fees where it is established that the delay in payment was unavoidable.

Section 4 permits the Commissioner of Patents and Trademarks to appoint temporary examiners in chief for the Board of Patent Appeals to deal more flexibly with workload.

Section 5 permits late filing of the oath and fee accompanying submission of specifications and drawings which accompany patent claims.

Section 6 permits greater flexibility in correcting mistakes in the naming of inventors on a patent application.

Section 7 allocates funds from the Patent and Trademark Office to the Department of State to pay the financial obligations of administering the patent Cooperation Treaty.

Section 8 clarifies the Trademark law with respect to what constitutes use of a mark "in commerce".

Section 9 deletes the burdensome technical requirement that trademark oppositions be verified.

Section 10 makes the date of registration rather than the date of publication the crucial date for purposes of establishing the incontestability of a trademark. This eliminates an ambiguity in the present law.

Section 11 limits the declaration of interferences under the trademark law to situations where extraordinary circumstances exist.

Section 12 authorizes the Commissioner of the Patent and Trademark Office the flexibility to deal with problems of delay in filing due to postal service breakdowns.

Section 13 permits the Commissioner of Patents to enter into cooperative studies, programs, exchanges and similar ventures associated with the administration of the Patent Office.

Section 14 conforms U.S. Patent and Trademark Law to a recent international treaty governing diplomatic or consular legalization of documents.

Section 15 corrects a mistaken citation in P.L. 96-517.

Section 16 creates a uniform term for design patents.

Section 17 establishes the effective dates for provisions of the Act. Increased filing fees would apply to all applications made on or after the date of enactment of H.R. 6260.

Section 18 permits voluntary arbitration of patent disputes.

SECTION-BY-SECTION ANALYSIS

SECTION 1

This section authorizes appropriations for the Patent and Trademark Office for the payment of salaries and necessary expenses of the Office. For Fiscal Year 1983, this section authorizes appropriations of $76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary, as well as such additional and supplemental amounts as may be necessary to cover any increases in salary, pay, retirement, or employee benefits which may be authorized by law. Funds made available by these appropriations are to be used to reduce by 50 per centum the amount of the fees to be paid under title 35, United States Code, section 41(a) and (b) by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by small business concerns as defined in section 3 of the Small Business Act and by regulations established by the Small Business Administration.

In addition, fees collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), will augment the authorized appropriation to provide the resources needed to conduct the operations of the Office for fiscal year 1983. The total resources for the Office in fiscal year 1983, that is, the amount appropriated pursuant to this section plus fees collected pursuant to the patent and trademark laws, which will be available to the Office, are estimated to be $154,934,000. The corresponding levels for fiscal year 1984 and fiscal year 1985 are estimated in the President's Budget to be $167 million and $176 million, respectively. Any additional amounts to cover increases in salary, pay, retirement, or other employee benefits which may be authorized by law will be in addition to, and will therefore increase, those program levels. Finally, any funds appropriated pursuant to this section and all fees collected, when specified in an appropriation act, will remain available without any fiscal year limitation.

SECTION 2

This section provides that, notwithstanding any other provision of law, there is authorized to be appropriated to the Patent and Trademark Office for fiscal year 1982, $121,461,000 and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law. This section increases the amount authorized for the Patent and Trademark Office by 2.5 million over that authorized in Public law 97-35. The President is recommending a supplemental appropriation of $2,500,000 for the Patent and Trademark Office for fiscal year 1982 in order to carry out the program recommendations included in his fiscal year 1983 Budget.

SECTION 3

This section establishes certain statutory fees which are to be charged by the Commissioner and authorizes the Commissioner to establish other fees whose amounts are not specifically set. Thus, the major routine fees which are applicable to patents and patent application processing are established (e.g., filing, issuance, and maintenance fees). The Commissioner is authorized to establish fees for all other processing, services, or materials related to patents which are not specifically established by statute. The processing and service fees, which would be established at a level to recover the estimated average costs to the Office. A more specific discussion of the various provisions of this section is set forth below.

Section 3(a) amends section 41(a) of title 35 to provide the amounts of the fees for filing and issuance of patent applications. In addition, the section includes provisions for increasing the filing fees due to increased complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. The section also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under section 41(a)1, the filing fee for an original patent, except in design or plant cases, is $300. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of three, $10 is due for each claim (whether independent or dependent) which is in excess of twenty, and $100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of title 35, United States Code, or any claim depending therefrom, will be considered as separate dependent claims in accordance with the number of claims to which reference is made. Under the section, errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner. This will enable the Commissioner to establish regulations whereby patent applications may correct, without prejudice, errors in payment of the additional fees, i.e., those in addition to the basic fees established.

Under section 41(a)2, the fee for issuing all original and reissue patents, except in design or plant cases, would be a uniform amount of $500. No supplemental issue fees are required.

Section 41(a)3 establishes fixed fees for filing applications for, and issuance of design and plant patents. For design patent cases, the filing fee would be $200 and the issue fee $250.

Section 41(a)4 relates to fees in reissue cases and establishes a fee of $300 for filing each application for the reissue of a patent. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 is due for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

Under section 41(a)5, a fee of $50 would be established for filing each disclaimer in a patent or patent application.

Section 41(a)6 establishes a fee due on filing an appeal from the examiner to the Board of Appeals of $115. In addition, a fee of $115 is due on filing a brief in support of the appeal, and a fee of $100 is due for requesting an oral hearing before the Board of Appeals.

Section 41(a)7 establishes two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees are applicable to petitions to accept the delayed payment of the fee for issuing a patent. The fees set forth in this section are due on filing the petition. Since the section provides for two alternative fees with different standards, the section would permit the applicant seeking revival or acceptance of a delayed payment of the fee for issuing a patent to choose one or the other of the fees and standards under such regulations as the Commissioner may establish. Under the section the Commissioner could establish time limits within which petitions under each of the different fees and standards can be filed. The section establishes a fee of $500 for filing each petition for revival or for acceptance of the delayed payment of an issue fee where the abandonment or the failure to pay the issue fee is unintentional. In order to prevent abuse and injury to the public the Commissioner could require a terminal disclaimer equivalent to the period of abandonment and could require applicants to act promptly after becoming aware of the abandonment. The section establishes a fee of $50 for filing a petition under sections 133 or 151 of title 35 in accordance with standards presently in effect requiring that the delay resulting in the abandonment, or the delay in payment of the issue fee, be unavoidable. Under this section a petition accompanied by either a fee of $500 or a fee of $50 would not be granted where the abandonment or the failure to pay the fee for issuing the patent was intentional as opposed to being unintentional or unaviodable. This section would permit the Commissioner to have more discretion than present law to revive abandoned applications and accept late payment of the fee for issuing a patent in appropriate circumstances.

Section 41(a)8 establishes fees for filing of petitions for extensions of time. Various time periods are set by the Office for taking actions on matters relating to patent applications. These time periods are set pursuant to statute or by regulations established by the Commissioner under the authority granted to the Commissioner by statute. This section would provide for fees for filing petitions to extend the time periods set pursuant to statute or by regulations for taking action within any limitations set by statute.

A fee of $50 is established for filing a request for a first one month extension of time, an additional fee of $100 for filing a request for a second one month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of $200 for filing a request for a third one month extension of time which would expire three months after the end of the time period set for taking action. A subsequent or fourth extension could be requested if additional time was available under the statute. In no case could a period be extended beyond the maximum time set by statute.

The Commissioner may issue regulations providing when, within any maximum period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. This section does preclude the Commissioner from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause.

Section 41(b) provides that the Commissioner charge the following fees for maintaining a patent other than a design or plant patent, in force: at three years and six months after grant, $400; at seven years and six months after grant, $800; and at eleven years and six months after grant, $1,200. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace priod the late payment of a maintenance fee.

In order to avoid an inequitable loss of patent rights, the Commissioner is given the authority to accept payment of any maintenance fee after the six-month grace period if it is established that the delay in payment was unavoidable. It is intended that the Commissioner will issue regulations establishing guidelines for acceptance of late payment. After the expiration of a reasonable period of time, the patentee would bear a heavy burden of proof that the delay was unavoidable. A surcharge may be imposed by the Commissioner as a precondition to acceptance of a late fee. This surcharge may be in addition to any surcharge imposed for payment during the grace period.

A provision is included to protect the rights of one who began using or who took steps to begin use of a patent which expired for failure to pay a maintenance fee and which was subsequently reestablished by acceptance of the late payment. The intervening rights provision in section 41(c)(2) is similar to the intervening rights provision in 35 U.S.C. 252 concerning reissued patents.

Section 41(d) provides that the Commissioner establish fees for all other processing services, or materials related to patents not specified in section 41 at an amount calculated to recover the estimated average cost to the Office of such processing, services, or materials. Such processing and other services includes, but is not limited to, the processing of various petitions desiring certain actions to be taken regarding patent applications, recording of assignments, reexamination of patents and the processing of international applications. Fees for materials include the price of patent copies, certifications and other copying services. The yearly fee for providing a library specified in section 13 of title 35 with uncertified copies of the specifications and drawings for all patents issued in that year is set at $50.

Section 41(f) provides that the fees established in subsections (a) and (b) of section 41 may be adjusted by the Commissioner on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than one per centum may be ignored by the Commissioner in making such adjustments.

Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is being changed to grant the Commissioner discretion to establish the level of recovery of office costs related to trademarks. It is expected that the Commissioner will set the fees in a way that the filing fee will be kept as low as possible to foster use of the Federal registration system. This may require that other fees for services or materials related to trademarks recover more than their actual estimated cost in order that the Commissioner achieve in the aggregate adequate cost recovery for the entire trademark operation.

A provision is inserted in section 42(c) of title 35 in order to ensure that the tradermark fees collected are used to fund trademark operations only and not the processing of patent applications.

SECTION 4

Section 3 of title 35 is amended by deleting specific reference to the number of examiners-in-chief in the first sentence. Elimination of the upper limit on the number of permanent members of the Board of Appeals would provide greater flexibility in filling most of its personnel needs, thereby avoiding an excess of examiner details. The authority to appoint acting examiners-in-chief, however, is maintained in order that temporary fluctuations in the workload of the Board may be accommodated.

SECTION 5

Under revised section 111 of title 35, the filing date of an application would be that on which the specification and any required drawings are received by the Patent and Trademark Office. The oath or declaration and filing fee could be submitted at such later time as established by the Commissioner, without any loss of the original filing date. Under the amendment, an applicant could either file the oath or declaration (including the applicant's signature) and fee together with an application or submit them at a later time as determined by the Commissioner.

The section would also authorize the imposition of a surcharge as a condition for accepting filing of the oath of payment of the filing fee after the filing date of the application. Since an application filed without the oath or declaration would not be signed or "made" by the applicant, the amendment permits a patent attorney or agent, authorized by the applicant, to submit the specification and drawings for the purpose of obtaining a filing date. Should the applicant, however, fail to file the oath or declaration, or pay the filing fee within the time limits set by the Commissioner, the application would be regarded as having been abandoned.

SECTION 6

The third paragraph of section 116 of title 35 is amended to enlarge the possibilities for correcting misnamed inventive entities. As a consequence, correction would be permitted also in cases where the person originally named as inventor was in fact not the inventor of the subject matter contained in the application. If such error occurred without any deceptive intention on the part of the true inventor, the Commissioner would have the authority to substitute the true inventor for the erroneously named person. Although probably rarer, instances such as changes from a mistakenly identified sole inventor to a different, but actual, joint inventors, conversions from erroneously identified joint inventors to different but actual, joint inventors, and conversions from erroneously identified joint inventors to a different, but actual, sole inventor would also be permitted. In each instance, however, the Commissioner must be assured of the presence of innocent error, without deceptive intention on the part of the true inventor or inventors, before permitting a substitution of a true inventor's name.

The ability to receive a filing date based on a specification and drawings without signature as set forth in revised section 111 of title 35, and to file the oath or declaration and pay the filing fee within such period as determined by the Commissioner is also available to joint inventors.

Section 256 of title 35, which is a companion to section 116, would be amended to similarly enlarge the possibilities for correction of misnamed inventors in issued patents.

SECTION 7

Section 6(d) of title 35, which provides for the allocation of appropriated Patent and Trademark Office funds to the Department of State for payment of United States financial obligations under the Patent Cooperation Treaty, is deleted. The Department of State has traditionally assumed responsibility for financial obligations for international agreements to which the United States adheres.

SECTION 8

Section 8(a) of the Trademark Act is amended to clarify that the continued use required to be shown in the sixth year be use "in commerce". Although it is believed by some that omission of the words "in commerce" may have been inadvertent in the 1946 Act, this section has been interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce" . Although it is believed by some that omission of the words " in commerce" may have been inadvertent in the 1946 Act, this section has interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce" for registrations published under section 12(c) of the Act. (This pertains to registrations issued under the Act of Mar. 3, 1881 and the Act of Feb. 20, 1905).

The word "still" has been deleted from section 8(a) and 8(b). Thus, the owner of a registration issued on the basis of a foreign registration under the provisions of section 44(e) of the Act will have to submit an affidavit to the effect that the mark is in use in commerce. Since the mark need not be used in commerce when it is registered, the requirement cannot be required to state that it is "still" in such use.

SECTION 9

Section 13 of the Trademark Act is amended to delete the requirement that an opposition be verified. The sentence which allowed an unverified application to be verified at a later date has been deleted. In addition, a phrase has been added to make it clear that any subsequent extension of time to file an opposition, beyond the first extension, must be requested before the end of the preceding extension.

Section 14 of the Trademark Act would also be amended to delete the requirement that a petition to cancel a registration be verified.

SECTION 10

Section 15 of the Trademark Act is amended to change the term "the publication" to "registration" in the first sentence. This change makes the date of registration rather than the date of publication the crucial date for purposes of incontestablility. It will also make section 15 consistent with sections 22 and 33 of the Act.

SECTION 11

Section 16 of the Trademark Act is amended to limit the declaration of interferences to those situations where a petition to the Commissioner shows that extraordinary circumstances exist, the rights of the parties can be determined adequately by the existing opposition and cancellation procedures. Additionally, if an interference is declared between an application and a registration and the applicant wins, a cancellation must still be initiated against the registration.

SECTION 12

A new subsection (a) has been added to section 21 of title 35 to authorize, but not to require, the Commissioner of Patents and Trademarks to give as the filing date of any paper or fee which is required to be filed in the Patent and Trademark Office the date on which the paper or fee was deposited with the United States Postal Service. The Commissioner may also give as the filing date of any paper or fee which was required to be filed in the Patent and Trademark Office the date it would have been deposited with the United States Postal Service but for postal service interruptions or emergencies which the Commissioner designates. The requirements governing whether any given paper or fee may be given the filing date of the day on which it was, or would have been deposited with the United States Postal Service will be set forth in regulations established by the Commissioner.

Section 21(b) of title 35 is identical to existing section 21 with two minor amendments. The word "federal" has been inserted before the phrase "holiday within the District of Columbia" to clarify the nature of the holiday.

SECTION 13

This section clarifies the authority of the Commissioner in section 6(a) of title 35 to enter into a wide range of cooperative agreements concerning the patent and trademark laws or the administration of the Patent and Trademark Office. These agreements are in addition to the exchange of publications authorized in 35 U.S.C. 11(b) and 12. These cooperative agreements may take the form of studies, programs, exchanges, and other similar ventures. Thus, the Patent and Trademark Office could, for example, exchange patent copies, non-patent literature, tapes or services in return for goods or services of value to the Patent and Trademark Office.

SECTION 14

The amendments of 35 U.S.C. 115 and Section 11 of the Trademark Act of 1946 recognize the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public Documents" which entered into force in the United States on Oct. 15, 1981. The Convention abolishes the requirement of diplomatic or consular legalization for foreign public documents which are sworn to or acknowledged by a notary public in any of the countries adhering to the Convention. For documents executed by a notary public of all other foreign countries, diplomatic or consular legalization will still be required.

The amendment of 35 U.S.C. 261 is intended to give affirmative effect to acknowledgments executed pursuant to the Hague Convention.

SECTION 15

This section corrects an incorrect citation. Public Law 96–517 amended section 41 of title 35, United States Code, in a way which eliminated 35 U.S.C. §41(a)(9). Unfortunately, section 13 of title 35, United States Code, was not amended accordingly by Public Law 96–517. This section corrects that oversight.

SECTION 16

This section sets a uniform term of fourteen years for all design patents.

SECTION 17

Sections 17(a) and (c) specify the effective dates of the Act. Section 17(a) also specifies that the maintenance fees provided for in section 3(b) of this Act will only apply to patents in which the application was filed on and after the date of enactment or to maintenance fees later established by law.

Section 17(b) adds a section to title 35 providing for the voluntary arbitration of patent disputes by the parties to the dispute. The section requires that the Commissioner be notified in writing of an award made by an arbitrator or modified by a court. Such notification will be entered in the record of the prosecution of the patent.

At present, agreements to arbitrate some aspects of disputes arising under patent licenses are enforceable by the courts; however, there have been court decisions that have disapproved arbitration of disputes concerning patent validity or infringement. In this regard, see, for example, *Zip Mfg. Co.* v. *Pep Mfg. Co.* 44 F.2d 184, 7 U.S.P.Q. 62 (D. Del. 1930) and *Beckman Instruments, Inc.* v. *Technical Developments Corp.* 433 F.2d 55, 167 U.S.P.Q. 10 (7th Cir. 1965).

Partly as a reaction to those decisions, during the 93rd Congress both the Department of Commerce and the Department of Justice endorsed a provision specifically authorizing arbitration of validity and infringement disputes. This provision, included in an omnibus patent law revision bill, S. 2504, was never enacted due tot he many controversial aspects of that legislation.

In the view of the Committee, a statutory authorization of voluntary agreements to arbitrate validity and infringement disputes would benefit both the parties to these disputes and the public.

Statutory endorsement of arbitration agreements would assure the parties that they could avail themselves of the numerous advantages of arbitration without the possibility of having to reargue the dispute in court. The advantages of arbitration are many: it is usually cheaper and faster than litigation; it can have simpler procedural and evidentiary rules; it normally minimizes hostility and is less disruptive of ongoing and future business dealings among the parties; it is often more flexible in regard to scheduling of times and places of hearings and discovery devices; and, arbitrators are frequently better versed than judges and juries in the area of trade customs and the technologies involved in these disputes.

The enforcement of voluntary arbitration provisions would serve the public in two ways. First, the availablity of arbitration with its numerous advantages will enhance the patent system and thus will encourage innovation. This view is supported by the Committee for Economic Development in their Jan. 1980 statement entitled "Stimulating Technological Progress." Secondly, arbitration could relieve some of the burdens on the overworked Federal courts. Chief Justice Burger in his speech to the American Bar Association on Jan. 24, 1982, generally endorsed the use of arbitration to reduce the judicial backlog. Also, I think it is important to note that the American Bar Association's Section on Patent, Trademark and Copyright Law has endorsed court enforcement of arbitration agreements calling for arbitration of validity and infringement.

The recommendations of the Secretary of Commerce to increase substantially patent and trademark user fees were made on the promise that such increases "will lay the groundwork for revitalizing the patent and trademark systems." The Secretary committed to three major goals: (1) to reach an average patent application pendency time of 18 months by FY 1987, (2) to issue an examiner's first action on trademark registrability in three months and disposal of an application within 13 months, and (3) to move realistically toward a fully automated Office by the 1990's. In accepting the Administration's recommendations on user fees, the Committee fully expects the Administration to live up to its end of the bargain to bring about a first-class Patent and Trademark Office. To provide an opportunity for timely and effective Committee oversight of progress toward improving the Patent and Trademark Office, the Committee directs that the Secretary of Commerce report annually to the Committee on progress toward achieving the three major goals of the Patent and Trademark Office, as outlined above, and, in addition, promptly inform the Committee at any time it appears that any of the goals, for any reason, is viewed as not attainable.

OVERSIGHT STATEMENT

The Committee on the Judiciary has oversight responsibility over the Patent and Trademark Office in the Department of Commerce. In addition to its ongoing oversight, the Committee's Subcommittee on Courts, Civil Liberties and the Administration of Justice held an oversight hearing with respect to the Patent and Trademark Office on Mar. 4, 1981, published as Oversight Hearings Before the Subcommittee on Courts, Civil Liberties and the Administration of Justice of the Committee on the Judiciary, House of Representatives, Ninety-Seventh Congress, First Session on the Copyright Office, The U.S. Patent and Trademark Office, and the Copyright Royalty Tribunal. Serial No. 17.

The Committee expects to continue its oversight activities in this area.

STATEMENT OF THE BUDGET COMMITTEE

No statement has been received on H.R. 6260 from the House Committee on the Budget.

STATEMENT OF THE CONGRESSIONAL BUDGET OFFICE

Pursuant to clause 7, rule XIII of the Rules of the House of Representatives and section 403 of the Congressional Budget Act of 1974, the following is the cost estimate of H.R. 6260, as amended, prepared by the Congressional Budget Office.

U.S. CONGRESS
CONGRESSIONAL BUDGET OFFICE,
Washington, D.C., May 13, 1982.

Hon. PETER W. RODINO, Jr.,
Chairman, Committee on the Judiciary, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional budget Office has prepared the attached cost estimate for H.R. 6260, a bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Should the Committee so desire, we would be pleased to provide further details on this estimate.

Sincerely

ALICE M. RIVLIN, *Director.*

CONGRESSIONAL BUDGET OFFICE, COST ESTIMATE

1. Bill number: H.R. 6260.

2. Bill title: A bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

3. Bill status: As ordered reported by the House Committee on the Judiciary, May 11, 1982.

Bill purpose: H.R. 6260 would authorize 1982 appropriations at a level $2.5 million above the amount already appropriated, and would provide a $76 million authorization level in 1983 to carry out the activities of the Patent and Trademark Office (PTO). In addition, such sums as may be necessary are authorized for fiscal years 1984 and 1985, plus such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other benefits authorized by law for each fiscal year 1983 thorugh 1985. PTO would also have available for obligation offsetting fee collections as provided for in Public Law 96–517, plus the additional fees as specified in H.R. 6260.

Assuming enactment of H.R. 6260, total PTO collections over time would result in recovery of approximately 100 percent of patent and trademark processing costs. Individuals, small businesses, and non-profit institutions would be exempt from the proposed additional fees, however, but would continue to follow the fee schedule outlined in P.L. 96–517, which assumes the ultimate recovery of approxiamtely 50 percent of all processing costs.

The President's 1982 budget includes a request for a $2.5 million supplemental for the PTO. The Administration has recommended increasing user fees to ultimately recover 100 percent of processing costs beginning in 1983, but does not provide for any exemptions to the proposed fee increases relative to current law. The effect of exemptions is to increase by approximately $8 million the authorized level of appropriations relative to the Administration's request.

In addition, the bill would make a number of other changes that are not expected to have a cost impact.

5. Cost estimate:

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Authorization level:					
Specified	2.5	76.0	....	....	....
Estimated	....	6.8	86.4	86.8	....
Subtotal	2.5	82.8	86.4	86.8	....
Total estimated outlays	2.4	61.8	82.4	82.8	5.5

Including outlays from appropriations to date for PTO, total 1982 outlays are estimated to be $121.5 million, and total 1983 outlays are estimated to be $79.8.

The costs of this bill fall within budget subfunction 376.

6. Basis of estimate: The authorization levels for PTO for 1982 and 1983 are those specified in the bill. The estimate authorization levels for 1984 and 1985 assume a level of funding sufficient to maintain a program level of $167 million and $176 million, respectively, including offsetting collections. In addition, authorization for increases in pay and other benefits of approximately $6.8 million, $7.4 million, and $7.8 million for fiscal years 1983 through 1985, respectively, were estimated based on CBO's current inflators. Outlays are based on historical spending patterns.

The estimated collections to PTO as a result of fees charged to cover the costs of processing trademarks and patents were provided by the agency, and assume the fee structure outlined in the bill. The estimated collections, under current law and under H.R. 6260, are shown in the table below.

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Estimated offsetting collections:					
Current law	....	47.8	52.7	57.7	....
Added by H.R. 6260	....	31.2	35.3	39.3	....
Total—H.R. 6260	....	79.0	88.0	97.0	....

7. Estimate comparison: None.

8. Previous CBO estimate: None.

9. Estimate prepared by: Mary B. Maginniss.

10. Estimate approved by: C. G. Nuckols (James L. Blum, Assistant Director for Budget Analysis).

COMMITTEE VOTE

The Committee on the Judiciary ordered H.R. 6260 as amended reported by a voice vote, without objection being heard, with a quorum of Members being present.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of Rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, existing law in which no change is proposed is shown in roman):

TITLE 35, UNITED STATES CODE
PART 1—PATENT AND TRADEMARK OFFICE

* * * * *

CHAPTER 1—ESTABLISHMENT, OFFICERS, FUNCTIONS

* * * * *

§3. Officers and employees.

(a) There shall be in the Patent and Trademark Office a Commissioner of Patents and Trademarks, a Deputy Commissioner, two Assistant Commissioners, and [not more than fifteen] examiners-in-chief *appointed under section 7 of this title.* The Deputy Commissioner, or, in the event of a vacancy in that office, the Assistant Commissioner senior in date of appointment shall fill the office of Commissioner during a vacancy in that office until the Commissioner is appointed and takes office. The Commissioner of Patents and Trademarks, the Deputy Commissioner, and the Assistant Commissioners shall be appointed by the President, by and with the advice and consent of the Senate. The Secretary of Commerce, upon the nomination of the Commissioner, in accordance with law shall appoint all other officers and employees.

* * * * *

§6. Duties of Commissioner.

(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies [and] programs, *or exchanges of items or services* regarding domestic and international patent and trademark law *or the administration of the Patent and Trademark Office,* and shall have charge of property belonging to the Patent and Trademark Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent and Trademark Office.

(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent and Trademark Office, not to exceed $100,000 in any year, to the Department of State for the purpose of making special payments to internatinal intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States.

[(d) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, allocate funds appropriated to the Patent Office, to the Department of State for the purpose of payment of the share on the part of the United States to the working capital fund established under the Patent Cooperation Treaty. Contributions to cover the share on the part of the United States of any operating deficits of the International Bureau under the Patent Cooperation Treaty shall be included in the annual budget of the Patent Office and may be transferred by the Commissioner, under the direction of the Secretary of Commerce, to the Department of State for the purpose of making payments thereof to the International Bureau.]

* * * * *

§13. Copies of patents for public libraries.

The Commissioner may supply printed copies of specifications and drawings of patents to public libraries in the United States which shall maintain such copies for the use of the public, at the rate for each year's issue established for this purpose in section 41 [(a)9] *(d)* of this title.

* * * * *

CHAPTER 2—PROCEEDINGS IN THE PATENT AND TRADEMARK OFFICE

* * * * *

§21. [Day for taking action falling on Saturday, Sunday, or holiday] *Filing date and day for taking action.*

(a) The Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner.

(b) When the day, or the last day, for taking any action or paying any fee in the United States Patent and Trademark Office falls on Saturday, Sunday, or a *Federal* holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding secular or business day.

* * * * *

CHAPTER 4—PATENT FEES

* * * * *

§41. Patent fees

[(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

[(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

[(c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Tradmark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

[(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.]

(a) The Commissioner shall charge the following fees:

1. On filing each application for an original patent, except in design or plant cases, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of three, $10 for each claim (whether independent or dependent) which is in excess of twenty, and $100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

2. For issuing each original or reissue patent, except in design or plant cases, $500.

3. In design and plant cases:

a. On filing each design application, $125.

b. On filing each plant application, $200.

c. On issuing each design patent, $175.

d. On issuing each plant patent, $250.

4. On filing each application for the reissue of a patent, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

5. On filing each disclaimer, $50.

6. On filing an appeal from the examiner to the Board of Appeals, $115; in addition, on filing a brief in support of the appeal, $115, and on requesting an oral hearing before the Board of Appeals, $100.

7. On filing each petition for the revival of an unintentionally abandoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, $500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be $50.

8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:

a. On filing a first petition, $50.

b. On filing a second petition, $100.

c. On filing a third or subsequent petition. $200.

(b) The Commissioner shall charge the following fees for maintaining a patent in force:

1. Three years and six months after grant, $400.

2. Seven years and six months after grant, $800.

3. Eleven years and six months after grant, $1,200.

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee. No fee will be established for maintaining a design or plant patent in force.

(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period.

(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection.

(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.

(3) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge.

[(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three times.]

(f) The fees established in subsection (a) and (b) of this section may be adjusted by the Commissioner on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored.

(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register.

§42. Patent and Trademark Office funding.

(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office. *Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks.*

(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required.

PART II—PATENTABILITY OF INVENTIONS AND GRANT OF PATENTS

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CHAPTER 11—APPLICATION FOR PATENT

* * * * *

[§111. Application for patent

[Application for patent shall be made by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include: (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be signed by the applicant and accompanied by the fee required by law.]

SEC. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such prescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.

* * * * *

§115. Oath of applicant

The applicant shall make oath that he believes himself to be the original and first inventor of the process, machine, manufacture, or composition of matter, or improvement thereof, for which he solicits a patent; and shall state of what country he is a citizen. Such oath may be made before any person within the United States authorized by law to administer oaths, or when, made in a foreign country, before any diplomatic or consular office of the United States authorized to administer oaths, or before any officer having an official seal and authorized to administer oaths in the foreign country in which the applicant may be, whose authority [shall be] *is* proved by certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States* and such oath shall be valid if it complies with the laws of the state or country where made. When the application is made as provided in this title by a person other than the inventor, the oath may be so varied in form that it can be made by him.

§116. [Joint inventors] *Inventors.*

When an invention is made by two or more persons jointly, they shall apply for patent jointly and each sign the application and make the required oath, except as otherwise provided in this title.

If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself and the omitted inventor. The Commissioner, on proof of the pertinent facts and after such notice to the omitted inventor as he prescribes, may grant a patent to the inventor making the application, subject to the same rights which the omitted inventor would have had if he had been joined. The omitted inventor may subsequently join in the application.

Whenever [a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error] *through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application,* and such error arose without any deceptive intention on his part, the Commissioner may permit the application to be amended accordingly, under such terms as he prescribes.

* * * * *

CHAPTER 16—DESIGNS

* * * * *

§173. Term of design patent.

[Patents for designs may be granted for the term of three years and six months, or for seven years, or for fourteen years, as the applicant, in his application, elects.]

Patents for designs shall be granted for the term of fourteen years.

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PART III—PATENTS AND PROTECTION OF PATENT RIGHTS

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CHAPTER 25—AMENDMENT AND CORRECTION OF PATENTS

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[§256. Misjoinder of inventor.

[Whenever a patent is issued on the application of persons as joint inventors and it appears that one of such persons was not in fact a joint inventor, and that he was included as a joint inventor by error and without any deceptive intention, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate deleting the name of the erroneously joined person from the patent.

[Whenever a patent is issued and it appears that a person was a joint inventor, but was omitted by error and without deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate adding his name to the patent as a joint inventor.

[The misjoinder or nonjoinder of joint inventors shall not invalidate a patent, if such error can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.]

§256. Correction of named inventor.

Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without and deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.

CHAPTER 16—OWNERSHIP AND ASSIGNMENT

* * * * *

§261. Ownership; assignment.

Subject to the provisions of this title, patents shall have the attributes of personal property.

Applications for patent, patents, or any interest therein, shall be assignable in law by an instrument in writing. The applicant, patentee, or his assigns or legal representatives may in like manner grant and convey an exclusive right under his application for patent, or patents, to the whole or any specified part of the United States.

A certificate of acknowledgment under the hand and official seal of a person authorized to administer oaths within the United States, or, in a foreign country, of a diplomatic or consular officer of the United States or an officer authorized to administer oaths whose authority is proved by a certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* shall be prima facie evidence of the execution of an assignment, grant or conveyance of a patent or application for patent.

An assignment, grant or conveyance shall be void as against any subsequent purchaser or mortgagee for a valuable consideration, without notice, unless it is recorded in the Patent and Trademark Office within three months from its date or prior to the date of such subsequent purchase or mortgage.

CHAPTER 29—REMEDIES FOR INFRINGEMENT OF PATENT, AND OTHER ACTIONS

Sec.
281. Remedy for infringement of patent.

* * * * *

294. Voluntary arbitration.

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§294. Voluntary arbitration.

(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give notice of such modification to the Commissioner. The Commissioner shall upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner.

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TRADEMARK ACT OF 1946

* * * * *

Sec. 8 (a). Duration of registration—Cancelation at end of 6 years unless affidavit of use filed.

Each certificate of registration shall remain in force for 20 years: *Provided,* That the registration of any mark under the provisions of this Act shall be canceled by the Commissioner at the end of 6 years following its date, unless within 1 year next preceding the expiration of such 6 years the registrant shall file in the Patent and Trademark Office an affidavit showing that said mark is [still] in use *in commerce* or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. Special notice of the requirement for such affidavit shall be attached to each certificate of registration.

Sec. 8(b). Cancelation of republished prior registrations unless affidavit of use filed.

Any registration published under the provisions of subsection (c) of section 12 of this Act shall be canceled by the Commissioner at the end of 6 years after the date of such publication unless within 1 year next preceding the expiration of such 6 years and registrant shall file in the Patent and Trademark Office an affidavit showing that said marks is [still] in use *in commerce* or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark.

* * * * *

Sec. II. Acknowledgments and verifications.

Acknowledgments and verifications required hereunder may be made before any person within the United States authorized by law to administer oaths, or, when made in a foreign country, before any diplomatic or consular officer of the United States or before any official authorized to administer oaths in the foreign country concerned whose authority [shall] *is* proved by a certificate of a diplomatic or consular officer of the United States *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* and shall be valid if they comply with the laws of the state or country where made.

* * * * *

Sec. 13. Opposition to registration of marks on the Principal Register.

Any person who believes that he would be damaged by the registration of a mark upon the principal register may upon payment of the required fee, file [a verified] *an* opposition in the Patent and Trademark Office, stating the grounds therefor, within thirty days after the publication under subsection (a) of section 12 of this Act of the mark sought to be registered. Upon written request prior to the expiration of the thirty-day period, the time for filing opposition shall be extended for an additional thirty days, and further extensions of time for filing opposition may be granted by the Commissioner for good cause *when requested prior to the expiration of an extension.* The Commissioner shall notify the applicant

of each extension of the time for filing opposition. [An unverified opposition may be filed by a duly authorized attorney, but such opposition shall be null and void unless verified by the opposer within a reasonable time after such filing to be fixed by the Commissioner.] An opposition may be amended under such conditions as may be prescribed by the Commissioner.

SEC. 14. A [verified] petition to cancel a registration of a mark, stating the grounds relied upon, may, upon payment of the prescribed fee, be filed by any person who believes that he is or will be damaged by the registration of a mark on the principal register established by this Act, or under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905—

(a) within five years from the date of the registration of the mark under this Act; or

(b) within five years from the date of publication under section 12(c) hereof of a mark registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905; or

(c) at any time if the registered mark becomes the common descriptive name of an article or substance, or has been abandoned, or its registration was obtained fraudulently or contrary to the provisions of section 4 or of subsections (a), (b), or (c) of section 2 of this Act for a registration hereunder, or contrary to similar prohibitory provisions of said prior Acts for a registration thereunder, or if the registered mark is being used by, or with the permission of, the registrant so as to misrepresent the source of the goods or services in connection with which the mark is used; or

(d) at any time if the mark is registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905, and has not been published under the provisions of subsection (c) of section 12 of this Act; or

(e) at any time in the case of a certification mark on the ground that the registrant (1) does not control, or is not able legitimately to exercise control over, the use of such mark, or (2) engages in the production or marketing of any goods or services to which the certification mark is applied, or (3) permits the use of the certification mark for purposes other than to certify, or (4) discriminately refuses to certify or to continue to certify the goods or services of any person who maintains the standards or conditions which such mark certifies:

Provided, That the Federal Trade Commission may apply to cancel on the grounds specified in subsections (c) and (e) of this section any mark registered on the principal register established by this Act, and the prescribed fee shall not be required.

Sec. 15. Incontestability under certain conditions of right to use mark.

Except on a ground for which application to cancel may be filed at any time under subsections (c) and (e) of section 14 of this Act, and except to the extent, if any, to which the use of a mark registered on the principal register infringes a valid right acquired under the law of any State or Territory by use of a mark or trade name continuing from a date prior to the date of [the publication] *registration* under this Act of such registered mark, the right of the registrant to use such registered mark in commerce for the goods or services on or in conncection with which such registered mark has been in continuous use for 5 consecutive years subsequent to the date of such registration and is still in use in commerce, shall be incontestable: *Provided,* That—

(1) there has been no final decision adverse to registrant's claim of ownership of such mark for such goods or services, or to registrant's right to register the same or to keep the same on the register; and

(2) there is no proceeding involving said rights pending in the Patent Office or in a court and not finally disposed of; and

(3) an affidavit is filed with the Commissioner within 1 year after the expiration of any such 5-year period setting forth those goods or services stated in the registration on or in connection with which such mark has been in continuous use for such 5 consecutive years and is still in use in commerce, and the other matters specified in subsections (1) and (2) hereof; and

(4) no incontestable right shall be acquired in a mark which is the common descriptive name of any article or substance, patented or otherwise.

Subject to the conditions above specified in this section, the incontestable right with reference to a mark registered under this Act shall apply to a mark registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905, upon the filing of the required affidavit with the Commissioner within 1 year after the expiration of any period of 5 consecutive years after the date of publication of a mark under the provisions of subsection (c) of section 12 of this Act.

The Commissioner shall notify any registrant who files the above-prescribed affidavit of the filing thereof.

Sec. 16. Interference.

[Whenever application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive, the Commissioner may declare that an interference exists. [*Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to decieve.* No interference shall be declared between an application and the registration of a mark the right to the use of which has become incontestable.

* * * * *

§31. Fees Aug. 27, 1982

[H.R. 6260]

(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. [Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material.] However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register.

Patent and Trademark Office.

(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with an occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups.

Appropriation authorization.

* * * * *

(60) **Department of Commerce**
Patent and Trademark Office

37 CFR Part 1

Rules of Practice in Patent Cases; Reexamination Proceedings

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.
Summary: The Patent and Trademark Office is amending its rules of practice in patent cases to provide procedures for the reexamination of patents. Public Law 96–517 amended the patent act to authorize reexamination proceedings as a means for improving the quality of United States patents. The Patent and Trademark Office intends, through this amendment of its rules, to provide patent owners and the public with guidance on the procedures the Office will follow in conducting reexamination proceedings.
Date: Effective date: July 1, 1981.
For Further Information Contract: Mr. R. Franklin Burnett by telephone at [703]557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks. Washington, D.C. 20231.
Supplementary Information: This rule change relates to a procedure for reexamination of patents as provided for in Public Law 96–517, section 1 of which relates to reexamination and becomes effective on July 1, 1981.

Background

A notice of proposed rulemaking was published in the Federal Register on Jan. 13, 1981 at 46 FR 3162–3175 and in the *Official Gazette* on Feb. 17, 1981 at 1003 O.G. 36–47.

The proposed rulemaking set forth two somewhat distinct procedures directed towards determining and improving the quality and reliability of United States patents. The procedures were (1) provisions for reexamination of patents as provided for in Pub. L. 96–517, section 1 of which relates to reexamination and becomes effective on July 1, 1981, and (2) provisions for inter partes protest proceedings in a patent application between the patent applicant and a member (or members) of the public who has (have) access to the application file.

An oral hearing was held on Apr. 16, 1981. Fifty-nine written letters and statements were submitted. Nineteen persons testified at the oral hearing which resulted in 107 pages of testimony.

Discussion of General Issues Involved

After careful consideration of the comments which have been received, the part of the proposed rulemaking relating to reexamination of patents as set forth in new Chapter 30 which Pub. L. 96–517 added to Title 35 of the United States Code [35 U.S.C. 301–307] is being adopted with certain changes. The remainder of the proposal relating to inter partes protest proceedings is not being adopted.

The comments relating to the proposed rules for inter partes protest proceedings were generally mixed, with a majority of persons and associations submitting comments either opposed to these proposed rules or indicating that adoption of the proposed rules should be delayed or deferred for further study and consideration.

A number of comments were received requesting some further changes to the rules be made. The thrust of some of the suggested changes would be to remove public access to reissue applications and to limit public participation in the examination of reissue applications. The changes suggested included restoring the rules in these areas to essentially their pre-1977 form. In particular, it was suggested that §1.175 be amended to eliminate paragraph (a)(4). These changes were not a part of the published proposal and are not being adopted at this time. Their consideration and adoption would require a new notice of proposed rulemaking.

Further, since the subject matter of reissue applications is already known to the public the necessity for maintaining them in confidence is not compelling. The elimination of paragraph (a)(4) of §1.175 would not have a significant effect since less than one-fourth of the currently filed reissue applications are based solely upon the 1977 change to §1.175. Under the present circumstances, it is more appropriate to defer any consideration of such changes until this issue has been reviewed further and possibly until some experience is gained under the rules adopted herein relating to reexamination. Such experience may indicate the desirability of either retaining the 1977 change to §1.175, deleting the 1977 change, or making different changes in the rules.

The comments relating to reexamination were generally favorable with most of the comments indicating general approval of the proposed rules. Among the more often mentioned specific comments were suggestions relating to public notice of reexamination requests and/or orders. A number of comments also related to requester and/or third party participation in the reexamination proceeding and also to the scope of the proceeding.

After careful review of the comments and suggestions it has been decided to adopt the suggestions relating to the publication in the *Official Gazette* of requests for reexamination for which the fee has been paid. In addition, any reexaminations ordered at the initiative of the Commissioner will also be announced in the *Official Gazette*. The announcement will include at least the date of the request or any Commissioner initiated order, a reexamination request or order control number, the patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

The suggestions and comments relating to more participation in the reexamination proceeding by the requester and third parties have been adopted only to a limited degree. The requester will in general have only that participation provided by the rules as proposed. However, any citations under §1.501 by any person will be entered in the patent file up until the date of an order to reexamine. The essentially ex parte nature of the proceeding is believed to be in keeping with the spirit and intent of the statute even though the statute does not require ex parte proceedings. Ex parte proceedings will minimize the costs and other effects of reexamination requests on patentees, especially individuals and small businesses.

The scope of the reexamination proceeding which was originally proposed has been essentially adopted in the final rules. The suggestions that the rules be broadened to include other issues have not been adopted since the other issues would unduly complicate the proceedings, raise the expense of the proceedings and raise questions whether such issues can be considered under Pub. L. 96–517.

Discussion of the Major Specific Issues Involved

The rules relating to reexamination proceedings are directed to the procedures set forth in new Chapter 30 of Title 35 of the United States Code (35 U.S.C. 301–307). This Chapter provides for the citation of prior art in patents, filing of requests for reexamination, decisions on such requests, reexamination and appeal from reexamination decisions, and the issuance of a certificate at the termination of the reexamination proceedings. Present§§1.1, 1.5, 1.11, 1.33, 1.34, 1.36, 1.104, 1.107, 1.109, 1.111, 1.112, 1.113, 1.115, 1.116, 1.121, 1.191, 1.192, 1.196, 1.197, 1.231, 1.248, 1.301, and 1.303 are amended to provide for reexamination procedures. A new "Subpart D-Reexamination of Patents" includes new §§1.501, 1.510, 1.515, 1.520, 1.525, 1.530, 1.535, 1.540, 1.550, 1.552, 1.555, 1.560, 1.565, and 1.570. Paragraph (b) of §1.291, relating to prior art citations in patents, is deleted, since provisions therefor appear in §1.501.

Section 1.1, as amended, provides for communications relating to reexamination proceedings to be marked "Box Reexam" to speed internal Office mail processing. No comments were received concerning this section. The proposal has been modified to indicate that only requests should be marked "Box Reexam".

Section 1.5, as amended, provides for all letters relating to a reexamination proceeding to be identified by patent number and a reexamination request control number. No comments were received concerning this section. Section 1.5 has been modified to also include reference to the Group Art Unit and the examiner, if known.

Section 1.11, as amended, provides for all papers made of record in reexamination proceedings to be open to inspection and copying by the public. Eighteen comments were received relating to publication of a notice in the *Official Gazette*. A new paragraph (c) has been added which provides for the publication of requests with sufficient fees paid and orders initiated by the Commissioner. Proposed paragraph "c" has been adopted as paragraph "d".

Section 1.33, as amended, has a new paragraph (c) relating to which address communications for the patent owner will be sent and who may sign papers filed. Four comments were received on this section relating to whom the mail should be addressed. One proposal, which suggested use of the current address of the attorney or agent of record, was adopted.

Section 1.34, as amended, provides for the appointment of an attorney or agent in a reexamination proceeding. Only one comment was received on this section which proposed a rule specifically allowing attorneys to file requests without identifying their clients. Since any person may request reexamination, such a rule is not felt necessary.

Section 1.36, as amended, provides for the revocation and withdrawal of powers of attorney in a reexamination proceeding. No comment was received. Section 1.36 is adopted as proposed with an additional change which added "or her" near the end.

Section 1.104, as amended, broadens the present section to also include reexamination. Three comments were received on §1.104. All comments indicated that the examiner should not make a prior art search. Although no complete new search by the examiner is required, the use of patents and printed publications in addition to those submitted by the requester is clearly indicated in 35 U.S.C. 303(a). According, §1.104 is adopted as proposed.

Section 1.107, as amended, provides for the citation of prior art by the examiner in a reexamination proceeding. The amended rule also refers to foreign published applications, as well as patents. No comments were received on this section. It is adopted as proposed.

Section 1.109, as amended, provides for the examiner to supply reasons for allowance in a reexamination proceeding if the examiner believes that the record does not make clear the reasons for allowing a claim or claims. No comments were received on this section. Except for a clarifying change in language, it is adopted as proposed.

Section 1.111, as amended, provides for replies by the patent owner in a reexamination proceeding. One comment was received which suggested a clarification. The suggestion was adopted. Other non-substantive changes have been made in the proposed section to shorten the sentences for clarity.

Section 1.112, as amended, provides for reexamination and reconsideration of the patent under reexamination after responses by the patent owner. Three comments were received on this section.

The wording has been changed as suggested to avoid any confusion between "reexamination" and "reexamine". The sentences have also been shortened for clarity.

Section 1.113, as amended, provides for a final rejection or action in a reexamination proceeding. One comment was received which pointed out a possible conflict between the amendment rights of section 305 and the final rejection of section 1.113. No problem is seen in this regard because of the provision of section 305 which states that "reexamination will be conducted according to the procedures established for initial examination." The section is adopted as proposed with the last sentence being divided into two sentences for clarity.

Section 1.115, as amended, provides for amendments by the patent owner in a reexamination proceeding. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity.

Section 1.116, as amended, provides for amendments after final action in reexamination proceedings. One comment was received which was the same as that mentioned and responded to in Section 1.113 above. The sentences have been shortened for clarity.

Section 1.121, as amended, contains a new paragraph (f) which requires a complete copy of any new or amended claim when presented during reexamination proceedings. Two persons commented on this section. One proposed side-by-side presentation of amended and original claims. The other proposed that exactly the same procedure be used as is now in effect for amending reissue claims. Neither suggestion was adopted since neither lends itself to printing only the amended claims in a certificate as easily as the procedure set forth in §1.121(f). The proposed section was revised to also provide for the amendment of the description. In addition, the last three sentences of §1.510(e) have been inserted as the last three sentences of §1.121(f) in order to provide a more complete description therein of the manner of making amendments, including the numbering of claims, the restriction on scope of the claims and the prohibition against the introduction of new matter.

Section 1.191, as amended, provides for appeal to the Board of Appeals by the patent owner from any decision adverse to patentability, in accordance with 35 U.S.C. 306. One comment was received on proposed §1.191 which urged that the requester should also be entitled to appeal. This proposal was not adopted because it is not provided for in the law and could result in harassment if permitted. The section is adopted as proposed except that "primary" contained in the existing rule is retained.

Section 1.192, as amended, provides two months from the date of the Notice of Appeal for the patent owner to file an appeal brief in a reexamination proceeding. Five comments were received relating to §1.192 which proposed that the period for filing an appeal brief in a reexamination appeal be two months as in other appeals. The proposed rule has been adopted with the suggested two month period. The sentences have been shortened for clarity.

Section 1.196 and §1.197 are being amended to refer to "appellants", which is a term which includes both applicants and patent owners.

These two sections were not published for comment, however, the issues involved were presented in proposed§§1.191 and 1.192. Paragraph (c) of §1.197 has also been rewritten for clarity.

Section 1.231(a)(1), as amended, provides for a motion that a patent claim is unpatentable in an interference proceeding where reexamination thereof has also been requested.

Three comments were received concerning §1.231. All comments related to when interference or reexamination proceedings would be suspended. Section 1.565 provides basis for such suspensions. Decisions will be made on a case by case basis, depending on the particular fact situation. The sentences in §1.231(a)(1) have been shortened and rearranged for clarity.

An amendment was proposed to delete the last two sentences of §1.247 relating to proof of service. No comments were received concerning this section but, on reconsideration, no need for such deletion is felt necessary and no change is being adopted.

Section 1.248, as amended, includes a new paragraph (b) relating to methods of serving papers and proof of service. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity and to conform to the Federal Rules of Civil Procedure.

Section 1.291, as amended, deletes paragraph (b). Former paragraph (b) dealt with the citation of prior art provisions. It was deleted since the provisions are now covered by §1.501. Five persons commented on §1.291. One comment relating to filing protests in reexamination proceedings was not adopted since such proceedings are ex parte in nature and are limited to consideration of prior art patents and printed publications cited by the public prior to the order. Two persons mentioned providing a procedure for citation of prior art by patentees. Citation of prior art by patentees is included in §1.501. The two other comments related to the content of protest proceedings, which are not part of this final rule. Section 1.291 is adopted as proposed except that the paragraph designation of (c) is not being changed.

Section 1.301, as amended, provides for appeal by the owner of a patent in reexamination proceedings to the U.S. Court of Customs and Patent Appeals. Four comments were received relating to §1.301. One person suggested the insertion of "any" as the fourth word in the section. This suggestion was adopted. The other three comments related to appeals in inter partes protest proceedings which are not a part of this promulgation. Section 1.301 is adopted as proposed with only the above mentioned change.

Section 1.303, as amended, provides for remedy by civil action under 35 U.S.C. 145 for the owner of a patent in reexamination proceedings. No comments were received concerning this section. The changes from the proposal are the insertion of "any" as the fourth word in the section as suggested in §1.301 and the addition of, "306" to the title.

New §1.501 provides a system for citation of patents and printed publications to the Patent and Trademark Office for placement in the patent file by any person during the period of enforceability of the patent in accordance with 35 U.S.C. 301. Seventeen persons commented on §1.501. Nine comments indicated that citations should be limited to patents or printed publications. Six comments indicated that persons citing art should be required to apply it to at least one claim. Three persons held the opposite view. The final rule wording provides for citations limited to patents and printed publications where the person making the citation states the pertinency and applicability of the citation to the patent and the bearing the citation has on the patentability of at least one claim of the patent. The final rule provides that a citation made by the patent owner may include an explanation of how the claims differ from the prior art cited. Any citations which include items other than patents and printed publications will not be entered in the patent file. This does not, of course, limit in any manner the kinds and types of information which can be relied upon in protests against pending patent applications, whether such be original applications or reissue applications. Four persons stated that a separate letter requesting confidentiality should be required in cases desiring confidentiality. This provision was not considered to be necessary. One comment requested clarification of the term "period of enforceability of a patent." The meaning of this term appears to be clear since it includes any period for which recovery can be had for infringement. Under usual circumstances, this would be the term of the patent plus the six years provided by 35 U.S.C. 286. Five comments were received relating the paragraph (c) concerning service of citations on the patent owner. The wording has been clarified. A suggestion was made that prior art copies and translations of non-English documents be required. This suggestion was not adopted since such documents are not absolutely essential until a request for reexamination has been filed. However, if the person citing the patents or printed publications desires that they be considered in any subsequent reexamination proceedings, copies and any necessary English translation should be included with the citation. A proposal was also made to charge a fee to prevent harassment. This proposal was not adopted since the mere citation of prior art is not considered to constitute harassment. A suggestion was

made to change the title of the section. This suggestion was adopted in slightly modified form.

New §1.510 sets forth procedures for any person to request reexamination in accordance with 35 U.S.C. 302. Paragraph (a) of new §1.510 limits the period for such request to the period of enforceability of the patent for which the request is filed and requires payment of the fee for requesting reexamination. Paragraph (b) of new §1.510 indicates what each request for reexamination must include. Paragraph (c) of new §1.510 indicates under which conditions a request for reexamination will be considered. Paragraph (d) of new §1.510 indicates the date on which the entire fee is received will be considered to be the date of the request for reexamination. Upon reconsideration of the paragraph as proposed, it was considered more appropriate to base the filing date of the request for reexamination on the receipt of the fee for requesting reexamination rather than include other matters. Proposed paragraph (d) has been amended accordingly and is adopted. Paragraph (e) of new §1.510 covers amendments which a patent owner can propose. Such amendments can accompany a request for reexamination by the patent owner. The paragraph, with changes in wording for clarity, is adopted as proposed. A new paragraph (f) was added to clarify that requests for reexamination may be filed by attorneys or agents on behalf of a requester. Nineteen persons commented on §1.510. One person inquired as to whether confidential requests would be accepted. In response thereto, §1.510 provides that any person may file a request for reexamination. That person's name will not be maintained in confidence. One suggestion was made to permit comment and rebuttal before the decision under §1.515. No need for such a procedure is seen since the only question to be considered is whether or not a substantial new question of patentability has been raised. An opportunity for comment and rebuttal is provided after the issuance of the order. One comment was received which desired provision for supplemental requests at a reduced fee. This proposal was not adopted since it is felt that all requesters should share equally in the cost. One comment was received which proposed that duplicate copies of the request be filed in the Office so that one copy would be available for public inspection at all times. This proposal was not adopted since it would appear to create more problems than it would solve. One comment was received that only "readily available" translations should be required. It is felt that if a document is considered to be sufficiently pertinent to request reexamination, that an English translation should be provided to insure complete and proper consideration. A suggestion was made relating to paragraph (b)(5) that direct service be limited to registered patent attorneys. No need for such a restriction is seen. Various other comments relating to procedures were considered but were not adopted.

New §1.515 relates to a determination as to whether the request has presented a substantial new question of patentability under 35 U.S.C. 303. Paragraph (a) of new §1.515 requires that the determination be made within 3 months of the filing date of the request. Paragraph (b) of new §1.515 refers to the refund provisions. Paragraph (c) of new §1.515 provides for review by petition to the Commissioner of any decision refusing reexamination. Seven persons commented on §1.515. Several comments were received suggesting that the term "reexamination" should be dropped before "examiner". This proposal was adopted. Several persons requested that all art cited in the patent file at the time of the order under §1.525 be considered when deciding whether a substantial new question of patentability is presented in the request. This is possible under the provision of §1.515(a) which permits "consideration of other patents or printed publications", but is not required insofar as prior art not relied upon in the request is concerned. One person suggested that "is" be changed to-affirms-in paragraph (c). This proposal has been adopted. One commentor questioned whether a right to review was available under paragraph (c) if reexamination was ordered. No right to review exists in such a case because all claims will be reviewed in view of all prior art during the reexamination under §1.550.

New §1.520 provides for reexamination at the initiative of the Commissioner under the provisions of the last sentence of paragraph (a) of 35 U.S.C. 303. Six persons commented on §1.520. One comment was received that indicated that the section did not include a reference to patents "discovered by the Commissioner" which is contained in 35 U.S.C. 303(a). This phrase has been added to the rule. A request was made that the sentence "Normally requests from outside-will not be considered." be deleted from the rule. The sentence is being retained since the rule wording provides an easy reference for Office policy. Two comments were received that indicated a desire to have any decisions not to reexamine in Commissioner initiated situations be made part of the patent file. This proposal was not adopted since the basis for not reexamining may involve many policy issues in addition to whether a substantial new question of patentability exists in the case. If all papers in such a case would be made part of a file, it may lead to conclusions that there are no new questions of patentability when this question may not have been addressed because the reexamination was not ordered for other reasons such as little or no interest in a patent about to expire. One comment stated that the section safeguards the rights of the patentee. The language referring to the designation and delegation of authority to appropriate Patent and Trademark Office officials is deleted as unnecessary since the Commissioner's authority to designate and delegate is implicit and understood.

New §1.525 provides for ordering reexamination where a substantial new question of patentability has been found pursuant to §§1.515 or 1.520. Six comments were received relating to §1.525. One comment was made that the attorney should be able to return notices to the sender if he is unable to contact the patent owner. This topic has not been added to the rules but will be handled on a case by case basis. One comment requested that the patent owner have the option to request that the reexamination be performed by an examiner (1) other than the original examiner, or (2) other than the examiner who issued the order. Comments were also received on both sides of the question as to whether the original examiner should conduct the reexamination. In response, it would appear to be inappropriate to allow an interested party to select the examiner. Under the section, the only limitation placed on the selection of the examiner by the Office is that the same examiner whose decision was reversed on petition ordinarily will not conduct the reexamination. Paragraph (b) has been changed to provide that the notices published in the *Official Gazette* will be considered to be constructive notice.

New §1.530 relates to the statement and proposed amendments provided for in the second sentence of 35 U.S.C. 304. Amendments submitted by the patent owner cannot enlarge the scope of a claim in the patent. Amendments will not be effectively entered into the patent until the certificate under §1.570 and 35 U.S.C. 307 is issued. Nine comments were received on §1.530. Several persons felt that the patent owner should be allowed to comment before the decision under §1.515 is made. Providing for such a comment would delay the decision under §1.515 which must be made within three months following the filing date of the request. Further, no need is seen for a statement relating to whether a new question of patentability is present since the patent owner has the opportunity to address any issues of patentability only after the first Office action. One comment questioned whether paragraph (d) also related to the description. This paragraph has been amended to clarify the matter. One person questioned whether an amendment could be filed with a statement. Paragraph (b) clearly answers this question in the affirmative. Several comments requested more time than two months for the patent owner to file a statement. In reply, the law in section 304 indicates that a reasonable period of not less than two months be provided for the patent owner's

statement. If the period is too short in particular situations, extensions of time can be requested. It is felt that two months should be retained in the rule in view of the "Special Dispatch" required in reexamination cases. The proposed second sentence of paragraph (b) has not been adopted since §1.525(b) now provides for the publication of notices of the filing of all requests which are accompanied by the proper fee.

New §1.535 provides for reply by the reexamination requester to the statement under §1.530 of the patent owner and for service on the patent owner of any such reply. The last sentence of proposed §1.540 has been added as the last sentence of §1.535. Five persons commented on §1.535. Four persons indicated that the requester should be given additional opportunity to comment. The reasons for the limited participation are that it is all that is required under the law, it prevents to a great degree, harassment of a patent owner, it results in a less expensive proceeding for all parties, and it results in an earlier conclusion of the proceedings.

New §1.540 relates to the consideration of statements under §1.530 and replies under §1.535. One comment was received that the phrase "may result in their being refused" was worded too loosely. In the absence of any specific suggestion, the proposed wording is considered to be adequate and is adopted as proposed. In addition, it is appropriate that the Office retain discretion as to consideration in such cases.

New §1.550 covers the basic items relating to the conduct of reexamination proceedings. These proceedings basically follow the same procedures used for examining patent applications. The patent owner will be required to serve the reexamination requester with any response by the patent owner to the Office, in order to remove the necessity of the requester having to continuously monitor the file wrapper. Fourteen persons commented on §1.550.

Several persons commented that they felt that at least some input by third parties should be permitted. Paragraph (e) has been revised to permit third party input up until the time of the order. Several comments were received that the periods for response should be extended to be similar to those in regular application Office actions. Although problems may arise in certain cases and extensions of time may be granted, it is felt that relatively short response times are necessary in order to process reexaminations with "special dispatch." A question was raised as to the effect of failure to respond to an Office action. Paragraph (d) has been amended to clarify this matter.

New §1.552 covers the scope of reexamination in a reexamination proceeding. While it is not intended that the examiners will routinely complete a new search when conducting reexamination, the examiners will be free to, and will, very likely, conduct additional searches and cite and apply additional prior patents and publications when they consider it is appropriate and beneficial to do so. Insofar as the actual reexamination is concerned, the examination as to original patent claims is only on the basis of patents or printed publications. However, narrowed amended claims or new claims limited to the original disclosure will also be examined for compliance with other sections of the statute (35 U.S.C. 112 and 132) which are necessary in order to ensure that any amended or new claims are supported, valid, and do not introduce new matter. New §1.552 also provides that questions relating to matters other than those identified in paragraphs (a) and (b) of the section would merely be noted by the examiner as being an open question in the record. Patent owners could then file a reissue application if they wish such questions to be resolved. Ten persons commented on §1.552. Several persons commented that the question of fraud should be considered in reexamination proceedings. Comments were also received that the proceedings should be limited to patents and printed publications. The rules have been written to follow the statute which speaks only to reexamination based on patents and printed publications. Mixed comments were also received concerning the retention of the second sentence of paragraph (c). The paragraph is being adopted as proposed with the addition of a reference to the fact that the examiner will note the existence of unresolved questions in an Office action. In addition, the phrase "raised or" has been deleted from paragraph (c) as unnecessary.

New §1.555 covers the duty of disclosure by a patent owner in a reexamination proceeding involving the owner's patent. Nine persons commented on §1.555. Four persons supported placing a duty of disclosure on the patent owner. One comment was received that an oath or declaration be required of the patent owner in a reexamination so as to minimize the appearance and occurrence of any fraudulent acts and to emphasize the patentee's obligation of candor. While the suggestion for an oath or declaration has not been adopted, §1.555 does place an obligation of candor on the patent owner insofar as bringing patents or printed publications to the attention of the Office is concerned. The necessity for an oath or declaration in addition to the obligation placed on the patent owner by §1.555 is not apparent at this time. Accordingly, the suggestion has not been adopted. Two persons felt the duty of disclosure should apply to both the patent owner and requester. This proposal was not adopted since no sanction could be easily applied against the requester who violated such a rule. One person suggested broadening the duty requirements to include information in addition to patents and printed publications. Although such a practice may be desirable, no need is seen to require information under the reexamination rules which cannot be used during the reexamination. One person felt that there should be no duty of disclosure requirement in reexamination proceedings since the Office will be considering specific prior art and the presence or absence of other prior art does not seem terribly relevant. This suggestion was not adopted since the issue of patentability is not limited to the specific prior art presented and the duty to disclose is consistent with current practice under §1.56. The section is adopted as proposed except for the indication that prior art statements should be filed in accordance with §1.98. Also, the section has been divided into two sentences for clarity.

New §1.560 relates to the conduct of interviews in reexamination proceedings. Seven comments were received directed to §1.560. One comment requested elimination of interviews. This suggestion was not adopted since interviews have been found to be very helpful in resolving issues. Five comments were received which indicated that the requester should be permitted to attend all interviews. This suggestion was not adopted because of the otherwise ex parte nature of the examination. Two comments were received which indicated that interviews should be permitted before the first Office action. This suggestion was not adopted since such interviews would be held at a time when the Office has not yet taken a position on the allowability of the claims under reexamination. Section 1.560 is adopted as proposed.

New §1.565 provides for the Commissioner to determine which, if any, proceedings should be stayed, consolidated, or suspended, if concurrent proceedings involving the patent under reexamination are instituted or in progress. Four comments were received concerning§1.565. One comment pointed out the desirability of combining copending reexamination proceedings. This concept has been accepted and a new paragraph (c) has been added to cover this matter. Two comments voiced concern over the possibility of delay resulting from stayed, suspended or combined cases. Although some delay may result, it is felt that a resolution of all issues should occur at an earlier date. Decisions as to whether to delay or combine cases will be made on a case by case basis to minimize delays and to protect the interests of all parties concerned. One comment was made to allow the patent owner to comment prior to any decision to stay proceedings by the Commissioner. The desirability of such comment will be decided on a case by case basis and is not considered desirable for placement in the rules. The addition of paragraph (c) and the insertion of

"is or" before "becomes" in the first sentence of paragraph (b) are the only changes from the proposed rule.

New §1.570 concerns the issuance of the reexamination certificate under 35 U.S.C. 307 after conclusion of reexamination proceedings. The certificate will cancel any patent claims determined to be unpatentable, confirm any patent claims determined to be patentable, and incorporate into the patent any amended or new claim determined to be patentable. Three commentors mentioned §1.570. Two persons questioned the statutory authority for paragraph (d). In response to the concern for statutory authority, it is the position of the Office that once all of the claims have been canceled from the patent, the patent ceases to be enforceable for any purpose. Accordingly, any pending reissue or other Office proceeding relating to a patent in which such a certificate has been issued will be terminated. This provides a degree of assurance to the public that patents with all the claims canceled via reexamination proceedings will not again be asserted. One commentor indicated that copies of the certificate should be part of subsequently sold copies of the patent. Such a practice is intended but is not being made part of the regulations.

Environmental, energy, and other consideration: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

[Text of adopted rules appears in 37 CFR. revised July 1, 1982.]

May 12, 1981. RENE D. TEGTMEYER,
Acting Commissioner of Patents and Trademarks.

May 15, 1981. ROBERT B. ELLERT,
Acting Assistant Secretary for Productivity, Technology, and Innovation.

[FR Doc. 81-16031 Filed 5-26-81; 8:45 am]

[1007 O.G. 30]

(61) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1 & 5
[Docket No. 21223–259]

Revision of Patent Procedure

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part 1 of 37 CFR, to implement the sections of Public Law 97-247 of 1982 which become effective on Feb. 27, 1983, and to make other miscellaneous changes. The other miscellaneous changes are being made to clarify and improve the rules where appropriate. The rulemaking also is amending Part 5 of 37 CFR to establish procedures for expediting the granting of a license under 35 U.S.C. 184 permitting the filing of a patent application in a foreign country.
Effective Date: Feb. 27, 1983.
For Further Information Contact: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to 1) implement the changes in practice in the Patent and Trademark Office provided for in Public Law 97-247 enacted on Aug. 27, 1982; 2) clarify or rewrite certain rules; and 3) expedite the granting of licenses under 35 U.S.C. 184.

This rule change contains a number of changes in practice designed to benefit both the Patent and Trademark Office in its handling of its mission and the public the Office serves.

Certain of the changes are housekeeping in nature.

A number of final rules have already been issued to implement Public Law 97-247. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086-33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982, at 47 FR 33959. The final rule was also published in the Official Gazette on Aug. 10, 1982, at 1021 O.G. 19-94. A final rule relating to definitions of "independent inventor" and "nonprofit organizations" was published on Sept. 10, 1982 at 47 FR 40134-40140 and on Sept. 21, 1982 at 1022 O.G. 29-46. A "Revision of Patent and Trademark Fees Confirmation" was published on Sept. 17, 1982 at 47 FR 41272-41283 and on Sept. 28, 1982 at 1022 O.G. 61-97. A final rule relating to the definition of "small business concern" was published on Sept. 30, 1982 at 47 FR 43272-43276 and on Oct. 19, 1982 at 1023 O.G. 23-29.

Discussion of Specific Rules and Significant Differences Between Proposed and Final Rules:

Section 1.4

Section 1.4 is amended as proposed to add a reference to Subpart D relating to citation of prior art and reexamination.

Section 1.6

Section 1.6 is amended as proposed to insert "federal" before "holidays" in paragraphs 1.6(a)-(c) in accordance with §21(b) of Title 35, United States Code, as amended by Public Law 97-247. New paragraph 1.6(d) will establish in the regulations a procedure under which papers and fees which could not be filed on a particular date because of an interruption or emergency in the United States Postal Service which is so designated by the Commissioner, may be promptly filed after the ending of such a designated interruption or emergency and be considered as having been filed on that particular date. Authority for such a practice is found in §21(a) of Title 35, United States Code, as amended by Public Law 97-247.

Section 1.7

Section 1.7 is amended as proposed to insert "federal" before "holiday" in accordance with 35 U.S.C. 21(b), as amended by Public Law 97-247.

Section 1.8

Section 1.8 is amended to remove in paragraph 1.8(a) the references to §§3.55 and 4.23, which sections were removed from the rules by the rulemaking entitled "Revision of Patent and Trademark Fees" published in the Federal Register on September 10, 1982 at 47 Fed. Reg. 40134-40140. The change in paragraph 1.8(a)(i) results from the change made in §111 of Title 35, United States Code, by Public Law 97-247. Under the revised rule, the certificate of mailing procedure would be available for filing patent oaths or declarations and filing fees. However, the certificate of mailing procedure could not be used for filing patent specifications and drawings to obtain a filing date. Such papers can be filed under new §1.10. The final rule clarifies that each paper or fee filed under §1.8 must include its own certificate of mailing. The proposed amendment to §1.8(a)(viii) referring to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals, has been adopted as a final rule as published on Oct. 26, 1982 at 47 FR 47380-47382 and therefore is not republished here.

Section 1.10

Section 1.10 is amended as proposed to provide a procedure for assigning the date on which any paper or fee is deposited as "Express Mail" with the United States Postal Service as the filing date of the paper or fee in the Patent and Trademark Office. Authority for the Commissioner to establish such a procedure is provided in §21(a) of Title 35, United States Code, as amended by Public Law 97-247 for any paper or fee required to be filed in the Patent and Trademark Office. This procedure covers the filing of all documents, including patent and trademark applications, and fees since they are required to be filed in the Patent and Trademark Office for processing. Questions were raised during the public hearing and in the written comments regarding the authority of the Commissioner to promulgate §1.10 insofar as it would provide for the use of "Express Mail" to file patent and trademark applications. The argument advanced was that the amendment of 35 U.S.C. 21(a) by Public Law 97-247 did not permit the Commissioner to adopt rules whereby "Express Mail" could be used to file patent and trademark applications since such applications are not papers or fees "required to be filed in the Patent and Trademark Office." It was urged that this language of 35 U.S.C. 21(a), in conjunction with amended 35 U.S.C. 111 which states that the "filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office," prevents adoption of proposed§1.10.

The arguments presented are not supported by the legislative history or by the literal language of the statute. Section 111 of Title 35, United States Code, before and after Public Law 97-247, requires patent applications to be made "in writing to the Commissioner." This is apparent from the first sentence of 35 U.S.C. 111 which provides that "[a]pplication for patent shall be made. . .in writing to the Commissioner." Thus, one seeking a patent is "required" to make application for the same "in writing to the Commissioner." The written application clearly constitutes a "paper or fee required to be filed in the Patent and Trademark Office." Section 21(a) of Title 35, United States Code, authorizes the Commissioner to adopt rules whereby "any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service." The authority provided by section 21(a) extends to "any paper or fee" to which the Commissioner, by an appropriate rulemaking, so extends it. The Commissioner can, therefore, by rule, establish that "any paper or fee," including a patent or trademark application, is "filed" or "received in the Patent and Trademark Office" when it is deposited with the United States Postal Service. The terms "filed" and "received" as used in 35 U.S.C. 21(a) and 111 can therefore be given the same meaning by an appropriate rulemaking by the Commissioner.

The legislative history, H.R. Rep. No. 542, 97th Cong., 2nd Sess. 8A (1982), clearly supports the interpretation set forth herein. In discussing new subsection (a) which has been added to section 21 of Title 35, United States Code, the Report emphasizes that the authority extends to "any paper or fee which is required to be filed" in the Patent and Trademark Office. The Report specifically states that the "requirements governing whether any given paper or fee may be given the filing date of the day on which it was. . .deposited with the United States Postal Service will be set forth in regulations established by the Commissioner." Clearly no restrictions were placed by the statute or the legislative history on the types of papers or fees which the Commissioner can consider as having been filed in the Patent and Trademark Office on the date of deposit with the United States Postal Service.

The new procedure, in paragraph 1.10(a), requires the use of the "Express Mail Post Office to Addressee" service of the United States Postal Service. This service provides for the use of a mailing label on which the Post Office clearly indicates the date on which it was deposited. Paragraph 1.10(b) requires (1) that the number of the "Express Mail" mailing label be placed on each paper or fee and (2) that a certificate of mailing by "Express Mail", signed by the person mailing the paper or fee, be included on each paper or fee and state the date of deposit as "Express Mail" in the United States Postal Service. The requirement that each paper or fee have the number of the "Express Mail" mailing label and the certificate of mailing by "Express Mail" included thereon is necessary so that the Patent and Trademark Office can verify when each paper or fee was filed if questions relating thereto arise. The number and certificate must be placed on each separate paper and each fee transmittal either directly on the document or by a separate paper firmly and securely attached thereto. It is not necessary that the number and certificate be placed on each page of a particular paper or fee transmittal. Merely placing the number and certificate in one prominent location on each separate paper or fee transmittal will be sufficient.

Under new paragraph 1.10(c), the Office will accord the paper or fee the date of deposit as "Express Mail" as the filing date without further proof unless a question is present regarding the date of mailing. If, however, more than a reasonable time has elapsed between the certificate date and the Patent and Trademark Office receipt date, or if other questions regarding the date of mailing are present, new paragraph 1.10(c) provides that the person mailing the paper or fee may be required to file (1) a copy of the "Express Mail" receipt showing the actual date of mailing and (2) a statement from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. Such statement must be a verified statement (oath or declaration) unless made by a person registered to practice before the Patent and Trademark Office.

The certificate of mailing procedure of §1.8(a) continues to be available in addition to the proposed procedure under §1.10. The final rule (§1.10) has been changed from that proposed to allow for a reasonable time between mailing and delivery rather than only for one day since actual delivery in one day is not always provided from all areas of the country. The final rule clarifies that each paper or fee must include its own certificate of mailing by "Express Mail." This rule is being promulgated at this time so that individuals who desire to use the service may do so after the effective date.

The "Express Mail" service is seen to be preferable to other types of postal services because a readily legible mailing date is provided to both the applicant and the Patent and Trademark Office on the "Express Mail" label. Also, the labels are of uniform size and can therefore be kept on file relatively easily by the Office, if such is determined to be necessary or desirable. Registered mail and certified mail, on the other hand, provide only a postmark for the mailing date when such mail arrives in the Patent and Trademark Office and such postmarks are often illegible. Also, such mail arrives in various size envelopes which do not easily lend themselves to being filed so that the postmark may be retained. Administrative burdens including lack of certainty of mailing date and storage are considered greater for registered or certified mail than for "Express Mail." The Patent and Trademark Office will monitor closely the use of "Express Mail" by the public and may reconsider permitting the use of other forms of service provided by the United States Postal Service.

Section 1.17

Section 1.17, paragraph (h), is amended as proposed to remove the reference to §1.45 and add a reference to new §1.48 relating to the correction of inventorship in patent applications.

Section 1.22

Section 1.22 is amended to recognize that filing dates may be assigned without payment of the basic filing fee as authorized by §111 of Title 35, United States Code, as

amended by Public Law 97-247. New paragraph 1.22(b) indicates that fees paid to the Office should be itemized in such a manner that the purpose for which the payment is submitted can be clearly determined by Office personnel for proper processing. The final rule includes clarification that it refers to patent and trademark fees and charges.

Section 1.24

Section 1.24 is amended as proposed to remove the reference to coupons in denominations of forty cents since coupons in this denomination are no longer necessary.

Section 1.41

Section 1.41 is amended as proposed to require in paragraph 1.14(a) that a patent be applied for in the name of the actual inventor or inventors and that the full names of the inventors be stated. Paragraph 1.41(b), as amended, clarifies the definition of the word "applicant". New paragraph 1.41(c) permits any person authorized by the applicant to file an application for patent in order to receive a filing date on behalf of the inventor or inventors, but the oath or declaration for the application must be made by all of the actual inventors in accordance with §§1.63 and 1.64. Under new paragraph 1.41(d), a showing may be required from the person initially filing an application that the filing was authorized.

Sections 1.42 and 1.43

Sections 1.42 and 1.43 are amended as proposed to remove the requirement that the legal representative sign the application papers in view of the changes in 35 U.S.C. 111, as amended by Public Law 97-247. The oath or declaration must still be signed. Several occurrences of the masculine gender in §1.42 have been removed.

Section 1.45

Section 1.45 is amended as proposed to remove present paragraphs 1.45(b) and (c) in view of new §1.48 and remove the requirement that joint inventors sign the application papers. The joint inventors are, however, still required to make the oath or declaration in accordance with new §§1.63 and 1.64.

Section 1.46

Section 1.46 is amended as proposed, with two commas being added for clarity, to permit anyone to file the application if authorized by the inventor or inventors or one of the persons mentioned in §§1.42, 1.43, or 1.47.

Section 1.47

Section 1.47 is amended as proposed to change the reference for the rule on oaths or declarations from §1.65 to §1.63.

Section 1.48

Section 1.48 adds a new section relating to correction of inventorship as authorized by §116 of Title 35, United States Code, as amended by Public Law 97-247. Under §1.48, if the correct inventor or inventors are not named in an application for patent, the application could be amended to name only the actual inventor or inventors so long as the error in the naming of the inventor or inventors occurred without any deceptive intention on the part of the actual inventor or inventors. Section 1.48 requires that the amendment be diligently made and be accompanied by (1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (2) an oath or declaration by each actual inventor or inventors as required by §1.63; (3) the fee set forth in §1.17(h); and (4) the written consent of any assignee. Correction will be permitted, if diligently requested, in cases where the person originally named as inventor was in fact not the inventor of the subject matter contained in the application. If such error occurred without any deceptive intention on the part of the true inventor, the Office has the authority to substitute the true inventor for the erroneously named person. If deceptive intention was present on the part of other individuals substantively involved in the preparation or prosecution of the application their conduct will be considered and appropriate action taken under 37 CFR 1.56. Although probably rarer, instances such as changes from a mistakenly identified sole inventor to different, but actual, joint inventors; conversions from erroneously identified joint inventors to different but actual, joint inventors; and conversions from erroneously identified joint inventors to a different, but actual, sole inventor will also be permitted. In each instance, however, the Office will have to be assured of the presence of innocent error, without deceptive intention on the part of the true inventor or inventors, before permitting a substitution of a true inventor's name. The final rule language has been modified from that proposed to follow more precisely the language of the statute and the legislative history by permitting correction where the error occurred without any deceptive intention on the part of the actual inventor or inventors.

Section 1.51

Section 1.51 is amended to change the reference in paragraph (a)(2) to new §1.63 for the requirements of an oath or declaration and to change paragraph (b) with regard to the required time for filing information disclosure statements. The final rule has been modified from that proposed by eliminating the word "material" before the "information disclosure statement" and the title has been changed to substitute "a complete" for "an" to be more precise.

Section 1.52

Section 1.52 is amended as proposed to revise paragraph 1.52(c) relating to interlineations, erasures, cancellations or other alterations in application papers to specify that such changes must be made before the signing of any accompanying oath or declaration and should be dated and initialed or signed by the applicant on the same sheet of paper. Paragraph 1.52(c), as amended, prohibits making alterations in the application papers after the signing of an oath or declaration referring to such application papers. Under paragraph 1.52(c), as amended, amendments to application papers made after the signing of an oath or declaration referring to the application papers can only be made in the manner provided by §§1.121 and 1.123-1.125.

Section 1.53

Section 1.53 is amended to revise the title to indicate that the section, as amended, relates to application serial numbers, filing dates and completion of applications. Paragraph 1.53(a) indicates that a serial number is assigned to any filed application for identification purposes, even if the application is incomplete or informal. Paragraph 1.53(b) provides that a filing date is assigned to an application as of the date a specification containing a description and claim and any required drawing are filed in the Patent and Trademark Office. Although the filing fee and oath or declaration can be submitted later, no amendments can be made to the specification or drawings which will introduce new matter. This practice is authorized by 35 U.S.C. 111 as amended by Public Law 97-247. New paragraph 1.53(c) provides for notifying applicant of any application incomplete because the specification or drawing is missing and giving the applicant a time period to correct any omission. If the omission is not corrected within the time period given, the application will be returned or otherwise disposed of and a handling fee of $50.00 will be retained from any refund of a filing fee. New paragraph 1.53(d) provides that, where a filing date has been assigned to a filed specification and drawing, the applicant will be notified and be given a period of time in which to file the missing fee, oath or declaration and to pay the surcharge due. The time period the Office plans to set is one month from the date of notification by the Patent and Trademark Office, but in no case less than two months after the date of filing of the application. New paragraph 1.53(e) indicates that a patent application will not be forwarded for examination on the merits until all required parts have been received. New paragraph 1.53(f) indicates that international applications filed under the Patent Cooperation Treaty which designate the United States of America are considered to have a United States filing date under PCT Article 11(3), except as provided in 35 U.S.C. 102(e), on the date the requirements of PCT Article 11(1)(i) to (iii) are met. Paragraphs 1.53(b) and (c) have been modified from those proposed by changing the word "received" to the word "filed." The word "receipt" in paragraph 1.53(c) has also been changed to "filing". These changes have been made to ensure that the language of §1.53 cannot be considered to conflict with the use of "Express Mail" to file patent applications and obtain a filing date as of the date of deposit as "Express Mail" with the United States Postal Service.

Section 1.54

Section 1.54 is amended as proposed to designate the existing section as paragraph (a) and add a reference to §1.53. Paragraph 1.54(b) is added to indicate that applicant will be informed of the serial number and filing date of the application.

Section 1.55

Section 1.55 is amended to limit the section to claims for foreign priority by removing paragraphs (a) and (d) and redesignating paragraphs (b) and (c) as paragraphs (a) and (b). Paragraph 1.55(a) is amended to change the reference from §1.65 to new §1.63. The final rule language includes a reference to 35 U.S.C. 172 which modifies 35 U.S.C. 119 for design patents.

Section 1.56

Section 1.56 is amended to revise paragraph (c) to remove reference to signing of the application but to add reference to signing of the oath or declaration pursuant to new §1.63. Paragraph 1.56(c) has also been modified from that proposed to break it down into four items as suggested by a comment. Under paragraph 1.56(c), an application may be stricken from the files if an oath or declaration pursuant to §1.63 is signed in blank, is signed without review of the oath or declaration by the person making the oath or declaration, or is signed without the review of the specification, including the claims, as required by §1.63(b). Paragraph 1.56(c) also provides for an application to be stricken from the files if application papers filed in the Office are altered after the signing of an oath or declaration pursuant to §1.63 referring to those application papers.

Section 1.57

Section 1.57 is removed as proposed since the requirements relating to applicant's signature to the oath or declaration of the application are adequately covered in other sections.

Section 1.59

Section 1.59 is rewritten as proposed to refer to and conform with the changes proposed in §1.53.

Section 1.60

Section 1.60 is amended to require the applicant to supply a copy of the originally signed application in all cases where the §1.60 filing procedure is used. The Office will no longer prepare copies. The Office, by a separate final rule, published at 47 F.R. 47242 on October 25, 1982, has adopted a new §1.62 to provide for the filing of a file wrapper continuing application which greatly lessens the need for the Office to continue to prepare copies under §1.60. The final rule language makes clear that the statement accompanying a true copy of the parent application must be a verified statement unless made by a person registered to practice before the Office.

Section 1.62

Section 1.62 is amended to avoid inconsistency with 35 U.S.C. 111 which becomes effective on February 27, 1983. 35 U.S.C. 111 as of that date permits filing dates to be granted to patent applications without receipt of the basic filing fee, or oath or declaration. Section 1.62 is therefore being amended to permit the granting of a filing date in accordance with §111. This amendment of §1.62 is necessary to ensure compliance with 35 U.S.C. 111. The Patent and Trademark Office finds that it would be impractical not to amend §1.62 so as to grant a filing date in accordance with 35 U.S.C. 111 and not doing so might also be construed to prevent applicants from taking advantage of the provisions of 35 U.S.C. 111 authorizing the delay in the filing of the fee and oath or declaration. If §1.62 is not amended in the manner set forth in this final rule, questions may be raised as to compliance with 35 U.S.C. 111 as it will exist effective February 27, 1983. Revised paragraph 1.62(a) indicates the minimum requirements for granting of a filing date. Paragraphs 1.62(b) and (c) cover the filing fee and oath or declaration requirements, respectively. Paragraph 1.62(d) relates to later filing of the filing fee or oath or declaration as provided for in 35 U.S.C. 111. Paragraphs 1.62(e)-(i) are identical to former paragraphs 1.62(b)-(f).

Section 1.63

Section 1.63 is added to replace
1.65 relating to the required content and execution of an oath or declaration filed as a part of a patent application and is intended to state the minimum contents thereof. An applicant may, if desired, choose to include one or more additional averments in the oath or declaration such as, for example, stating that the patent is not barred under the provisions of 35 U.S.C. 102. Paragraph 1.63(a) provides that the oath or declaration, (1) be executed in accordance with §1.66 or §1.68, (2) identify the specification to which it is directed in some definite manner such as giving the title of the invention or serial number of the application, if previously filed, (3) identify each inventor and his or her residence and country of citizenship, and (4) state whether the inventor is a sole or joint inventor of the claimed invention.

Paragraph 1.63(b) further requires the oath or declaration to state that the person signing the oath or declaration (1) has reviewed and understands the contents of the identified specification, (2) believes the named inventor is the original and the first inventor, and (3) acknowledges the duty to disclose information which is material. While paragraph 1.63(b) requires the person signing the oath or declaration to review and understand the specification including the claims, it is not intended to require that such person be skilled in patent law so as to grasp the legal implications of claim language and drafting. The person must recognize, however, that what is being claimed is the subject matter which that person regards as his or her invention pursuant to 35 U.S.C. 112.

Paragraph 1.63(c) requires that any application in which a claim for foreign priority is made identify in the oath or declaration the foreign application for patent or

inventor's certificate on which priority is claimed, and any foreign application having a filing date before that of the application on which priority is claimed.

Paragraph 1.63(d) requires that the oath or declaration in a continuation-in-part application, which discloses and claims subject matter in addition to that disclosed in the prior copending application, state that the person making the oath or declaration acknowledges the duty to disclose material information as defined in §1.56(a) which occurred between the filing date of the parent application and the national or PCT international filing date of the continuation-in-part application. This latter requirement is not new, but is included to serve as a reminder to the person making the oath or declaration of this duty to disclose material information such as foreign patenting, publication, or public use or sale in the United States which occurred more than one year prior to the filing date of the continuation-in-part application. For example, in circumstances where the claims of the continuation-in-part application are not fully supported by the disclosure of the parent application so as to be entitled to an earlier effective filing date under 35 U.S.C. 120, the duty to disclose extends to any material information, as defined in §1.56(a) measured from the filing date of the continuation-in-part application. This would include the first foreign patenting, and any foreign patenting subsequent to the first which materially differs therefrom, of the subject matter of the parent application which occurred more than one year prior to the national or PCT international filing date of the continuation-in-part application. Any publication of the parent application, other than foreign patenting, or any public use or sale in the United States of the subject matter of the prior application, which occurred more than one year prior to the national or PCT international filing date of the continuation-in-part application, would also come within §1.56(a) in such circumstances. See *In re Ruscetta and Jenny*, 118 U.S.P.Q. 101 (C.C.P.A. 1958); *In re van Langenhoven*, 458 F. 2d 132, 173 U.S.P.Q. 426 (C.C.P.A. 1972), and *Chromalloy American Corp.* v. *Alloy Surfaces, Co., Inc.*, 339 F. Supp. 859, 173 U.S.P.Q. 295 (Del. 1972).

Section 1.64

Section 1.64 is added as proposed to clearly indicate who must sign the oath or declaration of a patent application.

Section 1.65

Section 1.65 is removed as proposed because the oath or declaration requirements set forth therein are covered by new §1.63.

Section 1.67

Section 1.67 is amended as proposed to remove all of paragraphs (a) and (b) and substitute therefor new wording. Paragraph 1.67(a) indicates that a supplemental oath or declaration meeting the requirements of new §1.63 may be required to correct deficiencies or inaccuracies present in an earlier oath or declaration. Paragraph 1.67(b) requires a supplemental oath or declaration to be filed (1) when a claim is presented embracing material not originally claimed and (2) when a subsequently filed oath or declaration under §1.53(d) refers to an amendment which includes improper new matter. Paragraph 1.67(b) also clearly states the prohibition against entry of new matter after the filing date of the application.

Section 1.69

Section 1.69, paragraph (b), is amended as proposed to change the time at which a translation of a non-English language oath or declaration which has not been supplied by the Office must be filed. The time period for filing the translation is changed to two months after notification that a translation is required. The reference to §1.65 in paragraph 1.69(b) is changed to §1.63.

Section 1.70

Section 1.70 is amended to refer to §1.63 for the requirements to be met when an oath or declaration is filed under 35 U.S.C. 371(c)(4). The wording of the title in the final rule is changed to reflect more clearly the subject matter of the rule.

Section 1.77

Section 1.77 is amended as proposed to change paragraphs (h) and (i) to refer to the abstract of the disclosure and signed oath or declaration, respectively.

Section 1.97

Section 1.97 is amended to change the title from "prior art statement" to "information disclosure statement". This change is appropriate since the designation "information disclosure statement" more accurately characterizes the nature and content of the information which may be included in such a statement. Information which is required to be submitted pursuant to §1.56 may ultimately be determined not to be "prior art," but nevertheless may be "material" pursuant to §1.56. Section 1.97 has also been modified from that proposed by eliminating the word "material" since information submitted pursuant to §1.97 may be considered to be of questionable materiality or may be determined, upon examination, not to be "material". Section 1.97 now provides that an information disclosure statement should be filed with the application or within the later of three months after the filing date of the application or two months after applicant receives the filing receipt. Paragraph 1.97(b) has been amended in recognition that applicant may choose to furnish other material information in another manner or statement. Paragraph 1.97(b) now also refers to section 1.56(a) for the definition of "material information". The amendments to paragraph 1.97(b) do not in any manner reduce the obligation to submit material information as defined in §1.56(a).

Section 1.98

Section 1.98 indicates that information disclosure statements should list prior art with all of the information which is required to print such citations on the front page of a patent. The final rule states clearly that the publication date indicated on the document should be submitted. This will not serve to preclude a showing of a different, actual publication date. Another purpose of the citation requirements in this section is to permit ready reference to the document from its citation.

Section 1.99

Section 1.99 is amended to change the title to be consistent with the amendment to §1.97.

Section 1.101

Section 1.101 is amended to indicate specifically that applications which are to have their examination advanced pursuant to §1.102 will be taken up for examination out of order by the examiner. The final rule is also modified to set out when international applications which have complied with the requirements of 35 U.S.C. 371(c) are taken up for action.

Section 1.118

Section 1.118 is amended as proposed to designate the previous section as new paragraph (a) and amend it to clearly state that no new matter may be introduced into an application and to make specific reference to §§1.53, 1.63 and 1.67. New paragraph 1.118(b) indicates how improper amendments which introduce new matter in the specification or claims will be handled by the examiner.

Section 1.123

Section 1.123 is amended to require all corrections to drawings to be made by bonded draftsmen at applicant's expense since the Office does not have sufficient draftsmen to make such corrections. Sketches of any desired corrections will, however, still require approval of the examiner. The final rule makes clear that changes in the drawing may be made by submission of substitute drawings.

Section 1.125

Section 1.125 is amended to relax the prohibition against substitute specifications which are not required by the examiner. The section, however, adds the requirement that any substitute specification filed must be accompanied by a statement that the substitute specification includes no new matter. Under the section the statement must be a verified statement if made by a person not registered to practice before the Office. The final rule specifies that a substitute specification may not be accepted unless it is clear to the examiner that processing of the application would be facilitated thereby.

Section 1.131

Section 1.131 is amended as proposed to refer to the use of affidavits or declarations under the section during reexamination of a patent as long as the patent upon which the rejection is based does not claim the rejected invention. Section 1.131 cannot be used to overcome a rejection based upon a United States patent claiming the rejected invention. This is true regardless of whether the rejected claims are contained in an application being examined or a patent being reexamined. Section 1.131 is inapplicable if the same invention is being claimed by the United States patent upon which the rejection is based. Under the section as amended, the same person or persons who would make the affidavit or declaration in an application will be required to make the affidavit or declaration on behalf of the owner of the patent under reexamination.

Section 1.132

Section 1.132 is amended as proposed to refer to the use of affidavits or declarations under the section during reexamination of a patent.

Section 1.137

Section 1.137 is amended as proposed to except from the provisions of paragraph (b) those applications abandoned pursuant to §1.53(d) because the fee, oath, or declaration and the surcharge were not submitted. Section 111 of Title 35, United States Code, as amended by Public Law 97-247, requires that any delay in submission of the fee and oath be shown to be unavoidable. Thus, paragraph (b) of §1.137 permitting revival where abandonment was unintentional is inapplicable to the revival of applications which become abandoned pursuant to §1.53(d).

Section 1.141

The proposed amendments to §1.141 are withdrawn infra to permit the public to study the issues involved and make any further recommendations considered appropriate.

Section 1.153

Section 1.153 is amended to change the reference for oath and declaration requirements from §1.65 to §1.63 and to conform the language of the rule to be consistent therewith.

Section 1.154

Section 1.154 is amended as proposed to revise paragraph (e) to refer to the signed oath or declaration requirements of §1.153(b).

Section 1.162

Section 1.162 is amended as proposed to change the reference from §1.65 to §1.63.

Section 1.163

Section 1.163 is amended as proposed to change the wording of the section to clearly indicate that a signed oath or declaration is required rather than a signed specification.

Section 1.172

Section 1.172 is amended to indicate clearly that the reissue oath is signed and sworn to rather than the reissue application. The final rule has been modified from that proposed by referring to a "reissue oath" rather than to "reissue oaths".

Section 1.174

Section 1.174 is amended as proposed to remove the requirement that photoprints of original drawings be securely mounted or pasted on sheets of drawing board because paper drawings are acceptable.

Section 1.175

Section 1.175 is amended as proposed to change the reference to the oath or declaration from §1.65 to §1.63.

Sections 1.301, 1.302 and 1.303

The proposed amendments to sections 1.301, 1.302 and 1.303, referring to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals, have been adopted as final rules as published on Oct. 26, 1982 at 47 FR 47380-47382 and corrected on Nov. 5, 1982 at 47 FR 50142 and therefore are not republished here.

Section 1.324

Section 1.324 is amended to include wording similar to that in §1.48 for correction of inventorship in applications.

Section 1.325

Section 1.325 is amended as proposed to include reference to the reexamination procedure.

Section 1.335

Section 1.335 is added as proposed to provide a new section relating to the filing in the Patent and Trademark Office of notices of arbitration awards. Such filing is required under §294 of Title 35, United States Code, as added by Public Law 97–247. The final rule has also been modified in response to a comment to indicate that the notices of arbitration awards are intended to be placed in the patent files.

Section 1.565

The proposed amendments to §1.565 are withdrawn infra to permit the public to study the issues involved

and make any further recommendations considered appropriate.

Section 5.12

Section 5.12 is amended as proposed to separate the section into two paragraphs. Paragraph (a) provides that the filing of an application for an invention made in the United States is considered to include a petition for a license for foreign filing. If a license is granted, it will be indicated on the filing receipt. If it is not granted, no indication of the denial will appear. Failure to grant a license should be considered a denial of a first petition for a license. A subsequent petition may be filed under §5.12(b). Section 5.12(b) is essentially the text of §5.12 in its previous form. No rights to file a petition for license are being removed.

Withdrawal of Proposed Amendments To Sections 1.141 and 1.565.

A number of the speakers at the public hearing held on Dec. 16, 1982, urged that the amendments to §§1.141 and 1.565 be deferred or dropped pending further study. Those urging that the proposed amendments to §1.141 not be adopted at this time included speakers from the American Patent Law Association, from Committee 103 of the American Bar Associations's Patent, Trademark & Copyright Section, and from the Bar Association of the District of Columbia. The Boston Patent Law Association urged that the amendment to §1.565 be removed or held in abeyance. The American Patent Law Association indicated that more time was needed for its committees to analyze the issues in the proposed amendments to §§1.141 and 1.565.

In response to the recommendations received at the public hearing, the proposed amendments to §§1.141 and 1.565 are being withdrawn at this time to permit the public to study the issues involved and make any further recommendations considered appropriate. Pending the further study referred to by the speakers at the hearing and consideration of any recommendations resulting therefrom, the Office will continue to operate under present §§1.141 and 1.565 as interpreted by the Manual of Patent Examining Procedure and relevant Patent and Trademark Office and judicial precedents.

Responses to Comments on the Rules

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony, were considered in adopting the changes set forth herein.

Forty-eight letters presenting written comments were received and seven persons testified at the public hearing on Dec. 16, 1982.

Comments appear below along with responses thereto.

Comment:

One comment objected to inadequate notice regarding these proposed rule changes.

Reply:

The proposed rules notice was published in the Federal Register on Oct. 27, 1982. This is more than seven weeks prior to the date of the hearing and four months prior to the effective date of the final rules. Such periods are considered to be reasonable in view of the fact that the legislation requiring the rule changes was only enacted on Aug. 27, 1982 and that other rule changes were required to be implemented by Oct. 1, 1982.

Comment:

One comment proposed that "Patent and Trademark Office" should be used in the rules rather than merely "Office".

Reply:

The proposal has been adopted in the final rules in those locations where confusion may otherwise result.

Comment:

Five comments requested that promulgation of §§1.10, 1.63, 1.97, 1.141 and 1.565(e) be delayed and the period for comment extended until Mar. 30, 1983.

Reply:

Amendments to §§1.141 and 1.565 are not being promulgated at this time to provide time for further consideration and study as requested. If after study, a rule change is felt desirable, a new proposal will be issued. New §1.10 is being promulgated to make it available to applicants as it was intended in the statute. New §1.63 is being added and §1.65 deleted to reduce the formal statements required. If desired, the old oath and declaration forms may continue to be used if the statement is included that applicant "has reviewed and understands the contents of the specification, including the claims". For continuation-in-part applications, it is necessary to also include language is conformance with §1.63(d). Section 1.97 is being promulgated to remove problems relating to the time period in the current wording and to clarify the section in general.

Comment:

One person questioned why Sunday was not mentioned in §1.6(b) or (c).

Reply:

Section 1.6(b) and (c) are limited to weekdays which by definition excludes Sunday.

Comment:

Two comments were received which proposed that only a certificate of mailing procedure as in §1.8(a) be used for determining the date of deposit under 35 U.S.C. 21.

Reply:

The filing date of an application is considered to be much more critical than the filing dates of papers accepted under §1.8. The application filing date is often critical for determining if a statutory bar exists, whether foreign priority can be claimed and who is the senior party in an interference. Therefore, papers filed for purposes of receiving an application filing date should have some clear indication of the date of receipt by the United States Postal Service. Such a practice would also probably require storing all of the envelopes in the file wrapper for record purposes.

Comment:

Three comments were received which stated that private courier services should also be provided for in §1.10.

Reply:

Section 21(a) as amended by Public Law 97–247 provides for filing dates being given only when "deposited with the United States Postal Service." Although private courier services may be used to deliver papers to the Patent and Trademark Office, the actual date of receipt by the Patent and Trademark Office will be considered to be the filing date.

Comment:

A comment was received which argued that the Post Office date stamp should be stamped on the mailing label instead of having to enter the label number on each document.

Reply:

Stamping the mailing label would not add anything since the postal clerk receiving the "Express Mail" must already indicate the date and time of deposit and initial the label. A purpose of placing the label number on each paper is to permit several papers to be placed in a single envelope. The mailing labels may be retained in the Patent and Trademark Office for later verification.

Comment:

Seven comments were received that the requirement that the item be received the following day (§1.10(b)) was unnecessarily restrictive.

Reply:

Section 1.10 does not require that the item be received the next day in the Patent and Trademark Office in order to receive the date of deposit as the mailing date. The one day reference has been deleted. Further proof of mailing may be required where an unreasonable period of time is involved and supporting evidence is not otherwise available to the Patent and Trademark Office. Documents deposited with the United States Postal Service will be given a filing date which corresponds to the date of receipt indicated by the postal clerk on the "Express Mail" mailing label.

Comment:

Four comments indicated that §1.10 does not assist in placing applicants and attorneys outside the Washington area on the same footing as those in Washington.

Reply:

The main purpose of §1.10 is to implement 35 U.S.C. 21(a) in a manner which would provide for granting filing dates for papers and fees as of the date of their deposit with the United States Postal Service. Certainly these provisions using "Express Mail," together with the certificate of mailing procedure available under §1.8, will go a long way in reducing last minute deliveries to the Patent and Trademark Office by persons outside the Washington area.

Comment:

Two comments stated that the comments accompanying§1.10(c) should be clarified to explain the meaning of "more than one day."

Reply:

The final rule has been clarified.

Comment:

It was proposed by one person that the "affidavit or declaration" under §1.10(c) be waived if the statement is made by a registered attorney or agent.

Reply:

The suggestion has been adopted.

Comment:

It was indicated by one person that certified mail provides proof of mailing date under §1.10 by virtue of the Post Office stamp on the certified mail receipt card.

Reply:

The information on the certified mail receipt card is of no benefit to the Patent and Trademark Office since it is immediately returned to the sender. The Patent and Trademark Office would not be able to retain any information which gives proof of the date of mailing.

Comment:

Three comments raised questions as to the need to make the acceptance of the "Express Mail" contingent upon the performance of the Post Office in §1.10(c).

Reply:

The acceptance of the "Express Mail" is not contingent upon "next day delivery". The reference in §1.10(c) to proof of mailing merely provides a basis for the Office requiring proof of mailing where an explanation appears to be necessary to clarify the record. Such information is expected to be required only in a few instances. The rule has also been revised to clarify this matter.

Comment:

Five persons suggested the use of registered or certified U.S. mail for obtaining filing dates under 35 U.S.C. 21.

Reply:

Registered mail does not provide any information or evidence to the Patent and Trademark Office as to the date of mailing other than the postmark, which is often unreadable. Storage of envelopes containing such postmarks is also burdensome. The deficiency of certified mail has already been discussed.

Comment:

One person questioned what treatment will be accorded a paper placed in an "Express Mail" box receptacle after the box has been cleared for the last time on a given day.

Reply:

The paper will be considered to be deposited as of the date of receipt indicated on the "Express Mail" mailing label by the Postal Service clerk.

Comment:

One person commented that he found the idea of using a declaration or affidavit to establish a date of deposit unacceptable because it exposes the integrity of the assignment of filing dates to the risk of deception.

Reply:

The use of declarations or affidavits is usually intended to help explain activities which can be supported by exhibits. For example, if the Office copy of the mailing label was not entirely readable, applicant's copy of the "Express Mail" mailing label could accompany a declaration and serve as the basis for granting a filing date.

Comment:

Three persons objected to permitting only the individual who places the correspondence in an "Express Mail" facility to execute the certificate of express mailing under§1.10(c).

Reply:

The wording of §1.10(c) differs from §1.8 because the documents which are expected to be filed under §1.10 are patent and trademark applications. The filing dates of such documents are very important and should therefore be based on personal knowledge.

Comment:

One comment was received which suggested that §1.10 be adopted with an effective date retroactive to a year earlier.

Reply:

Such an earlier date is not possible since the statutory authority for §1.10 does not come into effect until Feb. 27, 1983.

Comment:

One comment proposed designating the Patent and Trademark Office as an "Express Mail" Post Office to make lower rates available.

Reply:

Such a designation is not possible.

Comment:

One person requested that the Patent and Trademark Office publish a form of certificate of mailing by "Express Mail" suitable for purposes of §1.10(b).

Reply:

A suggested form is included in the preamble of this rule change.

Comment:

One comment proposed that §1.10(c) clearly state what evidence will be necessary and sufficient to prove a filing date by mailing.

Reply:

A specific answer cannot be given since it is dependent upon the particular fact situation and what evidence is actually available.

Comment:

Two comments questioned whether P.L. 97–247 authorized a rule such as §1.10 granting filing dates as of the mailing date.

Reply:

The question raised by this comment has been treated in the discussion of §1.10 supra.

Comment:

One comment proposed that §1.10 be corrected to read—Any paper or fee *required* to be filed—to more closely conform with 35 U.S.C. 21(a).

Reply:

No need is seen to change §1.10 as suggested since, if a patent is desired, it is "required" that each paper relating to an application be filed in the Patent and Trademark Office.

Comment:

One comment indicated that the requirement to place the "Express Mail" label number on each paper and fee is not realistic.

Reply:

The placement of the label number on each paper or fee allows later verification of the mailing dates of all different papers mailed in one envelope and is not seen to be overly burdensome.

Comment:

A question was raised as to whether the "Express Mail" label number should be placed on every page.

Reply:

The label number need not be placed on each page. It should, however, be placed on the first page of each separate document, such as, a new application, amendment, assignment, and transmittal letter for a fee, along with the certificate of mailing by "Express Mail". Al-

though the label number may be on checks, such a practice is not required.

Comment:

A question was raised by one party as to the location within the Patent and Trademark Office of the mailing labels where papers to different applications are placed in the same envelope.

Reply:

The mailing labels from all "Express Mail" packages are expected to be removed and initially retained centrally in the Mail Room of the Patent and Trademark Off ice. The number on each document will allow direct access to the appropriate mailing label if any questions should arise.

Comment:

One comment suggested that §1.22(b) be amended to exclude itemization of all fees where a general authorization to charge a deposit account has been given.

Reply:

Even where fees are charged to a deposit account, it is desirable to know specifically which fees are to be paid. Therefore, the suggestion has not been adopted.

Comment:

One comment was received which suggested adding a sentence to §1.41(d) indicating that the filing of an oath or declaration executed by the applicant would constitute proof of authority to file the application.

Reply:

Such an additional sentence is not considered to be necessary since the Patent and Trademark Office does not intend to utilize the provisions of §1.41(d) unless a controversy arises.

Comment:

One comment was received which suggested the addition to the end of §1.42 of the words "except for patents granted to the assignee either of the inventor or of the legal representative of the inventor."

Reply:

No change is considered to be necessary since few, if any, problems have arisen without such additional wording in the past. The existing rule wording "upon proper intervention" also provides protection for assignees.

Comment:

One comment was received which indicated that §1.46 does not clearly authorize an assignee of a part interest to cause an application to be placed on file.

Reply:

Although §1.46 may not make this point clear, it is clear from §1.41(c).

Comment:

One comment recommended that the requirement to show diligence in correcting inventorship under §1.48 be deleted.

Reply:

It is felt that corrections of inventorship should be diligently made in patent applications. The naming of correct inventorship is necessary for the Patent and Trademark Office to make decisions on topics such as double patenting, priority claims and first inventorship.

Comment:

It was recommended in one comment that the verified statement of facts required by §1.48 "by the original named inventor or inventors" be replaced by a requirement that he or they merely assent to the statement of the facts since others may be better able to provide the best evidence.

Reply:

Since it is the original inventorship that is being changed, it is believed that all of the previously named inventors should positively indicate their agreement with the facts in the case. Affidavits by other individuals may also be supplied where such persons have direct personal knowledge of certain aspects of the case.

Comment:

One comment indicated that "it seems a reasonable presumption that if ownership is unaffected, deceptive intent is absent" in a §1.48 correction of inventorship situation and that such a presumption could be written into the rules.

Reply:

Even if applications are commonly owned, the wrong inventorship could be deceptively named to obtain rights which are only available to the same inventive entities. The report on Public Law 97-247 also states that "the commissioner must be assured of the presence of innocent error, without deceptive intention . . ." before permitting a substitution of a true inventor's name.

Comment:

One person suggested that the deceptive intent in §1.48 refer to the acts of the actual inventors rather than to both the alleged and actual inventor or inventors.

Reply:

This suggestion has been adopted in both §§1.48 and 1.324, but deceptive intention on the part of other parties is subject to review under §1.56.

Comment:

One person suggested that in §1.48, line 3 "may" be changed to—must—.

Reply:

The suggestion has not been adopted. Corrections may only be made if the conditions set forth in §1.48 are satisfied.

Comment:

Two comments objected to the insertion of "material" in §1.51(b).

Reply:

This word has been removed and does not appear in the final rule.

Comment:

One comment suggested changing "an" to—a complete—in the title of §1.51.

Reply:

This suggestion has been adopted.

Comment:

One comment indicated that §§1.52(c) and 1.56(c) seemed overly inflexible and harsh when considering minor grammatical changes.

Reply:

Although §1.56 indicates that applications "may" be stricken, rather than "must" be stricken, it is still considered important to maintain a clear line in the regulations against changes in the original applications made after the execution of the application oath or declaration. The line between grammatical changes and changes relating to the merits is frequently unclear.

Comment:

Three comments noted an apparent inconsistency between proposed §§1.10 and 1.53 as to whether §1.10 relates to the filing of patent applications.

Reply:

Section 1.10 does relate to the filing of patent applications. In order to clarify the wording, "received" in §1.53(b) has been changed to "filed".

Comment:

One comment was received suggesting that a sentence be added to §1.53(d) to indicate that PCT applicants cannot submit late filing fees, oaths or declarations under 35 U.S.C. 371.

Reply:

Such a reference in §1.53 does not appear appropriate because this section relates to "filing dates". In the PCT situation, the filing date was already granted at the time of filing the PCT international application.

Comment:

One comment was received which suggested that §1.53(a) be rewritten to indicate all applications are assigned serial numbers but not accorded filing dates.

Reply:

The proposal was not adopted since it is considered unnecessary.

Comment:

One person suggested that §1.53(b) be amended to specify that only "a specification *purporting* to contain a description and at least one claim . . ." is needed to obtain a filing date.

Reply:

No change is being made since a determination must be initially made as to whether or not a specification has been filed. In any case, sufficiency of the specification must later be checked by the examiner.

Comment:

One person indicated that the time period for filing a correction to a defect in an application is left entirely within the discretion of the Commissioner and that any setting of periods of time would be tantamount to an exercise of rulemaking authority. Section 1.53(d) should be provided with an explicit time limitation.

Reply:

No specific time period is considered to be necessary in the regulations. The Commissioner has full authority and discretion under the statute in 35 U.S.C. 111 to set periods of time. The statute does not require the Commissioner to use the rulemaking process to set time periods for response to an action or requirement by the Patent and Trademark Office in a patent application.

Comment:

Two comments were received objecting to the use of the words "or otherwise disposed of" in §1.53(c).

Reply:

This wording has existed in §1.53(b) in the past without objection. No need is seen to depart from this wording at this time.

Comment:

One person questioned whether the change in §1.54(b) would result in return post cards not being stamped with the application serial number.

Reply:

No change is intended in the existing return post card practice.

Comment:

One comment proposed adding another sentence to §1.154(b) indicating that foreign priority claims will be acknowledged on the filing receipt.

Reply:

This proposal is not being adopted since the examiner must determine whether the statutory requirements of 35 U.S.C. 119 have been met before an acknowledgment can be sent.

Comment:

One comment suggested that the Patent and Trademark Office indicate on the filing receipt both the filing date under §1.10 and the actual date of receipt.

Reply:

The actual date of receipt can be obtained by requesting a receipt from the Postal Service. The actual date of receipt cannot be placed on the filing receipt because of current computer limitations. The suggestion is therefore not being adopted at this time.

Comment:

One comment was received indicating that it is not clear whether or not an application based on a specification and drawing, but containing no oath or declaration or filing fee, could serve as the basis for a priority claim under 35 U.S.C. 120.

Reply:

If the filed specification and drawings fully disclose the invention as required by 35 U.S.C. 112, the application may serve as a basis for a priority claim under §120 even if no oath or declaration, or no fee has been filed, as long as the continuing application is filed prior to the abandonment of the first application under §1.53(d).

Comment:

One comment suggested that §1.55(b) be removed since the requirements of the statute are fully set forth in 35 U.S.C. 119.

Reply:

Although the statutory requirements set forth basic requirements, it is felt that the more specific details of §1.55(b) provide needed guidance for applicants.

Comment:

Two persons questioned the meaning of "inspection and review" in §1.56(c) and suggested certain amendments.

Reply:

The words "inspection and" are being removed to eliminate any redundancy. The paragraph has also been broken down into four items as proposed by a comment.

Comment:

One suggestion was made that applicant be allowed to order a copy of the parent patent, with payment of fee, when filing a §1.60 application.

Reply:

Such a practice is contrary to the intent of the rule change. The problems the Patent and Trademark Office is attempting to solve by the change, which are caused by poor copies and delays in processing, would remain with such a practice.

Comment:

Two persons suggested that §1.60 be amended to drop "and claimed" from the title.

Reply:

The suggestion has been adopted.

Comment:

One person suggested that §1.60 be modified to drop the requirement for verification by affidavit when the statement is made by a registered patent attorney or agent.

Reply:

The suggestion has been adopted.

Comment:

One comment noted that there is no specific requirement in §§1.56, 1.63 or 1.98 to identify foreign applications filed more than one year prior to the U.S. filing date.

Reply:

Section 1.63(b)(3) broadly requires applicant to acknowledge the duty to disclose information material to the examination of the application. This information includes foreign patents based on applications filed more than a year prior to the filing date of the United States application and which issue before the filing date of the United States application.

Comment:

One person felt that §1.63(b)(1) will be a disaster for the patent system since the inventor may not be physically able to review and understand the invention or because the legal language format used in claims may not be understood by the inventor. Five persons argued that adoption of §1.63 would result in raising the defense that the inventor did not understand the claims in each patent infringement suit.

Reply:

The inventor is not expected to understand all the legal interpretations or limitations in a claim. The inventor is expected to recognize that what is being claimed is the subject matter which the inventor regards as his or her invention pursuant to 35 U.S.C. 112. The physical factors have to some extent existed in past practice and have been handled on a case-by-case basis where necessary. The situation outlined would exist in any signing of a legal document. The wording of §1.63 has been explained in the preamble to minimize occurrences of problems.

Comment:

One comment noted that many inventors do not know whether additional subject matter is claimed in a continuation-in-part application under §1.63(d).

Reply:

The wording in §1.63(d) is considered to be appropriate and in accordance with case law. If uncertainty exists the attorney or agent, if any, should clarify the matter and §1.63(d) should be followed.

Comment:

One person proposed that §1.63(d) be modified to explicitly require the disclosure of foreign patents granted before the filing of the continuation-in-part application.

Reply:

Section 1.63(d) has been amended to clearly indicate that material information pursuant to §1.56(a) between the filing date of the parent application and the filing date of the continuation-in-part application must be disclosed. The discussion of new §1.63 refers to material foreign patents published during this time interval.

Comment:

Two comments indicated concern with the parenthetical language in proposed §1.63(d) in that it would create

severe problems.

Reply:

Paragraph (d) of §1.63 has been amended to remove such problems.

Comment:

One comment suggested adding—he or she is aware of—after information in §1.63(b)(3) and (d).

Reply:

This suggestion is not adopted since such wording is already present in §1.56(a).

Comment:

One comment suggested that §1.63(c) clarify what is intended by "the first filed foreign application," particularly in view of 35 U.S.C. 119, third paragraph.

Reply:

The rule has been amended to clarify the matter.

Comment:

One comment was received suggesting changes be made in the title and that paragraph (b) of §1.70 refer to §1.63 instead of "this section."

Reply:

The change suggested to the title has been made. The suggestion to paragraph (b) has not been made since it is considered unnecessary.

Comment:

Three comments were received which indicated that the wording of §1.97(a) would require an immediate filing of disclosure information if the filing receipt is received just before three months after filing.

Reply:

The wording of §1.97(a) has been changed to remove this problem.

Comment:

One comment was received which urged that the title of §1.97 and contents of §1.97(b) not be changed, since the proposed wording would not require filing of the closest prior art.

Reply:

The proposed changes are not intended to make any changes in the type of information which is to be submitted to the Office. The proposal has been adopted in modified form.

Comment:

One person indicated preference for the use of "prior art" in §§1.51(b), 1.97, 1.98, and 1.99 since it does not create an inferred admission that the information submitted is material. Five comments favored the removal of "prior art" from §1.97 but objected to the addition of "material".

Reply:

The rule change was proposed to answer arguments that the use of the term "prior art" implied that the information was a reference against applicant's invention. Since the majority of the comments supported modifying the rule, the use of the terms "prior art" as well as "material" are being dropped.

Comment:

Two comments were received concerning §1.98(a) suggesting that the "place of publication" be clarified or removed.

Reply:

This suggestion has not been adopted since the "place of publication" is not mandatory. It is intended to mean the city and country of publication. Also the citation of the "place of publication" is consistent with the §1.107(a) requirements.

Comment:

It was suggested by one person that §1.101 be amended to clarify when PCT international applications which have entered the national stage should be taken up for examination.

Reply:

An amendment has been made to §1.101 as suggested to clarify that they are taken up in order based on the date they have entered the national stage by compliance with the requirements of 35 U.S.C. 371(c).

Comment:

One comment was presented suggesting that the words "which are not examined on the merits" in §1.101 be removed.

Reply:

The suggestion has been adopted.

Comment:

One comment urged returning to the use of the Office draftsmen for minor corrections to reduce the burden under proposed §1.123.

Reply:

Some minor corrections may be made by the Office draftsmen on a time-available basis. However, since the Office currently has only a few draftsmen who are responsible for reviewing and approving all drawings, very little time is presently available for making corrections.

Comment:

Four suggestions were made to amend §1.123 to specifically provide for the filing of substitute drawings if corrections are required.

Reply:

These suggestions have been adopted.

Comment:

One comment was received indicating that §1.125 should indicate to whom it should be clear that acceptance of a substitute specification would facilitate processing.

Reply:

An amendment has been made to clarify that it should be clear to the examiner.

Comment:

One comment suggested removal of the last sentence of §1.137(b) to permit §1.183 petitions to be filed to waive time periods for requesting revival of unintentionally abandoned applications.

Reply:

No change in §1.137(b) is considered to be appropriate at this time since §1.137(b) only became effective on Oct. 1, 1982.

(Since changes to §1.141 are not being promulgated in this rule change, comments and replies to this section are not included.)

Comment:

One comment pointed out that the reference to a "period of twelve months" in §1.153 was indefinite.

Reply:

Section 1.153 has been amended to remove the indefiniteness.

Comment:

One comment was presented which suggested that §1.172 refer to a "reissue oath" rather than to "reissue oaths."

Reply:

This suggestion has been adopted.

Comment:

One comment suggested the insertion of "the filing of" before "each patent" in §1.335(a) and (b).

Reply:

The suggestion has been adopted.

(Since the proposed addition of a new paragraph (e) to §1.565 is not being adopted in this rule change, comments and replies to this section are not included.)

Comment:

One suggestion was made that a procedure be designed in which foreign filing licenses could be granted by return post card without losing the time required to send the filing receipts.

Reply:

It is felt that the procedure under §5.12 should be adopted at this time and be placed into operation. If after some experience additional modifications are found desirable, further changes could be made. To introduce several alternative procedures at this time is considered to be too complex and may endanger the success of the proposed procedure.

Comment:

One comment requested that the Office grant a prospective foreign filing license under §5.12 for all data and amendatory material to be filed abroad.

Reply:

Such petitions are not part of this proposed change but this concept is being considered in a separate rule change proposal.

Comment:

One comment suggested that the Filing Receipt specifically indicate whether or not a license has been denied under §5.12.

Reply:

The proposed practice under §5.12 would indicate on the Filing Receipt when a license is granted. On other cases in which a license is not granted further review is required. A license may still be granted at a later date.

Comment:

One comment stated that it should be possible to petition at any early date for a foreign filing license as well as obtain one on the filing receipt.

Reply:

It will still be possible to petition earlier for a license under revised §5.12.

Implementation Of Patent Procedure Revisions

The effective date of the patent procedure revisions contained in this rulemaking is Feb. 27, 1983. The various sections will be implemented in the manner set forth below:

§1.10 Filing of papers and fees by "Express Mail" with certificate.

The "Guidelines under §1.10" set forth below provide guidance in implementing §1.10:

Guidelines under §1.10

A) The certification under §1.10 requires a signature of the person depositing the paper with the United States Postal Service as "Express Mail". Specifically, if the certification under §1.10 appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification under §1.10.

B) When possible, the certification under §1.10 should appear on an upper portion of the first page of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO-85, the certification should be on a separate sheet securely attached to the paper.

C) When the certification is presented on a separate sheet, that sheet must (1) be signed and (2) fully identify and be securely attached to the paper or fee it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., complete application, specification and drawings, responses to rejection or refusal, notice of appeal, etc. If the serial number of the application is not known, the identification should include at least the name of the inventor(s) and the title of the invention. An unsigned certification will not be considered acceptable.

Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.

D) In situations wherein the correspondence includes papers for more than one application e.g., a single envelope containing separate applications or papers for various parts of the Patent and Trademark Office, each paper must have its own certification and the "Express Mail" label number as part thereof or attached thereto.

E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a notice of appeal), each paper should also have its own certification as a part thereof or attached thereto.

F) Practitioners may place the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

"Express Mail" mailing label number _____
Date of Deposit _____

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

_____
(Typed or printed name of person mailing paper or fee)

_____
(Signature of person mailing paper or fee)

§1.48 Correction of inventorship.

Any patent application pending on or after Feb. 27, 1983, is subject to the provisions of this section.

§1.53 Serial number, filing date, and completion of application.

The provisions of this section apply to any patent application filed on or after Feb. 27, 1983.

§1.63 Oath or declaration.

The provisions of §1.63 will become effective on Feb. 27, 1983, and will apply to any oath or declaration filed on or after that date. However, in order to provide a smooth transition from the old oath or declaration requirements to the new, the Office will continue to accept between Feb. 27, 1983, and June 30, 1983, any oath or declaration in compliance with §1.65 as it existed immediately prior to Feb. 27, 1983, so long as that oath or declaration is attached to and was executed as a part of an application to be filed in the Patent and Trademark Office.

Effective July 1, 1983, all oaths or declarations filed under §1.51(a)(2) as a part of a patent application must fully comply with §1.63.

A suggested format for a declaration is set forth below:

Declaration For Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

_____

the specification of which

(check one) ☐ is attached hereto.
☐ was filed on _____ as Application Serial No. _____ and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have

severe problems.
Reply:
Paragraph (d) of §1.63 has been amended to remove such problems.
Comment:
One comment suggested adding—he or she is aware of—after information in §1.63(b)(3) and (d).
Reply:
This suggestion is not adopted since such wording is already present in §1.56(a).
Comment:
One comment suggested that §1.63(c) clarify what is intended by "the first filed foreign application," particularly in view of 35 U.S.C. 119, third paragraph.
Reply:
The rule has been amended to clarify the matter.
Comment:
One comment was received suggesting changes be made in the title and that paragraph (b) of §1.70 refer to §1.63 instead of "this section."
Reply:
The change suggested to the title has been made. The suggestion to paragraph (b) has not been made since it is considered unnecessary.
Comment:
Three comments were received which indicated that the wording of §1.97(a) would require an immediate filing of disclosure information if the filing receipt is received just before three months after filing.
Reply:
The wording of §1.97(a) has been changed to remove this problem.
Comment:
One comment was received which urged that the title of §1.97 and contents of §1.97(b) not be changed, since the proposed wording would not require filing of the closest prior art.
Reply:
The proposed changes are not intended to make any changes in the type of information which is to be submitted to the Office. The proposal has been adopted in modified form.
Comment:
One person indicated preference for the use of "prior art" in §§1.51(b), 1.97, 1.98, and 1.99 since it does not create an inferred admission that the information submitted is material. Five comments favored the removal of "prior art" from §1.97 but objected to the addition of "material".
Reply:
The rule change was proposed to answer arguments that the use of the term "prior art" implied that the information was a reference against applicant's invention. Since the majority of the comments supported modifying the rule, the use of the terms "prior art" as well as "material" are being dropped.
Comment:
Two comments were received concerning §1.98(a) suggesting that the "place of publication" be clarified or removed.
Reply:
This suggestion has not been adopted since the "place of publication" is not mandatory. It is intended to mean the city and country of publication. Also the citation of the "place of publication" is consistent with the §1.107(a) requirements.
Comment:
It was suggested by one person that §1.101 be amended to clarify when PCT international applications which have entered the national stage should be taken up for examination.
Reply:
An amendment has been made to §1.101 as suggested to clarify that they are taken up in order based on the date they have entered the national stage by compliance with the requirements of 35 U.S.C. 371(c).
Comment:
One comment was presented suggesting that the words "which are not examined on the merits" in §1.101 be removed.
Reply:
The suggestion has been adopted.
Comment:
One comment urged returning to the use of the Office draftsmen for minor corrections to reduce the burden under proposed §1.123.
Reply:
Some minor corrections may be made by the Office draftsmen on a time-available basis. However, since the Office currently has only a few draftsmen who are responsible for reviewing and approving all drawings, very little time is presently available for making corrections.
Comment:
Four suggestions were made to amend §1.123 to specifically provide for the filing of substitute drawings if corrections are required.
Reply:
These suggestions have been adopted.
Comment:
One comment was received indicating that §1.125 should indicate to whom it should be clear that acceptance of a substitute specification would facilitate processing.
Reply:
An amendment has been made to clarify that it should be clear to the examiner.
Comment:
One comment suggested removal of the last sentence of §1.137(b) to permit §1.183 petitions to be filed to waive time periods for requesting revival of unintentionally abandoned applications.
Reply:
No change in §1.137(b) is considered to be appropriate at this time since §1.137(b) only became effective on Oct. 1, 1982.
(Since changes to §1.141 are not being promulgated in this rule change, comments and replies to this section are not included.)
Comment:
One comment pointed out that the reference to a "period of twelve months" in §1.153 was indefinite.
Reply:
Section 1.153 has been amended to remove the indefiniteness.
Comment:
One comment was presented which suggested that §1.172 refer to a "reissue oath" rather than to "reissue oaths."
Reply:
This suggestion has been adopted.
Comment:
One comment suggested the insertion of "the filing of" before "each patent" in §1.335(a) and (b).
Reply:
The suggestion has been adopted.
(Since the proposed addition of a new paragraph (e) to §1.565 is not being adopted in this rule change, comments and replies to this section are not included.)
Comment:
One suggestion was made that a procedure be designed in which foreign filing licenses could be granted by return post card without losing the time required to send the filing receipts.
Reply:
It is felt that the procedure under §5.12 should be adopted at this time and be placed into operation. If after some experience additional modifications are found desirable, further changes could be made. To introduce several alternative procedures at this time is considered to be too complex and may endanger the success of the proposed procedure.
Comment:
One comment requested that the Office grant a prospective foreign filing license under §5.12 for all data and amendatory material to be filed abroad.
Reply:
Such petitions are not part of this proposed change but this concept is being considered in a separate rule change proposal.
Comment:
One comment suggested that the Filing Receipt specifically indicate whether or not a license has been denied under §5.12.
Reply:
The proposed practice under §5.12 would indicate on the Filing Receipt when a license is granted. On other cases in which a license is not granted further review is required. A license may still be granted at a later date.
Comment:
One comment stated that it should be possible to petition at any early date for a foreign filing license as well as obtain one on the filing receipt.
Reply:
It will still be possible to petition earlier for a license under revised §5.12.

Implementation Of Patent Procedure Revisions

The effective date of the patent procedure revisions contained in this rulemaking is Feb. 27, 1983. The various sections will be implemented in the manner set forth below:

§1.10 Filing of papers and fees by "Express Mail" with certificate.

The "Guidelines under §1.10" set forth below provide guidance in implementing §1.10:

Guidelines under §1.10

A) The certification under §1.10 requires a signature of the person depositing the paper with the United States Postal Service as "Express Mail". Specifically, if the certification under §1.10 appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification under §1.10.

B) When possible, the certification under §1.10 should appear on an upper portion of the first page of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO-85, the certification should be on a separate sheet securely attached to the paper.

C) When the certification is presented on a separate sheet, that sheet must (1) be signed and (2) fully identify and be securely attached to the paper or fee it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., complete application, specification and drawings, responses to rejection or refusal, notice of appeal, etc. If the serial number of the application is not known, the identification should include at least the name of the inventor(s) and the title of the invention. An unsigned certification will not be considered acceptable.

Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.

D) In situations wherein the correspondence includes papers for more than one application e.g., a single envelope containing separate applications or papers for various parts of the Patent and Trademark Office, each paper must have its own certification and the "Express Mail" label number as part thereof or attached thereto.

E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a notice of appeal), each paper should also have its own certification as a part thereof or attached thereto.

F) Practitioners may place the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

"Express Mail" mailing label number _____
Date of Deposit _____

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

_____
(Typed or printed name of person mailing paper or fee)

_____
(Signature of person mailing paper or fee)

§1.48 Correction of inventorship.

Any patent application pending on or after Feb. 27, 1983, is subject to the provisions of this section.

§1.53 Serial number, filing date, and completion of application.

The provisions of this section apply to any patent application filed on or after Feb. 27, 1983.

§1.63 Oath or declaration.

The provisions of §1.63 will become effective on Feb. 27, 1983, and will apply to any oath or declaration filed on or after that date. However, in order to provide a smooth transition from the old oath or declaration requirements to the new, the Office will continue to accept between Feb. 27, 1983, and June 30, 1983, any oath or declaration in compliance with §1.65 as it existed immediately prior to Feb. 27, 1983, so long as that oath or declaration is attached to and was executed as a part of an application to be filed in the Patent and Trademark Office.

Effective July 1, 1983, all oaths or declarations filed under §1.51(a)(2) as a part of a patent application must fully comply with §1.63.

A suggested format for a declaration is set forth below:

Declaration For Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

_____

the specification of which

(check one) ☐ is attached hereto.
☐ was filed on _____ as Application Serial No. _____ and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have

also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

			Priority Claimed	
(Number)	(Country)	(Day/Month/Year Filed)	☐ Yes	☐ No
(Number)	(Country)	(Day/Month/Year Filed)	☐ Yes	☐ No
(Number)	(Country)	(Day/Month/Year Filed)	☐ Yes	☐ No

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor _____
Inventor's signature _____
Date
Residence _____
Citizenship _____
Post Office Address _____ _____
Full name of second joint inventor, if any _____
Second Inventor's signature _____
Date
Residence _____
Citizenship _____
Post Office Address _____ _____

(Supply similar information and signature for third and subsequent joint inventors.)

The declaration form set forth above is specifically designed for use where the specification is attached to the form and the specification and declaration are filed at one time, and also where the declaration form is filed after the specification and drawings in accordance with §1.53. The form can be used where foreign priority is claimed under 35 U.S.C. 119 and where the benefit of one or more United States applications is claimed under 35 U.S.C. 120. Appropriate modifications can be made in the form so long as compliance with the rules is maintained. For example, if the form is being used as a supplemental declaration form which is being submitted after numerous amendments the form might appropriately be modified by changing the words "was amended on" to "with amendments through."

§1.335 Filing of notice of arbitration awards.

The written notices required by this section should be directed to the attention of the Office of the Solicitor, which Office will be responsible for processing of such notices.

Other Considerations

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act. (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*

The rule change will not have a significant averse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. Public Law 97-247 has taken into consideration the impact it may have on small entities. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to foreign filing license petitions, will be reduced.

List of Subjects in 37 CFR Parts 1 and 5

Administrative practice and procedure, Courts, Inventions and patents.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and Public Law 97-247, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

37 CFR, Parts 1 and 5, are amended as follows:

1. Section 1.4 is amended by revising paragraph (a) to read as follows:

§1.4 Nature of correspondence.

(a) Correspondence with the Patent and Trademark Office comprises: (1) correspondence relating to services and facilities of the Office, such as general inquiries, requests for publications supplied by the Office, orders for printed copies of patents or trademark registrations, orders for copies of records, transmission of assignments for recording, and the like, and (2) correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§1.31 to 1.352; of international applications in Subpart C, §§1.401 to 1.482; of reexamination of patents in Subpart D, §§1.501 to 1.570; and of trademark applications, §§2.11 to 2.189.

* * * * *

2. Section 1.6 is revised to read as follows:

§1.6 Receipt of letters and papers.

(a) Letters and other papers received in the Patent and Trademark Office are stamped with the date of receipt. No papers are received in the Patent and Trademark Office on Saturdays, Sundays or federal holidays within the District of Columbia.

(b) Mail placed in the Patent and Trademark Office pouch up to midnight on weekdays, excepting Saturdays and federal holidays, by the post office at Washington, D. C., serving the Patent and Trademark Office, is considered as having been received in the Patent and Trademark Office on the day it was so placed in the pouch.

(c) In addition to being mailed or delivered by hand during office hours, letters and other papers may be deposited up to midnight in a box provided at the guard's desk at the lobby of building 3 of the Patent and Trademark Office at Crystal Plaza, Arlington, Virginia and at the main entrance (14th Street) of the Department of Commerce Building, Washington, D. C., on weekdays except Saturdays and federal holidays, and all papers deposited therein are considered as received in the Patent and Trademark Office on the day of deposit.

(d) If interruptions or emergencies in the United States Postal Service which have been so designated by the Commissioner occur, the Patent and Trademark Office will consider as filed on a particular date in the Office any paper or fee which is (1) promptly filed after the ending of the designated interruption or emergency and (2) accompanied by a statement indicating that such paper or fee would have been filed on that particular date if it were not for the designated interruption or emergency in the United States Postal Service. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

3. Section 1.7 is revised to read as follows:

§1.7 Times for taking action: Expiration on Saturday, Sunday or federal holiday.

Whenever periods of time are specified in this part in days, calendar days are intended. When the day, or the last day fixed by statute or by or under this part for taking any action or paying any fee in the Patent and Trademark Office falls on Saturday, Sunday, or on a federal holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding day which is not a Saturday, Sunday, or a federal holiday. See §1.304 for time for appeal or for commencing civil action.

4. Section 1.8 is amended by revising the introductory text of paragraph (a) and paragraph (a)(1), (a)(2) introductory text, and (a)(2)(i) to read as follows:

§1.8 Certificate of mailing.

(a) Except in the cases enumerated below, papers and fees required to be filed in the Patent and Trademark Office within a set period of time will be considered as being timely filed if: (1) they are addressed to the Commissioner of Patents and Trademarks, Washington, D. C. 20231, and deposited with the U.S. Postal Service with sufficient postage as first class mail prior to expiration of the set period, and (2) they also include a certificate for each paper or fee stating the date of deposit. The person signing the certificate should have reasonable basis to expect that the correspondence would be mailed on or before the date indicated. The actual date of receipt of the paper or fee will be used for all other purposes. This procedure does not apply to the following:

(i) The filing of a national patent application specification and drawing or other papers for the purpose of obtaining an application filing date;

* * * * *

5. A new section 1.10 is added to read as follows:

§1.10 Filing of papers and fees by "Express Mail" with certificate.

(a) Any paper or fee to be filed in the Patent and Trademark Office can be filed utilizing the "Express Mail Post Office to Addressee" service of the United States Postal Service and be considered as having been filed in the Office on the date the paper or fee is shown to have been deposited as "Express Mail" with the United States Postal Service.

(b) Any paper or fee filed by "Express Mail" must have the number of the "Express Mail" mailing label placed thereon prior to mailing, be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and any such paper or fee must also include a certificate of mailing by "Express Mail" which states the date of mailing by "Express Mail" and is signed by the person mailing the paper or fee.

(c) The Patent and Trademark Office will accept the certificate of mailing by "Express Mail" and accord the paper or fee the certificate date under 35 U.S.C. 21(a) without further proof of the date on which the mailing by "Express Mail" occurred unless a question is present regarding the date of mailing. If more than a reasonable time has elapsed between the certificate date and the Patent and Trademark Office receipt date or if other questions regarding the date of mailing are present, the person mailing the paper or fee may be required to file a copy of the "Express Mail" receipt showing the actual date of mailing and a statement from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

6. Section 1.17 is amended by revising paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph—$120.00

—§1.47—for filing by other than all the inventors or a person not the inventor
—§1.48—for correction of inventorship
—§1.182–for decision on questions not specifically provided for
—§1.183–to suspend the rules
—§1.268–for late filing of interference settlement agreement

* * * * *

7. Section 1.22 is revised to read as follows:

§1.22 Fees payable in advance.

(a) Patent and trademark fees and charges payable to the Patent and Trademark Office are required to be paid in advance, that is, at the time of requesting any action by the Office for which a fee or charge is payable with the exception that under §1.53 applications for patent may be assigned a filing date without payment of the basic filing fee.

(b) All patent and trademark fees paid to the Patent and Trademark Office should be itemized in each individual application, patent or other proceeding in such a

manner that it is clear for which purpose the fees are paid.

8. Section 1.24 is revised to read as follows:

§1.24 Coupons.

Coupons in denominations of one dollar are sold by the Patent and Trademark Office for the convenience of regular purchasers of U.S. patents and trademark registrations; these coupons may not be used for any other purpose. The one dollar coupons are sold individually and in books of 50 with stubs for record for $50. These coupons are good until used; they may be transferred but cannot be redeemed.

9. Section 1.41 is revised to read as follows:

§1.41 Applicant for patent.

(a) A patent must be applied for in the name of the actual inventor or inventors. Full names must be stated, including the family name and at least one given name without abbreviation together with any other given name or initial.

(b) Unless the contrary is indicated the word "applicant" when used in these sections refers to the inventor or joint inventors who are applying for a patent, or to the person mentioned in §§1.42, 1.43, or 1.47 who is applying for a patent in place of the inventor.

(c) Any person authorized by the applicant may file an application for patent on behalf of the inventor or inventors, but an oath or declaration for the application (§1.63) can only be made in accordance with §1.64.

(d) A showing may be required from the person filing the application that the filing was authorized where such authorization comes into question.

10. Section 1.42 is revised to read as follows:

§1.42 When the inventor is dead.

In case of the death of the inventor, the legal representative (executor, administrator, etc.) of the deceased inventor may make the necessary oath or declaration, and apply for and obtain the patent. Where the inventor dies during the time intervening between the filing of the application and the granting of a patent thereon, the letters patent may be issued to the legal representative upon proper intervention.

11. Section 1.43 is revised to read as follows:

§1.43 When the inventor is insane or legally incapacitated.

In case an inventor is insane or otherwise legally incapacitated, the legal representative (guardian, conservator, etc.) of such inventor may make the necessary oath or declaration, and apply for and obtain the patent.

12. Section 1.45 is amended by removing paragraphs (b) and (c) and the designation (a) to the first paragraph and by revising the text to read as follows:

§1.45 Joint inventors.

Joint inventors must apply for a patent jointly and each must make the required oath or declaration: neither of them alone, nor less than the entire number, can apply for a patent for an invention invented by them jointly, except as provided in §1.47.

13. Section 1.46 is revised to read as follows:

§1.46 Assigned inventions and patents.

In case the whole or a part interest in the invention or in the patent to be issued is assigned, the application must still be made or authorized to be made, and an oath or declaration signed, by the inventor or one of the persons mentioned in §§1.42, 1.43, or 1.47. However, the patent may be issued to the assignee or jointly to the inventor and the assignee as provided in §1.334.

14. Section 1.47 is revised to read as follows:

§1.47 Filing when an inventor refuses to sign or cannot be reached.

(a) If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself or herself and the omitted inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and by the required fee (§1.17(h)) and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the application to the omitted inventor at said address. Should such notice be returned to the Office undelivered, or should the address of the omitted inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette*. The omitted inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.63. A patent may be granted to the inventor making the application, upon a showing satisfactory to the Commissioner, subject to the same rights which the omitted inventor would have had if he or she had been joined.

(b) Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may make application for patent on behalf of and as agent for the inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and by the required fee (§1.17(h)) and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application. Should such notice be returned to the Office undelivered, or should the address of the inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette*. The inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.63. A patent may be granted to the inventor upon a showing satisfactory to the Commissioner.

15. A new section 1.48 is added to read as follows:

§1.48 Correction of inventorship.

If the correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by (1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (2) an oath or declaration by each actual inventor or inventors as required by §1.63; (3) the fee set forth in §1.17(h); and (4) the written consent of any assignee.

16. Section 1.51 is amended by revising paragraphs 1.51(a)(2) and (b) to read as follows:

§1.51 General requisites of a complete application.

(a) * * * * *

(2) An oath or declaration, see §§1.63 and 1.68.

* * * * *

(b) Applicants are encouraged to file an information disclosure statement. See §§1.97 through 1.99.

17. Section 1.52 is amended by revising paragraph (c) to read as follows:

§1.52 Language, paper, writing, margins.

* * * * *

(c) Any interlineation, erasure, cancellation or other alteration of the application papers filed must be made before the signing of any accompanying oath or declaration pursuant to §1.63 referring to those application papers and should be dated and initialed or signed by the applicant on the same sheet of paper. No such alterations in the application papers are permissible after the signing of an oath or declaration referring to those application papers (§1.56(c)). After the signing of the oath or declaration referring to the application papers, amendments may only be made in the manner provided by §§1.121 and 1.123–1.125.

* * * * *

18. Section 1.53 is revised to read as follows:

§1.53 Serial number, filing date, and completion of application.

(a) Any application for a patent received in the Patent and Trademark Office will be assigned a serial number for identification purposes.

(b) The filing date of an application for patent is the date on which (1) a specification containing a description pursuant to §1.71 and at least one claim pursuant to §1.75, and (2) any drawing required by §1.81(a), are filed in the Patent and Trademark Office. No new matter may be introduced into an application after its filing date (§1.118).

(c) If any application is filed without the specification or drawing required by paragraph (b) of this section, applicant will be so notified and given a time period within which to submit the omitted specification or drawing in order to obtain a filing date as of the date of filing of such submission. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less a $50.00 handling fee.

(d) If an application which has been accorded a filing date pursuant to paragraph (b) of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section.

(e) An application for a patent will not be placed upon the files for examination until all its required parts, complying with the rules relating thereto, are received, except that certain minor informalities may be waived subject to subsequent correction whenever required.

(f) The filing date of an international application designating the United States of America shall be treated as the filing date in the United States of America under PCT Article 11(3), except as provided in 35 U.S.C. 102(e).

19. Section 1.54 is revised to read as follows:

§1.54 Parts of application to be filed together; filing receipt.

(a) It is desirable that all parts of the complete application be deposited in the Office together; otherwise a letter must accompany each part, accurately and clearly connecting it with the other parts of the application. See §1.53 with regard to completion of an application.

(b) Applicant will be informed of the application serial number and filing date by a filing receipt.

20. Section 1.55 is revised to read as follows:

§1.55 Claim for foreign priority.

(a) An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119 and 172. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by §1.63. The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. 119 must be filed in the case of interference (§1.224); when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner; and in all other cases they must be filed not later than the date the issue fee is paid. If the papers filed are not in the English language, a translation need not be filed except in the three particular instances specified in the preceding sentence, in which event a sworn translation or a translation certified as accurate by a sworn or official translator must be filed. If the priority papers are submitted after the date the issue fee is paid, they must be accompanied by a petition requesting their entry and the fee set forth in §1.17(i).

(b) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his attorney or agent, when submitting a claim for such right as specified in paragraph (b) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he or she has satisfied himself or herself that to the best of his or her knowledge the applicant, when filing his or her application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

21. Section 1.56 is amended by revising paragraph (c) to read as follows:

§1.56 Duty of disclosure; fraud; striking or rejection of applications.

* * * * *

(c) Any application may be stricken from the files if:

(1) An oath or declaration pursuant to §1.63 is signed in blank;

(2) An oath or declaration pursuant to §1.63 is signed without review thereof by the person making the oath or declaration;

(3) An oath or declaration pursuant to §1.63 is signed without review of the specification, including the claims, as required by §1.63(b);

or

(4) The application papers filed in the Office are altered after the signing of an oath or declaration pursuant to §1.63 referring to those application papers.

* * * * *

§1.57 [Removed]

22. Section 1.57 is removed.

23. Section 1.59 is revised to read as follows:

§1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to §1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost.

24. Section §1.60 is revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application. Signing and execution of the application papers by the applicant may be omitted provided the copy is supplied by and accompanied by a statement by, the applicant or his or her attorney or agent that the application papers comprise a true copy of the prior application as filed. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date.

25. Section §1.62 is revised to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification and drawings from a prior application to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on a prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior application.

(b) The filing fee for a continuation, continuation-in-part, or divisional application under this section is based on the number of claims remaining in the application after entry of any preliminary amendment and entry of any amendments under §1.116 unentered in the prior application which applicant has requested to be entered in the continuing application.

(c) In the case of a continuation-in-part application which adds and claims additional disclosure by amendment, an oath or declaration as required by §1.63 must also be filed. In a continuation or divisional application which discloses and claims only subject matter disclosed in a prior application, no additional oath or declaration is required.

(d) If an application which has been accorded a filing date pursuant to paragraph (a) of this section does not include the appropriate filing fee pursuant to paragraph (b) of this section, or an oath or declaration by the applicant in the case of a continuation-in-part application pursuant to paragraph (c) of this section, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification of a defect pursuant to paragraph (a) of this section.

(e) An application filed under this section will utilize the file wrapper and contents of the prior application to constitute the new continuation, continuation-in-part, or divisional application but will be assigned a new application serial number.

(f) The filing of an application under this section will be construed to include a waiver of secrecy by the applicant under 35 U.S.C. 122 to the extent that any member of the public who is entitled under the provisions of 37 CFR 1.14 to access to, or information concerning either the prior application or any continuing application filed under the provisions of this section may be given similar access to, or similar information concerning, the other application(s) in the file wrapper.

(g) The filing of a request for a continuing application under this section will be considered to be a request to expressly abandon the prior application as of the filing date granted the continuing application.

(h) The applicant is urged to furnish the following information relating to the prior application to the best of his or her ability:

(1) Title as originally filed and as last amended;
(2) Name of applicant as originally filed and as last amended;
(3) Current correspondence address of applicant;
(4) Identification of prior foreign application and any priority claim under 35 U.S.C. 119.

(i) Envelopes containing only application papers and fees for filing under this section should be marked "Box FWC".

26. A new section 1.63 is added to read as follows:

§1.63 Oath or declaration.

(a) An oath or declaration filed under §1.51(a)(2) as a part of an application must:

(1) Be executed in accordance with either §1.66 or §1.68;
(2) Identify the specification to which it is directed;
(3) Identify each inventor and the residence and country of citizenship of each inventor; and
(4) State whether the inventor is a sole or joint inventor of the invention claimed.

(b) In addition to meeting the requirements of paragraph (a), the oath or declaration must state that the person making the oath or declaration:

(1) Has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration;
(2) Believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought; and
(3) Acknowledges the duty to disclose information which is material to the examination of the application in accordance with §1.56(a).

(c) In addition to meeting the requirements of paragraphs (a) and (b) of this section, the oath or declaration in any application in which a claim for foreign priority is made pursuant to §1.55 must identify the foreign application for patent or inventor's certificate on which priority is claimed, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month and year of its filing.

(d) In any continuation-in-part application filed under the conditions specified in 35 U.S.C. 120 which discloses and claims subject matter in addition to that disclosed in the prior copending application, the oath or declaration must also state that the person making the oath or declaration acknowledges the duty to disclose material information as defined in §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

27. A new section 1.64 is added to read as follows:

§1.64 Person making oath or declaration.

(a) The oath or declaration must be made by all of the actual inventors except as provided for in §§1.42, 1.43, or 1.47.

(b) If the person making the oath or declaration is not the inventor (§§1.42, 1.43, or 1.47), the oath or declaration shall state the relationship of the person to the inventor and, upon information and belief, the facts which the inventor is required to state.

§1.65 [Removed]

28. Section 1.65 is removed.

29. Section 1.67 is revised to read as follows:

§1.67 Supplemental oath or declaration.

(a) A supplemental oath or declaration meeting the requirements of §1.63 may be required to be filed to correct any deficiencies or inaccuracies present in an earlier filed oath or declaration.

(b) A supplemental oath or declaration meeting the requirements of §1.63 must be filed (1) when a claim is presented for matter originally shown or described but not substantially embraced in the statement of invention or claims originally presented, and (2) when an oath or declaration submitted in accordance with §1.53(d) after the filing of the specification and any required drawings specifically and improperly refers to an amendment which includes new matter. No new matter may be introduced into an application after its filing date even if a supplemental oath or declaration is filed (§1.53(b); §1.118). In proper cases the oath or declaration here required may be made on information and belief by an applicant other than inventor.

30. Section 1.69 is amended by revising paragraph (b) to read as follows:

§1.69 Foreign language oaths and declarations.

* * * * *

(b) Unless the text of any oath or declaration in a language other than English is a form provided or approved by the Patent and Trademark Office, it must be accompanied by a verified English translation, except that in the case of an oath or declaration filed under §1.63, the translation may be filed in the Office no later than two months from the date applicant is notified to file the translation.

31. Section 1.70 is amended by revising the title and paragraph (a) to read as follows:

§1.70 Oath or declaration under 35 U.S.C. 371(c)(4).

(a) When an applicant of an international application, if the inventor, desires to enter the national stage under 35 U.S.C. 371, he or she must file an oath or declaration in accordance with §1.63.

* * * * *

32. Section 1.77 is amended by revising paragraphs (h) and (i) to read as follows:

§1.77 Arrangement of application elements.

* * * * *

(h) Abstract of the disclosure.
(i) Signed oath or declaration.

* * * * *

33. The center heading preceding §1.97 and section 1.97 are revised to read as follows:

INFORMATION DISCLOSURE STATEMENT

§1.97 Filing of information disclosure statement.

(a) As a means of complying with the duty of disclosure set forth in §1.56, applicants are encouraged to file an information disclosure statement at the time of filing the application or within the later of three months after the filing date of the application or two months after applicant receives the filing receipt. If filed separately, the disclosure statement should, in addition to the identification of the application, include the Group Art Unit to which the application is assigned as indicated on the filing receipt. The disclosure statement may either be separate from the specification or may be incorporated therein.

(b) A disclosure statement filed in accordance with paragraph (a) of this section shall not be construed as a representation that a search has been made or that no other material information as defined in §1.56(a) exists.

34. Section 1.98 is amended by revising the title and paragraph (a) to read as follows:

§1.98 Content of information disclosure statement.

(a) Any disclosure statement filed under §1.97 or §1.99 shall include: (1) A listing of patents, publications or other information and (2) a concise explanation of the relevance of each listed item. The disclosure statement shall be accompanied by a copy of each listed patent or publication or other item of information in written form or of at least the portions thereof considered by the person filing the disclosure statement to be pertinent. All United States patents listed should be identified by their patent numbers, patent dates and names of the patentees. Each foreign published application or patent should be cited by identifying the country or office which issued it, the document number and publication date indicated on the document. Each printed publication should be identified by author (if any), title of the publication, pages, date and place of publication.

* * * * *

35. Section 1.99 is revised to read as follows:

§1.99 Updating of information disclosure statement.

If prior to issuance of a patent an applicant, pursuant to his or her duty of disclosure under §1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental information disclosure statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements of §1.98.

36. Section 1.101 is amended by revising paragraph (a) to read as follows:

§1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to §1.102 and those applications in which the Office has accepted a request for waiver of patent rights

filed under §1.139. International applications which have complied with the requirements of 35 U.S.C. 371(c) will be taken up for action based on the date on which such requirements were met. However, unless a request has been filed under 35 U.S.C. 371(f), no action may be taken prior to 21 months from the priority date.

* * * * *

37. Section 1.118 is revised to read as follows:

§1.118 Amendment of disclosure.

(a) No amendment shall introduce new matter into the disclosure of an application after the filing date of the application §1.53(b)). All amendments to the specification, including the claims, and the drawings filed after the filing date of the application must conform to at least one of them as it was at the time of the filing of the application. Matter not found in either, involving a departure from or an addition to the original disclosure, cannot be added to the application after its filing date even though supported by an oath or declaration in accordance with §1.63 or §1.67 filed after the filing date of the application.

(b) If it is determined that an amendment filed after the filing date of the application introduces new matter, claims containing new matter will be rejected and deletion of the new matter in the specification and drawings will be required even if the amendment is accompanied by an oath or declaration in accordance with §1.63 or §1.67.

38. Section 1.123 is revised to read as follows:

§1.123 Amendments to the drawing.

No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by bonded draftsmen, at applicant's expense, or by the submission of substitute drawings by applicant. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed for approval by the examiner. The paper requesting amendments to the drawing should be separate from other papers.

39. Section 1.125 is revised to read as follows:

§1.125 Substitute specification.

If the number or nature of the amendments shall render it difficult to consider the case, or to arrange the papers for printing or copying, the examiner may require the entire specification, including the claims, or any part thereof, to be rewritten. A substitute specification may not be accepted unless it has been required by the examiner or unless it is clear to the examiner that acceptance of a substitute specification would facilitate processing of the application. Any substitute specification filed must be accompanied by a statement that the substitute specification includes no new matter. Such statement must be a verified statement if made by a person not registered to practice before the Office.

40. Section 1.131 is amended by revising paragraph (a) to read as follows:

§1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the rejected invention, or on reference to a foreign patent or to a printed publication, and the applicant or the owner of the patent under reexamination shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the applicant or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the applicant's or patent owner's application was filed in this country.

* * * * *

41. Section 1.132 is revised to read as follows:

§1.132 Affidavits or declarations traversing grounds of rejection.

When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the invention, or on reference to a foreign patent, or to a printed publication, or to facts within the personal knowledge of an employee of the Office, or when rejected upon a mode or capability of operation attributed to a reference, or because the alleged invention is held to be inoperative or lacking in utility, or frivolous or injurious to public health or morals, affidavits or declarations traversing these references or objections may be received.

42. Section 1.137 is amended by revising paragraph (b) to read as follows:

§1.137 Revival of abandoned application.

* * * * *

(b) An application unintentionally abandoned for failure to prosecute, except pursuant to §1.53(d), may be revived as a pending application if the delay was unintentional. A petition to revive an unintentionally abandoned application must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date of abandonment of the application. A petition to revive an unintentionally abandoned application must be accompanied by (1) a statement that the abandonment was unintentional, (2) a proposed response unless it has been previously filed, and (3) a petition fee as set forth in §1.17(m). Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three month period set forth in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

* * * * *

43. Section 1.153 is amended by revising paragraph (b) to read as follows:

§1.153 Title, description and claim, oath or declaration.

* * * * *

(b) The oath or declaration required of the applicant must comply with §1.63.

44. Section 1.154 is amended by revising paragraph (e) to read as follows:

§1.154 Arrangement of specification.

* * * * *

(e) Signed oath or declaration (See §1.153(b)).

45. Section 1.162 is revised to read as follows:

§1.162 Applicant, oath or declaration.

The applicant for a plant patent must be the person who has invented or discovered and asexually reproduced the new and distinct variety of plant for which a patent is sought (or as provided in §§1.42, 1.43, and 1.47). The oath or declaration required of the applicant, in addition to the averments required by §1.63, must state that he or she has asexually reproduced the plant. Where the plant is a newly found plant the oath or declaration must also state that it was found in a cultivated area.

46. Section 1.163 is amended by revising paragraph (b) to read as follows:

§1.163 Specification.

* * * * *

(b) Two copies of the specification (including the claim) must be submitted, but only one signed oath or declaration is required. The second copy of the specification may be a legible carbon copy of the original.

47. Section 1.172 is amended by revising paragraph (a) to read as follows:

§1.172 Applicants, assignees.

(a) A reissue oath must be signed and sworn to or declaration made by the inventor or inventors except as otherwise provided (see §§1.42, 1.43, 1.47), and must be accompanied by the written assent of all assignees, if any, owning an undivided interest in the patent, but a reissue oath may be made and sworn to or declaration made by the assignee of the entire interest if the application does not seek to enlarge the scope of the claims of the original patent.

* * * * *

48. Section 1.174 is amended by revising paragraph (a) to read as follows:

§1.174 Drawings.

(a) The drawings upon which the original patent was issued may be used in reissue applications if no changes whatsoever are to be made in the drawings. In such cases, when the reissue application is filed, the applicant must submit a temporary drawing which may consist of a copy of the printed drawings of the patent or a photoprint of the original drawings of the size required for original drawing.

* * * * *

49. Section 1.175 is amended by revising the introductory text of paragraph (a) to read as follows:

§1.175 Reissue oath or declaration.

(a) Applicants for reissue, in addition to complying with the requirements of §1.63, must also file with their applications a statement under oath or declaration as follows:

* * * * *

50. Section 1.324 is revised to read as follows:

§1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that the correct inventor or inventors were not named through error without deceptive intention on the part of the actual inventor or inventors, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in §1.20(b), or on order of a court before which such matter is called in question, issue a certificate naming only the actual inventor or inventors.

51. Section 1.325 is revised to read as follows:

§1.325 Other mistakes not corrected.

Mistakes other than those provided for in §§1.322, 1.323, 1.324, and not affording legal grounds for reissue or for reexamination, will not be corrected after the date of the patent.

52. A new §1.335 is added to read as follows:

§1.335 Filing of notice of arbitration awards.

(a) Written notice of any award by an arbitrator pursuant to 35 U.S.C. 294 must be filed in the Patent and Trademark Office by the patentee, or the patentee's assignee or licensee. If the award involves more than one patent a separate notice must be filed for placement in the file of each patent. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the award.

(b) If an award by an arbitrator pursuant to 35 U.S.C. 294 is modified by a court, the party requesting the modification must file in the Patent and Trademark Office, a notice of the modification for placement in the file of each patent to which the modification applies. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the court's order modifying the award.

(c) Any award by an arbitrator pursuant to 35 U.S.C. 294 shall be unenforceable until any notices required by paragraph (a) or (b) of this section are filed in the Patent and Trademark Office. If any required notice is not filed by the party designated in paragraph (a) or (b) of this section, any party to the arbitration proceeding may file such a notice.

53. Section 5.12 is revised to read as follows:

§5.12 Petition for license.

(a) Filing of an application for patent for inventions made in the United States will be considered to include a petition for license under 35 U.S.C. 184 for the subject matter of the application. The filing receipt will indicate if a license is granted. If the initial automatic petition is not granted, a subsequent petition may be filed under paragraph (b) of this section.

(b) Petitions for license under 35 U.S.C. 184 should be presented in letter form and should include petitioner's address, and full instructions for delivery of the requested license when it is to be delivered to other than the petitioner.

Dec. 23, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of
Patents and Trademarks.

[1027 OG 9]

(62) **Deposit Accounts—Statutory Fee Charges**

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Feb. 23, 1966. *Commissioner.*

[824 O.G. 1200]

(63) **Request for Refunds**

In order to expedite the processing of refunds for payment of fees by actual mistake or in excess of the designated fees, attorneys and applicants requesting refunds should direct their correspondence to the attention of the "Refund Section, Accounting Division, Office of Finance." This procedure should be followed whether the request is for a refund check or for a credit to the deposit account. The problems of misrouting the request for a refund in the Patent and Trademark Office would be alleviated and the payment of refunds accelerated.

BRADFORD R. HUTHER,
Assistant Commissioner for Finance & Planning.

[1024 O.G. 59 (11-23-82)]

(64) **Deposit Account Authorizations**

The rules of practice were amended effective Oct. 1, 1982, at 37 CFR 1.25(b) to state that: "A general authorization to charge all fees, or only certain fees, set forth in §§1.16 to 1.18 to a deposit account may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed." A general authorization would not apply to document supply fees under §1.19, such as those required for certified copies; to post-issuance fees under §1.20, such as those required for maintenance fees; or to miscellaneous fees and charges under §1.21, such as assignment recording fees.

Many applications filed prior to Oct. 1, 1982, contain broad language authorizing *any* additional fees which might have been due to be charged to a deposit account. The Patent and Trademark Office does not interpret such broad authorizations, filed prior to Oct. 1, 1982, to include authorization to charge to a deposit account the issue fee or other fees in sections 1.16, 1.17 and 1.18 except those associated with the paper containing the broad authorization. However, such a broad authorization filed in an application on or after Oct. 1, 1982, will be interpreted as authorization to charge the issue fee; as well as any other fee set forth in §§1.16, 1.17 or 1.18. Fees under sections 1.19, 1.20 and 1.21 will not be charged as a result of a general authorization under section 1.25.

It is recommended that authorizations to charge fees to deposit accounts include reference to the particular fees or fee sections of the rules which applicant intends to authorize. For example, if filing and processing fees under §§1.16 and 1.17 only are intended to be included in the authorization, and not the issue fee under §1.18, the authorization could read: "The Commissioner is hereby authorized to charge any fees under 37 CFR 1.16 and 1.17 which may be required during the entire pendency of the application to Depost Account No. _____." Such an authorization would clearly exclude issue fees under 37 CFR 1.18 while including all the filing and processing fees listed in 37 CFR 1.16 and 1.17. Similarly, if it were intended to authorize the charging of fees relating only to a specific paper, the authorization could read "The Commissioner is hereby authorized to charge any fees under 37 CFR 1.16 and 1.17 which may be required by this paper to Deposit Account No. _____." Such authorizations would cover situations in which a check to cover a filing and processing fee under 37 CFR 1.16 and 1.17 was omitted or was for an amount less than the amount required.

It is extremely important that the authorization be clear and unambiguous. If applicants file authorizations which are ambiguous and which deviate from the usual forms of authorizations, the Office may not interpret the authorizations in the manner applicants intend. In such cases applicants could be subject to further expenses, petitions, etc. in order to correct fees which were not charged as intended due to an ambiguous authorization.

GERALD J. MOSSINGHOFF,
July 1, 1983. *Commissioner of Patents and Trademarks.*

[1032 OG 32]

(65) **Notice to All Deposit Account Holders**

Beginning Oct. 7, 1983, please *mail deposit account remittances only* to:

Patent and Trademark Office
P.O. Box 70541
Chicago, Ill. 60673

To expedite credit to your deposit account and the treasury, and arrangement has been made between the Patent and Trademark Office, Treasury Department, and the First National Bank of Chicago utilizing a special "lockbox" depositary to receive deposit account remittances.

Checks should continue to be made payable to the Commissioner of Patents and Trademarks and be accompanied by *the top portion of your deposit account statement.* Submit only remittances for deposit accounts to this new address. All other correspondence should continue to be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

LEONARD L. NAHME,
Director Office of Finance.

[1035 OG 27]

APPLICATION CONTENT

(66) **Use of Metric System of Measurements in Patent Applications**

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research and prior art search documents, all patent applicants are strongly encouraged to use either (1) only metric (S.I.) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Systeme International d'Unites," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
July 1, 1974. *Commissioner of Patents.*

[924 O.G. 1104]

(67) **Filing of Patent Applications Pursuant to 37 CFR 1.60**

Applicants are reminded that 37 CFR 1.60 was amended effective Feb. 27, 1983 to require applicants to furnish a copy of the prior application upon filing.

Some applicants continue to request that the copy be made by the Patent and Trademark Office as was done under the practice prior to Feb. 27, 1983. Others are filing a copy of the specification of the prior application, but not a copy of the oath or declaration. The Office will no longer make such copies as part of processing the new application.

The requirements of 37 CFR 1.60 must be complied with before a filing date will be granted for the continuing application.

It should be noted that 37 CFR 1.60 has been amended effective Apr. 1, 1984 to divide the section into paragraph (a) and new paragraph (b). Paragraph (a) adds a reference to amended 37 CFR 1.78(a) to clarify the conditions under which continuation or divisional applications may be filed. New paragraph (b) requires that the prior application be complete as set forth in 37 CFR 1.51(a) in order to properly file an application under 37 CFR 1.60. A complete application under 37 CFR 1.51(a) includes a signed oath or declaration. If the prior application was not a complete application (37 CFR 1.51(a)), a continuation or divisional application cannot be filed utilizing the provisions of 37 CFR 1.60 and any continuation or divisional application must include new application papers and be filed in accordance with 37 CFR 1.53.

Paragraph (b) of 37 CFR 1.60 also requires that a true copy of the prior complete application be filed. The copy must include the specification (including claims), drawings, oath or declaration showing the applicant's signature or an indication (on the oath or declaration) that it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. See the final rulemaking published in the Jan. 4, 1984 Federal Register at 49 FR 548-556 and reprinted in the Jan. 24, 1984 Official Gazette at 1038 O.G. 275-283.

GERALD J. MOSSINGHOFF
Apr. 6, 1984. *Commissioner of Patents and Trademarks.*

[1042 O.G. 18]

(68) **Information in Oath/Declaration Necessary to Identify the Specification in Accordance with 37 CFR 1.63**

Section 1.63 of 37 CFR requires that an oath or declaration "identify the specification to which it is directed." Since filing dates are now granted on applications with the oath or declaration being filed later with a surcharge, the question has arisen as to what information must be supplied in the oath or declaration to identify the specification to which it is directed and to comply with the rule.

The declaration form suggested by the Office includes spaces for filling in the names of the inventors, title of invention, application serial number, filing date, foreign priority application information and United States priority application information. While this information should be provided, it is not essential that all of these spaces be filled in in order to adequately identify the specification in compliance with 37 CFR 1.63.

The following combinations of information supplied in an oath or declaration are acceptable as minimums for identifying a specification:

(1) name of inventor and application serial number;
(2) name of inventor, attorney docket number which was on the application as filed, and filing date of the application;
(3) name of inventor, title of invention and filing date;
(4) name of inventor, title of invention and reference to a specification which is attached to the oath or declaration at the time of execution and filed with the oath or declaration;
(5) name of inventor, title of invention and a statement by a registered attorney or agent that the application filed in the PTO is the application which the inventor executed by signing the oath or declaration.

If the oath or declaration is filed with an "attached" specification as indicated in item (4) above, it must be accompanied by a statement that the "attached" specification is a copy of the specification and any amendments thereto which were filed in the Office in order to obtain a filing date for the application. Such statement must be a verified statement if made by a person not registered to practice before the Office.

Oaths or declarations which do not meet the requirements set forth above will not be accepted as complying with 37 CFR 1.63 for completing an application. Any variance from the above guidelines will only be consid-

ered upon the filing of a petition for waiver of the rules under 37 CFR 1.183 accompanied by a petition fee (37 CFR 1.17(h)). Supplemental oaths or declarations in accordance with 37 CFR 1.67 will be required in applications in which the oaths or declarations are not completely filled in but contain sufficient information to identify the specifications to which they apply as detailed above.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Sept. 12, 1983.

[1035 OG 3]

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(69) **Extension of Transition Period to File Oaths or Declarations in Compliance with 37 CFR 1.63**

The Federal Register of Jan. 20, 1983 indicated at 48 FR 2706 that all oaths or declarations filed on and after Feb. 27, 1983, must comply with the requirements of 37 CFR 1.63 except for the transition period as noted below.

The Office indicated that it would continue to accept any oath or declaration in compliance with 37 CFR 1.65 as it existed immediately prior to Feb. 27, 1983 during a transition period ending June 30, 1983, provided that the oath or declaration was attached to and was executed as a part of an application.

Although the Office is not required to do so, it intends to make translated declaration forms available to the public in at least the more frequently required non-English languages. Since these non-English language translations are not yet available, the transition period is extended to end on Sept. 30, 1983 rather than on June 30, 1983. During this period, the Patent and Trademark Office will continue to accept any oath or declaration in compliance with 37 CFR 1.65 as it existed immediately prior to Feb. 27, 1983, if the oath or declaration is attached to and was executed as a part of an application to be filed in the Patent and Trademark Office.

Effective Oct. 1, 1983, all oaths or declarations filed under 37 CFR 1.51(a)(2) as a part of a patent application must fully comply with 37 CFR 1.63.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

May 31, 1983.

[1031 OG 53]

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(70) **Graphical Illustrations in the Specification**

For convenience many applicants have been including graphs or other types of graphical illustrations in the text portion of the specification. These illustrations do not come within the purview of 37 C.F.R. 1.58 which permits tables and chemical and mathematical formulas in the specification in lieu of formal drawings. Frequently, these graphical illustrations do not have satisfactory reproduction characteristics. Moreover, these reproductions are generally less than satisfactory due to the fact that the illustrations are usually reduced in size in order to fit a column of the printed patent page. Accordingly, effective immediately, graphs and graphical type illustrations in the specification will be objected to under 37 C.F.R. 1.58(a) and drawings pursuant to 37 C.F.R. 1.81 will be required.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Jan. 12, 1978.

[967 O.G. 2]

(71) **Multiple Dependent Claims and New Drawing Filing Requirements**

Introduction

On January 24, 1978, Public Law 94-131 (pages 108–115 of "Patent Laws," August 1976 issue) and the Patent Cooperation Treaty came into force. This public law amends the patent statute, Title 35, United States Code, by providing for procedures and requirements set forth in the Patent Cooperation Treaty. Some of these statutory amendments also effect the laws governing the processing and examination of regular United States national applications filed on and after January 24, 1978.

The amendments of the patent law which will affect *U.S. patent applications filed on and after January 24, 1978,* relate to two elements of the patent application: the claims and the drawings. With regard to claims, the amendments to 35 U.S.C. 41 and 112 provide for multiple dependent claims in accordance with PCT Rule 6.4. With regard to drawings, the amendment to 35 U.S.C. 113 changes the requirements for filing drawings in order to obtain a filing date in accordance with PCT Article 7.

Purpose

This memorandum establishes in more detail the new procedures required by the amended statute. Any questions concerning these instructions may be directed to either Mary Turowski (extension 7-3776) in the administration area or Louis Maassel (extension 7-3070) in the examining area.

Revised 37 CFR sections 1.75(c), (f) and (g); and 1.81 and 1.83(c) were published in the *Official Gazette* of February 21, 1978.

Multiple Dependent Claims

Generally, a multiple dependent claim is a dependent claim which refers back in the alternative to more than one preceding independent or dependent claim.

The second paragraph of 35 U.S.C. section 112 has been revised in view of the multiple dependent claim practice introduced by the Patent Cooperation Treaty. Thus, section 112 authorizes multiple dependent claims, as long as they are in the alternative form (e.g., "A machine according to claims 3 *or* 4, further comprising . . ."). Cumulative claiming (e.g., "A machine according to claims 3 *and* 4, further comprising . . .") is *not* permitted. A multiple dependent claim may refer in the alternative to only one set of claims. A claim such as "A device as in claims 1, 2, 3 or 4, made by a process of claims 5, 6, 7 or 8" is improper. Section 112 allows reference to only a particular claim. Furthermore, a multiple dependent claim may *not* serve as a basis for any other multiple dependent claim, either directly or indirectly. These limitations help to avoid undue confusion in determining how many prior claims are actually referred to in a multiple dependent claim.

The amendment of the second paragraph of section 112 further clarifies that the limitations or elements of each claim incorporated by reference into a multiple dependent claim must be considered separately. Thus, a multiple dependent claim, as such, does not contain all the limitations of all the alternative claims to which it refers, but rather, contains in any one embodiment only those limitations of the particular claim referred to for the embodiment under consideration. Hence, a multiple dependent claim must be considered in the same manner as a plurality of single dependent claims.

Restriction Practice

For restriction purposes, each embodiment of a multiple dependent claim will be considered in the same manner as a single dependent claim. Therefore, restriction may be required between the embodiments of a multiple dependent claim. Also, some embodiments of a multiple dependent claim may be held withdrawn while other embodiments are considered on their merits.

Handling of Multiple Dependent Claims by the Application Division

The Application Division will be responsible for verifying whether multiple dependent claims filed with the application are in proper alternative form, that they depend only upon prior independent and single dependent claims and also for calculating the amount of the filing fee. A new form, PTO-1360, has been designed to be used in conjunction with the current fee calculation form PTO-875.

Handling of Multiple Dependent Claims by the Examining Group Clerical Staff

The examining group clerical staff is responsible for verifying compliance with the statute and rules of multiple dependent claims added by amendment and for calculating the amount of any additional fees required. This calculation should be performed on form PTO-1360.

If a multiple dependent claim (or claims) is added in an amendment without the proper fee, the amendment will not be entered until the fee has been received. In view of the requirements for multiple dependent claims, no amendment containing new claims or changing the dependency of claims will be entered before checking whether the paid fees cover the costs of the amended claims. The applicant, or his attorney or agent, will usually be contacted to pay the additional fee in the same manner as currently in existence for such defects. Where a letter is written in insufficient fee situations, a copy of the multiple dependent claim fee calculation form PTO-1360 will be included for applicant's information.

Handling of Dependent Claims by the Examiner

Should any multiple dependent claim be in an application filed prior to January 24, 1978 or include a claim association or claim structure that violates any of the prohibitions, the claim will be objected to as not being in proper form as required by 37 CFR 1.75 in the next Office action. Such an improper claim will not be further treated on the merits.

When referring to a singular dependent claim or a single embodiment of a multiple dependent claim, as when making a rejection, such a claim or embodiment will be referred to by using the number of all of the claims involved in that claim or embodiment, starting with the highest. For example, if claim 2 was dependent on claim 1, the notations would be 2/1. If in the same application, claim 3 was independent and claim 4 was multiple dependent on claims 2 or 3, the notations would be 4/2/1 and 4/3. Furthermore, if claim 5 depended from claim 4, the notations would be 5/4/2/1 and 5/4/3. Each of these embodiments will be treated individually. It would be possible for claim 4/2/1 to be rejected under section 102 and claim 4/3 to be indicated as avoiding the prior art and being allowable if rewritten in independent form. A number of embodiments may be grouped together if there is a common ground of rejection, but it must be clear how each embodiment is treated.

A claim, such as claim 4, will not be allowed until all embodiments covered thereby are allowable. If an embodiment of a multiple dependent claim avoids the art while other embodiments are rejected over prior art, a statement will be made that that embodiment avoids the art and would be allowed if rewritten in separate dependent or independent form. Wording similar to the following may be used:

> "Embodiment ——— would be allowable if rewritten as a proper dependent or independent claim which contains only the limitations of this embodiment."

Calculation of Fees When Multiple Dependent Claims are Presented, Use of Form PTO–1360

To assist in the computation of the fees for multiple dependent claims, a separate "Multiple Dependent Claim Fee Calculation Sheet," form PTO-1360, has been designed for use with the current "Patent Application Fee Determination Record," form PTO-875. Form PTO-1360 will be placed in the file wrapper by the Application Division where multiple dependent claims are in the application as filed. If multiple dependent claims are not included upon filing, but are later added by amendment, the examining group clerical staff will place the form in the file wrapper. If there are multiple dependent claims in the application, the total number of independent and dependent claims for fee purposes will be calculated on form PTO-1360 and the total number of claims and number of independent claims will then be placed on form PTO-875 for final fee calculation purposes.

If at least $65 is included with the application on filing, but the total fee is insufficient, a "Notice of Insufficient Fee," form PTO-1094, is placed in the file wrapper by the Application Division as is currently done. The notice will be mailed by the examining group in accordance with established procedures.

Calculating Fees for Multiple Dependent Claims Proper Multiple Dependent Claims

Amended section 41(a) of title 35, U.S.C., provides that claims in multiple dependent form cannot be considered as single dependent claims for the purpose of calculating fees. Thus, a multiple dependent claim would be considered to be that number of dependent claims to which it refers. Any proper claim depending directly or indirectly from a multiple dependent claim would also be considered as the same number of dependent claims as referred to in the multiple dependent claim from which it depends.

Improper Multiple Dependent Claim

If any multiple dependent claim is improper, Application Division may indicate that fact by placing an encircled numeral "1" in the "Dep. Claims" column of form PTO-1360. The fee for any improper multiple dependent claim, whether it is defective for not being in the alternative form or for being directly or indirectly dependent on a prior multiple dependent claim, will only be one, since only an objection to the form of such a claim will normally be made.

This procedure also greatly simplifies the calculation of fees. Any claim depending from an improper multiple dependent claim will also be considered to be improper and be counted as one dependent claim.

FEE CALCULATION EXAMPLE

Claim Number	
1	Independent
2	Dependent on claim 1
3	Dependent on claim 2
4	Dependent on claim 2 or 3
5	Dependent on claim 4
6	Dependent on claim 5
7	Dependent on claim 1 or 4
8	Dependent on claim 1 or 5
9	Dependent on claim 8
10	Independent
11	Dependent on claim 1 or 10
12	Dependent on claim 1 and 10

FORM PTO-1360 (2/78) U.S. DEPT. COMM. PAT. AND TRAD. OFF.

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET

(FOR USE WITH FORM PTO-875)

	AS FILED		AFTER 1ST AMDT		AFTER 2ND AMDT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1					
2		1				
3		1				
4		2				
5		2				
6		2				
7		①				
8		①				
9		①				
10	1					
11		2				
12		①				
TOTAL IND	2					
TOTAL DEP.	14	↵		↵		↵
TOTAL CLAIMS	16					

Comments on Fee Calculation Example

Claim 1.–This is an independent claim; therefore, a numeral "1" is placed opposite claim number 1 in the "Ind." column.

Claim 2.–Since this is a claim dependent on a single independent claim, a numeral "1" is placed opposite claim number 2 in the "Dep." column.

Claim 3.–Claim 3 is also a single dependent claim, so a numeral "1" is placed in the "Dep." column.

Claim 4.–Claim 4 is a proper multiple dependent claim. It refers directly to two claims in the alternative, namely, claims 2 or 3. Therefore, a numeral "2" to indicate direct reference to two claims is placed in the "Dep." column opposite claim number 4.

Claim 5.–This claim is a singularly dependent claim depending from a multiple dependent claim. For fee calculation purposes, such a claim is counted as being that number of claims to which direct reference is made in the multiple dependent claim which it depends. In this case, the multiple dependent claim number 4 it depends from counts as 2 claims; therefore, claim 5 also counts as 2 claims. Accordingly, a numeral "2" is placed opposite claim number 5 in the "Dep." column.

Claim 6.–Claim 6 depends indirectly from a multiple dependent claim 4. Since claim 4 counts as 2 claims, claim 6 also counts as 2 dependent claims. Consequently, a numeral "2" is placed in the "Dep." column after claim 6.

Claim 7.–This claim is a multiple dependent claim since it refers to claims 1 or 4. However, as can be seen by looking at the "2" in the "Dep." column opposite claim 4, claim 7 directly depends from a multiple dependent claim. This practice is improper under 35 U.S.C. 112 and Rule 1.75(c). Following the procedure for calculating fees for improper multiple dependent claims, a numeral "1" is placed in the "Dep." column with a circle drawn around it to alert the examiner that the claim is improper.

Claim 8.–This claim is a multiple dependent claim since it refers to claims 1 or 5. However, since claim 5 depends from multiple dependent claim 4, claim 8 indirectly depends from multiple dependent claim 4 through claim 5. This practice is improper. See MULTIPLE DEPENDENT CLAIMS, paragraph 2, above. Consequently, a numeral "1" is placed in the dependent claim column with a circle drawn around it.

Claim 9.–Claim 9 is improper since it depends from an improper claim. If the base claim is in error, this error cannot be corrected by adding additional claims depending therefrom. Therefore, a numeral "1" with a circle around it is placed in the "Dep." column.

Claim 10.–Here again we have an independent claim which is always indicated with a numeral "1" in the "Ind." column opposite the claim number.

Claim 11.–This claim refers to two independent claims in the alternative. A numeral "2" is therefore placed in the "Dep." column opposite claim 11.

Claim 12.–Claim 12 is a dependent claim which refers to two claims in the conjunctive ("1 *and* 10") rather than in the alternative ("1 *or* 10"). This form is improper under 35 U.S.C. 112 and Rule 1.75(c). Accordingly, since claim 12 is improper, an encircled numeral "1" is placed in the "Dep." column opposite claim 12.

Calculation of Filing Fee

After the numbers of "Ind." and "Dep." claims are noted on form PTO-1360, each column is added. In this example., there are 2 independent claims and 14 dependent claims or a total of 16 claims. The number of independent and total claims can then be placed on form PTO-875 and the fee calculated. In this example, the total number of claims 16 minus 10 leaves 6, which is multiplied by $2 for an additional total claim fee of $12. The total number of independent claims in the example is 2, which minus 1 is 1, which times the $10 rate is $10. The total filing fee is therefore $65 + $12 + $10, or total of $87.

Drawing Requirements

Revised 35 U.S.C. 113 relaxes the previous requirements for submission of drawings on filing under certain conditions. The first sentence of 35 U.S.C. 113 does require a drawing to be submitted upon filing where such drawing is necessary for the understanding of the invention. In this situation the lack of a drawing renders the application incomplete and as such, the application cannot be given a filing date until the drawing is received. The second sentence of 35 U.S.C. 113 deals with the situation wherein a drawing is not necessary for the understanding of the invention but the case admits of illustration and no drawing was submitted on filing. The lack of the drawing in this situation does not render the application incomplete but rather is treated much in the same manner as an informality. The examiner should require such drawings in almost all such instances. Such drawings could be required during the processing of the application but do not have to be furnished at the time the application is filed. The applicant is allowed at least two months from the date of the letter requiring drawings to submit them.

Handling of Drawing Requirements Under the First Sentence of 35 U.S.C. 113

Under the revised provisions the Application Division examiner will continue to make the initial decision in all new applications as to whether a drawing is "necessary" under the first sentence of 35 U.S.C. 113.

If during examination an examiner feels that a filing date should not have been granted in an application because it does not contain drawings, the matter will be brought to the attention of the Supervisory Primary Examiner (SPE) for review. If the SPE decides that drawings are required to understand the subject matter of the invention, the SPE will return the application to the Application Division with a memorandum requesting cancellation of the filing date and identifying the subject matter required to be illustrated.

Handling of Drawing Requirements Under the Second Sentence of 35 U.S.C. 113

35 U.S.C. 113 also deals with the situation wherein the drawing is not necessary for the understanding of the invention, but the subject matter admits of illustration by a drawing and the applicant has not furnished a drawing. The lack of the drawing in this situation does not render the application incomplete but rather is treated as an informality. A filing date will be accorded with the original presentation of the papers, despite the absence of drawings. In these situations, a drawing or further illustration will normally be required by the examiner. This may be done either prior to examination in a separate letter or in the first Office action and may be handled in much the same manner as informal photocopy drawings are presently handled. The examiner should require drawings where appropriate as early as possible, since the possession of the drawing at that time would facilitate the examination process. A letter requiring drawings may contain wording similar to the following:

> "The examiner has decided that the subject matter of this applicaton admits of illustration by a drawing and that a drawing would facilitate the understanding of the subject matter disclosed. (Continue with a specific mention of those items of which drawings are desired.) Applicant is required to furnish a drawing under 37 CFR 1.81. (Incorporate in Office action or set two-month period for response.)"

The applicant will be given at least two months from the date of such requirement to submit drawings. If the requirement for drawings is included in an Office action, the time for supplying the drawings will be the same as the time of response to the Office action. Upon receipt of the drawing within the period set, the examiner will check the drawings for new matter. If new matter is included, the drawing will not be entered. It will be objected to as containing new matter. A new drawing without such new matter may be required if the examiner still feels a drawing is needed under 37 CFR 1.81 or 1.83. The examiner's decision would be reviewable by petition to the Commissioner under Rule 1.181. The decision on such a petition would be handled by the Group Director. If a drawing is not timely received in response to a letter from the examiner which requires a drawing, the application becomes abandoned for failure to respond.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Feb. 8, 1978.

[968 O.G. 7]

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(72) **Use of Symbol "Ø" in Patent Applications**

The Greek letter Phi has long been used as a symbol in equations in all technical disciplines. It further has special uses which include the indication of an electrical phase or clocking signal as well as an angular measurement. The recognized symbols for the upper and lower case Greek Phi characters, however, do not appear on most typewriters. This apparently has led to the use of a symbol composed by first striking a zero key and then backspacing and striking the "cancel" or "slash" key to result in "Ø" which is an approximation of accepted symbols for the Greek character Phi. In other instances the symbol is composed using the upper or lower case letter "O" with the "cancel" or "slash" superimposed thereon by backspacing or is simply handwritten in a variety of styles. These expedients result in confusion because of the variety of type sizes and styles available on modern typewriters.

In recent years, the growth of data processing has seen the increasing use of this symbol ("Ø") as the standard representation of zero. The "slashed" or "cancelled zero" is used to indicate zero and avoid confusion with the upper case letter "O" in both text and drawings.

Thus, when the symbol "Ø" in one of its many variations, as discussed above, appears in patent applications being prepared for printing, confusion as to the intended meaning of the symbol arises. Those (such as examiners, attorneys, and applicants) working in the art can usually determine the intended meaning of this symbol because of their knowledge of the subject matter involved, but editors preparing these applications for printing have no such specialized knowledge and confusion arises as to which symbol to print. The result, at the very least, is delay until the intended meaning of the symbol can be ascertained.

Since the Office does not have the resources to conduct a technical editorial review of each application before printing, and in order to eliminate the problem of printing delays associated with the usage of these symbols, any questions about the intended symbol will be resolved by the editorial staff of the Office of Publications by printing the symbol "Ø" whenever that symbol is used by the applicant. Any Certificate of Correction necessitated by the above practice will be at the patentee's expense (37 CFR 1.323) because the intended symbol was not accurately presented by the Greek upper or lower case Phi letters (I, 0) in the patent application.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

Dec. 20, 1978.

[978 O.G. 152]

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(73) **U.S. Accession to Hague Convention Abolishing the Requirement of Legalization for Foreign Public Documents**

On Oct. 15, 1981, the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public Documents" entered into force between the United States and twenty-eight foreign countries that are parties to the Convention. The Convention applies to any document submitted to the United States Patent and Trademark Office for filing or recording, which is sworn to or acknowledged by a notary public in any one of the member countries. The Convention abolishes the certification of the authority of the notary public in a member country by a diplomatic or consular officer of the United States and substitutes certification by a special certificate, or apostille, executed by an officer of the member country. Accordingly, the Office will accept for filing or recording a document sworn to or acknowledged before a notary public in a member country if the document bears, or has appended to it, an apostille certifying the notary's authority. The requirement for a diplomatic or consular certificate, specified in 37 CFR 1.66 and note 1 of 37 CFR 3.45, will not apply to a document sworn to or acknowledged before a notary public in a member country if an apostille is used.

The member countries that are parties to the Convention are:

Austria	Italy	Spain
Bahamas	Japan	Suriname
Belgium	Lesotho	Swaziland
Botswana	Liechtenstein	Switzerland
Cyprus	Luxembourg	Tonga
Fiji	Malawi	U.K. of Great Britain and
France	Malta	

Germany Fed. Rep. of	Mauritius	N. Ireland
Hungary	Netherlands	United States
Israel	Portugal	Yugoslavia
	Seychelles	

The Convention prescribes the following form for the apostille:

Model of certificate

The certificate will be in the form of a square with sides at least 9 centimetres long

APOSTILLE
(Convention de La Haye du Oct. 5, 1961)

1. Country: .....
This public document
2. has been signed by .....
3. acting in the capacity of .....
4. bears the seal/stamp of .....

Certified

5. at ..... 6. the .....
7. by .....
8. No. .....
9. Seal/stamp: 10. Signature:

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Nov. 5, 1981.

[1013 O.G. 3]

(74) Simulated or Predicted Tests or Examples

In order to provide for uniform practice before the Patent and Trademark Office, the following clarification of current Office practice relating to simulated or predicted tests or examples is being set forth. This notice specifies the Office policy which is currently in effect and is considered to have been in effect in the past in this area. The wording of the MPEP provisions prior to this amendment went further than was intended. The amended sections below spell out more clearly the Office's position from the start.

The following wording will be substituted in revision number 8 for that presently in paragraph D of section 608.01(p) of the Manual of Patent Examining Procedure.

MPEP §608.01(p)

"D. Simulated or Predicted Test Results or Prophetic Examples

Simulated or predicted test results and prophetical examples (paper examples) are permitted in patent applications. Working examples correspond to work actually performed and may describe tests which have actually been conducted and results that were achieved. Paper examples describe the manner and process of making an embodiment of the invention which has not actually been conducted. Paper examples should not be represented as work actually done. No results should be represented as actual results unless they have actually been achieved. Paper examples should not be described using the past tense."

The first and last paragraphs of MPEP section 707.07(1) are being deleted.

DONALD J. QUIGG,
Deputy Commissioner of Patents and Trademarks.

Apr. 15, 1982.

[1018 O.G. 27]

(75) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 50716–5116]

Variety Naming Requirements for Plant Patent Applications

Agency: Patent and Trademark Office, Commerce.
Action: Notice of proposed rulemaking.
Summary: The Patent and Trademark Office proposes to amend certain of the rules of practice for plant patent applications. Under the proposed rules of practice, an applicant for a plant patent will, in addition to the present requirements for obtaining a plant patent, also be required to designate and record a variety name for the plant. These proposed rules fulfill an obligation imposed by the Convention of the International Union for the Protection of New Plant Varieties, to which the United States adheres.
Date: Comments on the proposed rules must be submitted by Oct. 31, 1985, to assure their consideration in formulating the rules put into effect.
Addresses: Address comments to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231. All comments received will be made publicly available in the Patent and Trademark office, Crystal Plz., Arlington, Va., Rm. 3–11C28. No public hearing is planned.
For Further Information Contact: Mr. Stanley D. Schlosser, Office of Legislation and International Affairs, by telephone at (703) 557-3065 or by mail addressed to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.
Supplementary Information: The requirement for designating a variety by name and recording that name arises from Article 13 of the UPOV (International Union for the Protection of New Plant Varieties) Convention. This Convention became applicable to the United States on Nov. 8, 1981. In the terminology of Article 13, this designation and recordation is referred to as the registration of the variety name. Registration is required for each plant variety protected in a member state of this Union (hereafter referred to as a member state) either by means of a plant patent or an award of breeders' rights.

It is left to each member state to determine exactly how registration will be effected. For the United States, the issuance of a plant patent, including in the patent the name of the variety patented, will constitute registration. The patent examining process will include a consideration of the suitability for registration of the proposed variety name.

A variety name will be registered if it is judged by the Patent and Trademark Office as not likely to mislead or cause confusion regarding the characteristics, value or identity of the variety, or the identity of the breeder. Also, a variety name to the registered must not impair or conflict with any trademark or another name in which other person has a proprietary right. Ordinarily, the patent applicant will be required to register the same variety name (or a translation thereof) for a particular variety in each member state adhering to the UPOV Convention. These are, in broad terms, the conditions set forth in UPOV Article 13 for the registration of a variety name.

A variety name is the generic name by which the variety is popularly or commonly known. The commercial use of a registered variety name, however, will not be regulated by the Patent and Trademark Office. Rather, use of a variety name, whether registered or unregistered (in cases where the variety is not patented), will be regulated by any applicable state and federal unfair competition and trademark laws.

Variety names are referred to in the UPOV Convention as "variety denominations" and often in plant breeding circles as "cultivar names." For the purposes of these rules of practice, the three terms are considered synonymous.

Attention is called to the Commissioner's Notice (**Federal Register**/Vol. 46, No. 22/Oct. 20, 1981) stating that appropriate rules for the naming of plant varieties, as required by the UPOV Convention, will be issued. The **Federal Register** Notice also provides information about interim procedures to be followed until rules of practice are adopted.

The proposed amendments to the rules of practice when finally adopted will replace the interim procedures announced in the **Federal Register** on Oct. 20, 1981, in regard to the patenting in the United States of asexually reproduced plants. These proposed amendments will not apply, however, to any protection sought under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.), administered by the Department of Agriculture and applying only to sexually reproduced plant varieties.

The proposed amendment to §1.163 prescribes the obligation (as set forth in the UPOV Convention) for registering the name of each patented plant variety. The proposed name will be selected by the patent applicant for inclusion in the title of the application, where it will be easiest for a reader of the patent to find. It will be judged for registrability by the examiner to whom the patent application is assigned for examination, who, however, may receive advice or information from officials of the trademark examining operation. As examples of suitable naming practice, note the titles of plant patents Nos. 5,413 and 5,414, "Plum Tree 'Mr. Paul' " and "Chrysanthemum Plant Named Foxy," respectively.

The requirement for registration applies only to plant patent applications actually filed in the United States on or after Nov. 1, 1981, the date on which the UPOV Convention took effect for the United States, even though the application may be entitled to an earlier United States filing date under the provisions of 35 U.S.C. 120, or claim the right of priority in accordance with 35 U.S.C. 119.

The procedure for judging registrability of a variety name will utilize the Office's compilation of variety names in use in the United States and foreign countries. This compilation has been and will continue to be obtained from horticultural, agriculture, floral and other professional societies, other national examination offices, the UPOV Secretariat, standard references, and other sources. Designation of a variety by name is a formal requirement for obtaining a patent, and will be generally administered in the same manner as other formal requirements.

Proposed new §1.166(a) sets forth the requirement for naming a variety to be patented. The criteria to be applied will be those set forth in the International Code of Nomenclature for Cultivated Plants—1980. Its articles 1 to 32 provide substantive rules for naming varieties. The other articles, concerned with non-statutory registration authorities, earlier publication, amendment of the Code and other matters unrelated to the registration criteria, of course, will not be involved. Copies of the Code are available from any of the following: The International Bureau for Plant Taxonomy and Nomenclature, Tweede Transitorium, Uithof, Utrecht, Netherlands; the American Horticultural Society, Mt. Vernon, Va. 22121; the Crop Science Society of America, 677 S. Sego Rd., Madison, Wis. 53711; and the Royal Horticultural Society, Vincent Sq., London, SW IP, 2PE, Great Britain.

Registrability will also take into account the Office's file of both registered trademarks and those proposed for registration. If a conflict exists between a proposed variety name and a registered trademark or one proposed for registration, the variety name will not be registered and a new name will be required.

Proposed §1.168(b) concerns patent applications failing to include a proposed variety name. The examiner will require the submission of a variety name and set a period for compliance.

Proposed §1.168(c) and (d) concern an examiner's refusal to register a proposed variety name. Paragraph (c) requires the applicant, upon a final determination of unregistrability, to submit another variety name. Paragraph (d) assures the applicant's right instead to petition the Commissioner in cases where the proposed name is not accepted. The petition will be subject to a fee and the other requirements of these rules applicable to petitions.

The UPOV Convention requires the breeder to identify the patented variety by the same variety (or a translation thereof) in all member states. A different name may be registered in a particular member state, however, in cases where the name registered earlier in another member state is unsuitable for registration. The Convention's requirements for the consistent naming of varieties are incorporated in proposed §1.168(e). The applicant may during the course of prosecuting the application be required to inform the Office of any other names by which the variety is known, either in the United States or foreign countries, and to provide a translation into English of any such names.

Specific criteria for unsuitability cannot always be defined in advance, but must develop on a case-by-case basis. Certain criteria for unsuitability can be stated at the outset, however. Names that are difficult to pronounce by English speakers, names having adverse business connotations, and names in non-English characters are examples of unsuitability. The applicant must when submitting a name for registration different from that used in another member state explain in writing why the name used in that other state is unsuitable.

A patent owner or the assignee of a patent will, at times, learn that the registered variety name conflicts with another person's trademark or other proprietary right, or be ordered by a court to commercialize the variety under another name. At other times, a registered variety name may turn out to conflict with an earlier-registered variety name or one already in use. Also, changes in language or custom may render an earlier-registered variety name unsuitable for commercial use. In these cases, a different or substitute name may be submitted for registration. Proposed §1.168(f) concerns the issuance of a certificate of correction under 35 U.S.C. 255 for the registration of a substitute name in such situations. The patent owner in applying for the registration of a substitute name will be required to explain in writing why it is necessary to do so.

It is, of course, in the patent applicant's interest to know or learn as early as possible if the proposed variety name conflicts with another's trademark or other proprietary right. Accordingly, proposed §1.168(g) authorizes the Patent and Trademark Office to publish in the *Trademark Official Gazette* each proposed variety name. The Office will also regularly publish in the *Trademark Official Gazette* lists of registered variety names, and such names will be identified in each plant patent and in the *Patent Official Gazette.*

The publication of proposed variety names should greatly reduce the possibility of later conflicts. Conflicts between proposed variety names and proprietary rights will be resolved in an ex parte manner. No inter partes proceedings will be held to resolve a conflict.

Any substitute name registered for a variety will also be published in the *Trademark Official Gazette,* and a certificate of correction containing the substitute name will be issued. If the patent has been assigned, the opportunity to register a different variety name will be available only to the assignee.

In the event a plant breeder proceeds to protect a plant variety under the provisions of section 101 of the patent laws (title 35, U.S.C), the variety naming require-

ments of these proposed rules shall also apply to that patent application. This possibility is acknowledged in the proposed amendment to section 1.71. Applications for the patenting of microorganisms under section 101 will, however, not be subjected to this variety naming requirement.

Article 13 of the UPOV Convention of Oct. 23, 1978, referred to above, reads:

Article 13

Variety Denomination

(1) The variety shall be designated by a denomination destined to be its generic designation. Each member State of the Union shall ensure that subject to paragraph (4) no rights in the designation registered as the denomination of the variety shall hamper the free use of the denomination in connection with the variety, even after the expiration of the protection.

(2) The denomination must enable the variety to be identified. It may not consist solely of figures except where this is an established practice for designating varieties. It must not be liable to mislead or to cause confusion concerning the characteristics, value or identity of the variety or the identity of the breeder. In particular, it must be different from every denomination which designates, in any member State of the Union, an existing variety of the same botanical species or of a closely related species.

(3) The denomination of the variety shall be submitted by the breeder to the authority referred to in Article 30(1)(b). If it is found that such denomination does not satisfy the requirements of paragraph (2), that authority shall refuse to register it and shall require the breeder to propose another denomination within a prescribed period. The denomination shall be registered at the same time as the title of protection is issued in accordance with the provisions of Article 7.

(4) Prior rights of third parties shall not be affected. If, by reason of a prior right, the use of the denomination of a variety is forbidden to a person who, in accordance with the provisions of paragraph (7), is obliged to use it, the authority referred to in Article 30(1)(b) shall require the breeder to submit another denomination for the variety.

(5) A variety must be submitted in member States of the Union under the same denomination. The authority referred to in Article 30(1)(b) shall register the denomination so submitted, unless it considers that denomination unsuitable in its State. In the latter case, it may require the breeder to submit another denomination.

(6) The authority referred to in Article 30(1)(b) shall ensure that all the other such authorities are informed of matters concerning variety denominations, in particular the submission, registration and cancellation of denominations. Any authority referred to in Article 30(1)(b) may address its observations, if any, on the registration of a denomination to the authority which communicated that denomination.

(7) Any person who, in a member State of the Union, offers for sale or markets reproductive or vegetative propagating material of a variety protected in that State shall be obliged to use the denomination of that variety, even after the expiration of the protection of that variety, in so far as, in accordance with the provisions of paragraph (4), prior rights do not prevent such use.

(8) When the variety is offered for sale or marketed, it shall be permitted to associate a trademark, trade name or other similar indication with a registered variety denomination. If such an indication is so associated, the denomination must nevertheless be easily recognizable.

UPOV Article 30(1)(b), referred to in Article 13, reads as follows:

Article 30

Implementation of the Convention on the Domestic Level; Contracts on the Joint Utilisation of Examination Services

(1) Each member State of the Union shall adopt all measures necessary for the application of this Convention; in particular, it shall:

(a). . .

(b) set up a special authority for the protection of new varieties of plants or entrust such protection to an existing authority;

(c). . .

Other Considerations: The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, et seq. There are no information collection requirements in the proposed rule change.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the proposed rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). The variety naming requirement will impose very little or no extra work on patent applicants (whether small or large businesses or individuals). The rule will help avoid litigation over variety names and trademark rights, which are far more burdensome than the procedures under the proposed rule.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patients.

For the reasons set out in the preamble, 37 CFR Part 1 is proposed to be amended by amending §§1.71, 1.163, 1.168 and 1.17 as set forth below. All proposed additions are printed between arrows.

Part 1—Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C., unless otherwise noted.

2. Section 1.17 is proposed to be amended by adding the following items in numerical order to the list in paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) * * *

▶—1.168(d) For petitioning the Commissioner to register a plant variety name. . . .

—§1.168(e) For petitioning the Commissioner to register a substitute plant variety name. . . .◀

* * * * *

3. Section 1.17 is proposed to be amended by adding paragraph (d) to read as follows:

§1.71 Detailed description and specification of the invention.

* * * * *

▶(d) In the case of an application for the patenting of a plant variety filed under the provisions of section 101 of title 35, United States Code, the requirements for the

naming of a variety specified under §§1.163 and 1.168 shall apply thereto.◀

4. Section 1.163 is proposed to be amended by adding the following three sentences at the end of paragraph (a):

§1.163 Specification

(a)* * * ▶The title of the invention must include a proposed name for the variety to be patented, where it may be easily recognized as such. A substitute variety name may be proposed during the pendency of the application provided its consideration will not significantly delay disposition of the application. The granting of the patent will be deemed the registration of the variety name for the patented plant for purposes of complying with Article 13 of the International Convention for the Protection of New Varieties of Plants (UPOV), as revised on Oct. 23, 1978.◀

* * * * *

5. A new §1.168 is proposed to be added, which reads as follows:

▶§1.168 Variety name, submission to the Office, examination.

(a) The variety name submitted by the patent applicant under §1.163 or §1.71(d) will be examined for compliance with §1.163 using as guidelines for this examination the cultivar naming requirements of the International Code of Nomenclature for Cultivated Plants —1980.

(b) If a proposed variety name is not included as part of the title of the application, as filed, the examiner will set a period of not less than thirty days for providing such name.

(c) If the examiner determines that a proposed variety name is not suitable for registration, or that the proposed name conflicts with a registered trademark or a trademark proposed for registration, the examiner shall refuse registration and set forth in an Office action the reasons for such refusal. Such reasons shall be included in the examiner's action provided under §1.104, subject to the provisions of §1.105. An applicant in disagreement with such refusal may request reconsideration and withdrawal of the refusal, giving the reasons therefor. If the examiner's refusal to register a proposed variety name is repeated and made final, the examiner will at the same time require the applicant to propose another variety name for registration.

(d) After a final requirement by the examiner for submission of a proposed new variety name, the applicant, in addition to making any response due on the remainder of the action, may in lieu of proposing a new variety name petition the Commissioner for review of the examiner's holding together with the fee set forth in §1.17(h).

(e) The applicant will be required to submit for registration the same variety name (or a translation thereof) as that previously registered or proposed for registration in an earlier filed application for protection of the variety in another UPOV member state. Such applicant may submit another name for registration, however, upon a showing satisfactory to the examiner as to why the name originally submitted in another UPOV member state is unsuitable for registration. During the pendency of an application, the examiner may require the applicant to provide any name for the same variety registered or proposed for registration in other UPOV member states before the United States application was filed. If not in English characters, a translation or transliteration of such name or names may be required. An applicant dissatisfied with the examiner's decision concerning the unsuitability of a variety name may petition the Commissioner, together with that fee set forth in §1.17(h).

(f) A patentee, in order to avoid a conflict between a registered variety name and a trademark, or where the registered variety name is likely to be confused with another variety name, or where a registered variety name had acquired an adverse connotation, may propose for registration a substitute variety name for that already registered. Such a proposal shall be in the form of a petition to the Commissioner, together with the fee set forth in §1.17(h). The proposed substitute name will be examined in the same manner as the name originally registered, and upon registration shall be promptly published in the *Official Gazette.* A certificate of correction indicating such substitute name shall be issued for the patent. If the patent has been assigned, only the assignee of record may apply for registration of a substitute name.

(g) The Commissioner shall upon its receipt in the Office promptly publish in the *Trademark Official Gazette* any variety name proposed for registration and the genus and species of the plant involved. Correspondence from a person other than the patent applicant concerning the registrability of a proposed or registered variety name shall be served on the applicant by such person and a certificate of such service shall appear on the copy of the correspondence filed in the Patent and Trademark Office. Such correspondence will be placed in the official file, and in the case of an application will be considered by the examiner in an ex parte manner during the examination of the application.◀

July 11, 1985. DONALD J. QUIGG,
Acting Commissioner of Patent and Trademarks.

[FR Doc. 85–19401 Filed 8–1585; 8:45 am]
Billing Code 3510–16–M

[1058 OG 28]

EXAMINATION OF APPLICATIONS

(76) Examination of Claims For Patentability Under 35 U.S.C. 103

The purpose of this notice is to inform the public of the current Patent and Trademark Office policy concerning determinations of obviousness under 35 U.S.C. 103 in view of the recent Supreme Court decision in *Sakraida* v. *Ag Pro,* 189 USPQ 449 (1976).

The following text is a copy of a memorandum issued to all patent examining personnel relative to this topic. "A clarification of the policy of the Patent and Trademark Office in the examination of claims for patentability under 35 U.S.C. 103 seems in order at this time in view of the Supreme Court's decision in *Sakraida* v. *Ag Pro,* 189 USPQ 449 (decided April 20, 1976) which is similar to the Court's earlier decision in *Anderson's-Black Rock, Inc.* v. *Pavement Salvage Co.,* 163 USPQ 673 (decided December 8, 1969). "Office policy has consistently been to follow *Graham* v. *John Deere Co.,* 148 USPQ 4559 (decided February 21, 1966) in the consideration and determination of obviousness under 35 U.S.C. 103. The three factual inquiries enunciated therein as a background for determining obviousness are as follows:

1. Determination of the scope and content of the prior art;
2. Ascertaining the differences between the prior art and the claims in issue; and
3. Resolving the level of ordinary skill in the pertinent art.

"Attention is directed to MPEP Section 706 for a more complete discussion of the application of the Graham test. "The Supreme Court reaffirmed and relied upon the Graham three-pronged test in its consideration and determination of obviousness in the fact situations presented in both the Ag Pro and Black Rock decisions. In each case, the Court went on to discuss whether the claimed combinations produced a 'new or different function' and 'a synergistic result,' but clearly decided whether the claimed inventions were unobvious 'on the basis of the three-way test in Graham. Nowhere in its

decisions in those cases does the Court state that the 'new or different function' and 'synergistic result' tests supersede a finding of unobviousness or obviousness under the Graham test. "Accordingly, examiners should continue to apply the test for patentability under 35 U.S.C. 103 set forth in Graham. It should be noted that the Supreme Court's application of the Graham test to the fact circumstances in Ag Pro is somewhat stringent, as it was in Black Rock."

C. MARSHALL DANN,
July 8, 1976. *Commissioner of Patents & Trademarks.*

[949 O.G. 3]

(77) **Translations of Foreign Language References**

Frequently, Office actions cite references that are in a foreign language. In the event a translation of the entire text or portion of the text of the reference is readily available in the examiners' search files, a copy of the translation will normally be included with the Office action. However, applicants are cautioned that the inclusion of a translation with a foreign language reference should not be construed to mean that the examiner used or relied on the translation, or that it is accurate or an official translation made by the Patent and Trademark Office.

While this service may be infrequent, it could be increased by the submission of translations by the applicant to the Office. Accordingly, it is requested that translations of foreign language references be transmitted to the Office, and in particular be transmitted with the response to the Office action or in a separate envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. In addition, it would be of great assistance to the Office in filing the translation, if the translation carried the following: 1. an identification of the foreign language reference and, where possible. 2. its location in the examiners' search files (e.g. location should be known if reference was cited in Office action). If indentifying information is not available, the incoming translation should carry the name "Scientific Library" thereon so that it can be processed by the Library.

WILLIAM FELDMAN,
Oct. 26, 1977. *Deputy Assistant Commissioner for Patents.*

[964 O.G. 24]

(78) **Restriction Between Inventions**

The practice set out in the notice of June 20, 1968 (852 O.G. 509) is hereby revised as follows.

Under the statute an application may properly be required to be restricted to one of two or more claimed inventions only if they are able to support separate patents and they are either independent or distinct.

If it is demonstrated that two or more claimed inventions have no disclosed relationship ("independent"), restriction should be required, and it is not necessary to further show that the claimed inventions are distinct. If it is demonstrated that two or more claimed inventions have a disclosed relationship ("dependent"), then a showing of distinctness is required to substantiate a restriction requirement.

Where inventions are neither independent nor distinct, one from the other, or they are not sufficiently different to support more than one patent, their joinder in a single application must be permitted.

Every requirement to restrict has two aspects, (1) the reasons (as distinguished from the mere statement of conclusion) why the inventions *as claimed* are either independent or distinct, and (2) the reasons for insisting upon restriction therebetween.

In order to support a requirement to restrict between combination and subcombination inventions, two-way distinctness must be demonstrated.

If it can be shown that a combination, as claimed (1) does not require the particulars of the subcombination as claimed for patentability, and (2) the subcombination can be shown to have utility either by itself or in other and different relations, the inventions are distinct. When these factors cannot be shown, such inventions are not distinct.

Two or more claimed subcombinations, disclosed as usable together in a single combination, and which can be shown to be separately usable, are usually distinct from each other.

In applications claiming inventions in different statutory categories only one-way distinctness is needed to support a restriction requirement. For example, in applications containing claims to both process and apparatus, distinctness may be shown if (1) the process as claimed can be practiced by hand or by another materially different apparatus, or (2) the apparatus as claimed can be used to practice another and materially different process.

As in the notice of May 1, 1974 concerning Markush-Type claims (922 O.G. 1016), if the search and examination of an entire application can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it includes claims to distinct or independent inventions.

WILLIAM FELDMAN,
Apr. 9, 1975. *Deputy Assistant Commissioner for Patents.*

[934 O.G. 450]

(79) **Restriction Policy and Practice**

The purpose of this notice is to inform the public of the results of the survey that was conducted on restriction requirements made under 35 U.S.C. 121 in the Patent Examining Groups and to report clarifications that have been implemented as a result of a review of restriction policy and practice.

The survey involved about 320 patent applications in which a restriction only Office action had been prepared by an examiner in the period between July—Sept. 1983. The selection of applications was proportioned among Groups according to the volume of restriction requirements during the period. The statistics collected (Appendix A) and the definitions (Appendix B) for each item on the survey form are provided at the end of this notice.

Some of the significant findings of the survey include:

- 19% (61/320) of the requirements surveyed were not reasonable based on a review of the record
- 35% (88/249) of the requirements surveyed (not involving an election of species) were not supported by any reasons, or contained reasons which were clearly inapplicable to the facts
- 41% (53/128) of the actions following an election and traverse did not address the arguments contained in the traverse
- 91% (48/53) of a sample of 53 applications surveyed —the attorney or agent of record had no record of receiving a telephone call requesting an oral election

In response to the results of this survey, existing guidelines in Chapter 800 of the Manual of Patent Examining Procedure (MPEP) have been reviewed with each examiner and supervisor in the Patent Examining Corps in order to promote uniformity of practice and compliance with existing guidelines. A follow-up survey will be conducted in early 1985. In addition, as a result of a review of our existing policy and guidelines, the following clarifications have been made:

(1) Telephone Practice (MPEP 812.01) -
Except in those cases where the requirement for restriction is complex, the application is being prosecuted by the applicant pro se, or the examiner knows from past experience that an election will not be made by phone, the examiner should make a telephone call to the attorney or agent of record and request an oral election in accordance with MPEP 812.01, first paragraph.
If an election cannot, or will not, be made orally at the time of the call or within a reasonable time thereafter, generally three working days, the Office action requiring the election in writing should contain the following sentence
"A telephone call was made to (name of attorney or agent) on (date) to request an oral election to the above restriction requirement, but did not result in an election being made."

(2) Multiple Inventions In A Continuing Application
Where claims to multiple inventions within the meaning of 35 U.S.C. 121 are presented in a continuing application (continuation, division, continuation-in-part including those which may be filed under 37 CFR 1.60 or 1.62), the examiner should make (or repeat) an appropriate requirement for restriction and require an election by the applicant UNLESS
(1) the applicant acknowledges the previous requirement in the parent application and clearly indicates which invention is to be prosecuted if the requirement is repeated. The examiner should make any proper requirement for restriction in the first Office action, state how applicant has indicated an election (e.g. statement in a preliminary amendment or transmittal letter), and include an action on the merits on the claims of the elected invention;

or

(2) the application is a continuation, but not a division or CIP filed as a File Wrapper Continuation (FWC) under 37 CFR 1.62. The examiner should assume that the requirement and election made in the parent application carries over unless otherwise indicated by applicant. The exmainer's first action should include a repetition of the restriction requirement made in the parent application to the extent it is still applicable in the continuation and an indication that prosecution is being continued on the invention elected and prosecuted by applicant in the parent application.
The policy and practice of making requirements final and seeking review by way of petition (37 CFR 1.144) remains unchanged in a continuing application, whether a requirement for election was first made in the parent and renewed in the continuation application or was made for the first time in the continuation application.

(3) Product, Process of Making, Process of Using (MPEP 806.05(i))
Practice in this situation is being amended to conform to Rule 13.2(i) of the Patent Cooperation Treaty (PCT) so that a three way requirement can be required only where the process of making is not "specially adapted" to make the product (i.e. the requirements of MPEP 806.05(f) are met). Otherwise, the process of using must be joined with the claims directed to the product and the process of making the product even though a showing of distinctness between the product and process of using the product (MPEP 806.05(h)) could be made. A determination of the patentability of the product need not be made prior to making a requirement for restriction.
The Manual of Patent Examining Procedure will be revised to reflect these clarifications in the next revision.

GERALD MOSSINGHOFF,
Aug. 1, 1984. *Commissioner of Patents and Trademarks.*

[1046 O.G. 2]

(80) **Restriction Practice Survey II**

This notice is intended to inform the public of the results of a follow-up survey of applications containing a written restriction requirement. The results of the first survey were reported in the Official Gazette on Sept. 4, 1984 (1046 OG 2; Restriction Policy and Practice). Survey II involved 319 applications selected at random in the Patent Examining Groups from those in which a restriction only action had been credited to an examiner in the period of July—Sept. 1984. This period was after the Corps Management Meeting on June 5, 1984 in which restriction policy and practice were reviewed with all SPEs and Directors, and followed the distribution of review materials to all examiners. The results of Survey II showed significant improvements over the results of Survey I, but the results were still not considered satisfactory in several aspects.

Survey Procedure: The selection of applications was generally proportioned among the Groups to correspond to the relative proportion of restriction only actions that were completed in each Group in the last quarter of FY 84. A minimum of ten applications were surveyed from each Group. The distribution was as follows:

110 – 16	210 – 11	310 – 10
120 – 37	220 – 10	320 – 18
130 – 33	230 – 10	330 – 24
150 – 47	240 – 30	340 – 30
	250 – 13	350 – 20
	260 – 10	
TOTALS 133	84	102

The survey team consisted of the same people who conducted the first survey. One person from the survey team reviewed each selected application file and completed the survey form regarding the restriction requirement(s) in the file. The same survey form was used in each survey.

In the event an application file could not be located or was not readily available, a different application was selected for the survey. In general, the substitute application was selected from those requirements completed by the same examiner assigned to the original application.

The survey did not include any design applications.

Survey Results: Statistical results of the survey are set forth on the survey form used in the Appendix including summaries on a Corps and discipline level. References in this notice to "Item ——" refer to the numbered items indicated on the survey form. These results indicate an improvement in all areas which were identified as acute problems in the first survey. We did not do a telephone survey to determine whether applicant's representative had been called prior to writing the requirement.

In addition to the survey, the statistics on restriction requirements before and after the training effort following the first survey are of interest. Statistics show that the number of restriction only actions has decreased 36% Corps-wide (52% in Group 120 which had the highest volume in the first survey) following our training effort. These statistics are shown below.

Quarter	Total First Actions	Total Corps Restriction Requirements	Group 120 Restriction Requirements
Apr–Jun 1984	32,035	2,771	514
Jul–Sep 1984	32,216	1,939	220
Oct–Dec 1984	28,158	1,522	212
	(32,358)*	(1,775)*	(247)*
Oct–Dec vs Apr–Jun		−36%	−52%.

*Figures adjusted (7/6 of actual) to reflect a 7 pay period quarter for comparison with the Apr.–June and July–Sept. quarters which included 7 pay periods.

In addition, 24% of the applications in the second survey contained a specific reference to a telephone call that was made by the examiner, but did not result in an election being made. It was also apparent that some of the requirements were sufficiently complex to warrant a written communication.

The applications reviewed in the second survey resulted in the conclusion that 9% of the requirements that were made were not reasonable on the record that was reviewed (Item 10 – 30/319). This compares to 19% (61/320) in the first survey. Of the 30 cases in which a conclusion of unreasonableness was made, the requirement was traversed in 22 (73%) of those cases, not traversed in 7 cases (23%), and no response was filed in 1 case. In the 22 cases where the unreasonable requirement was traversed, the requirement was withdrawn in 10 cases, not withdrawn in 8 cases, and no subsequent action had been made in 4 cases. In the first survey, 11 unreasonable requirements were withdrawn out of 61 made. The survey form on each of the unreasonable requirements in the second survey was returned and discussed with the Group Director.

In our opinion, the reasons provided by the examiner for insisting upon restriction were not proper (either non-existent or based on the wrong criteria) in 18% (Item 5j – 57/319) of the applications surveyed — compared to 35% in the first survey. In many of these cases, the reviewer determined that the requirement was justified, but for reasons which the examiner did not set forth in the requirement.

Our second survey revealed that applicant had traversed the requirements in 134 cases (Item 7c), and that where the examiner had given another action in those cases (Item 8 – 98), the reasons in the traverse had not been responded to in 30% (Item 8b – 30/98) of the cases. This represents a very modest improvement of the results in the first survey where 41% (53/128) had not responded to the arguments presented in applicants traverse.

In addition to the statistical results, the survey team met to discuss some of the problems observed during the survey. Several members of the team again observed that problems were more likely to arise where complex requirements involving a large number of claims and/or inventions are encountered, and where the claim schedule required the application of combination—subcombination criteria to show patentable distinctness (MPEP 806.05c – two-way distinctness). Where three or more inventions are presented in a single application, it was observed that the examiner rarely showed distinctness among all of the combinations of groups (e.g. I–II, II–III, I–III). Another observation that was frequently made was that many of the problems with incomplete requirements could have been avoided by the use of the form paragraphs and associated instructions.

Further Action: While the second survey indicated that significant improvements have been realized in our pursuit of uniformity in restriction practice, we have not achieved an acceptable level of performance in several areas. The same types of problems predominated in each survey, but are now at a reduced level. There is clearly a continuing need for supervisory review.

Supervisors will take the opportunity to emphasize the following points to examiners in their Art Units:

(1) Use of telephone when appropriate to minimize pendency time;
(2) Reasons to support the requirement (to satisfy the criteria for independence of patentable distinctness) *and* reasons for insisting upon restriction should be given in each written requirement. Mere conclusions are not sufficient;
(3) The substance of arguments contained in applicant's traverse should be responded to in the Office action following the traverse;
(4) A showing of two-way distinctness is required in situations where combination-subcombination criteria are applicable (MPEP 806.05c); and
(5) Use of appropriate form paragraphs should be encouraged.

In addition, each Group will review all restriction requirements made in the Group in a pay period at least once every six months.

Finally, review of restriction practice will not be made a component part of the Quality Review Program on an ongoing basis because of the desirability of identifying problems of this type before prosecution is over and the desirability of maintaining their focus on substantive issues. Of course, the Quality Review Staff will continue to bring problems with restriction requirements to the attention of the Director when they are encountered in the course of their review procedures.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

[1053 OG 5]

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(81) **Revised Practice Re Markush-Type Claims**

This notice deals with Markush-type generic claims which include a plurality of alternatively usable substances or members. In most cases, a recitation by enumeration is used because there is no appropriate or true generic language. In many cases, the Markush-type claims include independent and distinct inventions. This is true where two or more of the members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

In applications containing claims of that nature, the Examiner may require a provisional election of a single species prior to examination on the merits. The provisional election will be given effect in the event that the Markush-type claim will be examined fully with respect to the elected species and further to the extent necessary to determine patentability. Should the Markush-type claim be found not allowable, examination will be limited to the Markush-type claim and claims to the elected species, with claims drawn to species patentably distinct from the elected species held withdrawn from further consideration.

As an example, in the case of an application with a Markush-type claim drawn to the compound C-R, wherein R is a radical selected from the group consisting of A, B, C, D, and E, the Examiner may require a provisional election of a single species, CA, CB, CC, CD, or CE. The Markush-type claim would then be examined fully with respect to the elected species and any species considered to be clearly unpatentable over the elected species. If on examination the elected species is found to be anticipated or rendered obvious by prior art, the Markush-type claim and claims to the elected species shall be rejected, and claims to the non-elected species would be held withdrawn from further consideration. As in the prevailing practice, a second action on the rejected claims would be made final.

On the other hand, should no prior art be found that anticipates or renders obvious the elected species, the search of the Markush-type claim will be extended. If prior art is then found that anticipates or renders obvious the Markush-type claim with respect to a *non-elected species*, the Markush-type claim shall be rejected and claims to the non-elected species held withdrawn from further consideration. The prior art search, however, will not be extended unnecessarily to cover all non-elected species. Should applicant, in response to this rejection of the Markush-type claim, overcome the rejection, as by amending the Markush-type claim to exclude the species anticipated or rendered obvious by the prior art, the amended Markush-type claim will be re-examined. The prior art search will be extended to the extent necessary to determine patentability of the Markush-type claim. In the event prior art is found during the re-examination that anticipates or renders obvious the amended Markush-type claim, the claim will be rejected and the action made final. Amendments submitted after the final rejection further restricting the scope of the claim will not be entered.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the Examiner is encouraged to examine all claims on the merits, even though they are directed to independent and distinct inventions. In such a case, the Examiner will not follow the above procedure and will not require restriction.

This notice supersedes the practice set out in 922 O.G. 1016. dated May 1, 1974.

Although the above practice is now in effect, a rule change proposal is also being considered to provide for prosecution of multiple inventions in a single patent application by submission of additional fees.

DONALD W. BANNER,
Oct. 23, 1978. *Commissioner of Patents and Trademarks.*

[976 O.G. 128]

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(82) **Revised Procedures for Recording Searches and Considerations of Certain Prior Art**

In order to provide a more complete, accurate and uniform record of what has been searched and considered by the examiner for each application the Patent and Trademark Office has established revised procedures for recording search data in the application file. Such a record is of importance to anyone evaluating the strength and validity of a patent, particularly if the patent is involved in litigation. These new procedures will also facilitate the printing of certain search data on patents.

Under the revised procedures, searches are separated into two categories and listed, as appropriate, in either the "SEARCHED" box or a newly added "SEARCH NOTES" box on the file jacket.

Until file jackets can be reprinted to include a second search data box, all file jackets for new applications will have the "SEARCH NOTES" box stamped therein by the Mail Room. If additional space is required, entries will be continued on the outside right flap of the file jacket.

The revised procedures will apply to all new applications in which the first search is made after April 1, 1977 and do not affect the manner in which references are listed on the form PTO-892. "Notice of References Cited." Appropriate changes in the Manual of Patent Examining Procedure will be made.

A. "SEARCHED" Box Entries

Search entries made here, except those for search updates (see item A. 3 below), will be printed under "Field of Search" on the patent front page. Therefore, the following searches will be recorded in the "SEARCHED" box by the examiner along with the date and the examiner's initials, according to the following guidelines:

1. *A complete search of a subclass,* including all United States and foreign patent documents and other publications placed therein. The complete classification (class and subclass) will be recorded.
2. *A limited search of a subclass,* for example, a search that is restricted to an identifiable portion of the patent documents placed therein. If, however, only the publications in a subclass are searched, such an entry is to be made under "SEARCH NOTES" rather than under "SEARCHED." (See item B, 4 below.)
   The class and subclass, followed by the information defining the portion of the subclass searched in parenthesis, will be recorded.
3. *An update of a search previously made.*
   This search entry will be recorded in a manner to indicate clearly which of the previously recorded searches have been updated, followed by the expression "(updated)." Search update, entries, although recorded in the "SEARCHED" box, will not be printed.
   When a search made in a parent application is updated during the examination of a continuing application, those searches updated, followed by "(updated from parent S.N. _____)" will be recorded. If the parent has been patented, the patent number "Pat. N. _____" instead of serial number in the above phrase will be recorded.
4. *A mechanized search* of a file of documents in a specific art, conducted by using key terms to retrieve documents. The name of the mechanized search system as it appears in the following list will be recorded along with the expression "MS File" to indicate mechanized search file.

Mechanized Search Systems

Termatrex Systems:

Automatic Fuel Controls
Boots & Shoes
Chemical Testing
Combined Fasteners
Electrical Contact Materials
Surface Bonding Using Critical Metal

Edge-Notched Card System:

Fluid Devices

Punch Card Systems:

Electrolysis
Organometallics
Steroids

Computer Controlled Microfiche Search Systems (CCMSS):

A-D Convertors
Digital Data Processing Systems
Special Purpose Digital Processing Systems

When a search with a Termatrex or Edge-Notched card system is conducted, the examiner will complete form PTO-1041 in two copies, recording all queries searched, even those which yield only nonrelevant documents. All documents returned by the system in response to a query which are not actually reviewed will have an "X" drawn through their associated access and patent numbers. When conducting a search with a Punched Card system, the examiner will place in the application file the Code Sheet on which the terms searched have been marked along with the machine tape listing the documents retrieved. Any document not actually reviewed will have an "X" drawn through that document's number on the listing.

When conducting a search with the CCMSS search systems, the machine-produced search report, which lists the terms and tagged documents, will be placed in the application file on the right flap of the file jacket. Any tagged document not actually reviewed will have an "X" drawn through that document number on the search report.

B. "SEARCH NOTES" Box Entries

Entries made in the "SEARCH NOTES" box are of equal importance to those placed in the "SEARCHED" box; however, these entries will not be printed on any resulting patent. They are intended to complete the application file record of areas and/or documents considered by the examiner in the search. The examiner will record the following searches in the "SEARCH NOTES" box and in the manner indicated, with each search dated and initialled:

1. *A cursory search,* or scanning, of a subclass, i.e., a search usually made to determine if the documents

classified there are relevant. The classification will be recorded, followed by "(Cursory)."

2. *A consultation* with other examiners to determine if relevant search fields exist in their areas of expertise. The class and subclass discussed, if not actually searched, will be recorded, followed by "(consulted)." This entry may also include the name of the examiner consulted and the art unit.
3. *A search of a publication* not located within the classified patent file, e.g., a library search, a text book search, a Chemical Abstracts search, etc. The following data will be recorded for each type of literature search:

   a. *Abstracting publications,* such as Chemical Abstracts or the Engineering Index—the name of the publication, the list of terms consulted in the index and the period covered will be recorded.
   b. *Periodicals*—The title and period or volumes covered, as appropriate will be recorded.
   c. *Books*—The title and author, edition or date, as appropriate, will be recorded.
   d. *Other types of literature* not specifically mentioned above (i.e., catalogs, manufacturer's literature, private collections, etc.).
   Unless the search is a cursory or browsing one, data as necessary to provide unique identification of material searched will be recorded. Specific materials cited by the examiner will not be recorded again here.
   e. *Computer search in Scientific Library*—An on-line computerized literature searching service which uses key terms and index terms to locate relevant publications in many large bibliographic data bases is available to examiners in the Scientific Library of the Patent and Trademark Office. A member of the library staff is assigned to assist examiners in selecting key terms and to program the search.
   There are two on-line search systems: The Lockheed Information Systems and the SDC Search Service.
   These search systems include many data bases.
   A copy of the search printout will be made and placed in the application file, attached to the right flap of the file jacket.
   The examiner will also indicate which publications were reviewed by initialling and dating the copy of the printout in the left margin adjacent to each reviewed publication. If only an abstract of a document was reviewed, the note of "ck'ed abst." will be made next to the initials and date. If the complete document was reviewed, the note "ck'ed doc." will be placed with the initials and date.

4. A search of only the *publications in a subclass.* The class and subclass followed by "(publications only)" will be recorded.
5. *A review of art cited in a parent application* or in an original patent, as required for all continuing and reissue applications, or a review of art cited in related applications or patents mentioned within the specification, such as those included to provide background of the invention. The serial number of a parent application that is still Pending or abandoned, followed by "refs. checked" or "refs. ck'ed" will be recorded. If for any reason not all of the references are checked because they are not available or clearly not relevant, such exceptions will be noted. The patent number of a parent or related application that was patented or of an original patent now being reissued will be recorded along with the expressions "refs. checked" or "refs. ck'ed."

C. Not Recorded

The following data will not be recorded in either of the search boxes, but will be noted in the application file as indicated below:

1. *Citations of prior art by applicants conforming to Rule 98 and the practice thereunder.*
   In each instance where all prior art referred to in a paper placed in the application file is considered, the examiner will place the notation "all ck'ed" and his or her initials adjacent to the citation.
2. *Citations of prior art by applicants not conforming to Rule 98 and the practice thereunder.*
   In each instance where an examiner considers, but does not cite on form PTO-892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference. If all the references referred to in such a paper are reviewed, the examiner will place the notation "all ck'ed" and his or her initials adjacent the citation. If included in the specification, the examiner will write his or her initials adjacent to any reference(s) checked and enter "checked" or "ck'ed" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" or "ck'ed" will be entered adjacent to the citation(s) or wherever possible to indicate clearly those checked.

RENE D. TEGTMEYER,
Feb. 22, 1977. *Assistant Commissioner for Patents.*

[956 O.G. 1546]

(83) **Prior Art Cited by Applicants**

Effective immediately, applicants are encouraged to use new form PTO-1449, "List of Prior Art Cited by Applicant," when preparing a prior art statement under 37 CFR 1.97–1.99. A copy of the form is included herewith from which suitable reproductions can be made. This form, which will enable applicants to provide the PTO with a uniform listing of prior art citation, supersedes form PTO-3.72.

While the filing of prior art statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 CFR 1.97 through 1.99. To be considered a proper prior art statement, form PTO-1449 shall be accompanied by an explanation of relevance of each listed item, a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all prior art citations submitted in conformance with 37 CFR 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the boxes provided on the form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines and has not been considered. A copy of the submitted form, as reviewed by the examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the examiner will be printed on the issued patent in the same manner as prior art cited by the examiner on form PTO-892.

The reference designations "AA," "AB," etc. (referring to applicant's reference A, Applicant's reference B, etc.) will be used by the examiner in the same manner as examiner's reference designations "A," "B," "C," etc. on Office Action Form PTO-1142.

WILLIAM FELDMAN,
Aug. 15, 1980. *Deputy Assistant Commissioner for Patents.*

[998 O.G. 8]

(84) **Express Abandonments**

Experience over the past several months has indicated the need to clarify and re-emphasize existing practice regarding express abandonments submitted under 37 CFR 1.138

Since 1966, when Rule 138 was revised, it is no longer required that the applicant and the assignee of record, if any, sign an express abandonment. The revised rule indicates that a patent application may be expressly abandoned by an attorney or agent of record. Therefore, prior to signing a declaration of express abandonment of a patent application, it is imperative that the attorney or agent of record exercise every precaution in ascertaining that the abandonment of the application is in accordance with the desires and best interests of the applicant. Moreover, special care should be taken to insure that the appropriate application from a group of related applications is correctly identified in the letter of abandonment.

A declaration of abandonment signed by the applicant or his attorney or agent of record becomes effective when an appropriate official of the Office takes action in recognition of the declaration. When so recognized, the date of abandonment may be the date of recognition or a different date if so specified in the declaration itself. For example, where a continuing application is filed with a request to abandon the prior application as of the filing date accorded the continuing application, the date of the abandonment of the prior application will be in accordance with the request once it is recognized.

Action in recognition of an express abandonment may take the form of an acknowledgement by the examiner or the Patent Issue Division of the receipt of the express abandonment, indicating that it is in compliance with 37 CFR 1.138 (see Section 711.01 MPEP).Alternatively, recognition may be no more than the transfer of drawings to a new application pursuant to instructions which include a request to abandon the application containing the drawings to be transferred (see 37 CFR 1.60 and Section 608.02(i) MPEP).

It is suggested that divisional applications being submitted under 37 CFR 1.60 be reviewed before filing to ascertain whether the prior application should be abandoned. Recent experience reveals that some divisional applications are being filed under 37 CFR 1.60 with requests to transfer the drawings from, and abandon, the prior application. Following the recognition of the abandonment, the attorney or agent signing the request informs the Office that the request was made by mistake for any one of a number of reasons. Care should be exercised in situations such as these as the Office looks on express abandonments as acts of deliberation, intentionally performed.

Another common situation involves the submission of an express abandonment following the allowance of an application The express abandonment may not be recognized unless it is actually received by appropriate officials in time to act before the date of issue. In those cases, once a patent number and issue date have been assigned to the application, it is considered too late to act on the express abandonment unless a petition under Rule 313(b) or Rule 183 is granted (see Section 711.01 of MPEP).

WILLIAM FELDMAN,
Apr. 7, 1975. *Deputy Assistant Commissioner for Patents.*

[934 O.G. 2]

(85) **Notice of Abandonment for Failure to Prosecute Application**

Effective immediately the Patent Examining Corps will mail a communication, concerning all applications becoming abandoned in the Corps for failure to prosecute, to the correspondence address of record.

The communication to be mailed will merely comprise a copy of the first page of the Office action, to which applicant failed to properly respond, the copy including stamped language thereon indicating that the application has become abandoned and the date that the copy was mailed. The language stamped on the copy will be as follows: APPLICATION HAS BECOME ABANDONED. THIS NOTICE MAILED: _____ In no case will the mere failure to receive a notice of abandonment affect the status of an abandoned application.

This new procedure should enable applicants to take appropriate and diligent action to reinstate an application inadvertently abandoned for failure to timely respond to an official communication. In most cases, a petition to revive under 37 CFR 1.137 will be the appropriate remedy. It may be that a response to the Office action was mailed to the Office with a certificate of mailing declaration as a part thereof (notice of October 26, 1976: 951 O.G. 1342) but was not received in the Office. In this instance, adequate relief may be available by means of a petition to withdraw the holding of abandonment.

In any instance, if action is not taken promptly after receiving the notice of abandonment, appropriate relief may not be granted.

If a lack of diligent action is predicated on the contention that neither the Office action nor the notice of abandonment was received, one may presume that there is a problem with the correspondence address of record. Accordingly, your attention is directed to recent notices of May 28, 1975, and September 9, 1976, dealing with changes of address (935 O.G. 1352 and 951 O.G. 454). In essence, it is imperative that a paper notifying the Office of a change of address be filed promptly in *each* application in which the correspondence address is to be changed.

If an application is abandoned or a patent lapsed for an excessive time a terminal disclaimer may be required. A terminal disclaimer may also be required where the holding of abandonment or lapse is withdrawn but a determination is made that action attempting to correct the problem should have been taken in a more diligent manner.

WILLIAM FELDMAN,
May 9, 1977. *Deputy Assistant Commissioner for Patents.*

[959 O.G. 24]

(86) **Requirement for a Response Under 37 CFR 1.136 and 1.137 Where a Continuing Application is Being Filed.**

This notice is intended to clarify the requirements for a response as required by 37 CFR 1.136 or 1.137 in situations involving a petition for extension of time or a petition to revive an abandoned application for the purpose of filing a continuing application.

In those instances where an extension of time or a revival of an abandoned application is sought solely for the purpose of filing a continuing application under 35 U.S.C. 120 and where the prior application is to be abandoned in favor of the continuing application, the filing of a response as required by 37 CFR 1.111, 1.113, 1.192 or other regulation is considered to be an unnecessary expenditure of resources by the applicant. Accordingly, in these situations, the Patent and Trademark Office will accept the filing of a continuing application as a response under 37 CFR 1.136 or 1.137.

To facilitate processing by the Office, any such petition for extension of time or petition to revive should specifically refer to the filing of a continuing application and also include an express abandonment of the prior application conditioned upon the granting of the petition

and the granting of a filing date to the continuing application.

May 13, 1983. GERALD J. MOSSINGHOFF, *Commissioner of Patents and Trademarks.*

[1031 OG 11]

(87) **Petitions Under 37 CFR 1.183 to Waive One the Year Time Period Requirement in 37 CFR 1.137(b), 1.155(c) and 1.316(c)**

Petitions to revive an unintentionally abandoned application (37 CFR 1.137(b)) or to accept an unintentionally late paid issue fee (37 CFR 1.155(c) or 1.316(c)) must befiled within one year of the date on which the application became abandoned.

In the last sentence of the above-noted subsections of 37 CFR, the Commissioner of Patents and Trademarks has indicated that petitions under 37 CFR 1.183 to waive any time period requirements for filing a request pursuant to these subsections will not be considered, but will be returned to the applicant. However, it has become apparent that under certain very limited conditions, the interests of the patent system would be better served by considering such petitions.

These very limited conditions arise when an application becomes abandoned due to an action or inaction by applicant and the Patent and Trademark Office performs a positive, documented and Official act* (e.g., by issuing an Official document) which could lead a reasonable individual to conclude that the action or inaction was appropriate. If this conclusion is a contributing factor in the applicant's failure to realize the true, abandoned status of his application in time to file a petition under one of the above-noted subsections, then conditions exist under which a §1.183 petition will be considered.

For example, if an applicant files papers for a continuing application under 37 CFR 1.60 or 1.62 on a date when the parent application is abandoned (e.g., the applicant neglected to obtain an extension of time in the parent application), the requirements of these regulations are not satisfied and the papers should not be processed into an application. However, if in spite of this error the Office issues a filing receipt for the continuing application, a reasonable individual could conclude that the continuing application had been properly filed on a date when the parent application was pending. Further, if the lack of copendency between the parent and the continuing applications is not discovered until after one year from the date on which the parent application became abandoned, the opportunity to obtain copendency by reviving the parent application under 37 CFR 1.137(b) is lost. As an additional example, if an applicant submits a check for payment of the issue fee and the payment is improper (e.g., the check is not timely submitted or is returned to the Office unpaid due to insufficient funds), the application should be held abandoned. However, if in spite of the improper issue fee payment the Office issues the application as a patent, a reasonable individual could conclude that the issue fee payment had been proper. Further, if the improper issue fee payment is not discovered until after one year from the date on which the application became abandoned, the opportunity to request acceptance of a late paid issue fee under 37 CFR 1.155(c) or 1.316(c) is lost.

The abandonment problems described in the above-noted examples are clearly attributed to an error on the part of the applicant. Nevertheless, such a problem could be aggravated when the Office performs a positive, documented and Official act* which, in the circumstances recounted above, may be a contributing factor in the loss of an opportunity to rectify this problem by filing a petition under one of the above-noted subsections. In light of these factors, the Commissioner will exercise his authority under 37 CFR 1.183 to waive the one year period requirement for filing a petition pursuant to 37 CFR 1.137(b), 1.155(c) or 1.316(c) providing the following strictly limited conditions are present:

(1) The applicant's action or inaction which caused the application to become abandoned was clearly an unintentional oversight which resulted from a bona fide attempt, as evidenced by Patent and Trademark Office records, to comply with patent statutes, rules and procedures in order to keep the application pending as desired; and

(2) The Office performed a positive, documented and Official act* which could lead a reasonable individual to conclude that the action or inaction was proper and this conclusion was a contributing factor in the applicant's failure to realize the true abandoned status of his application in time to file a petition under one of the above-noted subsections; and

(3) A petition under 37 CFR 1.183 and one of the above-noted subsections is filed within three (3) months of the date applicant is notified by the Office or otherwise becomes aware of the abandoned status of the application; and

(4) The petition is accompanied by a terminal disclaimer with fee under 37 CFR 1.321 dedicating to the public a terminal part, equivalent to the period of abandonment, of the term of any patent granted on the application or on any application entitled to the benefit of the filing date of the application under 35 USC 120.

For a transitional period of three (3) months from the date of this Notice, the requirement for filing a petition within three (3) months of the date referred to in condition (3), above, will not be enforced providing:

(a) the abandoned application could have been restored to pending status if a petition under one of the above-noted subsections had been timely filed; and

(b) the applicant made a bona fide attempt, as evidenced by Patent and Trademark Office records, to restore the abandoned application to pending status within three months of the date applicant was notified by the Office or otherwise became aware of the abandoned status of the application.

Applicants should note that this is intended to be a very limited extension of the Commissioner's discretion in exercising his authority to waive the one year period required under the above-mentioned subsections. For this reason, the above-noted conditions and provisions will be strictly adhered to and any petition under §1.183 which fails to comply with these conditions or provisions will be denied.

*NOTE: THE FAILURE OF THE PATENT AND TRADEMARK OFFICE TO SEND AN OFFICIAL COMMUNICATION (E.G., A NOTICE OF ABANDONMENT) IS *NOT* CONSIDERED TO BE A POSITIVE, DOCUMENTED AND OFFICIAL ACT WITHIN THE MEANING OF THIS NOTICE.

Aug. 26, 1985. JAMES E. DENNY, *Deputy Assistant, Commissioner for Patents.*

[1059 OG 4]

(88) **Procedure for Handling Amendments under 37 CFR 1.116**

On Oct. 1, 1982, pursuant to Public Law 97–247, the Patent and Trademark Office discontinued the previous practice in patent applications of extending without fee the shortened statutory period for response to a final rejection upon the filing of a timely first response to a final rejection (37 CFR 1.116). Since Oct. 1, 1982, applicants are able to obtain additional time for a first or subsequent response to a final rejection by petitioning and paying the appropriate fee under 37 CFR 1.136(a), provided the additional time does not exceed the six month statutory period.

In order to continue to encourage the early filing of any first response after a final rejection and to take care of any situations in which the examiner does not timely respond to a first response after final rejection which is filed early in the period for response, the Office is changing the manner in which the period for response is set on any final rejection mailed after Feb. 27, 1983.

Under the changed procedure, if an applicant initially responds within two months from the date of mailing of any final rejection setting a three-month shortened statutory period for response and the Office does not mail an advisory action until after the end of the three-month shortened statutory period, the period for response for purposes of determining the amount of any extension fee will be the date on which the Office mails the advisory action advising applicant of the status of the application, but in no event can the period extend beyond six months from the date of the final rejection. This procedure will apply only to a first response to a final rejection and will be implemented by including the following language in each final rejection mailed after Feb. 27, 1983:

> A shortened statutory period for response to this final action is set to expire three months from the date of this action. In the event a first response is filed within two months of the mailing date of this final action and the advisory action is not mailed until after the end of the three-month shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than six months from the date of this final action.

For example, if applicant initially responds within two months from the date of mailing of a final rejection and the examiner mails an advisory action before the end of three months from the date of mailing of the final rejection, the shortened statutory period will expire at the end of three months from the date of mailing of the final rejection. In such a case, any extension fee would then be calculated from the end of the three-month period. If the examiner, however, does not mail an advisory action until after the end of three months, the shortened statutory period will expire on the date the examiner mails the advisory action and any extension fee may be calculated from that date.

Statutory periods set in Office actions mailed before Feb. 28, 1983, will not be effected by this change in procedure.

Jan. 14, 1983. GERALD J. MOSSINGHOFF, *Commissioner of Patents and Trademarks.*

[1027 OG 71]

(89) **Expedited Procedure for Processing Amendments and Other Responses After Final Rejection (37 CFR 1.116)**

In an effort to improve the timeliness of the processing of amendments and other responses under 37 CFR 1.116, and thereby provide better service to the public, the Patent and Trademark Office (PTO) is establishing, effective immediately, an expedited processing procedure which the public may utilize in filing amendments and other responses after final rejection under 37 CFR 1.116. In order for an applicant to take advantage of the expedited procedure the amendment or other response under 37 CFR 1.116 will have to be marked as a "Response Under 37 CFR 1.116 — Expedited Procedure-Examining Group (Insert Examining Group Number)" on the upper right portion of the amendment or other response and the envelope must be marked "Box AF" in the lower left hand corner. The markings preferably should be written in a bright color with a felt point marker. If the response is mailed to the Office, the envelope should contain only responses under 37 CFR 1.116 and should be mailed to "Box AF, Commissioner of Patents and Trademarks, Washington, D.C. 20231." Instead of mailing the envelope to "Box AF" as noted above, the response may be hand-carried to the particular Examining Group or other area of the Office in which the application is pending and marked on the outside envelope "Response Under 37 CFR 1.116 — Expedited Procedure-Examining Group (Insert Examining Group Number)".

Upon receipt by the PTO from the Postal Service of an envelope appropriately marked "Box AF," the envelope will be specially processed by the PTO Mail Room and forwarded promptly to the Examining Group, via the Office of Finance if any fees have to be charged or otherwise processed. Upon receipt of the response in the Examining Group it will be promptly processed by a designated clerical employee and forwarded to the examiner, via the Supervisory Primary Examiner (SPE), for action. The SPE is responsible for ensuring that prompt action on the response is taken by the examiner. If the examiner to which the application is assigned is not available and will not be available for an extended period, the SPE will ensure that action on the application is promptly taken to assure meeting the PTO goal described below. Once the examiner has completed his or her consideration of the response, the examiner's action will be promptly typed and mailed by clerical employees designated to expedite the processing of responses filed under this procedure. The Examining Group supervisory personnel, e.g., the Supervisory Primary Examiners, Supervisory Applications Clerk, and Group Director are responsible for ensuring that actions on responses filed under this procedure are promptly processed and mailed.

The PTO goal is to mail the examiner's action on the response within one month from the date on which the amendment or response is received by the PTO. The PTO is establishing monitoring procedures to determine how well the goal is being achieved. If the goal of mailing the action on the response within one month or less is not achieved in a high percentage of applications, e.g., at least 90–95% of appropriately marked responses, after a reasonable trial period, the PTO will institute further changes in procedures in the future which will give approprite relief to applicants in cases where the delay is due to Office processing.

Applicants are encouraged to utilize this expedited procedure in order to facilitate PTO processing of responses under 37 CFR 1.116. If applicants do not utilize the procedure by appropriately marking the envelope and enclosed papers, the benefits expected to be achieved therefrom will not be attained. The procedure cannot be expected to result in achievement of the goal in applications in which the delay results from actions by the applicant, e.g., delayed interviews, applicant's desire to file a further response, or a petition by applicant which requires a decision and delays action on the response. In any application in which a response under this procedure has been filed and no action by the examiner has been received within the time referred to herein, plus normal mailing time, a telephone call to the SPE of the relevant Group Art Unit would be appropriate in order to permit the SPE to determine the cause for any delay. If the SPE is unavailable or if no satisfactory response is received, the Group Director of the Examining Group should be contacted.

Any comments on this expedited procedure during the trial period are invited and should be directed to the attention of Rene D. Tegtmeyer, Assistant Commissioner for Patents, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Sept. 20, 1985. DONALD J. QUIGG, *Commissioner of Patents and Trademarks — Designate.*

[1059 OG 19]

(90) **New Procedures for Recordation of Interviews**

This notice establishes within the Patent and Trademark Office additional general procedures for the recordation of interviews. Proposed procedures were published in the Official Gazette of June 28, 1977 (959 O.G. 36) for comment from interested members of the public by August 10, 1977. Fifteen written comments were received the majority of which were favorable to the proposed procedures. Careful consideration has been given to the comments and the procedures are being adopted with a few changes.

Under present practice it is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability as set forth in section 713.04 of the Manual of Patent Examining Procedure (MPEP). This practice is continued and further amplified as set forth below.

Recent surveys have indicated that the substance of many interviews has not been made of record or the text thereof is incomplete as to substantive matters. In some cases, the substance of an interview may be presented as arguments in a subsequent response filed by the applicant but without any indication that they had been presented at the interview. In order to help insure a better record of examiner-applicant interviews in application files, the following new procedures are adopted to become effective for interviews conducted on and after January 1, 1978. Appropriate changes will be made in the Manual of Patent Examining Procedure (MPEP).

Examiners will complete a two-sheet carbon interleaf Interview Summary Form for each interview held where a matter of substance has been discussed by checking the appropriate boxes and filling in the blanks in neat handwritten form. Discussions regarding only procedural matters, directed solely to restriction requirements (for which interview recordation is otherwise provided for in Section 812.01 of the MPEP), or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below.

The Interview Summary Form shall be given an appropriate paper number, placed in the file and listed on the "Contents" list on the file wrapper. The docket and serial register cards will not be updated to reflect this interview. In a personal interview, the duplicate copy of the Form will be removed and given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephonic interview, the copy will be mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner before an allowance is not likely or if other circumstances dictate, the Form will be mailed promptly after the telephonic interview rather than with the next official communication. The original of the completed Form will be made of record and placed in the right hand flap of the file.

The Form provides for recordation of the following information:

—Serial Number of the application
—Name of applicant
—Name of examiner
—Date of interview
—Type of interview (personal or telephone)
—Name of participant(s) (applicant, attorney or agent, etc.)
—An indication whether or not an exhibit was shown or a demonstration conducted
—An identification of the claims discussed
—An identification of the specific prior art discussed
—An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). (Agreements as to allowability are tentative and do not restrict further action by the examiner to the contrary.)
—The signature of the examiner who conducted the interview
—Names of other Patent and Trademark Office personnel present.

The Form also contains a statement reminding the applicant of his responsibility to record the substance of the interview.

It is desirable that the examiner orally remind the applicant of his obligation to record the substance of the interview in each case unless both applicant and examiner agree that the examiner will record same. Where the examiner agrees to record the substance of the interview, or when it is adequately recorded on the Form or in an attachment to the Form, the examiner will check a box at the bottom of the Form informing the applicant that he need not supplement the Form by submitting a separate record of the substance of the interview.

It should be noted, however, that the Interview Summary Form will not be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview:

The complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted.
2) an identification of the claims discussed.
3) an identification of specific prior art discussed.
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the examiner.
5) a brief identification of the general thrust of the principal arguments presented to the examiner. The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he feels were or might be persuasive to the examiner.
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete or accurate, the examiner will take appropriate action as set forth in MPEP Section 713.04. If the record is complete and accurate, the examiner should place the indication "Interview record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 21]

(91) **Statements Filed Under Atomic Energy Act And NASA Act**

Attention is called to the provisions of section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) and section 305(c) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457). These statutes provide that the title to inventions useful in the production or utilization of special nuclear material or atomic energy, made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Atomic Energy Commission, and any invention made in the performance of any work under any contract of the National Aeronautics and Space Administration, shall be vested in the United States. They also provide that no patent may be granted for any invention useful in the production or utilization of special nuclear material or atomic energy, or which in the opinion of the Commissioner has significant utility in the conduct of aeronautical or space activities, unless the applicant files with his application or within 30 days after request therefor by the Commissioner, a statement under oath setting forth (*a*) the full facts in regard to the making or conception of the invention, and (*b*) the situation with regard to the contractual relationships involving the Commission or the Administration. Careful attention should be given the exact wording of the requirements of whichever of these sections is pertinent in order to assure that all of the requirements are met. Since the duty of requiring the statements is placed by law on the Commissioner of Patents, it is incumbent on the Commissioner to determine whether the statements are timely filed and sufficient in substance to comply. Since these laws do not provide for any extension of the 30-day period or for reviving an applicaton which has become abandoned for failure to file a proper statement, it is important that such statements be timely filed and that they do so comply in order to avoid loss of valuable patent rights.

The "full facts" involved in the conception and making of an invention should include those which are unique to that invention. The use of form paragraphs or printed forms which set forth only broad generalized statements of fact is not ordinarily regarded as meeting the requirements of these statutes.

This office has construed the word "applicant" in both of these statutes to mean the inventor or joint inventors in person. Accordingly, in the ordinary situation, the statements must be signed by the inventor or joint inventors, if available. This construction is consistent with the fact that no other person could normally be more knowledgeable of the "full facts concerning the circumstances under which such invention was made," (42 U.S.C. 2457) or, "full facts surrounding the making or conception of the invention or discovery" (42 U.S.C. 2182).

In instances where an applicant does not have first-hand knowledge whether the invention involved work under any contract, subcontract, or arrangement with or for the benefit of the Atomic Energy Commission, or had any relationship to any work under any contract of the National Aeronautics and Space Administration, and includes in his statement information of this nature derived from others, his statement should identify the source of his information. Alternatively, the statement by the applicant could be accompanied by a supplemental declaration or oath, as to the contractual matters, by the assignee or other person, e.g., an employee thereof, who has the requisite knowledge.

Where an applicant is deceased or incompetent, or where it is shown to the satisfaction of this Office that he refuses to furnish a statement or cannot be reached after diligent efforts, declarations or statements under oath setting forth the information required by the statutes may be accepted from an officer or employee of the assignee who has sufficient knowledge of the facts. The offer of such substitute statements should be based on the actual unavailability of or refusal by the applicant, rather than mere inconvenience. Where it is shown that one of joint inventors is deceased or unavailable, a statement by all of the other joint inventor(s) may be accepted.

WILLIAM FELDMAN,
Aug. 13, 1973. *Deputy Assistant Commissioner for Patents.*

[914 O.G. 2]

(92) **Extension of Time Limit**

This notice is intended to clarify certain misunderstandings and indicates the treatment given to requests for an extension of time in a situation where applicant has been given a time limit to complete an otherwise incomplete but bona fide attempt to respond to the previous Office action and advance the case to final action.

According to 37 CFR 1.135(c) when the applicant has filed a response to an examiner's action but consideration of some matter or compliance with some requirement has been inadvertently omitted, an opportunity to explain and supply the omission may be given before the question of abandonment is considered. According to the M.P.E.P., Section 710.02(c), the examiner may give applicant one month or the remainder of the period for response, whichever is longer, to complete the response. Neither the regulation nor the M.P.E.P. indicate that this time can be extended.

Under the regulation, the missing matter or lack of compliance must be considered by the examiner as being "inadvertently omitted." Once an inadvertent omission is brought to the attention of the applicant, the question of inadvertence no longer exists. Therefore, any further time to complete the response would not be appropriate under 37 CFR 1.135(c). Accordingly, no extension of time will henceforth be granted in these situations.

WILLIAM FELDMAN,
Nov. 28, 1977. *Deputy Assistant Commissioner for Patents.*

[965 O.G. 14]

(93) **TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS**

Chapter 1—Patent and Trademark Office, Department of Commerce

Part 1—Rules of Practice in Patent Cases

Patent Examining and Appeal Procedures

On October 4, 1976 notice was given in the Federal Register (41 FR 43729) of a proposal to amend sixteen sections of Title 37 of the Code of Federal Regulations relating to patent examining and appeal procedures. Interested persons were invited to comment on the proposal by December 7, 1976. One hundred seventy-five written letters and statements were submitted. A hearing was held in Arlington, Virginia on December 7, 1976 at which 21 persons testified orally. Careful consideration has been given to all comments received and the proposal is being adopted with certain changes.

The regulations adopted involve all sections that were proposed to be revised, amended or added—namely, §§1.11, 1.14, 1.52, 1.56, 1.65, 1.69, 1.97, 1.98, 1.99, 1.109, 1.175, 1.194, 1.196, 1.291, 1.292, and 1.346. Amendments also are being made in two sections which were not included in the published proposal—§§1.51 and 1.176. Since amendments to these sections are closely related to the substance of matters notice and public comment on these amendments are deemed unnecessary.

In addition, amendments are being adopted which were published for comment in two earlier, much less extensive proposals that concerned availability of certain files for public inspection. A notice of a proposed amendment to §1.14(b) was published on June 4, 1974 (39 FR 19786). A notice of a proposed amendment to §1.11(a) was published on September 17, 1974 (39 FR 33376). No negative comments were submitted with respect to either of these proposals and both are being adopted without change.

The text of the rules will be reproduced in the Patent and Trademark Office **Official Gazette** in about a month with additions indicated by arrows and deletions indicated by brackets to help readers identify the changes. A

transcript of the hearing, the letters and written statements received, and a summary and analysis of the comments are available for public inspection in Room 11E10 of Crystal Plaza Building 3, 2021 Jefferson Davis Highway, Arlington, Virginia.

Purpose of Rules

The purpose of the rules that are being adopted is to improve the quality and reliability of issued patents by strengthening patent examining and appeal procedures. It is desirable that patents be as dependable as possible, so as to enhance the incentives provided by the patent system to make inventions, to invest in research and development, to put new or improved products on the market, and to disclose inventions that otherwise would be kept as trade secrets. It is believed that the rules being adopted will help to maintain strong patent incentives.

The rules afford patent owners an opportunity, through the filing of a reissue application, to obtain a ruling from an examiner on the pertinence of additional prior art after a patent has been issued. The rules also broaden the public's opportunity for participation in the patent examining process, consistent with the limitations of statute, the protection of trade secrets, and the need to avoid making it unduly expensive to obtain a patent.

The rules set forth the duty of candor and good faith which applicants have to the Patent and Trademark Office and encourage them to provide information about the prior art in a way that will make it more useful to examiners. A provision for foreign language oaths by individuals who do not understand English is intended to make them more aware of their representations and of their obligations.

Under the rules more Patent and Trademark Office decisions that could have important precedent value will be available to the public, and some additional files will be available for inspection. Proceedings before the Board of Appeals are modified to help avoid the issuance of invalid patents. The rules encourage examiners to see that persons inspecting the file history of issued patents will be able to tell why the case was allowed.

Reissue Applications

Amended §1.175 permits a patent owner to have new prior art considered by the Office by way of a reissue application without making any changes in the claims or specification. It is adopted with no change from the proposal. The requirement for an oath or declaration alleging that the reissue applicant believes "the original patent to be wholly or partly inoperative or invalid. . . ." is dispensed within §1.175(a) (1) unless the applicant believes that to be the case. Section 1.175(a) (4) recognizes that reissues may be filed to have the patentability of the original patent considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

Thus, a patentee may file a reissue if he believes his patent is valid over prior art not previously considered by the Office but would like to have a reexamination. The procedure may be used at any time during the life of a patent. During litigation, a federal court may, if it chooses, stay proceedings to permit new art to be considered by the Office.

If a reissue application is filed as a result of new prior art with no changes in the claims or specification and the examiner finds the claims patentable over the new art, the application will be rejected as lacking statutory basis for a reissue, since 35 USC 251 does not authorize reissue of a patent unless it is deemed wholly or partly inoperative or invalid. However, the record of prosecution of the reissue will indicate that the prior art has been considered by the examiner.

A substantial majority of the comments received favored amended §1.175 as a means for improving the reliability of patents and avoiding unnecessary litigation costs. The negative comments generally questioned the statutory authority of the Commissioner to adopt this section. Authority for §1.175 is believed to exist in 35 U.S.C. 6, which is the Commissioner's rulemaking authority, and in 35 U.S.C. 251. The latter section of the statute requires that the patent be deemed wholly or partly inoperative or invalid before a reissue may be granted, but does not require such a belief by the patentee before a reissue application may be filed. The case law does not suggest that the approach of new §1.175(a)(4) is inconsistent with 35 U.S.C. 251.[1] Inasmuch as 35 U.S.C. 251 is a remedial provision,[2] it is believed that a liberal interpretation is justified and that adequate authority exists for the amended section.

Amended §1.11(b) opens all reissue applications to inspection by the general public. Section 1.11(b) also provides for announcement of the filings of reissue applications in the *Official Gazette*. This announcement will give interested members of the public an opportunity to submit to the examiner information pertinent to patentability of the reissue application. The announcement will include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned. Section 1.11(b) is amended from the proposal to so indicate. Reissue applications already on file on the effective date of the section will not be automatically open to inspection and will not be announced in the *Official Gazette*. However, a liberal policy will be followed in granting petitions for access to individual applications already on file.

In order that members of the public may have time to review the reissue application and submit pertinent information to the Office before the examiner's action, §1.176 is amended to provide that reissue applications will not be acted on sooner than two months after the *Official Gazette* announcement of filing.

A substantial majority of the comments received favored adoption of §1.11(b). The only opposition was based upon a suggestion that no statutory authority exists. However, since reissue applications contain no new disclosure, and therefore no trade secrets or confidential information, they are considered to present a "special circumstance" within the meaning of 35 U.S.C. 122.

The insertion of "all" as the fifth word of the first sentence of §1.11(b) is for clarity. The word "furnished" is changed to "obtained" in §1.11 for clarity.

Protests and Public Use Proceedings

Amended §§1.291 and 1.292 give greater recognition to the value of written protests and public use petitions in avoiding the issuance of invalid patents.

A substantial majority of the comments favored these sections and viewed them as improving the quality of issued patents. Entry of protests has been upheld in court.[3]

Section 1.291(a) provides that public protests against pending applications will be entered in the application file and will, if they meet stated requirements, be considered by the examiner. To guarantee consideration by the examiner, protests must be accompanied by copies of prior art documents relied upon, although protests without copies will not necessarily be ignored. This is similar to the requirement of new §1.98 that copies of patents and publications accompany prior art statements. Section 1.291 does not contemplate permitting a protester to participate as a party in further proceedings. In the case of applications available to the public, such as reissue applications, the protester may file papers rebutting statements made by the applicant. The examiner at his discretion may request a protester to submit additional written information or may provide extra time for comments by a protester to be filed.

To ensure consideration by the examiner, all protests must be timely submitted. Protests will generally be considered timely submitted, if they are filed before final rejection or allowance of the application by the examiner. The consideration given to protests filed after final rejection or allowance of the application by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Obviously, if the prior art documents anticipate or clearly render obvious one or more claims they will not knowingly be ignored. It must be recognized, however, that the likelihood of consideration by the examiner decreases as the patent date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

The first sentence of §1.291(a) is deleted as unnecessary. Section 1.291(a) also is changed from the proposal to make clear that it applies to pending applications and that all protests will be referred to the examiner having charge of the subject matter involved.

Section 1.291(b) incorporates the existing Office policy of permitting persons to submit prior art citations or copies of prior art after a patent has been granted. The section is changed from the proposal by the addition of the words "any papers related thereto" to recognize that statements as to the pertinence of prior art may be submitted. Both the citations and the related papers are to be entered without comments. The material submitted is not examined by the Office but is available to members of the public inspecting Office records.

Some suggestions were received for major modifications of §1.291. It was suggested that an advisory opinion of the examiner be placed in the patent file when protests were received after issuance of the patent. Several persons supported a suggestion for examiners to state whether a "new issue" was raised by prior art cited by a protester. Another suggestion was that a procedure similar to that used in the recent Trial Voluntary Protest Programs[4] be adopted on a continuing basis. These suggestions were carefully considered, but are not adopted. The suggestions extend substantially beyond §1.291 as proposed, and their benefits do not appear sufficient to justify the added cost at this time.

Materials submitted to the Office under §§1.291 and 1.292 are to be served upon the applicant, patentee, attorney or agent when possible. The term "patentee" is used in its ordinary sense as defined in 35 USC 100(d). If service is not possible, materials are to be submitted in duplicate so that the Office can attempt to send the duplicate copy. The proposal is changed by adding the words "with the Office" after "filed" in §§1.291(c) and 1.292(b) for clarity.

In §1.292, the requirement that petitioner bear the Office's expenses in conducting the public use proceeding is deleted. Section 1.292 is also amended to ensure that the existence of public use proceedings is recorded in the application file wrapper. Notice of a petition for a public use proceeding will be entered in the file in lieu of the petition itself when the petition and the accompanying papers are too bulky to accompany the file. Any public use papers not physically entered in the file will be publicly available whenever the application file wrapper is available.

Duty of Disclosure

Amended §1.56 defines the duty to disclose information to the Office and the criteria for striking an application when that duty is violated. The wording of the section is changed in several respects from the proposal, but the purpose and general scope are the same as in the proposal. The section codifies the existing Office policy on fraud and inequitable conduct, which is believed consistent with the prevailing case law in the federal courts. The expanded wording of the section is intended to be helpful to individuals who are not expert in the judicially developed doctrines concerning fraud. The section should have a stabilizing effect on future decisions in the Office and may afford guidance to courts as well.

A majority of comments received favored §1.56 as proposed or with modifications. Persons opposed expressed concern over the imprecise definition of the duty of disclosure and the possibility that the proposal would substantially increase the burden on patent applicants. Some stated that there would be increased litigation as a result of the proposal. Several suggestions were received on better ways to define the individuals who should disclose information and the kinds of information that should be disclosed.

The first sentence of §1.56(a) is changed from the proposal by adding the word "substantively," so that individuals having a duty of disclosure are limited to those who are "substantively involved in the preparation or prosecution of the application." This change is intended to make clear that the duty does not extend to typists, clerks, and similar personnel who assist with an application. This phrase, when taken with the last sentence of §1.56(a), is believed to provide an adequate indication of the individuals who are covered by the duty of disclosure. The word "with" is inserted in the first sentence of §1.56(a) before "the assignee" and before "anyone to whom there is an obligation to assign" to make clearer that the duty applies only to individuals, not to organizations.

Numerous comments concerned the term "relevance" that was used in the proposal. In response to the comments, language is substituted in §1.56 and related sections which is believed to establish a clearer standard for determining whether information need be disclosed to the Office. "Relevant" is replaced by "material" because the latter term connotes something more than a trivial relationship. It appears to be more commonly used in court opinions. In addition, the third sentence of §1.56, which defines materiality, is rewritten. The sentence now states that information is material "where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." The sentence paraphrases the definition of materiality used by the Supreme Court in its recent decision in *TSC Industries* v. *Northway*.[5] Although in that case the court was concerned with rules promulgated by the Securities and Exchange Commission, the Court's articulation of materiality is believed consistent with the prevailing concept that has been applied by lower courts in recent patent cases.

The definition of materiality in §1.56 will have to be interpreted in the context of patent law rather than securities law. Principles followed by courts in securities cases should not be translated to patent cases automatically. It is noteworthy, however, that in formulating the definition of materiality in *TSC Industries* the Supreme Court considered some of the same matters over which concern was expressed in the public comments on proposed§1.56. The court noted that the standard of materiality should not be so low that persons would be "subjected to liability for insignificant omissions or misstatements," or so low that the fear of liability would cause management "simply to bury the shareholder in an avalanche of trivial information—a result that is hardly conducive to informed decision making."[6]

Although the third sentence of §1.56(a) refers to decisions of an examiner, it is intended that the duty of disclosure would apply in the same manner in the less common instances where the official making a decision on a patent application is someone other than an examiner—e.g., a member of the Board of Patent Interferences or the Board of Appeals. This is implicit in the duty "of candor and good faith" toward the Office that is specified in the first sentence of §1.56(a).

Comments and questions were received concerning the term "information" used in the second and third sen-

[1] See *In re Clark*, 522 F.2d 623, 187 USPQ 209 (CCPA 1975), at footnote 4 where the court declined to decide whether it is proper to seek reissue merely to disclose uncited prior art. See also *In re Altenpohl*, 500 F.2d 1151, 183 USPQ 38 (CCPA 1974).

[2] See *In re Oda*, 443 F.2d 1200, 170 USPQ 268 (CCPA 1971).

[3] *International Paper Co.* v. *Fibreboard Corp.*, 63 F.R.D. 88, 181 USPQ 740 (D. Del. 1974).

[4] 923 O.G. 2; 930 O.G. 1454; 938 O.G. 945.

[5] 426 U.S.—, 48 L. Ed. 2d 757, 96 S. Ct. 2126, 44 U.S.L.W. 4852, decided June 14, 1976.

[6] 426 U.S. at—, 48 L. Ed. 2d at 765, 96 S. Ct. at 2132, 44 U.S.L.W. at 4855.

tences of §1.56(a) and elsewhere. It means all of the kinds of information required to be disclosed under current case law. In addition to prior art patents and publications, it includes information on prior public uses, sales, and the like. It is not believed practicable to define information in the text of the rule at this time. However, the rule is not intended to require disclosure of information favorable to patentability—e.g., evidence of commercial success of the invention. Neither is it meant to require disclosure of information concerning the level of skill in the art for purposes of determining obviousness.

Several comments were received concerning the duty to disclose information the patent applicant regards as confidential, including information the applicant has received from another party under an injunction of secrecy. This problem has existed prior to amendment of §1.56. The Patent and Trademark Office, of course, keeps information disclosed by applicants confidential until a patent is issued. It has been suggested that the Office should develop a mechanism for continuing to hold information in confidence after issuance of a patent if in the judgment of the examiner the information is not material to the examination of the application. The feasibility of offering a rule for public comment on this topic at a later date will be considered.

New §1.56(b) is added to make clear that information may be disclosed to the Office through an attorney or agent of record or through a pro se inventor, and that other individuals may satisfy their duty of disclosure to the Office by disclosing information to such an attorney, agent or inventor. Information that is not material need not be passed along to the Office.

Proposed sections 1.56 (b) and (c) have been revised and shortened and appear at §§1.56 (c) and (d). The proposal was criticized for leaving it open to the Office to apply a different standard of materiality from the one set forth in §1.56.[7] Section 1.56(d) as adopted states that an application "shall" be stricken when the criteria set forth are met. Thus §1.56(d) as adopted establishes a single standard for striking applications.

The term "inequitable conduct" is dropped from §1.56(d) as covering too great a spectrum of conduct to be subject to mandatory striking. Inequitable conduct that is equivalent to fraud is intended to come within the definition of fraud. The Court of Customs and Patent Appeals already has interpreted "fraud" in existing §1.56 to encompass conduct of this sort.[8] Moreover, §1.56(d) as adopted calls for striking an application either for fraud or for a violation of the duty of disclosure.

In §1.56(d) "bad faith" is substituted for the term "deliberate" that was used in the proposal. This change is to make clear than an intent to deceive (or gross negligence equivalent to such an intent) must be shown before an application will be stricken. Bad faith is not present if information is withheld as a result of an error in judgment or inadvertence.

Several comments concerned whether attorneys and agents could represent their clients' interests and at the same time comply with §1.56. Similar comments were directed to §§1.97 to 1.99. It is of course in the interest of the client to have a valid patent and this cannot be obtained without disclosure of known material facts. It is not inconsistent for an attorney or agent to fulfill his duty of candor and good faith to the Office and to act as an advocate for his client. The submission of information under §1.56 does not preclude the submission of arguments that such information does not render the subject matter of the application unpatentable.

In §1.65 a new third sentence is added to require the patent applicant to acknowledge the duty of disclosure. The language is changed from the proposal to be consistent with changes made in §1.56. To allow time for the Office and applicants to revise printed oath and declaration forms now in use, the mandatory acknowledgement of the duty of disclosure in amended §1.65 does not become effective until January 1, 1978. Applicants at their option may include the new language in oaths and declarations filed prior to the effective date. The Office will publish a separate notice in the Federal Register adding a sentence acknowledging the duty of disclosure to appropriate forms in 37 CFR Part 3, "Forms for Patent Cases."

The word "statement" is deleted from the title of §1.65 to avoid confusion with the prior art statement of §1.97 through 1.99.

Amended §1.346 emphasizes that there must be a reasonable basis to support every allegation of improper conduct made by a registered practitioner in any Office proceeding. The language that was proposed is clarified in the section as adopted. Although §1.346 is limited to papers filed in Office proceedings, the amendment to §1.346 is not intended to imply that disciplinary action never will be taken against a registered practitioner under§1.348 for a groundless allegation of improper conduct in a court proceeding.

Prior Art Statement

New §§1.97, 1.98 and 1.99 deal with prior art statements and provide a mechanism by which patent applicants may comply with the duty of disclosure provided in §1.56. The sections have been substantially changed from the proposal, in response to comments received.

Unlike the corresponding part of the proposal, the sections as adopted are not mandatory, though applicants are strongly encouraged to follow the procedures described in them. Applications will be examined whether or not a prior art statement is filed and whether it complies with the rules or is defective. It is nevertheless believed that applicants will find that the use of prior art statements complying fully with the requirements of §§1.97 through 1.99 will be the best way to satisfy the duty of disclosure. The Patent and Trademark Office cannot assure that prior art disclosed in other ways will be considered by the examiner.

Sections 1.97 through 1.99 do not prescribe the content of what materials should be submitted in the prior art statement; this is for the applicant and the attorney or agent to decide in the light of the duty of disclosure expressed in §1.56. The only criterion contained in §§1.97 through 1.99 as to content of the art cited is in §1.97(b). This subsection indicates that the statement will be construed as a representation that the prior are listed includes what the submitter considers to be the closest art of which he is aware. The submitter need not decide which particular items of prior art are the closest or identify any items as such; the representation is simply that he is not withholding known prior art which he considers closer than that which is submitted. Section 1.97(b) makes clear that the prior art statement is not representation that a search has been made or that no better art exists.

In §1.97(a) the time for filing the prior art statement is extended from the two months of the original proposal to three months. In most cases prior art submitted within three months will be available to the examiner before he takes up the case for action, though it will be helpful if citations are made as promptly as possible.

Section 1.98 lists the elements of the prior art statement: a listing of the art, a concise explanation of the relevance of each listed item, and copies of the art or the pertinent portions thereof.

The prior art statement resembles somewhat the "patentability statement" of the proposal and the "patentability brief" proposed elsewhere.[9] The name has been changed to reflect a change in the requirements of §1.98(a). Unlike the proposed version of this paragraph, which called for an explanation of why the claimed invention is believed patentable over the cited art, the paragraph as adopted calls only for a concise explanation of the relevance of each listed item. This may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention. It might be a simple statement pointing to similarities between the item of prior art and the claimed invention. It is permissible but not necessary to discuss differences between the prior art and the claims. It is thought that the explanation of relevance will be essentially as useful to the examiner as the formerly proposed explanation of patentability, and should be significantly less burdensome for the applicant to prepare.

Section 1.98 requires a copy of each patent or publication cited, including U.S. patents, to accompany the prior art statement. Several comments questioned the need for burdening the applicant to supply copies of materials that are present in the Office's files. However, substantial time and effort often is needed to locate a document in the Office's files. Since the person submitting the prior art statement generally has available a copy of the item being cited, it is believed that expense and effort can be minimized by having that person supply the copy in all cases. Consideration has been given to proposals to allow the applicant to submit an order for copies of the patents along with his statement instead of actually submitting copies. This will be further studied, but to date no way has been found to assure that the copies will be available to the examiner by the first action unless the applicant submits them with the prior art statement.

Other changes to §§1.97 through 1.99 from the proposal eliminate unnecessary language and clarify the requirements.

A notice published in 1974[10] contained guidelines for the citation of prior art by applicants. Many of those guidelines are repeated or superseded by §§1.97 through 1.99. In order to allow applicants, attorneys and agents time to adjust their procedures to comply with the requirements for prior art statements, the effective date of §§1.97 through 1.99 will be July 1, 1977. Until these new sections become effective, applicants should continue to follow the 1974 guidelines. Issuance of a revised notice, to take effect July 1, 1977, is under study.

A survey conducted by the Office in 1976 concludes that many applicants have not been citing prior art to the Office.[11] It is hoped that with the duty of disclosure expressly set forth in §1.56, applicants will perceive that it is to their advantage to use the procedures of §§1.97 through 1.99.

Section 1.51 is amended by designating the existing rule as §1.51(a) and adding new §1.51(b) which contains a reference to §§1.97 through 1.99.

Foreign Language Oaths

Amended §1.52 and new §1.69 are adopted as proposed.

Section 1.69 requires that oaths and declarations be in a language which is understood by the individual making the oath or declaration, i.e., a language which the individual comprehends. If the individual comprehends the English language, he must use it. If the individual cannot comprehend the English language, any oath or declaration must be in a language which the individual can comprehend. If an individual uses a language other than English for an oath or declaration, the oath or declaration must include a statement that the individual understands the content of any documents to which the oath or declaration relates. If the documents are in a language the individual cannot comprehend, the documents may be explained to him so that he is able to understand them.

The Office will provide approved translations for as many of the oath or declaration forms which appear in Part 3 of Title 37 of the Code of Federal Regulations as practicable, and in as many languages as practicable, probably using a side-by-side English/foreign language format. The availability of the foreign language forms will be announced in the *Official Gazette* at a later date.

The change in §1.52, providing for an exception to the requirement that oaths and declarations be in the English language, is necessitated by the adoption of §1.69.

Although very few persons opposed §§1.52 and 1.69, several suggested that the philosophy behind the change be extended to the specification, requiring the specification to be in a language which the applicant understands, accompanied by an English translation. This suggestion was not considered feasible because of the obvious burdens on the applicant and the danger to the applicant and the public if the translation is not literally correct. Also, if a large number of applications were filed in a foreign language, there would be significant administrative burdens on the Office. Attention is directed to the Manual of Patent Examining Procedure. §608.1, which permits non-English language applications to be filed in certain limited circumstances.

Other suggested modifications of the proposed rule included: (1) using an English language oath or declaration with one additional clause in a language understood by the person making the oath or declaration, the clause stating that the person understands all the documents to which the oath or declaration relates; and (2) extending the two month grace period for filling an English translation of an oath or declaration filed under §1.65.

After due consideration, suggestion (1) was believed not to accomplish the objectives of the rule as well as the adopted rule. Suggestion (2) would cause unsatisfactory delays in the initial processing of applications.

Decisions and Files Made Public

Section 1.14(d) makes more explicit the conditions under which significant decisions of the Patent and Trademark Office will be made available to the public, and includes reference to decisions of the Board of Patent Interferences, in addition to decisions of the Board of Appeals and the Commissioner.

A large majority of the comments received were favorable. Several commentators felt that more decisions would be made available as a result of the proposed section and that it would assist in publicizing aspects of Office procedure which may not have been available previously.

Some negative comments were based on the view that the Freedom of Information Act[12] required all decisions of the Office to be made publicly available. A greater number of those opposing the proposed section, however, felt that applicants should have an absolute right to have their applications maintained in confidence and that no information should be made public without specific authorization from them. One commentator felt that rulemaking on this subject should be deferred until currently pending litigation[13] under the Freedom of Information Act was finally resolved.

The section as adopted is applicable to decisions deemed by the Commissioner to involve an interpretation of patent laws or regulations that would be of significant precedent value, where such decisions are contained in either pending or abandoned applications or in interference files not otherwise open to the public. It is applicable whether or not the decision is a final decision of the Patent and Trademark Office.

The parenthetical phrase in the first sentence of the proposed section, which cited other provisions of the rules under which decisions are open to public inspection, is deleted as unnecessary and possibly confusing. Also, in view of several comments received, the period of time during which an applicant or party in interest may object to having a decision made public is extended from one month to two months. At least twenty days is given to request reconsideration and seek court review before a decision is made public over an objection.

Section 1.14(d) is considered to place a duty on the

[7]See discussion accompanying proposed rules in Federal Register of Oct. 4, 1976, page 43731, first sentence.

[8]*Norton* v. *Curtiss*, 433 F.2d 779, 792, 167 USPQ 532, 543 (CCPA 1970).

[9]E.g., Federal Register of Sept. 9, 1968, 34 FR 14176, 866 O.G. 1402; S. 2255, 94th Congress, §131(b).

[10]Notice of Aug. 12, 1974, 926 O.G. 2.

[11]BNA's Patent, Trademark and Copyright Journal, No. 301, Oct. 28, 1976, page D-1.

[12]USC 552.

[13]*Irons* v. *Gottschalk*; Slip Opinion, No. 74–1365 (D.C. Cir., Oct. 21, 1976).

Patent and Trademark Office to identify significant decisions and to take the steps necessary to inform the public of such decisions, by publication of such decisions, in whole or in part. It is anticipated, however, that no more than a few dozen decisions per year will be deemed of sufficient importance to warrant publication under the authority of this section.

Amended §1.14(b) allows public inspection of abandoned applications referred to in defensive publications. The comments received on the proposed amendment on this topic in 1974 expressed no opposition and the proposal is adopted without change.

The amendment is intended to encourage use of the defensive publication program provided under §1.139. The objective of that program is to make available to the public the technical disclosure of applications in which the owner prefers to publish an abstract in lieu of obtaining an examination. Existing §§1.11(b) and 1.139 open the complete defensive publication application to inspection by the general public upon publication of the abstract. With the amendment, an abandoned application referred to in a defensive publication application will likewise be open to public inspection, avoiding any need to repeat its contents in the defensive publication application. Thus, public availability of the applications involved should be of benefit both to the applicant and the public.

A suggestion was made that the section be extended still further to include abandoned applications referred to in foreign patents. This suggestion, however, goes too far beyond the proposal that was published and has too uncertain an impact to be adopted at this time.

Amended §1.11(a) provides earlier access to the file of an interference which involved a patent or an application on which a patent has issued. All comments that were submitted on the 1974 proposal on this topic were favorable and two commentators felt the proposal should be extended further. The proposal is being adopted without change.

Under present practice, access to the file of an interference is not permitted until judicial review of the decision of the Board of Patent Interferences has been exhausted. The amended section allows access to the file after final decision of the Board of Patent Interferences if that decision is an award of priority as to all parties. It is believed that such earlier access will be of benefit to members of the public by making available information relevant to the issuance of the patent whether or not the interference decision is still being adjudicated.

Patent Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested, provides for oral arguments by or on behalf of examiners in certain appeals and reduces the time permitted for oral arguments.

Comments relating to this section were favorable by a very substantial majority, although there were several reservations to the effect that §1.194(a) tended to discourage or downgrade oral arguments. Participation by examiners was considered to be desirable not only from the standpoint of improving the overall presentation of the argument, particularly in complex cases, but also for the educational and experience benefits to the examiners themselves.

The only opposition to the section was based on the feeling that oral hearings would be discouraged. The rule is intended to discourage oral hearings only to the same extent as the Office's 1975 Official Gazette notice on the subject.[14] Section 1.194(a) indicates that oral hearings should not be requested as a matter of course in every appeal, but only in those circumstances where the appellant feels that such a hearing will be of material assistance to the proper presentation of the appeal. The section expressly provides that equal consideration will be accorded in deciding all appeals, whether or not an oral hearing is held.

In appeals where the appellant has requested an oral hearing §1.194(b) provides for oral argument by, or on behalf of, the primary examiner, if such argument is considered to be helpful by either the primary examiner or the Board. This provision incorporates the present practice of permitting examiners to present an oral argument before the Board.[15] It gives the Board additional discretionary authority to request presentation of an oral argument by, or on behalf of the examiner to ensure that all issues are fully and accurately presented.

Section 1.194(c) provides, as does existing §1.194, that appeals will be assigned for consideration and decision without an oral hearing where none has been requested by the appellant. Where an oral hearing has been requested, a day of hearing will be set, and both appellant and the primary examiner will be notified. A provision for notice to the examiner is added to the proposed version. Additionally, §1.194(c) reflects the present practice of limiting oral argument on behalf of the appellant to twenty minutes.[16] The time permitted for argument by the examiner has been shortened from twenty minutes, as proposed, to fifteen minutes. The examiner, unlike the appellant, will not ordinarily need time to present the facts of the case or for rebuttal.

In any appeal where oral argument is to be presented by, or on behalf of, the primary examiner, the appellant will be given due notice of that fact.

Proposed §1.196(b) would have authorized the Board of Appeals to reject allowed claims, in cases before it, whenever the Board had knowledge of grounds for so doing.

While a majority of those commenting on this section favored in principle the concept of allowing the Board to have this right, significant concern was voiced that there was no statutory authority for the Board to actually reject allowed claims. Further, the question of proper authority for judicial review of such action by the Board was a matter of concern. Other reasons advanced in opposition to the section were that applicants would be inhibited from appealing by the risk of having allowed claims rejected and that the proposal would create a higher presumption of validity in cases reviewed by the Board. A significant number commented that it would be more appropriate for the Board to remand the case to the primary examiner for consideration of the grounds raised by the Board. This would afford the applicant an opportunity to demonstrate the patentability of the claims and would remove any question as to statutory authority.

In view of the comments received, existing §1.196(b) will not be modified, but a new §1.196(d) is added providing express authority for the Board of Appeals to include, in its decision, a statement of any grounds for rejecting any allowed claim that it believes should be considered by the primary examiner. Section 1.196(d) provides that the Board may remand the case to the examiner for such consideration, and that the applicant shall have an opportunity to respond to the grounds set forth by the Board prior to consideration, by the examiner. If the previously allowed claims are rejected by the examiner, the rejection may be appealed to the Board.

The new section further provides that a decision of the Board which includes a remand will not be considered as a final decision in the case, but that the Board, following conclusion of the proceedings before the primary examiner, will either adopt its earlier decision as final or will render a new decision based on all appealed claims, as it considers appropriate. In either case, final action by the Board will give rise to the existing alternatives available to an appellant following a decision by the Board.

In situations where the primary examiner concludes after consideration of all the evidence and argument that the remanded claims should be allowed, the new rule dealing with reasons for allowance (§1.109) provides an appropriate mechanism for him to explain, on the record, his reasoning for coming to this conclusion, notwithstanding the grounds set forth by the Board in its statement.

[14]See notice of Mar. 20, 1975, 933 O.G. 1010.

[15]MPEP, §1209.

[16]See notice of Mar. 20, 1975, 933 O.G. 1010.

Promulgation of new §1.196(d) does not affect the Board's existing authority to remand a case to the primary examiner without rendering a decision in appropriate circumstances. Section 1.196(d) is not intended as an instruction to the Board to reexamine every allowed claim in every appealed application. It is, rather, intended to give the Board express authority to act when it becomes apparent, during the consideration of rejected claims, that one or more allowed claims may be subject to rejection on either the same or on different grounds from those applied against the rejected claims.

Reasons for Allowance

New §1.109 is intended to emphasize and formalize the examiner's authority to state his reasoning for allowing a claim or claims. The authority is discretionary with the examiner and is only to be used when the record does not otherwise reveal the reasons for allowance.

A majority of the comments received favored the rule as proposed because it would tend to provide courts and others who were reviewing the patent with a clearer record. Those who opposed the rule most often gave the reason that the examiner might fail to state all the reasons or the strongest reasons why a claim was allowed, which could place unnecessary limitations on the claims or create an estoppel in subsequent litigation or licensing.

To help insure that the examiner's statement of his reasoning in allowing a claim will not unnecessarily limit the claims or create an estoppel, a final sentence is added to the proposal which states that failure of the applicant to comment upon or rebut the examiner's reasoning "shall not give rise to any implication that the applicant agrees with or acquiesces in the reasoning of the examiner."

Several commenters suggested that stricter enforcement of §§1.111 and 1.133 would eliminate the need for a new rule concerning reasons for allowance. Situations exist, however, where a statement of reasons for allowance could be helpful, for example when an examiner withdraws a rejection for reasons not suggested by the applicant; when an applicant submits several arguments for allowing a claim and the examiner finds not all of them persuasive: when an examiner allows a claim on the first Office action after citing very close prior art: and when the examiner allows a claim after remand from the Board of Appeals (see new §1.196(d)).

The first sentence of the proposed rule is changed to define more precisely the circumstances in which an examiner's statement is appropriate, as well as to define more precisely the content of the statement. The statement will include the examiner's "reasoning." The examiner may state his reasoning whenever he "believes that the record of the prosecution as a whole does not make clear his reasons for allowing a claim or claims."

Several persons commented that the rule should provide a procedure for appeal from the examiner's statement of his reasoning. The rule does permit applicants to comment upon the examiner's reasoning. If the applicant does not wish to comment, he may reserve for a later proceeding, without prejudice, any rebuttal. [Text of adopted rules appears in 37 CFR, revised 7-1-77]

Effective Date. These amendments become effective on March 1, 1977, except for §§1.51, 1.97, 1.98, and 1.99 which become effective on July 1, 1977, and §§1.65 and 1.69 which become effective on January 1, 1978.

C. MARSHALL DANN,
Jan. 18, 1977. *Commissioner of Patents and Trademarks.*

Betsy Ancker-Johnson, Ph.D.
Jan. 19, 1977. *Assistant Secretary for Science and Technology.*

[955 O.G. 1054]

(94) Guidelines for Implementation of Recently Revised Rules

Recently a number of rules relating to Patent Examining and Appeal procedures were revised. The new rules were published in the Federal Register at 42 F.R. 5588 on January 28, 1977, and in the *Official Gazette* at 955 O.G. 1054 on February 22, 1977. The following guidelines are being published to describe the procedures which are being followed in implementing 37 CFR sections 1.11, 1.97–1.99, 1.109, 1.194, 1.291 and 1.292.

Files Open to the Public

Section 1.11(b) is applicable only to those reissue applications filed on or after March 1, 1977. Those reissue applications already on file will not be automatically open to inspection but a liberal policy will be followed by the Office of the Solicitor in granting petitions for access to such applications.

(**Note.**—These sections as changed will be incorporated into the Manual text in Rev. 3 of the Manual.)

For those reissue applications filed on or after March 1, 1977, the following procedure will be observed:

1) The filing of reissue applications will be announced in the *Official Gazette* and will include certain identifying data as specified in section 1.11(b). Any member of the general public may request access to a particular reissue application filed after March 1, 1977. Since no record of such request is intended to be kept, an oral request will suffice.
2) The reissue application files will be maintained in the examining groups and inspection thereof will be supervised by group personnel. Although no general limit is placed on the amount of time spent reviewing the files, the Office may impose limitation, if necessary, e.g., where the application is actively being processed.
3) Where the reissue application has left the examining group for administrative processing, requests for access should be directed to the appropriate supervisory personnel in the Division or Branch where the application is currently located.
4) Requests for copies of papers in the reissue application file must be in writing addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 and may be either mailed or delivered to the Office mailroom. The price for copies made by the Office is thirty cents per page.

Prior Art Statements

This notice supersedes the notices of August 12, 1974 (926 O.G. 2) and May 19, 1975 (935 O.G. 902) relating to citations of prior art. Although new sections 1.97 through 1.99 are not effective until July 1, 1977, and are not mandatory upon applicants, they provide an ideal mechanism for complying with the duty of disclosure under 37 CFR 1.56. The statements should be submitted in accordance with the following guidelines:

1) Prior art statements should be submitted at the time of filing the application or within three months thereafter and may be separate from the specification or incorporated therein. The statement shall serve as a representation that the person preparing it has included therein what he believes to be the closest prior art of which he is aware and shall not be construed as a representation that no better art exists or that a search has been made. If the first action in the application is received prior to three months after filling of the application and no prior art statement has been submitted, the prior art statement may be submitted with the response to the first action and be considered timely.
2) The statement shall include a listing of the patents, publications or other information which the preparer of the statement wishes to cite and a concise ex-

planation of the relevance of each listed item. Copies of the pertinent portions of all listed documents shall be supplied along with the statement, both when incorporated into the specification and when filed separately. If two or more patents or publications considered material are substantially identical, a copy of a representative one shall be included with the statement and others may merely be listed with an indication of which are considered to be substantially identical.

3) A translation of the pertinent portions of foreign language patents or publications considered material should be transmitted if an existing translation is readily available to the applicant. It will be sufficient, however, to transmit an equivalent English language patent or publication so long as it is identified as an equivalent.

Where the applicant has submitted copies of prior art in accordance with these guidelines in a prior application, reference to the prior application and the submission therein will be sufficient for the continuing application as far as the copies are concerned. As far as the statement per se is concerned, the relevance of the prior art to the claimed subject matter must be indicated if it differs from its relevance as explained in the prior application.

4) If prior to the issuance of a patent an applicant pursuant to his duty of disclosure under 37 CFR 1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental prior art statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements aforementioned. The transmittal should include a statement explaining why the prior art was not earlier submitted.

While the Patent and Trademark Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other information not submitted in accordance with these guidelines will be considered by the examiner.

After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an Ex parte Quayle action, a notice of allowability (PTOL—327), an examiner's amendment (PTOL—37), or a Notice of Allowance (PTOL—85), any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by:

(*a*) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought;

(*b*) A timely affidavit under 37 CFR 1.131 with respect to the material cited; or

(*c*) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other information cited raises a serious question as to the patentability of the claimed subject matter, or is closer prior art than that of record.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under 37 CFR 1.183 requesting a waiver of 37 CFR 1.312. Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

In each instance where an examiner considers, but does not cite on form PTO—892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference according to the following:

If included in the specification, the examiner will write his or her initials adjacent to any references checked and enter "checked" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" will be entered adjacent to the citations or wherever possible to indicate clearly those checked.

Reasons for Allowance

One of the primary purposes of the change in Section 1.109 is to improve the quality and reliability of issued patents by providing a complete file history which should clearly reflect, as much as is reasonably possible, the reasons why the application was allowed. Such information facilitates evaluation of the scope and strength of a patent by the patentee and the public and may help avoid or simplify litigation of a patent.

The practice of stating the reasons for allowance is not new and the rule merely formalizes the examiner's existing authority to do so and provides applicants an opportunity to comment upon any such statement of the examiner.

When the examiner determines that it is necessary or desirable, a "Statement of Reasons for Allowance" will be prepared. The "Statement" will usually be an attachment to either a notice of allowability (PTOL—327) or Examiner's Amendment (PTOL—37). Any comments considered necessary by applicant must be submitted no later than the issue fee and should preferably *accompany* the issue fee. Submission with the issue fee avoids any delay in the processing of the application and avoids the necessity to associate the comments with the application while it is in issue except at the time the file must be pulled to record the payment of the issue fee. Such comments will be entered in the application file by the Allowed Files Branch with an appropriate notation on the "contents" list of the file wrapper, but will not be reviewed by the examiner.

Oral Hearings Before Board of Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested and provides for oral arguments by, or on behalf of, primary examiners in certain appeals.

Under Section 1.194, the following procedures will be in effect:

1) In accordance with Section 1.192, appellants who desire an oral hearing must request the same at the time of filing the appeal brief.

2) If appellant has requested an oral hearing and the primary examiner intends to present an oral argument, the last paragraph of the examiner's answer will indicate this intention.

3) Notice of the oral hearing will be given to the appellant and, at the same time, to the primary examiner in those cases in which the primary examiner has indicated an intention to present an oral argument.

4) After an oral hearing has been confirmed and the date set as provided in Section 1.194(c), the application file will be delivered to the examiner via the appropriate Group Director at least one week prior to the date of the hearing for those cases in which the examiner is expected to be present at the hearing. In those cases where the Board requests the presentation of an oral argument by, or on behalf of, the primary examiner, the appellant will be so notified. The Board's request for an oral argument may, where appropriate, indicate specific points or questions to which the argument should be particularly directed. The application file will be returned to the Board before the hearing.

5) In those appeals in which an oral hearing has been confirmed and either the primary examiner or the Board has indicated a desire for oral argument, such oral argument may be presented whether or not appellant appears.

Protests and Public Use Proceedings

Amended sections 1.291 and 1.292 give greater recognition to the value of written protests and public use petitions and are intended as an aid in avoiding the issuance of invalid patents.

Under sections 1.291 (b) and (c) and 1.292(b), the following procedures will be observed:

1) Only in those instances where it has not been possible to serve protest papers upon the applicant, attorney or agent, should duplicates of the papers submitted be provided. In this case the appropriate examining group will attempt to get the duplicate copy to the applicant, attorney or agent. However, every effort should be made by the protester to effect service.

2) Citations of prior art and any papers related thereto may be entered in the file after a patent has been granted by submitting them to the attention of the Record Room, where they will be entered without comment by the Office. If after diligent effort it has not been possible to serve the prior art citations and related papers on the patentee, his attorney or agent, duplicate copies should be submitted in which case the Record Room will attempt to get the duplicate copy to the owner of record.

3) When public use petitions and accompanying papers are submitted they, or a notice in lieu thereof, will be entered in the application file. Duplicate copies should be submitted only when, after diligent effort, it has not been possible for petitioner to serve a copy of the petition on the applicant, his attorney or agent in which case the Office of the Solicitor will attempt to get the duplicate copy to the applicant, his attorney or agent.

4) To ensure consideration by the examiner, protests should be timely submitted, i.e., before final rejection or allowance. Consideration of protests filed after final rejection or allowance will depend upon the relevance of the prior art documents and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not knowingly be ignored. If protests are not timely submitted or if they fail to comply with section 1.291(a) as to the submission of a copy of each prior art document relied upon, they will be acknowledged and referred to the examiner having charge of the subject matter involved for entry in the application file and such consideration as seems warranted.

In each instance where an examiner considers but does not cite on form PTO—892 specific prior art referred to in a protest, the examiner will place a notation in the protest paper adjacent to the reference which will include his or her initials and the term "checked."

Additional future guidelines as to protest procedures may be developed after gaining experience with the new practice.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Mar. 18, 1977.

[957 O.G. 11]

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(95) **Further Guidelines Relating to 37 CFR 1.175 and 1.291, as Amended Effective March 1, 1977**

The experience with the above revised rules since their effective date has indicated the desirability of further guidelines relating to the manner in which they are to be implemented. The following guidelines are supplemental to those which have already been provided in the publication of the rules in the Federal Register of January 28, 1977 (42 F.R. 5588) (955 O.G. 1054, February 22, 1977), and in the earlier Guidelines published at 957 O.G. 11 on April 12, 1977. Copies of the latter two *Official Gazette* publications appear as items 59 and 60 of the current "Consolidated Listing of Recent Official Gazette Notices" published at 966 O.G. 22–32. The present guidelines are also supplemental to the appropriate sections of the Manual of Patent Examining Procedure, e.g., Sections 1401–1401.12 relating to reissue, and Section 1309.02 relating to protests. Sections 721 and 721.01 of the MPEP contain guidelines to be followed if either a reissue or other application, or a protest relative to any application, raises questions of "fraud" or "violation of the duty of disclosure." Accordingly, the above-noted materials should be consulted in addition to these further guidelines, which are in themselves not intended to completely treat the subjects involved. For the most part, the guidelines herein merely identify and clarify existing requirements and practices. The Patent and Trademark Office has a general study underway of the procedures for handling reissue applications and protests which may result in future modifications in these guidelines.

Section 1.175(a)(4) of the revised rules recognizes that reissues may be filed to have the patentability of the original patent, without changes therein, considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

The experience to date reveals the need to clarify what should be filed by the applicant in order to seek the reexamination contemplated by sub-section (a)(4) and also the type and content of the examination which the examiner will give to applications filed under subsection (a)(4).

First, sub-section (a)(4) does *not* contemplate, or permit, the filing of a reissue application without an oath or declaration. To the contrary, an oath or declaration is required, and such oath or declaration *must* comply with each of sub-sections (a)(4), (a)(5), and (a)(6). Thus, under sub-section (a)(4) the oath or declaration must particularly specify the "prior art or other information relevant to patentability, not previously considered by the Office," which the reissue applicant considers "might cause the examiner to deem the original patent wholly or partly inoperative or invalid." The reissue oath or declaration must also request, under sub-section (a)(4), that "if the examiner so deems, the applicant be permitted to amend the patent and be granted a reissue patent."

Under sub-section (a)(5), the reissue oath or declaration, including those filed under sub-section (a)(4), must particularly specify "the errors or what might be deemed to be errors relied upon, and how they arose or occurred."[1] This sub-section has two specific requirements, *both of which must be complied with* in, or by, the reissue oath or declaration. Thus, insofar as (a)(4) reissue oaths or declarations are concerned, the oath or declaration must particularly specify "what might be deemed to be errors." For example, if the reissue applicant is seeking reexamination in view of particular prior art or other information, the reissue oath or declaration must point out "what might be deemed to be errors" in patentability in view of such prior art or other information. More specifically, the oath or declaration, in appropriate circumstances, might state that some or all claims might be deemed to be too broad and invalid in view of references X and Y which were not of record in the patented files. Usually, a general statement will suffice. But where appropriate, such as where the pertinence of the new references X and Y are not evident, more specificify about "what might be deemed to be errors" should be provided. Of course, the reissue applicant does *not* have to, and presumably does *not*, agree that "errors" exist. However, the reissue applicant does have to, in the reissue oath or declaration of the sub-section (a)(4) type, particularly specify "what might be deemed to be errors relied upon."

In addition to specifying "what might be deemed to be errors relied upon," sub-section (a)(5) also requires "particularly specifying" "how they arose or occurred." This means, of course, that the reissue oath or declaration must specify the manner in which that which "might be deemed to be errors" "arose or occurred." For example, if the (a)(4) reissue is being filed for reex-

amination in view of prior art or other information, the reissue oath or declaration must indicate when and the manner in which the reissue applicant became aware of the possible error in the patent, e.g., third party allegation, discovery of prior art or other information subsequent to issuance of patent, knowledge of prior art or other information before issuance of patent with significance being brought out after issuance by third party, through allegations made in litigation involving the patent, etc. It is particularly important that the reissue oath or declaration adequately specify how "what might be deemed to be errors" arose or occurred. If the reissue oath or declaration does not particularly specify "how," i.e., the manner in which any possible errors arose or occurred, the Office will be unable to adequately evaluate reissue applicant's statement in compliance with (a)(6) that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant."

Sub-section (a)(6) specifically requires that the reissue oath or declaration, including those filed under sub-section (a)(4), contain the averment that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant." This requirement must not be overlooked in filing since the requirement for an absence of "deceptive intention" is a necessary part of any reissue application, including those of the (a)(4) type.

The significance and importance of sub-sections (a)(5) and (a)(6) must not be overlooked or minimized insofar as reissue oaths or declarations are concerned, including those filed under sub-section (a)(4). These sub-sections, to a large extent, enable the Office to make its determination required by statute that any error is "without any deceptive intention."

In addition to meeting the requirements of Sections 1.175 (a)(4)–(a)(6) insofar as the reissue oath or declaration is concerned, the reissue applicant, at the time of filing the reissue application, including the (a)(4) type reissue application, must also be aware of the requirements of 37 CFR 1.56, as revised effective March 1, 1977. Reissue applicants may, of course, utilize new Sections 1.97–1.99 to comply with the duty of disclosure required by Section 1.56. While Section 1.97(a) provides for filing of the prior art statement within three months of the filing of the application, reissue applicants are encouraged to file the prior art statement at the time of filing the application in order that such prior art statements will be availale to the public during the two-month period provided by Section 1.176.

In situations in which the patent for which reexamination is being sought is, or has been, involved in litigation, which raised a question material to examination of the reissue application, such as the validity of the patent, or any allegation of fraud, the existence of such litigation must be brought to the attention of the Office at the time of, or shortly after, filing the application, either in the reissue oath or declaration, or in a separate paper, preferably accompanying the application as filed. Litigation begun after filing of the reissue application also should be promptly brought to the attention of the Office. The details and documents from the litigation, insofar as they are "material to the examination" of the reissue application as defined in 37 CFR 1.56(a), should accompany the application as filed, or be submitted as promptly thereafter as possible. For example, the defenses raised against validity of the patent, or charging fraud or inequitable conduct in the litigation, would normally be "material to the examination" of the reissue application. It would, in most situations, be appropriate to bring such defenses to the attention of the Office by filing in the reissue application a copy of the Court papers raising such defenses. As a minimum, the applicant should call the attention of the Office to the litigation, the existence and nature of any allegations relating to validity and/or "fraud" relating to the original patent, and the nature of litigation materials relating to these issues. Enough information should be submitted to clearly inform the Office of the nature of these issues so that the Office can intelligently evaluate the need for asking for further materials in the litigation. Thus, the existence of supporting materials which may substantiate allegations of invalidity or "fraud" should, at least, be fully described, or submitted. The Office is *not*, of course, interested in receiving voluminous litigation materials which are *not* relevant to the Office's consideration of the reissue application. The status of the litigation should be updated in the reissue application as soon as significant events happen in the litigation.

The Examination of Reissue Applications, Including Those Filed Under 37 CFR 1.175(a)(4)

The examination of reissue applications, including those filed under sub-section (a)(4), will be in accordance with Sections 1401–1401.12, M.P.E.P. Attention is particularly directed to Section 1401.09, M.P.E.P. which refers to the two aspects of reissue examination, i.e., examination in the same manner as an original application and examination for compliance with the reissue statute and rules. The purpose of the present guidelines is to supplement those presently in existence and to emphasize certain points, particularly as they relate to reissue applications filed under sub-section (a)(4).

When examining the reissue application the examiner will consider whether or not applicant, in the reissue oath or declaration, has complied with each of the requirements of 37 CFR 1.175. For example, in all reissue applications, the reissue oath or declaration must comply with the requirements of the first sentence of 37 CFR 1.65. When the reissue application is other than the (a)(4) type, the reissue oath or declaration must comply with the appropriate sub-sections (a)(1) to (a)(3) and sub-sections (a)(5) and (a)(6). When the reissue application is filed under sub-section (a)(4), the reissue oath or declaration must also comply with sub-sections (a)(5) and (a)(6). Thus, all reissue applications must comply with sub-sections (a)(5) and (a)(6). If the examination reveals a lack of compliance with any requirement of Section 1.175, e.g., the requirements of sub-sections (a)(5) and/or (a)(6), a rejection will be made on the basis that the reissue oath or declaration is insufficient. See Section 1401.08, M.P.E.P. Under no circumstances will any reissue application be passed for issue without full compliance with 37 CFR 1.175.

Applications filed under sub-section (a)(4) will not, of course, be passed for issue without amendment, but will be rejected as lacking statutory basis for a reissue if *there are no other grounds for rejection*, since 35 U.S.C. 251 does not authorize reissue of a patent unless the patent is deemed wholly or partly inoperative or invalid. If a reissue filed under sub-section (a)(4) is subsequently amended thereby converting it into an application under sub-sections (a)(1) to (a)(3), *a supplemental reissue oath or declaration must be filed containing the appropriate averments*, If such a proper supplemental oath or declaration is not filed, a rejection will be made on the basis that the reissue oath or declaration is insufficient. The supplemental oath or declaration insures compliance with 35 U.S.C. 251 by providing appropriate averments relating to actual errors rather than possible errors.

If the examiner becomes aware of litigation involving the patent sought to be reissued during examination of the reissue application, and applicant has not made the details regarding that litigation of record in the reissue application, the examiner, in the next office action, will inquire regarding the same. The following paragraph may be used for such an inquiry:

> "It has come to the attention of the examiner that the patent sought to be reissued by this application (is) (has been) involved in litigation. Any documents and/or materials, including the defenses raised against validity, or against enforceability because of fraud or inequitable conduct, which would be material to the examination of this reissue application are required to be made of record in response hereto. See 37 CFR 1.175(b)."

If the additional details of the litigation appear to be material to examination of the reissue application, the examiner may make such additional inquiries as necessary and appropriate under 37 CFR 1.175(b).

However, any application which indicates the existence of *a question* of "fraud" or "violation of the duty of disclosure" will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P., as soon as the existence of *such question* is appreciated. For example, any reissue application which seeks reexamination in view of material prior art or other information known before issuance of the patent to a person having a duty under 37 CFR 1.56(a) must be forwarded under Section 721.01, M.P.E.P., to the Assistant Commissioner via the Group Director.

The Filing of Protests Under 37 CFR 1.291

The amendments to Section 1.291 reflected the increased value the Office places on appropriate written protests as an aid in avoiding the issuance of invalid patents. The present supplemental guidelines are in addition to those previously published and referred to above.

The nature of the protest, and the timeliness of its submission, are important factors in determining the consideration which is given the protest, and by whom it is considered. Insofar as the question of timeliness is concerned, the original publication of the rules at 955 O.G. 1054, the earlier Guidelines published at 957 O.G. 11, and Section 1309.02, M.P.E.P. adequately treat this question. Protests should obviously be submitted as early in the examination process as possible in order to be of maximum benefit to the Office in its examination of the application involved.

If the protest is being filed with regard to a reissue application, the protest should be filed within the two-month period following announcement of the filing of the reissue application in the Offical Gazette, if it is at all possible to do so. If, for some reason, the protest of the reissue application cannot be filed within the two-month period provided by 37 CFR 1.176, the protest can be submitted at a later time, but protestor must be aware that reissue applications are "special" and a later filed protest may be received after action by the examiner, if submitted later than the two months provided by 37 CFR 1.176. In the event a protest is intended against a reissue application, but cannot be submitted within the two months provided following the O.G. announcement, the protestor can request an additional specified period within which to file the protest, explaining why the additional time is necessary and the nature of the protest intended. A copy of any such request for additional time to protest a reissue application beyond the two months provided must be served on the reissue applicant. The request for additional time should be directed to the appropriate Group Director. The requests for additional time beyond the two months provided will be *critically reviewed as to demonstrated need* before being granted since the delay of examination of a reissue application of another party is being requested. Accordingly, the requests should be made *only where necessary, for the minimum period required* and with a justification establishing the necessity for the extension.

Any protest filed alleging "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A–13. Protests based on grounds other than "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Director of the particular examining group in which the application is pending. If the protestor is unable to specifically identify the application to which the protest is directed, but, nevertheless, believes such an application to be pending, the protest should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A–13, along with as much identifying data for the application as is available.

As indicated in the earlier publications, e.g., Section 1309.02, M.P.E.P., every effort should be made by a protestor to effect service of the protest upon the attorney or agent of applicant who is of record or upon the applicant. The protest filed in the Office should reflect that service has been made. Only in those instances where service is not possible should the protest be filed in duplicate in order that the Office can attempt service. Of course, the copy served upon applicant or applicant's attorney or agent should be accompanied by a copy of each prior art or other document relied upon in the same manner as required by Section 1.291(a) for the Office copy.

The Examiner's Consideration of Protests

Protests other than those alleging "fraud" or "violation of the duty of disclosure" will be received by, or forwarded to, the Group Director of the examining group where the application is, or may be, pending and then referred to the appropriate examiner. If it is then, or later, discovered that a question of "fraud" or "violation of the duty of disclosure" exists, the application and the protest, will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P.

If no allegations or questions of "fraud" or "violation of the duty of disclosure" are found to exist, the examiner will consider the protest and report the results of the consideration to the Group Director. If the protest has been timely submitted, i.e., before final rejection or allowance, the examiner will consider each of the prior art or other documents submitted. At least those prior art documents which the examiner relies on in rejecting claims will be made of record by means of form PTO—892. If the examiner does not cite all of the prior art or other documents of form PTO—892, the examiner will place a notation in the protest paper adjacent to the reference to the documents which will include the examiner's initials and the term "checked."

If the protest is filed after final rejection or allowance of the application, the consideration by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not be knowingly ignored. Prosecution of the application will be reopened where necessary. However, protestor must be aware that the likelihood of consideration by the Examiner decreases as the patent issue date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

If the protest is not accompanied by a copy of each prior art or other document relied upon as required by Section 1.291(a), the protestor cannot be assured that the examiner will consider the missing document. However, if the examiner does so, the examiner will either cite the document on form PTO—892 or place a notation in the protest paper adjacent to the reference to the document which will include the examiner's initials and the term "checked."

If, upon considering the protest or any submissions subsequent thereto, the examiner considers it desirable to obtain applicant's comments on the protest before further action, the examiner will offer applicant an opportunity to file comments within a set period, usually two months.

The following suggested format can be used to offer applicant an opportunity to file comments on the protest:

> "A protest against the issuance of a patent based on this application has been filed under 37 CFR 1.291 on . . . . and a copy (has been indicated as having been served on applicant) (is attached hereto). Any comments or response applicant desires to file before consideration of the protest must be filed by . . . ."

Section 1.291(a) indicates that protests are acknowledged and this acknowledgement will normally be made by the particular office to which the protest is ultimately directed for consideration. Protests alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Office of the Assistant Commissioner for Patents. Other protests, i.e., those not alleging "fraud" or "violation of the duty of disclosure" will nor-

mally be acknowledged by the Group Director of the examining group where the application is, or may be, pending.

If the protest involves an application to which the protestor has access, e.g., a reissue application filed after March 1, 1977, or one in which protestor has been formally granted access, then protestor may monitor the proceedings and file such additional papers as protestor considers appropriate. If protestor has access to the application, protestor may request the Office to supply protestor with copies of Office actions or other documents mailed by the Office. Such a request should be directed to the particular area in which the application is pending, e.g., Office of Assistant Commissioner for Patents, or Director of the particular examining group. The request should explain why protestor needs the copies in question and should indicate an intent on protestor's part to assist the Office in its examination by supplying relevant comments. Normally, the Office will send copies of Office actions to protestors where the protestor indicates an intent to review actions and, if appropriate, comment to the Office on them. However, since protestor has no right to copies of the Office actions or other documents, the granting or denying of such requests will be within the sole discretion of, and for the convenience of the Office.

If the protestor has access to the application, the examiner may communicate with the protestor *in writing* to seek clarification and/or additional information if the examiner considers such clarification and/or additional information necessary to properly consider the protest. The following suggested format can be used by the examiner to seek clarification and/or additional information from a protestor having access to an application:

> "The protest, as filed_____, has been noted. However, clarification and/or additional information is desired. In particular [Examiner explains] any submission of the requested information should be made within ONE MONTH of the date of this letter and the submission must indicate service on applicant."

While the examiner should not normally need clarification and/or additional information from the protestor where the grounds involve only published prior art, e.g., patents, periodicals, etc., under some circumstances it may be necessary for the examiner to seek such clarification and/or additional information. For example, if the date of a reference is in question, or some question of public use is involved, and the information being sought is within the knowledge or control of the protestor, the examiner may find it necessary to communicate with the protestor to obtain the same.

Where the examiner feels that a protestor with access to an application can contribute significantly to the examination process, the protestor may be given a specific period, normally one month, within which to comment on responses submitted by patent applicants to Office actions. Such a comment period should only be provided where it would appear to be of benefit to the examination process and only with the approval of a Supervisory Primary Examiner. Where an applicant agrees to such participation by a protestor or where a Court has suspended litigation for consideration of a related application by the Patent and Trademark Office with an expression of its desire for such protestor participation, it should be more liberally granted.

Where a protestor requests permission to participate in any interview between an applicant and the examiner or requests on its own behalf to have an interview with the examiner, the request should be referred to the Office of the Assistant Commissioner for Patents for action. Normally, protestor participation in interviews with examiners will not be allowed unless special justifying circumstances exist. Where authorized, participation by the protestor in an interview will be according to conditions set down by the Patent and Trademark Office. Normally, any transcript of the interview, if authorized, will be at the expense of the party or parties requesting it and will be arranged by such party or parties. Where Office actions are being sent to a protestor or where a protestor is present for an interview, a copy of the Interview Summary Form and other records made of the interview will be provided to the protestor. Where protestor's participate in an interview, they may submit their own record of the interview which will be made of record in the file.

Interviews relating to a patent application with a protestor will not be permitted without the applicant present.

A protestor with access to an application appealed to the Board of Appeals who intends to file comments or a brief in opposition to appellant's brief should file an indication of such intention within one month after the notice of appeal is filed and serve a copy of the same upon appellant. The indication of intention should state that protestor agrees to file such comments or brief in triplicate, within one month after appellant's brief is filed, and also agrees to serve a copy of the comments or brief upon appellant. If such an indication is not filed and served, or the protestor's comments or brief is not timely filed in triplicate and served, no assurance is given that the Examiner will consider the protestor's comments or brief during the preparation of the Examiner's Answer.

A protestor who participates by the filing of comments or a brief in opposition to appellant's brief may also request, at the time of filing the comments or brief, to appear at any oral hearing. If a protestor does not file such comments or brief, the protestor cannot be present at any oral hearing. If a protestor does file such a request, the Board of Appeals, in its discretion, will decide whether or not the issues on appeal are such that protestor's participation at the hearing would be helpful. The Board of Appeals will notify protestor whether or not the request to appear at the hearing is granted and, if granted, how much time will be permitted. Of course, if appellant does not request an oral hearing, or provides timely notification to the Board and protestor that appellant will not appear, protestor will not be heard.

A copy of any examiner's letter or communication to a protestor will be mailed to applicant at the same time it is mailed to the protestor. While the examiner may communicate *in writing* with a protestor having access to the application, the examiner will *not* communicate orally and protestor must refrain from oral communications with the examiner except to ask purely procedural questions which have no relation to the substance of the protest or the merits of the application, unless specifically authorized *in writing* by the Assistant Commissioner for Patents.

Where the handling of a protest or the handling of a reissue application involved in related litigation requires an inordinately larger than normal amount of work on the part of an examiner and where otherwise warranted, Supervisory Primary Examiners may authorize the use of non-examining time for handling some or all of the examination.

The above guidelines are intended to make clearer the policies of the Patent and Trademark Office in respect to the handling of reissue applications, protests and "fraud" questions. The Office is especially interested in seeing that the consideration of reissue applications and protests is thorough and fair. It is interested in seeing that protestors have an opportunity to participate in the proceedings in the Office to the extent that such participation is helpful and appropriate in each case. It is also greatly interested in the completeness and accuracy of the file record, including indications whether or not prior art references and information mentioned in the record have been reviewed by the examiner.

The present guidelines which will be incorporated into the M.P.E.P. as soon as possible, when considered in conjunction with those previously issued and the M.P.E.P., should answer many of the questions being raised about the revised rules.

DONALD W. BANNER,
Commissioner of Patents & Trademarks.

Nov. 13, 1978.

[977 O.G. 11]

(96) Expedited Processing of Reissue Applications and Applications Having Issues of Fraud or Failure to Comply With The Duty of Disclosure

The Patent and Trademark Office has been experiencing increasing delays in the examination of reissue applications and other applications in which charges or questions of fraud or failure to comply with the duty of disclosure have been raised or are apparent on the record. Consideration of these charges involves considerable expenditures of resources and time. They also tend to delay prompt consideration on the merits in view of the prior art, etc. Considerable duplication of effort and expenditures of resources and time also may occur when the Office considers applications in circumstances where the same issues are concurrently being considered in Court.

Deferral of Fraud Issues

Effective immediately, the Office is instituting a policy of delaying consideration of issues of fraud or failure to comply with the duty of disclosure in any application until all other issues are settled.

Accordingly, under this procedure, applications having issues of fraud or failure to comply with the duty of disclosure will continue to be referred to the Office of the Assistant Commissioner for Patents, but will then be promptly returned, along with any appropriate examining instructions, to the Director of the Examining Group for immediate action by the Examiner. Decisions on Petitions to Strike applications pursuant to 37 CFR 1.56(d) will be deferred pending resolution of the patentability issues before the Examiner. Any such Petitions to Strike filed after the Office of the Assistant Commissioner has initially reviewed the application and returned it for immediate action will be acknowledged by the Examining Group Director and action on the Petition will be deferred pending completion of the patentability issues before the Examiner. Examiners will note in their Office actions the existence of issues of fraud or failure to comply with the duty of disclosure without commenting on the substance of such issues and will indicate that the issues will be considered after all other matters have been disposed of. Matters other than fraud or failure to comply with the duty of disclosure raised in a Petition to Strike, e.g., patentability in light of a reference, will be treated by the Examiner or other appropriate official. Petitions relating to procedural matters involving the examination of the applications, e.g., requests for protestor participation in interviews, will be decided by the appropriate Examining Group Director. Applications which have been referred to the Office of the Assistant Commissioner and which are required to be returned thereto before allowance or after abandonment of the application will have a notation placed on the face of the application file by the Office of the Assistant Commissioner requiring such return.

Suspension of Action Where There is Concurrent Litigation

In order to avoid duplication of effort, actions in applications in which there is an indication of concurrent litigation will be suspended automatically unless and until it is evident to the examiner, or the applicant indicates, that: (1) a stay of the litigation is in effect; (2) the litigation has been terminated; (3) there are no significant overlapping issues between the application and the litigation; or (4) it is applicant's desire that the application be examined at that time.

Expedited Examination of Reissues

All reissue applications, except those under suspension because of litigation, will be taken up for action ahead of other "special" applications; this means that all issues not deferred will be treated and responded to *immediately.* Furthermore, reissue applications involved in "stayed litigation" will be taken up for action in advance of other reissue applications.

Insofar as reissue applications for patents in litigation are concerned, the Office is presently considering modifications to the rules to provide for their examination within the two-month waiting period now provided by Section 1.176. Until appropriate modifications are made to the rules, the Office will entertain petitions under 37 CFR 1.183 to waive the delay period of 37 CFR 1.176. In addition, the Office is presently considering requiring the prompt disclosure of the existence of litigation related to a pending application.

Time monitoring systems are being put into effect which will closely monitor the time used by applicants, protestors, and examiners in processing reissue applications of patents involved in litigation in which the court has stayed further action.

Applicants in reissue applications involved in litigation which has been stayed, dismissed, etc. for consideration by the Patent and Trademark Office will normally be given one month to respond to Office actions in those situations where the Office determines that the reissue applicant can readily prepare a response in such time. This one month period may be extended upon a showing of clear justification. Of course, up to three months may be set for response if the Examiner determines such a period is justified.

Applicants and protestors submitting papers for entry in reissue applications of patents involved in litigation are requested to mark the outside envelope and the top right hand portion of the paper with the words *"REISSUE LITIGATION"* and with the unit of the PTO in which the reissue application is located—e.g., Assistant Commissioner for Patents, Board of Appeals or Examining Group. The notations preferably should be written in a bright color with a felt point marker. Papers marked *"REISSUE LITIGATION"* will be given special attention. Also, the PTO will place a prominent notation on the application file to indicate the existence of litigation.

The purpose of these changes is to reduce the time between filing and final action insofar as possible while still giving all parties sufficient time to be heard. This notice is supplemental to, and in some respects modifies, the earlier published notices on this subject and particularly the notice published at 977 O.G. 11 on December 12, 1978.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

June 5, 1979.

[983 O.G. 24]

(97) Prior Art Cited by Patent Offices in Other Countries

Section 1.56 of Title 37 of the Code of Federal Regulations requires patent applicants and others associated with the prosecution of a patent application before the U.S. Patent and Trademark Office to call to the Office's attention information which is material to examination. Where related or corresponding patent applications have been filed in other countries, prior art may be cited by the Patent Offices of those other countries in connection with the examination of the applications filed there. Where prior art is cited by those other Patent Offices while the U.S. application is pending, citations which are material to examination in this country and known to any of the individuals covered by Section 1.56 must be called to the attention of this Office. Attorneys and agents are reminded of their obligations in this respect.

It is suggested, of course, that such prior art be cited to the U.S. Patent and Trademark Office in a prior art statement which complies with the provisions of Section 1.97–1.99 of 37 CFR.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

Apr. 23, 1979.

[982 O.G. 36]

(98) **Extensions of Time in Reexamination Proceedings**

This notice is intended to clarify extension of time practice as it relates to reexamination proceedings, and supplement the provisions of Section 2265 of the Manual of Patent Examining Procedure (MPEP).

The provisions of 37 CFR 1.136(a) and (b) are *NOT* applicable to reexamination proceedings under any circumstances . Public Law 97-247 amended 35 U.S.C. 41 to authorize the Commissioner to charge fees for extensions of time to take action in an "application". A reexamination proceeding does not involve an "application". 37 CFR 1.136 authorizes extensions of the time period only in an application in which an applicant must respond or take action. There is neither an "application", nor an "applicant" involved in a reexamination proceeding.

Requests for an extension of time to file a patent owner's statement under 37 CFR 1.530 or respond to any Office action in a reexamination proceeding must be filed under 37 CFR 1.550(c). These requests for an extension of time will be granted only for sufficient cause and must be filed on or before the day on which action by the patent owner is due. In no case will mere filing of a request for extension of time automatically effect any extension. Although the appeal provisions of 37 CFR 1.192(a), 1.197(b), and 1.304(a) set time periods applicable to reexamination as well as application proceedings, they also include a further proviso making these time periods subject to the extension provisions of 37 CFR 1.136. However, for the reasons set forth above, the extension provisions of 37 CFR 1.136 are limited to application proceedings and do not apply to reexamination proceedings. Therefore, any request for an extension of time in a reexamination proceeding to file a brief or reply brief, a request for reconsideration or rehearing, or a notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action, will be considered under the provisions of 37 CFR 1.550(c). The regulations setting a time period in which any of these actions must be taken set a time for reply within the meaning of 37 CFR 1.550(b), which time can be extended under 37 CFR 1.550(c).

The extension-of-time practice in reexamination proceedings in which a final Office action has been mailed continues to be reflected in MPEP Section 2265. That is, the after-final practice in reexamination proceedings did not change Oct. 1, 1982, and the automatic extension of time policy for response to a final rejection and associated practice are still in effect in reexamination proceedings.

Extensions of time for a requester of a reexamination, who is not the patent owner, are available only in rare circumstances. A request for an extension of the time period to file a petition from the denial of a request for reexamination can only be entertained by filing a petition under 37 CFR 1.183 with appropriate fee to waive the time provisions of 37 CFR 1.515(c). No extensions will be permitted to the two-month time for filing a reply by the requester under 37 CFR 1.535. This two-month period is set by statute (35 U.S.C. 304) and cannot be extended.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Feb. 17, 1983.

[1028 OG 18]

(99) **Clarification of Reexamination Practice and Change in Reexamination Certificate Wording**

I. *Clarification of Reexamination Practice.*

This notice is intended to clarify the options open to the patent owner *in a reexamination proceeding* when an allowable dependent claim depends from a rejected or cancelled *patent* claim.

A. *Leave dependent claim in dependent form.*

It is unnecessary in a reexamination proceeding to rewrite an allowable dependent patent claim in independent form when the dependent patent claim depends from a rejected or cancelled *patent* claim. The allowable dependent patent claim may remain in the printed format as it appears in the patent even though the patent claim upon which it is dependent is cancelled. Since the or iginal patent claim numbers are not changed in a reexamination proceeding the content of the cancelled base patent claim would remain in the printed patent and would be available to be read as a part of the allowed dependent patent claim.

If a new claim (a claim other than a claim appearing in the patent) has been later cancelled, a claim which depends thereon will be rejected as incomplete and must be rewritten. New claims which depend from a rejected or cancelled patent claim do not have to be rewritten.

If the patent owner elects to leave a dependent claim (original or new) in dependent form when the independent patent claim is rejected or cancelled, the reexamination certificate would indicate (1) that the patentability of an allowed unamended dependent patent claim "is confirmed" or (2) that a new dependent claim is "determined to be patentable". The independent patent claim (cancelled or rejected at the time of the issuance of the reexamination certificate) would be indicated as "cancelled". Note that if the dependent patent claim which is left in dependent form is amended (e.g., correction of a misspelled word) the certificate would indicate the claim "to be patentable as amended". The independent patent claim is considered to be incorporated by reference in the dependent claim even though the independent claim is cancelled from the patent by the certificate.

B. *Combine claims into independent claim.*

It is also permissible for the patent owner to amend either the dependent or independent patent claim to incorporate the subject matter of the other. If the patent owner elects to rewrite one of the dependent or independent claims to include the subject matter of the other and cancel the other claim, the rewritten claim would be indicated on the certificate as being "patentable as amended". The other claim which was cancelled would be indicated on the certificate as "cancelled".

C. *Present new claim and cancel patent claims.*

It is also permissible for the patent owner to present a new claim incorporating the subject matter of the independent and dependent patent claims and cancel the independent and dependent patent claims. In this case the certificate would indicate "new claim ___ is added and determined to be patentable". The cancelled independent and dependent patent claims would be indicated as "cancelled".

NOTE: This Practice Applies Only to Reexamination and Does Not Change Current Practice Relating to Original and Reissue Applications

II. *Change in Reexamination Certificate Wording.*

The Office is also modifying the language of reexamination certificates directed to claims that are cancelled (for any reason) by dropping the language "having been finally determined to be unpatentable" since the existing language may not be accurate in all cases and since the patent and reexamination files are open to the public and the record speaks for itself. The certificate will merely state such a claim "is cancelled". This change will be effective with the July 17, 1984, Official Gazette issue.

DONALD J. QUIGG,
Deputy Commissioner of Patent and Trademarks.

June 14, 1984.

[1044 O.G. 11]

(100) **Priority Claims Based on Inventors Certificates**

Pursuant to the provisions of 35 U.S.C. 119, last paragraph (as amended July 28, 1972), 37 CFR 1.55(c) requires that when an applicant wishes to claim a right of priority on the basis of an application for an inventor's certificate, ". . . the applicant or his attorney or agent, when submitting a claim for such right . . . shall include an affidavit or declaration including a specific statement that, upon an investigation, he has satisfied himself that to the best of his knowledge the applicant, when filing his application for the inventor's certificate, had the option to file an application either for a patent or for an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority."

As such, it has been and remains the position of the Patent and Trademark Office that, in accordance with 35 U.S.C. 119, application for inventors' certificates shall give rise to a right of priority only when the country in which they are filed gives to applicants, at their discretion, the right to apply, on the same invention, either for a patent or for an inventor's certificate. The affidavit or declaration specified under 37 CFR 1.55(c) is only required for the purpose of ascertaining whether, in the country where the application for an inventor's certificate originated, this option generally existed for applicants with respect to the particular subject matter of the invention involved. The requirements of 35 U.S.C. 119 and 37 CFR 1.55(c) are not intended, however, to probe into the eligibility of the particular applicant to exercise the option in the particular priority application involved.

It is recognized that certain countries that grant inventors' certificates also provide by law that their own nationals who are employed in state enterprises may only receive inventors' certificates and not patents on inventions made in connection with their employment. This will not impair their right to be granted priority in the United States based on the filing of the inventor's certificate.

Accordingly, affidavits or declarations filed pursuant to 37 CFR 1.55(c) need only show that in the country in which the original inventor's certificate was filed, applicants generally have the right to apply at their own option either for a patent or an inventor's certificate as to the particular subject matter of the invention.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Aug. 17, 1977.

[962 O.G. 14]

(101) **Requirements for Priority Documents, Priority Based on Application for Industrial Design**

In the Federal Republic of Germany, an application for protection of an industrial design may be accompanied by either a model or a drawing. It is understood that German residents file such applications with their local judicial authority ("Amtsgericht") rather than with the German Patent Office in Munich.

Questions have been raised in this connection as to:

(1) What sort of priority document under 35 U.S.C. 119 is required when the original filing has comprised a model rather than a drawing, and

(2) Whether it is necessary where the original filing was with a local judicial authority to obtain also a certificate from the national patent office.

As to the first question, the Patent and Trademark Office will receive under 35 U.S.C. 119, as evidence of an earlier filed design application which included the deposit of a model, drawings or acceptable photographs of the deposited model faithfully reproducing the design embodied therein together with other required information, certified by an official of the court or office with which the application was originally filed.

No additional certification by the national patent office will be required. Article 4D(3) of the Paris Convention refers to certification ". . . by the authority which received such application . . ." so the reference in 35 U.S.C. 119 to "patent office" will be construed to extend also to the authority in charge of the design register.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Aug. 15, 1977.

[962 O.G. 14]

(102) **Right of Priority (35 U.S.C. 119) Based on a Foreign Application Filed Under a Bilateral or Multilateral Treaty**

Under Article 4A of the Paris Convention for the Protection of Industrial Property (21 UST 1583; 24 UST 2140; TIAS 6923, 7727; 852 O.G. 511) a right of priority may be based either on an application filed under the national law of a foreign country adhering to the Convention or on a foreign application filed under a bilateral or multilateral treaty concluded between two or more such countries. Examples of such treaties are the Hague Agreement Concerning the International Deposit of Industrial Designs, the Benelux Designs Convention, and the Libreville Agreement of September 13, 1962, relating to the creation of an African and Malagasy Industrial Property Office. The Convention on the Grant of European Patents and the Patent Cooperation Treaty will be further examples of such treaties once they enter into force.

The Priority Claim

In claiming priority of a foreign application previously filed under such a treaty, certain information must be supplied to the Patent and Trademark Office. In addition to the application number and the date of the filing of the application, the following information is required: (1) the name of the treaty under which the application was filed, (2) the name of at least one country other than the United States in which the application has the effect of, or is equivalent to, a regular national application, and (3) the name and location of the national or intergovernmental authority which received such application.

Certification of the Priority Papers

Section 119 of Title 35 of the United States Code requires the applicant to furnish a certified copy of priority papers. Certification by the authority empowered under a bilateral or multilateral treaty to receive applications which give rise to a right of priority under Article 4A(2) of the Paris Convention will be deemed to satisfy the certification requirement.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Aug. 9, 1977.

[962 O.G. 2]

(103) **Abstract of the Disclosure**

This notice is intended to announce a change in the examining practice concerning review of the abstract for compliance with the guidelines set forth in MPEP 608.01(b).

At present, the examiner is instructed to review the abstract for compliance with the guidelines when passing the case to issue, making any necessary revisions by examiner's amendment. This policy has led to the necessity for many changes by the examiner which could have and should have been made at an earlier point in the prosecution. For example, abstracts in excess of the 250 word limit require cancellation and/or rewriting of portions thereof. This 250 word limit is strictly enforced since it represents a requirement of the printing process

and the printed patent format designed to present a maximum amount of information concerning a patent on a single page.

Effective immediately, examiners are to require correction of the abstract at the earliest point in the prosecution that non-compliance with the guidelines is detected. Applicants are expected to observe the guidelines in drafting the abstract and correct any defect that is identified in an Office action. Applicants are encouraged to make the necessary corrections not only to relieve the examiner of this burden, but also to help avoid any potential conflict with respect to altering the scope of the enabling disclosure. In this regard, it should be noted that the abstract of the disclosure has been interpreted to be a part of the specification for the purposes of compliance with paragraph 1 of 35 USC 112. *In re Armbruster,* 512 F2d 676, 185 USPQ 152 (CCPA 1975). However, although it is preferable for applicant to make any necessary changes, the examiner will retain the authority and responsibility for reviewing, editing and revising the abstract of the disclosure at the time of allowance of the application to assure compliance with the guidelines.

Section 608.01(b) of the Manual of Patent Examining Procedures will be amended appropriately.

WILLIAM FELDMAN,
Dec. 30, 1977. *Deputy Assistant Commissioner for Patents.*

[967 O.G. 2]

(104) **Supplemental Guidelines for The Implementation of 37 CFR 1.109— Reasons for Allowance**

A recent review of recorded statements of reasons for allowance indicates the need for a better understanding regarding implementation of new Rule 109 (37 CFR 1.109).

These guidelines are supplemental to those published in the **Official Gazette** at 957 O.G. 11 on April 12, 1977 and amplified in Section 1302.14 MPEP, Rev. 52, April 1977.

In determining whether reasons for allowance should be recorded the primary consideration lies in the first sentence of the Rule.

> "If the examiner believes that the record of the prosecution *as a whole* does not make clear his reasons for allowing a claim or claims, the examiner may set forth such reasoning." (Emphasis added.)

In most cases the examiner's actions and the applicant's response make evident the reasons for allowance, satisfying the "record as a whole" proviso of the rule. This is particularly true when applicant fully complies with 37 CFR 1.111(b) and (c), 37 CFR 1.119 and 37 CFR 1.133(b). Thus where the examiner's actions clearly point out the reasons for rejection and the applicant's response explicitly represents reasons why claims are patentable over the reference, the reasons for allowance are in all probability evident from the record and no statement should be necessary. Conversely, where the record is not explicit as to reasons, but allowance is in order, then a logical extension of 37 CFR 1.111, 1.119 and 1.133 would dictate that the examiner should make reasons of record and such reasons should be specific.

Where specific reasons are recorded by the examiner, care must be taken to insure that such reasons are accurate, precise and do not place unwarranted interpretations, whether broad or narrow, upon the claims. The examiner should keep in mind the possible misinterpretations of his statement that may be made and its possible estoppel effects. Each statement should include at least: (1) the major difference in the claims not found in the prior art of record, and (2) the reasons why that difference is considered to define patentably over the prior art if either of these reasons for allowance is not clear in the record. The statement is not intended to necessarily state all the reasons for allowance or all the details why claims are allowed and should not be written to specifically or impliedly state that all the reasons for allowance are set forth.

Under the rule, the examiner must make a judgement of the individual record to determine whether or not reasons for allowance should be set out in that record. These guidelines, then, are intended to aid the examiner in making that judgement. They comprise illustrative examples as to applicability and appropriate content. They are not intended to be exhaustive.

Examples of When It Is Likely That a Statement Should Be Added to the Record

1. Claims are allowed on the basis of one (or some) of a number of arguments and/or affidavits presented and a statement is necessary to identify which of these were persuasive, for example:
   a. When the arguments are presented in an appeal brief.
   b. When the arguments are presented in an ordinary response with or without amendment of claims.
   c. When both an affidavit under 37 CFR 1.131 and arguments under 102 and 103 are presented.
2. First action issue:
   a. Of non-continuing application wherein claims are very close to cited prior art and differences have not been discussed elsewhere.
   b. Of continuing applications wherein reasons for allowance are not apparent from the record in the parent case or clear from preliminary filled matters.
3. Withdrawal of a rejection for reasons not suggested by applicant, for example:
   a. As a result of an appeal conference.
   b. When applicant's arguments have been misdirected or are not persuasive alone and the Examiner comes to realize that more cogent argument is available.
   c. When claims are amended to avoid a rejection under 35 USC 102 but arguments (if any) fail to address the question of obviousness.
4. Allowance after remand from the Board of Appeals.
5. Allowance coincident with the citation of newly found references that are very close to the claims, but claims are considered patentable thereover:
   a. When reference is found and cited (but not argued) by applicant.
   b. When reference is found and cited by Examiner.
6. Where the reasons for allowance *are* of record but in the Examiner's judgement, are unclear (e.g. spread throughout the file history) so that an unreasonable effort would be required to collect them.
7. Allowance based on claim interpretation which might not be readily apparent, for example:
   a. Article claims in which method limitations impart patentability.
   b. Method claims in which article limitations impart patentability.
   c. Claim is so drafted that "non-analogous" art is not applicable.
   d. Preamble or functional language "breathes life" into claim.

Examples of Statements of Suitable Content

1. The primary reason for allowance of the claims is the inclusion of .03 to .05 percent nickel in all the claims. Applicant's second affidavit, in example 5 shows unexpected results from this restricted range.
2. During two telephonic interviews with applicant's attorney, Mr.—on 5/6 and 5/10/77, the Examiner stated that Applicant's remarks about the placement of the primary teaching's grid member were persuasive, but he pointed out that applicant did not claim the member as being within the reactor. Thus, an amendment doing such was agreed to.
3. The instant application is deemed to be directed to an unobvious improvement over the invention patented in Pat. No. 3,953.224. The improvement comprises baffle means *12* whose effective length in the extraction tower may be varied so as to optimize and to control the extraction process.
4. Upon reconsideration, this application has been awarded the effective filing date of S.N. _____. Thus the rejection under 35 USC 102(d) and 103 over Belgian Patent No. 757,246 is withdrawn.
5. The specific limitation as to the pressure used during compression was agreed to during the telephone interview with applicant's attorney. During said interview, it was noted that applicants contended in their amendment that a process of the combined applied teachings could not result in a successful article within the amended pressure range. The Examiner agreed to rely on this statement (see page 3, bottom, of applicant's amendment), and the case was allowed.
6. In the Examiner's opinion, it would not be obvious to a person of ordinary skill in the art first to eliminate one of top members 4, second to eliminate plate 3, third to attach remaining member 4 directly to tube 2 and finally to substitute this modified handle for the handle 20 of Nania (see Fig. 1) especially in view of applicant's use of term "consisting."

Examples of Statements That Are Not Suitable as to Content

1. The 3 roll press couple has an upper roll 36 which is swingably adjustable to vary the pressure selectively against either of the two lower rolls. (Note: The significance of this statement may not be clear if no further explanation is given.)
2. The main reasons for allowance of these claims are applicant's remarks in the appeal brief and an agreement reached in the appeals conference.
3. The instant composition is a precursor in the manufacture of melamine resins. A thorough search of the prior art did not bring forth any compositions which corresponds to the instant compositions. The Examiner in the art also did not know of any art which could be used against the instant composition.
4. Claims 1–6 have been allowed because they are believed to be both novel and unobvious.

The examiner should *not* include in his statement any matter which does not relate directly to the reasons for allowance. For example:

5. Claims 1 and 2 are allowed because they are patentable over the prior art. If applicants are aware of better art than that which has been cited, they are required to call such to the attention of the Examiner.
6. The reference Jones discloses and claims an invention similar to applicant's. However, a comparison of the claims, as set forth below, demonstrates the conclusion that the inventions are non-interfering.

WILLIAM FELDMAN,
Jan. 24, 1978. *Deputy Assistant Commissioner for Patents.*

[968 O.G. 6]

(105) **Practice/Re: New Grounds of Rejection After Appeal Brief Has Been Filed**

A new practice has been implemented in the Patent Examining Corps to promote uniformity and adherence to guidelines in situations where a new ground of rejection is made in an Office action after an appeal brief has been filed. Under this practice Supervisory Patent Examiner approval is required for any new ground of rejection made after the filing of an Appeal Brief. This requirement extends to new grounds of rejection made either in an examiner's answer or in an Office action reopening prosecution. Evidence of that approval should appear on applicant's copy of the Office action or answer as well as the record copy. Consultation with or approval by the Group Director is no longer required in these situations.

This new practice does not alter the existing guidelines for reopening prosecution (MPEP) 706.7(e) or for making a new ground of rejection in an examiner's answer (MPEP 1208.01). Appropriate modification will be made to applicable Sections of the Manual of Patent Examining Procedure in a future revision.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

[970 O.G. 94 (5-23-78)]

(106) **Commercial Success and Other Considerations Bearing on Obviousness**

In order to clarify Office practice relative to considerations of commercial success and other items bearing on obviousness, the following changes are made in the Manual of Patent Examing Procedure.

In section 716, subsection 4, change the sub-title and first paragraph to read as follows:

4. *Commercial Success and Other Considerations Bearing on Obviousness*

Affidavits or declarations submitting evidence of commercial success, long-felt but unsolved needs, failure of others, etc., must be considered by the Examiner in determining the issue of obviousness of claims for patent-ability under 35 U.S.C. 103. Such evidence might be utilized to give light to circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or unobviousness, such evidence may have relevancy, *Graham* v. *John Deere Co.,* 383 U.S. 1, 148 USPQ 459 (1966) ; *In re Palmer.* 172 USPQ 126, 451 F.2d 1100 (CCPA 1971) ; *In re Fielder and Underwood,* 176 USPQ 300, 471 F.2d 640 (CCPA 1973). The *Graham* v. *John Deere* pronouncements on the relevance of commercial success, etc. to a determination of obviousness were not negated in *Sakraida* v. *Ag Pro,*425 U.S. 273, 189 USPQ 449 (1976) or *Andersons Black Rock, Inc.* v. *Pavement Salvage Co., Inc.,* 396 U.S. 57, 163 USPQ 673 (1969), where reliance was placed upon *A & P Tea Co.* v. *Supermarket Corp.,* 340 U.S. 147 87 USPQ 303 (1950). See *Dann* v. *Johnston,* 425 U.S. 219, 189 USPQ 257 (1976), at 261, footnote 4.

The weight attached to evidence of commercial success, etc. by the Examiner will depend upon its materiality to the issue of obviousness and the amount and nature of the evidence. Note the great reliance apparently placed on this type of evidence by the Supreme Court in upholding the patent in *United States* v. *Adams,* 383 U.S. 39, 148 USPQ 479 (1966).

Evidence of commercial success, etc. must be commensurate in scope with the scope of the claims [*In re Tiffin,* 448 F.2d. 791. 171 USPQ 294 (1971)]. Further in considering evidence of commercial success, care should be taken to evaluate to the extent possible from the evidence submitted, whether the commercial success alleged is directly derived from the invention claimed, in a marketplace where the consumer is free to choose on the basis of objective principles, and that such success is *not* the result of heavy promotion or advertising, shift in advertising consumption by purchasers normally tied to applicant or assignee, or other business events extraneous to the merits of the claimed invention, etc. [*In re Mageli, et al.* 176 USPQ 305, (CCPA 1973)]; [*In re Noznick, et al,* 178 USPQ 43, (CCPA 1973)].

Similarly in considering evidence of longfelt but unsolved needs and failure of others, care should be taken to determine whether such failures were due to lack of interest or appreciation of an invention's poten-

tial or marketability rather than want of technical know-how [*Scully Signal Co.* v. *Electronics Corp. of America*, 196 USPQ 657 (1st Cir. 1977)].

In section 716, subsection 4, add the following as the last paragraph:

If, after evaluating the evidence, the examiner is still not convinced that the claimed invention is patentable, his action should include a simple statement to that effect, identifying the reason(s) (e.g., evidence of commercial success not convincing, the commercial success not related to the technology, etc.).

RENE D. TEGTMEYER,
July 10, 1978. *Assistant Commissioner for Patents.*

[973 O.G. 34]

(107) **Handling of Dependent Claims by the Examiner**

Effective immediately, the following practice will be followed by patent examiners when making reference to a dependent claim—either singular or multiple. The new practice is intended to simplify and streamline our current practice (MPEP 608.01(n), Revision 55, January 1978) which experience indicates was unnecessarily burdensome in many cases.

1. When identifying a singular dependent claim which does not include a reference to a multiple dependent claim, either directly or indirectly, reference should be made only to the number of the dependent claim.
2. When identifying the embodiments included within a multiple dependent claim, or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, each embodiment should be identified by using the number of the claims involved, starting with the highest, *to the extent necessary* to specifically identify each embodiment.
3. When all embodiments included within a multiple dependent claim or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, are subject to a common rejection, objection or requirement, reference may be made only to the number of the dependent claim.

The following table illustrates the intended differences between current and the revised practice where each embodiment of each claim must be treated on an individual basis:

Claim Number	Claim Dependency	Identification: Current Practice	Identification: Revised Practice
1	Independent	1	1
2	Depends from 1	2/1	2
3	Depends from 2	3/2/1	3
4	Depends from 2 or 3 .	4/2/1	4/2
		4/3/2/1	4/3
5	Depends from 3	5/3/2/1	5
6	Depends from 2, 3 or 5	6/2/1	6/2
		6/3/2/1	6/3
		6/5/3/2/1	6/5
7	Depends from 6	7/6/2/1	7/6/2
		7/6/3/2/1	7/6/3
		7/6/5/3/2/1	7/6/5

When all embodiments in a multiple dependent claim situation (claims 4, 6 and 7 above) are subject to a common rejection, objection or requirement, reference may be made only to the number of the individual dependent claim. For example, if 4/2 and 4/3 were subject to a common ground of rejection, reference should be made only to claim 4 in the statement of that rejection.

The provisions of 35 USC 132 require that each Office action make it explicitly clear what rejection, objection and/or requirement is applied to each claim embodiment.

WILLIAM FELDMAN,
Oct. 17, 1978. *Deputy Assistant Commissioner.*

[976 O.G. 128]

(108) **Microorganisms—Patentable Subject Matter**

The decision of the Supreme Court in *Diamond* v. *Chakrabarty* (206 U.S.P.Q. 193) held that microorganisms produced by genetic engineering are not excluded from patent protection by 35 U.S.C. §101. It is clear from the Supreme Court decision that the question of whether or not an invention embraces living matter is irrelevant to the issue of patentability.

Accordingly, the Patent and Trademark Office is now examining patent applications including claims to microorganisms which had been under suspension. Assuming that the products involved were the result of human intervention and were not products of nature, such claims will not be rejected under 35 U.S.C. §101 as directed to unpatentable subject matter.

SIDNEY A. DIAMOND,
July 29, 1980. *Commissioner of Patents and Trademarks.*

[997 O.G. 24]

(109) **Department of Commerce**
Patent and Trademark Office

Designation of International Depository Authorities under the Budapest Treaty

The Budapest Treaty and the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure came into force on Aug. 19, 1980 with respect to the United States, Bulgaria, France, Hungary, and Japan. A copy of the Treaty was published in the *Official Gazette* on Aug. 23, 1977 (961 O.G. 21–26).

This Treaty authorizes each State for which the Treaty is in effect to designate a depository on its territory to serve as an international depository authority. More than one depository may be designated. Each such depository will be authorized to receive and store deposits, and dispense samples thereof, in compliance with the Treaty and the patent laws of each State adhering thereto. The Treaty is open for adherence by any member State of the Paris Union for the Protection of Industrial Property.

The Commissioner of Patents and Trademarks hereby solicits requests from private and public depositories located in the United States to serve as international depository authorities. Requests should be addressed to: Sidney A. Diamond, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Each request must explain and, to the extent practicable, provide evidence of the depository's capacity to meet the obligations of the Treaty. Such request must also include an offer by the depository to assume the cost of transferring deposits made under the Treaty to another international depository authority in the event of default of any of its Treaty obligations. The availability of funds for such transfer, if needed, must be available through a bond, special reserve fund, escrow or other means judged suitable by the Commissioner.

Requests will be promptly evaluated by the Commissioner of Patents and Trademarks, and each requesting depository promptly notified of the decision reached. Questions or inquiries concerning this notice may be addressed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557-3065.

The World Intellectual Property Organization, in Geneva, Switzerland, the Secretariat for the Paris Union, has provided a memorandum explaining the role and obligations of international depository authorities. This memorandum is reproduced below for the guidance of depositories in requesting recognition as an international depository authority.

MEMORANDUM

For the purposes of prospective international depositary authorities under the Budapest Treaty

Introduction

1. This memorandum contains informations for the benefit of any depositary institutions (culture collections) that may wish to become "international depositary authorities" under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (done at Budapest on Apr. 28, 1977). Its brevity is such that it cannot be exhaustive. Any interested person requiring full information should refer to the relevant provisions of the Budapest Treaty and the Regulations under it (any reference hereinafter to an "Article" or to a "Rule" is a reference to an Article of the Budapest Treaty or to a Rule of the Regulations under it).

Objectives of the Budapest Treaty

2. Disclosure of the invention is a generally recognized requirement for the grant of patents (for the purposes of this memorandum, the word "patent" also covers other titles of protection, such as inventors' certificates). Normally, an invention is disclosed by means of a written description. Where an invention involves the use of a microorganism that is not available to the public, such a description is not sufficient for disclosure, since the invention could not be used by a person skilled in the art. That is why in the patent procedure of an increasing number of countries it is necessary not only to file a written description but also to deposit, with a depositary institution, a sample of the microorganism. When protection for the invention is sought in several countries, the complex and costly procedures of the deposit of the microorganism might have to be repeated in each of those countries. The objective of the Budapest Treaty is precisely to obviate such multiple deposits: under the Treaty a single deposit with one "international depositary authority" is sufficient for the purposes of patent procedure before the industrial property offices of all Contracting States, and of inter-governmental organizations granting regional patents which have declared that they recognize the effects of the Treaty (Articles 3(1)(a) and 9(1)(a)).

General Remarks on International Depositary Authorities

3. "International depositary authorities" are depositary institutions that have acquired the status of international depositary authorities. To obtain this status, a depositary institution has to be located on the territory of a Contracting State or of a member State of one of the organizations referred to in the preceding paragraph, and has to benefit from "assurances" furnished by that Contracting State or organization to the effect that the institution complies and will continue to comply with the requirements referred to in paragraph 5 below (Article 6(1)). The action for acquiring this status is taken by the State or organization concerned (Article 7 and Rule 3). There is nothing to prevent it from making more than one depositary institution acquire such status: it is therefore possible for there to be several international depositary authorities located on the territory of one and the same State.

4. An international depositary authority can lose its status either entirely (in which case "termination of status" is spoken of) or partly, in other words in respect of certain types of microorganisms only (in which case "limitation of status" is spoken of). Loss of the status occurs if the State or organization whose action brought about the acquisition of the status denounces the Treaty or withdraws the declaration of recognition of the effects of the Treaty (in which case the loss of status can only be total), or if the State or organization withdraws its assurances regarding the international depositary authority, or again by virtue of a decision of the Assembly of Contracting States taken at the request of another Contracting State or another organization (Articles 8, 9(4) and 17(4); Rule 4).

Requirements Which Have to be Met by International Depositary Authorities

5. The requirements referred to in paragraph 3 above which a depositary institution has to meet in order to become a depositary authority are the following (Article 6(2) and Rule 2):

(a) The institution has to have a continuous existence. It has to be impartial and objective—which means among other things that it has to be free of any dependence on interests that are liable to prejudice the disinterested performance of its functions—and it has to be available, for the deposit of microorganisms, to any depositor under the same conditions. These requirements, which in fact seem self-evident, are designed to give the public in general and depositors in particular fundamental guarantees of reliability as to the smooth operation of the system. On the other hand, the legal status of the institution is irrelevant: it may be either public or private.

(b) The institution has to have the necessary staff and facilities to perform its scientific and administrative tasks, which consist among other things in:

(i) accepting for deposit any or certain kinds of microorganisms;

(ii) examining the viability of the microorganisms deposited with it and issuing a receipt to the depositor and any required viability statement (see paragraphs 7 and 8 below);

(iii) storing the deposited microorganism for at least 30 years (Rule 9(1)) in such a way as to keep them viable and uncontaminated;

(iv) providing for sufficient safety measures to minimize the risk of losing the deposited microorganisms,

(v) complying with respect to the microorganisms deposited under the Treaty with the requirement of secrecy which means giving no information to anyone on the question whether a microorganism has been thus deposited and giving no information to anyone (except to a person who is entitled to a sample—see paragraph 10 below) on any microorganism thus deposited (Rule 9(2));

(vi) furnishing, rapidly and in an appropriate manner, samples of the deposited microorganisms to all those who are entitled to such samples (see paragraph 10 below).

Handling of Microorganism Deposits by the International Depositary Authority

6. *Reception of the microorganism.* The international depositary authority may require that the microorganism be deposited in an appropriate form and quantity, and that it be accompanied by a form established by that authority. In such a case, the said authority has to communicate its requirements (and any amendments to them) to the International Bureau in order that the latter may communicate them to all the depositors concerned (Rules 6.3 and 13.2(b)(v)). When it receives the microorganism, the international depositary authority notes the date of receipt of the deposit and gives it an accession number (Rule 7.3(iii) and (v)). It issues a receipt to the

depositor attesting the receipt and acceptance of the deposit (Rule 7). The model of the international form for the receipt, the use of which will be mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

7. *Viability test.* The international depositary authority promptly tests the viability of the microorganism; it also undertakes viability tests at reasonable intervals, depending on the kind of microorganism and its possible storage conditions, or at any time, if necessary for technical reasons or at the request of the depositor (Rule 10.1)

8. *Viability statement.* The international depositary authority issues a statement concerning the viability of the microorganism to the depositor or to any person receiving a sample of the microorganism (see paragraph 10 below) (Rule 10.2). The model of the international form for the viability statement, the use of which is mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

9. *Storage of the microorganism.* The international depositary authority stores the microorganism for a period of at least 30 years after the date of its deposit, or until five years have elapsed without its having received a request for a sample, the period expiring later being applicable (Rule 9.1). It complies with the requirement of secrecy at all times (see paragraph 5(v) above). Where it cannot furnish samples of the deposited microorganism for any reason, it notifies the depositor of the fact, indicating the reason and informing him that he is entitled to make a new deposit (Article 4).

10. *Furnishing of samples.* The Regulations contain detailed provisions specifying who is entitled to receive samples of the microorganism, and when (Rule 11). The depositor himself is entitled to receive a sample at any time. He may authorize third parties to have samples furnished to them, whereupon the third parties receive a sample on presentation of their authorizations. Any industrial property office to which the Treaty applies may receive a sample on request if it needs the microorganism for the purposes of a patent procedure. Any other person may obtain a sample on request if an industrial property office to which the Treaty applies certifies that, under the applicable law, that person has a right to a sample of the microorganism concerned; the Regulations specify in detail the certification procedure. The use of a form (whose contents will be established by the Assembly and communicated by the International Bureau to all international depositary authorities) is mandatory for the request and certification. There is an alternative procedure wherey the industrial property office from time to time communicates to international depositary authorities lists of the accession numbers given to the deposit of the microorganisms referred to in the patents granted and published by it; the effect of this communication is to authorize those authorities to furnish samples of the microorganisms to anyone. It should be stressed that it follows from the foregoing that the international depositary never has to decide itself whether it has the right to furnish a sample since it only does so if it has the authorization of the depositor or of an industrial property office. The international depositary authority furnishes the sample in a container marked with the accession number given to the deposit and accompanied by a copy of the receipt for the deposit. It notifies the depositor of the furnishing of the sample.

11. *Communication of the scientific description and/or proposed taxonomic designation.* If the depositor has indicated a scientific description and/or proposed a taxonomic designation of the deposited microorganism, the international depositary authority must communicate it, on request, to any person entitled to receive a sample of the said microorganism (Rule 7.6).

12. *Fees.* For the procedure under the Treaty and the Regulations, the international depositary authority has the right to charge a fee in certain cases (specified in Rule 12.1). The two main fees are the fee for the storage of the microorganism (which is a single fee for the entire period of storage) and the fee for the furnishing of a sample (the furnishing of samples to industrial property offices is free of charge, however). The international depositary authority fixes the amounts of fees at its discretion, but they must not vary on account of the nationality or residence of the persons who have to pay them.

SIDNEY A. DIAMOND,
July 14, 1978. *Commissioner of Patents and Trademarks.*

[999 O.G. 2]

(110) **Entry Into Force of the Budapest Treaty**

The Patent and Trademark Office announces the entry into force on Aug. 19, 1980 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure with respect to the United States, Hungary, Bulgaria, France and Japan. A copy of the Treaty was published in the Official Gazette on Aug. 23, 1977 (961 O.G. 21–36).

Following entry into force of the Treaty, each state adhering or acceding thereto will be authorized to nominate depositories on its territory to serve as international depository authorities. Upon compliance with certain procedural steps set forth in the Treaty, each such depository will be designated an international depository authority.

No depository in the United States or elsewhere has yet been nominated or designated to serve as an international depository authority. It is expected, however, that some depositories will shortly be designated both in the United States and other States adhering to the Treaty. Public notice will be provided of the designation of each international depository authority and its requirements for patent deposits.

An application for a patent in any adhering States involving the action of a microorganism, for which a deposit is required, may make the required deposit in any international depository authority. The fact and date of making the deposit will be recognized for all patent purposes in each State adhering to the Treaty. No further deposit will be required for national patent processing or enforcement, provided a deposit is properly made under the provisions of the Treaty.

An application for a United States patent will not be required to proceed under the provisions of the Budapest Treaty, however. Such an applicant may rely instead on a deposit made in any depository meeting the requirements set forth in *In re Argoudelis, et al.*, 168 USPQ 99 (CCPA, 1970) and reprinted in section 608.01(p), Manual of Patent Examining Procedure.

Questions or information regarding the Budapest Treaty may be directed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557-3065.

SIDNEY A. DIAMOND,
July 14, 1980. *Commissioner of Patents and Trademarks.*

JORDAN J. BARUCH,
July 16, 1980. *Assistant Secretary for Productivity, Technology and Innovation.*

[997 O.G. 10]

(111) **Department of Commerce**
Patent and Trademark Office
Recognition of United States Depository as an International Depository Authority Under the Budapest Treaty

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the United States announces recognition of the American Type Culture Collection, Rockville, Md., as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according this recognition as of Jan. 31, 1981 follows:

SIDNEY A. DIAMOND,
Dec. 30, 1980. *Commissioner of Patents and Trademarks.*

BUDAPEST Notification No. 11

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United States of America Relating to the Acquisition of the Status of International Depositary Authority by the American Type Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments to the Minister for Foreign Affairs and has the honor to notify him of the receipt, on Nov. 17, 1980, of a written communication from the Government of the United States of America, relating to the American Type Culture Collection, indicating that the said depositary institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depositary authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on Apr. 28, 1977.

The American Type Culture Collection will acquire the status of international depositary authority under the said Treaty as from Jan. 31, 1981, the date of publication of the said communication in the Jan. 1981 issue of *Industrial Property/La Propriete industrielle* (see Article 7(2) of the said Treaty).

Dec. 3, 1980.

[1002 O.G. 116]

(112) **Department of Commerce**
Patent and Trademark Office
Recognition of United States Depository as an International Depository Authority Under the Budapest Treaty

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the United States announces recognition of the Agricultural Research Culture Collection, Peoria, Ill., as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according this recognition as of Jan. 31, 1981 follows:

SIDNEY A. DIAMOND,
Dec. 30, 1980. *Commissioner of Patents and Tradmarks.*

BUDAPEST Notification No. 12

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United States of America Relating to the Acquisition of the Status of International Depositary Authority by the Agricultural Research Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments to the Minister for Foreign Affairs and has the honor to notify him of the receipt, on Dec. 2, 1980, of a written communication from the Government of the United States of America, relating to the Agricultural Research Culture Collection, indicating that the said depositary institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depositary authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on Apr. 28, 1977.

The Agricultural Research Culture Collection will acquire the status of international depositary authority under the said Treaty as from Jan. 31, 1981, the date of publication of the said communication in the Jan. 1981 issue of *Industrial Property/La Propriete industrielle* (see Article 7(2) of the said Treaty).

Dec. 8, 1980.

[1002 O.G. 116]

(113) **Plant Life — Patentable Subject Matter**

The decision by the Board of Patent Appeals and Interferences in Ex Parte Hibberd (Sept. 18, 1985) held that the Plant Patent Act (35 USC 161–164) and the Plant Variety Protection Act (7 USC 2321 et seq.) do not represent the exclusive forms of protection for plant life covered by these acts, and that there is no irreconcilable conflict between these plant-specific statutes and 35 USC 101. It is clear from the Board decision that plant life is not excluded from patent protection under 35 USC 101.

Accordingly, the Patent and Trademark Office is now examining applications including claims to plant life — e.g., plants per se, seeds, plant parts. To the extent that the claimed subject matter is directed to a "nonnaturally occurring manufacture or composition of matter — a product of human ingenuity" (*Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980)), such claims will not be rejected under 35 USC 101 as being directed to unpatentable subject matter.

DONALD J. QUIGG,
Oct. 8, 1985. *Commissioner of Patents and Trademarks—Designate.*

[1060 OG 4]

(114) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 21001–201]

File Wrapper Continuing Application Procedure

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases to provide a new procedure for filing continuation, continuation-in-part, and divisional patent applications. This procedure is being provided to simplify filing and processing of continuation, continuation-in-part and divisional patent applications which have heretofore required a new set of application papers. By using the application which is

to be abandoned, the procedure will eliminate many of the problems currently involved in preparing and processsing such continuing patent application papers.

Effective Date: Feb. 27, 1983.

For Further Information Contact: Mr. Louis O. Maassel by telephone at (703) 557-3070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: The Patent and Trademark Office is amending the rules of practice for patent cases to permit an applicant to file a continuation or division of a pending patent application by simply filing a request therefor and paying the necessary application filing fee. To file a continuation-in-part application, an amendment adding the additional subject matter and an oath or declaration relating thereto is also required.

The "file wrapper continuing" (FWC) procedure is incorporated in the rules by adding a new §1.62. Under this simplified procedure, any continuing application such as a continuation, continuation-in-part, or divisional application may be filed by using the papers in the copending prior application, which application will become automatically expressly abandoned. Under the FWC procedure, a new serial number is assigned and the specification, drawings and other papers in the parent application file wrapper are used as the papers in the continuing application. Changes in inventorship may be made. The "file wrapper continuing" (FWC) procedure is available for utility, design, plant, and reissue applications to the full extent that continuing applications can now be filed in such applications. Use of the FWC procedure will automatically result in express abandonment of the prior application as of the date that the continuation, continuation-in-part, or divisional application is filed.

The FWC procedure could be used for any continuation, continuation-in-part or divisional application provided the applicant wishes the copending prior application to become abandoned. If a divisional application is desired without abandonment of the parent application, the procedure under §1.60 should be used. Applicant also has the option of filing new application papers with a reexecuted oath or declaration.

Background

The notice of proposed rulemaking was published in the Federal Register on Nov. 7, 1980 at 45 FR 73965 and in the Official Gazette on Dec. 9, 1980 at 1003 O.G. 9. An oral hearing was held on Feb. 4, 1981.

Discussion of Major Issue Involved

A continuation or divisional application is an application in which the disclosure is identical to an earlier application. However, the claims may be changed. Continuation applications are often filed in situations where the applicant feels that the issue of patentability has not been satisfactorily resolved before the examiner and the application is not in condition for an appeal from the final rejection to the Board of Appeals. Divisional applications are filed voluntarily or as a result of a requirement for restriction by the examiner in a prior application. Continuation-in-part applications are filed where additional subject matter is added and claimed in the application. Under 35 U.S.C. 120 of the patent law, a continuation, continuation-in-part or divisional application may be filed during the pendency of the prior application and the benefit of the filing date of the prior application for the subject matter disclosed therein may be obtained.

The practice under §1.60 has resulted in a number of problems, especially difficulties in obtaining good-quality copies of prior applications. In addition, the practice involves unnecessary handling and processing delays.

Under new §1.62, the specification, claims and drawings, and any amendments in the prior application are made available for use in the continuation, continuation-in-part, or divisional application. A new filing fee is required in accordance with 35 U.S.C. 41 and 37 CFR 1.16. The only other statutory requirement under 35 U.S.C. 111 is a signed oath or declaration. Since a continuation or divisional application cannot contain new matter, the oath or declaration filed in the prior application would supply all the information required under the statute and rules to have a complete application and to obtain a filing date. Accordingly, the previously-filed oath or declaration will be considered to be the oath or declaration of the §1.62 continuation or division. However, if a continuation-in-part application is being filed, or a correction of inventorship is being made, then a new oath or declaration must be signed and filed by the applicant.

The original disclosure of an application filed under §1.62 will be the original parent application as executed by the inventor(s). However, the filing fee will be based on the claims in the §1.62 application after entry of any unentered amendments under §1.116 in the prior application and any preliminary amendment which may accompany the FWC request and filing fee. The Certificate of Mailing Procedure under 37 CFR 1.8 will not apply to filing a request for a "File Wrapper Continuing" application since the filing of such a request is considered to be a filing of application papers for the purpose of obtaining an application filing date (37 CFR 1.8(a)(i)).

The applicant may file a signed FWC request and the regular filing fee under §1.16 and other necessary papers with the Patent and Trademark Office, either by mail addressed to "Box FWC" or in person with the mail room. An individual check or deposit account authorization should accompany each FWC application, since combined checks delay processing.

The Correspondence and Mail Division will sort out all "Box FWC" envelopes upon receipt and deliver them to a reader for prompt special handling. The reader would apply the "Mail Room" date stamp and mark the categories of the fees. The papers for each FWC application would be assigned a regular national serial number and be placed in a "Jumbo" size file wrapper. The Special Handling Branch will review the FWC request for accuracy and completeness and assign the filing date if everything appears to be in order. Problems will be handled, insofar as possible, by calling the applicant or attorney by telephone. There will be no need for any processing of the FWC application by the Classification or Examination Branches of Application Division since there are no papers to be examined and the FWC application will be routed to the group assigned the prior application. When the FWC application file wrapper is received in the examining group, the parent application will be promptly obtained and processed by a clerical staff member.

All of the correspondence from the Office in a FWC application will refer to the FWC application serial number and filing date and will be processed in the same manner as any other continuation, continuation-in-part or divisional application. The first action final rejection procedures set forth in §706.07(b) of the Manual of Patent Examining Procedure will also apply to FWC applications filed under §1.62.

The PALM III system will supply information to authorized persons as to the location of the parent application file wrapper and will tie the parent application number to the FWC application number.

The provisions of §1.62 provide that if any application in the file wrapper is available to the public that all applications in the file wrapper will be available to the public.

Some of the anticipated benefits of the new §1.62 procedure are the following:

For the Applicant

1. Formal requirements will be minimal.

2. A more prompt first action in the continuing application should be received in view of reduced processing time. The Application Division can process promptly all §1.62 applications with minimal effort. In the examining groups, the applications will be given high priority for processing purposes.

3. Amendments made to the specification, drawings and claims of the prior application will carry over into the §1.62 continuing application and will not need to be resubmitted in the continuing application.

For the Public

1. The pendency of a series of applications should be reduced since the time delay before examination and issuance of a continuing application filed under the §1.62 procedure would be reduced.

2. The entire record of prosecution could be in one file wrapper under the §1.62 procedure, even if several continuing applications are filed. This will result in easier access by the public to a series of applications if a patent is later issued.

For the Patent and Trademark Office

1. The workload of reviewing and processing new application papers in the Application Division will be reduced.

2. The examining group clerks will not be required to again enter amendments made in the prior application.

3. Less storage space will be required under §1.62 since there will be fewer papers to store.

4. The prior application file history and references cited therein will be readily available to the examiner under§1.62 and will not need to be ordered from abandoned files.

5. The Office will not be required to prepare a copy of the prior application file under the §1.62 procedure.

Discussion of Comments Received

After careful consideration of the comments which have been received, the proposed rulemaking relating to file wrapper continuing application procedure is being adopted with certain changes. A total of 23 comment letters were received. Six of these letters were received from patent law organizations. Two persons presented oral comments at the hearing. The comments of 6 letters supported the proposed rulemaking without further suggestions for change. Only one letter opposed the proposal.

Seven of the letters urged adoption of a procedure whereby an applicant could pay a fee to have a final rejection withdrawn so that prosecution could be extended in an application rather than filing a continuing application. This suggestion was not adopted for several reasons. Such a procedure could not be used for filing of continuation-in-part applications, the average pendency of applications in the Office would be extended, and significant problems in internal record systems would be created.

A number of comments were received which presented specific suggestions to proposed §1.62. Four letters commented that the requirement of proposed §1.62(a)(4) to supply information as to title, applicant, correspondence address, etc. in order to file under §1.62 could easily lead to filing errors.

In final §1.62(a)(3) only the serial number, filing date and applicant's name of the prior application are required. The filing of information relating to the title, applicant's name, etc. is however urged in paragraph (e) of final §1.62 and is needed to prepare Office records and the filing receipt.

One comment letter was received which indicated that a specific reference should be made to unentered amendments filed under 37 CFR 1.116. Such a reference has been added to paragraph (a)(2) of §1.62.

Two letters objected to the requirement in proposed §1.62(a)(2) that a new set of claims be presented. This requirement has been deleted from final §1.62.

A number of general comments were also presented relating to §1.62. One comment argued that the proposed practice would encourage abuse by examiners of the second action final rejection practice. In response to this argument, it is felt that the proposed procedure would not create any new problems.

One comment indicated that problems involving access to the file wrapper may arise. It is felt, however, that access problems should not arise in view of paragraph (c) of final §1.62 which relates to waiver of secrecy. The current PALM III computer record system is capable of indicating the location of both the prior and continuing applications.

One comment was received relating to proposed §1.138 which indicated that the reference to §1.60 was confusing. The reference to §1.60 has been deleted in final§1.138.

New §1.62 sets forth the requirements of the file wrapper continuing procedure.

Section §1.138 is amended so that a registered attorney or agent could, without being of record, file a §1.62 application and expressly abandon a pending prior application. Such an action would not affect applicant's rights to any great extent since the prior application would only be expressly abandoned if a filing date was granted to a continuing application.

Other Considerations

Environmental, Energy, and Other Considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980(44 U.S.C. 3501 et seq.).

The rule change will not have a significant adverse economic impact on a substantial number of small entities because it adds no burdens and does simplify filing procedures (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to preparing application papers and amendments, will be reduced.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Lawyers.

(Text of adopted rules appears in 37 CFR, revised July 1, 1983.)

Sept. 30, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[FR Doc. 82-29283 Filed 10-23-82: 8:45 am]
BILLING CODE 3510-16-M

[1024 O.G. 59]

(115) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1

Reissue, Reexamination, Protest and Examination Procedures in Patent Cases

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases (1) to eliminate con-

sideration of the so-called "no defect" reissue applications, (2) to limit the participation by protestors during the examination of patent applications, (3) to reject and permit appeal to the Board of Appeals for failure to comply with the duty of disclosure rather than striking applications without appeal rights, and (4) to clarify the interface between patent application examination and patent reexamination in certain areas. These changes are intended to (1) reduce the prosecution costs of patent applicants, and (2) permit some of the Patent and Trademark Office resources now devoted to consideration of the so-called "no defect" reissue applications, and to extensive participation by protestors during application examination, to be directed toward reduction of the backlog of pending patent applications. The changes are also intended to provide for review by the Board of Appeals of duty of disclosure issues which arise during patent application examination. The rule changes are further intended to clarify the interface between the duty of disclosure during patent application examination and the duty of disclosure during patent reexamination, as well as the treatment of concurrent reissue and reexamination proceedings on the same patent.

Effective Date: July 1, 1982.

For Further Information Contact: Mr. R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks. Washington, D.C. 20231.

Supplementary Information:

Background

A notice of proposed rulemaking was published in the Federal Register on Nov. 10, 1981, at 46 FR 55666-55672 and in the Official Gazette on Dec. 8, 1981, at 1013 O.G. 19-25. An oral hearing was held on Feb. 4, 1982. Forty-two written letters and statements were submitted. Fourteen persons testified at the oral hearing which resulted in 113 pages of testimony. Consideration was also given to the comments presented at the oral hearing on Apr. 16, 1981, relating to the proposed rules for implementing patent reexamination.

Objectives of Rule Change

The rule change is designed to adopt and implement suggestions from members of the public for changes in patent examination practice considered desirable in light of the implementation of statutory patent reexamination, contained in Public Law 96-517. Many of the persons who commented in writing and at the hearing held on Apr. 16, 1981, on the proposed rules for implementing patent reexamination favored modification of patent examination rules as amended herein. This rule change is designed to implement the suggestions received and, in particular, to reduce the prosecution costs of patent applicants by limiting the amount of participation by protestors during the patent application examination process.

The rule change also seeks to reduce the amount of time required by the Patent and Trademark Office to examine protested applications by limiting protestor participation. The technical expertise of the Patent and Trademark Office will continue to be available to make determinations of patentability on the basis of prior art and related facts on an ex parte basis. However, the patent examiners in the Office are not trained as hearing examiners and have no substantial experience in handling inter partes matters. Under the rule change, protestor participation will be limited to the filing of papers in opposition to the grant of a patent with no Office communications to the protestor resulting therefrom beyond an acknowledgment of receipt of a protest or petition to strike in reissue applications. The opportunity to comment on Office actions and applicants' responses is eliminated. The rule change also intends to accomplish these purposes by eliminating the consideration of reissue applications not initially presented to correct defects pursuant to 35 U.S.C. 251.

The rule change is also designed to provide for review by the Board of Appeals of duty of disclosure issues which arise during patent application examination. This is accomplished by amending §1.56(d) to provide that the claims in an application be rejected if upon examination pursuant to 35 U.S.C. 131 and 132 it is found that applicant is not "entitled to a patent under the law" because of fraud or a violation of the duty of disclosure. The rejection would be made under the same conditions and circumstances previously used to strike an application, i.e., "clear and convincing evidence" of fraud or any violation of the duty of disclosure through bad faith or gross negligence. The statute, 35 U.S.C. 131, provides for examination of an application "and if on such examination it appears that the applicant is entitled to a patent under the law, the Commissioner shall issue a patent * * *" Section 132 of Title 35, United States Code, makes provision for the rejection of a claim for a patent as a result of the examination directed by 35 U.S.C. 131. While questions of fraud and violations of the duty of disclosure have historically been dealt with by the Commissioner through the mechanism of striking the affected application, there is no statutory requirement that the Commissioner act in that manner. Clearly the Commissioner can choose how, and by whom, the examination directed by 35 U.S.C. 131 can be made. 35 U.S.C. 132 authorizes a rejection in those circumstances where applicant is not "entitled to a patent under the law." The rule change simply modifies the mechanism and procedures which the Commissioner will use where the applicant is not "entitled to a patent under the law" because of failures to comply with §1.56(d).

The rule change is also designed to clarify the interface between patent application examination and patent reexamination in certain areas. The two areas involved are duty of disclosure and concurrent proceedings involving a patent under reexamination and for which a reissue application has been filed.

Sections 1.56, 1.106, 1.175, 1.193, 1.291, 1.555, 1.565, and 1.570 are amended to accomplish the purpose indicated above.

Discussion of Specific Rules

Access and Publication of Reissue Applications

The changes proposed in §1.11 are not being adopted since only one of the twenty-two comments favored the changes.

The publication of notices of the filing of reissues and provisions for public access to reissues will therefore continue as at present. Such publication eliminates the need for interested members of the public to periodically monitor the patent files to determine if a reissue application has been filed.

Amendments to §1.56

A large majority of the comments supported the amendments to §1.56. A number of comments questioned the advisability of having relatively inexperienced or non-attorney examiners handle questions of fraud or violation of the duty of disclosure. In response thereto, the amendments to the rule do not require that such questions be handled by the examiner who examines the application for questions of obviousness, enablement, etc. The Office presently plans to have questions of possible fraud or violation of the duty of disclosure examined by examiners with legal training assigned to the Office of the Assistant Commissioner for Patents. Several comments suggested that the provisions for striking an application pursuant to existing paragraph (c) of §1.56 are inconsistent with the rejection for fraud or violation of the duty of disclosure contemplated in the amendment to paragraph (d). In response thereto, it is pointed out that paragraph (c) of §1.56 makes striking of the application discretionary with the Commissioner. It is thus more appropriate to retain this authority to strike the application in appropriate circumstances rather than to make it subject to a rejection. No inconsistency is seen between the different routes under paragraphs (c) and (d) of §1.56. Several comments were received indicating concern about the possible delay of a decision by the Board of Appeals pending consideration of a fraud or duty of disclosure question. In response to these concerns, it is pointed out that less time overall will be required by having the Board of Appeals consider the matter once rather than in a series of separate decisions. Further, expense to the applicant will be minimized by one appeal rather than two. The amendments to §1.56 are adopted as proposed except for some clarifying changes in paragraph (g).

Section 1.56 is amended by revising the title and paragraph (d), and by adding new paragraphs (e) through (i). The revision to the title and paragraph (d) provides for the rejection of claims upon examination pursuant to 35 U.S.C. 131 and 132 on the ground that applicant is not entitled to a patent under the law if it is established by clear and convincing evidence (1) that any fraud was practiced or attempted on the Office in connection with the application, or in connection with any previous application upon which the application relies, or (2) that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the application, or in connection with any previous application upon which the application relies. Under amended paragraph (d), any rejection which would be made would include all the claims in the application.

The standards to be used in rejecting the claims under paragraph (d) as amended, would be the same as those utilized by the Commissioner in striking applications pursuant to present paragraph (d), i.e., clear and convincing evidence of fraud or any violation of the duty of disclosure through bad faith or gross negligence. Consistent with present practice, the revision of paragraph (d) looks to fraud or a violation of the duty of disclosure through bad faith or gross negligence with relation to the application under consideration or any previous application upon which the application relies.

The phrase "in connection with the application" is construed in the same manner as in the present unamended paragraph (d). For purposes of this section, a reexamination proceeding on a patent would be considered as being "in connection with the application" insofar as consideration of any subsequent reissue application is concerned. The phrase also includes within its scope the mere refiling of the subject matter of an application in another application without relying in the second application upon the first application. Thus, an appropriate rejection upon examination pursuant to 35 U.S.C. 131 and 132 based on conduct or actions proscribed by §1.56(d) could not be avoided merely by refiling the subject matter of the application in a second or subsequent application which did not rely upon the earlier application. The phrase "in connection with any previous application upon which the application relies" is intended to include all applications upon which the application under consideration relies, either directly or indirectly. For example, an application to reissue a patent obviously relies upon the application which resulted in the patent sought to be reissued. Likewise, continuation applications, continuation-in-part applications, and divisional applications also rely upon one or more parent applications.

New paragraph (e) of §1.56 normally delays the examination of an application for compliance with paragraph (d) of §1.56 until such time as (1) all other matters are resolved, or (2) appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise ready for consideration by the Board of Appeals, at which time the appeal will be suspended for examination pursuant to paragraph (d) of this section. Present plans are to have this examination on the question of fraud or violation of the duty of disclosure conducted by examiners with legal training assigned to the Office of the Assistant Commissioner for Patents. Paragraph (e), as added, would thus permit the resolution of issues arising under §1.56(d) to be delayed until consideration of such issues is necessary and appropriate. The practice under new paragraph (e) is generally consistent with present practice under paragraph (d) which normally delays the substantive resolution of fraud and duty of disclosure issues until other issues have been resolved in favor of applicant. Under new paragraph (e) an appeal would be suspended for examination pursuant to amended paragraph (d) of §1.56 once appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise ready for consideration by the Board of Appeals. If no questions of possible violation of §1.56 are raised or evident on the record before the examiner, no examination for compliance with paragraph (d) of §1.56 will be undertaken. New paragraph (e) provides for the reopening of prosecution of the application to the extent necessary to conduct the examination pursuant to amended paragraph (d) of §1.56 including any appeal pursuant to §1.191. New paragraph (e) also indicates that where an appeal has already been filed based on a rejection on other grounds, any further rejection under amended paragraph (d) will be treated in accordance with amended §1.193(c).

New paragraph (f) continues the present long standing practice whereby any member of the public can file a petition to strike an application from the files pursuant to paragraph (c) of §1.56. Such petitions are currently being filed without specific mention in §1.56. Under revised§1.56 petitions to strike an application for a violation of §1.56 are limited to violations of paragraph (c), with any violations of paragraph (d) being subject matter for rejection under paragraph (d). New paragraph (f) requires that any such petition alleging a violation of paragraph (c) which is entered in the application file must: (1) Be timely filed, (2) specifically identify the application to which the petition is directed, and (3) be served on the applicant or be filed with the Office in duplicate in the event service is not possible. New paragraph (f) does not specifically limit a "timely petition" to any particular point in the examination of the application. Such petitions will generally be considered "timely" if they are filed before final rejection or allowance of the application by the examiner. Whether or not a petition filed after final rejection or allowance of the application by the examiner is considered "timely" will depend upon the circumstances and the point in the prosecution at which the petition is submitted.

New paragraph (f) requires that the petition specifically identify the application to which the petition is directed. While an identification by application serial number is not essential, the identification must include enough specificity that the Office can determine with certainty the application to which the petition is directed. Paragraph (f) requires service of the petition on the applicant, or a duplicate copy in the event service is not possible, before the petition will be entered. While the Office might, in some circumstances, reproduce and serve a petition on the applicant, a member of the public would have no assurance that this would be done and, under paragraph (f), could not rely upon the Office doing so. Paragraph (f) also requires that any petition filed by an attorney or agent comply with §1.346.

New paragraph (g) of §1.56 assures a member of the public that a petition to strike an application for violation of paragraph (c) of §1.56 which meets the requirements of paragraph (f) will be considered by the Office. Language has been added to conform to additional language in §1.291(c). The Office will send petitioner an acknowledgment of the entry of a petition to strike in a reissue application file. However, the Office will not communicate with the member of the public filing such a petition in non-reissue applications, except for the return of any self-addressed postcard which was enclosed which merely acknowledges receipt of the petition. The member of the public filing the petition will not be permitted to contact the Office as to the disposition, or status, of the petition, or to participate in any Office proceedings relating to the petition. No further papers will be acknowledged or considered unless they raise new issues which could not have been earlier presented

and thereby constitute a new proper petition. Mere arguments relating to the Office's decision on the petition or applicant's response to the petition would not qualify as a new proper petition. The disposition of the petition, once one has been filed, will, under paragraph (g), be an ex parte matter between the Office and the applicant. Paragraph (g) provides for communication by the Office with the applicant regarding a petition to strike the application which has been entered in the application file. Under new paragraph (g) the applicant could be required by the Office to respond to the petition. Any such response would be ex parte and would not be served on the member of the public filing the petition.

New paragraph (h) of §1.56 provides that any member of the public may seek to have the claims in an application rejected pursuant to the amended paragraph (d) of §1.56 by filing a timely protest in accordance with §1.291. New paragraph (h) also requires that any such protest filed by an attorney or agent seeking a rejection of claims pursuant to amended paragraph (d) of §1.56 must be in compliance with §1.346. One comment suggested that the last sentence of paragraph (h) is redundant since §1.346 applies without any specific mention. After careful consideration of the comment the sentence is being retained in order to emphasize and remind attorneys and agents of the obligations imposed by §1.346.

New paragraph (i) provides for the Office requiring the applicant to supply information pursuant to paragraph (a) of §1.56 in order for the Office to decide any issues relating to paragraphs (c) and (d) of §1.56, whether or not such issues arise as a result of a petition or a protest, or arise from other sources, e.g., an examiner discovering the issue while studying the application file. Any requirements for information under new paragraph (i) will be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under new paragraph (i) differs from past practice under which information was required, or requested, from applicant and one or more petitioners or protestors in some cases.

Rejection of Claims

Five comments were submitted relating to new paragraph (c) of §1.106. Two of the comments favored the paragraph as written and three recommended modification or clarification of the paragraph to ensure that it is not inconsistent with *In re Ruff, et al.*, 45 CCPA 1037, 118 USPQ 340 (CCPA 1958), and subsequent decisions. No modification or clarification of the paragraph is considered necessary since the intent of the paragraph was not to change current practice, but was merely to emphasize the importance placed on admissions and to make §1.106 more closely reflect current practice, which includes practice following *In re Ruff, et al.*, and subsequent decisions. The amendments to §1.106 are adopted as proposed.

Section 1.106 is amended to include a new paragraph (c) which emphasizes the importance placed on admissions by the applicant or the patent owner in a reexamination proceeding insofar as matters affecting patentability are concerned. Paragraph (c) includes a reference to the use of rejections based upon facts within the knowledge of the examiner as provided in §1.107. Paragraph (c) does not constitute a change in practice, but does result in §1.106 more closely reflecting current practice.

Reissue Oath or Declaration

Ten persons commented on §1.175. Four comments were received in support of the proposed change. Three of these favorable comments were from patent law groups. Of the six comments received opposing the change, two were from patent law groups. Eleven comments received at the Apr. 16, 1981, hearing on reexamination argued for retraction of the "Dann Amendments" which included §1.175(a)(4). Four comments at the Apr. 16, 1981, hearing favored retaining the "Dann Amendments". The arguments supporting the change were generally that paragraph (a)(4) was not necessary in view of the new reexamination procedure. The arguments opposing the deletion were generally that an inter partes practice before the Office is desirable from the standpoint of the judiciary and for a complete resolution of issues. After careful consideration of all of the arguments and the resources available in the Patent and Trademark Office, it is felt that the practice under paragraph (a)(4) of §1.175 should be discontinued and paragraph (a)(4) should be cancelled.

The numbering of paragraphs (a)(5) and (6) is not being changed. Proposed paragraph 1.175(a)(6) is being adopted as new paragraph 1.175(a)(7). The proposed wording is otherwise being adopted without change.

Amended §1.175 eliminates paragraph (a)(4). Under paragraph (a)(4), the Office gave advisory opinions on patentability over additional prior art without any changes in the patent claims. The courts have generally refused to give preclusive effect to these advisory opinions. See *PIC, Inc.* v. *Prescon Corp.*, 485 F. Supp. 1302, 205 USPQ 228 (D. Del. 1980), and *Rohm and Haas Co.* v. *Mobil Oil Corp.*, 525 F. Supp. 1298, 212 USPQ 354 (D. Del. 1981). Accordingly, in view of the implementation of patent reexamination pursuant to Pub. L. 96-517 it is appropriate to discontinue the advisory opinions provided pursuant to §1.175(a)(4). Under amended §1.175 an applicant for reissue of a patent will be required to file with the reissue application a statement under oath or declaration specifically averring a defect in the patent, e.g., "a defective specification or drawing," or an excess or insufficiency in the claims. Amended §1.175 also requires, in paragraphs (a)(5) and (a)(6), that applicant specify "errors" as opposed to "what might be deemed to be errors." Amended §1.175 effectively eliminates Office consideration of the merits of "no defect" reissue applications since any such "no defect" reissue applications filed after July 1, 1982, the effective date of the changes to §1.175, will not be examined as to questions of patentability. In addition, §1.175(a)(7) has been added to parallel the provisions in §1.65 requiring the same acknowledgment of the duty of disclosure in the oath or declaration of reissue applications as in the case of non-reissue applications.

Delay in Examination of Reissue Applications

Six comments were received relative to the proposed changes in §1.176. One comment supported, and five comments opposed, deleting the two month waiting period before action could be taken by an examiner in a reissue application. The opposing comments favored retaining the two month period to provide an opportunity for interested parties to submit information relating to the examination of a reissue application after notice of the filing thereof has been published in the Official Gazette. Since the notices under §1.11 will continue to be published, no need is seen to change §1.176. The proposed change is therefore not adopted.

Examiner's Answer

Only one comment was made relating to the proposed addition of paragraph (c) to §1.193. It suggested including a minimum time period for response in the rule. This suggestion was not adopted because in some circumstances it may be appropriate to set a shorter or a longer period for the reply brief. The amendments to §1.193 are adopted as proposed.

Paragraph (c) adds to §1.193 a provision that any decision rejecting claims pursuant to §1.56(d) in an application already on appeal from a rejection based on other grounds shall constitute a supplemental examiner's answer introducing a new ground of rejection and removing the suspension of the appeal introduced pursuant to §1.56(e). Prior to entering any such supplemental examiner's answer under paragaph (c), the Office may require information from applicant pursuant to paragraph (i) of §1.56. Under paragraph (c) of §1.193, the appellant may file a reply to the supplemental examiner's answer. Paragraph (c) provides that the appellant's reply to the supplemental examiner's answer will be considered and responded to as necessary with appellant being provided with an additional month, or such other time as may be set, within which to reply to any such response from the Office. After introduction of a supplemental examiner's answer pursuant to paragraph (c) and any replies and response thereto, the application will be forwarded to the Board of Appeals for consideration.

Protests by the Public Against Pending Applications

Fifteen persons commented on the proposed amendment of §1.291. Two persons suggested that protests be acknowledged by more than the return of a self-addressed postcard. The suggestion has been adopted to the extent of providing for an acknowledgment of the entry of a protest in a reissue application file to be sent to the member of the public filing the protest. The suggestion has not been adopted insofar as original applications are concerned since these applications are generally required to be kept in confidence under 35 U.S.C. 122. Further, the use of return postcards is an established method of receiving acknowledgment from the Office that a paper has been filed. By merely returning the postcard to a protestor in an application for an original patent and directing Office initiated communications solely to applicant, the amount of Office resources required will be minimized.

Several persons commented that the protest proceeding should be more inter partes. The weight of the comments received at the hearings held on Apr. 16, 1981, and Feb. 4, 1982, and in writing, favored ex parte proceedings. To ensure that the proceedings are essentially ex parte, a sentence is being added to paragraph (c) of § 1.291, indicating that active participation by a member of public ends with the filing of the protest. To retain the inter partes nature of the protest would be contrary to the majority of the comments received and to one of the major purposes of the rule change, i.e., to reduce the amount of time spent by the Office in examining protested applications. The amendments to paragraphs (a) and (b) of §1.291 are adopted as proposed and paragraph (c) is being revised as indicated above.

Amended §1.291 continues to permit protests by the public against pending original and reissue applications. The protest may include any grounds which the member of the public filing the protest believes to be applicable.

Amended paragraph (a) of §1.291 provides for entry of a protest in the application file if the protest specifically identifies the application, is timely submitted, and is either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate, in the event service is not possible. The comments made above in the discussion of new paragraph (f) of §1.56 regarding the timeliness of the filing or submission, specific identification of the application, and service on the applicant, are also applicable to the amendments of paragraph (a) of §1.291. The requirement that the Office acknowledge the filing of a protest is deleted from paragraph (a), but is covered in paragraph (c).

New paragraph (b) of §1.291 assures members of the public that a protest will be considered by the Office if (1) it specifically identifies the application to which it is directed; (2) it is timely submitted; (3) it is properly served upon the applicant in accordance with §1.248, or is filed with the Office the duplicate in the event service is not possible; (4) it includes a listing of the patents, publications or other information relied upon and a concise explanation of the relevance of each listed item; (5) it includes a copy of each listed patent or publication or other item of information in written form, or at least the pertinent portions thereof; and (6) it includes an English language translation of all the necessary and pertinent parts of any non-English language document relied upon. It is considered desirable that §1.291 advise members of the public as to the contents which should be included in any protest since there will be no Office communications directed to the member of the public submitting the protest under paragraph (c). Thus, under paragraph (c) members of the public will not be given an opportunity to complete any protest which is incomplete. Amended paragraph (c) provides for the acknowledgment of the entry of a protest in a reissue application file.

Amended paragraph (c) of §1.291 provides that a member of the public filing a protest in an application for an original patent will not receive any communications from the Office relating to the protest, other than the return of a self-addressed postcard acknowledging receipt of the protest. Amended paragraph (c) of §1.291 does not permit the member of the public filing the protest, or any other member of the public, to contact the Office as to the disposition, or status, of the protest or to participate in any Office proceedings relating to the protest. The disposition of the protest, once it has been filed will, under paragraph (c), be an ex parte matter between the Office and the applicant. However, applications which are open to the public may be inspected pursuant to §1.11.

Amended paragraph (c) provides for the Office to communicate with the applicant regarding any protest entered in the application file. Under paragraph (c), the applicant could be required by the Office to respond to the protest. Any response would be ex parte and would not be served on the member of the public filing the protest. Paragraph (c) provides for the Office to require applicant to supply information pursuant to pargraph (a) of §1.56 in order for the Office to decide any issues raised by the protest. Requirements for information under paragraph (c) will be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under paragraph (c) differs from past practice under which information could be required, or requested, from applicant and one or more protestors. Under amended paragraph (c), the active participation of the protestor ends with the filing of the protest and no further submission on behalf of the protestor will be acknowledged or considered unless such submission raises new issues which could not have been earlier presented, and thereby constitutes a new protest. Mere arguments relating to an Office action or an applicant's response would not qualify as a new protest.

Duty of Disclosure in Reexamination Proceedings

Only two comments were received relative to proposed§1.555. One comment argued that the Office should never ignore a violation of the duty of disclosure or leave it hanging. In response thereto, neither the statute nor the presently existing reexamination rules provide for reexamination on grounds other than those based on patents or printed publications. The second comment questioned whether a patent owner has a duty to cite new prior art after a request but prior to an order to reexamine. No further clarification of the section is necessary since §1.555(a) specifies when the patent owner should file a prior art statement in a reexamination proceeding. The amendments to §1.555 are adopted as proposed.

Amended §1.555 makes the duty of disclosure in reexamination proceedings more consistent with the duty of disclosure in patent applications. Paragraph (a) of §1.555 specifies that a duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner or involved employees of the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. This rule is consistent with the duty set forth in §1.56(a) insofar as patent applications are concerned, except that in paragraph (a) of §1.555 the patent owner is specified rather than the inventor as set forth in paragraph (a) of §1.56. This does not, however, impose the responsibility for compliance with the duty of disclosure on a corporate entity or organization but leaves the responsibility with involved

individuals in the corporation or other organization. Paragraph (a) of §1.555 places a requirement on the individuals identified to bring to the attention of the Office patents or printed publications material to the reexamination which have not been previously made of record in the patent file and specifies how that should be accomplished.

Amended paragraph (b) of §1.555 essentially parallels existing paragraph (b) of §1.56 and makes similar provisions applicable to disclosures in reexamination proceedings.

Amended paragraph (c) of §1.555 provides that the duties of candor, good faith, and disclosure required in paragraph (a) of §1.555 have not been complied with if any fraud was practiced or attempted on the Office or there was any violation of the duty of disclosure through bad faith or gross negligence by, or on behalf of, the patent owner in the reexamination proceeding. The language of paragraph (c) refers to fraud or violation of the duty of disclosure in the reexamination proceeding since such conduct during the pendency of applications is covered by §1.56.

Amended paragraph (d) of §1.555 affirms that the responsibility for compliance with §1.555 rests upon the individuals identified in paragraph (a). Paragraph (d) also provides that no evaluation will be made in the reexamination proceeding by the Office as to compliance with §1.555. Paragraph (d) of §1.555 also provides that questions of compliance with §1.555 which are discovered during a reexamination proceeding will be noted as unresolved questions in accordance with present §1.552(c). Paragraph (d) will not preclude the patent owner from filing a reissue application to have questions of candor, good faith, and duty of disclosure considered and resolved, including such questions which arise during a reexamination proceeding, so long as the requirements of 35 U.S.C. 251 have been met. Paragraph (d) does not preclude suspension or disbarment proceedings under present §1.348 based upon conduct during a reexamination proceeding.

Concurrent Office Proceedings

Four comments were received on §1.565. One comment proposed adding a sentence at the end of paragraph (b) of §1.565 reflecting that reexamination would only be stayed in extraordinary situations. This suggestion has not been adopted since it is considered inappropriate to attempt to further define by rule the circumstances under which a stay of the reexamination may be appropriate. Two comments were received raising questions as to the treatment, during a merged reissue and reexamination proceeding, of broader claims which are present therein because of a reissue application which contained broadened claims. No clarification or change is necessary since the broadened claims are properly in the merged proceeding during the period it is merged. Such broader claims which are present in both the reissue and reexamination files during the pendency of the merged proceeding will be treated in accordance with the reissue statute and case law during the pendency of the merged proceeding. If the merged proceeding ceases to exist because of the abandonment of the reissue application, the claims in the reexamination file, including any broadened claims, will be examined in accordance with the reexamination statute and rules. Finally, one comment did not agree with merging reissue and reexamination proceedings because the merger is not seen to produce cost savings or other salutary results. One of the reasons for the merged proceedings is to ensure that claims of differing scope and inconsistent responses are not presented at the same time in different proceedings in the same patent. Moreover, since the proceedings are concurrent rather than sequential, a significant savings in resources and overall pendency time may be realized by merging in many cases.

The amendment to §1.565 clarifies the proposed language of paragraph (b), eliminates from paragraph (b) the last two sentences relating to the treatment of concurrent reexamination and reissue proceedings, and adds a new paragraph (d) relating to this subject. The clarification in paragraph (b) is intended to avoid misinterpretations relating to stay determinations where concurrent litigation or reissue applications are involved.

Under new paragraph (d), which is consistent with the practice presently in effect under paragraph (b), if a reissue application and a reexamination proceeding on which an order pursuant to present §1.525 has been mailed are pending concurrently on a patent, a decision will normally be made to merge the two proceedings or to stay one of the proceedings. New paragraph (d) also provides that where merger of a reissue application and a reexamination proceeding is ordered, the merged examination will be conducted in accordance with present §§1.171–1.179. The examiner, in examining the merged proceeding, will apply the reissue statute and case law, in addition to applicable provisions of §§1.171–1.179, to the merged proceeding. This is appropriate in view of the fact that the statutory provisions for reissue applications and reissue application examination include, *inter alia,* provisions equivalent to 35 U.S.C. 305 relating to the conduct of reexamination proceedings. New paragraph (d) of §1.565 makes clear that the patent owner must place and maintain the same claims in the reissue application and the reexamination proceeding during the pendency of the merged proceeding. Under new paragraph (d) of §1.565 the examiner's actions and any responses by the patent owner in a merged proceeding will apply to both the reissue application and the reexamination proceeding and will be physically entered into both files. New paragraph (d) also provides that any reexamination proceeding merged with a reissue application shall be terminated by the grant of the reissued patent. The amendments to §1.565 are adopted with the changes or clarification indicated in paragraph (b).

Reexamination Certificate

Section 1.570, as amended, revises paragraph (e) to refer to new paragraph (d) of §1.565 rather than paragraph (b) in order to reflect the changes in §1.565.

No comments were received concerning the section and it is adopted without change.

Interim Procedures on Applications Pending on Effective Date

On July 1, 1982, the revised procedures of §§1.56(d) and 1.193(c) will apply to any applications then pending which have not been the subject of a final Office decision on questions of fraud or violation of the duty of disclosure. Any petition to strike an application from the files or any protest against a pending application filed prior to July 1, 1982, will be governed by the rules in effect prior to that date. Any applications filed under §1.175(a)(4) prior to July 1, 1982, will be examined until the application is amended and a reissue patent issues thereon or the application becomes abandoned. For a discussion of the interim practice in effect prior to July 1, 1982, see 1013 O.G. 18–19.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

List of Subjects in 37 CRF Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Lawyers.

Amendment of Regulations

(Text of adopted rules appear in 37 CFR, revised July 1, 1983.)

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 6, 1982.

[FR Doc. 82-13613 Filed 5-18-82; 8:45 am]
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[1019 O.G. 37]

(116) Interim Reissue, Reexamination, Protest, And Examination Procedures In Patent Cases Pending Proposed Revision of 37 CFR §§1.11, 1.56, 1.106, 1.175, 1.176, 1.193, 1.291, 1.555, 1.565, and 1.570.

This notice sets forth, in general, the practice the Office intends to follow pending a final determination on the "Notice of proposed rulemaking" published in the Federal Register on November 10, 1981, at 46 F.R. 55666–55672. The "Notice of proposed rulemaking" is also being published in this issue of the Official Gazette.

Practice Relating To §1.11

Any reissue application which is presently open to inspection by the general public pursuant to present §1.11(b), and any reissue application filed before the effective date of a change in the rule, will continue to be open to inspection by the general public. No restriction of access to those reissue applications is contemplated at this time, either during their pendency before the Office, or after an abandonment of the reissue application. The filing of reissue applications will continue to be announced in the Official Gazette pending revision of §1.11(b).

Practice Relating To §1.56

Any issues arising under §1.56(d) prior to the effective date of a change in paragraph (d) will continue to be handled in accordance with paragraph (d) as it presently exists. If paragraph (d) is amended as proposed, the Office presently intends to apply the revised procedures to any applications then pending which have not been the subject of a final Office decision on questions of "fraud" or violation of the duty of disclosure.

Any petitions to strike applications from the files which have been filed prior to the date of publication of this Notice in the Official Gazette will continue to be treated in accordance with the practices in effect prior to this Official Gazette Notice via the appropriate sections of the Manual of Patent Examining Procedure.

Any petition to strike an application from the files which is filed after the date of publication of this Notice will be considered in accordance with the procedure set forth in the "Notice of proposed rulemaking" insofar as participation by the petitioner is concerned. Since the provisions of 37 CFR 1.56 now in effect do not guarantee a member of the public the right to participate fully in Office consideration of petitions to strike applications, it is considered appropriate and proper to restrict participation on behalf of a petitioner as set forth in the "Notice of proposed rulemaking" while such proposed rulemaking is pending. At this time the degree of participation is solely at the discretion of the Commissioner and the Commissioner is hereby acting in his discretion to restrict such participation. Accordingly, any petition to strike an application from the files which is filed after the date of publication of this Notice must include a self-addressed postcard specifically identifying the petition and the application to which the petition is directed if an acknowledgement of the filing of the petition is desired. A member of the public filing a petition to strike an application after the date of publication of this Notice will not receive any communications from the Office relating to the petition, other than the return of a self-addressed postcard which the Office will stamp and return in order to acknowledge receipt of the petition. All Office communications will be conducted with the applicant in accordance with the procedures set forth in the proposed rulemaking, which procedures are those currently in effect.

Practice Relating To §1.106

No interim practice is necessary regarding this proposed revision since it would not constitute a change in practice, but would merely make §1.106 more closely reflect current practice.

Practice Relating To §1.175

Any applications filed under §1.175(a)(4) prior to the effective date of any change in the rule will be examined until the application is amended and a reissue patent issues thereon or the application becomes abandoned.

Practice Relating To §1.176

The examination of any applications filed prior to the effective date of any change in the rule will continue to be delayed for two months after the announcement of the filing in the Official Gazette, except where the delay period is waived by a decision on a petition under 37 CFR 1.183.

Practice Relating To §1.193(c)

No interim practice is necessary regarding this proposed revision since the practice of rejecting claims pursuant to §1.56(d) will not be adopted prior to the effective date of a change in paragraph (d).

Practice Relating To §1.291

Any protest against a pending application which is filed after the date of publication of this Notice in the Official Gazette will be treated essentially in accordance with the procedures set forth in the "Notice of proposed rulemaking." Any protests which have been filed prior to the date of publication of this Notice in the Official Gazette will continue to be treated in accordance with the practices in effect prior to this Official Gazette Notice via the appropriate sections of the Manual of Patent Examining Procedure. Since the provisions of 37 CFR 1.291 now in effect do not guarantee a member of the public the right to participate fully in Office consideration of protests filed under §1.291, it is considered appropriate and proper to restrict participation on behalf of a protestor essentially as set forth in the "Notice of proposed rulemaking" while such proposed rulemaking is pending. At this time the degree of participation is solely at the discretion of the Commissioner and the Commissioner is hereby acting in his discretion to restrict such participation. Accordingly, any protest filed after the date of publication of this Notice will be acknowledged as set forth in present §1.291 on a self-addressed postcard which protestor is hereby advised to include with the protest. The self-addressed postcard must specifically identify the protest and the application to which the protest is directed, to the extent such identifying data for the application is known. A member of the public filing a protest against a pending application after the date of publication of this Notice will receive no communication from the Office relating to the protest, other than the self-addressed postcard which the Office will stamp and return in order to acknowledge receipt of the protest as set forth in present §1.291(a). All Office communications will be conducted with the applicant in accordance with the procedures set forth in the proposed rulemaking, which procedures are those

currently in effect. Pending adoption of the proposed rulemaking the Office will consider protests which comply with present §1.291(a) even though the protest does not include all the items enumerated in proposed new paragraph (b) of §1.291.

Practice Relating To §1.555

No interim practice is necessary regarding this proposed revision since it merely makes §1.555 more closely parallel §1.56 and more specifically defines the responsibility of a patent owner in a reexamination proceeding.

Practice Relating To §1.565

No interim practice is necessary regarding this proposed revision since it merely clarifies, but does not change, present practice.

Practice Relating To §1.570

No interim practice is necessary since this proposed revision merely reflects the paragraph change proposed in §1.565.

CONCLUSION

The present interim procedures will be in effect until further notice and pending a final determination on the proposed rulemaking.

Nov. 16, 1981. DONALD J. QUIGG,
Deputy Commissioner of Patents & Trademarks.

[1013 O.G. 18]

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(117) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1 and 5
[Docket No. 40227-18]

Revision of Foreign Filing License Procedure

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Parts 1 and 5 of 37 CFR, to establish a streamlined procedure for granting licenses for foreign filing. The changes simplify the obtaining of licenses for filing foreign patent applications and for filing amendments, modifications, and supplements in foreign patent applications. Under the revised rules (1) the export, but not actual filing, of technical data to a foreign country for purposes related to the filing and prosecution of a patent application may be done either under appropriate export agencies' rules or by a license issued by the Commissioner of Patents and Trademarks, (2) certain licenses issued by the Commissioner for filing foreign patent applications include a license to file amendments, modifications, and supplements, containing additional matter in foreign applications, (3) specific contents of a petition for retroactive license are established and (4) fees are set for expedited handling of requests for foreign filing licenses and for certain petitions. These changes will result in reduced work for both patent applicants and the Patent and Trademark Office and at the same time strengthen national security protections.
Effective Date: June 1, 1984.
For Further Information Contact: Kenneth L. Cage by telephone at (703) 557-2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to simplify and expedite the granting of licenses under 35 U.S.C. 184. It contains a number of changes in practice designed to benefit both the Patent and Trademark Office in its handling of its mission and the public the Office serves. Notice of proposed rulemaking was published May 23, 1983, at 48 FR 23144 and corrected June 7, 1983, at 48 FR 26319.

Discussion of Specific Rules

Secton 5.11(a) has been substantially restructured and modified from the proposal. Under §5.11(a), a license from the Commissioner of Patents and Trademarks is always needed for the act of filing a patent application in a foreign patent office unless the six-month period has passed or the invention was not made in the United States.

Amended §5.11 (b) and (c) would clarify in the regulations that the export of technical data to a foreign country may be done under appropriate export agencies' rules controlling the export of technical data—Department of State (22 CFR Parts 121-130); Department of Commerce, International Trade Administration Office (15 CFR Part 379); or the Department of Energy (10 CFR Part 810)—or by license from the Commissioner. Compliance with the appropriate export agencies' rules or the license from the Commissioner is required before *exporting* technical data in the form of a patent application or data in any form if related to preparing, filing, and prosecuting a patent application in a foreign country, if the United States application has not been on file for six months at the time of export, or no application has been filed in the United States. It is optional from whom approval for export is obtained. In fact, for certain technical data being exported to certain countries, a specific request for a license or approval from any of the export agencies would not be necessary. However, a single license from the Commissioner would cover both export and filing and avoid any question whether a specific license or approval is required from any of the export agencies. Approval from the appropriate export agencies for export would require a separate additional license from the Commissioner for the filing of the foreign patent application. The rule changes will make the rules more closely conform with the regulations of other agencies which deal with the export of technical data to a foreign country.

The definition of export in these regulations will be controlled by the definition of export in the appropriate regulations of the export agencies having jurisdiction over the export of technical data related to the patent application. (15 CFR 379.1, 22 CFR 125.03 and 10 CFR 810.7).

The requirement of complying with the rules of the export agencies or the Commissioner before exporting an application to a foreign country is not intended to change long-standing Patent and Trademark Office interpretation of 35 U.S.C. 184 or in any way interpret the language in 35 U.S.C. 184 "file or cause or authorize to be filed" as requiring a license before technical data related to the filing or prosecution of an application is exported to a foreign country, such as to a foreign attorney or agent or corporation for review or revision for later filing. It does, however, reflect the delegations the Commissioner has received from other agencies and which are referenced in §§5.18, 5.19 and new §5.20 and clarifies that a patent applicant must be licensed for export of technical data abroad for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application either by appropriate export agencies or by the Commission. The language "related to the preparation, filing or possible filing and prosecution of a foreign patent application" in §5.11(b) is used rather than "support a patent application" as used in §5.18 or "foreign filing" as used in §5.19 to make clearer that the latter two phrases include the export of technical data in the form of explanations or possible claim language or the like sent to a foreign agent or other person in relation to a foreign patent application. However, a license from the Commissioner would not substitute for approvals required by appropriate export agencies if technical data is exported for purposes not related to the filing or possible filing and prosecution of a foreign patent application. For example, a license from the Commissioner would not cover export of technical data in a U.S. patent application to a foreign research laboratory to support a research project.

Further, the rule is intended to reflect that every exportation of technical data related to filing or possible filing or prosecution within six months of a United States filing without a license from the Commissioner is prohibited unless the applicant complies with the rules of the appropriate export agencies. For example, where an application has been exported to a foreign agent with an authorization to file a foreign patent application, the export of the application may be under a general license from the International Trade Administration of the Department of Commerce. A license from the Commissioner is always necessary for the actual filing of the foreign patent application. In another example, where a validated license is needed under 15 CFR Part 379 to export technical data in the form of a patent application, applicants will need to obtain an International Trade Administration license or obtain a Commissioner's license prior to the act of export. Under either example, a license from the Commissioner is required before the application is filed in a foreign patent office. In the latter example, a single license from the Commissioner will permit both export and filing of the application.

This rule is promulgated under the authority of 35 U.S.C. 6 and delegations to the Commissioner by regulation (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7) or otherwise under the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978. Authority for this rule also exists under 35 U.S.C. 188.

The amended rule assures adequate protection of sensitive material under Title 35, United States Code and provides regulatory consistency with the Arms Export Control Act, as amended, the Export Administration Act, as amended, the Atomic Energy Act of 1954, as amended, the Nuclear Non-Proliferation Act of 1978, and their implementing regulations. The sanctions which apply for failure to obtain a license from either the Commissioner or the appropriate export agencies prior to export are the sanctions specified in the export acts. The sanctions which apply for failure to obtain a license from the Commissioner prior to the filing of a foreign application are the sanctions specified in Title 35, United States Code.

Section 5.11(d), proposed as §5.11(b), states that applications under secrecy order under §5.2 cannot be exported to an international agency or filed in a foreign country except in accordance with §5.5.

Section 5.11(e), proposed as §5.11(c), states that a license pursuant to paragraph (a) is not required where the invention was not made in the United States, or the United States application was on file for six months without a secrecy order being issued.

Section 5.11(f), proposed as §5.11(d), states that a license for foreign filing may be revoked at any time upon written notice. Similarly, an authorization for foreign filing resulting from the passage of six months from the filing of a United States patent application may be revoked by the imposition of a secrecy order. The revocation is effective as of the date of the notice and is not intended to be applicable to any prior acts by applicants relying in good faith on the grant of a license.

The language of §§5.12(b), 5.13, and 5.14 have been clarified from the proposal to reflect that the §1.17(h) requirement for a fee is for the expedited handling of a license. No fee is required for a routine, non-expedited request for a foreign filing license.

Section 5.15 has been changed from the form proposed. Amended §5.15 defines licenses for foreign export and filing of two different scopes. The §5.15(a) scope license, the grant of which is indicated on the filing receipt in accordance with §5.12(a) published at 48 FR 2696. (Jan. 20, 1983) and 1027 OG 9 (Feb. 1, 1983), permits the subsequent export and filing of technical data for purposes related to the preparation, filing or possible filing and prosecution of the foreign application and of any amendments or modifications to the application in a foreign country, even if "additional subject matter" were introduced; provided the additional subject matter does not change the general nature of the subject matter disclosed and does not pertain to certain categories of potentially sensitive material which are set forth in §5.15(a)(4).

The phrase "change the general nature of the subject matter disclosed" is intended to cover situations where the additional subject matter so alters the character of the disclosure that national security review is appropriate. This phrase is intended to permit a broad range of amendments, modifications and supplements, including additional subject matter. The following examples are intended to further clarify the meaning of the language "general nature of the subject matter disclosed" in §5.15(a):

Example 1—The physical data on a named compound. If a licensed disclosure gives the name and structure of a compound, the general nature of the subject matter disclosed includes physical data such as boiling point, melting point or specific gravity of the compound. If a name of a compound is disclosed, the structure of the compound is also within the general nature. If the licensed disclosure deals with the hardness of a claimed alloy, the disclosure of tensile strength is within the general nature.

Example 2—A known specie of a known genus. If the genus "lower alkyl" is disclosed, the inclusion of the species "methyl" is within the general nature, as would be homologs and isomers of that genus.

Example 3—Comparison data of the disclosed compound to data on prior art compounds. If the licensed disclosure contains a disclosure of the compounds of a pesticide invention, and pesticidal activities, the comparison of pesticidal data of a known compound representing the closest prior art is within the general nature.

Example 4—A specific optimum temperature within a specified temperature range. If a licensed disclosure has a range of 0°C to 120°C, the disclosure of an optimum temperature of 100°C is within the general nature.

Example 5—Activity data on compounds of the invention. If activity data on 30 of 50 named compounds is disclosed, the disclosure of activity data on other named compounds of the invention is within the general nature.

Example 6—Additional subject matter and utilities. If a licensed disclosure describes a chemical herbicide for weed control, the disclosure of chemical warfare uses or human toxic properties (other than to demonstrate safety or absence of such toxicity) *is not* within the general nature. If a licensed disclosure describes an analog computer for microwave telephone transmission, the addition of a cryptographic encoding or decoding device and utility *is not* within the general nature. If a licensed disclosure describes a battery power source for a satellite, the addition or substitution of a nuclear isotopic power source *is* within the general nature, but would be within the control of §5.15(a)(4)(ii).

A §5.15(b) scope license is limited to the original subject matter disclosed at the time the license was granted and does not cover "additional subject matter" as the phrase is currently interpreted (*In re Gaertner,* 202 USPQ 714 (CCPA 1979)).

Under §5.15(c), a license with the scope of §5.15(a) could also be granted pursuant to a §5.13 or §5.14 petition. If granted, the §5.15(a) scope of license will be indicated on the license grant. For instance, under §5.15(c) an applicant who filed a United States patent application before Feb. 27, 1983, when the filing receipt license practice became effective could request a §5.15(a) scope license which, if granted, will cover the subsequent filing of amendments, modifications or supplements, including additional matter in a corresponding foreign patent application. The licenses under §§5.12(b), 5.13, and 5.14 are normally limited in scope to the original subject matter disclosed at the time the license was

granted unless a license of the §5.15(a) scope is indicated on the license grant. If a petition for a license under §5.12(b) is granted prior to the grant of the §5.12(a) filing receipt license, the former would merge into the latter and would be considered a §5.12(a) license for the purpose of §5.15.

A new §5.20, not included in the proposal, sets forth the specific authority of the Commissioner to license foreign filing, possible filing or prosecution of a patent application in a foreign country under 35 U.S.C. 184 regarding unclassified activities in foreign atomic energy programs. This change only reflects the existing relationship between 37 CFR 5.11 and 10 CFR §810.7 and alerts patent applicants in this technology to the Commissioner's authority. The term "sensitive nuclear technology" used in paragraph (b) of §5.20 is defined in 10 CFR §810.3(q).

A new §5.25, proposed initially as §5.20 and modified, sets forth in the regulations the requirements to be met for the granting of a retroactive license. The requirements include (1) a list of the foreign countries in which the patent application material was filed; (2) the date(s) of filing of the foreign application(s); (3) an oath or declaration which (i) states that the subject matter filed is not subject to a secrecy order under 35 U.S.C. 181, (ii) makes a showing of diligence in attempting to obtain the license upon discovery of the error, and (iii) makes a showing of facts which support a conclusion of inadvertence; and (4) includes the required fee. The section also provides in paragraph (b) for review from a denial of a petition for a retroactive license. The section further provides in paragraph (c) that the granting of a retroactive license pursuant to §5.25 does not excuse any violation of regulations of the export agencies which may have occurred because of the failure to obtain an appropriate license prior to export.

Sections 5.21, 5.22 and 5.23 have been redesignated to become §§5.31, 5.32 and 5.33, respectively.

Significant Differences Between Proposed and Final Rules

Section 1.17

Section 1.17(h) is amended to include a specific reference to §5.25 petitions for retroactive licenses for which the petition fee is charged, rather than having the present retroactive license fee under §1.182 petitions. The fee for §5.12(b) licenses is new and applies only where expedited handling of these license requests is sought. This fee for expedited handling is also referred to in §§5.13 and 5.14. Section 5.15(c) provides for a fee for changing the scope of a license.

Section 5.1

The proposed amendment to §5.1 is not being adopted and is withdrawn.

Section 5.11

Section 5.11 is amended to control the *export* of technical data in the form of an application or data in any form if related to preparing, filing, or prosecuting a patent application in a foreign country, if the United States application has not been on file for at least six months prior to the date of transmittal, or if no application has been filed in the United States. Export approvals, if required, may be provided by appropriate export agencies—Department of State; Department of Commerce, International Trade Administration or Department of Energy—or by the Commissioner. This will enable the Patent and Trademark Office and the export agencies to better reflect and exercise the export control functions set forth in the Arms Export Control Act, as amended, the Export Administration Act of 1979, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, respectively.

Under these Acts, the export of technical data is the activity to be controlled. The final rule differs from the proposed rule in that the Patent and Trademark Office will not be the sole export control authority over technical data in the form of an application, or data in any form, if related to preparing, filing, or prosecuting a patent application. Applications will have the option to obtain necessary export approvals either (1) from appropriate export agencies or (2) from the Commissioner. The Commissioner will continue to be the sole licensing authority for the act of filing an application in a foreign patent office.

Paragraphs (a), (b), and (c) of §5.11 control export activity by requiring either an export agency approval or a Commissioner's license for export of technical data in connection with foreign filing of an application and to that extent implement the Arms Export Control Act, the Export Administration Act, the Atomic Energy Act and the Nuclear Non-Proliferation Act. If a license is obtained from the Commissioner under §5.12, §5.13 or §5.14, no separate approval for the export of technical data to a foreign country in connection with a patent application is required from the export agencies.

It is emphasized that the scope of the Commissioner's license is limited to exporting and filing technical data in the form of an application, or in any form, if related to preparing, filing and prosecuting a patent application or for consideration of the filing of a patent application in a foreign country. A Commissioner's license does not authorize selling or using technical data in a foreign country or exporting data for other purposes. These latter acts continue to require separate approvals from the appropriate export agencies.

Also, the export of technical data in any form to a foreign country for purposes other than related to filing or supporting the filing of a patent application is not controlled by Title 35, U.S.C. or the regulations in Part 5. The exportation of data to a foreign country in such cases would be subject only to other laws and regulations such as the export and arms control regulations. Approval for the export of such technical data for purposes related to filing, possible filing, or supporting the filing of a patent application will be available from the appropriate export agencies or the Commissioner. On the other hand, the Commissioner will be the sole licensing authority for the act of filing the application in a foreign patent office.

Section 5.11(d), proposed as §5.11(b), states that an application cannot be exported to a foreign country when the corresponding United States application is under secrecy order except under §5.5

Section 5.11(e), proposed as §5.11(c), states that no license is required if the invention was not made in the United States, or the application was on file in the United States at least six months and is not under a secrecy order issued under §5.2

Section 5.11(f), proposed as §5.11(d), states that any license for foreign filing may be revoked at any time by written notification. It has been amended to further clarify that revocation also applies to authorizations resulting from the passage of six months from the filing date of a United States patent application when a secrecy order is imposed.

Section 5.12

Section 5.12(b) is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

Section 5.13

Section 5.13 is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

Section 5.14

Section 5.14(a) is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

The other changes in §5.14 make grammatical corrections and do not alter the intent of the section.

Section 5.15

Section 5.15(a) broadens the scope of licenses granted under §5.12(a). Section 5.15(a), as proposed, is changed to clarify the scope of a §5.15(a) license and delete certain of the exclusions originally proposed. This license permits exporting technical data to and filing corresponding subject matter in an application in any foreign country. The license also permits amendments, modifications, and supplements, including divisions, changes or supporting matter consisting of the illustration, exemplification, comparison, or explanation of subject matter disclosed in the application, to be exported and filed in any foreign country. This license includes additional matter which does not change the general nature of subject matter disclosed and does not pertain to certain prohibited subjects or areas listed on various export restriction lists established by the Department of State and the Department of Energy.

These changes also permit an applicant to take action in the prosecution of the foreign or international application and submit supporting data such as affidavits, test data or the like as long as it directly relates to the filing, possible filing or prosecution of the application and does not pertain to the prohibited subjects or areas enumerated in §5.15(a)(4). The changes in §5.15(a) obviate the problems in *In re Gaertner,* supra, by providing a license scope which covers the type of activity involved in that case.

Amended paragraph (b) of §5.15 is the same as proposed paragraph (b) except for changes for consistency.

Amended paragraph (c) of §5.15 differs from §5.15(c) as proposed by including a reference to §5.14 and specifically permitting an applicant to petition for a change of the scope of a license.

New paragraph (d) of §5.15 is similar to proposed paragraph (d) with only changes for consistency.

New paragraph (e) of §5.15 is similar to proposed paragraph (e) with only changes for consistency.

Paragraph (f) of §5.15 is similar to proposed paragraph (f) with only changes for consistency.

Paragraph (g) is adopted essentially as proposed.

Section 5.17

Section 5.17 is similar to proposed §5.17 with only consistency changes.

Section 5.20

Section 5.20, not included in the proposal, is new and clarifies the existing authority of the Commissioner under the unclassified activities in foreign atomic energy programs. Under 10 CFR 810.7, the license of the Commissioner under 37 CFR 5.11 pursuant to 35 U.S.C. 184 constitutes information available to the public and generally authorized activity.

Section 5.25

Section 5.25, proposed initially as §5.20, is new and sets forth the requirements for petitioning for a retroactive license.

Section 5.31 and 5.32

Sections 5.21 and 5.22 are redesignated as §§5.31 and 5.32, respectively.

Section 5.33

Section 5.23 is redesignated as §5.33 and adopted as proposed.

Responses to Comments on the Rules

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony were considered.

Twenty-one letters presenting written comments were received and nine persons testified at the public hearing on July 20, 1983. Comments appear below along with the responses.

Comment: One comment objected to the amendment of §5.1 to include "transmittal for" filing.

Reply: This comment has been adopted by deleting the phrase from the final rule.

Comment: Three comments requested an explanation of the conditions when a license may be revoked under §5.11(d) be clearly set forth and asked whether, if revocation occurs, past acts are valid and whether there will be compensation for damages.

Reply: The section has been revised to further clarify the conditions under which a license may be revoked. The power to revoke licenses has been expressly included in all issued licenses for a number of years. Section 5.11(d) as proposed, merely recognizes in the rule the fact that licenses can be revoked. With the advent of the filing of a U.S. application becoming a request for a foreign filing license under §5.12(a), a regulatory procedure clarifying the revocation practice was appropriate. Revocation will be effective only as of the date of revocation and prior acts predicated on the license would be in compliance with 37 CFR Part 5. The rule as proposed has been clarified to indicate that revocation may apply either to a license specifically granted by the Commissioner or to an authorization to file a foreign application resulting from the passage of six months from the filing of a United States patent application. No compensation is available for revocation of a license.

Comment: Eighteen comments requested the amendment of §5.11 to eliminate the license requirement for "transmittal for filing" and substitute the requirement for "filing" only.

Reply: The proposal has been adopted by eliminating the requirement for a license from the Commissioner prior to transmitting or exporting an application abroad. The regulations have been clarified to emphasize the requirements for the export of technical data in the form of an application. An applicant has a choice of exporting such applications under authority of either (1) the appropriate export agencies controlling the export of technical data—Department of State; Department of Commerce, International Trade Administration; or Department of Energy or (2) a license from the Commissioner. While a license from the Commissioner is required only for filing an application abroad, the provisions of §§5.18, 5.19 and 5.20 reflect the Commissioner's authority to license the export of technical data in the form of an application for purposes related to filing in addition to the foreign filing of the application in a foreign country.

Comment: Six person objected to the transmittal license requirement and argued that the Patent and Trademark Office lacks authority under 35 U.S.C. 184 to require pre-filing (transmitting) licenses. It was also argued that foreign filing licensing is not the conduct of proceedings under 35 U.S.C. 6.

Reply: The final rules do not require a license from the Commissioner for export (or transmittal). The export provisions of §5.11 are issued under 35 U.S.C. 6 and pursuant to delegations under the regulations of the export agencies.

Comment: One comment argued that the constitutional right of freedom of speech would be impaired by requiring a license for published material.

Reply: A constitutional argument of prior restraint by export licensing of the International Traffic in Arms Regulations was reviewed by the Ninth Circuit in the case of *United States* v. *Edler,* 579 F. 2d 516 (9th Cir. 1978) cert. denied 449 U.S. 1084 (1981). No prior restraint within first amendment protection was found by the Court.

Comment: One comment stated that the $120 petition license fee under §5.12(b) is too high, and a $60 fee would be more reasonable.

Reply: The license fee under §5.12(b), §5.13 and §5.14 is not applicable to routine licensing requests. It is only applicable to expedited processing of license requests

which require special efforts by the Patent and Trademark Office. The $120 petition fee better reflects the costs to the Patent and Trademark Office for providing expedited handling.

Comment: One comment proposed the deletion of the last sentence of paragraph §5.14(a) since under §5.12(a) only those cases having interest from a security standpoint are refused a license.

Reply: This suggestion has not been adopted because the provision may apply to petitions filed prior to receipt of a filing receipt license where expedited handling is requested.

Comment: One comment stated that §5.15(d) appears to be redundant since it applies only to cases on file for six months and on which no secrecy order has been imposed.

Reply: Under §5.15(d), a license is not needed for cases in this category if no additional subject matter is added. This section complements §5.15(b) where a license of narrow scope is granted.

Comment: One comment raised the question whether §5.15(a) as to amendments, supplements, and modifications includes continuation-in-part applications.

Reply: Continuation-in-part applications are included within the term "amendments, supplements, and modifications." *Beckman Instruments, Inc.* v. *Coleman Instruments,* 143 USPQ 278 (7th Cir. 1964).

Comment: Two comments requested that the express language in §5.15(a)(3) be amended to state that "Technical Data" relating to articles, materials and supplies be limited to the validated license requirements of §§379.4(c) and 379.4(d) of the Export Administration Regulations and no other sections, or alternatively, that paragraph (a)(3) be deleted in its entirety.

Reply: The final rules do not include §5.15(a)(3) as proposed.

Comment: Two comments proposed that the two-tier licensing structure of §5.15(a) and §5.15(b) be amended to reflect a broad one-tier system based on §5.15(a).

Reply: The two-tier system reflects different treatment for applications within the inspection scope of 35 U.S.C. 181 and those outside of its inspection scope. Security review occurs on all applications with inspection cases having a narrow license grant, and noninspection cases having a broad license grant. This inspection case treatment is necessary for the Patent and Trademark Office to meet its responsibilities under 35 U.S.C. 184 and particularly 37 CFR 5.18, 5.19, and 5.20 where the State, Commerce and Energy Departments accept the Commissioner's licenses in lieu of their own export approval.

Comment: One comment indicated that proposed §5.15(a)(3) was of such wide scope that licenses will always be needed. The example cited was that this section would require licenses for all amendments filed in North Korea and Cuba.

Reply: The comment is correct and the provisions of §5.15(a)(3) have been deleted. The country of destination restrictions did not provide a workable mechanism for technology review under the provisions of 35 U.S.C. 181.

Comment: Three comments recommended making a §5.15(a) scope license available pursuant to a §5.14 petition where an application was filed prior to Feb. 27, 1983, or where an initial automatic §5.12(a) petition was not granted after Feb. 27, 1983 or where the general nature of the invention changed but is still outside of the provisions of §5.15(a)(4).

Reply: This provision has been adopted to allow the Commissioner to issue broadened licenses upon a §5.14 petition in the above circumstances. New §5.15(c) allows the Commissioner to convert the scope of a license from §5.15(b) to a §5.15(a) license.

Comment: Two comments proposed the extension of a §5.15(a) license upon petition after one or more years after the United States filing date or after grant of a §5.15(b) license.

Reply: This suggestion has been adopted in §5.15(c) which will provide the mechanism by petition at any time to convert the scope of a license. This is promulgated since errors may occur in the denial of a §5.15(a) license. Also, the initial determination of the sensitive nature of technology may be altered by changes in the security classification guidelines. Procedurally, such petitions will be referred to the appropriate defense agencies for their review of the technology prior to the grant of any license.

Comment: One comment requested clarification on how and under what circumstances a §5.12(b) license granted under §5.15(c) has the same scope as a license granted under §5.12(a).

Reply: Licenses granted under §5.12(a) will have the §5.15(a) scope because the applications are not within the inspection scope of a 35 U.S.C. 181 referred to the defense agencies for security review. Under §5.15(c), applications which are not referred to defense agencies pursuant to petitions under §§5.12, 5.13 and 5.14 will have a license of the scope of §5.15(a).

Comment: Three comments suggested an amendment to proposed §5.20(4) to delete the "inadvertence" standard and substitute "through error without deceptive intent."

Reply: Inadvertence is a statutory standard which cannot be altered by rulemaking. Further, judge-made law has determined the metes and bounds of this term which further proscribes the rulemaking authority of the Commissioner. In *Barr Rubber Products Co.* v. *Sun Rubber Co.,* 149 USPQ 204, 209 (S.D.N.Y., 1966) inadvertence was defined as "lack of care or attentiveness: inattention" or "an effect of inattention: a result of carelessness; an oversight, mistake, or fault from negligence."

Inadvertence signifies want of attention, and an action which is deliberately taken with full knowledge of the law and facts is not inadvertent. *In re Application of Nov. 22, 1952,* 153 USPQ 410, 411 (Asst. Commr. 1967).

Implementation of Patent Procedure Revisions

The various sections will be implemented by the Commissioner on the effective date of the rules by the acceptance of petitions under the various sections. The broadened license scope of §5.15(a) will apply as of the effective date of these rules to all cases having filing receipt licenses under §5.12(a) which became effective on Feb. 27, 1983. The provisions of this broad license do not apply to acts of export or filing which occurred prior to the effective date of these rules. No other action will be required by an applicant to receive the benefits of this change.

Other Considerations

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The Acting General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354) for several reasons. Under this rulemaking, small entities would be able to obtain licenses without filing separate requests therefor. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, simplifying existing procedures where possible.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increases in cost or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

Paperwork Reduction Act. The collection of information requirement of this rule is included in a PTO request for approval pending before the OMB. Upon assignment of a control number by OMB, we will publish an appropriate amendment of the affected rules.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Inventions and patents, Lawyers, Small businesses.

37 CFR Part 5

Classified information, Foreign relations, Inventions and patents.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 41 and 181–188 and by delegations to the Commissioner by regulation (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7) or otherwise under the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, the Patent and Trademark Office is amending Parts 1 and 5 of Title 37 of the Code of Federal Regulations as set forth below:

PART 1—[AMENDED]

1. Section 1.17 is amended by revising paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of Part 1 or 5 listed below which refers to this paragraph $120.00

—§1.47—for filing by other than all the inventors or a person not the inventor
—§1.48—for correction of inventorship
—§1.182—for decision on questions not specifically provided for
—§1.183—to suspend the rules
—§1.268—for late filing of interference settlement agreement
—§§5.12, 5.13 & 5.14—for expedited handling of foreign filing license
—§5.15—for changing the scope of a license
—§5.25—for retroactive license

2. The table of contents and heading for Part 5 are revised to read as follows:

PART 5—SECRECY OF CERTAIN INVENTIONS AND LICENSES TO EXPORT AND FILE APPLICATIONS IN FOREIGN COUNTRIES

Secrecy Orders

Sec.
5.1 Defense inspection of certain applications.
5.2 Secrecy order.
5.3 Prosecution of application under secrecy orders; withholding patent.
5.4 Petition for rescission of secrecy order.
5.5 Permit to disclose or modification of secrecy order.
5.6 General and group permits.
5.7 Compensation.
5.8 Appeal to Secretary.

Licenses for Foreign Exporting and Filing

5.11 License for filing in a foreign country an application on an invention made in the United States or for transmitting international application.
5.12 Petition for license.
5.13 Petition for license; no corresponding application.
5.14 Petition for license; corresponding U.S. application.
5.15 Scope of license.
5.16 Effect of secrecy order.
5.17 Who may use license.
5.18 Arms, ammunition, and implements of war.
5.19 Export of technical data.
5.20 Export of technical data relating to sensitive nuclear technology.
5.25 Petition for retroactive license.

General

5.31 Effect of modification, rescission or license.
5.32 Papers in English language.
5.33 Correspondence.

Authority: 35 U.S.C. 6, 41, 181–188 and the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, and the delegations in the regulations under these acts to the Commissioner (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7).

3. The center heading preceding §5.11 and the text of §5.11 are revised to read as follows:

Licenses for Foreign Exporting and Filing

§5.11 License for filing in a foreign country an application on an invention made in the United States or for transmitting an international application.

(a) A license from the Commissioner of Patents and Trademarks under 35 U.S.C. 184 is required before filing any application for patent or for the registration of a utility model, industrial design, or model, in a foreign patent office or any foreign patent agency or any international agency other than the United States Receiving Office, if:

(1) An application on the invention has been on file in the United States less than six months prior to the date on which the application is to be filed, or

(2) No application on the invention has been filed in the United States.

(b) The license from the Commissioner of Patents and Trademarks referred to in paragraph (a) would also authorize the export of technical data abroad for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application without separately complying with the regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of the Office of Export Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy).

(c) Where technical data in the form of a patent application, or in any form is being exported for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application, without the license from the Commissioner of Patents and Trademarks referred to in paragraphs (a) or (b) of this section, or on an invention not made in the United States, the export regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of Office of Export Administration, International Trade Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy) must be complied with unless a license is not required because a United States application was on file at the time of export for at least six months without a secrecy order under §5.2 being placed thereon. The term "exported" means export as it is defined in 22 CFR Parts 121–130, 15 CFR Part 379 and 10 CFR Part 810.

(d) If a secrecy order has been issued under §5.2, an application cannot be exported to, or filed in, a foreign

country (including an international agency in a foreign country), except in accordance with §5.5.

(e) No license pursuant to paragraph (a) of this section is required if:

(1) The invention was not made in the United States, or

(2) The United States application is not subject to a secrecy order under §5.2, and was filed at least six months prior to the date on which the application is filed in a foreign country.

(f) A license pursuant to paragraph (a) of this section can be revoked at any time upon written notification by the Patent and Trademark Office. An authorization to file a foreign patent application resulting from the passage of six months from the date of filing of a United States patent application may be revoked by the imposition of a secrecy order.

4. Section 5.12 is amended by revising paragraph (b) to read as follows:

§5.12 Petition for license.

* * * * *

(b) Petitions for license should be presented in letter form and must include the required fee (§1.17(h)), if expedited handling of the petition is also sought, the petitioner's address, and full instructions for delivery of the requested license when it is to be delivered to other than the petitioner.

5. Section 5.13 is revised to read as follows:

§5.13 Petition for license; no corresponding application.

If no corresponding national or international application has been filed in the United States, the petition for license under §5.12(b) must be accompanied by the required fee (§1.17(h)), if expedited handling of the petition is also sought, and a legible copy of the material upon which a license is desired. This copy will be retained as a measure of the license granted. For assistance in the identification of the subject matter of each license so issued, it is suggested that the petition be submitted in duplicate and provide a title and other description of the material. The duplicate copy of the petition will be returned with the license or other action on the petition.

6. Section 5.14 is amended by revising paragraphs (a) and (c) to read as follows:

§5.14 Petition for license; corresponding U.S. application.

(a) When there is a corresponding United States application on file, a petition for license under §5.12(b) must include the required fee (§1.17(h)), if expedited handling of the petition is also sought, and must identify this application by serial number, filing date, inventor, and title, but a copy of the material upon which the license is desired is not required. The subject matter licensed will be measured by the disclosure of the United States application. Where the title is not descriptive, and the subject matter is clearly of no interest from a security standpoint, time may be saved by a short statement in the petition as to the nature of the invention.

* * * * *

(c) When the application to be filed or exported abroad contains matter not disclosed in the United States application or applications, including the case where the combining of two or more United States applications introduces subject matter not disclosed in any of them, a copy of the application as it is to be filed in the foreign country or international application which is to be transmitted to a foreign international or national agency for filing in the Receiving Office, must be furnished with the petition. If however, all new matter in the foreign or international application to be filed is readily identifiable, the new matter may be submitted in detail and the remainder by reference to the pertinent United States application or applications.

7. Section 5.15 is revised to read as follows:

§5.15 Scope of license.

(a) Grant of a license under §5.12(a) authorizes the export and filing of an application in a foreign country or the transmitting of an international application to any foreign patent agency or international patent agency when the subject matter of the foreign or international application corresponds to that of the domestic application. This license includes authority:

(1) To export and file all duplicate and formal papers to the foreign country or international agencies;

(2) To make amendments, modifications and supplements, including divisions, changes or supporting matter consisting of the illustration, exemplification, comparison, or explanation of subject matter disclosed in the application;

(3) To take any action in the prosecution of the foreign or international application; and

(4) To add subject matter or take any action under paragraphs (a) (1)–(3) of this section which does not change the general nature of the subject matter disclosed at the time of filing, unless the subject matter added involves technical data pertaining to:

(i) Defense services or articles designated in the United States Munitions List applicable at the time of foreign filing, the unlicensed exportation of which is prohibited pursuant to the Arms Export Control Act, as amended, and 22 CFR Parts 121–130; or

(ii) Restricted Data, sensitive nuclear technology or technology useful in the production or utilization of special nuclear material or atomic energy, the dissemination of which is subject to restrictions of the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, as implemented by the regulations for Unclassified Activities in Foreign Atomic Energy Programs, 10 CFR Part 810, in effect at the time of foreign filing.

(b) Grant of a license under §5.12(b) authorizes the export and filing of an application in a foreign country or the transmitting of an international application to any foreign patent agency or international patent agency. Further, this license includes authority to forward all duplicate and formal papers to the foreign patent agency or international patent agency and to make amendments, modifications or supplements to and take any action in the prosecution of the foreign or international application, provided subject matter additional to that covered by the license is not involved.

(c) A license granted under §5.12(b) pursuant to §5.13 or §5.14 shall have the scope indicated in paragraph (a) of this section, if it is so specified in the license. A petition, accompanied by the required fee (§1.17(h)), may also be filed to change a license having the scope indicated in paragraph (b) of this section to a license having the scope indicated in paragraph (a) of this section. The change in the scope of a license will be as of the date of the grant of the change in scope.

(d) In those cases in which no license is required to file the foreign application or transmit the international application, no license is required to file papers in connection with the prosecution of the foreign or international application not involving the disclosure of additional subject matter.

(e) Any paper filed abroad or transmitted to an international patent agency following the filing of a foreign or international application which changes the general nature of the subject matter disclosed at the time of filing or which involves the disclosure of subject matter listed in paragraphs (a)(4) (i) or (ii) of this section must be separately licensed in the same manner as a foreign or international application. Further, if no license has been granted under §5.12(a) on filing the corresponding United States application, any paper filed abroad or with an international patent agency which involves the disclosure of additional subject matter must be licensed in the same manner as a foreign or international application.

(f) Licenses separately granted in connection with two or more United States applications may be exercised by combining or dividing the disclosures, as desired, provided:

(1) Subject matter which changes the general nature of the subject matter disclosed at the time of filing or which involves subject matter listed in paragraphs (a)(4) (i) or (ii) of this section is not introduced and,

(2) In the case where at least one of the licenses was obtained under §5.12(b), additional subject matter is not introduced.

(g) A license does not apply to acts done before the license was granted. See §5.25 for petitions for retroactive licenses.

8. Section 5.17 is revised to read as follows:

§5.17 Who may use license.

Licenses may be used by anyone interested in the export, foreign filing, or international transmittal for or on behalf of the inventor or the inventor's assigns.

9. A new §5.20 is added to read as follows:

§5.20 Export of technical data relating to sensitive nuclear technology.

(a) Under regulations (10 CFR 810.7) established by the United States Department of Energy, an application filed in accordance with the regulations (37 CFR 5.11–5.33) of the United States Patent and Trademark Office and eligible for foreign filing under 35 U.S.C. 184, is considered to be information available to the public in published form and a generally authorized activity for the purposes of the Department of Energy regulations.

(b) Inquiries concerning the export of sensitive nuclear technology other than related to the filing or prosecution of a foreign patent application should be made to the Attention: Secretary, United States Department of Energy, Office of International Security Affairs, Washington, D.C. 20858.

§5.21 [Redesignated as §5.31]

10. Section 5.21 is redesignated as §5.31.

§5.22 [Redesignated as §5.32]

11. Section 5.22 is redesignated as §5.32.

12. A new §5.25 is added to read as follows:

§5.25 Petition for retroactive license.

(a) A petition of retroactive license under 35 U.S.C. 184 shall be presented in accordance with §5.13 or §5.14, and shall include:

(1) A listing of the foreign countries in which the patent application material was filed,

(2) The dates on which the material was filed,

(3) A verified statement containing:

(i) An averment that the subject matter in question was not under a secrecy order at the time it was filed abroad, and that it is not currently under a secrecy order.

(ii) A showing that the license has been diligently sought after discovery of the proscribed foreign filing, and

(iii) An explanation of why the material was inadvertently filed abroad without the required license under §5.11 first having been obtained, and

(4) The required fee (§1.17(h)).

The above explanation must include a showing of facts rather than a mere allegation of inadvertence. The showing of facts should include statements by those persons having personal knowledge of the acts regarding filing in a foreign country and should be accompanied by copies of any necessary supporting documents such as letters of transmittal or instructions for filing. The acts which are alleged to constitute inadvertence should cover the period from the time of filing until actual filing of the petition under this section.

(b) If a petition for a retroactive license is denied, a time period of not less than thirty days shall be set, during which the petition may be renewed. Failure to renew the petition within the set time period will result in a final denial of the petition. A final denial of a petition stands unless a petition is filed under §1.181 within two months of the date of the denial. If the petition for a retroactive license is denied with respect to the invention of a pending application and no petition under §1.181 has been filed, a final rejection of the application under 35 U.S.C. §185 will be made.

(c) The granting of a retroactive license does not excuse any violation of the export regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of Office of Export Administration, International Trade Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy) which may have occurred because of the failure to obtain an appropriate license prior to export.

13. Section 5.23 is redesignated as §5.33 and revised to read as follows:

§5.33 Correspondence.

All correspondence in connection with this part, including petitions, should be addressed to "Commissioner of Patents and Trademarks (Attention Licensing and Review), Washington, D.C. 20231."

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Feb. 24, 1984.

[FR Doc. 84-8884 Filed 4-3-84; 8:45 am]
BILLING CODE 3510-16-M

[1042 O.G. 3]

(118) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1 and 5
[Docket No. 40227-18]

Revision of Foreign Filing License Procedure

Agency: Patent and Trademark Office, Commerce
Action: Final rule: Change of effective date
Summary: The Patent and Trademark Office amended the rules of practice in patent cases, Parts 1 and 5 of 37 CFR, to establish a streamlined procedure for granting licenses for foreign filing by publishing a notice in the Federal Register on Apr. 4, 1984, at 49 Fed. Reg. 13456–13463. The notice set an effective date of June 1, 1984. However, title 35, United States Code, section 41(g) provides that "No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register." Since these rules establish fees and the effective date of the rules was slightly less than 60 days after the publication of the final rule change in the Federal Register, it is necessary to set a later effective date.
Date: The effective date of the rule change published at 49 Fed. Reg. 13456–13463 is changed to June 4, 1984.
For further information contact: Kenneth L. Cage by telephone at (703) 557-2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 30, 1984.

[1042 O.G. 58]

(119) **Guidelines for Extension of Patent Term Under 35 U.S.C. 156**

This notice is intended to establish initial guidelines for patent owners who are seeking extensions of patent terms pursuant to newly enacted 35 U.S.C. 156. These guidelines will be effective until further notice. Section 156 of Title 35, United States Code, provides that a patent owner seeking an extension of the term of a patent pursuant to its provisions must submit an application to the Commissioner of Patents and Trademarks (hereinafter Commissioner) within a certain defined period of time. Section 156 specifies certain components the application is to contain, including "such patent or other information as the Commissioner may require." See 35 U.S.C. 156(d) (1) (E). Section 156(d) (4) also provides that "[a] n application for the extension of the term of a patent is subject to the disclosure requirements prescribed by the Commissioner." Section 156(h) provides that the "Commissioner may establish such fees as the Commissioner determines appropriate to cover the costs to the Office of receiving and acting upon applications under this section." The purpose of this notice is to provide the guidelines which a patent owner or its agent should use in deciding whether to submit an application for the extension of the term of a patent to the Patent and Trademark Office and in actually making the submission of such an application. This notice is divided into a number of sections set forth below which treat various determinations which have to be made by a patent owner or its agent prior to submission of an application and further includes guidelines as to the actual content of an application for extension of the term of a patent.

A patent owner or its agent should use the guidelines in the various sections set forth below in determining whether a patent is subject to, and meets the conditions for, extension of its term. If so, the patent owner or its agent should also use the guidelines set forth below in preparing and filing an application for extension of the patent term. If any application for extension of the term of a patent is filed in accordance with 35 U.S.C. 156 before the date on which this notice is published in the Official Gazette and is not in compliance with the requirements of this notice, applicant will be notified of the deficiencies in the application and will be given a period of time within which to correct the deficiencies.

Guidelines

§A. *Patents subject to extension of the patent term.*

(a) Any patent which claims a product as defined in paragraph (b) of this section, or a method of using such a product, or a method of manufacturing such a product, is subject to being extended in accordance with 35 U.S.C. 156.

(b) The term "product" referred to in paragraph (a) of this section means (1) a human drug product or (2) any medical device, food additive, or color additive subject to regulation under the Federal Food, Drug, and Cosmetic Act. The term "human drug product" means the active ingredient of a new drug, antibiotic drug, or human biological product (as those terms are used in the Federal Food, Drug, and Cosmetic Act and the Public Health Service Act) including any salt or ester of the active ingredient, as a single entity or in combination with another active ingredient.

§B. *Conditions for extension of term of a patent.*

The term of a patent may be extended if:

(a) the patent claims a product or a method of using or manufacturing a product as defined in §A of this notice;

(b) the term of the patent has never been previously extended except for any interim extension issued pursuant to 35 U.S.C. 156(e) (2);

(c) an application for extension is submitted pursuant to §D of this notice;

(d) the product has been subject to a regulatory review period as defined in 35 U.S.C. 156(g) and by the Secretary of Health and Human Services before its commercial marketing or use;

(e) the product has received permission for commercial marketing or use and (i) the application is submitted within the sixty day period beginning on the date the product first received permission for commercial marketing or used under the provision of law under which the applicable regulatory review period occurred, or (ii) in the case of a patent claiming a method of manufacturing the product which primarily uses recombinant DNA technology in the manufacture of the product, the application for extension is submitted within the sixty day period beginning on the date of the first permitted commercial marketing or use of a product manufactured under the process claimed in the patent;

(f) the term of the patent has not expired before the submission of an application pursuant to §D of this notice; and

(g) no other patent has been extended for the same regulatory review period for the product.

§C. *Applicant for extension of patent term.*

Any application for extension of a patent term must be submitted by the owner of record of the patent or its agent and must comply with the requirements of §D of this notice.

§D. *Application for extension of the term of a patent.*

(a) An application for extension of the term of a patent must be made in writing to the Commissioner of Patents and Trademarks. The filing date of an application for extension of the term of a patent is the date on which the complete application for extension and a duplicate of the papers thereof, certified as such, are received in the Patent and Trademark Office or filed pursuant to the provisions of 37 CFR 1.10. The provisions of 37 CFR 1.8 should not be used to file an application for the extension of the term of a patent.

(b) A complete application for the extension of the term of a patent comprises:

(1) a complete identification of the approved product as by appropriate chemical and physical structure or characteristics;

(2) a complete identification of the Federal statute including the applicable provision of law under which the regulatory review occurred;

(3) an identification of the date on which the product received permission for commercial marketing or use under the provision of law under which the applicable regulatory review period occurred;

(4) a statement that the application is being submitted within the sixty day period permitted for submission and an identification of the date of the last day on which the application could be submitted;

(5) a complete identification of the patent for which an extension is being sought by the name of the inventor, the patent number, and the date of issue;

(6) a copy of the patent for which an extension is being sought, including the entire specification (including claims) and drawings, in the form of a cut-up copy of the original patent with only a single column of the printed patent securely mounted or reproduced in permanent form on one side of a separate paper;

(7) a copy of any disclaimer, certificate of correction, receipt of maintenance fee payment, or reexamination certificate issued in the patent;

(8) a statement that the patent claims the approved product or a method of using or manufacturing the approved product, and a showing which lists each applicable patent claims and demonstrates the manner in which each applicable patent claim reads on the approved product or a method of using or manufacturing the approved product;

(9) the relevant dates and information pursuant to 35 U.S.C. 156(g) in order to enable the Secretary of Health and Human Services to determine the applicable regulatory review period;

(10) a brief description of the activities undertaken by the applicant during the applicable regulatory review period with respect to the approved product and the significant dates applicable to such activities;

(11) a statement that in the opinion of the applicant the patent is eligible for the extension and a statement as to the length of extension claimed, including how the length of extension was determined;

(12) a statement that applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks and the Secretary of Health and Human Services any information which is material to any determinations to be made relative to the application for extension; and

(13) the prescribed fee for receiving and acting upon the application for extension (see §F of this notice) and an oath or declaration as set forth in paragraph (c) of this section.

(c) Any application for extension of the term of a patent submitted pursuant to paragraphs (a) and (b) of this section must include an oath or declaration signed by the owner of record of the patent or its agent which specifically identifies the application papers and the patent for which an extension is sought and avers that the person signing the oath or declaration:

(1) has reviewed and understands the contents of the application being submitted pursuant to this section;

(2) believes the patent is subject to extension pursuant to §A of this notice;

(3) believes an extension of the length claimed is fully justified under 35 U.S.C. 156; and

(4) believes the patent for which the extension is being sought meets the conditions for extension of the term of a patent as set forth in §B of this notice.

(d) If any application for extension of the term of a patent submitted pursuant to this section is held to be incomplete, applicant may seek to have that holding reviewed by filing a petition pursuant to 37 CFR 1.182 within such time as may be set, or if no time is set, within one month of the date on which the application was held incomplete.

§E. *Interim extension of the term of a patent.*

An applicant who has filed an application for extension pursuant to §D of this notice may request one or more interim extensions for periods of up to one year pending a final determination on the application. Any such request should be filed at least three months prior to the expiration date of the patent. The Commissioner may issue interim extensions for periods of up to one year until a final determination is made without a request by the applicant. In no event will the interim extensions granted under this section be longer than the maximum period of extension to which the applicant would be eligible.

§F. *Fee for receiving and acting on an application for extension of the term of a patent.*

Pursuant to 35 U.S.C. 156(h) the Commissioner has determined that a fee of $750.00 is appropriate to cover the costs to the Patent and Trademark Office of receiving and acting upon applications for extension of the term of a patent filed pursuant to 35 U.S.C. 156. The fee should accompany the application when filed. If a fee in a different amount is adopted in Title 37 of the Code of Federal Regulations, applicant will be refunded any excess or required to submit any deficiency.

§G. *Address for application for extension of the term of a patent and communcations relating thereto.*

All applications for extension of the term of a patent and any communcations relating thereto intended for the Patent and Trademark Office should be addressed to the Commissioner of Patents and Trademarks, Box Patent Ext., Washington, D.C. 20231. When appropriate, the communication should also be marked to the attention of a particular individual.

§H. *For further information contact:*

R. Franklin Burnett by telephone at (703) 557–3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Summary

The initial guidelines set forth above are considered to be appropriate and authorized by 35 U.S.C. 156. They will provide appropriate guidance to patent owners and their agents pending appropriate changes which will be made in Title 37 of the Code of Federal Regulations.

DONALD J. QUIGG,
Sept. 25, 1984. *Acting Commissioner of Patents and Trademarks.*

[1047 O.G. 16]

(120) **Guidelines for the Submission of Applications for Interim Protection of Mask Works Under 17 U.S.C. 914**

Chapter 9 of Title 17 of the United States Code, the Semiconductor Chip Protection Act of 1984, establishes a new form of intellectual property protection for mask works that are fixed in semiconductor chips. Mask works are defined as a "series of related images, however fixed or encoded" that represent the three-dimensional patterns in the layers of a semiconductor chip. This chapter provides a 10 year term of protection for original mask works measured from their date of registration on first commercial exploitation anywhere in the world. Mask works must be registered in the United States Copyright Office within two years' of first commercial exploitation to maintain this protection.

This chapter denies protection to foreign owners of mask works unless the works are first commercially exploited in the United States. It is contemplated that foreign countries will eventually obtain full protection by concluding treaties or enacting chip protection legislation. In order to encourage steps toward a regime of internatonal comity in mask work protection, Section 914(a) provides that the Secretary of Commerce may extend the privilege of interim protection under the Semiconductor Chip Act to nationals of foreign nations under certain conditions. These are: (1) that the foreign nation in question is making progress (either by treaty negotiation or legislative enactment) toward a regime of mask work protection generally similar to that under the Act; (2) that its nationals and persons controlled by them (such as subsidiaries or affiliated companies) are not engaging and have not in the recent past engaged in chip piracy or the sale of products containing infringing semiconductor components; and (3) that entry of the Secretary's order would promote the purposes of the Act and of achieving international comity toward mask work protection.

This notice establishes initial guidelines that specify the content and procedures for the submission of petitions for the Secretary of Commerce to issue or to terminate an Order extending the privilege of making interim registrations for mask works pursuant to chapter 9 of Title 17 of the United States Code. The Assistant Secretary of Commerce and Commissioner of Patents

and Trademarks has been delegated the responsibility to receive petitions, conduct proceedings, make findings, and issue or terminate Orders. These guidelines set forth, in accordance with the statutory provisions, the persons eligible to initiate such proceedings, the procedures to be followed, and the information required to be submitted so that the Commissioner can make the determination required by the statute.

A. DEFINITIONS

As used in these guidelines:

(a) "Commissioner" means the Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.
(b) "Interim registration" means a registration of a mask work with the Register of Copyrights by a foreign national, domiciliary or sovereign authority made pursuant to an Order issued under these guidelines.
(c) "Order" means an action by the Commissioner issuing or terminating an Order extending to foreign nationals, domiciliaries and sovereign authorities the privilege of making interim registrations for mask works pursuant to Chapter 9 of title 17, U.S.C.
(d) "Petition" means a request that the Commissioner issue or terminate an Order extending to foreign nationals, domiciliaries and sovereign authorities the privilege of making interim registrations or mask works pursuant to Chapter 9 of title 17, U.S.C.
(e) "Proceeding" means a proceeding to issue or to terminate an Order extending to foreign nationals, domiciliaries and sovereign authorities the privilege of making interim registrations for mask works pursuant to Chapter 9, of title 17, U.S.C.
(f) "Secretary" means the Secretary of Commerce.

B. Effective Date of Guidelines

These guidelines shall come into force on the date of signature of H.R. 6163 by the President.

C. Initiation of Proceedings

(a) The Commissioner may initiate proceedings under these guidelines on his own motion or as directed by the Secretary.
(b) The Commissioner shall initiate proceedings under these guidelines upon receipt of a petition.

D. Submission of Petitions

(a) Petitions may be submitted at any time, however the effective date of any Order shall not precede the coming into force of Chapter 9 of 17 U.S.C.
(b) Petitions shall be submitted to the Commissioner for review and evaluation.

E. Content of Petitions

(a) Any petition requesting that the Commissioner issue an Order extending the privilege of making interim registration under Chapter 9 of 17 U.S.C. must include:
(1) A statement of the foreign governmental agency in charge of developing legislation or negotiating a treaty for the protection of mask works in a manner generally similar to the provisions of Chapter 9 of 17 U.S.C.: (i) that it is making good-faith efforts and reasonable progress toward developing and enacting such legislation or toward entering into such a treaty, and (ii) providing substantive information regarding the entity in the foreign nation to whom the responsibility has been delegated and the procedures that will be followed including any expected target dates for action.
(2) A statement by the appropriate foreign government or foreign governmental agency, including such supporting evidence as may be available, that neither that nation or persons controlled by them are engaged in the misappropriation, or unauthorized distribution or commercial exploitation of mask works.
(3) Information from the party submitting the petition that provides evidence of the progress or the actual efforts undertaken by the foreign nation. Such information should include:
(i) Copies of bills introduced in the foreign legislature;
(ii) Copies of legislative proposals by responsible agencies;
(iii) Records of international proceedings or negotiations showing efforts toward developing an appropriate treaty;
(iv) Reports of governmental or private sector commissions studying and making recommendations on appropriate measures to protect mask works in semiconductor chip products;
(v) Correspondence between private sector organizations and responsible governmental organizations; and
(vi) Any other material including executive proclamations, resolutions or regulations that would support the claim of good-faith efforts and the absence of misappropriations or the absence of unauthorized distribution or commercial exploitation of mask works.
(b) All materials furnished must be in the English language or provided with a certified English translation.

F. Proceeding

(a) A proceeding shall be initiated by the publication of a notice in the Federal Register providing interested parties with an opportunity to submit relevant comments.
(b) Based upon comments received or a review of any petition submitted, the Commissioner, at his discretion, may hold a hearing to permit interested parties and the petitioner to present additional information.
(c) The Commissioner shall review the petition, evaluate the evidence submitted, consider the results of any hearing conducted during the course of the proceeding, and issue or terminate an Order.
(d) If the Commissioner refuses to issue an Order the petitioner may, within 30 days and upon the submission of additional evidence, request reconsideration. If 30 days pass and no request for reconsideration is received, the refusal to issue an Order shall be considered final.
(e) The Commissioner may issue an Order that is valid for a period of up to three years. The Commissioner, in making a determination on the duration of the proposed Order, will be guided by the strength and weight of the evidence submitted.

G. Duration of Orders

(a) Orders shall endure for the period specified in accordance with Section F(e) above, but in no case longer than three years from the effective date of Chapter 9 of 17 U.S.C. in accordance with 17 U.S.C. 914(d)(l)(e) unless the authority of the Secretary is extended in accordance with 17 U.S.C. 914(f) (2).
(b) Orders shall be terminated if:

(1) The Commissioner finds after a proceeding under Section F above that the conditions upon which the Order was based no longer exist, or
(2) Mask works of nationals, domicilaries, and sovereign authorities of that foreign nation or mask works first commercially exploited in that nation become eligible for protection under: (i) a Presidential proclamation issued in accordance with 17 U.S.C. 902(a) (2), or (ii) that nation's own law for the protection of such works so long as that nation is a party to a treaty protecting such works to which the United States is also a party.

H. Mailing Address

(a) Petitions, requests for reconsideration, and all correspondence submitted pursuant to these guidelines shall be addressed to:
Commissioner of Patents and Trademarks
Box 4
Washington, D.C. 20231
(b) For further information contact:
Assistant Commissioner for External Affairs
703/557–3065
Mail inquiries should be directed to the same address indicated above to his attention.

SUMMARY

The initial guidelines set forth above are considered to be appropriate to implement Title 17 U.S.C. 914. They will become effective on the date of signature of H.R. 6163 by the President. They will provide appropriate guidance to mask work owners and their agents pending the issuance of regulations.

RENE D. TEGTMEYER
Nov. 1, 1984. *Acting Commissioner of Patents and Trademarks.*

[1048 O.G. 30]

(121) **Errors in Notice of Allowance**

The purpose of this notice is to clarify existing Office practice with respect to providing a new issue fee due date. Sometimes errors appear on the Notice of Allowance, such as an incorrect number of claims, the misspelling of an inventor's name, an incorrect inventorship, or an incorrect title. A duplicate Notice of Allowance correcting the errors may be requested from the Group that mailed the Notice. However, a new issue fee due date will not be provided if the information on the original Notice of Allowance is sufficient to allow a reasonable practitioner to timely file a proper issue fee in the correct application. Specifically, the mere filing of a request for a corrected or duplicate Notice of Allowance will not act to stay the period for paying the issue fee.

JAMES E. DENNY,
June 12, 1985. *Deputy Assistant Commissioner for Patents.*

[1056 OG 35]

(122) **Initial Guidelines Implementing Changes in 35 U.S.C. 103, 116, and 120**

The Patent and Trademark Office has established initial guidelines for patent examiners to use in implementing the changes made in 35 U.S.C. 103, 116, and 120 by Public Law 98-622, the Patent Law Amendments Act of 1984. As a service to the public, those guidelines are published below. A copy of Public Law 98–622 is also being published concurrently herewith. Some of the procedural aspects of matters contained in the guidelines will be incorporated into Title 37 of the Code of Federal Regulation through the rule-making process.

RENE D. TEGTMEYER,
Dec. 11, 1984. *Assistant Commissioner for Patents.*

Initial Guidelines As To Implementation Of 35 U.S.C. 103

Public Law 98–622 added a new sentence to 35 U.S.C. 103 which reads as follows:

"Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person."

The significant features resulting from this amendment to §103 are the following:

(1) The only prior art which is disqualified is prior art under §102(f) or (g) where the subject matter, i.e., the prior art, and the invention "were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person." (Person includes organization.)
(2) If the subject matter (prior art) qualifies as prior art under any other section, e.g., §102(a), (b), or (e), it is still prior art and can be used.
(3) Amendment applies only to subject matter which qualifies as prior art under §103; it does not affect subject matter which qualifies as prior art under §102, i.e., anticipatory prior art.
(4) Term "another person" means any inventive entity other than the inventor and includes the inventor and any other person.
(5) Term "developed" is to be read broadly and is not limited to any particular manner of development.
(6) Subject matter derived from another under §102(f) is prior art under §103 unless the derived subject matter and the claimed invention are owned by, or subject to an obligation of assignment to, the same person at the time the claimed invention was made.
(7) The disclosure of an earlier filed patent application which issues as a patent continues to be prior art under §102(e) against a later invented and filed application of another inventor even though the patent and the later application are owned by, or subject to an obligation of assignment to, the same person.
(8) Commonly owned applications, i.e., applications owned by the same person, may be refiled as a single application to avoid one or more of them becoming prior art against another under §§102(e) and 103.
(9) The phrase "owned by the same person" requires that the same person, persons, or organization own 100% of the subject matter (prior art) and 100% of the claimed invention.
(10) The phrase "subject to an obligation of assignment to the same person" requires that a legal obligation of assignment exist and not merely a moral or unenforceable obligation.
(11) As long as the same person owns the subject matter and the invention at the time the claimed invention was made, a license to another may be made without the subject matter becoming prior art.
(12) Amended §103 requires actual ownership (or obligation to assign) be in existence at the time the claimed invention is made for the subject matter to be disqualified as prior art; acquiring one or the other later is not sufficient.
(13) Burden of establishing that subject matter is disqualified as prior art is placed on patent applicant and not on the patent examiner once the examiner establishes a prima facie case of obviousness based on the prior art.
(14) Double patenting rejections may now be made in applications based on commonly owned patents of different inventive entities and double patenting rejections of the obviousness type can be overcome by terminal disclaimers.
(15) A double patenting rejection may also be made in a later filed application where the application/patent on which the rejection is based and the later filed

application are not commonly owned as long as one of the inventors is common between the later filed application and the application/patent; such a rejection cannot be overcome by terminal disclaimer in view of the lack of common ownership.

(16) The Commissioner's Notice of January 9, 1967, "Double Patenting", 834 O.G. 1615 (Jan. 31, 1967) is withdrawn to the extent that it does not authorize a double patenting rejection where different inventive entities are present.

(17) Inventors of subject matter not commonly owned at the time of the invention may file as joint inventors in a single application. However, the claims in such an application are not protected from a §102(f)/103 or §102(g)/103 rejection.

Implementation Steps As To Amended 35 U.S.C. 103

A. *Applications To Be Considered*

(1) Amended §103 does not "affect any final decision made by the court or the Patent and Trademark Office before the date of enactment [November 8, 1984]... with respect to a patent or application for patent, if no appeal from such decision is pending and the time for filing an appeal has expired."

(2) The amendment of §103 will *not* be considered to apply to:

(a) Any application which has been abandoned prior to November 8, 1984, unless such application is revived pursuant to the provisions of 37 CFR 1.137(a) or (b) and is pending on or after November 8, 1984;

(d) Any application in which all the claims have been allowed and in which prosecution has been closed prior to November 8, 1984, e.g., by an *Ex parte Quayle* action, a Notice of allowability, or a Notice of Allowance. However, a continuing application would obtain the benefit of amended §103 if filed prior to the abandonment or issuance of the application; and

(c) Any application in which an appeal has been filed and is no longer pending or in which the time for filing an appeal has expired prior to November 8, 1984. However if the application contains allowed claims on or after November 8, 1984, the allowed claims are subject to amended §103.

(3) The amendment to §103 will be applied to any application (a) which is before the examiner for action and in which all the claims have not been allowed and the prosecution closed or (b) in which prosecution has been closed and is being reopened to reject the allowed claims on grounds other than §102(f)/103 or §102(g)/103.

(4) Applications not before the examiner for action, e.g., an application in which a response from applicant is required, will *not* be considered as to the applicability of amended §103 unless applicant takes timely action which properly requires an action on the merits by the examiner.

B. *Conflicting Co-pending Applications Of Different Inventive Entities With No Indication That They Are Commonly Owned*

(1) If the application files do not establish that they are owned by, or subject to an obligation of assignment to, the same person, the examiner will:

(a) assume that the applications are not commonly owned;

(b) examine the applications on all grounds other than any conflict between the applications;

(c) consider the applicability of §102(f)/103 or § 102(g)/103 if one application refers to the other (if there is no cross-reference between the applications it would be inappropriate for the examiner to refer to one application in the other in view of 35 U.S.C. 122);

(d) consider interference if appropriate;

(e) suspend the later filed application if it is otherwise allowable until the earlier filed application is abandoned or issues as a patent and then reject the later filed application under § 102(e)/103, if appropriate; and

(f) proceed under item C below if at any time during the examination a statement is made that the applications are commonly owned.

C. *Conflicting Co-pending Applications Of Different Inventive Entities Which Are Commonly Owned*

(1) Co-pending applications will be considered by the examiner to be owned by, or subject to an obligation of assignment to, the same person if (a) the application files refer to assignments recorded in the PTO in accordance with 37 CFR 1.331 which convey the entire rights in the applications to the same person(s) or organization(s); or (b) copies of unrecorded assignments which convey the entire rights in the applications to the same person(s) or organization(s) are filed in each of the applications; or (c) an affidavit or declaration by the common owner is filed which states that there is common ownership and explains why the affiant believes there is common ownership; or (d) other evidence is submitted which establishes common ownership of the applications in question, e.g., a court decision determining the owner. In circumstances where the common owner is a corporation or other organization an affidavit or declaration averring common ownership may be signed by an official of the corporation or organization empowered to act on behalf of the corporation or organization.

(2) If the application files establish that they are owned by, or subject to an obligation of assignment to, the same person, the examiner will:

(a) examine the applications as to all grounds except §§102(f) and (g) as they apply through §103 if the application files establish common ownership at the time the later invention was made;

(b) examine the applications for double patenting, including double patenting of the obviousness type, and make a provisional rejection, if appropriate, (see *In re Mott,* 190 USPQ 536 (CCPA 1976);

(c) examine the later filed application under §102(e) as it applies through §103 and make a provisional rejection under §102(e)/103 in the later filed application, if appropriate;

(d) permit applicant of the later filed application to file an affidavit under 37 CFR 1.131 to overcome the provisional or actual §102(e)/103 rejection, if appropriate, and a terminal disclaimer to overcome the provisional or actual rejection on double patenting of the obviousness type.

Initial Guidelines As To Implementation Of 35 U.S.C. 116

Public Law 98–622 amended 35 U.S.C. 116 to clarify that each inventor need not "sign the application" in addition to making the required oath and to add a new sentence which reads as follows:

"Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent."

The significant features resulting from these amendments to §116 are the following:

(1) The joint inventors do not have to separately "sign the application," but only need apply for the patent jointly and make the required oath by signing the same; this is a clarification, but not a change in current practice.

(2) Inventors may apply for a patent jointly even though "they did not work together or at the same time," thereby clarifying (a) that it is not necessary that the inventors physically work together on a project, and (b) that one inventor may "take a step at one time, the other an approach at different times." (*Monsanto Co.* v. *Kamp,* 154 USPQ 259 (D.D.C. 1967)).

(3) Inventors may apply for a patent jointly even though "each did not make the same type or amount of contribution," thereby clarifying the "fact that each of the inventors plays a different role and that the contribution of one may not be as great as that of another does not detract from the fact that the invention is joint, if each makes some original contribution, though partial, to the final solution of the problem." *Monsanto,* supra.

(4) Inventors may apply for a patent jointly even though "each did not make a contribution to the subject matter of every claim of the patent."

(5) Inventors may apply for a patent jointly as long as each inventor made a contribution, i.e., was an inventor or joint inventor, of the subject matter of at least one claim of the patent; there is no requirement that all the inventors be joint inventors of the subject matter of any one claim.

(6) If an application by joint inventors includes more than one independent and distinct invention, restriction may be required with the possible result of a necessity to change the inventorship named in the application if the elected invention was not the invention of all the originally named inventors.

(7) The amendment to §116 increases the likelihood that different claims of an application or patent may have different dates of invention; when necessary the Office or court may inquire of the patent applicant or owner concerning the inventors and the invention dates for the subject matter of the various claims.

Implementation Steps As To Amended 35 U.S.C. 116

(1) See items (1) to (4) above under "Applications To Be Considered" for applications to be considered under amended §116.

(2) Pending applications will be permitted to be amended by complying with 37 CFR 1.48 to add claims to inventions by inventors not named when the application was filed as long as such inventions were disclosed in the application as filed since 37 CFR 1.48 permits correction of inventorship where the "correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors".

(3) Under amended §116 an examiner will reject claims under §102(f) only in circumstances where a named inventor is not the inventor of at least one claim in the application; no rejection under §102(f) is appropriate if a named inventor made a contribution to the invention defined in any claim of the application.

(4) Under amended §116 considered in conjunction with amended §103, a rejection may be appropriate under §102(f)/103 where the subject matter, i.e., prior art, and the claimed invention were not owned by, or subject to an obligation of assignment to, the same person at the time the invention was made.

(5) Applicants are responsible for correcting, and will be required to correct, the inventorship in compliance with 37 CFR 1.48 when the application is amended to change the claims so that one (or more) of the named inventors is no longer an inventor of the subject matter of a claim remaining in the application.

(6) In requiring restriction in an application filed by joint inventors the examiner will remind applicants of the necessity to correct the inventorship pursuant to 37 CFR 1.48 if an invention is elected and the claims to the invention of one or more inventors are cancelled.

(7) The examiner will not inquire of the patent applicant concerning the inventors and the invention dates for the subject matter of the various claims until it becomes necessary to do so in order to properly examine the application.

(8) If an application is filed with joint inventors, the examiner will assume that the subject matter of the various claims was commonly owned at the time the inventions covered therein were made, unless there is evidence to the contrary. If inventors of subject matter, not commonly owned at the time of the later invention, file a joint application, applicants have an obligation pursuant to 37 CFR 1.56 to point out the inventor and invention dates of each claim and the lack of common ownership at the time the later invention was made in order that the examiner may consider the applicability of §102(f)/103 or §102(g)/103. The examiner will assume, unless there is evidence to the contrary, that applicants are complying with their duty of disclosure.

Initial Guidelines As To Implementation Of 35 U.S.C. 120

Public Law 98–622 amended 35 U.S.C. 120 by striking out "by the same inventor" and inserting in its place "which is filed by an inventor or inventors named in the previously filed application."

The amended first paragraph of 35 U.S.C. 120 (the bracketed portion was deleted and the underlined portion added) reads as follows:

§120. Benefit of earlier filing date in the United States

An appliction for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, [by the same inventor] *which is filed by an inventor or inventors named in the previously filed application* shall have the same effect, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application."

The significant features of these amendments to §120 are the following:

(1) A later filed application by an inventor or inventors of a previously filed co-pending application may claim the benefit of the previously filed co-pending application under §120 even though the later filed application does not name all of the same inventors as the previously filed application.

(2) In order for the later filed application to be entitled to claim the benefit of the earlier filed co-pending application under §120 the earlier filed co-pending application must

(a) have at least one inventor in common with the later filed application; and

(b) disclose the common inventor's invention in the manner provided by the first paragraph of 35 U.S.C. 112, i.e., fully disclose and support at least one of the common inventor's claims found in the later application.

(3) When necessary the Patent and Trademark Office or a court may inquire of the patent applicant or owner as to who invented, and the date of invention of, the subject matter being claimed in any claims in the later filed application.

(4) Double patenting rejections may be applicable, whether or not the applications and patents are commonly owned as long as the applications/patent(s) have at least one inventor in common.

(5) If the applications and patents are commonly

owned, the rejection of the applications on the grounds of double patenting can be overcome by an appropriate terminal disclaimer as long as the identical invention is not being claimed. See *In re Robeson*, 141 USPQ 485 (CCPA 1964), and *In re Kaye*, 141 USPQ 829 (CCPA 1964).

(6) If the applications and patents are not commonly owned, the double patenting rejection is entered in the later filed application and cannot be overcome by a terminal disclaimer since the ownership of the subject matter being claimed belongs to someone other than the owner of the later application.

Implementation Steps As To Amended 35 U.S.C. 120

(1) See items (1) to (4) above under "Applications To Be Considered" for applications to be considered under amended §120.

(2) The examiner will examine any earlier filed co-pending application to which priority is claimed under §120 to determine if
   (a) the earlier filed co-pending application has at least one inventor in common with the later filed application;
   (b) the other requirements for claiming benefit under §120 are met; and
   (c) a rejection on the grounds of double patenting is proper.

(3) As long as the formal requirements for claiming benefit under §120 are met, the examiner will permit the claim to be made without examining the earlier filed co-pending application for disclosure and support of at least one claim of the later filed application under the first paragraph of §112 unless it becomes necessary to do so, e.g. because of an interference or an intervening reference.

(4) The examiner will not inquire of the patent applicant as to who invented, and the date of invention of, the subject matter being claimed in any claims in the later filed application until it becomes necessary to do so in order to properly examine the application.

(5) The examiner will examine the earlier and later filed applications and make actual or provisional rejections for double patenting where appropriate, whether or not the applications are commonly owned.

Example 1 - Single Application - Plural Inventors

Inventors A and B, both employees of Company E with obligation to assign all their inventions to E develop inventions X and Y respectively. An application for patent is properly filed listing A and B as joint inventors and with claims to both X and Y as now possible under §116 as amended by Public Law 98–622.

Situation 1.

The claims to X and Y are not patentably distinct.

Examiner's Action:

If otherwise patentable over the prior art—allows application.

Situation 2.

The claims to X and Y are patentably distinct.

Examiner's Action:

Require restriction and election of claims to either X or Y. The applicant, after election, must correct the inventorship of the application to list only the inventor of the elected invention; for example, inventor A if claims to invention X were elected. A divisional application with B as inventor and claims to Y may claim benefit of the originally filed application under 35 U.S.C. 120 as amended by Public Law 98–622.

Situation 3.

The application contains a Markush-type claim to X and Y and separate species claims to X and Y.

Examiner's Action:

(a) Examine the application to determine if the inventions X and Y are restrictable. If so, the claims to elected invention X (assume X is elected by applicants) and the X portion of the Markush claim to X and Y are examined.
   (i) if the claim to X is allowable, the entire Markush claim and the species claim to Y must also be examined.
   (ii) if the claim to X is *not* allowable, no further action on species claim Y or the Y portion of the Markush claim is required.

The inventorship of the application at the time of allowance must be corrected, if necessary, to correspond to the inventions covered by the claims allowed.

Example 2 - Multiple applications - plural inventions

Inventors A and B, both employees of Company E, with obligation to assign all their inventions to E, develop inventions X and Y with Y being developed by B after knowledge of A's development of X. A files application on X before B's development of Y and B later files application. Both applications establish they are owned by Company E.

Situation 1.

The claims to X and Y are not patentably distinct.

Examiner's Action:

(a) Examine the applications as to all grounds except §102(f) and (g) as they apply through §103;

(b) Make a provisional rejection of the later filed application on the grounds of double patenting of the obviousness type, if appropriate. If a terminal disclaimer is filed in accordance with §1.321(b), the provisional double patenting rejection of the obviousness type will be overcome;

(c) Examine the later filed application under §102(e)/103 and make a provisional rejection based on §102(e)/103, if appropriate. An affidavit under §1.131 can be filed to overcome the rejection based on §102(e)/103.

Situation 2.

After receiving the examiner's action in situation 1, A and B filed a continuation-in-part application with inventor C and claim A's invention, B's invention and an improvement they jointly developed with C. A and B abandon their prior applications.

Examiner's Action:

Examine the application in the normal manner; no double patenting and §102(e)/103 problems now exist.

Example 3 - Two copending applications with no indication in the record of common ownership

Inventor A files an application with claims to invention X. Another copending application is filed by inventor B claiming invention Y. There is no indication of common ownership.

Situation 1.

The claims in the two applications are directed to patentably distinct inventions.

Examiner's Action:

If the claims are otherwise allowable, the applications are both allowed.

Situation 2.

The claims in the two applications are *not* patentably distinct.

Examiner's Action:

The applications are prosecuted until one application is allowable. If the time difference between the two applications is too large to declare an interference, action on the later filed application is suspended until the earlier filed application issues as a patent. At that time the later filed application is rejected over the earlier filed application under §102(e)/103.

If the filing dates of the applications are sufficiently close to declare an interference, claims for an interference should be suggested. If the applications are commonly owned, the common owner must make the ownership known. When such common ownership is made known, a provisional double patenting rejection should be made in the later filed application. If the double patenting rejection is of the obviousness type, a terminal disclaimer under 37 CFR 1.321(b) may be filed. The later filed application should be examined under §102(e)/103 and a provisional rejection based on §102(e)/103 should be made in the later filed application, if appropriate. An affidavit under §1.131 can be filed to overcome a rejection based on §102(e)/103.

Example 4 - Claims in single application by different inventors.

An application for patent is filed in the Patent and Trademark Office in which the owner E sets forth the following information.

"The subject matter of claim 1 was invented by inventor A. The subject matter of claim 2 was invented by inventor B. Inventor B knew of the invention of inventor A at the time he made his invention. Both A and B made their inventions while working for owner E with a duty to assign". The inventions are different but not patentably distinct.

Examiner's Action:

If the claims are patentable over the prior art, the application should be allowed.

Public Law 98–622
Signed November 8, 1984

Ninety-eighth Congress of the United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Monday, the twenty-third day of January, one thousand nine hundred and eighty-four

An Act

To amend title 35, United States Code, to increase the effectiveness of the patent laws, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Patent Law Amendments Act of 1984".

TITLE I—PATENT IMPROVEMENT PROVISIONS

USE OF PATENTED INVENTIONS OUTSIDE THE UNITED STATES

SEC. 101.(a) Section 271 of title 35, United States Code, is amended by adding at the end thereof the following new subsection:

"(f)(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

"(2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer."

STATUTORY INVENTION REGISTRATION

SEC. 102.(a) Chapter 14 of title 35, United States Code, is amended by adding at the end thereof the following new section:

"§157. Statutory invention registration

"(a) Notwithstanding any other provision of this title, the Commissioner is authorized to publish a statutory invention registration containing the specification and drawings of a regularly filed application for a patent without examination if the applicant:

"(1) meets the requirements of section 112 of this title;

"(2) has complied with the requirements for printing, as set forth in regulations of the Commissioner;

"(3) waives the right to receive a patent on the invention within such period as may be prescribed by the Commissioner; and

"(4) pays application, publication, and other processing fees established by the Commissioner.

If an interference is declared with respect to such an application, a statutory invention registration may not be published unless the issue of priority of invention is finally determined in favor of the applicant.

"(b) The waiver under subsection (a)(3) of this section by an applicant shall take effect upon publication of the statutory invention registration.

"(c) A statutory invention registration published pursuant to this section shall have all of the attributes specified for patents in this title except those specified in section 183 and sections 271 through 289 of this title. A statutory invention registration shall not have any of the attributes specified for patents in any other provision of law other than this title. A statutory invention registration published pursuant to this section shall give appropriate notice to the public, pursuant to regulations which the Commissioner shall issue, of the preceding provisions of this subsection. The invention with respect to which a statutory invention certificate is published is not a patented invention for purposes of section 292 of this title.

"(d) The Secretary of Commerce shall report to the Congress annually on the use of statutory invention registrations. Such report shall include an assessment of the degree to which agencies of the Federal Government are making use of the statutory invention registration system, the degree to which it aids the management of federally developed technology, and an assessment of the cost savings to the Federal Government of the use of such procedures.".

(b) The table of sections at the beginning of chapter 14 of title 35, United States Code, is amended by adding at the end thereof the following:

"157. Statutory invention registration.".

(c) The amendments made by this section shall take effect six months after the date of the enactment of this Act.

PRIOR ART

SEC. 103. Section 103 of title 35, United States Code, is amended by adding at the end thereof the following:

"Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person."

JOINT INVENTORS

SEC. 104. (a) Section 116 of title 35, United States Code, is amended by amending the first paragraph to read as follows:

"When an invention is made by two or more persons jointly, they shall apply for patent jointly and each make the required oath, except as otherwise provided in this title. Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.".

(b) Section 120 of title 35, United States Code, is amended by striking out "by the same inventor" and inserting in lieu thereof "which is filed by an inventor or inventors named in the previously filed application".

ARBITRATION OF INTERFERENCES

SEC. 105. Section 135 of title 35, United States Code, is amended by adding at the end thereof the following new subsection:

"(d) Parties to a patent interference, within such time as may be specified by the Commissioner by regulation, may determine such contest or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of title 9 to the extent such title is not inconsistent with this section. The parties shall give notice of any arbitration award to the Commissioner, and such award shall, as between the parties to the arbitration, be dispositive of the issues to which it relates. The arbitration award shall be unenforceable until such notice is given. Nothing in this subsection shall preclude the Commissioner from determining patentability of the invention involved in the interference.".

EFFECTIVE DATE

SEC. 106. (a) Subject to subsections (b), (c), (d), and (e) of this section, the amendments made by this Act shall apply to all United States patents granted before, on, or after the date of enactment of this Act, and to all applications for United States patents pending on or filed after the date of enactment.

(b) The amendments made by this Act shall not affect any final decision made by the court or the Patent and Trademark Office before the date of enactment of this Act with respect to a patent or application for patent, if no appeal from such decision is pending and the time for filing an appeal has expired.

(c) Section 271(f) of title 35, United States Code, added by section 101 of this Act shall apply only to the supplying, or causing to be supplied, of any component or components of a patented invention after the date of enactment of this Act.

(d) No United States patent granted before the date of enactment of this Act shall abridge or affect the right of any person or his successors in business who made, purchased, or used prior to such effective date anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used, if the patent claims were invalid or otherwise unenforceable on a ground obviated by section 103 or 104 of this Act and the person made, purchased, or used the specific thing in reasonable reliance on such invalidity or unenforceability. If a person reasonably relied on such invalidity or unenforceability, the court before which such matter is in question may provide for the continued manufacture, use, or sale of the thing made, purchased, or used as specified, or for the manufacture, use, or sale of which substantial preparation was made before the date of enactment of this Act, and it may also provide for the continued practice of any process practiced, or for the practice of which substantial preparation was made, prior to the date of enactment, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced before the date of enactment.

(e) The amendments made by this Act shall not affect the right of any party in any case pending in court on the date of enactment to have their rights determined on the basis of the substantive law in effect prior to the date of enactment.

TITLE II—PATENT AND TRADEMARK OFFICE PROCEDURES

BOARD OF PATENT APPEALS AND INTERFERENCES

SEC. 201. (a) Section 7 of title 35, United States Code, is amended to read as follows:

"§7. Board of Patent Appeals and Interferences

"(a) The examiners-in-chief shall be persons of competent legal knowledge and scientific ability, who shall be appointed to the competitive service. The Commissioner, the Deputy Commissioner, the Assistant Commissioners, and the examiners-in-chief shall constitute the Board of Patent Appeals and Interferences.

"(b) The Board of Patent Appeals and Interferences shall, on written appeal of an applicant, review adverse decisions of examiners upon applications for patents and shall determine priority and patentability of invention in interferences declared under section 135(a) of this title. Each appeal and interference shall be heard by at least three members of the Board of Patent Appeals and Interferences, who shall be designated by the Commissioner. Only the Board of Patent Appeals and Interferences has the authority to grant hearings.

"(c) Whenever the Commissioner considers it necessary, in order to keep current the work of the Board of Patent Apeals and Interferences, the Commissioner may designate any patent examiner of the primary examiner grade or higher, having the requisite ability, to serve as examiner-in-chief for periods not exceeding six months each. An examiner so designated shall be qualified to act as a member of the Board of Patent Appeals and Interferences. Not more than one of the members of the Board of Patent Appeals and Interferences hearing an appeal or determining an interference may be an examiner so designated. The Secretary of Commerce is authorized to fix the pay of each designated examiner-in-chief in the Patent and Trademark Office at not to exceed the maxium rate of basic pay payable for grade GS-16 of the General Schedule under section 5332 of title 5. The rate of basic pay of each individual designated examiner-in-chief shall be adjusted, at the close of the period for which that individual was designated to act as examiner-in-chief, to the rate of basic pay which that individual would have been receiving at the close of such period if such designation had not been made.".

(b) The item relating to section 7 in the table of sections at the beginning of chapter 1 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

INTERFERENCES

SEC. 202. Section 135(a) of title 35, United States Code, is amended to read as follows:

"(a) Whenever an application is made for a patent which, in the opinion of the Commissioner, would interfere with any pending application, or with any unexpired patent, an interference may be declared and the Commissioner shall give notice of such declaration to the applicants, or applicant and patentee, as the case may be. The Board of Patent Appeals and Interferences shall determine questions of priority of the inventions and may determine questions of patentability. Any final decision, if adverse to the claim of an applicant, shall constitute the final refusal by the Patent and Trademark Office of the claims involved, and the Commissioner may issue a patent to the applicant who is adjudged the prior inventor. A final judgment adverse to a patentee from which no appeal or other review has been or can be taken or had shall constitute cancellation of the claims involved in the patent, and notice of such cancellation shall be endorsed on copies of the patent distributed after such cancellation by the Patent and Trademark Office.".

APPEALS AND CIVIL ACTIONS

SEC. 203. (a) Section 141 of title 35, United States Code, is amended—

(1) in the first sentence—

(A) by striking out "of the Board of Patent Appeals may appeal" and inserting in lieu thereof "in an appeal to the Board of Patent Appeals and Interferences under section 134 of this title may appeal the decision"; and

(B) by striking out ", thereby waiving his right" and inserting in lieu thereof ". By filing such an appeal the applicant waives his or her right";

(2) in the second sentence—

(A) by striking out "board of patent interferences on the question of priority may appeal" and inserting in lieu thereof "Board of Patent Appeals and Interferences on the interference may appeal the decision";

(B) by striking out "according to" and inserting in lieu thereof " in accordance with"; and

(C) by striking out "he" and inserting in lieu thereof "the party"; and

(3) by amending the last sentence to read as follows: "If the appellant does not, within thirty days after the filing of such notice by the adverse party, file a civil action under section 146, the decision appealed from shall govern the further proceedings in the case.".

(b) Section 145 of title 35, United States Code, is amended—

(1) in the first sentence by striking out "Appeals may" and inserting in lieu thereof "Patent Appeals and Interferences in an appeal under section 134 of this title may,"; and

(2) in the second sentence by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(c) Section 146 of title 35, United States Code, is amended by striking out "board of patent intereferences on the question of priority" and inserting in lieu thereof "Board of Patent Appeals and Interferences on the interference".

TECHNICAL AND CONFORMING AMENDMENTS

SEC. 204. (a) Section 41(a)(6) of title 35, United States Code, is amended—

(1) by striking out "Appeals" each place it appears and inserting in lieu thereof "Patent Appeals and Interferences"; and

(2) by inserting "in the appeal" after "oral hearing".

(b)(1) Section 134 of title 35, United States Code, is amended—

(A) in the section caption by striking out "APPEALS" and inserting in lieu thereof "PATENT APPEALS AND INTERFERENCES"; and

(B) by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(2) The item relating to section 134 in the table of sections at the beginning of chapter 12 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(c) Section 305 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

AMENDMENTS TO OTHER PROVISIONS OF LAW

SEC. 205. (a) Section 1295(a)(4)(A) of title 28, United States code, is amended by striking out "Appeals or the Board of Patent" and inserting in lieu thereof "Patent Appeals and".

(b) Section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) is amended in the third paragraph—

(1) by striking out "a Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences"; and

(2) by striking out "the Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

(c)(1) Section 305(d) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457(d)) is amended—

(A) by striking out "a Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences"; and

(B) by striking out "the Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

(2) Section 305(e) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457(e)) is amended by striking out "a Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

SAVINGS PROVISION

SEC. 206. Any individual who, on the effective date of this title, is an examiner-in-chief of the Board of Patent Appeals of the Patent and Trademark Office or an examiner of interferences of the Board of Patent Interferences of such office shall be entitled to continue in office as a member of the Board of Patent Appeals and Interferences of the Patent and Trademark Office as of such effective date.

EFFECTIVE DATE

SEC. 207. Section 206 of this Act and the amendments made by this title shall take effect three months after the date of the enactment of this Act.

TITLE III—NATIONAL COMMISSION ON INNOVATION AND PRODUCTIVITY

ESTABLISHMENT

SEC. 301. There is hereby established a National Commission on Innovation and Productivity (hereinafter in this title referred to as the "Commission").

MEMBERSHIP OF COMMISSION

Sec. 302. (a) The Commission shall be composed of —

(1) three Members of the Senate appointed by the President of the Senate;

(2) three Members of the House of Representatives apointed by the Speaker of the House of Representatives; and

(3) three members appointed by the President of the United States, one of whom the President shall designate as Chairman.

Of the members appointed by the President, one member should be an appropriate officer or employee of the United States, one member should be an employer who employs inventors, and one member should be an employed inventor.

(b) At no time shall more than two of the members appointed under paragraph (1), (2), or (3) of subsection (a) be persons who are members of the same political party.

(c) Any vacancy in the Commission shall not affect its powers but shall be filled in the same manner in which the original appointment was made, and subject to the

limimtation set forth in subsection (b) with respect to the original appointment.

(d) Six members of the Commission shall constitute a quorum, but a lesser number may conduct hearings.

DUTIES OF THE COMMISSION

SEC. 303. The Commission shall make a full and complete review and study of the level of innovation and producitivity of employed inventors. Such study shall include an analysis of the various methods available to inspire or stimulate individual and corporate innovation and productivity, including an assessment of the techniques used in other countries to achieve this objective. Such study may include an assessment of those aspects of other areas of intellectual property law that inspire or stimulate such innovation and productivity. The Commission shall make recomendations for such revisions of the laws of the United States, including the repeal of unnecessary or undesirable statutes, and such other changes as the Commission considers will better foster innovation and productivity.

COMPENSATION OF MEMBERS OF THE COMMISSION

SEC. 304. (a) A member of the Commission who is a Member of Congress or a full-time officer or employee of the United States shall receive no additional compensation by reason of his or her service on the Commission.

(b) Subject to amounts provided in advance in appropriations Acts, a member of the Commission from private life shall receive the daily equivalent of the annual rate of basic pay payable for level III of the Executive Schedule for each day (including traveltime) during which such member is engaged in the actual performance of duties vested in the Commission, plus reimbursement for travel, subsistence, and other necessary expenses incurred in the performance of such duties, in accordance with subchapter I of chapter 57 of title 5, United States Code.

DIRECTOR AND STAFF

SEC. 305. (a) The Commission shall have a Director who shall be appointed by the Commission and who shall be paid at a rate not to exceed the rate of basic pay payable for level IV of the Executive Schedule. The Director, subject to the direction of the Commission, shall supervise the activities of persons emloyed by the Commission and the preparation of the reports of the Commission and shall perform such other duties as may be assigned to the Director by the Commission.

(b) The Commission may appoint and fix the pay of such additional personnel as it considers appropriate.

(c) The staff of the Commission may be appointed without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and may be paid without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, except that no individual so appointed may receive pay in excess of the maximum annual rate of basic pay payable for GS-16 of the General Schedule.

(d) The Chairman of the Commission may procure temporary and intermittent services under section 3109(b) of title 5, United States Code.

GOVERNMENT AGENCY COOPERATION

SEC. 306. The Commission is authorized to request from any department, agency, or independent instrumentality of the Government any information and assistance it considers necessary to carry out its functions under this title. Each such department, agency, and instrumentality is authorized to cooperate with the Commission and, to the extent permitted by law, to furnish such information and assistance to the Commission.

REPORT OF THE COMMISSION; TERMINATION

SEC. 307. The Commission shall submit interim reports on its activities to the President and the Congress at such times as the Commission considers appropriate, except that at least one such report shall be so submitted within one year after the date of the enactment of this Act. The Commission shall submit its final report on its activities to the President and the Congress within two years after such date of enactment. The Commission shall cease to exist sixty days after the date of the submission of its final report.

ADMINISTRATIVE SERVICES

SEC. 308. The General Services Administration shall provide administrative services for the Commission on a reimbursable basis.

AUTHORIZATION OF APPROPRIATIONS

SEC. 309. There is authorized to be appropriated $250,000 to carry out this title.

EFFECTIVE DATE

SEC. 310. This title shall take effect on January 21, 1985.

TITLE IV—MISCELLANEOUS PROVISIONS

INTERNATIONAL STAGE

SEC. 401. (a) Section 361(d) of title 35, United States Code, is amended in the first sentence by inserting "or within one month after the date of such filing" after "application".

(b) Section 366 of title 35, United States Code, is amended—

(1) in the first sentence—

(A) by inserting "after the date of withdrawal," after "effect"; and

(B) by inserting before the period the following: ", unless a claim for the benefit of a prior filing date under section 365(c) of this part was made in a national application, or an international application designating the United States, filed before the date of such withdrawal"; and

(2) in the second sentence by inserting "withdrawn" after "such".

NATIONAL STAGE

SEC. 402. (a) Section 371(a) of title 35, United States Code, is amended—

(1) by striking out "is" and inserting in lieu thereof "may be"; and

(2) by striking out", except those filed in the Patent Office".

(b) Section 371(b) of title 35, United States Code, is amended to read as follows:

"(b) Subject to subsection (f) of this section, the national stage shall commence with the expiration of the applicable time limit under article 22(1) or (2) of the treaty.".

(c) Section 371(c)(2) of title 35, United States Code, is amended—

(1) by striking out "received from" and inserting in lieu thereof "communicated by"; and

(2) by striking out "verified" before "translation".

(d) Section 371(d) of title 35, United States Code, is amended to read as follows:

"(d) The requirements with respect to the national fee referred to in subsection (c)(1), the translation referred to in subsection (c)(2), and the oath or declaration referred to in subsection (c)(4) of this section shall be complied with by the date of the commencement of the national stage or by such later time as may be fixed by the Commissioner. The copy of the international application referred to in subsection (c)(2) shall be submitted by the date of the commencement of the national stage. Failure to comply with these requirements shall be regarded as abandonment of the application by the parties thereof, unless it be shown to the satisfaction of the Commissioner that such failure to comply was unavoidable. The payment of a surcharge may be required as a condition of accepting the national fee referred to in subsection (c)(1) or the oath or declaration referred to in subsection (c)(4) of this section if these requirements are not met by the date of the commencement of the national stage. The requirements of subsection (c)(3) of this section shall be complied with by the date of the commencement of the national stage, and failure to do so shall be regarded as a cancellation of the amendments to the claims in the international application made under article 19 of the treaty.".

(e) Section 372(b) of title 35, United States Code, is amended—

(1) by striking out the period at the end of paragraph (2) and inserting in lieu thereof "; and"; and

(2) by adding at the end thereof the following:

"(3) the Commissioner may require a verification of the translation of the international application or any other document pertaining to the application if the application or other document was filed in a language other than English.".

(f) Section 372 of title 35, United States Code, is amended by striking out subsection (c).

(g) Section 376(a) of title 35, United States Code, is amended by striking out paragraph (5) and redesignating paragraph (6) as paragraph (5).

TECHNICAL AMENDMENTS

SEC. 403. (a) Title 35, United States Code, is amended by striking out "Patent Office" each place it appears and inserting in lieu thereof "Patent and Trademark Office".

(b) The table of parts at the beginning of title 35, United States Code, is amended by adding at the end thereof the following:

"IV. Patent Cooperation Treaty . . . . . 351".

PATENT FEES

SEC. 404. (a) Notwithstanding section 41 of title 35, United States Code, as in effect before the enactment of Public Law 97-247 (96 Stat. 317), no fee shall be collected for maintaining a plant patent in force.

(b) Notwithstanding section 41(c) of title 35, United States Code, as in effect before the enactment of Public Law 97-247 (96 Stat. 317), the Commissioner of Patents and Trademarks may accept, after the six-month grace period referred to in such section 41(c), the payment of any maintenance fee due on any patent based on an application filed in the Patent and Trademark Office on or after December 12, 1980, and before August 27, 1982, to the same extent as in the case of patents based on applications filed in the Patent and Trademark Office on or after August 27, 1982.

TRADEMARK TRIAL AND APPEAL BOARD

SEC. 405. Section 3 of title 35, United States Code, is amended by adding at the end thereof the following:

"(e) The members of the Trademark Trial and Appeal Board of the Patent and Trademark Office shall each be paid at a rate not to exceed the maximum rate of basic pay payable for GS-16 of the General Schedule under section 5332 of title 5."

EFFECTIVE DATE

SEC. 406. (a) Section 404 of this Act and the amendments made by section 403 of this Act shall take effect on the date of the enactment of this Act.

(b) The amendments made by sections 401, 402, and 405 of this Act shall take effect six months after the date of the enactment of this Act.

[1050 OG 316]

(123) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket no. 41269-5018]

Final Rules for Miscellaneous Patent Provisions

Agency: Patent and Trademark Office, Commerce
Action: Notice of final rulemaking
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part I of Title 37, Code of Federal Regulations, to provide rules and procedures for the miscellaneous patent provisions enacted into law by Public Laws 98-620 and 98-622, on Nov. 8, 1984, in which statutory invention registrations, changes in appeals to the courts, prior art and joint inventor provisions and PCT international application filing and processing procedures were established or amended. The rulemaking provides specific rules and procedures for the new and amended provisions.
Effective Date: May 8, 1985
For Further Information Contact: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to establish a set of rules and procedures for the various requirements of Public Laws 98-620 and 98-622 concerning appeals to the courts, statutory invention registrations, rejections based on prior art and double patenting, and filing of international applications under the Patent Cooperation Treaty. The proposed rules were published on Jan. 25, 1985 in Volume 50 of the Federal Register, pages 3712 through 3725. A public hearing was held on the proposed rule changes on Feb. 8, 1985.
Background Information: Most of the rule changes contained herein are necessary as a result of Public Laws 98-620 or 98-622, both of which were signed by President Reagan on Nov. 8, 1984. The following is a summary of the purposes of the various statutory amendments.

Amended 35 U.S.C. 103 - Unpublished knowledge of prior art.

Public Law 98-622 changes a complex body of case law which discourages communication among members of research teams working in corporations, universities or other organizations. It amended 35 U.S.C. section 103 by adding a new sentence which provides that subject matter developed by another which qualifies as "prior art" only under subsections 102(f) or (g) of 35 U.S.C. is not to be considered when determining whether an invention sought to be patented is obvious under 35 U.S.C. 103, provided the subject matter and the claimed invention were commonly owned at the time the invention was made.

"Prior art" is the existing body of technical information against which the patentability of an invention is judged. Publicly known information is always considered in determining whether an invention would have been obvious. However, under *In re Bass*, 474 F. 2d 1276, 177 USPQ 178 (CCPA 1973), and *In re Clemens*, 622 F.2d 1029, 206 USPQ 289 (CCPA 1980), an earlier invention which is not public could have been treated under 35 U.S.C. 102(g), and possibly under 102(f), as prior art with respect to a later invention made by another employee of the same organization.

New technology often is developed by using background scientific or technical information known within an organization but unknown to the public. Public Law 98-622, by disqualifying such background information from prior art, encourages communication among mem-

bers of research teams, and leads to more public dissemination through patents of the results of team research.

The subject matter that is disqualified as prior art under 35 U.S.C. 103 is strictly limited to subject matter that qualifies as prior art only under 35 U.S.C. 102(f) or 102(g). If the subject matter qualifies as prior art under any other subsection—e.g., subsection 102(a), 102(b) or 102(e)—it will not be disqualified as prior art under the amendment to section 103.

The contents of a patent of the same or different ownership as an application, continues to be available as prior art against the application under section 103 by virtue of section 102(e) as of the application filing date of the patent. If subject matter becomes potential prior art under section 102 (e) because a patent application is filed on such subject matter before a commonly owned claimed invention is made the subject matter of a later application the two applications may be combined (under amended §§116 and 120) into a single application and such subject matter (with the abandonment of the two applications) would no longer constitute potential prior art under section 102(e) or under section 103 since it would not be "described in a patent granted on an application for patent by another."

It is important to recognize that the amendment to the law applies only to consideration of prior art for purposes of section 103. It does not apply to or affect subject matter which qualifies as prior art under section 102. A patent applicant urging that subject matter is disqualified has the burden of establishing that it was commonly owned at the time the claimed invention was made.

Public Law 98–622 was not intended to permit anyone other than the inventors to be named in a patent application or patent. Also, the amendment was not intended to enable appropriation of the invention of another.

The Patent and Trademark Office has withdrawn the Commissioner's Notice of Jan. 9, 1967, "Double Patenting", 834 O.G. 1615 (Jan. 31, 1967), to the extent that it does not authorize a double patenting rejection where different inventive entities are present. See the Commissioner's Notice of Dec. 11, 1984, "Initial Guidelines Implementing Changes in 35 U.S.C. 103, 116, and 120", 1050 O.G. 316 (Jan. 8, 1985). The Office is reinstituting, in appropriate circumstances, the practice of rejecting claims in commonly owned applications of different inventive entities on the ground of double patenting. See 130 Cong. Rec. H 10527, column 3 (daily ed. Oct. 1, 1984) (statement of Rep. Kastenmeier); *In re Rogers*, 394 F.2d 566, 567 n. 4, 157 USPQ 569, 570 n. 4 (CCPA 1964). This is in accordance with existing case law and prevents an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter. See *In re Zickendraht*, 319 F.2d 225, 138 USPQ 22 (CCPA 1963) ("The doctrine is well established that claims in different applications need be more than merely different in form or content; and that *patentable distinction* must exist to entitle applicants to a second patent") and *In re Christensen*, 330 F.2d 652, 141 USPQ 295 (CCPA 1964) (". . . the correct procedure for double patenting cases is to analyze the claims to determine the inventions defined therein, and then decide whether such inventions, as claimed are *patentably distinct* and therefore qualified to be claimed in separate patents"). In accordance with established patent law doctrines, double patenting rejections can be overcome in certain circumstances by disclaiming, pursuant to the existing provisions of 37 CFR 1.321, the terminal portion of the term of the later patent and including in the disclaimer a provision that the patent shall be enforceable only for and during the period the patent is commonly owned with the application or patent which formed the basis for the rejection, thereby eliminating the problem of extending patent life.

Information learned from or transmitted to persons outside the organization is not disqualified as prior art.

The term "subject matter" will be construed broadly, in the same manner the term is construed in the remainder of §103. The term "another" as used in §103 means any inventive entity other than the inventor and would include the inventor and any other persons. The term "developed" is to be read broadly and is not limited by the manner in which the development occurred. The term "commonly owned" means wholly owned by the same person, persons, or organization at the time the invention was made.

Amended 35 U.S.C. 116 - Joint inventor filing

35 U.S.C. 116 as amended by Public Law 98–622 recognizes the realities of modern team research. A research project may include many inventions. Some inventions may have contributions made by individuals who are not involved in other, related inventions.

Amended 35 U.S.C. 116 allows inventors to apply for a patent jointly even though (i) they did not physically work together or at the same time, (ii) each did not make the same type or amount of contribution, or (iii) each did not make a contribution to the subject matter of every claim of the patent. Items (i) and (ii) adopt the rationale stated in decisions such as *Monsanto* v. *Kamp*, 269 F. Supp. 818, 154 USPQ 259 (D.D.C. 1967). Item (iii) adopts the rationale of cases such as *SAB Industries AB* v. *Bendix Corp.*, 199 USPQ 95 (E.D. Va. 1978).

Like other patent applications, jointly-filed applications are subject to the requirements of 35 U.S.C. 121 that an application be directed to only a single invention. If more than one invention is included in the application, the Patent and Trademark Office may require the application to be restricted to one of the inventions. In such a case, a "divisional" application complying with 35 U.S.C. 120 would be entitled to the benefit of the earlier filing date of the original application.

It is possible that different claims of an application or patent may have different dates of invention even though the patent covers only one independent and distinct invention within the meaning of 35 U.S.C. 121. When necessary, the Patent and Trademark Office or a court may inquire of the patent application or owner concerning the inventors and the invention dates for the subject matter of the various claims.

Amended 35 U.S.C. 120 - Benefit of prior U.S. application

35 U.S.C. 120 was amended by Public Law 98–622 to provide that an application can obtain the benefit of the filing date of an earlier application when not all inventors named in the joint application are the same as those named in the earlier application. This amendment permits greater latitude in filing "divisional" applications. For example, if the previously filed application named inventors A and B as the inventors, a later application by either A or B could be filed during the pendency of the previously filed application and claim benefit of the previously filed application. In order for a claim to be entitled to the benefit of an earlier pending application, the subject matter of the claim of the later application would have to be disclosed in the earlier application.

Similarly, if inventor A filed an application on an invention and during the pendency of that application made an improvement on the subject matter of the application as a joint inventor with inventor B, the joint application filed on behalf of inventors A and B could claim the benefit of A's previously filed sole application to the extent that the later filed joint application contained claims directed solely to A's subject matter which was disclosed in the earlier filed pending application in the manner provided by the first paragraph of section 112 of title 35, U.S.C.

Likewise, an application filed by inventors A and C could claim the benefit of an earlier filed pending application of inventors A and B, to the extent that the requirements of section 120 could be met.

Like other patent applications, jointly-filed applications will continue to be subject to the requirement of 35 U.S.C. 121 that an application be directed to only a single invention. If more than one invention is included in the application, the Patent and Trademark Office may require the application to be restricted to one of the inventions. In such a case, a "divisional" application would be entitled to the benefit of the earlier filing date of the original application.

New 35 U.S.C. 157 - Statutory Invention Registration (SIR)

This section which is effective on May 8, 1985, establishes an optional procedure by which an inventor may secure protection which is strictly defensive in nature.

Under current law, there is no simple, practical method by which an inventor can protect his or her ability to exploit the invention without obtaining a patent. The new procedure confers on an inventor the same defensive rights that a patent provides to prevent others from patenting the invention. However, it does not permit the holder to exclude others from making, using or selling the invention.

Due to the fact that a SIR does not grant an exclusive right to an inventor, it is not necessary to subject a SIR to the lengthy examination process required for the granting of a patent. Such an examination is necessary if the SIR is subject to an interference proceeding to determine priority of invention. In all other instances, the Patent and Trademark Office will only review the application for adherence to formal printing and fee payment requirements and to ensure that the requirements of 35 U.S.C. 112 are satisfied.

An applicant desiring to have a SIR published will be required to file a regular complete application for a patent and to execute a request including a waiver of enforcement of patent rights. This waiver of the claimed invention will be effective at the time of publication. The original application can be abandoned in favor of a continuing application for a patent, claiming the filing date of the earlier filed application, by filing an express abandonment of the original application and a timely request or petition to withdraw the request for a SIR prior to publication of the SIR, thereby providing the applicant with flexibility during the pendency period of the application. Until the SIR is published the application remains an application for a patent. However, the holder of a SIR will not be able to file a reissue application to recapture the rights to exclusive use that were waived by the initial publication of the SIR.

The waiver of the right to receive a patent, required of all applicants electing to receive a SIR, applies to those remedies provided for the enforcement of a patent under section 183 and sections 271 through 289 of title 35, United States Code. The waiver also applies to remedies under other titles of the United States Code including sections 1337 and 1337a of title 19, section 2356 of title 22, and section 1498 of title 28. This waiver of enforcement applies only to the claimed subject matter of the SIR and not to any foreign patent arising from an application which might have served as the basis of a priority claim under the Paris Convention for the Protection of Industrial Property. Likewise, the waiver does not prevent the holder of a SIR from asserting any defenses provided in sections 271 through 289 of title 35, U.S.C. with respect to a charge of infringement of any other patent.

The Commissioner of Patents and Trademarks can refuse to accept the waiver in certain cases. For example, the waiver could not be accepted if the waiver is not a waiver of all the previously mentioned rights. The Commissioner also has discretion, which has not been exercised at this time, to set time limits on the waiver. This would allow the Commissioner to limit the ability of an inventor to keep inventions secret through a series of continuing patent applications followed by a conversion to a SIR.

The waiver of patent rights in the SIR to the subject matter claimed therein may affect the patentability of a claim in other related applications, particularly divisional applications, since the waiver of patent rights would be effective for all inventions claimed in the SIR and would be effective as a waiver of the right of the inventor to obtain a patent on the invention claimed in the same application or any other application, but not in any patent issued before the date the SIR is published. Where an application containing generic claims is published as a SIR, the waiver in that application applies to any other related applications, including divisions, continuations, and continuations-in-part, to the extent that the same invention claimed in the SIR is also claimed in the other related application.

The Patent and Trademark Office will apply standards similar to those which it applies in making determinations of "same invention" double patenting for purposes of determining whether or not a waiver by an inventor to claims in a SIR precludes patenting by the same inventor to subject matter in any other related application.

Therefore, the waiver would preclude patenting of an invention claimed by an inventor in a related application which is the same as the invention claimed by the same inventor in the SIR. When making this determination it is the claimed subject matter of the related application. Where the subject matter claimed in the related application is the same as the subject matter waived in the SIR, i.e., the "same invention" in the double patenting sense, the claims of the related application will be rejected as being precluded by the waiver in the SIR and cannot be overcome by a terminal disclaimer. The limitation of the scope of the waiver to the claimed invention would not affect the application of existing §1.658(c) should the SIR become involved in an interference. If a divisional application is filed and published as a SIR claiming only a method, publication thereof will not normally effect a waiver on an application for a patent claiming only an apparatus. The waiver in a SIR would not affect any rights in a patent which issued prior to the date of publication of the SIR, but would preclude an already issued patent from being broadened by reissue if the rights to the subject matter to which broadened claims relate have been waived by publication of the SIR. The waiver applies to any rights of the same inventor in any application pending when the SIR is published even if the inventor is a joint applicant in the pending application and was a sole applicant in the application published as a SIR. The waiver would not affect the rights of any other inventor even though those rights are commonly owned by the same person.

The holder of a SIR containing the required waiver will be left without the offensive rights associated with a patent. In other respects a SIR will be the same as a patent, including the application which is published as a SIR serving as the basis for a priority claim in a foreign application under the Paris Convention. A SIR will be treated the same as a U.S. patent for all defensive purposes. The application, and the SIR published therefrom, could become involved in an interference; the SIR would be a "constructive reduction to practice" under 35 U.S.C. 102(g); it will be "prior art" under all applicable sections of 35 U.S.C. 102 including section 102(e); and it will be classified, cross-referenced and placed in the search files, disseminated to foreign patent offices, stored in the Patent and Trademark Office computer tapes, made available in commercial data bases, and announced in the *Official Gazette* of the Patent and Trademark Office. A published SIR is intended to be a fully viable publication for defensive purposes, usable as a reference as of its filing date in the same manner as a patent. A SIR will also serve as a basis to initiate or participate in an interference or priority proceeding under 35 U.S.C. 291 in a manner similar to a patent and can be used as a reference in defense of an infringement suit.

A SIR is based on a regularly filed application for a patent. Therefore, the filing date of the application will be a sufficient basis for a priority claim in a foreign application. Article 4, section A(3) of the Paris Convention states:

"By a regular national filing is meant any filing that

is adequate to establish the date on which the application was filed in the country concerned, whatever may be the subsequent fate of the application."

After a SIR is published, markings such as "patent pending" are improper under section 292 of title 35 of the United States Code.

The SIR will serve as a replacement for the current "defensive publication program" which was established by regulation under 37 CFR 1.139. Although publication under the "defensive publication program" was intended to provide rights similar to those of the SIR, publication under that program has been held not to be available as evidence of prior knowledge as of its filing date under section 102(a) of title 35, U.S.C. (*Ex parte Osmond*, 191 USPQ 334 (P.T.O. Bd. App. 1976)). The use of a "defensive publication" as a reference to prevent a patent from issuing on a subsequent application is therefore limited. A SIR, on the other hand, will have a clear statutory basis in title 35, U.S.C. The SIR will be "prior art" and a "constructive reduction to practice" under section 102(a) and section 102(g), respectively, as of the filing date of the application on which it is based.

A SIR will not be subject to reexamination under sections 302 to 307 of title 35, United States Code.

The Commissioner is authorized to issue SIRs for defensive purposes, but is not required to do so. The Commissioner has discretion in determining whether or not a SIR should be issued on a particular application. In circumstances where the subject matter is obviously not an invention, is too informal to print, and so forth, the Commissioner has the right to refuse to publish the SIR.

SIRs will be published sooner than patents because no substantive examination will normally be required for SIRs. To the extent that examination is required, it will be conducted in the same manner as in any other patent application. Maintenance fees will not be charged for SIRs.

Since the fees set by the Commissioner for the new SIR procedure under section 157 of title 35, U.S.C. are not established under section 41(a) or (b) of that title, they are not subject to reduction if the applicant has small entity status.

If the fee for requesting publication is not paid at the time of filing of the waiver of the right to receive a patent, the Commissioner may set a period within which the fee must be paid to prevent abandonment of the application. Such a period would be subject to petitions and fees for extensions of time. If abandonment should occur, the application may be revived.

In the final analysis, the SIR procedures set forth in the law should give inventors defensive protection more cheaply than they could get by obtaining a patent. The procedure will allow the government and the private sector to make inventions public knowledge. Last, the SIR would be particularly useful to those with limited resources such as universities and small businesses, who have a new, less expensive alternative to the traditional patenting of inventions.

Amended 35 U.S.C. 361, 366, 371, 372 and 376 - Miscellaneous provisions relating to the applications under the Patent Cooperation Treaty.

Section 361(d) of title 35, United States Code, was amended effective May 8, 1985, to provide a one-month grace period from the date of filing an international application for payment of the basic international fee and the transmittal and search fees.

Section 366 of title 35, United States Code, was amended, effective May 8, 1985, to clarify the effect of withdrawal of an international application on claims for the benefit of its filing date. The withdrawal of an international application designating the United States will not deprive an applicant of the right to claim the benefit of the filing date of such an international application in a later filed application, provided the claim for benefit is made before that international application is withdrawn. Stated otherwise, this clarifies that withdrawing the designation of the United States in an international application is comparable to abandoning a national application as far as a claim for an earlier filing date is concerned.

National Stage

As a general proposition, the amendments made to 35 U.S.C. 371 set forth a legislative scheme, effective May 8, 1985, to provide greater flexibility in the Patent and Trademark Office for the handling of international applications. In addition, by relaxing the requirements which international applicants must satisfy by the commencement of the national stage, the amendments give international applicants benefits similar to those given national applications by section 111, 35 U.S.C. as amended by Public Law 97–247 with respect to the time for filing the national fee and oath or declaration.

Section 372(b) of title 35, United States Code, is amended, effective May 8, 1985, to authorize the Commissioner to require a verification of the translation of an international application or any other document pertaining thereto if the application or other document was filed in a language other than English. An authorization for the Commissioner to require verification in appropriate cases is necessary since subsection (c)(2) of section 371 was amended to remove the requirement that the translation be verified in all cases.

Section 372(c) of title 35, United States Code, was deleted thereby discontinuing the requirement for payment of a special fee to maintain claims in an international application which were not searched by an international searching authority. This deletion was made to place international applications processed in the national stage on the same footing as purely national applications.

Section 376(a) of title 35, United States Code, was also amended by Public Law 98–622 to delete mention of the special fee in order to conform with the amendment of section 372(c).

Discussion of Specific Rules

Section 1.11 is amended as proposed to add a reference to published statutory invention registrations in paragraph (a) to indicate that they are available to the public. The portion of present §1.11(a) which deals with interferences is transferred to a new paragraph (e) and rewritten.

The amendment to paragraph (b) deletes reference to §1.139, which is being deleted in favor of the SIR, and inserts language which covers opening to the public defensive publications published under §1.139 as well as other applications laid open to the public such as the previously published abstracts and abbreviatures.

Section 1.11 is amended as proposed to delete the word "general" before public as unnecessary.

New paragraph (e) of §1.11 is added to cover the availability to the public of all interferences, including those which involved a statutory invention registration. This paragraph applies to interferences declared under the new rules which became effective on Feb. 11, 1985, 49 F.R. 48416, (Dec. 12, 1984) as well as the rules formerly in effect. The term "award of priority" is intended to refer to those decisions of the Board of Patent Interferences, or Board of Patent Appeals and Interferences, awarding priority in interferences conducted under the former rules. The term "judgment" refers to judgments entered by the Board of Patent Appeals and Interferences in interferences conducted under the new rules. The language of the proposed rule has been slightly modified for clarity in the final rule.

Section 1.14 is amended as proposed to delete reference to §1.139 since that section is being removed.

Section 1.17 paragraph (h) is amended as proposed to include the petition fee required by new §1.295.

Section 1.17 is amended to add new paragraphs (n) and (o) to establish fees for requesting publication of statutory invention registrations. Paragraph (n) establishes a $400.00 fee for requesting publication of a statutory invention registration where no first examiner's action pursuant to §1.104 has been issued in the application. The amount paid for basic filing fees under §1.16(a), (f) or (g) will be credited against this amount. For example, if a $300.00 filing fee was paid, only $100.00 additional would be required for requesting publication of a statutory invention registration.

The addition of paragraph (o) to §1.17 is similar to the addition of paragraph (n) but establishes a fee for requesting publication of applications, which have received any examiner's action pursuant to §1.104, as a statutory invention registration. The higher fee of $800.00 set in paragraph (o) is necessary in view of the expenditure of additional Office resources in examining the application prior to the filing of the request for a statutory invention registration.

Section 1.19 is amended as proposed to provide in paragraph (a)(1) a reference to the cost of a printed copy of a statutory invention registration and in paragraph (e) to provide reference to statutory invention registrations listed by subclass.

Section 1.20 is amended as proposed to delete the requirement to pay maintenance fees in all plant patents in view of the amendment in Public Law 98–622. Paragraph 1.20(m) is amended as proposed to provide that non-timely payment of maintenance fees may be accepted in patents based on applications filed prior to Aug. 27, 1982, in accordance with Public Law 98–622.

Public Law 98–622 provides that no maintenance fees are charged for plant patents, regardless of when filed. Without this provision that no maintenance fees be charged for plant patents, plant patent owners whose applications were filed between the dates of enactment of Public Law 96–517 and Public Law 97–247 (Dec. 12, 1980 to Aug. 27, 1982) would be subject to payment of maintenance fees, while plant patent owners whose applications were filed outside those dates would not be subject to such fees. Public Law 98–622 eliminates that inconsistency.

Section 1.45 is amended as proposed to reflect the change made by Public Law 98–622 in 35 U.S.C. 116. The previously existing paragraph is designated as paragraph (a). New paragraph (b) incorporates the wording added to 35 U.S.C. 116 by Public Law 98–622. New paragraph (c) indicates that each named inventor listed in an application must have made a contribution, individually or jointly, to the subject matter of at least one claim of the application and that the application will be considered to be a joint application under 35 U.S.C. 116.

Section 1.48 is amended to add new paragraphs (b) and (c). New paragraph (b) provides for deleting the names of persons originally properly included as inventors, but whose invention is no longer being claimed in the application. Such a situation would arise where claims have been amended or deleted because they are unpatentable or as a result of a requirement for restriction of the application to one invention, or for other reasons. Public Law 98–622 and §1.48(b) change the result reached in *Ex parte Lyon*, 146 USPQ 222, 1965 Dec. Comm'r. Pat. 362 (Bd. App. 1964). The final rule has fewer requirements than the proposed rule for correction of inventorship in this situation. The proposed rule would have required, in addition to the requirements of the final rule, an oath or declaration by each actual inventor or inventors as required by §1.63 and the written consent of any assignee. The final rule requires only a petition and fee with the petition including a statement identifying each named inventor who is being deleted and acknowledging that the inventor's invention is no longer being claimed in the application. The amendment would have to be diligently made under paragraph (b).

The final rule adds a paragraph (c) in response to a comment to provide for the situation where an application discloses unclaimed subject matter by an inventor or inventors not named in the application as filed. In such a situation, the application may be amended pursuant to paragraph (a) of §1.48 to add claims to the subject matter and also to name the correct inventors for the application. The claims would be added by an amendment and, in addition, an amendment pursuant to paragraph (a) of §1.48 would be required to correct the inventors named in the application. Any claims added to the application must be supported by the disclosure as filed and cannot add new matter.

Section 1.60 is amended to include wording which would permit an application to be filed under this section only if it named as inventors the same or less than all the inventors who were named and signed the oath or declaration in the prior application. This addition is necessary in view of the new provisions of 35 U.S.C. 120, as amended by Public Law 98–622, which permit continuing applications to be filed by different inventors. Under §1.60 additional inventors are not permitted to be named since the oath or declaration from the prior application is relied upon.

Section 1.61 is amended as proposed to incorporate the ability to file the translation, oath or declaration, and national fee after the 20 month deadline set forth in PCT Article 22(1) for entering the national phase in the United States Patent and Trademark Office.

Public Law 98–622 amended 35 U.S.C. 371(a) to provide greater flexibility for the PTO handling international applications. Also, 35 U.S.C. 371(a), by relaxing the requirements which international applicants must satisfy by the commencement of the national stage, gives international applicants benefits similar to those given national applicants under 35 U.S.C. 111 by P.L. 97–247 with respect to the time for filing the national fee and oath or declaration.

Paragraph (b) of §1.61 is amended to delete the 2 month time period to conform with the decision concerning PCT Article 22(2) adopted by the Assembly of the International Patent Cooperation Union (PCT Union) on Feb. 3, 1984. The amendment to the Article took effect on Jan. 1, 1985.

PCT Article 22(2) as amended, reads as follows:

"Where the International Searching Authority makes a declaration, under Article 17(2)(a), that no international search report will be established, the time limit for performing the acts referred to in paragraph (1) of this Article shall be the same as that provided in paragraph (1)."

The additional wording to paragraph (b) of §1.61 sets forth the ability to comply with the requirements for entering the national phase before the Patent and Trademark Office as a Designated Office within 22 months of the priority date. If the national fee or oath or declaration is submitted later than 20 months after the priority date, a surcharge as set in §1.445(a) (5) is required to be paid. If a required English translation of the international application is filed later than 20 months after the priority date, a processing fee as set in §1.445(a) (6) is required to be paid.

New paragraph (c) of §1.61 provides that any amendments under PCT Article 19 which are not received along with any necessary English translation by the end of 20 months from the priority date will be considered as cancelled. This change is required in view of amended §371(d) of 35 U.S.C.

Paragraph (d) is added as proposed to §1.61 in view of §372(b) of title 35, United States Code, as amended by Public Law 98–622, which authorizes the Commissioner to require a verification of the translation of an international application or any other document pertaining thereto if the application or other document was filed in a language other than English. An authorization for the Commissioner to require verification in appropriate cases was necessary since subsection (c) (2) of 35 U.S.C. 371 was amended to remove the requirement that the translation be verified in all cases.

Section 1.62 is amended by revising paragraphs (a), (c), and (h) to include wording which would permit a continuing application to be filed under this section by the same or less than all the same inventors who filed and signed the oath or delcaration in the prior application. This addition is necessary in view of the new provisions of 35 U.S.C. 120, as amended by Public Law 98–

622, which permit continuing applications to be filed by different inventors. Under §1.62, additional inventors may be added only in applications in which a new oath or declaration is required because additional subject matter is being claimed. Paragraph (h) has been amended to also request applicants to furnish the title of the invention and the names of the applicants in the continuing application to permit the Office to enter this information in its records in the Application Branch.

Section 1.78 is amended to provide in paragraph (a) that the inventorship in the continuing application may be different from the inventorship in the prior copending application and that the prior application must disclose the invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. The requirement that at least one claim be fully supported in the prior application to be entitled to priority benefit is not new, but is included to serve as a reminder that information such as foreign patenting, publication, or public use or sale in the United States which occurred more than one year prior to the filing date of the later application is available as prior art where the claims of the continuation-in-part application are not fully supported by the disclosure of the parent application so as to be entitled to an earlier effective filing date under 35 U.S.C. 120. See *In re Ruscetta*, 255 F. 2d 687, 118 USPQ 101 (CCPA 1958); *In re van Langenhoven*, 458 F. 2d 132, 173 USPQ 426 (CCPA 1972), and *Chromalloy American Corp.* v. *Alloy Surfaces Co., Inc.*, 339 F. Suppl. 859, 173 USPQ 295 (D. Del. 1972).

Paragraph (c) as amended provides for the reply to an examiner's inquiry as to first inventor of conflicting claims in commonly owned applications or an application and a patent to be either (1) a statement that the inventions were both commonly owned at the time the later invention was made or (2) an indication of the first inventor. Paragraph (c) has been changed from that proposed in response to comments to clarify that common ownership or an obligation of assignment to the same person has to exist at the time the later invention was made. New paragraph (d) provides for making a double patenting rejection where an application claims an invention which is not patentably distinct from an invention claimed in a commonly-owned patent with the same or different inventive entities. An obviousness-type double patenting rejection could be overcome by the assignee by submitting a terminal disclaimer complying with §1.321(b).

Section 1.101 is amended as proposed to delete reference to applications filed under §1.139 since this section is being removed.

Section 1.103 is amended as proposed to refer in paragraph (d) to a request "for a defensive publication" rather than a request "filed under §1.139" since §1.139 is being removed. Paragraph (d) is amended as proposed to also refer to "patent interference proceedings under Subpart E" rather than to "proceedings under §1.201(b)" since §1.201(b) has been removed.

Section 1.104 is amended as proposed to add a new paragraph (e) to specify the nature of the showing necessary before the examiner would consider co-pending applications to be owned by, or subject to an obligation of assignment to, the same person for purposes of 35 U.S.C. 102(f)/103, 102(g)/103, and paragraph (d) of §1.106. The rule permits the necessary showing to be made in different alternative ways. The necessary showing will be considered by the examiner to be present if the application files refer to assignments which are recorded in the Patent and Trademark Office in accordance with §1.331 as long as the assignments conveyed the entire rights in the applications to the same person or organization. A second alternative which can be used, if assignments have not been recorded, permits the examiner to consider copies of unrecorded assignments filed in each of the applications by the applicants as long as the unrecorded assignments convey the entire rights in the applications to the same person or organization. A third alternative permits an affidavit or declaration to be filed by the common owner stating that there is common ownership and stating facts which explain why the affiant or declarant believes there is common ownership. Under this alternative, sufficient facts will have to be presented in order to enable the examiner to conclude that a prima facie case of common ownership exists. The fourth alternative permits other evidence to be used which would establish common ownership of the applications, e.g., a court decision determining the owner. The terms "person" and "organization" in the rule would include circumstances where the ownership resided in more than one person and/or organization as long as the applications are owned jointly by the same owners. Paragraph (e) also provides that where the common owner is a corporation or other organization an affidavit or declaration averring common ownership may be signed by an official of the corporation or organization who is empowered to act on behalf of the corporation or organization. A mere power of attorney to prosecute a patent application will not make an individual an official of the corporation or organization or empower the individual to act on behalf of the corporation or organization.

The wording of §1.106(d) amends the rule to reflect the change in 35 U.S.C. 103 and refers to the "entire" rights to the subject matter and the claimed invention to make it clear that the term "commonly owned" means wholly owned by the same person, persons, or organization.

If the person, persons, or organization owned less than 100 percent of the subject matter which would otherwise be prior art to the claimed invention, or less than 100 percent of the claimed invention, then common ownership would not exist. Common ownership requires that the person, persons, or organization own 100 percent of the subject matter and 100 percent of the claimed invention. As long as principal ownership rights to either the subject matter or the claimed invention reside in different persons or organizations common ownership does not exist. A license of the claimed invention to another by the owner where basic ownership rights are retained would not defeat ownership. The requirement for common ownership at the time the claimed invention was made is intended to preclude obtaining ownership of subject matter after the claimed invention was made in order to disqualify that subject matter as prior art against the claimed invention. The question of whether common ownership exists at the time the claimed invention was made is to be determined on the basis of the evidence presented and the facts of the particular case in question. Actual ownership of the subject matter and the claimed invention by the same individual or organization or a legal obligation to assign both the subject matter and the claimed invention to the same individual or organization must be in existence at the time the claimed invention was made in order for the subject matter to be disqualified as prior art. A moral or unenforceable obligation would not evidence common ownership.

The burden of establishing that subject matter is disqualified as prior art under the section is intended to be placed and reside upon the person or persons urging that the subject matter is disqualified. For example, the examiner would normally make what appears to be a proper 35 U.S.C. 102(f)/103 or 102(g)/103 rejection and the burden would be on the patent applicant to establish that subject matter is disqualified as prior art because it was commonly owned at the time the claimed invention was made. To place the burden upon the patent examiner would not be appropriate since evidence as to common ownership at the time the claimed invention was made might not be available to the patent examiner, but such evidence, if it exists, should be readily available to the patent applicant or the patentee.

The invention is made for purposes of the amendment to §103 when the conception is complete as defined in *Mergenthaler* v. *Scudder*, 11 App. D.C. 264, 1897 C.D. 724 (C.A.D.C. 1897), and in *In re Tansel*, 117 USPQ 188 (CCPA 1958).

> "The conception of the invention consists in the complete performance of the mental part of the inventive act. All that remains to be accomplished in order to perfect the act or instrument belongs to the department of construction, not invention. It is, therefore, the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention as it is thereafter to be applied in practice that constitutes an available conception within the meaning of the patent law."

Mergenthaler v. *Scudder*, supra, at page 731.

Paragraph (e) of §1.106 has been added in response to a comment that the rulemaking should leave no doubt as to the standard to be applied in determining the effect of a statutory invention registration waiver in one application on a related application. Paragraph (e) of §1.106 provides that the claims in any original application naming an inventor will be rejected as being precluded by a waiver in a published statutory invention registration naming that inventor if the same subject matter is claimed in the application and the statutory invention registration. Paragraph (e) of §1.106 also provides that the claims in any reissue application naming an inventor will be rejected as being precluded by a waiver in a published statutory invention registration naming that inventor if the reissue application seeks to claim subject matter which was not covered by claims issued in the patent prior to the date of publication of the statutory invention registration and which was the same subject matter waived in the statutory invention registration.

Section 1.108 is amended as proposed to delete the reference to filing a request under §1.139, which is being removed, and insert in its place a reference to a defensive publication.

A new section 1.110 is added as proposed to allow the examiner or other Office official to make inquiry as to the invention date, inventors and ownership at the time the invention was made when necessary for purposes of an Office proceeding.

Section 1.131 is amended to require that affidavits to overcome a rejection of a claim on a cited patent or publication be by the inventor or inventors of the subject matter of that claim. Section 1.131 has also been amended in response to a comment to permit the person qualified under §§1.42, 1.43, or 1.47 to make the required oath or declaration in appropriate circumstances.

Section 1.139 is being removed in view of the new statutory invention registration. The proposed rules made clear the intent to remove this section which established the defensive publication program although the section per se was not published as being removed. The defensive publication program is being replaced by the ability to obtain a statutory invention registration.

Section 1.193 is amended as proposed to change from twenty days to one month the time for filing a reply brief in response to an examiner's answer which raises new points of argument. This amendment is intended to simplify the docketing of this time period and make it consistent with the time period fixed for requesting an oral hearing in §1.194(b).

Section 1.293 is added to provide who may file a request for a statutory invention registration (SIR) and the requirements of such a request in accordance with 35 U.S.C. 157 added by Public Law 98–622. Paragraph (a) of §1.293 indicates that a request for publication of a statutory invention registration in a complete pending patent application for an original patent may be filed and be signed by the applicant, and any assignee of record, or the attorney or agent of record in the application. Paragraph (b) sets forth the requirements for a request for a statutory invention registration. Such a request must include:

(1) a waiver of the applicant's right to receive a patent. This waiver will become effective upon the date of publication. Therefore, it will be possible to petition to withdraw a request for publication of a statutory invention registration until such time that publication can not be terminated;
(2) payment of the fee for requesting publication of a statutory invention registration as set forth in §1.17(n) or (o). The fee is set at two levels to reflect the amount of resources used by the Patent and Trademark Office;
(3) a statement that the application meets the disclosure requirements of 35 U.S.C. 112. This provision is considered desirable in order to prevent publication of defective and insufficient disclosures; and
(4) a statement that the application complies with the formal requirements of the rules of practice relating to printing. This provision is required in order to provide the printer with drawings and specification which are suitable for printing in substantially the same format as a patent.

A suggested format for use in filing a request for a statutory invention registration is as follows:

Request for Statutory Invention Registration

Application Serial No. or [ ] Attached hereto
Filed:
Titled:
Applicants:

A. In the above identified patent application, I hereby
1. request and authorize the Commissioner of Patents and Trademarks to publish the above identified regularly filed patent application as a Statutory Invention Registration. (35 U.S.C. 157)
2. waive the right to receive a United States patent on the same invention claimed in the above identified patent application. These rights, which are waived, include those specified in 35 U.S.C. §183 and §§271 through 289 as well as all attributes specified for patents in any other provision of law other than title 35 United States Code. The waiver includes, but is not limited to, the remedies under 19 U.S.C. 1337 and 1337a, 22 U.S.C. 2356 and 28 U.S.C. 1498. (35 U.S.C. 157(c))
3. understand that the above waiver will be effective pursuant to 37 CFR 1.293 upon publication of the Statutory Invention Registration to waive the inventor's right to receive a United States patent on the invention claimed in the Statutory Invention Registration. (37 CFR 1.293(b) (1))
4. state that, in my opinion, the disclosure and claims of the above identified patent application meet the requirements of 35 U.S.C. 112. (37 CFR 1.293(b) (3))
5. state that, in my opinion, the above identified application complies with the requirements for printing as set forth in the Rules of Practice for Patent Cases, 37 CFR Part 1. (37 CFR 1.293(b) (4))
6. enclose the fee set forth in 37 CFR 1.17(n) or (o) for requesting publication of a Statutory Invention Registration.

[ ] A first examiner's action *has not* been mailed in the above application, 37 CFR 1.17(n) — $400.00 or
[ ] A first examiner's action *has* been mailed in the above application, 37 CFR 1.17(o) — $800.00
$_____

Minus Basic Filing Fee, if previously paid

	Small entity	Large entity
Basic filing for utility patent app. on set forth in 37 CFR 1.16(a)	[ ] $150.00	[ ] $300.00
Basic filing fee for design patent application set forth in 37 CFR 1.16(f)	[ ] $62.50	[ ] $125.00
Basic filing fee for plant patent application set forth in 37 CFR 1.16(g)	[ ] $100.00	[ ] $200.00

MINUS: $_____
Amount Due $_____

[ ] Amount enclosed by check or money order
_____

[ ] Please charge Deposit Account No. _____ in the amount of _____

[ ] If payment of any additional fee is required for publication of the Statutory Invention Registration, charge such payment to Deposit Account No. _____

B. For printing on the Statutory Invention Registration front page list below the name(s) of not more than 3 registered patent attorneys or agents OR alternatively, the name of the firm having as a member a registered patent attorney or agent. If no name is listed below, no name will be printed. _____

C. Name of assignee, if any, for printing on the Statutory Invention Registration _____

Address (City and State or Country) _____

State of incorporation, if assignee is a corporation _____

(signature(s) (37 CFR 1.293(a))
[ ] applicant(s) and any assignee
[ ] attorney or agent of record

Paragraph (c) of §1.293 is added to define the effects of a waiver filed with a request for a statutory invention registration. The waiver is effective, upon publication of the SIR, to waive the inventor's right to receive a patent on the invention claimed in the SIR in any application for an original patent which is pending on, or filed after, the date of publication of the SIR. The waiver will affect pending or later applications the inventor filed as a joint inventor with others, but will not affect an application of another person, even if the application and the SIR were commonly owned. The waiver will affect a reissue application of an earlier patent of the inventor only to the extent that the reissue application seeks to enlarge the scope of the claims. Paragraph (c) of §1.293 has been modified from the proposal by inclusion of a reference to §1.106(e).

Section 1.294 is added as proposed to provide in paragraph (a) for a review of the request for publication of a statutory invention registration and the patent application to which it is directed. The request will be examined to determine if the requirements of §1.293 have been met. The application to which the request is directed will be examined to determine (1) if the subject matter of the application is appropriate for publication, (2) if the requirements for publication are met, and (3) if the requirements of 35 U.S.C. 112 and §1.293 are met. Under 35 U.S.C. 157, the Commissioner is authorized to publish a statutory invention registration, but is not required to do so. Thus, the Commissioner has discretion in determining whether or not a statutory invention registration should be issued on a particular patent. In circumstances where the subject matter was obviously not a patentable invention, was too informal to print, and so forth, the request to publish the statutory invention registration will be refused.

Paragraph (b) of §1.294 provides for notifying applicant of the results of the examination of the request for publication of the statutory invention registration. Paragraph (c) of §1.294 provides for the issuance of a notice of the intent to publish a statutory invention registration once the request has been examined and approved.

Section 1.295 is added to provide for the review of a final refusal to publish a statutory invention registration. The review would be by petition to the Commissioner for matters other than those arising from a rejection pursuant to 35 U.S.C. 112 and by appeal for a rejection pursuant to 35 U.S.C. 112. The language of the final rule is slightly different from that proposed to emphasize that the Board either affirms or reverses decisions rather than rejections. Paragraph (a) also differs from the proposal by including, in response to a comment, a provision for requesting return of the petition fee if the necessity for the petition resulted from an error by the Patent and Trademark Office.

Section 1.296 has been modified from the proposal to provide a specific period during which a request for a statutory invention registration may be withdrawn. Under §1.296, as modified, a request for a statutory invention registration may be withdrawn, at applicant's option, prior to the date of the notice of intent to publish a statutory invention registraiton issued pursuant to §1.294(c) by filing a request to withdraw the request for publication of a statutory invention registration. An applicant filing such a request to withdraw may also, under §1.296, request a refund of any amount paid in excess of the application filing fee and a handling fee of $100.00 which will be retained by the Office. Any request to withdraw the request for publication of a statutory invention registration filed on or after the date of the notice of intent to publish pursuant to §1.294(c) must be in the form of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h).

Section 1.297 is added to provide for the publication of the statutory invention registration and of the notice of its publication in the *Official Gazette*. In response to a comment, §1.297 has been modified so that the statement on the statutory invention registration will specifically state that the statutory invention registration is not a patent.

Sections 1.301, 1.302 and 1.304 are amended as proposed to delete the requirement to give reasons for appeal when filing an appeal to the Court of Appeals for the Federal Circuit in accordance with §414(a) of Public Law 98–620 which amended 35 U.S.C. 142, 143 and 144.

Section 1.378 is amended as proposed to delete from paragraph (a) the limitation that only applications filed on or after Aug. 27, 1982 may have the maintenance fee accepted after expiration of the patent. This change follows the change made by §404(b) of Public Law 98–622.

Section 1.431 is amended as proposed to provide for the later payment directly to the Receiving Office of the basic fee portion of the international fee and the transmittal and search fees within one month of the filing of an international application. The rule follows §361(d) of title 35 U.S.C. as amended by Public Law 98–622, to provide a one-month grace period from the date of filing of an international application for the payment of the basic international fee and the transmittal and search fees.

It should be noted that the designation fees continue to be required by 12 months after the priority date and that no subsequent grace period is provided in the Receiving Office for designation fees.

New paragraphs 1.431(d) and (e) incorporate into the regulations the provisions of PCT Rule 16 bis. Under these provisions the Receiving Office will charge any unpaid or insufficient fees to a deposit account maintained by the International Bureau. The applicant will then be notified by the International Bureau and be given one month to reimburse the amount charged plus a surcharge of 50%. The surcharge would not be less than 248 Swiss francs or more than 624 Swiss francs under the current fee schedule.

Section 1.445 is amended as proposed to clarify paragraph (a) (4) to clearly indicate that the national fee is credited by an amount of $250 only one time where a $500 search fee has been paid to the Patent and Trademark Office to act as an international searching authority. This is consistent with current practice. The special fee provisions in paragraph (a) (5) are being deleted in view of §402(g) of Public Law 98–622 which deleted the fee in 35 U.S.C. 376(a) (5). The wording of §1.445(a) (5) sets forth the surcharge required for filing of a national fee or oath or declaration later than 20 months from the priority date. Paragraph (a) (6) of §1.445 is added to require a fee of $20.00 for filing an English translation of an international application later than 20 months after the priority date. This makes the practice in international applications consistent with that in national applications where a fee of $20.00 is charged under §1.17(k) for processing an application filed with a specification in a non-English language.

Section 1.446 is amended as proposed to clarify the refund of a portion of the $500 search fee toward payment of the national fee.

Section 1.451 is amended as proposed to correct a rule citation in paragraph (b) and to amend paragraph (c) to provide for supplying a copy of the priority document to the Receiving Office in conformance with revised PCT Rule 17.1.

Section 1.461 is amended as proposed to delete provisions which relate to the applicant transmitting the record copy to the International Bureau. Provisions for such alternative transmittal were deleted from PCT Rule 22, effective Jan. 1, 1985. Accordingly, since the PCT rules no longer provide for such transmittal, the provisions therefor in the U.S. rules are also being deleted.

Response to Comments on the Rules

Specific comments were received on a number of the proposed rule changes. Six letters submitting written comments were received. Oral testimony was presented by four persons at the public hearing conducted on Feb. 8, 1985 and the oral testimony of two of these persons (representing the American Intellectual Property Law Association and Intellectual Property Owners, Inc.) was supplemented by written statements. All of the written and oral comments were considered in adopting the changes set forth herein. Comments suggesting modifications to the proposed rules appear below with responses thereto.

Comment: One Comment suggested that 37 CFR 1.11 be amended to create a waiver of secrecy of an application as of the date of filing of a notice of appeal to the Court of Appeals for the Federal Circuit. The comment suggests that secrecy could be maintained upon request by the appellant in such a situation.

Reply: The change was not published in the proposed rulemaking and is considered to be too substantial a change to be adopted without publication as a proposal to allow public comment. Further, if the suggestion were adopted appellants might simply include a request for secrecy with every notice of appeal.

Comment: One comment suggested that the $120.00 petition fee under §1.17(h) for review of a refusal to publish a statutory invention registration under §1.295 be returned to the petitioner if the refusal to publish is found to have occurred only through an administrative error of the PTO.

Reply: This suggestion has been adopted by an additional sentence being added to §1.295(a).

Comment: Three comments suggested that the proposed fees for a statutory invention registration were too high. One comment suggested the elimination of the fee proposed in §1.17(o).

Reply: Although lower fees would certainly be preferred by the public, the Office must recover its costs of processing and publishing statutory invention registrations. The two levels of fees permit an applicant whose application has not had a first Office action mailed to pay a minimum amount while those filing a request for a statutory invention registration later would share the average additional costs. The amounts proposed are the current estimates of expected costs and cannot be reduced. This will become apparent when it is realized that about $250.00 of the $400.00 fee which has been established for requesting publication of a statutory invention registration prior to the mailing of the first examiner's action pursuant to §1.104 is the cost of printing the statutory invention registration and does not include in-house publication staff costs. The remainder of the fee is used to cover the administrative processing costs and the limited examination which is required to be given pursuant to 35 U.S.C. 157. The higher fee of $800.00 which has been established is necessary to cover the additional costs to the Office when an applicant requests publication of a statutory invention registration after the office has begun examination of the application on which the applicant is requesting publication of a statutory invention registration. Since the rules permit the request to be filed at any time during the examination process substantial additional examination costs, including possibly appeal costs, may have been incurred in a particular application prior to the date on which the request for publication is made. Accordingly, the additional $400.00 is required to cover the extra costs to the Office where the applicant belatedly requests publication of a statutory invention registration. Applicants can avoid the higher costs to themselves and the Office by requesting publication of the statutory invention registration in a timely fashion prior to the mailing of the first examiner's action pursuant to §1.104. The possibility of reducing fees below costs to the Office does not exist since the legislative history of 35 U.S.C. 157 does not reflect any intent that other Office fees or appropriations be used to defer the costs of statutory invention registrations. Further, most of the comments received urged that the fees be set as low as possible, but not below the level necessary to recover costs.

Comment: One comment suggested that the Patent and Trademark Office should investigate less expensive procedures for printing statutory invention registrations to reduce the costs and thereby lower the fees.

Reply: If the registrations are not printed by a system using computer tape, the subject matter of the registrations would not be easily searchable in paper form and would not be fully available for searching under the planned automated "paperless" system. Further, the "section-by-section" analysis submitted for the Record by Representative Kastenmeier during discussion of H. R. 6286 on the floor of the House stated that the statutory invention registration "would be classified and cross-referenced, disseminated to foreign patent offices, stored in the Patent and Trademark Office computer tapes, made available in commercial data bases, and announced in the *Official Gazette* of the PTO." (130 Cong. Rec. H 10526 (1984), column 3). These uses of the statutory invention registrations preclude use of any informal method of printing which would be different from the method used for the printing of patents.

Comment: A number of comments were received concerning §1.48(b). The comments related to (1) the propriety of the fee required, (2) the incorporation of paragraph (b) into current §1.48, (3) the inclusion in the rules of a fixed and definite time period to correct inventorship, (4) the inclusion in the rules of a provision to add inventors claiming previously disclosed but unclaimed subject matter, and (5) a suggestion that the change in inventorship be simplified and possibly effected by a statement by applicant's attorney.

Reply: Each comment will be treated separately in order. (1) The fee of $120.00 to accompany a petition for correction of inventorship is considered appropriate since the consideration of such a petition and correction of Office records takes additional resources. Such a fee should also act as a discouragement to grouping marginal inventions and loosely related inventions into the same application. (2) Whether paragraph (b) is made part of §1.48 or established as a separate rule does not appear to be a substantive matter. Paragraph (b) is being made part of §1.48 to place all rules relating to correction of inventorship in applications in a single rule. (3) No specific time period for correction of inventorship was indicated in the proposed rules. The rule requires that the correction must be made diligently. Since the examiner will not normally be aware of when inventorship correction is required, the responsibility of making such a correction diligently must rest with the applicant. The time of the correction will vary from case to case. (4) The addition of claims to previously disclosed but unclaimed subject matter of additional inventors is considered to be an error in the application and is therefore corrected under §1.48(a). A new paragraph (c) has been added to §1.48 to make this clear. Such a correction must always include a new oath or declaration. (5) The correction of inventorship has been simplified from that proposed. Final §1.48(b) does not require a new oath or declaration of each actual inventor or written consent of any assignee as originally proposed. The final rule requires a petition including a statement identifying each named inventor who is being deleted and acknowledging that the inventor's invention

is no longer being claimed in the application, and the fee set forth in §1.17(h). The petition could be signed by applicant's attorney who would then take full responsibility for ensuring that the inventor is not being improperly deleted from the application.

Comment: One comment suggested that proposed §§1.60 and 1.62 should be modified to permit the filing of such continuing applications with different inventive entities from the prior application.

Reply: The procedures under §§1.60 and 1.62 were developed to allow continuing applications to be filed without the necessity of again obtaining an inventor's signature to a declaration. The proposed rule wording has been modified in the final rule to permit inventors to be deleted in the continuing application. The addition of inventors is now permitted where a new oath or declaration would be required because of claims in the continuing application being drawn to additional subject matter.

Comment: One comment suggested that §§1.77 and 1.78 be modified to change the placement in a patent application of the information regarding cross-reference to related applications. It was suggested to require this information to be placed immediately after the Abstract, following the claims, so that the cross-reference information could be easily removed when filing the application outside the United States.

Reply: These changes were not included in the proposed rulemaking and therefore the public has not had an opportunity to comment on the suggestion. Accordingly, the suggestion has not been adopted.

Comment: One comment suggested that proposed §1.78(c) be modified to permit a statement that the claimed inventions were subject to an obligation of assignment to the same person at the time the inventions were made.

Reply: The suggestion has been adopted.

Comment: One comment suggested that the application of double patenting rejections to applications of different inventive entities which are commonly owned as set out in proposed §1.78(d) not be made until the effective date of this rulemaking.

Reply: The Commissioner's Notice of Dec. 11, 1984, "Initial Guidelines Implementing Changes in 35 U.S.C. 103, 116, and 120", 1050 O.G. 316 (Jan. 8, 1985), changed the practice in accordance with the intention of Congress in enacting Public Law 98–622. See 130 Cong. Rec. H 10527, column 3 (daily ed. Oct. 1, 1984) (statement of Rep. Kastenmeier) wherein the following statement appears:

> "The Committee expects that the Patent and Trademark Office will reinstitute in appropriate circumstances the practice of rejecting claims in commonly owned applications of different inventive entities on the ground of double patenting. This will be necessary in order to prevent an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter. In accordance with established patent law doctrines, double patenting rejections can be overcome in certain circumstances by disclaiming the terminal portion of the term of the later patent, thereby eliminating the problem of extending patent life."

Since the provisions of Public Law 98–622 became effective on Nov. 8, 1984, it was not appropriate to delay the change in practice.

Comment: One comment suggested that the policy of rejecting commonly-owned applications of different inventive entities on the grounds of double patenting, as set forth in proposed §1.78(d), was unnecessary in view of 35 U.S.C. 102(e).

Reply: The provisions of 35 U.S.C. 102(e) will not be effective to preclude double patenting in situations where the applicants of the later filed application can use the provisions of 37 CFR 1.131 to antedate the filing date of the earlier filed application or patent. Accordingly, the application of the prohibitions against double patenting is necessary in order to prevent an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter. See 130 Cong. Rec. H 10527, supra.

Comment: One comment suggested that proposed §1.78(c) was broader than required by statute and capable of being construed to conflict with proposed §1.106(d) by referring to common ownership at "the time the inventions were made" rather than at the time the later invention was made.

Reply: The wording of §1.78(c) has been revised from the proposal to clarify the problem spoken to in the comment.

Comment: One comment suggested that the proposed amendment to §1.131 not be made so that the "applicant" can make affidavits or declarations to overcome rejections. The comment suggested that the proposed rule provides no remedy in situations where the inventor is dead, insane, legally incapacitated, cannot be reached or refuses to join in the application.

Reply: The final rule has been changed in response to the comment to permit the person qualified under §§1.42, 1.43, or 1.47 to make the required oath or declaration in appropriate circumstances.

Comment: Two comments suggested that the scope of the waiver in a statutory invention registration be limited to the subject matter of the claims of the statutory invention registration and not to any obvious modifications thereof. Another comment suggested that the statutory invention registration applicant should be able to waive the right to a patent on all of the subject matter disclosed in the application if he wishes to do so. One comment suggested that the rulemaking should leave no doubt as to the standard to be applied in determining the effect of a statutory invention registration waiver in one application on a related application.

Reply: A new paragraph (e) has been added to §1.106 to clarify the standard to be applied in determining the effect of a statutory invention registration waiver. The suggestion that the scope of the waiver be limited to the subject matter of the claims of the statutory invention registration and not to any obvious modifications thereof has been adopted.

Comment: Three comments suggested that since a statutory invention registration is prior art as of its effective filing date, the time permitted between the effective filing date and the publication of the statutory invention registration should be limited. Several different approaches were suggested. One comment suggested that there was no problem in this regard. Another comment suggested that the organization is studying the question and will have recommendations in several months.

Reply: The statute makes it clear that the Commissioner is not required to publish a statutory invention registration in response to a request therefor. The case-by-case consideration of requests for publication of a statutory invention registration should safeguard the public without unduly placing limits on patent applicants. The Office will await further recommendations on this question and will observe actual experience prior to placing any time limitations on the use of statutory invention registrations.

Comment: Two comments suggested that §1.293 be modified to eliminate the requirement for a statement in the request for publication of a statutory invention registration that the application meets the requirements of 35 U.S.C. 112. One of these comments also suggested the elimination of the statement that the application meets formal requirements for printing. One comment suggested that if there is a requirement for a statement in the request for publication of a statutory invention registration that the application meets the requirements of 35 U.S.C. 112, there will not be a great necessity for the Office to spend a lot of time examining the application, although there has to be some examination.

Reply: The reason for the statements in §1.293 regarding compliance with 35 U.S.C. 112 and the formal

requirements for printing as a patent was to reduce the cost of statutory invention registrations to the applicants and to the Office. The level of fees which have been established assumes that applicants will include the statements required by §1.293 in their requests and that the statements will accurately reflect the condition of the applications to which the requests are directed.

Comment: One comment suggested that the rules should include a fixed and definite time period in which an authorized party can withdraw a statutory invention registration after its approval and before its publication.

Reply: The suggestion has been adopted. Section 1.296 has been modified to permit a request to withdraw the request for publication of a statutory invention registration to be filed at any time prior to the date of the notice of intent to publish the statutory invention registration. After the date of the notice of intent to publish the statutory invention registration, any request to withdraw the request for publication of the statutory invention registration must be in the form of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h).

Comment: One comment suggested that the statement to be printed on statutory invention registrations as set out in proposed §1.297(b) be modified to be easily understood by lay people.

Reply: The statement has been modified to specifically state that the statutory invention registration is not a patent.

Environmental, Energy, and Other Considerations: The final rule change will not have a significant impact on the quality of the human environment or conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). In fact, the rule change will benefit small entities since the statutory invention registration procedures will provide a new, less expensive alternative to the traditional patenting of inventions in appropriate circumstances. Further, the ability to join multiple inventors in a single application in appropriate circumstances will be of particular benefit to small entities. Other changes, such as the elimination of the reasons for appeal, will also be beneficial to all inventors. See a "section-by-section" analysis submitted for the Record by Representative Kastenmeier during discussion of H.R. 6286 on the floor of the House in which the following statement appears (130 Cong. Rec. H 1057 (1984), column 1):

> "Last, the SIR would be particularly useful to those with limited resources such as universities and small businesses, who have a new less expensive alternative to the traditional patenting of inventions."

These rules, therefore, will have no significant adverse economic impact on small entities.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The information collection requirements contained in these rules were submitted to the Office of Management and Budget (OMB) at the time of the proposed rulemaking for review under Section 3504(h) of the Paperwork Reduction Act. OMB has approved the information collection requirements and has assigned OMB control number 0651–0018 thereto.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Pub. L. 98–620 and 98–622, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

1. Section 1.11 is amended by revising paragraphs (a) and (b) and adding new paragraph (e) to read as follows:

§1.11 Files open to the public.

(a) After a patent has been issued or a statutory invention registration has been published, the specification, drawings and all papers relating to the case in the file of the patent or statutory invention registration are open to inspection by the public, and copies may be obtained upon paying the fee therefor. See § 2.27 for trademark files.

(b) All reissue applications, all applications in which the Office has accepted a request to open the complete application to inspection by the public, and related papers in the application file, are open to inspection by the public, and copies may be furnished upon paying the fee therefor. The filing of reissue applications will be announced in the *Official Gazette*. The announcement shall include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned.

* * * * *

(e) The file of any interference involving a patent, a statutory invention registration, or an application on which a patent has issued or which has been published as a statutory invention registration, is open to inspection by the public, and copies may be obtained upon paying the fee therefor, if: (1) the interference has terminated, or (2) an award of priority or judgment has been entered as to all parties and all counts.

2. Section 1.14 is amended by revising paragraph (b) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(b) Except as provided in §1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application in which the applicant has filed an authorization to open the complete application to the public, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant.

* * * * *

3. Section 1.17 is amended by revising paragraph (h) and by adding new paragraphs (n) and (o) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of this part listed below which

refers to this paragraph $120.00
§1.47 — for filing by other than all the inventors or a person not the inventor
§1.48 — for correction of inventorship
§1.182 — for decision on questions not specifically provided for
§1.183 — to suspend the rules
§1.295 — for review of refusal to publish a statutory invention registration
§1.377 — for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent
§1.378(e) — for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent
§1.644(e) — for petition in an interference
§1.644(f) — for request for reconsideration of a decision on petition in an interference
§1.666(c) — for late filing of interference settlement agreement
§§5.12, 5.13, & 5.14 — for expedited handling of foreign filing license
§5.15 — for changing the scope of a license
§5.25 — for retroactive license

* * * * *

(n) For requesting publication of a statutory invention registration prior to the mailing of the first examiner's acton pursuant to §1.104 ..... $400.00 reduced by the amount of the application basic filing fee paid

(o) For requesting publication of a statutory invention registration after the mailing of the first examiner's action pursuant to §1.104 ..... $800.00 reduced by the amount of the application basic filing fee paid

4. Section 1.19 is amended by revising paragraphs (a) and (e) to read as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents:
(1) Printed copy of a patent, including a design patent, statutory invention registration, or defensive publication document, except color plant patent $1.00

* * *

* * * * *

(e) List of patents in subclass:
(1) For list of all United States patents and statutory invention registrations in a subclass, per 100 numbers or fraction thereof 2.00
(2) For list of United States patents and statutory invention registrations in a subclass limited by date or number, per 50 numbers or fraction thereof 2.00

5. Section 1.20 is amended by revising paragraphs (e), (f), (g) and (m) to read as follows:

§1.20 Post-issuance fees.

* * * * *

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant $200.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant 400.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant 600.00

* * * * *

(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable 500.00

6. Section 1.45 is revised by labeling the existing paragraph as (a) and by adding new paragraphs (b) and (c) to read as follows:

§1.45 Joint inventors.

* * * * *

(a)
(b) Inventors may apply for a patent jointly even though
(1) they did not physically work together or at the same time,
(2) each inventor did not make the same type or amount of contribution, or
(3) each inventor did not make a contribution to the subject matter of every claim of the application.

(c) If multiple inventors are named in an application, each named inventor must have made a contribution, individually or jointly, to the subject matter of at least one claim of the application and the application will be considered to be a joint application under 35 U.S.C. 116.

7. Section 1.48 is amended by labeling the current paragraph as paragraph (a) and by adding new paragraphs (b) and (c) to read as follows:

§1.48 Correction of inventorship.

(a) * * * * *

(b) If the correct inventors are named in the application when filed and the prosecution of the application results in the amendment or cancellation of claims so that less than all of the originally named inventors are the actual inventors of the invention being claimed in the application, an amendment shall be filed deleting the names of the person or persons who are not inventors of the invention being claimed. The amendment must be diligently made and shall be accompanied by:
(1) a petition including a statement identifying each named inventor who is being deleted and acknowledging that the inventor's invention is no longer being claimed in the application, and
(2) the fee set forth in §1.17(h).

(c) If an application discloses unclaimed subject matter by an inventor or inventors not named in the application, the application may be amended pursuant to paragraph (a) of this section to add claims to the subject matter and name the correct inventors for the application. [OMB Control No. 0651–0018].

8. Section 1.60 is revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

(a) A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121 and §1.78(a)), naming as inventors the same or less than all the inventors named in a prior application and which discloses and claims only subject matter disclosed in the prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application.

(b) An applicant may omit signing of the oath or declaration in a continuation or divisional application if (1) the prior application was a complete application as set forth in §1.51(a), (2) applicant files a true copy of the prior complete application as filed including the specification (including claims), drawings, oath or declaration showing the signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application, and (3) the inventors named in the continuation or divisional application are the same or less than all the inventors named in the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date. If the continuation or divisional application is filed by less than all the inventors named in the prior application a statement must accompany the application when filed requesting deletion of the names of the person or persons who are not inventors of the invention being claimed in the continuation or divisional application.

9. Section 1.61 is amended by revising the section heading and paragraphs (a) and (b) and adding paragraphs (c) and (d) to read as follows:

§1.61 Filing of applications in the United States of America as a Designated Office.

(a) To maintain the benefit of the international filing date and obtain an examination as to the patentability of the invention in the United States, the applicant shall furnish to the U.S. Patent and Trademark Office not later than the expiration of 20 months from the priority date: (1) a copy of the international application with any amendments under PCT Article 19, unless it has been previously communicated by the International Bureau or unless it was originally filed in the U.S. Patent and Trademark Office; (2) a translation of the international application and a translation of any amendments under PCT Article 19 into the English language, if originally filed in another language; (3) the national fee (see §1.445(a)(4)); and (4) an oath or declaration of the inventor (see §1.70).

(b) If the translation of the international application, oath or declaration, and national fee have not been submitted by the applicant within twenty (20) months from the priority date, such requirements may be met within twenty-two (22) months from the priority date. The payment of the surcharge set forth in §1.445(a)(5) is required as a condition for accepting the national fee or the oath or declaration later than 20 months after the priority date. The payment of the processing fee set forth in §1.445(a)(6) is required for acceptance of an English translation later than 20 months after the priority date. Failure to comply with these requirements will result in abandonment of the application. The provisions of §1.136 do not apply to the 22 month period of this section.

(c) If a copy of the amendments under PCT Article 19 is not communicated by the International Bureau or a copy thereof and any necessary English translation thereof is not received by the end of 20 months from the priority date, such failure will be regarded as cancellation of the amendments under PCT Article 19 in the international application.

(d) Verification of the translation of the international application or any other document pertaining to an international application may be required where it is considered necessary, if the international application or other document was filed in a language other than English.

10. Section 1.62 is amended by revising paragraphs (a), (c) and (h) to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification, drawings and oath or declaration from a prior complete application (§1.51(a)) which is to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior complete application. If the continuation, continuation-in-part, or divisional application is filed by less than all the inventors named in the prior application a statement must accompany the application when filed requesting deletion of the names of the person or persons who are not inventors of the invention being claimed in the continuation, continuation-in-part, or divisional application.

* * * * *

(c) In the case of a continuation-in-part application which adds and claims additional disclosure by amendment, an oath or declaration as required by §1.63 must also be filed. In those situations where a new oath or declaration is required due to additional subject matter being claimed, additional inventors may be named in the continuing application. In a continuation or divisional application which discloses and claims only subject matter dislcosed in a prior application, no additional oath or declaration is required and the application must name as inventors the same or less than all the inventors named in the prior application.

* * * * *

(h) The applicant is urged to furnish the following information relating to the prior and continuing applications to the best of his or her ability:

* * * * *

(5) The title of the invention and names of the applicants to be named in the continuing application.

* * * * *

11. Section 1.78 is amended by revising paragraphs (a) and (c) and by adding a new paragraph (d) to read as follows:

§1.78 Claiming benefit of earlier filing date and cross-references to other applications.

(a) An application may claim an invention disclosed in a prior filed copending national application or international application designating the United States of America. In order for an application to claim the benefit of a prior filed copending national application, the prior application must name as an inventor at least one inventor named in the later filed application and disicose the named inventor's invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, the prior application must be (1) complete as set forth in §1.51, or (2) entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16; or (3) entitled to a filing date as set forth in §1.53(b) and have paid therein the processing and retention fee set forth in §1.21(1) within the time period set forth in §1.53(d). Any application claiming the benefit of a prior filed copending national or international application must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by serial number and filing date or international application number and international filing date and indicating the relationship of the applications. Cross-references to other related applications may be made when appropriate. (See §1.14(b)).

* * * * *

(c) Where two or more applications, or an application and a patent naming different inventors and owned by the same party contain conflicting claims, and there is no statement of record indicating that the claimed inventions were commonly owned or subject to an obligation of assignment to the same person at the time the later invention was made, the assignee may be called upon to state whether the claimed inventions were commonly owned or subject to an obligation of assignment to the same person at the time the later invention was made, and if not, indicate which named inventor is the prior inventor. In addition to making said statement, the assignee may also explain why an interference should or should not be declared.

(d) Where an application claims an invention which is not patentably distinct from an invention claimed in a commonly owned patent with the same or a different inventive entity, a double patenting rejection will be made in the application. An obviousness-type double patenting rejection may be obviated by filing a terminal disclaimer in accordance with §1.321(b).

12. Section 1.101 is amended by revising paragraph (a) to read as follows:

§1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to §1.102. International applications which have complied with the requirements of 35 U.S.C. 371(c) will be taken up for action based on the date on which such requirements were met. However, unless a request has been filed under 35 U.S.C. 371(f), no action may be taken prior to 21 months from the priority date.

* * * * *

13. Section 1.103 is amended by revising paragraph (d) to read as follows:

§1.103 Suspension of action.

* * * * *

(d) Action on applications in which the Office has accepted a request to publish a defensive publication will be suspended for the entire pendency of these applications except for purposes relating to patent interference proceedings under Subpart E.

14. Section 1.104 is amended by adding a new paragraph (e) immediately following the Note to paragraph (d) to read as follows:

§1.104 Nature of examination; examiner's action.

* * * * *

(e) Co-pending applications will be considered by the examiner to be owned by, or subject to an obligation of assignment to, the same person if (1) the application files refer to assignments recorded in the Patent and Trademark Office in accordance with §1.331 which convey the entire rights in the applications to the same person or organization; or (2) copies of unrecorded assignments which convey the entire rights in the applications to the same person or organization are filed in each of the applications; or (3) an affidavit or declaration by the common owner is filed which states that there is common ownership and states facts which explain why the affiant or declarant believes there is common ownership; or (4) other evidence is submitted which establishes common ownership of the applications. In circumstances where the common owner is a corporation or other organization an affidavit or declaration may be signed by an official of the corporation or organization empowered to act on behalf of the corporation or organization.

15. Section 1.106 is amended by adding new paragraphs (d) and (e) to read as follows:

§1.106 Rejection of claims.

* * * * *

(d) Subject matter which is developed by another person which qualifies as prior art only under 35 U.S.C. 102 (f) or (g) may be used as prior art under 35 U.S.C. 103 against a claimed invention unless the entire rights to the subject matter and the claimed invention were commonly owned by the same person or organization or subject to an obligation of assignment to the same person or organization at the time the claimed invention was made.

(e) The claims in any original application naming an inventor will be rejected as being precluded by a waiver in a published statutory invention registration naming that inventor if the same subject matter is claimed in the application and the statutory invention registration. The claims in any reissue application naming an inventor will be rejected as being precluded by a waiver in a published statutory invention registration naming that inventor if the reissue application seeks to claim subject matter (1) which was not covered by claims issued in the patent prior to the date of publication of the statutory invention registration and (2) which was the same subject matter waived in the statutory invention registration.

16. Section 1.108 is revised to read as follows:

§1.108 Abandoned applications not cited.

Abandoned applications as such will not be cited as references except those which have been opened to inspection by the public following a defensive publication.

17. Section 1.110 is added to read as follows:

§1.110 Inventorship and date of invention of the subject matter of individual claims.

When more than one inventor is named in an application or patent, the Patent and Trademark Office, when necessary for purposes of an Office proceeding, may require an applicant, patentee, or owner to identify the inventive entity of the subject matter of each claim in the application or patent. Where appropriate, the invention dates of the subject matter of each claim and the ownership of the subject matter on the date of invention may be required of the applicant, patentee or owner. See also §§1.78(c) and (d). [OMB Control No. 0651-0018].

18. Section 1.131 is amended by revising paragraph (a) to read as follows:

§1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the rejected invention, or on reference to a foreign patent or to a printed publication, and the inventor of the subject matter of the rejected claim, the owner of the patent under reexamination, or the person qualified under §§1.42, 1.43 or 1.47, shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the inventor or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the inventor's or patent owner's application was filed in this country.

* * * * *

§1.139 [removed]

19. Section 1.139 is removed.

20. Section 1.193 is amended by revising paragraph (b) to read as follows:

§1.193 Examiner's answer.

* * * * *

(b) The appellant may file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within one month from the date of such answer. However, if the examiner's answer states a new ground of rejection appellant may file a reply thereto within two months from the date of such answer; such reply may include any amendment or material appropriate to the new ground.

* * * * *

21. A new section 1.293 is added to read as follows:

§1.293 Statutory invention registration.

(a) An applicant for an original patent may request, at any time during the pendency of applicant's pending complete application, that the specification and drawings be published as a statutory invention registration. Any such request must be signed by (1) the applicant and any assignee of record or (2) an attorney or agent of record in the application.

(b) Any request for publication of a statutory invention registration must include the following parts:

(1) a waiver of the applicant's right to receive a patent on the invention claimed effective upon the date of publication of the statutory invention registration;

(2) the required fee for filing a request for publication of a statutory invention registration as provided for in §1.17(n) or (o);

(3) a statement that, in the opinion of the requester, the application to which the request is directed meets the requirements of 35 U.S.C. 112; and

(4) a statement that, in the opinion of the requester, the application to which the request is directed complies with the formal requirements of this part for printing as a patent.

(c) A waiver filed with a request for a statutory invention registration will be effective, upon publication of the statutory invention registration, to waive the inventor's right to receive a patent on the invention claimed in the statutory invention registration, in any application for an original patent which is pending on, or filed after, the date of publication of the statutory invention registration. A waiver filed with a request for a statutory invention registration will not affect the rights of any other inventor even if the subject matter of the statutory invention registration and an application of another inventor are commonly owned. A waiver filed with a request for a statutory invention registration will not affect any rights in a patent to the inventor which issued prior to the date of publication of the statutory invention registration unless a reissue application is filed seeking to enlarge the scope of the claims of the patent. See also §1.106(e). [OMB Control No. 0651-0018].

22. A new section 1.294 is added to read as follows:

§1.294 Examination of request for publication of a statutory invention registration and patent application to which the request is directed.

(a) Any request for a statutory invention registration will be examined to determine if the requirements of §1.293 have been met. The application to which the request is directed will be examined to determine (1) if the subject matter of the application is appropriate for publication, (2) if the requirements for publication are met, and (3) if the requirements of 35 U.S.C. 112 and §1.293 of this part are met.

(b) Applicant will be notified of the results of the examination set forth in paragraph (a) of this section. If the requirements of §1.293 and this section are not met by the request filed, the notification to applicant will set a period of time within which to comply with the requirements in order to avoid abandonment of the application. If the application does not meet the requirements of 35 U.S.C. 112, the notification to applicant will include a rejection under the appropriate provisions of 35 U.S.C. 112. The periods for response established pursuant to this section are subject to the extension of time provisions of §1.136. After response by the applicant, the application will again be considered for publication of a statutory invention registration. If the requirements of §1.293 and this section are not timely met, the refusal to publish will be made final. If the requirements of 35 U.S.C. 112 are not met, the rejection pursuant to 35 U.S.C. 112 will be made final.

(c) If the examination pursuant to this section results in approval of the request for a statutory invention registration the applicant will be notified of the intent to publish a statutory invention registration.

23. A new section 1.295 is added to read as follows:

§1.295 Review of decision finally refusing to publish a statutory invention registration.

(a) Any requester who is dissatisfied with the final refusal to publish a statutory invention registration for

reasons other than compliance with 35 U.S.C. 112 may obtain review of the refusal to publish the statutory invention registration by filing a petition to the Commissioner accompanied by the fee set forth in §1.17(h) within one month or such other time as is set in the decision refusing publication. Any such petition should comply with the requirements of §1.181(b). The petition may include a request that the petition fee be refunded if the final refusal to publish a statutory invention registration for reasons other than compliance with 35 U.S.C. 112 is determined to result from an error by the Patent and Trademark Office.

(b) Any requester who is dissatisfied with a decision finally rejecting claims pursuant to 35 U.S.C. 112 may obtain review of the decision by filing an appeal to the Board of Patent Appeals and Interferences pursuant to §1.191. If the decision rejecting claims pursuant to 35 U.S.C. 112 is reversed, the request for a statutory invention registration will be approved and the registration published if all of the other provisions of §1.293 and this section are met. [OMB Control No. 0651-0018].

24. A new section 1.296 is added to read as follows:

§1.296 Withdrawal of request for publication of statutory invention registration.

A request for a statutory invention registration, which has been filed, may be withdrawn prior to the date of the notice of the intent to publish a statutory invention registration issued pursuant to §1.294(c) by filing a request to withdraw the request for publication of a statutory invention registration. The request to withdraw may also include a request for a refund of any amount paid in excess of the application filing fee and a handling fee of $100 which will be retained. Any request to withdraw the request for publication of a statutory invention registration filed on or after the date of the notice of intent to publish issued pursuant to §1.294(c) must be in the form of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h). [OMB Control No. 0651-0018].

25. A new section 1.297 is added to read as follows:

§1.297 Publication of statutory invention registration.

(a) If the request for a statutory invention registration is approved the statutory invention registration will be published. The statutory invention registration will be mailed to the requester at the correspondence address as provided for in §1.33(a). A notice of the publication of each statutory invention registration will be published in the *Official Gazette*.

(b) Each statutory invention registration published will include a statement relating to the attributes of a statutory invention registration. The statement will read as follows:

A statutory invention registration published pursuant to 35 U.S.C. 157 is not a patent but it has all of the attributes specified for patents in title 35, United States Code, except those specified in 35 U.S.C. 183 and sections 271 through 289. A statutory invention registration does not have any of the attributes specified for patents in any other provision of law other than title 35, United States Code. The invention with respect to which a statutory invention registration is published is not a patented invention for purposes of the marking provisions of 35 U.S.C. 292.

26. Section 1.301 is revised to read as follows:

§1.301 Appeal to U.S. Court of Appeals for the Federal Circuit.

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Patent Appeals and Interferences, and any party to an interference dissatisfied with the decision of the Board of Patent Appeals and Interferences, may appeal to the U.S. Court of Appeals for the Federal Circuit. The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office file a written notice of appeal directed to the Commissioner (see §§1.302 and 1.304); and (b) in the Court, file a copy of the notice of appeal and pay the fee for appeal, as provided by the rules of the Court. The certified list of documents and any original or certified copies of such documents required by the Court will be transmitted to the Court by the Patent and Trademark Office.

27. Section 1.302 is revised to read as follows:

§1.302 Notice of appeal.

(a) When an appeal is taken to the U.S. Court of Appeals for the Federal Circuit, the appellant shall give notice thereof to the Commissioner within the time specified in §1.304.

(b) In interferences, the notice must be served as provided in §1.646.

28. Section 1.304 is amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Patent Appeals and Interferences. If a request for reconsideration or modification of the decision is filed within the time provided under §1.197(b) or §1.658(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. Except for an appeal from or commencing a civil action after a decision of the Board of Patent Appeals and Interferences in a reexamination proceeding or an interference proceeding, the time periods set forth herein are subject to the provisions of §1.136. See §1.550(c) for extensions of time to appeal or commence a civil action in a reexamination proceeding. See §1.645(a) for extensions of time to appeal or commence a civil action in an interference. An examiner-in-chief, upon a showing of excusable neglect, may extend the time for seeking judicial review of a decision of the Board of Patent Appeals and Interferences in an interference case when a request is untimely filed after expiration of the time prescribed by this section.

* * * * *

29. Section 1.378 is amended by revising the section heading and paragraph (a) to read as follows:

§1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent.

(a) The Commissioner may accept the payment of any maintenance fee due on a patent after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable and if the surcharge required by §1.20(m) is paid as a condition of accepting payment of the maintenance fee. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the conditions set forth in 35 U.S.C. 41(c)(2).

* * * * *

30. Section 1.431 is amended by revising paragraphs (b)(3)(iii) and (c) and by adding new paragraphs (d) and (e) to read as follows:

§1.431 International application requirements.

* * * * *

(b)(3) * * *

(iii) The name of the applicant, as prescribed (note § §1.421-1.424);

(c) Payment of the basic portion of the international fee (PCT Rule 15.2) and the transmittal and search fees (§1.445) may be made in full at the time international application papers required by paragraph (b) of this section are deposited or within one month thereafter. Failure to make full payment within one month of the deposit of the international application papers required by paragraph (b) of this section will result in the fees being charged to the International Bureau under the provisions of paragraph (d) of this section and PCT Rule 16 bis.

(d) The United States Receiving Office will charge to the International Bureau in accordance with PCT Rule 16 bis and will consider as having been timely paid:

(1) the transmittal fee, the basic fee portion of the international fee, or the search fee where these fees have not been fully paid by the applicant within one month of the date of deposit of the international application, and

(2) the destination fee, or the amount necessary to cover all the designations made in the request which have not been paid by the applicant within one year from the priority date.

(e) The International Bureau will notify applicant of any amount charged under paragraph (d) of this section and invite the applicant to pay directly to the International Bureau within one month from the date of the notification, the amount charged, augmented by a surcharge of 50%, provided the surcharge will not be less and will not be more, than the amounts indicated in the Schedule of Fees appended to the PCT Rules. If the payment needed to cover the transmittal fees, the basic fee, the search fee, one designation fee and the surcharge is not timely made to the International Bureau, the International Bureau will notify the Receiving Office which will declare the international application withdrawn under PCT Article 14(3)(a). If the applicant makes timely payment of the fees referred to in the previous sentence, but the amount paid is not sufficient to cover all the designation fees, the Receiving Office will declare any designations not paid withdrawn under PCT Article 14(3)(b) in accordance with PCT Rule 16 bis. 2(c).

31. Section 1.445 is amended by revising paragraphs (a)(4) and (5) and adding paragraph (a)(6) to read as follows:

§1.445 International application filing and processing fees.

(a) * * *

(4) The national fee, that is, the amount set forth as the filing fee under §1.16(a) through (d) credited one time only by an amount of $250 where an international search fee of $500.00 has been paid on the corresponding international application to the United States Patent and Trademark Office as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee, a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single $500.00 international search fee.

(5) Surcharge for filing the national fee or oath or declaration later than 20 months from the priority date $100.00

(6) For filing an English translation of an international application later than 20 months after the priority date (§1.61(b)).. $20.00

* * * * *

32. Section 1.446 is amended by revising the section heading and paragraph (b) to read as follows:

§1.446 Refund of international application filing and processing fees.

* * * * *

(b) Refund of a portion of the search fee toward payment of the national fee may be made one time to the extent set forth in §1.445(a)(4) if requested at the time of paying the national fee provided that a $500 search fee has been paid.

* * * * *

33. Section 1.451 is amended by revising paragraphs (b) and (c) to read as follows:

§1.451 The priority claim and priority document in an international application.

* * * * *

(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office or in a separate letter filed in the Receiving Office not later than 16 months after the priority date, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal to the International Bureau (PCT Article 8 and PCT Rule 17). The fee for preparing a certified copy is stated in §1.19(a)(3) and (b)(1).

(c) If a certified copy of the priority document is not submitted together with the international application on filing, or, if the priority application was filed in the United States and a request and appropriate payment for preparation of such a certified copy do not accompany the international application on filing or are not filed within 16 months of the priority date, the certified copy of the priority document must be furnished by the applicant to the International Bureau or to the United States Receiving Office within the time limit specified in PCT Rule 17.1(a).

34. Section 1.461 is amended by deleting paragraph (b) and by revising paragraph (a) to read as follows:

§1.461 Procedures for transmittal of record copy to the International Bureau.

(a) Transmittal of the record copy of the international application to the International Bureau shall be made by the United States Receiving Office.

(b) (reserved)

* * * * *

Feb. 14, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

[1053 OG 10]

MISCELLANEOUS

(124) Hearings Before the Board of Appeals

In recent years the backlog of cases awaiting decision by the Board of Appeals has grown substantially. The average time elapsing between filing of the examiner's answer and final disposition is now roughly 17 months.

Intensive effort by the Board and greater use of acting examiners-in-chief have been successful in raising the number of dispositions, but at the same time the number of appeals continues to grow. Thus in the first six months of 1974, the Board disposed of 1,193 appeals but received 1,915; in the last half of the year the Board disposed of 1,993 appeals but received 2,179.

In this connection it will be helpful if applicants and attorneys will dispense with oral hearings except where unusual circumstances are present which make a hearing important to the decision. Appeals submitted on brief receive just as careful consideration as those in which oral argument is presented, nor are any implications drawn as to the merits of the appeal from failure to request a hearing. It has been the Board's experience that in the ordinary case the hearing is not of great value in arriving at the ultimate decision.

Appellants are also encouraged to review cases where a hearing has already been requested, with a view to withdrawing the request if it is not necessary. It is particularly important that the Board be given timely notice whenever circumstances prevent the applicant or his representative from the appearing at a scheduled hearing.

Rule 194 (37 CFR 1.194) limits oral argument to thirty minutes unless otherwise ordered by the Board. It has been the Board's experience, however, that effective arguments can be presented in less than thirty minutes in most cases. Effective immediately the Board will be informing appellants in the notices of hearing mailed to them that oral argument will be limited to *twenty minutes* unless otherwise ordered before the hearing begins.

The assistance of the public will be appreciated.

C. MARSHALL DANN,
Mar. 20, 1975. *Commissioner of Patents and Trademarks.*

[933 O.G. 1010]

(125) **Hearings Before the Board of Patent Appeals and Interferences**

During the past twelve months there has been an increase in the number of *ex parte* appeals pending before the Board of Patent Appeals and Interferences. In order to address the growing backlog of pending appeals, it is necessary to make the most effective use of the time of Examiners-in-Chief hearing appeals. Significant amounts of time are spent by Examiners-in-Chief preparing for the hearings. In an effort to conserve the time spent in the preparation for hearing by Examiners-in-Chief, notice is hereby given that *subsequent* to the confirmation of attendance at oral hearing, requests for postponement of the hearing will not be granted in the absence of a showing of dramatically unusual circumstances.

SAUL I. SEROTA,
June 6, 1985. *Acting Chairman Board of Patent Appeals and Interferences.*

[1056 OG 44]

(126) **Hearings Before the Board of Patent Appeals and Interferences**

Rule 1.3 (37 CFR 1.3) provides that:

"[a]pplicants and their attorneys or agents are required to conduct their business with the Patent and Trademark Office with decorum and courtesy."

Notice is hereby given that persons attending hearings before the Board of Patent Appeals and Interferences are advised that the above provision also applies to dress. If an attendee at a hearing is not appropriately dressed, the attendee may be requested to leave the hearing room.

SAUL I. SEROTA,
June 6, 1985. *Acting Chairman Board of Patent Appeals and Interferences.*

[1056 OG 45]

(127) **Access to Interference Settlement Agreements by Government Agencies**

Under the provisions of 35 U.S.C. §135(c), a party to an interference filing a copy of a settlement agreement may request that the copy be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person on a showing of good cause.

In order to provide the parties with a record of the inspection of such agreements by Government agencies, a representative of an agency will henceforth be required to present a written request, similar to the following, for each interference in which the inspection and/or copying of the agreement(s) is desired:

Date:_____

To: Clerk, Board of Patent Interferences

Pursuant to the provisions of 35 U.S.C. 135(c), please permit .....
the bearer(s) of this letter, to [ ] inspect and/or [ ] copy the settlement agreement(s) filed in Interference No. .....
The information gained from such inspection and/or copying will be kept in confidence and will not be disclosed to any other person except for official investigative or law enforcement purposes.

.....
Name, Title

.....
Agency

The request will be placed in the folder containing the copy of the agreement, where it may be inspected by the parties or their authorized representatives.

This procedure will be applicable only to inspection or copying by the representatives of Government agencies, since no person other than a representative of a Government agency, or of a party, will be granted access to a copy of an interference settlement agreement which is kept separate from the interference file except by way of a petition for access thereto, see M.P.E.P. §1002.02(k), item 2, and the parties to the interference are normally provided with copies of any such petition.

LUTRELLE F. PARKER,
June 5, 1978. *Acting Commissioner of Patents and Trademarks.*

[972 O.G. 2]

(128) **Accessibility of Non-Final Discovery Opinions and Orders Issued by the Board of Patent Interferences**

A number of inquiries have been received from the patent bar and other interested persons relating to discovery practice under 37 C.F.R. §1.287 before the Board of Patent Interferences. The inquiries indicate a need for making available to the public non-final Board opinions, including concurring and dissenting opinions, as well as orders, made in the adjudication of discovery matters before the Board. While non-final opinions need not be made available to the public [5 U.S.C. §552(a)(2)], in order to satisfy the need, copies of non-final opinions issued by the Board will be kept in a file in the Service Branch of the Board in the U.S. Patent and Trademark Office

(Crystal Plaza, Building 6, Eleventh Floor, Room 1116, Arlington, Virginia). Opinions in the file may be reviewed by the public during normal business hours (8:30 A.M. to 5:00 P.M.). Copies of opinions may be made by the public on reproducing equipment in the Service Branch with tokens at a cost of $0.15 per page or copies may be ordered at a cost of $0.30 per page [37 C.F.R. 1.21(b)].

In view of the provisions of 35 U.S.C. §122 and 37 C.F.R. §1.11(a), a consent will be obtained by the Office from all parties in an interference before an opinion issued in connection with the interference is placed in the file if the interference file is not otherwise available to the public. Preliminary indications are that the parties and their counsel generally consent.

In order to obtain optimum dissemination of the information contained in the file, opinions placed therein will be indexed according to specific topics. Copies of the index will be updated from time to time as the need occurs. Specific questions relating to the index and file may be directed to the Patent Interference Examiners.

The initial index is as follows:

Index

1.00 Discovery in general [37 C.F.R. §1.287]
- 1.10 Requests and service under §1.287(a)
- 1.20 Requests under §1.287(b)
- 1.30 Motions for additional discovery under §1.287(c)
  - 1.31 Related to derivation
  - 1.32 Related to abandonment, suppression, and concealment
  - 1.33 Related to inequitable conduct
  - 1.34 Other
- 1.40 Motions under §1.287(d)(1)
- 1.50 Action under §1.287(d)(2)
- 1.60 Agreements under §1.287(e)

C. MARSHALL DANN,
Mar. 5, 1976 *Commissioner of Patents and Trademarks.*

[944 O.G. 2098]

(129) **Petitions in Interference Cases From Decisions of The Board on Motions for Additional Discovery Under 37 CFR 1.287(c)**

Notwithstanding the clear statement in the last sentence of 37 CFR 1.287(c), parties in interference cases continue to seek review by the Commissioner of decisions of the Board of Patent Interferences on motions for additional discovery under 37 CFR 1.287(c). Review of such a decision can be had along with judicial review of a decision on the question of priority. *Cochran* v. *Kresock,* 530 F.2d 385, 188 USPQ 553 (CCPA 1976); *Comstock* v. *Kroekel,* 200 USPQ 548 (Comm'r. Pat. 1978). Accordingly, parties in interference cases are reminded that a petition to the Commissioner should not be filed for the purpose of seeking review of an interlocutory decision of the Board granting or denying a motion for additional discovery under 37 CFR 1.287(c). See also *Fenstermacher* v. *Daugherty,* 189 USPQ 536 (Comm'r. Pat. 1975) and *Sheehan* v. *Doyle,* 202 USPQ 783 (Comm'r. Pat. 1978). The filing of such a petition only serves to delay the ultimate disposition of interferences on the merits. The filing of a paper for the mere purpose of delay is not permitted by the rules. 37 CFR 1.346. The Board of Patent Interferences will no longer grant a stay of proceedings pending disposition of a petition to the Commissioner seeking review of a decision of the Board on a motion for additional discovery under 37 CFR 1.287(c).

SIDNEY A. DIAMOND,
Apr. 17, 1980. *Commissioner of Patents and Trademarks.*

[994 O.G. 28]

(130) **Commissioner's Notice Practice under 37 CFR §1.225(b)**

When a junior party to an interference is placed under an order to show cause why judgment should not be entered pursuant to 37 CFR §1.225 and requests final hearing to contest an ancillary matter, either the junior or senior party may file a motion for permission to take testimony pursuant to 37 CFR §1.225(b) and the last sentence of 37 CFR §1.251(b). However, some uncertainty has arisen as to when the motion must be filed and what it must contain.

Motion by the Junior Party

When a junior party is placed under an order to show cause and the junior party desired a testimony period, the motion for permission to take testimony should be filed preferably before the time set for responding to the order to show cause. The motion will be considered timely, however, if filed no later than twenty (20) days after the Board of Patent Interferences enters an order setting final hearing.

There are instances where the requested testimony relates to priority. For example, the junior party may occasionally desire to take testimony to establish prior inventive acts alleged in a preliminary statement even though those acts are subsequent to the senior party's effective filing date. This situation arises when (1) the junior party's preliminary statement dates fall between the filing date of the senior party's involved application and the filing date of a prior application accorded to the senior party, (2) the junior party has unsuccessfully contended in a motion under 37 CFR §1.231 that the senior party should not be accorded benefit of the prior application, and (3) the junior party has requested final hearing to review the examiner's adverse decision on the motion.

When the requested testimony includes priority testimony, the motion to take testimony may be *pro forma, viz.,* a simple request that a testimony period be set to obtain priority evidence. Normally, however, when a junior party seeks to take testimony under 37 CFR §1.225(b), the proposed testimony relates solely to ancillary matters. When the requested testimony relates solely to ancillary matters, the motion must comply with the provisions of 37 CFR §1.225(b)—a showing of good cause must be submitted and a *pro forma* request would not be sufficient. See generally Rivise & Caesar, *Interference Law and Practice,* Vol. III, §§376–377 (1947).

Motion by the Senior Party

There are occasions when a senior party may desire a testimony period even if the junior party does not request a testimony period. See e.g., *Lorenian v. Winstead,* 127 USPQ 501 (Bd.Int. 1959). When a senior party desires a testimony period, the motion for permission to take testimony should be filed promptly after the Board of Patent Interferences enters an order setting final hearing, but in no event later than twenty (20) days after entry of such order. A senior party should take into account the fact that a junior party will begin preparation of a brief for final hearing after receiving notice of the briefing schedule. Therefore, a senior party should not be permitted to let a junior party expend unnecessary energy preparing a brief for final hearing if the senior party plans to move to take testimony.

As in the case of a junior party, a request to take testimony relating to priority may be *pro forma.* A request to take testimony limited to ancillary matters must comply with 37 CFR §1.225(b). See 37 CFR 1.251(b), last sentence.

RENE D. TEGTMEYER,
June 15, 1981. *Acting Commissioner of Patents and Trademarks.*

[1008 O.G. 9]

(131).

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
Docket No. 40104-4151

Patent Interference Proceedings

Agency: Patent and Trademark Office, Commerce
Action: Final rule.
Summary: The Patent and Trademark Office is amending its rules of practice in patent interference cases. The Patent Law Amendments Act of 1984, Public Law 98-622, §§201-202, abolished the Board of Appeals and Board of Patent Interferences and created in their place a Board of Patent Appeals and Interferences which will decide *ex parte* appeals from adverse decisions of patent examiners and interference cases. The Patent and Trademark Office, through this amendment of its rules, intends to provide guidance on the procedures the Office will be following in conducting interference cases before the Board of Patent Appeals and Interferences.
Date: The effective date of these rules is: Feb. 11, 1985.
For Further Information Contact: Fred E. McKelvey by telephone at (703) 557-4025 (if no answer, message may be left at 703-557-4103) or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: The Patent and Trademark Office (PTO) conducts interference proceedings to determine who as between two or more applicants for patent or one or more applicants and one or more patentees is the first inventor of a patentable invention. Heretofore, the determination was made by a Board of Patent Interferences. The Patent Law Amendments Act of 1984, Public Law 98-622, §§201-202 combines the Board of Appeals and the Board of Patent Interferences into a single Board of Patent Appeals and Interferences (Board) and authorizes the Board to consider priority and patentability in interference cases.

In view of the discretion given the Board under 35 U.S.C. §135(a), as amended by Public Law 98-622 ("The Board . . . . may determine questions of patentability . . . ."), these new rules will apply to all interferences declared on or after Feb. 11, 1985, except in special circumstances, such as: (1) interferences which are declared as a result of a motion made in another interference which was pending before the Board before Feb. 11, 1985, (e.g., an interference declared as a result of a motion under 37 CFR §1.231 to declare an additional interference); (2) an interference related to another interference declared prior to Feb. 11, 1985 (e.g., an interference involving a method of using a compound where an interference involving the same parties and the compound was declared prior to Feb. 11, 1985); and (3) an interference reinstituted after having been dissolved under the old rules (37 CFR §§1.201-1.288)(e.g., an interference reinstituted after having been dissolved as a result of a motion under 37 CFR §1.231 to dissolve on the grounds of unpatentability where the applicant has obtained allowance of the claims held unpatentable in the decision on motions).

Through these new rules the PTO seeks to improve interference procedure so that the rights of parties in interferences are determined at an early date and the overall process of examining patent applications which become involved in interferences is simplified.

In order to obtain maximum input from the public prior to formally proposing revisions to the rules, on Aug. 1, 1983, the PTO published in the *Federal Register* an advance notice of proposed rulemaking for interference rules. 48 F.R. 34836-34855. The advance notice was not published in the *Official Gazette*. Twenty-one written comments were received. All comments are available for public inspection in Rm. 10C01, Crystal Gateway II, 1225 Jefferson Davis Hwy., Arlington, Va.

On Jan. 30, 1984, the PTO published in the *Federal Register* a notice of proposed rulemaking. 49 F.R. 3768-3802. The notice was also published in the *Official Gazette* on Feb. 14, 1984. 1039 O.G. 11; 1039 TMOG 11. The notice also appeared in the Bureau of National Affairs' Patent, Trademark & Copyright Journal, Vol. 27, pp. 312-346 (Feb. 2, 1984), hereinafter 'BNA." Eighteen written comments were received in response to the notice of proposed rulemaking. The comments are analyzed herein. A hearing was held on May 15, 1984. Three individuals appeared at the hearing. Oral comments made at the hearing are also analyzed herein. The eighteen comments and copy of the transcript of the hearing are available for public inspection in Rm. 10C01, Crystal Gateway II, 1225 Jefferson Davis Hwy., Arlington, Va.

The new rules for interferences are set forth herein in §§1.601 through 1.688. The new rules replace entirely the present interference rules (37 CFR §§1.201 through 1.288). A "six hundred" number series is used for the new rules. The use of a six hundred number series for the new rules will permit interested individuals to research published decisions (e.g., F.2d, USPQ) or computerized legal research services (e.g., LEXIS) citing the new rules.

An index of the headings of §§1.601-1.688 and a table correlating 37 CFR §§1.201 through 1.288 (old rules) to §§1.601 through 1.688 (new rules) appears below.

Under the new rules, interferences are decided by the Board. The Board has jurisdiction to determine (1) priority of invention, (2) patentability of any claim corresponding to a count both as to applicants and patentees, (3) any issue of interference-in-fact as to any count, and (4) any other issue necessary to resolve the interference. The rules permit an interference to be declared on the basis of a single count defining one patentable invention in interferences involving patents as well as applications. The Board also has jurisdiction to determine whether counts are patentably distinct.

When an interference is declared, an examiner-in-chief is assigned to handle the interlocutory stages of the interference. An examiner having full signatory authority determines when one or more applications or one or more applications and a patent claim the same patentable invention. When the examiner makes such determination, the examiner will forward any involved applications or patents to the Board. The examiner will designate, at the time the involved applications or patents are sent to the Board, the claims of any application and patent which correspond to each count. The examiner-in-chief can subsequently designate additional claims to correspond to a count. The examiner-in-chief assigned to handle the interference will issue a notice to the parties declaring the interference.

The object of the interference will be to resolve all controversies as to all interfering subject matter defined by one or more counts. A final decision in the interference will determine who, if anyone, is entitled to claims which correspond to a count. Any decision adverse to an applicant by the Board will constitute a final refusal by the PTO to that applicant of the claims involved. Any decision adverse to a patentee constitutes cancellation from the patent of the claims involved.

Any decision by the Board on any issue is binding on the examiner and would govern further proceedings in the PTO.

The designation of a single examiner-in-chief to handle the interlocutory phases of an interference will permit better management of, and control over, interference proceedings. The rules provide that times be set and the examiner-in-chief exercise control over proceedings in the interference such that pendency of the interference before the Board from declaration to final decision will not normally exceed 24 months. The examiner-in-chief should be familiar with the history of the interference and will be accessible to counsel for the parties. For example, an examiner-in-chief, where appropriate, may conduct telephone conference calls to obtain agreement of the parties on the setting of schedules. The rules also permit the examiner-in-chief to hold hearings in the PTO or by conference telephone call in order to expedite or settle interlocutory issues in interferences. Any hearing can be transcribed by a court reporter under

such conditions as an examiner-in-chief or the Board deems appropriate. The examiner-in-chief, where appropriate, will be available by phone to rule on the admissibility of evidence in the event parties encounter unusual problems during the taking of depositions. The examiner-in-chief will also be available to rule on requests for production of documents which take place during cross-examination. Oral orders given by phone will be followed by written orders.

At the time an interference is declared, the examiner-in-chief will set a time for filing preliminary motions. The preliminary motions can include:

(1) A motion for judgment on the ground that a claim corresponding to the count is not patentable to an opponent under 35 U.S.C. §§102, 103, 112, or any other provision of law.

(2) A motion for judgment on the ground that there is no interference-in-fact between the claims of the opponents in the interference.

(3) A motion to add or to substitute new counts, to amend a claim corresponding to a count, to designate an application or patent claim to correspond to a count, to designate an application or patent claim as not corresponding to a count, or to require an applicant to present a claim to be designated to correspond to a count.

(4) A motion to substitute another application for the application involved in the interference or to add an application for reissue to the interference.

(5) A motion to declare another interference.

(6) A motion to be accorded the benefit of an earlier application or to attack the benefit of an earlier application which has been accorded to an opponent.

Other motions are permitted as necessary, such as a motion to amend the count and/or a claim corresponding to the count in response to a preliminary motion for judgment.

Oppositions to motions are permitted if filed within a time set by the examiner-in-chief. Replies are also authorized. Papers which are not authorized by the rules or requested by the examiner-in-chief can be returned unfiled.

A preliminary statement will be filed prior to or concurrently with the preliminary motions outlined above.

Motions will be decided by an examiner-in-chief, who may consult with an examiner on questions of patentability which have not previously been decided by the examiner. The examiner-in-chief may grant a motion, deny a motion, defer consideration on the merits of a motion to final hearing, or take such other action with respect to a motion as may be appropriate, e.g., dismiss an entirely inappropriate motion.

At the time preliminary motions are decided, the preliminary statements will be opened. If a decision on a motion or inspection of the preliminary statement results in entry of an order to show cause why a judgment should not be entered, the party against whom judgment might be entered can request a hearing before the examiner-in-chief and two additional examiners-in-chief. The decision will govern further proceedings. If adverse, the decision will constitute a final agency action. If favorable, the interference will proceed before the examiner-in-chief.

After preliminary motions are decided and assuming judgment does not result, a period may be set for the parties to file motions for additional discovery. The scope of the additional discovery would be the same as under current practice.

When a time period is set for filing discovery motions, or after discovery has closed, the examiner-in-chief will set a period for taking testimony. Any party wishing to take the testimony of a witness can elect to have the testimony of the witness taken by deposition or presented by affidavit. A transcript of an *ex parte* deposition can be used as an affidavit. If an affidavit is presented, the opposing party may then cross-examine on oral deposition. Any redirect will take place at the deposition. The party calling the witness is responsible for securing a court reporter and filing the transcript and record associated with cross-examination of its witness.

In the event a party needs testimony from a third-party who will not appear unless a subpoena is issued, including a hostile witness, direct and cross-examination testimony may be taken on oral deposition. The rules provide that prior authorization of an examiner-in-chief is required before a party can take testimony by issuance of a subpoena under 35 U.S.C. §24. The rule thus adopts the policy of *Sheehan* v. *Doyle*, 513 F.2d 895, 898, 185 USPQ 489, 492 (1st Cir.), *cert. denied*, 423 U.S. 874 (1975), and *Sheehan* v. *Doyle*, 529 F.2d 38, 40, 188 USPQ 545, 546 (1st Cir.), *cert. denied*, 429 U.S. 870 (1976), *rehearing denied*, 429 U.S. 987 (1976), and rejects the policy announced in *Brown* v. *Braddick*, 595 F.2d 961, 967, 203 USPQ 95, 101-102 (5th Cir. 1979). Testimony obtained in other proceedings, e.g., another interference or an infringement action, may be used if otherwise admissible.

Under the rules, the Federal Rules of Evidence are made applicable to interferences, except for those portions which relate to criminal actions, juries, and other matters not relevant to interferences. Those portions include:

(1) Rule 103(c).
(2) Rule 104(c), (d), and (e).
(3) The language in Rule 105 which reads "and instruct the jury accordingly."
(4) Rule 201(g).
(5) The language in Rule 403 which reads "or misleading the jury."
(6) Rule 404(a)(1) and (2).
(7) The word "charge" in Rule 405(b).
(8) The language "or criminal" and proviso (ii) in Rule 410.
(9) Rule 412.
(10) Rule 606.
(11) The language "whether by an accused" and "other" in the last sentence of Rule 607.
(12) The provisions of the first sentence of Rule 611 (c) relating to leading questions on direct examination do not apply to statements made in an affidavit authorized to be filed under the rules.
(13) The language "Except as otherwise provided in criminal proceedings by section 3500 of title 18, United States Code" and "except that in criminal cases when the prosecution elects not to comply, the order shall be one striking the testimony or, if the court in its discretion determines that the interests of justice so require, declaring a mistrial" in Rule 612.
(14) Rule 614.
(15) Rule 706.
(16) The language "excluding, however, in criminal cases matters observed by police officers and other law enforcement personnel" and "and against the Government in criminal cases" in Rule 803(8).
(17) The language "but not including, when offered by the Government in a criminal prosecution for purposes other than impeachment, judgments against persons other than the second" in Rule 803(22).
(18) The language "prosecution for homicide or in a" in Rule 804(b)(2).
(19) The language "A statement tending to expose the declarant to criminal liability and offered to exculpate the accused is not admissible unless corroborating circumstances clearly indicate the trustworthiness of the statement" in Rule 804(b)(3).
(20) Rule 1101(a), (b), (d)(2), (d)(3), and (e).

The examiner-in-chief will set a period for filing the record and briefs. Oral hearings normally will be held before a panel consisting of the examiner-in-chief assigned to the interference and two other examiners-in-chief. The panel will render a final decision in the interference. Requests for reconsideration are permitted.

In rendering its decision, the Board will consider only that evidence which can be made available to the public under §1.11(a). Accordingly, the Board will not consider evidence which is submitted under a protective order issued by a court if release of that evidence under §1.11(a) would be inconsistent with the terms of the court's order.

A final decision of the Board is reviewable in the U. S. Court of Appeals for the Federal Circuit or an appropriate U. S. district court. Any reviewing court can review all aspects of the decision including patentability, priority, and all relevant interlocutory orders, such as denials of discovery.

Except as noted above, these new rules are applicable to all interferences declared on or after Feb. 11, 1985. Interferences declared prior to Feb. 11, 1985, continue to be governed by the prior rules (37 CFR §§1.201-1.288 (July 1, 1984)) and will be decided by personnel of the Board of Patent Appeals and Interferences. Actions presently taken by a patent interference examiner or examiners of interferences will be taken by an examiner-in-chief.

An anticipated time schedule for a two-party interference follows.

Sections 1.601 through 1.688 would introduce new concepts in interference practice. Some of the more significant aspects of the rules, as well as some of the new concepts, include the following.

Section 1.1 codifies a practice announced in a Commissioner's Notice of Nov. 28, 1983, "Mailing of Papers to the PTO in Patent Interference Proceedings," 1037 *Official Gazette* 25 (Dec. 27, 1983) and authorizes a party in an interference to direct mail to the PTO intended for the interference to a special box in the Mail Room for interference papers. Amendments copying claims which are filed prior to the time an interference is declared would continue to be addressed in accordance with §1.5(a).

Section 1.5 provides that when a paper filed in the PTO concerns an interference which has been declared, it should state the names of the parties (e.g., *Smith* v. *Jones*) and the number of the interference. The name of the examiner-in-chief assigned to the interference (§1.610) and the name of the party filing the paper should also appear conspicuously on the first page of the paper. Identification of the examiner-in-chief assigned to the interference and the name of the party filing the paper will greatly assist the Board in its administration of interference cases.

Section 1.8 excludes from the certificate of mailing practice any paper in an interference which an examiner-in-chief orders filed by hand or "Express Mail." Papers filed by "Express Mail" in an interference case would be addressed as set forth in §1.1(e).

Section 1.11 sets forth when the interference file would become available to the public without a petition for access.

Section 1.48 provides that when a request is filed to correct inventorship of an application involved in an interference, the request shall comply with the requirements of §1.48 and shall be accompanied by a motion under §1.634. The request will be placed in the file of the application and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.138 permits an attorney or agent to sign and file a paper abandoning an application involved in an interference.

Section 1.196 more clearly sets forth the options open to an applicant when the Board makes a new ground of rejection under §1.196(b). The last sentence of paragraph (b)(1) is intended to clarify practice in certain situations. One situation involves a case where (1) the Board affirms an examiner's rejection of a "first" claim and makes a new ground of rejection under §1.196(b) of a "second" claim, (2) the applicant elects to have further proceedings before the examiner on the new ground of rejection on the second claim, and (3) those proceedings do not result in a further appeal (i.e., the second claim is allowed or is cancelled). The last sentence of §1.196(b)(1) permits the Board to make its decision final on the first claim. By making its decision final on the first claim, the time period under §1.304 for seeking judicial review begins. Another situation involves a case where (1) the Board affirms an examiner's rejection of a claim over reference A, (2) the Board also enters a new ground of rejection of the claim over reference B, (3) the applicant elects to have further proceedings before the examiner on the new ground of rejection, and (4) those proceedings result in applicant overcoming the new ground of rejection based on reference B. The last sentence of §1.196(b)(1) permits the Board to make its decision final as to its affirmance of the rejection over reference A. Entry of an order making its decision final would start the period under §1.304 for seeking judicial review. Thus, an applicant does not forego possible judicial review by electing further prosecution before the examiner when a new ground of rejection is made by the Board. Under paragraph (d), a recommendation by the Board that an allowed claim be rejected is binding on the examiner (rather than being a mere recommendation as was previously the case) in the absence of (1) an amendment, (2) showing of facts by affidavit or other appropriate evidence, or (3) both. The last sentence of paragraph (d) is intended to clarify that the Board may enter a final decision in certain circumstances. When the Board affirms an examiner's rejection of a "first" claim and makes a recommendation under paragraph (d) as to a "second" claim, the application is remanded to the examiner and the Board's decision affirming the rejection of the first claim is not a final decision. If proceedings before the examiner on remand do not result in a further appeal (i.e., the second claim is allowed or is cancelled), the Board may then make its decision final as to the first claim. By making its decision final as to the first claim, the time period under §1.304 for seeking judicial review starts. Thus, an applicant does not forego judicial review on the first claim merely because of the remand proceedings with respect to the second claim.

Most of the current interference rules (§§1.201 through 1.247 and 1.251 through 1.288) are removed, but will continue to govern interferences declared prior to Feb. 11, 1985. Section 1.248 is retained and governs service of papers in all patent cases except interference proceedings. Section 1.646 governs service of papers in interference proceedings.

Under §1.292, it is intended to modify public use proceedings only to the extent that public use and on sale issues which arise during an interference shall be raised by a preliminary motion under §1.633(a). There is no fee for filing the motion in the interference, but a fee would continue to be necessary when a petition is filed for institution of a public use proceeding apart from an interference. When a public use proceeding is instituted apart from an interference, the Commissioner will designate an appropriate official to conduct the proceeding including the setting of times for taking testimony under §§1.671 through 1.685. There will continue to be no "additional discovery" (see §§1.687 and 1.688) in public use proceedings.

Section 1.304 makes clear that the provisions of §1.136 do not apply when judicial review is sought of a decision of the Board of Patent Appeals and Interferences in (1) a reexamination proceeding or (2) an interference. An extension of time to seek judicial review of a decision of the Board in a reexamination proceeding may be obtained under §1.550(c). An extension of time to seek judicial review of a decision of the Board in an interference proceeding may be obtained under §1.645. Section 1.304 also establishes an "excusable neglect" standard for seeking judicial review in interference cases when a notice of appeal is untimely filed or a civil action is not timely commenced. The excusable neglect standard is intended to be the same as the standard under Rule 4(a)(5) of the Federal Rules of Appellate Procedure.

Section 1.322 provides that when a request for a certificate of correction under 35 U.S.C. §254 (PTO mistake) is filed to make a correction of a patent involved in an interference, the request shall comply with the requirements of §1.322 and shall be accompanied by a motion under §1.635. The request will be placed in the file of the patent and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.323 provides that when a request for a certificate of correction under 35 U.S.C. §255 (patentee's mistake) is filed to make a correction of a patent involved in an interference, the request shall comply with the requirements of §1.323 and shall be accompanied by a motion under §1.635. The request will be placed in the file of the patent and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.324 provides that when a request is filed to correct inventorship of a patent involved in an interference, the request shall comply with the requirements of §1.324 and shall be accompanied by a motion under proposed§1.634. The request will be placed in the file of the patent and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.565 provides that when a patent is involved in an interference proceeding and a reexamination proceeding, both the interference proceeding and the reexamination proceeding *will* continue unless one of the proceedings is stayed. A stay of a reexamination proceeding will be made by the Commissioner. A stay of an interference proceeding will be made by an examiner-in-chief, subject to review by the Commissioner. Section 1.565 continues the present practice of the Commissioner determining in every instance whether to stay a reexamination proceeding when the patent involved in the reexamination proceeding is sought to be reissued or becomes involved in litigation.

Under §1.601, the rules shall be construed to secure the just, speedy, and inexpensive determination of interferences. Section 1.601 defines various terms used in Subpart E including "additional discovery," "affidavit," "case-in-chief," "case-in-rebuttal," "count," "effective filing date," "filing date," "interference," "interference-in-fact," "junior party," "lead" attorney, "party," "phantom count," "same patentable invention," "separate patentable invention," "senior party," "sworn," and "United States." "Affidavits" include declarations under 35 U.S.C. §25 and 37 CFR §1.68 as well as statutory declarations under 28 U.S.C. §1746. The definition of "United States" is the same as the definition of United States in 35 U.S.C. §100(c).

The definition of "interference" permits an interference between one or more applications and one or more patents. Thus, these new rules follow the policy of Wilson v. Yakel, 1876 Dec. Comm'r. Pat. 245 (Comm'r.Pat. 1876) and, to the extent inconsistent therewith, do not follow the policy announced in *Touval* v. *Newcombe*, 194 USPQ 509 (Comm'r.Pat. 1976). However, in view of the statutory requirement for the presence of at least one application in an interference, if an applicant were to concede priority or otherwise be terminated from an interference involving only one application and more than one patent, the interference would have to be terminated for lack of subject matter jurisdiction unless one or more of the patentees filed an application for reissue which could be added to the interference under §1.633(h). A "count" defines interfering subject matter. An interference may have two counts only if the second count defines a "separate patentable invention" from the first count. The reason the second count must define a separate patentable invention is to permit the PTO to lawfully issue separate patents to different parties in an interference when a single party does not prevail as to all counts. A "separate patentable invention" is defined in §1.601(n):

> Invention (A) is a "separate patentable invention" with respect to invention (B) when invention (A) is new (35 U.S.C. §102) and non-obvious (35 U.S.C. §103) in view of invention (B) assuming invention (B) is prior art with respect to invention (A).

Section 1.602(a) continues the present PTO practice (37 CFR §1.201(c)) of not declaring or continuing an interference between (1) two or more applications owned by the same party or (2) an application and a patent owned by a single party unless good cause is shown. A corporation and its wholly-owned subsidiary are considered a "single party" within the meaning of §1.602(a). Under prior rules, when a patent and an application involved in an interference became commonly owned, the interference was not "dissolved." Rather, the PTO required that the interference be terminated with a judgment. *Chillas* v. *Weisberg*, 1928 Dec. Comm'r. Pat. 24 (Comm'r.Pat. 1928); *Malone* v. *Toth*, 202 USPQ 397 (Comm'r.Pat. 1978); and *Morehouse* v. *Armbruster*, 209 USPQ 514 (Comm'r.Pat. 1980). Under these new rules, all interferences, including those involving only applications, will be terminated with a judgment. As noted in *Chillas* v. *Weisberg*, *supra* at 25 "the common owner can allow a judgment against the junior party to be rendered by default or it can file a concession of priority from one party to the other." Paragraphs (b) and (c) of §1.602 continue the present PTO practice (37 CFR §1.201(c)) of requiring a party to notify the PTO of any real party in interest not apparent on the face of the notice declaring the interference (see §1.611) or of any change in the real party in interest after the interference is declared. The PTO needs to know the identity of any real party in interest to properly enforce §1.602(a) and to enable an examiner-in-chief to determine whether recusal is necessary or appropriate. A new requirement in paragraphs (b) and (c), not present in 37 CFR §1.201(c), is a 20-day time period for advising the PTO of the identity of, or any change in, the real party in interest.

Under §§1.601(f), 1.603, and 1.606, the interfering subject matter would be defined by one or more counts. All the claims in an application or a patent which define the same patentable invention as a count would be designated to correspond to the count. An interference would have two counts only if one count defines a separate patentable invention from another count. Under §1.606, at the time an interference is declared between a patent and an application, a count would not be narrower in scope than any patent claim which corresponds to the count. Thus, a patent claim would be presumed, subject to a motion under §1.633(c), not to embrace "separate patentable inventions." Some examples illustrate how the PTO would formulate counts and designate patent and application claims to correspond to counts.

Example 1: Application A contains patentable claim 1 (engine). Application B contains patentable claim 8 (engine). If an interference is declared, there would be one count (engine). Claim 1 of application A and claim 8 of application B would be designated to correspond to the count.

Example 2: Application C contains patentable claims 1 (engine) and 2 (6-cylinder engine). Application D contains patentable claim 8 (engine). An engine and a 6-cylinder engine define the same patentable invention. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application C and claim 8 of application D would be designated to correspond to the count.

Example 3: Application E contains patentable claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application F contains patentable claims 11 (engine) and 12 (8-cylinder engine). Claims 1 and 2 of application E and claims 11 and 12 of application F define the same patentable invention. Claim 3 of application E defines a separate patentable invention from claims 1 and 2 of application E and claims 11 and 12 of application F. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application E and claims 11 and 12 of application F would be designated to correspond to the count. Claim 3 of application E would not be designated to correspond to the count.

Example 4: Application G contains patentable claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application H contains patentable claims 11 (engine) and 15 (engine with a platinum piston). Claims 1 and 2 of application G and claim 11 of application H define the same patentable invention. Claim 3 of application G and claim 15 of application H define a separate patentable invention from claims 1 and 2 of application G and claim 11 of application H. If an interference is declared, there would be two counts:

Count 1 (engine) and Count 2 (engine with a platinum piston). Claims 1 and 2 of application G and claim 11 of application H would be designated to correspond to Count 1. Claim 3 of application G and claim 15 of application H would be designated to correspond to Count 2.

Example 5: Application J contains patentable claims 1 (engine), 2 (combination of an engine and a carburetor) and 3 (combination of an engine, a carburetor, and a catalytic converter). Application K contains patentable claims 31 (engine), 32 (combination of an engine and a carburetor), and 33 (combination of an engine, a carburetor, and an air filter). The engine, combination of an engine and carburetor, and combination of an engine, carburetor, and air filter define the same patentable invention. The combination of an engine, carburetor, and catalytic converter define a separate patentable invention from engine. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application J and claims 31, 32, and 33 of application K would be designated to correspond to the count. Claim 3 of application J would not be designated as corresponding to the count.

Example 6: The PTO will continue to follow *Waldeck v. Lewis*, 120 USPQ 88 (Comm'r.Pat. 1955). Application L contains patentable claims 1 (Markush group of benzene or toluene), 2 (benzene), and 3 (toluene). Application M contains patentable claim 11 (benzene). Benzene and toluene define the same patentable invention. If an interference is declared, there would be one count (Markush group of benzene or toluene). Claims 1, 2, and 3 of application L and claim 11 of application M would be designated to correspond to the count.

Example 7: Application N contains patentable claim 1 (benzene). Application P contains patentable claim 11 (xylene). Benzene and xylene define the same patentable invention. If an interference is declared, there would be one count (benzene or xylene). Claim 1 of application N and claim 11 of application P would be designated to correspond to the count.

Example 8: Application Q contains patentable claims 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application R contains patentable claim 33 (benzene). If benzene and chloroform define the same patentable invention and an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of application Q and claim 33 of application R would be designated to correspond to the count. If chloroform defines a separate patentable invention from benzene and an interference is declared, there would be one count (benzene). Claims 1 and 2 of application Q and claim 33 of application R would be designated to correspond to the count. Claim 3 of application Q would not be designated to correspond to the count.

Example 9: Application S contains patentable claims 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application T contains patentable claims 11 (Markush group of benzene or chloroform), 12 (benzene), and 13 (chloroform). If benzene and chloroform define the same patentable invention and an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of application S and claims 11, 12, and 13 of application T would be designated to correspond to the count. The PTO will continue to adhere to *Becker v. Patrick*, 47 USPQ 314 (Comm'r.Pat. 1939). An interference can have two counts only if one count defines a separate patentable invention from another count. If chloroform defines a separate patentable invention from benzene and an interference is declared, there would be two counts: Count 1 (benzene) and Count 2 (chloroform). Claims 1 and 2 of application S and claims 11 and 12 of application T would be designated to correspond to Count 1. Claims 1 and 3 of application S and claims 11 and 13 of application T would be designated to correspond to Count 2.

Example 10: Patent A contains claim 1 (engine). Application U contains patentable claim 11 (engine). If an interference is declared, there would be one count (engine). Claim 1 of patent A and claim 11 of application U would be designated to correspond to the count.

Example 11: Patent B contains claims 1 (engine) and 2 (6-cylinder engine). Application V contains patentable claim 8 (engine). An engine and a 6-cylinder engine define the same patentable invention. If an interference is declared, there would be one count (engine). Claims 1 and 2 of patent B and claim 8 of application V would be designated to correspond to the count.

Example 12: Patent C contains claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application W contains patentable claims 11 (engine) and 12 (8 cylinder engine). Claims 1 and 2 of patent C and claims 11 and 12 of application W define the same patentable invention. Claim 3 of patent C defines a separate patentable invention from claims 1 and 2 of patent C and claims 11 and 12 of application W. If an interference is declared, there would be one count (engine). Claims 1 and 2 of patent C and claims 11 and 12 of application W would be designated to correspond to the count. Claim 3 of patent C would not be designated to correspond to the count.

Example 13: Patent D contains claim 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application X contains patentable claims 11 (engine) and 15 (engine with a platinum piston). Claims 1 and 2 of patent D and claim 11 of application X define the same patentable invention. Claim 3 of patent D and claim 15 of application X define a separate patentable invention from claims 1 and 2 of patent D and claim 11 of application X. If an interference is declared, there would be two counts: Count 1 (engine) and Count 2 (engine with a platinum piston). Claims 1 and 2 of patent D and claim 11 of application X would be designated to correspond to Count 1. Claim 3 of patent D and claim 15 of application X would be designated to correspond to Count 2.

Example 14: Patent E contains claims 1 (Markush group of benzene or toluene), 2 (benzene), and 3 (toluene). Application Y contains patentable claim 11 (benzene). Benzene and toluene define the same patentable invention. If an interference is declared, there would be one count (Markush group of benzene or toluene). Claims 1, 2, and 3 of patent E and claim 11 of application Y would be designated to correspond to the count.

Example 15: In this example, the claims of patent E and application Y in Example 14 are reversed. Patent E contains claim 1 (benzene). Application Y contains patentable claims 11 (Markush group of benzene or toluene), 12 (benzene), and 13 (toluene). If an interference is declared, the count would be the same as the count in Example 14—(Markush group of benzene or toluene). Claim 1 of patent E and claims 11, 12, and 13 of application Y would be designated to correspond to the count.

Example 16: The PTO will continue to follow cases such as *Case v. CPC International, Inc.*, 730 F.2d 745, 221 USPQ 196 (Fed. Cir. 1984); *cert. denied*, 105 S.Ct. 233 (1984); *Aelony v. Arni*, 547 F.2d 566, 192 USPQ 486 (CCPA 1977); and *Nitz v. Ehrenriech*, 537 F.2d 539, 190 USPQ 413 (CCPA 1976), and declare interferences where interfering patent and application claims are mutually exclusive provided the claims define the same patentable invention. Patent F contains claim 1 (benzene). Application Z contains patentable claim 11 (xylene). Benzene and xylene define the same patentable invention. If an interference is declared, there would be one count (benzene or xylene). Claim 1 of patent F and claim 11 of application Z would be designated to correspond to the count.

Example 17: It will be the practice of the PTO under §1.606 to initially declare interferences with counts which are identical to or broader than patent claims which correspond to the counts. A single patent claim would be presumed, subject to a motion under §1.633(c), not to define separate patentable inventions. Patent G contains claim 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application AA contains patentable claim 33 (benzene). If an interference is declared, initially it would be presumed by the PTO, subject to a later motion under §1.633(c), that benzene and chloroform define the same patentable invention. There would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of patent G and claim 33 of application AA would be designated to correspond to the count. If a party believes benzene and chloroform define separate patentable inventions, that party could file a motion under §1.633(c) to redefine the count and the claims corresponding to the counts.

Example 18: Patent H contains claims 1 (Markush group of benzene or chloroform), 2, (benzene), and 3 (chloroform). Application AB contains patentable claims 11 (Markush group of benzene or chloroform), 12 (benzene), and 13 (chloroform). Benzene and chloroform initially would be presumed, subject to a motion under §1.633(c), to define the same patentable invention, because they are recited as a Markush group in a single patent claim. If an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of patent H and claims 11, 12, and 13 of application AB would be designated to correspond to the count. If a party believes benzene and chloroform define separate patentable inventions, the party could move under §1.633(c) to substitute a count (benzene) for (Markush group of benzene or chlcrcfcrm) and to add a count (chloroform). See Example 36.

Example 19: Under §1.606, the PTO will continue to follow the practice announced in *Ex parte Card and Card*, 1904 Dec.Comm'r.Pat. 383 (Comm'r.Pat. 1904). Patent J contains claim 1 (method of mixing, grinding, and heating). Application AC ccntains patentable claim 8 (method of mixing and heating) and does not disclose or claim a grinding step. In the context of the inventions disclosed in patent J and application AC, a method of mixing, grinding, and heating is the same patentable invention as a method of mixing and heating. Under current practice, it wculd be said that "grinding" is an "immaterial" limitation in claim 1 of patent J. Under §1.606, the fact application AC does not disclose grinding would not preclude an interference. If an interference is declared, there would be one count (method of mixing and heating). Claim 1 of patent J and claim 8 of application AC would be designated to correspond to the count.

Under §1.605, timely filing of an amendment presenting a claim suggested by the examiner for purposes of an interference would stay *ex parte* proceedings in the application in which the claim is presented pending a determination by the examiner of whether an interference will be declared. Also under §1.605(a), when an examiner suggests a claim, the applicant will be required to copy verbatim the suggested claim. At the time the suggested claim is copied, however, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the copied claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared.

Under §1.607(b), when an applicant seeks an interference with a patent, e.g., by copying claims from the patent, examination of the application including any appeal would be handled with special dispatch within the PTO. "Special dispatch" would be construed to be the same as special dispatch in a reexamination proceeding. See 35 U.S.C. §305.

Under §1.608, the PTO will continue current practice (37 CFR §1.204(c)) of requiring an applicant seeking to provoke an interference with a patent to submit evidence which demonstrates that the applicant is *prima facie* entitled to a judgment relative to the patentee. Evidence would be submitted only when the earlier of the filing date or effective filing date of the application is more than three months after the earlier of the filing date or effective filing date under 35 U.S.C. §120 of the patent. The evidence may relate to patentability and need not be restricted to priority. When the evidence (1) consists of prior printed publications and patents and (2) shows that the claims of the application are not patentable, the claims in the application would be rejected and the applicant could file a request for reexamination of the patent.

Section 1.609 sets forth what an examiner shall forward to the Board when an interference is declared. For the most part, §1.609 continues current practice. However, under §1.609(b)(3), the examiner would identify all claims in an application which the examiner believes are patentable over the proposed counts. Thus, a claim in an application would either correspond to a count or would be indicated as being patentable over the count. For instance, in Example 3, *supra*, the examiner would indicate that (1) claims 1 and 2 of application E and claims 11 and 12 of application F correspond to the count and (2) claim 3 of application E defines a separate patentable invention from the count.

Under §1.610, each interference will be declared by an examiner-in-chief. The examiner-in-chief enters all interlocutory orders in the interference. As necessary, another examiner-in-chief may act in place of the examiner-in-chief assigned to the interference. At the discretion of the examiner-in-chief assigned to the interference, a panel of two or more examiners-in-chief may enter an interlocutory order. The examiner-in-chief will set times and control proceedings such that pendency of the interference normally will not exceed 24 months. Under §1.610(d), the examiner-in-chief is authorized to hold conferences. Any conference can be by a telephone conference call. Under §1.610(e), an examiner-in-chief is authorized to determine a proper course of conduct for any situation not specifically covered by the rules.

Under §1.611(a), the PTO will normally notify each party at its correspondence address (37 CFR §1.33(a)) that an interference is declared. This practice will save the PTO the administrative burden of sending multiple notices as is required by the present rules. Under §1.611(a), the PTO could, in an appropriate circumstance, also send a notice to a patentee or an assignee. An appropriate circumstance for sending an additional notice would be a situation where a patent was issued on the basis of an application filed under 37 CFR §1.47. The matters to be specified in a notice declaring an interference are set out in §1.611(c). One item to be set out is the "order of the parties," meaning the order in which the parties will take testimony. If Jones is the junior party and Smith is the senior party, the order of the parties is: Jones v. Smith. The order of the parties may change as a result of the granting of a motion under §1.633(d), (f), or (g). Under §1.611(d), the notice declaring the interference may also set dates for filing preliminary statements, notices that preliminary statements have been filed, motions under §1.633, oppositions to those motions, and replies to the oppositions. Alternatively, an examiner-in-chief may set those times in a separate order before or after consultation with counsel for the parties. Under §1.611(e), the PTO may place a notice in the *Official Gazette* each time an interference is declared involving a patent. The notice would make it easier for patent practitioners throughout the country to determine whether a given patent is or has been involved in an interference.

Under §1.612, except for affidavits under §1.131 and any evidence and explanation under §1.608(b) filed separate from an amendment, each party shall have access to the file of every other party after an interference is declared. The files of applications and patents involved in an interference will be maintained if the Service Branch of the Board of Patent Appeals and Interferences for inspection and copying. Any explanatiCn which is filed as part of an amendment or an amendment which discusses details contained in an affidavit under §1.131 would not be sealed under §1.612(a). Thus, §1.612(a) continues the practice discussed in *Moorman v. Martin*, 103 USPQ 273 (Comm'r.Pat. 1950) and Calvert, *An Overview of Interference Practice*, 62 J. Pat. Off. Soc'y. 290, 293 (1980). Under§1.612(b), each party will have access to an opponent's affidavit under §1.131 or an opponent's evidence and explanation under §1.608(b) when a decision is rendered on motions under §1.633. Under §1.612(c), a party would be required to serve any evidence and ex-

planation under §1.608(b) if an order to show cause is issued under §1.617(a) and the party responds to the order under §1.617(b). Under §1.612(d), the parties may agree to exchange copies of their respective files.

Under §1.613(a), when a party has appointed more than one attorney or agent of record, the party may be required to designate a "lead" attorney or agent. A lead attorney or agent would be a registered attorney or agent of record who is primarily responsible for prosecuting an interference on behalf of a party and is the individual whom an examiner-in-chief can contact to set times and take other action in the interference. Section 1.613(b) continues the practice of not permitting the same attorney or agent to represent two or more parties in an interference except as permitted by Chapter 1, see e.g., §1.344. Under §1.613(c), an examiner-in-chief can make an appropriate inquiry to determine whether an attorney or agent should be disqualified from representing a party. A final decision to disqualify an attorney or agent is made by the Commissioner under 35 U.S.C. §32.

Section 1.614 specifies when the Board gains jurisdiction over an interference. The section also indicates when an interference becomes a contested case within the meaning of 35 U.S.C. §24. A remand to the examiner is authorized and may be useful in certain situations, such as, when a party moves under §1.633(c) to add a proposed count which is broader than any count in an interference. Alternatively, an examiner-in-chief would be able to obtain informal opinions from examiners during the course of an interference. Nothing in the rules, however, is intended to authorize informal conferences between an examiner-in-chief and an examiner with respect to the merits of an application before the Board in an *ex parte* appeal from an adverse decision of the examiner.

Section 1.616 permits an examiner-in-chief or the Board to impose appropriate sanctions against a party who fails to comply with the rules or with an order entered in the interference. Paragraphs (a) through (e) set forth some of the possible sanctions which can be entered. The particular sanction to be entered would depend on the facts of a given case and ordinarily would not be entered prior to giving the affected party an opportunity to present its views. An individual examiner-in-chief could not impose a sanction granting judgment inasruch as entry of a judgment requires action by the Board. See §1.610(a). A party desiring sanctions imposed against an opponent could move under §1.635 for entry of an order imposing sanctions.

Section 1.617 retains summary judgment proceedings in those cases where a junior party applicant is required to file evidence and an explanation under §1.608(b). To avoid summary judgment, the junior party applicant must establish that it is *prima facie* entitled to judgment relative to the senior party patentee. For the most part, practice under §1.617 will be the same as the current practice under 37 CFR §1.228. The major changes would be the following: (1) A *prima facie* case could be based on patentability as well as priority. (2) A stricter standard would be imposed for presenting additional evidence after entry of an order to show cause. Under current practice (37 CFR §1.228), additional evidence may be submitted with a response to an order to show cause "when a showing in excuse of . . . [its] omission from the original" showing is made. The "good cause" showing required by §1.617(b) imposes a stricter standard than was required under the prior rules. The stricter standard is necessary to encourage applicants copying claims from a patent to better prepare their initial showings under proposed §1.608(b). Under current practice, the Board of Patent Interferences has found that substantial time is lost in issuing orders to show cause based on an inadequate initial showing only to have an adequate showing made with the response to the order to show cause. Under the "good cause" standard, ignorance by a party or counsel of the provisions of the rules or the substantive requirements of the law would not constitute good cause. (3) When an interference involves more than two parties, all opponents would be permitted to participate in summary judgment proceedings. Thus, the new rules overrule *Chan* v. *Akiba* v. *Clayton*, 189 USPQ 621 (Comm'r.Pat. 1975). (4) Currently, an applicant must file two copies of its initial showing under 37 CFR §1.204(c). Under §1.608(b), a party would file only one copy of the showing. However, any party responding to an order to show cause would be required to serve a copy of its initial showing under §1.608(b) with any response to the order to show cause. (5) A single examiner-in-chief may order an interference to proceed after issuance of an order to show cause under§1.608(b) and the filing of a response by an applicant under §1.617(b). Only the Board, however, may enter a summary judgment. See §1.617(b).

Under §1.618, the PTO has authority to return to a party any paper presented in an interference which is not authorized by, or is not in compliance with the requirements of, Subpart E. When an improper paper is filed, a party may be given an opportunity to file a proper paper under such conditions as an examiner-in-chief may deem appropriate. Two examples of improper papers are: (1) replies to replies which are not authorized by the rules and (2) papers presented which have attached thereto a paper previously filed in the interference.

Sections 1.621 through 1.629 govern preliminary statements which continue to be required in interference cases.

Under §1.621, a preliminary statement can be signed by any individual having knowledge of the facts (e.g., the inventor) or by an attorney or agent of record. Permitting an attorney or agent of record to sign a preliminary statement eliminates unnecessary mailing of papers between parties and their attorney or agent.

Under §1.622, the preliminary statement would identify the inventor who made the invention defined by each count. If the inventor identified in the preliminary statement is not an inventor named in the application or patent involved in the interference, a motion under §1.634 must be diligently filed to correct inventorship.

Sections 1.623, 1.624, and 1.625 respectively set out the allegations which should be made in, and the attachments which should accompany, a preliminary statement when (1) the invention was made in the United States, (2) the invention was made abroad and was introduced into the United States, and (3) derivation by an opponent from a party is to be an issue.

Section 1.626 permits a party to file a preliminary statement which states that the party only intends to rely on the filing date of an earlier United States or foreign application. Ordinarily, a junior party who fails to file a preliminary statement is not entitled to access to any other preliminary statement filed (see §1.631(b)). Section 1.626 would permit a junior party who only intends to rely on an earlier application to have access to any opponent's preliminary statement.

Section 1.628 sets out how an error in a preliminary statement may be corrected.

Section 1.629 sets out the effect of a preliminary statement. A party who fails to file a preliminary statement will not be permitted to prove (1) that the party made the invention defined by a count prior to the party's filing date or (2) that an opponent derived the invention from the party.

Under §1.631, preliminary statements normally will be opened for inspection when an examiner-in-chief decides preliminary motions filed under §1.633. A junior party who does not file a preliminary statement is not entitled to access to a preliminary statement of any other party. When an interference is terminated before preliminary statements are opened, any preliminary statement which has been filed will be returned unopened to the party who submitted the statement.

Under §1.632, a notice must be filed by a party who intends to argue that an opponent abandoned, suppressed, or concealed an actual reduction to practice. 35 U.S.C. §102(g). A party will not be permitted to brief (§1.656) or argue at final hearing (§1.654) that an opponent abandoned, suppressed, or concealed an actual reduction to practice unless the notice is timely filed. A notice is timely if filed within ten (10) days of the close of the testimony-in-chief period of an opponent. While a party has the burden of proving that an opponent abandoned, suppressed, or concealed, the burden may be discharged on the basis of the opponent's evidence alone. *Shindelar* v. *Holdeman*, 628 F.2d 1337, 207 USPQ 112 (CCPA 1980). See also *Correge* v. *Murphy*, 705 F.2d 1326, 217 USPQ 753 (Fed. Cir. 1983); *Horwath* v. *Lee*, 564 F.2d 948, 195 USPQ 701 (CCPA 1977); and *Peeler* v. *Miller*, 535 F.2d 647, 190 USPQ 117 (CCPA 1976). Under current practice where notice is not required, it is possible that a party may learn for the first time that abandonment, suppression, or concealment is an issue when the party receives an opponent's brief at final hearing. See *Kluq* v. *Wood*, 212 USPQ 767, 771 n. 2 (Bd.Pat.Int. 1981). At that point, it is often too late to reopen proceedings in the interference. The purpose of requiring the notice under §1.632 is to make the parties and the Board aware during the interlocutory stage of an interference that abandonment, suppression, or concealment may be an issue in the interference. Early notice will permit the parties to ask for and the examiner-in-chief to set appropriate testimony periods for a party to present evidence related to abandonment, suppression, and concealment, particularly in those cases where long unexplained delays tend to prove the allegation of suppression or concealment. Early notice will also eliminate the need for the party moving to reopen the testimony period. *Klug* v. *Wood, supra.*

Under §1.633, a party may file preliminary motions for judgment, to redefine the interference, to substitute a different application in the interference, to declare an additional interference, to be accorded the benefit of an earlier application, to attack benefit previously accorded an opponent, or to add a reissue application to the interference. The motions are called "preliminary motions" in order to distinguish the motions from other motions which might be filed during the course of an interference. The preliminary motions would replace motions currently authorized by 37 CFR §1.231.

Under §1.633(a), a motion to dissolve would be replaced with a motion for judgment. A party can file a motion for judgment on the ground that an opponent's *claim* corresponding to a count is unpatentable to the opponent. With two exceptions, unpatentability can be based on prior art (35 U.S.C. §§102, 103), insufficiency of disclosure (35 U.S.C. §112, first paragraph), indefiniteness of claims (35 U.S.C. §112, second paragraph), double patenting, estoppel, or any other ground which would support a holding that claims corresponding to a count are not patentable. The two exceptions are (1) priority of invention of the subject matter of a count by the moving party as against any opponent and (2) derivation of the subject matter of a count by the opponent from the moving party. The two exceptions are directed to issues which are traditional "priority" issues, e.g., which inventor made the invention defined by a count first or, when derivation is an issue, who made the invention. Resolution of those "priority" issues almost always requires the taking of testimony. A motion for judgment, however, would be proper when a party believed an individual not involved in the interference made the invention defined by the count prior to an opponent in the interference, but subsequent to the moving party. Thus, a patentability issue, such as that raised under 35 U.S.C. §102(g) in *Sutter Products Co.* v. *Pettibone Mulliken Corp.*, 428 F.2d 639, 166 USPQ 100 (7th Cir. 1970), properly could be raised with a motion for judgment under§1.633(a). Derivation by an opponent from an individual not involved in the interference could also be raised under §1.633(a).

Under §1.633(b), a party could move for a judgment when the party believes there is no interference-in-fact. A motion for judgment on the ground of no interference-in-fact is only proper under one of three conditions: (1) when an interference involves designs, (2) when the interference involves plant applications or a plant application and plant patent, or (3) when no claim of a party which corresponds to a count is identical to any claim of an opponent which corresponds to that count. An example illustrates when a motion under §1.636(b) is proper.

Example 20: Application AD contains patentable claim 1 (6-cylinder engine). Application AE contains patentable claim 3 (8-cylinder engine). An interference is declared with a single count (6 or 8-cylinder engine). Claim 1 of application AD and claim 3 of application AE are designated to correspond to the count. Applicant AD believes that a 6-cylinder engine is a "separate patentable invention" (see §1.601(n)) from an 8-cylinder engine. Applicant AD would file a motion under §1.633(b) for a judgment on the ground of no interference-in-fact stating why a 6-cylinder engine is patentably distinct from an 8-cylinder engine. If the Board ultimately agrees with applicant AD, a patent could issue to AD containing claim 1 of application AD and a second patent could issue to AE containing claim 3 of application AE.

Under §1.633(c), a party may move to redefine interfering subject matter. One way to redefine interfering subject matter would be to add or substitute a count. When a party seeks to add a count, the party is required to demonstrate that the proposed count to be added is directed to a "separate patentable invention" from every other count in the interference.

A motion may be filed to amend an application claim which has already been designated to correspond to a count. See §1.633(c)(2). Such a motion might be filed when a party believes an application claim designated to correspond to a count is unpatentable and the amended claim is believed to be patentable.

An applicant may move to add a claim to the applicant's application and to designate the claim to be added to correspond to a count. See §1.633(c)(2). Such a motion may be filed when the applicant discloses specific subject matter which is not claimed, would like to claim the subject matter, and wants the subject matter involved in the interference.

Another way to redefine interfering subject matter would be to designate a claim as corresponding or not corresponding to a count. See §1.633(c)(3) and (c)(4). Examples 21 and 22 illustrate this latter point.

Example 21: Application AF contains patentable claim 1 (engine). Patent K contains claims 3 (engine) and 5 (6-cylinder engine). Claim 1 of application AF and claim 3 of patent K are designated to correspond to the count. Applicant AF believes a 6-cylinder engine is the same patentable invention (see §1.601(n)) as engine. Applicant AF would file a motion under §1.633(c)(3) to designate claim 5 of patent K as corresponding to the count. If the motion is granted and applicant AF prevails in the interference, judgment would be entered against patentee K and both claims 3 and 5 of patent K would be cancelled under 35 U.S.C. §135(a).

Example 22: Application AG contains patentable claim 1 (engine). Patent L contains claims 3 (engine) and 5 (8-cylinder engine). An interference is declared with one count (engine). Claim 1 of application AG and claims 3 and 5 of patent L are designated to correspond to the count. Patentee L believes that an 8-cylinder engine defines a "separate patentable invention" (see §1.601(n)) from engine. Patentee L should file a motion under §1.633(c)(4) to designate claim 5 of patent L as "not corresponding" to the count. If the motion is granted and an adverse judgment is entered against patentee L, only claim 3 would be cancelled from the patent pursuant to 35 U.S.C. §135(a).

A motion to redefine the interfering subject matter may also request that an opponent who is an applicant be required to add a claim to the opponent's application and to designate the claim to correspond to a count. See §1.633(c)(5). Such a motion might be filed when a party sees that the opponent discloses, but does not claim, subject matter which the party believes should be involved in the interference.

Section 1.633(i) would continue present practice (37

CFR §1.231) of allowing a party to move to redefine the subject matter of the interference or substitute a different application when an opponent moves for judgment (see §1.633(a) and (b)) or to attack benefit (see §1.633(g)).

Paragraph (j) of §1.633 will permit an opponent to move for benefit when a party moves to add or substitute a count. Thus, when a motion to add a count is filed by a party and an opponent wants benefit of an earlier application in the event the motion to add is granted, the opponent should file a motion under §1.633(j) to be accorded benefit. The mere fact that the opponent had been accorded benefit of an earlier application when the interference was declared does not mean the opponent will be accorded benefit as to some other count which may be added on motion of some other party.

Section 1.634 authorizes a motion to correct inventorship in an application (see §1.48) or a patent (see §1.324) involved in an interference.

Section 1.635 authorizes the filing of motions other than those specified in §§1.633 or 1.634. Motions filed under §1.635 would be referred to as "miscellaneous motions" to distinguish from "preliminary motions" under §1.633. Instances where a miscellaneous motion would be filed include motions to correct an error in a preliminary statement, to extend time for taking action or to seek judicial review, to obtain permission to proceed under 35 U.S.C. §24, or to obtain additional discovery.

Section 1.636 sets out the times within which a motion would be filed.

Section 1.637 sets out the content of motions. In prior interference practice, parties and their counsel have had difficulty meeting all the "unwritten" requirements for motions under 37 CFR §1.231. Section 1.637 is quite specific in setting out the requirements for each type of motion, particularly the preliminary motions. By setting out with specificity the requirements for each type of motion, it is intended to minimize disposition of motions on technicalities. A vast majority of the comments in response to the advanced notice published in the *Federal Register* on Aug. 1, 1983, commenting on then proposed §1.637 were in favor of the requirements for motions being specifically set out in the regulations.

Section 1.638 authorizes oppositions to motions. Any opposition would have to identify any material fact in dispute. A reply to an opposition would be authorized for all motions. A reply to a reply is not authorized.

Section 1.639 sets forth the evidence which may accompany a motion, opposition, or reply. Every material fact alleged in a motion, opposition, or an reply would have to be supported by proof. Section 1.639(b) authorizes affidavits to be used as proof for any motion. The affidavit may later be used by a party during the testimony period (see §§1.671(e) and 1.672(b)). When a party believes that testimony is necessary to decide a motion under §1.633 or §1.634, the party would have to describe the nature of the testimony needed. If an examiner-in-chief agrees that testimony is needed, appropriate interlocutory relief would be granted and testimony would be ordered.

Example 23: An interference is declared with one count between application AH and application AJ. Applicant AH files a preliminary motion under §1.633(c)(1) to redefine the interference by adding a second count. In order to succeed, applicant AH must show that the proposed count to be added is directed to a "separate patentable invention" (see §1.601(n)) from the count already in the interference. In the motion, applicant AH sets forth in detail the testimony which would be required to prove that the subject matter of the proposed count is to a separate patentable invention from the subject matter of the count in the interference. Applicant AJ opposes the motion on the ground that the proposed and present counts define the "same patentable invention" (see §1.601(n)). An examiner-in-chief determines that a material fact is in dispute and that applicant AH has established testimony is needed to properly rule on the motion. Under the circumstances, the motion would be deferred to final hearing and a testimony period would be ordered. The questions of (1) whether the proposed and present counts define the same patentable invention and (2) priority would be decided at final hearing.

Under §1.640, an examiner-in-chief would decide all motions. A hearing could be held on a motion in the discretion of an examiner-in-chief. Where appropriate, an examiner-in-chief could consult with an examiner on a question of patentability which arises in the first instance in the interference. Consultation would not be necessary where the examiner had already ruled on the patentability question which comes before the examiner-in-chief or the Board. Moreover, nothing in §1.640 authorizes conferences between examiners-in-chief and examiners in *ex parte* appeals under 35 U.S.C. §134 from an adverse decision of an examiner. A party is entitled to request reconsideration of a decision on a motion by a single examiner-in-chief. An opposition to a request for reconsideration could not be filed unless ordered by an examiner-in-chief or the Board, but the decision by the single examiner-in-chief would not normally be modified unless an opposition has been requested. The request for reconsideration would be acted on by a panel of the Board consisting of at least three examiners-in-chief, one of whom would normally be the examiner-in-chief who decided the motion. Several comments were received in response to the advance notice questioning why the examiner-in-chief who decided the motion would form part of the panel deciding the request for reconsideration. The decision to propose, and now adopt, a regulation which would permit the examiner-in-chief who decided the motion to participate in the decision on reconsideration was made after careful balancing of all the factors involved. It could have been proposed to permit the examiner-in-chief to individually decide the request for reconsideration. However, it is believed that parties in interference cases would feel that their requests for reconsideration are being more fully considered if more than one person considers their request. The two additional examiners-in-chief would be able to consult with the examiner-in-chief most familiar with the case, but would be able to control the decision on reconsideration by a majority vote. Use of the examiner-in-chief who decided the motion and two additional examiners-in-chief would (1) minimize delay which would occur if three new examiners-in-chief were used who were unfamiliar with the record and (2) minimize the possibility that reversible error occurred if only the examiner-in-chief who decided the motion also individually decided the request for reconsideration.

Under §1.644, petitions to the Commissioner are authorized in interference cases under certain restricted conditions. Petitions in interferences have been the source of substantial delay. Section 1.644 attempts to minimize those delays. Section 1.644 authorizes a petition to the Commissioner from a decision of an examiner-in-chief or a panel when the examiner-in-chief or the panel shall be of the opinion (1) that the decision involves a controlling question of procedure or an interpretation of a rule as to which there is a substantial ground for a difference of opinion and (2) that an immediate decision on petition would materially advance the ultimate termination of the interference. The standard is intended to be analogous to that of a district court certifying a question to a court of appeals under 28 U.S.C. §1292(b). A petition could be filed seeking to invoke the supervisory authority of the Commissioner. However, the petition could not be filed prior to entry of judgment and could not relate to the merits of priority or patentability or the admissibility of evidence under the Federal Rules of Evidence. A petition could also be filed seeking waiver of a rule. A fee of $120 would be charged for each petition and for each request for reconsideration of a decision on petition. Any petition would be decided on the record made before the examiner-in-chief or the Board and additional evidence could not be submitted with the petition. An opposition could not be filed unless ordered by the Commissioner. Where reasonably possible, service of a petition would have to be such that delivery is accomplished within one day. Service by hand or "Express Mail" would comply with this requirement.

Section 1.645 permits a party to file a motion to seek an extension of time to take action in an interference or to seek judicial review. The motion would have to be filed within sufficient time to actually reach an examiner-in-chief prior to expiration of the time for taking action. Under §1.645, a moving party would not be able to assume that a motion for an extension of time would be granted. Under §1.610(d)(6), a request for an extension of time could be made orally and an appropriate order would then be entered thus eliminating considerable paper work. The order would be the written record of the request and decision. See §1.2. Extensions of time have caused numerous delays in interference cases. Under present interference practice, some delays are caused because attorneys and agents on many occasions unexpectedly receive orders setting times. Under the new practice, attorneys and agents can expect times to be set for filing preliminary statements, preliminary motions, motions for additional discovery, testimony, and briefs after a conference call. It is expected that use of conference calls will permit an examiner-in-chief and attorneys or agents for parties to set a time schedule which is mutually satisfactory. A motion to extend time would not be granted unless a party shows good cause. The use of conference calls would allow schedules to be set before orders setting time are entered and therefore the press of other business which arises after the examiner-in-chief and attorneys and agents agree to times would not normally be considered good cause.

Under §1.647, when a party relies on a document in a foreign language, an English language translation of the document and an affidavit attesting to the accuracy of the translation would be required. The rule would apply to any document, including evidence submitted with motions, foreign applications for which a party seeks benefit, testimony, and exhibits introduced in evidence during testimony.

Under §1.651, after a decision is entered on preliminary motions, an examiner-in-chief would set times for filing motions for additional discovery and for taking testimony. Any motion for additional discovery would be to obtain answers to interrogatories, requests for admissions, and documents and things necessary for a party to prepare its case-in-chief.

Section 1.653 sets out what shall be in the record to be considered by the Board at final hearing. The record would continue to be printed or typed on paper 8-1/2 Requested: Requested: by 11Requested: Requested: in size. Accordingly, when a party files an affidavit, the party should use 8-1/2Requested: Requested: by 11Requested: Requested: paper for the affidavit.

Section 1.654 continues the practice of holding a final hearing where oral argument may be presented by all parties. No fee would be charged for appearing at oral argument at final hearing in an interference.

Section 1.655 specifies the matters which can be considered in rendering a final decision. Patentability is an issue which may be raised. The Board can also consider whether any interlocutory order was manifestly erroneous or an abuse of discretion, although any interlocutory order would be presumed to be correct and burdcn of showing error shall be on the party attacking the order. This last procedural provision permits the Board to correct any manifest error before a party seeks judicial review of an interlocutory order along with judicial review of the Board's final decision.

Section 1.656 sets forth the requirements for briefs for final hearing. In large measure, §1.656 follows the requirements of Rule 28 of the Federal Rules of Appellate Procedure. An original and three copies of a brief is required. Under §1.656(h), if a party wants the Board in rendering its final decision to rule that any evidence is inadmissible, the party must file with its opening brief an original and three copies of a motion to suppress the evidence. Any previous objection to the admissibility of evidence is waived unless the motion to suppress is filed. This procedural provision makes clear that an objection to the admissibility of evidence must be renewed at final hearing and will be considered by the Board in rendering its final decision. When a junior party fails to file a brief, an order can be issued requiring the junior party to show cause why failure to file the brief should not be taken as a concession of priority.

Under §1.658 the Board would enter a final decision. The decision can (1) enter judgment, in whole or in part, (2) remand the interference to an examiner-in-chief, or (3) take further action not inconsistent with law. A judgment as to a count shall state whether or not each party is entitled to a patent containing claims which correspond to the count. When judgment is entered as to all counts, the decision of the Board is considered final for the purpose of judicial review. Section 1.658(c) defines the doctrine of interference estoppel as it is to be applied in the PTO after an interference is terminated. The definition of interference estoppel is designed to encourage parties in interference cases to settle as many issues as possible in one proceeding. Section 1.658(c) creates an estoppel both as to senior and junior parties unlike the present practice (37 CFR §1.257) which limits estoppel in some instances to junior parties. An estoppel would *not* apply with respect to any claims which correspond, or which properly could have corresponded, to a count as to which the party was awarded a favorable judgment. A few examples illustrate how estoppel would be applied.

Example 24: Junior party applicant AL and senior party applicant AK both disclose separate patentable inventions "A" and "B" and claim only invention A in their respective applications. An interference is declared with a single count to invention A. Neither party files a preliminary motion (see §1.633(c)(1)) to add a count to invention B. Judgment as to all of AL's claims corresponding to the sole count is awarded to junior party applicant AL. Senior party applicant AK would be estopped to thereafter obtain a patent containing claims to invention B, because applicant AK failed to move to add a count to invention B in the interference. Junior party applicant AL would not be estopped to obtain a patent containing claims to invention B.

Example 25: In this example, the facts are the same as in Example 24 except that judgment is awarded as to all AK's claims corresponding to the count to senior party applicant AK. Junior party applicant AL would be estopped to obtain a patent containing claims to invention B in the interference. Senior party applicant AK would not be estopped to obtain a patent containing claims to invention B.

Example 26: Junior party applicant AM and senior party applicant AP both disclose separate patentable inventions "C", "D", and "E" and claim inventions C and D in their respective applications. An interference is declared with two counts. Count 1 is to invention C and Count 2 is to invention D. Neither party files a preliminary motion to add a proposed Count 3 to invention E. Judgment as to all AM's claims corresponding to Counts 1 and 2 is awarded to junior party applicant AM. Senior party applicant AP would be estopped to thereafter obtain a patent containing claims to invention E, because applicant AP failed to move to add a count to invention E in the interference. Junior party applicant AM would not be estopped to obtain a patent containing claim to invention E.

Example 27: In this example, the facts are the same as in Example 26 except that judgment is awarded as to all AP's claims corresponding to Counts 1 and 2 to senior party applicant AP. Junior party applicant AM would be estopped to obtain a patent containing claims to invention E, because applicant AM failed to move to add a count to invention E in the interference. Senior party applicant AP would not be estopped to obtain a patent containing claims to invention E.

Example 28: In this example, the facts are the same as in Example 26 except that judgment is awarded on all of AM's claims corresponding to Count 1 to junior party

applicant AM and judgment is awarded on all AP's claims corresponding to Count 2 to senior party applicant AP. Both parties would be estopped to obtain a patent containing claims to invention E, because neither moved to add a count to invention E during the interference. Assume that junior party AM could have properly moved under §1.633(f) to be accorded the benefit of an earlier application, but did not do so during the interference. Junior party AM would not be estopped in subsequent *ex parte* prosecution from asking for benefit of the earlier application as to the invention defined by Count 1. Accordingly, if the examiner were to reject junior party AM's claim corresponding to Count 1 on the basis of some newly discovered prior art, junior party AM could properly antedate the prior art by seeking the benefit under 35 U.S.C. §120 of the earlier application. Thus, even though junior party AM was a "losing party" as to Count 2 (an adverse judgment as to junior party AM's claims corresponding to Count 2 having been entered), junior party AM was awarded a favorable judgment (§1.658(c)) as to Count 1. Junior party AM would be estopped in subsequent *ex parte* prosecution from attempting to be accorded the benefit of the earlier application as to the invention of Count 2.

Example 29: Applicant AQ discloses and claims invention "F." Applicant AR discloses and claims separate patentable inventions "F" and "G." The assignee of applicant AQ also owns an application AS which discloses and claims invention "G." An interference is declared between applicant AQ and applicant AR. The sole count is directed to invention F. No motion is filed by applicant AQ or its assignee to declare an additional interference between applicant AR and applicant AS with a count to invention G. A judgment as to all of AR's claims corresponding to the sole count is awarded to applicant AR. Applicant AS and the assignee would be estopped to obtain a patent containing claims to invention G, because applicant AR and the assignee failed to move to declare an additional interference with a count to invention G.

Example 30: The facts in this example are the same as the facts in Example 29 except that judgment as to all of AQ's claims corresponding the sole count is awarded to applicant AQ. Applicant AS and the assignee would not be estopped, because applicant AQ was not a "losing party" (§1.658(c)).

Example 31: Applicant AT discloses a generic invention to "solvent" and a species to "benzene." Application AT contains a patentable claim 1 (solvent) and no other claims. Applicant AU discloses the generic invention to "solvent" and species to "benzene" and "toluene." Application AU contains patentable claim 3 (solvent) and no other claims. An interference is declared with a single count (solvent). Claims 1 of application AT and claim 3 of application AU are designated to correspond to the count. No preliminary motions are filed. A judgment is entered in favor of applicant AT on the claim corresponding to the sole count. Applicant AU would be estopped to obtain a patent containing a claim to benzene, because applicant AU failed to file a preliminary motion under §1.633(c)(1) seeking to add a count to benzene and benzene was disclosed in winning party AT's application. Applicant AU would also be estopped to obtain a patent containing a claim to toluene, unless "toluene" defines a "separate patentable invention" from "solvent ." A basis for interference estoppel (§1.658(c)) exists if "toluene" and "solvent" define the "same patentable invention," because a claim to "toluene" could properly have been added and designated to correspond to the count. See §1.633(c)(2).

Under §1.659, the Board would be able to make recommendations to examiners and the Commissioner, including recommendations that application claims not involved in the interference be rejected and that a patent be reexamined as to patent claims not involved in the interference.

Under §1.660, a party would be required to notify the Board when the party's patent or application becomes involved in other PTO proceedings (reexamination, reissue, or protest) or litigation.

Section 1.661 sets forth when an interference is considered terminated after a judgment is entered in the interference. For the purpose of filing copies of settlement agreements, an interference is considered terminated when the time for all appeals has expired. *Tallent* v. *Lemoine*, 204 USPQ 1058 (Comm'r.Pat. 1979). See also *Nelson* v. *Bowler*, 212 USPQ 760 (Comm'r.Pat. 1981).

Section 1.662 provides that a party may request that an adverse judgment be entered. The section also provides that when a written disclaimer (not a statutory disclaimer), concession of priority or unpatentability, abandonment of the invention, abandonment of an application, or abandonment of the contest is filed, the disclaimer, concession, or abandonment would be treated as a request for entry of an adverse judgment. Section 1.662(b) provides that when a patentee files a reissue application and omits all claims of a patent corresponding to the counts of an interference for the purpose of avoiding the interference, judgment would be entered against the patentee. Under §1.662(c), the filing of a statutory disclaimer would not be treated as a request for entry of an adverse judgment unless all patent claims corresponding to a count are disclaimed. Under §1.662(d), if after entry of a judgment or after filing of a statutory disclaimer no interference exists, the interference would be terminated as to any party against whom judgment has not been entered and any further prosecution of any application involved in the interference would be *ex parte* before the examiner.

Section 1.666 sets out the procedure for filing settlement agreements in interference cases. The PTC is merely a repository for copies of agreements filed under 35 U.S.C. §135(c) and does not undertake to rule on whether the statute requires that a copy of any particular agreement be filed. *Nelson* v. *Bowler*, 212 USPQ 760 (Comm'r.Pat. 1981).

Section 1.671 sets out what would be considered evidence. The Federal Rules of Evidence, with certain exceptions, are made applicable to interference cases. Under§1.671(e), a party cannot rely on a previously filed affidavit unless the affidavit is served and notice is given that the party intends to rely on the affidavit. The purpose for the notice is to permit an opponent to determine whether a deposition for cross-examination is necessary (see §§1.672(b) and 1.673(e)).

Section 1.671(e) is intended to overrule prior construction of PTO rules in *Holmes* v. *Kelly*, 586 F.2d 234, 237 n. 7, 199 USPQ 778, 782 n. 7 (CCPA 1978) and *Brecker* v. *Jennings*, 204 USPQ 663 (Bd.Pat.Int. 1978), which considered a Rule 132 affidavit in the file of an involved application to be part of the "record" in an interference. Under §1.671(e), a party intending to rely on such an affidavit must give notice and serve a copy of the affidavit on the opponent.

Under §1.671(f), the significance of documentary and other exhibits must be discussed with particularity by a witness during oral deposition or in an affidavit. Section 1.671(f) sets out in the regulations an evidentiary requirement imposed by precedent. See *Popoff* v. *Orchin*, 144 USPQ 762 (Bd.Pat.Int. 1963) (unexplained experimental data should not be considered); *Chandler* v. *Mock*, 150 F.2d 563, 66 USPQ 209 (CCPA 1945) (records standing alone were held to be meaningless), and *Smith* v. *Bousquet*, 111 F.2d 157, 45 USPQ 347 (CCPA 1940) (unexplained tests in stipulated testimony are entitled to little weight). See also *In re Borkowski*, 505 F.2d 713, 184 USPQ 29 (CCPA 1974) and *Triplett* v. *Steinmayer*, 129 F.2d 869, 54 USPQ 409 (CCPA 1942). Under §1.671(g), a party is required to obtain permission from an examiner-in-chief prior to proceeding under 35 U.S.C. §24. This requirement insures that a subpoena is necessary (e.g., a subpoena ordinarily should not be necessary where testimony of an opponent is sought) and that testimony sought through a §24 subpoena is relevant before a subpoena is issued. The motion seeking permission to proceed under §24, any opposition thereto, and the order of an examiner-in-chief authorizing the moving party to proceed under §24 will be of assistance to a federal court in the event a party is required to resort to a court to enforce the subpoena or to compel answers to questions propounded at any deposition where a witness is appearing pursuant to a subpoena. See *Sheehan* v. *Doyle*, 529 F.2d 38, 188 USPQ 545 (1st Cir.), *cert. denied*, 429 U.S. 870 (1976), *rehearing denied*, 429 U.S. 987 (1976).

Under §1.671(h), any evidence which is not taken or sought and filed in accordance with the regulations will not admissible.

Section 1.672 sets forth the manner in which testimony shall be taken. Testimony can be taken by deposition or affidavit at the election of the party presenting the testimony. A party presenting testimony by affidavit must file and serve the affidavit. If the party presents testimony by affidavit and an opponent elects to cross-examine the affiant, the party is required to notice a deposition for the purpose of cross-examination. Re-direct and re-cross will take place at the deposition. Where the parties agree, testimony can be presented by affidavit without opportunity for cross-examination (see §1.672(e)) or by an agreed statement of facts (see §1.672(f)).

Section 1.673 sets out how a deposition must be noticed. A deposition can be noticed for any reasonable place in the United States. The extent to which parties, witnesses, and attorneys or agents have to travel may be considered in determining whether a place is reasonable. Prior to serving a notice for a deposition, a party is required to take two procedural steps. Under §1.673(b), a party would be required to serve a copy of the documents and a list of the things in its possession, custody, and control upon which it intended to rely. Under §1.673(g), the party is required to have an oral conference (in person or by telephone) with all opponents to attempt to agree on a mutually acceptable time and place for taking the deposition. An examiner-in-chief may set the time and place if agreement is not reached. A single notice listing all the witnesses and the general nature of their expected testimony is then served. Under §1.673(c) and except as provided, a party can not rely on any witness not mentioned in the notice, any document not served, or any thing not listed. Under §1.673(h), a copy of any notice must be attached to the certified transcript of each deposition filed.

Section 1.674 sets out the persons before whom depositions can be taken.

Section 1.675 sets out how a deposition is to be taken.

Section 1.676 sets out how a court reporter should prepare and file a certified transcript of a deposition. Section 1.676(d) sets out how exhibits are to be marked for identification, used at depositions, and filed. Provisions similar to those of Rule 30(f)(1)(A) and (B) of the Federal Rules of Civil Procedure are applicable to interferences.

Section 1.677 sets out the form of a transcript of a deposition.

Under §1.678, a transcript of a deposition must be filed in the PTO within 45 days of the date of the deposition.

Section 1.682 sets out how a party may introduce in evidence, if otherwise admissible, official records or printed publications. When a notice is served, a party is also required to serve (but not file) copies of the official records and printed publications. Any objection to the notice or to the admissibility of any official record or publication must be filed within 15 days of the date of service of the notice.

Section 1.683 sets out how a party may use testimony from another interference or proceeding.

Section 1.684 sets out how a party may take testimony in a foreign country.

Section 1.685 sets out how objections during the taking of depositions must be raised. Under §1.685(a), an error in a notice of deposition is waived unless a motion to quash the notice is filed as soon as the error is, or could have been, discovered. Under §1.685(b), any objection to the qualifications of an officer is waived unless (1) the objection is noted on the record of the deposition before a witness begins to testify or (2) if discovered after the deposition, a motion to suppress is filed as soon as the objection is, or could have been, discovered. Under §1.685(c), any error in the manner in which testimony is transcribed, the transcript is signed by a witness, or the transcript is prepared or otherwise handled by the court reporter is waived unless a motion to suppress is filed as soon as the error is, or could have been, discovered. Under §1.685(d), any objection on the merits to the admissibility of evidence (e.g., under the Federal Rules of Evidence is waived unless an objection is made on the record at the deposition stating the specific ground of objection. Often objections are cured by subsequent testimony. Accordingly, any objection which a party wants the Board to consider at final hearing must also be made the subject of a motion under §1.656(h).

Section 1.687 sets out how a party could seek and obtain additional discovery. "Additional discovery" is defined in §1.601(a). Section 1.687 does not change the standard ("interest of justice") for obtaining discovery.

Section 1.688 sets out how a party can introduce into evidence admissions and answers to interrogatories obtained as a result of additional discovery.

Changes in Text

Several changes have been made to the text of the proposed rules published in the *Federal Register* on Jan. 30, 1984. The changes are discussed below. Additional rationale for the changes are further discussed under the heading "Analysis of Comments."

All references to the "Board of Appeals and Interferences" have been changed to "Board of Patent Appeals and Interferences" in view of Public Law 98-622.

In §1.11(a) the language "or after termination of an interference without an award of judgment" has been deleted. This change has been made in view of changes made in paragraphs (c) and (d) of §1.662.

In response to a comment, the fee required for a petition in an interference under §1.644(e) and a request for reconsideration of a decision on petition in an interference under §1.644(f) have been set out as separate items.

Section 1.136 was changed to refer to §1.611 rather than §1.610(a).

The following sentence was inadvertently omitted as the third sentence of §1.138 in the notice of proposed rulemaking: "A registered attorney or agent acting under the provision of §1.34(a), or of record, may also expressly abandon a prior application as of the filing date granted to a continuing application when filing such a continuing application." This sentence presently appears in §1.138.

In §1.196(d), second sentence, "thirty days" has been changed to "one month.

In §1.197(b), "thirty days" has been changed to "one month.

In the last sentence of §1.304, "The Commissioner" has been changed to "An examiner-in-chief" and "of a decision of the Board of Patent Appeals and Interferences in an interference case" has been inserted after "time for seeking judicial review." This change is made to limit the "excusable neglect" standard to interference cases only.

In §1.601(j), the language "all the claims of a party which correspond" has been changed to read "at least one claim of a party which corresponds. The language "all the claims of an opponent which correspond" has been changed to read "at least one claim of an opponent which corresponds.

Section 1.605(a) has been changed by deleting from the third sentence the language "a claim which is the same or substantially the same as" and by adding the following sentence as the fourth sentence: "At the time the suggested claim is presented, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the suggested claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared." In the second sentence, "30 days" has been changed to "one month.

In the last sentence of §1.606, the language "to define one patentable invention" has been changed to read: "not to contain separate patentable inventions."

The word "and" has been inserted in §1.607(a) before

"(3)". The word "must" in the first sentence of §1.607(c) has been changed to "shall" in response to a suggestion in a comment.

Pursuant to two separate suggestions, the following is being added after the first sentence in §1.608(b): "Where the basis upon which an applicant is entitled to judgment relative to a patentee is priority of invention, the evidence shall include affidavits by the applicant, if possible, and one or more corroborating witnesses, supported by documentary evidence, if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would *prima facie* entitle the applicant to judgment on priority with respect to the earlier of the filing date or effective filing date of the patent. To facilitate preparation of a record (§1.653(g) and (h)) for final hearing, an applicant should file affidavits on paper which is 8-1/2 by 11 inches (21.8 by 27.9 cm.)."

In §1.609(b)(1), the language "count or counts" has been changed to "proposed count or counts". In §1.609(b)(2), each occurrence of "the count" has been changed to "each count".

In §1.613(a), "§1.344" has been changed to "this Chapter." This change is being made to obviate the need to again amend §1.613 in the event new rules relating to practice before the PTO are issued. See the notice of proposed rulemaking published in the *Federal Register* on Aug. 24, 1984. 49 F.R. 33790, proposed §§10.62 and 10.66. The language "or members of the same firm of attorneys or agents" has been added after "agent" in §1.613(b).

In §1.615(a), second sentence, "which are" has been deleted and "in the interference" has been added after "will not be entered or considered".

Several changes have been made in §1.617. In §1.617(a), the language "the interference shall proceed before the examiner-in-chief" has been changed to read: "the interference shall proceed in the normal manner under the regulations of this part". The second sentence of §1.617(b) ("A response may include a request by the applicant for a hearing before the Board.") has been changed to read: "Any request by the applicant for a hearing before the Board shall be made in the response." This change was made to clarify when and how a hearing must be requested by the applicant. The second sentence of §1.617(d) has been changed to read: "The statement may set forth views as to why summary judgment should be granted against the applicant, but the statement shall be limited to discussing why all the evidence presented by the applicant does not overcome the reasons given by the examiner-in-chief for issuing the order to show cause." Section 1.617(e) has been re-written as follows: "Within a time authorized by the examiner-in-chief, an applicant may file a reply to any statement filed by any opponent." The language "examiner-in-chief or the" has been added after "by the applicant is timely filed, the" in the first sentence of §1.617(g). The language "Board decides that" has been deleted from the second sentence of §1.617(g). The language "If the Board decides otherwise" has been replaced with "Otherwise" in the third sentence of §1.617(g). The language "before the examiner-in-chief" in the third sentence of §1.617(g) has been changed to read: "in the normal manner under the regulations of this part." These changes will authorize either an examiner-in-chief or a Board to authorize an interference to proceed under §1.617(g). It will continue to be necessary for the Board to enter an order *granting* summary judgment. In the last sentence of §1.617(h), "patentee" has been changed to "any opponent".

The language "the name of" has been deleted from the first sentence of §1.622(a). The second sentence of §1.622(a) in the notice of proposed rulemaking ("When an inventor identified in the preliminary statement is not identical to the inventor named in the party's application or patent, the party shall file a motion . . . .") has been changed to read: "When an inventor identified in the preliminary statement is not an inventor named in the party's application or patent, the party shall file a motion . . . ." This change is being made in view of §105(a) of Public Law 98-622 which amended 35 U.S.C. §116 to permit joint inventors to be named "even though . . . (3) each did not make a contribution to the subject matter of every claim . . . ."

The following changes have been made in §1.623(c). In the first sentence, "copy of the drawing" has been changed to "copy of the first drawing". In the second sentence, "copy of the written description" has been changed to "copy of the first written description". In the third sentence, "when a drawing or written description" has been changed to "when a copy of the first drawing or first written description".

Several changes have been made to §1.624. The following has been added as a second sentence in §1.624(a)(5): "If an actual reduction to practice of the invention was not introduced into the United States, the preliminary statement shall so state." The following changes have been made in §1.624(c). Each occurrence of "was made" has been changed to "was introduced into the United States." In the first sentence, "copy of the drawing" has been changed to "copy of that drawing". In the second sentence, "copy of the written description" has been changed to "copy of that written description". In the third sentence, "a drawing or written description" has been changed to "a copy of the first drawing or first written description introduced in the United States".

The following changes have been made in §1.625(c). In the first sentence, "copy of the drawing" has been changed to "copy of the first drawing". In the second sentence, "copy of the written description" has been changed to "copy of the first written description". In the third sentence, "a drawing or written description" has been changed to "a first drawing or first written description".

The language of §1.628(b) which read: "because the drawing or written description is not in the party's possession, custody, or control, the party may file a motion . . to amend its preliminary statement promptly after it secures possession, custody, or control of a copy of the drawing or written description" has been changed to read as follows: "the party (1) shall show good cause and explain in the preliminary statement why a copy of the drawing or written description cannot be attached to the preliminary statement and (2) shall attach to the preliminary statement the earliest drawing or written description made in or introduced into the United States which is available. The party shall file a motion . . . to amend its preliminary statement promptly after the first drawing, first written description or drawing or written description first introduced into the United States becomes available."

The first sentence ("A preliminary statement should be carefully prepared.") has been deleted from §1.629(a).

In §1.629(b), the language "no earlier than" has been changed to "as early as".

In §1.629(d), the following has been added after "allegation: "unless the party complies with §1.628(b)."

A new §1.632 has been added to require a party to give timely notice of the party's intent to argue that an opponent has abandoned, suppressed, or concealed an actual reduction to practice. A companion change has been made to §1.654.

Two changes have been made to §1.633(c). Paragraph (c)(2) has been changed by adding thereto the following language: "or adding a claim in the moving party's application to be designated to correspond to a count". In addition, in §1.633(c), the "or" before "(4)" has been deleted and the following has been added to the end of the first sentence: ", or (5) requiring an opponent who is an applicant to add a claim and to designate the claim to correspond to a count."

Paragraph (j) has been added to §1.633.

In §1.636(b), "(i)" has been changed to "(i) or (j)" in view of the addition of paragraph (j) to §1.633. The language "filed as soon as practical" in §1.636(c) has been changed to "diligently filed" in order to conform §1.636 to §1.48. A party must exercise diligence in correcting

inventorship. *Van Otteren* v. *Hafner*, 278 F.2d 738, 126 USPQ 151 (CCPA 1960).

Several changes have been made to §1.637. The language "Where appropriate," has been deleted from the following paragraphs of §1.637: (c)(1)(vi); (c)(2)(iv); (c)(3)(iii); (d)(4); (e)(1)(viii); (e)(2)(vii); and (h)(4). The following has been added in §1.637(c)(2) before "shall: "or adding a claim to be designated to correspond to a count". The language "amended claim" in §1.637(c)(2)(i) has been changed to read: "amended or added claim". The language "Apply the terms of each proposed claim to the disclosure of the application" in §1.637(c)(2)(ii) has been changed to read: "Show that the proposed or added claim defines the same patentable invention as the count." The language "proposed amended claim" in §1.637(c)(2)(iii) has been changed to read "amended or added claim." The language "adding the proposed claim" in §1.637(c)(2)(iii) has been changed to read: "making the amended or added claim".

The word "interferences" in §1.637(c)(4)(ii) has been corrected to read: "interference".

Subparagraph (c)(5) has been added to §1.637.

The following has been added as the last sentence to §1.637(f)(2): "If the earlier application filed abroad is not in English, the requirements of §1.647 must also be met."

In paragraph §1.637(f)(3), the language "discloses an embodiment with the scope" has been changed to read: "constitutes a constructive reduction to practice".

The first sentence, originally proposed in §1.638(b) ("A reply to an opposition shall not be filed unless authorized by this subpart or an examiner-in-chief or the motion was filed under §§1.633 or 1.634"), has been deleted. The language "any authorized reply" in §1.638(b) has been changed to "a reply".

The language "or a motion to correct inventorship under §1.634" has been added to the first sentence of §1.639(c) after "preliminary motion under §1.633."

The following has been added after the first sentence of §1.640(b)(1): "Failure or refusal of a party to timely present an amendment required by an examiner-in-chief shall be taken without further action as a disclaimer by that party of the invention involved." The fourth sentence of §1.640(c) ("A request for reconsideration will ordinarily not be granted unless an opposition has been requested by an examiner-in-chief or the Board") has been changed to read: "A decision of a single examiner-in-chief will not ordinarily be modified unless an opposition has been requested by an examiner-in-chief or the Board." In the last sentence of §1.640(c), the language "shall be decided by a panel" has been changed to read: "shall be acted on by a panel".

The word "application" in the paragraph heading and text of §1.642 has been changed to read: "application or patent".

Three changes have been made in §1.644. The following language has been added after "Commissioner" in §1.644(a)(2): "and is not filed prior to the decision of the Board awarding judgment and does not relate to (i) the merits of priority of invention or patentability or (ii) the admissibility of evidence under the Federal Rules of Evidence". The following language has been deleted from the second sentence of §1.644(b): "and shall not relate to (1) the merits of priority of invention or patentability or (2) the admissibility of evidence under rhe Federal Rules cf Evidence". The language "A request for reconsideration will ordinarily not be granted unless" in the second sentence of §1.644(f) has been changed to read: "The decision will not ordinarily be modified unless such".

Two changes have been made in §1.645. The word "to" has been added before "file a notice of appeal" and "commence a civil action" in the first sentence of paragraph (a). The language ", accompanied by an affidavit," has been deleted from paragraph (b).

Three changes have been made to §1.646. The word "service" has been added after "additional" in the third sentence of paragraph (b). The language "or except as otherwise provided by this part," has been added after "otherwise ordered by an examiner-in-chief," in paragraph (c). The language in paragraph (c) "paper may be made" has been changed to "paper shall be made". The word "time" has been changed to "date" in the last sentence of paragraph (e).

A new paragraph (c) has been added to §1.654 to require that a party give timely notice of the party's intent to argue that an opponent has abandoned, suppressed, or concealed an actual reduction to practice. Section 1.632 specifies the time within which the notice shall be filed.

Three changes have been made in §1.658. The language "paragraph (a) of the section" in the last sentence of §1.658(b) has been changed to "paragraph (a) of this section". The "(i)" in the first sentence of §1.658(c) has been changed to "(j)" in view of the addition of §1.633(j). In the notice of proposed rulemaking, the second sentence of §1.658(c) read: "A party, other than a party awarded a favorable judgment as to all counts, who could have properly moved, but failed to move, under §§1.633 or 1.634, shall be estopped to take *ex parte* or *inter partes* action in the Patent and Trademark Office after the interference which is inconsistent with the party's failure to properly move." This sentence has been changed to read: "A losing party who could have properly moved, but failed to move, under §1.633 cr 1.634, shall be estopped to take *ex parte* or *inter partes* action in the Patent and Trademark Office after the interference which is inconsistent with that party's failure to properly move, except that a losing party shall not be estopped with respect to any claims which correspond, or properly could have corresponded, to a count as to which that party was awarded a favorable judgment."

Several changes have been made in §1.662. In §1.662(a), the word "construed" has been changed to "treated. The first sentence of §1.662(c) in the notice of proposed rulemaking read: "The filing of a statutory disclaimer under 35 U.S.C. §253 by a patentee will not be treated as a request for entry of an adverse judgment against the patentee, but will delete any statutorily disclaimed claims from being involved in the interference." That first sentence has been changed to read: "The filing of a statutory disclaimer under 35 U.S.C. §253 by a patentee will delete any statutorily disclaimed claims from being involved in the interference." The second sentence of §1.662(c) in the notice of proposed rulemaking read: "A statutory disclaimer of any claim involved in an interference shall in subsequent proceedings have the same effect with respect to the patentee as an adverse judgment." That second sentence has been changed to read: "A statutory disclaimer will not be treated as a request for entry of an adverse judgment against the patentee unless it results in the deletion of all patent claims corresponding to a count." In view of this change, proposed §1.662(d) has been deleted as unnecessary, and a change has also been made in §1.11(a) to delete any reference to a termination of an interference by any means orher than judgment.

The last sentence of §1.671(g) has been changed from "The motion shall describe the general nature and show the admissibility in the interference of the testimony, document, or thing" to: "The motion shall describe the general nature and the relevance of the testimony, document, or thing."

Three changes have been made to §1.672(b). In the second sentence after "witness by affidavit shall" the following has been added: ", prior to the close of the party's relevant testimony period". The language "file an affidavit" has been changed to "file and serve an affidavit". The following has been added after the third sentence: "A party shall not be entitled to rely on any document referred to in the affidavit unless a copy of the document is filed with the affidavit. A party shall not be entitled to rely on any thing mentioned in the affidavit unless the opponent is given reasonable access to the thing. A thing is something other than a document."

Several changes have been made in §1.673(b). The introductory sentence of paragraph (b) ("Unless the parties agree otherwise, at least three days prior to the conference required by paragraph (g) of this section, a party shall serve, but not file, the following:") has been

changed to read: "Unless the parties agree otherwise, a party shall serve, but not file, at least three days prior to the conference required by paragraph (g) of this section, if service is made by hand or "Express Mail," or at least ten days prior to the conference if service is made by any other means, the following:" In §1.673(b)(1) the word "copy" has been changed to "list and copy".

In the last sentence of §1.675(d), the language "signed by the witness in the presence of any notary" has been changed to read "signed by the witness in the form of (1) an affidavit in the presence of any notary or (2) a declaration". This change conforms §1.675(d) to §1.68.

In §1.682(a)(4), ", where appropriate," has been added prior to "be accompanied" and "(§1.671(d))" has been added after "printed publication".

The word "admissible" in §1.684(a)(4) has been changed to "relevant".

The following sentence has been deleted from §1.687(b): "If the witness refuses to produce a requested document or thing, the party may file a motion (§1.635) for additional discovery under paragraph (c) of this section."

Section 1.688 has been revised to more clearly describe how a party may introduce in evidence an answer to a request for admission or an answer to a written interrogatory.

Analysis of Comments

Eighteen written comments were received. Three individuals testified at a hearing held on May 15, 1984. The following is an analysis of the written comments and the oral comments made at the hearing.

One comment suggested that §1.8 not be amended to exclude from the certificate of mailing practice a paper in an interference which an examiner-in-chief orders to be filed by hand or "Express Mail." The comment argues that "[s] ome parties might not have an attorney in the Washington area or they may live in an area not serviced by Express Mail." The suggestion is not being adopted. Experience has shown that there are situations in interferences where it is desirable to have and the parties need a prompt ruling on a written motion. It is difficult for an examiner-in-chief to render a prompt ruling if the motion and any opposition are not promptly served and filed. In those situations where a party has no Washington, D.C. metropolitan area attorney or where a party resides in an area not served by "Express Mail," it may not be possible to hand-file or use "Express Mail." The examiner-in-chief would then exercise discretion by not invoking the exception of new subparagraph (xii) of §1.8(a).

One comment suggested that it would be clearer if the fee for a petition in an interference and the fee for a request for reconsideration of a decision on petition in an interference were set out in §1.17(h) as separate items. This suggestion has been adopted and the two fees have been set out in §1.17(h) as separate items.

A suggestion was made that a reference be made in §1.136 to §1.611 rather than §1.610(a). The suggestion is being adopted, because a reference to §1.611 is believed to be more appropriate. Once an interference is declared involving an application, *ex parte* prosecution of the application is suspended and the applicant need not respond to any PTO action outstanding as of the date the interference is declared.

One comment made the following remark concerning §1.196: "I do not understand the need or desire of the PTO to start the time to appeal to a Court from a PTO *final* decision on one claim, while PTO action is continuing on a second claim." As explained in the notice of proposed rulemaking (49 F.R. 3770, columns 2-3; 1039 O.G. 20-21; 1039 TMOG 20-21), when there are further proceedings before the examiner following a decision by the Board of Patent Appeals and Interferences, judicial review is not appropriate. Hence, under §1.196, the PTO will not start a time for seeking judicial review of a PTO decision on one claim while PTO action is continuing on another claim. The last sentences of §1.196(b)(1) and §1.196(d) authorize the Board to enter an order making its decision final as to one claim when remand proceedings as to another claim result in a favorable decision for the applicant. Section 1.196 is intended to eliminate piecemeal appeals.

With respect to §1.292(c), one commentator said: "[a] party should be able to raise public use and [on] sale issues at any stage [of an interference proceeding] provided the issue is raised in a timely manner after learning of the use or sale." Public use and on sale issues are to be raised in interferences by way of a preliminary motion under §1.633(a). If a motion under §1.633(a) cannot be timely filed, a belated motion may be filed provided the moving party complies with the provisions of §1.645(b). Whether or not a belated motion will be accepted where a public use or sale is discovered after the time for filing §1.633(a) motions which has passed will manifestly depend on the facts of a given case.

One comment suggested that the language "speedy, and inexpensive" be deleted from the second sentence of the preamble of §1.601. This suggestion is not being adopted. The second sentence of the preamble of §1.601 provides that the rules "shall be construed to secure the just, speedy, and inexpensive determination of every interference." The provision is modeled in part after the second sentence of Rule 1 of the Federal Rules of Civil Procedure which states that the Federal Rules "shall be construed to secure the just, speedy, and inexpensive determination of every action." The "just, speedy, and inexpensive determination" provision of §1.601 will prove useful in construing other provisions in the rules.

Two comments were received which suggested a change in language in §1.601(j). One comment correctly noted that "[i] f even one claim of each party defines the same patentable invention, there is an interference-in-fact." The comment went on to correctly note that "[t] he remaining claims can be disposed of by a motion under§1.633(c)(4)." A second comment noted that under the definition proposed, all the claims of both parties corresponding to a count must define the same patentable invention. The comment went on to correctly note the intent of the PTO is, however, that an interference-in-fact exists if at least one of the claims of a party corresponding to a count defines the same patentable invention as one of the corresponding claims of an opponent. In view of the suggestions made in the two comments, §1.601(j) has been changed to state that an interference-in-fact exists when at least one claim of a party which corresponds to a count and at least one claim of an opponent which corresponds to the count defines the same patentable invention.

Two comments were received which suggested that the language "earliest filing date" in §1.601(m) be changed to read "earliest effective filing date." The suggestion is not being adopted. Section 1.601(m) defines "senior party." The definition of "senior party" in §1.601(m) is consistent with current practice and is intended to codify current practice. In an interference where there are no benefit applications, the "senior party" is the party with the earliest "filing date." There are interferences where a party may be "senior" with respect to a first count based on the filing dates of the applications involved in the interference and "junior" with respect to a second count because the opponent is entitled to benefit of an earlier application as to the second count only. Under these circumstances in the past, the PTO has designated the party who is "senior" based on the filing dates of the applications involved as the "senior party." The designation of the party as "senior party" is for procedural purposes only, i.e., setting who takes testimony first, and does not affect which party has the burden of proof. Section 1.601(m) preserves this past practice.

Comments were received regarding §1.601(n) which defines "same patentable invention" and "separate patentable invention." One written comment suggested that §1.601(n) be deleted. The commentator appeared at the hearing and also urged orally that §1.601(n) be deleted. The suggestion is not being adopted. In view of the nature of the comment and the importance of the definitions in §1.601(n), the written comment is reproduced in its entirety:

> *Comment*: The paragraph to be deleted contains an explicit definition of both "same patentable invention" and "separate patentable invention". It requires application of a two-prong test for determining "sameness" or "separateness". Two inventions are considered to be the "same patentable invention" when they are the same under 35 USC 102 or obvious variants under 35 USC 103 when one is considered as "prior art" with respect to the other. Application of this standard may lead to results which are anomalous or in conflict with statutory requirements if, as the proposed rules apparently assume, the award of priority as to counts embodying "separate patentable inventions" will inherently and finally resolve the question of entitlement to a patent as between the parties on involved claims corresponding to those counts. Three specific problems with the definition of Rule 601(n) have been identified as follows:
>
> (1) If the standard of separate patentability as between two counts is applied on a mutual basis (i.e., Invention A must be separately patentable from Invention B considered as prior art and Invention B must be separately patentable from Invention A considered as prior art), then the conduct of interferences with separate counts directed to both a generic invention and an included specific embodiment thereof (i.e., a species) are frustrated. If, however, such mutuality is not applied (i.e., if Invention A is the existing count, then a count directed to Invention B is proper so long as Invention B would be considered patentable over Invention A as prior art), then a number of irreconcilable anomalies in count modification through preliminary motions practice will be manifest.
>
> (2) "Separate patentability" as a non-obviousness issue is in every context *except* interference practice before the PTO determined with finality only when an *affirmative* determination has been reached or the applicant *elects* to discontinue further prosecution of any applications embodying the invention or to admit obviousness. Because in the ex parte context an applicant may continue to marshall additional evidence supportive of non-obviousness until separate patentability over a prior art invention has been established, "separate patentability" is always a fluid concept where ultimate resolution can neither be predicted nor foreclosed. On certain cases interference proceedings under the proposed rules will be conducted and judgment rendered on the assumption of a lack of "separate patentability", which would ordinarily be subject to change or rebuttal as additional argument, evidence or other supportive activity of non-obviousness were marshalled. Thus, simply determining a proposed count is not yet "separately patentable" for the purposes of count formation ought not to foreclose post-interference reconsideration of separate patentability questions when the party proposing the count would not have been foreclosed on priority grounds.
>
> (3) The underlying assumption that "separate patentability" is to be established under the proposed rules for one invention when a second invention is considered as "prior art" does not have any necessary correspondence to the *effect* of an adverse judgment in an interference on the question of priority. While a lost count in interference is not patentable to the loser, the lost count will be considered as "prior art" against the losing party only if the status of prior art for the purposes of 35 USC 103 is established by the record in the interference, (i.e., by representing a prior invention of another made in the United States, not abandoned, suppressed or concealed under 35 USC 102). A party entitled to priority for a count under the benefit provisions of 35 USC 119 creates no "prior art" under 35 USC 102(g)/103 against his opponent. Separate counts ought not to be created or denied in an interference on the basis of a rule which fails to account for whether the interference record will confirm the assumption in the definition that a lost count will become "prior art".
>
> The following examples are provided as indicative of perceived difficulties in the application of the definition embodied in Rule 601(n):
>
> *Example A*: Rule 601(n) is applied in a mutuality sense to an interference where the existing count (Invention A) is a broad genus over organic compounds. Both parties disclose a species (Invention B) which one of the parties alleges represents a "selection invention", i.e., is neither anticipated by the genus nor obvious therefrom. The party proposing to add a species count to Invention B must demonstrate that the genus was neither the same as nor obvious in view of the species, an impossibility since *disclosure of the species anticipates the genus under 35 USC 102.* In effect, no party could ever propose sub-generic or species counts included within broader generic counts. Since all potential patentability and priority questions with respect to possible sub-generic and species claims are intended to be resolved in the unified patentability/priority proceedings, loss of such a broad generic count might be construed as estopping the losing party from arguing entitlement to a patent for species and subgenera within the lost count. Since proof of a single species is dispositive of the question of priority as to a genus, no matter how large, this is a more severe result than would appear to be proper or intended.
>
> *Example B*: Under the facts of Example A, if the standard under which the propriety for including a second sub-generic or species count is merely that the *proposed* count must be non-obvious over the *existing* count considered as prior art, then, an interference could conceivably proceed with both the generic and the species count in the interference. The usual criteria for "selection inventions" could be employed. However, when an interference is declared with a species count embodying Invention A, then utilization of a test requiring that a proposed count be non-obvious over the existing count as prior art leads literally to the conclusion that a proposed count to a generic Invention B is *anticipated* by the existing species count and therefore may not be added to the interference. This artificial distinction can certainly not have been intended, and yet the rules provide no clear indication of which result is the "correct" one or whether another test will be employed, e.g., the narrower count need only be non-obvious over the broader count.
>
> *Example C*: A party moves to substitute two subgeneric counts to allegedly separately patentable inventions, Invention A and Invention B, in place of a broad generic count to the "Markush" group of Invention A *and* Invention B. The party alleges Invention B has surprising and unexpected properties over Invention A and is separately patentable thereover. Because, however, a consideration of Invention B as "prior art" suggests Invention A would not be non-obvious thereover, the motion is denied. The moving party establishes priority as to Invention B, but loses the sole count of the interference to an opponent who filed a foreign application disclosing a single species from Invention A. The result is that the moving party with clear evidence of priority apparently loses the right to patent an invention on the technicality of "count formation" in interference. The result is substantially more severe than had he been simply faced with a statutory bar!
>
> *Example D*: The senior party, a foreign applicant, relies on a priority application disclosing Embodiment A. Subsequently the junior party files a United States application directed to an Embodiment B. Thereafter both parties file applications in the United States disclosing a generic invention including

both Embodiments A and B. An interference is declared on the generic invention and the junior party moves to substitute two counts, one count to Embodiment A and a second count to Embodiment B on the ground that they represent separate patentable inventions. Since the junior party's invention date for Embodiment B is after the senior party's priority date, the junior party will be obliged to concede priority on the sole count in the interference unless his motion to substitute counts is granted.

Accordingly, the junior party undertakes laboratory tests which indicate that both Embodiments A and B achieve substantially the same result in substantially the same manner without any significant differences in effectiveness. Without evidence of separate patentability to support rhe motion to substitute, the junior party is unsuccessful and priority is awarded to the senior party.

The junior party abandons his claim to the generic invention of the lost count, but persists in his assertion he is entitled to a patent on Embodiment B since the interference record indicates no actual priority for this embodiment in favor of the senior party. Ultimately, the junior party obtains evidence that Embodiment B is unexpectedly more useful than anticipated in a commercial setting, while Embodiment A is substantially unsuitable for any practical use in a commercial setting.

Is the junior party entitled to a patent notwithstanding the disposition of the issue of its separate patentability in an *inter partes* proceeding? If indeed, the junior party would be entitled to such a patent, must a second interference now be declared with the senior party to again litigate the issue of priority? Had the junior party failed to have made the motion to substitute counts in view of his utter lack of supporting evidence of separate patentability, would the estoppel under 37 CFR 1.658(c) have applied? Finally, would the ends of justice be better served by a standard for count formation which could be finally determined contemporaneously with the filing of the preliminary motions themselves? All of these questions suggest that the utilization of a fluid concept such as non-obviousness as the basis for count formation will give unintended and unsupportable results in situations where the lack of separate patentability is prematurely assumed.

Example E: In the scenario of Example D, the non-entitlement to contest Embodiment B as a separate count was premised on a failure to demonstrate that Embodiment B was non-obvious over Embodiment A considered as prior art. However, an award of priority to the senior party based on the disclosure of Embodiment A in a foreign priority application does not render Embodiment A as available prior art (35 USC 102(g)/103) inasmuch as Embodiment A would not have been a prior invention of another made in the United States which had not been abandoned, suppressed or concealed. The junior party's entitlement to a patent on Embodiment B should depend, therefore, solely on his entitlement to priority with respect to Embodiment B. Priority is a necessary condition for entitlement to a patent since both parties disclose the embodiment and a sufficient condition since regardless of the party entitled to priority on Embodiment A, it should not become obviousness-generating prior art. Therefore, any standard or count formation which fails to reach the result of the junior party is entitled to contest priority and a patent on Embodiment B is contrary to current statutory requirements for entitlement to a patent.

The proposed rules attempt to rationally define counts in an interference so that the judgment in the interference settles all questions of entitlement to a patent. This not only cannot be done *prospectively*, but should not be done at all. Judgment should be made on *claims*, not counts and unpatentability determinations made against a party subject to the normal ex parte standard that additional evidence of non-obviousness, or other evidence of patentability wholly independent of priority itself, could compel a reconsideration of the judgment of unpatentability.

With respect to paragraph (1) of the comment, the standard of patentability will *not* be applied "on a mutual basis." Thus, if a species is patentable over a genus, the species is a "separate patentable invention" from the genus. Compare *In re Taub*, 348 F.2d 556, 146 USPQ 384 (CCPA 1965)(fluorine species might be patentable over genus of Markush group of hydrogen and halogen). A first count to a genus and a second count to a species which is patentable over the genus may properly appear in an interference. See e.g., Example 4. The comment suggests that if "such mutuality is not applied . . . then a number of irreconcilable anomalies . . . will be manifest." The urged "irreconcilable anomalies" are not readily apparent to the PTO.

The PTO disagrees with the concept expressed in paragraph (2) of the comment that there should be "post-interference reconsideration of separate patentability." One of the principal objects of Public Law 98-622 and these new rules is to encourage complete determination of all rights between parties in an interference and to avoid post-interference reconsideration in an *ex parte* environment of issues which were or could have been raised *inter partes* in an interference.

The commentator remarks in paragraph (3) of the comment that "[a] party entitled to priority for a count under the benefit of 35 USC 119 creates no 'prior art' under 35 USC 102(g)/103 against his opponent." *In re McKellin*, 529 F.2d 1324, 188 USPQ 428 (CCPA 1976), arguable provides support for the commentator's remark. It should be noted, however, that in defining "same patentable invention" and "separate patentable invention" in §1.601(n), the PTO is not establishing a new definition of "prior art." Rather, the PTO is providing definitions which will determine—both initially and ultimately in an interference—how *claims* in an application or patent will be designated to correspond to counts. See §§1.603 and 1.606. Examples 1-19 illustrate how the PTO proposes to initially designate claims to correspond to counts. The designation of claims to correspond (or not correspond) to a count is significant because, as noted by the plurality opinion in *McKellin*, 529 F.2d at 1327, 188 USPQ at 432: "[a] n applicant [or patentee] who has lost an interference is not entitled to claims which correspond to the subject matter of the counts of the interference." Section 1.658(c) estops a party from obtaining a claim which could have been added and which would have been designated to correspond to the lost count. The definitions of "same patentable invention" and "separate patentable invention" in §1.601(n), the availability of motions to designate or not designate claims as corresponding to a count under §1.633(c), and the estoppel provisions of §1.658(c) provide the basis for accomplishing the PTO's objective of resolving *inter partes* in a single proceeding all issues which are or could have been raised between parties in an interference.

Examples illustrate how §§1.601(n), 1.633(c) and 1.658(c) accomplish the PTO's objective.

Example 32: Application AV discloses engines in general and in particular a 6-cylinder engine. Application AV contains only claim 1 (engine). Application AW discloses engines in general, but does not specifically disclose a 6-cylinder engine. Application AW contains only a single claim 3 (engine). The U. S. "filing date" (§1.601(h)) of the AV application is prior to the U. S. filing date of the AW application, but the AW application claims a foreign priority date under 35 U.S.C. 119 based on an application filed in a foreign country prior to the filing date of the AV application. An interference is declared. The sole count of the interference is to "an engine." Claim 1 of the AV application and claim 3 of the AW application are designated to correspond to the count. During the interference, applicant AV does not move under §1.633(c)(2) to add a claim to a 6-cylinder engine and to designate the claim to correspond to the count. Applicant AW is awarded a judgment in the interference based on the earlier filing date of the foreign patent application. After the interference, applicant AV adds claim 2 (6-cylinder engine) to the AV application. Whether AV would be entitled to a patent containing a claim to a 6-cylinder engine will depend solely on whether a 6-cylinder engine is a "separate patentable invention" from "engine"—the subject matter of the count. If a 6-cylinder engine is a "separate patentable invention" within the meaning of §1.601(n), applicant AV could not have successfully moved under §1.633(c)(2) to add claim 2 and to designate it to correspond to the count. Therefore applicant AV could obtain a patent containing claim 2. If, on the other hand, a 6-cylinder engine is not a "separate patentable invention," claim 2 of the AV application would be rejected on the basis of interference estoppel because claim 2 could have been added by a motion under §1.633(c)(2). See §1.658(c). See also Example 37.

Example 33: This example is basically the same as Example 32, except that application AV initially contains claim 1 (engine) and claim 2 (6-cylinder engine). When the interference is declared, both claims 1 and 2 of application AV are designated to correspond to the count. During the interference, applicant AV does not move under §1.633(c)(4) to designate claim 2 as not corresponding to the count. A judgment in the interference is entered for applicant AW based on the earlier filing date of the foreign patent application. After the interference, applicant AV would not be able to obtain a patent containing claim 2, because that claim was designated to correspond to a count and entry of the judgment constitutes a final decision by the PTO refusing to grant applicant AV a patent containing claim 2.

In the written comment, Examples A through E were set out to illustrate what the commentator believed were "perceived difficulties." These examples are set out above and are analyzed below.

Analysis of Commentator's Example A

Example A does not describe any practice under these rules, because "same patentable invention" and "separate patentable invention" under §1.601(n) are not intended to be "applied in a mutuality sense." Where a first count is to a genus and a second count is to a species within the scope of the genus, there may be two counts if the species is separately patentable from the genus. The species is "invention A" referred to in §1.601(n); the genus is "invention B" referred to in §1.601(n).

Analysis of Commentator's Example B

Commentator's Example B suggests—incorrectly—that if an interference is declared with a count to a species that no motion under §1.633(c)(1) to add a count to a genus can ever be granted. If the species ("invention A" referred to in §1.601(n)) is not anticipated by or obvious in view of the genus ("invention B" referred to in §1.601(n)), a motion to add a separate count to the genus may be proper. The commentator uses the language "selection inventions" in both Examples A and B. Insofar as the PTO is aware, the language is not a term of art in the patent law. The PTO has not ascribed any particular meaning to the language in analyzing Examples A or B.

Analysis of Commentator's Example C

The result suggested in commentator's Example C can come to pass only if the moving party accepts as final the denial of the motion to substitute two "sub-generic counts" for the "broad generic count." Unlike practice under the rules which have been in effect, under these new rules a decision denying a motion to substitute a count is reviewable by the Board (see §1.640(c) and §1.655(a), second sentence). Additionally, the party could seek judicial review (35 U.S.C. §§141, 146) of any final decision by the Board. However, if the party accepts as final the PTO's determination that inventions A and B are the "same patentable invention," the party would be precluded from obtaining a patent to invention B. After the interference is terminated, the only conceivable way that the moving party could seek to obtain a patent containing claims to invention B would be to first successfully move to reopen the interference for the purpose of presenting additional evidence. If the motion to reopen is granted (and it would be expected that such a motion will rarely be granted), the moving party would then have to successfully establish that invention A and invention B are not the same patentable invention. The PTO will continue to follow the general guidelines of 4 Rivise & Caesar, *Interference Law and Practice*, §821 *et seq.* (Michie Co. 1948), in determining motions to reopen an interference after entry of judgment. It should be additionally noted that interferences in which a judgment has been entered by a district court in an action brought under 35 U.S.C. §146 or a mandate has been entered by the U. S. Court of Appeals for the Federal Circuit (35 U.S.C. §141 or 28 U.S.C. §1295(a)(4)(C)) will not be reopened until the district court vacates its judgment and/or the Federal Circuit withdraws its mandate.

Analysis of Commentator's Example D

Several questions asked in the commentator's Example D can be answered as follows:

Question: Is the junior party entitled to a patent notwithstanding the disposition of the issue of its separate patentability in an *inter partes* proceeding? *Answer*: No. The junior party should have presented the "evidence that Embodiment B is unexpectedly more useful than anticipated in a commercial setting" during the interference. The PTO expects to resolve issues *inter partes* in the interference. If the PTO was to permit the evidence to be presented after the interference is terminated and after *ex parte* prosecution resumes, a principal purpose of the overall change to interference practice would be defeated. It may be unfortunate that the evidence was not known to the junior party. However, it may also be true that the winning party—had the evidence been presented in the interference—could have produced probative counter-evidence. Why should the winning party be put to the expense of a second interference?

Question: If indeed, the junior party would be entitled to such a patent, must a second interference now be declared with the senior party to again litigate the issue of priority? *Answer*: The premise in the question is not correct. The junior party is not entitled to a patent to Embodiment B and therefore there will not be a second interference.

Question: Had the junior party failed to have made the motion to substitute counts in view of his utter lack of supporting evidence of separate patentability, would the estoppel under 37 CFR 1.658(c) have applied? *Answer*: Yes, unless the junior party can successfully move to reopen the interference.

Question: Would the ends of justice be better served by a standard for count formation which could be finally determined contemporaneously with the filing of the preliminary motions themselves? *Answer*: While the question is not fully understood, it should be recognized that counts will initially be formed when an interference is declared and are subject to being changed by a motion (§1.633(c)) or by the Board (§1.640(c) and §1.655, second sentence). The correctness of the PTO's ultimate decision on what counts should be is subject to judicial review (35 U.S.C. §§141, 146).

Analysis of Commentator's Example E

The PTO, without agreeing or disagreeing with all of the commentator's statements in Example E, disagrees with any ultimate conclusion that the junior party is entitled to a patent on Embodiment B and that such a result "is contrary to current statutory requirements for

entitlement to a patent." Interference estoppel precludes granting a patent claiming Embodiment B to the junior party even if Embodiment A is not prior art with respect to Embodiment B.

One comment asked whether "invention A" and "invention B" mentioned in §1.601(n) "refer to the entire scope of subject matter recited in a claim or to the disclosed embodiment(s) supporting the claim (a la *In re Vogel*,[422 F.2d 438,] 164 USPQ 619 (CCPA 1970))?" The question is somewhat difficult, if not impossible, to answer in the abstract. Whether "invention A" refers to the entire scope or to the embodiments which support a claim is not controlling under these new rules. One fundamental change being made under the new rules is that judgments will be in the form of whether an applicant or patentee is or is not entitled to a *claim*. In the past, the Board of Patent Interferences has entered an "award of priority." The use of an "award of priority" does not always accurately express the "judgment" entered in many interferences. See e.g., *Applegate* v. *Scherer*, 332 F.2d 571, 573 n. 1, 141 USPQ 796, 798 n. 1 (CCPA 1964). Whether an applicant or patentee is or is not entitled to a particular claim in any given interference will depend on many factors, some of which include the scope of the claim, the scope of the opponent's claim, and the prior art. An example illustrates the point.

Example 34: Applicant AX discloses an apparatus having fastening means. The specific means disclosed are rivets. Applicant AY discloses a similar apparatus having fastening means. The specific means disclosed are a nut and bolt. The prior art reveals that items have been fastened with numerous fastening means including both rivets and nuts and bolts. In determining whether AX's apparatus with rivet fastening means is the "same patentable invention" as AY's apparatus with nut and bolt fastening means, it would be proper to consider the specific apparatus disclosed by AX, the specific apparatus disclosed by AY, the fact that both AX and AY disclose the use of "fastening means" broadly, and the prior art which shows rivets and nuts and bolts to be known fastening means.

One comment suggested that the last sentence of §1.604(b) and the last sentence of §1.607(c) be deleted in view of a proposed rule (§10.23(c)(7); 49 F.R. 10028; 49 F.R. 33809) which defines "misconduct" as including "[k] nowingly withholding from the Office information identifying a patent or application of another from which one or more claims have been copied." The proposed rule is still being considered. In any event, the last sentences of §§1.604(b) and 1.607(c) are instructions to examiners whereas proposed 37 CFR §10.23(c)(7) defines misconduct for those registered to practice before the PTO. Another comment suggested deletion of §1.604(b) because "existing rules [37 CFR §1.56] already provide a duty of disclosure of subject matter *material* to examination." There is no inconsistency between the rule relating to the duty of disclosure and §1.604. The comment also suggested that by identifying another application, an applicant "might be construed as having *admitted* that the claims" of the other application are directed to the same patentable invention as the claims in the applicant's application. The filing of such a paper is a statement by the applicant that the claims presented are "*known* to the applicant to define the same patentable invention" (emphasis added). If an applicant wishes to call another application to the attention of an examiner and the applicant believes that the other application does *not* claim the same patentable invention, but nevertheless may be relevant within the meaning of 37 CFR §1.56, the applicant may identify the other application and at the same time state why the invention claimed in the other application is not the same patentable invention as the invention claimed in the applicant's application. For the reasons given, the suggestions made in the two comments are not being adopted.

Three comments relating to §1.605 were received. One comment suggested that the language "or substantially the same as the suggested claim" be deleted from the third sentence of §1.605. The suggestion is being adopted to the extent that the language "a claim which is the same or substantially the same as" is being deleted. Under §1.605, when the examiner requests an applicant to copy a suggested claim, the applicant will be required to copy verbatim the claim suggested by the examiner. A second comment suggested that the second and third sentences of §1.605 be changed to read as follows:

> The applicant to whom the claim is suggested shall amend the application by presenting the suggested claim, or shall identify in the application one or more pending claims which the applicant regards as being directed to the same or substantially the same invention as the suggested claim, within a time specified by the Examiner, not less than thirty days. Failure or refusal of an applicant to timely present a claim or to timely identify one or more claims which are directed to the same or substantially the same invention as the suggested claim shall be taken without further action as a disclaimer by the applicant of the invention defined by the suggested claim.

A third comment suggested that the second and third sentences of §1.605 fail to take into account the case where an applicant is already claiming the invention. The third comment suggested addition of the following at the end of the third sentence of §1.605(a): ", unless the application already contains claims to the same patentable invention." The suggestions made in the second and third comments are not being adopted as such. However, the following sentence is being added as the fourth sentence of §1.605: "At the time the suggested claim is presented, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the suggested claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared." A major deficiency of the suggestions made in the second and third comments was the inability of the PTO to efficiently and effectively handle situations where the applicant (1) presents a claim which is "substantially the same as" the suggested claim or (2) points to a claim already in the application *and* the examiner is of the opinion that the claim is not to the same patentable invention. Under these circumstances, the examiner could not properly declare an interference. Accordingly, the applicant will be required to present verbatim the suggested claim. The applicant may, however, also present any other claim which the applicant believes is more appropriate. Alternatively, the applicant, in addition to presenting verbatim the suggested claim, may also call the examiner's attention to a claim already in the application which the applicant believes is more appropriate for interference purposes. In either case, the applicant must explain to the examiner why a claim other than the suggested claim is more appropriate for inclusion in the interference. Upon consideration of the suggested claim and the applicant's alternative claims and any explanation, the examiner is in a position to forward the application to the Board for declaration of an interference. If the applicant is dissatisfied with the claims of the application designated to correspond to the count, the applicant may file an appropriate motion under§1.633(c).

Two comments were received which suggested that the last sentence of §1.606 is not entirely clear. One comment suggested that the language in the last sentence which reads: "to define one patentable invention" be changed to read: "not to contain separate patentable invention." This suggestion is being adopted. The use of the language "*one* patentable invention" was unfortunate and rendered the actual intent of the rule unclear. Under §1.606, at the time an interference is declared a *rebuttable* presumption will exist that any patent claim designated to correspond to a count does not embrace separate patentable inventions. Moreover, at the time the interference is declared, no count will be narrower in scope than the broadest patent claim designated to correspond to that count. The presumption is *rebuttable* and may be challenged and overcome by a motion under §1.633(c).

Examples 17 and 18 illustrate practice under §1.606.

Two comments were received discussing §1.607. A first comment suggested that the word "must" in the first sentence of §1.607(c) be changed to "shall. The suggestion is being adopted. Use of "shall" makes §1.607(c) consistent with §1.604(b). A second comment asked the following question:

> "If the examiner determines that the applicant's claim is patentable but that there is no interfering subject matter, and the examiner accordingly allows the claim but refuses to declare an interference, is that determination appealable [to the Board of Appeals and Interferences under 35 U.S.C. §1.134]?"

The commentator suggests that "such a determination" is appealable and rationale in support of the commentator's position appears in Gholz, *Board of Appeals Jurisdiction Over Appeals from Decisions by Primary Examiners Refusing to Institute Interferences on Modified or Phantom Counts*, 64 J. Pat. Off. Soc'y 651 (1982). At the hearing, the commentator orally urged that the rules be amended to permit an appeal to the Board when an examiner allows a claim, but refuses to declare an interference involving the allowed claim. The suggestion is not being adopted. A decision by an examiner to allow a claim, but not to declare an interference involving the allowed claim, is petitionable and not appealable. See Gholz, *supra*, at 652 n. 13. The rule being suggested would enlarge the jurisdiction of the Board. Action by Congress would be necessary to accomplish what is embodied in the suggestion.

Several written comments and one oral presentation at the hearing were made concerning §1.608. One comment suggested that §1.608 be expanded to provide for summary judgment in interferences involving applications where the earlier of the filing date or effective filing date of one application was three months earlier than the date of the other application. This suggestion is not being adopted. Ordinarily, interferences are not declared between applications having effective dates more than three months apart. Moreover, expanding summary judgment proceedings to application-application interferences would result in delay in resolving interferences. Currently in application-patent summary judgment proceedings under 37 CFR §1.204(c), very few summary judgments are entered against applicants who are junior to a patentee by more than three months. There is no reason to expect that a significant number of summary judgments would be entered in application-application interferences. As noted in the notice of proposed rulemaking, the PTO has already declined to expand summary judgment proceedings to cases where a patentee is junior to an applicant by more than three months. See 49 F.R. 3775 (paragraph bridging columns 1 and 2); 1039 O.G. 34; 1039 TMOG 34; 27 BNA 319.

Two written comments were received which suggested that §1.608(b) should be more specific in indicating the kind of evidence which should be submitted when an applicant attempts to make out a *prima facie* case based on priority of invention. The suggestions in the comments are being adopted. The following sentence has been added to §1.608(b):

> Where the basis upon which an applicant is entitled to judgment relative to a patentee is priority of invention, the evidence shall include affidavits by the applicant, if possible, and one or more corroborating witnesses, supported by documentary evidence, if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would *prima facie* entitle the applicant to judgment on priority with respect to the earlier of the filing date or effective filing date of the patent.

Similar language appears in the current rule: 37 CFR §1.204(c). The PTO agrees entirely with the following discussion made by one commentator:

> The material added to Rule 608(b) currently appears in existing 37 CFR 1.204(c). A comparison of the existing language of 37 CFR 1.204(c) with the proposed rule might be construed as suggesting that the allegations which are now expressly required where priority is an issue will be changed, specifically relaxed in some manner. Since under proposed Rule 617 this clearly is *not* the case, the proposed addition to Rule 608(b) should assist the practitioner in understanding the intent of the PTO.

The commentator has accurately pointed out that the PTO intends tc apply a stricter standard fcr filing additional evidence in summary judgment proceedings after an order to show cause has been issued. See the notice of proposed rulemaking. 49 F.R. 3775 (column 1); 1039 O.G. 34; 1039 TMOG 1039; 27 BNA 319 (column 1).

At the hearing, it was suggested that §1.608 should encourage the use of 8-1/2 by 11 inch paper for affidavits. This suggestion is being adopted and the following sentence has been added to §1.608(b): "To facilitate preparation of a record (§1.653(g) and (h)) for final hearing, an applicant should file affidavits on paper which is 8-1/2 x 11 inches (21.8 by 27.9 cm.)." The commentator at the hearing suggested that "many people submitting a Rule 608(b) showing are going to want to rely upon that showing under Rule 672(b)" in those cases where an interference is allowed to proceed. Use of 8-1/2 by 11 inch paper will facilitate preparation of the ultimate record.

Two comments were received with respect to §1.609. The first comment suggested that the language "count or counts" in §1.609(b)(1) be changed to "proposed count or counts" and that each occurrence of "the count" in §1.609(b)(2) be changed to "each count". The suggestion is being adopted. These changes are editorial in nature and are designed to enhance the clarity of the rule. A second comment indicated that it was not clear to the commentator why it was necessary under §1.609(b)(3) for the examiner to identify the claims in an application or patent which are deemed to be patentable over any count. The commentator went on to say that the examiner "could probably readily identify claims which would clearly be unpatentable over a count and perhaps this would be all that is needed. If the examiner simply said all claims are considered unpatentable over the count, what recourse does the applicant have if he disagrees?" The purpose of having the examiner identify all claims which are patentable over the count or counts is to place the parties on notice that those claims are allowable notwithstanding any decision in the interference. Thus, in an interference between Jones and Smith if the examiner indicates that claim 8 of Jones is patentable over the proposed count or counts, Smith will know that Jones may receive a patent containing claim 8 even if Smith wins the interference. This will permit Smith to move under §1.633(c) to add claim 8 as corresponding to a count if Smith believes claim 8 defines the same patentable invention as one of the counts. Contrary to the suggestion in the comment, an examiner will not indicate that a claim is unpatentable over a count; rather, the examiner will designate the claim to correspond to a count. Each claim in a patent or application which is directed to the same patentable invention as a count will be designated to correspond to the count. Under the new practice, an examiner will no longer have occasion to indicate that a claim will be rejected over a lost count. To fully answer the commentator's question, if a claim is designated to correspond to a count and the applicant believes the claim does not define the same patentable invention as the count, the applicant may move under §1.633(c) to designate the claim as *not* corresponding to the count. If the motion is granted, the examiner would be authorized to issue the applicant a patent containing the claim even if the applicant loses the interference.

Several comments were received which discuss §1.611. One comment suggested addition of a paragraph (f) to permit expanded summary judgment proceedings in application-application interferences. Since expanded summary judgment proceedings are not contemplated, the suggestion is not being adopted. See the discussion above under analysis of comments of §1.608(b). Two comments suggested that §1.611(c)(8), which provides

that a notice declaring the interference shall specify among other things the "order of the parties," fails to take into account the fact one party may be "senior" as to one count and "junior" as to another count. As explained above in connection the analysis of the comments concerning §1.601(m), the "order of the parties" is a procedural tool. It indicates the "style" of the case—which practitioners are encouraged to use. If there are two counts and one party is "senior" as to one count and "junior" as to another count, the party has the burden of proof as to that count to which the party is "junior." See §1.657. Appropriate testimony periods will be set (§1.651(b)) to accommodate differing burdens of proof in cases where a party is "senior" on one count and "junior" on another count. The suggestions to change the meaning of "order of the parties" are not being adopted. Another comment suggested that §1.611(e) be changed to indicate that notice "shall" (as opposed to "may") be given in the *Official Gazette* when an interference has been declared involving a patent. No useful purpose would be served by changing "may" to "shall" inasmuch as the rights of parties involved in an interference are not affected by publication or non-publication of the fact that a patent is involved in the interference. By §1.611 the PTO intends to exercise discretion to publish in the *Official Gazette* an identification of patents which become involved in interferences; however, the PTO does not intend to undertake an absolute obligation to do so. The use of "may" better expresses the PTO's intent behind §1.611(e).

No written comments were received relating to §1.612. However, at the hearing two suggestions were made orally. The first suggestion was that where a "party" has obtained a copy of his "opponent's" affidavit under§1.131 or §1.608(b) (see §1.612(b)), the party should be required to notify the opponent. According to the suggestion, if the opponent then intends to rely on the affidavit (§1.671(e)), the opponent would have to "reserve" the affidavit on the party. This suggestion is not being adopted. When the party gains access to the affidavit under §1.612(b), the party may or may not make an accurate copy. On the other hand, the opponent knows exactly those portions of the affidavit upon which the opponent intends to rely. After careful consideration, the PTO believes on balance that it is better for the opponent to serve a copy of the evidence upon which the opponent intends to rely. Service avoids issues as to whether the party obtained under §1.612(b) a complete and/or accurate copy of the evidence upon which the opponent intends to rely.

The second suggestion concerning §1.612 made orally at the hearing was that a party should have access to an opponent's "predecessor application, even though the application may not be relied upon for 35 USC, Section 120 benefit." According to the suggestion, access to a "predecessor application" may be needed to uncover relevant evidence, including violations of 37 CFR §1.56. Specifically, the commentator called attention to *Driscoll* v. *Cebalo*, 731 F.2d 878, 221 USPQ 745 (Fed. Cir. 1984), *rehearing denied mem.*, (Fed. Cir. July 25, 1984). The suggestion is not being adopted. The Patent Statute (35 U.S.C. §122) provides that applications for patent will be preserved in secrecy by the PTO unless special circumstances are shown. Section 1.687(c) provides for "additional discovery" when required in the interest of justice. Additional discovery is believed to provide the necessary procedural vehicle for obtaining access to an opponent's "predecessor application."

One comment was received which suggested that the language "or members of the same firm of attorneys and agents" be added after "agent" in §1.613(b). The suggestion is being adopted, because it is believed to make the rule clearer.

One comment was received which said the following with respect to §1.616: "Sanctions should not be left to the Examiner-in-Chief (EIC) or BAI [Board of Patent Appeals and Interferences] - This Rule is unnecessary and should be deleted. An alternative would be to give sanction power only to the BAI." The suggestion to delete §1.616 is not being adopted. There are cases where sanctions are warranted. See e.g., *Woods* v. *Tsuchiya*, 207 USPQ 228 (Comm'r. Pat. 1979) and *Tezel* v. *Bellantoni*, 188 USPQ 688 (Bd.Pat.Int. 1975). The PTO continues to believe that imposition of a sanction (except judgment) by a single examiner-in-chief is appropriate. In any event, a party may ask a 3-member panel of the Board to reconsider any sanction which may be imposed by a single examiner-in-chief. See §1.640(c).

Several written and oral comments were received regarding§1.617.

One oral comment made at the hearing suggested that "it should be explicitly stated in Rule 617(a) that the decision of the examiner-in-chief to permit the interference to proceed is without prejudice to the right of any other party to attack the sufficiency of the Rule 608(b) showing when offered as Rule 672 testimony." The suggestion is not being adopted. While no explicit statement to that effect will be placed in §1.617(a), it necessarily follows that any opponent may attack the sufficiency of an applicant's showing under §1.608(b) when that showing is presented as evidence under §1.672. In summary judgment proceedings, all an applicant need do is make out a *prima facie* case. If the interference is allowed to proceed in the normal manner, the applicant must prove priority by a preponderance of evidence (when the application and the patent are copending) or beyond a reasonable doubt (when the application was filed after the patent issued). Manifestly, the burden in summary judgment proceedings is not as strict as the burden in proceedings following summary judgment. *Breuer* v. *DeMarinis*, 558 F.2d 22, 28, 194 USPQ 308, 313 (CCPA 1977) and *Schwab* v. *Pittman*, 451 F.2d 637, 640, 172 USPQ 69, 71 (CCPA 1971).

Several comments suggested that an applicant should be permitted as a matter of right to file a reply to any statement filed by any opponent under §1.617(d). The suggestion that a reply be permitted is being adopted. Accordingly, §1.617(e) has been changed to read: "[w]ithin a time authorized by the examiner-in-chief, an applicant may file a reply to any statement filed by any opponent." Some of the comments indicated that the applicant should be able to reply to a statement by a patentee or another opponent. The language "any opponent" in § 1.617(e) is intended to include both the patentee and any other opponent. The change in the last sentence of § 1.617(h) of "patentee" to "any opponent" is intended to make clear that all parties may appear at a hearing if the applicant requests a hearing.

One comment suggested that the patentee (and presumably any other opponent) should be allowed to present "evidence" during summary judgment proceedings. This suggestion is not being adopted. A change in the second sentence of §1.617(d) is intended to make clear that opponents may file statements in response to an applicant's "response," but the statement "shall be limited to discussing why all the evidence presented by the applicant does not overcome the reasons given by the examiner-in-chief for issuing the order to show cause." The PTO does not intend to expand summary judgment proceedings into a "mini-interference." An applicant presents evidence under §1.608(b). If the examiner-in-chief finds that evidence insufficient, an order to show cause stating reasons for the insufficiency is issued. An applicant may respond and, if appropriate, file "additional evidence." The PTO intends to be rather strict in permitting the filing of new evidence. After the applicant responds (with or without additional evidence), any opponent may file a statement. In the statement, the opponent should be free to comment on all the evidence (original and additional) which the applicant presents. Compare *In re Plockinger*, 481 F.2d 1327, 179 USPQ 103 (CCPA 1973). Under §1.617(d) the opponent may not urge a rationale for summary judgment which does not appear in the order to show cause issued by the examiner-in-chief. However, it is not the PTO's intent to interpret§1.617(d) in the narrow manner the Court of Customs and Patent Appeals interpreted 37 CFR §1.204(c) in *Kahl* v. *Scoville*, 609 F.2d 991, 995-996, 203 USPQ 652, 656 [headnote 6] (CCPA 1979). An example will illustrate how the PTO intends to interpret § 1.617(d).

Example 35: An applicant copies claims from a patent and is required to submit a showing under §1.608(b). Upon review of the showing under §1.608(b), the examiner-in-chief concludes that the showing fails to make out a *prima facie* case of priority, because applicant has failed to show an actual reduction to practice. Applicant files a response and includes additional evidence which purports to show an actual reduction to practice. The patentee then files a statement in which two arguments are made. *First*, patentee argues that the additional evidence has not been properly authenticated. *Second*, patentee argues that even if applicant has shown an actual reduction to practice, summary judgment is nevertheless appropriate because applicant suppressed and concealed after the actual reduction to practice. The first argument is proper, but the second argument is not. A patentee may comment on the sufficiency of the applicant's evidence. Fairness, however, dictates that summary judgment be granted only after fair notice in the order to show cause. Accordingly, summary judgment will not be based on a rationale raised by a patentee in a statement which does not correspond to the rationale used by the examiner-in-chief in the order to show cause.

A change has been made in §1.617(a) and §1.617(g) to make clear that once summary judgment proceedings have concluded, an interference will proceed "in the normal manner." The change is intended to codify the decisions in *Walsh* v. *Sakai*, 167 USPQ 465 (Comm'r.Pat. 1967) and *Ing* v. *Chiou*, 207 USPQ 321 (Comm'r.Pat. 1979). This change is further discussed in the discussion of the comments received with respect to §1.635.

One comment was received which indicated that §1.618:

"needs qualification. It may be appropriate to resubmit certain papers (See also 1.644(d) last sentence)."

The precise "qualification" needed was not set forth in the comment. Likewise, no example of "certain papers" was set forth. Under the circumstances, the PTO declines to make any change in §1.618.

Several comments were received which discussed the rules relating to preliminary statements.

Three comments were received which suggested that §1.622(a) be amended to "take into account several court decisions holding that joint inventors need not be joint inventors of [the subject matter of] all claims." Changes have been made in §1.622(a) consistent with the amendment to 35 U.S.C. §116 made by Public Law 98-622.

One comment was critical of §§1.623(c); 1.624(c); and 1.625(c), because §1.628(b) does not cover the possibility that a drawing might not be available, e.g., a drawing destroyed in "a fire." Section 1.628(b) has been amended to permit a party to allege a date when a first drawing or first written description was made in those circumstances where the first drawing or first written description is not available. The party will be required (1) to show good cause and explain in the preliminary statement why a copy of the drawing or written description cannot be attached to the preliminary statement and (2) attach to the preliminary statement the earliest drawing or written description made in or introduced into the United States which is available. The party would also be required to file a motion to amend its preliminary statement promptly after the drawing or written description becomes available. It is the PTO's intent by the amendment to §1.628(b) to overrule the holding of headnote[1] of *Reddy* v. *Davis*, 187 USPQ 386, 388 (Comm'r.Pat. 1975)

Another comment was critical of the language "conceived" in §1.623(a)(4). The current rules do not require a party to allege a conception; rather, they require one to allege the date of the certain acts which, if proved, would establish conception. See 37 CFR §1.216(a)(4). According to the commentator, an allegation of conception is "unprovable and meaningless." The use of "conception" in §1.623(a)(4) is intentional and is designed to permit a party to "plead" the earliest date on which it believes conception occurred. Contrary to the suggestion in the comment, "conception" is not meaningless and may be proved during the the testimony period. See *Gould* v. *Schawlow*, 363 F.2d 908, 150 USPQ 634 (CCPA 1966); *Meitzner* v. *Corte*, 410 F.2d 433, 161 USPQ 599 (CCPA 1969); and *Mergenthaler* v. *Scudder*, 11 App.D.C. 264, 1897 C.D. 724 (D.C.Cir. 1897). There is no need to prove "conception" in the preliminary statement.

A preliminary statement serves several useful purposes in an interference: (1) it serves to limit a party's proofs as to time, (2) it serves as a vehicle for permitting the examiner-in-chief or the Board to issue orders to show cause in those cases where it would be futile to take testimony, and (3) it serves as notice to an opponent of the case which is alleged by a party. Under the rules being announced herein, the issues which will be raised and decided by the Board at final hearing are made known during the interlocutory stage through (a) the preliminary statement, (b) motions under §1.633 and decisions thereon, and (c) notices under §1.632 of a party's intent to argue abandonment, suppression, or concealment. Section 1.632(a)(4) requires a party to allege a date of conception—it does not require proof of conception. The allegation puts the opponent on notice that the party intends to prove conception as of a date no earlier than the date alleged in the preliminary statement.

One comment suggested that the rules relating to preliminary statements are deficient because they do not permit one to allege allegations concerning tapes. Specifically, the commentator said: "What about a taped transcript of an invention, a practice being followed in a number of research departments of corporations?" If making a tape is the last act of conception, a party may allege the date the tape was made as the conception date under §1.623(a)(4).

Several comments were received which suggested that a party should not have to allege derivation in a preliminary statement because the party may not know derivation occurred until the testimony period. Section 1.625 requires a party to file a preliminary statement when derivation is an issue. If derivation is not known or discovered prior to the date the preliminary statement is due, a party may move to amend the preliminary statement and allege derivation promptly after existence of derivation is discovered.

Several comments discussing §1.624 were received. One comment suggested that §1.624(a)(5) should require a party to state, where appropriate, that no actual reduction to practice of an invention made in a foreign country was introduced into the United States. This suggestion is being adopted and a second sentence has been added to §1.624(a)(5) which provides: "If an actual reduction to practice of the invention was not introduced into the United States, the preliminary statement shall so state." This sentence conforms §1.624(a)(5) to the allegation required in the second sentence of §1.623(a)(5). Another comment suggested that the language "in the United States" be inserted after "reasonable diligence" in §1.624(a)(6) and that all occurrences of the language "was made" in §1.624(c) be changed to "was introduced into the United States". This suggestion is being adopted. As noted in the comment, "[t] he changes . . . are necessary to clarify that for an invention made abroad the only relevant activities are those which occur in the United States." See 35 U.S.C. §104.

One comment asked "how does one introduce 'an actual reduction to practice of the invention' in the United States?" *Breuer* v. *DeMarinis*, 558 F.2d 22, 194 USPQ 308 (CCPA 1971), illustrates a case where an actual reduction to practice abroad was introduced into the United States.

One comment suggested that §1.627(a) be changed to require preliminary statements "be enclosed in an outer envelope addressed to the Commissioner of Patents and Trademarks and be additionally marked Box Interference—Preliminary Statement." According to the com-

ment, the confidentiality of preliminary statements "envisioned under the proposed rules would be further enhanced . . . ." The suggestion is not being adopted. The PTO believes it is sufficient if preliminary statements are enclosed in a sealed envelope as specified in §1.627(a). The Board will not permit access to preliminary statements which have not been ordered opened by an examiner-in-chief.

Several comments discussing §1.629 were received. One comment suggested that the first sentence ("A preliminary statement should be carefully prepared.") should not appear in §1.629(a). This suggestion is being adopted. The PTO agrees with the commentator that the sentence:

> "no longer appears necessary or appropriate in the context of rulemaking. The remainder of the paragraph makes the admonition redundant at best."

Two comments were received which suggested that the word "normally" be deleted from the last sentence of §1.629(d). The suggestions are not being adopted. A preliminary statement is a pleading. The Board does not evaluate or consider the content of a drawing or written description prior to final hearing. At final hearing, in fact, the Board will only consider the drawing or written description if a party places the drawing or written description in evidence. The word "normally" first appeared in 37 CFR §1.223(c), last sentence, in 1978 (see e.g., 973 TMOG 19 (Aug. 1, 1978)). The last sentence of 37 CFR §1.223(c) was intended to codify headnote [2] of *Reddy* v. *Davis*, 187 USPQ 386 (Comm'r.Pat. 1975). The word "normally" appears in the rule to permit the Board to exercise discretion to evaluate or consider the content of a drawing or written description in some unusual and presently unforeseen circumstance.

One comment suggested that "no earlier than" in §1.629(b) be changed to "as early as". The suggestion is being adopted inasmuch as it is believed to more clearly state the intent of the rule.

One comment suggested that §1.629(d) "is improper because it fails to take into account testimony which can show that a drawing and/or written description were actually made even though the drawing and/or written description are not now available." A change to §1.628(d) and addition of "unless the party complies with §1.628(b)" to the first sentence of §1.629(d) eliminates the problem raised by the commentator.

One comment discussing §1.631(a) was received which expressed the view that a junior party should be required to send a copy of its preliminary statement to the senior party even if the senior party does not file a preliminary statement. According to the commentator, the senior party is *prima facie* the first inventor and at some time it will have to know the earliest dates alleged by the junior party. The rules require all parties to file a preliminary statement. If a junior party does not file a preliminary statement, it will be denied access to any other preliminary statement which is filed. A senior party, however, is always entitled to access to any preliminary statement filed by a junior party. See e.g., §1.631(b). However, a junior party will only be required to serve a senior party who files a statement.

Numerous comments were received discussing §1.633.

One commentator asked: "What sort of a judgment is in order if a count is not patentable over the prior art to an opponent?" Section 1.633(a) authorizes a party to bring a motion for judgment on the ground that the opponent's *claim* corresponding to a count is not patentable. It is important to note that the motion raises the patentability of the opponent's *claim* not the count. Accordingly, by a motion under §1.633(a), a party seeks entry of a judgment that the opponent is not entitled to a patent containing a claim corresponding to a count.

Two comments questioned the nature of the judgment when a motion under §1.633(b) is granted. Section 1.633(b) authorizes the filing of a motion for judgment on the ground that there is no interference-in-fact. If a motion under §1.633(b) is granted, the judgment would provide that each party is entitled to a patent containing that party's claims corresponding to the count. Judgments in interferences under these rules will determine a party's entitlement or lack of entitlement to *claims* corresponding to a count.

One comment expressed the hope that "third party inventorship" would not be made an issue in interferences. Contrary to the hope expressed by the commentator, "third party inventorship" can be made the subject of a motion under §1.633(a). Any ground of unpatentability may be made the subject of a motion under §1.633(a) except (1) priority of invention of the subject matter of a count by the moving party as against any opponent or (2) derivation of the subject matter of a count by an opponent from the moving party. It should be noted that under past practice, third party inventorship has not been considered "ancillary" to priority. *Sheffner* v. *Gallo*, 515 F.2d 1169, 185 USPQ 726 (CCPA 1975). However, under these rules, the question of whether an issue is "ancillary" no longer arises. See 130 Cong. Rec. H10528 (daily ed. Oct. 1, 1984)(statement by Rep. Kastenmeier). Public Law 98-622 gives the Board authority to consider priority and *patentability*. Third party inventorship involves a question of patentability. 35 U.S.C. §102(f). One comment pointed out that §1.633(e) adopts the estoppel rule approved by the Court of Customs and Patent Appeals in *Avery* v. *Chase*, 101 F.2d 205, 40 USPQ 343 (CCPA 1939), *cert. denied*, 307 U.S. 638 (1939), while rejecting the rule announced by the U. S. Court of Appeals for the District of Columbia Circuit in *International Cellucotton Products Co.* v. *Coe*, 35 F.2d 869, 30 USPQ 366 (D.C. Cir. 1936). See also *American Cyanamid Co.* v. *Coe*, 106 F.2d 851, 42 USPQ 302 (D.C. Cir. 1939). The commentator is correct in noting that the rules adopt the estoppel rule approved in *Avery* v. *Chase*. The following comment by the CCPA in its opinion in *In re Shimer*, 69 F.2d 556, 558, 21 USPQ 161, 163 (CCPA 1934), accurately expresses the intent of the PTO in promulgating §§1.633(e) and 1.658(c):

> It may be stated that this rule works no hardship to him who is diligent in pursuit of his rights. When an interference is declared, the files of his contestants are open to him. He has full cognizance of their disclosures and claims. So advised, it becomes his duty to put forward every claim he has. [Rule 1.633(e)] . . . affords him this opportunity. If the rule be not enforced or enforceable, then delays and litigation are greatly increased. It is quite obvious that the doctrine of estoppel, as applied in these cases, results in the better conduct of the business of the Patent[and Trademark] Office and in the public good.

One comment suggested that the following be added to the end of §1.633(c):

> A motion to add or substitute a count shall be construed as an automatic request for the benefit of any earlier application [filing] dates accorded the existing count, and also as encompassed by a contemporaneous motion under §1.633(f) or (g), unless indicated otherwise. Any opposition thereto must be raised in a motion opposition pursuant to §1.638.

The suggestion is not being adopted. A specific reference to §1.637(c) appears in §1.633(c). The provisions of §1.637(c) spell out in detail the steps which a moving party must take in filing a motion under §1.633(c). One of those steps requires the moving party to request benefit of any earlier application. The mere fact that benefit has been accorded for a "first" count does not establish that benefit should be accorded for a "second" count. The PTO believes the burden should be on the moving party to point out where an earlier application supports a count rather than placing the burden on an opponent in the first instance to point out where an earlier application fails to support particular subject matter. There is no compelling reason to force the opponent "to prove a negative." It should be noted that the language "Where appropriate," has been deleted in every instance from §1.637 to make clear that the burden lies on the moving party to request benefit when that party files a motion under §1.633.

At the hearing, one individual commented that §1.633(a) is not clear as to whether a motion for judgment based on "fraudulent appropriation of the moving party's invention by his opponent" excluded. The "fraudulent appropriation of the moving party's invention by his opponent" is derivation. Section 1.633(a)(2) excludes both "innocent" derivation (e.g., through a third party and unknown to either party in an interference) or "fraudulent" derivation (e.g., where one party knowingly takes the invention from an opponent). In either event if derivation by an opponent of a party's invention is proved, the party will be awarded judgment.

One comment made the following statement:

> An opponent faced with a motion for judgment on the ground that a count is unpatentable may not be able to prove patentability in the short time periods. Provision should be made for extensions of time in such cases.

Provisions for extensions of time are made in §1.645.

One comment addressed Example 23 which appeared in the notice of proposed rulemaking. Example 23 also appears in a slightly modified form herein and, as modified, takes into account discussion in the comment. The commentator believed that the motion mentioned in Example 23 should be denied and that a testimony period should be set. Accordingly to the commentator, the granting of the motion would shift the burden to the opponent of the motion. The commentator's point is well taken. Actually, the motion should be deferred to final hearing and a testimony period would be set. In ruling on motions under §1.633, it will not always be possible for the examiner-in-chief to grant or deny outright a motion. When testimony is needed to rule on a motion, the proper course of action is to defer a decision on the motion to final hearing and permit testimony. See §1.639(c). The moving party retains the burden. If testimony is taken on patentability, the parties would also have to take testimony on priority. With all testimony at its disposal, the Board would then be in a position to rule on all issues and award a judgment.

One comment asked how the claims of the parties would be designated to correspond to the counts if in Example 18 a motion to substitute Count 2 (benzene) and add Count 3 (chloroform) was granted. The following Example 36 answers the commentator's question.

Example 36: The facts in this example are the same as Example 18. Assume that applicant AB believes that benzene and chloroform define separate patentable inventions. Applicant AB would file a motion under §1.633(c)(1) to substitute Count 2 (benzene) for Count 1 (Markush group of benzene or chloroform) and add Count 3 (chloroform). If the examiner-in-chief grants the motion, the interference would be redeclared by deleting Count 1 and substituting in its place Counts 2 and 3. Claims 1 and 2 of the patent H and claims 11 and 12 of application AB would be designated to correspond to Count 2. Claims 1 and 3 of patent H and claims 11 and 13 of application AB would be designated to correspond to Count 3. If one party proves priority with respect to both benzene and chloroform, that party would be entitled to all claims in its application or patent corresponding to Counts 2 and 3. The other party would not be entitled to a patent containing any claim corresponding to Counts 2 and 3. If patentee H proves priority with respect to benzene and applicant AB proves priority with respect to chloroform (assuming there was no issue raised at final hearing with respect to the patentable distinctness of benzene and chloroform), the judgment would provide that patentee H is not entitled to a patent with claims 1 and 3, but is entitled to a patent with claim 2 and that applicant AB is not entitled to a patent with claims 11 and 12, but is entitled to a patent with claim 13. If an issue is properly raised at final hearing as to whether benzene and chloroform are the same patentable invention and the Board holds that they are the same patentable invention, the party proving the earliest priority as to either benzene or chloroform would prevail as to all claims. Thus, if patentee H invented benzene before applicant AB invented benzene or chloroform, patentee H would be entitled to a patent containing claims 1 through 3 even if applicant AB invented chloroform before patentee H invented chloroform. Applicant AB would not be entitled to a patent with claims 11 through 13.

An oral comment was received by telephone which raised the question of whether a party is, or could be, required to present in the party's application every claim which the party may ever seek to obtain in a patent based on the party's application. According to the commentator, such a requirement would prevent the party from proceeding *ex parte* after the interference on any claim on which a favorable judgment was not entered. It is not the PTO's intent to require a party who is an applicant to present at the outset all claims which the party may ever seek to obtain in a patent based on his application. Parties in interference cases should recognize, however, that the interference estoppel provisions of §1.658(c) have been expanded with the view to eliminating much of the *ex parte* maneuvering which has taken place in the past after an interference is terminated. Accordingly, a party who fails to move to place a matter in issue runs a considerable risk that the party will not be able to raise the issue *ex parte* after an interference is terminated. Nevertheless, the PTO has determined that it will not, at this time, adopt the requirement suggested by the commentator. The commentator also suggested, contingent on his earlier suggestion being rejected, that the rules provide that a party be authorized to file a motion to require an opponent who is an applicant to add a claim to the opponent's application and to designate the claim as corresponding to a count. This suggestion is being adopted by addition of § 1.633(c)(5). Paragraph (c)(5) authorizes the filing of a motion to redefine the interfering subject matter by requiring an opponent who is an applicant to add a claim and to designate the claim to correspond to a count. A companion addition of paragraph (c)(5) to §1.637 sets out the requirements of a motion under §1.633(c)(5). Those requirements are: the moving party must (1) propose a claim to be added to the opponent's application, (2) show the patentability of the claim to the opponent and apply the terms of the claim to the disclosure of the opponent's application, (3) identify the count to which the proposed claim shall be designated to correspond, and (4) show that the proposed claim defines the same patentable invention as the count to which it will be designated to correspond. The following example illustrates how practice under §§1.633(c)(5) and 1.637(c)(5) is expected to occur.

Example 37: In this example, some of the facts set out in Example 32 will be used. Application AV discloses engines and in particular a 6-cylinder engine. Application AV contains only claim 1 (engine). Application AW discloses engines in general, but does not specifically disclose a 6-cylinder engine. Application AW contains only a single claim 3 (engine). Seeing that application AV specifically discloses a 6-cylinder engine and believing that a 6-cylinder engine is the same patentable invention as "engine," AW could move under §1.633(c)(5) to require applicant AV to add a claim (6-cylinder engine) and to have the claim designated to correspond to the count (engine). Applicant AV could oppose on the ground that a 6-cylinder engine is not the "same patentable invention" as "engine." If the motion is granted, applicant AV would be required to add a claim to 6-cylinder engine and the claim would be designated to correspond to the count. If applicant AV loses the interference, the judgment would preclude applicant AV from obtaining a patent with claims to "engine" or "6-cylinder engine." If the motion is denied on the basis that a 6-cylinder engine is not the same patentable invention, applicant AV would not be required to present a claim to 6-cylinder engine and would be able to pursue such a claim *ex parte* even if applicant AV loses the interference.

If an applicant is ordered by an examiner-in-chief to file an amendment to present a claim and the applicant

fails or refuses to timely present the amendment, the failure or refusal will be taken without further action as a disclaimer by the applicant of the subject matter of the claim. See the second sentence of §1.640(b)(1).

At the hearing, one commentator indicated that it is not clear whether §1.635 "would permit a motion for judgment in a situation where a junior party's case-in-chief fails as a matter of law to overcome a senior party's effective filing date." Under the rules, it is not the intent of the PTO to allow a senior party to test the sufficiency of the case-in-chief of a junior party prior to final hearing. Thus, a "motion for a directed verdict" (see Rule 50(a) of the Federal Rules of Civil Procedure) at the conclusion of the junior party's case-in-chief and prior to a senior party's case-in-chief is not authorized under the rules. If a senior party believes the case-in-chief of the junior party is insufficient as a matter of law, the senior party may *elect* to proceed immediately to final hearing. If the senior party is incorrect, however, the senior party will have waived any right to present any case-in-chief or rebuttal. See e.g., *Comstock* v. *Kroekel*, 200 USPQ 548, 550 n. 4 (Comm'r.Pat. 1978); *Lorenian* v. *Winstead*, 127 USPQ 501, 508 (Bd.Pat.Int. 1959); and, more recently, *Burson* v. *Carmichael*, 731 F.2d 849, 221 USPQ 664 (Fed. Cir. 1984) ("There is no support in law for repeated bites at the apple"). This would be true even if the only evidence relied upon by the junior party is a showing under 1.608(b). In this respect, the rules codify the decision in *Walsh* v. *Sakai*, 167 USPQ 465 (Comm'r.Pat. 1970).

Two comments were received which suggested that the twenty-day period in §1.636(b) is too short. It was suggested that a longer time period be set and one comment suggested thirty (30) days. The suggestions are not being adopted. The time period set for filing oppositions will normally be set during a telephone conference call between the examiner-in-chief and the attorneys for the parties. The twenty-day period appears in the rule in the event a specific time for filing oppositions is not set by an examiner-in-chief. The twenty-day period is deemed to be sufficient in most cases. Twenty days are currently allowed to respond to a motion. See 37 CFR §1.231(b). It should be noted that the twenty-day period is longer than the minimum period allowed by the Federal Rules of Civil Procedure for responding to motions. See Rule 6(d) and (e).

Two comments were received which discussed §1.637. Both comments suggested that a sentence be added to §1.637(f)(2) to require a translation to be filed when a party moves for benefit of an earlier foreign application which is not in English. The suggestions are being adopted and the following has been added as the last sentence of §1.637(f)(2): "If the earlier applicatcn filed abroad is not in English, the requirements of §1.647 must also be met." Section 1.647 requires a translation whenever a party relies on a document in a language other than English. One comment suggested that the language of §1.637(f)(3) ("Show that the earlier application discloses an embodiment within the scope of the each count.") may be "contrary to past decisions of the CCPA which have held a disclosure can be good without a specific embodiment." The critical issue in each benefit situation is whether the earlier application constitutes a constructive reduction to practice of the invention defined by the count. The issue is necessarily resolved on a case-by-case basis and the presence or absence of an embodiment is only one factor to be considered. Accordingly, the language of §1.647(f)(2) has been changed to read: "Show that the earlier application constitutes a constructive reduction to practice of each count." The comment also criticized the use of the word "each" in §1.647(f)(2). The term "each" is used to make clear that when there are two or more counts, the moving party must show that the earlier application constitutes a constructive reduction to practice for each count. There are cases where a disclosure in an earlier application would constitute a constructive reduction to practice for one count but not for another count.

Several changes have been made to §1.637 which were not made as a result of a comment submitted from the public. Each occurrence of the language "Where appropriate," in §1.637 has been deleted as being unnecessary and possibly confusing. Whenever a party wants or believes that it is entitled to benefit of an earlier application, the party must file a motion under §1.633(f) for benefit. The language "Where appropriate" may have given parties the mistaken impression that a motion was not necessary where benefit of the earlier application had been accorded in the papers declaring the interference. See the discussion above of the suggested change to §1.633(c) which was rejected.

The language "or adding a claim to be designated to correspond to a count" has been added to §1.637(c)(2). The change supplements a change made in §1.633(c)(2). Section 1.637(c)(2) sets out the requirements for a preliminary motion to redefine the interfering subject matter by adding a claim in the moving party's application and to designate the claim to correspond to a count.

In §1.637(c)(2)(ii), the language "Apply the terms of each proposed claim to the disclosure of the application" has been changed to "Show that the proposed or added claim defines the same patentable invention as the count". This change was made to add the requirement of showing that the new claim defines the same patentable invention as the count and to eliminate a requirement already contained in §1.637(c)(2)(iii).

Section 1.637(c)(2)(iii) was changed to refer to an "amended or added claim" and thereby conform the language of the section to the language of §1.633(c)(2).

Paragraph (c)(5) was added to set out the requirements of a motion under §1.633(c)(5) which permits a party to move to require an opponent who is an applicant to add a claim to the application and to designate the claim to correspond to a count. See Example 37.

Two comments were made concerning §1.638. One comment suggested that the twenty-day periods of paragraphs (a) and (b) were too short. The PTO has evaluated the time periods of paragraphs (a) and (b) and has decided that no change will be made to those periods. Attention is directed to the discussion above of the comments concerning §1.636(b) which also contains a twenty-day period.

Another comment made at the hearing suggested that a reply to an opposition to a motion should be permitted as a matter of course. Upon consideration of the comment, it has been decided to authorize the filing of replies to opposition to all motions. Presently, replies are permitting as a matter of course only for oppositions to motions under 37 CFR §1.231. Section 1.638(b), as changed, would permit the reply in every instance. The PTO over the years has received complaints concerning the inability of a party to file replies. The change being made in §1.638(b) will be reviewed sometime in the future to determine whether authorizing replies is helpful to the Board and/or whether undue delay in resolving interference occurs because replies are filed. Moreover, the PTO will make a judgment on whether "new issues" are being raised as a matter of course in replies. It can thus be seen that the change in authorizing replies may be considered experimental and could be changed in the future if found to be counter-productive or inconsistent with the objective of resolving interferences in a relatively prompt manner.

One comment discussing §1.639 was received. The comment states:

> The requirement that proofs of alleged material facts *must* be filed may be difficult or impossible to meet in view of the shortened times. [The] rule should make provisions for timely submission of proofs within reasonable times.

To the extent that the comment suggests setting specific times in the rules, the suggestion is not being adopted. It should be noted that if affidavits cannot be timely prepared to be filed with a motion, the moving party may wish to take advantage of paragraph (c) which requires a party to specify any testimony needed to resolve a motion.

One change was made in §1.639(c) to make clear that a moving party or an opponent may describe any testimony needed to resolve a motion under either §1.633 or §1.634. Often, testimony is needed to resolve inventorship disputes. Accordingly, a party may describe testimony needed to resolve motions to correct inventorship under §1.634. It should be noted that if a party relies solely on affidavits in support of a motion (under §1.633 or §1.634) and the issue raised in the motion is to be considered at final hearing, the party must comply with §1.671(e).

Several comments were received which discussed §1.640. One comment asked: "When the final sentence speaks of a panel deciding the request for reconsideration, does this mean that the panel decides whether to reconsider or whether to modify the decision?" It was the PTO's intent that the panel make a decision on whether to modify the decision made by the single examiner-in-chief. Accordingly, the language "shall be decided by a panel" in the last sentence of §1.640(c) has been changed to read: "shall be acted on by a panel. Another change in language to the fourth sentence of §1.640(c) has been made to make clear that a decision of a single examiner-in-chief will not ordinarily be modified by a panel without an opportunity to file an opposition.

Another comment suggested that §1.640(a) be changed to "allow, even encourage, the examiner-in-chief to travel to conferences where more convenient/practical for all concerned." This suggestion is not being adopted. The use of a telephone conference call eliminates the need to adopt the suggestion. The same comment suggested that the "speedy and inexpensive" language of the second sentence of §1.640(b) be deleted. The suggestion is not being adopted. The comment fails to explain why the language should be deleted. It is obvious that a motion cannot always be granted or denied; other action is often appropriate, e.g., deferring consideration of a motion to final hearing. Section 1.640(b) gives the examiner-in-chief discretion to take appropriate action and the "just, speedy, and inexpensive determination" language provides some standard which an examiner-in-chief may follow in those cases where granting or denying a motion is not appropriate.

One comment was received which suggested that §1.640 be changed to provide that an examiner-in-chief hold a hearing to determine whether an interference should proceed in those cases where a junior party fails to allege a date prior to the senior party and remains in an interference only because the junior party is alleging "fraud" by the senior party. The suggestion is not being adopted. If a party believes that an opponent has committed "fraud" or has engaged in "inequitable conduct," the party may file a motion under §1.633(a) for judgment. Obviously, a motion for judgment on the basis of "fraud" or "inequitable conduct" must make out a case by clear and convincing evidence. The examiner-in-chief has sufficient authority under the rules to preclude a party from proceeding in an interference on a baseless charge of "fraud" or "inequitable conduct."

One oral comment was received which suggested that the examiner-in-chief be required to consult with an examiner prior to deciding a preliminary motion for judgment under §1.633(a) based on patentability. The oral comment suggested alternate proposals:

(1) The examiner-in-chief will normally obtain a patentability report when deciding motions involving a question of patentability.

(2) The examiner-in-chief will consult with a primary examiner prior to deciding a motion raising an issue of patentability.

The suggestion of the oral comment is not being adopted. An examiner-in-chief is a person having "competent legal knowledge and scientific ability." 35 U.S.C. §7. Examiners-in-chief review decisions of examiners on questions of patentability. Accordingly, there is no reason to *require* an examiner-in-chief to consult with an examiner on a question of patentability. The PTO recognizes that many examiners possess special expertise in particular arts. It is for this reason that §1.640(b) provides that "[a] n examiner-in-chief *may* consult with an examiner in deciding motions involving a question of patentability" (emphasis added). Thus, an examiner-in-chief is authorized to consult with an examiner on a question of patentability where the examiner-in-chief believes consultation will be beneficial.

One comment suggested that §1.642 be changed to permit an examiner-in-chief to add a newly discovered patent, as well as newly discovered applications, to an interference. Inasmuch as 35 U.S.C. §135(a) authorizes interferences between applications and patents, the suggestion is being adopted. The language "application" in §1.642 has been changed to read: "application or patent.

Several comments discussing §1.644 were received. One commentator made four suggestions, none of which are being adopted. First, the commentator suggested that there should be no fee for a petition under §1.644(a)(1). This suggestion is not being adopted. A decision on a petition is a service performed by the PTO on behalf of a petitioner. The Commissioner is authorized to charge fees for services performed. 35 U.S.C. § 41(d). Second, the commentator suggested that the last sentence of §1.644(d) be deleted. This suggestion is not being adopted. In the past when parties have filed petitions, copies of documents already in the interference file have been attached to the petition. The copies tend to increase unnecessarily the size of the file of an interference. Inasmuch as the document submitted with the petition is already in the interference, there is no need to file a "second" copy of the document. Parties can expect that petitions will be returned (§1.618) if the petition is accompanied by documents which are already in the interference file. Third, the commentator argued that the "requirement of service within one (1) day is too onerous and should be deleted" from §1.644(g). No rationale was given in support of the argument. Petitions have caused considerable delay in interference cases in the past. To avoid unnecessary delay and surprise on the part of the opponent, the PTO has decided to require that service of a petition be such that delivery to the opponent is within one (1) working day. Service within one day should not ordinarily be difficult in view of "Express Mail" and numerous commercial one-day delivery services available. Lastly, the commentator suggested that §1.644(i) be changed to provide that decision on a petition would not be delegated to the examiner-in-chief handling the interference. The suggestion to change §1.644(i) is not being adopted. However, when a PTO employee is granted authority to decide a petition in an interference case, the employee would not be the examiner-in-chief handling the interference or an employee on a panel of the Board deciding the petition. It would be expected that an employee deciding a petition by delegation of authority would be one who could exercise independent judgment on the petition bearing in mind that a petition will be decided on the record made before the examiner-in-chief or the panel. In connection with this latter point, findings of fact by an examiner-in-chief or the Board will be presumed to be correct unless shown to be clearly erroneous. Discretionary action by an examiner-in-chief or the Board will not be overturned unless it is shown that an abuse of discretion occurred.

One commentator asked the following: "Is §1.644(g) intended to apply only to 'oppositions' to §1.644 petitions, or is it also applicable to §1.638 oppositions?" The provisions of §1.644(g) apply only to petitions filed under§1.644; those provisions do not apply to oppositions under §1.638.

Two comments suggested that §1.644(a)(2) be changed to include an express statement that a petition under paragraph (a)(2) could not be filed until after the Board has entered judgment and that the petition could not relate to the merits of priority of invention or patentability or a question of whether evidence is admissible under the Federal Rules of Evidence. The suggestions are being adopted and appropriate language has been added to §1.644(a)(2) after the word "Commissioner". The change was suggested by the commentators so that no reasonable person could possibly overlook the fact that a petition to exercise supervisory authority can

be filed *only after entry of judgment.* It should be noted that the language "and shall not relate to (1) the merits of priority of invention or patentability or (2) the admissibility of evidence under the Federal Rules of Evidence" has been deleted from §1.644(b) in view of the change to §1.644(a)(2).

One comment suggested that the last sentence of § 1.644(f) be changed to make clear that a decision would not ordinarily be modified until the Commissioner had requested an opposition to a request for reconsideration. This suggestion has been adopted and an appropriate change has been made to the last sentence of §1.644(g).

One comment suggested that the word "shall" in the last sentence of §1.644(b) precludes the filing of an opposition beyond the 15-day period specified in the rules. According to the commentator, the opposition should also be considered timely if filed within "any appropriate extension." A party may move to extend the time for filing an opposition. See §1.645.

One comment argued that §1.644(a)(1) cannot "be squared with the statute as interpreted in *Myers* [v. *Feigelman,* 455 F.2d 596, 172 USPQ 580 (CCPA 1972)]." The rationale in support of the comment is the following:

> I presume that the limitation in subparagraph (b) that a petition under subparagraph (a)(2) "shall not relate to . . . the merits of priority of invention or patentability or . . . the admissibility of evidence" is intended to avoid conflict with *Myers* v. *Feigelman,* 172 USPQ 580 (CCPA 1972), and its progeny. However, I read *Myers* as saying that, if the board has statutory authority to make a decision (including all the myriad of ancillary decisions that the panels and/or the single examiner-in-chief will be making under the new procedure), then the Commissioner does not have authority to review the board's or the single examiner-in-chief's decision. Or, to put it the other way around, if the Commissioner reviews an examiner-in-chief's decision, he is stepping into the shoes of the examiner-in-chief, and the Commissioner's decision is in turn reviewable by the panel (which is, of course, the only entity authorized to exercise the *statutory* jurisdiction of the board—see *Knickerbacker Toy Co.* v. *Faultless Starch Co.,* 175 USPQ 417 n.8 (CCPA 1972)). Thus, I don't see how proposed section 1.644(a)(1) can possibly be squared with the statute as interpreted in *Myers.*

It is true that the CCPA has stated that, "in performing his duties, the Commissioner cannot usurp the functions or impinge upon the jurisdiction of the Board . . . established by 35 U.S.C. 135." *In re Dickinson,* 299 F.2d 954, 958, 133 USPQ 39, 43 (CCPA 1962). See also *Myers* v. *Feigelman, supra,* 455 F.2d at 599 n. 8, 172 USPQ at 583 n. 8. However, it is also true that the Commissioner "shall superintend or perform all duties required by law respecting the granting and issuing of patents . . . ." 35 U.S.C. §6; *Kingsland* v. *Carter Carburetor Corp.,* 83 U.S.App.D.C. 266, 168 F.2d 565, 77 USPQ 499 (D.C.Cir. 1948); *In re Staeger,* 189 USPQ 284, 285 n. 2 (Comm'r.Pat. 1974). The Commissioner, subject to approval of the Secretary of Commerce, establishes the procedure by which the examiners-in-chief and the Board will consider interference cases. 35 U.S.C. §6. See also 35 U.S.C. §23 relating to affidavits and depositions.

Under the rules, the Commissioner will not determine on petition either "priority of invention" or "patentability." See §1.644(b). Likewise, the Commissioner will not consider whether evidence should have been admitted or excluded under the Federal Rules of Evidence. The PTO believes that the federal courts, which routinely rule on admissibility under the Federal Rules, are in a better position to determine whether the Board properly interpreted the Federal Rules of Evidence.

While the Commissioner will not decide "priority of invention" or "patentability" under 35 U.S.C. §135(a), it does not follow that the Commissioner is precluded from interpreting PTO rules on procedural matters, including procedural matters related to the admissibility of evidence on some basis other than the Federal Rules of Evidence, e.g., whether a party has complied with a PTO rule such as §1.671(e)(procedure for relying on affidavits) or §1.671(g)(permission required for obtaining evidence by subpoena).

Full consideration has been given to the comment. The PTO nevertheless believes that §1.644(a)(1) is not inconsistent with law. Several comments concerning §1.645 were received. One comment suggested that "to" be inserted in the first sentence of paragraph (a) before "file a notice of appeal" and "commence a civil action". According to the comment, "[t] he use of parallel infinitive verb forms provides greater clarity to the rule." The suggestion has been adopted.

Another commentator said the following:

> "No good reason is seen to require a notarized oath from an attorney merely to explain why a paper was filed late, if there is no claim of substantive prejudice by other parties. Attorneys and examiners-in-chief should not be spending unnecessary time and effort on merely procedural formalities. That is contrary to the intent of the new rules."

The PTO agrees with the commentator and has deleted the language "accompanied by an affidavit" from §1.645(b).

One comment suggested that a reference to §1.610(d)(6) which provides for oral requests should be inserted into §1.645 to reflect intent stated in the comments[of the notice of proposed rulemaking] on proposed§1.645." This suggestion is not being adopted. As the commentator notes, §1.610(d) authorizes an examiner-in-chief to hold a conference call to resolve issues and to enter an appropriate order following the conference call. A conference call may be used to obtain an extension of time. If the examiner-in-chief grants the request, an order may be entered—in which case a written motion is not necessary. The order provides the written record required by 37 CFR §1.2. However, it would unduly lengthen the rules to insert a reference to §1.610(d) in each rule to which it may be applicable. Section 1.645(a) specifies the procedure to be used when a written motion is filed. It should be noted that an examiner-in-chief may require a written motion notwithstanding a conference call.

One comment stated that "[t] he 'other business' may be more pressing than the Interference. In order to serve the ends of justice, the PTO should be considerate in this matter." The PTO intends to evaluate each request for an extension of time on a case-by-case basis. However, extensions of time in interference cases have become "routine." A recent survey of a file in one interference revealed the following. The interference was declared on Mar. 30, 1976. Preliminary statements were filed on May 5, 1979. A decision on motions was entered on June 28, 1982. Testimony was filed on Jan. 3, 1984. During the period between declaration and filing of testimony, sixty-four (64) requests or stipulations for extension of time were filed.

When counsel and an examiner-in-chief agree to a schedule and times are set, the parties will be expected to adhere to the schedule unless there are unusual circumstances. Apart from work that counsel may have in an interference, an examiner-in-chief will have a docket and must manage not only the interference involving counsel, but numerous other interferences. The U. S. Court of Appeals for the Federal Circuit recently said the following in *Rosemount, Inc.* v. *Beckman Instruments, Inc.,* 727 F.2d 1540, 1549-1550, 221 USPQ 1, 10 (Fed. Cir. 1984):

> The conduct of a trial, granting of continuances and the like, is not, however, solely or entirely a matter of balancing conveniences of the parties. The Federal Rules of Civil Procedure recognize another consideration—the need for the exercise of discretion by the trial court in carrying out its duty of managing the judicial process, the business of the court, and the administration of justice.

Likewise, these rules also recognize the need for the exercise of discretion by an examiner-in-chief in carrying out his or her duty of managing the interference (§1.610), the business of the PTO (§1.610), and the administration of justice (§1.601).

Several comments were received which discussed §1.646. One comment suggested that it would be clearer if "service" was inserted after "additional" in the last sentence of §1.646(b). This suggestion has been adopted.

Another comment suggested that "or except as otherwise provided in these Rules" be added to §1.646(c) after "otherwise ordered by an examiner-in-chief". The commentator pointed out that the change was needed because certain rules (§§1.644(g) and 1.658(b)) require service by "Express Mail" or by hand. The commentator accurately pointed out that adding the suggested phrase "will call attention to the fact that there are other rules which have their own requirements for service of papers." The suggestion has been adopted, except that "this part" has been used instead of "these Rules."

One comment suggested changing "time" to "date" in the last sentence of §1.646(e). The suggestion has been adopted. The change is necessary to conform with the language of the rule to actual practice and other language in the rule.

Two comments suggested that §1.646(d), which authorizes an examiner-in-chief to order service by hand or "Express Mail," be deleted. This suggestion is not being adopted. The use of "Express Mail" or delivery by hand is often desirable to expedite matters or to avoid unnecessary delay. One comment argued that delivery by hand may be prohibitive. Commercial couriers may be used to accomplish delivery by hand. The fee charged by most commercial couriers is not "prohibitive." The other comment argued that "there are circumstances when . . . [delivery by hand] is [not] possible." The use of §1.646(d) is discretionary on the part of an examiner-in-chief. If delivery by hand, i.e., personal delivery or delivery by commercial courier, or by "Express Mail" is impossible, it would be expected that the examiner-in-chief would exercise discretion and permit service by first class mail.

One comment suggested that the language "present case," which was said to appear in §1.651(b)(1) and §1.651(c), be changed to "prepare case." The suggestion is not being adopted because the language "present case" does not appear in §1.651. In any event, a testimony period is set for a party to present its testimony—either case-in-chief or case-in-rebuttal.

One comment was received which made two suggestions regarding §1.652. First, the comment suggested that a period longer than 15 days be set for filing a response to a paper answering an order to show cause. This suggestion is not being adopted. The fifteen-day period is believed to be adequate in most cases. If more time is needed, a party may file a motion under §1.645. Second, the comment suggested that the party placed under an order to show cause should be permitted as a matter of course to file a "reply" brief. This suggestion is not being adopted. In those instances where the Board believes a "reply" brief is desirable it may authorize the filing of a "reply."

One comment argued that §1.653(i) "fails to make provision for exhibits which are too big to file or are too dangerous to file." If an "exhibit" cannot be filed, it will not be given consideration. A party will have to rely on testimony and/or pictures or sketches for "exhibits" (e.g., a large machine in a factory) which are too large or too dangerous to be filed in the PTO.

While no comments were received concerning §1.654, it should be noted that a new paragraph (c) has been added and paragraph (c) as set out in the notice of proposed rulemaking has been redesignated as paragraph (d). New paragraph (c) provides that a party shall not be entitled to argue that an opponent abandoned, suppressed, or concealed an actual reduction to practice unless a notice under §1.632 was timely filed.

Two comments discussing §1.655 were received. The first comment made the following statement regarding §1.655(a):

> Last sentence—interlocutory orders are reviewed only for 'manifest error' etc. It is not clear whether this includes show cause orders under 1.640 resulting from unpatentability determined under 1.633(a). However, if so, it precludes proper review of the patentability determination.

Patentability will initially be determined by a single examiner-in-chief. See §§1.610(a) and 1.640(b). If the examiner-in-chief determines that a claim of a party is unpatentable to that party, an order to show cause why judgment should not be entered as to that claim will be issued to that party. See §1.640(d). If a response to the order to show cause is filed, a decision will be entered by the Board. See §§1.610(a) and 1.640(e). If the Board determines that the claim is not patentable to the party, a final decision and judgment will be entered holding the claim to be unpatentable. Review of the final decision and judgment is by judicial review under 35 U.S.C. §§141 or 146. It should be noted, however, that if there are other claims in the party's application or patent which are deemed to be patentable, an interlocutory order would be entered holding only that certain claims are unpatentable. A final order holding those claims unpatentable would be entered after final hearing on other issues. Such a practice will avoid piecemeal judicial review.

Another comment suggested that §1.655 be changed to preclude consideration of patentability at final hearing. Public Law 98-622 authorizes consideration of patentability assuming patentability is properly raised by a party during the interlocutory phase of an interference.

Two comments discussing §1.656 were received. One comment suggested that "[b] riefs should be letter size for consistency." The PTO has no preference for the size of briefs. Briefs may be filed on letter or legal-size paper. Inasmuch as the federal courts now require letter-size paper, parties who intend to use a PTO brief as an exhibit in a federal court should use letter-size paper.

Another comment suggested that §1.656 be amended to preclude a single examiner-in-chief from ruling on admissibility of evidence. The introductory remarks to the notice of proposed rulemaking (and this notice) state that "[t] he examiner-in-chief, *where appropriate, will be available by phone to rule on the admissibility of evidence in the event parties encounter unusual* problems during the taking of depositions" (emphasis added). The commentator states:

> If an examiner-in-chief has ruled certain evidence inadmissible, that evidence would presumably not be before the Board at final hearing. Proposed Rule 1.656(h) provides a means for a party to obtain suppression of evidence to which he has made timely objection, but the Rule does not provide for any means for a party whose proffered evidence has been held inadmissible by the examiner-in-chief, to have that holding considered by the Board.

The change suggested by the comment will not be adopted. However, a brief explanation of how practice is expected to work is in order. The introductory remarks indicate that a single examiner-in-chief may rule on admissibility of evidence "where appropriate" and in "unusual" circumstances. There are times during interferences where a motion *in limine* can be helpful. For example, a junior party during its case-in-chief may wish to examine a witness on a document which was *not* served as required by §1.673(b)(1). The senior party objects and realizes that if the junior party is permitted to examine the witness on the document, extensive cross-examination using numerous documents would be necessary. In order to avoid wasting considerable time, the parties could contact the examiner-in-chief by phone for a determination *in limine* on whether the junior party should be able to examine the witness on the document. Under the circumstances outlined the examiner-in-chief in his or her discretion could enter an order excluding the document from evidence. The order would be subject to a request for reconsideration. See §1.640(c). Ordinarily, however, it would be expected that parties would present evidence subject to objection. See §1.675(c), last sentence. It is not envisioned that a single examiner-in-

chief will routinely rule on the admissibility of evidence.

Several comments discussing §1.658 were received. One comment suggested that the 14-day time period in §1.658(b) is too short. Section 1.658(b) provides that a party may file a request for reconsideration with 14 days of a final decision by the Board. The 14-day time period is the same period authorized for filing requests for reconsideration by the U. S. Court of Appeals for the Federal Circuit. See Rule 40(a) of the Federal Rules of Appellate Procedure.

Several individuals suggested that a less restricted "interference estoppel" be set out in §1.658(c). While full consideration has been given to the suggestions, it has been decided to retain in these rules the interference estoppel provisions of §1.658(c) essentially as proposed. "Interference estoppel" under §1.658(c) is designed to implement the PTO's intent to have as many issues resolved as possible in a single *inter partes* proceeding. Numerous examples in this notice illustrate how practice is expected to take place under §1.658(c).

The language in the second sentence of §1.658(c) has been changed to more clearly state the nature of the estoppel and the exception to estoppel. The word "counts" in the second sentence of §1.658(c) means the counts as they exist at the time a final decision is entered.

One comment was received concerning §1.658(c) which requires a specific answer. The comment made the following statement:

> You state that an estoppel would not apply against a party awarded a favorable judgment as to *all* counts. However, it seems to me that there will be occasion when it would not be appropriate to have estoppel where there was a split decision. For instance, consider an interference between applicants A and B in which A was awarded priority as to count 1 and B was awarded priority as to count 2. If I understand you correctly, A would be estopped in post-interference *ex parte* practice to present an additional claim X which was patentably indistinct from his claim corresponding to count 1 if B had support for claim X. I think this result would be unfortunate, and that A should be permitted to further refine his claim structure after the interference — that is, after he has been assured that he is entitled to claims to the basic invention recited in count 1. Under the circumstances described by the commentator, inventor A would *not* be estopped to present a claim to X because X is "patentably indistinct" (the proper terminology under the rules would be to say X is the "same patentable invention" as the subject matter of count 1) from the subject matter of count 1. Inventor A would be entitled to claim any disclosed invention which is directed to the "same patentable invention" as count 1. The change in the second sentence of §1.658(c) more clearly reflects the PTO's intent in this regard. Inventor A would *not* be entitled to claim any invention which is the "same patentable invention" as the subject matter of lost count 2. See Examples 26, 27, and 28 for illustrations of interference estoppel practice when a "split" judgment is entered.

Two comments were received discussing §1.659. One comment suggested that the first sentence of §1.659(b) should "reflect" that a reexamination may be based only on patents and printed publications. The suggestion is not being adopted. The basis upon which a reexamination may be instituted are set out elsewhere in the statute and rules. 35 U.S.C. 301-306; 37 CFR 1.501-1.570. There is no further need to set that basis out again in §1.659(b). Another comment suggested that the language "not involved in the judgment of the interference" be deleted from §1.659(b). The rationale in support of the comment was as follows:

> Besides introducing a potential ambiguity as to what claims were 'involved in the judgment,' there does not appear to be any good reasons to draw this distinction, particularly unless it is made more specific. Why should the Board be prevented from recommending reexamination of some (less relevant) patent claims and not other patent claims which are potentially even more relevant to the public, unless *all* of the *same art* has already been fully evaluated against the *same claims* in the Board's decision? (emphasis in original).

When a patent is involved in an interference, each claim of the patent will be designated to (1) correspond to a count *or* (2) not correspond to a count. All claims which are *ultimately* determined to correspond to a count will be "involved in the judgment of the interference." Inasmuch as they are involved in the judgment of the interference, there is no need to recommend reexamination of those claims. The claims involved in the interference are either patentable or unpatentable based on the final decision of the Board. Section 1.659(b) merely authorizes the Board to recommmend reexamination of patent claims which (1) are *not* involved in the judgment and (2) for one reason or another neither party saw fit to move to designate as corresponding to a count.

One comment was received which suggested that the requirements of §1.660 are unnecessary. The PTO disagrees. The requirements of §1.660 are designed to keep the PTO and a party's opponent informed of activity which is relevant to an interference. These rules attempt, to the extent possible, to eliminate procedural surprise. Inasmuch as mail delays occur and the PTO cannot react instantaneously to every paper filed in connection with every application or patent, the provisions of §1.660 are believed helpful in preventing surprise on the part of opponent's and unnecessary work by examiners-in-chief or the Board due to a lack of knowledge of relevant activity which may be taking place in the PTO.

One comment suggested that at the end of §1.661 the following be added: "and the time for any such available appeal or review has expired." The suggestion is not being adopted. Section 1.661 already provides for finality when "no appeal . . . can be taken . . . ." The language finds antecedent basis in 35 U.S.C. §135(a).

Several comments discussing §1.662 were received. Two comments suggested a change be made to provide that when a patentee files a statutory disclaimer under 35 U.S.C. §253 and deletes *all* claims corresponding to a count, the disclaimer will be treated as a request for judgment. As one of the comments pointed out, "[s] ince . . . [the filing of a statutory disclaimer disclaiming all claims corresponding to a count] by the patentee could have no other conceivable effect, the proposed rule should be changed to require judgment when all corresponding claims are disclaimed." The suggestion has been adopted and appropriate changes have been made to §1.662(c). In view of the changes, the following language in §1.662(c), as proposed, is not necessary: "A statutory disclaimer of any claim involved in an interference shall in subsequent proceedings have the same effect with respect to the patentee as an adverse judgment." When a patentee disclaims less than all claims corresponding to a count; the claims which remain in the patent continue to be involved in the interference and any patentability or priority issues involving those remaining claims will be involved in the judgment on the merits in the interference.

Two comments suggested that the word "dissolved" in §1.662(d) be changed to "terminated". This suggestion is being adopted, because §1.662(d) has been deleted. However, all interferences will be terminated with a "judgment." A change has been made in the language of §1.11(a) to delete any reference to terminating an interference other than by judgment.

One comment suggested that the word "construed" in §1.662(a) be changed to "treated". This suggestion has been adopted and more clearly states the intent of the PTO. The filing of the various papers mentioned paragraphs (a) and (c) of §1.662 will result in certain action by the PTO. The word "treated" more appropriately describes the consequences of filing such papers.

One comment suggested that §1.662(a) "is too sweeping." According to the commentator, a patentee may file a disclaimer because it has "become aware of a statutory bar or can not afford the expense of an interference." If the patentee becomes aware of a statutory bar, the patentee should call the "bar" to the attention of the PTO or file an appropriate motion under §1.633(a) for judgment if the "bar" applies to the opponent. If a junior party patentee decides than an interference is too expensive and for that reason files a disclaimer, there is no reason why judgment should not be entered in favor of the opponent. The comment also suggested that §1.662(c) "needs revision" because a patentee may disclaim one claim corresponding to a count, but not another. Section 1.662(c), as revised, takes into account the possibility that less than all claims corresponding to a count may be disclaimed. When some of the patent claims corresponding to a count are disclaimed, the interference proceeds on the basis of the remaining claims which correspond to the count. If all patent claims corresponding to a count are disclaimed, judgment will be entered.

One comment made the following statement regarding the third sentence of §1.662(a):

> What of abandonment in favor of a CIP [continuation-in-part application]? Would this be construed as [a] request to enter [an] adverse judgment? Language should reflect procedural moves of substituting CIP for abandoned application and/or declaring new interference.

The third sentence of §1.662(a) does not apply to an application which is *not* involved in an interference. If an applicant files a continuation-in-part application and successfully moves (§1.633(d)) to substitute the continuation-in-part for the application involved in the interference, abandonment of the application originally involved in the interference would have no bearing on the interference. Accordingly, no additional language is needed in §1.662(a).

Two comments discussing §1.663 were received. One comment suggested that an explanation of the status of patent claims involved in an adverse judgment should be stated in the rule. This suggestion is not being adopted. The status of patent claims involved in an adverse judgment is stated in 35 U.S.C. §135(a). Another comment suggested that the status of "claims which could have been counts . . . should be made of record." Unless a motion (§1.633(c)) to add claims to correspond to counts is filed, no reference will be made in a judgment as to claims "which could have been made counts."

One comment suggested that the language "then owned by either party but" be inserted after "application" in §1.665. This suggestion is not being adopted. The language "same parties" in §1.665 is intended to cover a party and any assignee. The suggested language "then owned" would narrow the scope of the rule in a manner not intended by the PTO.

An oral comment at the hearing suggested that §1.671(e) be changed so that a party would not have to serve copies of affidavits relied upon under §1.608(b) in those cases where an opponent had already obtained copies of the Rule 608(b) affidavits. This suggestion is not being adopted. See the discussion above answering comments related to §1.612(b). Another comment made at the hearing noted that the PTO is "adopting" the Federal Rules of Evidence. The Federal Rules include a "shop book" rule—Rule 803(b)(6). The commentator expressed the view that adopting of a "shop book" rule might make an important change in evidence which is admissible in interferences and suggested that "it would be helpful if the Patent and Trademark Office would publicly comment on this extremely important evidentiary rule . . . . " The PTO believes that adoption of Rule 803(b)(6) of the Federal Rules of Evidence does not constitute a change in the admissibility of "shop book" evidence in interference cases. Rule 803(b)(6) is very similar to the former Federal Shop Book Rule (28 U.S.C. §1732) which it replaced. The courts have articulated a rule of law which the PTO will continue to apply in determining admissibility of laboratory note books under the "shop book" Rule 803(b)(6) of the Federal Rules of Evidence. See e.g., *Alpert* v. *Slatin*, 305 F.2d 891, 134 USPQ 296 (CCPA 1962) and *Elliott* v. *Barker*, 481 F.2d 1337, 179 USPQ 100 (CCPA 1973).

One comment suggested that §1.671(f) be eliminated on the ground that a rule should not be used to train attorneys and agents. The suggestion is not being adopted. The problem addressed by §1.671(f) is significant. By providing in the rules that documentary evidence must be explained the PTO hopes to save both parties and the Board considerable difficulty in presenting and evaluating evidence.

One comment suggested that §1.671(g) should be changed to require a party only to show the "relevancy" of expected testimony as opposed to the "admissibility" of the testimony. This suggestion is being adopted and an appropriate change has been made to §1.671(g) to require a moving party to "describe the general nature and the relevance of the testimony, document, or thing."

An oral comment was received which asked whether permission to issue a subpoena would be needed in the event a party seeks to call a witness under the control of an opponent. Ordinarily, the examiner-in-chief can order a party to produce an individual for a deposition as long as the individual is a party or is under the control of the party, e.g., an employee of an assignee. Where so-called "third parties" are concerned, however, issuance of a subpoena may be necessary, because the PTO has no authority to compel attendance of third parties. Several comments concerning §1.672 were received. One comment at the hearing pointed out that use of 8-1/2 by 11 inch paper for affidavits appears to be optional. The commentator is correct in pointing out that the use is optional. By using 8-1/2 by 11 inch paper, however, a party will save considerable time when filing a record (§1.653).

Two comments asked questions concerning §1.672(b), and in particular, the meaning of the word "party" in the phrase "a party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits . . . ." Specifically, one commentator stated:

> It is the scope of the words "the party" which leave doubt as to the meaning of the passage. If "the party" refers *only* to the party proffering the affidavit testimony, then the passage is fair since such party had the opportunity to use whatever documents it deemed favorable to its position. But if "the party" also encompasses the opponent, i.e., the cross-examining party not proffering the affidavit testimony, then the passage improperly restricts the scope of cross-examination. Surely, the proponent party cannot, simply by confining the affidavit to favorable documents, insulate the witness from cross-examination on unfavorable documents.

Section 1.672(b) refers to a "party" and an "opponent." The "party" is the party filing the affidavit and not an opponent of that party. Any "opponent" conducting cross-examination of an affiant may properly rely on documents and things not referred to in the affidavit.

One comment suggested that the language "a witness whose testimony will not be compelled under 35 U.S.C. 24" should be deleted or revised. According to the commentator:

> This is often not determinable in advance. Even a "voluntary" witness may develop cold feet and require a subpoena, or demand one for his own protection. Nor will all witnesses agreeable to affidavits be agreeable to depositions.

The suggestion is not being adopted. An affidavit may be used only when a witness agrees to sign the affidavit. If an individual refuses to sign an affidavit or voluntarily appear at a deposition, the party calling the witness will have to compel attendance at a deposition by a subpoena under 35 U.S.C. §24 after receiving permission from an examiner-in-chief.

One comment asked why there is "no express provision . . . [in the rules] for simply taking appropriate testimony of an adverse party by notice . . . rather than requiring a subpoena?" In many cases, notice will be sufficient inasmuch as an examiner-in-chief or the Board

may generally order an adverse party to appear and give testimony. Thus, in many cases a subpoena is not needed to require attendance at a deposition of an adverse party.

Two comments suggested that a time be set out in the rules by which an affidavit should be filed. The suggestion is being adopted and the second sentence of §1.672(b) has been changed to provide that affidavits shall be filed prior to the close of the party's relevant testimony period. The two comments also suggested that the rules specify that documents relied upon in an affidavit be filed with the affidavit. This suggestion is also being adopted by an appropriate change to §1.672(b) which will provide that a party cannot rely on any document referred to in an affidavit unless a copy of the document is filed with the affidavit. Any document filed with an affidavit must also be served (§1.646). Section 1.672(b) will also provide that a party may not rely on any "thing" mentioned in an affidavit unless the opponent is given reasonable access to the "thing." A "thing" is something other than a document. The comments had suggested that the "things" be limited to those under the possession, custody, or control of the party submitting the affidavit. This suggestion is not being adopted. If a "thing" is not under the possession, custody, or control of a party, the party should resort the use of a deposition and compel production of the "thing" by a subpoena under 35 U.S.C. §24.

Four comments were received discussing §1.673. It was suggested that the time for service under §1.673(b) be three days if service is accomplished by hand or "Express Mail" and ten days if service is accomplished by any other means. This suggestion is being adopted. An appropriate change has been made in the introductory sentence of §1.673(b). It was also suggested that the word "copy" in §1.673(b)(1) be changed to read "list and copy". In support of the suggestion, one commentator states:

> In connection with the service of documents, the amendment to the proposed rule would require that a listing of documents accompany the documents themselves. This would permit cross-checking between lists and documents to ascertain whether or not discrepancies exist and reduce the possibility for later controversy.

The suggestion is being adopted. Under §1.673(b)(1) a list of the documents would have to accompany the documents. One comment suggested that documents served should be "Bates numbered." While this suggestion is not being adopted in the sense of changing the language of a rule, it must be remembered that the party serving documents may be required to later prove exactly what was served. Using "Bates" numbers or an equivalent scheme may prove invaluable in later stages of an interference.

One comment discussing §1.682 suggested that the language "not identified on the record during the taking of testimony of a witness" be deleted. This suggestion is not being adopted. If an official record or printed publication is made an exhibit during a deposition or in an affidavit, it need not be submitted under §1.682. Section 1.682 permits a party to make an official record or printed publication part of the evidence being considered at final hearing without calling a witness. The official record or printed publication must, however, be self-authenticating. On the other hand, a party may present the official record or printed publication as an exhibit during testimony. When this latter course is followed, there is no need to take advantage of the provisions of §1.682. The comment also suggested that a change be made in §1.682(a)(4) because the requirement therein for a "certified" copy appeared to be inconsistent with §1.671(d) which provides that a record of the PTO need not be certified. The suggestion is being adopted by adding "where appropriate" at the beginning of §1.682(a)(4) and a reference to §1.671(d) at the end of §1.682(a)(4). If the official record is not a record of the PTO, it will be necessary to submit a certified copy of the official record.

Comments were received discussing §1.684. One comment suggested that language be inserted in §1.684(a) to make clear that the testimony authorized is for a case-in-chief or a case-in-rebuttal. The suggestion is not being adopted. The testimony authorized by §1.684(a) is necessarily testimony for a case-in-chief or a case-in-rebuttal. The commentator correctly notes that the use of written interrogatories under §1.684 "for cross-examination would seem neither appropriate or justified." Section 1.684 does not apply to cross-examination. If a party submits an affidavit under §1.672(b) or intends to rely on an affidavit under §1.617(e), the party must make the affiant available for cross-examination at a deposition. See §1.673(e). A deposition may be noticed only "for a reasonable time and place in the United States." See §1.673(a). Accordingly, it is not expected that §1.684(a) will be used to cross-examine affiants residing in foreign countries. The party filing the affidavit will be required to make the affiant available for cross-examination in the United States.

One comment suggested that the provisions of §1.685(d) are "harsher" than the corresponding provisions of 37 CFR §1.285(c). The comment is not fully understood. Section 1.685(d) requires an objection to be stated on the record. An objection to the admissibility of evidence must be stated on the record *and* a motion under§1.656(h) renewing the objection at final hearing must be filed. No longer will a party be permitted to attend a deposition and fail to enter an objection only to raise the objection at final hearing. The current practice permits a party to delay the objection until it is often too late to permit an opponent to correct the evidentiary basis on which the objection is bottomed.

One comment suggested that the second sentence of §1.687(b) ("If the witness refuses to produce a requested document or thing, the party may file a motion (§1.635) for additional discovery under paragraph (c) of this section.") be deleted. This suggestion is being adopted. The PTO agrees with the following remark by the commentator: "[o]mission of the sentence is recommended since it is clear from [paragraph] (c) [of §1.687] that such a motion could be made in an appropriate case."

One comment at the hearing suggested that the PTO's inability to enter protective orders makes discovery unduly complicated. The commentator suggested that under§1.687(c), as set out in the notice of proposed rulemaking, it is possible to obtain appropriate protective orders. The commentator correctly concedes that the maximum sanction which the PTO can enter upon a proven violation of a PTO entered protective order is judgment. See §1.616. The commentator suggested, however, that additional discovery may be conditioned on the issuance of a subpoena *duces tecum* under 35 U.S.C. § 24. Upon issuance of the subpoena, the commentator stated that the opponent could move the district court for entry of a protective order. If a party violates a protective order entered by a district court, the party would be subject to such sanctions as the district court might deem appropriate as well as a sanction by the PTO, including entry of judgment against the party. The PTO, unlike the district court, would not be able to apply a sanction after an interference is terminated.

The commentator's suggestion is believed to be sound. No change in the language of §1.687(b) is believed to be necessary inasmuch as paragraph (b) authorizes the PTO to "specify the terms of conditions of such additional discovery." One of those terms could be requiring a party to issue a subpoena under 35 U.S.C. §24. By making a party proceed in the first instance in the PTO, appropriate PTO orders may be entered suggesting the scope of any protective order and stating the underlying basis for requiring a party to produce documents. The order could be of assistance to the district court in subsequent enforcement or contempt proceedings.

Additional discovery obtained under a protective order issued by either the PTO or a district court will not be admitted in evidence in the PTO in determining the interference. All evidence submitted in an interference must be made available to the public under the provisions of §1.11(a). Accordingly, any protective orders have to be vacated before a document could be admitted in evidence in the PTO which is subject to a protective order.

Example 38 illustrates how the practice would work.

Example 38:

An interference involves party X and party Y. During the interference, party X files a motion for additional discovery under §1.687(c) asking that party Y be required to produce certain documents. Party Y opposes on the sole ground that the documents contain trade secret and confidential information. Party Y indicates that it has no objection to producing the documents for inspection by counsel for party X, but insists that party X not be permitted to inspect the documents. Accordingly, party Y asks the examiner-in-chief to authorize the discovery subject to entry of a protective order. Party Y argues, however, that the sanctions of §1.616 are not sufficient in the event of a violation of the protective order. An examiner-in-chief concludes that additional discovery should be ordered, that a protective order is appropriate, and that the sanctions of §1.616 are not sufficient in the event of a violation of the protective order. Under the circumstances, the examiner-in-chief would enter an order directing party Y to produce the documents for inspection by counsel of party X on the condition that party X seek production of the documents by a subpoena *duces tecum* under 35 U.S.C. §24. Upon issuance of any subpoena, party Y could move the district court for entry of a protective order. If the district court enters the protective order, party Y can produce the documents to counsel for party X. If the protective order of the examiner-in-chief is violated, an appropriate sanction up to and including judgment may be entered by the Board. In addition, party Y would be in a position to seek contempt or other sanctions in the district court. The documents produced for inspection by counsel for party X could not be admitted in evidence in the interference (until the protective order is vacated), because those documents are not documents which can be made available to the public under §1.11(a).

The following is an anticipated time schedule for a two-party interference:

Event in Interference	Time from last event in the interference	Total time in interference
Interference declared (1.611)		
Filing of preliminary statements (1.621) and preliminary motions (1.633)	3 months	3 months
Filing oppositions to preliminary motions (1.638(a))	2/3 month	3-2/3 months
Filing replies to oppositions (1.638(b))	2/3 month	4-1/3 months
Decision on preliminary motions (1.640(b)(1)), open preliminary statements (1.631), set times for filing motions for discovery (1.687(c) and testimony (1.651(a))	1 month	5-1/3 months
Filing of motions for discovery (1.635, 1.651(a), 1.687(c))	1 month	6-1/3 months
Filing of opposition to motion for discovery (1.638(a))	2/3 months	7 months
Filing reply to opposition to motion for discovery (1.638(b))	2/3 months	7-2/3 months
Decision on motion for discovery	2/3 months	8-1/3 months
Time for compliance with any discovery	2/3 months	9 months
Junior party testimony (case-in-chief; 1.672(b)):		
Testimony	2 months	11 months
Senior party cross-examination of affiants if needed	1 month	12 months
Senior party testimony (case-in-chief and case- in-rebuttal, 1.672(b)):		
Testimony	2 months	13-2/3 months
Junior party cross-examination of affiants if needed	1 month	14-2/3 months
Junior party testimony (case-in-rebuttal):		
Testimony	2/3 month	16 months
Senior party cross- examination of affiants if needed	2/3 month	16-2/3 months
Filing of record (1.653(c))	1-1/3 months	18 months
Brief for junior party (1.656)	1 month	19 months
Brief for senior party (1.656)	1 month	20 months
Reply brief for junior party (1.656)	2/3 month	20-2/3 months
Final hearing (1.654)	1 month	21-2/3 months
Decision (1.658)	2 months	23-2/3 months

The following is an index for §§1.601 through 1.688:

Rule Index

§1.601	Scope of rules, definitions
§1.602	Interest in applications and patents involved in interference
§1.603	Interference between applications; subject matter of the interference
§1.604	Request for interference between applications by an applicant
§1.605	Suggestion of claim to applicant by examiner
§1.606	Interference between an application and a patent; subject matter of the interference
§1.607	Request by applicant for interference with patent
§1.608	Interference between an application and a patent; *prima facie* showing by applicant
§1.609	Preparation of interference papers by examiner
§1.610	Assignment of interference to examiner-in-chief, time period for completing interference
§1.611	Declaration of interference
§1.612	Access to applications
§1.613	Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent
§1.614	Jurisdiction over interference
§1.615	Suspension of *ex parte* prosecution
§1.616	Sanctions for failure to comply with rules or order
§1.617	Summary judgment against applicant
§1.618	Return of unauthorized papers
§1.621	Preliminary statement, time for filing, notice of filing
§1.622	Preliminary statement, who made invention, where invention made
§1.623	Preliminary statement; invention made in United States
§1.624	Preliminary statement; invention made abroad
§1.625	Preliminary statement; derivation by an opponent
§1.626	Preliminary statement; earlier application
§1.627	Preliminary statement, sealing before filing, opening of statement
§1.628	Preliminary statement, correction of error
§1.629	Effect of preliminary statement
§1.630	Reliance on earlier application
§1.631	Access to preliminary statement, service of preliminary statement
§1.632	Notice of intent to argue abandonment, suppression, or concealment by opponent
§1.633	Preliminary motions
§1.634	Motion to correct inventorship
§1.635	Miscellaneous motions
§1.636	Motions, time for filing
§1.637	Content of motions
§1.638	Opposition and reply, time for filing opposition and reply
§1.639	Evidence in support of motion, opposition, or reply
§1.640	Motions, hearing and decision, redeclaration of interference, order to show cause
§1.641	Unpatentability discovered by examiner-in-chief
§1.642	Addition of application or patent to interference
§1.643	Prosecution of interference by assignee
§1.644	Petitions in interference
§1.645	Extension of time, late papers, stay of proceedings
§1.646	Service of papers, proof of service
§1.647	Translation of document in foreign language
§1.651	Setting times for discovery and taking testimony, parties entitled to take testimony
§1.652	Judgment for failure to take testimony or file record
§1.653	Record and exhibits
§1.654	Final hearing
§1.655	Matters considered in rendering a final decision
§1.656	Briefs for final hearing
§1.657	Burden of proof as to date of invention
§1.658	Final decision
§1.659	Recommendation
§1.660	Notice of reexamination, reissue, protest or litigation
§1.661	Termination of interference after judgment
§1.662	Request for entry of adverse judgment; reissue filed by patentee
§1.663	Status of claim of defeated applicant after interference
§1.664	Action after interference
§1.665	Second interference
§1.666	Filing of interference settlement agreements
§1.671	Evidence must comply with rules
§1.672	Manner of taking testimony
§1.673	Notice of examination of witness
§1.674	Persons before whom depositions may be taken
§1.675	Examination of witness, reading and signing transcript of deposition
§1.676	Certification and filing by officer, marking exhibits
§1.677	Form of a transcript of deposition
§1.678	Transcript of deposition must be filed
§1.679	Inspection of transcript
§1.682	Official records and printed publications
§1.683	Testimony in another interference, proceeding, or action
§1.684	Testimony in a foreign country
§1.685	Errors and irregularities in depositions
§1.687	Additional Discovery
§1.688	Use of discovery

The following is a table correlating the present rules (37 CFR §1.201 through 1.288) to the rules (37 CFR §§1.601 through 1.688).

Rule Correlation Table

Old	New
1.201(a)	1.601(a)
1.201(b)	1.601(b), (c)
1.201(c)	1.602
1.202	none
1.203(a)	1.603(a), (b)
1.203(b)	1.605(a)
1.203(c)	1.605(b)
new	1.604(a)
1.203(d)	1.604(b)
1.204(a)	none
1.204(b)	1.608(b)
1.204(c)	1.608(c)
1.205(a)	1.606(a), (b)
1.205(b)	1.607(a), (c)
1.205(c)	1.607(d)
new	1.608(a)
1.206(a)	1.607(b)
1.207(a)	1.609
new	1.610
1.207(b)	1.611
1.208	1.613
1.211	1.614
1.212	1.615
new	1.616
1.228	1.617
new	1.618
1.215(a)	1.621(a)
1.215(b)	1.621(b)
1.215(c)	1.629(c)
1.216(a)	1.622(a), (b)
1.216(a)(1)-(6)	1.623(a)
1.216(b)	1.623(b), 1.624(b), 1.625(b)
1.216(c)	1.666
1.217(a)	1.624(a), 1.625(a)
1.217(b)	1.623(a)
1.218	1.621(a)
1.219	1.627
1.222	1.628
1.223	1.629
1.224	1.630
1.225	1.640(d), (e), and 1.651(c)(4)
1.226	1.612
1.227	1.631
new	1.632
1.231	1.633, 1.634
1.237	1.641
1.238	1.642
1.242	1.643
1.243	1.635, 1.636, 1.637(b) 1.638 through 1.640
1.244	1.644
1.245	1.645
1.246	1.645
1.247	1.646
1.248	1.646
new	1.647
1.251	1.651
1.252	1.652
1.253	1.653
1.254	1.656
1.255	1.656(c)
1.256	1.654
1.257(a)	1.657
1.257(b)	1.658(c), (d)
1.258	1.655
1.259	1.659
new	1.660
1.262	1.662(a)
1.263	1.662(a) and (d)
1.264	1.662(b) and (c)
new	1.662(e)
1.265	1.663
1.266	1.664
1.267	1.665
1.268	1.666
1.271	1.671
new	1.671(g)
1.272(a)	1.672(a), (b)
1.272(b)	1.672(c)
1.272(c)	1.672(d), (e)
1.273(a)	1.673(a), (c), (d),
new	1.673(e)
1.273(b)	1.673(f)
1.274	1.674
1.275	1.675
1.276	1.676
1.277	1.677
1.278	1.678
1.279	1.679
1.281	1.645
1.282	1.682
1.283	1.683
1.285	1.685
1.286	eliminated
1.287(a)(1)(i),(ii)	1.673(b)
1.287(a)(1)(iii)	1.673(a)
1.287(a)(2),(3)	eliminated
1.287(b)	eliminated
1.287(c)	1.687
1.287(d)(1)	1.673(c)
1.287(d)(2)	1.616
1.287(e)	1.687(d)
1.288	1.688

Other Considerations: These rules do not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rules are in conformity with the requirements of the (1) Regulatory Flexibility Act (Pub. L. 96-354), (2) Executive Order 12291, and (3) the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Small Business Administration that these rules will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act; Public Law 96-354). The rules govern the conduct of interference cases which arise in the Patent and Trademark Office. In fiscal 1983, the Patent and Trademark Office received 105,704 patent applications. During the same period, 180 interferences were declared. It is expected that the overall cost will be reduced for obtaining a patent based on application which become involved in an interference. See a "section-by-section" analysis submitted for the Record by Representative Kastenmeier during discussion of H. R. 6286 on the floor of the House in which the following statement appears (130 Cong.Rec. H10528, columns 2 and 3):

> it is expected that interferences will become simpler, more expeditious, and less costly. Under the bill, all issues of patentability and priority which arise in an interference can be decided in a single proceeding rather than in a series of complicated *inter partes* and *ex parte* proceedings.

These rules, therefore, will have no significant economic impact on small entities.

The Patent and Trademark Office has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy would be less than $100 million. There would be no major increase in costs or prices for consumers, individual industries, federal state, or local government agencies, or geographic regions. There would be no adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

These rules do not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations, Conflict of interests, Courts, Inventions and patents, Lawyers.

PART 1 — RULES OF PRACTICE IN PATENT CASES

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 23, 41, and 135, Part 1 of Title CFR is amended as set forth below.

1. Section 1.1 is amended by adding a new paragraph (e) to read as follows:

§1.1 All communications to be addressed to Commissioner of Patents and Trademarks.

* * * * *

(e) Communications relating to interferences and applications or patents involved in an interference should be additionally marked "BOX INTERFERENCE."

2. Section 1.4 is amended by revising paragraph (a)(2) and reprinting the introductory text of paragraph (a) to read as follows:

§1.4 Nature of correspondence.

(a) Correspondence with the Patent and Trademark Office comprises:

* * * * *

(2) correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§1.31

to 1.352; of international applications in Subpart C, §§1.401 to 1.482; of reexamination of patents in Subpart D, §§1.501 to 1.570; of interferences in Subpart E, §§ 1.601 to 1.688; and of trademark applications §§2.11 to 2.189.

* * * * *

3. Section 1.5 is amended by adding a new paragraph (e) to read as follows:

§1.5 Identification of application, patent or registration

* * * * *

(e) When a paper concerns an interference, it should state the names of the parties and the number of the interference. The name of the examiner-in-chief assigned to the interference (§1.610) and the name of the party filing the paper should appear conspicuously on the first page of the paper.

4. Section 1.8 is amended by adding to paragraph (a) a new subparagraph (xii) to read as follows:

§1.8 Certificate of mailing.

* * * * *

(xii) The filing of a paper in an interference which an examiner-in-chief orders to be filed by hand or "Express Mail."

* * * * *

5. Section 1.9 is amended by adding a new paragraph (g) to read as follows:

§1.9 Definitions.

* * * * *

(g) For definitions in interferences see §1.601.

6. Section 1.11 is amended by revising paragraph (a) to read as follows:

§1.11 Files open to the public.

(a) After a patent has been issued, the specification, drawings and all papers relating to the case in the file of the patent are open to inspection by the general public, and copies may be obtained upon paying the fee therefor. After entry of a judgment in an interference by the Board of Patent Appeals and Interferences as to all parties, the file of any interference which involved a patent, or an application on which a patent has issued, is similarly open to public inspection and procurement of copies. See §2.27 for trademark files.

* * * * *

7. Section 1.14 is amended by removing from paragraph (d) the words "Board of Patent Appeals or the Board of Patent Interferences" and inserting, in their place, the words "Board of Patent Appeals and Interferences."

8. Section 1.17 is amended by revising paragraphs (e), (g), (h), and (i) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:

By a small entity (§1.9(f))	$ 57.50
By other than a small entity	115.00

* * * * *

(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in appeal under 35 U.S.C. §134:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	100.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph $120.00

— §1.47 — for filing by other than all the inventors or a person not the inventor
— §1.48 — for correction of inventorship
— §1.182 — for decision on questions not specifically provided for
— §1.183 — to suspend the rules
— §1.377 — for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent
— §1.378(e) — for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent
— §1.644(e) — for petition in an interference
— §1.644(f) — for request for reconsideration of a decision on petition in an interference.
— §1.666(c) — for late filing of interference settlement agreement.
— §§5.12, 5.13 & 5.14 — for expedited handling of foreign filing license
— §5.15 — for changing the scope of a license
— §5.25 — for retroactive license

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph ..... $ 60.00

— §1.12 — for access to an assignment record
— §1.14 — for access to an application
— §1.55 — for entry of late priority papers
— §1.102 — to make application special
— §1.103 — to suspend action in application
— §1.177 — for divisional reissues to issue separately
— §1.312 — for amendment after payment of issue fee
— §1.313 — to withdraw an application from issue
— §1.314 — to defer issuance of a patent
— §1.334 — for patent to issue to assignee, assignment recorded late
— §1.666(b) — for access to interference settlement agreement

* * * * *

9. Section 1.36 is revised as follows:

§1.36 Revocation of power of attorney or authorization; withdrawal of attorney or agent.

A power of attorney or authorization of agent may be revoked at any stage in the proceedings of a case, and an attorney or agent may withdraw, upon application to and approval by the Commissioner. An attorney or agent, except an associate attorney or agent whose address is the same as that of the principal attorney or agent, will be notified of the revocation of the power of attorney or authorization, and the applicant or patent owner will be notified of the withdrawal of the attorney or agent. An assignment will not of itself operate as a revocation of a power or authorization previously given, but the assignee of the entire interest may revoke previous powers and be represented by an attorney or agent of the assignee's own selection. See §1.613(d) for withdrawal of an attorney or agent of record in an interference.

10. Section 1.48 is revised as follows:

§1.48 Correction of inventorship.

If the correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by (a) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (b) an oath or declaration by each actual inventor or inventors as required by §1.63; (c) the fee set forth in §1.17(h); and (d) the written consent of any assignee. When the application is involved in an interference, the petition shall comply with the requirements of this section and shall be accompanied by a motion under §1.634.

11. Section 1.55 is amended by removing from paragraph (a) "1.224" and inserting, in its place, "1.630".

12. Section 1.59 is revised as follows:

§1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to §1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost of any application in which either the required basic filing fee (§1.16) or the processing and retention fee (§1.21(1)) has been paid. See §1.618 for return of unauthorized and improper papers in interferences.

13. Section 1.68 is revised as follows:

§1.68 Declaration in lieu of oath.

Any document to be filed in the Patent and Trademark Office and which is required by any law, rule, or other regulation to be under oath may be subscribed to by a written declaration. Such declaration may be used in lieu of the oath otherwise required, if, and only if, the declarant is on the same document, warned that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon. The declarant must set forth in the body of the declaration that all statements made of the declarant's own knowledge are true and that all statements made on information and belief are believed to be true.

14. Section 1.103 is amended by revising paragraph (d) as follows:

§1.103 Suspension of action.

* * * * *

(d) Action on applications in which the Office has accepted a request filed under §1.139 will be suspended for the entire pendency of these applications except for purposes relating to interference proceedings under §§1.601 through 1.688.

15. Section 1.122 is amended by revising paragraph (b) as follows:

§1.122 Entry and consideration of amendments.

* * * * *

(b) Ordinarily all amendments presented in a paper filed while the application is open to amendment are entered and considered, subsequent cancellation or correction being required of improper amendments. Untimely amendatory papers may be refused entry and consideration in whole or in part. For amendments presented during an interference see §1.664.

16. Section 1.136 is amended by removing "§1.207" and inserting, in its place, "§1.611" and by removing "§1.245" and inserting, in its place, "§1.645".

17. Section 1.138 is revised as follows:

§1.138 Express Abandonment.

An application may be expressly abandoned by filing in the Patent and Trademark Office a written declaration of abandonment signed by the applicant and the assignee of record, if any, and identifying the application. An application may also be expressly abandoned by filing a written declaration of abandonment signed by the attorney or agent of record. A registered attorney or agent acting under the provision of §1.34(a), or of record, may also expressly abandon a prior application as of the filing date granted to a continuing application when filing such a continuing application. Express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue.

18. Section 1.181 is amended by revising paragraph (a) as follows:

§1.181 Petition to the Commissioner.

(a) Petition may be taken to the Commissioner: (1) from any action or requirement of any examiner in the *ex parte* prosecution of an application which is not subject to appeal to the Board of Patent Appeals and Interferences or to the court; (2) in cases in which a statute or the rules specify that the matter is to be determined directly by or reviewed by the Commissioner; and (3) to invoke the supervisory authority of the Commissioner in appropriate circumstances. For petitions in interferences, see §1.644.

* * * * *

19. The center heading preceding §1.191 is revised to read "APPEAL TO THE BOARD OF PATENT APPEALS AND INTERFERENCES".

20. Section 1.191 is amended by revising the section heading and paragraphs (a) and (c) as follows:

§1.191 Appeal to Board of Patent Appeals and Interferences.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination, any of the claims of which have been twice rejected or who has been given a final rejection (§1.113), may, upon the payment of the fee set forth in §1.17(e), appeal from the decision of the examiner to the Board of Patent Appeals and Interferences within the time allowed for response.

* * * * *

(c) An appeal when taken must be taken from the rejection of all claims under rejection which the applicant or patent owner proposes to contest. Questions relating to matters not affecting the merits of the invention may be required to be settled before an appeal can be considered.

* * * * *

21. Section 1.194 is amended by removing the words "Board of Appeals" and inserting, in their place, the words "Board of Patent Appeals and Interferences."

22. Section 1.196 is revised as follows:

§1.196 Decision by the Board of Patent Appeals and Interferences.

(a) The Board of Patent Appeals and Interferences, in its decision, may affirm or reverse the decision of the examiner in whole or in part on the grounds and on the claims specified by the examiner. The affirmance of the rejection of a claim on any of the grounds specified constitutes a general affirmance of the decision of the examiner on that claim, except as to any ground specifically reversed.

(b) Should the Board of Patent Appeals and Interferences have knowledge of any grounds not involved in the appeal for rejecting any appealed claim, it may in-

clude in the decision a statement to that effect with its reasons for so holding, which statement shall constitute a new rejection of the claims. When the Board of Patent Appeals and Interferences makes a new rejection of an appealed claim, the appellant may exercise any one of the following three options:

(1) The appellant may submit an appropriate amendment of the claims so rejected or a showing of facts, or both, and have the matter reconsidered by the examiner in which event the application will be remanded to the examiner and the decision of the Board of Patent Appeals and Interferences shall not be considered final for the purpose of judicial review. The statement shall be binding upon the examiner unless an amendment or showing of facts not previously of record be made which, in the opinion of the examiner, overcomes the new ground for rejection stated in the decision. When appropriate, upon conclusion of proceedings on remand before the examiner, the Board of Patent Appeals and Interferences may enter an order otherwise making its decision final.

(2) The appellant may have the case reconsidered under§1.197(b) by the Board of Patent Appeals and Interferences upon the same record. Where request for such reconsideration is made the Board of Patent Appeals and Interferences shall, if necessary, render a new decision which shall include all grounds upon which a patent is refused.

(3) The appellant may treat the decision, including the new grounds for rejection given by the Board of Patent Appeals and Interferences, as a final decision in the case.

(c) Should the decision of the Board of Patent Appeals and Interferences include an explicit statement that a claim may be allowed in amended form, appellant shall have the right to amend in conformity with such statement which shall be binding on the examiner in the absence of new references or grounds of rejection.

(d) Although the Board of Patent Appeals and Interferences normally will confine its decision to a review of rejections made by the examiner, should it have knowledge of any grounds for rejecting any allowed claim it may include in its decision a recommended rejection of the claim and remand the case to the examiner. In such event, the Board shall set a period, not less than one month, within which the appellant may submit to the examiner an appropriate amendment, a showing of facts or reasons, or both, in order to avoid the grounds set forth in the recommendation of the Board of Patent Appeals and Interferences. The examiner shall be bound by the recommendation and shall enter and maintain the recommended rejection unless an amendment or showing of facts not previously of record is filed which, in the opinion of the examiner, overcomes the recommended rejection. Should the examiner make the recommended rejection final the applicant may again appeal to the Board of Patent Appeals and Interferences. Whenever a decision of the Board of Patent Appeals and Interferences includes a remand, that decision shall not be considered a final decision. When appropriate, upon conclusion of proceedings on remand before the examiner, the Board of Patent Appeals and Interferences may enter an order otherwise making its decision final.

23. Section 1.197 is amended by revising paragraphs (a) and (b) as follows:

§1.197 Action following decision.

(a) After decision by the Board of Patent Appeals and Interferences, the case shall be returned to the examiner, subject to the appellant's right of appeal or other review, for such further action by the appellant or by the examiner, as the condition of the case may require, to carry into effect the decision.

(b) A single request for reconsideration or modification of the decision may be made if filed within one month from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Patent Appeals and Interferences so states.

* * * * *

24. Section 1.198 is amended by removing the words "Board of Appeals" and inserting, in their place, the words "Board of Patent Appeals and Interferences."

25. The center heading preceding §1.201 is removed.

26. Sections 1.201 through 1.212 are removed.

27. The center heading preceding §1.215 is removed.

28. Sections 1.215 through 1.228 are removed.

29. The center heading preceding §1.231 is removed.

30. Sections 1.231 through 1.238 are removed.

31. The center heading preceding §1.242 is removed.

32. Sections 1.242 through 1.247 are removed.

33. A center heading preceding §1.248 is added which reads "MISCELLANEOUS PROVISIONS".

34. Section 1.248 is amended by adding paragraph (c) and revising the section heading as follows:

§1.248 Service of Papers; manner of service; proof of service in cases other than interferences.

* * * * *

(c) See §1.646 for service of papers in interferences.

35. The center heading preceding §1.251 is removed.

36. Sections 1.251 through 1.259 are removed.

37. The center heading preceding §1.261 is removed.

38. Sections 1.261 through 1.268 are removed.

39. The center heading preceding §1.271 is removed.

40. Sections 1.271 through 1.288 are removed.

41. Section 1.292 is amended by revising paragraph (a) and adding paragraph (c) as follows:

§1.292 Public use proceedings.

(a) When a petition for the institution of public use proceedings, supported by affidavits or declarations and the fee set forth in §1.17(j) is filed by one having information of the pendency of an application and is found, on reference to the examiner, to make a *prima facie* showing that the invention claimed in an application believed to be on file had been in public use or on sale more than one year before the filing of the application, a hearing may be had before the Commissioner to determine whether a public use proceeding should be instituted. If instituted, the Commissioner may designate an appropriate official to conduct the public use proceeding, including the setting of times for taking testimony, which shall be taken as provided by §§1.671 through 1.685. The petitioner will be heard in the proceedings but after decision therein will not be heard further in the prosecution of the application for patent.

* * * * *

(c) A petition for institution of public use proceedings shall not be filed by a party to an interference as to an application involved in the interference. Public use and on sale issues in an interference shall be raised by a preliminary motion under §1.633(a).

42. Section 1.301 is amended by removing the words "Board of Appeals" and the words "Board of Patent Interferences" and inserting, in each of their places, the words "Board of Patent Appeals and Interferences."

43. Section 1.302 is amended by removing from paragraph (b) "1.248" and inserting, in its place, "1.646" and by removing "and other contested cases".

44. Section 1.303 is amended by removing from paragraph (a) the words "Board of Appeals" and the words "Board of Patent Interferences" and inserting, in each of their places, the words "Board of Patent Appeals and Interferences" and by removing from paragraph (c) "1.248" and inserting, in its place, "1.646". 45. Section 1.304 is amended by revising paragraph (a) as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§ 1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Patent Appeals and Interferences. If a request for reconsideration or modification of the decision is filed within the time provided under §1.197(b) or §1.658(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. Except for an appeal from or commencing a civil action after a decision of the Board of Patent Appeals and Interferences in a reexamination proceeding or an interference proceeding, the time periods set forth herein are subject to the provisions of §1.136. See §1.550(c) for extensions of time to appeal or commence a civil action in a reexamination proceeding. See §1.645(a) for extensions of time to appeal or commence a civil action in an interference. An examiner-in-chief, upon a showing of excusable neglect, may extend the time for seeking judicial review of a decision of the Board of Patent Appeals and Interferences in an interference case when a request is untimely filed after expiration of the time prescribed by this section.

* * * * *

46. Section 1.322 is amended by revising paragraph (a) as follows:

§1.322 Certificate of correction of Office mistake.

(a) A certificate of correction under 35 U.S.C. 254 may be issued at the request of the patentee or the patentee's assignee. Such certificate will not be issued at the request or suggestion of anyone not owning an interest in the patent, nor on motion of the Office, without first notifying the patentee (including any assignee of record) and affording the patentee an opportunity to be heard. When the request relates to a patent involved in an interference, the request shall comply with the requirements of this section and shall be accompanied by a motion under §1.635.

* * * * *

47. Section 1.323 is revised as follows:

§1.323 Certificate of correction of applicant's mistake.

Whenever a mistake of a clerical or typographical nature or of minor character which was not the fault of the Office, appears in a patent and a showing is made that such mistake occurred in good faith, the Commissioner may, upon payment of the fee set forth in §1.20(a), issue a certificate, if the correction does not involve such changes in the patent as would constitute new matter or would require reexamination. A request for a certificate of correction of a patent involved in an interference shall comply with the requirements of this section and shall be accompanied by a motion under §1.635.

48. Section 1.324 is revised as follows:

§1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that the correct inventor or inventors were not named through error without deceptive intention on the part of the actual inventor or inventors, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in §1.20(b), or on order of a court before which such matter is called in question, issue a certificate naming only the actual inventor or inventors. A request to correct inventorship of patent involved in an interference shall comply with the requirements of this section and shall be accompanied by a motion under §1.634.

49. Section 1550 is amended by removing from paragraph (a) "Board of Appeals" and inserting, in its place, "Board of Patent Appeals and Interferences."

50. Section 1.565 is amended by revising paragraph (b) and adding paragraph (e) as follows:

§1.565 Concurrent office proceedings.

* * * * *

(b) If a patent in the process of reexamination is or becomes involved in litigation or a reissue application for the patent is filed or pending, the Commissioner shall determine whether or not to stay the reexamination or reissue proceeding.

* * * * *

(e) If a patent in the process of reexamination is or becomes involved in an interference, the Commissioner may stay reexamination or the interference. The Commissioner will not consider a request to stay an interference unless a motion (§1.635) to stay the interference has been presented to, and denied by, an examiner-in-chief and the request is filed within ten (10) days of a decision by an examiner-in-chief denying the motion for a stay or such other time as the examiner-in-chief may set.

51. A new subpart entitled "Subpart E—Interferences" is added which reads as follows:

SUBPART E—INTERFERENCES

Sec.

1.601 Scope of rules, definitions

1.602 Interest in applications and patents involved in interference

1.603 Interference between applications; subject matter of the interference

1.604 Request for interference between applications by an applicant

1.605 Suggestion of claim to applicant by examiner

1.606 Interference between an application and a patent; subject matter of the interference

1.607 Request by applicant for interference with patent

1.608 Interference between an application and a patent; *prima facie* showing by applicant

1.609 Preparation of interference papers by examiner

1.610 Assignment of interference to examiner-in-chief, time period for completing interference

1.611 Declaration of interference

1.612 Access to applications

1.613 Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent

1.614 Jurisdiction over interference

1.615 Suspension of ex parte prosecution

1.616 Sanctions for failure to comply with rules or order

1.617 Summary judgment against applicant

1.618 Return of unauthorized papers

1.621 Preliminary statement, time for filing, notice of filing

1.622 Preliminary statement, who made invention, where invention made

1.623 Preliminary statement; invention made in United States

1.624 Preliminary statement; invention made abroad

1.625 Preliminary statement; derivation by an opponent

1.626 Preliminary statement; earlier application

1.627 Preliminary statement, sealing before filing, opening of statement

1.628 Preliminary statement, correction of error

1.629 Effect of preliminary statement

1.630 Reliance on earlier application

1.631 Access to preliminary statement, service of preliminary statement

1.632 Notice of intent to argue abandonment, suppression, or concealment by opponent

1.633 Preliminary motions
1.634 Motion to correct inventorship
1.635 Miscellaneous motions
1.636 Motions, time for filing
1.637 Content of motions
1.638 Opposition and reply, time for filing opposition and reply
1.639 Evidence in support of motion, opposition, or reply
1.640 Motions, hearing and decision, redeclaration of interference, order to show cause
1.641 Unpatentability discovered by examiner-in-chief
1.642 Addition of application or patent to interference
1.643 Prosecution of interference by assignee
1.644 Petitions in interference
1.645 Extension of time, late papers, stay of proceedings
1.646 Service of papers, proof of service
1.647 Translation of document in foreign language
1.651 Setting times for discovery and taking testimony, parties entitled to take testimony
1.652 Judgment for failure to take testimony or file record
1.653 Record and exhibits
1.654 Final hearing
1.655 Matters considered in rendering a final decision
1.656 Briefs for final hearing
1.657 Burden of proof as to date of invention
1.658 Final decision
1.659 Recommendation
1.660 Notice of reexamination, reissue, protest, or litigation
1.661 Termination of interference after judgment
1.662 Request for entry of adverse judgment; reissue filed by patentee
1.663 Status of claim of defeated applicant after interference
1.664 Action after interference
1.665 Second interference
1.666 Filing of interference settlement agreements
1.671 Evidence must comply with rules
1.672 Manner of taking testimony
1.673 Notice of examination of witness
1.674 Persons before whom depositions may be taken
1.675 Examination of witness, reading and signing transcript of deposition
1.676 Certification and filing by officer, marking exhibits
1.677 Form of a transcript of deposition
1.678 Transcript of deposition must be filed
1.679 Inspection of transcript
1.682 Official records and printed publications
1.683 Testimony in another interference, proceeding, or action
1.684 Testimony in a foreign country
1.685 Errors and irregularities in depositions
1.687 Additional Discovery
1.688 Use of discovery

Authority: 35 USC 6, 23, 41, and 135

SUBPART E — Interferences

§1.601 Scope of rules, definitions.

This subpart governs the procedure in patent interferences in the Patent and Trademark Office. This subpart shall be construed to secure the just, speedy, and inexpensive determination of every interference. For the meaning of terms in the Federal Rules of Evidence as applied to interferences, see §1.671(c). Unless otherwise clear from the context, the following definitions apply to this subpart:

(a) "Additional discovery" is discovery to which a party may be entitled under §1.687 in addition to discovery to which the party is entitled as a matter of right under§1.673(a) and (b).

(b) "Affidavit" means affidavit, declaration under §1.68, or statutory declaration under 28 U.S.C. §1746. A transcript of an *ex parte* deposition may be used as an affidavit.

(c) "Board" means the Board of Patent Appeals and Interferences.

(d) "Case-in-chief" means that portion of a party's case where the party has the burden of going forward with evidence.

(e) "Case-in-rebuttal" means that portion of a party's case where the party presents evidence in rebuttal to the case-in-chief of another party.

(f) A "count" defines the interfering subject matter between (1) two or more applications or (2) one or more applications and one or more patents. When there is more than one count, each count shall define a separate patentable invention. Any claim of an application or patent which corresponds to a count is a claim involved in the interference within the meaning of 35 U.S.C. §135(a). A claim of a patent or application which is identical to a count is said to "correspond exactly" to the count. A claim of a patent or application which is not identical to a count, but which defines the same patentable invention as the count, is said to "correspond substantially" to the count. When a count is broader in scope than all claims which correspond to the count, the count is a "phantom count." A phantom count is not patentable to any party.

(g) The "effective filing date" of an application or a patent is the filing date of an earlier application accorded to the application or patent under 35 U.S.C. §§119, 120, or 365.

(h) In the case of an application, "filing date" means the filing date assigned to the application. In the case of a patent, "filing date" means the filing date assigned to the application which issued as the patent.

(i) An "interference" is a proceeding instituted in the Patent and Trademark Office before the Board to determine any question of patentability and priority of invention between two or more parties claiming the same patentable invention. An interference may be declared between two or more pending applications naming different inventors when, in the opinion of an examiner, the applications contain claims for the same patentable invention. An interference may be declared between one or more pending applications and one or more unexpired patents naming different inventors when, in the opinion of an examiner, any application and any unexpired patents contain claims for the same patentable invention.

(j) An "interference-in-fact" exists when at least one claim of a party which corresponds to a count and at least one claim of an opponent which corresponds to the count define the same patentable invention.

(k) A "lead" attorney or agent is a registered attorney or agent of record who is primarily responsible for prosecuting an interference on behalf of a party and is the attorney or agent whom an examiner-in-chief may contact to set times and take other action in the interference.

(l) A "party" is (1) an applicant or patentee involved in the interference or (2) a legal representative or an assignee of an applicant or patentee involved in an interference. Where acts of a party are normally performed by an attorney or agent, "party" may be construed to mean the attorney or agent. An "inventor" is the individual named as inventor in an application involved in an interference or the individual named as inventor in a patent involved in an interference.

(m) A "senior party" is the party with earliest effective filing date as to all counts or, if there is no party with the earliest effective filing date as to all counts, the party with the earliest filing date. A "junior party" is any other party.

(n) Invention "A" is the "same patentable invention" as a invention "B" when invention "A" is the same as (35 U.S.C. §102) or is obvious (35 U.S.C. §103) in view of invention "B" assuming invention "B" is prior art with respect to invention "A". Invention "A" is a "separate patentable invention" with respect to invention "B" when invention "A" is new (35 U.S.C. §102) and non-

obvious (35 U.S.C. §103) in view of invention "B" assuming invention "B" is prior art with respect to invention "A".

(o) "Sworn" means sworn or affirmed.

(p) "United States" means the United States of America, its territories and possessions.

§1.602 Interest in applications and patents involved in an interference.

(a) Unless good cause is shown, an interference shall not be declared or continued between (1) applications owned by a single party or (2) applications and an unexpired patent owned by a single party.

(b) The parties, within 20 days after an interference is declared, shall notify the Board of any and all right, title, and interest in any application or patent involved or relied upon in the interference unless the right, title, and interest is set forth in the notice declaring the interference.

(c) If a change of any right, title, and interest in any application or patent involved or relied upon in the interference occurs after notice is given declaring the interference and before the time expires for seeking judicial review of a final decision of the Board, the parties shall notify the Board of the change within 20 days of the change.

§1.603 Interference between applications; subject matter of the interference.

Before an interference is declared between two or more applications, the examiner must be of the opinion that there is interfering subject matter claimed in the applications which is patentable to each applicant subject to a judgment in the interference. The interfering subject matter shall be defined by one or more counts. Each count shall define a separate patentable invention. Each application must contain, or be amended to contain, at least one claim which corresponds to each count. All claims in the applications which define the same patentable invention as a count shall be designated to correspond to the count.

§1.604 Request for interference between applications by an applicant.

(a) An applicant may seek to have an interference declared with an application of another by (1) suggesting a proposed count and presenting a claim corresponding to the proposed count, (2) identifying the other application and, if known, a claim in the other application which corresponds to the proposed count, and (3) explaining why an interference should be declared.

(b) When an applicant presents a claim known to the applicant to define the same patentable invention claimed in a pending application of another, the applicant shall identify that pending application, unless the claim is presented in response to a suggestion by the examiner. The examiner shall notify the Commissioner of any instance where it appears an applicant may have failed to comply with the provisions of this paragraph.

§1.605 Suggestion of claim to applicant by examiner.

(a) The examiner may suggest that an applicant present a claim in an application for the purpose of an interference with another application or a patent. The applicant to whom the claim is suggested shall amend the application by presenting the suggested claim within a time specified by the examiner, not less than one month. Failure or refusal of an applicant to timely present the suggested claim shall be taken without further action as a disclaimer by the applicant of the invention defined by the suggested claim. At the time the suggested claim is presented, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the suggested claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared.

(b) The suggestion of a claim by the examiner for the purpose of an interference will not stay the period for response to any outstanding Office action. When a suggested claim is timely presented, *ex parte* proceedings in the application will be stayed pending a determination of whether an interference will be declared.

§1.606 Interference between an application and a patent; subject matter of the interference.

Before an interference is declared between an application and an unexpired patent, an examiner must determine that there is interfering subject matter claimed in the application and the patent which is patentable to the applicant subject to a judgment in the interference. The interfering subject matter will be defined by one or more counts. Each count shall define a separate patentable invention. Any application must contain, or be amended to contain, at least one claim which corresponds to each count. All claims in the application and patent which define the same patentable invention as a count shall be designated to correspond to the count. At the time an interference is initially declared (§1.611), a count shall not be narrower in scope than any patent claim which corresponds to the count and any single patent claim will be presumed, subject to a motion under §1.633(c), not to contain separate patentable inventions.

§1.607 Request by applicant for interference with patent.

(a) An applicant may seek to have an interference declared between an application and an unexpired patent by (1) presenting a proposed count and a claim corresponding to the proposed count and, if any claim of the patent or application does not correspond exactly to the proposed count, explaining why an interference should be declared, (2) identifying the patent and indicating which claim in the application and which claim or claims of the patent correspond to the proposed count, and (3) applying the terms of the application claim corresponding to the count to the disclosure of the application.

(b) When an applicant seeks an interference with a patent, examination of the application, including any appeal to the Board, shall be conducted with special dispatch within the Patent and Trademark Office. The examiner shall determine whether there is interfering subject matter claimed in the application and the patent which is patentable to the applicant subject to a judgment in an interference. If the examiner determines that there is any interfering subject matter, an interference will be declared. If the examiner determines that there is no interfering subject matter, the examiner shall state the reasons why an interference is not being declared and otherwise act on the application.

(c) When an applicant presents a claim which corresponds exactly or substantially to a claim of a patent, the applicant shall identify the patent and the number of the patent claim, unless the claim is presented in response to a suggestion by the examiner. The examiner shall notify the Commissioner of any instance where an applicant fails to identify the patent.

(d) A notice that an applicant is seeking to provoke an interference with a patent will be placed in the file of the patent and a copy of the notice will be sent to the patentee. The identity of the applicant will not be disclosed unless an interference is declared. If a final decision is made not to declare an interference, a notice to that effect will be placed in the patent file and will be sent to the patentee.

§1.608 Interference between an application and a patent; *prima facie* showing by applicant.

(a) When the earlier of the filing date or effective filing date of an application is three months or less after the earlier of the filing date or effective filing date of a patent, the applicant, before an interference will be de-

cared, shall file an affidavit alleging that there is a basis upon which applicant is entitled to a judgment relative to the patentee.

(b) When the earlier of the filing date or the effective filing date of an application is more than three months after the earlier of the filing date or the effective filing date under 35 U.S.C. §120 of a patent, the applicant, before an interference will be declared, shall file (1) evidence which may consist of patents or printed publications, other documents, and one or more affidavits which demonstrate that applicant is *prima facie* entitled to a judgment relative to the patentee and (2) an explanation stating with particularity the basis upon which the applicant is *prima facie* entitled to the judgment. Where the basis upon which an applicant is entitled to judgment relative to a patentee is priority of invention, the evidence shall include affidavits by the applicant, if possible, and one or more corroborating witnesses, supported by documentary evidence, if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would *prima facie* entitle the applicant to judgment on priority with respect to the earlier of the filing date or effective filing date of the patent. To facilitate preparation of a record (§1.653(g) and (h)) for final hearing, an applicant should file affidavits on paper which is 8-1/2 x 11 inches (21.8 by 27.9 cm.). The significance of any printed publication or other document which is self-authenticating within the meaning of Rule 902 of the Federal Rules of Evidence or §1.671(d) and any patent shall be discussed in an affidavit or the explanation. Any printed publication or other document which is not self-authenticating shall be authenticated and discussed with particularity in an affidavit. Upon a showing of sufficient cause, an affidavit may be based on information and belief. If a examiner finds an application to be in condition for declaration of an interference, the examiner will consider the evidence and explanation only to the extent of determining whether a basis upon which the applicant would be entitled to a judgment relative to the patentee is alleged and, if a basis is alleged, an interference may be declared.

§1.609 Preparation of interference papers by examiner.

When the examiner determines that an interference should be declared, the examiner shall forward to the Board:

(a) All relevant application and patent files and

(b) A statement identifying:

(1) The proposed count or counts;

(2) The claims of any application or patent which correspond to each count, stating whether the claims correspond exactly or substantially to each count;

(3) The claims in any application which are deemed by the examiner to be patentable over any count; and

(4) Whether an applicant or patentee is entitled to the benefit of the filing date of an earlier application and, if so, sufficient information to identify the earlier application.

§1.610 Assignment of interference to examiner-in-chief, time period for completing interference.

(a) Each interference will be declared by an examiner-in-chief who may enter all interlocutory orders in the interference, except that only a panel consisting of at least three members of the Board shall (1) hear oral argument at final hearing, (2) enter a decision under §§1.617, 1.640(c) or (e), 1.652, 1.656(i) or 1.658 or (3) enter any other order which terminates the interference.

(b) As necessary, another examiner-in-chief may act in place of the one who declared the interference. Unless otherwise provided in this section, at the discretion of the examiner-in-chief assigned to the interference, a panel consisting of two or more members of the Board may enter interlocutory orders.

(c) Unless otherwise provided in this subpart, times for taking action by a party in the interference will be set on a case-by-case basis by the examiner-in-chief assigned to the interference. Times for taking action shall be set and the examiner-in-chief shall exercise control over the interference such that the pendency of the interference before the Board does not normally exceed two years.

(d) An examiner-in-chief may hold a conference with the parties to consider: (1) simplification of any issues, (2) the necessity or desirability of amendments to counts, (3) the possibility of obtaining admissions of fact and genuineness of documents which will avoid unnecessary proof, (4) any limitations on the number of expert witnesses, (5) the time and place for conducting a deposition (§1.673(g)), and (6) any other matter as may aid in the disposition of the interference. After a conference, the examiner-in-chief may enter any order which may be appropriate.

(e) The examiner-in-chief may determine a proper course of conduct in an interference for any situation not specifically covered by this part.

§1.611 Declaration of interference.

(a) Notice of declaration of an interference will be sent to each party.

(b) When a notice of declaration is returned to the Patent and Trademark Office undelivered, or in any other circumstance where appropriate, an examiner-in-chief may (1) send a copy of the notice to a patentee named in a patent involved in an interference or the patentee's assignee of record in the Patent and Trademark Office or (2) order publication of an appropriate notice in the *Official Gazette*.

(c) The notice of declaration shall specify:

(1) the name and residence of each party involved in the interference;

(2) the name and address of record of any attorney or agent of record in any application or patent involved in the interference;

(3) the name of any assignee of record in the Patent and Trademark Office;

(4) the identity of any application or patent involved in the interference;

(5) where a party is accorded the benefit of the filing date of an earlier application, the identity of the earlier application;

(6) the count or counts;

(7) the claim or claims of any application or any patent which correspond to each count; and

(8) the order of the parties.

(d) The notice of declaration may also specify the time for: (1) filing a preliminary statement as provided in §1.621(a); (2) serving notice that a preliminary statement has been filed as provided §1.621(b); and (3) filing preliminary motions authorized by §1.633, oppositions to the motions, and replies to the oppositions.

(e) Notice may be given in the *Official Gazette* that an interference has been declared involving a patent.

§1.612 Access to applications.

(a) After an interference is declared, each party shall have access to and may obtain copies of the files of any application set out in the notice declaring the interference, except for affidavits filed under §1.131 and any evidence and explanation under §1.608(b) filed separate from an amendment.

(b) After preliminary motions under §1.633 are decided (§1.640(b)), each party shall have access to and may obtain copies of any affidavit filed under §1.131 and any evidence and explanation filed under §1.608(b) in any application set out in the notice declaring the interference.

(c) Any evidence and explanation filed under §1.608(b) in the file of any application identified in the notice declaring the interference shall be served when required by §1.617(b).

(d) The parties at any time may agree to exchange copies of papers in the files of any application identified in the notice declaring the interference.

§1.613 Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent.

(a) Each party may be required to designate one attorney or agent of record as the lead attorney or agent.

(b) The same attorney or agent or members of the same firm of attorneys or agents may not represent two or more parties in an interference except as may be permitted under this Chapter.

(c) An examiner-in-chief may make necessary inquiry to determine whether an attorney or agent should be disqualified from representing a party in an interference. If an examiner-in-chief is of the opinion that an attorney or agent should be disqualified, the examiner-in-chief shall refer the matter to the Commissioner. The Commissioner will make a final decision as to whether any attorney or agent should be disqualified.

(d) No attorney or agent of record in an interference may withdraw as attorney or agent of record except with the approval of an examiner-in-chief and after reasonable notice to the party on whose behalf the attorney or agent has appeared. A request to withdraw as attorney or agent of record in an interference shall be made by motion (§1.635).

§1.614 Jurisdiction over interference.

(a) The Board shall assume jurisdiction over an interference when the interference is declared under §1.611.

(b) When the interference is declared the interference is a contested case within the meaning of 35 U.S.C. §24.

(c) The examiner shall have jurisdiction over any pending application until the interference is declared. An examiner-in-chief, where appropriate, may for a limited purpose restore jurisdiction to the examiner over any application involved in the interference.

§1.615 Suspension of *ex parte* prosecution.

(a) When an interference is declared, *ex parte* prosecution of an application involved in the interference is suspended. Amendments and other papers related to the application received during pendency of the int be entered or considered in the interference without the consent of an examiner-in-chief.

(b) *Ex parte* prosecution as to specified matters may be continued concurrently with the interference with the consent of the examiner-in-chief.

§1.616 Sanctions for failure to comply with rules or order.

An examiner-in-chief or the Board may impose an appropriate sanction against a party who fails to comply with the regulations of this part or any order entered by an examiner-in-chief or the Board. An appropriate sanction may include among others entry of an order:

(a) holding certain facts to have been established in the interference;

(b) precluding a party from filing a motion or a preliminary statement;

(c) precluding a party from presenting or contesting a particular issue;

(d) precluding a party from requesting, obtaining, or opposing discovery; or

(e) granting judgment in the interference.

§1.617 Summary judgment against applicant

(a) An examiner-in-chief shall review any evidence filed by an applicant under §1.608(b) to determine if the applicant is *prima facie* entitled to a judgment relative to the patentee. If the examiner-in-chief determines that the evidence shows the applicant is *prima facie* entitled to a judgment relative to the patentee, the interference shall proceed in the normal manner under the regulations of this part. If in the opinion of the examiner-in-chief the evidence fails to show that the applicant is *prima facie* entitled to a judgment relative to the patentee, the examiner-in-chief shall, concurrently with the notice declaring the interference, enter an order stating the reasons for the opinion and directing the applicant, within a time set in the order, to show cause why summary judgment should not be entered against the applicant.

(b) The applicant may file a response to the order and state any reasons why summary judgment should not be entered. Any request by the applicant for a hearing before the Board shall be made in the response. Additional evidence shall not be presented by the applicant or considered by the Board unless the applicant shows good cause why any additional evidence was not initially presented with the evidence filed under §1.608(b). At the time an applicant files a response, the applicant shall serve a copy of any evidence filed under §1.608(b) and this paragraph.

(c) If a response is not timely filed by the applicant, the Board shall enter a final decision granting summary judgment against the applicant.

(d) If a response is timely filed by the applicant, all opponents may file a statement within a time set by the examiner-in-chief. The statement may set forth views as to why summary judgment should be granted against the applicant, but the statement shall be limited to discussing why all the evidence presented by the applicant does not overcome the reasons given by the examiner-in-chief for issuing the order to show cause. Evidence shall not be filed by any opponent. An opponent may not request an oral hearing.

(e) Within a time authorized by the examiner-in-chief, an applicant may file a reply to any statement filed by any opponent.

(f) When more than two parties are involved in an interference, all parties may participate in summary judgment proceedings under this section.

(g) If a response by the applicant is timely filed, the examiner-in-chief or the Board shall decide whether the evidence submitted under §1.608(b) and any additional evidence properly submitted under paragraph (b) of this section shows that the applicant is *prima facie* entitled to a judgment relative to the patentee. If the applicant is not *prima facie* entitled to a judgment relative to the patentee, the Board shall enter a final decision granting summary judgment against the applicant. Otherwise, an interlocutory order shall be entered authorizing the interference to proceed in the normal manner under the regulations of this part.

(h) Only an applicant who filed evidence under §1.608(b) may request a hearing. If that applicant requests a hearing, the Board may hold a hearing prior to entry of a decision under paragraph (g) of this section. The examiner-in-chief shall set a date and time for the hearing. Unless otherwise ordered by the examiner-in-chief or the Board, the applicant and any opponent will each be entitled to no more than 30 minutes of oral argument at the hearing.

§1.618 Return of unauthorized papers.

(a) The Patent and Trademark Office shall return to a party any paper presented by the party when the filing of the paper is not authorized by, or is not in compliance with the requirements of, this subpart. Any paper returned will not thereafter be considered by the Patent and Trademark Office in the interference. A party may be permitted to file a corrected paper under such conditions as may be deemed appropriate by an examiner-in-chief.

(b) When presenting a paper in an interference, a party shall not submit with the paper a copy of a paper previously filed in the interference.

§1.621 Preliminary statement, time for filing, notice of filing.

(a) Within the time set for filing preliminary motions under §1.633, each party may file a preliminary statement. The preliminary statement may be signed by any individual having knowledge of the facts recited therein or an attorney or agent of record.

(b) When a party files a preliminary statement the party shall also simultaneously file and serve on all opponents in the interference a notice stating that a preliminary statement has been filed. A copy of the preliminary statement need not be served until ordered by an examiner-in-chief.

§1.622 Preliminary statement, who made invention, where invention made.

(a) A party's preliminary statement must identify the inventor who made the invention defined by each count and must state on behalf of the inventor the facts required by paragraph (a) of §§1.623, 1.624, and 1.625 as may be appropriate. When an inventor identified in the preliminary statement is not an inventor named in the party's application or patent, the party shall file a motion under §1.634 to correct inventorship.

(b) The preliminary statement shall state whether the invention was made in the United States or abroad. If made abroad, the preliminary statement shall state whether the party is entitled to the benefit of the second sentence of 35 U.S.C. §104.

§1.623 Preliminary statement; invention made in United States.

(a) When the invention was made in the United States or a party is entitled to the benefit of the second sentence of 35 U.S.C. §104, the preliminary statement must state the following facts as to the invention defined by each count:

(1) The date on which the first drawing of the invention was made.

(2) The date on which the first written description of the invention was made.

(3) The date on which the invention was first disclosed by the inventor to another person.

(4) The date on which the invention was first conceived by the inventor.

(5) The date on which the invention was first actually reduced to practice. If the invention was not actually reduced to practice by or on behalf of the inventor prior to the party's filing date, the preliminary statement shall so state.

(6) The date after the inventor's conception of the invention when active exercise of reasonable diligence toward reducing the invention to practice began.

(b) If a party intends to prove derivation, the preliminary statement must also comply with §1.625.

(c) When a party alleges under paragraph (a)(1) of this section that a drawing was made, a copy of the first drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(2) of this section that a written description of the invention was made, a copy of the first written description shall be filed with and identified in the preliminary statement. See §1.628(b) when a copy of the first drawing or written description cannot be filed with the preliminary statement.

§1.624 Preliminary statement; invention made abroad.

(a) When the invention was made abroad and a party intends to rely on introduction of the invention into the United States, the preliminary statement must state the following facts as to the invention defined by each count:

(1) The date on which a drawing of the invention was first introduced into the United States.

(2) The date on which a written description of the invention was first introduced into the United States.

(3) The date on which the invention was first disclosed to another person in the United States.

(4) The date on which the inventor's conception of the invention was first introduced into the United States.

(5) The date on which an actual reduction to practice of the invention was first introduced into the United States. If an actual reduction to practice of the invention was not introduced into the United States, the preliminary statement shall so state.

(6) The date after introduction of the inventor's conception into the United States when active exercise of reasonable diligence in the United States toward reducing the invention to practice began.

(b) If a party intends to prove derivation, the preliminary statement must also comply with §1.625.

(c) When a party alleges under paragraph (a)(1) of this section that a drawing was introduced into the United States a copy of that drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(2) of this section that a written description of the invention was introduced into the United States a copy of that written description shall be filed with and identified in the preliminary statement. See §1.628(b) when a copy of the first drawing or first written description introduced in the United States cannot be filed with the preliminary statement.

§1.625 Preliminary statement; derivation by an opponent.

(a) When the invention was made in the United States or abroad and a party intends to prove derivation by an opponent from the party, the preliminary statement must state the following as to the invention defined by each count:

(1) The name of the opponent.

(2) The date on which the first drawing of the invention was made.

(3) The date on which the first written description of the invention was made.

(4) The date on which the invention was first disclosed by the inventor to another person.

(5) The date on which the invention was first conceived by the inventor.

(6) The date on which the invention was first communicated to the opponent.

(b) If a party intends to prove priority, the preliminary statement must also comply with §1.623 or §1.624.

(c) When a party alleges under paragraph (a)(2) of this section that a drawing was made, a copy of the first drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(3) of this section that a written description of the invention was made, a copy of the first written description shall be filed with and identified in the preliminary statement. See §1.628(b) when a first drawing or first written description cannot be filed with the preliminary statement.

§1.626 Preliminary statement; earlier application.

When a party does not intend to present evidence to prove a conception or an actual reduction to practice and the party intends to rely solely on the filing date of an earlier application filed in the United States or abroad to prove a constructive reduction to practice, the preliminary statement may so state and identify the earlier application with particularity.

§1.627 Preliminary statement, sealing before filing, opening of statement.

(a) The preliminary statement and copies of any drawing or written description shall be filed in a sealed envelope bearing only the name of the party filing the statement and the style (e.g., Jones v. Smith) and number of the interference. The sealed envelope should contain only the preliminary statement and copies of any drawing or written description. If the preliminary statement is filed through the mail, the sealed envelope should be enclosed in an outer envelope addressed to the Commissioner of Patents and Trademarks in accordance with §1.1(e).

(b) A preliminary statement may be opened only at the direction of an examiner-in-chief.

§1.628 Preliminary statement, correction of error.

(a) A material error arising through inadvertence or mistake in connection with (1) a preliminary statement or (2) drawings or a written description submitted therewith or omitted therefrom, may be corrected by a motion (§1.635) for leave to file a corrected statement. The motion shall be supported by an affidavit and shall show that the correction is essential to the ends of justice and shall be accompanied by the corrected statement. The motion shall be filed as soon as practical after discovery of the error.

(b) When a party cannot attach a copy of a drawing or a written description to the party's preliminary statement as required by §§1.623(c), 1.624(c), or 1.625(c), the party (1) shall show good cause and explain in the preliminary statement why a copy of the drawing or written description cannot be attached to the preliminary statement and (2) shall attach to the preliminary statement the earliest drawing or written description made in or introduced into the United States which is available. The party shall file a motion (§1.635) to amend its preliminary statement promptly after the first drawing, first written description, or drawing or written description first introduced into the United States becomes available. A copy of the drawing or written description may be obtained, where appropriate, by a motion (§1.635) for additional discovery under §1.687 or during a testimony period.

§1.629 Effect of preliminary statement.

(a) A party shall be strictly held to any date alleged in the preliminary statement. Doubts as to (1) definiteness or sufficiency of any allegation in a preliminary statement or (2) compliance with formal requirements will be resolved against the party filing the statement by restricting the party to the earlier of its filing date or effective filing date or to the latest date of a period alleged in the preliminary statement as may be appropriate. A party may not correct a preliminary statement except as provided by §1.628.

(b) Evidence which shows that an act alleged in the preliminary statement occurred prior to the date alleged in the statement shall establish only that the act occurred as early as the date alleged in the statement.

(c) If a party does not file a preliminary statement, the party:

(1) shall be restricted to the earlier of the party's filing date or effective filing date and

(2) will not be permitted to prove that:

(i) the party made the invention prior to the party's filing date or

(ii) any opponent derived the invention from the party.

(d) If a party files a preliminary statement which contains an allegation of a date of first drawing or first written description and the party does not file a copy of the first drawing or written description with the preliminary statement as required by §1.623(c), §1.624(c), or §1.625(c), the party will be restricted to the earlier of the party's filing date or effective filing date as to that allegation unless the party complies with §1.628(b). The content of any drawing or written description submitted with a preliminary statement will not normally be evaluated or considered by the Board.

(e) A preliminary statement shall not be used as evidence on behalf of the party filing the statement.

§1.630 Reliance on earlier application.

A party shall not be entitled to rely on the filing date of an earlier application filed in the United States or abroad unless (a) the earlier application is identified (§1.611(c)(5)) in the notice declaring the interference or (b) the party files a preliminary motion under §1.633 seeking the benefit of the filing date of the earlier application.

§1.631 Access to preliminary statement, service of preliminary statement.

(a) Unless otherwise ordered by an examiner-in-chief, concurrently with entry of a decision by the examiner-in-chief on preliminary motions filed under §1.633, any preliminary statement filed under §1.621(a) shall be opened to inspection by the senior party and any junior party who filed a preliminary statement. Within a time set by the examiner-in-chief, a party shall serve copies of its preliminary statement on every opponent who served a notice under §1.621(b).

(b) A junior party who does not file a preliminary statement shall not have access to the preliminary statement of any other party.

(c) If an interference is terminated before the preliminary statements have been opened, the preliminary statements will remain sealed and will be returned to the respective parties who submitted the statements.

§1.632 Notice of intent to argue abandonment, suppression or concealment by opponent.

A notice shall be filed by a party who intends to argue that an opponent has abandoned, suppressed, or concealed an actual reduction to practice (35 U.S.C. §102(g)). A party will not be permitted to argue abandonment, suppression, or concealment by an opponent unless the notice is timely filed. Unless authorized otherwise by an examiner-in-chief, a notice is timely when filed within ten (10) days of the close of the testimony-in-chief of the opponent.

§1.633 Preliminary Motions.

A party may file the following preliminary motions:

(a) A motion for judgment on the ground that an opponent's claim corresponding to a count is not patentable to the opponent. In determining a motion filed under this paragraph, a claim may be construed by reference to the prior art of record. A motion under this paragraph shall not be based on: (1) priority of invention of the subject matter of a count by the moving party as against any opponent or (2) derivation of the subject matter of a count by an opponent from the moving party. See §1.637(a)

(b) A motion for judgment on the ground that there is no interference-in-fact. A motion under this paragraph is proper only if: (1) the interference involves a design application or patent or a plant application or patent or (2) no claim of a party which corresponds to a count is identical to any claim of an opponent which corresponds to that count. See §1.637(a)

(c) A motion to redefine the interfering subject matter by (1) adding or substituting a count, (2) amending an application claim corresponding to a count or adding a claim in the moving party's application to be designated to correspond to a count, (3) designating an application or patent claim to correspond to a count, (4) designating an application or patent claim as not corresponding to a count, or (5) requiring an opponent who is an applicant to add a claim and to designate the claim to correspond to a count. See §1.637(a) and (c).

(d) A motion to substitute a different application owned by a party for an application involved in the interference. See §1.637(a) and (d).

(e) A motion to declare an additional interference (1) between an additional application not involved in the interference and owned by a party and an opponent's ap-

plication or patent involved in the interference or (2) when an interference involves three or more parties, between less than all applications and any patent involved in the interference. See §1.637(a) and (e).

(f) A motion to be accorded the benefit of the filing date of an earlier application filed in the United States or abroad. See §1.637(a) and (f).

(g) A motion to attack the benefit accorded an opponent in the notice declaring the interference of the filing date of an earlier application filed in the United States or abroad. See §1.637(a) and (g).

(h) When a patent is involved in an interference and the patentee has on file or files an application for reissue under §1.171, a motion to add the application for reissue to the interference. See §1.637(a) and (h).

(i) When a motion is filed under paragraph (a), (b), or (g) of this section, an opponent, in addition to opposing the motion, may file a motion to redefine the interfering subject matter under paragraph (c) of this section or a motion to substitute a different application under paragraph (d) of this section.

(j) When a motion is filed under paragraph (c)(1) of this section an opponent, in addition to opposing the motion, may file a motion for benefit under paragraph (f) of this section as to the count to be added or substituted.

§1.634 Motion to correct inventorship.

A party may file a motion to (a) amend its application involved in an interference to correct inventorship as provided by §1.48 or (b) correct inventorship of its patent involved in an interference as provided in §1.324. See §1.637(a).

§1.635 Miscellaneous motions.

A party seeking entry of an order relating to any matter other than a matter which may be raised under §§1.633 or 1.634 may file a motion requesting entry of the order. See §1.637(a) and (b).

§1.636 Motions, time for filing.

(a) A preliminary motion under §1.633(a) through (h) shall be filed within a time period set by an examiner-in-chief.

(b) A preliminary motion under §1.633(i) or (j) shall be filed within 20 days of the service of the preliminary motion under §1.633(a), (b), or (g) unless otherwise ordered by an examiner-in-chief.

(c) A motion under §1.634 shall be diligently filed after an error is discovered in the inventorship of an application or patent involved in an interference unless otherwise ordered by an examiner-in-chief.

(d) A motion under §1.635 shall be filed as specified in this subpart or when appropriate unless otherwise ordered by an examiner-in-chief.

§1.637 Content of motions.

(a) Every motion shall include (1) a statement of the precise relief requested, (2) a statement of the material facts in support of the motion, and (3) a full statement of the reasons why the relief requested should be granted.

(b) A motion under §1.635 shall contain a certificate by the moving party stating that the moving party has conferred with all opposing parties in an effort in good faith to resolve by agreement the issues raised by the motion. A moving party shall indicate in the motion whether any other party plans to oppose the motion. The provisions of this paragraph do not apply to a motion to suppress evidence (§1.656(h)).

(c) A preliminary motion under §1.633(c) shall explain why the interfering subject matter should be redefined.

(1) A preliminary motion seeking to add or substitute a count shall:

(i) Propose each count to be added or substituted.

(ii) When the moving party is an applicant, show the patentability to the applicant of all claims in, or proposed to be added to, the party's application which correspond to each proposed count and apply the terms of the claims to the disclosure of the party's application; when necessary a moving party applicant shall file with the motion an amendment adding any proposed claim to the application.

(iii) Identify all claims in an opponent's application which should be designated to correspond to each proposed count; if an opponent's application does not contain such a claim, the moving party shall propose a claim to be added to the opponent's application. The moving party shall show the patentability of any proposed claims to the opponent and apply the terms of the claims to the disclosure of the opponent's application.

(iv) Designate the claims of any patent involved in the interference which define the same patentable invention as each proposed count.

(v) Show that each proposed count defines a separate patentable invention from every other count in the interference.

(vi) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(2) A preliminary motion seeking to amend an application claim corresponding to a count or adding a claim to be designated to correspond to a count shall:

(i) Propose an amended or added claim.

(ii) Show that the proposed or added claim defines the same patentable invention as the count.

(iii) Show the patentability to the applicant of each amended or added claim and apply the terms of the amended or added claim to the disclosure of the application; when necessary a moving party applicant shall file with the motion an amendment making the amended or added claim to the application.

(iv) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(3) A preliminary motion seeking to designate an application or patent claim to correspond to a count shall:

(i) Identify the claim and the count.

(ii) Show the claim defines the same patentable invention as the count.

(iii) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(4) A preliminary motion seeking to designate an application or patent claim as not corresponding to a count shall:

(i) Identify the claim and the count.

(ii) Show the claim does not define the same patentable invention as any other claim designated in the notice declaring the interference as corresponding to the count.

(5) A preliminary motion seeking to require an opponent who is an applicant to add a claim and designate the claim as corresponding to a count shall:

(i) Propose a claim to be added by the opponent.

(ii) Show the patentability to the opponent of the claim and apply the terms of the claim to the disclosure of the opponent's application.

(iii) Identify the count to which the claim shall be designated to correspond.

(iv) Show the claim defines the same patentable invention as the count to which it will be designated to correspond.

(d) A preliminary motion under §1.633(d) to substitute a different application shall:

(1) Identify the different application.

(2) Certify that a complete copy of the file of the different application, except for documents filed under §1.131 or §1.608(b), has been served on all opponents.

(3) Show the patentability to the applicant of all claims in, or proposed to be added to, the different application which correspond to each count and apply the terms of the claims to the disclosure of the different application; when necessary the applicant shall file with the motion an amendment adding a claim to the different application.

(4) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(e) A preliminary motion to declare an additional interference under §1.633(e) shall explain why an additional interference is necessary:

(1) When the preliminary motion seeks an additional interference under §1.633(e)(1), the motion shall:

(i) Identify the additional application.

(ii) Certify that a complete copy of the file of the additional application, except for documents filed under §§1.131 or 1.608(b), has been served on all opponents.

(iii) Propose a count for the additional interference.

(iv) Show the patentability to the applicant of all claims in, or proposed to be added to, the additional application which correspond to each proposed count for the additional interference and apply the terms of the claims to the disclosure of the additional application; when necessary the applicant shall file with the motion an amendment adding a claim to the additional application.

(v) When the opponent is an applicant, show the patentability to the opponent of any claims in, or proposed to be added to, the opponent's application which correspond to the proposed count and apply the terms of the claims to the disclosure of the opponent's application.

(vi) When the opponent is a patentee, designate the claims of the patent which define the same patentable invention defined by the proposed count.

(vii) Show that each proposed count for the additional interference defines a separate patentable invention from all counts of the interference in which the motion is filed.

(viii) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(2) When the preliminary motion seeks an additional interference under §1.633(e)(2), the motion shall:

(i) Identify any application or patent to be involved in the additional interference.

(ii) Propose a count for the additional interference.

(iii) When the moving party is an applicant, show the patentability to the applicant of all claims in, or proposed to be added to the party's application which correspond to each proposed count and apply the terms of the claims to the disclosure of the party's application; when necessary a moving party applicant shall file with the motion an amendment adding any proposed claim to the application.

(iv) Identify all claims in any opponent's application which should be designated to correspond to each proposed count; if an opponent's application does not contain such a claim, the moving party shall propose a claim to be added to the opponent's application. The moving party shall show the patentability of any proposed claims to the opponent and apply the terms of the claims to the disclosure of the opponent's application.

(v) Designate the claims of any patent involved in the interference which define the same patentable invention as each proposed count.

(vi) Show that each proposed count for the additional interference defines a separate patentable invention from all counts in the interference in which the motion is filed.

(vii) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(f) A preliminary motion for benefit under §1.633(f) shall:

(1) Identify the earlier application.

(2) When the earlier application is an application filed in the United States, certify that a complete copy of the file of the earlier application, except for documents filed under §1.131 or §1.608(b), has been served on all opponents. When the earlier application is an application filed abroad, certify that a copy of the application filed abroad has been served on all opponents. If the earlier application filed abroad is not in English, the requirements of §1.647 must also be met.

(3) Show that the earlier application constitutes a constructive reduction to practice of each count.

(g) A preliminary motion to attack benefit under §1.633(g) shall explain, as to each count, why an opponent should not be accorded the benefit of the filing date of the earlier application.

(h) A preliminary motion to add an application for reissue under §1.633(h) shall:

(1) Identify the application for reissue.

(2) Certify that a complete copy of the file of the application for reissue has been served on all opponents.

(3) Show the patentability of all claims in, or proposed to be added to, the application for reissue which correspond to each count and apply the terms of the claims to the disclosure of the application for reissue; when necessary a moving applicant for reissue shall file with the motion an amendment adding a claim to the application for reissue.

(4) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

§1.638 Opposition and reply, time for filing opposition and reply.

(a) Unless otherwise ordered by an examiner-in-chief, any opposition to any motion shall be filed within 20 days after service of the motion. An opposition shall (1) identify any material fact set forth in the motion which is in dispute and (2) include an argument why the relief requested in the motion should be denied.

(b) Unless otherwise ordered by an examiner-in-chief, a reply shall be filed within 15 days after service of the opposition. A reply shall be directed only to new points raised in the opposition.

§1.639 Evidence in support of motion, opposition, or reply.

(a) Proof of any material fact alleged in a motion, opposition, or reply must be filed and served with the motion, opposition, or reply unless the proof relied upon is part of the interference file or the file of any patent or application involved in the interference or any earlier application filed in the United States of which a party has been accorded or seeks to be accorded benefit.

(b) Proof may be in the form of patents, printed publications, and affidavits.

(c) When a party believes that testimony is necessary to support or oppose a preliminary motion under §1.633 or a motion to correct inventorship under §1.634, the party shall describe the nature of the testimony needed. If the examiner-in-chief finds that testimony is needed to decide the motion, the examiner-in-chief may grant appropriate interlocutory relief and enter an order authorizing the taking of testimony and deferring a decision on the motion to final hearing.

§1.640 Motions, hearing and decision, redeclaration of interference, order to show cause.

(a) A hearing on a motion may be held in the discretion of the examiner-in-chief. The examiner-in-chief shall set the date and time for any hearing. The length of oral argument at a hearing on a motion is a matter within the discretion of the examiner-in-chief. An examiner-in-chief may direct that a hearing take place by telephone.

(b) Motions will be decided by an examiner-in-chief.

An examiner-in-chief may consult with an examiner in deciding motions involving a question of patentability. An examiner-in-chief may grant or deny any motion or take such other action which will secure the just, speedy, and inexpensive determination of the interference.

(1) When preliminary motions under §1.633 are decided, the examiner-in-chief will, when necessary, set a time for filing any amendment to an application involved in the interference and for filing a supplemental preliminary statement as to any new counts involved in the interference. Failure or refusal of a party to timely present an amendment required by an examiner-in-chief shall be taken without further action as a disclaimer by that party of the invention involved. A supplemental preliminary statement shall meet the requirements specified in §§1.623, 1.624, 1.625, or 1.626, but need not be filed if a party states that it intends to rely on a preliminary statement previously filed under §1.621(a). After the time expires for filing any amendment and supplemental preliminary statement, the examiner-in-chief will, if necessary, redeclare the interference.

(2) After a decision is entered on preliminary motions filed under §1.633, a further motion under §1.633 will not be considered except as provided by §1.655(b).

(c) When a decision on any motion under §§1.633, 1.634, or 1.635 is entered which does not result in the issuance of an order to show cause under paragraph (d) of this section, a party may file a request for reconsideration within 14 days after the date of the decision. The filing of a request for reconsideration will not stay any time period set by the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. No opposition to a request for reconsideration shall be filed unless requested by an examiner-in-chief or the Board. A decision of single examiner-in-chief will not ordinarily be modified unless an opposition has been requested by an examiner-in-chief or the Board. The request for reconsideration shall be acted on by a panel of the Board consisting of at least three examiners-in-chief, one of whom will normally be the examiner-in-chief who decided the motion.

(d) An examiner-in-chief may issue an order to show cause why judgment should not be entered against a party when:

(1) A decision on a motion is entered which is dispositive of the interference against the party as to all counts;

(2) The party is a junior party who fails to file a preliminary statement; or

(3) The party is a junior party whose preliminary statement fails to overcome the earlier of the filing date or effective filing date of another party.

(e) When an order to show cause is issued under paragraph (d) of this section, the Board shall enter a judgment in accordance with the order unless, within 20 days after the date of the order, the party against whom the order issued files a paper which shows good cause why judgment should not be entered in accordance with the order. Any other party may file a response to the paper within 20 days of the date of service of the paper. If the party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party. If a party wishes to take testimony in response to an order to show cause, the party's response should be accompanied by a motion (§1.635) requesting the testimony period. See §1.651(c)(4).

§1.641 Unpatentability discovered by examiner-in-chief

During the pendency of an interference, if the examiner-in-chief becomes aware of a reason why a claim corresponding to a count may not be patentable, the examiner-in-chief may notify the parties of the reason and set a time within which each party may present its views. After considering any timely filed views, the examiner-in-chief shall decide how the interference shall proceed.

§1.642 Addition of application or patent to interference.

During the pendency of an interference, if the examiner-in-chief becomes aware of an application or a patent not involved in the interference which claims the same patentable invention as a count in the interference, the examiner-in-chief may add the application or patent to the interference on such terms as may be fair to all parties.

§1.643 Prosecution of interference by assignee.

(a) An assignee of record in the Patent and Trademark Office of the entire interest in an application or patent involved in an interference is entitled to conduct prosecution of the interference to the exclusion of the inventor.

(b) An assignee of a part interest in an application or patent involved in an interference may file a motion (§1.635) for entry of an order authorizing it to prosecute the interference. The motion shall show (1) the inability or refusal of the inventor to prosecute the interference or (2) other cause why the ends of justice require that the assignee of a part interest be permitted to prosecute the interference. The examiner-in-chief may allow the assignee of a part interest to prosecute the interference upon such terms as may be appropriate.

§1.644 Petitions in interferences.

(a) There is no appeal to the Commissioner in an interference from a decision of an examiner-in-chief or a panel consisting of more than one examiner-in-chief. The Commissioner will not consider a petition in an interference unless:

(1) The petition is from a decision of an examiner-in-chief or a panel and the examiner-in-chief or the panel shall be of the opinion (i) that the decision involves a controlling question of procedure or an interpretation of a rule as to which there is a substantial ground for a difference of opinion and (ii) that an immediate decision on petition by the Commissioner may materially advance the ultimate termination of the interference;

(2) The petition seeks to invoke the supervisory authority of the Commissioner and is not filed prior to the decision of the Board awarding judgment and does not relate to (i) the merits of priority of invention or patentability or (ii) the admissibility of evidence under the Federal Rules of Evidence; or

(3) The petition seeks relief under §1.183.

(b) A petition under paragraph (a)(1) of this section filed more than 15 days after the date of the decision of the examiner-in-chief or the panel may be dismissed as untimely. A petition under paragraph (a)(2) of this section shall not be filed prior to decision by the Board awarding judgment. Any petition under paragraph (a)(3) of this section shall be timely if it is made as part of, or simultaneously with, a proper motion under §§1.633, 1.634, or 1.635. Any opposition to a petition shall be filed within 15 days of the date of service of the petition.

(c) The filing of a petition shall not stay the proceeding unless a stay is granted in the discretion of the examiner-in-chief, the panel, or the Commissioner.

(d) Any petition must contain a statement of the facts involved and the point or points to be reviewed and the action requested. Briefs or memoranda, if any, in support of the petition or opposition shall accompany or be embodied therein. The petition will be decided on the basis of the record made before the examiner-in-chief or the panel and no new evidence will be considered by the Commissioner in deciding the petition. Copies of documents already of record in the interference shall not be submitted with the petition or opposition.

(e) Any petition under paragraph (a) of this section shall be accompanied by the petition fee set forth in §1.17(h).

(f) Any request for reconsideration of a decision by the Commissioner shall be filed within 15 days of the decision of the Commissioner and must be accompanied by the fee set forth in §1.17(h). No opposition to a request for reconsideration shall be filed unless requested by the Commissioner. The decision will not ordinarily be modified unless such an opposition has been requested by the Commissioner.

(g) Where reasonably possible, service of any petition, opposition, or request for reconsideration shall be such that delivery is accomplished within one working day. Service by hand or "Express Mail" complies with this paragraph.

(h) An oral hearing on the petition will not be granted except when considered necessary by the Commissioner.

(i) The Commissioner may delegate to appropriate Patent and Trademark Office employees the determination of petitions under this section.

§1.645 Extension of time, late papers, stay of proceedings.

(a) A party may file a motion (§1.635) seeking an extension of time to take action in an interference, to file a notice of appeal (§§1.302, 1.304), or to commence a civil action (§1.303, 1.304). The motion shall be filed within sufficient time to actually reach the examiner-in-chief before expiration of the time for taking action, filing the notice, or commencing the civil action. A moving party should not assume that the motion will be granted even if there is no objection by any other party. The motion will be denied unless the moving party shows good cause why an extension should be granted. The press of other business arising after an examiner-in-chief sets a time for taking action will not normally constitute good cause. A motion seeking additional time to take testimony because a party has not been able to procure the testimony of a witness shall set forth the name of the witness, any steps taken to procure the testimony of the witness, the dates on which the steps were taken, and the facts expected to be proved through the witness.

(b) Any paper belatedly filed will not be considered except upon motion (§1.635) which shows sufficient cause why the paper was not timely filed.

(c) The provisions of §1.136 do not apply to time periods in interferences.

(d) In an appropriate circumstance, an examiner-in-chief may stay proceedings in an interference.

§1.646 Service of papers, proof of service.

(a) A copy of every paper filed in the Patent and Trademark Office in an interference or an application or patent involved in the interference shall be served upon all other parties except:

(1) Preliminary statements when filed under §1.621; preliminary statements shall be served when service is ordered by an examiner-in-chief.

(2) Certified transcripts and exhibits which accompany the transcripts filed under §§1.676 or 1.684; copies of transcripts shall be served as part of a party's record under §1.653(c).

(b) Service shall be on an attorney or agent for a party. If there is no attorney or agent for the party, service shall be on the party. An examiner-in-chief may order additional service or waive service where appropriate.

(c) Unless otherwise ordered by an examiner-in-chief, or except as otherwise provided by this part, service of a paper shall be made as follows:

(1) By handing a copy of the paper to the person served.

(2) By leaving a copy of the paper with someone employed by the person at the person's usual place of business.

(3) When the person served has no usual place of business, by leaving a copy of the paper at the person's residence with someone of suitable age and discretion then residing therein.

(4) By mailing a copy of the paper by first class mail; when service is by mail the date of mailing is regarded as the date of service.

(5) When it is shown to the satisfaction of an examiner-in-chief that none of the above methods of obtaining or serving the copy of the paper was successful, the examiner-in-chief may order service by publication of an appropriate notice in the *Official Gazette*.

(d) An examiner-in-chief may order that a paper be served by hand or "Express Mail".

(e) Proof of service must be made before a paper will be considered in an interference. Proof of service may appear on or be affixed to the paper. Proof of service shall include the date and manner of service. In the case of personal service under paragraphs (c)(1) through (c)(3) of this section, proof of service shall include the names of any person served and the person who made the service. Proof of service may be made by an acknowledgment of service by or on behalf of the person served or a statement signed by the party or the party's attorney or agent containing the information required by this section. A statement of an attorney or agent attached to, or appearing in, the paper stating the date and manner of service will be accepted as *prima facie* proof of service.

§1.647 Translation of document in foreign language.

When a party relies on a document in a language other than English, a translation of the document into English and an affidavit attesting to the accuracy of the translation shall be filed with the document.

§1.651 Setting times for discovery and taking testimony, parties entitled to take testimony.

(a) At an appropriate stage in an interference, an examiner-in-chief shall set (1) a time for filing motions (§1.635) for additional discovery under §1.687(c) and (2) testimony periods for taking any necessary testimony.

(b) Where appropriate, testimony periods will be set to permit a party to:

(1) present its case-in-chief and/or case-in-rebuttal and/or

(2) cross-examine an opponent's case-in-chief and/or a case-in-rebuttal.

(c) A party is not entitled to take testimony to present a case-in-chief unless:

(1) the examiner-in-chief orders the taking of testimony under §1.639(c);

(2) the party alleges in its preliminary statement a date of invention prior to the earlier of the filing date or effective filing date of the senior party;

(3) a testimony period has been set to permit an opponent to prove a date of invention prior to the earlier of the filing date or effective filing date of the party and the party has filed a preliminary statement alleging a date of invention prior to that date; or

(4) a motion (§1.635) is filed showing good cause why a testimony period should be set.

(d) Testimony shall be taken during the testimony periods set under paragraph (a) of this section.

§1.652 Judgment for failure to take testimony or file record.

If a junior party fails to timely take testimony authorized under §1.651, or file a record under §1.653(c), an examiner-in-chief, with or without a motion (§1.635) by another party, may issue an order to show cause why judgment should not be entered against the junior party. When an order is issued under this section, the Board shall enter judgment in accordance with the order unless, within 15 days after the date of the order, the junior party files a paper which shows good cause why judgment should not be entered in accordance with the order. Any other party may file a response to the paper within 15 days of the date of service of the paper. If the

party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party.

§1.653 Record and exhibits.

(a) Testimony shall consist of affidavits under §1.672(b) and (c), transcripts of depositions under §§1.672(b) and (c), agreed statements of fact under §1.672(f), and transcripts of interrogatories, cross-interrogatories, and recorded answers under §1.684(c).

(b) An affidavit shall be filed as set forth in §1.672(b) or (e). A certified transcript of a deposition including a deposition cross-examining an affiant, shall be filed as set forth in §1.676. An original agreed statement shall be filed as set forth in §1.672(f). A transcript of interrogatories, cross-interrogatories, and recorded answers shall be filed as set forth under §1.684(c).

(c) In addition to the items specified in paragraph (b) of this section and within a time set by an examiner-in-chief each party shall file three copies and serve one copy of a record consisting of:

(1) An index of the names of each witness giving the pages of the record where the direct testimony and cross-examination of each witness begins.

(2) An index of exhibits briefly describing the nature of each exhibit and giving the page of the record where each exhibit is first identified and offered into evidence.

(3) The count or counts.

(4) Each (i) affidavit, (ii) transcript, including transcripts of cross-examination of any affiant, (iii) agreed statement relied upon by the party, and (iv) transcript of interrogatories, cross-interrogatories, and recorded answers filed under paragraph (b) of this section.

(5) Each notice, official record, and publication relied upon by the party and filed under §1.682(a).

(6) Any evidence from another interference, proceeding, or action relied upon by the party under §1.683.

(7) Each request for an admission and the admission and each written interrogatory and the answer upon which a party intends to rely under §1.688.

(d) The pages of the record shall be consecutively numbered.

(e) The name of each witness shall appear at the top of each page of each affidavit or transcript.

(f) The record may be typewritten or printed.

(g) When the record is printed, it may be produced by standard typographical printing or by any process capable of producing a clear black permanent image. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. Margins must be justified. Footnotes may not be printed in type smaller than 9 point. The page size shall be 8-1/2 by 11 inches (21.8 by 27.9 cm.) with type matter 6-1/2 by 9-1/2 inches (16.5 by 24.1 cm.). The record shall be bound to lie flat when open.

(h) When the record is typewritten, it must be clearly legible on opaque, unglazed, durable paper approximately 8-1/2 by 11 inches (21.8 by 27.9 cm.) in size (letter size). Typing shall be double-spaced on one side of the paper in not smaller than pica-type with a margin of 1-1/2 inches (3.8 cm.) on the left-hand side of the page. The pages of the record shall be bound with covers at their left edges in such manner to lie flat when open in one or more volumes of convenient size (approximately 100 pages per volume is suggested). Multigraphed or otherwise reproduced copies conforming to the standards specified in this paragraph may be accepted.

(i) Each party shall file its exhibits with the record specified in paragraph (c) of this section. One copy of each documentary exhibit shall be served. Documentary exhibits shall be filed in an envelope or folder and shall not be bound as part of the record. Physical exhibits, if not filed by an officer under §1.676(d), shall be filed with the record. Each exhibit shall contain a label which identifies the party submitting the exhibit and an exhibit number, the style of the interference (e.g., Jones v. Smith), and the interference number. Where possible, the label should appear at the bottom right-hand corner of each documentary exhibit. Upon termination of an interference, an examiner-in-chief may return an exhibit to the party filing the exhibit. When any exhibit is returned, the examiner-in-chief shall enter an appropriate order indicating that the exhibit has been returned.

(j) Any testimony, record, or exhibit which does not comply with this section may be returned under §1.618(a).

§1.654 Final hearing.

(a) At an appropriate stage of the interference, the parties will be given an opportunity to appear before the Board to present oral argument at a final hearing. An examiner-in-chief shall set a date and time for final hearing. Unless otherwise ordered by an examiner-in-chief or the Board, each party will be entitled to no more than 60 minutes of oral argument at final hearing.

(b) The opening argument of a junior party shall include a fair statement of the junior party's case and the junior party's position with respect to the case presented on behalf of any other party. A junior party may reserve a portion of its time for rebuttal.

(c) A party shall not be entitled to argue that an opponent abandoned, suppressed, or concealed an actual reduction to practice unless a notice under §1.632 was timely filed.

(d) After final hearing, the interference shall be taken under advisement by the Board. No further paper shall be filed except under §1.658(b) or as authorized by an examiner-in-chief or the Board. No additional oral argument shall be had unless ordered by the Board.

§1.655 Matters considered in rendering a final decision.

(a) In rendering a final decision, the Board may consider any properly raised issue including (1) priority of invention, (2) derivation by an opponent from a party who filed a preliminary statement under §1.625, (3) patentability of the invention, (4) admissibility of evidence, (5) any interlocutory matter deferred to final hearing, and (6) any other matter necessary to resolve the interference. The Board may also consider whether any interlocutory order was manifestly erroneous or an abuse of discretion. All interlocutory orders shall be presumed to have been correct and the burden of showing manifest error or an abuse of discretion shall be on the party attacking the order.

(b) A party shall not be entitled to raise for consideration at final hearing a matter which properly could have been raised by a motion under §§1.633 or 1.634 unless (1) the motion was properly filed, (2) the matter was properly raised by a party in an opposition to a motion under §§1.633 or 1.634 and the motion was granted over the opposition, or (3) the party shows good cause why the issue was not timely raised by motion or opposition.

(c) To prevent manifest injustice, the Board may consider an issue even though it would not otherwise be entitled to consideration under this section.

§1.656 Briefs for final hearing.

(a) Each party shall be entitled to file briefs for final hearing. The examiner-in-chief shall determine the briefs needed and shall set the time and order for filing briefs.

(b) The opening brief of a junior party shall contain under appropriate headings and in the order indicated:

(1) A table of contents, with page references, and a table of cases (alphabetically arranged), statutes, and other authorities cited, with references to the pages of the brief where they are cited.

(2) A statement of the issues presented for decision in the interference.

(3) A statement of the facts relevant to the issues presented for decision with appropriate references to the record.

(4) An argument, which may be preceded by a summary, which shall contain the contentions of the party with respect to the issues to be decided, and the reasons therefor, with citations to the cases, statutes, other authorities, and parts of the record relied on.

(5) A short conclusion stating the precise relief requested.

(6) An appendix containing a copy of the counts.

(c) The opening brief of the senior party shall conform to the requirements of paragraph (b) of this section except:

(1) a statement of the issues and of the facts need not be made unless the party is dissatisfied with the statement in the opening brief of the junior party and

(2) an appendix containing a copy of the counts need not be included if the copy of the counts in the opening brief of the junior party is correct.

(d) Briefs may be printed or typewritten. If typewritten, legal-size paper may be used. The opening brief of each party in excess of 50 legal-size double-spaced typewritten pages or any other brief in excess of 25 legal-size double-space typewritten pages shall be printed unless a satisfactory reason be given why the brief should not be printed. Any printed brief shall comply with the requirements of §1.653(g). Any typewritten brief shall comply with the requirements of §1.653(h), except legal-size paper may be used and the binding and covers specified are not required.

(e) An original and three copies of each brief must be filed.

(f) Any brief which does not comply with the requirements of this section may be returned under §1.618(a).

(g) Any party, separate from its opening brief, but filed concurrently therewith, may file an original and three copies of concise proposed findings of fact and conclusions of law. Any proposed findings of fact shall be supported by specific references to the record. Any proposed conclusions of law shall be supported by citation of cases, statutes, or other authority. Any opposing party, separate from its opening or reply brief, but filed concurrently therewith, may file a paper accepting or objecting to any proposed findings of fact or conclusions of law; when objecting, a reason must be given. The Board may adopt the proposed findings of fact and conclusions of law in whole or in part.

(h) If a party wants the Board in rendering its final decision to rule on the admissibility of any evidence, the party shall file with its opening brief an original and three copies of a motion (§1.635) to suppress the evidence. The provisions of §1.637(b) do not apply to a motion to suppress under this paragraph. Any objection previously made to the admissibility of an opponent's evidence is waived unless the motion required by this paragraph is filed. An original and three copies of an opposition to the motion may be filed with an opponent's opening brief or reply brief as may be appropriate.

(i) When a junior party fails to timely file an opening brief, an order may issue requiring the junior party to show cause why the Board should not treat failure to file the brief as a concession of priority. If the junior party fails to respond within a time period set in the order, judgment may be entered against the junior party.

§1.657 Burden of proof as to date of invention.

A rebuttable presumption shall exist that, as to each count, the inventors made their invention in the chronological order of the earlier of their filing dates or effective filing dates. The burden of proof shall be upon a party who contends otherwise.

§1.658 Final decision.

(a) After final hearing, the Board shall enter a decision resolving the issues raised at final hearing. The decision may (1) enter judgment, in whole or in part, (2) remand the interference to an examiner-in-chief for further proceedings, or (3) take further action not inconsistent with law. A judgment as to a count shall state whether or not each party is entitled to a patent containing the claims in the party's patent or application which correspond to the count. When the Board enters a decision awarding judgment as to all counts, the decision shall be regarded as a final decision.

(b) Any request for reconsideration of a decision under paragraph (a) of this section shall be filed within 14 days after the date of the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. Any reply to a request for reconsideration shall be filed within 14 days of the date of service of the request for reconsideration. Where reasonably possible, service of the request for reconsideration shall be such that delivery is accomplished by hand or "Express Mail." The Board shall enter a decision on the request for reconsideration. If the Board shall be of the opinion that the decision on the request for reconsideration significantly modifies its original decision under paragraph (a) of this section, the Board may designate the decision on the request for reconsideration as a new decision.

(c) A judgment in an interference settles all issues which (1) were raised and decided in the interference, (2) could have been properly raised and decided in the interference by a motion under §1.633 (a) through (d) and (f) through (j) or §1.634 and (3) could have been properly raised and decided in an additional interference with a motion under §1.633(e). A losing party who could have properly moved, but failed to move, under §§1.633 or 1.634, shall be estopped to take *ex parte* or *inter partes* action in the Patent and Trademark Office after the interference which is inconsistent with that party's failure to properly move, except that a losing party shall not be estopped with respect to any claims which correspond, or properly could have corresponded, to a count as to which that party was awarded a favorable judgment.

§1.659 Recommendation.

(a) Should the Board have knowledge of any ground for rejecting any application claim not involved in the judgment of the interference, it may include in its decision a recommended rejection of the claim. Upon resumption of *ex parte* prosecution of the application, the examiner shall be bound by the recommendation and shall enter and maintain the recommended rejection unless an amendment or showing of facts not previously of record is filed which, in the opinion of the examiner, overcomes the recommended rejection.

(b) Should the Board have knowledge of any ground for reexamination of a patent involved in the interference as to a patent claim not involved in the judgment of the interference, it may include in its decision a recommendation to the Commissioner that the patent be reexamined. The Commissioner will determine whether reexamination will be ordered.

(c) The Board may make any other recommendation to the examiner or the Commissioner as may be appropriate.

§1.660 Notice of reexamination, reissue, protest, or litigation.

(a) When a request for reexamination of a patent involved in an interference is filed, the patent owner shall notify the Board within 10 days of receiving notice that the request was filed.

(b) When an application for reissue is filed by a patentee involved in an interference, the patentee shall notify the Board within 10 days of the day the application for reissue is filed.

(c) When a protest under §1.291 is filed against an application involved in an interference, the applicant shall notify the Board within 10 days of receiving notice that the protest was filed.

(d) A party in an interference shall notify the Board promptly of any litigation related to any patent or appli-

cation involved in an interference, including any civil action commenced under 35 U.S.C. §146.

§1.661 Termination of interference after judgment.

After a final decision is entered by the Board, an interference is considered terminated when no appeal (35 U.S.C. §141) or other review (35 U.S.C. §146) has been or can be taken or had.

§1.662 Request for entry of adverse judgment; reissue filed by patentee.

(a) A party may, at any time during an interference, request and agree to entry of an adverse judgment. The filing by an applicant or patentee of a written disclaimer of the invention defined by a count, concession of priority or unpatentability of the subject matter of a count, abandonment of the invention defined by a count, or abandonment of the contest as to a count will be treated as a request for entry of an adverse judgment against the applicant or patentee as to all claims which correspond to the count. Abandonment of an application by an applicant, other than an applicant for reissue having a claim of the patent sought to be reissued involved in the interference, will be treated as a request for entry of an adverse judgment against the applicant as to all claims corresponding to all counts. Upon the filing by a party of a request for entry of an adverse judgment, the Board may enter judgment against the party.

(b) If a patentee involved in an interference files an application for reissue during the interference and omits all claims of the patent corresponding to the counts of the interference for the purpose of avoiding the interference, judgment may be entered against the patentee. A patentee who files an application for reissue other than for the purpose of avoiding the interference shall timely file a preliminary motion under §1.633(h) or show good cause why the motion could not have been timely filed.

(c) The filing of a statutory disclaimer under 35 U.S.C. §253 by a patentee will delete any statutorily disclaimed claims from being involved in the interference. A statutory disclaimer will not be treated as a request for entry of an adverse judgment against the patentee unless it results in the deletion of all patent claims corresponding to a count.

§1.663 Status of claim of defeated applicant after interference.

Whenever an adverse judgment is entered as to a count against an applicant from which no appeal (35 U.S.C. §141) or other review (35 U.S.C. §146) has been or can be taken or had, the claims of the application corresponding to the count stand finally disposed of without further action by the examiner. Such claims are not open to further *ex parte* prosecution.

§1.664 Action after interference.

(a) After termination of an interference, the examiner will promptly take such action in any application previously involved in the interference as may be necessary. Unless entered by order of an examiner-in-chief, amendments presented during the interference shall not be entered, but may be subsequently presented by the applicant subject to the provisions of this part provided prosecution of the application is not otherwise closed.

(b) After judgment, the application of any party may be held subject to further examination, including an interference with another application.

§1.665 Second interference.

A second interference between the same parties will not be declared upon an application not involved in an earlier interference for an invention defined by a count of the earlier interference. See §1.658(c).

§1.666 Filing of interference settlement agreements.

(a) Any agreement or understanding between parties to an interference, including any collateral agreements referred to therein, made in connection with or in contemplation of the termination of the interference, must be in writing and a true copy thereof must be filed before the termination of the interference (§1.661) as between the parties to the agreement or understanding.

(b) If any party filing the agreement or understanding under paragraph (a) of this section so requests, the copy will be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person upon petition accompanied by the fee set forth in §1.17(i) and on a showing of good cause.

(c) Failure to file the copy of the agreement or understanding under paragraph (a) of this section will render permanently unenforceable such agreement or understanding and any patent of the parties involved in the interference or any patent subsequently issued on any application of the parties so involved. The Commissioner may, however, upon petition accompanied by the fee set forth in §1.17(h) and on a showing of good cause for failure to file within the time prescribed, permit the filing of the agreement or understanding during the six month period subsequent to the termination of the interference as between the parties to the agreement or understanding.

§1.671 Evidence must comply with rules.

(a) Evidence consists of testimony and exhibits, official records and publications filed under §1.682, evidence from another interference, proceeding, or action filed under §1.683, and discovery relied upon under §1.688, and the specification (including claims) and drawings of any application or patent:

(1) Involved in the interference.

(2) To which a party has been accorded benefit in the notice declaring the interference or by a preliminary motion granted under §1.633.

(3) For which a party has sought, but has been denied, benefit by a preliminary motion under §1.633.

(4) For which benefit was rescinded by a preliminary motion granted under §1.633.

(b) Except as otherwise provided in this part, the Federal Rules of Evidence shall apply to interference proceedings. Those portions of the Federal Rules of Evidence relating to criminal actions, juries, and other matters not relevant to interferences shall not apply.

(c) Unless the context is otherwise clear, the following terms of the Federal Rules of Evidence shall be construed as follows:

(1) "Courts of the United States," "U.S. Magistrate," "court," "trial court," or "trier of fact" means examiner-in-chief or Board as may be appropriate.

(2) "Judge" means examiner-in-chief.

(3) "Judicial notice" means official notice.

(4) "Civil action," "civil proceeding," "action," or "trial," mean interference.

(5) "Appellate court" means United States Court of Appeals for the Federal Circuit or a United States district court when judicial review is under 35 U.S.C. §146.

(6) "Before the hearing" in Rule 703 means before giving testimony by oral deposition or affidavit.

(7) "The trial or hearing" in Rules 803(24) and 804(5) means the taking of testimony by oral deposition.

(d) Certification is not necessary as a condition to admissibility when the record is a record of the Patent and Trademark Office to which all parties have access.

(e) A party may not rely on an affidavit filed by that party during *ex parte* prosecution of an application, an affidavit under §1.608(b), or an affidavit under §1.639(b) unless (1) a copy of the affidavit is or has been served and (2) a written notice is filed prior to the close of the party's relevant testimony period stating that the party intends to rely on the affidavit. When proper notice is given under this paragraph, the affidavit shall be deemed filed under §1.672(b). A copy of the affidavit shall be included in the record (§1.653).

(f) The significance of documentary and other exhibits shall be discussed with particularity by a witness during oral deposition or in an affidavit.

(g) A party must file a motion (§1.635) seeking permission from an examiner-in-chief prior to taking testimony or seeking documents or things under 35 U.S.C. §24. The motion shall describe the general nature and the relevance of the testimony, document, or thing.

(h) Evidence which is not taken or sought and filed in accordance with this subpart shall not be admissible.

§1.672 Manner of taking testimony.

(a) Testimony of a witness may be taken by oral deposition or affidavit in accordance with this subpart.

(b) A party wishing to take the testimony of a witness whose testimony will not be compelled under 35 U.S.C. §24 may elect to present the testimony of the witness by affidavit or deposition. A party electing to present testimony of a witness by affidavit shall, prior to the close of the party's relevant testimony period, file and serve an affidavit of the witness or, where appropriate, a notice under §1.671(e). To facilitate preparation of the record (§1.653(g) and (h)), a party should file an affidavit on paper which is 8-1/2 by 11 inches (21.8 by 27.9 cm). A party shall not be entitled to rely on any document referred to in the affidavit unless a copy of the document is filed with the affidavit. A party shall not be entitled to rely on any thing mentioned in the affidavit unless the opponent is given reasonable access to the thing. A thing is something other than a document. After the affidavit is filed and within a time set by an examiner-in-chief, any opponent may file a request to cross-examine the witness on oral deposition. If any opponent requests cross-examination of an affiant, the party shall notice a deposition under §1.673(e) for the purpose of cross-examination by any opponent. Any redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness whose testimony is presented by affidavit, the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under this paragraph, except to the extent necessary to conduct proper redirect. A party electing to present testimony of a witness by deposition shall notice a deposition of the witness under §1.673(a). The party who gives notice of a deposition shall be responsible for obtaining a court reporter and for filing a certified transcript of the deposition as required by §1.676.

(c) A party wishing to take the testimony of a witness whose testimony will be compelled under 35 U.S.C. §24 must first obtain permission from an examiner-in-chief under §1.671(g). If permission is granted, the party shall notice a deposition of the witness under §1.673 and may proceed under 35 U.S.C. §24. The testimony of the witness shall be taken on oral deposition.

(d) Notwithstanding the provisions of this subpart, if the parties agree in writing, a deposition may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner, and when so taken may be used like other depositions.

(e) If the parties agree in writing, the testimony of any witness may be submitted in the form of an affidavit without opportunity for cross-examination. The affidavit of the witness shall be filed in the Patent and Trademark Office.

(f) If the parties agree in writing, testimony may be submitted in the form of an agreed statement setting forth (1) how a particular witness would testify if called or (2) the facts in the case of one or more of the parties. The agreed statement shall be filed in the Patent and Trademark Office. See §1.653(a).

§1.673 Notice of examination of witness.

(a) A party electing to take testimony of a witness by deposition shall, after complying with paragraphs (b) and (g) of this section, file and serve a single notice of deposition stating the time and place of each deposition to be taken. Depositions may be noticed for a reasonable time and place in the United States. Unless the parties agree in writing, a deposition may not be noticed for any other place without approval of an examiner-in-chief (see §1.684). The notice shall specify the name and address of each witness and the general nature of the testimony to be given by the witness. If the name of a witness is not known, a general description sufficient to identify the witness or a particular class or group to which the witness belongs may be given instead.

(b) Unless the parties agree otherwise, a party shall serve, but not file, at least three days prior to the conference required by paragraph (g) of this section, if service is made by hand or "Express Mail," or at least ten days prior to the conference if service is made by any other means, the following:

(1) A list and copy of each document in the party's possession, custody, or control and upon which the party intends to rely at any deposition and

(2) A list of and a proffer of reasonable access to things in the party's possession, custody, or control and upon which the party intends to rely at any deposition.

(c) A party shall not be permitted to rely at any deposition on any witness not listed in the notice, or any document not served or any thing not listed as required by paragraph (b) of this section, (1) unless all opponents agree in writing or on the record to permit the party to rely on the witness, document, or thing or (2) except upon a motion (§1.635) promptly filed which is accompanied by any proposed notice, additional documents, or lists and which shows sufficient cause why the notice, documents, or lists were not served in accordance with this section.

(d) Each opposing party shall have a full opportunity to attend a deposition and cross-examine. If an opposing party attends a deposition of a witness not named in a notice and cross-examines the witness or fails to object to the taking of the deposition, the opposing party shall be deemed to have waived any right to object to the taking of the deposition for lack of proper notice.

(e) A party electing to present testimony by affidavit and who is required to notice depositions for the purpose of cross-examination under §1.672(b), shall, after complying with paragraph (g) of this section, file and serve a single notice of deposition stating the time and place of each cross-examination deposition to be taken.

(f) The parties shall nor take depositions in more than one place at the same time or so nearly at the same time that reasonable opportunity to travel from one place of deposition to another cannot be had.

(g) Before serving a notice of deposition and after complying with paragraph (b) of this section, a party shall have an oral conference with all opponents to attempt to agree on a mutually acceptable time and place for conducting the deposition. A certificate shall appear in the notice stating that the oral conference took place or explaining why the conference could not be had. If the parties cannot agree to a mutually acceptable place and time for conducting the deposition at the conference, the parties shall contact an examiner-in-chief who shall then designate the time and place for conducting the deposition.

(h) A copy of the notice of deposition shall be attached to the certified transcript of the deposition filed under §1.676(a).

§1.674 Persons before whom depositions may be taken.

(a) Within the United States or a territory or insular possession of the United States a deposition shall be taken before an officer authorized to administer oaths by the laws of the United States or of the place where the examination is held.

(b) Unless the parties agree in writing, the following persons shall not be competent to serve as an officer: (1) a relative or employee of a party, (2) a relative or employee of an attorney or agent of a party, or (3) a person

interested, directly or indirectly, in the interference either as counsel, attorney, agent, or otherwise.

§1.675 Examination of witness, reading and signing transcript of deposition.

(a) Each witness before giving an oral deposition shall be duly sworn according to law by the officer before whom the deposition is to be taken.

(b) The testimony shall be taken in answer to interrogatories with any questions and answers recorded in their regular order by the officer or by some other person, who shall be subject to the provisions of §1.674(b), in the presence of the officer unless the presence of the officer is waived on the record by agreement of all parties.

(c) All objections made at the time of the deposition to the qualifications of the officer taking the deposition, the manner of taking it, the evidence presented, the conduct of any party, or any other objection to the proceeding shall be noted on the record by the officer. Evidence objected to shall be taken subject to any objection.

(d) Unless the parties agree in writing or waive reading and signature by the witness on the record at the deposition, when the testimony has been transcribed a transcript of the deposition shall be read by the witness and then signed by the witness in the form of (1) an affidavit in the presence of any notary or (2) a declaration.

§1.676 Certification and filing by officer, marking exhibits.

(a) The officer shall prepare a certified transcript of the deposition by attaching to a transcript of the deposition a copy of the notice of deposition, any exhibits to be annexed to the certified transcript, and a certifi cate signed and sealed by the officer and showing:

(1) The witness was duly sworn by the officer before commencement of testimony by the witness.

(2) The transcript is a true record of the testimony given by the witness.

(3) The name of the person by whom the testimony was recorded and, if not recorded by the officer, whether the testimony was recorded in the presence of the officer.

(4) The presence or absence of any opposing party.

(5) The place where the deposition was taken and the day and hour when the deposition began and ended.

(6) The officer is not disqualified under §1.674.

(b) If the parties waived any of the requirements of paragraph (a) of this section, the certificate shall so state.

(c) The officer shall note on the certificate the circumstances under which a witness refuses to sign a transcript.

(d) Unless the parties agree otherwise in writing or on the record at the deposition, the officer shall securely seal the certified transcript in an envelope endorsed with the style of the interference (e.g., Smith v. Jones), the interference number, the name of the witness, and the date of sealing and shall promptly forward the envelope to BOX INTERFERENCE, Commissioner of Patents and Trademarks, Washington, D.C. 20231. Documents and things produced for inspection during the examination of a witness, shall, upon request of a party, be marked for identification and annexed to the certified transcript, and may be inspected and copied by any party, except that if the person producing the documents and things desires to retain them, the person may (1) offer copies to be marked for identification and annexed to the certified transcript and to serve thereafter as originals if the person affords to all parties fair opportunity to verify the copies by comparison with the originals or (2) offer the originals to be marked for identification, after giving to each party an opportunity to inspect and copy them, in which event the documents and things may be used in the same manner as if annexed to the certified transcript. The exhibits shall then be filed as specified in §1.653(i). If the weight or bulk of a document or thing shall reasonably prevent the document or thing from being annexed to the certified transcript, it shall, unless waived on the record at the deposition by all parties, be authenticated by the officer and forwarded to the Commissioner in a separate package marked and addressed as provided in this paragraph.

§1.677 Form of a transcript of deposition.

(a) A transcript of a deposition must be typewritten on opaque, unglazed, durable paper approximately 8-1/2 by 11 inches (21.8 by 27.9 cm.) in size (letter size). Typing shall be double-spaced on one side of the paper in not smaller than pica-type with a margin of 1-1/2 inches (3.8 cm.) on the left-hand side of the page. The pages must be consecutively numbered throughout the entire record of each party (§1.653(d)) and the name of the witness must be typed at the top of each page (§1.653(e)). The questions propounded to each witness must be consecutively numbered unless paper with numbered lines is used and each question must be followed by its answer.

(b) Exhibits must be numbered consecutively and each must be marked as required by §1.653(i).

§1.678 Transcript of deposition must be filed.

Unless otherwise ordered by an examiner-in-chief, a certified transcript of a deposition must be filed in the Patent and Trademark Office within 45 days from the date of the deposition. If a party refuses to file a certified transcript, the examiner-in-chief or the Board may take appropriate action under §1.616. If a party refuses to file a certified transcript, any opponent may move for leave to file the certified transcript and include a copy of the transcript as part of the opponent's record.

§1.679 Inspection of transcript.

A certified transcript filed in the Patent and Trademark Office may be inspected by any party. The certified transcript may not be removed from the Patent and Trademark Office for printing (§1.653(g)) unless authorized by an examiner-in-chief upon such terms as may be appropriate.

§1.682 Official records and printed publications.

(a) A party may introduce into evidence, if otherwise admissible, any official record or printed publication not identified on the record during the taking of testimony of a witness, by filing a notice offering the official record or publication into evidence. If the evidence relates to the party's case-in-chief, the notice shall be filed prior to close of testimony of the party's case-in-chief. If the evidence relates to rebuttal, the notice shall be filed prior to the close of testimony of the party's case-in-rebuttal. The notice shall (1) identify the official record or printed publication, (2) identify the portion thereof to be introduced in evidence, (3) indicate generally the relevance of the portion sought to be introduced in evidence, and (4), where appropriate, be accompanied by a certified copy of the official record or a copy of the printed publication (§1.671(d)).

(b) A copy of the notice, official record, and publication shall be served.

(c) Unless otherwise ordered by an examiner-in-chief, any written objection to the notice or to the admissibility of the official record or printed publication shall be filed within 15 days of service of the notice. See also §1.656(h).

§1.683 Testimony in another interference, proceeding, or action.

(a) Prior to close of a party's appropriate testimony period or within such time as may be set by an examiner-in-chief, a party may file a motion (§1.635) for leave to use in an interference testimony of a witness from another interference, proceeding, or action involving the same parties, subject to such conditions as may be deemed appropriate by an examiner-in-chief. The motion shall specify with particularity the exact testimony to be used and shall demonstrate its relevance.

(b) Any objection to the admissibility of the testimony of the witness shall be made in an opposition to the motion. See also §1.656(h).

§1.684 Testimony in a foreign country.

(a) An examiner-in-chief may authorize testimony of a witness to be taken in a foreign country. A party seeking to take testimony in a foreign country shall, prior to the close of the party's appropriate testimony period or within such time as may be set by an examiner-in-chief, file a motion (§1.635):

(1) Naming the witness.

(2) Describing the particular facts to which it is expected that the witness will testify.

(3) Stating the grounds on which the moving party believes that the witness will so testify.

(4) Demonstrating that the expected testimony is relevant.

(5) Demonstrating that the testimony cannot be taken in this country at all or cannot be taken in this country without hardship to the moving party greatly exceeding the hardship to which all opposing parties will be exposed by the taking of the testimony in a foreign country.

(6) Accompanied by an affidavit stating that the motion is made in good faith and not for the purpose of delay or harassing any party.

(7) Accompanied by written interrogatories to be asked of the witness.

(b) Any opposition under §1.638(a) shall state any objection to the written interrogatories and shall include any cross-interrogatories to be asked of the witness. A reply under §1.638(b) may be filed and shall be limited to stating any objection to any cross-interrogatories proposed in the opposition.

(c) If the motion is granted, the moving party shall be responsible for obtaining answers to the interrogatories and cross-interrogatories before an officer qualified to administer oaths in the foreign country under the laws of the United States or the foreign country. The officer shall prepare a transcript of the interrogatories, cross-interrogatories, and recorded answers to the interrogatories and cross-interrogatories and shall transmit the transcript to BOX INTERFERENCE, Commissioner of Patents and Trademarks, Washington, D.C. 20231, with a certificate signed and sealed by the officer and showing:

(1) The witness was duly sworn by the officer before answering the interrogatories and cross-interrogatories.

(2) The recorded answers are a true record of the answers given by the witness to the interrogatories and cross-interrogatories.

(3) The name of the person by whom the answers were recorded and, if not recorded by the officer, whether the answers were recorded in the presence of the officer.

(4) The presence or absence of any party.

(5) The place, day, and hour that the answers were recorded.

(6) A copy of the recorded answers was read by or to the witness before the witness signed the recorded answers and that the witness signed the recorded answers in the presence of the officer. The officer shall state the circumstances under which a witness refuses to read or sign recorded answers.

(7) The officer is not disqualified under §1.674.

(d) If the parties agree in writing, the testimony may be taken before the officer on oral deposition.

(e) A party taking testimony in a foreign country shall have the burden of proving that false swearing in the giving of testimony is punishable as perjury under the laws of the foreign country. Unless false swearing in the giving of testimony before the officer shall be punishable as perjury under the laws of the foreign country where testimony is taken, the testimony shall not be entitled to the same weight as testimony taken in the United States. The weight of the testimony shall be determined in each case.

§1.685 Errors and irregularities in depositions.

(a) An error in a notice for taking a deposition is waived unless a motion (§1.635) to quash the notice is filed as soon as the error is, or could have been, discovered.

(b) An objection to a qualification of an officer taking a deposition is waived unless:

(1) The objection is made on the record of the deposition before a witness begins to testify.

(2) If discovered after the deposition, a motion (§1.635) to suppress the deposition is filed as soon as the objection is, or could have been, discovered.

(c) An error or irregularity in the manner in which testimony is transcribed, a certified transcript is signed by a witness, or a certified transcript is prepared, signed, certified, sealed, indorsed, forwarded, filed, or otherwise handled by the officer is waived unless a motion (§1.635) to suppress the deposition is filed as soon as the error or irregularity is, or could have been, discovered.

(d) An objection to the competency of a witness, admissibility of evidence, manner of taking the deposition, the form of questions and answers, any oath or affirmation, or conduct of any party at the deposition is waived unless an objection is made on the record at the deposition stating the specific ground of objection. Any objection which a party wishes considered by the Board at final hearing shall be included in a motion to suppress under §1.656(h).

(e) Nothing in this section precludes taking notice of plain errors affecting substantial rights although they were not brought to the attention of an examiner-in-chief or the Board.

§1.687 Additional Discovery.

(a) A party is not entitled to discovery except as authorized in this subpart.

(b) Where appropriate, a party may obtain production of documents and things during cross-examination of an opponent's witness or during the testimony period of the party's case-in-rebuttal.

(c) Upon a motion (§1.635) brought by a party within the time set by an examiner-in-chief under §1.651 or thereafter as authorized by §1.645 and upon a showing that the interest of justice so requires, an examiner-in-chief may order additional discovery, as to matters under the control of a party within the scope of the Federal Rules of Civil Procedure, specifying the terms and conditions of such additional discovery.

(d) The parties may agree to discovery among themselves at any time. In the absence of an agreement, a motion for additional discovery shall not be filed except as authorized by this subpart.

§1.688 Use of discovery.

(a) If otherwise admissible a party may introduce into evidence, an answer to a written request for an admission or an answer to a written interrogatory obtained by discovery under §1.687 by filing a copy of the request for admission or the written interrogatory and the answer. If the answer relates to a party's case-in-chief, the answer shall be filed prior to the close of testimony of the party's case-in-chief. If the answer relates to the party's rebuttal, the admission or answer shall be filed prior to the close of testimony of the party's case-in-rebuttal. Unless otherwise ordered by an examiner-in-chief, any written objection to the admissibility of an answer shall be filed within 15 days of service of the answer.

(b) A party may not rely upon any other matter obtained by discovery unless it is introduced into evidence under this subpart.

DONALD J. QUIGG,
Nov. 8, 1984. *Acting Commissioner of Patents and Trademarks.*

[1050 OG 385]

(132) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 40104–4151]

Patent Interference Proceedings

Agency: Patent and Trademark Office, Commerce.
Action: Final rule; correction.
Summary: This document corrects clerical errors and adds material to the Analysis of Comments in the notice of final rule amending the Patent and Trademark rules of practice in patent interference cases, which were published in the Official Gazette of Jan. 29, 1985 (1050 OG 385 through 440).
For Further Information Contact: Fred E. McKelvey by telephone at (703) 557–4035 or by mail marked to his attention and addressed to Box Interference, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information:
Clerical Correction to the Preamble
The following corrections are made to the Official Gazette issue of Jan. 29, 1985:

Page 386

1. In the second column, line 32 (the fifth full paragraph, the second sentence) the word "an" is inserted after the word "or"

Page 387

2. In the second column, line 48 (the fifth full paragraph), after the word "agent", the following words "of record" are inserted.

Page 388

3. In the first column, line 29 (the first full paragraph, the third sentence), the words "of an interference" are removed and the words "in an interference" are inserted in their place; in line 39 (the first full paragraph, the last sentence), the words "Federal Rule" are removed and the words "Federal Rules" are inserted in their place; in line 41 (the second full paragraph, the first sentence), the word "provide" is removed and the word "provides" is inserted in its place.
4. In the second column, line 29 (the second full paragraph, the second sentence), the word "defined" is removed and the word "defines" is inserted in its place; in line 45 (the second full paragraph, the last sentence), the spelling of the word "in" is corrected; in line 48 (the last paragraph, the first sentence), the words "one of " are removed and the words "one or" are inserted in their place.

Page 391

5. In the second column, line 59 (the paragraph bridging the third column, the second sentence), quotation marks are placed around the word "lead".
6. In the third column, line 44 (the second full paragraph, the fourth sentence), the article "a" is inserted before the word "sanction".

Page 392

7. In the first column, line 12 (the second full sentence from the top of the page), the word "proposed" is removed; in line 30 (the seventh full sentence from the top of the page), the words "and applicant" are removed and the words "an applicant" are inserted in their place; in line 55 (the first full paragraph, the second sentence), the colon appearing after the word "appropriate" is deleted and a period is inserted in its place.
8. In the third column, line 5, the first letter of the word "while" is capitalized.

Page 394

9. In the second column, line 13 (the first full paragraph, the fourth sentence), the spelling of the word "Consultation" is corrected.

Page 395

10. In the first column, line 44 (the second full paragraph, the last sentence), the spelling of the word "necessary" is corrected; in line 59 (the last paragraph, the first sentence), the spelling of the word "specifies" is corrected.
11. In the second column, line 1, the word "the" is inserted after the word "and"; in line 14 (the first full paragraph, the third sentence), the words "is required" are removed and the words "are required" are inserted in their place.

Page 396

12. In the first column, line 5, the word "of" is removed.
13. In the second column, line 13 (the first full paragraph, the fourth sentence), the word "Claims" is removed and the word "Claim" inserted in its place.

Page 397

14. In the second column, line 2, the words "would be" are removed and the word "is" is inserted in its place; in line 6, the word "intended" is removed and the word "intends" is inserted in its place.

Page 399

15. In the second column, line 41 (the fifth full paragraph), the word "had" is removed and the word "has" is inserted in its place.
16. In the third column, line 37 (the third full paragraph, the last sentence), the comma after the word "language" is removed; in line 38, the comma after the word "affidavit" is removed.

Page 401

17. In the first column, line 11 (the first full paragraph, the first sentence), the words "of sale" are removed and the words "or sale" are inserted in their place.

Page 402

18. In the first column, line 4, the word "over" is removed and the word "of" is inserted in its place.

Page 403

19. In the first column, line 2, the spelling of the word "arguably" is corrected; in line 9, the spelling of the word "definitions" is corrected.

Page 404

20. In the first column, line 18 (the second full paragraph, the fourth sentence), the words "PTO was" are removed and the words "PTO were" are inserted in their place.

21. In the second column, line 26 (the first full paragraph, the fourth sentence), the spelling of the word "under" is corrected.

Page 406

22. In the third column, line 21 (the first full paragraph, the third sentence), a closing quotation mark is placed after the word "opponents's".

Page 407

23. In the first column, line 4 (the first full paragraph, the first sentence), the spelling of the word "suggested" is corrected.

Page 409

24. In the first column, line 21 (the first full paragraph, the third sentence), the words "do not" are inserted after the word "rules".
25. In the third column, line 33 (the first full paragraph, the first sentence), the word "is" is inserted before the word "excluded".

Page 411

26. In the third column, line 26 (the third full paragraph, the third sentence), the word "permitting " is removed and the word "permitted" is inserted in its place.

Page 413

27. In the second column, line 47 (the second full paragraph, the second sentence), the reference to "1.644(b)" should read "1.644(a)(2)".
28. In the third column, line 59 (the last paragraph, the first sentence), the first letter of the word "Interference" is made lower case.

Page 416

29. In the first column, line 1, the word "opponent's" is removed and the word "opponents" is inserted in its place.
30. In the second column, line 40 (the first full paragraph, the second sentence), the reference to "1662(a)" should read "1.662(a)"; in line 45 (the first full paragraph, the third sentence), the reference to "1633(d)" should read "1.633(d)".

Page 417

31. In the second column, line 49 (the second full paragraph, the third sentence from the end), quotation marks are placed around the word "things"; in line 55 (the second full paragraph, the last sentence), the word "to" is inserted after the words "should resort".
32. In the third column, line 11 (the first full sentence from the top of the page), the colon after the word "controversy" is removed and a period is inserted in its place; in line 54 (the first full paragraph, the penultimate sentence), the spelling of the word "appropriate" is corrected.

Page 418

33. In the second column, line 16 (the first full paragraph, the first sentence), the first letter of the word "Commentator's" is made lower case.

Page 419

34. In the table correlating the old rules 37 CFR 1.201 through 1.288 to the new rules 37 CFR 1.601 through 1.688, the following corrections are made to the entries under the section, designated as new:

RULE CORRELATION TABLE

Old	New
1.201(a)	1.601(i)
1.201(b)	1.601(i)
1.203(a)	1.603
1.204(b)	1.608(a)
1.204(c)	1.608(b)
1.205(a)	1.606
1.208	1.613(b)
1.216(b)	1.623(c), 1.624(c), 1.625(c)
1.245	1.645(a)
1.246	1.645(b)
1.257(b)	1.658(c)
1.263	1.622(c)
1.264	1.662(b)
1.271	1.671(h)
1.272(b)	1.672(d)
1.272(c)	1.672(e), (f)
1.281	1.645(a)
1.287(b)	1.687(b)
1.287(c)	1.687(c)

Additional Analysis of Comments

Page 404

1. In the second column after the last full paragraph, the following paragraph is added:
An oral comment was received by telephone concerning the declaration of an interference under §§1.603 and 1.606 with applications filed under the provisions of 35 U.S.C. 157—Statutory Invention Registration (SIR). Under 35 U.S.C. 157(c), a published SIR has all of the attributes specified for patents except those specified in 35 U.S.C. 183 and 271 to 289. Consequently, interferences will be declared between an application and either an application containing a request for a SIR (37 CFR 1.293) or a published SIR. Until sufficient experience is gained by the PTO, the interference will be conducted by procedure established on a case by case basis.

Page 415

In the second column, after the first full paragraph, the following paragraph is added:
Oral comments have been received by telephone concerning the doctrine of interference estoppel under 37 CFR 1.658(c) with respect to a party's failure to move under 37 CFR 1.633(e) to declare an "additional interference" between an additional application not involved in the interference and owned by the party and an opponent's application or patent involved in the interference on a separate patentable invention. Generally a party will be estopped for failure to move when the separate patentable invention (subject matter) which could have been the subject of the "additional interference" was *claimed* (during the pendency of the interference) (1) in the opponent's involved application or patent or (2) in a non-involved application owned by the party.
The following illustrates the general applicability of interference estoppel in certain situations where a party fails to move under 37 CFR 1.633(e) to declare an "additional interference" on a separate patentable invention.

Party's non-involved application	Opponent's involved application or patent	Estoppel
Claimed	Claimed	Yes
Disclosed	.do	Yes
Claimed	Disclosed	Yes
Disclosed	.do	No

Clerical Corrections to the Rules

1. On page 420 the second column, the amendment to §1.8, amendatory instruction 4 is corrected by changing "paragraph (a)(xii) to read "paragraph (a)(2)(xii)".
2. On page 421, the second column, in the second sen-

tence of §1.59, the spelling of the word "required" is corrected and the reference to "§1.21(1)" is corrected to read "§1.21(*l*)".

3. On page 423, the third column, §1.324 is corrected by inserting in the second sentence the article "a" before the word "patent".

4. On page 424, the first column, in §1.565, in the first sentence of paragraph (b), "in filed" should have read "is filed".

5. On page 425, the first column, the last sentence of § 1.601(i) is corrected by removing the last occurrence of the word "patents" and inserting, in its place, the word "patent".

6. On page 425, the first column, §1.601(k) is corrected by removing the words "and interference" and inserting, in their place, the words "an interference".

7. On page 425, the second column the second sentence of §1.601(n) is corrected by removing the words "a invention" and inserting, in their place, the words "an invention".

8. On page 427, the first column, §1.611(d)(2) is corrected by inserting the word "in" after the word "provided".

9. On page 427, the second column, the reference to "1.608(b)" in the first sentence of §§1.612(a), 1.612(b) and 1.612(c) is corrected to read "1.608".

10. On page 427, the third column, the first sentence of §1.615(a) is corrected by placing in italics the words "ex parte".

11. On page 427, the third column, the second sentence of §1.616 is corrected by changing to upper case the first letter of the words "holding", "precluding" and "granting" in paragraphs (a) to (e).

12. On page 428, the first column, the first sentence of §1.617(b) is corrected by removing the first occurrence of the word "any" and inserting, in its place, the word "may".

13. On page 428, the first column, the last sentence of §1.617(b) is corrected by inserting the words "on each opponent" after the words "shall serve".

14. On page 428, the first column, the last sentence of §1.617(d) is corrected by removing the words "an oral" and inserting, in their place, the article "a".

15. On page 428, the first column, the last sentence of §1.617(g) is corrected by removing the word "part" and inserting, in its place, the word "subpart".

16. On page 428, the second column, the second sentence of §1.621(a) is corrected by inserting the word "by" after the first occurrence of the word "or".

17. On page 428, the second column, the first sentence of §1.621(b) is corrected by inserting a comma after the first occurrence of word "statement".

18. On page 428, the third column, the first sentence of §1.624(a) is corrected by removing the semicolon appearing after the word "count" and inserting, in its place, a colon.

19. On page 430, the first column, the last sentence of §1.631(a) is corrected by removing the words "a party shall serve copies of its preliminary statement on every opponent" and inserting, in their place, the words "a party shall serve a copy of its preliminary statement on each opponent".

20. On page 430, the first column, the heading of § 1.633 is corrected by changing to lower case the first letter of the word "Motions".

21. On page 430, the third column, in §1.636(b) the reference to "§1.633(a), (b), or (g)" is corrected to read "§1.633(a), (b), (c)(1), or (g)".

22. On page 431, the second column, in §§1.637(d)(2) and 1.637(e)(1)(ii) the reference to "§1.608(b)" is corrected to read "§1.608".

23. On page 431, the second column, §1.637(e)(1)(iv) is corrected by removing the words "a claim" and inserting, in their place, the words "any claim".

24. On page 431, the third column, §1.637(e)(2)(iii) is corrected by removing the first occurrence of the word "party's" and inserting, in its place, the word "party".

25. On page 431, the third column, the second sentence of §1.637(e)(2)(iv) is corrected by removing the two occurrences of the word "claims" and inserting, in their place, the word "claim".

26. On page 431, the third column, in the first sentence of §1.637(f)(2), the reference to "§1.608(b)" is corrected to read "§1.608".

27. On page 432, the first column, §1.637(h)(3) is corrected by removing the words "a claim" and inserting, in their place, the words "any proposed claim".

28. On page 432, the second column, §1.640(b)(2) is corrected by removing the words "entered or" and inserting, in their place, the words "entered on".

29. On page 432, the third column, the penultimate sentence of §1.640(c) is corrected by inserting the article "a" before the words "single examiner-in-chief".

30. On page 432, the third column, §1.640(d)(1) is corrected by removing the words "all counts" and inserting, in their place, the words "any count".

31. On page 432, the third column, the first sentence of §1.640(e) is corrected by removing the word "filed" and inserting, in its place, the word "files".

32. On page 433, the second column, §1.644(i) is corrected by removing the word "petition" and inserting, in its place, "petitions".

33. On page 433, the second column, the first sentence of §1.645(a) is corrected by inserting the word "or" after "§§1.302," and after "§§1.303,".

34. On page 433, the third column, in the first sentence of §1.646(a), the spelling of the word "every" is corrected.

35. On page 433, the third column, §1.646(c) is corrected by removing the word "part" and inserting, in its place, the word "subpart".

36. On page 434, the third column, §1.653(c)(5) is corrected by removing the word "an" and inserting, in its place, the word "and".

37. On page 434, the third column, the last sentence of §1.653(g) is corrected by removing the word "found" and inserting, in its place, the word "bound".

38. On page 435, the first column, the penultimate sentence of §1.653(i) is corrected by removing the words "and exhibit" and inserting, in their place, the words "an exhibit".

39. On page 436, the third column, the second sentence of §1.664(a) is corrected by removing the word "part" and inserting, in its place, the word "subpart".

40. On page 437, the first column, the last sentence of §1.666(c) is corrected by removing the word "Commission" and inserting, in its place, "Commissioner".

41. On page 437, the second column, the first sentence of §1.671(b) is corrected by removing the word "part" and inserting, in its place, the word "subpart".

42. On page 437, the second column, in the first sentence of §1.671(e) the reference to "§1.608(b)" is corrected to read "§1.608".

43. On page 437, the third column, the third sentence of §1.672(b) is corrected by removing the words "a party shall file" and inserting, in their place, the words "a party should file".

44. On page 438, the third column, in §1.676(a), the spelling of the third occurrence of the word "transcript" is corrected.

45. On page 440, the first column, the second sentence of §1.684(c)(6) is corrected by removing the words "a witness refused to read" and inserting, in their place, the words "a witness refuses to read".

46. On page 440, the second column, §1.685(c) is corrected by inserting the word "or" after the first occurrence of the word "error," and by removing the word "indorsed" and inserting, in its place, the word "endorsed".

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

May 21, 1985.

[FR Doc. 85-13077 Filed 5-30-85; 8:45 am]
Billing Code 3510-16-M

[1059 OG 27]

(133)

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
Docket 50103-5003

Arbitration of Patent Interference Cases

Agency: Patent and Trademark Office, Commerce
Action: Advance Notice of proposed rulemaking
Summary: Section 105 of the Patent Law Amendments Act of 1984 provides for arbitration of patent interferences cases. The Patent and Trademark Office plans to issue regulations to implement the arbitration provisions of the Patent Law Amendments Act of 1984. Interested individuals are invited to make suggestions and to comment on the proposed rules being considered. A notice of proposed rulemaking could be published as early as Apr. 1, 1985.
Dates: Comments and suggestions should be received by Mar. 1, 1985.
Address: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231 marked to the attention of Fred E. McKelvey (703) 557-4025.
For Further Information Contact: Fred E. McKelvey, by telephone at (703) 557-4025, or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: Section 105 of the Patent Law Amendments Act of 1984, Public Law 98-622, enacted on Nov. 8, 1984, provides for arbitration of patent interference cases. Section 105, codified as 35 U.S.C. §135(d), provides:

Arbitration of Interferences

> Parties to a patent interference, within such time as may be specified by the Commissioner by regulation, may determine such contest or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of title 9 to the extent such title is not inconsistent with this section. The parties shall give notice of any arbitration award to the Commissioner, and such award shall, as between the parties to the arbitration, be dispositive of the issues to which it relates. The arbitration award shall be unenforceable until such notice is given. Nothing in this subsection shall preclude the Commissioner from determining patentability of the invention involved in the interference.

The Patent and Trademark Office (PTO) conducts interference cases to determine who as between two or more applicants for patent or one or more applicants and one or more patentees is the first inventor of a patentable invention. Patent interference cases can be quite expensive. Arbitration may prove useful to minimize expenses in interference cases.

Arbitration will be governed by title 9 of the U.S. Code to the extent that title 9 is not inconsistent with §105 of Public Law 98-622. Within the confines of title 9 of the U.S. Code and §105 of Public Law 98-622, the parties can agree on the procedure to be used in arbitrating a patent interference case. An example of rules which parties might adopt are the Patent Arbitration Rules of the American Arbitration Association (June 1, 1983).

The PTO favors settlement of interference cases, but has not had extensive experience in connection with arbitration of interferences. It has been suggested that patent attorneys and agents likewise may have had little experience with arbitration of patent matters. Field, *Patent Arbitration: Past, Present, and Future,* 24 Idea 235 (1984). The following non-exhaustive list of articles may be helpful to familiarize readers with arbitration in patent matters generally: (1) Field, *supra;* (2) Goldstein, *Arbitrating Disputes Relating to Patent Validity and Infringement,* 72 Illinois Bar Journal 350 (Mar. 1984); (3) Carmichael, *Arbitration of Patent Disputes,* 38 The Arbitration Journal 3 (Mar. 1983); (4) Note, *Arbitration and Intellectual Property: A Survey of Arbitration in Patent, Trademark and Copyright cases,* 48 Albany Law Journal 797 (1984) (the entire Spring 1984 edition of the Albany Law Journal is directed to arbitration issues), (5) Devitt, *International Arbitration of Patent Disputes,* 65 J. Pat. Off. Soc'y 621 (1983); (6) *PTC Research Report; Alternatives to Court Litigation in Intellectual Property Disputes: Binding Arbitration and/or Mediation—Patent and Nonpatent Issues,* 22 Idea 271 (1982); (7) Davis, *Resolving Patent Disputes by Arbitration and Minitrial,* 65 J. Pat. Off. Soc'y 275 (1983); (8) Davis, *A New Approach to Resolving Costly Litigation,* 61 J. Pat. Off. Soc'y 482 (1979); and (9) Janicke, *Resolving Patent Disputes by Arbitration: An Alternative to Litigation,* 62 J. Pat. Off. Soc'y 339 (1980).

In order to provide some basis for comments and suggestions, a proposed §1.690 being considered is set out in this notice.

Paragraph (a) of proposed §1.690 being considered states, consistent with §105 of Public Law 98-622, that parties to an interference may determine the interference or any aspect thereof by arbitration. This paragraph would permit parties to arbitrate the issue of priority based on counts (and claims corresponding thereto) as determined by the PTO and set out in a notice declaring the interference. One issue which might arise in arbitration is the extent to which parties may arbitrate other "aspects" of an interference, e.g., the scope of a count and claims corresponding thereto. Section 105 of Public Law 98-622 vests the PTO with final authority, subject to judicial review, to determine patentability. Hence, interested individuals may wish to consider and comment on the effect of an award which arbitrates the scope of a count (or claims corresponding thereto) or the ultimate issue of priority based on that count where the PTO later determines that the counts or claims corresponding thereto were improper vehicles for deciding priority.

Paragraph (b) of proposed §1.690 being considered states that an arbitration shall take place within such time as an examiner-in-chief may set. The examiner-in-chief would set a time for making an award on a case-by-case basis depending upon the status of the case. For example, if all the testimony had been taken and the only issue for the arbitrator was deciding priority based on that testimony, a relatively short time could be set. On the other hand, if the parties wanted witnesses to appear before the arbitrator, a longer period of time might be needed. Extensions of time for making an award could be obtained under 37 CFR §1.645 (49 F.R.48464 (Dec. 12, 1984)). However, it should be expected that the examiner-in-chief will make a reasonable effort to dispose of the interference within 24 months from the date it is declared. 37 CFR §1.610 (49 F.R. 48457 (Dec. 12, 1984)).

Paragraph (c) of proposed §1.690 being considered would provide that an award shall be in writing and shall be definite with respect to the issue or issues arbitrated and to the disposition of each issue. The arbitration award would have to be signed by the arbitrator or arbitrators and would have to be filed in the PTO within twenty (20) days from the date of the award. As between the parties, the award would be dispositive of the issues arbitrated.

Paragraph (d) of proposed §1.690 being considered states that an arbitration award does not preclude the Office from determining patentability of any invention involved in an interference. Thus, the parties cannot establish *vis-a-vis* the public that subject matter is patentable.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations, Conflicts of interest, Courts, Inventions and patents, Lawyers.

The proposed rule under consideration would add §1.690 to Subpart E of 37 CFR Part 1 as follows:

§1.690 Arbitration of Interferences.

(a) Parties to a patent interference may determine the interference or any aspect thereof by arbitration.

(b) An interference or any aspect thereof shall be arbitrated within such time as may be authorized on a case-by-case basis by an examiner-in-chief.

(c) An arbitration award shall be in writing and shall state in a clear and definite manner (1) the issue or issues which were arbitrated and (2) the disposition of each issue. The parties shall give notice to the Office of an arbitration award by filing within twenty days from the date of the award a copy of the award signed by the arbitrator or arbitrators. When an award is timely filed, the award shall, as to the parties to the arbitration, be dispositive of the issue to which it relates.

(d) An arbitration award shall not preclude the Office from determining patentability of any invention involved in the interference.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 8, 1985.

[1051 OG 9]

(134) **Disclosure Document Program**

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program. Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

The Program

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

Content of Disclosure Document

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Disclosure Document will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8 1/2 by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A $10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the $10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."

Retention

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

Warning as to Limitations

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

RICHARD A. WAHL,
Assistant Commissioner of Patents.

Jan. 4, 1971.

[883 O.G. 3]

(135) **Suspension of Action Under 37 CFR 1.103 and Under 37 CFR 1.212**

The purpose of this notice is to clarify existing Office practice with respect to suspension of action. "Suspension of action" under 37 CFR 1.103 applies only to the

situation where action is to be taken *by the Examiner*. In other words, action cannot be suspended in an application which contains an outstanding Office action awaiting response by the applicant.

Under 37 CFR 1.212, upon declaration of an interference, ex parte prosecution of an application is suspended and any outstanding Office actions are considered as withdrawn by operation of the rule. *Ex parte Peterson*, USPQ 119 (Commissioner of Patents, 1941). Upon termination of the interference, the Examiner will reinstate the action treated as withdrawn by operation of 37 CFR 1.212 and set a statutory period for response. The formats set forth in MPEP 1109.01 and MPEP 1109.02 may be followed.

Careful adherence to the distinction set forth above will prevent any question of abandonment from arising in connection with cases in which suspension of prosecution has occurred.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Mar. 7, 1978.

[969 O.G. 8]

(136) **POSTAL SERVICE EMERGENCY CONTINGENCY PLAN**

The U.S. Patent and Trademark Office is establishing the following contingency plan for filing any paper or paying any fee in the Office in the event of an emergency caused by any major interruption in the mail service in the United States. Upon determination by the Commissioner of Patents and Trademarks that such an emergency exists, a notice activating the plan will be issued by the Commissioner. The activating notice will be published in the Wall Street Journal and made available in a special recorded telephone message at area code 703, 557-3158. Also, certain publications, patent bar groups, and other organizations closely associated with the patent system, will be notified. Termination of the program will be similarly announced. Where the postal emergency is not nationwide, the Commissioner will designate the areas of the United States in which the procedures outlined below will be in effect.

U.S. Department of Commerce District Offices (formerly referred to as Department of Commerce Field Offices) will be designated on an emergency basis, as receiving stations for filing papers and paying fees in the U.S. Patent and Trademark Office.

Upon determination that an emergency exists, the following procedures may be followed: All papers and fees should be enclosed in a sealed envelope addressed to the Patent and Trademark Office and deposited in one of the District Offices. Such papers will be considered as received in the U.S. Patent and Trademark Office on the day of deposit. The District Office will date stamp each envelope and the accompanying receipt card which completely identifies the deposited papers. The receipt card will be returned to the depositor. Applicants or their representatives should assure the legibility of the date stamp.

District Office deposits should be limited to checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, trademark oppositions, Section 8 affidavits, trademark renewals, and to other papers for which the patent and trademark statutes do not provide a remedy for failure to obtain a particular date.

Where papers originate from overseas, it is suggested that the papers be mailed to a registered agent in Canada, with a request that the papers be forwarded by courier to the nearest District Office in the United States.

In regard to pending applications, if the time for taking any action or paying any fee expires during the period that the Commissioner declares to be an emergency, the time will be extended until one month after the end of the emergency period, provided that such extension does not exceed the maximum period for response provided for in the statutes.

Since this extension of time will be automatic, there will be no record in the individual files to indicate that a response filed during the extended period is in fact timely. In order to provide a complete record, applicants or their representatives should file a paper referring to this notice in each case in which a response is filed during the extended period.

The addresses of the Department of Commerce District Offices, subject to subsequent changes, are as follows:

ALBUQUERQUE, N.M., 87101, Room 316, U.S. Courthouse (505) 766-2386.
ANCHORAGE, 99501, 632 Sixth Ave., Hill Bldg., Suite 412 (907) 265-4597.
ATLANTA, 30309, Suite 523, 1401 Peachtree St., NE. (404) 526-6000.
BALTIMORE, 21202, 415 U.S. Customhouse, Gay and Lombard Sts. (301) 962-3560.
BIRMINGHAM, ALA., 35205, Suite 200-201, 908 S. 20th St. (205) 325-3327.
BOSTON, 02116, 10th Floor, 441 Stuart St. (617) 223-2312.
BUFFALO, N.Y., 14202, Room 1312, Federal Bldg., 111 W. Huron St. (716) 842-3208.
CHARLESTON, W. VA., 25301, 3000 New Federal Office Bldg., 500 Quarrier St. (304) 343-6181, Ext. 375.
CHEYENNE, WYO., 82001, 6022 O'Mahoney Federal Center, 2120 Capitol Ave. (307) 788-2151.
CHICAGO, 60603, Room 1406, Mid-Continental Plaza Bldg., 55 E. Monroe St. (312) 353-4450.
CINCINNATI, 45202, 8028 Federal Office Bldg., 550 Main St. (515) 684-2944.
CLEVELAND, 44114, Room 600, 666 Euclid Ave. (216) 522-4750.
COLUMBIA, S.C., 29204, Forest Center, 2611 Forest Dr. (803) 765-5345.
DALLAS, 75202, Room 3E7, 1100 Commerce St. (214) 749-1515.
DENVER, 80202, Room 161, New Custom House, 19th and Stout Sts. (303) 837-3246.
DES MOINES, IOWA, 50309, 609 Federal Bldg., 210 Walnut St. (515) 284-4222.
DETROIT, 48226, 445 Federal Bldg. (313) 226-3650.
GREENSBORO, N.C., 27402, 203 Federal Bldg., W. Market St., P.O. Box 1950. (919) 275-9111, Ext. 345.
HARTFORD, CONN., 06103, Room 610-B, Federal Office Bldg., 450 Main St. (203) 244-3530.
HONOLULU, 96813, 286 Alexander Young Bldg., 1015 Bishop St. (808) 546-8694.
HOUSTON, 77002, 201 Fannin, 1017 Federal Office Bldg. (713) 226-4231.
INDIANAPOLIS, 46204, 355 Federal Office Bldg., 46 E. Ohio St. (317) 269-6214.
KANSAS CITY, MO., 64106, Room 1840, 601 E. 12th St. (816) 374-3142.
LOS ANGELES, 90024, 11201 Federal Bldg., 11000 Wilshire Blvd. (213) 824-7591.
MEMPHIS, 38103, Room 710, 147 Jefferson Ave. (901) 534-3213.
MIAMI, 33130, Rm. 821, City National Bank Bldg., 25 W. Flagler St. (305) 350-5267.
MILWAUKEE, 53203, Straus Bldg., 238 W. Wisconsin Ave. (414) 224-3473.
MINNEAPOLIS, 55401, 306 Federal Bldg., 110 S. Fourth St. (612) 725-2133.
NEW ORLEANS, 70130, Room 432, International Trade Mart, 2 Canal St. (504) 589-6546.
NEW YORK, 10007, 41st Floor, Federal Office Bldg., 26 Federal Plaza, Foley Sq. (212) 264-0634.
NEWARK, N.J., 07102, Gateway Bldg., (4th Floor) (201) 645-6214.
PHILADELPHIA, 19106, 9448 Federal Bldg., 600 Arch St. (215) 597-2850.
PHOENIX, ARIZ., 85004, 508 Greater Arizona Savings Bldg., 112 N. Central Ave. (602) 261-3285.

PITTSBURGH, 15222, 431 Federal Bldg., 1000 Liberty Ave. (412) 644-2850.
PORTLAND, ORE., 97205, 921 SW. Washington St., Suite 521, Pittock Block. (503) 221-3001.
RENO, NEV., 89502, 2028 Federal Bldg., 300 Booth St. (702) 784-5203.
RICHMOND, VA., 23240, 8010 Federal Bldg., 400 N. 8th St. (804) 782-2246.
ST. LOUIS, 63105, Chromalloy Bldg., 120 S. Central Ave. (314) 622-4243.
SALT LAKE CITY, 84111, 1201 Federal Bldg., 125 S. State St. (801) 524-5116.
SAN FRANCISCO, 94102, Federal Bldg., Box 36013, 450 Golden Gate Ave., (415) 556-5860.
SAN JUAN, P.R., 00902, Room 100, Post Office Bldg., (809) 723-4640.
SAVANNAH, 31402, 235 U.S. Courthouse and Post Office Bldg., 125-29 Bull St. (912) 232-4204.
SEATTLE, 98109, 706 Lake Union Bldg., 1700 Westlake Ave. North (206) 442-5615.

C. MARSHALL DANN,
July 18, 1975. *Commissioner of Patents and Trademarks.*

[937 O.G. 386]

(137) **Examiner Testimony**

As stated in Section 1701 of the Manual of Patent Examining Procedure, patent examiners are forbidden to testify as patent experts or to express opinions, in testimony or otherwise, as to the invalidity of any issued patent. Patent examiners have, in connection with litigation involving patent validity, been called to testify on factual matters. In those cases, the practice has been to permit the examiner to testify only upon the issuance of a subpoena.

Henceforth, patent examiners will be permitted to testify on deposition in patent suits, without the need for a subpoena, provided the following conditions are satisfied:

1. The party proposing to take the testimony will state in writing, that the questions to be asked of the examiner will be phrased to comply with the permissible scope of inquiry as outlined in the protective orders contained in the Court opinions in *In re Mayewsky*, 162 USPQ 86, 89 and *Shaffer Tool Works* v. *Joy Manufacturing Co.*, 167 USPQ 170, 171: ". . . the scope of the oral depositions of the patent examiners is hereby limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the patent examiners in acting upon the patent applications maturing into the patent [in suit]." 167 USPQ 171.
2. That in addition to complying with the requirements of Rule 30 of the Federal Rules of Civil Procedure, the party taking the testimony will agree to give notice of the taking of the deposition of the patent examiner to the Solicitor, at least thirty days prior to the date on which the taking of the deposition is desired.
3. That the party taking the deposition arrange with the Solicitor to notice the deposition at a place convenient to the Patent Office.

If the party desiring to take the testimony of the examiner does not agree to the conditions enumerated, the Patent Office will not permit the examiner to be deposed without a subpoena and compliance with the procedure set forth in Section 7.02, Department of Commerce Administrative Order 205-12, June 29, 1967 as amended April 10, 1970. That section states:

> In any case where it is sought by subpoena, order or other compulsory process or other demand of a court or other authority (hereinafter referred to as a "demand") to require the production or disclosure of any record in the files of the Department of Commerce or other information acquired by an officer or employee of the Department as a part of the performance of his official duties or because of his official status, the matter shall be immediately referred for determination to the appropriate official described in subsection 4.01 of this order. If such official has discretion with respect to disclosure and he determines that it would be improper to comply with the demand, or if he has no discretion with respect to disclosure, the matter shall be promptly referred to the Secretary of Commerce for final determination. Unless and until the Secretary determines that the records or information should be produced, the officer or employee who appears in answer to the demand shall inform the court or other authority (*a*) that the section 7 of this order prohibits the officer or employee from producing or disclosing the records or other information demanded without the prior approval of the Secretary of Commerce, and (*b*) that the demand has been, or is being, as the case may be, referred for the prompt consideration of the Secretary. The officer or employee shall also provide the court or other authority with a copy of the regulations prescribed in this section 7 of this order, and shall respectfully request the court or other authority to stay the demand pending the receipt of instructions or directions from the Secretary of Commerce concerning the demand.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. 762]

(138) **No Change in Foreign Filing License Requirements**

It should be noted that the change to 37 CFR 5.19 deleting the requirement to obtain an export license for filing a patent application in a foreign country does not in any way alter the provisions of 35 U.S.C. 184. 35 U.S.C. 184 requires that a foreign filing license be obtained from the Patent and Trademark Office before any patent application, based on an invention made in the United States, is filed abroad unless a corresponding application has been on file in the USPTO for over six months.

Further information may be obtained by contacting Mr. T. H. Tubbesing at 703-557-2897, or Mr. Edward Drazdowsky at 703-557-2167.

WILLIAM FELDMAN,
Nov. 24, 1980. *Acting Assistant Commissioner, for Patents.*

[1001 O.G. 28]

(139) **Department of Commerce**
Patent and Trademark Office

United States Adherence to the International Union for the Protection of New Varieties of Plants (UPOV)

On Nov. 12, 1980, the United States deposited its instrument of acceptance of the 1978 text of the UPOV Convention. The United States was the second State to adhere to this text, New Zealand having earlier done so.

The UPOV Convention will take effect with respect to the United States and the other adherents to the 1978 text upon a total of five adherences, three of which must be by present member States (States adhering to the 1961 text of the Convention). We expect at least three present member States to adhere shortly and the 1978 text to take effect, therefore, during 1981.

The United States deposited its instrument of acceptance on the basis of the legal protection offered for asexually reproduced plants under the plant patent law (35 U.S.C. 161–164). Accordingly, the Convention will apply only to asexually reproduced plants protected under this law. Steps are now being taken, however, by the Plant Variety Protection Office of the Department of Agriculture to conform the implementation of the Plant Variety Protection Act (7 U.S.C. 2321 et seq.) to the Convention's requirements. When this is done, the United States will notify the UPOV Secretariat that the Convention is also applicable in the United States to sexually reproduced plants protected under that Act.

Questions concerning the UPOV Convention may be directed to the Office of Legislation and International Affairs of the Patent and Trademark Office. This Office may be addressed as follows: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The Office's telephone number is (703) 557-3065.

SIDNEY A. DIAMOND,
Dec. 16, 1980. *Commissioner of Patents and Trademarks.*

[1002 O.G. 102]

(140) **Taking Effect in the United States of the International Convention for the Protection of New Varieties of Plants**

The International Convention for the Protection of New Varieties of Plants (the UPOV Convention) will take effect in the United States on Nov. 8, 1981. It will apply to all applications for the patenting of plants under the provisions of Title 35, United States Code, which are filed on or after Nov. 8, 1981. The actual filing date will govern in determining whether the Convention will apply to an application, even though the application may be entitled to an earlier effective date under section 119 or 120 of Title 35, United States Code.

In addition to the United States, the UPOV Convention will be in effect as of Nov. 8, 1981, in the following fourteen States: Belgium, Denmark, Federal Republic of Germany, France, Ireland, Israel, Italy, Netherlands, New Zealand, Republic of South Africa, Spain, Sweden, Switzerland, and the United Kingdom.

No changes in the patent law are needed to implement the UPOV Convention in the United States. An applicant for a plant patent will be required, however, to submit for registration a variety name for the plant to be patented. Registration is required by Article 13 of the UPOV Convention.

Registrability shall be determined in accordance with the International Code of Nomenclature for Cultivated Plants (1980). As an interim procedure pending the promulgation of an appropriate rule, inclusion of the variety name in the application will be accepted as a submission of the name for registration. No plant patent as a result of an application filed on or after Nov. 8, 1981, shall be issued without the registration of a variety name. Questions concerning this variety naming requirement or the UPOV Convention may be addressed to:

Mr. Michael K. Kirk, Director
Office of Legislation and
International Affairs
Box 4
U.S. Patent and Trademark Office
Washington, D.C. 20231

Mr. Kirk's telephone number is (703) 557-3065.

GERALD J. MOSSINGHOFF,
Oct. 15, 1981. *Commissioner of Patents and Trademarks.*

[1011 O.G. 27]

(141) **Policy Regarding Exchange Agreements Under the Authority of 35 USC Section 6(a)**

Background

The Patent and Trademark Office (PTO), by virtue of Section 6(a) of Title 35, United States Code, is empowered to enter into exchange agreements with other organizations to further the use of patent and trademark information, and to facilitate the use and availability of that information. In recognition of these objectives, the PTO establishes the following guidelines and principles which shall apply when evaluating and entering into exchange agreements with other public, private, domestic and foreign agencies, firms and companies.

Nature of Exchange Agreements

Exchange agreements by the PTO will generally be for the purpose of (1) acquiring goods and services which will assist the PTO in accomplishing its mission and achieving its goals; (2) reducing the cost to the government of processing activities associated with the examination of applications for patent and trademark registration; (3) fostering the dissemination of information contained in patent and trademark documents; and (4) furthering the general goal of automating patent and trademark examination processes.

In exchange agreements, the PTO and the industrial or commercial concerns will share in the cost and risks of the endeavor. Terms and conditions of each agreement, including the business arrangements, are negotiable within the limits of prevailing statutes and regulations and will be commensurate with the risks, involvement, and investment of the parties to the agreements. The PTO's intent is to offer as much latitude as practical in the agreement.

Each agreement will be negotiated on a case-by-case basis. Agreements will vary in size, complexity, scope and the nature of the materials, services, and/or products being exchanged by the parties. All exchange agreements will be subject to the availability of funds.

Incentives

Incentives provided by the PTO for the purpose of entering into exchange agreements may include, but are not limited to (1) providing copies of PTO documents; (2) providing computer processable data obtained from patents, trademark applications, trademark registrations, and other data sources developed by the PTO; (3) providing government furnished equipment necessary for the other party to fulfill the agreement; and (4) entering into joint programs where each party funds its own participation.

Considerations

The factors to be considered by the PTO prior to entering into an exchange agreement or providing incentives shall include, but will not be limited to the following considerations: (1) public or social need for the product(s) of the agreement; (2) enhanced dissemination of technological information; (3) benefits accruing to the public or the U.S. Government from the endeavor; (4) the desirability of private sector involvement in PTO programs; (5) the merit of the research, development or application proposed; (6) the degree of risk and financial participation by the other party; (7) the amount of proprietary data or other information to be furnished by the concern; (8) the rights in data to be granted to the PTO and the concern as a result of their contributions; (9) the willingness and ability of the concern to market and sell any resulting new or enhanced products on a reasonable basis; and (10) the impact of PTO sponsorship upon a given industry or area of commercial endeavor.

Administration

The Administrator for Automation is delegated the authority to enter into negotiations. The Commissioner of Patents and Trademarks will approve exchange agreements on behalf of the PTO. Before proceeding into comprehensive evaluation of a joint endeavor, a preliminary assessment will be made of the merits of the offer. Exchange agreement proposals which are too sketchy or ill-defined to (1) establish the merit in the basic idea, (2) establish that the proposal is in accordance with PTO program objectives, or (3) establish that the proposing organization is willing to make significant contribution to the endeavor, will not be evaluated in depth and will be treated as correspondence or advertising. This preliminary assessment will be conducted by the Administrator for Automation or his or her designee to determine if the proposal warrants further consideration. If this determination is positive and if the parties agree to proceed with a joint endeavor, the Administrator for Automation will enter into detailed discussions and negotiations with the offeror regarding the technical and business aspects of the offer. Upon reaching a mutually satisfactory arrangement, the agreement will be submitted to the Commissioner of Patents and Trademarks for approval. Administration of the exchange agreement program will be performed by the Administrator for Automation.

Due to resource limitations and the necessity for diversity in the program, only one offer will normally be accepted for a given PTO incentive. If substantially similar offers are received within any 45-day period, they will be evaluated and/or negotiated together. The offer which provides the best total consideration for the Government will be accepted. Special consideration shall be given to small and minority businesses, as appropriate.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

May 3, 1983.

[1030 OG 49]

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(142) **Qualifications for Admission to the Examination for Registration to Practice Before the Patent and Trademark Office**

37 CFR 1.341(c) provides in pertinent part, "No person will be admitted to practice and registered unless he shall . . . establish to the satisfaction of the Commissioner that he is of good moral character and good repute and *** possessed of the legal and scientific and technical qualifications necessary to enable him to render applicants for patents valuable service ***. In order that the Commissioner may determine whether the person *** has the qualifications specified, satisfactory proof of good moral character and repute, and of sufficient basic training in scientific and technical matters must be submitted ***."

All persons requesting application forms are routinely furnished with a circular entitled "General Requirements For Admission To The Examination For Registration To Practice Before The Patent and Trademark Office". The circular contains a list of the subjects in which a person must have a bachelor's degree or the equivalency thereof in scientific and technical training to meet registration qualifications. It is strongly recommended that persons who do not have a bachelor's degree in one of those subjects comply with the instructions in the paragraph following the list to show their scientific and technical qualifications. If it is intended to rely on courses in computer science, no more than 3 semester hours of courses in computer programming will be accepted as providing part of the required basic training in scientific and technical matters. Computer science courses oriented away from the physical sciences or engineering, e.g., toward accounting or business, will not be accepted as providing any of the requisite basic training in scientific and technical matters.

Many applications for admission to an examination are filed on or just prior to the announced closing date for doing so, and these applications are frequently disapproved because the person does not furnish a satisfactory showing of his or her qualifications. For instance, persons with a bachelor's degree in a subject other than one of those listed in the circular frequently do not follow instructions in the circular and do not furnish both their transcripts and official course descriptions. Other persons list charges brought against them requiring further showings to overcome doubts raised by the charges about their character and reputation. Still others who failed one section of the examination three times do not furnish a satisfactory showing of sufficient additional legal training to pass the examination.

The Office of Enrollment and Discipline evaluates each application for admission to the examination on an individual basis as soon as practical after receipt in that office. Thereafter, notification is promptly mailed to each person whose application has been disapproved.

The Office of Personnel Management (OPM — formerly Civil Service Commission), which administers the examination, requires that it receive correct data from the Patent and Trademark Office identifying the locale of the examination and the number of persons to be tested well ahead of the examination date. *To afford adequate time to present a satisfactory supplemental showing to gain admission to the examination for which application is being made, it is recommended that all persons file their applications early, preferably at least two months before the closing date.*

All supplemental showings of qualifications and all applications filed after the announced closing date to apply for admission to an examination will be considered only in connection with the person's admission to the next succeeding examination. Admission to an examination given on a particular date is available only to persons who have filed a completed application form, a $75.00 admission fee, and a satisfactory showing of qualifications on or before the closing date for applying for admission to the examination. Examinations are given in Apr. and Oct. each year, and the respective closing dates for applying for admission to the examinations are the preceding Jan. 31 and July 31.

WILLIAM FELDMAN,
Director of Enrollment and Discipline.

Sept. 18, 1984.

[1047 O.G. 35]

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(143) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1, 2, and 10
Docket 407 88-4181

Practice before the Patent and Trademark Office

Agency: Patent and Trademark Office, Commerce
Action: Final Rule
Summary: The Patent and Trademark Office (PTO) is amending its rules governing practice before the PTO by attorneys and agents. These rules are needed to clarify and modernize the rules relating to admission to practice and the conduct of disciplinary cases. The rules are also needed to set out in the Code of Federal Regulations a PTO Code of Professional Responsibility. By amending the rules, the PTO believes the standards for admission to practice in patent cases will be more easily understood, that those practicing before the PTO will have ready access to a code of professional responsibility, and that procedure in disciplinary cases will be more easily understood. The PTO expects that the conduct of disciplinary proceedings under these rules will be more effective and less costly.
Dates: The effective date of these rules (except §1.21(a)(5) and (6)) is Mar. 8, 1985. Section 1.21(a)(5) and (6) is effective Apr. 8, 1985.

For Further Information Contact: Fred E. McKelvey by telephone at (703) 557-4025 (if no answer, message may be left at 703-557-4103) or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: Attorneys and agents practice before the Patent and Trademark Office (PTO) in patent cases. 35 U.S.C. 31. Attorneys also practice before the PTO in trademark and other non-patent cases. 5 U.S.C. 500(b). A few agents also practice before the PTO in trademark cases under rules in force prior to Jan. 1, 1957.

A notice of proposed rulemaking for attorney and agent conduct and disciplinary procedure was published on Aug. 11, 1983 in the *Federal Register*, 48 F.R. 36478, and on Sept. 20, 1983 in the *Official Gazette*, 1034 O.G. 39, 1034 TMOG 33. A notice extending the comment period and setting a second hearing was published on Oct. 5, 1983 in the *Federal Register*, 48 F.R. 45424, and on Oct. 18, 1983, in the *Official Gazette*, 1035 O.G. 19, 1035 TMOG 17. The PTO decided to withdraw, and not adopt, the rules proposed in the *Federal Register* notice of Aug. 11, 1983. There were numerous objections to the proposed rules and the public indicated that a longer period for study and review of a code of conduct and disciplinary procedures was necessary.

An advance notice of proposed rulemaking setting out revised rules being considered for standards of conduct and disciplinary proceedings was published on Mar. 16, 1984, in the *Federal Register*, 49 F.R. 10012, and on Apr. 10, 1984, in the *Official Gazette*, 1041 O.G. 15, 1041 TMOG 13. Numerous organizations and individuals filed comments in response to the advance notice.

On Aug. 24, 1984, the PTO published in the *Federal Register* a notice of proposed rulemaking. 49 F.R. 33790. On Aug. 28, 1984, the notice was also published in the *Official Gazette*. 1045 O.G. 29; 1045 TMOG 25. The notice also appeared in the Bureau of National Affairs, *Patents, Trademark & Copyright Journal*, Vol. 28, No. 694, pp. 485-515 (Aug. 30, 1984). Twenty-two written comments were timely received in response to the notice of proposed rulemaking. The comments are analyzed herein. A hearing was held on Oct. 10, 1984. Five individuals appeared at the hearing. Oral comments made at the hearing are also analyzed herein. The twenty-two written comments and a copy of the transcript of the hearing are available for public inspection in Room 12B10, Crystal Gateway II, 1225 Jefferson Davis Hgw., Arlington, Va.

This notice of rulemaking sets out rules in three areas:

(1) Practice of attorneys and agents before the PTO in patent, trademark, and other non-patent cases (§§10.2 through 10.19);

(2) A PTO Code of Professional Responsibility (§§10.20 through 10.112); and

(3) Rules governing (a) investigation of possible violations of the PTO Code of Professional Responsibility and (b) disciplinary proceedings to reprimand, suspend, or exclude (disbar) individuals from practicing before the PTO who, after notice and opportunity for a hearing, are found to have violated a disciplinary rule of the PTO Code of Professional Responsibility (§§10.130 through 10.170).

Familiarity with the advance notice and notice of proposed rulemaking is assumed. Changes in the text of the rules published for comment in the notice of proposed rulemaking are discussed. Comments received in response to the notice of proposed rulemaking are discussed. Comments not timely received in response to the advance notice are also discussed.

Tables 1, 2, and 3 are included in this notice to assist readers in correlating present rules with the new rules and to find the principal source for the new rules. An indication in Tables 1, 2, or 3 that a section is "new" means that a corresponding section does not currently appear in Tile 37 of the Code of Federal Regulations.

Table 1 shows the principal sources of the new rules which relate to (1) admission to practice of attorneys and agents in patent cases and (2) practice in trademark and other non-patent cases.

Table 2 shows the principal sources of the rules for the new PTO Code of Professional Responsibility.

Table 3 shows the principal sources of the new rules for disciplinary proceedings.

Other sources for, and rationale in support of, the proposed rules are discussed in the Supplementary Information of the advance notice, 49 F.R. 10012-10022, and the Supplementary Information of the notice of proposed rulemaking, 49 F.R. 33790-33803.

In issuing these rules, the PTO has made every effort to minimize preemption of State control over the practice of law. Thus, in §10.1, second sentence, the new rules provide:

> Nothing in . . . [these rules] shall be construed to preempt the authority of each State to maintain control over the practice of law, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives.

This provision of §10.1 is based on language in *Sperry* v. *Florida ex rel, Florida Bar*, 373 U.S. 379, 402 (1963), and makes clear the PTO's intent to regulate only conduct related or relevant to practice before the PTO.

In an effort to ascertain whether the proposed rules would have any adverse impact on the States, copies of both the advance notice of Mar. 16, 1984, and the notice of proposed rulemaking of Aug. 24, 1984, were sent to Bar Counsel in each State. The PTO received responses from Bar Counsel in Ala., Conn., Fla., Ga., Md., Miss., Nebr., Tex., and Vt. Comments were also received from the National Organization of Bar Counsel, the American Bar Association, and others.

Alaska Bar Counsel, contrary to other bar counsel filing comments, suggested that creation of a PTO Code of Professional Responsibility would be "inherently confusing" to any attorney practicing in a State and also before the PTO. The new rules, however, do not establish for the first time a PTO Code of Professional Responsibility. The current PTO code appears in 37 CFR §§1.344 and 2.12. Sections 1.344 and 2.12 merely incorporate by reference the Code of Professional Responsibility of the American Bar Association (1970). The new PTO code more appropriately sets out the standards of conduct relevant to the practice of law before the PTO. Alaska Bar Counsel also felt that it would be more appropriate if the PTO brought alleged ethics violations by attorneys to local state enforcement authorities. This view was not shared by other bar counsel who filed comments. The statute (35 U.S.C. 32) authorizes the Commissioner to administer discipline. The PTO has taken disciplinary action in instances where a State has declined to do so. Moreover, there are registered patent agents who are not subject to discipline by State enforcement agencies. Finally, Alaska Bar counsel suggested that "adjudicative agencies" are too closely involved in a disciplinary matter to be impartial. Congress has determined otherwise. 35 U.S.C. 32 and 5 U.S.C. 500(d).

Comments were received from the Statewide Grievance Committee of Connecticut in response to the advance notice. Many helpful suggestions were made in the comments. Most of the suggestions were adopted at the time the notice of proposed rulemaking was published.

The Florida Bar, through its Director of Lawyer Regulation, filed comments in response to the notice of proposed rulemaking. The Florida Bar commented on §§10.1(c) and 10.23(c) (5). The PTO's response to the comment appears later in this notice under a discussion of §10.1.

An Assistant General Counsel of the State Bar of Georgia filed a response to the advance notice. The response stated, among other things: "Although due to the press of business at the present time I am unable to provide a substantive response in this correspondence, I will respond within the appropriate time limits after having an opportunity to study the enclosed . . . [advance notice]." No further response was received.

Bar counsel for the Attorney Grievance Commission

of Maryland filed a response to the advance notice. In his response Bar Counsel states in part:

It does not appear to me that any of the proposed Rules would present any difficulty in the administration of discipline within Md.

Complaint Counsel for Miss. responded to the advance notice. He stated in part:

I have not reviewed the proposed Code in comparison with the Code of Professional Responsiblity in great detail. In general however I can state that adoption of the proposed Code would not have an adverse effect upon the function of this office.

The General Counsel of the State Bar of Texas responded to the advance notice and did "not perceive that any problem would be created by . . . [the proposed rules] in Tex." The General Counsel did express the thought that the PTO's use of the word "practitioner" instead of "lawyer" would not prevent reciprocal discipline in Tex. based on disciplinary action by the PTO. The PTO sees no reason for disagreeing with the General Counsel. The word "practitioner" is used by the PTO to define registered attorneys, registered agents, *and* other attorneys authorized to practice in trademark and other non-patent cases before the PTO under 5 U.S.C. 500(b).

The Chairman of the Professional Conduct Board of Vermont responded to the advance notice. He states in part:

I find nothing contained in the proposed rules which would present any difficulty in the administration of disciplinary matters within the State of Vermont. Further, I see no problems created vis-a-vis the Code of Profesaional Responsibility in this jurisdiction.

The President of the National Organization of Bar Counsel responded to the notice of proposed rulemaking. He expressed a concern as to whether the PTO intended to "provide for notice and information of . . . [each disciplinary violation by an attorney] to each jurisdiction where the attorney is licensed." Two provisions of the rules are designed to insure that States are notified of PTO disciplinary action. Section 10.158(b) (1) requires a disciplined attorney to notify all bars of which he or she is a member and to file a copy of the notice with the Director of Enrollment and Discipline of the PTO. Section 10.159(a) requires the Director to notify known state bars and appropriate bar associations of PTO disciplinary action. In addition, as a matter of policy, the PTO intends to notify the National Discipline Data Bank of the American Bar Association.

Comments were filed in response to the advance notice and the notice of proposed rulemaking by the Standing Committee on Professional Discipline of the American Bar Association. The comments filed in response to the advance notice were analyzed in the notice of proposed rulemaking and are not re-analyzed in this notice. In its comments responding to the notice of proposed rulemaking the Standing Committee made several helpful suggestions, some of which are being adopted. A full discussion of the PTO rationale for adopting or not adopting a particular suggestion appears under analysis of comments later in this notice. The Standing Committee urged adoption of the 1983 ABA Model Rules. The PTO is not now adopting the Model Rules *inter alia* because most States have not adopted those rules. If a significant number of states adopt the Model Rules, the PTO will consider further amendments to its Code of Professional Responsibility. The Standing Committee suggested changes to §10.23(c) (12) which are being adopted in part. The Standing Committee suggested that notice be given to a practitioner prior to any meeting of the Committee on Discipline. This suggestion is not being adopted. In most instances, a practitioner will be able to respond to a notice under 5 U.S.C. 558(c). The Committee will have the practitioner's response at the time of its deliberation. The Standing Committee urged that hearings in disciplinary matters should be open to the public. Others opposed this position. The PTO is not adopting this suggestion in view of 35 U.S.C. 122. Further rationale for not adopting the Standing Committee's suggestion appears later in the notice. The Standing Committee urged a change in §10.149 to make the burden for proving a disciplinary violation one of "clear and convincing evidence." This suggestion is being adopted. The Standing Committee urged that more discovery be permitted than was authorized by §10.152 as proposed. This suggestion is being adopted as explained further in this notice. The Standing Committee also thought §10.159 should provide for notice to the ABA National Discipline Data Bank when the PTO administers discipline. While §10.159 will not specifically mention the Data Bank, a change has been made to permit the Director to notify appropriate bar associations. The Data Bank is an appropriate bar association.

Changes in Text: Several changes have been made in the text of the new rules from the text of the proposed rules which were published for comment in the notice of proposed rulemaking. Those changes are discussed below.

In §1.8, the new subparagraph will be (xiii). Subparagraph (xii) was added when the rules relating to patent interference proceedings were amended. See 49 F.R. 48451 (Dec. 12, 1984).

In the first sentence of §1.31, the term "agent" has been changed to "registered agent" to make clear that only registered agents are intended.

Section 1.33(c) is being amended to delete a reference to former §§1.341 and 1.347 and to now refer to §§10.5 and 10.11.

Section 1.56(f) and (h) is being amended to delete a reference to former §1.346 and to now referred to §10.18.

In the second sentence of §10.1, "subpart shall" has been changed to "part shall" and "maintain control over" has been changed to "regulate." In the same sentence, "within its borders" has been deleted.

In §10.2(b) (1), "maintain the register" has been changed to "maintain the register provided for in §10.5".

In the next-to-the-last sentence of §10.7(b), "examining corps" has been changed to "patent examining corps".

The language "an alien" in §10.9(b) has been changed to read "a resident alien" to make clear that aliens registered under paragraphs (a) or (b) of §10.6 must be resident aliens.

In the first sentence of §10.14(c), "foreigner" has been changed to "foreign attorney or agent", "registered and in good standing" has been changed to "registered or in good standing", "applicants" has been changed to "parties" and "trademark applications" has been changed to "trademark cases".

In §10.18(a) (1), "the paper has been read" has been changed to "the paper has been read by the practitioner".

Several changes have been made in §10.23.

In §10.23(c) (4) (iii), "improperly" has been added before "bestowing."

In §10.23(c) (5), "on ethical grounds" has been added after the first occurrence of "attorney or agent" and "suspension or disbarment as an attorney or agent" (after "10.6(c)") has been deleted.

In §10.23(c) (7), "patent" has been added before "application of another" and the following has been added as a second sentence: "See §§1.604(b) and 1.607(c) of this Subchapter."

In §10.23(c) (8), "Failing to forward" has been changed to "Failing to inform a client or former client"; "inability to forward, to" has been changed to "inability to notify"; "client correspondence" has been changed to "client of correspondence"; "is correspondence which" has been changed to "is correspondence of which"; and "under the circumstances should be forwarded to the client or former client" has been changed to "under the circumstances the client or former client should be notified."

Section 10.23(c) (12) has been changed to read: "Knowingly filing, or causing to be filed, a frivolous complaint alleging a violation by a practitioner of the Patent and Trademark Office Code of Professional Responsibility."

In §10.23(c) (15), "including" has been changed to "making a" and "matter" has been changed to "statement".

In §10.36(b) (3), the language "in the locality" has been deleted.

The following language has been deleted from §10.40(c): ", and may not withdraw in other matters,".

In §10.62(b), the language "contemplated or pending litigation or" has been deleted.

In §10.63(a), the language "contemplated or pending litigation or" has been deleted. Both occurrences of "trial or" have been deleted from §10.63(a). The language "contemplated or pending litigation or" has been deleted from §10.63(b).

The following sentence has been added to §10.64(b): "A practitioner may, however, advance any fee required to prevent or remedy an abandonment of a client's application by reason of an act or omission attributable to the practitioner and not to the client, whether or not the client is ultimately liable for such fee."

In §10.84(a) (3), "§10.85" has been changed to "this part".

The following sentence has been added to §10.87(a): "It is not improper, however, for a practitioner to encourage a client to meet with an opposing party for settlement discussions."

Subparagraph (5) of §10.89(c) as it appeared in the notice of proposed rulemaking has been deleted. Subparagraph (6) of §10.89(c) as it appeared in the notice of proposed rulemaking has been changed to read: "(5) Engage in undignified or discourteous conduct before the Office (see §1.3 of this Subchapter)." Subparagraph (7) of §10.89(c) has been redesignated as subparagraph (6).

In §10.112(a), the language:

maintained: (1) in the case of a practitioner whose office is located in the United States, the State in which the practitioner's office is situated or (2) in the case of a practitioner having an office in a foreign country or registered under §10.6(c) in the United States or the foreign country

has been changed to read:

maintained in the United States or, in the case of a practitioner having an office in a foreign country or registered under §10.6(c), in the United States or the foreign country.

In §10.131(a), the second sentence has been deleted as being unnecessary in view of §10.132(b). The second sentence of §10.131(a) in the notice of proposed rulemaking read: "The investigation shall be such as to determine whether there is probable cause to believe that a violation of a Disciplinary Rule by a practitioner has occurred."

In the first sentence of §10.132(a), the language "that there is probable cuase to believe" has been deleted. The Committee on Discipline, not the Director, shall determine whether there is probable cause to believe that a practitioner has violated a Disciplinary Rule. See §§10.4(b) and 10.132(b).

Several changes have been made in §10.133. In the first sentence of §10.133(b), the language "§§10.132(b) and 10.134" has been replaced with "§10.134". The reference to §10.132(b) is not necessary. The language "his or her resignation by filing" in §10.133(b) has been deleted as unnecessary. The second sentence of §10.133(b) has been modified to become new paragraphs (c) and (d). Paragraph (c) indicates the content of an affidavit of resignation filed prior to the date set by the administrative law judge (ALJ) for hearing. Paragraph (d) indicates the content of an affidavit of resignation filed on or after the date set by the ALJ for hearing. Paragraph (c) has been redesignated as new paragraph (e). In addition, the language "paragraph (b)" therein has been changed to "paragraphs (b) or (c)". Paragraphs (d) and (e) have been redesignated as new paragraphs (f) and (g), respectively.

In §10.135(a) (2) (i), "Committee on Enrollment" has been changed to "Director".

In §10.149, "a preponderance of" has been changed in both instances to "clear and convincing".

Several changes have been made to §10.152 to expand discovery. Paragraphs (a) and (b) of §10.152 as set out in the notice of proposed rulemaking have been redesignated as paragraphs (e) and (f), respectively, and new paragraphs (a) through (d) have been added. New paragraph (a) sets forth discovery which is authorized. New paragraph (b) sets forth matter which *cannot* be discovered. Paragraph (c) sets forth factors which an ALJ can consider in determining whether to authorize discovery. Paragraph (d) requires that a motion be filed which addresses specifically and separately each particular request for discovery. In paragraph (e) (formerly paragraph (a)), a new subparagraph (3) has been added to specify that the ALJ may require the parties to set out in a pre-hearing statement information related to expert witnesses. Old subparagraphs (3) and (4) have been redesignated as new subparagraphs (4) and (5), respectively.

In §10.154(b), a new subparagraph (5) has been added which states: "(5) any extenuating circumstances."

In §10.155(a), both occurrences of "on the respondent" have been deleted.

Several changes have been made to §10.158. In §10.158(b) (1), after "all clients of the practitioner" the following has been added "for whom he or she is handling matters before the Office". In §10.158(b) (2), "client's active case files" has been changed to "client's active Office case files". In §10.158(c), changes have been made to make paragraph (c) applicable to corporate patent departments and to prohibit a suspended or excluded practitioner from meeting in person or in the presence of another practitioner with an official of the PTO in connection with the prosecution of a patent, trademark, or other case.

The following has been added to the end of §10.159(a): "and any appropriate bar associations,"

Several changes have been made in §10.160(c). "A practitioner has been suspended or excluded" has been changed to "An individual who has resigned under §10.133 or who has been suspended or excluded". The language "if the Director is satisfied" has been changed to "when the individual makes a clear and convincing showing". The language "suspended or excluded practitioner" has been changed to "individual".

Response to and Analysis of Comments: Twenty-two (22) written comments where timely received in response to the notice of proposed rulemaking. The comments have been analyzed. Some suggestions made in comments have been adopted and others have been rejected. A detailed analysis of the timely received comments follows. Several comments were not timely received by July 9, 1984, in response to the advance notice of proposed rulemaking of Mar. 16, 1984. These comments have now been considered and are analyzed herein.

Several comments were received which suggested that the rules purport to regulate attorney conduct beyond that necessary or proper for administration of federal programs by the PTO. It is not, and has never been, the intention of the PTO to regulate conduct except to the extent necessary for the accomplishment of federal objectives. Thus, only that conduct which is relevant to the practice of patent, trademark, or other law *before the PTO* is what the PTO seeks to regulate. The preamble of §10.1 indicates that Subpart 10 governs solely the practice of patent, trademark, and other law before the PTO. As noted in the preamble to §10.1, "[n]othing in this subpart shall be construed to preempt the authority of each State to regulate the practice of law, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives." See *Sperry* v. *Florida ex rel. Florida Bar,* 373 U.S. 379, 402 (1963). See also *Michigan Canners and Freezers Ass'n.* v. *Agricultural Marketing and Bargaining Board,* 104 S. Ct. 2518, 2523 (1984) (State Law is preempted when it stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress) and *Fidelity Federal Savings and Loan Ass'n.* v. *de la Cuesta,* 102 S. Ct. 3014, 3022 (1982) (federal regulations have no less pre-

emptive effect than federal statutes).

Several comments were received concerning §10.1. The Florida Bar noted that in the notice of proposed rulemaking the PTO indicated "that failure to pay State bar dues is not a basis for suspension or exclusion before the PTO because failure to pay the dues has no relationship to the federal objectives which the PTO seeks to accomplish." 49 F.R. 33795, column 1, third full paragraph. The Florida Bar suggested that "the loss of good standing [should] be of concern to the PTO." The PTO agrees in part. Suspension from a State bar for failure to pay dues will not be viewed by the PTO as "misconduct." See §10.23(c) (5), which has been changed to define misconduct as suspension or disbarment on ethical grounds. If an attorney is suspended by his or her State bar for failure to pay bar dues, and for that reason is no longer in good standing before the State bar, that attorney is no longer an attorney within the meaning of §10.1(c). An attorney suspended from his or her State bar for failure to pay bar dues would no longer be eligible to represent individuals before the PTO in trademark and other non-patent cases.

One commentator suggested that the second sentence of §10.1 be changed to read: "Nothing in this subpart shall be construed to preempt the authority of each State to regulate the practice of law, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives." The suggestion is being adopted. The commentator noted that as originally proposed in the notice of proposed rulemaking, the phrase "to maintain control over the practice of law within its borders" is unduly restrictive. The commentator correctly pointed out that "[c]ertainly, New York would have the authority to regulate the practice of law by a New York attorney residing in Fla."

Another commentator noted the language "federal objectives" in §10.1 and felt it would be appropriate for the PTO "to set forth what the federal objectives really are." The PTO does not believe it is appropriate to set out in the regulations specific federal objectives. The PTO engages in the examination of applications for patents, reexamination of issued patents, examination of applications for registrations of trademarks, and numerous *inter partes* patent and trademark proceedings. The federal objectives of the PTO center around these activities.

With respect to §10.2(c), one commentator argued that "it is unfair to require the payment of a fee to review a final decision of the Director." The PTO disagrees. The review provided by §10.2(c) is a service preformed by the PTO for which a fee may be charged. There is no compelling reason for not charging a fee.

Several comments were received discussing §10.4. One commentator suggested "that a provision for no discovery or testimony from a member of the Committee on Discipline is unfair and inappropriate." The PTO does not believe that a "mini-trial" should be conducted in a subsequent disciplinary proceeding of how or why the Committee on Discipline reached its decision. The commentator also argued that 10.4(c) "would be in direct conflict with the Federal Rules of Civil Procedure" in any review in the U.S. District Court for the District of Columbia. Again, the PTO disagrees. The Federal Rules of Civil Procedure do not apply to disciplinary cases in the PTO. Moreover, those rules do not apply in cases seeking judicial reivew of a decision of the Commissioner in a disciplinary matter. Applicable law (35 U.S.C. 32 and Local Rule 1-26 of the district court) provides for review on the record made in the PTO. See also *Camp* v. *Pitts*, 411 U.S. 138 (1973). Hence, there is no discovery in a proceeding under 35 U.S.C. 32.

Comments were received which suggest that the associate and assistant solicitors in the Office of the Solicitor cannot be isolated from the Solicitor and the Deputy Solicitor. The associate and assistant solicitors are to be isolated so that (1) the associate and assistant solicitors may act as attorney for the Director in prosecuting a disciplinary proceeding and (2) the Solicitor and Deputy Solicitor may act as legal advisor to the Commissioner in deciding a disciplinary matter. In disciplinary matters, the associate and assistant solicitors will report directly to the Director. Associate and assistant solicitors will not have occasion to discuss disciplinary matters with the Solicitor or Deputy Solicitor.

The following discussion in the *Attorney General's Manual on the Administrative Procedure Act*, pp. 57-58 (1947), commenting on original §5(c) (now 5 U.S.C. 554(d)) is believed particularly relevant to the issues raised in the comments:

> Assuming that an agency will in many cases wish to consult with certain of its staff members, it may proceed in one of two ways. It may in a particular case consult with staff members who in fact have not performed investigative or prosecuting functions in that or a factually related case. In the alternative, the agency may find it feasible so to organize its staff assignments that the staff members whom it most frequently desires to consult will be free of all investigative and prosecuting functions.
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> * * * * *
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> [I]f the agency so organizes its staff that the general counsel is not responsible for the investigative and prosecuting functions, he would be regularly available to the agency for consultation on the decision of cases.[1]

Several commentators suggested that members of the public or the PTO bar should be members of the Committee on Discipline. This suggestion is not being adopted. As noted in the notice of proposed rulemaking (49 F.R. 33793, column 2, last paragraph), there are two reasons for not adopting the suggestion. Use of individuals outside the PTO is made difficult by 35 U.S.C. 122. Administrative delays would take place because it would be more difficult to schedule meetings.

One commentator suggested that the language "at least" in the phrase "at least three employees of the Office" should be deleted from the second sentence of §10.4(a). This suggestion is not being adopted. The"at least" language will permit the Commissioner to appoint alternate members to substitute for a member who may be disqualified or who may be unavailable for an extended period.

Section 10.10 provides that only practitioners who are registered under §10.6 or individuals given limited recognition under §10.9 will be permitted to prosecute patent applications of others before the PTO. One comment was received which noted that the rules do not address the "status" of (a) "an individual in a training program directed to the preparation and prosecution of applications for patent" or (b) "a long-time employee working within a patent organization in the area of preparation and prosecution of applications for patent, but has never become registered to practice as either a Patent Agent or Patent Attorney." The commentator suggested that the rules should state what such individuals or employees may do. The suggestion is not being adopted. Only registered practitioners (attorneys and agents) may practice patent law before the PTO. The commentator also suggested that the rules should provide that long-time corporate or government employees who have never been registered should be given limited recognition by the PTO. This suggestion is not being adopted. Limited recognition will be given only on a case-by-case basis. See §10.9.

One comment suggested that "applicants" and "trademark applications" in the first sentence of §10.14(c) rendered it unclear whether an individual authorized to practice before the PTO in trademark cases could prosecute post-registration cases, such as a cancellation proceeding. The rule has been clarified by changing "applicants" to "parties" and "trademark applications" to "trademark cases". An individual authorized to represent others under §10.14 is authorized to appear in any trademark case.

[1]The general counsel's participation in rule making and in court litigation would be entirely compatible with his role in advising the agency in the decision of adjudicatory cases subject to section 5(c).

Several comments were received discussing §10.18. One comment made at the hearing suggested that the rule should specify who should read the paper being signed. The commentator stated: "I think it would be salutary if what you really mean is that the practitioner who signs it has read it." The suggestion is being adopted and the language of §10.18(a) (1) has been changed from "the paper has been read" to "the paper has been read by the practitioner".

Two individuals commented that requiring the signature of a practitioner would eliminate the "custom" of having an associate sign the name of a principal attorney on a paper which the principal authorizes the associate to file. Section 10.18 requires that the practitioner signing the paper sign his or her own name. The rule would permit associate attorney John Smith to sign on behalf of principal attorney David Jones by signing the paper as follows: "David Jones by John Smith." The rule would not permit Smith to merely sign Jones' name or to sign "David Jones by JS." The rule does not authorize a non-practitioner (e.g., a para-legal or secretary) to sign a paper on behalf of a practitioner.

One comment asked the following:

> Assume an inventor is under Final Rejection and the period for proper response is near at hand. The attorney is now instructed to "keep the case alive" until a CIP [continuation-in-part] is prepared and filed. For reasons outside the control of the attorney, the CIP cannot be filed in time. Assume now the attorney files a Notice of Appeal, *never intending* to prosecute the appeal, intending only to buy time until the CIP can be filed. Would the filing of the Notice of Appeal violate Rule 10.18 and subject the attorney to PTO disciplinary action?

A notice of appeal is a proper response to a final rejection. Accordingly, it would not appear under the circumstances outlined that the notice of appeal was "interposed for delay" within the meaning of §10.18(a) (4).

Three comments were received discussing §10.22. One comment suggested that modifiers, such as "knowingly" and "willfully" be inserted in paragraphs (a) and (b) of §10.22. The suggestion is not being adopted. A "materially false statement," a failure "to disclose a material fact," or furthering the application of another "known . . . to be unqualified" constitute acts which cannot be characterized as innocent. Accordingly, there is no need to insert the "modifiers" in the text of the rule. Another commentator suggested that the provisions of §10.22 are not relevant to the federal objectives of the PTO. The PTO disagrees. Practitioners who (1) fail to tell the truth, (2) fail to reveal material information or (3) knowingly further the application of an unqualified individual to a bar, demonstrate that they are "disreputable" within the meaning of 35 U.S.C. 32. A third commentator suggested that §10.22(b) is too broad because a practitioner could recommend an individual for membership in a bar and the individual might fail to pass the bar examination. Unless a practitioner has good reason to know that the individual will fail to pass a bar examination, it is not apparent how the practitioner's recommendation could amount to a violation of the PTO Code of Professional Responsibility.

Numerous comments were received discussing §10.23. One comment suggested that §10.23(c) (8) be changed to require notification of a client rather than requiring correspondence to be forwarded. This suggestion has been adopted by making appropriate changes to §10.23(c) (8).

A suggestion was made to delete the reference to $5000 in §10.23(c) (17). This suggestion is not being adopted. See the discussion in the advance notice, 49 F.R. 10016, column 1.

A suggestion was made that §10.23(c) (5) has "a built-in inequity as regards different patent attorneys in different states." According to the commentator, a practitioner suspended for an act by Ohio might not be suspended for the same act by New York. The commentator reasons it would be unfair for the Office to suspend the Ohio practitioner, but not the New York practitioner. The commentator's concern is not warranted in view of the second sentence of §10.1.

Another commentator noted that §10.23(a) (3) "points up the difficulty of superimposing . . . [a] set of rules on of the various local jurisdictions." Here again, the commentator's concern is not believed warranted in view of the second sentence of §10.1. Another commentator noted that "moral turpitude" is hard to define. It was suggested that possession of marijuana is regarded as a crime involving moral turpitude in some states where a 99-year sentence may be received. It was suggested that in other states possession of marijuana might result in "a slap on the wrist." If a practitioner is incarcerated for a crime in a state, it follows that the practitioner is not capable of representing individuals before the Office. This is true even if the same practitioner would not have been incarcerated in another state for the same act.

The Florida Bar raised a question concerning §10.23(c) (5) which is answered under the discussion above of §10.1. Section 10.23(c) (5) has been changed to make suspension or disbarment "on ethical grounds" a basis for suspension or disbarment by the Office. "Ethical grounds" would include incompetence, but would not include failure to pay State bar dues.

One comment suggested that "disreputable" and "gross misconduct" in §10.23(a) be defined. The terms "disreputable" and "gross misconduct" appear in 35 U.S.C. 32 and need no further definition in the rules. For a discussion of "disreputable," see *Poole* v. *United States*, 54 A.F.T.R. 2d (P-H) 84-5536 (D.D.C. June 29, 1984).

Several comments suggested that the Model Rules of Professional Conduct of the American Bar Association (1983) be adopted in place of §10.23. Adoption of the Model Rules was given consideration prior to publication of the advance notice and the notice of proposed rulemaking. The matter has been considered again. However, it has not been demonstrated to the Office that a large number of states have adopted the Model Rules. As noted in the notice of proposed rulemaking, at least Va. has rejected the Model Rules. Accordingly, the PTO will not, at this time, adopt the Model Rules. If a large number of states adopt the Model Rules in the future, the PTO would be willing to reconsider its position.

One comment suggested that "before the Office" be inserted after the word "conduct" in §10.23(b) (4), (5), and (6). This suggestion is not being adopted in view of the second sentence of §10.1.

A suggestion was received that "improperly" be inserted at the beginning of §10.23(c) (4) (iii). This suggestion has been adopted.

A suggestion was received that the word "patent" be inserted before "application" in §10.23(c) (7). This suggestion has been adopted.

A suggestion was received that §10.23(c) (15) be changed so that a trademark practitioner could present potentially scandalous subject matter in order to receive a determination on the merits of registrability. See e.g., *In re McGinley*, 660 F.2d 481, 211 USPQ 668 (CCPA 1981). Section 10.23(c) (15) has been changed to refer only "making a scandalous or indecent statement in a paper filed in the Office."

Several individuals suggested that it may be difficult to determine the identity of tunder §10.23(c) (8), particularly in corporate patent departments. The PTO will presume that practitioners know the identities of their clients and that information conveyed to the client is being conveyed in a manner acceptable to the client.

Section 10.23(c) (12) has been changed in response to comments which suggested that it would be difficult for practitioners to comply with §10.23(c) (12) on the one hand and §§10.24 and 10.131 on the other hand. The purpose of §10.23(c) (12) is to eliminate a frivolous complaint against practitioners. Accordingly, §10.23(c) (12) has been changed to define as misconduct "knowningly filing, or causing to be filed, a frivolous complaint alleging a violation by a practitioner of the Patent and Trademark Office Code of Professional Responsibility."

Several individuals criticized §10.24. The provisions of

§10.24 are derived from DR 1-103 of the Code of Professional Responsibility of the American Bar Association (1970)—the rule currently applicable to practitioners. See 37 CFR §§1.344 and 2.13. The PTO is not aware that the current rule causes any problems. Accordingly, the numerous suggestions to delete or amend §10.24 are not being adopted.

One comment was received which suggested that charging another person with trademark infringement and requesting that the person withdraw a pending application "might be . . . interpreted as a violation" of §10.31(a). The PTO disagrees. A reasonable interpretation of the rule does not justify the unreasonable construction by the commentator.

At the hearing, an individual discussed §10.32. The individual suggested that three "practices" should be sanctioned under any PTO Code of Professional Responsibility and it was suggested that all three practices might be prohibited by §10.32. *First,* the individual suggested that "the giving of moderately priced presents . . . to established clients on appropriate occasions—Christmas, weddings of their daughters" should not constitute a violation of §10.32. The PTO agrees. The giving of a gift to an "established client" on the occasions suggested is not a gift "to a person for recommending the practitioner's services." *Second,* the individual suggested that a practitioner should not be prohibited from "paying for ordinary client entertainment." The PTO agrees. Again the "client" is not "a person recommending the practitioner's services" in return for being entertained. *Third,* the individual argued that the rules should not preclude an "exchange of cases with foreign practitioners." An "exchange" was said to occur "[w]here a foreign patent practitioner in his country sends cases to an American patent or trademark practitioner to prosecute before the PTO, and you send the foreign firm cases to prosecute before the foreign patent office, on the more or less explicit basis that it's something in the nature of a trade." According to the individual, the "exchange" ordinarily takes place without knowledge of the practitioner's client. The individual expressed the opinion that "exchanges" without knowledge of the client presently occur routinely. The PTO believes that the suggested "exchange" may ethically take place *only* when the practitioner's clients are fully advised of the exchange. Three other witnesses at the hearing expressed the view—correctly the PTO believes—that client knowledge is essential to an ethical exchange of the type contemplated. No change in §10.32 is being made.

A suggestion was received that "in matters before the Office" be inserted after "professional employment" in §10.33. The suggestion is not being adopted in view of the second sentence of §10.1. Another comment suggested that Rule 7.3 of the Model Rules of Professional Conduct (1983) be adopted in place of §10.33. The suggestion is not being adopted. Section 10.33 is based partly on Rule 7.3, but contains the additional language "under circumstances evidencing undue influence, intimidation, or overreaching." Section 10.33 is designed to prohibit so-called "ambulance chasing." In *Ohralik* v. *Ohio State Bar Ass'n.*, 436 U.S. 447 (1978), the Supreme Court held that a state could lawfully regulate ambulance chasing. In its opinion, the Supreme Court said:

> We need not discuss or evaluate each of these interests in detail as appellant has conceded that the State has a legitimate and indeed "compelling" interest in preventing those aspects of solicitation that involve fraud, undue influence, intimidation, overreaching, and other forms of 'vexatious conduct.' We agree that protection of the public from these aspects of solicitation is a legitimate and important state interest.

436 U.S. at 462. The additional language appearing in §10.33 is designed to limit the application of §10.33 to those situations in which the PTO has a legitimate interest. See also 35 U.S.C. 32 and §10.31(a).

A suggestion was received that §10.35(b) should be deleted. According to the suggestion, "[r]egulation of the practitioner's business arrangements should be left to state regulation." While the PTO is in general agreement with the rationale suggested, there exist partnerships of agents which are not subject to regulation by any state. Moreover, the commentator has not suggested or shown that §10.35(b) is inconsistent with the policy of any state. Practitioners should not be free to hold themselves out as being associated with a partnership or other organizations when an association does not in fact exist.

One comment suggested that "in the locality" be deleted from §10.36(b)(3). This suggestion is being adopted, because "in the locality" has no particular significance in the practice of patent and trademark law. Clients of patent and trademark practitioners are not necessarily located where counsel are located. Moreover, the practice is national in scope.

An individual at the hearing suggested that the PTO should delete subparagraphs (1) and (2) from §10.37(a). This suggestion is not being adopted. The individual suggested that a client need not know that "employment" has been referred to another practitioner or to a foreign practitioner. The PTO disagrees and so did three other individuals who expressed a view at the hearing. Moreover, the PTO believes that when "farming out" occurs with the consent of a client, that the fee division should be proportional to the services rendered. Under § 10.37, "farming out" of work without knowledge and consent of a client will constitute a disciplinary rule violation.

One commentator suggested that §10.39 "may result in numerous claims to the effect that a practitioner brought a proceeding 'merely for the purpose of harassing or maliciously injuring another person.' " Section 10.39 continues existing policy (37 CFR §1.344 and DR 2-109 of the ABA Code (1970)). Under existing policy, the PTO has not experienced "numerous claims." Accordingly, there is no reason to expect such claims under §10.39.

A suggestion was received that the first sentence of §10.40(a) be changed to read: "A practitioner may withdraw from employment in a proceeding before the Office without permission from the Commissioner in those instances in which a substitute has been selected and is willing to serve." This suggestion is not being adopted. If "a substitute has been selected and is willing to serve," presumably with the consent of the client, a new power of attorney may be filed in the PTO. Another commentator suggested that §10.40 should not apply to corporate attorneys. This suggestion likewise is not being adopted. If a corporate atorney changes jobs, the attorney should withdraw from representing the "old" corporation *or* the old corporation should revoke any power of attorney.

One comment suggested that the PTO should be under a burden of deciding requests for permission to withdraw within thirty (30) days. This suggestion is not being adopted, but it is and will continue to be PTO policy to promptly decide requests for permission to withdraw.

One comment suggested that ", and may not withdraw in other matters," be deleted from §10.40(c). This suggestion has been adopted.

One comment asked whether a power of attorney given during prosecution of a patent application continues to be viable after the patent is issued. The answer is "yes." Communications received during reexamination proceedings are sent to the correspondence address established during prosecution of the application which matures into the patent being reexamined. See 37 CFR §1.525. Notices concerning maintenance fees likewise are mailed to the correspondence address. See 37 CFR §1.363, 49 F.R. 34725 (Aug. 31, 1984). The commentator also raised a question of who is the client when a case is filed on behalf of an individual, but the individual's assignee pays the practitioner's bills. Practitioners are expected to know the identities of their clients. If a practitioner is hired by a corporation and wishes to make that fact plain on the record of a patent application, the practitioner may file an assignment and a power of attorney signed by the assignee. If a dispute should then occur between the individual and the assignee, the record would be clear that the assignee is the client.

A comment suggested that §10.40(a) "would appear to be unreasonable" in view of the language "giving due notice to another practitioner." Such language does not appear in §10.40(a).

An oral comment was received by phone which questioned whether the use of para-legals or apprentices by a practitioner constitutes the unauthorized practice of law. If a para-legal or apprentice works under the direction of a practitioner and the practitioner does not allow the para-legal or apprentice to hold themselves out as a practitioner, there is no unauthorized practice of law problem within the meaning of §10.47.

One comment discussing §10.49 made the following statement:

> ". . . if the intent of this section is to prohibit a practitioner from forming a partnership with a lawyer who, while in good standing with his State bar, does not qualify to practice before the Office (either because he has not taken the patent examination or is not qualified to handle trademark matters), then it should be stricken."

As explained in the notice of proposed rulemaking (49 F.R. 33797, column 3), the PTO does not intend to prohibit formation of law firms by members of the Bar of any state.

One comment suggested that "in matters before the Office" should be inserted after "employment" in §10.62(a). This suggestion is not being adopted in view of the second sentence of §10.1.

Another comment suggested that §§10.62 and 10.63 be replaced with Rule 3.7(b) of the Model Rules of Professional Conduct of the ABA (1983). For reasons already discussed, the PTO is not adopting the Model Rules. The comment went on to suggest that practitioners would not be free testify concerning attorney diligence in patent interference cases. The PTO has made it plain twice that it disagrees. See the advance notice (49 F.R. 10016, column 3 (Mar. 16, 1984)) and the notice of proposed rulemaking (49 F.R. 33797, column 3, last paragraph (Aug. 24, 1984)).

A comment suggested that language in §§10.62 and 10.63 is not clear. Specifically, the commentator referred to "solely to an uncontested matter" or "solely to a matter of formality." This language occurs in the current rules and has not caused any known difficulty.

Two comments were received which suggested that §10.64(b) should permit practitioners to pay fees which rightfully should be paid by a practitioner. This suggestion is being adopted and the following sentence has been added to §10.64(b): "A practitioner may, however, advance any fee required to prevent or remedy an abandonment of a client's application by reason of an act or omission attributable to the practitioner and not to the client, whether or not the client is ultimately liable for such fee." One of the commentators supplied the following rationale with which the PTO agrees:

> It sometimes happens that payment of a fee is necessitated by some act or omission for which the practitioner and not the client is responsible. One example is a fee for an extension of time to respond to an Office Action (see 37 C.F.R. §1.17 and §1.136), where the delay has resulted from the practitioner's workload for other clients, or from the practitioner's absence from his or her office for purposes unrelated to the client's business. Another example is a petition fee for revival of an application unintentionally abandoned through some inadvertent oversight on the practitioner's part. In these circumstances, it would seem unjust to require the client to bear the cost of the fee.

One comment suggested that §10.65 should be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

Another comment suggested that §10.65(a) "may limit a practitioner serving on the board of directors of a client." The commentator went on to say that practitioners serving on boards of directors is a common practice. Inasmuch as the client consents to practitioner serving on the board, it is believed that §10.65 does not limit a practitioner as suggested by the commentator.

One comment was received which suggested that §10.66(d) be changed to exclude corporate patent departments. According to the comment, "why should an entire corporate patent department have to withdraw if one of its members has to withdraw for disciplinary reasons?" In situations where it would not be appropriate for an entire firm or department to withdraw, §10.66(d) permits the Commissioner or the Director to so order. See e.g., *Sunkist Growers, Inc.* v. *The Benjamin Ansehl Co.*, 221 USPQ 1077 (Comm'r.Pat. 1984). Another comment suggested that §10.66 should be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

One comment was received which suggested that §10.67 be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

A comment was received which suggested that §10.68(c) might be construed to preclude a practitioner from joining a law firm where attorneys who are not registered to practice before the PTO "are in control," i.e., are the "senior" partners. The definition of practitioner (see §10.1(r)) precludes such a construction, because any attorney in good standing in any State is a practitioner. Another comment suggested that §10.68 be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

One comment was made at the hearing which suggested that modifiers, such as "knowingly, willfully, intentionally," be inserted in §10.77. This suggestion is not being adopted. The PTO believes §10.77 states clearly the prohibited conduct.

A comment was received which suggested that §§10.77, 10.78, and 10.84 be amended to indicate that they refer only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

One comment suggested that the term "unwarranted" in §10.85(a) (2) is "too vague as to its limits." The PTO disagrees. Contrary to the suggestion by the commentator, it is believed that practitioners can readily determine whether they are advocating a position that is unwarranted under existing law.

A comment was received which suggested that §10.85(b) can place a difficult burden on patent counsel. In support of his position, the commentator gave two examples and commented on both examples as follows:

Example 1: A client engages a patent attorney in the preparation of a patent application, and the patent attorney goes through the usual routine of advising the client of statutory bars, duty to disclose, etc. The attorney prepares and files the application, and during the course of the prosecution, the client informs the attorney of some activities that occurred a couple of years before filing the application, which activities might constitute an offer for sale. The attorney advises that this must be disclosed to the Patent Examiner, but the applicant refuses to follow this course of action and discharges the patent attorney. The client then engages another attorney to complete the prosecution, without telling the new attorney of the potentially damaging prior art.

Comment: In accordance with my interpretation of §10.85(b), the first attorney would be required to disclose this situation to the Office, unless the term "prepetrated a fraud" as it appears in that rule does not include the deliberate failure to disclose relevant prior art. My concern is that this could make for some very poor relationships with the client who might not understand the attorney's duty of disclosure before the Office.

Example 2: A rather poor inventor has managed to

drum up enough money for the filing fee for a patent application and then proceeds to prepare and file his own patent application, without the assistance of a patent attorney. After a few months, the inventor obtains some financing from an investor, and the inventor and the investor consult the patent attorney to see if he would continue with the prosecution of the application. The attorney reviews the fact pattern and informs both the inventor and the investor that there is unquestionably some prior art, in the form of an earlier publication by the inventor, which must be disclosed before the Office. When the inventor and the investor find that the attorney intends to disclose this prior art as soon as he is engaged as their attorney, the inventor and the investor tell the attorney that they would rather engage the services of some other patent attorney, and that they will not tell the second attorney of the prior art.

Comment: As I would interpret §10.85 (b), the first patent attorney would be obliged to inform the Office of the relevant prior art. The first patent attorney would likely have the serial number and filing date of the application, and it would appear to me that the patent attorney would have to disclose not only the prior art, but also disclose the intent of the inventor and the investor not to disclose the same. This is pretty harsh treatment, and I can see where the inventor and the investor would have some very hard feelings against the patent attorney.

The PTO agrees that under the circumstances of Example 1, a "client . . . might not understand the attorney's duty of disclosure . . . " Likewise, the PTO can understand "where the inventor and the investor [in Example 2] would have some very hard feelings against the patent attorney." Nevertheless, the commentator has correctly noted in each case that the practitioner is required to advise the PTO. The practitioner's obligation under §10.85(b) has not been changed by the rules and is mandated by *Kingsland* v. *Dorsey*, 338 U.S. 318 (1949). See also Nahstoll, *The Lawyer's Allegiance: Priorities Regarding Confidentiality*, 41 Wash. & Lee L. Rev. 421 (1984).

A comment was received which suggested that §10.85 be amended to indicate that it pertains only to matters before the PTO. The suggestion is not being adopted in view of the second sentence of §10.1.

Two comments were received which suggested that §10.87(a) could be construed to prohibit a practitioner from recommending that a client meet with an opposing party for settlement discussions. Both comments suggested that §10.87(a) be amended to permit a practitioner to recommend that a client engage in settlement discussions directly with an opposing party. The suggestion is being adopted and the following sentence has been added to §10.87(a): "It is not improper, however, for a practitioner to encourage a client to meet with an opposing party for settlement discussions."

A suggestion was made that §10.87 be amended to indicate that it pertains only to matters before the PTO. The suggestion is not being adopted in view of the second sentence of §10.1.

One comment suggested that §10.89(c) (5) be "eliminated on the grounds of vagueness" because one cannot "be expected to comply with apparently unpublished customs of courtesy or practice." The suggestion is being adopted. Subparagraph (6) of §10.89(c) is being redesignated as subparagraph (5) and has also been changed to read: "Engage in undignified or discourteous conduct before the Office (see §1.3 of this Subchapter)." Subparagraph (7) has been redesignated as subparagraph (6).

Another comment discussing §10.89 asked "since when must counsel cite to the Examiner in *ex parte* proceedings cases known to be directly adverse to the position being advocated?" Counsel are expected to advise patent and trademark examiners of known controlling authority which is contrary to a position being advocated. It is important for counsel to do so in *ex parte* cases because there is no *advocate* taking a position contrary to the position being taken by an applicant. See also *Southern Pacific Transportation Co.* v. *Public Utilities Commission of the State of Calif.*, 716 F.2d 1285, 1291 (9th Cir. 1983).

A commentator contended that §10.89(a) "makes no sense" because a decision of the PTO may have been overruled by the Federal Circuit. Section 10.89(a) is limited to "a decision of the Office made in the course of a proceeding." Practitioners are expected to follow interlocutory orders entered in PTO proceedings. Obviously if such an order is ultimately overruled or reversed by a court, it no longer need be followed. The same commentator suggested that §10.89(c) (3) is not appropriate. Specifically, the commentator indicated that practitioners often rely on the specification of a patent application and prior art. The specification and prior art are evidence, not the "practitioner's personal knowledge."

One commentator suggested that §§10.92 and 10.93 be amended to indicate that they relate solely to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

A commentator at the hearing suggested that §10.93 be changed to permit practitioners to discuss procedural matters with interlocutory examiners or members of the Board of Patent Interferences or the Trademark Trial and Appeal Board. In view of Public Law 98–622, November 8, 1984, the Board of Patent Interferences will cease to exist on February 8, 1985. All patent interference cases will be transfered to the Board of Patent Appeals and Interferences and will be assigned to an examiner-in-chief. Practitioners may consult an examiner-in-chief orally upon adequate notice to opposing counsel. A telephone conference call may be arranged when opposing counsel desires to participate in the oral consultation. The same is true of the interlocutory examiners or members of the Trademark Trial and Appeal Board. Questions of a purely procedural nature may be asked. However, an examiner-in-chief or the interlocutory examiner or member of the Trademark Trial and Appeal Board may nevertheless decline to answer procedural questions without opposing counsel being present or involved in a conference call.

One commentator suggested that §§10.101, 10.102, 10.103, and 10.111 be amended to indicate that they refer only to proceedings in the PTO. The suggestion is not being adopted in view of the second sentence of §10.1.

One comment suggested that practitioners residing in the United States should be able to maintain trust funds in a bank in any State. This suggestion is being adopted and §10.112(a) has been changed to implement the suggestion. However, if a State bar requires funds to be kept in a bank within the State, a practitioner would be required to keep funds in a bank in the State in order to comply with State rules. Another comment suggested that §10.112(c)(2) is not practical. According to the commentator, "invention samples and invention disclosures and drawings usually are the client's property, but keeping them in a safe deposit box is totally impractical." The commentator overlooks that portion of §10.112(c)(2) which reads "in a safe deposit box or other place of safekeeping . . . ." A client may consent to a practitioner keeping invention samples, invention disclosures, and drawings in the practitioner's office. The practitioner, of course, should see to it that the office is maintained with appropriate security.

An individual testified at the hearing that §10.112 is not clear. According to the individual, "I think the rules should specify that if you get money up front from a client, whether it's called a retainer, pre-payment, or whatever . . . that money has to be put into a trust fund or a trust account . . . and that you can't take the money out and spend it until you have performed the services and sent a bill to the client that says X dollars has come out of your trust account in payment of Y services." The PTO believes that §10.112(b)(2) specifies "that you can't take the money out and spent it until you have performed the services" and that §10.112(c)(3) specifies that you must send "a bill to the client." Accordingly, no change to §10.112 is necessary.

One commentator testified at the hearing that the PTO rules do not address "those individuals who, due to a mental or physical defect, are not able to bring themselves in conformity with the rules of conduct . . . ." On the contrary, §10.130 specifies that any practitioner shown to be "incompetent" may be suspended or excluded. The commentator at the hearing referred to an individual "who has a drinking problem or one who is mentally incapable of representing people before the . . . Office." The statute (35 U.S.C. 32) and the rules address such an individual. As noted in the advance notice, the PTO has declined to adopt the suggestion appearing in Manson, *Helping Lawyers Who Need Help (But Won't Ask for It!)*, 25 Va. Bar News 27 (June 1977). See 49 F.R. 10017, column 1 (Mar. 16, 1984). If an individual is suspended due to a drinking problem, reinstatement (see §10.160) may be conditioned on a clear and convincing showing that the drinking problem has been overcome.

One individual testified at the hearing that a "statute of limitations" should be inserted in §10.131. This suggestion is not being adopted. As the individual noted during testimony, statues of limitations do not apply in disciplinary proceedings.

A suggestion was received that §10.132 be changed to expressly provide that:

> No disposition adverse to the respondent shall be recommended by the Director until the respondent shall have been afforded the opportunity to be heard.

This suggestion is not being adopted. Section 10.132(a) provides that, where necessary, the Director shall comply with 5 U.S.C. 558(c) prior to calling a meeting of the Committee on Discipline. The relevant portion of 5 U.S.C. 558(c) provides:

> Except in cases of willfulness or those in which public health, interest, or safety required otherwise, the withdrawal, suspension, revocation, or annulment of a license is lawful only if, before the institution of agency proceedings therefor, the license has been given;
>
> (1) notice by the agency in writing of the facts or conduct which may warrant the action; and
>
> (2) opportunity to demonstrate or achieve compliance with all lawful requirements.

Where appropriate, a notice under §588(c) will be issued prior to the time the Director takes a case to the Committee on Discipline. Any reply to the §558 (c) notice will be reviewed by the Director and the Committee on Discipline prior to deciding whether a complaint should be filed.

Another suggestion was received which indicated that §10.132(c) should be changed so that the "accused practitioner . . . [would] have the right to select an administrative law judge from a panel of such judges, such panel including the names of at least two law judges." This suggestion is not being adopted. No rationale was given in support of the suggestion and there is no known reason to permit a respondent to select the particular administrative law judge (ALJ) to be assigned to hear the practitioner's case.

Several changes have been made in §10.133 by the PTO which are not in response to any comment or suggestion. The language "§§10.132(b) and 10.134" in the first sentence of §10.133(b) has been changed to §10.134". This change was made because a reference to §10.132(b) is not necessary. The language "his or her resignation by filing" in the first sentence of §10.133(b) has also been deleted as unnecessary. The second sentence of paragraph (b) of §10.133 has been replaced by new paragraphs (c) and (d). New paragraph (c) specifies the content of an affidavit of resignation filed prior to the date set by the ALJ for a hearing. New paragraph (d) specifies the content of an affidavit of resignation filed on or after the date set by the ALJ for a hearing. Old paragraph (c) has been redesignated as new paragraph (e) and the language "paragraph (b)" therein has been changed to read "paragraphs (b) and (c)". Old paragraphs (d) and (e) have been redesignated as new paragraphs (f) and (g), respectively.

New paragraph (c) of §10.133 has been added to define the conditions under which a practitioner may resign prior to the date set by the ALJ for a hearing. Experience has shown that practitioners do not readily resign prior to hearing if they are required to admit the charges against them and/or are required to admit that they could not have been defended against the charges or the subject of an investigation. Paragraph (c) does not require a practitioner to admit the charges or any lack of defense at the time of resignation. Rather, under §10.133(c)(5), any admission is operative at the time of a request for reinstatement and only for the *limited* purpose of determining the request for reinstatement. By deferring the time when the practitioner makes the admissions, it is believed that settlements are more likely. Once a hearing begins, however, there is no reason to permit a resignation without admission of the facts and a lack of defense. The admissions of paragraph (c)(5) are relevant in determining whether reinstatement should be granted and whether sufficient time has passed between resignation and any application for reinstatement.

One comment was made at the hearing which suggested that "if, in fact there is a real stalemate in a settlement discussion, that there be some avenue so that there be, in essence, binding arbitration" on the part of the respondent and the Director. This suggestion is not being adopted. There is no reason to impose binding arbitration in disciplinary matters. While settlements are to be encouraged, if the parties (the respondent and the Director) cannot reach a mutually agreeable settlement, the proper recourse is to proceed with the disciplinary proceeding.

A suggestion was received that the second sentence of §10.138 be deleted. The suggestion is not being adopted. The second sentence of §10.138 provides that evidence obtained by a subpoena under 35 U.S.C. 24 will not be admitted unless prior approval was obtained from the ALJ to proceed under §24. This provision is necessary to retain control over the proceedings in the ALJ. Moreover, an order authorizing a party to proceed under §24 can be helpful to any district court which is required to determine whether an individual should be compelled to answer counsel's questions. Additional rationale in support of the PTO's decision not to adopt the suggestion appears in the advance notice (49 F.R. 10019, columns 1 and 2) and in the notice of proposed rulemaking (49 F.R. 33800, column 1).

Two individuals testified at the hearing concerning §10.144. Section 10.144 provides that hearings in disciplinary cases will not be open to the public. One individual suggested that hearings in disciplinary matters should be opened to the public. The other individual took the opposite position and supported §10.144 as proposed. The suggestion to open hearings to the public is not being adopted at this time. The PTO believes that a practitioner should not unnecessarily be exposed to charges of alleged wrongdoing until the practitioner is found to have violated the PTO Code of Professional Responsibility. Unnecessary and premature exposure could cause a practitioner's clients to find other counsel based on mere allegations. Additionally, the PTO is required to maintain information concerning patent applications in secrecy. 35 U.S.C. 122. In most disciplinary cases information concerning a patent application is revealed at any hearing. Accordingly, the PTO will not provide for public hearings. However, the PTO intends to further study the possibility of hearings open to the public (e.g., in a disciplinary proceeding involving only trademark matters) and may, in the future, propose to modify §10.144.

Numerous comments were received which suggested that the burden of proof set forth in §10.149 should be changed from "preponderance of evidence" to "clear and convincing evidence." As announced at the hearing, this suggestion is being adopted. The "clear and convincing evidence" standard brings §10.149 in conformance with §10.158(d)(1)(ii) which also requires proof by clear and convincing evidence.

The term "clear and convincing evidence" is not

susceptable to a precise definition. The PTO, therefore, deems it appropriate to set forth its views on what constitutes "clear and convincing evidence." "Clear and convincing evidence" falls somewhere between proof beyond a reasonable doubt and proof by a preponderance of evidence.

A reasonable doubt is a doubt based upon reason and common sense—the kind of doubt that would make a reasonable person hesitate to act. Proof beyond a reasonable doubt must, therefore, be proof of such a convincing character that a person would be willing to rely and act upon it unhesitatingly in the most important of his or her affairs. Devitt, *Federal Jury Practice and Instructions* §11.01 (2d ed. 1970).

To establish a fact by a preponderance of evidence means to prove that fact is more likely so than not so. A preponderance of evidence means such evidence as, when considered and compared with that opposed to it, has more convincing force, and produces in the mind of the trier of fact a belief that what is sought to be proved is more likely true than not true. Devitt, *supra* at §7.01.

Clear and convincing evidence is that measure or degree of proof which will produce in the mind of the trier of fact a firm belief or conviction as to an allegation sought to be established; it is more than a preponderance of evidence, but less than that required to establish guilt beyond a reasonable doubt. *Hobson* v. *Eaton*, 399 F.2d 781 (6th Cir. 1968). It does not mean clear and unequivocal." *Fred C. Walker Agency, Inc.* v. *Lucas*, 215 Va. 535, 540–541, 211 S.E.2d 88, 92 (1975).

Several comments were received which suggested that §10.150 be changed to make the Federal Rules of Evidence applicable to disciplinary proceedings. The suggestion is not being adopted. The PTO has explained, in both the advance notice (49 F.R. 10020, column 2) and the notice of proposed rulemaking (49 F.R. 338001, columns 1 and 2) why it cannot adopt the Federal Rules of Evidence in disciplinary cases. The "Federal Rules of Evidence . . . do not apply to administrative proceedings . . . ." Davis, *Administrative Law Treatise*, §14.01 (Supp. 1970). The controlling law is set out in 5 U.S.C. 556(d) which provides in part: "Any oral or documentary evidence may be received, but the agency as a matter of policy shall provide for the exclusion of irrelevant, immaterial, or unduly repetitious evidence. A sanction may not be imposed or rule or order issued except on consideration of the whole record or those parts thereof cited by a party and supported by and in accordance with the reliable, probative, and substantial evidence." It appears to be the concern of some of the comments that the Administrative Procedure Act does not articulate an appropriate standard of evidence and that hearsay may be admitted. Suffice it to say that many adjudications occur daily under the Administrative Procedure Act, including disciplinary proceedings. The following language appearing in an opinion of the Eleventh Circuit in *TRW-United Greenfield Division* v. *National Labor Relations Board*, 716 F.2d 1391, 1394 (11th Cir. 1983), may be helpful:

> At the hearing the ALJ refused to allow five additional employees to testify that other employees told them that such a statement had been made. TRW contends it was denied a full and fair hearing by the exclusion of this testimony. The general rule is that administrative tribunals are not bound by the strict rules of evidence governing jury trials. *Opp Cotton Mills, Inc.* v. *Administrator of Wage & Hour Div.*, 312 U.S. 126, 155, 61 S.Ct. 524, 537, 85 L.Ed. 624 (1971). Thus, the admission of testimony which would be deemed incompetent in judicial proceedings would not invalidate the administrative order. *Tagg Bros. & Moorhead* v. *United States*, 280 U.S. 420, 442, 50 S.Ct. 220, 225, 74 L.Ed. 524 (1930). But this assurance of a desirable flexibility in administrative procedure does not go so far as to justify orders without a basis in evidence having rational probative force. Mere uncorroborated hearsay or rumor does not constitute substantial evidence. *Consolidated Edison Co.* v. *N.L.R.B.*, 305 U.S. 197, 230, 59 S.Ct. 206, 217, 83 L.Ed. 126 (1938). Therefore, the hearsay testimony of other employees would not have amounted to substantial evidence sufficient to support a finding for the company. We find that TRW was not denied a full and fair hearing by the judge's refusal to admit hearsay testimony.

See also *Steadman* v. *Securities and Exchange Commission*, 450 U.S. 91, 98 n. 17 (1981); *Richardson* v. *Perales*, 402 U.S. 389, 410–411 (1971); *Brown* v. *Gamage*, 377 F.2d 154, 158 (D.C.Cir.), *cert. denied*, 389 U.S. 858 (1967); Annotation, *Hearsay Evidence In Proceedings Before Federal Administrative Agencies*, 6 ALR Fed 76 (1971); and Davis, *Hearsay in Administrative Proceedings*, 32 Geo. Wash. L. Rev. 689 (1964).

A suggestion was received that §10.151 be changed to make the deposition rules of the Federal Rules of Civil Procedure applicable to disciplinary proceedings. This suggestion is not being adopted. The discovery provisions of the Federal Rules of Civil Procedure are not being adopted by the PTO in disciplinary cases. Except for discovery which the parties agree to make voluntarily, all discovery under these rules will require the prior permission of the ALJ. This prior permission is designed to insure that the ALJ retains control over the proceeding. By requiring prior approval of the ALJ to take a deposition, the rules insure that the deposition will relate to evidence the ALJ deems to be relevant and will afford the ALJ the option of determining whether he or she wishes to observe the witness.

Several comments were received which suggested that §10.152 be changed to permit more discovery. Some commentators urged adoption of the discovery provisions of the Federal Rules of Civil Procedure relating to requests for admissions, interrogatories, and requests for production of documents. Other commentators felt that the discovery proposed in the notice of proposed rulemaking was not sufficient and that more discovery should be authorized. These latter commentators, however, did not urge adoption of the discovery provisions of the Federal Rules of Civil Procedure. As one commentator noted:

> Disciplinary proceedings are not in the nature of civil actions and full discovery within the scope of the Federal Rules of Civil Procedure is probably not needed or desirable.

The PTO agrees that more discovery is appropriate than would have been authorized under §10.152 as proposed. The PTO does not agree, however, that discovery should be commensurate in scope with the discovery provisions of the Federal Rules of Civil Procedure.

One commentator at the hearing who urged adoption of the discovery provisions of the Federal Rules of Civil Procedure, correctly recognized the existence of "concerns of the Patent [and Trademark] Office regarding what are alleged to be general discovery abuses." There is ample basis for the PTO's concern. See e.g., Pollack, *Discovery—Its Abuse and Correction*, 80 F.R.D. 219 (1979) (reproducing remarks made by Judge Pollack at the Fifth Circuit Judicial Conference on April 26, 1978 at New Orleans). The same commentator at the hearing went on to note, however, that if the ALJ "gets on top of a case and monitors a case very actively, then no discovery abuses will occur, and if they do, they will be dealt with swiftly and properly."

Advocates of discovery "reform" seemingly rely on two principles which are claimed to be the cure-all for discovery abuse: (1) active control by the judge and (2) sanctions. See e.g. *Second Report of the Special Committee for the Study of Discovery Abuse*, 92 F.R.D. 137 (1980). The PTO is not in a position to impose the most effective sanction—costs. However, the PTO can invest the ALJ with control over discovery. It is because the PTO can invest the ALJ with control over discovery that the suggestion for more discovery is being adopted. Section 10.152 has been changed to permit discovery which the PTO believes will be effective. The scope of the discovery, however, will not be commensurate in scope with the Federal Rules of Civil Procedure.

Paragraph (a) of §10.152 will permit *limited* discovery *after* an answer is filed. Discovery is not authorized prior to the filing of an answer. A party seeking discovery will have to make out a clear and convincing case to the ALJ that discovery is necessary *and* relevant. If discovery is authorized, the ALJ may set conditions he or she deems appropriate to accomplish the discovery. For example, the ALJ may set the place and time for inspection of documents which are required to be produced or the ALJ can order a party to mail copies of the documents to the other party. Under paragraph (a) of §10.152, discovery is limited to a *reasonable* number of requests for admissions, interrogatories, or requests for production of documents and things. Consideration was given to setting numerical maximums for requests for admission, interrogatories and requests for production of documents and things. See e.g., Local Rule 11.1 of the U.S. District Court for the Eastern District of Virginia. However, numerical maximums are not presently specified. Should discovery become a problem, the PTO will give further consideration to limiting the number of discovery requests which a party may file.

Paragraph (b) of §10.152 specified certain matters which *cannot* be discovered. Matter which will be used by another party solely for impeachment or cross-examination cannot be discovered. Documents which will be used as part of the Director's case-in-chief or the respondent's case-in-rebuttal or affirmative defenses are subject to discovery. Patent applications not available to a respondent under 35 U.S.C. §122 are not subject to discovery. Matter relating to disciplinary proceedings commenced prior to the effective date of these rules is not available. For the most part, the reasons for a particular length of suspension or disbarment have not been stated in the past. Accordingly, disciplinary proceedings commenced prior to these rules are not particularly relevant. See *Poole* v. *United States*, 54 A.F.T.R. 2d (P-H) 84–5536 (D.D.C. June 29, 1984). Prior disciplinary proceedings which resulted in public discipline being imposed will continue to be available in the Office of the Director of Enrollment and Discipline. Respondents will continue to be free to inspect the files of those proceedings. Matters relating to experts, except as may be required by the ALJ under §10.152(e), likewise are not subject to discovery. Privileged matter and attorney work product are excluded from matter which can be discovered.

Paragraph (c) sets forth some factors the ALJ can consider in determining whether to authorize discovery or to limit discovery which is authorized. The factors include delay (which is a major consideration in disciplinary matters), burden on the party required to produce discovery, availability of the discovery sought to the public (in which case, discovery may not be necessary), the extent to which the matter sought to be discovered is equally available to both parties, and the extent to which discovery is available from another source.

Paragraph (d) of §10.152 requires a party desiring discovery to file a motion which explains, in detail, how each request is relevant to an issue raised in the complaint or the answer.

Paragraph (e) of §10.152 sets out matter which the ALJ can require a party to produce in a pre-hearing statement. Subparagraph (4) states the matter the ALJ can require disclosed related to experts.

The PTO has every reason to believe that the discovery authorized by §10.152 will be useful and that sufficient authority has been given to the ALJ to effectively control discovery and prevent abuses. The PTO intends to monitor discovery closely in the future and will consider amending these rules if abuses occur.

One comment suggested that §10.154(b) be modified by adding "any extenuating circumstances" as a matter to be considered in imposing a penalty. This suggestion is being adopted. Another comment suggested that §10.154 should address "probation." This suggestion is not being adopted. Nevertheless, the PTO has authority to place a practitioner on probation for all or a portion of any suspension and to revoke the probation upon a showing of a violation. See *In re Dula*, 1030 *Official Gazette* 20 (May 17, 1983).

One comment suggested that §10.155 be modified to specify that the Director should serve a copy of any appeal "on the respondent or on the attorney for respondent." This suggestion is not being adopted. However, in view of the suggestion the language "on the respondent" (both occurrences) in §10.155(a) is being deleted. Section 10.142(a) specifies how service is made on a respondent who is represented by an attorney.

A suggestion was received that §10.157 be modified to provide that a stay would be entered in every case where a respondent seeks judicial review of a decision of the Commissioner. This suggestion was rejected at the time the notice of proposed rulemaking was published (49 F.R. 33802) and is not being adopted. There are cases where a stay is not appropriate, e.g., when the disbarred practitioner is incarcerated. There are other times when a stay may be appropriate. Accordingly, stays will be granted in the discretion of the Commissioner.

Several comments were received discussing §10.158. Some commentators suggested that §10.158 was "too lenient" and another suggested that it was "too hard" on suspended and excluded practitioners. Section 10.158 is designed to advise suspended practitioners as to what they can and cannot do during any period of suspension. The PTO believes that §10.158 strikes a reasonable balance in a difficult area. See the discussion concerning §10.158 in the advance notice (49 F.R. 10021, columns 2 and 3). One comment suggested that §10.158 should be made applicable to corporations. This suggestion is being adopted by appropriate changes in §10.158(c) to refer to client-employers. Another comment suggested that §10.158(b)(1) and (2) be changed to refer to matters before the PTO. This suggestion is also being adopted.

An oral comment was received asking whether the Director could conduct an investigation in connection with a determination under §10.158(d). The Director may conduct whatever investigation is warranted to determine whether a suspended or excluded practitioner seeking reinstatement has complied with regulations relating to suspended and excluded practitioners.

A comment was received regarding §10.159(a) which suggested that the Director notify the American Bar Association National Discipline Data Bank when a practitioner is suspended or excluded. This suggestion is not being adopted as such. However, §10.159(a) has been changed to authorize the Director to notify "any appropriate bar association." The PTO is not inclined to mention any particular bar association by name in the rules. It will be the practice of the PTO to notify the National Discipline Data Bank, among others, when a practitioner is disciplined. Another comment suggested that the entire file of a disciplinary proceeding should not be open to the public when only some, but not all, charges are sustained. This suggestion is not being adopted. In most disciplinary matters, it would be highly inconvenient to segregate the relevant from the irrelevant. Moreover, once discipline is imposed, the principal rationale for keeping the file secret no longer exists. The disciplined practitioner will suffer whatever public embarassment results from discipline apart from whether part or all of the file is open to the public.

With respect to §10.160, one commentator suggested that the burden on the suspended or excluded practitioner for reinstatment be stated in the rules. This suggestion is being adopted and a "clear and convincing showing" requirement has been added to §10.160(c). Section 10.149 sets out the burden on the Director for proof of allegations in the complaint and upon the respondent for proving affirmative defenses. The showing required by §10.158(d)(1) is by "clear and convincing evidence." One commentator suggested that the 5-year period of §10.160(b) should be changed to a 3-year period. This suggestion is not being adopted. According to the commentator, the PTO has failed to state why a 5-year period was proposed. The commentator believes a 3-year period is more appropriate, although no reason is given in support of the commentator's belief. The PTO, after

considering the matter, has concluded that some period must be specified and there is no reason to change the 5-year period proposed. A commentator suggested that a practitioner suspended for less than six months should "automatically" be reinstated. This suggestion is not being adopted, because the Director, as a condition to any reinstatement, must find that the suspended practitioner complied with §10.158. Another commentator questioned whether the rules should provide for application for reinstatement during a period of probation. The PTO believes the rules need not make provision for application for reinstatement during probation. For example, if a practitioner is suspended for a period of three years and it is ordered that the practitioner be actually suspended for at least one year *and* that the last two years the practitioner be placed on probation, the practitioner would be able to apply for reinstatement after serving one year of the three year suspension.

The PTO disagrees with the following comment concerning§10.161(b). "This clause is ex post facto legislation as it seeks retroactively an increase of penalties regarding conduct which occurred prior to the legislation." No legislation is involved. Section 10.161(b) does not "increase penalties."

Table 1
Principal Source of Sections 10.2 through 10.19

Sec.	
10.1 (preamble)	35 USC 31; *Sperry* v. *Florida*, 373 U.S. 379, 402 (1963)
10.1	35 USC 25; 28 USC 1746
10.1(c)	5 USC 500(b)
10.1(q)	1 USC 1
10.1(aa)	35 USC 100(c)
10.2(a)	New
10.2(b) (1)	New, but see 37 CFR 1.341(i) (1983)
10.2(b) (2)	New, but see 37 CFR 1.348(a) (1983)
10.2(c)	New, but see 37 CFR 1.341(i) (1983)
10.3	37 CFR 1.341(i) (1983)
10.4(a)	New
10.4(b)	New, but see 37 CFR 1.348(a) (1983)
10.4(c)	New
10.5	37 CFR 1.341 (1983)
10.6(a)	37 CFR 1.341(a) (1983)
10.6(b)	37 CFR 1.341(b) (1983)
10.6(c)	37 CFR 1.341(e) (1983)
10.6(d)	37 CFR 1.341(f) (1983)
10.6(e)	37 CFR 1.341(g) (1983)
10.7(a), (b)	37 CFR 1.341(c) (1983)
10.7(c)	New
10.8	37 CFR 1.341(h) (1983)
10.9(a)	37 CFR 1.342 (1983)
10.9(b)	New
10.10	37 CFR 1.343 (1983)
10.11	37 CFR 1.347 (1983)
10.12	[reserved]
10.13	[reserved]
10.14	5 USC 500(b) and 37 CFR 2.12 (1983)
10.15	35 USC 32; 5 USC 500(d) (2); 37 CFR 1.343 (1983); and 37 CFR 2.12(f) (1983)
10.16	[reserved]
10.17	[reserved]
10.18(a)	37 CFR 1.346 (1983) and 37 CFR 2.15 (1983), see also Rule 11, FRCP
10.18(b)	35 USC 32 & Rule 11, FRCP
10.19	[reserved]

Table 2
Principle Source of Sections of 10.20 through 10.112, the PTO Code of Professional Responsibility

Abbreviations:
FRCP means Federal Rules of Civil Procedure
MCPR means Model Code of Professional Responsibility of the ABA (1980)
MRPC means Model Rules of Professional Conduct of the ABA (1983)
VCPR means the Virginia Code of Professional Responsibility (1984)

Sec.	
10.20	Preamble to MCPR (1980)
10.21	MCPR Canon 1 (1980)
10.22	MCPR DR 1–101 (1980)
10.23(a)	35 U.S.C. 32
10.23(b) (1)	35 U.S.C. 32 and MCPR DR 1–102(A) (1) (1980)
10.23(b) (2)–(6)	MCPR DR 1–102(A) (2)–(6) (1980)
10.23(c) (1)–(14)	PTO created
10.23(c) (15)	Rule 11, FRCP
10.23(c) (16)–(18)	PTO created
10.23(d)	*U.S.* v. *Beecroft*, 608 F.2d 753 (9th Cir. 1979)
10.24	MCPR 1–103 (1980)
10.25 through 10.29	(reserved)
10.30	MCPR Canon 2 (1980)
10.31(a)	35 U.S.C. 32
10.31(b)	5 U.S.C. 501
10.31(c)	37 CFR 1.345(c) (1983)
10.31(d)	Newly created
10.32	MRPC Rule 7.2 (1983)
10.33	MRPC Rule 7.3 (1983)
10.34	MRPC Rule 7.4 (1983)
10.35(a)	5 U.S.C. 501 and MRPC Rule 7.5 (1983)
10.35(b)	MRPC Rule 7.5 (1983)
10.36	MCPR DR 2–106 (1980)
10.37	MCPR DR 2–107 (1980)
10.38	MCPR DR 2–108 (1980)
10.39	MCPR DR 2–109 (1980)
10.40	MCPR DR 2–110 (1980)
10.41 through 10.45	(reserved)
10.46	MCPR Canon 3 (1980)
10.47(a), (c)	MCPR DR 3–101 (1980)
10.47(b)	New (but see e.g., *Crawford* v. *State Bar of California*, 7 Cal. Rptr. 746, 355 P.2d 490 (Cal. 1960))
10.48	MCPR DR 3–102 (1980)
10.49	MCPR DR 3–103 (1980)
10.50 through 10.55	(reserved)
10.56	MCPR Canon 4 (1980)
10.57	MCPR DR 4–101 (1980)
10.58 through 10.60	(reserved)
10.61	MCPR Canon 5 (1980)
10.62	MCPR DR 5–101 (1980)
10.63	MCPR DR 5–102 (1980)
10.64	MCPR DR 5–103 (1980)
10.65	MCPR DR 5–104 (1980)
10.66	MCPR DR 5–105 (1980)
10.67	MCPR DR 5–106 (1980)
10.68	MCPR DR 5–107 (1980)
10.69 through 10.75	(reserved)
10.76	MCPR Canon 6 (1980)
10.77	MCPR DR 6–101 (1980)
10.78	MCPR DR 6–102 (1980)
10.79 through 10.82	(reserved)
10.83	MCPR Canon 7 (1980)
10.84	MCPR DR 7–101 (1980)
10.85	MCPR DR 7–102 (1980)
10.86	(reserved)
10.87	MCPR DR 7–104 (1980)
10.88	MCPR DR 7–105 (1980)
10.89	MCPR DR 7–106 (1980)
10.90	(reserved)
10.91	(reserved)
10.92	MCPR DR 7–109 (1980)
10.93	VCPR DR 7–109 (1984)
10.94 through 10.99	(reserved)
10.100	MCPR Canon 8 (1980)
10.101(a)	MCPR DR 8–101 (1980)
10.101(b)	37 CFR 1.341(f) (1983) and 41 Cp. Att'y Gen. 21 (1949), *reprinted in* 1949 Dec. Comm'r Pat. 1
10.102	MCPR DR 8–102 (1980)
10.103	MCPR DR 8–103 (1980)
10.104 through 10.109	(reserved)
10.110	MCPR Canon 9 (1980)
10.111	MCPR DR 9–101 (1980)
10.112	MCPR DR 9–102 (1980)

Table 3
Principal Source of Sections 10.130 through 10.161

Section	*Source*
10.130	35 U.S.C. 32
10.131(a)	New, but see 37 CFR 1.348(a)
10.131(b)	MCPR DR 1–103 (1980)
10.131(c)	New
10.132(a), (c)	New
10.132(b)	New, but see 37 CFR 1.348(b) (1983)
10.133	New
10.134	37 CFR 1.348(b) (1983)
10.135(a) (1)	New
10.135(a) (2)	37 CFR 1.348(b) (1983)
10.135(a) (3)	New
10.135(b)	New
10.135(c)	New
10.135(d)	5 USC 500(f)
10.136(a)	37 CFR 1.348(c) (1983)
10.136(b)	New
10.136(c)	37 CFR 1.348(c) (1983)
10.136(d)	37 CFR 1.348(c) (1983)
10.136(e)	New
10.137	37 CFR 1.348(c) (1983)
10.138	New
10.139(a)	5 USC 3105
10.139(b)	5 USC 556(c)
10.139(c)	New
10.139(d)	New
10.139(e)	New
10.140(a)	5 USC 500(b)
10.140(b)	New
10.141	New
10.142	New
10.143	New
10.144	New
10.145	New
10.146–10.148	[reserved]
10.149	New
10.150(a)	5 USC 556(d)
10.150(b)	37 CFR 1.348 (d) (3) (1983)
10.150(c)	New
10.150(d)	New
10.150(e)	New
10.151	37 CFR 1.348(d) (3) (1983)
10.152	New, see *Silverman* v. *CFTC*, 549 F.2d 28 (7th Cir. 1977)
10.153	New, but see 5 USC 557(c)
10.154	See 5 USC 557(b) and 35 USC 32
10.155	New
10.156	New
10.157	35 USC 32, Local Rule 1–26 (D.D.C.)
10.158	New
10.159	New
10.160	New
10.161	New
10.162–10.169	[reserved]
10.170	New, but see 37 CFR 1.183

Other Considerations: The rules will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rules are in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354) and Executive Order 12291.

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the rules will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). The rules regulate the conduct of attorneys and agents who represent individuals and juristic entities before the Patent and Trademark Office and would not be expected to result in an increase of fees charged by attorneys and agents to entities, including small entities.

The Patent and Trademark Office has determined that the rules are not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The information reporting requirements contained in the rules have been approved by the Office of Management and Budget, OMB Control No. 0651–0012 and OMB Control No. 0651–0017.

List of Subjects in 37 CFR Parts 1, 2 and 10.

Administrative practice and procedure, Authority delegations, Conflict of interests, Courts, Inventions and patents, Trademarks, Lawyers.

For the reasons given in the preamble and under the authority granted to the Commissioner of Patents and Trademarks by 5 U.S.C. 500; 15 U.S.C. 1123; and 35 U.S.C. 6, 31, 32, and 41. Parts 1, 2, and 10 of Title 37 of the Code of Federal Regulations are amended as set forth below:

Part 1—Rules of Practice in Patent Cases

1. Section 1.8 is amended by adding to paragraph (a) (12) a new subparagraph (xiii) to read as follows:

§1.8 Certificate of mailing.

(a) * * *

(2) * * *

(xiii) Papers filed in connection with a disciplinary proceeding under Part 10 of this Subchapter.

2. Section 1.21 is amended by adding to paragraph (a) two new subparagraphs (5) and (6) to read as follows:

§1.21 Miscellaneous fees and charges.

(a) * * *

(5) For review of a decision of the Director of Enrollment and Discipline under §10.2(c) 60.00

(6) For requesting regrading of an examination under §10.7(c) 60.00

* * * * *

3. Section 1.31 is revised to read as follows:

§1.31 Applicants may be represented by a registered attorney or agent.

An applicant for patent may file and prosecute his or her own case, or he or she may be represented by a registered attorney, registered agent, or other individual authorized to practice before the Patent and Trademark Office in patent cases. See §§10.6 and 10.9 of this Subchapter. The Patent and Trademark Office cannot aid in the selection of a registered attorney or agent.

4. Section 1.33 is amended by removing from paragraph (c) "1.341 and 1.347" and inserting in its place "10.5 and 10.11".

5. Section 1.34 is amended by revising paragraph (a) as follows:

§1.34 Recognition for representation.

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a patent case, his or her personal appearance or signature shall constitute a representation to the Patent and Trademark Office that under the provisions of this Subchapter and the law, he or she is authorized to represent the particular party in whose behalf he or she acts. In filing such a paper, the registered attorney or agent should specify his or her registration number with his or her signature. Further proof of authority to act in a representative capacity may be required.

* * * * *

6. Section 1.56 is amended by removing from paragraphs (f) and (h) "1.346" and inserting in its place "10.18".

7. The center heading preceding §1.341 is removed.

8. Sections 1.341 through 1.348 are removed.

9. Section 1.455 is amended by removing from paragraph (a) "1.341" and inserting in its place "10.10".

Part 2—Rules of Practice in Trademark Cases

10. Section 2.11 is revised to read as follows:

§2.11 Applicants may be represented by an attorney.

The owner of a trademark may file and prosecute his or her own application for registration of such trademark, or he or she may be represented by an attorney or other individual authorized to practice in trademark cases under §10.14 of this Subchapter. The Patent and Trademark Office cannot aid in the selection of an attorney or other representative.

11. Sections 2.12 through 2.16 are removed.

12. Section 2.17 is amended by revising paragraph (a) as follows:

§2.17 Recognition for representation.

(a) When an attorney as defined in §10.1(c) of this Subchapter acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a trademark case, his or her personal appearance or signature shall constitute a representation to the Patent and Trademark Office that, under the provisions of §10.14 and the law he or she is authorized to represent the particular party in whose behalf he or she acts. Further proof of authority to act in a representative capacity may be required.

* * * * *

13. Section 2.19 is revised to read as follows:

§2.19 Revocation of power of attorney or of other authorization to represent, withdrawal.

(a) Authority to represent an applicant or a party to a proceeding may be revoked at any stage in the proceedings of a case upon notification to the Commissioner; and when it is so revoked, the Office will communicate directly with the applicant or party to the proceeding or with such other qualified person as may be authorized. The Patent and Trademark Office will notify the person affected of the revocation of his or her authorization.

(b) An individual authorized to represent an applicant or party in a trademark case may withdraw upon application to and approval by the Commissioner.

14. The following Part 10 is added:

Part 10–Representation of others before the Patent and Trademark Office

Sec.

10.1 Definitions
10.2 Director of Enrollment and Discipline
10.3 Committee on Enrollment
10.4 Committee on Discipline

Individuals Entitled to Practice Before the Patent and Trademark Office

10.5 Register of attorneys and agents in patent cases
10.6 Registration of attorneys and agents
10.7 Requirements for registration
10.8 Oath and registration fee
10.9 Limited recognition in patent cases
10.10 Individuals not registered or recognized to practice in patent cases
10.11 Removing names from the register
10.12–10.13 [reserved]
10.14 Individuals who may practice before the Office in trademark and other non-patent cases
10.15 Refusal to recognize a practitioner
10.16–10.17 [reserved]
10.18 Signature and certificate of practitioner
10.19 [reserved]

Patent and Trademark Office Code of Professional Responsibility

10.20 Canons and Disciplinary Rules
10.21 Canon 1
10.22 Maintaining integrity and competence of the legal profession
10.23 Misconduct
10.24 Disclosure of information to authorities
10.25–10.29 [reserved]
10.30 Canon 2
10.31 Communications concerning a practitioner's services
10.32 Advertising
10.33 Direct contact with prospective clients
10.34 Communication of fields of practice
10.35 Firm names and letterheads
10.36 Fees for legal services
10.37 Division of fees among practitioners
10.38 Agreements restricting the practice of a practitioner
10.39 Acceptance of employment
10.40 Withdrawal from employment
10.41–10.45 [reserved]
10.46 Canon 3
10.47 Aiding unauthorized practice of law
10.48 Sharing legal fees
10.49 Forming a partnership with a non-practitioner
10.50–10.55 [reserved]
10.56 Canon 4
10.57 Preservation of confidences and secrets of a client
10.58–10.60 [reserved]
10.61 Canon 5
10.62 Refusing employment when the interest of the practitioner may impair the practitioner's independent professional judgment
10.63 Withdrawal when the practitioner becomes a witness
10.64 Avoiding acquisition of interest in litigation or proceeding before the Office
10.65 Limiting business relations with a client
10.66 Refusing to accept or continue employment if the interests of another client may impair the independent professional judgment of the practitioner
10.67 Settling similar claims of clients

10.68 Avoiding influence by others than the client
10.69–10.75 [reserved]
10.76 Canon 6
10.77 Failing to act competently
10.78 Limiting liability to client
10.79–10.82 [reserved]
10.83 Canon 7
10.84 Representing a client zealously
10.85 Representing a client within the bounds of the law
10.86 [reserved]
10.87 Communicating with one of adverse interest
10.88 Threatening criminal prosecution
10.89 Conduct in proceedings
10.90–10.91 [reserved]
10.92 Contact with witnesses
10.93 Contact with officials
10.94–10.99 [reserved]
10.100 Canon 8
10.101 Action as a public official
10.102 Statements concerning officials
10.103 Practitioner candidate for judicial office
10.104–10.109 [reserved]
10.110 Canon 9
10.111 Avoiding even the appearance of impropriety
10.112 Preserving identity of funds and property of client
10.113–10.129 [reserved]

Investigations and Disciplinary Procedures

10.130 Reprimand, suspension or exclusion
10.131 Investigations
10.132 Initiating a disciplinary proceeding; reference to an administrative law judge
10.133 Conference between Director and practitioner; resignation
10.134 Complaint
10.135 Service of complaint
10.136 Answer to complaint
10.137 Supplemental complaint
10.138 Contested case
10.139 Administrative law judge; appointment; responsibilities; review of interlocutory orders; stays
10.140 Representative for Director or respondent
10.141 Filing of papers
10.142 Service of papers
10.143 Motions
10.144 Hearings
10.145 Proof; variance; amendment of pleadings
10.146–10.148 [reserved]
10.149 Burden of proof
10.150 Evidence
10.151 Depositions
10.152 Discovery
10.153 Proposed findings and conclusions; post-hearing memorandum
10.154 Initial decisions of administrative law judge
10.155 Appeal to the Commissioner
10.156 Decision of the Commissioner
10.157 Review of Commissioner's final decision
10.158 Suspended or excluded practitioner
10.159 Notice of suspension or exclusion
10.160 Petition for reinstatement
10.161 Savings clause
10.162–10.169 [reserved]
10.170 Suspension of rules

Authority: 5 U.S.C. 500: 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41

Part 10—Representation of others before the Patent and Trademark Office

§10.1 Definitions.

This part governs solely the practice of patent, trademark, and other law before the Patent and Trademark Office. Nothing in this part shall be construed to preempt the authority of each State to regulate the practice of law, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives. Unless otherwise clear from the context, the following definitions apply to this part:

(a) "Affidavit" means affidavit, declaration under 35 U.S.C. 25 (see §1.68 and §2.20 of this Subchapter), or statutory declaration under 28 U.S.C. 1746.

(b) "Application" includes an application for a design, plant, or utility patent, an application to reissue any patent, and an application to register a trademark.

(c) "Attorney" or "lawyer" means an individual who is a member in good standing of the bar of any United States court or the highest court of any State. A "non-lawyer" is a person who is not an attorney or lawyer.

(d) "Canon" is defined in §10.20(a).

(e) "Confidence" is defined in §10.57(a).

(f) "Differing interests" include every interest that may adversely affect either the judgment or the loyalty of a practitioner to a client, whether it be a conflicting, inconsistent, diverse, or other interest.

(g) "Director" means the Director of Enrollment and Discipline.

(h) "Disciplinary Rule" is defined in §10.20(b).

(i) "Employee of a tribunal" includes all employees of courts, the Office, and other adjudicatory bodies.

(j) "Giving information" within the meaning of §10.23(c)(2) includes making (1) a written statement or representation or (2) an oral statement or representation.

(k) "Law firm" includes a professional legal corporation or a partnership.

(l) "Legal counsel" means practitioner.

(m) "Legal profession" includes the individuals who are lawfully engaged in practice of patent, trademark, and other law before the Office.

(n) "Legal service" means any legal service which may lawfully be performed by a practitioner before the Office.

(o) "Legal System" includes the Office and courts and adjudicatory bodies which review matters on which the Office has acted.

(p) "Office" means Patent and Trademark Office.

(q) "Person" includes a corporation, an association, a trust, a partnership, and any other organization or legal entity.

(r) "Practitioner" means (1) an attorney or agent registered to practice before the Office in patent cases or (2) an individual authorized under 5 U.S.C. 500(b) or otherwise as provided by this Subchapter, to practice before the Office in trademark cases or other non-patent cases. A "suspended or excluded practitioner" is a practitioner who is suspended or excluded under §10.156. A "non-practitioner" is an individual who is not a practitioner.

(s) A "proceeding before the Office" includes an application, a reexamination, a protest, a public use proceeding, a patent interference, an *inter partes* trademark proceeding, or any other proceeding which is pending before the Office.

(t) "Professional legal corporation" means a corporation authorized by law to practice law for profit.

(u) "Registration" means registration to practice before the Office in patent cases.

(v) "Respondent" is defined in §10.134(a)(1).

(w) "Secret" is defined in §10.57(a).

(x) "Solicit" is defined in §10.33.

(y) "State" includes the District of Columbia, Puerto Rico, and other federal territories and possessions.

(z) "Tribunal" includes courts, the Office, and other adjudicatory bodies.

(aa) "United States" means the United States of America, its territories and possessions.

§10.2 Director of Enrollment and Discipline.

(a) *Appointment.* The Commissioner shall appoint a Director of Enrollment and Discipline. In the event of the absence of the Director or a vacancy in the office of the Director, the Commissioner may designate an employee of the Office to serve as acting Director of Enrollment and Discipline. The Director and any acting Director shall be an active member in good standing of the bar of a State.

(b) *Duties.* The Director shall:

(1) Receive and act upon applications for registration, prepare and grade the examination provided for in §10.7(b), maintain the register provided for in §10.5, and perform such other duties in connection with enrollment and recognition of attorneys and agents as may be necessary.

(2) Conduct investigations into possible violations by practitioners of Disciplinary Rules, with the consent of the Committee on Discipline initiate disciplinary proceedings under §10.132(b), and perform such other duties in connection with investigations and disciplinary proceedings as may be necessary.

(c) *Review of Director's decision.* Any final decision of the Director refusing to register an individual under §10.6, recognize an individual under §§10.9 or 10.14(c), or reinstate a suspended or excluded petitioner under §10.160, may be reviewed by petition to the Commissioner upon payment of the fee set forth in §1.21(a)(5). A petition filed more than 30 days after the date of the decision of the Director may be dismissed as untimely. Any petition shall contain (1) a statement of the facts involved and the points to be reviewed and (2) the action requested. Briefs or memoranda, if any, in support of the petition shall accompany or be embodied therein. The petition will be decided on the basis of the record made before the Director and no new evidence will be considered by the Commissioner in deciding the petition. Copies of documents already of record before the Director shall not be submitted with the petition. An oral hearing on the petition will not be granted except when considered necessary by the Commissioner.

(OMB Control No. 0651–0012).

§10.3 Committee on Enrollment.

(a) The Commissioner may establish a Committee on Enrollment composed of one or more employees of the Office.

(b) The Committee on Enrollment shall, as necessary, advise the Director in connection with the Director's duties under §10.2(b)(1).

§10.4 Committee on Discipline.

(a) The Commissioner shall appoint a Committee on Discipline. The Committee on Discipline shall consist of the at least three employees of the Office, none of whom reports directly or indirectly to the Director or the Solicitor. Each member of the Committee on Discipline shall be a member in good standing of the bar of a State.

(b) The Committee on Discipline shall meet at the request of the Director and after reviewing evidence presented by the Director shall, by majority vote, determine whether there is probable cause to bring charges under §10.132 against a practitioner. When charges are brought against a practitioner, no member of the Committee on Discipline, employee under the direction of the Director, or associate solicitor or assistant solicitor in the Office of the Solicitor shall participate in rendering a decision on the charges.

(c) No discovery shall be authorized of, and no member of the Committee on Discipline shall be required to testify about, deliberations of the Committee on Discipline.

Individuals Entitled to Practice Before the Patent and Trademark Office

§10.5 Register of attorneys and agents in patent cases.

A register of attorneys and agents is kept in the Office on which are entered the names of all individuals recognized as entitled to represent applicants before the Office in the preparation and prosecution of applications for patent. Registration in the Office under provisions of this part shall only entitle the individuals registered to practice before the Office in patent cases.

§10.6 Registration of attorneys and agents.

(a) *Attorneys.* Any citizen of the United States who is an attorney and who fulfills the requirements of this part may be registered as a patent attorney to practice before the Office. When appropriate, any alien who is an attorney, who lawfully resides in the United States, and who fulfills the requirements of this part may be registered as a patent attorney to practice before the Office, *provided:* registration is not inconsistent with the terms upon which the alien was admitted to, and resides in, the United States and *further provided:* the alien may remain registered only (1) if the alien continues to lawfully reside in the United States and registation does not become inconsistent with the terms upon which the alien continues to lawfully reside in the United States or (2) if the alien ceases to reside in the United States, the alien is qualified to be registered under paragraph (c) of this section. See also §10.9(b).

(b) *Agents.* Any citizen of the United States who is not an attorney and who fulfills the requirements of this part may be registered as a patent agent to practice before the Office. When appropriate, any alien who is not an attorney, who lawfully resides in the United States, and who fulfills the requirements of this part may be registered as a patent agent to practice before the Office, *provided:* registration is not inconsistent with the terms upon which the alien was admitted to, and resides in, the United States, and *further provided:* the alien may remain registered only (1) if the alien continues to lawfully reside in the United States and registration does not become inconsistent with the terms upon which the alien continues to lawfully reside in the United States or (2) if the alien ceases to reside in the United States, the alien is qualified to be registered under paragraph (c) of this section. See also §10.9(b).

Note: All individuals registered prior to Nov. 15, 1938, were registered as attorneys, whether they were attorneys or not, and such registrations have not been changed.

(c) *Foreigners.* Any foreigner not a resident of the United States who shall file proof to the satisfaction of the Director that he or she is registered and in good standing before the patent office of the country in which he or she resides and practices and who is possessed of the qualifications stated in §10.7, may be registered as a patent agent to practice before the Office for the limited purpose of presenting and prosecuting patent applications of applicants located in such country, *provided:* the patent office of such country allows substantially reciprocal privileges to those admitted to practice before the United States Patent and Trademark Office. Registration as a patent agent under this paragraph shall continue only during the period that the conditions specified in this paragraph obtain.

(d) *Government employees.* Any officer or employee of the United States who is disqualified by statute (18 U.S.C. 203, 205) from practicing as an attorney or agent in proceedings or other matters before Government departments or agencies, may not be registered to practice before the Office. If any registered attorney or agent becomes an officer or employee of the United States who is disqualified by statute from practicing as an attorney or agent in proceedings and other matters before Government departments or agencies, his or her name shall be endorsed as inactive on the register during the period of any employment by the United States. An officer or employee of the United States whose official duties require the preparation and prosecution of applications for patent and who fulfills the requirements of this part may be registered to practice before the Office to the extent necessary to carry out his or her official duties. A written statement describing the official duties of the officer or employee and signed on behalf of the agency employing the officer or employee may be required by the Director.

(e) *Former Office employees.* No individual who has served in the Office will be registered after termination of his or her services, nor if registered before such service, be reinstated, unless he or she signs a written statement indicating that he or she has read 18 U.S.C. 207. No individual who has served in the patent examining corps of the Office will be registered after termination of his or her services, nor if registered before such service, be reinstated, unless he or she signs a written undertaking (1) not to prosecute or aid in any manner in the prosecution of any patent application pending in any patent examining group during his or her period of service therein and (2) not to prepare or prosecute or to assist in any manner in the preparation or prosecution of any patent application of another (i) assigned to such group for examination and (ii) filed within two years after the date he or she left such group, without written authorization of the Director. Associated and related classes in other patent examining groups may be required to be included in the undertaking or designated classes may be excluded from the undertaking. When an application for registration or reinstatement is made after resignation from the Office, the applicant will not be registered or reinstated if he or she has prepared or prosecuted or assisted in the preparation or prosecution of any patent application as indicated in this paragraph.

(OMB Control No. 0651–0012)

§10.7 Requirements for registration.

(a) No individual will be registered to practice before the Office unless he or she shall:

(1) apply to the Commissioner in writing on a form supplied by the Director and furnish all requested information and material and

(2) establish to the satisfaction of the Director that he or she is:

(i) of good moral character and repute;

(ii) possessed of the legal, scientific, and technical qualifications necessary to enable him or her to render applicants for patents valuable service; and

(iii) is otherwise competent to advise and assist applicants for patents in the presentation and prosecution of their applications before the Office.

(b) In order that the Director may determine whether an individual seeking to have his or her name placed upon the register has the qualifications specified in paragraph (a) of this section, satisfactory proof of good moral character and repute and of sufficient basic training in scientific and technical matters must be submitted to the Director. Except as provided in this paragraph, each applicant for registration must take and pass an examination which is held from time to time. Each application for admission to take the examination for registration must be accompanied by the fee set forth in §1.21(a)(1) of this Subchapter. The taking of an examination may be waived in the case of any individual who has actively served for at least four years in the patent examining corps of the Office. The examination will not be administered as a mere academic exercise.

(c) Within two months from the date an applicant is notified that he or she failed an examination, the applicant may request regrading of the examination upon payment of the fee set forth in §1.21(a)(6). Any applicant requesting regrading shall particularly point out the errors which the applicant believed occurred in the grading of his or her examination.

(OMB Control No. 0651–0012)

§10.8 Oath and registration fee.

Before an individual may have his or her name entered on the register of attorneys and agents, the individual must, after his or her application is approved, subscribe and swear to an oath or make a declaration prescribed by the Commissioner and pay the registration fee set forth in §1.21(a)(2) of this Subchapter.

(OMB Control No. 0651–0012)

§10.9 Limited recognition in patent cases.

(a) Any individual not registered under §10.6 may, upon a showing of circumstances which render it necessary or justifiable, be given limited recognition by the Director to prosecute as attorney or agent a specified application or specified applications, but limited recognition under this paragraph shall not extend further than the application or applications specified.

(b) When registration of a resident alien under paragraphs (a) or (b) of §10.6 is not appropriate, the resident alien may be given limited recognition as may be appropriate under paragraph (a) of this section.

§10.10 Individuals not registered or recognized to practice in patent cases.

Only practitioners who are registered under §10.6 or individuals given limited recognition under §10.9 will be permitted to prosecute patent applications of others before the Office.

§10.11 Removing names from the register.

(a) Registered attorneys and agents shall notify the Director of any change of address. Any notification to the Director of any change of address shall be separate from any notice of change of address filed in individual applications.

(b) A letter may be addressed to any individual on the register, at the address of which separate notice was last received by the Director, for the purpose of ascertaining whether such individual desires to remain on the register. The name of any individual failing to reply and give any information requested by the Director within a time limit specified will be removed from the register and the names of individuals so removed will be published in the *Official Gazette.* The name of any individual so removed may be reinstated on the register as may be appropriate and upon payment of the fee set forth in §1.21(a)(3) of this Subchapter.

(OMB Control No. 0651–0012)

§§10.12–10.13 [reserved]

§10.14 Individuals who may practice before the Office in trademark and other non-patent cases.

(a) *Attorneys.* Any individual who is an attorney may represent others before the Office in trademark and other non-patent cases. An attorney is not required to apply for registration or recognition to practice before the Office in trademark and other non-patent cases.

(b) *Non-lawyers.* Individuals who are not attorneys are not recognized to practice before the Office in trademark and other non-patent cases, except that individuals not arrotneys who were recognized to practice before the Office in trademark cases under this chapter prior to Jan. 1, 1957, will be recognized as agents to continue practice before the Office in trademark cases.

(c) *Foreigners.* Any foreign attorney or agent not a resident of the United States who shall prove to the satisfaction of the Director that he or she is registered or in good standing before the patent or trademark office of the country in which he or she resides and practices, may be recognized for the limited purpose of representing parties located in such country before the Office in the presentation and prosecution of trademark cases, *provided:* the patent or trademark office of such country al-

lows substantially reciprocal privileges to those permitted to practice in trademark cases before the United States Patent and Trademark Office. Recognition under this paragraph shall continue only during the period that the conditions specified in this paragraph obtain.

(d) Recognition of any individual under this section shall not be construed as sanctioning or authorizing the performance of any act regarded in the jurisdiction where performed as the unauthorized practice of law.

(e) No individual other than those specified in paragraphs (a), (b), and (c) of this section will be permitted to practice before the Office in trademark cases. Any individual may appear in a trademark or other non-patent case in his or her own behalf. Any individual may appear in a trademark case for (1) a firm of which he or she is a member or (2) a corporation or association of which he or she is an officer and which he or she is authorized to represent, if such firm, corporation, or association is a party to a trademark proceeding pending before the Office.

§10.15 Refusal to recognize a practitioner.

Any practitioner authorized to appear before the Office may be suspended or excluded in accordance with the provisions of this part. Any practitioner who is suspended or excluded under this subpart or removed under §10.11(b) shall not be entitled to practice before the Office.

§§10.16–10.17 [reserved]

§10.18 Signature and certificate of practitioner.

(a) Every paper filed by a practitioner representing an applicant or party to a proceeding in the Office must bear the signature of, and be personally signed by, such practitioner except those papers which are required to be signed by the applicant or party. The signature of practitioner to a paper filed by him or her, constitutes a certificate that:

(1) the paper has been read by the practitioner;

(2) the paper's filing is authorized;

(3) to the best of his or her knowledge, information, and belief, there is good ground to support the paper, including any allegations of improper conduct contained or alleged therein; and

(4) it is not interposed for delay.

(b) Any practitioner knowingly violating the provisions of this section is subject to disciplinary action. See §10.23(c)(15).

§10.19 [reserved]

Patent and Trademark Office Code of Professional Responsibility

§10.20 Canons and Disciplinary Rules.

(a) Canons are set out in §§10.21, 10.30, 10.46, 10.56. 10.61, 10.76, 10.83, 10.100, and 10.110. Canons are statements of axiomatic norms, expressing in general terms the standards of professional conduct expected of practitioners in their relationships with the public, with the legal system, and with the legal profession.

(b) Disciplinary Rules are set out in §§10.22–10.24, 10.31–10.40, 10.47–10.57, 10.62–10.68, 10.77, 10.78, 10.84, 10.85, 10.87–10.89, 10.92, 10.93, 10.101–103, 10.111, and 10.112. Disciplinary Rules are mandatory in character and state the minimum level of conduct below which no practitioner can fall without being subjected to disciplinary action.

§10.21 Canon 1.

A practitioner should assist in maintaining the integrity and competence of the legal profession.

§10.22 Maintaining integrity and competence of the legal profession.

(a) A practitioner is subject to discipline if the practitioner has made a materially false statement in, or if the practitioner has deliberately failed to disclose a material fact requested in connection with, the practitioner's application for registration or membership in the bar of any United States court or any State court or his or her authority to otherwise practice before the Office in trademark and other non-patent cases.

(b) A practitioner shall not further the application for registration or membership in the bar of any United States court, State court, or administrative agency of another person known by the practitioner to be unqualified in respect to character, education, or other relevant attribute.

§10.23 Misconduct.

(a) A practitioner shall not engage in disreputable or gross misconduct.

(b) A practitioner shall not:

(1) Violate a Disciplinary Rule.

(2) Circumvent a Disciplinary Rule through actions of another.

(3) Engage in illegal conduct involving moral turpitude.

(4) Engage in conduct involving dishonesty, fraud, deceit, or misrepresentation.

(5) Engage in conduct that is prejudicial to the administration of justice.

(6) Engage in any other conduct that adversely reflects on the practitioner's fitness to practice before the Office.

(c) Conduct which constitutes a violation of paragraphs (a) and (b) of this section includes, but is not limited to:

(1) Conviction of a criminal offense involving moral turpitude, dishonesty, or breach of trust.

(2) Knowingly giving false or misleading information or knowingly participating in a material way in giving false or misleading information, to:

(i) A client in connection with any immediate, prospective, or pending business before the Office.

(ii) The Office or any employee of the Office.

(3) Misappropriation of, or failure to properly or timely remit, funds received by a practitioner or the practitioner's firm from a client to pay a fee which the client is required by law to pay to the Office.

(4) Directly or indirectly improperly influencing, attempting to improperly influence, offering or agreeing to improperly influence, or attempting to offer or agree to improperly influence an official action of any employee of the Office by:

(i) use of threats, false accusations, duress, or coercion,

(ii) an offer of any special inducement or promise of advantage, or

(iii) improperly bestowing of any gift, favor, or thing of value.

(5) Suspension or disbarment from practice as an attorney or agent on ethical grounds by any duly constituted authority of a State or the United States or, in the case of a practitioner who resides in a foreign country or is registered under §10.6(c), by any duly constituted authority of:

(i) a State,

(ii) the United States, or

(iii) the country in which the practitioner resides.

(6) Knowingly aiding or abetting a practitioner suspended or excluded from practice before the Office in engaging in unauthorized practice before the Office under §10.158.

(7) Knowingly withholding from the Office information identifying a patent or patent application of another from which one or more claims have been copied. See §§1.604(b) and 1.607(c) of this Subchapter.

(8) Failing to inform a client or former client or failing to timely notify the Office of an inability to notify to a client or former client of correspondence received from the Office or the client's or former client's opponent in an *inter partes* proceeding before the Office when the correspondence (i) could have a significant effect on a matter pending before the Office, (ii) is received by the practitioner on behalf of a client or former client and (iii) is correspondence of which a reasonable practitioner would believe under the circumstances the client or former client should be notified.

(9) Knowingly misusing a certificate of mailing under §1.8 of this Subchapter or a certificate of "Express Mail" under §1.10 of this Subchapter.

(10) Violating the duty of candor or good faith requirements of §1.56(a) of this Subchapter.

(11) Knowingly filing, or causing to be filed, an application which is subject to being stricken under §1.56(c) of this Subchapter.

(12) Knowingly filing, or causing to be filed, a frivolous complaint alleging a violation by a practitioner of the Patent and Trademark Office Code of Professional Responsibility.

(13) Knowingly preparing or prosecuting a patent application in violation of an undertaking signed under §10.6(e).

(14) Knowingly failing to advise the Director in writing of any change which would preclude continued registration under §10.6.

(15) Knowingly signing a paper filed in the Office in violation of the provisions of §10.18 or making a scandalous or indecent statement in a paper filed in the Office.

(16) Willfully refusing to reveal or report knowledge or evidence to the Director contrary to §10.24 or paragraph (b) of §10.131.

(17) Representing before the Office in a patent case either a joint venture comprising an inventor and an invention developer or an inventor referred to the registered practitioner by an invention developer when (i) the registered practitioner knows, or has been advised by the Office, that a formal complaint filed by a federal or state agency, based on any violation of any law relating to securities, unfair methods of competition, unfair or deceptive acts or practices, mail fraud, or other civil or criminal conduct, is pending before a federal or state court or federal or state agency, or has been resolved unfavorably by such court or agency, against the invention developer in connection with invention development services and (ii) the registered practitioner fails to fully advise the inventor of the existence of the pending complaint or unfavorable resolution thereof prior to undertaking or continuing representation of the joint venture or inventor. "Invention developer" means any person, and any agent, employee, officer, partner, or independent contractor thereof, who is not a registered practitioner and who advertises invention development services in media of general circulation or who enters into contracts for invention development services with customers as a result of such advertisement. "Invention development services" means acts of invention development required or promised to be performed, or actually performed, or both, by an invention developer for a customer. "Invention development" means the evaluation, perfection, marketing, brokering, or promotion of an invention on behalf of a customer by an invention developer, including a patent search, preparation of a patent application, or any other act done by an invention developer for consideration toward the end of procuring or attempting to procure a license, buyer, or patent for an invention. "Customer" means any individual who has made an invention and who enters into a contract for invention development services with an invention developer with respect to the invention by which the inventor becomes obligated to pay the invention developer less than $5,000 (not to include any additional sums which the invention developer is to receive as a result of successful development of the invention). "Contract for invention development services" means a contract for invention development services with an invention developer with respect to an invention made by a customer by which the inventor becomes obligated to pay the invention developer less than $5,000 (not to include any additional sums which the invention developer is to receive as a result of successful development of the invention).

(18) In the absence of information sufficient to establish a reasonable belief that fraud or inequitable conduct has occurred, alleging before a tribunal that anyone has committed a fraud on the Office or engaged in inequitable conduct in a proceeding before the Office.

(d) A practitioner who acts with reckless indifference to whether a representation is true or false is chargeable with knowledge of its falsity. Deceitful statements of half-truths or concealment of material facts shall be deemed actual fraud within the meaning of this part.

§10.24 Disclosure of information to authorities

(a) A practitioner possessing unprivileged knowledge of a violation of a Disciplinary Rule shall report such knowledge to the Director.

(b) A practitioner possessing unprivileged knowledge or evidence concerning another practitioner, employee of the Office, or a judge shall reveal fully such knowledge or evidence upon proper request of a tribunal or other authority empowered to investigate or act upon the conduct of practitioners, employees of the Office, or judges.

(OMB Control No. 0651–0017)

§§10.25–10.29 [reserved]

§10.30 Canon 2.

A practitioner should assist the legal profesion in fulfilling its duty to make legal counsel available.

§10.31 Communications concerning a practitioner's services.

(a) No practitioner shall with respect to any prospective business before the Office, by word, circular, letter, or advertising, with intent to defraud in any manner, deceive, mislead, or threaten any prospective applicant or other person having immediate or prospective business before the Office.

(b) A practitioner may not use the name of a Member of either House of Congress or of an individual in the service of the United States in advertising the practitioner's practice before the Office.

(c) Unless authorized under §10.14(b), a non-lawyer practitioner shall not hold himself or herself out as authorized to practice before the Office in trademark cases.

(d) Unless a practitioner is an attorney, the practitioner shall not hold himself or herself out:

(1) to be an attorney or lawyer or

(2) as authorized to practice before the Office in non-patent and trademark cases.

§10.32 Advertising.

(a) Subject to §10.31, a practitioner may advertise services through public media, including a telephone directory, legal directory, newspaper, or other periodical, radio, or television, or through written communications not involving solicitation as defined by §10.33.

(b) A practitioner shall not give anything of value to a person for recommending the practitioner's services, except that a practitioner may pay the reasonable cost of advertising or written communication permitted by this section and may pay the usual charges of a not-for-profit lawyer referreal service or other legal service organization.

(c) Any communication made pursuant to this section shall include the name of at least one practitioner responsible for its content.

§10.33 Direct contact with prospective clients.

A practitioner may not solicit professional employment from a prospective client with whom the practitioner has no family or prior professional relationship, by mail, in-person or otherwise, when a significant motive for the practitioner's doing so is the practitioner's pecuniary gain under circumstances evidencing undue influence, intimidation, or overreaching. The term "solicit" includes contact in person, by telephone or telegraph, by letter or other writing, or by other communication directed to a specific recipient, but does not include letters addressed or advertising circulars distributed generally to persons not specifically known to need legal services of the kind provided by the practitioner in a particular matter, but who are so situated that they might in general find such services useful.

§10.34 Communication of fields of practice.

A registered practitioner may state or imply that the practitioner is a specialist as follows:

(a) A registered practitioner who is an attorney may use the designation "Patents," "Patent Attorney," "Patent Lawyer," "Registered Patent Attorney," or a substantially similar designation.

(b) A registered practitioner who is not an attorney may use the designation "Patents," "Patent Agent," "Registered Patent Agent," or a substantially similar designation, except that any practitioner who was registered prior to November 15, 1938, may refer to himself or herself as a "patent attorney."

§10.35 Firm names and letterheads.

(a) A practitioner shall not use a firm name, letterhead, or other professional designation that violates §10.31. A trade name may be used by a practitioner in private practice if it does not imply a current connection with a government agency or with a public or charitable legal services organzation and is not otherwise in violation of §10.31.

(b) Practitioners may state or imply that they practice in a partnership or other organization only when that is the fact.

§10.36 Fees for legal services.

(a) A practitioner shall not enter into an agreement for, charge, or collect an illegal or clearly excessive fee.

(b) A fee is clearly excessive when, after a review of the facts, a practitioner of ordinary prudence would be left with a definite and firm conviction that the fee is in excess of a reasonable fee. Factors to be considered as guides in determining the reasonableness of a fee include the following:

(1) The time and labor required, the novelty and difficulty of the questions involved, and the skill requisite to perform the legal service properly.

(2) The likelihood, if apparent to the client, that the acceptance of the particular employment will preclude other employment by the practitioner.

(3) The fee customarily charged for similar legal services.

(4) The amount involved and the results obtained.

(5) The time limitations imposed by the client or by the circumstances.

(6) The nature and length of the professional relationship with the client.

(7) The experience, reputation, and ability of the practitioner or practitioners performing the services.

(8) Whether the fee is fixed or contingent.

§10.37 Division of fees among practitioners.

(a) A practitioner shall not divide a fee for legal services with another practitioner who is not a partner in or associate of the practitioner's law firm or law office, unless:

(1) The client consents to employment of the other practitioner after a full disclosure that a division of fees will be made.

(2) The division is made in proportion to the services performed and responsibility assumed by each.

(3) The total fee of the practitioners does not clearly exceed reasonable compensation for all legal services rendered to the client.

(b) This section does not prohibit payment to a former partner or associate pursuant to a separation or retirement agreement.

§10.38 Agreements restricting the practice of a practitioner.

(a) A practitioner shall not be a party to or participate in a partnership or employment agreement with another practitioner that restricts the right of a practitioner to practice before the Office after the termination of a relationship created by the agreement, except as a condition to payment of retirement benefits.

(b) In connection with the settlement of a controversy or suit, a practitioner shall not enter into an agreement that restricts the practitioner's right to practice before the Office.

§10.39 Acceptance of employment.

A practitioner shall not accept employment on behalf of a person if the practitioner knows or it is obvious that such person wishes to:

(a) Bring a legal action, commence a proceeding before the Office, conduct a defense, assert a position in any proceeding pending before the Office, or otherwise have steps taken for the person, merely for the purpose of harassing or maliciously injuring any other person.

(b) Present a claim or defense in litigation or any proceeding before the Office that is not warranted under existing law, unless it can be supported by good faith argument for an extension, modification, or reversal of existing law.

§10.40 Withdrawal from employment.

(a) A practitioner shall not withdraw from employment in a proceeding before the Office without permission from the Office (see §§1.36, and 2.19 of this Subchapter). In any event, a practitioner shall not withdraw from employment until the practitioner has taken reasonable steps to avoid foreseeable prejudice to the rights of the client, including giving due notice to his or her client, allowing time for employment of another practitioner, delivering to the client all papers and property to which the client is entitled, and complying with applicable laws and rules. A practitioner who withdraws from employment shall refund promptly any part of a fee paid in advance that has not been earned.

(b) Mandatory withdrawal. A practitioner representing a client before the Office shall withdraw from employment if:

(1) the practitioner knows or it is obvious that the client is bringing a legal action, commencing a proceeding before the Office, conducting a defense, or asserting a position in litigation or any proceeding pending before the Office, or is otherwise having steps taken for the client, merely for the purpose of harassing or maliciously injuring any person;

(2) the practitioner knows or it is obvious that the practitioner's continued employment will result in violation of a Disciplinary Rule;

(3) the practitioner's mental or physical condition renders it unreasonably difficult for the practitioner to carry out the employment effectively; or

(4) the practitioner is discharged by the client.

(c) Permissive withdrawal. If paragraph (b) of this section is not applicable, a practitioner may not request permission to withdraw in matters pending before the Office unless such request or such withdrawal is because:

(1) the petitioner's client:

(i) insists upon presenting a claim or defense that is not warranted under existing law and cannot be supported by good faith argument for an extension, modification, or reversal of existing law;

(ii) personally seeks to pursue an illegal course of conduct;

(iii) insists that the practitioner pursue a course of conduct that is illegal or that is prohibited under a Disciplinary Rule;

(iv) by other conduct renders it unreasonably difficult for the practitioner to carry out the employment effectively;

(v) insists, in a matter not pending before a tribunal, that the practitioner engage in conduct that is contrary to the judgment and advice of the practitioner but not prohibited under the Disciplinary Rule; or

(vi) has failed to pay one or more bills rendered by the practitioner for an unreasonable period of time or has failed to honor an agreement to pay a retainer in advance of the performance of legal services.

(2) the practitioner's continued employment is likely to result in a violation of a Disciplinary Rule;

(3) the practitioner's inability to work with co-counsel indicates that the best interests of the client likely will be served by withdrawal;

(4) the practitioner's mental or physical condition renders it difficult for the practitioner to carry out the employment effectively;

(5) the practitioner's client knowingly and freely assents to termination of the employment; or

(6) the practitioner believes in good faith, in a proceeding pending before the Office, that the Office will find the existence of other good cause for withdrawal.

§§10.41-10.45 [reserved]

§10.46 Canon 3.

A practitioner should assist in preventing the unauthorized practice of law.

§10.47 Aiding unauthorized practice of law.

(a) A practitioner shall not aid a non-practitioner in the unauthorized practice of law before the Office.

(b) A practitioner shall not aid a suspended or excluded practitioner in the practice of law before the Office.

(c) A practitioner shall not aid a non-lawyer in the unauthorized practice of law.

§10.48 Sharing legal fees.

A practitioner or a firm of practitioners shall not share legal fees with a non-practitioner except that:

(a) An agreement by a practitioner with the practitioner's firm, partner, or associate may provide for the payment of money, over a reasonable period of time after the practitioner's death, to the practitioner's estate or to one or more specified persons.

(b) A practitioner who undertakes to complete unfinished legal business of a deceased practitioner may pay to the estate of the deceased practitioner that proportion of the total compensation which fairly represents the services rendered by the deceased practitioner.

(c) A practitioner or firm of practitioners may include non-practitioner employees in a compensation or retirement plan, even though the plan is based in whole or in part on a profit-sharing arrangement, providing such plan does not circumvent another Disciplinary Rule.

§10.49 Forming a partnership with a non-practitioner.

A practitioner shall not form a partnership with a non-practitioner if any of the activities of the partnership consist of the practice of patent, trademark, or other law before the Office.

§§10.50-10.55 [reserved]

§10.56 Canon 4.

A practitioner should preserve the confidences and secrets of a client.

§10.57 Preservation of confidences and secrets of a client.

(a) "Confidence" refers to information protected by the attorney-client or agent-client privilege under applicable law. "Secret" refers to other information gained in the professional relationship that the client has requested be held inviolate or the disclosure of which would be embarrassing or would be likely to be detrimental to the client.

(b) Except when permitted under paragraph (c) of this section, a practitioner shall not knowingly:

(1) Reveal a confidence or secret of a client.

(2) Use a confidence or secret of a client to the disadvantage of the client.

(3) Use a confidence or secret of a client for the advantage of the practitioner or of a third person, unless the client consents after full disclosure.

(c) A practitioner may reveal:

(1) Confidences or secrets with the consent of the client affected but only after a full disclosure to the client.

(2) Confidences or secrets when permitted under Disciplinary Rules or required by law or court order.

(3) The intention of a client to commit a crime and the information necessary to prevent the crime.

(4) Confidences or secrets necessary to establish or collect the practitioner's fee or to defend the practitioner or the practitioner's employees or associates against an accusation of wrongful conduct.

(d) A practitioner shall exercise reasonable care to prevent the practitioner's employees, associates, and others whose services are utilized by the practitioner from disclosing or using confidences or secrets of a client, except that a practitioner may reveal the information allowed by parargraph (c) of this section through an employee.

§§10.58-10.60 [reserved]

§10.61 Canon 5.

A practitioner should exercise independent professional judgment on behalf of a client.

§10.62 Refusing employment when the interest of the practitioner may impair the practitioner's independent professional judgment.

(a) Except with the consent of a client after full disclosure, a practitioner shall not accept employment if the exercise of the practitioner's professional judgment on behalf of the client will be or reasonably may be affected by the practitioner's own financial, business, property, or personal interests.

(b) A practitioner shall not accept employment in a proceeding before the Office if the practitioner knows or it is obvious that the practitioner or another practitioner in the practitioner's firm ought to sign an affidavit to be filed in the Office or be called as a witness, except that the practitioner may undertake the employment and the practitioner or another practitioner in the practitioner's firm may testify:

(1) If the testimony will relate solely to an uncontested matter.

(2) If the testimony will relate solely to a matter of formality and there is no reason to believe that substantial evidence will be offered in opposition to the testimony.

(3) If the testimony will relate solely to the nature and value of legal services rendered in the case by the practitioner or the practitioner's firm to the client.

(4) As to any matter, if refusal would work a sub-

stantial hardship on the client because of the distinctive value of the practitioner or the practitioner's firm as counsel in the particular case.

§10.63 Withdrawal when the practitioner becomes a witness.

(a) If, after undertaking employment in a proceeding in the Office, a practitioner learns or it is obvious that the practitioner or another practitioner in the practitioner's firm ought to sign an affidavit to be filed in the Office or be called as a witness on behalf of a practitioner's client, the practitioner shall withdraw from the conduct of the proceeding and the practitioner's firm, if any, shall not continue representation in the proceeding, except that the practitioner may continue the representation and the practitioner or another practitioner in the practitioner's firm may testify in the circumstances enumerated in paragraphs (1) through (4) of §10.62(b).

(b) If, after undertaking employment in a proceeding before the Office, a practitioner learns or it is obvious that the practitioner or another practitioner in the practitioner's firm may be asked to sign an affidavit to be filed in the Office or be called as a witness other than on behalf of the practitioner's client, the practitioner may continue the representation until it is apparent that the practitioner's affidavit or testimony is or may be prejudicial to the practitioner's client.

§10.64 Avoiding acquisition of interest in litigation or proceeding before the Office.

(a) A practitioner shall not acquire a proprietary interest in the subject matter of a proceeding before the Office which the practitioner is conducting for a client, except that the practitioner may:

(1) Acquire a lien granted by law to secure the practitioner's fee or expenses; or

(2) Contract with a client for a reasonable contingent fee; or

(3) In a patent case, take an interest in the patent as part or all of his or her fee.

(b) While representing a client in connection with a contemplated or pending proceeding before the Office, a practitioner shall not advance or guarantee financial assistance to a client, except that a practitioner may advance or guarantee the expenses of going forward in a proceeding before the Office including fees required by law to be paid to the Office, expenses of investigation, expenses of medical examination, and costs of obtaining and presenting evidence, provided the client remains ultimately liable for such expenses. A practitioner may, however, advance any fee required to prevent or remedy an abandonment of a client's application by reason of an act or omission attributable to the practitioner and not to the client, whether or not the client is ultimately liable for such fee.

§10.65 Limiting business relations with a client.

A practitioner shall not enter into a business transaction with a client if they have differing interests therein and if the client expects the practitioner to exercise professional judgment therein for the protection of the client, unless the client has consented after full disclosure.

§10.66 Refusing to accept or continue employment if the interests of another client may impair the independent professional judgment of the practitioner.

(a) A practitioner shall decline proffered employment if the exercise of the practitioner's independent professional judgment in behalf of a client will be or is likely to be adversely affected by the acceptance of the proffered employment, or if it would be likely to involve the practitioner in representing differing interests, except to the extent permitted under paragraph (c) of this section.

(b) A practitioner shall not continue multiple employment if the exercise of the practitioner's independent professional judgment in behalf of a client will be or is likely to be adversely affected by the practitioner's representation of another client, or if it would be likely to involve the practitioner in representing differing interests, except to the extent permitted under paragraph (c) of this section.

(c) In the situations covered by paragraphs (a) and (b) of this section a practitioner may represent multiple clients if it is obvious that the practitioner can adequately represent the interest of each and if each consents to the representation after full disclosure of the possible effect of such representation on the exercise of the practitioner's independent professional judgment on behalf of each.

(d) If a practitioner is required to decline employment or to withdraw from employment under a Disciplinary Rule, no partner, or associate, or any other practitioner affiliated with the practitioner or the practitioner's firm, may accept or continue such employment unless otherwise ordered by the Director or Commissioner.

§10.67 Settling similar claims of clients.

A practitioner who represents two or more clients shall not make or participate in the making of an aggregate settlement of the claims of or against the practitioner's clients, unless each client has consented to the settlement after being advised of the existence and nature of all the claims involved in the proposed settlement, of the total amount of the settlement, and of the participation of each person in the settlement.

§10.68 Avoiding influence by others than the client.

(a) Except with the consent of the practitioner's client after full disclosure, a practitioner shall not:

(1) Accept compensation from one other than the practitioner's client for the practitioner's legal services to or for the client.

(2) Accept from one other than the practitioner's client any thing of value related to the practitioner's representation of or the practitioner's employment by the client.

(b) A practitioner shall not permit a person who recommends, employs, or pays the practitioner to render legal services for another, to direct or regulate the practitioner's professional judgment in rendering such legal services.

(c) A practitioner shall not practice with or in the form of a professional corporation or association authorized to practice law for a profit, if a non-practioner has the right to direct or control the professional judgment of a practitioner.

§§10.69-10.75 [reserved]

§10.76 Canon 6.

A practitioner should represent a client competently.

§10.77 Failing to act competently.

A practitioner shall not:

(a) Handle a legal matter which the practitioner knows or should know that the practitioner is not competent to handle, without associating with the practitioner another practitioner who is competent to handle it.

(b) Handle a legal matter without preparation adequate in the circumstances.

(c) Neglect a legal matter entrusted to the practitioner.

§10.78 Limiting liability to client.

A practitioner shall not attempt to exonerate himself or herself from, or limit his or her liability to, a client for his or her personal malpractice.

§§10.79-10.82 [reserved]

§10.83 Canon 7.

A practitioner should represent a client zealously within the bounds of the law.

§10.84 Representing a client zealously.

(a) A practitioner shall not intentionally:

(1) Fail to seek the lawful objectives of a client through reasonably available means permitted by law and the Disciplinary Rules, except as provided by paragraph (b) of this section. A practitioner does not violate the provisions of this section, however, by acceding to reasonable requests of opposing counsel which do not prejudice the rights of the client, by being punctual in fulfilling all professional commitments, by avoiding offensive tactics, or by treating with courtesy and consideration all persons involved in the legal process.

(2) Fail to carry out a contract of employment entered into with a client for professional services, but a practitioner may withdraw as permitted under §§10.40, 10.63, and 10.66.

(3) Prejudice or damage a client during the course of a professional relationship, except as required under this part.

(b) In representation of a client, a practitioner may:

(1) Where permissible, exercise professional judgment to waive or fail to assert a right or position of the client.

(2) Refuse to aid or participate in conduct that the practitioner believes to be unlawful, even though there is some support for an argument that the conduct is legal.

§10.85 Representing a client within the bounds of the law.

(a) In representation of a client, a practitioner shall not:

(1) Initiate or defend any proceeding before the Office, assert a position, conduct a defense, delay a trial or proceeding before the Office, or take other action on behalf of the practitioner's client when the practitioner knows or when it is obvious that such action would serve merely to harass or maliciously injure another.

(2) Knowingly advance a claim or defense that is unwarranted under existing law, except that a practitioner may advance such claim or defense if it can be supported by good faith argument for an extension, modification, or reversal of existing law.

(3) Conceal or knowingly fail to disclose that which the practitioner is required by law to reveal.

(4) Knowingly use perjured testimony or false evidence.

(5) Knowingly make a false statement of law or fact.

(6) Participate in the creation or preservation of evidence when the practitioner knows or it is obvious that the evidence is false.

(7) Counsel or assist a client in conduct that the practitioner knows to be illegal or fraudulent.

(8) Knowingly engage in other illegal conduct or conduct contrary to a Disciplinary Rule.

(b) A practitioner who receives information clearly establishing that:

(1) A client has, in the course of the representation, perpetrated a fraud upon a person or tribunal shall promptly call upon the client to rectify the same, and if the client refuses or is unable to do so the practitioner shall reveal the fraud to the affected person or tribunal.

(2) A person other than a client has perpetrated a fraud upon a tribunal shall promptly reveal the fraud to the tribunal.

§10.86 [reserved]

§10.87 Communicating with one of adverse interest.

During the course of representation of a client, a practitioner shall not:

(a) Communicate or cause another to communicate on the subject of the representation with a party the practitioner knows to be represented by another practitioner in that matter unless the practitioner has the prior consent of the other practitioner representing such other party or is authorized by law to do so. It is not improper, however, for a practitioner to encourage a client to meet with an opposing party for settlement discussions.

(b) Give advice to a person who is not represented by a practitioner other than the advice to secure counsel, if the interests of such person are or have a reasonable possibility of being in conflict with the interests of the practitioner's client.

§10.88 Threatening criminal prosecution.

A practitioner shall not present, participate in presenting, or threaten to present criminal charges solely to obtain an advantage in any prospective or pending proceeding before the Office.

§10.89 Conduct in proceedings.

(a) A practitioner shall not disregard or advise a client to disregard any provision of this Subchapter or a decision of the Office made in the course of a proceeding before the Office, but the practitioner may take appropriate steps in good faith to test the validity of such provision or decision.

(b) In presenting a matter to the Office, a practitioner shall disclose:

(1) Controlling legal authority known to the practitioner to be directly adverse to the position of the client and which is not disclosed by opposing counsel or an employee of the Office.

(2) Unless privileged or irrelevant, the identities of the client the practitioner represents and of the persons who employed the practitioner.

(c) In appearing in a professional capacity before a tribunal, a practitioner shall not:

(1) State or allude to any matter that the practitioner has no reasonable basis to believe is relevant to the case or that will not be supported by admissible evidence.

(2) Ask any question that the practitioner has no reasonable basis to believe is relevant to the case and that is intended to degrade a witness or other person.

(3) Assert the practitioner's personal knowledge of the facts in issue, except when testifying as a witness.

(4) Assert the practitioner's personal opinion as to the justness of a cause, as to the credibility of a witness, as to the culpability of a civil litigant, or as to the guilt or innocence of an accused; but the practitioner may argue, on the practitioner's analysis of the evidence, for any position or conclusion with respect to the matters stated herein.

(5) Engage in undignified or discourteous conduct before the Office (see §1.3 of the Subchapter).

(6) Intentionally or habitually violate any provision of this Subchapter or established rule of evidence.

§10.90–10.91 [reserved]

§10.92 Contact with witnesses.

(a) A practitioner shall not suppress any evidence that the practitioner or the practitioner's client has a legal obligation to reveal or produce.

(b) A practitioner shall not advise or cause a person to be secreted or to leave the jurisdiction of a tribunal for the purpose of making the person unavailable as a witness therein.

(c) A practitioner shall not pay, offer to pay, or acquiesce in the payment of compensation to a witness contingent upon the content of the witness' affidavit, testimony or the outcome of the case. But a practitioner may advance, guarantee, or acquiesce in the payment of:

(1) Expenses reasonably incurred by a witness in at-

tending, testifying, or making an affidavit.

(2) Reasonable compensation to a witness for the witness' loss of time in attending, testifying, or making an affidavit.

(3) A reasonable fee for the professional services of an expert witness.

§10.93 Contact with officials.

(a) A practitioner shall not give or lend anything of value to a judge, official, or employee of a tribunal under circumstances which might give the appearance that the gift or loan is made to influence official action.

(b) In an adversary proceeding, including any *inter partes* proceeding before the Office, a practitioner shall not communicate, or cause another to communicate, as to the merits of the cause with a judge, official, or Office employee before whom the proceeding is pending, except:

(1) In the course of official proceedings in the cause.

(2) In writing if the practitioner promptly delivers a copy of the writing to opposing counsel or to the adverse party if the adverse party is not represented by a practitioner.

(3) Orally upon adequate notice to opposing counsel or to the adverse party if the adverse party is not represented by a practitioner.

(4) As otherwise authorized by law.

§§10.94-10.99 [reserved]

§10.100 Canon 8.

A practitioner should assist in improving the legal system.

§10.101 Action as a public official.

(a) A practitioner who holds public office shall not:

(1) Use the practitioner's public position to obtain, or attempt to obtain, a special advantage in legislative matters for the practitioner or for a client under circumstances where the practitioner knows or it is obvious that such action is not in the public interest.

(2) Use the practitioner's public position to influence, or attempt to influence, a tribunal to act in favor of the practitioner or of a client.

(3) Accept any thing of value from any person when the practitioner knows or it is obvious that the offer is for the purpose of influencing the practitioner's action as a public official.

(b) A practitioner who is an officer or employee of the United States shall not practice before the Office in patent cases except as provided in §10.6(d).

§10.102 Statements concerning officials.

(a) A practitioner shall not knowingly make false statements of fact concerning the qualifications of a candidate for election or appointment to a judicial office or to a position in the Office.

(b) A practitioner shall not knowingly make false accusations against a judge, other adjudicatory officer, or employee of the Office.

§10.103 Practitioner candidate for judicial office.

A practitioner who is a candidate for judicial office shall comply with applicable provisions of law.

§10.104-10.109 [reserved]

§10.110 Canon 9.

A practitioner should avoid even the appearance of professional impropriety.

§10.111 Avoiding even the appearance of impropriety.

(a) A practitioner shall not accept private employment in a matter upon the merits of which he or she has acted in a judicial capacity.

(b) A practitioner shall not accept private employment in a matter in which he or she had personal responsibility while a public employee.

(c) A practitioner shall not state or imply that the practitioner is able to influence improperly or upon irrelevant grounds any tribunal, legislative body, or public official.

§10.112 Preserving identity of funds and property of client.

(a) All funds of clients paid to a practitioner or a practitioner's firm, other than advances for costs and expenses, shall be deposited in one or more identifiable bank accounts maintained in the United States or, in the case of a practitioner having an office in a foreign country or registered under §10.6(c), in the United States or the foreign country.

(b) No funds belonging to the practitioner or the practitioner's firm shall be deposited in the bank accounts required by paragraph (a) of this section except as follows:

(1) Funds reasonably sufficient to pay bank charges may be deposited therein.

(2) Funds belonging in part to a client and in part presently or potentially to the practitioner or the practitioner's firm must be deposited therein, but the portion belonging to the practitioner or the practitioner's firm may be withdrawn when due unless the right of the practitioner or the practitioner's firm to receive it is disputed by the client, in which event the disputed portion shall not be withdrawn until the dispute is finally resolved.

(c) A practitioner shall:

(1) Promptly notify a client of the receipt of the client's funds, securities, or other properties.

(2) Identify and label securities and properties of a client promptly upon receipt and place them in a safe deposit box or other place of safekeeping as soon as practicable.

(3) Maintain complete records of all funds, securities, and other properties of a client coming into the possession of the practitioner and render appropriate accounts to the client regarding the funds, securities, or other properties.

(4) Promptly pay or deliver to the client as requested by a client the funds, securities, or other properties in the possession of the practitioner which the client is entitled to receive.

(OMB Control No. 0651-0017)

§§10.113-10.129 [reserved]

Investigations and Disciplinary Proceedings

§10.130 Reprimand, suspension or exclusion.

(a) The Commissioner may, after notice and opportunity for a hearing, (a) reprimand or (b) suspend or exclude, either generally or in any particular case, any individual, attorney, or agent shown to be incompetent or disreputable, who is guilty of gross misconduct, or who violates a Disciplinary Rule.

(b) Petitions to disqualify a practitioner in *ex parte* or *inter partes* cases in the Office are not governed by §§10.130 through 10.170 and will be handled on a case-by-case basis under such conditions as the Commissioner deems appropriate.

§10.131 Investigations.

(a) The Director is authorized to investigate possible violations of Disciplinary Rules by practitioners. See §10.2(b) (2).

(b) Practitioners shall report and reveal to the Director any knowledge or evidence required by §10.24. A practitioner shall cooperate with the Director in connection with any investigation under paragraph (a) of this section and with officials of the Office in connection with any disciplinary proceeding instituted under §10.132(b).

(c) Any non-practitioner possessing knowledge or information concerning a violation of a Disciplinary Rule by a practitioner may report the violation to the Director. The Director may require that the report be presented in the form of an affidavit.

§10.132 Initiating a disciplinary proceeding; reference to an administrative law judge.

(a) If after conducting an investigation under §10.131(a) the Director is of the opinion that a practitioner has violated a Disciplinary Rule, the Director shall after complying where necessary with the provisions of 5 U.S.C. 558(c), call a meeting of the Committee on Discipline. The Committee on Discipline shall then determine as specified in §10.4(b) whether a disciplinary proceeding shall be instituted under paragraph (b) of this section.

(b) If the Committee on Discipline determines that probable cause exists to believe that a practitioner has violated a Disciplinary Rule, the Director shall institute a disciplinary proceeding by filing a complaint under §10.134. The complaint shall be filed in the Office of the Director. A disciplinary proceeding may result in:

(1) a reprimand or

(2) suspension or exclusion of a practitioner from practice before the Office.

(c) Upon the filing of a complaint under §10.134, the Commissioner will refer the disciplinary proceeding to an administrative law judge.

§10.133 Conference between Director and practitioner; resignation.

(a) *General.* The Director may confer with a practitioner concerning possible violations by the practitioner of a Disciplinary Rule whether or not a disciplinary proceeding has been instituted.

(b) *Resignation.* Any practitioner who is the subject of an investigation under §10.131 or against whom a complaint has been filed under §10.134 may resign from practice before the Office only by submitting with the Director an affidavit stating his or her desire to resign.

(c) If filed prior to the date set by the administrative law judge for a hearing, the affidavit shall state that:

(1) the resignation is freely and voluntarily proferred;

(2) the practitioner is not acting under duress or coersion from the Office;

(3) the practitioner is fully aware of the implications of filing the resignation;

(4) the practitioner is aware (i) of a pending investigation or (ii) of charges arising from the complaint alleging that he or she is guilty of a violation of the Patent and Trademark Office Code of Professional Responsibility, the nature of which shall be set forth by the practitioner to the satisfaction of the Director;

(5) the practitioner acknowledges that, if and when he or she applies for reinstatement under §10.160, the Director will conclusively presume, for the limited purpose of determining the application for reinstatement, that:

(i) the facts upon which the complaint is based are true and

(ii) the practitioner could not have successfully defended himself or herself against (A) charges predicated on the violation under investigation or (B) charges set out in the complaint filed against the practitioner.

(d) If filed on or after the date set by the administrative law judge for a hearing, the affidavit shall make the statements required by subparagraphs (1) through (4) of paragraph (b) of this section and shall state that:

(1) the practitioner acknowledges the facts upon which the complaint is based are true; and

(2) the resignation is being submitted because the practitioner could not successfully defend himself or herself against (i) charges predicated on the violation under investigation or (ii) charges set out in the complaint.

(e) When an affidavit under paragraph (b) or (c) of this section is received while an investigation is pending, the Commissioner shall enter an order excluding the practitioner "on consent." When an affidavit under paragraphs (b) or (c) of this section is received after a complaint under §10.134 has been filed, the Director shall notify the administrative law judge. The administrative law judge shall enter an order transferring the disciplinary proceeding to the Commissioner and the Commissioner shall enter an order excluding the practitioner "on consent."

(f) Any practitioner who resigns from practice before the Office under this section and who intends to reapply for admission to practice before the Office must comply with the provisions of §10.158.

(g) Settlement. Before or after a complaint is filed under §10.134, a settlement conference may occur between the Director and a practitioner for the purpose of settling any disciplinary matter. If an offer of settlement is made by the Director or the practitioner and is not accepted by the other, no reference to the offer of settlement or its refusal shall be admissible in evidence in the disciplinary proceeding unless both the Director and the practitioner agree in writing.

§10.134 Complaint.

(a) A complaint instituting a disciplinary proceeding shall:

(1) Name the practitioner, who may then be referred to as the "respondent."

(2) Give a plain and concise description of the alleged violations of the Disciplinary Rules by the practitioner.

(3) State the place and time for filing an answer by the respondent.

(4) State that a decision by default may be entered against the respondent if an answer is not timely filed.

(5) Be signed by the Director.

(b) A complaint will be deemed sufficient if it fairly informs the respondent of any violation of the Disciplinary Rules which form the basis for the disciplinary proceeding so that the respondent is able to adequately prepare a defense.

§10.135 Service of complaint.

(a) A complaint may be served on a respondent in any of the following methods:

(1) By handing a copy of the complaint personally to the respondent, in which case the individual handing the complaint to the respondent shall file an affidavit with the Director indicating the time and place the complaint was handed to the respondent.

(2) By mailing a copy of the complaint by "Express Mail" or first-class mail to:

(i) a registered practitioner at the address for which separate notice was last received by the Director or

(ii) a non-registered practitioner at the last address for the respondent known to the Director.

(3) By any method mutually agreeable to the Director and the respondent.

(b) If a complaint served by mail under paragraph (a) (2) of this section is returned by the U.S. Postal Service, the Director shall mail a second copy of the complaint to the respondent. If the second copy of the complaint is also returned by the U.S. Postal Service, the Director shall serve the respondent by publishing an appropriate notice in the *Official Gazette* for four consecutive weeks, in which case the time for answer shall be at least thirty days from the fourth publication of the notice.

(c) If a respondent is a registered practitioner, the Director may serve simultaneously with the complaint a letter under §10.11(b). The Director may require the re-

spondent to answer the §10.11(b) letter within a period of not less than 15 days. An answer to the §10.11(b) letter shall constitute proof of service. If the respondent fails to answer the §10.11(b) letter, his or her name will be removed from the register as provided by §10.11(b).

(d) If the respondent is represented by an attorney under §10.140(a), a copy of the complaint shall also be served on the attorney.

§10.136 Answer to complaint.

(a) *Time for answer.* An answer to a complaint shall be filed within a time set in the complaint which shall be not less than thirty days.

(b) *With whom filed.* The answer shall be filed in writing with the administrative law judge. The time for filing an answer may be extended once for a period of no more than thirty days by the administrative law judge upon a showing of good cause provided a motion requesting an extension of time is filed within thirty days after the date the complaint is filed by the Director. A copy of the answer shall be served on the Director.

(c) *Content.* The respondent shall include in the answer a statement of the facts which constitute the grounds of defense and shall specifically admit or deny each allegation set forth in the complaint. The respondent shall not deny a material allegation in the complaint which the respondent knows to be true or state that respondent is without sufficient information to form a belief as to the truth of an allegation when in fact the respondent possesses that information. The respondent shall also state affirmatively special matters of defense.

(d) *Failure to deny allegations in complaint.* Every allegation in the complaint which is not denied by a respondent in the answer is deemed to be admitted and may be considered proven. No further evidence in respect of that allegation need be received by the administrative law judge at any hearing. Failure to timely file an answer will constitute an admission of the allegations in the complaint.

(e) *Reply by Director.* No reply to an answer is required by the Director and any affirmative defense in the answer shall be deemed to be denied. The Director may, however, file a reply if he or she chooses or if ordered by the adminstrative law judge.

§10.137 Supplemental complaint.

False statements in an answer may be made the basis of a supplemental complaint.

§10.138 Contested case.

Upon the filing of an answer by the respondent, a disciplinary proceeding shall be regarded as a contested case within the meaning of 35 U.S.C. 24. Evidence obtained by a subpoena issued under 35 U.S.C. 24 shall not be admitted into the record or considered unless leave to proceed under 35 U.S.C. 24 was previously authorized by the administrative law judge.

§10.139 Administrative law judge; appointment; responsibilities; review of interlocutory orders; stays.

(a) *Appointment.* An administrative law judge, appointed under 5 U.S.C. 3105, shall conduct disciplinary proceedings as provided by this part.

(b) *Responsibilities.* The administrative law judge shall have authority to:

(1) Administer oaths and affirmations;

(2) Make rulings upon motions and other requests;

(3) Rule upon offers of proof, receive relevant evidence, and examine witnesses;

(4) Authorize the taking of a deposition of a witness in lieu of personal appearance of the witness before the adminstrative law judge;

(5) Determine the time and place of any hearing and regulate its course and conduct;

(6) Hold or provide for the holding of conferences to settle or simplify the issues;

(7) Receive and consider oral or written arguments on facts or law;

(8) Adopt procedures and modify procedures from time to time as occasion requires for the orderly disposition of proceedings;

(9) Make initial decisions under §10.154; and

(10) Perform acts and take measures as necessary to promote the efficient and timely conduct of any disciplinary proceeding.

(c) *Time for making initial decision.* The administrative law judge shall set times and exercise control over a disciplinary proceeding such that an initial decision under §10.154 is normally issued within six months of the date a complaint is filed. The administrative law judge may, however, issue an initial decision more than six months after a complaint is filed if in his or her opinion there exist unusual circumstances which preclude issuance of an initial decision within six months of the filing of the complaint.

(d) *Review of interlocutory orders.* An interlocutory order of an administrative law judge will not be reviewed by the Commissioner except:

(1) when the administrative law judge shall be of the opinion (i) that the interlocutory order involves a controlling question of procedure or law as to which there is a substantial ground for a difference of opinion and (ii) that an immediate decision by the Commissioner may materially advance the ultimate termination of the disciplinary proceeding or

(2) in an extraordinary situation where justice requires review.

(e) *Stays pending review of interlocutory order.* If the Director or a respondent seeks review of an interlocutory order of an administrative law judge under paragraph (b)(2) of this section, any time period set for taking action by the administrative law judge shall not be stayed unless ordered by the Commissioner or the administrative law judge.

§10.140 Representative for Director or respondent.

(a) A respondent may be represented before the Office in connection with an investigation or disciplinary proceeding by an attorney. The attorney shall file a written declaration that he or she is an attorney within the meaning of §10.1(c) and shall state:

(1) the address to which the attorney wants correspondence related to the investigation or disciplinary proceeding sent and

(2) a telephone number where the attorney may be reached during normal business hours.

(b) The Commissioner shall designate at least two associate solicitors in the Office of the Solicitor to act as representatives for the Director in disciplinary proceedings. In prosecuting disciplinary proceedings, the designated associate solicitors shall not involve the Solicitor or the Deputy Solicitor. The Solicitor and the Deputy Solicitor shall remain insulated from the investigation and prosecution of all disciplinary proceedings in order that they shall be available as counsel to the Commissioner in deciding disciplinary proceedings.

§10.141 Filing of papers.

(a) The provisions of §1.8 of this Subchapter do not apply to disciplinary proceedings.

(b) All papers filed after the complaint and prior to entry of an initial decision by the administrative law judge shall be filed with the administrative law judge at an address or place designated by the administrative law judge. All papers filed after entry of an initial decision by the administrative law judge shall be filed with the Director. The Director shall promptly forward to the Commissioner any paper which requires action under this part by the Commissioner.

(c) The administrative law judge or the Director may provide for filing papers and other matter by hand or by "Express Mail."

§10.142 Service of papers.

(a) All papers other than a complaint shall be served on a respondent represented by an attorney by:

(1) delivering a copy of the paper to the office of the attorney; or

(2) mailing a copy of the paper by first-class mail or "Express Mail" to the attorney at the address provided by the attorney under §10.140(a) (1); or

(3) any other method mutually agreeable to the attorney and a representative for the Director.

(b) All papers other than a complaint shall be served on a respondent who is not represented by an attorney by:

(1) delivering a copy of the paper to the respondent; or

(2) mailing a copy of the paper by first-class mail or "Express Mail" to the respondent at the address to which a complaint may be served or such other address as may be designated in writing by the respondent; or

(3) any other method mutually agreeable to the respondent and a representative of the Director.

(c) A respondent shall serve on the representative for the Director one copy of each paper filed with the administrative law judge or the Director. A paper may be served on the representative for the Director by:

(1) delivering a copy of the paper to the representative; or

(2) mailing a copy of the paper by first-class mail or "Express Mail" to an address designated in writing by the representative; or

(3) any other method mutually agreeable to the respondent and the representative.

(d) Each paper filed in a disciplinary proceeding shall contain therein a certificate of service indicating:

(1) the date on which service was made and

(2) the method by which service was made.

(e) The administrative law judge or the Commissioner may require that a paper be served by hand or by "Express Mail."

(f) Service by mail is completed when the paper mailed in the United States is placed into the custody of the U.S. Postal Service.

§10.143 Motions.

Motions may be filed with the administrative law judge. The adminstrative law judge will determine on a case-by-case basis the time period for response to a motion and whether replies to responses will be authorized. No motion shall be filed with the administrative law judge unless such motion is supported by a written statement by the moving party that the moving party or attorney for the moving party has conferred with the opposing party or attorney for the opposing party in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If issues raised by a motion are resolved by the parties prior to a decision on the motion by the administrative law judge, the parties shall promptly notify the administrative law judge.

§10.144 Hearings.

(a) The administrative law judge shall preside at hearings in disciplinary proceedings. Hearings will be stenographically recorded and transcribed and the testimony of witnesses will be received under oath or affirmation. The administrative law judge shall conduct hearings in accordance with 5 U.S.C. 556. A copy of the transcript of the hearing shall become part of the record. A copy of the transcript shall be provided to the Director and the respondent at the expense of the Office.

(b) If the respondent to a disciplinary proceeding fails to appear at the hearing after a notice of hearing has been given by the administrative law judge, the administrative law judge may deem the respondent to have waived the right to a hearing and may proceed with the hearing in the absence of the respondent.

(c) A hearing under this section will not be open to the public except that the Director may grant a request by a respondent to open his or her hearing to the public and make the record of the disciplinary proceeding available for public inspection, *provided* agreement is reached in advance to exclude from public disclosure information which is privileged or confidential under applicable laws or regulations. If a disciplinary proceeding results in disciplinary action against a practitioner, and subject to §10.159(c), the record of the entire disciplinary proceeding, including any settlement agreement, will be available for public inspection.

§10.145 Proof; variance; amendment of pleadings.

In case of a variance between the evidence and the allegations in a complaint, answer, or reply, if any, the administrative law judge may order or authorize amendment of the complaint, answer, or reply to conform to the evidence. Any party who would otherwise be prejudiced by the amendment will be given reasonable opportunity to meet the allegations in the complaint, answer, or reply, as amended, and the administrative law judge shall make findings on any issue presented by the complaint, answer, or reply as amended.

§§10.146-10.148 [reserved]

§10.149 Burden of proof.

In a disciplinary proceeding, the Director shall have the burden of proving his or her case by clear and convincing evidence and a respondent shall have the burden of providing any affirmative defense by clear and convincing evidence.

§10.150 Evidence.

(a) *Rules of evidence.* The rules of evidence prevailing in courts of law and equity are not controlling in hearings in disciplinary proceedings. However, the administrative law judge shall exclude evidence which is irrelevant, immaterial, or unduly repetitious.

(b) *Depositions.* Depositions of witnesses taken pursuant to §10.151 may be admitted as evidence.

(c) *Government documents.* Official documents, records, and papers of the Office are admissible without extrinsic evidence of authenticity. These documents, records and papers may be evidenced by a copy certified as correct by an employee of the Office.

(d) *Exhibits.* If any document, record, or other paper is introduced in evidence as an exhibit, the administrative law judge may authorize the withdrawal of the exhibit subject to any conditions the administrative law judge deems appropriate.

(e) *Objections.* Objections to evidence will be in short form, stating the grounds of objection. Objections and rulings on objections will be a part of the record. No exception to the ruling is necessary to preserve the rights of the parties.

§10.151 Depositions.

(a) Depositions for use at the hearing in lieu of personal appearance of a witness before the administrative law judge may be taken by respondent or the Director upon a showing of good cause and with the approval of, and under such conditions as may be deemed appropriate by, the administrative law judge. Depositions may be taken upon oral or written questions, upon not less than ten days written notice to the other party, before any officer authorized to administer an oath or affirmation in the place where the deposition is to be taken. The requirement of ten days notice may be waived by the parties and depositions may then be taken of a witness and at a time and place mutually agreed to by the parties. When a deposition is taken upon written questions, copies of the written questions will be served

upon the other party with the notice and copies of any written cross-questions will be served by hand or "Express Mail" not less then five days before the date of the taking of the deposition unless the parties mutually agree otherwise. A party on whose behalf a deposition is taken shall file a copy of a transcript of the deposition signed by a court reporter with the administrative law judge and shall serve one copy upon the opposing party. Expenses for a court reporter and preparing, serving, and filing depositions shall be borne by the party at whose instance the deposition is taken.

(b) When the Director and the respondent agree in writing, a deposition of any witness who will appear voluntarily may be taken under such terms and conditions as may be mutually agreeable to the Director and the respondent. The deposition shall not be filed with the administrative law judge and may not be admitted in evidence before the administrative law judge unless he or she orders the deposition admitted in evidence. The admissibility of the deposition shall lie within the discretion of the administrative law judge who may reject the deposition on any reasonable basis including the fact that demeanor is involved and that the witness should have been called to appear personally before the administrative law judge.

§10.152 Discovery.

Discovery shall not be authorized except as follows:

(a) After an answer is filed under §10.136 and when a party establishes in a clear and convincing manner that discovery is necessary and relevant, the administrative law judge, under such conditions as he or she deems appropriate, may order an opposing party to:

(1) answer a reasonable number of written requests for admission or interrogatories;

(2) produce for inspection and copying a reasonable number of documents; and

(3) produce for inspection a reasonable number of things other than documents.

(b) Discovery shall not be authorized under paragraph (a) of this section of any matter which:

(1) will be used by another party solely for impeachment or cross-examination;

(2) is not available to the party under 35 U.S.C. §122;

(3) relates to any disciplinary proceeding commenced in the Patent and Trademark Office prior to Mar. 8, 1985;

(4) relates to experts except as the administrative law judge may require under paragraph (e) of this section.

(5) is privileged; or

(6) relates to mental impressions, conclusions, opinions, or legal theories of any attorney or other representative of a party.

(c) the administrative law judge may deny discovery requested under paragraph (a) of this section if the discovery sought:

(1) will unduly delay the disciplinary proceeding;

(2) will place an undue burden on the party required to produce the discovery sought; or

(3) is available (i) generally to the public, (ii) equally to the parties; or (iii) to the party seeking the discovery through another source.

(d) Prior to authorizing discovery under paragraph (a) of this section, the administrative law judge shall require the party seeking discovery to file a motion (§10.143) and explain in detail for each request made how the discovery sought is necessary and relevant to an issue actually raised in the complaint or the answer.

(e) The administrative law judge may require parties to file and serve, prior to any hearing, a pre-hearing statement which contains

(1) A list (together with a copy) of all proposed exhibits to be used in connection with a party's case-in-chief,

(2) a list of proposed witnesses,

(3) as to each proposed expert witness:

(i) an identification of the field in which the individual will be qualified as an expert;

(ii) a statement as to the subject matter on which the expert is expected to testify; and

(iii) a statement of the substance of the facts and opinions to which the expert is expected to tesify,

(4) the identity of government employees who have investigated the case, and

(5) copies of memoranda reflecting respondent's own statements to administrative representatives.

(f) After a witness testifies for a party, if the opposing party requests, the party may be required to produce, prior to cross-examination, any written statement made by the witness.

§10.153 Proposed findings and conclusions; post-hearing memorandum.

Except in cases when the respondent has failed to answer the complaint, the administrative law judge, prior to making an initial decision, shall afford the parties a reasonable opportunity to submit proposed findings and conclusions and a post-hearing memorandum in support of the proposed findings and conclusions.

§10.154 Initial decision of administrative law judge.

(a) The administrative law judge shall make an initial decision in the case. The decision will include (a) a statement of findings and conclusions, as well as the reasons or basis therefore with appropriate references to the record, upon all the material issues of fact, law, or discretion presented on the record, and (b) an order of suspension or exclusion from practice, an order of reprimand, or an order dismissing the complaint. The adminstrative law judge shall file the decision with the Director and shall transmit a copy to the representative of the Director and to the respondent. In the absence of an appeal to the Commissioner, the decision of the administrative law judge will, without further proceedings, become the decision of the Commissioner of Patents and Trademarks thirty (30) days from the date of the decision of the administrative law judge.

(b) The initial decision of the administrative law judge shall explain the reason for any penalty of reprimand, suspension or exclusion. In determining any penalty, the following should normally be considered:

(1) the public interest;

(2) the seriousness of the violation of the Disciplinary Rule;

(3) the deterrent effects deemed necessary; and

(4) the integrity of the legal profession; and

(5) any extenuating circumstances.

§10.155 Appeal to the Commissioner.

(a) Within thirty (30) days from the date of the initial decision of the administrative law judge under §10.154, either party may appeal to the Commissioner. An appeal by the respondent will be filed with the Director in duplicate and will include exceptions to the decisions of the administrative law judge and supporting reasons for those exceptions. If the Director files the appeal, the Director shall serve a copy of the appeal. Within thirty (30) days after receipt of an appeal or copy thereof, the other party may file a reply brief in duplicate with the Director. If the Director files the reply brief, the Director shall serve a copy of the reply brief. Upon the filing of an appeal and a reply brief, if any, the Director shall transmit the entire record to the Commissioner.

(b) The appeal will be decided by the Commissioner on the record made before the administrative law judge.

(c) The Commissioner may order reopening of a disciplinary proceeding in accordance with the principles which govern the granting of new trials. Any request to reopen a disciplinary proceeding on the basis of newly discovered evidence must demonstrate that the newly discovered evidence could not have been discovered by due diligence.

§10.156 Decision of the Commissioner.

(a) An appeal from an initial decision of the administrative law judge shall be decided by the Commissioner. The Commissioner may affirm, reverse, or modify the initial decision or remand the matter to the administrative law judge for such further proceedings as the Commissioner may deem appropriate. Entry of a decision by the Commissioner is a final agency action in a disciplinary proceeding. In making a final decision, the Commissioner shall review the record or those portions of the record as may be cited by the parties in order to limit the issues. The Comissioner shall tranmit a copy of the final decision to the Director and to the respondent.

(b) A final decision of the Commissioner may dismiss a disciplinary proceeding, reprimand a practitioner, or may suspend or exclude the practitioner from practice before the Office.

§10.157 Review of Commissioner's final decision.

(a) Review of the Commissioner's final decision in a disciplinary case may be had by a petition filed in the United States District Court for the District of Columbia. See 35 U.S.C. 32 and Local Rule 1-26 of the United States District Court for the District of Columbia.

(b) The Commissioner may stay a final decision pending review of the Commissioner's final decision.

§10.158 Suspended or excluded practitioner.

(a) A practitioner who is suspended or excluded from practice before the Office under §10.156(b) shall not engage in unauthorized practice of patent, trademark and other non-patent law before the Office.

(b) Unless otherwise ordered by the Commissioner, any practitioner who is suspended or excluded from practice before the Office under §10.156(b) shall:

(1) Within 30 days of entry of the order of suspension or exclusion, notify all bars of which he or she is a member and all clients of the practitioner for whom he or she is handling matters before the Office in separate written communications of the suspension or exclusion and shall file a copy of each written communication with the Director.

(2) Within 30 days of entry of the order of suspension or exclusion, surrender a client's active Office case files to (i) the client or (ii) another practitioner designated by the client.

(3) Not hold himself or herself out as authorized to practice law before the Office.

(4) Promptly take any necessary and appropriate steps to remove from any telephone, legal, or other directory any advertisement, statement, or representation which would reasonably suggest that the practitioner is authorized to practice patent, trademark or other nonpatent law before the Office, and within 30 days of taking those steps, file with the Director an affidavit describing the precise nature of the steps taken.

(5) Not advertise the practitioner's availability or ability to perform or render legal services for any person having immediate, prospective, or pending business before the Office.

(6) Not render legal advice or services to any person having immediate, prospective, or pending business before the Office as to that business.

(7) Promptly take steps to change any sign identifying a practitioner's or the practitioner's firm's office and the practitioner's or the practitioner's firm's stationary to delete therefrom any advertisement, statement, or representation which would reasonably suggest that the practitioner is authorized to practice law before the Office.

(8) Within 30 days, return to any client any unearned funds, including any unearned retainer fee, and any securities and property of the client.

(c) A practitioner who is suspended or excluded from practice before the Office and who aides another practitioner in any way in the other practitioner's practice of law before the Office, may, under the direct supervision of the other practitioner, act as a para-legal for the other practitioner or perform other services for the other practitioner which are normally performed by lay-persons, *provided:*

(1) the practitioner who is suspended or excluded is:

(i) a salaried employee of:

(A) the other practitioner;

(B) the other practitioner's law firm; or

(C) a client-employer who employs the other practitioner as a salaried employee;

(2) the other practitioner assumes full professional responsibility to any client and the Office for any work performed by the suspended or excluded practitioner for the other practitioner;

(3) the suspended or excluded practitioner, in connection with any immediate, prospective, or pending business before the Office, does not:

(i) communicate directly in writing, orally, or otherwise with a client of the other practitioner;

(ii) render any legal services to a client of the other practitioner; or

(iii) meet in person or in the presence of the other practitioner with:

(A) any Office official in connection with the prosecution of any patent, trademark, or other case;

(B) any client of the other practitioner, the other practioner's law firm, or the client-employer of the other practitioner;

(C) any witness or potential witness which the other practitioner, the other practitioner's law firm, or the other practitioner's client-employer may or intends to call as a witness in any proceeding before the Office. The term "witness" includes individuals who will testify orally in a proceeding before, or sign an affidavit or any other document to be filed in, the Office.

(d) When a suspended or excluded practitioner acts as a para-legal or performs services under paragraph (c) of this section, the suspended or excluded practitioner shall not thereafter be reinstated to practice before the Office unless:

(1) the suspended or excluded practitioner shall have filed with the Director an affidavit which (i) explains in detail the precise nature of all para-legal or other services performed by the suspended or excluded practitioner and (ii) shows by clear and convincing evidence that the suspended or excluded practitioner has complied with the provisions of this section and all Disciplinary Rules, and

(2) the other practitioner shall have filed with the Director a written statement which (i) shows that the other practitioner has read the affidavit required by subparagraph (d) (1) of this section and that the other practitioner believes every statement in the affidavit to be true and (ii) states why the other practitioner believes that the suspended or excluded practitioner has complied with paragraph (c) of this section.

§10.159 Notice of suspension or exclusion.

(a) Upon issuance of a final decision reprimanding a practitioner or suspending or excluding a practitioner from practice before the Office, the Director shall give notice of the final decision to appropriate employees of the Office and to interested departments, agencies, and courts of the United States. The Director shall also give notice to appropriate authorities of any State in which a practitioner is known to be a member of the bar and any appropriate bar association.

(b) The Director shall cause to be published in the *Official Gazette* the name of any practitioner suspended or excluded from practice. Unless otherwise ordered by the Commissioner, the Director shall publish in the *Official Gazette* the name of any practitioner reprimanded by the Commissioner.

(c) The Director shall maintain records, which shall be available for public inspection, of every disciplinary proceeding where a practitioner is reprimanded, suspended, or excluded unless the Commissioner orders that the proceeding be kept confidential.

§10.160 Petition for reinstatement.

(a) A petition for reinstatement of a practitioner suspended for a period of less than five years will not be considered until the period of suspension has passed.

(b) A petition for reinstatement of a practitioner excluded from practice will not be considered until five years after the effective date of the exclusion.

(c) An individual who has resigned under §10.133 or who has been suspended or excluded may file a petition for reinstatement. The Director may grant a petition for reinstatement when the individual makes a clear and convincing showing that the individual will conduct himself or herself in accordance with the regulations of this part and that granting a petition for reinstatement is not contrary to the public interest. As a condition to reinstatement, the Director may require the individual to:

(1) meet the requirements of §10.7, including taking and passing an examination under §10.7(b) and

(2) pay all or a portion of the costs and expenses, not to exceed $1,500, of the disciplinary proceeding which lead to suspension or exclusion.

(d) Any suspended or excluded practitioner who has violated the provisions of §10.158 during his or her period of suspension or exclusion shall not be entitled to reinstatement until such time as the Director is satisfied that a period of suspension equal in time to that ordered by the Commissioner or exclusion for five years has passed during which the suspended or excluded practitioner has complied with the provisions of §10.158.

(e) Proceedings on any petition for reinstatement shall be open to the public. Before reinstating any suspended or excluded practitioner, the Director shall publish in the *Official Gazette* a notice of the suspended or excluded practitioner's petition for reinstatement and shall permit the public a reasonable opportunity to comment or submit evidence with respect to the petition for reinstatement.

§10.161 Savings clause.

(a) A disciplinary proceeding based on conduct engaged in prior to the effective date of these regulations may be instituted subsequent to such effective date, if such conduct would continue to justify suspension or exclusion under the provisions of this part.

(b) No practitioner shall be subject to a disciplinary proceeding under this part based on conduct engaged in before the effective date hereof if such conduct would not have been subject to disciplinary action before such effective date.

§10.162-10.169 [reserved]

§10.170 Suspension of rules.

(a) In an extraordinary situation, when justice requires, any requirement of the regulations of this part which is not a requirement of the statutes may be suspended or waived by the Commissioner or the Commissioner's designee, *sua sponte*, or on petition of any party, including the Director or the Director's representative, subject to such other requirements as may be imposed.

(b) Any petition under this section will not stay a disciplinary proceeding unless ordered by the Commissioner or an administrative law judge.

Dec. 21, 1984. GERALD J. MOSSINGHOFF
Commissioner of Patents and Trademarks

[1052 OG 4]

(144) Patent Cooperation Treaty (PCT) Update

Change in International Fees effective Jan. 1, 1985, change in international search fee charged by European Patent Office, and Listing of PCT Countries

I. Change in International Fees, Effective Jan. 1, 1985

On Sept. 28, 1984, the PCT Assembly in its twelfth session (eighth Extraordinary) held in Geneva, Switzerland, fixed new amounts for the various international fees set in Swiss francs in the Schedule of Fees annexed to the PCT Regulations, effective Jan. 1, 1985. The new amounts in Swiss francs reflect a 5% increase over the previous amounts. The U.S. dollar amounts, however, reflect an overall decrease from the previous amounts.

The PCT Assembly also fixed an upper limit on the number of designation fees which must be paid for a single PCT application at ten. Effective Jan. 1, 1985 designation fees must be paid only for the first ten (10) country or regional designations. There is no payment due for the eleventh and subsequent country or regional designations.

Effective Jan. 1, 1985, for the United States applicants filing PCT international applications in the United States Receiving Office, the amount of the International fees are as follows:

Basic Fee (first 30 pages)	$ 265.00
Basic Supplemental Fee (each page over 30)	5.00
Designation Fee (per country or region up to ten)	64.00
Designation Fee (for 11th and subsequent countries or regions)	No Charge

II. Change in international search fee charged by European Patent Office

A new amount of 690 U.S. dollars has been established for the search fee for an international search by the European Patent Office. The new amount is applicable as from Jan. 3, 1985.

* * * * *

Dec. 24, 1984. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1050 OG 330]

(145) Patent Cooperation Treaty (PCT) Update

Accession to the Patent Cooperation Treaty (PCT) by Barbados, ratification of the PCT by Italy and listing of PCT Member Countries.

The United States Patent and Trademark Office has received notification from the World Intellectual Property Organization (WIPO) that Barbados deposited its instrument of accession to the PCT on 12 Dec. 1984. Therefore, according to PCT Article 63(2), Barbados may be designated in international applications filed on and after 12 Mar. 1985.

The Office also received notification from WIPO that Italy deposited its instrument of ratification to the PCT on 28 Dec. 1984. Therefore, Italy may be designated in international applications filed on and after 28 Mar. 1985. It should be noted that only regional patent protection through the European Patent Office will be available for PCT applications designating Italy. Applicants who wish to secure an Italian national patent must file directly with the Italian Patent Office.

The entry into force of the PCT for Italy is of particular importance since it has the consequence that, as from 28 Mar. 1985, all countries party to the European Patent Convention (Austria, Belgium, France, Germany (Federal Republic of), Italy, Liechtenstein, Luxembourg, the Netherlands, Sweden, Switzerland and the United Kingdom) will also be party to the PCT. This opens the possibility of obtaining, by filing a single international application under the PCT, a European patent for all those countries with the same rights as would be conferred by a national patent granted in each country. Currently, about 5000 designations of Italy are made by applicants from the United States in European patent applications each year.

Listing of PCT Member Countries

	Country	Ratification or Accession	Date of Ratification or Accession	Date from which Country may be Designated
(1)	Central African Republic*	Accession	15 September 1971	01 June 1978
(2)	Senegal*	Ratification	08 March 1972	01 June 1978
(3)	Madagascar	Ratification	27 March 1972	01 June 1978
(4)	Malawi	Accession	16 May 1972	01 June 1978
(5)	Cameroon*	Accession	15 March 1973	01 June 1978
(6)	Chad*	Accession	12 February 1974	01 June 1978
(7)	Togo*	Ratification	28 January 1975	01 June 1978
(8)	Gabon*	Accession	06 March 1975	01 June 1978
(9)	United States of America	Ratification	26 November 1975	01 June 1978
(10)	Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11)	Congo*	Accession	08 August 1977	01 June 1978
(12)	Switzerland**	Ratification	14 September 1977	01 June 1978
(13)	United Kingdom**	Ratification	24 October 1977	01 June 1978
(14)	France**	Ratification	25 November 1977	01 June 1978
(15)	Soviet Union	Ratification	29 December 1977	01 June 1978
(16)	Brazil	Ratification	09 January 1978	01 June 1978
(17)	Luxembourg**	Ratification	31 January 1978	01 June 1978
(18)	Sweden**	Ratification	17 February 1978	01 June 1978
(19)	Japan	Ratification	01 July 1978	01 October 1978
(20)	Denmark	Ratification	01 September 1978	01 December 1978
(21)	Austria**	Ratification	23 January 1979	23 April 1979
(22)	Monaco	Ratification	22 March 1979	22 June 1979
(23)	Netherlands**	Ratification	10 April 1979	10 July 1979
(24)	Romania	Accession	23 April 1979	23 July 1979
(25)	Norway	Ratification	01 October 1979	01 January 1980
(26)	Liechtenstein**	Accession	19 December 1979	19 March 1980
(27)	Australia	Accession	31 December 1979	31 March 1980
(28)	Hungary	Ratification	27 March 1980	27 June 1980
(29)	Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30)	Finland	Ratification	01 July 1980	01 October 1980
(31)	Belgium**	Ratification	14 September 1981	14 December 1981
(32)	Sri Lanka	Accession	26 November 1981	26 February 1982
(33)	Mauritania*	Accession	13 January 1983	13 April 1983
(34)	Sudan	Accession	16 January 1984	16 April 1984
(35)	Bulgaria	Accession	21 February 1984	21 May 1984
(36)	Republic of Korea (South Korea)	Accession	10 May 1984	10 August 1984
(37)	Mali*	Accession	19 July 1984	19 October 1984
(38)	Barbados	Accession	12 December 1984	12 March 1985
(39)	Italy**	Ratification	28 December 1984	28 March 1985

* Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI member countries. A designation of any country is an indication that all OAPI countries have been designated. Note: Only one designation fee is due regardless of the number of OAPI member countries designated.

**Member of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member countries are available through PCT, except for France, Belgium and Italy, for which only European patents are available if PCT is used. Note: Only one PCT designation fee is due if European regional patent protection is sought for one, several or all EPC member countries.

Feb. 4, 1985. DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

[1052 OG 52]

(146) Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Oct. 12, 1985 and is announced in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

International PCT fees have been changed effective Oct. 29, 1985 and were announced in the *PCT Gazette* on Aug. 29, 1985 and in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	170.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	

—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority, all cases	750.00
International fees	
Basic fee (first 30 pages):	280.00
Basic Supplemental fee (for each page over 30):	6.00
Designation fee for the first 10 national or regional offices:	70.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Oct. 21, 1985.

[1058 OG 26]

(147) **Reduction of European Search Fee for PCT Cases**

The following letter dated December 21, 1979 from Dr. J. B. Van Benthem, the President of the European Patent Office, was received by the Commissioner of Patents and Trademarks and is being published to provide the information to applicants using the Patent Cooperation Treaty (PCT). The effect of the decision of the European Patent Organization is to reduce the search fee required by the European Patent Office by 20% if the application was filed under the PCT and was searched by the United States Patent and Trademark Office acting as an International Searching Authority.

The letter and accompanying annex are reproduced below.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

"Dear Mr. Diamond:

Pursuant to Article 157, paragraph 3, EPC, the Administrative Council of the European Patent organization is entitled to decide under what conditions and to what extent:

a) the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with

b) the search fee as provided for in Article 157, paragraph 2b, EPC is to be reduced.

Up to the present, the Administrative Council of the EPO has taken decisions in regard to the Article 157, paragraph 3, in respect of international applications for which the international search report has been drawn up by the following Offices: the European Patent Office, the Swedish Patent Office, the Austrian patent Office, the United States Patent and Trademark Office, the Japanese Patent Office and USSR State Committee for Inventions and Discoveries.

The decisions concerning the Swedish and Austrian Patent Offices are based on the agreements concluded between these Offices and the EPO pursuant to Section III, paragraph 2 and Section IV, paragraph 2 of the Protocol on the Centralisation of the European Patent System, which is an integral part f the EPC. These agreements prescribe that the searches to be carried out by these Offices are to meet the same criteria and be of the same standard as applied at the EPO.

For these reasons the Administrative Council has decided that in respect of Sweden and Austria the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with and a search fee as provided for in Article 157, paragraph 2b, EPC shall not be charged.

As far as those States are concerned which are not members of the European Patent Organization, the Administrative Council of the EPO decided on 14 September 1979, that the search fee provided for in Article 157, paragraph 2b, EPC, shall be reduced by one-fifth in the case of international applications on which an international search report has been drawn up by the United States patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries. This reduction reflects the economy expected to be made in drawing up the supplementary European search report according to EPO standards.

Annexed you will find a copy of the Decision of 14 Sept. 1979. It applies to all international applicatios filed since 1 June 1979.

Yours sincerely,
J. B. Van Benthem.

(President)"

ANNEX

The Administrative Council of the European Patent Organization

Having regard to the European Patent Convention (hereinafter called "the Convention"), and in particular Article 157, paragraph 3, thereof, Has decided as follows:

Article 1

The search fee provided for in Article 157, paragraph 2(b), of the Convention shall be reduced by one fifth in the case of international applications on which an international search report has been drawn up by the United States Patent ad Trademark Office, the Japanese Patent Officer or the USSR State Committee for Inventions and Discoveries.

Article 2

This decision shall enter into force on 14 September 1979. It shall apply to all international applications filed since 1 June 1978.

Done at Berlin, 14, Sept. 1979.

For the Administrative Council
The Chairman
G. VANES
END OF ANNEX

[992 O.G. 2]

(148) **Amendments to Patent Cooperation Treaty**

The 11th session of the PCT Union Assembly held in Geneva, Switzerland from 30 Jan. to 3 Feb. 1984 decided to amend two time limits in the Treaty (Articles 22(2) and 39(1)(a)) and to revise approximately one hundred provisions in the PCT Regulations.

The assembly decided that all amendments would enter into force on Jan. 1, 1985, subject to the following:

(i) the amendments to Rules 12.1(c) and (d), 34.1 and 48.3(a) and (b) will become applicable at the same time that the PCT will enter into force in respect of the first Spanish speaking country to ratify or accede to the PCT;

(ii) the deletion of Rule 80.6(b) will become effective on Jan. 1, 1986;

(iii) some countries may, under certain circumstances, delay, for a transitory period, the application, by them, of some of the amendments. Delays required by U.S. law are noted below.

The purpose and a brief description of the most important amendments are indicated below.

Making the Procedure During the International Phase Under Chapter I of the PCT Safer and Simpler for the Applicant.

The Assembly adopted very important amendments giving the applicant the means to ensure that his or her international application will not be lost because the record copy has not reached the International Bureau in due time (see Rules 20.5 and 22.1). The time limit at the expiration of which the international application would be considered withdrawn under Article 12(3) if the record copy had not reached the International Bureau will start running only when a notification is sent by the International Bureau to the applicant (see Rule 22.3), and the new system as resulting from those various amendments will completely replace the "alternative" procedure previously provided by Rule 22.2.

Other amendments will have the effect that the one-month grace period for the payment of the international fee and the search fee will be granted by all Receiving Offices, subject to some transitional provisions, (see Rule 15.4).

Amendments were adopted which will expressly allow the time limits fixed by the Receiving Office for the correction of defects to be extended and will ensure that no international application will be considered withdrawn by the Receiving Office for lack of compliance with physical requirements if it complies with those requirements to the extent necessary for the purpose of reasonably uniform international publication (see Rule 26).

The time limit within which the applicant may amend the claims during the international phase will be longer in certain cases. Furthermore, the applicant will have the possibility to state more in his or her explanations of amendments and will be permitted to submit the amendments in the language of publication only. (See Rule 46).

The amendments to Rules 32 and 32 bis, make it possible to withdraw the international application, designations, or the priority claim by filing a notice with the Receiving Office even after the latter has sent the record copy to the International Bureau. The Assembly noted that the international application would not be published if the withdrawal reached the International Bureau before the completion of the technical preparation for international publication, which is not earlier than 15 days before the expiration of 18 months from the priority date.

The rules concerning the rectification, during the international phase, of obvious errors in documents were liberalized by allowing the rectification of obvious errors which are not errors of transcription (see Rule 91). Furthermore, the applicant may, if the rectification has been refused during the international phase, obtain publication of the request for rectification in the pamphlet publishing the international application. Such publication, however, will not relieve the applicant from the need to request, during the national phase, the Designated Offices to authorize the rectification.

New rules were adopted which deal with Designated States excusing delays in meeting certain time limits, in particular, time limits pertaining to the international phase and the time limit for entering the national phase (see Rule 82bis). In that connection, it was understood by the Assembly that the excusing of the delay may take place only during the national phase and under the conditions set forth by the national law.

Making the Procedure Under Chapter II of the PCT More Attractive for the Applicant.

A very important amendment adopted by the Assembly consisted of modifying the time limit under Article 39(1)(a) for entering the national phase before elected Offices. Subject to some transitory provisions, the 25 month time limit has been extended to 30 months. The Assembly also decided to extend the time limit to 28 months from the priority date to establish the international preliminary examination report: where preliminary examination has been demanded before the expiration of the 19th month from the priority date. The said extensions give applicants more opportunities to present arguments to the International Preliminary Examining Authority and more time for thorough international preliminary examination. (See Article 39 and Rules 66.4 and 69.)

Note that Chapter II procedure is *not* currently available to United States residents or nationals filing in the United States Receiving Office or to international applications as to designations of the United States of America.

Making it Safer and Simpler for the Applicant to Enter the National Phase.

The Assembly modified the time limit under Article 22(2) in order to harmonize it with the time limit under Article 22(1). This amendment means that, subject to some transitory provisions, the time limit for entering the national phase before the Designated Offices will be 20 months from the priority date in *all* cases, even where the International Searching Authority declares that no international search report will be established. In the latter case, under the previous text, the time limit was shorter.

The Assembly adopted new rules specifying the requirements for entering the national phase, in particular, the contents of the translation of the international application to be furnished when entering the national phase. (see Rules 49.3 to 49.5, 51 bis and 74). It is now clear that the applicant must be given an opportunity *after* entering the national phase before the Designated Office, for furnishing evidence—where evidence is required under the national law—as to the identity of the inventor if not the applicant, the applicant's right to file when he or she is not the inventor or circumstances making an earlier disclosure non-prejudicial. Also, if the applicant did not appoint a local agent when the national phase is entered, that he or she must be given an opportunity, *after* entering the national phase, to appoint a local agent where he or she is, under the national law, obliged to be represented by such an agent.

Including Certain Patent Documents Published in the Spanish Language into the PCT Minimum Documentation and Including the Spanish Language Among the Languages of Publication of International Applications.

It is expected that the very important amendments adopted by the Assembly in that connection will make it easier for Spain and for Spanish-speaking countries of Latin America to join the PCT Union (see Rules 12.1(c) and (d), 34.1 and 48.3(a) and (b)).

Simplifying the Tasks of the International Authorities Involved in the PCT Procedure and Simplifying the PCT Regulations in General.

The Assembly adopted a number of amendments in that connection, in particular, through the transfer of Rules or parts of Rules which are of no direct interest to applicants to the Administrative Instructions under the PCT and the deletion of some obsolete Rules. It is to be expected that after this very comprehensive revision of the Regulations, there will be a longer period during which no, or only very few, changes will be necessary in the PCT system.

Comments on particular changes:

Decisions Concerning Articles 22(2) and 39(1)(a)

Decision concerning Article 22(2)

The Assembly, in order to make the same time limit applicable under paragraphs (1) and (2) of Article 22, decided as follows:

Article 22(2) is modified as follows:

"•Where the International Searching Authority makes a declaration, under Article 17(2)(a), that no international search report will be established, the time limit for performing the acts referred to in paragraph (1) of this Article shall be *the same as that provided for in paragraph (1)*."

The modification consists of replacing the words "two months from the date of the notification sent to the applicant of the said declaration" by the underlined, it

also consists of deleting, before the word "Where," the words "Notwithstanding the provisions of paragraph (1)".

The modification entered into force on Jan. 1, 1985. However, as long as that time limit is incompatible with the national law applied by the Designated Office, a time limit of two months from the date of the notification sent to the applicant of the said declaration shall, during that transitory period, apply with respect to that Designated Office, provided that such Office has made a notification to that effect to the International Bureau.

Decision Concerning Article 39(1)(a)

The Assembly, in order to extend the time limit under Article 39(1)(a) from 25 to 30 months from the priority date, decided as follows:

Article 39(1)(a) is modified as follows:

"if the selection of any Contracting State has been effected prior to the expiration of the 19th month from the priority date, the provisions of Article 22 shall not apply to such State and the applicant shall furnish a copy of the international application (unless the communication under Article 20 has already taken place) and a translation thereof (as prescribed), and pay the national fee (if any), to each elected Office not later than at the expiration of 30 months from the priority date."

The modification consists of changing "25" to "30".

As noted above, Article 39 relates to procedures under Chapter II which are not currently available to applicants filing in the United States Receiving Office or in international applications when entering the United States as a Designated Office.

The modification of Article 39 entered into force on January 1, 1985. However as long as the said time limit of 30 months is incompatible in all cases with the national law applied by the elected Office, a time limit of 25 months from the priority date shall, during that transitory period, apply with respect to that elected Office, provided that such Office has made a notification to that effect to the International Bureau.

Attention is Directed to Important Amendments to the Regulations Affecting United States Applicants.

Rule 4 relates to the contents of the Request. The changes provide for correction of any obvious errors and correction of the application number of the priority application before the Receiving Office.

Rule 15.4: The amendment sets the period for payment of the basic fee and the international search fee to all the Receiving Offices at one month from the date on which the international application was received; the same applies to the period for payment of designation fees when the application is filed on expiry of the priority period. The provisions in paragraphs (a) and (b) are not yet in effect in the United States under the provisions of Rule 15.4(d).

The amendment makes it clear that the amount to be paid when the fees or their equivalents are increased between the date of filing of the application and the date of payment; the amount to be paid is the lower amount.

Rules 22.1(b) and 22.3 together with Rule 20.5(c): These amendments provide for a system whereby the International Bureau monitors the receipt of the record copy of the international application, and the Receiving Office, and where appropriate the applicant, is notified so that the record copy can be produced if the Receiving Office is late in sending it; at the same time, the amended version of Rule 22.3 introduces a new time limit under Article 12(3) of the Treaty, which begins when such notifications are sent out.

Rule 26.2: Under certain circumstances, the rule now provides that the Receiving Office can extend the time limit for the correction of certain elements in the international application.

Rule 46: The amended Rule makes it easier to submit amended claims within the time limit during the international phase.

Rules 49.5 and 51bis: The new Rules set out the conditions applying to entry into the national or regional phase and in particular those concerning the contents of and physical requirements for the translation under Article 22(1) or 39(1) of the Treaty and the national requirements dealt with in Article 27.

Rule 91: The main purpose of the amendments to this Rule is to enable the applicant, on payment of a fee, to request the publication, at the same time as the international application, of a request for rectification which has been rejected during the international phase.

A copy of the amendments to the PCT Articles and Rules appears below.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Mar. 8, 1985.

Decisions of the Assembly Concerning Articles 22(2) and 39(1)(a) of the Patent Cooperation Treaty (PCT) and Amendments to the Regulations Under the PCT as Adopted by the Assembly

Decisions Concerning Articles 22(2) and 39(1)(a)
Decision Concerning Article 22(2)

The Assembly, in order to make the same time limit applicable under paragraphs (1) and (2) of Article 22, decides as follows:

(1) Article 22(2) is modified as follows:

"Where the International Searching Authority makes a declaration, under Article 17(2)(a), that no international search report will be established, the time limit for performing the acts referred to in paragraph (1) of this Article shall be *the same as that provided for in paragraph (1)*."

(2) The modification enters into force on Jan. 1, 1985. However, as long as that time limit is incompatible with the national law applied by the designated Office, a time limit of two months from the date of the notification sent to the applicant of the said declaration shall, during that transitory period, apply with respect to that designated Office, provided that such Office has made a notification to that effect to the International Bureau.

(3) The notification referred to in paragraph (2) shall be addressed to the International Bureau before Oct. 1, 1984. It shall be promptly published by the International Bureau in the Gazette, and it shall become effective on Jan. 1, 1985.

(4) Any notification effected under paragraph (3) may be withdrawn at any time. Such withdrawal shall be promptly published by the International Bureau in the Gazette, and it shall be effective 2 months after its publication in the Gazette or at any later date as indicated in the notice of withdrawal.

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*The modification consists of replacing the words "two months from the date of the notification sent to the applicant of the said declaration" by the words underlined; it also consists of deleting, before the word "Where," the words "Notwithstanding the provisions of paragraph (1),"

Decision Concerning Article 39(1)(a)

The Assembly, in order to extend the time limit under Article 39(1)(a) from 25 to 30 months from the priority date, decides as follows:

(1) Article 39(1)(a) is modified as follows:

"If the election of any Contracting State has been effected prior to the expiration of the 19th month from the priority date, the provisions of Article 22 shall not apply to such State and the applicant shall furnish a copy of the international application (unless the communication under Article 20 has already taken place) and a translation thereof (as prescribed), and pay the national fee (if any), to each elected Office not later than at the expiration of *30** months from the priority date."

(2) The modification enters into force on Jan. 1, 1985. However, as long as the said time limit of 30 months is incompatible in all cases with the national law applied by the elected Office, a time limit of 25 months from the priority date shall, during that transitory period, apply with respect to that elected Office, provided that such Office has made a notification to that effect to the International Bureau.

(3) The notification referred to in paragraph (2) shall be addressed to the International Bureau before Oct. 1, 1984. It shall be promptly published by the International Bureau in the Gazette, and it shall become effective on Jan. 1, 1985.

(4) Any notification effected under paragraph (3) may be withdrawn at any time. Such withdrawal shall be promptly published by the International Bureau in the Gazette, and it shall be effective 2 months after its publication in the Gazette or at any later date as indicated in the notice of withdrawal.

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*The modification consists of changing "25" to "30."

Amendments to the Regulations*
Rule 4
The Request (Contents)

4.1 to 4.9 [No change]

4.10 Priority Claim

(a) [No change]

(b) If the request does not indicate both

(i) When the earlier application is not a regional or an international application, the country in which it was filed; when the earlier application is a regional or an international application, at least one country for which it was filed, and

(ii) the date on which it was filed,

the priority claim shall, for the purpose of the procedure under the Treaty, be considered not to have been made except where, resulting from an obvious error **, the indication of the said country or the said date is missing or is erroneous; whenever the identity or correct identity of the said country, or the said date or the correct date, may be established on the basis of the copy of the earlier application which reaches the receiving Office before it transmits the record copy to the International Bureau, the error shall be considered as an obvious error.

(c) If the application number of the earlier application is not indicated in the request but is furnished by the applicant to the International Bureau *or to the receiving Office* prior to the expiration of the 16th month from the priority date, it shall be considered by all designated States to have been furnished in time.***

(d) If the filing date of the earlier application as indicated in the request does not fall within the period of one year preceding the international filing date, the receiving Office, or, if the receiving Office has failed to do so, the International Bureau, shall invite the applicant to ask either for the cancellation of the declaration made under Article 8(1) or, if the date of the earlier application was indicated erroneously, for the correction of the date so indicated. If the applicant fails to act accordingly within 1 month from the date of the invitation, the declaration made under Article 8(1) shall be cancelled ex officio.****

(e) [No change]

4.11 to 4.16 [No change]

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*Where the amendment consists of one or more new words, it or they are underlined (the word or words which is or are replaced are not indicated). Where the amendment consists of deleting one or more words, without replacing it or them, this fact is indicated in footnotes.

**The amendment consists of deleting, after the word "error," the words "of transcription."

***The amendment also consists of deleting the last two sentences of this paragraph.

****The amendment consists of deleting the last two sentences of the present text of this paragraph.

4.17 Additional* Matter

(a) The request shall contain no matter other than that specified in Rules 4.1 to 4.16, *provided that the Administrative Instructions may permit, but cannot make mandatory, the inclusion in the request of any additional matter specified in the Administrative Instructions.*

(b) If the request contains matter other than that specified in Rules 4.1 to 4.16 *or permitted under paragraph (a) by the Administrative Instructions,* the receiving Office shall ex officio delete the additional matter.

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*The amendment consists of deleting the word "No" before the word "Additional."

Rule C
The Claims

6.1 to 6.3 [No change]

6.4 Dependent Claims

(a) Any claim which includes all the features of one or more other claims (claim in dependent form, hereinafter referred to as "dependent claim") shall do so by a reference, if possible at the beginning, to the other claim or claims

and shall then state the additional features claimed. Any dependent claim which refers to more than one other claim ("multiple dependent claim") shall refer to such claims in the alternative only. Multiple dependent claims shall not serve as a basis for any other multiple dependent claim. *Where the national law of the national Office acting as International Searching Authority does not allow multiple dependent claims to be drafted in a manner different from that provided for in the preceding two sentences, failure to use that manner of claiming may result in an indication under Article 17(2)(b) in the international search report. Failure to use the said manner of claiming shall have no effect in a designated State if the manner of claiming actually used satisfies the national law of that State.*

(b) and (c) [No change]

6.5 [No Change]

Rule 8
The Abstract

8.1 [No change]

8.2 Figure

(a) If the applicant fails to make the indication referred to in Rule 3.3(a)(iii), or if the International Searching Authority finds that a figure or figures other than that figure or those figures suggested by the applicant would, among all the figures of all the drawings, better characterize the invention, it shall, *subject to paragraph (b),* indicate the figure or figures which *should accompany the abstract when the latter is published by the International Bureau. In such case, the abstract* shall *be accompanied by* the figure or figures so indicated by the International Searching Authority. Otherwise, the *abstract shall, subject to paragraph (b), be accompanied by* the figure or figures suggested by the applicant.

(b) *If the International Searching Authority finds that none of the figures of the drawings is useful for the understanding of the abstract, it shall notify the International Bureau accordingly. In such case, the abstract, when published by the International Bureau, shall not be accompanied by any figure of the drawings even where the applicant has made a suggestion under Rule 3.3(a)(iii).*

8.3 [No change]

Rule 11
Physical Requirements of the International Application

11.1 to 11.14 [No change]

11.15 Translations
[*Deleted*]

Rule 12
Language of the International Application

12.1 *Admitted Languages*

(a) Any international application shall be filed in the language, or one of the languages, specified in the agreement concluded between the International Bureau and the International Searching Authority competent for the international searching of that application, provided that, if the agreement specifies several languages, the receiving Office may prescribe among the specified languages that language in which or those languages in one of which the international application must be filed.

(b) *If the international application is filed in a language other than the language in which it is to be published, the request may, notwithstanding paragraph (a), be filed in the language of publication.*

(c) *Subject to paragraph (d), where the official language of the receiving Office is one of the languages referred to in Rule 48.3(a) but is a language not specified in the agreement referred to in paragraph (a), the international application may be filed in the said official language. If the international application is filed in the said official language, the search copy transmitted to the International Searching Authority under Rule 23.1 shall be accompanied by a translation into the language, or one of the languages, specified in the agreement referred to in paragraph (a); such translation shall be prepared under the responsibility of the receiving Office.*

(d) *Paragraph (c) shall apply only where the International Searching Authority has declared, in a notification addressed to the International Bureau, that it accepts to search international applications on the basis of the translation referred to in paragraph (c).*

12.2 Language of Changes in the International Application

Any changes in the international application, such as amendments and corrections, shall, *subject to Rules 46.3 and 66.9,* be in the same language as the said *application.**

*The amendment also consists of deleting, after the word "application," the expression "(cf. Rule 66.5)."

Rule 13bis
Microbiological Inventions

13bis.1 to 13bis.6 ([No change]

13bis.7 National Requirements: Notification and Publication

(a) [No change]

(b) Each national Office shall notify the International Bureau* of the depositary institutions with which the national law permits deposits of microorganisms to be made for the purposes of patent procedure before that Office or, if the national law does not provide for or permit such deposits, of that fact.

(c) [No change]

*The amendment consists of deleting, after the word "Bureau," the following words: "a first time before entry into force of this Rule and then each time a change occurs."

Rule 15
The International Fee

15.1 to 15.3 [No change]

15.4 Time of Payment

(a) *The basic fee shall be paid within one month from the date of receipt of the international application.*

(b) *The designation fee shall be paid:*

(i) *where the international application does not contain a priority claim under Article 8, within one year from the date of receipt of the international application.*

(ii) *where the international application contains a priority claim under Article 8, within one year from the priority date or within one month from the date of receipt of the international application if that month expires after the expiration of one year from the priority date.*

(c) *Where the basic fee or the designation fee is paid later than the date on which the international application was received and where the amount of that fee is, in the currency in which it is payable, higher on the date of payment ("the higher amount") than it was on the date on which the international application was received ("the lower amount"),*

(i) *the lower amount shall be due if the fee is paid within one month from the date of receipt of the international application.*

(ii) *the higher amount shall be due if the fee is paid later than one month from the date of receipt of the international application.*

(d) *If, on Feb. 3, 1984, paragraphs (a) and (b) are not compatible with the national law applied by the receiving Office and as long as they continue to be not compatible with that law, the basic fee shall be paid on the date of receipt of the international application and the designation fee shall be paid within one year from the priority date.*

15.5 [No change: remains *deleted*]

15.6 [No change]

Rule 16bis
Advancing Fees by the International Bureau

16bis.1 Guarantee by the International Bureau

(a) Where, by the time they are due under Rule 14.1(b), Rule 15.4(a)* and Rule 16.1(f), the receiving Office finds that in respect of an international application no fees were paid to it by the applicant, or that the amount paid to it by the applicant is less than what is necessary to cover the transmittal fee, the basic fee and the search fee, the receiving Office shall charge the amount required to cover those fees, or the missing part thereof, to the International Bureau and shall consider the said amount as if it had been paid by the applicant at the due time.

(b) Where, by the time** they are due under Rule 15.4(b)*, the receiving Office finds that in respect of an international application the payment made by the applicant is insufficient to cover the designation fees necessary to cover the designations, the receiving Office shall charge the amount required to cover those fees to the International Bureau and shall consider that amount as if it had been paid by the applicant at the due time.

(c) [No change]

(d) [*Deleted*]

16 bis .2 Obligations of the Applicant, Etc.

(a) to (c) [No change]

(d) to (g) [*Deleted*]

16bis.3 Notifications
[*Deleted*]

*The amendment consists of deleting the reference to paragraph (c).

**The amendment consists of deleting, after the word "time," the words "it or."

Rule 17
The Priority Document

17.1 Obligation to Submit Copy of Earlier National Application

(a) Where the priority of an earlier national application is claimed under Article 8 in the international application, a copy of the said national application, certified by the authority with which it was filed ("the priority document"), shall, unless already filed with the receiving Office together with the international application, be submitted by the applicant to the International Bureau or to the receiving Office not later than 16 months after the priority date or, in the case referred to in Article 23(2), not later than at the time the processing or examination is requested.*

(b) Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to transmit the priority document to the International Bureau. Such request shall be made not later than the expiration of the applicable time limit referred to under paragraph (a) and may be subjected by the receiving Office to the payment of a fee.**

(c) [No change]

(d) [*Deleted*]

17.2 [No change]

*The amendment consists of deleting the last two sentences of this paragraph.

**The amendment consists of deleting the last sentence of this paragraph.

Rule 20
Receipt of the International Application

20.1 to 20.4 [No change]

20.5 Positive Determination
(a) [No change]
(b) [No change]
(c) The receiving Office shall promptly notify the applicant of the international application number and the international filing date. *At the same time, it shall send to the International Bureau a copy of the notification sent to the applicant, except where it has already sent, or is sending at the same time, the record copy to the International Bureau under Rule 22.1(a).*

20.6 to 20.9 [No change]

Rule 22
Transmittal of the Record Copy

22.1 Procedure
(a) [No change]
(b) *If the International Bureau has received a copy of the notification under Rule 20.5(c) but is not, by the expiration of 13 months from the priority date, in possession of the record copy, it shall remind the receiving Office that it should transmit the record copy to the International Bureau promptly.*
(c) *If the International Bureau has received a copy of the notification under Rule 20.5(c) but is not, by the expiration of 14 months from the priority date, in possession of the record copy, it shall notify the applicant and the receiving Office accordingly.*
(d) *After the expiration of 14 months from the priority date, the applicant may request the receiving Office to certify a copy of his international application as being identical with the international application as filed and may transmit such certified copy to the International Bureau.*
(e) *Any certification under paragraph (d) shall be free of charge and may be refused only on any of the following grounds:*
(i) *the copy which the receiving Office has been requested to certify is not identical with the international application as filed;*
(ii) *prescriptions concerning national security prevent the international application from being treated as such;*
(iii) *the receiving Office has already transmitted the record copy to the International Bureau and that Bureau has informed the receiving Office that it has received the record copy.*
(f) *Unless the International Bureau has received the record copy, or until it receives the record copy, the copy certified under paragraph (e) and received by the International Bureau shall be considered to be the record copy.*
(g) *If, by the expiration of the time limit applicable under Article 22, the applicant has performed the acts referred to in that Article but the designated Office has not been informed by the International Bureau of the receipt of the record copy, the designated Office shall inform the International Bureau. If the International Bureau is not in possession of the record copy, it shall promptly notify the applicant and the receiving Office unless it has already notified them under paragraph (c).*

22.2 Alternative Procedure
[*Deleted*]

22.3 Time Limit under Article 12(3)
The time limit referred to in Article 12(3) shall be *3 months from the date of the notification sent by the International Bureau to the applicant under Rule 22.1(c) 21 or (g).*

22.4 Statistics Concerning Non-Compliance with Rules 22.1 and 22.2
[*Deleted*]

22.5 Documents Filed with the International Application
[*Deleted*]

Rule 23
Transmittal of the Search Copy

23.1 Procedure
(a) The search copy shall be transmitted by the receiving Office to the International Searching Authority at the latest on the same day as the record copy is transmitted to the International Bureau.*
(b) If the International Bureau has not received, within 10 days from the receipt of the record copy, information from the International Searching Authority that that Authority is in possession of the search copy, the International Bureau shall promptly transmit a copy of the international application to the International Searching Authority.**
(c) [*Deleted*]

*The amendment consists of deleting, at the end of the present text of this paragraph, the words "or, under Rule 22.2(d), to the applicant."
**The amendment consists of deleting the second sentence of this paragraph.

Rule 24
Receipt of the Record Copy by the International Bureau

24.1 Recording of Date of Receipt of the Record Copy
[*Deleted*]

24.2 [No change]

Rule 26
Checking *By,* and Correcting *Before, the Receiving Office of* Certain Elements of the International Application

26.1 [No change]26.2 Time Limit for Correction
The time limit referred to in Article 14(1)(b) shall be reasonable under the circumstances* and shall be fixed in each case by the receiving Office. It shall not be less than 1 month** from the date of the invitation to correct. *It may be extended by the receiving Office at any time before a decision is taken.*

26.3 Checking of Physical Requirements under Article 14(1)(a)(v)
The physical requirements referred to in Rule 11 shall be checked *only* to the extent that compliance therewith is necessary for the purpose of reasonably uniform international publication.

26.3*bis Invitation to Correct Defects under Article 14(1)(b)*
The receiving Office shall not be required to issue the invitation to correct a defect under Article 14(1)(a)(v) where the physical requirements referred to in Rule 11 are complied with to the extent necessary for the purpose of reasonably uniform international publication.

26.4 Procedure
(a) [No change]
(b) to (d) [*Deleted*]

26.5 *Decision of the Receiving Office*
(a) The receiving Office shall decide whether the applicant has submitted the correction within the *time limit under Rule 26.2 and, if* the correction has been submitted within *that time limit,* whether the international application so corrected is or is not to be considered withdrawn *provided that no international application shall be considered withdrawn for lack of compliance with the physical requirements referred to in Rule 11 if it complies with those requirements to the extent necessary for the purpose of reasonably uniform international publication.*
(b) [*Deleted*]

26.6 [No change]

*The amendment consists of deleting, after the word "circumstances," the words "of the particular case."
**The amendment consists of deleting, after the word "month," the words "and normally not more than 2 months."

Rule 28
Defects Noted by the International Bureau*

28.1 Note on Certain Defects
(a) If, in the opinion of the International Bureau**, the international application contains any of the defects referred to in Article 14(1)(a)(i), (ii) or (v), the International Bureau*** shall bring such defects to the attention of the receiving Office.
(b) [No change]

*The amendment consists of deleting, after the word "Bureau," the words "or the International Searching Authority."
**The amendment consists of deleting, after the word "Bureau," the words "or of the International Searching Authority."
***The amendment consists of deleting, after the word "Bureau," the words "or the International Searching Authority, respectively."

Rule 29
International Applications or Designations Considered Withdrawn under Article 14(1), (3) or (4)

29.1 [No change]

29.2 Finding by Designated Office
[*Deleted*]

29.3 and 29.4 [No change]

Rule 32
Withdrawal of the International Application or of Designations

32.1 Withdrawals
(a) and (b) [No change]
(c) Withdrawal shall be effected by a signed notice from the applicant to the International Bureau or* to the receiving Office. In the case of Rule 4.8(b), the notice shall require the signature of all the applicants.
(d) [*Deleted*]
(e) *There shall be no international publication of the international application or of the designation, as the case may be, if the notice effecting withdrawal reaches the International Bureau before the technical preparations for publication have been completed.*

Rule 32bis
Withdrawal of the Priority Claim

32*bis*.1 Withdrawals
(a) and (b) [No change]
(c) Where the withdrawal of the priority claim, or, in the case of more than one such claim, the withdrawal of any of them, causes a change in the priority date of the international application, any time limit which is computed

from the original priority date and which has not already expired shall be computed from the priority date resulting from that change. In the case of the time limit of 18 months referred to in Article 21(2)(a), the International Bureau may nevertheless proceed with the international publication on the basis of the said time limit as computed from the original priority date if the *notice effecting* withdrawal *reaches the International Bureau* during the period of 15 days preceding the expiration of that time limit.

(d) For any withdrawal under paragraph (a), the provisions of Rule 32.1(c)** shall apply *mutatis mutandis.*

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*The amendment consists of deleting, after the word "or," the following words: ", if the record copy has not yet been sent to the International Bureau."

**The amendment also consists of deleting, after the words "Rule 32.1(c)," the words "and (d) and Rule 74bis.1."

Rule 34
Minimum Documentation

34.1 Definition

(a) and (b) [No change]

(c) Subject to paragraphs (d) and (e), the "national patent documents" shall be the following:

(i) to (v) [No change]

(vi) such patents issued by, and such patent applications published in, any other country after 1920 as are in the English, French, German or Spanish languages and in which no priority is claimed, provided that the national Office of the interested country sorts out these documents and places them at the disposal of each International Searching Authority.

(d) [No change]

(e) Any International Searching Authority whose official language, or one of whose official languages is not Japanese, Russian or Spanish is entitled not to include in its documentation those patent documents of Japan and the Soviet Union *as well as those patent documents in the Spanish language,* respectively, for which no abstracts in the English language are generally available. English abstracts becoming generally available after the date of entry into force of these Regulations shall require the inclusion of the patent documents to which the abstracts refer no later than 6 months after such abstracts become generally available. In case of the interruption of abstracting services in English in technical fields in which English abstracts were formerly generally available, the Assembly shall take appropriate measures to provide for the prompt restoration of such services in the said fields.

(f) [No change]

Rule 42
Time Limit for International Search

42.1 Time Limit for International Search

The time limit for establishing the international search report or the declaration referred to in Article 17(2)(a) *shall be* 3 months from the receipt of the search copy by the International Searching Authority, or 9 months from the priority date, whichever time limit expires later.*

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*The amendment also consists of deleting the last sentence of Rule 42.1.

Rule 46
Amendment of Claims Before the International Bureau

46.1 Time Limit

The time limit referred to in Article 19 shall be 2 months from the date of transmittal of the international search report to the International Bureau and to the applicant by the International Searching Authority or *16 months from the priority date, whichever time limit expires later, provided that any amendment made under Article 19 which is received by the International Bureau after the expiration of the applicable time limit shall be considered to have been received by the Bureau on the last day of that time limit if it reaches it before the technical preparations for international publication have been completed.*

46.2 Dating of Amendments

[*Deleted*]

46.3 Language of Amendments

If the international application has been filed in a language other than the language in which it is published*, any amendment made under Article 19 shall be** in the language *of publication.*

46.4 Statement

(a) The statement referred to in Article 19(1) shall be in the language in which the international application is published and shall not exceed 500 words if in the English language or if translated into that language. *The statement shall be identified as such by a heading, preferably by using the words "Statement under Article 19(1)" or their equivalent in the language of the statement.*

(b) The statement shall contain no *disparaging* comments on the international search report or the relevance of*** citations contained in that report. *Reference* to citations, *relevant to a given claim,* contained in the international search report *may be made only in connection with an amendment of that claim.*

46.5 Form of Amendments

(a) [No change]

(b) and (c) [*Deleted*]

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*The amendment also consists of deleting, after the word "published," the words "by the International Bureau."

**The amendment also consists of deleting, after the word "be," the word "both."

***The amendment also consists of deleting, after the word "of," the word "the."

Rule 47
Communication to Designated Offices

47.1 Procedure

(a) [No change]

(b) Such communication shall be effected promptly after the international publication of the international application and, in any event, by the end of the 19th month after the priority date. *Any amendment received by the International Bureau within the time limit under Rule 46.1 which was not included in the communication shall be communicated promptly to the designated Offices by the International Bureau, and the latter shall notify the applicant accordingly.**

(c) to (e) [No change]

47.2 and 47.3 [No change]

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*The amendment also consists of deleting the last sentence of Rule 47.1(b).

Rule 48
International Publication

48.1 [No change]

48.2 Contents

(a) The pamphlet shall contain:

(i) to (v) [No change]

(vi) any statement filed under Article 19(1), unless the International Bureau finds that the statement does not comply with the provisions of Rule 46.4,

(vii) *any request for rectification referred to in the third sentence of Rule 91.1(f).*

(b) Subject to paragraph (c), the front page shall include:

(i) [No change]

(ii) a figure or figures where the international application contains drawings, *unless Rule 8.2(b) applies,*

(iii) [No change]

(c) to (f) [No change]

(g) If, at the time *of the completion of the technical preparations for international publication,* the international search report is not yet available (for example, because of publication on the request of the applicant as provided in Articles 21(2)(b) and 64(3)(c)(i)), the pamphlet shall contain, in place of the international search report, an indication to the effect that that report was not available and that either the pamphlet (then also including the international search report) will be republished or the international search report (when it becomes available) will be separately published.

(h) If, at the time *of the completion of the technical preparations for international publication,* the time limit for amending the claims under Article 19 has not expired, the pamphlet shall refer to that fact and indicate that, should the claims be amended under Article 19, then, promptly after such amendments, either the pamphlet (containing the claims as amended) will be republished or a statement reflecting all the amendments will be published. In the latter case, at least the front page and the claims shall be republished and, if a statement under Article 19(1) has been filed, that statement shall be published as well, unless the International Bureau finds that the statement does not comply with the provisions of Rule 46.4.

(i) [No change]

48.3 *Languages*

(a) If the international application is filed in English, French, German, Japanese, Russian *or Spanish,* that application shall be published in the language in which it was filed.

(b) If the international application is filed in a language other than English, French, German, Japanese, Russian or Spanish, that application shall be published in English translation. The translation shall be prepared under the responsibility of the International Searching Authority, which shall be obliged to have it ready in time to permit *international publication by the prescribed date, or, where Article 64(3)(b) applies, to permit the communication under Article 20 by the end of the 19th month after the priority date.* Notwithstanding Rule 16.1(a), the International Searching Authority may charge a fee for the translation to the applicant. The International Searching Authority shall give the applicant an opportunity to comment on the draft translation. The International Searching Authority shall fix a time limit reasonable under the circumstances of the case for such comments. If there is no time to take the comments of the applicant into account before the translation is communicated or if there is a difference of opinion between the applicant and the said Authority as to the correct translation, the applicant may send a copy of his comments, or what remains of them, to the International Bureau and each designated Office to which the translation was communicated. The International Bureau shall publish the essence of the comments together with the translation of the International Searching Authority or subsequently to the publication of such translation.

(c) If the international application is published in a language other than English, the international search report to the extent that it is published under Rule 48.2(a)(v), or the declaration referred to in Article 17(2)(a), *the title of the invention,* the abstract *and any text matter pertaining to the figure or figures accompanying the abstract* shall be published both in that language and in English. The translations shall be prepared under the responsibility of the International Bureau.

48.4 and 48.5 [No change]

48.6 Announcing of Certain Facts

(a) [No change]

(b) [*Deleted*]

(c) If the international application *or the designation of any designated State* is withdrawn *under Rule 32.1, or if the priority claim is withdrawn under Rule 32bis.1,* after *the technical preparations for* international publication *have been completed,* this fact shall be published in the Gazette.

Rule 49
Copy, Translation and Fee under Article 22

49.1 Notification
(a) [No change]
(a-bis) *Any Contracting State not requiring the furnishing, under Article 22, by the applicant of a copy of the international application (even though the communication of the copy of the international application by the International Bureau under Rule 47 has not taken place by the expiration of the time limit applicable under Article 22) shall notify the International Bureau accordingly.*
(a-ter) *Any Contracting State which, pursuant to Article 24(2), maintains, if it is a designated State, the effect provided for in Article 11(3) even though a copy of the international application is not furnished by the applicant by the expiration of the time limit applicable under Article 22 shall notify the International Bureau accordingly.*
(b) Any notification received by the International Bureau under *paragraphs (a), (a-bis) or (a-ter)* shall be promptly published by the International Bureau in the Gazette.
(c) [No change]

49.2 [No change]

49.3 Statements under Article 19; Indications under Rule 13bis.4
For the purpose of Article 22 and the present Rule, any statement made under Article 19(1) and any indication furnished under Rule 13*bis*.4 shall, *subject to Rule 49.5(c) and (h)*, be considered part of the international application.

49.4 *Use of National Form*
No applicant shall be required to use a national form when performing the acts referred to in Article 22.

49.5 *Contents of and Physical Requirements for the Translation*
(a) *For the purposes of Article 22, the translation of the international application shall contain the description, the claims, any text matter of the drawings and the abstract. If required by the designated Office, the translation shall also, subject to paragraphs (b) and (e),*
(i) *contain the request,*
(ii) *if the claims have been amended under Article 19, contain both the claims as filed and the claims as amended, and*
(iii) *be accompanied by a copy of the drawings.*
(b) *Any designated Office requiring the furnishing of a translation of the request shall furnish copies of the request form in the language of the translation free of charge to the applicants. The form and contents of the request form in the language of the translation shall not be different from those of the request under Rules 3 and 4; in particular, the request form in the language of the translation shall not ask for any information that is not in the request as filed. The use of the request form in the language of the translation shall be optional.*
(c) *Where the applicant did not furnish a translation of any statement made under Article 19(1), the designated Office may disregard such statement.*
(d) *If any drawing contains text matter, the translation of that text matter shall be furnished either in the form of a copy of the original drawing with the translation pasted on the original text matter or in the form of a drawing executed anew.*
(e) *Any designated Office requiring under paragraph (a) the furnishing of a copy of the drawing shall, where the applicant failed to furnish such copy within the time limit applicable under Article 22,*
(i) *invite the applicant to furnish such copy within a time limit which shall be reasonable under the circumstances and shall be fixed in the invitation, or*
(ii) *disregard the said drawing if such invitation, on Feb. 3, 1984, is not compatible with the national law applied by that Office and as long as it continues to be not compatible with that law.*
(f) *The expression "Fig." does not require translation into any language.*
(g) *Where any copy of the drawings or any drawing executed anew which has been furnished under paragraph (d) or (e) does not comply with the physical requirements referred to in Rule 11, the designated Office may invite the applicant to correct the defect within a time limit which shall be reasonable under the circumstances and shall be fixed in the invitation.*
(h) *Where the applicant did not furnish a translation of any indication furnished under Rule 13bis.4, the designated Office shall invite the applicant to furnish such translation, if it deems it to be necessary, within a time limit which shall be reasonable under the circumstances and shall be fixed in the invitation.*
(i) *Information on any requirement and practice of designated Offices under the second sentence of paragraph (a) shall be published by the International Bureau in the Gazette.*
(j) *No designated Office shall require that the translation of the international application comply with physical requirements other than those prescribed for the international application as filed.*

Rule 51
Review by Designated Offices

51.1 to 51.3 [No change]

51.4 Notification to the International Bureau
[*Deleted*]

Rule 51bis
Certain National Requirements Allowed under Article 27(1), (2), (6) and (7)

51*bis*.1 *Certain National Requirements Allowed*
(a) *The documents referred to in Article 27(2)(ii), or the evidence referred to in Article 27(6), which the applicant may be required to furnish under the national law applicable by the designated Office include, in particular:*
(i) *any document relating to the identity of the inventor,*

(ii) *any document relating to any transfer or assignment of the right to the application,*
(iii) *any document containing an oath or declaration by the inventor alleging his inventorship,*
(iv) *any document containing a declaration by the applicant designating the inventor or alleging the right to the application,*
(v) *any document containing any proof of the right of the applicant to claim priority where he is different from the applicant having filed the earlier application the priority of which is claimed,*
(vi) *any evidence concerning non-prejudicial disclosures or exceptions to lack of novelty, such as disclosures resulting from abuse, disclosures at certain exhibitions and disclosures by the applicant during a certain period of time.*
(b) *The national law applicable by the designated Office may, in accordance with Article 27(7), require that*
(i) *the applicant be represented by an agent having the right to represent applicants before that Office and/or have an address in the designated State for the purpose of receiving notifications,*
(ii) *the agent, if any, representing the applicant be duly appointed by the applicant.*
(c) *The national law applicable by the designated Office may, in accordance with Article 27(1), require that the international application, the translation thereof or any document relating thereto be furnished in more than one copy.*
(d) *The national law applicable by the designated Office may, in accordance with Article 27(2)(ii), require that the translation of the international application furnished by the applicant under Article 22 be verified by the applicant or the person having translated the international application in a statement to the effect that, to the best of his knowledge, the translation is complete and faithful.*

51*bis*.2 *Opportunity to Comply with National Requirements*
(a) *Where any of the requirements referred to in Rule 51bis.1, or any other requirement of the national law applicable by the designated Office which that Office may apply under Article 27(1), (2), (6) or (7), is not already fulfilled during the same period within which the requirements under Article 22 must be complied with, the applicant shall have an opportunity to comply with the requirement after the expiration of that period.*
(b) *The national law applicable by the designated Office may, in accordance with Article 27(2)(ii), require that the applicant, upon invitation by the designated Office, furnish a certification of the translation of the international application by a public authority or a sworn translator, if the designated Office deems such certification to be necessary under the circumstances, within a time limit which shall be reasonable under the circumstances and shall be fixed in the invitation.*
(c) *If, on Feb. 3, 1984, paragraph (a) is, with respect to the requirements referred to in Rule 51bis.1 (a)(iii) and (vi), (b)(i) and (d), not compatible with the national law applied by the designated Office and as long as it continues to be not compatible with that law, the applicant shall have no opportunity to comply with any of the requirements after the expiration of the time limit applicable under Article 22. Information on such national laws shall be published by the International Bureau in the Gazette.*

Rule 53
The Demand

53.1 Form
(a) to (c) [No change]
(d) [*Deleted*]

53.2 to 53.8 [No change]

Rule 54
The Applicant Entitled to Make a Demand

54.1 and 54.2 [No change]

54.3 Several Applicants: Different for Different Elected States
(a) [No change]
(b) [*Deleted*]

54.4 *Applicant Not Entitled to Make a Demand or an Election*
(a) *If the applicant does not have the right or, in the case of several applicants, if none of them has the right to make a demand under Article 31(2), the demand shall be considered not to have been submitted.*
(b) *If the requirement under Rule 54.3(a) is not fulfilled in respect of any elected State, the election of that State shall be considered not to have been made.*

Rule 55
Languages (International Preliminary Examination)

55.1 The Demand
The demand shall be in the language of the international application or, *if the international application has been filed in a language other than the language in which it is published, in the language of publication.*

55.2 The International Application
[*Deleted*]

Rule 58
The Preliminary Examination Fee

58.1 and 58.2 [No change]

58.3 Refund
The International Preliminary Examining Authorities shall inform the International Bureau of the extent, if any, to

which, and the conditions, if any, under which, they will refund any amount paid as a preliminary examination fee where the demand is considered as if it had not been submitted*, and the International Bureau shall promptly publish such information.

*The amendment consists of deleting, after the word "submitted," the words "under Rule 57.4(c), Rule 58.2(c) or Rule 60.1(c)."

Rule 60
Certain Defects in the Demand or Elections

60.1 and 60.2 [No change]

60.3 Attempted Elections
[*Deleted*]

Rule 61
Notification of the Demand and Elections

61.1 Notifications to the International Bureau, the Applicant, and the International Preliminary Examining Authority
(a) The International Preliminary Examining Authority shall indicate on* the demand the date of receipt or, where applicable, the date referred to in Rule 60.1(b). The International Preliminary Examining Authority shall promptly send the *demand* to the International Bureau, *and* shall *prepare and* keep *a* copy in its files.
(b) The International Preliminary Examining Authority shall promptly inform the applicant in writing of the date of receipt of the demand. Where the demand has been considered under Rules *54.4(a)*, 57.4(c), 58.2(c) or 60.1(c) as if it had not been submitted *or where an election has been considered under Rule 54.4(b) as if it had not been made*, the International Preliminary Examining Authority shall notify the applicant *and the International Bureau* accordingly.
(c) [No change]

61.2 and 61.3 [No change]

*The amendment consists of deleting, after the word "on," the words "both copies of."

Rule 62
Copy for the International Preliminary Examining Authority

62.1 The International Application
[*Deleted*]

62.2 [No change]

Rule 66
Procedure Before the International Preliminary Examining Authority

66.1 [No change]

66.2 First Written Opinion of the International Preliminary Examining Authority
(a) If the International Preliminary Examining Authority
(i) considers that the international application has any of the defects described in Article 34(4).
(ii) considers that the international preliminary examination report should be negative in respect of any of the claims because the invention claimed therein does not appear to be novel, does not appear to involve an inventive step (does not appear to be non-obvious), or does not appear to be industrially applicable,
(iii) notices that there is some defect in the form of contents of the international application under the Treaty or these Regulations,
(iv) considers that any amendment goes beyond the disclosure in the international application as filed, or
(v) wishes to accompany the international preliminary examination report by observations on the clarity of the claims, the description, and the drawings, or the question whether the claims are fully supported by the description,
the said Authority shall notify the applicant accordingly in writing. *Where the national law of the national Office acting as International Preliminary Examining Authority does not allow multiple dependent claims to be drafted in a manner different from that provided for in the second and third sentences of Rule 6.4(a), the International Preliminary Examining Authority may, in case of failure to use that manner of claiming, apply Article 34(4)(b). In such case, it shall notify the applicant accordingly in writing.*
(b) [No change]
(c) The notification shall invite the applicant to submit a written reply together, where appropriate, with amendments*.
(d) [No change]

66.3 Formal Response to the International Preliminary Examining Authority
(a) The applicant may respond to the invitation referred to in Rule 66.2(c) of the International Preliminary Examining Authority by making amendments* or—if he disagrees with the opinion of that Authority—by submitting arguments, as the case may be, or do both.
(b) [No change]

66.4 Additional Opportunity for *Submitting Amendments or Arguments*
(a) [No change]
(b) On the request of the applicant, the International Preliminary Examining Authority may give him one or more additional opportunities to submit amendments or *arguments.*

66.5 Amendment
Any change, other than the rectification of obvious errors**, in the claims, the description, or the drawings, including cancellation of claims, omission of passages in the description, or omission of certain drawings, shall be considered an amendment.

66.6 [No change]

66.7 Priority Document
(a) If the International Preliminary Examining Authority needs a copy of the application whose priority is claimed in the international application, the International Bureau shall, on request, promptly furnish such copy. *If that copy is not furnished to the International Preliminary Examining Authority because the applicant failed to comply with the requirements of Rule 17.1, the international preliminary examination report may be established as if the priority had not been claimed.*
(b) If the application whose priority is claimed *in the international application* is in a language other than the language or one of the languages of the International Preliminary Examining Authority, *that Authority may invite the applicant to furnish* a translation in the said language or one of the said languages *within 2 months from the date of the invitation. If the translation is not furnished within that time limit, the international preliminary examination report may be established as if the priority had not been claimed.*
(c) [*Deleted*]

66.8 Form of*** Amendments
(a) The applicant shall be required to submit a replacement sheet for every sheet of the international application which, on account of **** an amendment, differs from the sheet originally filed. The letter accompanying the replacement sheets shall draw attention to the differences between the replaced sheets and the replacement sheets. To the extent that any amendment results in the cancellation of an entire sheet, that amendment shall be communicated in a letter.
(b) [*Deleted*]

66.9 *Language of Amendments*
If the international application has been filed in a language other than the language in which it is published, any amendment, as well as any letter referred to in Rule 66.8(a), shall be submitted in the language of publication.

*The amendment consists of deleting, after the word "amendments," the words "or corrections."
**The amendment consists of deleting, after the word "errors," the words "of transcription."
***The amendment consists of deleting, after the word "of," the words "Corrections and."
****The amendment consists of replacing, after the word "of," the words "a correction or" by the word "an."

Rule 69
Time Limit for International Preliminary Examination

69.1 Time Limit for International Preliminary Examination
(a) *The time limit for establishing the international preliminary examination report shall be:*
(i) *28 months from the priority date if the demand was filed prior to the expiration of 19 months from the priority date;*
(ii) *9 months from the start of the international preliminary examination if the demand was filed after the expiration of 19 months from the priority date.*
(b) and (c) [No change]

Rule 70
The International Preliminary Examination Report

70.1 [No change]

70.2 Basis of the Report
(a) [No change]
(b) If, pursuant to Rule *66.7(a) or (b)*, the report is established as if the priority had not been claimed, the report shall so indicate.
(c) [No change]

70.3 to 70.10 [No change]

70.11 Mention of Amendments*
If, before the International Preliminary Examining Authority, amendments* have been made, this fact shall be indicated in the report. *Where any amendment has resulted in the cancellation of an entire sheet, this fact shall also be specified in the report.*

70.12 to 70.15 [No change]

70.16 Annexes of the Report
If the claims, the description, or the drawings, were amended** before the International Preliminary Examining Authority, each replacement sheet *under Rule 66.8(a)* shall be *annexed* to the report.*** Replacement sheets superseded by later replacement sheets *and letters under Rule 66.8(a)* shall not be annexed.****

70.17 Languages of the Report and the Annexes
(a) The report *and any annex* shall be in the language in which the international application to which *they relate* is published.
(b) [*Deleted*]

*The amendment consists of deleting, in the title, after the word "Amendments," the words "or Correction of Certain Defects" and, in the Rule itself, after the word "amendments," the words "or corrections."
**The amendment also consists of deleting, after the word "amended", the words "or any part of the international application was corrected."
***The amendment also consists of deleting, after the word "report," the words "as an annex thereto."
****The amendment also consists of deleting the last sentence of Rule 70.16.

Rule 74
Translations of Annexes of the International Examination Report and Transmittal Thereof

74.1 *Contents of Translation and* Time Limit *for Transmittal Thereof*
Where the furnishing of a translation of the international applica tion is required by the elected Office under Article 39(1), the applicant shall, within the time limit applicable under Article 39(1), transmit a translation of any replacement sheet referred to in Rule 70.16 which is annexed to the international preliminary examination report. The same time limit shall apply where the furnishing of a translation of the international application to the elected Office must, because of a declaration made under Article 64(2)(a)(i), be effected within the time limit applicable under Article 22.

Rule 74bis
Notification of Withdrawal under Rule 32

74*bis*.1 Notification of the International Preliminary Examining Authority
[*Deleted*]

Rule 75
Withdrawal of the Demand, or of Elections

75.1 Withdrawals
(a) Withdrawal of the demand or all the elections may be effected prior to the expiration of *30* months from the priority date except as to any elected State in which national processing or examination has already started. Withdrawal of the election of any elected State may be effected prior to the date on which examination and processing may start in that State.
(b) [No change]

75.2 Notification of Elected Offices
[*Deleted*]

75.3 Notification of the International Preliminary Examining Authority
[*Deleted*]

75.4 [No change]

Rule 76
Copy, Translation and Fee under Article 39(1); Translation of Priority Document

76.1 Notification
[*Deleted*]

76.2 Lar ,uages
[*Deleted*]

76.3 Statements under Article 19; Indications under Rule 13bis.4
[*Deleted*]

76.4 [No change]

76.5 *Application of Rules 22.1(g), 49 and 51bis*
Rules 22.1(g), 49 and 51bis shall apply, provided that:
(i) *any reference in the said Rules to the designated Office or to the designated State shall be construed as a reference to the elected Office or to the elected State, respectively;*
(ii) *any reference in the said Rules to Article 22 shall be construed as a reference to Article 39(1);*
(iii) *the words "international applications filed" in Rule 49.1(c) shall be replaced by the words "a demand submitted."*

Rule 80
Computation of Time Limits

80.1 to 80.5 [No change]

80.6 Date of Documents
(a) [No change]
(b) [*Deleted*]

80.7 [No change]

Rule 82
Irregularities in the Mail Service

82.1 Delay or Loss in Mail
(a) and (b) [No change]
(c) In the cases provided for in paragraph (b), evidence of mailing within the prescribed time limit, and, where the document or letter was lost, the substitute document or letter as well *as the evidence concerning its identity with the document or letter lost* shall be submitted within 1 month after the date on which the interested party noticed—or with due diligence should have noticed—the delay or the loss, and in no case later than 6 months after the expiration of the time limit applicable in the given case.

82.2 [No change]

Rule 82bis
Excuse by the Designated or Elected State of Delays in Meeting Certain Time Limits

82*bis*.1 *Meaning of "Time Limit" in Article 48(2)*
The reference to "any time limit" in Article 48(2) shall be construed as comprising a reference:
(i) *to any time limit fixed in the Treaty or these Regulations;*
(ii) *to any time limit fixed by the receiving Office, the International Searching Authority, the International Preliminary Examining Authority or the International Bureau or applicable by the receiving Office under its national law;*
(iii) *to any time limit fixed by, or in the national law applicable by, the designated or elected Office, for the performance of any act by the applicant before that Office.*

82*bis*.2 *Reinstatement of Rights and Other Provisions to which Article 48(2) Applies*
The provisions of the national law which is referred to in Article 48(2) concerning the excusing, by the designated or elected State, of any delay in meeting any time limit are those provisions which provide for reinstatement of rights, restoration, *restitutio in integrum* or further processing in spite of non-compliance with a time limit, and any other provision providing for the extension of time limits or for excusing delays in meeting time limits.

Rule 82ter
Rectification of Errors Made by the Receiving Office or by the International Bureau

82*ter*.1 *Errors Concerning the International Filing Date and the Priority Claim*
If the applicant proves to the satisfaction of any designated or elected Office that the international filing date is incorrect due to an error made by the receiving Office or that the declaration made under Article 8(1) has been erroneously cancelled or corrected by the receiving Office or the International Bureau, and if the error is an error such that, had it been made by the designated or elected Office itself, that Office would rectify it under the national law or national practice, the said Office shall rectify the error and shall treat the international application as if it had been accorded the rectified international filing date or as if the declaration under Article 8(1) had not been cancelled or corrected, as the case may be.

Rule 88
Amendment of the Regulations

88.1 [No change]

88.2 Requirement of Unanimity During a Transitional Period
[*Deleted*]

88.3 [No change]

88.4 Procedure
Any proposal for amending a provision referred to in Rules 88.1* or 88.3 shall, if the proposal is to be decided upon in the Assembly, be communicated to all Contracting States at least 2 months prior to the opening of that session of the Assembly which is called upon to make a decision on the proposal.

*The amendment consists of deleting, after the expression "Rule 88.1," the expression "88.2."

Rule 90
Representation

90.1 and 90.2 [No change]

90.3 Appointment
(a) and (b) [No change]
(c) If the separate power of attorney is not signed*, or if the required separate power of attorney is missing, or if the indication of the name or address of the appointed person does not comply with Rule 4.4, the power of attorney shall be considered non-existent unless the defect is corrected.
(d) [No change]

90.4 [No change]

*The amendment consists of deleting, after the word "signed," the words "as provided in paragraph (a)."

Rule 91
Obvious Errors in Documents

91.1 Rectification
(a) Subject to paragraphs (b) to *(g-quater)*, obvious errors* in the international application or other papers submitted by the applicant may be rectified.

(b) Errors which are due to the fact that something other than what was obviously intended was written in the international application or other paper shall be regarded as obvious errors*. The rectification itself shall be obvious in the sense that anyone would immediately realize that nothing else could have been intended than what is offered as rectification.
(c) [No change]
(d) Rectification may be made on the request of the applicant. The authority having discovered what appears to be an obvious error** may invite the applicant to present a request for rectification as provided in paragraphs (e) to *(g-quater). Rule 26.4(a) shall apply mutatis mutandis to the manner in which rectifications shall be requested.*
(e) [No change]
(f) *Any authority which authorizes or refuses any rectification shall promptly notify the applicant of the authorization or refusal and, in the case of refusal, of the reasons therefor. The authority which authorizes a rectification shall promptly notify the International Bureau accordingly. Where the authorization of the rectification was refused, the International Bureau shall, upon request made by the applicant prior to the time relevant under paragraph (g-bis), (g-ter) or (g-quater) and subject to the payment of a special fee whose amount shall be fixed in the Administrative Instructions, publish the request for rectification together with the international application. A copy of the request for rectification shall be included in the communication under Article 20 where a copy of the pamphlet is not used for that communication or where the international application is not published by virtue of Article 64(3).*
(g) The authorization for rectification referred to in paragraph (e) shall, subject to paragraphs (g-bis), (g-ter) and (g-quater), be effective:
(i) where it is given by the receiving Office or by the International Searching Authority, if its notification to the International Bureau reaches that Bureau before the expiration of 17 months from the priority date;
(ii) where it is given by the International Preliminary Examining Authority, if it is given before the establishment of the international preliminary examination report;
(iii) where it is given by the International Bureau, if it is given before the expiration of 17 months from the priority date.
(g-bis) If the notification made under paragraph (g)(i) reaches the International Bureau, or if the rectification made under paragraph (g)(iii) is authorized by the International Bureau, after the expiration of 17 months from the priority date but before the technical preparations for international publication have been completed, the authorization shall be effective and the rectification shall be incorporated in the said publication.
(g-ter) Where the applicant has asked the International Bureau to publish his international application before the expiration of 18 months from the priority date, any notification made under paragraph (g)(i) must reach, and any rectification made under paragraph (g)(iii) must be authorized by, the International Bureau, in order for the authorization to be effective, not later than at the time of the completion of the technical preparations for international publication.
(g-quater) Where the international application is not published by virtue of Article 64(3), any notification made under paragraph (g)(i) must reach, and any rectification made under paragraph (g)(iii) must be authorized by, the International Bureau, in order for the authorization to be effective, not later than at the time of the communication of the international application under Article 20.
(h) [*Deleted*]

91.2 Manner of Carrying Out Rectifications
[*Deleted*]

*The amendment consists of deleting, after the word "errors," the words "of transcription."
**The amendment consists of deleting, after the word "error," the words "of transcription."

Rule 92
Correspondence

92.1 [No change]

92.2 Languages
(a) Subject to *Rules 55.1 and 66.9 and to paragraph (b) of this Rule,* any letter or document submitted by the applicant to the International Searching Authority or the International Preliminary Examining Authority shall be in the same language as the international application to which it relates.
(b) [No change]
(c) [*Deleted*]
(d) and (e) [No change]

92.3 and 92.4 [No change]

Rule 92bis
Recording of Changes in Certain Indications in the Request or the Demand

92*bis*.1 Recording of Changes by the International Bureau
(a) The International Bureau shall, on the request of the applicant or the receiving Office, record changes in the following indications appearing in the request or demand:
(i) person, name, residence, nationality or address of the applicant,
(ii) person, name or address of the agent, the common representative or the inventor.
(b) *The International Bureau shall not record the requested change if the request for recording is received by it after the expiration:*
(i) of the time limit referred to in Article 22(1), where Article 39(1) is not applicable with respect to any Contracting State;
(ii) of the time limit referred to in Article 39(1)(a), where Article 39(1) is applicable with respect to at least one Contracting State.

92*bis*.2 Notifications
[*Deleted*]

[1053 OG 44]

(149) Patent Cooperation Treaty (PCT) Update

Change in international search fee charged by the European Patent Office, effective Aug. 10, 1985 and guidance regarding requirements submitted under 35 U.S.C. 371.

The International Bureau of the World Intellectual Property Organization has informed the U.S. Patent and Trademark Office that due to a change in the exchange rate between the U.S. Dollar and the German Deutschmark, the dollar amount of the international search fee charged by the European Patent Office for performing a search on PCT applications filed in the United States Receiving Office will increase to $680.00, effective Aug. 10, 1985.

On May 8, 1985, 35 U.S.C. 371 (c) was changed to remove the requirement that a verification statement attesting to the true and accurate nature of the translation be submitted when entering the U.S. Patent and Trademark Office as a Designated Office. Although the verification statement is no longer required at the time of entering the national phase, the translation must still be a true and accurate translation of the international application as filed. Any changes to the claims, for example, deletions of multiple dependencies or cancellations of claims to reduce the national fee, must be submitted in the form of a preliminary amendment separate from the translation of the application as filed.

Translations of amendments to the claims made under PCT Article 19 also must be submitted as a separate paper. Applicants are reminded that both the Article 19 amendments and the translation of those amendments into English must be filed by 20 months from any claimed priority date to avoid cancellation of the amendments to the claims made by the Article 19 amendment. If applicant wishes such cancelled amendments under Article 19 to be considered by the examiner, they may be introduced in the form of an amendment under 37 CFR 1.115.

July 22, 1985. DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

[1057 OG 10]

(150) HELPFUL HINTS FROM THE PTO

- *Submission of Corrected Drawings in Allowed Patent Applications* — When drawings need to be corrected in an allowed application, the applicant is *required* to submit *acceptable* corrected drawings within a three-month shortened statutory period. Within that three-month period, two weeks should be allowed for review of the correction by the Office. If a correction is determined to be unacceptable by the Office, the applicant must arrange to have an acceptable correction re-submitted within the original three-month period to avoid the necessity of obtaining an extension of time and of paying the extension fee. Therefore, the applicant should file corrected drawings as soon as possible following the setting of the three-month shortened statutory period.

- *Requests for Allowed Patent Application Files* — Applicants or attorneys requesting files from the Publishing Division, Office of Publications, should make their request at least twenty-four hours in advance to ensure file availability. Attention is especially directed to out-of-town requesters who visit the Office, anticipating same day service. Although the Office is usually able to respond promptly, unexpected inconvenience can be avoided if arrangements are made in advance. Inquiries and requests should be directed to the Correspondence Section at (703) 557–6397 or (703) 557–6398 between the hours of 8:30 a.m. through 5:00 p.m. on weekdays.

- *PTO Special Boxes* — The special box numbers have been established to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Therefore, if any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they were intended.

We have been experiencing problems with Box 9 being used for other than coupon orders for copies of patents and trademark registrations.

The following special boxes should be used only for their specified purpose.

Address to:
Box_____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box 4 — Mail for the Office of Legislation and International Affairs.
Box 5 — "No fee" mail related to trademarks.
Box 7 — Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.
Box 8 — All papers for the Office of the Solicitor.
Box 9 — Coupon orders for U.S. patent and trademark copies.
Box 10 — Orders for certified copies of patent and trademark applications.
Box 12 — Contributions to the Examiner Education Program.
Box Interference — Communications relating to Interferences and Applications and patents involved in Interference.
Box M. Fee — Correspondence related to a patent that is subject to the payment of a Maintenance Fee.
Box. Pat. Ext. — Applications for patent term extension.
Box PCT — Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam — Mail related to reexamination applications.

Feb. 4, 1985. THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

(151) HELPFUL HINTS FROM THE PTO

- *Express Mail* — Many applicants are losing the advantage of receiving the date a paper or fee was deposited at the Post Office when "Express Mail" is used, due to a failure of following proper procedures. According to Chapter 37 CFR §1.10, any such paper or fee must include a certificate of mailing by "Express Mail," signed by the person mailing the paper or fee.

Often, the certificate is missing, illegible, inaccurate, incomplete, or difficult to locate. As a result, the paper or fee is considered to have been filed on the date of receipt in the PTO.

To ensure papers and fees sent by "Express Mail" are accorded the proper certificate date, the following suggestions/reminders are offered:

- Each document must have a certificate of mailing typed on or affixed to the document.
- The certificate should be placed on the first page of

the document or the covering letter to ensure easy accessibility.
- The certificate should be legible.
- Dates on the certificate must correspond to dates on the Express Mail label.
- Each certificate must have an original signature.

The preferred wording and information to be included on this certificate is as follows:

"Express Mail" Mailing Label No. (*insert B no. from Express Mail label*)
Date of Deposit (*insert date from Express Mail Label*)
I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office To Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

(*Typed or printed name of person mailing paper or fee*)

(*Signature of person mailing paper or fee*) By following these procedures, problems concerning filing dates should be minimized.

- *Extension of Time Policy* — Where an extension of time is required to file a response in a timely manner, the response is not considered complete until the response, fee, and request or petition for an extension of time are received. The fee and request or petition must be filed before the expiration of the extended period requested. The fee cannot be paid outside the statutory six-month limit for the period of response.

The extension of time policy for after final practice is set forth in MPEP §§706.07(f) and 1302.04. In essence, where applicants' approval is not needed to amend the claims, no extension of time is required. However, if applicants' approval is required and applicants did not file their response within two months of the FINAL REJECTION, the appropriate extension of time must be purchased.

If applicants have a deposit account, it is recommended that applicants file, in an individual application, a general authorization to charge any of the fees set forth in 37 CFR §§1.16 to 1.18 to a deposit account for the entire pendency of the application (1032 OG 32).

Also, it should be noted that extensions of time may be purchased for extending the time required to pay for the request for an oral hearing before the Board of Appeals. MPEP §1209(1). The time for a request and fee for an oral hearing is one month from the date of the Examiner's Answer or any supplemental Examiner's Answer.

THERESA A. BRELSFORD,
Mar. 4, 1985. *Assistant Commissioner for Administration.*

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(152) HELPFUL HINTS FROM THE PTO

- *Patent Applications* — We are trying to expedite and improve preliminary processing of patent applications. Please help by putting patent applications and associated papers (e.g. assignments) in separate envelopes from all other mail. Identify on the outside of the envelope "PATENT APPLICATION".
- *Application File Drawings* — Application Branch personnel are having some difficulty matching drawings with applications during pre-exam processing. It would be helpful if the applicant's name, docket number and the title of the invention were put on the back of the drawings. This may be done by writing lightly on the drawings or by using gum labels. Identification on the back of the drawings would be greatly appreciated.
- *Certification Services* — Expedited service requests for certification of copies that have been made by the requester shall be limited to those files open for public inspection. If there is such a need for expedited service, the request should be made to the Manager, Examination Services Division. All other requests for copies must be made to the Certifications Branch, which will fill your request within 7 days or less.
- *New Application Filing Problems* — Applications continue to be filed incorrectly under both 37 CFR 1.60 and 37 CFR 1.62. This causes problems not only for applicants but also for the Patent and Trademark Office. Filing dates are not granted to applications which do not comply with the rules. As a result, petitions with fees are required to be filed in such applications before a filing date will be granted.

Most often, the problems that arise in this area can be characterized as the following:

— Applicants continue to fail to comply with the requirements of 37 CFR 1.60 with regard to what must be submitted upon filing under the rule. This is true even after the clarifying amendments (effective Apr. 1, 1984) were made to the rule. This problem was also addressed in the Official Gazette Notice of May 8, 1984 entitled "Filing of Patent Applications Pursuant to 37 CFR 1.60."
A true copy of the prior application must be filed including the specification (including claims), drawings, oath or declaration showing the applicant's signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application.

— Applicants are using transmittal forms which request filings under one rule when, in fact, they wish to file under another rule. For example, a transmittal form requesting filing under 37 CFR 1.62 may be filed when it was really desired to file a divisional application under 37 CFR 1.60 and not to abandon the parent application.
Applications have also been filed with a transmittal form requesting filing under 37 CFR 1.60 when it was intended to file under 37 CFR 1.62. The confusion in the record of such applications must be clarified by a decision on petition before the applications can be processed for examination.

— Some applicants fail to realize that the parent application is abandoned by the filing of a continuing application under 37 CFR 1.62. Paragraph (g) of 37 CFR 1.62 states:
"The filing of a request for a continuing application under this section will be considered to be a request to expressly abandon the prior application as of the filing date granted the continuing application."
Correction after such a mistaken filing under 37 CFR 1.62 usually requires a revival of the parent application under 37 CFR 1.137(a) or (b) which expends resources of both the applicant and the PTO.

— Some applicants are attempting to file continuing applications under 37 CFR 1.62 after payment of the issue fee in the parent application. Such applications are improper and are not entitled to a filing date. Additionally, such filings will not affect the prior application, i.e., the parent application may issue as a patent. Paragraph (a) of 37 CFR 1.62 specifies that continuing applications may be filed under 37 CFR 1.62 "before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application".

— Some applicants are attempting to file continuation-in-part applications under 37 CFR 1.62 with a new specification rather than with the changes made by amendment to the prior application. As stated in 37 CFR 1.62(a) filings under 37 CFR 1.62 use the specification of the prior application. Paragraph (c) of 37 CFR 1.62 also states:
"In the case of a continuation-in-part application which *adds and claims additional disclosure by amendment*, an oath or declaration as required by §1.63 must also be filed...." (emphasis added)

NOTICE
The February 12, 1985, Official Gazette Notice on "Availability of a Patent and Trademark Publication" is rescinded. The new edition of "The Story of the U.S. Patent Office" is not yet available.

THERESA A. BRELSFORD,
Apr. 8, 1985. *Assistant Commissioner for Administration.*

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(153) HELPFUL HINTS FROM THE PTO

- *Patent Applications* — We are trying to expedite and improve preliminary processing of patent applications. Please help by putting patent applications and associated papers (e.g. assignments) in separate envelopes from all other mail. Identify on the outside of the envelope "PATENT APPLICATION".
- *Application File Drawings* — Application Branch personnel are having some difficulty matching drawings with applications during pre-examination processing. It would be helpful if the applicant's name, docket number, and the title of the invention were put on the back of the drawings. This may be done by writing lightly on the drawings or by using gum labels.
- When the Office receives formal or substitute drawings, a cover letter identifying the application by serial number should accompany them. It is extremely difficult to associate the drawings with the files when this information is missing. The application serial number should be placed on the sheet of drawing in accordance with 37 CFR 1.84(l).
- *Power of Attorney* — The Office receives letters granting power to inspect patent applications. These may only be granted by the attorney of record or inventor. Sometimes the person signing the power is not authorized to do so, causing delay until proper authorization is received.
- *Certification Services* — Expedited service requests for certification of copies that have been made by the requester shall be limited to those files open for public inspection. If there is such a need for expedited service, the request should be made to the Manager, Examination Services Division. All other requests for copies must be made to the Certification Branch, which will fill your request within 7 days or less.

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THERESA A. BRELSFORD,
May 3, 1985. *Assistant Commissioner for Administration.*

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(154) HELPFUL HINTS FROM THE PTO

- *In the May 28, 1985, Official Gazette "HELPFUL HINTS FROM THE PTO", conflicting direction was given on marking initial or substitute file drawings:*

— *Application File Drawings* — Application Branch personnel are having some difficulty matching drawings with applications during pre-examination processing. It would be helpful if the applicant's name, docket number, and the title of the invention were put on the back of the drawings. This may be done by writing lightly on the drawings or by using gum labels.

— When the Office receives formal or substitute drawings, a cover letter identifying the application by serial number should accompany them. It is extremely difficult to associate the drawings with the files when this information is missing. The application serial number should be placed on the sheet of drawing in accordance with 37 CFR 1.84(l).

According to 37 CFR 1.84(l), identifying indicia (such as the attorney's docket number, inventor's name, number of sheets, etc.) not to exceed 2¾ inches may be placed in a centered location between the side edges within three-fourths inch of the top edge. Either this marking technique on the front of the drawing or the placement of this information on the back of the drawing is acceptable. However, for identification of the serial number, the PTO prefers that it be placed on the front.

- *Patent Applications* — We are trying to expedite and improve preliminary processing of patent applications. Please help by putting patent applications and associated papers (e.g. assignments) in a separate envelope from all other mail. Identify on the outside of the envelope "PATENT APPLICATIONS". For example, if you are submitting two patent applications with associated assignment papers, they would all be placed in an envelope marked "PATENT APPLICATIONS". Any other papers being submitted, such as amendments to other applications, appeals, and patent copy requests, would be placed in another envelope.
- *File Wrapper Continuation Applications* — Many continuation applications filed under 37 CFR 1.62 (FWC) contain no preliminary amendment to the claims which were finally rejected in the parent application. The result is a first action final rejection of these claims. Applicants should file any desired amendments at the time the application is filed under 37 CFR 1.62, since the Office is treating these applications as "Special" and an action on the merits will be rendered quite promptly.
- *Surcharge for Filing a Patent Application* — Filing dates are accorded to applications filed without the basic filing fee and without the oath or declaration. In such cases, a notice is mailed by Application Division requiring at least the basic filing fee and the oath or declaration, accompanied by a surcharge (37 CFR 1.16(E)). In numerous instances, applicants fail to submit the surcharge causing the application to become abandoned. See 37 CFR 1.53(D) and MPEP §506.

Small Entity Statements — Verified statements claiming small entity status, where appropriate, would best be signed and submitted at the time the application oath or declaration is signed to permit filing of the statement with the applications. This would reduce correspondence between attorney and client, reduce paper handling by the PTO support staff and the PTO Finance Branch, and greatly simplify the processing of subsequent papers involving fees. If small entity status is being claimed for the first time at the time of payment, a verified statement claiming small entity status should be submitted with the issue fee. See MPEP §509.03.

THERESA A. BRELSFORD,
June 3, 1985. *Assistant Commissioner for Administration.*

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(155) HELPFUL HINTS

- *Petitions to Revive Abandoned Applications* — Frequently, a petition to revive an abandoned application is accompanied by an unnecessary request and

fee for extension of time. Our policy is set forth in MPEP 711.03(c). Specifically, a response does not require a request and fee for extension of time as a condition of revival.
Further, a petition to revive an abandoned application is often accompanied by an unnecessary terminal disclaimer. A terminal disclaimer is required only when a grantable petition based on unavoidable delay is not filed within six months of the date of abandonment; cf. 37 CFR 1.137(a) and 1.137(c). A terminal disclaimer should not accompany a petition based on unintentional abandonment; i.e., 37 CFR 1.137(b). In these respects, the reasoning is analogous to petitions to accept late payment of the issue fee under 37 CFR 1.155 or 1.316.
Finally, when a terminal disclaimer is a necessary component of the petition, the period to be disclaimed must equal the number of months between the date of abandonment and the date a grantable petition is filed. The date of abandonment is the date the period for response has expired; see MPEP 711.04(a). This is normally the end of the three month shortened statutory period. Moreover, the terminal disclaimer should employ the following format:

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
(NAME)
Serial No.
Filed:
For:

TERMINAL DISCLAIMER

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

Your petitioner, _____, residing at _____

_____

_____

represents that he is the owner of the entire interest in the above-identified application (by virtue of an assignment recorded at Reel __and Frame __, filed on the __ day of ____, 19__).

Your petitioner, _____, hereby disclaims the terminal___months of any patent granted on the above-identified application or on any application which is entitled to the benefit of the filing date of this application under 35 U.S.C. 120. This agreement is to run with any patent so granted and to be binding upon the grantee, its successors or assigns.

IN WITNESS WHEREOF, I hereunto set my hand and seal this __day of ____, 19__

_____
(Signature)

July 9, 1985. THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

(156) **HELPFUL HINTS FROM THE PTO**

- *Returning Files to the File Information Unit (FIU)* — Recently, files obtained through the FIU have been left in the Public Search Room at the close of business rather than being returned as required.

  All customers are reminded that files obtained through the FIU are official government records which must be returned to the FIU by 7:45 p.m. on the same day they are obtained. Additionally, files obtained through the FIU shall not be removed from the confines of the Public Search Room at any time. Adherence to these regulations is requested. Continued violations will result in cessation or suspension of individual privileges.

- *Information Cited on Form PTO–1449*

  The Public is encouraged to use Form PTO–1449, "Information Disclosure Citation," when preparing a statement under 37 CFR 1.97–1.99 (see MPEP §609). This form provides the Office with a uniform way of listing the citations and vehicle from which the information thereon can be printed on the issued patent.
  Recently, citations are being presented on various forms prepared by the public rather than on Form PTO–1449. As a result, delays are cropping up in the printing process. Because the printer has difficulty in following the various formats and is having to query the examiner each time a non-PTO–1449 form is used, you are encouraged to use the Form PTO–1449 with any submission udner 37 CFR 1.97–1.99.
  Note that listing citations on Form PTO–1449 does not raise an irrebuttable presumption that the citation is prior art. A holding by an examiner that any citation on Form PTO–1449 is prior art to claimed subject matter can be rebutted by procedures commonly used to rebut the prior art status of an examiner's citations on Form PTO–892, "Notice of References Cited".
  Among the information that should be provided on Form PTO–1449 is the date of the citation. In addition, it is helpful if the class and subclass of each citation is provided. It is appreciated that classification information may not be known at the time Form PTO–1449 is prepared. When classification information is not known, draw a line in the boxes under the class and subclass heading adjacent to the citation for which classification information is not known.

Aug. 5, 1985. THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

(157) **HELPFUL HINTS FROM THE PTO**

- *Withdrawal of Attorney* — To expedite the handling of request for permission to withdraw as attorney under 37 CFR §1.36, submit the request in triplicate (original and two copies) and indicate thereon the present mailing addresses of the attorney who is withdrawing and of the applicant. The examining group number should also appear on all such requests. Because the Office does not recognize law firms, each attorney of record must sign the notice of withdrawal, or the notice of withdrawal must contain a clear indication of one attorney signing on behalf of another.
  A request to withdraw is effective when approved rather than when received. This is particularly important when such requests are submitted toward the end of the period for response. There should be at least thirty days between approval of withdrawal and the expiration date of a time response period so that the applicant will have sufficient time to obtain other representation or take other action. If less than thirty days remain in a running response period, a request to withdraw is normally disapproved.
  It would be helpful if a request and fee, preferably an authorization to charge a deposit account, were included with a request to withdraw. Such would permit the Office to make sure, in most instances, that sufficient time remains in the period for response.

Sept. 3, 1985. THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

(158) **HELPFUL HINTS FROM THE PTO**

- *Submission of Drawings* — For your convenience and for more effective handling of any drawing corrections whch may be necessary, please DO NOT SUBMIT ORIGINAL DRAWINGS WITH PATENT APPLICATIONS. DO SUBMIT THREE HIGH QUALITY COPIES. If the copies submitted pass the formality review and patent examination, no substitute drawings will be necessary. If corrections are necessary, they should be made to the original drawings. Either a good copy of the corrected drawings or the corrected original can then be submitted after the Notice of Allowability is mailed.

- *Reissue Amendments* — In order to avoid unnecessary delays in the issuance of reissue applications, applicants and their attorneys are reminded to exercise caution and give sufficient attention to 37 CFR 1.21(a) and (e) in presenting reissue amendments to the PTO. The practices and procedures vary somewhat from regular utility application amendments, and this frequently causes clerical problems and editorial revisions. MPEP Sec. 1455 provides guidance for proper entry of amendments and claim numbering. Publication of the reissue application(s) may be needlessly postponed while formal irregularities are corrected.

- *Returning Files to the File Information Unit (FIU)* — As follow-up to a previously indentified problem involving FIU file histories being left in the Public Search Room rather than being returned as required, all charge cards were monitored for a three week period.
  Of the 2,011 files obtained, a total of 32 were not properly returned. Although the percentage of abuse is not great, customers are again reminded that files obtained through the FIU are official government records which must be returned by 7:45 p.m. on the same day they are obtained. Additionally, files obtained through the FIU shall not be removed from the confines of the Public Search Room at any time.
  FIU personnel will continue to periodically monitor this problem. Should individual patterns of abuse be discerned, administrative sanctions up to termination of access privileges will be applied.

Oct. 7, 1985. THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

TRADEMARK NOTICES

TRADEMARK RULES PROPOSALS AND COMMENTS

(159) **Trademark Rules, Proposals, and Comments**
Department of Commerce
Patent and Trademark Office
37 CFR Part 2
[Docket No. 2816–154]

Trademark Applications, Filing Dates

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.
Summary: This document amends the rules of practice in trademark cases. The amendments are needed to reduce both the special handling required to process and control applications not entitled to a filing date and the delays such handling imposes on other applications. The amendments clarify the requirements for an application and allow the Office to return applications that fail to meet these requirements. The amendments also define with greater specificity the nature of the drawing and specimens which must accompany an application in order for it to be entitled to a filing date.
Effective Date: Oct. 4, 1982.
For Further Information Contact: Alan B. Davidson by telephone at (703) 557-3916, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: A notice of proposed rulemaking concerning the amendment of 37 CFR 2.21, 2.52, 2.54, and 2.57 and the deletion of §2.55 was published in the Federal Register on Oct. 7, 1981 (46 FR 49602). Interested parties were requested to submit written comments on or before Jan. 5, 1982. Comments were received from thirteen individuals and organizations and were given careful consideration.

One commenter suggested that the final sentence of §2.54, providing for correction of drawings by the Office, should not be deleted. The individual reasoned that minor alterations are more expeditiously handled by sending the drawing to the Office draftsman rather than returning it to the applicant. The administrative overhead of such a procedure was thought to be more costly than the correction process. This suggestion has not been adopted. Under the existing practice, simple deletions from drawings are made by Examiners and clerical personnel using gummed labels and opaque correction fluid. Due to the lack of facilities, drawings have not been sent to the Drafting Branch for correction for two years.

One commenter questioned whether the proposed revision of paragraph (d) of §2.52 required a date of first use for applications filed under the provisions of Section 44 of the Lanham Act. The revision was not intended to extend the use date requirement to such applications. Paragraph (d) has been reworded to eliminate any possible confusion.

Three commenters expressed unequivocal support for the proposed amendments. While two other commenters found them to be beneficial both to the Office and to applicants, they expressed some concern as to how the new practice will be implemented. One asked about the availability of proof of the initial date of filing should the papers be improperly returned by the Office. The other directed attention to the possibility that a self-addressed postcard, often submitted by an applicant, would be sent back bearing a mail date stamp and a serial number, and the application papers would be returned subsequently as incomplete.

The procedures that have been developed to implement the proposed changes should eliminate both of these concerns. All papers which constitute an application will be date stamped in the Mail Room prior to a review of their completeness. If an application fails to meet the requirements for receiving a filing date, a second stamp will be added to indicate that the papers are informal. A notation will also be placed on the application to indicate the nature of the omission that resulted in denying a filing date. Should the initial determination prove to be erroneous, reinstating the filing date should be a simple matter. Only applications deemed to be sufficient to receive a filing date will reach the processing stage at which a serial number is assigned and the postcard returned. Hence, there should be no instances in which the papers are returned but the self-addressed postcard indicates they are accepted.

One commenter recommended further revisions to §§2.21(a)(6) and 2.52(d). The individual thought an application based on Sections 44(d) or 44(e) of the Lanham Act should be required to include complete information on the foreign application or registration claimed. In addition, the country of origin, the application or registration number, and relevant dates were suggested as required components of the heading of the drawing. These recommendations have not been adopted. Such information, while helpful, is not essential to the initial examination of an application. Much of the information is available from the certification or certified copy of the foreign registration that must accompany the application papers. While placing Section 44 information on the drawing may be of some convenience, it is not needed in order to perform a normal search. The principal area of concern to commenters involved the revisions of §§ 2.52(d) and 2.21(a)(6) which make the heading on the drawing a requirement for receiving a filing date. The six commenters who addressed themselves to this issue believed the changes placed form over substance and imposed a penalty too severe for a strictly administrative problem. They believed that the potential impact of the new procedure on applicants' substantive rights far outweighed the current inconvenience to the Office. Alternative proposals were advanced for eliminating the problem of clerks interrupting classification work to add or complete headings on drawings. One called for imposing a penalty fee for applications with incomplete drawings. Another would require the Office to hold such applications for a reasonable time while the applicant corrected the deficiency. The original filing date would be awarded once compliance was achieved. One suggestion would allow an application to receive a filing date upon substantial compliance with the drawing requirements.

A survey conducted by the Patent and Trademark Office recently showed additional processing was required to add or complete the headings on the drawings in 14% of all applications. This means remedial action is necessary for approximately 8500 applications annually. Each time an application clerk is required to add or complete the heading on a drawing, processing of other applications is slowed. As a result, the mailing of filing receipts and the filing of copies of the application drawings in the Trademark Search Library cannot be accomplished in the most timely manner.

Inadequate preparation of drawings affects the public as well as the Office. Users of the Trademark Search Room need certain basic information about each new mark in order to identify marks likely to cause confusion with other pending and registered marks. Unless this information is displayed on the drawings, the searcher must attempt to locate the application files, the only alternative source of the information.

The imposition of penalty fees or the establishment of a grace period for correcting deficiencies would not eliminate the potential difficulties for Search Library users. If drawings without complete headings were held pending correction, the search copies of all application drawings received by the Office on a given day would not be filed at the same time in the Search Library. The potential impact on a party making a search could be severe should a conflicting mark bearing a filing date a month or more old appear after a search that should have revealed it has been conducted. For these reasons, the suggestions were not adopted.

One commenter explicitly stated, and others implied, a fear of overzealous enforcement of the amended rules. The Office will make every effort to interpret the rules sensibly. The Office will make every effort to interpret the rules sensibly. For instance, an application will not be denied a filing date because of the absence of a zip code or other non-critical part of an address. No letter-by-letter comparison of an applicant's name appearing on the drawing and in the application will be made. Detailed procedures and guidelines for the Office's clerical personnel should ensure a reasonable and evenhanded approach. The implementation of the rules will be monitored carefully for the first several months.

Environmental and Other Considerations

This rule changes will not have any significant impact on the quality of the human environment or the conservation of energy resources.

These rule changes will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*) The rule changes will clarify application requirements, simplify existing procedures, and expedite procedings before the Patent and Trademark Office.

The Patent and Trademark Office has determined that these rule changes do not constitute major rules as defined in Section 1(b) of Executive Order 12291 (45 FR 13193), since they would benefit trademark applicants and reduce the burdens on the Office.

These rule changes will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed on the public.

List of Subjects in 37 CFR Part 2

Administrative practice and procedure, Trademarks.

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Amendment to Regulations

In consideration of the comments received and pursuant to the authority of the Commissioner of Patents and Trademarks under 15 U.S.C. 1123, Part 2 of Title 37, Code of Federal Regulations is amended as set forth below.

1. Section 2.21 is revised to read as follows:

§2.21 Requirements for receiving a filing date.

(a) Materials submitted as an application for registration of a mark will not be accorded a filing date as an application until all of the following elements are received:

(1) Name of the applicant;

(2) A name and address to which communications can be directed;

(3) A drawing of the mark sought to be registered containing the information required by paragraph (d) of §2.52;

(4) An identification of goods or services;

(5) At least one specimen or facsimile of the mark as actually used;

(6) A date of first use of the mark in commerce, or a certification or certified copy of a foreign registration if the application is based on such foreign registration pursuant to section 44(e) of the Trademark Act, or a claim of the benefit of a prior foreign application in accordance with section 44(d) of the Act:

(7) The required filing fee for at least one class of goods or services. Compliance with one or more of the rules relating to the elements specified above may be required before the application is further processed.

(b) The filing date of the application is the date on which all of the elements set forth in paragraph (a) of this section are received in the Patent and Trademark Office.

(c) If the papers and fee submitted as an application do not satisfy all of the requirements specified in paragraph (a) of this section, the papers will not be considered to constitute an application and will not be given a filing date. The Patent and Trademark Office will return the papers and any fee submitted therewith to the person who submitted the papers. The Office will notify the person to whom the papers are returned of the defect or defects which prevented their being considered to be an application.

2. Section 2.52 is amended by revising paragraph (d) to read as follows:

§2.52 Requirement for drawings.

* * * * *

(d) *Heading.* Across the top of the drawing, beginning one inch (2.5 cm.) from the top edge and not exceeding one fourth of the sheet, there must be placed a heading, listing in separate lines, applicant's complete name, applicant's post office address, the dates of first use of the mark and first use of the mark in commerce (except for an application filed under section 44 of the Trademark Act), and the goods or services recited in the application or a typical item of the goods or services if a number of items are recited in the application. This heading should be typewritten.

* * * * *

3. Section 2.54 is revised to read as follows:

§2.54 Informal drawings.

A drawing not in conformity with §2.51 or paragraphs (a), (b), (c), or (e) of §2.52 or §2.53 may be accepted for purpose of examination, but the drawing must be corrected or a new one furnished, as required, before that mark can be published or the application allowed.

§2.55 [Removed]

4. Section 2.55 is removed.

5. Section 2.57 is revised to read as follows:

§2.57 Facsimiles.

(a) When, due to the mode of applying or affixing the trademark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8-1/2 inches (21.6 cm.) wide and 13 inches (33.0 cm.) long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

(b) A purported facsimile which is merely a reproduction of the drawing submitted to comply with §2.51 will not be considered to be a facsimile depicting the mark as actually used on or in connection with the goods or in connection with the services.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Aug. 13, 1982.

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[1023 TMOG 3]

(160) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 2
[Docket No. 30120-11]

Trademark Oppositions; Petitions To Cancel and Affidavits or Declarations Under Section 8 of the Trademark Act

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in trademark cases to eliminate the requirement for verification of oppositions and petitions to cancel; to require that additional requests for extension of time to oppose be filed prior to the expiration of an extension; to require that affidavits or declarationsSection 8 of the Trademark Act show use of the mark in commerce; and to clarify and revise certain other procedures for oppositions and petitions to cancel. The amendments are necessary to implement certain trademark provisions of Pub. L. 97–247, enacted Aug. 27, 1982, which provisions are effective six months after the date of enactment, and to revise and codify existing practices so as to assist the orderly and prompt resolution of the issues.

Effective Date: Feb. 27, 1983.

For Further Information Contact: As to the rules relating to oppositions and petitions to cancel, Ms. Janet Rice by telephone at (703) 557–3551 or by mail addressed to the Commissioner of Patents and Trademarks. Attention: Ms. Janet Rice, Crystal Sq. 5, Suite 1008, Washington, D.C. 20231. As to the rules relating to affidavits or declarations under Section 8, contact Ms. Paula Hairston by telephone at (703) 557–3882 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Ms. Paula Hairston, Room CP2–3C–06, Washington, D.C. 20231.

Supplementary Information: Amendments to rules 2.101, 2.102, 1.103, 2.111, and 2.112, among others, were proposed in a rulemaking notice published in the **Federal Register** on June 29, 1982, at 47 FR 28324, the Patent and Trademark Office Official Gazette of July 27, 1982, at 1020 O.G. 25, and Vol. 24 of BNA's Patent, Trademark & Copyright Journal (July 1, 1982) at p. 236. The purpose of these proposed amendments was to revise and codify existing practices. One of the proposed amendments (not adopted herein) was to interchange rules 2.101 and 2.102. Interested parties were requested to submit written comments on or before Oct. 4, 1982. An oral hearing was held on the same date. Written comments relating to proposed rules 2.101, 2.102, 2.103, 2.111, and 2.112 were submitted by four organizations and one individual. Three persons testified at the oral hearing.

Two of the individuals testified in behalf of organizations which also submitted written comments. Each of the two testified that the organization which he represented approved of the proposed amendments except as indicated in the organization's written comments. The third individual testified concerning the history and purpose of the proposed amendments and expressed his approval of them.

However, further changes to several of these proposed rules, as well as amendments to other trademark rules, were required in order to implement certain trademark provisions of intervening Pub. L. 97–247 enacted Aug. 27, 1982. The text of the law is published in the Patent and Trademark Office Official Gazette of Oct. 26, 1982, at 1023 O.G. 31.

Provisions of Pub. L. 97–247 relating to trademark fees were implemented by trademark fee rule changes which were published in the **Federal Register** on July 30, 1982 at 47 FR 33086 and which took effect on Oct. 1, 1982. That final rule document was based on the public law in effect at that time, Pub. L. 96–517, and on H.R. 6260, which was then pending but is now Pub. L. 97–247. As a result of the fee rule changes, which were subsequently confirmed in a document published in the **Federal Register** on Sept. 17, 1982 at 47 FR 41272, further changes to rule 2.101 (identified in the June 29, 1982 notice as 2.102) were required.

Additional changes to rules 2.101 (identified in the June 29, 1982 notice as 2.102), 2.103 and 2.111, as well as changes to rules 2.161 and 2.162, were required in order to implement the provisions of Sections 8 and 9 of Public Law 97–247. Section 8 of the new law amends Section 8 of the Trademark Act of 1946 (15 U.S.C. 1058) to require that an affidavit or declaration filed under Section 8 show use of the mark in commerce. Section 9(a) amends Section 13 of the Trademark Act (15 U.S.C. 1063) to eliminate the requirement for verification of oppositions (thus permitting a party's attorney to sign an opposition before the Trademark Trial and Appeal Board), and to require that additional requests for extension of time to oppose be filed prior to the expiration of the extension. Section 9(b) amends Section 14 of the Trademark Act (15 U.S.C. 1064) to eliminate the requirement for verification of petitions to cancel (thus permitting a party's attorney to sign petitions to cancel before the Trademark Trial and Appeal Board). The provisions of Sections 8 and 9 of the new law which are implemented by the rules amended in the present notice are effective Feb. 27, 1983.

The proposed changes to rules 2.101 (identified in the June 29, 1982 notice as 2.102), 2.103, 2.111, 2.161, and 2.162 required as a result of the enactment of Pub. L. 97–247 were published in the **Federal Register** on Nov. 24, 1982 at 47 FR 53054. In that notice, as in the June 29, 1982; notice, rules 2.101 and 2.102 were interchanged, and it was indicated in the notice that although rules 2.102 (identified in the notice as 2.101) and 2.112, as proposed in the June 29, 1982, notice, already included the necessary changes called for by Pub. L. 97–247 and thus were not being republished, further comments on the two proposed rules would be entertained. Interested parties were requested to submit written comments on or before Jan. 7, 1983. Comments were received from one organization.

Other provisions of Pub. L. 97–247 relevant to trademark cases either require no changes in Part 2 of Title 37 CFR or require changes in Part 1 which were proposed in a separate notice.

Sections 10, 11, and 14(c) of the new law amend the Trademark Act but require no changes in the trademark rules of practice. Section 10 amends Section 15 of the Trademark Act (15 U.S.C. 1065) relating to incontestability of registered marks. Under the amended section, a registered mark does not acquire incontestability if its use infringes a valid right acquired under the law of any state or territory by use of a mark or trade name continuing from a date prior to the date of registration. Before the section was amended, the date was the date of publication. Section 11 amends Section 16 of the Act (15 U.S.C. 1066) to correspond to the current practice relating to interferences. The amended section states that an interference will be declared only upon petition to the Commissioner showing extraordinary circumstances. Section 14(c) amends Section 11 of the Act (15 U.S.C. 1061) relating to acknowledgements and verifications. An official authorized to administer oaths in a foreign country may prove such authority by apostille if the foreign country accords like effect to apostilles of designated officials in the United States.

Section 12 of the new law affects practice in both patent and trademark cases. Amendments to the rules in Part 1 which apply to both patent and trademark cases were proposed in a separate notice published in the **Federal Register** on Oct. 27, 1982 at 47 FR 47744.

In summary, this notice of final rulemaking is based upon the notices of proposed rulemaking published in the **Federal Register** on June 29, 1982, at 47 FR 28324 and on Nov. 24, 1982 at 47 FR 53054.

Discussion of Specific Sections Changed

The rules which are being amended are discussed below. (The designation § is used in The Code of Federal Regulations to denominate a rule; lettered subdivisions ("(a)", "(b)", etc.) are subsections of rules; numbered subdivisions ("(1)", "(2)", etc.) are paragraphs within sections or subsections.)

It was proposed in the notice of June 29, 1982, that former §§2.101 and 2.102 be interchanged. That proposal has not been adopted in the amended rules. Further §2.101, as amended, eliminates the requirement for verification of oppositions.

Section 2.101(a), as amended, states when an opposition proceeding is commenced, which is important for the application of §2.135.

Section 2.101(b), as amended, indicates that an opposi-

tion should be addressed to the Trademark Trial and Appeal Board, which helps to route mail within the PTO.

Section 2.101(c), as amended, requires that an opposition be filed within thirty days after publication of the application or prior to the expiration of a granted extension of time for filing an opposition.

Section 2.101(d)(1) requires the payment of the statutory fee for an opposition, and provides for the late payment of opposition fee or fees, when a notice of opposition is not accompanied by at least one full fee to oppose one class by one person, if the required fee(s) is submitted to the Patent and Trademark Office within the time limit set in the notification of the defect by the Office. This section incorporates the substance of, and replaces, §2.101(c) which was adopted effective Oct. 1, 1982, 47 FR 33086 at 33111.

Section 2.101(d) (2) and (3) provide, where the fees that are submitted are insufficient for the number of classes being opposed and/or for the number of persons joined as party opposer, an opportunity for submission of the required fees or specification of the class or classes opposed and/or of the party opposers, and provides for the allocation of the insufficient fees if no such specification is made.

Sections 2.102(a) and (b), as amended, repeat, with revisions to clarify the provisions, former §2.102(a).

Section 2.102(c) requires that a notice of opposition be filed within thirty days after publication of the application or prior to expiration of a granted extension of time for filing a notice opposition, and provides that extensions of time to file an opposition aggregating more than 120 days will not be granted except upon (1) the written consent of applicant, or (2) a written request by the potential opposer which states that applicant has consented to the request and which includes proof of service upon applicant, or (3) a showing of extraordinary circumstances.

Section 2.102(d) provides that a request to extend the time for filing a notice of opposition should be submitted in triplicate. This section codifies an existing practice which expedites notification of the Board's action on a request for an extension of time.

Section 2.103 is removed. Since §2.101, as amended, eliminates the requirement for verification of an opposition and allows the attorney to sign an opposition without need for subsequent confirmation, §2.103 is unnecessary.

Sections 2.111 and 2.112, as amended, eliminate the requirement for verification of petitions for cancellation. It was proposed in the notice of June 29, 1982 that the requirement for verification of a petition for cancellation be deleted from §2.112 and be placed in §2.111. The requirement is not included in either section, as amended.

Section 2.111(a) states when a cancellation proceeding is commenced, which is important for the application of §2.134.

Section 2.111(b) incorporates most of the provisions of former §2.111 and also indicates that a petition for cancellation should be addressed to the TTAB, which helps to route mail within the PTO.

Section 2.111(c) states the requirement for the payment of the fee(s) due upon filing a petition for cancellation; provides, where the fees that are submitted are insufficient for the number of classes sought to be cancelled and/or for the number of persons joined as party petitioners, an opportunity for submission of the required fees (provided that the five-year period, if applicable, has not expired) or specification of the class or classes sought to be cancelled and/or of the party petitioners; provides for the allocation of the insufficient fees if no such specification is made; and states that the filing date of a petition for cancellation is the date of receipt in the Patent and Trademark Office of the petition with the required fee, and that if the amount of the fee filed with the petition is sufficient for at least one named party petitioner and one class of goods or services but is less than the required amount because multiple party petitioners and/or multiple classes in the registration for which cancellation is sought are involved, and the required additional amount of the fee is filed within the time limit set in the notification of the defect by the Office, the filing date of the petition with respect to the additional party petitioners and/or classes is the date of receipt in the Patent and Trademark Office of the additional fees.

Section 2.112(a) incorporates that part of former §2.112 which described the contents of a petition for cancellation, except that the requirement for verification has been removed.

Section 2.112(b) states the conditions for filing a consolidated petition for cancellation of different registrations owned by the same party.

Section 2.161, as amended, requires that an affidavit or declaration filed under Section 8 of the Trademark Act of 1946 show that the mark is in use in commerce.

Sections 2.162(e), (f) and (g), as amended, require that the affidavit or declaration filed under Section 8 of the Trademark Act of 1946 state that the mark is in use in commerce, and specify the nature of such commerce. The latter requirement is consistent with §2.33(viii) of the trademark rule which requires that the application for trademark registration specify the nature of the commerce in which the mark is used.

Response to Comments on the Rules

All of the comments received in response to the notices of proposed rulemaking published in the **Federal Register** on June 29, 1982, and Nov. 24, 1982, have been given careful consideration, and a number of the suggested modifications have been adopted. The comments and responses appear below.

Comment: One organization opposed the proposal to reverse the order of §§2.101 and 2.102, asserting that a change in the location of §2.101 would be likely to cause confusion, and that the more logical order is to first explain the substance of filing an opposition and then explain how to obtain an extension of time in which to act.

Response: To minimize confusion in view of the numerous recent rule changes and proposed rule changes, the proposal to reverse the order of §§2.101 and 2.102 has been withdrawn.

Comment: One organization noted that in §§2.101 and 2.102, as proposed, the term "opposition", when used to refer to the complaint in an opposition proceeding, has been changed to "notice of opposition". The organization expressed its belief that there is no reason for reverting to the phrase "notice of opposition" except tradition, and that that phrase is confusingly similar to the phrase "notification of opposition".

Response: The proposal to change "opposition" to "notice of opposition" in certain instances has not been adopted.

Comment: Two organizations suggested that §2.101(d) (identified as §2.102(e) and as 2.102(d) in the notices of proposed rulemaking of June 29, 1982, and Nov. 24, 1982, respectively), which deals with insufficient opposition fees and provides for the allocation of the fees submitted, be revised to give opposer(s) an opportunity to select the opposer(s) and/or classes to which the submitted fees apply. One of these organizations suggested that the opposer also be given an opportunity to submit the proper fee(s). Similar comments were made with respect to §2.111(c) (identified in the June 29, 1982 notice as §2.111(d)), which deals with insufficient cancellation fees.

Response: Where the fees submitted are insufficient for each named party opposer or petitioner for each class sought to be opposed or cancelled, it is in fact the practice of the Board to give the opposer(s) or petitioner(s) an opportunity to either submit the proper fees or to select the opposer(s) or petitioner(s) and/or classes to which the submitted fees apply. Accordingly, the sections have been changed to reflect this practice. See also, with respect to insufficient cancellation fees, §2.85(e).

Comment: One member of one of the organizations suggested that the subsections identified as §2.102 (e) and (f) in the notice of proposed rulemaking of June 29, 1982, and as §2.102 (d) and (e) in the notice of proposed rulemaking of Nov. 24, 1982, be consolidated into a single subsection so that all of the provisions concerning insufficient opposition fees will appear in the same subsection. Another organization suggested that these and certain other portions of the rules dealing with fees be moved to §2.6 or a new §2.7.

Response: The suggestion concerning consolidation has been adopted, and the two subsections in question have been consolidated into the single subsection now identified as §2.101(d). Inasmuch as it is believed that the most logical and effective location for these provisions is §2.101, the suggestion that they be moved to §2.6 or a new §2.7 has not been adopted.

Comment: One individual suggested that §2.101(a) (identified as §2.102(a) in the notices of proposed rulemaking) and §2.111(a) be modified by inserting the word "properly" before the word "executed" in order to make it clear that an opposition or cancellation proceeding is not commenced until a properly verified complaint has been filed.

Response: In view of the elimination of the requirement for verification of oppositions and petitions for cancellation, this suggestion is moot.

Comment: One organization suggested, with respect to the phrase "or other person authorized to represent the potential opposer" which appears in §2.102(a) (identified as §2.101(a) in the June 29, 1982 notice of proposed rulemaking), that the type of authorization intended here be explained by inserting a cross reference to §2.12 (b) and (c) and §2.17(b), the sections entitled "Persons who may practice before the Patent and Trademark Office in trademark cases" and "Recognition for representation", respectively.

Response: The subsection has been modified as suggested.

Comment: One organization stated, with respect to §2.102(b) (identified in the June 29, 1982 notice of proposed rulemaking as §2.101(b)), that it agreed with "the PTO's proposed amendment in paragraph (b) regarding 'privity'," but believed that "the intent should be mentioned in the legislative history of the rules."

Response: The substance of §2.102(b), as amended, is identical to the latter portion of former §2.102(a). That is, the amendment is not substantive in nature but rather involves a slight improvement in the wording of the subsection. The provision concerning privity was added by an earlier amendment effective Feb. 1, 1976. The legislative history of that rule change may be found in the notice of proposed rulemaking published in the **Federal Register** on Feb. 11, 1975 at 40 FR 6363 and in the notice of final rulemaking published in the **Federal Register** at 41 FR 756.

Comment: One organization suggested that the phrase "under this section" be deleted from the subsection identified as §2.101(c) in the June 29, 1982 notice of proposed rulemaking (§2.102(c), as amended) so that extensions can be granted without requiring a showing of good cause following an extension which is not made under this section, as, for example, after a blanket extension published in the Official Gazette.

Response: The suggestion has been adopted.

Comment: Two organizations and some of the members of the "cognizant committee" of a third organization commented, with respect to the subsection identified in the June 29, 1982 notice as §2.101(c) (§2.102(c), as amended), that the requirement that a potential opposer seeking an extension of time beyond 120 days based upon the consent of applicant must furnish applicant's consent in writing is unduly harsh and that the potential opposer should be permitted to rely upon applicant's oral consent.

Response: Rule 2.102(c), as amended, permits the potential opposer to rely upon applicant's oral consent provided that the request to extend is accompanied by proof of service upon applicant or its authorized representative. Although proof of service of papers filed in connection with an inter partes proceeding before the Board upon the other parties to the proceeding is required after the proceeding commences, it is not normally required prior to that time. However, where a request for extension of time to oppose beyond 120 days is based upon potential opposer's assertion that applicant has given its oral consent thereto, the requirement for proof of service is necessary in order to provide applicant written confirmation of its oral consent.

Comment: Another portion of the "cognizant committee" of the organization referred to in the comment above suggested, with respect to the same subsection, that either the language regarding written stipulation be deleted or that the word "or" before the phrase "upon a showing of extraordinary circumstances" be changed to "and", thereby making a showing of extraordinary circumstances an essential requirement for any extension of time to oppose beyond 120 days.

Response: It is advantageous both to the Office and to the parties to a potential opposition if the conflict between the parties can be settled without resort to an opposition proceeding. It is believed that the changes suggested by this portion of the committee are unduly restrictive and would cause oppositions to be filed in cases where they might otherwise be avoided. Accordingly, the proposed changes have not been made. It should be noted in this regard that even when a request for extension of time beyond 120 days is based upon the written or oral consent of the applicant, good cause must still be shown for the requested extension. Thus the potential for abuse of the extension of time process which would exist if there were no requirement for a showing of good cause is avoided in §2.102(c) as amended.

Comment: One organization questioned the provisions in §2.111 for the payment of late fees in connection with a petition for cancellation as being possibly inconsistent with §14 of the Trademark Act of 1946, which states that the "petition * * * may, upon payment of the prescribed fee, be filed * * *"; noted that there is the possibility that the five-year period of §14 would pass between the filing of the petition and the payment of the fee as to one or more classes; and suggested that a petition to cancel should not be effective as to any class or person until the fee for that class is paid and the filing is complete.

Response: While it has been held, because of the power granted to the Commissioner by §13 of the Trademark Act of 1946 to extend the time for filing a notice of opposition and to fix a time within which an unverified opposition may be verified, that the payment of the required fee is not jurisdictional in the case of an opposition (See: Marzall v. Libby, McNeill & Libby, 89 USPQ 10 (D.C. Cir. 1951), and Colgate-Palmolive Co. v. Brenner, 148 USPQ 535 (S.D.N.Y. 1965)), the Court of Customs and Patent Appeals has held, in The Williamson-Dickie Manufacturing Co. v. Mann Overall Co., Inc., 149 USPQ 518 (CCPA 1966), that the payment of the required fee for a petition for cancellation is a jurisdictional requirement without which a petition has not been filed in compliance with §14 of the statute. Cf. §9 of the Trademark Act of 1946 (which, like §14, contains no provision granting the Commissioner the power to extend the time for filing), §2.183(b) of the Trademark Rules of Practice, and In re Michaels Stern & Co., Inc., 199 USPQ 382 (Comr. 1978). Further, when multiple classes are combined in a single application or registration, the combined application or registration is regarded as though it were a group of individual applications which have been physically assembled within a single file wrapper bearing a single serial or registration number, and each of these individual applications or registrations must stand or fall on its own merits in pre-registration and post-registration ex parte and inter partes proceedings, so that if an opposition or petition for cancellation is filed with respect to more than one of the classes in the combined application or registration, there are effectively multiple separate proceedings, each of which must be determined on its own facts and merits. See, for example: Federated Foods, Inc. v. Fort

Howard Paper Co., 192 USPQ 24 (CCPA 1974), and In re Bombardier Limited, 204 USPQ 943 (Comr. 1979). Similarly, when multiple persons are named in a complaint as party opposers or petitioners, each must show that it would be damaged by the issuance or continued existence of the registration in question, so that if two different persons, for example, are joined as party petitioners, there are effectively two different cancellation proceedings, each of which must be determined on its own merits. It follows from the foregoing that when a petition for cancellation involves multiple classes and/or party petitioners, the required fee is jurisdictional with respect to each class and/or party petitioner, that is, that the petition for cancellation is not effective as to any class or person until the fee for that class or person has been received by the Office; and that if the five-year period of §14 of the Trademark Act of 1946 expires between the filing of the petition and the payment of the fee as to one or more classes or party petitioners, the petition as those classes or party petitioners can be entertained by the Trademark Trial and Appeal Board only to the extent that the petition is based upon the provisions of §14 (c), (d) or (e) or §24 of the statute or seeks cancellation of a registration issued under the Act of 1920. Accordingly, §2.111(a) has been revised to state that a cancellation proceeding is commenced by the timely filing of a petition for cancellation, together with the required fee, in the Patent and Trademark Office; the last sentence of subsection (b) has been revised to indicate that in those cases where the five-year limitation is applicable, both the petition and the required fee must be filed within the five-year period; in subdivisions (1) and (2) of subsection (c) (identified in the notice of proposed rulemaking of June 29, 1982, as subsection (d)), the provision of an opportunity to submit additional fees is limited, if the five-year period is applicable, to those cases in which the period has not expired; and a new subdivision (3) has been added to subsection (c) stating that the filing date of a petition for cancellation is the date of receipt in the Patent and Trademark Office of the petition together with the required fee, and that if the amount of the fee filed with the petition is sufficient for at least one named party petitioner and one class of goods or services but is less than the required amount because multiple party petitioners and/or multiple classes in the registration for which cancellation is sought are involved, and the required additional amount of the fee is filed within the time limit set in the notification of the defect by the Office, the filing date of the petition with respect to the additional party petitioners and/or classes is the date of receipt in the Patent and Trademark Office of the additional fees.

Comment: One organization suggested that a cross reference to §2.6 be added to §2.111(c)(1) (identified in the June 29, 1982, notice of proposed rulemaking as §2.111(d)(1)) along with the reference to §2.85(e).

Response: A cross reference to §2.6 has been added to §2.111(c)(1), along with the reference to §2.85(e).

Comment: One organization objected to §2.162(e) to the extent that it requires that a statement of use in commerce "must be supported by evidence which shows that the mark is in use in commerce * * *," and recommended that the words "in commerce" be deleted from the quoted phrase. The organization indicated that while it did not object to the requirement of use in commerce, nor to the requirement of a showing that the mark is in use, it did object to a requirement of a showing that the mark is in use in commerce since such a showing could not be accomplished by a mere specimen but would also require invoices or the like.

Response: The subsection has been modified as suggested.

Environmental, Energy, and Other Considerations

The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The rule change includes no additional or increased fees. Substantive rights to use valuable trademarks are not adversely affected. The rule change serves to implement the required trademark provisions of Pub. L. 97-247.

The rule change does not impose a record keeping or reporting burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. No additional information is required from the public. No additional records are required to be maintained by the Patent and Trademark Office because there are no additional fees or proceedings to monitor.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant, adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States based enterprises to compete with foreign based enterprises in domestic or export markets.

List of Subjects in 37 CFR Part 2

Administrative practice and procedure, Courts, Lawyers, Trademarks.

Amendment of Regulations

After consideration of the comments received and pursuant to the authority contained in 15 U.S.C. 1123, Part 2 of Title 37 of the Code of Federal Regulations is amended as set forth below.

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

1. Section 2.101 is revised to read as follows:

§2.101 Filing an opposition.

(a) An opposition proceeding is commenced by the filing of an opposition in the Patent and Trademark Office.

(b) Any person who believes that he would be damaged by the registration of a mark on the Principle Register may oppose the same by filing an opposition, which should be addressed to the Trademark Trial and Appeal Board.

(c) The opposition must be filed within thirty days after publication (§2.80) of the application being opposed or within an extension of time (§2.102) for filing an opposition.

(d)(1) The opposition must be accompanied by the required fee for each party joined as opposer for each class in the application for which registration is opposed (see §2.6(1)). If no fee, or a fee insufficient to pay for one person to oppose the registration of a mark in at least one class, is submitted within thirty days after publication of the mark to be opposed or within an extension of time for filing an opposition, the opposition will not be refused if the required fee(s) is submitted to the Patent and Trademark Office within the time limit set in the notification of this defect by the Office.

(2) If the fees submitted are sufficient to pay for one person to oppose registration in at least one class but are insufficient for an opposition against all of the classes in the application, and the particular class or classes against which the opposition is filed are not specified, the Office will issue a written notice allowing opposer until a set time in which to submit the required fee(s) or to specify the class or classes opposed. If the required fee(s) is not submitted, or the specification made, within the time set in the notice, the opposition will be presumed to be against the class or classes in ascending order, beginning with the lowest numbered class and including the number of classes in the application for which the fees submitted are sufficient to pay the fee due for each class.

(3) If persons are joined as party opposers, and the fees submitted are sufficient to pay for one person to oppose registration in at least one class but are insufficient for each named party opposer, the Office will issue a written notice allowing the named party opposers until a set time in which to submit the required fee(s) or to specify the opposer(s) to which the submitted fees apply. If the required fee(s) is not submitted, or the specification made, within the time set in the notice, the first named party will be presumed to be the party opposer and additional parties will be deemed to be party opposers to the extent that the fees submitted are sufficient to pay the fee due for each party opposer. If persons are joined as party opposers against the registration of a mark in more than one class, the fees submitted are insufficient, and no specification of opposers and classes is made within the time set in the written notice issued by the Office, the fees submitted will be applied first on behalf of the first-named opposer against as many of the classes in the application as the submitted fees are sufficient to pay, and any excess will be applied on behalf of the second-named party to the opposition against the classes in the application in ascending order.

2. Section 2.102 is revised to read as follows:

§2.102 Extension of time for filing an opposition.

(a) Any person who believes that he would be damaged by the registration of a mark on the Principal Register may file a written request to extend the time for filing an opposition. The written request may be signed by the potential opposer or by an attorney at law or other person authorized, in accordance with §2.12 (b) and (c) and §2.17(b), to represent the potential opposer.

(b) The written request to extend the time for filing an opposition must identify the potential opposer with reasonable certainty. Any opposition filed during an extension of time should be in the name of the person to whom the extension was granted, but an opposition may be accepted if the person in whose name the extension was requested was misidentified through mistake or if the opposition is filed in the name of a person in privity with the person who requested and was granted the extension of time.

(c) The written request to extend the time for filing an opposition must be filed in the Patent and Trademark Office before the expiration of thirty days from the date of publication or within any extension of time previously granted, should specify the period of extension desired, and should be addressed to the Trademark Trial and Appeal Board. A first extension of time for not more than thirty days will be granted upon request. Further extensions of time may be granted by the Board for good cause. In addition, extensions of time to file an opposition aggregating more than 120 days from the date of publication of the application will not be granted except upon (1) a written consent or stipulation signed by the applicant or its authorized representative, or (2) a written request by the potential opposer or its authorized representative stating that the applicant or its authorized representative has consented to the request, and including proof of service on the applicant or its authorized representative, or (3) a showing of extraordinary circumstances, it being considered that a potential opposer has an adequate alternative remedy by a petition for cancellation.

(d) Every request to extend the time for filing a notice of opposition should be submitted in triplicate (original plus two copies).

§2.103 [Removed]

3. Section 2.103 is removed.

4. Section 2.111 is revised to read as follows:

§2.111 Filing petition for cancellation.

(a) A cancellation proceeding is commenced by the timely filing of a petition for cancellation, together with the required fee, in the Patent and Trademark Office.

(b) Any person who believes that he is or will be damaged by a registration may file a petition, which should be addressed to the Trademark Trial and Appeal Board, to cancel the registration in its entirety or for each class in the registration specified in the petition. The petition may be filed at any time in the case of registrations on the Supplemental Register or under the Act of 1920, or registrations under the Act of 1881 or the Act of 1905, which have not been published under §12(c) of the Act of 1946, or on any ground specified in §14 (c) or (e) of the Act of 1946. In all other cases the petition and the required fee must be filed within five years from the date of registration of the mark under the Act of 1946 or from the date of publication under §12(c) of the Act of 1946.

(c)(1) The petition must be accompanied by the required fee for each class in the registration for which cancellation is sought (see §§2.6(1) and 2.85(e)). If the fees submitted are insufficient for a cancellation against all of the classes in the registration, and the particular class or classes against which the cancellation is filed are not specified, the Office will issue a written notice allowing petitioner until a set time in which to submit the required fee(s) (provided that the five-year period, if applicable, has not expired) or to specify the class or classes sought to be cancelled. If the required fee(s) is not submitted, or the specification made, within the time set in the notice, the cancellation will be presumed to be against the class or classes in ascending order, beginning with the lowest numbered class, and including the number of classes in the registration for which the fees submitted are sufficient to pay the fee due for each class.

(2) If persons are joined as party petitioners, each must submit a fee for each class for which cancellation is sought. If the fees submitted are insufficient for each named party petitioner, the Office will issue a written notice allowing the named party petitioners until a set time in which to submit the required fee(s) (provided that the five-year period, if applicable, has not expired) or to specify the petitioner(s) to which the submitted fees apply. If the required fee(s) is not submitted, or the specification made, within the time set in the notice, the first named party will be presumed to be the party petitioner and additional parties will be deemed to be party petitioners to the extent that the fees submitted are sufficient to pay the fee due for each party petitioner. If persons are joined as party petitioners against a registration sought to be cancelled in more than one class, the fees submitted are insufficient, and no specification of parties and classes is made within the time set in the written notice issued by the Office, the fees submitted will be applied first on behalf of the first-named petitioner against as many of the classes in the registration as the submitted fees are sufficient to pay, and any excess will be applied on behalf of the second-named party to the petition against the classes in the registration in ascending order.

(3) The filing date of the petition is the date of receipt in the Patent and Trademark Office of the petition together with the required fee. If the amount of the fee filed with the petition is sufficient to pay for at least one person to petition to cancel one class of goods or services but is less than the required amount because multiple party petitioners and/or multiple classes in the registration for which cancellation is sought are involved, and the required additional amount of the fee is filed within the time limit set in the notification of the defect by the Office, the filing date of the petition with respect to the additional party petitioners and/or classes is the date of receipt in the Patent and Trademark Office of the additional fees.

5. Section 2.112 is revised to read as follows:

§2.112 Contents of petition for cancellation.

(a) The petition to cancel must set forth a short and plain statement showing how the petitioner is or will be damaged by the registration, state the grounds for cancellation, and indicate the respondent party to whom notification shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition.

(b) Petitions to cancel different registrations owned by

the same party may be joined in a consolidated petition when appropriate, but the required fee must be included for each party joined as petitioner for each class sought to be cancelled in each registration against which the petition to cancel is filed.

6. Section 2.161 is revised to read as follows:

§2.161 Cancellation for failure to file affidavit or declaration during sixth year.

Any registration under the provisions of the Act of 1946 and any registration published under the provisions of section 12(c) of the Act (§2.153) shall be cancelled as to any class in the registration at the end of six years following the date of registration or the date of such publication, unless within one year next preceding the expiration of such six years the registrant shall file in the Patent and Trademark Office an affidavit or declaration in accordance with §2.20 showing that said mark is in use in commerce as to such class or showing that its nonuse as to such class is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark.

7. Section 2.162 is amended by revising paragraphs (e), (f) and (g) to read:

§2.162 Requirements for affidavit or declaration during sixth year.

* * * * *

(e) State that the registered mark is in use in commerce and specify the nature of such commerce (except under paragraph (f) of this section). The statement must be supported by evidence which shows that the mark is in use, and normally such evidence consists of a specimen or a facsimile specimen which is currently in use, or a statement of facts concerning use. The supporting evidence should be submitted with the affidavit or declaration, but if it is not or if the evidence submitted is found to be deficient, the evidence, or further evidence, may be submitted and considered even though filed after the sixth year has expired;

(f) If the registered mark is not in use in commerce, recite facts to show that nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. If the facts recited are found not to be sufficient, further evidence or explanation may be submitted and considered even though filed after the sixth year has expired; and

(g) Contain the statement of use in commerce or statement as to nonuse and appropriate evidence, as required in paragraphs (e) and (f) of this section, for each class to which the affidavit or delcaration pertains in this registration.

(Secs. 8 and 9, Pub. L. 97–247 (96 Stat. 320))

DONALD J. QUIGG,
Deputy Commissioner of Patents and Trademarks.

Jan. 19, 1983.

[FR Doc. 83–2550 Filed 1–27–83; 8:45 am]
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[1027 TMOG 129]

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(161)

Department Of Commerce
Patent and Trademark Office
37 CFR Part 2
(Docket No. 30428-69)

Trademark Applications and Examination Proceedings; Trademark Interference, Concurrent Use, Opposition and Cancellation Proceedings; Trademark Post-Registration Proceedings

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in trademark cases to clarify and revise procedures for the examination of applications; appeals from final refusals of registration; the institution and/or conduct of trademark interference, concurrent use, opposition and cancellation proceedings; the examination of affidavits or declarations under section 8 of the Trademark Act of 1946; amendments to registrations under section 7 (d) of the Trademark Act; and petitions to the Commissioner. The procedures revise or codify existing practices, or simplify procedures, or establish periods of time, to assist the orderly and prompt resolution of issues.

Effective Date: June 22, 1983.

For Further Information Contact: Miss Janet E. Rice by telephone at (703) 557-3551 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Janet E. Rice, Crystal Square 5, Suite 1008, Washington, D.C. 20231.

Supplementary Information: Amendments to §§2.20, 2.27, 2.63, 2.64, 2.65, 2.72, 2.81, 2.96, 2.98, 2.99, 2.101, 2.102, 2.103, 2.104, 2.105, 2.106, 2.107, 2.111, 2.112, 2.113, 2.115, 2.116, 2.117, 2.120, 2.121, 2.122, 2.123, 2.124, 2.125, 2.127, 2.128, 2.129, 2.131, 2.132, 2.134, 2.135, 2.142, 2.146, 2.165, 2.173, 2.184, and 2.186 and the removal of §§2.88, 2.94, 2.95, 2.97, 2.126, 2.147, and 2.148 were proposed in a rulemaking notice published in the **Federal Register** on June 29, 1982, at 47 FR 28324, the Patent and Trademark Office *Official Gazette* of July 27, 1982, at 1020 O.G. 25, and Vol. 24 of *BNA's Patent, Trademark & Copyright Journal* (July 1, 1982) at p. 236. The purpose of these proposed amendments was to revise and codify existing practices. One of the proposed amendments (subsequently not adopted) was to interchange§§2.101 and 2.102. Interested parties were requested to submit written comments on or before Oct. 4, 1982. An oral hearing was held on the same date. Written comments were submitted by four organizations and four individuals. Three persons testified at the oral hearing. Two of the individuals testified in behalf of organizations which also submitted written comments. Each of the two testified that the organization which he represented approved of the proposed amendments except as indicated in the organization's written comments. The third individual testified concerning the history and purpose of the proposed amendments and expressed his approval of them.

However, further changes to several of these proposed rules, as well as amendments to other trademark rules, were required in order to implement certain trademark provisions of intervening Pub. L. 97-247 enacted Aug. 27, 1982. The text of the law is published in the Patent and Trademark Office *Official Gazette* of Oct. 26, 1982, at 1023 O.G. 31.

Provisions of Pub. L. 97-247 relating to trademark fees were implemented by trademark fee rule changes which were published in the **Federal Register** on July 30, 1982 at 47 FR 33086 and which took effect on Oct. 1, 1982. That final rule document was based alternatively on the law in effect at that time, Pub. L. 96-517, and on H.R. 6260, which was then pending but is now Pub. L. 97-247. As a result of the fee rule changes, which were based on Pub. L. 97-247 and subsequently confirmed in a document published in the **Federal Register** on Sept. 17, 1982 at 47 FR 41282, further changes to §2.101 [identified in the June 29, 1982 notice as §2.102] were required.

Additional changes to §2.101 [identified in the June 29, 1982 notice as §2.102] and §2.111, the removal of §2.103, and changes to §§2.161 and 2.162 were required in order to implement the provisions of Sections 8 and 9 of Pub. L.97-247. Section 8 of the new law amends Section 8 of the Trademark Act of 1946 (15 U.S.C. 1058) to require that an affidavit or declaration filed under Section 8 show use of the mark in commerce. Section 9(a) amends Section 13 of the Trademark Act (15 U.S.C. 1063) to eliminate the requirement for verification of oppositions (thus permitting a party's attorney to sign an opposition before the Trademark Trial and Appeal Board), and to require that additional requests for extension of time to oppose be filed prior to the expiration of the extension. Section 9(b) amends Section 14 of the Trademark Act (15 U.S.C. 1064) to eliminate the requirement for verification of petitions to cancel (thus permitting a party's attorney to sign petitions to cancel before the Trademark Trial and Appeal Board). The provisions of Sections 8 and 9 of the new law became effective Feb. 27, 1983.

The additional proposed changes to §1.101 (identified in the June 29, 1982 notice as §2.102) and §2.111, the changes to §§2.161 and 2.162, and the proposed removal of §2.103, all required as a result of the enactment of Pub. L. 97-247, were published in the **Federal Register** on Nov. 24, 1982 at 47 FR 53054. In that notice, as in the June 29, 1982 notice, §§2.101 and 2.102 were interchanged, and it was indicated in the notice that although§2.102 [identified in the notice as §2.101] and §2.112, as proposed in the June 29, 1982 notice, already included the necessary changes called for by Pub. L. 97-247 and thus were not being republished, further comments on the two proposed rules would be entertained. Interested parties were requested to submit written comments on or before Jan. 7, 1983. Comments were received from one organization.

In a notice of final rulemaking published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972, and in the *Official Gazette* of Feb. 22, 1983 at 1027 O.G. 129, §2.103 was removed, and §§2.101, 2.102, 2.111, 2.112, 2.161, and 2.162 were amended, to incorporate changes adoped both as a result of the notice of proposed rulemaking of June 29, 1982 (to revise and codify existing practices) and as a result of the notice of proposed rulemaking of Nov. 24, 1982 (to implement the provisions of Sections 8 and 9 of Pub. L. 97-247). All of the comments relating to §§2.101, 2.102, 2.103, 2.111, 2.112, 2.161, and 2.162 which were received in response to the two notices of proposed rulemaking were discussed in that final rule notice and the rule changes adopted therein became effective on Feb. 27, 1983.

Accordingly, this final rule notice does not include a discussion of the comments relating to §§2.101, 2.102, 2.103, 2.111, and 2.112 which were received in response to the June 29, 1982 notice of proposed rulemaking.

Discussion of Specific Sections Changed:

The rules which are being amended are discussed below. (The designation § is used in The Code of Federal Regulations to denominate a rule. If internal division of a section is necessary, it is divided into paragraphs designated as follows: "a", "b", etc. at the first level; "1", "2", etc. at the second level; "i", "ii", etc. at the third level; "A", "B", etc. at the fourth level; "*1*", "*2*", etc. at the fifth level; and "*i*", "*ii*", etc. at the sixth level.)

In this preamble to the rulemaking, "Patent and Trademark Office" is abbreviated as "PTO" and "Trademark Trial and Appeal Board" is abbreviated as "TTAB".

Section 2.20 was proposed to be amended by the addition of a new paragraph (b) to codify the practice whereby a nonofficer of a corporation or association who is authorized to sign a notice of opposition or petition for cancellation may verify the pleading by a declaration in lieu of an oath or affirmation. Inasmuch as the requirement for verification has been eliminated (See Pub. L. 97-247, enacted Aug. 27, 1982 and the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972), this proposal is withdrawn as moot.

Section 2.27(e) is added to permit the PTO to retain in confidence, not available for public inspection, anything filed under seal pursuant to a protective order [see amended §§2.120(f) and 2.125(e)]. Conforming amendments are made in paragraphs (b) and (d) of §2.27.

Section 2.63 is clarified and designated as paragraph (a).

Section 2.63(b) is added to codify the practice of allowing an applicant to petition to the Commissioner for relief from either an examiner's repeated but nonfinal formal requirement which is appropriate for petition to the Commissioner or a final action which is limited to subject matter which is appropriate for petition to the Commissioner. The paragraph also requires that a petition be timely and sets a time limit for action after denial of a petition. See amended §2.146(b) for a description of nonpetitionable subject matter and amended §2.146(d) for the time limit (sixty days) for a petition. The final text includes a phrase that was not included in the proposed paragraph, namely, the phrase "and the subject matter of the requirement is appropriate for petition to the Commissioner" which now appears in the clause "(1) the requirement is repeated, but the examiner's action is not made final, and the subject matter of the requirement is appropriate for petition to the Commissioner;". The phrase has been added in order to further clarify the intent of the paragraph and is not considered to result in a material alteration thereof.

Section 2.64 is designated as paragraph (a) and revised to agree with the provision in §2.63(b) permitting petitions to the Commissioner concerning some requirements which have been made final.

Section 2.64(b) is added to clarify the existing practice of replying to requests for reconsideration after final action, and to permit entry of amendments accompanying such requests if they comply with the Act of 1946 and the rules of practice in trademark cases.

Section 2.65 is designated as paragraph (a) and amended by the addition of a sentence to provide that a timely and proper petition under §2.63(b) avoids the abandonment of an application. A new paragraph (b) permits the examiner to allow an applicant additional time to explain and supply an inadvertent omission which would otherwise have resulted in the application being held abandoned. The final text of (b) includes a phrase that was not included in the paragraph as proposed, namely, the phrase "filed within the six-month response period" which now appears in the clause beginning "When action by the applicant filed within the six-month response period is a bona fide attempt to advance the examination of the application * * *." The phrase has been added in order to further clarify the intent of the paragraph and is not considered to result in a material alteration thereof.

Section 2.72 is revised so that the standard for amendment of a mark in an application now is the same in terms as the standard for amendment of a registered mark set forth in section 7(d) of the Act of 1946.

Section 2.72 was proposed to be further revised to allow non-material changes in the drawing to be supported by specimens which were not necessarily in use at the time the original application was filed. However, upon further consideration, it appears that the proposed revision might result in so many amendments to marks as to constitute a burden on the Patent and Trademark Office. Accordingly, this part of the proposal is withdrawn.

Section 2.81 is revised to clarify the language of the section. Proposed §2.81 has been slightly reworded herein so as to further improve the clarity of the section.

Section 2.88 is deleted because requests to consolidate applications are very rare and the procedure is unworkable. See Official Gazette notice of July 29, 1981, 1009 TMOG 17.

Section 2.94 is deleted because interferences are declared only upon petition [see §2.91], which assumes proper review before an interference is declared, and existing §2.94 is unnecessary.

Section 2.95 is deleted because the deletion of §2.94 makes §2.95 unnecessary.

Section 2.96 is amended to codify existing practice on the issues determinable in an interference and the order of the parties and burden of proof. The amended rule states who is the junior party if two applications have the same filing date but different dates of execution. The third and fourth sentences of proposed §2.96 have been reworded herein so as to improve the clarity of the section.

Section 2.97 is deleted because it is unnecessary in view of the codification in §2.96.

Section 2.98 is amended to make the rule consistent with existing §2.91.

Section 2.99 is reorganized and amended to describe the concurrent use application procedure in greater detail. Paragraph (a) of the amended rule provides that an application for a concurrent use registration will be examined in the same manner as other applications for registration.

Paragraphs (b) and (c) and paragraph (d)(1) of §2.99 describe the procedure to be used to institute a concurrent use proceeding.

Paragraphs (d)(2) and (3) of §2.99 codify existing practice on who must file an answer to a notice of institution of a concurrent use proceeding and the effect of not filing an answer.

Section 2.99(e) codifies existing practice on the order of the parties and the burden of proof and states who is the junior party if two applications have the same filing date but different dates of execution. A person specified as an excepted user but who has not filed an application is stated to be a senior party to every party that has an application involved in the proceeding because a party without an application is seeking no relief and therefore has no burden of proving entitlement to relief.

Section 2.99(f) provides for the issuance of a concurrent use registration upon the basis for a court's determination of the rights of the parties to use their marks in commerce, without the institution of a proceeding by the TTAB, when all of the conditions specified in the rule are fulfilled. The first clause in paragraph (f), which, as proposed, read "when a concurrent use registration is sought on the basis of a court's determination of the rights of the parties to use the marks in commerce, * * *", has been modified herein to read "When a concurrent use registration is sought on the basis that a court of competent jurisdiction has finally determined that the parties are entitled to use the same or similar marks in commerce, * * *." The modified clause closely follows the language of that portion of section 2(d) of the Act of 1946 upon which the rule is based. The modification has been made in order to clarify the subsection and is not considered to result in a material alteration thereof.

Section 2.99(g) codifies existing law that registrations and applications to register on the Supplemental Register and registrations under the Act of 1920 are not subject to concurrent use registration proceedings and implements section 26 of the Act of 1946, which provides, inter alia, that applications for and registrations on the Supplemental Register shall not be subject to section 17 of the Act, which is the statutory authority for a concurrent use registration proceeding (cf. existing §2.91(b)).

Section 2.104 is amended to clarify existing §2.104.

Section 2.105 is amended to clarify existing §2.105 and codify the practice thereunder.

Section 2.106(c) is amended to codify the practice under existing §2.106(c) that, after an answer is filed, an opposition may be withdrawn without prejudice only with the written consent of the applicant.

Section 2.107 is amended to codify the practice under existing §2.107 whereby any pleading, including the answer, may be amended.

Section 2.113 is amended to clarify existing §2.113, which described the procedure for notifying a registrant of the filing of a proper petition for cancellation of his registration. The amended section includes cross-references to §§2.111 and 2.112 (amended effective Feb. 27, 1983), which pertain to the "filing" of and proper form for a petition for cancellation, and to §2.118, which pertains to undelivered Office notices.

Section 2.115 is amended to codify the practice under existing §2.115 whereby any pleading, including the answer, may be amended.

Section 2.116(b) is amended to clarify the language and intent of existing §2.116(b).

Section 2.116(c) is amended to clarify existing §2.116(c). Any complaint filed by a party in an interference or concurrent use proceeding would be a petition for cancellation, and the position of the parties in the consolidated proceeding will be set by the TTAB as required.

Section 2.117 is amended by designating the present section as paragraph (a) and adding two new paragraphs, (b) and (c). Section 2.117 as proposed contained four subsections. Proposed paragraph (b) is withdrawn and proposed paragraphs (c) and (d) are redesignated (b) and (c).

Section 2.117(b) codifies existing practice as to determination of a potentially dispositive motion when the question of suspension of proceedings is raised.

Section 2 .117(c) permits a party to move, or parties to stipulate, for suspension, which usually occurs when negotiations for settlement are undertaken and the parties want proceedings suspended for that purpose.

Section 2.120 is amended in several respects, commencing with a reorganization of the rule to state how discovery may be taken, then how discovery may be compelled, then how admissions may be requested and the sufficiency of admissions or objections to requests therefor may be tested, and then how the results of discovery may be used in a proceeding.

Section 2.120(a) clarifies the language of the introductory paragraph of existing §2.120.

Section 2.120(b) clarifies existing §2.120(a)(1) and codifies the practice thereunder, and is made applicable to domestic parties.

Section 2.120(c)(1) restates in modified form the provisions of existing §2.120(a)(2), and in addition, permits oral discovery depositions in foreign countries on motion for good cause or by stipulation of the parties.

Section 2.120(c)(2) provides for oral discovery depositions within the United States of foreign parties or their officers, etc. if they will be in the United States during a discovery period.

Section 2.120(d) makes specific provision for requests for production and codifies the practice for this kind of discovery.

Section 2.120(e) clarifies existing §2.120(c)(1) and codifies the practice on motions to compel discovery.

Section 2.120(f) adds provisions pertaining to protective orders during discovery.

Section 2.120(g) clarifies existing §2.120(c)(2) and further codifies the practice on sanctions for failing to obey orders pertaining to discovery.

Section 2.120(h) adds to the discovery rules provisions pertaining to requests for admissions and codifies the practice pertaining to requests for admissions.

Section 2.120(i) codifies the practice on the use of telephone and pre-trial conferences to resolve disputes.

Section 2.120(j) clarifies existing §2.120(a)(3) relating to the use of discovery depositions, and codifies and revises the practice on the filing with the TTAB of matter obtained during discovery and the use thereof at trial.

Section 2.121 clarifies existing §2.121 and codifies the practice thereunder.

Section 2.122 consolidates in one section the rules governing the introduction and admission of certain types of evidence in inter partes proceedings before the TTAB.

Section 2.122(a) identifies the sources of the law of evidence to be applied in inter partes proceedings.

Section 2.122(b)(1) clarifies the language and codifies the practice under existing §2.122(a).

Paragraph (b)(2) and paragraph (c) of §2.122 clarify existing §2.126 and codify the practice under that section.

Section 2.122(d)(1) incorporates all of the substance of existing §2.122(b) relating to the introduction in evidence of a plaintiff's pleaded registration with the complaint, except that the provision permitting the submission of an order for status and title copies of a pleaded registration with the complaint has been eliminated.

Section 2.122(d)(2) provides for the introduction in evidence of a registration owned by a party to a proceeding during the taking of testimony or by the filing of a notice of reliance on the registration, together with status and title copies thereof, during that party's testimony period.

Section 2.122(e) [identified in the notice of proposed rulemaking as §2.122(c)(1)] clarifies and adds to the provisions of existing §2.122(c) relating to printed publications and official records. Section 2.122(e) requires that an official record or copy thereof offered under the rule be an authentic record or copy pursuant to the Federal Rules of Evidence and also requires that, when a copy of a relevant portion of a printed publication is offered, the copy include the title page and any other page needed to show the place and date of publication, the name and address of the publisher, and the name of the author or the editor, which information is intended to enable the party against whom the evidence is offered to identify what it is. In the proposed and final rules, a new phrase, namely, "among members of the public or that segment of the public which is relevant under an issue in a proceeding", has been added to the opening clause of existing §2.122(c), so that that clause now reads "Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation among members of the public or that segment of the public which is relevant under an issue in a proceeding". The phrase was added so that it would be clear that a trade journal, for example, is a printed publication of the type contemplated by the rule notwithstanding the fact that it may be circulated only among members of the trade rather than among members of the general public; the addition is not to be construed as an indication that an individual company's promotional literature, product booklets, annual reports, etc., are admissible under this section. Cf. Glamorene Products Corporation v. Earl Grissmer Company, Inc., 203 USPQ 1090 (TTAB 1979); Litton Industries, Inc. v. Litronix, Inc., 188 USPQ 407 (TTAB 1975); and Minnesota Mining and Manufacturing Company v. Stryker Corporation, 179 USPQ 433 (TTAB 1973).

Section 2.122(f) clarifies existing §2.122(d) and codifies the practice thereunder.

Section 2.123 is amended by revising paragraphs (a), (e)(3), (j), and (k) thereof.

Section 2.123(a)(1) provides that testimony may be taken by depositions upon oral questions or upon written questions and further provides that if a party serves a notice of taking a testimonial deposition upon written questions, any adverse party may move to have the deposition taken upon oral questions if the witness, even though he may be a foreign party or a person who usually resides in a foreign country, is, or at the time of the deposition will be, in the United States or any territory under the control and jurisdiction of the United States.

Section 2.123(a)(2) provides that testimony in a foreign country is ordinarily to be taken by a deposition upon written questions but that the party against whom a testimonial deposition will be taken may move for good cause shown to have it taken by oral questions in a foreign country, and further provides that the parties may stipulate to have testimony taken by an oral deposition in a foreign country.

Section 2.123(e)(3) codifies the practice that a party who did not receive a proper notice of the taking of a deposition with respect to any witness may cross-examine that witness under protest while preserving his right to move to strike the whole of the testimony of that witness.

Section 2.123(j) is revised to provide that Rule 32(d)(1), (2), and (3) (A) and (B) of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions; that notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and that in case of such injury it must be made to appear that the objection was raised at the time specified in the aforesaid rule.

Section 2.123(k) is revised to provide that objections to the competency of a witness or to the competency, relevancy, or materiality of testimony must be raised at the time required by Rule 32(d)(3)(A) of the Federal Rules of Civil Procedure, and that such objections will not be considered until final hearing.

Section 2.124 sets out the procedure to be followed in taking a discovery deposition or a testimonial deposition upon written questions.

Section 2.124(a) provides that a deposition upon written questions may be taken before any of the persons described in Rule 28 of the Federal Rules of Civil Procedure.

Section 2.124(b)(1) provides for the kind of notice which must be served by a party desiring to take a testimonial deposition upon written questions and further provides that a copy of the notice, without the questions, must be filed with the TTAB.

Section 2.124(b)(2) provides for the kind of notice which must be served by a party desiring to take a discovery deposition upon written questions and further provides that a copy of the notice, without the questions, must be filed with the TTAB. This paragraph also provides that, if the name of the person to be deposed is not known to the party who will take the deposition, a general description sufficient to identify the class or group to whom the prospective witness belongs shall be stated in the notice and the party to be deposed shall designate one or more discovery witnesses.

Section 2.124(c) requires that every notice of deposition upon written questions name or describe by title the officer before whom the deposition will be taken.

Section 2.124(d)(1) specifies the procedure and timetable for serving the questions, objections, and substitute questions for a deposition upon written questions.

Section 2.124(d)(2) provides that the TTAB may reset the times specified in §2.124(d)(1) and, when a testimonial deposition is to be taken upon written questions, shall suspend or reschedule other proceedings in the matter to allow for the completion of the deposition.

Section 2.124(e) provides the procedure for sending the notice and questions to the officer designated in the notice, the taking of the deposition, and the certification and mailing of the transcript to the party who took the deposition.

Section 2.124(f) provides for the service of copies of the transcript and exhibits, states that the party who took the deposition is responsible for the correctness of the transcript, permits the use of a discovery deposition as provided by §2.120(j), and provides for the filing with the TTAB of a testimonial deposition, a copy thereof, and the exhibits.

Section 2.124(g) states that objections to questions and answers may be considered at final hearing.

Section 2.125(a) provides for the service of a transcript of an oral testimonial deposition and the exhibits, and, in respect of that requirement, continues the rule of existing §2.125(a).

Section 2.125(b) makes the party who took a deposition responsible for its correctness and for serving the adverse party with a corrected transcript or corrected pages.

Section 2.125(c) continues the requirement of existing §2.125(a) that a certified transcript and the exhibits be filed promptly with the TTAB and further provides that notice of filing be served on the adverse party and that a copy of the notice be filed with the TTAB. The requirement for the filing of a copy of the transcript (in addition to the certified transcript), which appeared both in existing §2.125(a) and in proposed §2.125(c), has not been retained in the final rule since the TTAB does not really need the copy and the printing of it is an unnecessary expense for parties involved in proceedings before the TTAB.

Section 2.125(d) continues the requirements of existing §2.125(b).

Section 2.125(e) provides that the TTAB, on motion, may order that any part of a deposition transcript or exhibits that directly disclose a trade secret or other confidential research, development, or commercial information may be filed under seal and kept confidential and provides for sanctions for failure to comply with the order.

Section 2.126 is deleted because the substance of the existing section has been shifted to §2.122(b)(2) and (c).

Paragraphs (a), (b), and (c) of §2.127 clarify, and codify the practice under, existing paragraphs (a), (b), and (c) of that section.

Section 2.127(d) codifies the practice with respect to suspending all matters in a case not germane to a potentially dispositive motion until the determination thereof.

Section 2.128(a)(1) clarifies existing §2.128(a) except that the rule requiring copies of a brief is shifted to final §2.128(b).

Section 2.128(a)(2) codifies the practice of having the TTAB set the briefing schedule by order when proceedings are consolidated, or when there is a counterclaim, or when more than two parties are involved.

Section 2.128(a)(3) contains a new provision enabling the TTAB to enter judgment against a plaintiff who fails to file a brief at final hearing and also fails to respond to an order to show cause why such judgment should not be entered against him or files a response indicating that he has lost interest in the case.

Section 2.128(b) clarifies and codifies the practice under the last sentence of existing §2.128(a) and existing §2.128(b).

Section 2.129(a) clarifies and codifies the practice under existing §2.128(c) and existing §2.129(a).

Section 2.129(b) clarifies existing §2.129(b).

Section 2.129(c) clarifies existing §2.129(c), from which the language referring to a decision on a motion which is finally dispositive of a case has been deleted because any requests for reconsideration or modification of a decision issued on a motion would be made under final §2.127(b).

Section 2.131 clarifies and codifies the practice under existing §2.131. The effect is to eliminate the dichotomy between inter partes and ex partes issues and to provide for the determination by the TTAB of all issues that have been expressly pleaded by the parties or tried by their express or implied consent and to reserve for remand to the examiner for reexamination only issues neither pleaded nor tried but which appear to make the mark of an applicant unregistrable.

Section 2.132(a) changes the practice under existing §2.132(a) by eliminating the step of having the TTAB issue an order to the plaintiff to show cause why judgment should not be entered against him. Under amended §2.132(a), the plaintiff will have fifteen days from the date of service of the defendant's motion for dismissal within which to show cause why judgment should not be rendered against the plaintiff.

Section 2.132(b) clarifies existing §2.132(b).

Section 2.134(a) codifies the practice under existing §2.134 that the written consent of the adverse party is required to avoid judgment against a cancellation respondent who applies to cancel his registration under section 7(d) of the Act of 1946 while the registration is involved in a proceeding.

Section 2.134(b) provides that, after the commencement of a cancellation proceeding, if it comes to the attention of the TTAB that a respondent (registrant) has permitted his registration to be cancelled under section 8 of the Act of 1946 or has failed to renew his registration under section 9 of the Act, an order may be issued allowing respondent until a set time in which to show cause why the resulting demise of the registration should not be deemed to be the equivalent of a cancellation of the registration by request of the repondent without the written consent of the adverse party and should not result in entry of judgment against the respondent; and that, in the absence of a showing of good and sufficient cause, judgment may be entered against respondent. Section 2.134(b) is added to avoid situations where a respondent in a cancellation proceeding may moot the case and avoid judgment because of the fortuitous circumstance that his registration happens to reach its sixth anniversary or twentieth anniversary while a proceeding is pending and the respondent exploits this situation by simply failing to file an affidavit under section 8 of the Act or a renewal application under section 9 of the Act.

Section 2.135 codifies the practice under existing §2.135, which is parallel to the practice under existing §2.134 and final §2.134(a), that the written consent of the adverse party is required to avoid judgment against an applicant who abandons his application or mark while the application is involved in an opposition, concurrent use or interference proceeding. It should be noted that existing §2.135 begins, "If, in a proceeding, an applicant * * *", but that the section as proposed referred only to "an opposition proceeding". The narrowing of the application of the rule in the section as proposed was an inadvertent error. In order to correct the error, the proposal to revise the section to include only a reference to an opposition proceeding is withdrawn. The wording of the beginning of final §2.135, namely, "After commencement of an opposition, concurrent use, or interference proceeding, if the applicant * * *", is legally equivalent to the beginning of existing §2.135.

Section 2.142(a) clarifies existing §2.142(a).

Section 2.142(b) requires the examiner to file with the TTAB a brief answering the appellant's brief and requires the examiner to file the brief within sixty days after appellant's brief is sent to the examiner by the TTAB. Section 2.142(b) as proposed required that the examiner's brief (referred to therein as a "statement") answer "every point in" the appellant's brief, whereas existing §2.142(b) requires only that the examiner furnish a written statement "In answer to" appellant's brief. Upon further consideration, the proposal to modify §2.142(b) to require that the examiner's brief answer "every point in" the appellant's brief is withdrawn since it is likely to result in briefs which are unduly lengthy. An appellant's brief may contain points which are so insignificant, immaterial, etc. as to require no response.

Section 2.142(c) codifies the practice that all requirements made by the examiner and not the subject of appeal shall be complied with prior to the filing of an appeal.

Section 2.142(d) provides that the record in the application should be complete prior to the filing of an appeal, states that the TTAB will ordinarily not consider additional evidence filed with the TTAB by the appellant or by the examiner after an appeal is filed, and provides that either the appellant or the examiner may request the TTAB to suspend the appeal and remand the application for further examination if the appellant or the examiner desires to introduce additional evidence.

Section 2.142(e)(1) amends existing §2.142(c), and codifies the practice under the existing rule, by changing the due date for a request for an oral hearing on an appeal from the date when the appellant's brief is filed to a date ten days after the due date for a reply brief.

Section 2.142(e)(2) requires the examiner to present an oral argument if an oral argument is requested by the appellant.

Section 2.142(e)(3) allots twenty minutes to the appellant for oral argument and ten minutes to the examiner for oral argument.

Section 2.142(f) provides for situations where, during an appeal, it appears to the TTAB that an issue not previously raised may render the mark of the appellant unregistrable, that is, when something on the face of the record on appeal indicates that a question concerning the registrability of the mark may exist but has not been considered. The paragraph provides the procedure to be followed by the TTAB, the Examiner, and the appellant when the TTAB suspends an appeal and remands an application on the TTAB's own initiative. The paragraph as amended includes certain words, namely, "to be completed", appearing in the phrase "and remand the application to the examiner for further examination to be completed within thirty days", which were not included in the paragraph as proposed. The words have been added in order to further clarify the intent of the paragraph and are not considered to result in a material alteration thereof. Further, for the reason indicated in connection with §2.142(b), the words "every point in" have been omitted from §2.142(f)(4).

Section 2.146 collects in one section the rules on petitions to the Commissioner in existing §§2.146, 2.147, and part of §2.148. For this reason existing §2.147 is removed. In the notice of proposed rulemaking, it was also proposed that existing §2.148 be deleted. The reason for the proposal was a belief that the entire substance of

§2.148 was incorporated in proposed §2.146(a)(5), which provides that petition may be taken to the Commissioner in any extraordinary situation, when justice requires and no other party is injured thereby, to request a suspension or waiver of any requirement of the rules not being a requirement of the Act of 1946. However, existing §2.148 provides that in an extraordinary situation, when justice requires and no other party is injured thereby, any requirement of the rules not being a requirement of the statute may be suspended or waived by the Commissioner. That rule is not limited to waiver petition but rather also encompasses waiver upon the Commissioner's own initiative. Inasmuch as the entire substance of existing §2.148 is not incorporated in proposed and final §2.146(a)(5), the proposal to remove §2.148 is withdrawn.

Section 2.146(a) reflects the change in §2.63(b) permitting petitions concerning some requirements which have been made final.

Section 2.146(b) delineates classes of questions which are not considered to be appropriate subject matter for petitions to the Commissioner. These questions are substantive issues of registrability of marks and are considered to be appropriate for appeal to the TTAB. Section 2.146(b) as proposed read "Questions arising under Sections 2, 3, 4, 5, 6 and 23 of the Trademark Act during the ex parte prosecution of applications are not considered to be appropriate subject matter for petitions to the Commissioner", whereas paragraph (b) as adopted herein reads "Questions of substance arising during the ex parte prosecution applications, including, but not limited to, questions arising of under Sections 2, 3, 4, 5, 6 and 23 of the Act of 1946, are not considered to be appropriate subject matter for petitions to the Commissioner." The wording of the paragraph has been modified for purposes of clarification, and such modification is not considered to result in a material alteration of the paragraph.

Section 2.146(c) specifies the contents of a petition of the Commissioner, and in this respect clarifies requirements previously included in §2.146(b).

Section 2.146(d) specifies the time limit for filing a petition on any matter not otherwise specifically provided for. In proposed §2.146(d), an attempt was made to list the matters otherwise specifically provided for. However, several matters were inadvertently omitted. In order to ensure that the rule is correct, the list has been omitted from the final rule.

Section 2.146(e) provides time limits and specifies the procedure for a petition to the Commissioner from the denial of a request for an extension of time to file an opposition or from an interlocutory order of the TTAB. Section 2.146(e)(1) contains a new requirement that a petition from the denial of a request for an extension of time to oppose must be served on the applicant or his attorney and provides for a response by the applicant to the petition.

Section 2.146(f) clarifies a provision previously included in §2.146(c).

Section 2.146(g) clarifies and codifies the practice previously under §2.146(d) and, in addition, makes §2.146 consistent with §§2.63(b) and 2.65, as adopted herein.

Section 2.146(h) codifies the practice previously under §2.146(e) whereby authority to act on classes of petitions, in addition to any particular petition, may be delegated.

Paragraphs (a), (b), and (c) of §2.165 specify the procedure when the affidavit or declaration filed under section 8 of the Act of 1946 is refused. The steps to be taken by the registrant to request reconsideration and to petition to the Commissioner and the time limits for such requests and petitions are stated.

Section 2.165(d) states that a petition to the Commissioner for review of the action refusing the affidavit or declaration under section 8 of the Act of 1946 shall be a condition precedent to an appeal to or action for review by any court. This implements section 21 (a)(1) and (b)(1) of the Act, which provides, inter alia, that a registrant who has filed an affidavit under section 8 of the Act who is dissatisfied with the decision of the Commissioner may appeal to the U.S. Court of Appeals for the Federal Circuit or may have remedy by a civil action.

Section 2.173(b) clarifies the circumstances in which an amendment of the identification of goods or services of a registration is permitted. The rule states that an identification of goods or services can be restricted or can be otherwise changed in ways that would not require republication of the mark.

Paragraphs (a), (b), and (c) of §2.184 specify procedures and time limits for relief when an application for renewal of the registration under section 9 of the Act of 1946 is refused, in parallel with final §2.165.

Section 2.184(d) is parallel to final §2.165(d) and has the same statutory basis.

Section 2.186 clarifies and codifies the practice under existing §2.186 that action with respect to an assigned application or registration may be taken by the assignee provided that the assignment has been recorded.

Response to Comments on the Rules

The written comments and oral testimony offered in response to the notice of proposed rulemaking published in the **Federal Register** on June 29, 1982 have been given careful consideration, and a substantial number of the suggested modifications have been adopted. The comments and responses (except those pertaining to §§2.101, 2.102, 2.103, 2.111, and 2.112, which were included in the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972) appear below:

Comment: In response to the proposal to amend §2.20 by adding a new paragraph (b) to codify a particular practice relating to the verification of oppositions and petitions for cancellation, one organization noted that the question of verification of oppositions and petitions for cancellation appeared to be moot in view of Pub. L. 97-247; indicated its belief, with respect to the phrase "person who is authorized to sign" in proposed §2.20(b), that the rules pertaining to oppositions and petitions for cancellation should be amended to require that when an opposition or petition for cancellation is signed on behalf of a corporation or an association by a person who is authorized to sign the document but who is not an officer, the person must represent that he has such authority; and submitted its proposal for a substitute §2.20 (modeled on the corresponding patent rule, §1.68) which is broader in scope than present §2.20.

Response: Inasmuch as Pub. L. 97-247 has amended the Trademark Act of 1946 so as to eliminate the requirement for verification of oppositions and petitions for cancellation, the proposal to amend §2.20 by adding a new paragraph (b) relating to verification of oppositions and petitions for cancellation has been withdrawn. The other two suggestions involve substantive rule changes which are outside the scope of the proposed rule changes as published and hence cannot be adopted without affording members of the public an opportunity to comment thereon. However, these suggestions will be considered in connection with any future proposals to amend the rules in question. In this regard, it should be noted that when an opposition or petition for cancellation is signed by a person whose authority to sign is not apparent, it is the practice of the Trademark Trial and Appeal Board to inquire as to that person's authority to sign.

Comment: One organization suggested that the word "Anything" be substituted in proposed §2.27(e) for the phrase "Any documents, tangible things, answer to interrogatories, or all or any part of any discovery or testimonial deposition transcripts" because the attempt to list all of the types of things subjected to the rule might invite disputes as to whether particular items are covered. The same organization suggested that the following sentence be added to paragraph (e): "When possible, only confidential portions of filings with the Board shall be filed under seal."

Response: The paragraph has been modified as suggested.

Comment: One organization and three members of another organization suggested that proposed §2.64(b),

which concerns requests for reconsideration after final action by the examiner, be modified to require that any request for reconsideration filed within three months of the final action be responded to by the examining attorney before the time for appeal.

Response: The six-month period for appealing from a final refusal of registration, or for complying with a requirement which has been made final, or for petitioning the Commissioner [if permitted by §2.63(b)] with respect to such a requirement, is statutory, and the Patent and Trademark Office cannot guarantee that any request for reconsideration filed within three months of the final action will be responded to by the examining attorney before the time for appeal. However, the paragraph has been modified to provide that normally the examiner will reply to a request for reconsideration before the end of the six-month period if the request is filed within three months after the date of the final action.

Comment: Two organizations expressed disapproval of the final sentence of proposed §2.64(b), which reads: "Amendments accompanying requests for reconsideration after final action will be entered if they place the application in condition for publication or in better form for appeal." The organizations criticized this provision as being unduly restrictive and vague, and suggested that the subsection be modified to permit any amendment that complies to the Trademark Act of 1946 and the Rules of Practice in Trademark Cases.

Response: The paragraph has been modified as suggested.

Comment: One organization suggested that proposed §2.65(a), which includes a reference to proposed §2.63(b), be modified to include also a reference to proposed §2.146, for the asserted reason that if reference is made to other sections of the rules, the reference should include all the most pertinent rules.

Response: The Paragraph has been modified as suggested.

Comment: Two organizations urged with respect to proposed §2.65(b) (which concerns the filing of an incomplete response to an examiner's action), that the word "may" in the clause "opportunity to explain and supply the omission may be given before the question of abandonment is considered" be changed to "shall".

Response: The suggestion has not been adopted. A requirement that an opportunity to explain and supply an omission be given in every case would result in a significant increase in the work load of the Trademark Examining Operation and hence an undue burden upon the Patent and Trademark Office. Accordingly, the word "may" has been retained in the final paragraph so as to leave the Trademark Examining Attorney with the descretion to determine whether such an opportunity should be given, depending upon the nature of the omission. The final paragraph parallels corresponding patent §1.135(c).

Comment: One member of one of the organizations commented that as a result of the proposed revision of §2.72 (which would allow non-material changes in the drawing of a mark to be supported by specimens which were not necessarily in use at the time the original application was filed), an applicant might amend its mark sought to be registered in order to overcome a reference under section 2(d) of the Trademark Act of 1946.

Response: The proposed revision might well have the result suggested in the comment, and an amendment for such a purpose would not be wrong, in and of itself. However, upon further consideration it appears that the proposed revision might result in so many amendments to marks as to constitute a burden upon the Patent and Trademark Office. Accordingly, the proposal to revise §2.72 in the manner described above is withdrawn. A second proposal to change the last sentence of §2.72 from "Amendments may not be made if the nature of the mark is changed thereby." to "Amendments may not be made if the character of the mark is materially altered.", so that the standard for amendment will be the same as the standard for amendment of registered marks (see section 7(d) of the Act of 1946), is adopted.

Comment: One organization commented, with respect to proposed §2.81, that there is a typographical error in the first line of the section, namely, that "with" should be "within." Another organization noted certain errors in the corrections to proposed §2.121(b)(1) and (c) published in the **Federal Register** at 47 FR 32955.

Response: The noted errors were made in printing. They do not appear in the original text of the notice of proposed rulemaking which was prepared and retained by the Patent and Trademark Office.

Comment: One individual, one organization, and one member of another organization expressed their belief that the second sentence in proposed §2.99(a) (which states, "The examiner may require an applicant for registration as a concurrent user to make a prima facie showing that the applicant is entitled to a concurrent use registration") is too vague to be of help in drafting a concurrent use application, and suggested that this portion of the paragraph either be deleted or made more specific.

Response: Upon further consideration, it appears that the subject matter of this portion of the subsection should be developed either through decisional law or in the Trademark Manual of Examining Procedure. Accordingly, the sentence has been deleted.

Comment: Proposed §2.99(f) lists the conditions which must be met when an applicant seeks to obtain a concurrent use registration under the provisions of section 2(d) of the Act of 1946 based on a court decree, without the necessity of a concurrent use proceeding in the Patent and Trademark Office. One organization urged that the fifth condition (which states: "the excepted use specified in the concurrent use application does not involve a registration") be deleted for the reason that it is vague and, in any event, inappropriate where the registration involved was otherwise before the court.

Response: When the excepted use specified in a concurrent use application based on a court decree involves an unrestricted registration, a concurrent use registration proceeding must be instituted in order that the Trademark Trial and Appeal Board may restrict the registration in accordance with the court decree. In such cases, the concurrent use registration proceeding does not go forward to trial but rather is terminated on the basis of the court decree immediately after institution of the proceeding. However, if the registration has been restricted by the Commissioner in accordance with the court decree, and the other conditions listed in paragraph (f) have been met, there is ordinarily no need for a concurrent use registration proceeding. Accordingly, paragraph (f) has been modified to read: "the excepted use specified in the concurrent use application does not involve a registration, or any involved registration has been restricted by the Commissioner in accordance with the court decree."

Comment: One organization noted that in §§2.104 and 2.105, as proposed, the term "opposition", when used to refer to the complaint in an opposition proceeding, has been changed to "notice of opposition". The organization expressed its belief that there is no reason for reverting to the phrase "notice of opposition" except tradition, and that that phrase is confusingly similar to the phrase "notification of opposition".

Response: The proposal to change "opposition" to "notice of opposition" in certain instances has not been adopted.

Comment: One organization commented that proposed §2.113 should be modified to indicate that the effective filing date of a petition for cancellation will be the date that the statutory requirements, including payment of the required fee(s), are satisfied. The organization indicated that it was concerned here and elsewhere (see comment and response pertaining to §2.111 in the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972) about cases in which an incomplete filing is made within five years of the date of registration and not perfected until the five-year period of section 14(a) of the Act of 1946 has passed. The organization also suggested that the section be modified to include a cross-reference to existing §2.118, which pertains to undelivered notifications.

Response: The section has been modified to include a cross-reference to §2.118. Additionally, the first clause in the section, which as proposed read "When a petition for cancellation has been filed in proper form and the correct fee(s) have been submitted,", has been modified by the inclusion of a cross-reference to §§2.111 and 2.112 and by the deletion of the words "and the correct fee(s) have been submitted,", so that the modified clause reads "When a petition for cancellation has been filed in proper form (see §§2.111 and 2.112),". Section 2.111, as amended effective Feb. 27, 1983 (see the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 47 FR 3972) provides in effect that the filing date of a petition for cancellation with respect to each named party petitioner and each class sought to be cancelled is the date of receipt in the Patent and Trademark Office of the petition together with the required fee for that party petitioner and class, and that is those cases where the five-year limitation of sections 14 (a) and (b) of the Acts of 1946 is applicable, the petition and required fee(s) must be filed prior to the expiration of the five-year period. Section 2.112, as amended effective Feb. 27, 1983, pertains to the proper form for a petition for cancellation.

Comment: One organization stated, with respect to proposed §2.117(b), that it failed to appreciate the necessity for requiring that issue be joined in both the civil action and the proceeding in the Patent and Trademark Office before the Trademark Trial and Appeal Board will consider suspension of the Board proceeding pending the outcome of the civil action. The organization also noted that the retained paragraph of §2.117 needs a paragraph reference, i.e., "(a)".

Response: The retained paragraph of §2.117 has designated been "a". Insofar as proposed paragraph (b) is concerned, it is not in fact the practice of the Board to require that issue be joined in the civil action before suspension of the Board proceeding will be considered [see Tokaido v. Honda Associates, Inc., 179 USPQ (TTAB 1973)]. Moreover, while it may not be possible in some cases to determine whether a civil action is likely to be determinative of a proceeding before the Board until an answer has been filed in one or both proceedings, in other cases it is feasible and advantangeous to suspend prior to answer. Accordingly, proposed §2.117(b) has been withdrawn, and proposed paragraphs (c) and (d) have been redesignated (b) and (c).

Comment: One organization suggested that suspension be considered automatic upon the showing of the institution of a civil action between the parties provided that the party in the position of plaintiff in the Board proceeding has neither commenced taking testimony nor filed any evidence in such proceeding.

Response: It is the normal practice of the Board to suspend under the circumstances outlined in the comment if it appears that the civil action may be dispositive of the proceeding before the Board. However, even under these circumstances there are times when it may be desirable to go forward with the Board proceeding, as, for example, when the civil court has a large backlog or suspends its own action pending the final determination of the Board proceeding. Accordingly, it is believed that the matter of suspension should be left to the discretion of the Board, and the suggested amendment has not been adopted.

Comment: With respect to §2.117(b) [identified in the notice of proposed rulemaking as §2.117(c)], which as proposed reads "Whenever there is pending, at the time when the question of the suspension of proceedings is raised, a motion which is potentially dispositive of the case, the motion will be decided before the question of suspension will be considered.", one organization and two members of another organization suggested that the phrase "the motion will be decided" be changed to "the motion may be decided", so that the Board will have the discretion to either suspend or rule in such a case, and will not be compelled to determine the motion before it if, for example, a similar motion is pending in the civil action.

Response: The paragraph has been modified in accordance with this suggestion.

Comment: Four members of one organization objected to proposed §2.120(c)(2) (which provides in effect that whenever a foreign party or its officers, etc., is or will be in the United States during a discovery period, such party may be deposed in the United States by oral examination upon notice by the party seeking discovery.) The reason given for the objection was that the foreign officer could be seriously inconvenienced because of the proposed rule, which invites abuse.

Response: While it is true that a foreign officer who is traveling in the United States on other business might find it inconvenient to have his oral discovery deposition taken, it is equally true that there are instances in which it is inconvenient for a domestic officer to have his oral deposition taken. Further, there can be no doubt that the oral deposition is a far better discovery device than the deposition upon written questions. It is believed that the advantages offered by the oral deposition outweigh the disadvantage of possible inconvenience. Accordingly, proposed §2.120(c)(2) is being adopted herein as a final rule.

Comment: With respect to proposed §2.120(d), which provides for the production of documents, in response to a request for production of documents, at the place where the documents are usually kept, or where the parties agree, or where and in the manner which the Trademark Trial and Appeal Board, upon motion, orders, one individual suggested that the paragraph be modified to require that the party upon which the request is served respond to the request by sending copies of all documents requested to the party making the request.

Response: The purpose of §2.120(d) is to permit the Board, upon motion, to order that a party produce requested documents by photocopying and mailing them to the requesting party at the latter's expense. However, inasmuch as there are cases in which some other manner of production is more appropriate or feasible, the manner of production is a matter which is better left to the discretion of the Board. Accordingly, the suggestion has not been adopted.

Comment: One individual suggested that proposed §2.120(e), which concerns motions to compel discovery, be modified to provide that if counsel for the parties reach an agreement relating to a disputed discovery matter, a motion may be brought to enforce the agreement.

Response: Inasmuch as it is not the function of the Board to enforce agreements between parties, this suggestion has not been adopted. However, a party may always argue the existence of such an agreement as a factor bearing on the merits of a motion to compel discovery.

Comment: With respect to proposed §2.120(i) (which provides, in essence, that the Board may at its discretion request that the parties come to its offices for a pre-trial conference when pre-trial questions or issues have been so complex that their resolution by correspondence or telephone conference is not practical), one individual, noting that the paragraph provides for a pre-trial conference at the Board's option and discretion, suggested that the paragraph be modified to indicate that such a conference may also be requested by a party to a proceeding but that the Board be left with the discretion to grant the request. The same individual also suggested that the paragraph, which as proposed contains only a passing reference to a "telephone conference", be broken into two parts, the first being devoted to the telphone conference (with provision therefor at the option of the Board or at the request of a party to a proceeding, but again leaving the Board with discretion to grant the request), and the second being devoted to the pre-trial conference. The individual expressed his belief that attorneys should be made aware of the telephone conference procedure since it can be very useful to them as well as to the Board.

Response: The paragraph has been modified as suggested to include two paragraphs and to provide that the Board may utilize the telephone and pre-trial conference procedures either upon its own initiative or upon request made by one or both of the parties. Although neither of the new paragraphs contains the words "at its discretion," both contain the words "the Board may," which clearly indicate that the utilization of these procedures is a matter which is left to the discretion of the Board.

Comment: A number of comments were received with respect to proposed §2.120(j), which pertains to the use of discovery depositions, admissions, or answers to interrogatories. Two organizations noted that proposed §2.120(j)(2) (which incorporates the "fairness exception" of Rule 32(a)(4) of the Federal Rules of Civil Procedure ("F.R.C.P.") apparently limits the use of discovery depositions only to the inquiring party, while Rule 32(a)(4) F.R.C.P. allows the use of the deposition for any purpose by either party once the adverse party has relied upon any part of it. These organizations recommended that the paragraph be modified to follow Rule 32(a)(4) F.R.C.P. One organization objected to proposed §2.120(j)(3) (which permits the introduction into evidence on motion of the discovery deposition of a non-party under certain circumstances provided that the motion is filed promptly after the circumstances claimed to justify use of the deposition become known) on the ground that the timing requirement for the motion is unnecessary and unduly restrictive and that the better practice would be to let the motion be filed at the time of the purported offer of the deposition into evidence. Another organization recommended that consideration be given to permitting much greater use of non-party discovery depositions than permitted by proposed §2.120(j)(3), or at least that the burden imposed by the last of the listed instances in which such depositions may be introduced into evidence, namely, "upon a showing of extraordinary circumstances and necessity in the interest of justice", should be lessened. Three members of one organization commented that any party, not just the deposing party, should be able to make a discovery deposition of record if its use at trial is permitted by Rule 32 F.R.C.P. Finally, one individual noted that proposed §2.120(j), which permits only the inquiring party to introduce a discovery deposition into evidence (unless the "fairness exception" applies), conflicts with Rule 32(a)(2) F.R.C.P., which provides that a deposition of a party "may be used by an adverse party for any purpose", and with Rule 32(a)(3) F.R.C.P., which provides that the deposition of "a witness, whether or not a party, may be used by any party for any purpose" in the limited circumstances corresponding to those set forth in proposed §2.120(j)(3) (except for the 100-mile exception, which is not applicable to proceedings before the Trademark Trial and Appeal Board). This individual submitted a suggested alternative text for §2.120(j) which conforms to Rule 32(a) F.R.C.P. by (a) eliminating the restriction in proposed §2.120(j)(1) and (2) that only the inquiring party may offer a discovery deposition in evidence, and (b) broadening proposed §2.120(j)(2) to cover any "witness, whether or not a party". In the suggested text, paragraphs (1)–(3) of proposed §2.120(j) are also reorganzied and rearranged for clarity.

Response: The text suggested by the individual has been adopted with certain modifications in order to resolve the conflicts and objections noted by this individual and others, as outlined above. In the final paragraph, the text of §2.120(j)(1) follows the text of Rule 32(a)(2) F.R.C.P. The text of the discovery deposition "fairness exception", which appears in final §2.120(j)(4), is essentially the same as the text of Rule 32(a)(4) F.R.C.P. The provision relating to the introduction into evidence, by order of the Board upon motion, of the discovery deposition of a non-party under certain circumstances [which appears in final §2.120(j)(2)] has been broadened to permit the introduction, by order of the Board upon motion, of the discovery deposition of a witness, whether or not a party, by any party under the stated circumstances. The final such circumstance, which in the proposed paragraph read "upon a showing of extraordinary circumstances and necessity in the interest of justice", has been modified to read "upon a showing that such exceptional circumstances exist as to make it desirable, in the interest of justice, to allow the deposition to be used," which closely follows the wording of Rule 32(a)(3) F.R.C.P. The timing requirement for a motion filed under the paragraph has been changed from "filed promptly after the circumstances claimed to justify use of the deposition became known" to "filed at the time of the purported offer of the deposition in evidence" for all such motions except those based upon a claim of exceptional circumstances. In the latter instance, the proposed timing requirement, namely, "filed promptly after the circumstances claimed to justify use of the deposition became known", has been retained in the final rule for two reasons; first, to provide an adverse party with the best possible opportunity to investigate the claim of exceptional circumstances, and second, so that in those cases where the circumstances become known prior to the taking of the deposition, the motion will be filed, and hence can be determined, before the deposition is taken. Finally, in order to make it clear that once a discovery deposition, or a part thereof, or an answer to an interrogatory, or an admission, has been properly made of record by one party, it may be referred to by any party for any purpose permitted by the Federal Rules of Evidence, a provision to that effect, identified as paragraph (j)(7), has been included in the final paragraph.

Comment: With respect to proposed §2.122(c)(2) (which provides that a registration owned by a party to a proceeding may be made of record by that party by filing a notice of reliance accompanied by a certified copy of the registration showing current status and title), two organizations and three members of another organization objected to the requirement for certification of the status and title copies as being unnecessary, expensive, and unduly harsh. One of these organizations, noting that proposed §2.122 is modified to eliminate the practice set forth in existing §2.122(b) (which provides that a registration of an opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if two copies showing status and title of the registration or an order for such copies accompany the opposition or petition), expressed its belief that, accepting the Patent and Trademark Office's position that the practice set forth in existing §2.122(b) has caused delays and problems for the Office, still there is no reason for requiring that the status and title copies of the registration be certified when made of record, pursuant to proposed §2.120(c)(2), by the filing of a notice of reliance during the testimony period of the party filing the notice.

Response: The proposal to require that status and title copies of registrations also be certified has not been adopted herein. Further, since the only part of existing §2.122(b) which caused trouble was the provision involving the submission of an *order* for status and title copies with the complaint, the proposal to modify existing §2.122 by eliminating that provision is adopted herein, but the proposal to eliminate the provision involving the submission of actual status and title copies with the complaint is withdrawn. Hence, final §2.122 provides, in paragraph (d)(1), that a registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if the opposition or petition is accompanied by two copies of the registration prepared and issued by the Patent and Trademark Office showing both the current status of and current title to the registration.

Comment: One organization suggested that the word "competent" should be inserted before the word "evidence" in two (unspecified) places in proposed §2.122(b)(2) and in one place in proposed §2.122(b)(3), and that the first clause in proposed §2.122(c)(2) be changed from "A registration owned by any party to a proceeding may be made of record in the proceeding by that party by filing a notice of reliance," to "A registration owned by any party to a proceeding may be made of record in the proceeding by that party by appropriate identification and introduction during the proper testimony period or by filing a notice of reliance,". The same organization also submitted a suggested plan for reorganizing proposed §2.122 and for giving each paragraph therein a heading. Three members of another organization expressed their agreement with these suggestions.

Response: The suggested plan for reorganization and for headings has been adopted herein with certain minor modifications necessitated by the response to the foregoing comment (e.g., the comment concerning the introduction of registrations in evidence).

The word "competent" has been inserted before the word "evidence" only once in final §2.122(b)(2) and not at all in final §2.122(c) [identified in the notice of proposed rulemaking as §2.122(b)(3)]. The clauses in these paragraphs were the word "competent" might have been, but was not, inserted before the word "evidence" read "The allegation in an application for registration, or in a registration, of a date of use is not evidence on behalf of the applicant or registrant;"; "Specimens in the file of an application for registration, or in the file of a registrant, are not evidence on behalf of the applicant or registrant * * *"; and "An exhibit attached to a pleading is not evidence on behalf of the party to whose pleading the exhibit is attached * * *" The reason why the word "competent" was not inserted in these instances is that in each one the matter in question is not evidence *on behalf of the named party* at all (although specimens, or the allegation of a date of use, for example, may be used as evidence against an applicant or registrant, e.g., as an admission against interest).

Finally, the first clause in proposed §2.122(c)(2) [identified herein as §2.122(d)(2)] has been modified to read "A registration owned by any party to a proceeding may be made of record in the proceeding by that party by appropriate identification and introduction during the taking of testimony or by filing a notice of reliance."There is a slight difference between the clause as adopted and the clause as suggested by the organization (the organization's suggested wording "during the proper testimony period" has been changed to "during the taking of testimony"). The change in the wording was made so that it would be clear that this portion refers to identification and introduction during the taking of testimony as distinguished from identification and introduction by notice of reliance. This change is not to be construed as an indication that such identification and introduction does not have to be made "during the proper testimony period"; with the deception of status and title copies of a plaintiff's pleaded registration submitted with the complaint, any evidence which a party offers on the case must be offered during the proper testimony period.

Comment: With respect to proposed §2.123(a)(1) (which provides, inter alia, that if a party serves notice of the taking of a testimonial deposition upon written questions of a witness within the United States, any adverse party may, within fifteen days from the date of service of the notice, file a motion with the Trademark Trial and Appeal Board, for good cause, for an order that the deposition be taken by oral examination), one individual, noting that the procedure for taking testimony by written questions is unsatisfactory and often frustrating, suggested that the paragraph be changed to require that a party seeking to utilize this procedure (in lieu of an oral examination) file a motion requesting, for good cause shown, permission to by-pass the oral examination of its witness, that is, that the burden of filing a motion and showing good cause be shifted to the party who wants to take testimony upon written questions.

Response: If the burden of filing the motion were shifted in the manner suggested, the Trademark Trial and Appeal Board would have to rule on a motion in every case where a party desires to take testimony by written questions. Under the rule as proposed, the Board would have to rule on a motion only in those cases where one party desires to take testimony by written questions and the adverse party objects to the use of this procedure in lieu of an oral depositon. Often, the adverse party does not object. Moreover, Rule 31 F.R.C.P., which provides for the use of depositions upon written questions in federal district courts, does not require that a party who wishes to use this procedure file a motion requesting permission to do so. Accordingly, this suggestion has not been adopted.

Comment: Two organizations commented that proposed paragraphs (j) and (k) of §2.123, which relate to the raising of objections to testimony depositions taken in inter partes proceedings, appear to be inconsistent and unclear as to the timing of objections. Both organizations suggested that the paragraphs be modified to rely upon the pertinent portion of the Federal Rules of Civil Procedure, namely, Rule 32(d)(3). Similarly, one individual commented that proposed paragraph (k) is ambiguous as to the timing of an objection to testimony based upon lack of competency of the witness.

Response: In order to improve their consistency and clarity, the paragraphs have been modified as suggested. It should be noted that the result of the modification of paragraph (j) is that if a party fails to attend the taking of a deposition, he thereby waives any objection which under Rule 32(d)(3)(A) and (B) F.R.C.P. is deemed to be waived if not made at the taking of the deposition. This is a significant change from existing §2.123(j), which permits the raising of formal or technical objections as soon as a party becomes aware of them, e.g., in the case of a party who did not attend the taking of a deposition, at the time when such party receives a copy of a transcript of the deposition.

Comment: With respect to the same paragraphs, one individual suggested that the Trademark Trial and Appeal Board entertain and determine, prior to the briefing period, motions to strike testimony, so that parties to a proceeding before the Board will know exactly what is in the record when they write their briefs.

Response: The adoption of this suggestion would put an intolerable burden on the Board because the Board would have to read testimony depositions both at the time of determination of a motion to strike them and again at final hearing. It is the longstanding policy of the Board not to read trial testimony taken in a proceeding before it, or to examine other evidence offered by the parties in support of their respective cases, until final hearing,. See, for example: *Curtice-Burns, Inc.* v. *Northwest Sanitation Products, Inc.*, 182 USPQ 572 (Comr. 1974), and *Clairol Inc.* v. *Holland Hall Products, Inc.*, 161 USPQ 616 (TTAB 1969). Accordingly, the suggestion has not been adopted.

Comment: With respect to proposed §2.124(d)(2) (which provides in part that when one or more testimonial depositions are to be taken upon written questions, the Trademark Trial and Appeal Board may suspend or reschedule other proceedings in the matter to allow for the orderly completion of the depositions upon written questions), one individual expressed his belief that when the Board receives notice that a deposition is to be taken upon written questions, it should immediately suspend proceedings for a sixty-day period to allow for the completion of the deposition, thereby avoiding unnecessary motions to extend the trial periods.

Response: The paragraph has been modified to provide that in such situations the Board "shall" suspend or reschedule other proceedings in the matter to allow for the orderly completion of the deposition. The length of the suspension has been left to the discretion of the Board since the time required to complete the taking of a deposition upon written questions varies according to the place where the witness is located.

Comment: One organization, noting that the words "the letter" in proposed §2.124(e) have no antecedent and hence create an unnecessary ambiguity, suggested that the words "the notice and of all of the questions mailed" be substituted therefor. With respect to the statement in proposed §2.124(f) that it is the responsibili-

ty of the party who takes a deposition upon written questions to assure that the transcript is correct, the same organization suggested that the paragraph be modified to include a cross-reference to proposed §2.125(b), which specifies procedures for correcting transcripts.

Response: The paragraphs have been modified as suggested.

Comment: With respect to proposed §§2.27(e), 2.120(f), and 2.125(e), which relate to the provision, in inter partes proceedings before the Trademark Trial and Appeal Board, of certain types of discovery information, and the submission of certain types of trial evidence, under protective order, one individual commented that the proposed rules would appear to permit parties to keep virtually all relevant information confidential from the public at large.

Response: Under the rules as proposed and adopted, only trade secrets and confidential information are held under seal and kept confidential by the Board. Very little of the evidence offered in inter partes proceedings before the Trademark Trial and Appeal Board is of this nature.

Comment: Two organizations objected to proposed §2.128(a)(3) (which provides in essence that when a party fails to file a brief on the case, the Trademark Trial and Appeal Board may treat such failure as a concession of the case) on the grounds that the proposed rule is unduly harsh; that it constitutes an abrogation of the Board's responsibility to decide cases on the record before it, regardless of the absence of briefs; that the granting or denial of a registration with its evidentiary presumptions is too important an issue to be decided on the basis of a presumed concession; and that a party who fails to file a brief should at least be given an opportunity to show cause why judgment should not be entered against him for such failure. Similarly, one member of another organization believes that the proposed rule would encourage the filing of spurious oppositions in cases where the opposer feels that the applicant may not be in a position to afford the legal fees required for preparing a brief.

Response: For the reasons indicated in the comments, proposed §2.128(a)(3) has been modified to refer only to the party in the position of plaintiff, and proposed §2.128(a)(1) has been modified to make it clear that the filing of a brief on the case is not mandatory for the party in the position of defendant. Further, the primary purpose of proposed §2.128(a)(3) was to save the Board the burden of determining cases of the merits in instances where the parties have settled, but have failed to inform the Board thereof, or where one party, particularly the plaintiff, has lost interest in the case. It is not the intention of the Board to enter judgment against a plaintiff for failure to file a brief on the case if the plaintiff still desires to obtain a determination of the case on the merits. Accordingly, proposed §2.128(a)(3) has been modified herein to provide an opportunity for the plaintiff who fails to file a main brief on the case to show cause why such failure should not be treated as a concession of the case. Additionally, the paragraph has been modified to indicate that judgment may be entered against a plaintiff for failure to file a main brief only if plaintiff fails to file a response to the order to show cause or files a response indicating that he has lost interest in the case.

Comment: One organization, noting that proposed §2.128(b) permits briefs to be filed on legal or letter size paper, suggested that since the federal courts now permit only the use of letter size paper, consideration should be given to requiring that briefs and all other formal papers filed in the Patent and Trademark Office by on letter size paper only. With respect to the same paragraph, one individual recommended, because of the different paper sizes permitted under the rule, that the rule be modified to specify the number of words that a brief can contain or, alternatively, to specify separately the number of pages permitted for briefs written on each size of paper. The same individual suggested that it should be made clear that the permitted number of pages in a brief does not include pages containing the index and the alphabetical list of cases.

Response: The paragraph has been modified to require that briefs be submitted on letter size paper. As to what is included within the specified page limitations, the paragraph as proposed and adopted states in part that "no brief shall contain more that fifty pages *of argument* and, in the case of a reply brief, *the entire brief* shall not exceed twenty-five pages" (emphasis added). It is believed that the paragraph as written clearly indicates that the fifty-page limitation for a main brief applies only to the length of the argument and does not include the index and case list pages, but that the twenty-five page limitation for a reply brief applies to the entire brief, e.g., argument, index, case list, and all. Accordingly, no further modification has been made.

Comment: With respect to proposed §2.134(b) (which provides that if the respondent in a cancellation proceeding permits his involved registration to be cancelled under section 8 of the Act of 1946 or fails to renew the registration under section 9 of the Act of 1946, such cancellation or failure to renew shall be deemed to be the equivalent of a cancellation by request of respondent without the consent of the adverse party and shall result in entry of judgment against respondent), two organizations commented that the judgment entered against a respondent under the proposed paragraph would have a res judicata effect; that the entry of such a judgment would be unduly harsh where the cancellation or expiration was the result of an inadvertence or mistake; and that, at a minimum, a respondent should be allowed to "show cause" why such a judgment should be entered. Similarly one individual commented that in such situations, a respondent whose use of its registered mark has in fact been discontinued should be put in a position whereby it can terminate the dispute with prejudice only as to the ground of abandonment.

Response: The paragraph has been modified to provide an opportunity for the respondent in such situation to "show cause" why judgment should not be entered against it. If respondent submits a showing that the cancellation or expiration was the result of an inadvertence or mistake, judgment will not be entered against it. If respondent submits a showing that the cancellation or expiration was occasioned by the fact that its registered mark had been abondoned and that such abandonment was not made for purposes of avoiding the proceeding but rather was the result, for example, of a two-year period of nonuse which commenced well before respondent learned of the existence of the proceeding, judgment will be entered against it only and specifically on the ground of abandonment.

Comment: Apparently with respect to proposed §2.135 (which provides that after the commencement of an opposition proceeding, if applicant files a written abandonment of the application or of the mark without the written consent of every adverse party, judgment shall be entered against the applicant), one individual expressed his belief that if an applicant involved in an opposition were allowed to abandon its mark or application without the consent of the opposer without incurring entry of judgment against itself, more applicants would abandon, thus saving money for the Patent and Trademark Office.

Response: The purpose of §2.135 is to prevent an applicant involved in an opposition from abandoning its opposed application and then refiling, thus putting opposer (and the Patent and Trademark Office) to the expense of multiple proceedings. A rule to the contrary would be inequitable. Accordingly, §2.135 has not been modified in the manner suggested by this comment.

Comment: One individual questioned the necessity for the requirement in proposed §2.142(e)(2) that if the appellant in an ex parte proceeding requests an oral argument, the examiner who issued a refusal of registration or a requirement from which an appeal is taken, or in lieu thereof another examiner from the same examining division as designated by the supervisory attorney thereof, shall present an oral argument.

Response: The purpose of the requirement is to ensure that the examining attorney will be present at the oral hearing to respond to any new arguments raised by appellant and to answer any questions which the members of the panel assigned to hear the case may have. The examining attorney's oral argument need not be lengthy; if he (she) has nothing to add to what he (she) has already said in his (her) appeal brief, he (she) may simply say so.

Comment: With respect to the last sentence of proposed§2.165(a) (which states in essence that the certificate of mailing procedure provided by §1.8 does not apply to affidavits or declarations filed under section 8 (a) or (b) of the Act), one organization expressed its belief that the sentence should be deleted in light of H.R. 6260.

Response: H.R. 6260, which was enacted on Aug. 27, 1982 as Pub. L.97-247, amended 35 U.S.C. 21 to include a provision that the Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner. As a result thereof, a new section, §1.10, effective Feb. 27, 1983, has been added, by final rule notice published in the **Federal Register** on Jan. 20, 1983 at 48 FR 2696, to Part I of Title 37 CFR. The new section provides a procedure for assigning the date on which any paper or fee is deposited as "Express Mail" with the United States Postal Service as the filing date of the paper or fee in the Patent and Trademark Office. Inasmuch as this new section applies to "any paper or fee", it applies to affidavits or declarations filed under section 8 (a) or (b) of the Act of 1946. However, the §1.8 certificate of mailing procedure has not been eliminated, and that section still specifically provides that the procedure outlined therein does not apply to affidavits filed under section 8 (a) or (b) of the Act. In view thereof, the last sentence of §2.165(a) has been amended by the addition of a final clause, namely, "but the certificate of mailing by 'Express Mail' procedure provided by §1.10 does apply thereto."

Comment: One organization has submitted suggestions for changes to rules not involved herein.

Response: The suggested changes cannot be adopted without affording members of the public an opportunity to comment thereon. However, these suggestions will be considered in connection with any future proposals to amend the rules in question.

Environmental, energy and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. '96–354). The rule change includes no additional or increased fees. Substantive rights to use valuable trademarks are not adversely affected.

The rule change does not impose a record keeping or reporting burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. No additional information is required from the public. No additional records are required to be maintained by the Patent and Trademark Office because there are no additional fees or proceedings to monitor.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increases in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant, adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States based enterprises to compete with foreign based enterprises in domestic or export markets.

List of Subjects in 37 CFR Part 2

Administrative practice and procedures, Courts, Lawyers, Trademarks

Amendments of Regulations

After consideration of the comments received and pursuant to the authority contained in 15 U.S.C. 1123, Part 2 of Title 37 of the Code of Federal Regulations is amended as set forth below.

PART 2–RULES OF PRACTICE IN TRADEMARK CASES

1. Section 2.27 is amended by revising paragraphs (b) and (d) and adding paragraph (e) to read as follows:

§2.27 Pending trademark application index; access to applications.

* * * * *

(b) Except as provided in paragraph (e) of this section, access to the file of a particular pending application will be permitted prior to publication under §2.60 upon written request.

* * * * *

(d) Except as provided in paragraph (e) of this section, after a mark has been registered, or published for opposition, the file of the application and all proceedings relating thereto are available for public inspection and copies of the papers may be furnished upon paying the fee therefor.

(e) Anything ordered to be filed under seal pursuant to a protective order issued or made by any court or by the Trademark Trial and Appeal Board in any proceeding involving an application or a registration shall be kept confidential and shall not be made available for public inspection or copying unless otherwise ordered by the court or the Board, or unless the party protected by the order voluntarily discloses the matter subject thereto. When possible, only confidential portions of filing with the Board shall be filed under seal.

2. Section 2.63 is revised to read as follows:

§2.63 Reexamination.

(a) After response by the applicant, the application will be reexamined or reconsidered. If registration is again refused or any formal requirement(s) is repeated, but the examiner's action is not stated to be final, the applicant may respond again.

(b) After reexamination the applicant may respond by filing a timely petition to the Commissioner for relief from a formal requirement if: (1) The requirement is repeated, but the examiner's action is not made final, and the subject matter of the requirement is appropriate for petition to the Commissioner (see §2.146(b)); or (2) the examiner's action is made final and such action is limited to subject matter appropriate for petition to the Commissioner. If the petition is denied, the applicant shall have until six months from the date of the Office action which repeated the requirement or made it final or thirty days from the date of the decision on the petition, whichever date is later, to comply with the requirement. A formal requirement which is the subject of a petition decided by the Commissioner may not subsequently be the subject of an appeal to the Trademark Trial and Appeal Board.

3. Section 2.64 is revised to read as follows:

§2.64 Final Action.

(a) On the first or any subsequent reexamination or reconsideration the refusal of the registration or the insistence upon a requirement may be stated to be final,

whereupon applicant's response is limited to an appeal, or to a compliance with any requirement, or to a petition to the Commissioner if permitted by §2.63(b).

(b) During the period between a final action and expiration of the time for filing an appeal, the applicant may request the examiner to reconsider the final action. The filing of a request for reconsideration will not extend the time for filing an appeal or petitioning the Commissioner, but normally the examiner will reply to a request for reconsideration before the end of the six-month period if the request is filed within three months after the date of the final action. Amendments accompanying requests for reconsideration after final action will be entered if they comply with the rules of practice in trademark cases and the Act of 1946.

4. Section 2.65 is revised to read as follows:

§2.65 Abandonment.

(a) If an applicant fails to respond, or to respond completely, within six months after the date an action is mailed, the application shall be deemed to have been abandoned. A timely petition to the Commissioner pursuant to §§2.63(b) and 2.146 is a response which avoids abandonment of an application.

(b) When action by the applicant filed within the six-month response period is a bona fide attempt to advance the examination of the application and is substantially a complete response to the examiner's action, but consideration of some matter or compliance with some requirement has been inadvertently omitted, opportunity to explain and supply the omission may be given before the question of abandonment is considered.

5. Section 2.72 is revised to read as follows:

§2.72 Amendments to description or drawing of the mark.

Amendments to the description or drawing of the mark may be permitted only if warranted by the specimens (or facsimilies) as originally filed, or supported by additional specimens (or facsimilies) and a supplemental affidavit or declaration in accordance with §2.20 alleging that the mark shown in the amended drawing was in actual use prior to the filing date of the application. Amendments may not be made if the character of the mark is materially altered.

6. Section 2.81 is revised to read as follows:

§2.81 Allowance of application.

If no opposition is filed within the time permitted or all oppositions filed are dismissed, and if no interference is declared and no concurrent use proceeding is instituted, the application will be prepared for issuance of the certificate of registration as provided in §2.151.

§2.88 [Removed]

7. Section 2.88 is removed.

§2.94 [Removed]

8. Section 2.94 is removed.

§2.95 [Removed]

9. Section 2.95 is removed.

10. Section 2.96 is revised to read as follows:

§2.96 Issue; burden of proof.

The issue in an interference between applications is normally priority of use, but the rights of the parties to registration may also be determined. The party whose application involved in the interference has the latest filing date is the junior party and has the burden of proof. When there are more than two parties to an interference, a party shall be a junior to and shall have the burden of proof as against every other party whose application involved in the interference has an earlier filing date. If the involved applications of any parties have the same filing date, the application with the latest date of execution will be deemed to have the latest filing date and that applicant will be the junior party. The issue in an interference between an application and a registration shall be the same, but in the event the final decision is adverse to the registrant, a registration to the applicant will not be authorized so long as the interfering registration remains on the register.

§2.97 [Removed]

11. Section 2.97 is removed.

12. Section 2.98 is revised to read as follows:

§2.98 Adding party to interference.

A party may be added to an interference only upon petition to the Commissioner by that party. If an application which is or might be the subject of a petition for addition to an interference is not added, the examiner may suspend action on the application pending termination of the interference proceeding.

13. Section 2.99 is revised to read as follows:

§2.99 Application to register as concurrent user.

(a) An application for registration as a lawful concurrent user will be examined in the same manner as other applications for registration.

(b) When it is determined that the mark is ready for publication, the applicant may be required to furnish as many copies of this application, specimens and drawing as may be necessary for the preparation of notices for each applicant, registrant or user specified as a concurrent user in the application for registration.

(c) Upon receipt of the copies required by paragraph (b) of this section, the examiner shall forward the application for concurrent use registration for publication in the Official Gazette as provided by §2.80. If no opposition is filed, or if all oppositions that are filed are dismissed or withdrawn, the Trademark Trial and Appeal Board shall prepare a notice for the applicant for concurrent use registration and for each applicant, registrant or user specified as a concurrent user in the application. The notices for the specified parties shall state the name and address of the applicant and of the applicant's attorney or other authorized representative, if any, together with the serial number and filing date of the application.

(d)(1) The notices shall be sent to each applicant, in care of his attorney or other authorized representative, if any, to each user, and to each registrant. A copy of the application shall be forwarded with the notice to each party specified in the application.

(2) An answer to the notice is not required in the case of an applicant or registrant whose application or registration is specified as a concurrent user in the application, but a statement, if desired, may be filed within forty days after the mailing of the notice; in the case of any other party specified as a concurrent user in the application, and answer must be filed within forty days after the mailing of the notice.

(3) If an answer, when required, is not filed, judgment will be entered precluding the specified user from claiming any right more extensive than that acknowledged in the application(s) for concurrent use registration, but the applicant(s) will remain with the burden of proving entitlement to registration(s).

(e) The applicant for a concurrent use registration has the burden of proving entitlement thereto. If there are two or more applications for concurrent use registration involved in a proceeding, the party whose application has the latest filing date is the junior party. A party whose application has a filing date between the filing dates of the earliest involved application and the latest involved application is a junior party to every party whose involved application has an earlier filing date. If any applications have the same filing date, the application with the latest date of execution will be deemed to have the latest filing date and that applicant will be the junior party. A person specified as an excepted user in a concurrent use application but who has not filed an application shall be considered a party senior to every party that has an application involved in the proceeding.

(f) When a concurrent use registration is sought on the basis that a court of competent jurisdiction has finally determined that the parties are entitled to use the same or similar marks in commerce, a concurrent use registration proceeding will not be instituted if all of the following conditions are fulfilled:

(1) The applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding; and

(2) The court decree specifies the rights of the parties; and

(3) A true copy of the court decree is submitted to the examiner; and

(4) The concurrent use application complies fully and exactly with the court decree; and

(5) The excepted use specified in the concurrent use application does not involve a registration, or any involved registration has been restricted by the Commissioner in accordance with the court decree.

If any of the conditions specified in this paragraph is not satisfied, a concurrent use registration proceeding shall be prepared and instituted as provided in paragraphs (a) throught (e) of this section.

(g) Registrations and applications to register on the Supplemental Register and registrations under the Act of 1920 are not subject to concurrent use registration proceedings.

14. Section 2.104 is revised to read as follows:

§2.104 Contents of opposition.

The opposition must set forth a short and plain statement showing how the opposer would be damaged by the registration of the opposed mark and state the grounds for opposition. A duplicate copy of the opposition, including exhibits, shall be filed with the opposition.

15. Section 2.105 is revised to read as follows:

§2.105 Notification of opposition proceeding(s).

When an opposition in proper form has been filed and the correct fee(s) have been submitted, a notification shall be prepared by the Trademark Trial and Appeal Board, which shall identify the title and number of the proceeding and the application involved and shall designate a time, not less than thirty days from the mailing date of the notification, within which an answer must be filed. A copy of the notification shall be forwarded to the attorney or other authorized representative of the opposer, if any, or to the opposer. The duplicate copy of the opposition and exhibits shall be forwarded with a copy of the notification to the attorney or other authorized representative of the applicant, if any, or to the applicant.

16. Section 2.106 is amended by revising paragraph (c) to read as follows:

§2.106 Answer.

* * * * *

(c) The opposition may be withdrawn without prejudice before the answer is filed. After the answer is filed, the opposition may not be withdrawn without prejudice except with the written consent of the applicant.

17. Section 2.107 is revised to read as follows:

§2.107 Amendment of pleadings in an opposition proceeding.

Pleadings in an opposition proceeding may be amended in the same manner and to the same extent as in a civil action in a United States district court.

18. Section 2.113 is revised to read as follows:

§2.113 Notification of cancellation proceeding.

(a) When a petition for cancellation has been filed in proper form (see §§2.111 and 2.112), a notification shall be prepared by the Trademark Trial and Appeal Board, which shall identify the title and number of the proceeding and the registration or registrations involved and shall designate a time, not less than thirty days from the mailing date of the notification, within which an answer must be filed. A copy of the notification shall be forwarded to the attorney or other authorized representative of the petitioner, if any, or to the petitioner. The duplicate copy of the petition for cancellation and exhibits shall be forwarded with a copy of the notification to the respondent (see §2.118). If the petition is found to be defective as to form, the party filing the petition shall be so advised and allowed a reasonable time for correcting the informality.

19. Section 2.115 is revised to read as follows:

§2.115 Amendment of pleadings in a cancellation proceeding.

Pleadings in a cancellation proceeding may be amended in the same manner and to the same extent as in a civil action in a United States district court.

20. Section 2.116 is amended by revising paragraphs (b) and (c) to read as follows:

§2.116 Rules of Procedure.

* * * * *

(b) The opposer in an opposition proceeding or the petitioner in a cancellation proceeding shall be in the position of plaintiff, and the applicant in an opposition proceeding or the respondent in a cancellation proceeding shall be in the position of defendant. A party that is a junior party in an interference proceeding or in a concurrent use registration proceeding shall be in the position of plaintiff against every party that is senior, and the party that is a senior party in an interference proceeding or in a concurrent use registration proceeding shall be defendant against every party that is junior.

(c) The opposition or the petition for cancellation and the answer correspond to the complaint and answer in a court proceeding.

21. Section 2.117 is revised to read as follows:

§2.117 Suspension of proceedings.

(a) Whenever it shall come to the attention of the Trademark Trial and Appeal Board that parties to a pending case are engaged in a civil action which may be

dispositive of the case, proceedings before the Board may be suspended until termination of the civil action.

(b) Whenever there is pending, at the time when the question of the suspension of proceedings is raised, a motion which is potentially dispositive of the case, the motion may be decided before the question of suspension is considered.

(c) Proceedings may also be suspended, for good cause, upon motion or a stipulation of the parties approved by the Board.

22. Section 2.120 is revised to read as follows:

§2.120 Discovery.

(a) *In general.* The provisions of the Federal Rules of Civil Procedure relating to discovery shall apply in opposition, cancellation, interference and concurrent use registration proceedings except as otherwise provided in this section. The Trademark Trial and Appeal Board will specify the closing date for the taking of discovery.

(b) *Discovery deposition within the United States.* The deposition of a natural person shall be taken in the Federal judicial district where the person resides or is regularly employed or at any place on which the parties agree by stipulation. The responsibility rests wholly with the party taking discovery to secure the attendance of a proposed deponent other than a party or anyone who, at the time set for the taking of the deposition, is an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure. See 35 U.S.C. 24.

(c) *Discovery deposition in foreign countries.* (1) The discovery deposition of a natural person residing in a foreign country who is a party or who, at the time set for the taking of the deposition, is an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, shall, if taken in a foreign country, be taken in the manner prescribed by §2.124 unless the Trademark Trial and Appeal Board, upon motion for good cause, orders or the parties stipulate, that the deposition be taken by oral examination.

(2) Whenever a foreign party is or will be, during a time set for discovery, present within the United States or any territory which is under the control and jurisdiction of the United States, such party may be deposed by oral examination upon notice by the party seeking discovery. Whenever a foreign party has or will have, during a time set for discovery, an officer, director, managing agent, or other person who consents to testify on its behalf, present within the United States or any territory which is under the control and jurisdiction of the United States, such officer, director, managing agent, or other person who consents to testify in its behalf may be deposed by oral examination upon notice by the party seeking discovery. The party seeking discovery may have one or more officers, directors, managing agents, or other persons who consent to testify on behalf of the adverse party, designated under Rule 30(b)(6) of the Federal Rules of Civil Procedure. The deposition of a person under this paragraph shall be taken in the Federal judicial district where the witness resides or is regularly employed, or, if the witness neither resides nor is regularly employed in a Federal judicial district, where the witness is at the time of the deposition. This paragraph does not preclude the taking of a discovery deposition of a foreign party by any other procedure provided by paragraph (c)(1) of this section.

(d) *Request for production.* The production of documents and things under the provisions of Rule 34 of the Federal Rules of Civil Procedure will be made at the place where the documents and things are usually kept, or where the parties agree, or where and in the manner which the Trademark Trial and Appeal Board, upon motion, orders.

(e) *Motion for an order to compel discovery.* If a party fails to designate a person pursuant to Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, or if a party, or such designated person, or an officer, director or managing agent of a party fails to attend a deposition or fails to answer any question propounded in a discovery deposition, or any interrogatory, or fails to produce and permit the inspection and copying of any document or thing, the party seeking discovery may file a motion before the Trademark Trial and Appeal Board for an order to compel a designation, or attendance at a deposition, or an answer, or production and an opportunity to inspect and copy. The motion shall include a copy of the request for designation or of the relevant portion of the discovery deposition; or a copy of the interrogatory with any answer or objection that was made; or a copy of the request for production, any proffer of production or objection to production in response to the request, and a list and brief description of the documents or things that were not produced for inspection and copying. The motion must be supported by a written statement from the moving party that such party or the attorney therefor has made a good faith effort, by conference or correspondence, to resolve with the other party or the attorney therefor the issues presented in the motion and has been unable to reach agreement. If issues raised in the motion are subsequently resolved by agreement of the parties, the moving party should inform the Board in writing of the issues in the motion which no longer require adjudication.

(f) *Motion for a protective order.* Upon motion by a party from whom discovery is sought, and for good cause, the Trademark Trial and Appeal Board may make any order which justice requires to protect a party from annoyance, embarrassment, oppression, or undue burden or expense, including one or more of the types of orders provided by clauses (1) through (8), inclusive, of Rule 26(c) of the Federal Rules of Civil Procedure. If the motion for a protective order is denied in whole or in part, the Board may, on such conditions (other than an award of expenses to the party prevailing on the motion) as are just, order that any party provide or permit discovery.

(g) *Failure to comply with order.* If a party fails to comply with an order of the Trademark Trial and Appeal Board relating to discovery, including a protective order, the Board may make any appropriate order, including any of the orders provided in Rule 37(b)(2) of the Federal Rules of Civil Procedure, except that the Board does not have authority to hold any person in contempt or to award any expenses to any party. The Board may impose against a party any of the sanctions provided by this subsection in the event that said party or any attorney, agent, or designated witness of that party fails to comply with a protective order made pursuant to Rule 26(c) of the Federal Rules of Civil Procedure.

(h) *Request for admissions.* Requests for admissions shall be governed by Rule 36 of the Federal Rules of Civil Procedure except that the Trademark Trial and Appeal Board does not have authority to award any expenses to any party. A motion by a party to determine the sufficiency of an answer or objection to a request made by that party for an admission shall include a copy of the request for admission and any exhibits thereto and of the answer or objection. The motion must be supported by a written statement from the moving party that such party or the attorney therefor has made a good faith effort, by conference or correspondence, to resolve with the other party or the attorney therefor the issues presented in the motion and has been unable to reach agreement. If issues raised in the motion are subsequently resolved by agreement of the parties, the moving party should inform the Board in writing of the issues in the motion which no longer require adjudication.

(i) *Telephone and pre-trial conferences.* (1) Whenever it appears to the Trademark Trial and Appeal Board that a motion filed in an inter partes proceeding is of such nature that its resolution by correspondence is not practical, the Board may, upon its own initiative or upon request made by one or both of the parties, resolve the motion by telephone conference.

(2) Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of an inter partes proceeding have become so complex that their resolution by correspondence or telephone conference is not practical and that resolution would be likely to be facilitated by a conference in person of the parties or their attorneys with a Member or Attorney-Examiner of the Board, the Board may, upon its own initiative or upon motion made by one or both of the parties, request that the parties or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices for a pre-trial conference.

(j) *Use of discovery deposition, admission, or answer to interrogatory.* (1) The discovery deposition of a party or of anyone who at the time of taking the deposition was on officer, director or managing agent of a party, or a person designated by a party pursuant to Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, may be offered in evidence by an adverse party.

(2) Except as provided in paragraph (j)(1) of this section, the discovery deposition of a witness, whether or not a party, shall not be offered in evidence unless the person whose deposition was taken is, during the testimony period of the party offering the deposition, dead; or out of the United States (unless it appears that the absence of the witness was procured by the party offering the deposition); or unable to testify because of age, illness, infirmity, or imprisonment; or cannot be served with a subpoena to compel attendance at a testimonial deposition; or there is a stipulation by the parties; or upon a showing that such exceptional circumstances exist as to make it desirable, in the interest of justice, to allow the deposition to be used. The use of a discovery deposition by any party under this paragraph will be allowed only by stipulation of the parties approved by the Trademark Trial and Appeal Board, or by order of the Board on motion, which shall be filed at the time of the purported offer of the deposition in evidence, unless the motion is based upon a claim that such exceptional circumstances exist as to make it desirable, in the interest of justice, to allow the deposition to be used, in which case the motion shall be filed promptly after the circumstances claimed to justify use of the deposition became known.

(3) A discovery deposition, an answer to an interrogatory, or an admission to a request for admisssion, which may be offered in evidence under the provisions of paragraph (j) of this section may be made of record in the case by filing the deposition or any part thereof with any exhibit to the part that is filed, or a copy of the interrogatory and answer thereto with any exhibit made part of the answer, or a copy of the request for admission and any exhibit thereto and the admission (or a statement that the party from whom an admission was requested failed to respond thereto), together with a notice of reliance. The notice of reliance and the material submitted thereunder should be filed during the testimony period of the party who files the notice of reliance. An objection made at a discovery deposition by a party answering a question subject to the objection will be considered at final hearing.

(4) If only part of a discovery deposition is submitted and made part of the record by a party, an adverse party may introduce under a notice of reliance any other part of the deposition which should in fairness be considered so as to make not misleading what was offered by the submitting party.

(5) An answer to an interrogatory, or an admission to a request for admission, may be submitted and made part of the record by only the inquiring party except that, if fewer than all of the answers to interrogatories, or fewer than all of the admissions, are offered in evidence by the inquiring party, the responding party may introduce under a notice of reliance any other answers to interrogatories, or any other admissions, which should in fairness be considered so as to make not misleading what was offered by the inquiring party.

(6) Paragraph (j) of this section will not be interpreted to preclude the reading or the use of a discovery deposition, or answer to an interrogatory, or admission as part of the examination or cross-examination of any witness during the testimony period of any party.

(7) When a discovery deposition, or a part thereof, or an answer to an interrogatory, or an admission, has been made of record by one party in accordance with the provisions of paragraph (j)(3) of this section, it may be referred to by any party for purpose permitted by the Federal Rules of Evidence.

(8) Interrogatories, requests for production, requests for admissions, and materials or depositions obtained during the discovery period should not be filed with the Board except when submitted with a motion to compel discovery, or in support of or response to a motion for summary judgment, or under a notice of reliance during a party's testimony period.

23. Section 2.121 is revised to read as follow:

§2.121 Assignment of times for taking testimony.

(a)(1) The Trademark Trial and Appeal Board will issue a trial order assigning to each party the time for taking testimony. No testimony shall be taken except during the times assigned, unless by stipulation of the parties approved by the Board, or, upon motion, by order of the Board. Testimony periods may be rescheduled by stipulation of the parties approved by the Board, or upon motion granted by the Board, or by order of the Board. The resetting of the closing date for discovery will result in the rescheduling of the testimony periods without action by any party.

(2) The initial trial order will be mailed by the Board after issue is joined.

(b)(1) The Trademark Trial and Appeal Board will schedule a testimony period for the plaintiff to present its case in chief, a testimony period for the defendant to present its case and to meet the case of the plaintiff, and a testimony period for the plaintiff to present evidence in rebuttal.

(2) When there is a counterclaim, or when proceedings have been consolidated and one party is in the position of plaintiff in one of the involved proceedings and in the position of defendant in another of the involved proceedings, or when there is an interference or a concurrent use registration proceeding involving more than two parties, the Board will schedule testimony periods so that each party in the position of plaintiff will have a period for presenting its case in chief against each party in the position of defendant, each party in the position of defendant will have a period for presenting its case and meeting the case of each plaintiff, and each party in the position of plaintiff will have a period for presenting evidence in rebuttal.

(c) A testimony period which is solely for rebuttal will be set for fifteen days. All other testimony periods will be set for thirty days. The periods may be extended by stipulation of the parties approved by the Trademark Trial and Appeal Board, or upon motion granted by the Board, or by order of the Board.

(d) When parties stipulate to the rescheduling of testimony periods or to the rescheduling of the closing date for discovery and the rescheduling of testimony periods, a stipulation presented in the form used in a trial order, signed by the parties, or a motion in said form signed by one party and including a statement that every other party has agreed thereto, and submitted in one original plus as many photocopies as there are parties, will, if approved, be so stamped, signed, and dated, and the copies will be promptly returned to the parties.

24. Section 2.122 is revised to read as follows:

§2.122 Matters in evidence.

(a) *Rules of evidence.* The rules of evidence for proceedings before the Trademark Trial and Appeal Board are the Federal Rules of Evidence, the relevant provisions of the Federal Rules of Civil Procedure, the relevant provisions of Title 28 of the United States Code,

and the provisions of this Part of Title 37 of the Code of Federal Regulations.

(b) *Application files.* (1) The file of each application or registration specified in a declaration of interference, of each application or registration specified in the notice of a concurrent use registration proceeding, of the application against which a notice of opposition is filed, or of each registration against which a petition or counterclaim for cancellation is filed forms part of the record of the proceeding without any action by the parties and reference may be made to the file for any relevant and competent purpose.

(2) The allegation in an application for registration, or in a registration, of a date of use is not evidence on behalf of the applicant or registrant; a date of use of a mark must be established by competent evidence. Specimens in the file of an application for registration, or in the file of a registration, are not evidence on behalf of the applicant or registrant unless identified and introduced in evidence as exhibits during the period for the taking of testimony.

(c) *Exhibits to pleadings.* Except as provided in paragraph (d)(1) of this section, an exhibit attached to a pleading is not evidence on behalf of the party to whose pleading the exhibit is attached unless identified and introduced in evidence as an exhibit during the period for the taking of testimony.

(d) *Registrations.* (1) A registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if the opposition or petition is accompanied by two copies of the registration prepared and issued by the Patent and Trademark Office showing both the current status of and current title to the registration. For the cost of a copy of a registration showing status and title, see §2.6(n).

(2) A registration owned by any party to a proceeding may be made of record in the proceeding by that party by appropriate identification and introduction during the taking of testimony or by filing a notice of reliance, which shall be accompanied by a copy of the registration prepared and issued by the Patent and Trademark Office showing both the current status of and current title to the registration. The notice of reliance shall be filed during the testimony period of the party that files the notice.

(e) *Printed publications and official records.* Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation among members of the public or that segment of the public which is relevant under an issue in a proceeding, and official records, if the publication or official record is competent evidence and relevant to an issue, may be introduced in evidence by filing a notice of reliance on the material being offered, which notice shall specify the printed publication or the official record and the pages to be read, indicate generally the relevance of the material being offered, and be accompanied by the official record or a copy thereof whose authenticity is established under the Federal Rules of Evidence, or by the printed publication or a copy of the relevant portion thereof, including the title page and any other page needed to show the place and date of publication, the name and address of the publisher, and the name of the author or the editor. A copy of an official record of the Patent and Trademark Office need not be certified to be offered in evidence. The notice of reliance shall be filed during the testimony period of the party that files the notice.

(f) *Testimony from other proceedings.* By order of the Trademark Trial and Appeal Board, on motion, testimony taken in another proceeding, or testimony taken in a suit or action in a court, between the same parties or those in privity may be used in a proceeding, so far as relevant and material, subject, however, to the right of any adverse party to recall or demand the recall for examination or cross-examination of any witness whose prior testimony has been offered and to rebut the testimony.

25. Section 2.123 is amended by revising paragraphs (a), (e)(3), (j) and (k) to read as follows:

§2.123 Trial testimony in inter partes cases.

(a)(1) The testimony of witnesses in inter partes cases may be taken by depositions upon oral examination as provided by this section or by depositions upon written questions as provided by §2.124. If a party serves notice of the taking of a testimonial deposition upon w ritten questions of a witness who is, or will be at the time of the deposition, present within the United States or any territory which is under the control and jurisdiction of the United States, any adverse party may, within fifteen days from the date of service of the notice, file a motion with the Trademark Trial and Appeal Board, for good cause, for an order that the deposition be taken by oral examination.

(2) A testimonial deposition taken in a foreign country shall be taken by deposition upon written questions as provided by §2.124, unless the Board, upon motion for good cause, orders that the deposition be taken by oral examination, or the parties so stipulate.

* * * * *

(e) *Examination of witnesses.* * * *

(3) Every adverse party shall have full opportunity to cross-examine each witness. If the notice of examination of witnesses which is served pursuant to paragraph (c) of this section is improper or inadequate with respect to any witness, an adverse party may cross-examine that witness under protest while reserving the right to object to the receipt of the testimony in evidence. Promptly after the testimony is completed, the adverse party, if he wishes to preserve the objection, shall move to strike the testimony from the record, which motion will be decided on the basis of all of the relevant circumstances. A motion to strike the testimony of a witness for lack of proper or adequate notice of examination must request the exclusion of the entire testimony of that witness and not only a part of that testimony.

* * * * *

(j) *Effect of errors and irregularities in depositions:* Rule 32(d) (1), (2), and (3) (A) and (B) of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions. Notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in case of such injury it must be made to appear that the objection was raised at the time specified in said rule.

(k) *Objections to admissibility.* Subject to the provisions of paragraph (j) of this section, objection may be made to receiving in evidence any deposition, or part thereof, or any other evidence, for any reason which would require the exclusion of the evidence from consideration. Objections to the competency of a witness or to the competency, relevancy, or materiality of testimony must be raised at the time specified in Rule 32(d)(3)(A) of the Federal Rules of Civil Procedure. Such objections will not be considered until final hearing.

26. Section 2.124 is revised to read as follows:

§2.124 Depositions upon written questions.

(a) A deposition upon written questions may be taken before any person before whom depositions may be taken as provided by Rule 28 of the Federal Rules of Civil Procedure.

(b)(1) A party desiring to take a testimonial deposition upon written questions shall serve notice thereof upon each adverse party within ten days from the opening date of the testimony period of the party who serves the notice. The notice shall state the name and address of the witness. A copy of the notice, but not copies of the questions, shall be filed with the Trademark Trial and Appeal Board.

(2) A party desiring to take a discovery deposition upon written questions shall serve notice thereof upon each adverse party and shall file a copy of the notice, but not copies of the questions, with the Board. The notice shall state the name and address, if known, of the person whose deposition is to be taken. If the name of the person is not known, a general description sufficient to identify him or the particular class or group to which he belongs shall be stated in the notice, and the party from whom the discovery deposition is to be taken shall designate one or more persons to be deposed in the same manner as is provided by Rule 30(b)(6) of the Federal Rules of Civil Procedure.

(c) Every notice given under the provisions of paragraph (b) of this section shall be accompanied by the name or descriptive title of the officer before whom the deposition is to be taken.

(d)(1) Every notice served on any adverse party under the provisions of paragraph (b) of this section shall be accompanied by the written questions to be propounded on behalf of the party who proposes to take the deposition. Within twenty days from the date of service of the notice, any adverse party may serve cross questions upon the party who proposes to take the deposition; any party who serves cross questions shall also serve every other adverse party. Within ten days from the date of service of the cross questions, the party who proposes to take the deposition may serve redirect questions on every adverse party. Within ten days from the date of service of the redirect questions, any party who served cross questions may serve recross questions upon the party who proposes to take the deposition; any party who serves recross questions shall also serve every other adverse party. Written objections to questions may be served on a party propounding questions; any party who objects shall serve a copy of the objections on every other adverse party. In response to objections, substitute questions may be served on the objecting party within ten days of the date of service of the objections; substitute questions shall be served on every other adverse party.

(2) Upon motion for good cause by any party, or upon its own initiative, the Trademark Trial and Appeal Board may extend any of the time periods provided by paragraph (d)(1) of this section. Upon receipt of written notice that one or more testimonial depositions are to be taken upon written questions, the Trademark Trial and Appeal Board shall suspend or reschedule other proceedings in the matter to allow for the orderly completion of the depositions upon written questions.

(e) Within ten days after the last date when questions, objections, or substitute questions may be served, the party who proposes to take the deposition shall mail a copy of the notice and copies of all the questions to the officer designated in the notice; a copy of the notice and of all the questions mailed to the officer shall be served on every adverse party. The officer designated in the notice shall take the testimony of the witness in response to the questions and shall record each answer immediately after the corresponding question. The officer shall then certify the transcript and mail the transcript and exhibits to the party who took the deposition.

(f) The party who took the deposition shall promptly serve a copy of the transcript, copies of documentary exhibits, and duplicates or photographs of physical exhibits on every adverse party. It is the responsibility of the party who takes the deposition to assure that the transcript is correct (see §2.125(b)). If the deposition is a discovery deposition, it may be made of record as provided by §2.120(j). If the deposition is a testimonial deposition, the original, together with copies of documentary exhibits and duplicates or photographs of physical exhibits, shall be filed promptly with the Trademark Trial and Appeal Board.

(g) Objections to questions and answers in depositions upon written questions may be considered at final hearing.

27. Section 2.125 is revised to read as follows:

§2.125 Filing and service of testimony.

(a) One copy of the transcript of testimony taken in accordance with §2.123, together with copies of documentary exhibits and duplicates or photographs of physical exhibits, shall be served on each adverse party within thirty days after completion of the taking of that testimony.

(b) The party who takes testimony is re sponsible for having all typographical errors in the transcript and all errors of arrangement, indexing and form of the transcript corrected, on notice to each adverse party, prior to the filing of one certified transcript with the Trademark Trial and Appeal Board. The party who takes testimony is responsible for serving on each adverse party one copy of the corrected transcript or, if reasonably feasible, corrected pages to be inserted into the transcript previously served.

(c) One certified transcript and exhibits shall be filed promptly with the Trademark Trial and Appeal Board. Notice of such filing shall be served on each adverse party and a copy of each notice shall be filed with the Board.

(d) Each transcript shall comply with §2.123(g) with respect to arrangement, indexing and form.

(e) Upon motion by any party, for good cause, the Trademark Trial and Appeal Board may order that any part of a deposition transcript or any exhibits that directly disclose any trade secret or other confidential research, development, or commercial information may be filed under seal and kept confidential under the provisions of §2.27(e). If any party or any attorney or agent of a party fails to comply with an order made under this paragraph, the Board may impose any of the sanctions authorized by §2.120(g).

§2.126 [Removed]

28. Section 2.126 is removed.

29. Section 2.127 is revised to read as follows:

§2.127 Motions

(a) Every motion shall be made in writing, shall contain a full statement of the grounds, and shall embody or be accompanied by a brief. A brief in response to a motion shall be filed within fifteen days from the date of service of the motion unless another time is specified by the Trademark Trial and Appeal Board or the time is extended by order of the Board on motion for good cause. When a party fails to file a brief in response to a motion, the Board may treat the motion as conceded. An oral hearing will not be held on a motion except on order by the Board.

(b) Any request for reconsideration or modification of an order or decision issued on a motion must be filed within thirty days from the date thereof. A brief in response must be filed within fifteen days from the date of service of the request.

(c) Interlocutory motions, requests, and other matters not actually or potentially dispositive of a proceeding may be acted upon by a single Member of the Trademark Trial and Appeal Board or by an Attorney-Examiner of the Board to whom authority so to act has been delegated.

(d) When any party files a motion to dismiss, or a motion for judgment on the pleadings, or a motion for summary judgment, or any other motion which is potentially dispositive of a proceeding, the case will be suspended by the Trademark Trial and Appeal Board with respect to all matters not germane to the motion and no party should file any paper which is not germane to the motion. If the case is not disposed of as a result of the motion, proceedings will be resumed pursuant to an order of the Board when the motion is decided.

30. Section 2.128 is revised to read as follows:

§2.128 Briefs at final hearing.

(a)(1) The brief of the party in the position of plaintiff shall be due not later than sixty days after the date set for the close of rebuttal testimony. The brief of the party in the position of defendant, if filed, shall be not later than thirty days after the due date of the first brief. A reply brief by the party in the position of plaintiff, if filed, shall be due not later than fifteen days after the due date of the defendant's brief.

(2) When there is a counterclaim, or when proceedings have been consolidated and one party is in the position of plaintiff in one of the involved proceedings and in the position of defendant in another of the involved proceedings, or when there is an interference or a concurrent use registration proceeding involving more than two parties, the Trademark Trial and Appeal Board will set the due dates for the filing of the main brief, and the answering brief, and the rebuttal brief by the parties.

(3) When a party in the position of plaintiff fails to file a main brief, an order may be issued allowing plaintiff until a set time, not less than fifteen days, in which to show cause why the Board should not treat such failure as a concession of the case. If plaintiff fails to file a response to the order, or files a response indicating that he has lost interest in the case, judgment may be entered against plaintiff.

(b) Briefs shall be submitted in typewritten or printed form, double spaced, on letter size paper. Without leave of the Trademark Trial and Appeal Board, no brief shall contain more than fifty pages of argument and, in the case of a reply brief, the entire brief shall not exceed twenty-five pages. Each brief shall contain an alphabetical index of cases cited therein. One original and two legible copies, on good quality paper, of each brief shall be filed.

31. Section 2.129 is revised to read as follows:

§2.129 Oral argument; reconsideration.

(a) If a party desires to have an oral argument at final hearing, the party shall request such argument by a separate notice filed not later than ten days after the due date for the filing of the last reply brief in the proceeding. Oral arguments will be heard by three Members of the Trademark Trial and Appeal Board at the time specified in the notice of hearing. If any party appears at the specified time, that party will be heard. If the Board is prevented from hearing the case at the specified time, a new hearing date will be set. Unless otherwise permitted, oral arguments in an inter partes case will be limited to thirty minutes for each party. A party in the position of plaintiff may reserve part of the time allowed for oral argument to present a rebuttal argument.

(b) The date or time of a hearing may be reset, so far as is convenient and proper, to meet the wishes of the parties and their attorneys or other authorized representatives.

(c) Any request for rehearing or reconsideration or modification of a decision issued after final hearing must be filed within thirty days from the date of the decision. A brief in response must be filed within fifteen days from the date of service of the request. The times specified may be extended by order of the Trademark Trial and Appeal Board on motion for good cause.

32. Section 2.131 is revised to read as follows:

§2.131 Remand after decision in inter partes proceeding.

If, during an inter partes proceeding, facts are disclosed which appear to render the mark of an applicant unregistrable, but such matter has not been tried under the pleadings as filed by the parties or as they might be deemed to be amended under Rule 15(b) of the Federal Rules of Civil Procedure to conform to the evidence, the Trademark Trial and Appeal Board, in lieu of determining the matter in the decision on the proceeding, may refer the application to the examiner for reexamination in the event the applicant ultimately prevails in the inter partes proceeding. Upon receiving the application, the examiner shall withhold registration pending reexamination of the application in the light of the reference by the Board. If, upon reexamination, the examiner finally refuses registration to the applicant, an appeal may be taken as provided by §§2.141 and 2.142.

33. Section 2.132 is revised to read as follows:

§2.132 Involuntary dismissal for failure to take testimony.

(a) If the time for taking testimony by any party in the position of plaintiff has expired and that party has not taken testimony or offered any other evidence, any party in the position of defendant may, without waiving the right to offer evidence in the event the motion is denied, move for dismissal on the ground of the failure of the plaintiff to prosecute. The party in the position of plaintiff shall have fifteen days from the date of service of the motion to show cause why judgment should not be rendered against him. In the absence of a showing of good and sufficient cause, judgment may be rendered against the party in the position of plaintiff. If the motion is denied, testimony periods will be reset for the party in the position of defendant and for rebuttal.

(b) If no evidence other than a copy or copies of Patent and Trademark Office records is offered by any party in the position of plaintiff, any party in the position of defendant may, without waiving the right to offer evidence in the event the motion is denied, move for dismissal on the ground that upon the law and the facts the party in the position of plaintiff has shown no right to relief. The party in the position of plaintiff shall have fifteen days from the date of service of the motion to file a brief in response to the motion. The Trademark Trial and Appeal Board may render judgment against the party in the position of plaintiff, or the Board may decline to render judgment until all of the evidence is in the record. If judgment is not rendered, testimony periods will be reset for the party in the position of defendant and for rebuttal.

(c) Any motion filed under paragraph (a) or (b) of this section must be filed before the opening of the testimony period of the moving party.

34. Section 2.134 is revised to read as follows:

§2.134 Surrender or voluntary cancellation of registration.

(a) After the commencement of a cancellation proceeding, if the respondent applies for cancellation of the involved registration under section 7(d) of the Act of 1946 without the written consent of every adverse party, judgment shall be entered against the respondent.

(b) After the commencement of a cancellation proceeding, if it comes to the attention of the Trademark Trial and Appeal Board that the respondent has permitted his involved registration to be cancelled under section 8 of the Act of 1946 or has failed to renew his involved registration under section 9 of the Act of 1946, an order may be issued allowing respondent until a set time, not less than fifteen days, in which to show cause why such cancellation or failure to renew should not be deemed to be the equivalent of a cancellation by request of respondent without the consent of the adverse party and should not result in entry of judgment against respondent as provided by paragraph (a) of this section. In the absence of a showing of good and sufficient cause, judgment may be entered against respondent as provided by paragraph (a) of this section.

35. Section 2.135 is revised to read as follows:

§2.135 Abandonment of application or mark.

After the commencement of an opposition, concurrent use, or interference proceeding, if the applicant files a written abandonment of the application or of the mark without the written consent of every adverse party, judgment shall be entered against the applicant.

36. Section 2.142 is proposed to be revised to read as follows:

§2.142 Time and manner of ex parte appeals.

(a) Any appeal filed under the provisions of §2.141 must be filed within six months from the date of final refusal or the date of the action from which the appeal is taken. An appeal is taken by filing a notice of appeal and paying the appeal fee.

(b) The brief of appellant shall be filed within sixty days from the date of appeal. If the brief is not filed within the time allowed, the appeal may be dismissed. The examiner shall, within sixty days after the brief of appellant is sent to the examiner, file with the Trademark Trial and Appeal Board a written brief answering the brief of appellant and shall mail a copy of the brief to the appellant. The appellant may file a reply brief within twenty days from the date of mailing of the brief of the examiner.

(c) All requirements made by the examiner and not the subject of appeal shall be complied with prior to the filing of an appeal.

(d) The record in the application should be complete prior to the filing of an appeal. The Trademark Trial and Appeal Board will ordinarily not consider additional evidence filed with the Board by the appellant or by the examiner after the appeal is filed. After an appeal is filed, if the appellant or the examiner desires to introduce additional evidence, the appellant or the examiner may request the Board to suspend the appeal and to remand the application for further examination.

(e)(1) If the appellant desires an oral hearing, a request therefor should be made by a separate notice filed not later than ten days after the due date for a reply brief. Oral argument will be heard by three Members of the Trademark Trial and Appeal Board at the time specified in the notice of hearing, which may be reset if the Board is prevented from hearing the argument at the specified time or, so far as is convenient and proper, to meet the wish of the appellant or his attorney or other authorized representative.

(2) If the appellant requests an oral argument, the examiner who issued the refusal of registration or the requirement from which the appeal is taken, or in lieu thereof another examiner from the same examining division as designated by the supervisory attorney thereof, shall present an oral argument. If no request for an oral hearing is made by the appellant, the appeal will be decided on the record and briefs.

(3) Oral argument will be limited to twenty minutes by the appellant and ten minutes by the examiner. The appellant may reserve part of the time allowed for oral argument to present a rebuttal argument.

(f)(1) If, during an appeal from a refusal of registration, it appears to the Trademark Trial and Appeal Board that an issue not previously raised may render the mark of the appellant unregistrable, the Board may suspend the appeal and remand the application to the examiner for further examination to be completed within thirty days.

(2) If the further examination does not result in an additional ground for refusal of registration, the examiner shall promptly return the application to the Board, for resumption of the appeal, with a written statement that further examination did not result in an additional ground for refusal of registration.

(3) If the further examination does result in an additional ground for refusal of registration, the examiner and appellant shall proceed as provided by §§2.61, 2.62, 2.63 and 2.64. If the ground for refusal is made final, the examiner shall return the application to the Board, which shall thereupon issue an order allowing the appellant sixty days from the date of the order to file a supplemental brief limited to the additional ground for the refusal of registration. If the supplemental brief is not filed by the appellant within the time allowed, the appeal may be dismissed.

(4) If the supplemental brief of the appellant is filed, the examiner shall, within sixty days after the supplemental brief of the appellant is sent to the examiner, file with the Board a written brief answering the supplemental brief of appellant and shall mail a copy of the brief to the appellant. The appellant may file a reply brief within twenty days from the date of mailing of the brief of the examiner.

(5) If an oral hearing on the appeal had been requested prior to the remand of the application but not yet held, an oral hearing will be set and heard as provided in paragraph (e) of this section. If an oral hearing had been held prior to the remand or had not been previously requested by the appellant, an oral hearing may be requested by the appellant by a separate notice filed not later than ten days after the due date for a reply brief on the additional ground for refusal of registration. If the appellant files a request for an oral hearing, one will be set and heard as provided in paragraph (e) of this section.

(g) An application which has been considered and decided on appeal will not be reopened except for the entry of a disclaimer under section 6 of the Act of 1946 or upon order of the Commissioner, but a petition to the Commissioner to reopen an application will be considered only upon a showing of sufficient cause for consideration of any matter not already adjudicated.

37. Section 2.146 is revised to read as follows:

§2.146 Petitions to the Commissioner.

(a) Petition may be taken to the Commissioner: (1) From any repeated or final formal requirement of the examiner in the ex parte prosecution of an application if permitted by §2.63(b); (2) in any case for which the Act of 1946, or Title 35 of the United States Code, or this Part of Title 37 of the Code of Federal Regulations specifies that the matter is to be determined directly or reviewed by the Commissioner; (3) to invoke the supervisory authority of the Commissioner in appropriate circumstances; (4) in any case not specifically defined and provided for by this part of Title 37 of the Code of Federal Regulations; (5) in an extraordinary situation, when justice requires and no other party is injured thereby, to request a suspension or waiver of any requirement of the rules not being a requirement of the Act of 1946.

(b) Questions of substance arising during the ex parte prosecution of applications, including, but not limited to, questions arising under sections 2, 3, 4, 5, 6 and 23 of the Act of 1946, are not considered to be appropriate subject matter for petitions to the Commissioner.

(c) Every petition to the Commissioner shall include a statement of the facts relevant to the petition, the points to be reviewed, the action or relief that is requested, and the requisite fee (see §2.6). Any brief in support of the petition shall be embodied in or accompany the petition. When facts are to be proved in ex parte cases (as in a petition to revive an abandoned application), the proof in the form of affidavits or declarations in accordance with §2.20, and any exhibits, shall accompany the petition.

(d) A petition on any matter not otherwise specifically provided for shall be filed within sixty days from the date of mailing of the action from which relief is requested.

(e)(1) A petition from the denial of a request for an extension of time to file a notice opposition shall be filed within fifteen days from the date of mailing of the denial of the request and shall be served on the attorney or other authorized representative of the applicant, if any, or on the applicant. Proof of service of the petition shall be made as provided by §2.119(a). The applicant may file a response within fifteen days from the date of service of the petition and shall serve a copy of the response on the petitioner, with proof of service as provid-

ed by §2.119(a). No further paper relating to the petition shall be filed.

(2) A petition from an interlocutory order of the Trademark Trial and Appeal Board shall be filed within thirty days after the date of mailing of the order from which relief is requested. Any brief in response to the petition shall be filed, with any supporting exhibits, within fifteen days from the date of service of the petition. Petitions and responses to petitions, and any papers accompanying a petition or response, under this subsection shall be served on every adverse party pursuant to §2.119(a).

(f) An oral hearing will not be held on a petition except when considered necessary by the Commissioner.

(g) The mere filing of a petition to the Commissioner will not act as a stay in any appeal or inter partes proceeding that is pending before the Trademark Trial and Appeal Board nor stay the period for replying to an Office action in an application except when a stay is specifically requested and is granted or when §§2.63(b) and 2.65 are applicable to an ex parte application.

(h) Authority to act on petitions, or on any petition, may be delegated by the Commissioner.

§2.147 [Removed]

38. Section 2.147 is removed.

39. Section 2.165 is revised to read as follows:

§2.165 Reconsideration of affidavit or declaration.

(a)(1) If the affidavit or declaration filed pursuant to §2.162 is insufficient or defective, the affidavit or declaration will be refused and the registrant will be notified of the reason. Reconsideration of the refusal may be requested within six months from the date of the mailing of the action. The request for reconsideration must state the grounds for the request. A supplemental or substitute affidavit or declaration required by section 8 of the Act of 1946 cannot be considered unless it is filed before the expiration of six years from the date of the registration or from the date of publication under section 12(c) of the Act. The certificate of mailing procedure provided by §1.8 does not apply to affidavits or declarations or to supplemental or substitute affidavits or declarations filed under section 8 (a) or (b) of the Act, but the certificate of mailing by "Express Mail" procedure provided by §1.10 does apply thereto.

(2) A request for reconsideration shall be a condition precedent to a petition to the Commissioner to review the refusal of the affidavit or declaration unless the first action refusing the affidavit or declaration directs the registrant to petition the Commissioner for relief, in which event the petition must be filed within six months from the date of mailing of the action.

(b) If the refusal of the affidavit or declaration is adhered to, the registrant may petition the Commissioner to review the action under §2.146(a)(2). The petition to the Commissioner requesting review of the action adhering to the refusal of the affidavit or declaration must be filed within six months from the date of mailing of the action which denied reconsideration.

(c) The decision of the Commissioner on the petition will constitute the final action of the Patent and Trademark Office. If there is no petition to the Commissioner, the Commissioner will notify the registrant of the refusal of the affidavit or declaration after the expiration of six years from the date of registration or from the date of publication under section 12(c) of the Act of 1946, and such notice will constitute the final action of the Office.

(d) A petition to the Commissioner for review of the action shall be a condition precedent to an appeal to or action for review by any court.

40. Section 2.173 is amended by revising paragraph (b) to read as follows:

§2.173 Amendment; disclaimer in part.

* * * * *

(b) No amendment in the identification of goods or services in a registration will be permitted except to restrict the identification or otherwise to change it in ways that would not require republication of the mark. No amendment seeking the elimination of a disclaimer will be permitted.

* * * * *

41. Section 2.184 is revised to read as follows:

§2.184 Refusal of renewal.

(a) If the application for renewal is incomplete or defective, the renewal will be refused. The application may be completed or amended in response to a refusal, subject to the provisions of §2.183. If a response to a refusal of renewal is not filed within six months from the date of mailing of the action, the application for renewal will be considered abandoned. A request to reconsider a refusal of renewal shall be a condition precedent to a petition to the Commissioner to review the refusal of renewal.

(b) If the refusal of renewal is adhered to, the registrant may petition the Commissioner to review the action under §2.146(a)(2). The petition to the Commissioner requesting review of the action adhering to the refusal of the renewal must be filed within six months from the date of mailing of the action which adhered to the refusal. If a timely petition to the Commissioner is not filed, the application for renewal will be considered abandoned.

(c) The decision of the Commissioner on the petition will constitute the final action of the Patent and Trademark Office.

(d) A petition to the Commissioner for review of the action shall be a condition precedent to an appeal to or action for review by any court.

42. Section 2.186 is revised to read as follows:

§2.186 Action may be taken by assignee of record.

Any action with respect to an assigned application or registration which may or must be taken by a registrant or applicant may be taken by the assignee provided that the assignment has been recorded.

Apr. 28, 1983. DONALD J. QUIGG,
Deputy Commissioner of Patents and Trademarks.

[FR Doc. 83-13500 Filed 5-20-83; 8:45 am]
BILLING CODE 3510-6-M

[1031 TMOG 12]

(162) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1, 2, and 10
Docket 407 88-4181

Practice before the Patent and Trademark Office

Agency: Patent and Trademark Office, Commerce
Action: Final Rule
Summary: The Patent and Trademark Office (PTO) is amending its rules governing practice before the PTO by attorneys and agents. These rules are needed to clarify and modernize the rules relating to admission to practice and the conduct of disciplinary cases. The rules are also needed to set out in the Code of Federal Regulations a PTO Code of Professional Responsibility. By amending the rules, the PTO believes the standards for admission to practice in patent cases will be more easily understood, that those practicing before the PTO will have ready access to a code of professional responsibility, and that procedure in disciplinary cases will be more easily understood. The PTO expects that the conduct of disciplinary proceedings under these rules will be more effective and less costly.
Dates: The effective date of these rules (except §1.21(a)(5) and (6)) is Mar. 8, 1985. Section 1.21(a)(5) and (6) is effective Apr. 8, 1985.
For Further Information Contact: Fred E. McKelvey by telephone at (703) 557-4025 (if no answer, message may be left at 703-557-4103) or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: Attorneys and agents practice before the Patent and Trademark Office (PTO) in patent cases. 35 U.S.C. 31. Attorneys also practice before the PTO in trademark and other non-patent cases. 5 U.S.C. 500(b). A few agents also practice before the PTO in trademark cases under rules in force prior to Jan. 1, 1957.

A notice of proposed rulemaking for attorney and agent conduct and disciplinary procedure was published on Aug. 11, 1983 in the *Federal Register,* 48 F.R. 36478, and on Sept. 20, 1983 in the *Official Gazette,* 1034 O.G. 39, 1034 TMOG 33. A notice extending the comment period and setting a second hearing was published on Oct. 5, 1983 in the *Federal Register,* 48 F.R. 45424, and on Oct. 18, 1983, in the *Official Gazette,* 1035 O.G. 19, 1035 TMOG 17. The PTO decided to withdraw, and not adopt, the rules proposed in the *Federal Register* notice of Aug. 11, 1983. There were numerous objections to the proposed rules and the public indicated that a longer period for study and review of a code of conduct and disciplinary procedures was necessary.

An advance notice of proposed rulemaking setting out revised rules being considered for standards of conduct and disciplinary proceedings was published on Mar. 16, 1984, in the *Federal Register,* 49 F.R. 10012, and on Apr. 10, 1984, in the *Official Gazette,* 1041 O.G. 15, 1041 TMOG 13. Numerous organizations and individuals filed comments in response to the advance notice.

On Aug. 24, 1984, the PTO published in the *Federal Register* a notice of proposed rulemaking. 49 F.R. 33790. On Aug. 28, 1984, the notice was also published in the *Official Gazette.* 1045 O.G. 29; 1045 TMOG 25. The notice also appeared in the Bureau of National Affairs, *Patents, Trademark & Copyright Journal,* Vol. 28, No. 694, pp. 485-515 (Aug. 30, 1984). Twenty-two written comments were timely received in response to the notice of proposed rulemaking. The comments are analyzed herein. A hearing was held on Oct. 10, 1984. Five individuals appeared at the hearing. Oral comments made at the hearing are also analyzed herein. The twenty-two written comments and a copy of the transcript of the hearing are available for public inspection in Room 12B10, Crystal Gateway II, 1225 Jefferson Davis Hgw., Arlington, Va.

This notice of rulemaking sets out rules in three areas:

(1) Practice of attorneys and agents before the PTO in patent, trademark, and other non-patent cases (§§10.2 through 10.19);

(2) A PTO Code of Professional Responsibility (§§10.20 through 10.112); and

(3) Rules governing (a) investigation of possible violations of the PTO Code of Professional Responsibility and (b) disciplinary proceedings to reprimand, suspend, or exclude (disbar) individuals from practicing before the PTO who, after notice and opportunity for a hearing, are found to have violated a disciplinary rule of the PTO Code of Professional Responsibility (§§10.130 through 10.170).

Familiarity with the advance notice and notice of proposed rulemaking is assumed. Changes in the text of the rules published for comment in the notice of proposed rulemaking are discussed. Comments received in response to the notice of proposed rulemaking are discussed. Comments not timely received in response to the advance notice are also discussed.

Tables 1, 2, and 3 are included in this notice to assist readers in correlating present rules with the new rules and to find the principal source for the new rules. An indication in Tables 1, 2, or 3 that a section is "new" means that a corresponding section does not currently appear in Tile 37 of the Code of Federal Regulations.

Table 1 shows the principal sources of the new rules which relate to (1) admission to practice of attorneys and agents in patent cases and (2) practice in trademark and other non-patent cases.

Table 2 shows the principal sources of the rules for the new PTO Code of Professional Responsibility.

Table 3 shows the principal sources of the new rules for disciplinary proceedings.

Other sources for, and rationale in support of, the proposed rules are discussed in the Supplementary Information of the advance notice, 49 F.R. 10012-10022, and the Supplementary Information of the notice of proposed rulemaking, 49 F.R. 33790-33803.

In issuing these rules, the PTO has made every effort to minimize preemption of State control over the practice of law. Thus, in §10.1, second sentence, the new rules provide:

> Nothing in . . . [these rules] shall be construed to preempt the authority of each State to maintain control over the practice of law, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives.

This provision of §10.1 is based on language in *Sperry* v. *Florida ex rel, Florida Bar,* 373 U.S. 379, 402 (1963), and makes clear the PTO's intent to regulate only conduct related or relevant to practice before the PTO.

In an effort to ascertain whether the proposed rules would have any adverse impact on the States, copies of both the advance notice of Mar. 16, 1984, and the notice of proposed rulemaking of Aug. 24, 1984, were sent to Bar Counsel in each State. The PTO received responses from Bar Counsel in Ala., Conn., Fla., Ga., Md., Miss., Nebr., Tex., and Vt. Comments were also received from the National Organization of Bar Counsel, the American Bar Association, and others.

Alaska Bar Counsel, contrary to other bar counsel filing comments, suggested that creation of a PTO Code of Professional Responsibility would be "inherently confusing" to any attorney practicing in a State and also before the PTO. The new rules, however, do not establish for the first time a PTO Code of Professional Responsibility. The current PTO code appears in 37 CFR §§1.344 and 2.12. Sections 1.344 and 2.12 merely incorporate by reference the Code of Professional Responsibility of the American Bar Association (1970). The new PTO code more appropriately sets out the standards of conduct relevant to the practice of law before the PTO. Alaska Bar Counsel also felt that it would be more appropriate if the PTO brought alleged ethics violations by attorneys to local state enforcement authorities. This view was not shared by other bar counsel who filed comments. The statute (35 U.S.C. 32) authorizes the Commissioner to administer discipline. The PTO has taken disciplinary action in instances where a State has declined to do so. Moreover, there are registered patent agents who are not subject to discipline by State enforcement agencies. Finally, Alaska Bar counsel suggested that "adjudicative agencies" are too closely involved in a disciplinary matter to be impartial. Congress has determined otherwise. 35 U.S.C. 32 and 5 U.S.C. 500(d).

Comments were received from the Statewide Grievance Committee of Connecticut in response to the advance notice. Many helpful suggestions were made in the comments. Most of the suggestions were adopted at the time the notice of proposed rulemaking was published.

The Florida Bar, through its Director of Lawyer Regulation, filed comments in response to the notice of proposed rulemaking. The Florida Bar commented on §§10.1(c) and 10.23(c) (5). The PTO's response to the comment appears later in this notice under a discussion of §10.1.

An Assistant General Counsel of the State Bar of Georgia filed a response to the advance notice. The response stated, among other things: "Although due to the press of business at the present time I am unable to provide a substantive response in this correspondence, I will respond within the appropriate time limits after having an opportunity to study the enclosed . . . [advance notice]." No further response was received.

Bar counsel for the Attorney Grievance Commission of Maryland filed a response to the advance notice. In his response Bar Counsel states in part:

It does not appear to me that any of the proposed Rules would present any difficulty in the administration of discipline within Md.

Complaint Counsel for Miss. responded to the advance notice. He stated in part:

I have not reviewed the proposed Code in comparison with the Code of Professional Responsiblity in great detail. In general however I can state that adoption of the proposed Code would not have an adverse effect upon the function of this office.

The General Counsel of the State Bar of Texas responded to the advance notice and did "not perceive that any problem would be created by . . . [the proposed rules] in Tex." The General Counsel did express the thought that the PTO's use of the word "practitioner" instead of "lawyer" would not prevent reciprocal discipline in Tex. based on disciplinary action by the PTO. The PTO sees no reason for disagreeing with the General Counsel. The word "practitioner" is used by the PTO to define registered attorneys, registered agents, *and* other attorneys authorized to practice in trademark and other non-patent cases before the PTO under 5 U.S.C. 500(b).

The Chairman of the Professional Conduct Board of Vermont responded to the advance notice. He states in part:

I find nothing contained in the proposed rules which would present any difficulty in the administration of disciplinary matters within the State of Vermont. Further, I see no problems created vis-a-vis the Code of Professional Responsibility in this jurisdiction.

The President of the National Organization of Bar Counsel responded to the notice of proposed rulemaking. He expressed a concern as to whether the PTO intended to "provide for notice and information of . . . [each disciplinary violation by an attorney] to each jurisdiction where the attorney is licensed." Two provisions of the rules are designed to insure that States are notified of PTO disciplinary action. Section 10.158(b) (1) requires a disciplined attorney to notify all bars of which he or she is a member and to file a copy of the notice with the Director of Enrollment and Discipline of the PTO. Section 10.159(a) requires the Director to notify known state bars and appropriate bar associations of PTO disciplinary action. In addition, as a matter of policy, the PTO intends to notify the National Discipline Data Bank of the American Bar Association.

Comments were filed in response to the advance notice and the notice of proposed rulemaking by the Standing Committee on Professional Discipline of the American Bar Association. The comments filed in response to the advance notice were analyzed in the notice of proposed rulemaking and are not re-analyzed in this notice. In its comments responding to the notice of proposed rulemaking the Standing Committee made several helpful suggestions, some of which are being adopted. A full discussion of the PTO rationale for adopting or not adopting a particular suggestion appears under analysis of comments later in this notice. The Standing Committee urged adoption of the 1983 ABA Model Rules. The PTO is not now adopting the Model Rules *inter alia* because most States have not adopted those rules. If a significant number of states adopt the Model Rules, the PTO will consider further amendments to its Code of Professional Responsibility. The Standing Committee suggested changes to §10.23(c) (12) which are being adopted in part. The Standing Committee suggested that notice be given to a practitioner prior to any meeting of the Committee on Discipline. This suggestion is not being adopted. In most instances, a practitioner will be able to respond to a notice under 5 U.S.C. 558(c). The Committee will have the practitioner's response at the time of its deliberation. The Standing Committee urged that hearings in disciplinary matters should be open to the public. Others opposed this position. The PTO is not adopting this suggestion in view of 35 U.S.C. 122. Further rationale for not adopting the Standing Committee's suggestion appears later in the notice. The Standing Committee urged a change in §10.149 to make the burden for proving a disciplinary violation one of "clear and convincing evidence." This suggestion is being adopted. The Standing Committee urged that more discovery be permitted than was authorized by §10.152 as proposed. This suggestion is being adopted as explained further in this notice. The Standing Committee also thought §10.159 should provide for notice to the ABA National Discipline Data Bank when the PTO administers discipline. While §10.159 will not specifically mention the Data Bank, a change has been made to permit the Director to notify appropriate bar associations. The Data Bank is an appropriate bar association.

Changes in Text: Several changes have been made in the text of the new rules from the text of the proposed rules which were published for comment in the notice of proposed rulemaking. Those changes are discussed below.

In §1.8, the new subparagraph will be (xiii). Subparagraph (xii) was added when the rules relating to patent interference proceedings were amended. See 49 F.R. 48451 (Dec. 12, 1984).

In the first sentence of §1.31, the term "agent" has been changed to "registered agent" to make clear that only registered agents are intended.

Section 1.33(c) is being amended to delete a reference to former §§1.341 and 1.347 and to now refer to §§10.5 and 10.11.

Section 1.56(f) and (h) is being amended to delete a reference to former §1.346 and to now referred to §10.18.

In the second sentence of §10.1, "subpart shall" has been changed to "part shall" and "maintain control over" has been changed to "regulate." In the same sentence, "within its borders" has been deleted.

In §10.2(b) (1), "maintain the register" has been changed to "maintain the register provided for in §10.5".

In the next-to-the-last sentence of §10.7(b), "examining corps" has been changed to "patent examining corps".

The language "an alien" in §10.9(b) has been changed to read "a resident alien" to make clear that aliens registered under paragraphs (a) or (b) of §10.6 must be resident aliens.

In the first sentence of §10.14(c), "foreigner" has been changed to "foreign attorney or agent", "registered and in good standing" has been changed to "registered or in good standing", "applicants" has been changed to "parties" and "trademark applications" has been changed to "trademark cases".

In §10.18(a) (1), "the paper has been read" has been changed to "the paper has been read by the practitioner".

Several changes have been made in §10.23.

In §10.23(c) (4) (iii), "improperly" has been added before "bestowing."

In §10.23(c) (5), "on ethical grounds" has been added after the first occurrence of "attorney or agent" and "suspension or disbarment as an attorney or agent" (after "10.6(c)") has been deleted.

In §10.23(c) (7), "patent" has been added before "application of another" and the following has been added as a second sentence: "See §§1.604(b) and 1.607(c) of this Subchapter."

In §10.23(c) (8), "Failing to forward" has been changed to "Failing to inform a client or former client"; "inability to forward, to" has been changed to "inability to notify"; "client correspondence" has been changed to "client of correspondence"; "is correspondence which" has been changed to "is correspondence of which"; and "under the circumstances should be forwarded to the client or former client" has been changed to "under the circumstances the client or former client should be notified."

Section 10.23(c) (12) has been changed to read: "Knowingly filing, or causing to be filed, a frivolous complaint alleging a violation by a practitioner of the Patent and Trademark Office Code of Professional Responsibility."

In §10.23(c) (15), "including" has been changed to "making a" and "matter" has been changed to "statement".

In §10.36(b) (3), the language "in the locality" has been deleted.

The following language has been deleted from §10.40(c): ", and may not withdraw in other matters,".

In §10.62(b), the language "contemplated or pending litigation or" has been deleted.

In §10.63(a), the language "contemplated or pending litigation or" has been deleted. Both occurrences of "trial or" have been deleted from §10.63(a). The language "contemplated or pending litigation or" has been deleted from §10.63(b).

The following sentence has been added to §10.64(b): "A practitioner may, however, advance any fee required to prevent or remedy an abandonment of a client's application by reason of an act or omission attributable to the practitioner and not to the client, whether or not the client is ultimately liable for such fee."

In §10.84(a) (3), "§10.85" has been changed to "this part".

The following sentence has been added to §10.87(a): "It is not improper, however, for a practitioner to encourage a client to meet with an opposing party for settlement discussions."

Subparagraph (5) of §10.89(c) as it appeared in the notice of proposed rulemaking has been deleted. Subparagraph (6) of §10.89(c) as it appeared in the notice of proposed rulemaking has been changed to read: "(5) Engage in undignified or discourteous conduct before the Office (see §1.3 of this Subchapter)." Subparagraph (7) of §10.89(c) has been redesignated as subparagraph (6).

In §10.112(a), the language:

maintained: (1) in the case of a practitioner whose office is located in the United States, the State in which the practitioner's office is situated or (2) in the case of a practitioner having an office in a foreign country or registered under §10.6(c) in the United States or the foreign country

has been changed to read:

maintained in the United States or, in the case of a practitioner having an office in a foreign country or registered under §10.6(c), in the United States or the foreign country.

In §10.131(a), the second sentence has been deleted as being unnecessary in view of §10.132(b). The second sentence of §10.131(a) in the notice of proposed rulemaking read: "The investigation shall be such as to determine whether there is probable cause to believe that a violation of a Disciplinary Rule by a practitioner has occurred."

In the first sentence of §10.132(a), the language "that there is probable cuase to believe" has been deleted. The Committee on Discipline, not the Director, shall determine whether there is probable cause to believe that a practitioner has violated a Disciplinary Rule. See §§10.4(b) and 10.132(b).

Several changes have been made in §10.133. In the first sentence of §10.133(b), the language "§§10.132(b) and 10.134" has been replaced with "§10.134". The reference to §10.132(b) is not necessary. The language "his or her resignation by filing" in §10.133(b) has been deleted as unnecessary. The second sentence of §10.133(b) has been modified to become new paragraphs (c) and (d). Paragraph (c) indicates the content of an affidavit of resignation filed prior to the date set by the administrative law judge (ALJ) for hearing. Paragraph (d) indicates the content of an affidavit of resignation filed on or after the date set by the ALJ for hearing. Paragraph (c) has been redesignated as new paragraph (e). In addition, the language "paragraph (b)" therein has been changed to "paragraphs (b) or (c)". Paragraphs (d) and (e) have been redesignated as new paragraphs (f) and (g), respectively.

In §10.135(a) (2) (i), "Committee on Enrollment" has been changed to "Director".

In §10.149, "a preponderance of" has been changed in both instances to "clear and convincing".

Several changes have been made to §10.152 to expand discovery. Paragraphs (a) and (b) of §10.152 as set out in the notice of proposed rulemaking have been redesignated as paragraphs (e) and (f), respectively, and new paragraphs (a) through (d) have been added. New paragraph (a) sets forth discovery which is authorized. New paragraph (b) sets forth matter which *cannot* be discovered. Paragraph (c) sets forth factors which an ALJ can consider in determining whether to authorize discovery. Paragraph (d) requires that a motion be filed which addresses specifically and separately each particular request for discovery. In paragraph (e) (formerly paragraph (a)), a new subparagraph (3) has been added to specify that the ALJ may require the parties to set out in a pre-hearing statement information related to expert witnesses. Old subparagraphs (3) and (4) have been redesignated as new subparagraphs (4) and (5), respectively.

In §10.154(b), a new subparagraph (5) has been added which states: "(5) any extenuating circumstances."

In §10.155(a), both occurrences of "on the respondent" have been deleted.

Several changes have been made to §10.158. In §10.158(b) (1), after "all clients of the practitioner" the following has been added "for whom he or she is handling matters before the Office". In §10.158(b) (2), "client's active case files" has been changed to "client's active Office case files". In §10.158(c), changes have been made to make paragraph (c) applicable to corporate patent departments and to prohibit a suspended or excluded practitioner from meeting in person or in the presence of another practitioner with an official of the PTO in connection with the prosecution of a patent, trademark, or other case.

The following has been added to the end of §10.159(a): "and any appropriate bar associations."

Several changes have been made in §10.160(c). "A practitioner has been suspended or excluded" has been changed to "An individual who has resigned under §10.133 or who has been suspended or excluded". The language "if the Director is satisfied" has been changed to "when the individual makes a clear and convincing showing". The language "suspended or excluded practitioner" has been changed to "individual".

Response to and Analysis of Comments: Twenty-two (22) written comments where timely received in response to the notice of proposed rulemaking. The comments have been analyzed. Some suggestions made in comments have been adopted and others have been rejected. A detailed analysis of the timely received comments follows. Several comments were not timely received by July 9, 1984, in response to the advance notice of proposed rulemaking of Mar. 16, 1984. These comments have now been considered and are analyzed herein.

Several comments were received which suggested that the rules purport to regulate attorney conduct beyond that necessary or proper for administration of federal programs by the PTO. It is not, and has never been, the intention of the PTO to regulate conduct except to the extent necessary for the accomplishment of federal objectives. Thus, only that conduct which is relevant to the practice of patent, trademark, or other law *before the PTO* is what the PTO seeks to regulate. The preamble of §10.1 indicates that Subpart 10 governs solely the practice of patent, trademark, and other law before the PTO. As noted in the preamble to §10.1, "[n]othing in this subpart shall be construed to preempt the authority of each State to regulate the practice of law, except to the extent necessary for the Patent and Trademark Of-

fice to accomplish its federal objectives." See *Sperry* v. *Florida ex rel. Florida Bar*, 373 U.S. 379, 402 (1963). See also *Michigan Canners and Freezers Ass'n.* v. *Agricultural Marketing and Bargaining Board*, 104 S. Ct. 2518, 2523 (1984) (State Law is preempted when it stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress) and *Fidelity Federal Savings and Loan Ass'n.* v. *de la Cuesta*, 102 S. Ct. 3014, 3022 (1982) (federal regulations have no less preemptive effect than federal statutes).

Several comments were received concerning §10.1. The Florida Bar noted that in the notice of proposed rulemaking the PTO indicated "that failure to pay State bar dues is not a basis for suspension or exclusion before the PTO because failure to pay the dues has no relationship to the federal objectives which the PTO seeks to accomplish." 49 F.R. 33795, column 1, third full paragraph. The Florida Bar suggested that "the loss of good standing [should] be of concern to the PTO." The PTO agrees in part. Suspension from a State bar for failure to pay dues will not be viewed by the PTO as "misconduct." See §10.23(c) (5), which has been changed to define misconduct as suspension or disbarment on ethical grounds. If an attorney is suspended by his or her State bar for failure to pay bar dues, and for that reason is no longer in good standing before the State bar, that attorney is no longer an attorney within the meaning of §10.1(c). An attorney suspended from his or her State bar for failure to pay bar dues would no longer be eligible to represent individuals before the PTO in trademark and other non-patent cases.

One commentator suggested that the second sentence of §10.1 be changed to read: "Nothing in this subpart shall be construed to preempt the authority of each State to regulate the practice of law, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives." The suggestion is being adopted. The commentator noted that as originally proposed in the notice of proposed rulemaking, the phrase "to maintain control over the practice of law within its borders" is unduly restrictive. The commentator correctly pointed out that "[c]ertainly, New York would have the authority to regulate the practice of law by a New York attorney residing in Fla."

Another commentator noted the language "federal objectives" in §10.1 and felt it would be appropriate for the PTO "to set forth what the federal objectives really are." The PTO does not believe it is appropriate to set out in the regulations specific federal objectives. The PTO engages in the examination of applications for patents, reexamination of issued patents, examination of applications for registrations of trademarks, and numerous *inter partes* patent and trademark proceedings. The federal objectives of the PTO center around these activities.

With respect to §10.2(c), one commentator argued that "it is unfair to require the payment of a fee to review a final decision of the Director." The PTO disagrees. The review provided by §10.2(c) is a service preformed by the PTO for which a fee may be charged. There is no compelling reason for not charging a fee.

Several comments were received discussing §10.4. One commentator suggested "that a provision for no discovery or testimony from a member of the Committee on Discipline is unfair and inappropriate." The PTO does not believe that a "mini-trial" should be conducted in a subsequent disciplinary proceeding of how or why the Committee on Discipline reached its decision. The commentator also argued that 10.4(c) "would be in direct conflict with the Federal Rules of Civil Procedure" in any review in the U.S. District Court for the District of Columbia. Again, the PTO disagrees. The Federal Rules of Civil Procedure do not apply to disciplinary cases in the PTO. Moreover, those rules do not apply in cases seeking judicial reivew of a decision of the Commissioner in a disciplinary matter. Applicable law (35 U.S.C. 32 and Local Rule 1-26 of the district court) provides for review on the record made in the PTO. See also *Camp* v. *Pitts*, 411 U.S. 138 (1973). Hence, there is no discovery in a proceeding under 35 U.S.C. 32.

Comments were received which suggest that the associate and assistant solicitors in the Office of the Solicitor cannot be isolated from the Solicitor and the Deputy Solicitor. The associate and assistant solicitors are to be isolated so that (1) the associate and assistant solicitors may act as attorney for the Director in prosecuting a disciplinary proceeding and (2) the Solicitor and Deputy Solicitor may act as legal advisor to the Commissioner in deciding a disciplinary matter. In disciplinary matters, the associate and assistant solicitors will report directly to the Director. Associate and assistant solicitors will not have occasion to discuss disciplinary matters with the Solicitor or Deputy Solicitor.

The following discussion in the *Attorney General's Manual on the Administrative Procedure Act*, pp. 57-58 (1947), commenting on original §5(c) (now 5 U.S.C. 554(d)) is believed particularly relevant to the issues raised in the comments:

> Assuming that an agency will in many cases wish to consult with certain of its staff members, it may proceed in one of two ways. It may in a particular case consult with staff members who in fact have not performed investigative or prosecuting functions in that or a factually related case. In the alternative, the agency may find it feasible so to organize its staff assignments that the staff members whom it most frequently desires to consult will be free of all investigative and prosecuting functions.
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> [I]f the agency so organizes its staff that the general counsel is not responsible for the investigative and prosecuting functions, he would be regularly available to the agency for consultation on the decision of cases.[8]

Several commentators suggested that members of the public or the PTO bar should be members of the Committee on Discipline. This suggestion is not being adopted. As noted in the notice of proposed rulemaking (49 F.R. 33793, column 2, last paragraph), there are two reasons for not adopting the suggestion. Use of individuals outside the PTO is made difficult by 35 U.S.C. 122. Administrative delays would take place because it would be more difficult to schedule meetings.

One commentator suggested that the language "at least" in the phrase "at least three employees of the Office" should be deleted from the second sentence of §10.4(a). This suggestion is not being adopted. The"at least" language will permit the Commissioner to appoint alternate members to substitute for a member who may be disqualified or who may be unavailable for an extended period.

Section 10.10 provides that only practitioners who are registered under §10.6 or individuals given limited recognition under §10.9 will be permitted to prosecute patent applications of others before the PTO. One comment was received which noted that the rules do not address the "status" of (a) "an individual in a training program directed to the preparation and prosecution of applications for patent" or (b) "a long-time employee working within a patent organization in the area of preparation and prosecution of applications for patent, but has never become registered to practice as either a Patent Agent or Patent Attorney." The commentator suggested that the rules should state what such individuals or employees may do. The suggestion is not being adopted. Only registered practitioners (attorneys and agents) may practice patent law before the PTO. The commentator also suggested that the rules should provide that long-time corporate or government employees who have never been registered should be given limited recognition by the PTO. This suggestion is not being adopted. Limited recognition will be given only on a case-by-case basis. See §10.9.

[8] The general counsel's participation in rule making and in court litigation would be entirely compatible with his role in advising the agency in the decision of adjudicatory cases subject to section 5(c).

One comment suggested that "applicants" and "trademark applications" in the first sentence of §10.14(c) rendered it unclear whether an individual authorized to practice before the PTO in trademark cases could prosecute post-registration cases, such as a cancellation proceeding. The rule has been clarified by changing "applicants" to "parties" and "trademark applications" to "trademark cases". An individual authorized to represent others under §10.14 is authorized to appear in any trademark case.

Several comments were received discussing §10.18. One comment made at the hearing suggested that the rule should specify who should read the paper being signed. The commentator stated: "I think it would be salutary if what you really mean is that the practitioner who signs it has read it." The suggestion is being adopted and the language of §10.18(a) (1) has been changed from "the paper has been read" to "the paper has been read by the practitioner".

Two individuals commented that requiring the signature of a practitioner would eliminate the "custom" of having an associate sign the name of a principal attorney on a paper which the principal authorizes the associate to file. Section 10.18 requires that the practitioner signing the paper sign his or her own name. The rule would permit associate attorney John Smith to sign on behalf of principal attorney David Jones by signing the paper as follows: "David Jones by John Smith." The rule would not permit Smith to merely sign Jones' name or to sign "David Jones by JS." The rule does not authorize a non-practitioner (e.g., a para-legal or secretary) to sign a paper on behalf of a practitioner.

One comment asked the following:

> Assume an inventor is under Final Rejection and the period for proper response is near at hand. The attorney is now instructed to "keep the case alive" until a CIP [continuation-in-part] is prepared and filed. For reasons outside the control of the attorney, the CIP cannot be filed in time. Assume now the attorney files a Notice of Appeal, *never intending* to prosecute the appeal, intending only to buy time until the CIP can be filed. Would the filing of the Notice of Appeal violate Rule 10.18 and subject the attorney to PTO disciplinary action?

A notice of appeal is a proper response to a final rejection. Accordingly, it would not appear under the circumstances outlined that the notice of appeal was "interposed for delay" within the meaning of §10.18(a) (4).

Three comments were received discussing §10.22. One comment suggested that modifiers, such as "knowingly" and "willfully" be inserted in paragraphs (a) and (b) of §10.22. The suggestion is not being adopted. A "materially false statement," a failure "to disclose a material fact," or furthering the application of another "known . . . to be unqualified" constitute acts which cannot be characterized as innocent. Accordingly, there is no need to insert the "modifiers" in the text of the rule. Another commentator suggested that the provisions of §10.22 are not relevant to the federal objectives of the PTO. The PTO disagrees. Practitioners who (1) fail to tell the truth, (2) fail to reveal material information or (3) knowingly further the application of an unqualified individual to a bar, demonstrate that they are "disreputable" within the meaning of 35 U.S.C. 32. A third commentator suggested that §10.22(b) is too broad because a practitioner could recommend an individual for membership in a bar and the individual might fail to pass the bar examination. Unless a practitioner has good reason to know that the individual will fail to pass a bar examination, it is not apparent how the practitioner's recommendation could amount to a violation of the PTO Code of Professional Responsibility.

Numerous comments were received discussing §10.23. One comment suggested that §10.23(c) (8) be changed to require notification of a client rather than requiring correspondence to be forwarded. This suggestion has been adopted by making appropriate changes to §10.23(c) (8).

A suggestion was made to delete the reference to $5000 in §10.23(c) (17). This suggestion is not being adopted. See the discussion in the advance notice, 49 F.R. 10016, column 1.

A suggestion was made that §10.23(c) (5) has "a built-in inequity as regards different patent attorneys in different states." According to the commentator, a practitioner suspended for an act by Ohio might not be suspended for the same act by New York. The commentator reasons it would be unfair for the Office to suspend the Ohio practitioner, but not the New York practitioner. The commentator's concern is not warranted in view of the second sentence of §10.1.

Another commentator noted that §10.23(a) (3) "points up the difficulty of superimposing . . . [a] set of rules on of the various local jurisdictions." Here again, the commentator's concern is not believed warranted in view of the second sentence of §10.1. Another commentator noted that "moral turpitude" is hard to define. It was suggested that possession of marijuana is regarded as a crime involving moral turpitude in some states where a 99-year sentence may be received. It was suggested that in other states possession of marijuana might result in "a slap on the wrist." If a practitioner is incarcerated for a crime in a state, it follows that the practitioner is not capable of representing individuals before the Office. This is true even if the same practitioner would not have been incarcerated in another state for the same act.

The Florida Bar raised a question concerning §10.23(c) (5) which is answered under the discussion above of §10.1. Section 10.23(c) (5) has been changed to make suspension or disbarment "on ethical grounds" a basis for suspension or disbarment by the Office. "Ethical grounds" would include incompetence, but would not include failure to pay State bar dues.

One comment suggested that "disreputable" and "gross misconduct" in §10.23(a) be defined. The terms "disreputable" and "gross misconduct" appear in 35 U.S.C. 32 and need no further definition in the rules. For a discussion of "disreputable," see *Poole* v. *United States*, 54 A.F.T.R. 2d (P-H) 84-5536 (D.D.C. June 29, 1984).

Several comments suggested that the Model Rules of Professional Conduct of the American Bar Association (1983) be adopted in place of §10.23. Adoption of the Model Rules was given consideration prior to publication of the advance notice and the notice of proposed rulemaking. The matter has been considered again. However, it has not been demonstrated to the Office that a large number of states have adopted the Model Rules. As noted in the notice of proposed rulemaking, at least Va. has rejected the Model Rules. Accordingly, the PTO will not, at this time, adopt the Model Rules. If a large number of states adopt the Model Rules in the future, the PTO would be willing to reconsider its position.

One comment suggested that "before the Office" be inserted after the word "conduct" in §10.23(b) (4), (5), and (6). This suggestion is not being adopted in view of the second sentence of §10.1.

A suggestion was received that "improperly" be inserted at the beginning of §10.23(c) (4) (iii). This suggestion has been adopted.

A suggestion was received that the word "patent" be inserted before "application" in §10.23(c) (7). This suggestion has been adopted.

A suggestion was received that §10.23(c) (15) be changed so that a trademark practitioner could present potentially scandalous subject matter in order to receive a determination on the merits of registrability. See e.g., *In re McGinley*, 660 F.2d 481, 211 USPQ 668 (CCPA 1981). Section 10.23(c) (15) has been changed to refer only "making a scandalous or indecent statement in a paper filed in the Office."

Several individuals suggested that it may be difficult to determine the identity of tunder §10.23(c) (8), particularly in corporate patent departments. The PTO will presume that practitioners know the identities of their clients and that information conveyed to the client is being conveyed in a manner acceptable to the client.

Section 10.23(c) (12) has been changed in response to

comments which suggested that it would be difficult for practitioners to comply with §10.23(c) (12) on the one hand and §§10.24 and 10.131 on the other hand. The purpose of §10.23(c) (12) is to eliminate a frivolous complaint against practitioners. Accordingly, §10.23(c) (12) has been changed to define as misconduct "knowingly filing, or causing to be filed, a frivolous complaint alleging a violation by a practitioner of the Patent and Trademark Office Code of Professional Responsibility."

Several individuals criticized §10.24. The provisions of §10.24 are derived from DR 1-103 of the Code of Professional Responsibility of the American Bar Association (1970)—the rule currently applicable to practitioners. See 37 CFR §§1.344 and 2.13. The PTO is not aware that the current rule causes any problems. Accordingly, the numerous suggestions to delete or amend §10.24 are not being adopted.

One comment was received which suggested that charging another person with trademark infringement and requesting that the person withdraw a pending application "might be . . . interpreted as a violation" of §10.31(a). The PTO disagrees. A reasonable interpretation of the rule does not justify the unreasonable construction by the commentator.

At the hearing, an individual discussed §10.32. The individual suggested that three "practices" should be sanctioned under any PTO Code of Professional Responsibility and it was suggested that all three practices might be prohibited by §10.32. *First,* the individual suggested that "the giving of moderately priced presents . . . to established clients on appropriate occasions—Christmas, weddings of their daughters" should not constitute a violation of §10.32. The PTO agrees. The giving of a gift to an "established client" on the occasions suggested is not a gift "to a person for recommending the practitioner's services." *Second,* the individual suggested that a practitioner should not be prohibited from "paying for ordinary client entertainment." The PTO agrees. Again the "client" is not "a person recommending the practitioner's services" in return for being entertained. *Third,* the individual argued that the rules should not preclude an "exchange of cases with foreign practitioners." An "exchange" was said to occur "[w]here a foreign patent practitioner in his country sends cases to an American patent or trademark practitioner to prosecute before the PTO, and you send the foreign firm cases to prosecute before the foreign patent office, on the more or less explicit basis that it's something in the nature of a trade." According to the individual, the "exchange" ordinarily takes place without knowledge of the practitioner's client. The individual expressed the opinion that "exchanges" without knowledge of the client presently occur routinely. The PTO believes that the suggested "exchange" may ethically take place *only* when the practitioner's clients are fully advised of the exchange. Three other witnesses at the hearing expressed the view—correctly the PTO believes—that client knowledge is essential to an ethical exchange of the type contemplated. No change in §10.32 is being made.

A suggestion was received that "in matters before the Office" be inserted after "professional employment" in §10.33. The suggestion is not being adopted in view of the second sentence of §10.1. Another comment suggested that Rule 7.3 of the Model Rules of Professional Conduct (1983) be adopted in place of §10.33. The suggestion is not being adopted. Section 10.33 is based partly on Rule 7.3, but contains the additional language "under circumstances evidencing undue influence, intimidation, or overreaching." Section 10.33 is designed to prohibit so-called "ambulance chasing." In *Ohralik* v. *Ohio State Bar Ass'n.,* 436 U.S. 447 (1978), the Supreme Court held that a state could lawfully regulate ambulance chasing. In its opinion, the Supreme Court said:

> We need not discuss or evaluate each of these interests in detail as appellant has conceded that the State has a legitimate and indeed "compelling" interest in preventing those aspects of solicitation that involve fraud, undue influence, intimidation, overreaching, and other forms of 'vexatious conduct.' We agree that protection of the public from these aspects of solicitation is a legitimate and important state interest.

436 U.S. at 462. The additional language appearing in §10.33 is designed to limit the application of §10.33 to those situations in which the PTO has a legitimate interest. See also 35 U.S.C. 32 and §10.31(a).

A suggestion was received that §10.35(b) should be deleted. According to the suggestion, "[r]egulation of the practitioner's business arrangements should be left to state regulation." While the PTO is in general agreement with the rationale suggested, there exist partnerships of agents which are not subject to regulation by any state. Moreover, the commentator has not suggested or shown that §10.35(b) is inconsistent with the policy of any state. Practitioners should not be free to hold themselves out as being associated with a partnership or other organizations when an association does not in fact exist.

One comment suggested that "in the locality" be deleted from §10.36(b)(3). This suggestion is being adopted, because "in the locality" has no particular significance in the practice of patent and trademark law. Clients of patent and trademark practitioners are not necessarily located where counsel are located. Moreover, the practice is national in scope.

An individual at the hearing suggested that the PTO should delete subparagraphs (1) and (2) from §10.37(a). This suggestion is not being adopted. The individual suggested that a client need not know that "employment" has been referred to another practitioner or to a foreign practitioner. The PTO disagrees and so did three other individuals who expressed a view at the hearing. Moreover, the PTO believes that when "farming out" occurs with the consent of a client, that the fee division should be proportional to the services rendered. Under § 10.37, "farming out" of work without knowledge and consent of a client will constitute a disciplinary rule violation.

One commentator suggested that §10.39 "may result in numerous claims to the effect that a practitioner brought a proceeding 'merely for the purpose of harassing or maliciously injuring another person.' " Section 10.39 continues existing policy (37 CFR §1.344 and DR 2-109 of the ABA Code (1970)). Under existing policy, the PTO has not experienced "numerous claims." Accordingly, there is no reason to expect such claims under §10.39.

A suggestion was received that the first sentence of §10.40(a) be changed to read: "A practitioner may withdraw from employment in a proceeding before the Office without permission from the Commissioner in those instances in which a substitute has been selected and is willing to serve." This suggestion is not being adopted. If "a substitute has been selected and is willing to serve," presumably with the consent of the client, a new power of attorney may be filed in the PTO. Another commentator suggested that §10.40 should not apply to corporate attorneys. This suggestion likewise is not being adopted. If a corporate atorney changes jobs, the attorney should withdraw from representing the "old" corporation *or* the old corporation should revoke any power of attorney.

One comment suggested that the PTO should be under a burden of deciding requests for permission to withdraw within thirty (30) days. This suggestion is not being adopted, but it is and will continue to be PTO policy to promptly decide requests for permission to withdraw.

One comment suggested that ", and may not withdraw in other matters," be deleted from §10.40(c). This suggestion has been adopted.

One comment asked whether a power of attorney given during prosecution of a patent application continues to be viable after the patent is issued. The answer is "yes." Communications received during reexamination proceedings are sent to the correspondence address established during prosecution of the application which matures into the patent being reexamined. See 37 CFR §1.525. Notices concerning maintenance fees likewise are mailed to the correspondence address. See 37 CFR §1.363, 49 F.R. 34725 (Aug. 31, 1984). The commentator also raised a question of who is the client when a case is filed on behalf of an individual, but the individual's assignee pays the practitioner's bills. Practitioners are expected to know the identities of their clients. If a practitioner is hired by a corporation and wishes to make that fact plain on the record of a patent application, the practitioner may file an assignment and a power of attorney signed by the assignee. If a dispute should then occur between the individual and the assignee, the record would be clear that the assignee is the client.

A comment suggested that §10.40(a) "would appear to be unreasonable" in view of the language "giving due notice to another practitioner." Such language does not appear in §10.40(a).

An oral comment was received by phone which questioned whether the use of para-legals or apprentices by a practitioner constitutes the unauthorized practice of law. If a para-legal or apprentice works under the direction of a practitioner and the practitioner does not allow the para-legal or apprentice to hold themselves out as a practitioner, there is no unauthorized practice of law problem within the meaning of §10.47.

One comment discussing §10.49 made the following statement:

> ". . . if the intent of this section is to prohibit a practitioner from forming a partnership with a lawyer who, while in good standing with his State bar, does not qualify to practice before the Office (either because he has not taken the patent examination or is not qualified to handle trademark matters), then it should be stricken."

As explained in the notice of proposed rulemaking (49 F.R. 33797, column 3), the PTO does not intend to prohibit formation of law firms by members of the Bar of any state.

One comment suggested that "in matters before the Office" should be inserted after "employment" in §10.62(a). This suggestion is not being adopted in view of the second sentence of §10.1.

Another comment suggested that §§10.62 and 10.63 be replaced with Rule 3.7(b) of the Model Rules of Professional Conduct of the ABA (1983). For reasons already discussed, the PTO is not adopting the Model Rules. The comment went on to suggest that practitioners would not be free testify concerning attorney diligence in patent interference cases. The PTO has made it plain twice that it disagrees. See the advance notice (49 F.R. 10016, column 3 (Mar. 16, 1984)) and the notice of proposed rulemaking (49 F.R. 33797, column 3, last paragraph (Aug. 24, 1984)).

A comment suggested that language in §§10.62 and 10.63 is not clear. Specifically, the commentator referred to "solely to an uncontested matter" or "solely to a matter of formality." This language occurs in the current rules and has not caused any known difficulty.

Two comments were received which suggested that §10.64(b) should permit practitioners to pay fees which rightfully should be paid by a practitioner. This suggestion is being adopted and the following sentence has been added to §10.64(b): "A practitioner may, however, advance any fee required to prevent or remedy an abandonment of a client's application by reason of an act or omission attributable to the practitioner and not to the client, whether or not the client is ultimately liable for such fee." One of the commentators supplied the following rationale with which the PTO agrees:

> It sometimes happens that payment of a fee is necessitated by some act or omission for which the practitioner and not the client is responsible. One example is a fee for an extension of time to respond to an Office Action (see 37 C.F.R. §1.17 and §1.136), where the delay has resulted from the practitioner's workload for other clients, or from the practitioner's absence from his or her office for purposes unrelated to the client's business. Another example is a petition fee for revival of an application unintentionally abandoned through some inadvertent oversight on the practitioner's part. In these circumstances, it would seem unjust to require the client to bear the cost of the fee.

One comment suggested that §10.65 should be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

Another comment suggested that §10.65(a) "may limit a practitioner serving on the board of directors of a client." The commentator went on to say that practitioners serving on boards of directors is a common practice. Inasmuch as the client consents to practitioner serving on the board, it is believed that §10.65 does not limit a practitioner as suggested by the commentator.

One comment was received which suggested that §10.66(d) be changed to exclude corporate patent departments. According to the comment, "why should an entire corporate patent department have to withdraw if one of its members has to withdraw for disciplinary reasons?" In situations where it would not be appropriate for an entire firm or department to withdraw, §10.66(d) permits the Commissioner or the Director to so order. See e.g., *Sunkist Growers, Inc.* v. *The Benjamin Ansehl Co.,* 221 USPQ 1077 (Comm'r.Pat. 1984). Another comment suggested that §10.66 should be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

One comment was received which suggested that §10.67 be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

A comment was received which suggested that §10.68(c) might be construed to preclude a practitioner from joining a law firm where attorneys who are not registered to practice before the PTO "are in control," i.e., are the "senior" partners. The definition of practitioner (see §10.1(r)) precludes such a construction, because any attorney in good standing in any State is a practitioner. Another comment suggested that §10.68 be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

One comment was made at the hearing which suggested that modifiers, such as "knowingly, willfully, intentionally," be inserted in §10.77. This suggestion is not being adopted. The PTO believes §10.77 states clearly the prohibited conduct.

A comment was received which suggested that §§10.77, 10.78, and 10.84 be amended to indicate that they refer only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

One comment suggested that the term "unwarranted" in §10.85(a) (2) is "too vague as to its limits." The PTO disagrees. Contrary to the suggestion by the commentator, it is believed that practitioners can readily determine whether they are advocating a position that is unwarranted under existing law.

A comment was received which suggested that §10.85(b) can place a difficult burden on patent counsel. In support of his position, the commentator gave two examples and commented on both examples as follows:

> *Example 1:* A client engages a patent attorney in the preparation of a patent application, and the patent attorney goes through the usual routine of advising the client of statutory bars, duty to disclose, etc. The attorney prepares and files the application, and during the course of the prosecution, the client informs the attorney of some activities that occurred a couple of years before filing the application, which activities might constitute an offer for sale. The attorney advises that this must be disclosed to the Patent Examiner, but the applicant refuses to follow this course of action and discharges the patent attorney. The client then engages another attorney to complete the prosecution, without telling the new attorney of the potentially damaging prior art.
>
> *Comment:* In accordance with my interpretation of

§10.85(b), the first attorney would be required to disclose this situation to the Office, unless the term "prepetrated a fraud" as it appears in that rule does not include the deliberate failure to disclose relevant prior art. My concern is that this could make for some very poor relationships with the client who might not understand the attorney's duty of disclosure before the Office.

Example 2: A rather poor inventor has managed to drum up enough money for the filing fee for a patent application and then proceeds to prepare and file his own patent application, without the assistance of a patent attorney. After a few months, the inventor obtains some financing from an investor, and the inventor and the investor consult the patent attorney to see if he would continue with the prosecution of the application. The attorney reviews the fact pattern and informs both the inventor and the investor that there is unquestionably some prior art, in the form of an earlier publication by the inventor, which must be disclosed before the Office. When the inventor and the investor find that the attorney intends to disclose this prior art as soon as he is engaged as their attorney, the inventor and the investor tell the attorney that they would rather engage the services of some other patent attorney, and that they will not tell the second attorney of the prior art.

Comment: As I would interpret §10.85 (b), the first patent attorney would be obliged to inform the Office of the relevant prior art. The first patent attorney would likely have the serial number and filing date of the application, and it would appear to me that the patent attorney would have to disclose not only the prior art, but also disclose the intent of the inventor and the investor not to disclose the same. This is pretty harsh treatment, and I can see where the inventor and the investor would have some very hard feelings against the patent attorney.

The PTO agrees that under the circumstances of Example 1, a "client . . . might not understand the attorney's duty of disclosure . . . " Likewise, the PTO can understand "where the inventor and the investor [in Example 2] would have some very hard feelings against the patent attorney." Nevertheless, the commentator has correctly noted in each case that the practitioner is required to advise the PTO. The practitioner's obligation under §10.85(b) has not been changed by the rules and is mandated by *Kingsland* v. *Dorsey,* 338 U.S. 318 (1949). See also Nahstoll, *The Lawyer's Allegiance: Priorities Regarding Confidentiality,* 41 Wash. & Lee L. Rev. 421 (1984).

A comment was received which suggested that §10.85 be amended to indicate that it pertains only to matters before the PTO. The suggestion is not being adopted in view of the second sentence of §10.1.

Two comments were received which suggested that §10.87(a) could be construed to prohibit a practitioner from recommending that a client meet with an opposing party for settlement discussions. Both comments suggested that §10.87(a) be amended to permit a practitioner to recommend that a client engage in settlement discussions directly with an opposing party. The suggestion is being adopted and the following sentence has been added to §10.87(a): "It is not improper, however, for a practitioner to encourage a client to meet with an opposing party for settlement discussions."

A suggestion was made that §10.87 be amended to indicate that it pertains only to matters before the PTO. The suggestion is not being adopted in view of the second sentence of §10.1.

One comment suggested that §10.89(c) (5) be "eliminated on the grounds of vagueness" because one cannot "be expected to comply with apparently unpublished customs of courtesy or practice." The suggestion is being adopted. Subparagraph (6) of §10.89(c) is being redesignated as subparagraph (5) and has also been changed to read: "Engage in undignified or discourteous conduct before the Office (see §1.3 of this Subchapter)." Subparagraph (7) has been redesignated as subparagraph (6).

Another comment discussing §10.89 asked "since when must counsel cite to the Examiner in *ex parte* proceedings cases known to be directly adverse to the position being advocated?" Counsel are expected to advise patent and trademark examiners of known controlling authority which is contrary to a position being advocated. It is important for counsel to do so in *ex parte* cases because there is no *advocate* taking a position contrary to the position being taken by an applicant. See also *Southern Pacific Transportation Co.* v. *Public Utilities Commission of the State of Calif.,* 716 F.2d 1285, 1291 (9th Cir. 1983).

A commentator contended that §10.89(a) "makes no sense" because a decision of the PTO may have been overruled by the Federal Circuit. Section 10.89(a) is limited to "a decision of the Office made in the course of a proceeding." Practitioners are expected to follow interlocutory orders entered in PTO proceedings. Obviously if such an order is ultimately overruled or reversed by a court, it no longer need be followed. The same commentator suggested that §10.89(c) (3) is not appropriate. Specifically, the commentator indicated that practitioners often rely on the specification of a patent application and prior art. The specification and prior art are evidence, not the "practitioner's personal knowledge."

One commentator suggested that §§10.92 and 10.93 be amended to indicate that they relate solely to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

A commentator at the hearing suggested that §10.93 be changed to permit practitioners to discuss procedural matters with interlocutory examiners or members of the Board of Patent Interferences or the Trademark Trial and Appeal Board. In view of Public Law 98–622, November 8, 1984, the Board of Patent Interferences will cease to exist on February 8, 1985. All patent interference cases will be transfered to the Board of Patent Appeals and Interferences and will be assigned to an examiner-in-chief. Practitioners may consult an examiner-in-chief orally upon adequate notice to opposing counsel. A telephone conference call may be arranged when opposing counsel desires to participate in the oral consultation. The same is true of the interlocutory examiners or members of the Trademark Trial and Appeal Board. Questions of a purely procedural nature may be asked. However, an examiner-in-chief or the interlocutory examiner or member of the Trademark Trial and Appeal Board may nevertheless decline to answer procedural questions without opposing counsel being present or involved in a conference call.

One commentator suggested that §§10.101, 10.102, 10.103, and 10.111 be amended to indicate that they refer only to proceedings in the PTO. The suggestion is not being adopted in view of the second sentence of §10.1.

One comment suggested that practitioners residing in the United States should be able to maintain trust funds in a bank in any State. This suggestion is being adopted and §10.112(a) has been changed to implement the suggestion. However, if a State bar requires funds to be kept in a bank within the State, a practitioner would be required to keep funds in a bank in the State in order to comply with State rules. Another comment suggested that §10.112(c)(2) is not practical. According to the commentator, "invention samples and invention disclosures and drawings usually are the client's property, but keeping them in a safe deposit box is totally impractical." The commentator overlooks that portion of §10.112(c)(2) which reads "in a safe deposit box or other place of safekeeping . . . ." A client may consent to a practitioner keeping invention samples, invention disclosures, and drawings in the practitioner's office. The practitioner, of course, should see to it that the office is maintained with appropriate security.

An individual testified at the hearing that §10.112 is not clear. According to the individual, "I think the rules should specify that if you get money up front from a client, whether it's called a retainer, pre-payment, or whatever . . . that money has to be put into a trust fund or a

trust account . . . and that you can't take the money out and spend it until you have performed the services and sent a bill to the client that says X dollars has come out of your trust account in payment of Y services." The PTO believes that §10.112(b)(2) specifies "that you can't take the money out and spent it until you have performed the services" and that §10.112(c)(3) specifies that you must send "a bill to the client." Accordingly, no change to §10.112 is necessary.

One commentator testified at the hearing that the PTO rules do not address "those individuals who, due to a mental or physical defect, are not able to bring themselves in conformity with the rules of conduct . . . ." On the contrary, §10.130 specifies that any practitioner shown to be "incompetent" may be suspended or excluded. The commentator at the hearing referred to an individual "who has a drinking problem or one who is mentally incapable of representing people before the . . . Office." The statute (35 U.S.C. 32) and the rules address such an individual. As noted in the advance notice, the PTO has declined to adopt the suggestion appearing in Manson, *Helping Lawyers Who Need Help (But Won't Ask for It!),* 25 Va. Bar News 27 (June 1977). See 49 F.R. 10017, column 1 (Mar. 16, 1984). If an individual is suspended due to a drinking problem, reinstatement (see §10.160) may be conditioned on a clear and convincing showing that the drinking problem has been overcome.

One individual testified at the hearing that a "statute of limitations" should be inserted in §10.131. This suggestion is not being adopted. As the individual noted during testimony, statues of limitations do not apply in disciplinary proceedings.

A suggestion was received that §10.132 be changed to expressly provide that:

> No disposition adverse to the respondent shall be recommended by the Director until the respondent shall have been afforded the opportunity to be heard.

This suggestion is not being adopted. Section 10.132(a) provides that, where necessary, the Director shall comply with 5 U.S.C. 558(c) prior to calling a meeting of the Committee on Discipline. The relevant portion of 5 U.S.C. 558(c) provides:

> Except in cases of willfulness or those in which public health, interest, or safety required otherwise, the withdrawal, suspension, revocation, or annulment of a license is lawful only if, before the institution of agency proceedings therefor, the license has been given;
>
> (1) notice by the agency in writing of the facts or conduct which may warrant the action; and
>
> (2) opportunity to demonstrate or achieve compliance with all lawful requirements.

Where appropriate, a notice under §588(c) will be issued prior to the time the Director takes a case to the Committee on Discipline. Any reply to the §558 (c) notice will be reviewed by the Director and the Committee on Discipline prior to deciding whether a complaint should be filed.

Another suggestion was received which indicated that §10.132(c) should be changed so that the "accused practitioner . . . [would] have the right to select an administrative law judge from a panel of such judges, such panel including the names of at least two law judges." This suggestion is not being adopted. No rationale was given in support of the suggestion and there is no known reason to permit a respondent to select the particular administrative law judge (ALJ) to be assigned to hear the practitioner's case.

Several changes have been made in §10.133 by the PTO which are not in response to any comment or suggestion. The language "§§10.132(b) and 10.134" in the first sentence of §10.133(b) has been changed to §10.134". This change was made because a reference to §10.132(b) is not necessary. The language "his or her resignation by filing" in the first sentence of §10.133(b) has also been deleted as unnecessary. The second sentence of paragraph (b) of §10.133 has been replaced by new paragraphs (c) and (d). New paragraph (c) specifies the content of an affidavit of resignation filed prior to the date set by the ALJ for a hearing. New paragraph (d) specifies the content of an affidavit of resignation filed on or after the date set by the ALJ for a hearing. Old paragraph (c) has been redesignated as new paragraph (e) and the language "paragraph (b)" therein has been changed to read "paragraphs (b) and (c)". Old paragraphs (d) and (e) have been redesignated as new paragraphs (f) and (g), respectively.

New paragraph (c) of §10.133 has been added to define the conditions under which a practitioner may resign prior to the date set by the ALJ for a hearing. Experience has shown that practitioners do not readily resign prior to hearing if they are required to admit the charges against them and/or are required to admit that they could not have been defended against the charges or the subject of an investigation. Paragraph (c) does not require a practitioner to admit the charges or any lack of defense at the time of resignation. Rather, under §10.133(c)(5), any admission is operative at the time of a request for reinstatement and only for the *limited* purpose of determining the request for reinstatement. By deferring the time when the practitioner makes the admissions, it is believed that settlements are more likely. Once a hearing begins, however, there is no reason to permit a resignation without admission of the facts and a lack of defense. The admissions of paragraph (c)(5) are relevant in determining whether reinstatement should be granted and whether sufficient time has passed between resignation and any application for reinstatement.

One comment was made at the hearing which suggested that "if, in fact there is a real stalemate in a settlement discussion, that there be some avenue so that there be, in essence, binding arbitration" on the part of the respondent and the Director. This suggestion is not being adopted. There is no reason to impose binding arbitration in disciplinary matters. While settlements are to be encouraged, if the parties (the respondent and the Director) cannot reach a mutually agreeable settlement, the proper recourse is to proceed with the disciplinary proceeding.

A suggestion was received that the second sentence of §10.138 be deleted. The suggestion is not being adopted. The second sentence of §10.138 provides that evidence obtained by a subpoena under 35 U.S.C. 24 will not be admitted unless prior approval was obtained from the ALJ to proceed under §24. This provision is necessary to retain control over the proceedings in the ALJ. Moreover, an order authorizing a party to proceed under §24 can be helpful to any district court which is required to determine whether an individual should be compelled to answer counsel's questions. Additional rationale in support of the PTO's decision not to adopt the suggestion appears in the advance notice (49 F.R. 10019, columns 1 and 2) and in the notice of proposed rulemaking (49 F.R. 33800, column 1).

Two individuals testified at the hearing concerning §10.144. Section 10.144 provides that hearings in disciplinary cases will not be open to the public. One individual suggested that hearings in disciplinary matters should be opened to the public. The other individual took the opposite position and supported §10.144 as proposed. The suggestion to open hearings to the public is not being adopted at this time. The PTO believes that a practitioner should not unnecessarily be exposed to charges of alleged wrongdoing until the practitioner is found to have violated the PTO Code of Professional Responsibility. Unnecessary and premature exposure could cause a practitioner's clients to find other counsel based on mere allegations. Additionally, the PTO is required to maintain information concerning patent applications in secrecy. 35 U.S.C. 122. In most disciplinary cases information concerning a patent application is revealed at any hearing. Accordingly, the PTO will not provide for public hearings. However, the PTO intends to further study the possibility of hearings open to the public (e.g., in a disciplinary proceeding involving only trademark matters) and may, in the future, propose to modify §10.144.

Numerous comments were received which suggested that the burden of proof set forth in §10.149 should be changed from "preponderance of evidence" to "clear and convincing evidence." As announced at the hearing, this suggestion is being adopted. The "clear and convincing evidence" standard brings §10.149 in conformance with §10.158(d)(1)(ii) which also requires proof by clear and convincing evidence.

The term "clear and convincing evidence" is not succeptable to a precise definition. The PTO, therefore, deems it appropriate to set forth its views on what constitutes "clear and convincing evidence." "Clear and convincing evidence" falls somewhere between proof beyond a reasonable doubt and proof by a preponderance of evidence.

A reasonable doubt is a doubt based upon reason and common sense—the kind of doubt that would make a reasonable person hesitate to act. Proof beyond a reasonable doubt must, therefore, be proof of such a convincing character that a person would be willing to rely and act upon it unhesitatingly in the most important of his or her affairs. Devitt, *Federal Jury Practice and Instructions* §11.01 (2d ed. 1970).

To establish a fact by a preponderance of evidence means to prove that fact is more likely so than not so. A preponderance of evidence means such evidence as, when considered and compared with that opposed to it, has more convincing force, and produces in the mind of the trier of fact a belief that what is sought to be proved is more likely true than not true. Devitt, *supra* at §7.01.

Clear and convincing evidence is that measure or degree of proof which will produce in the mind of the trier of fact a firm belief or conviction as to an allegation sought to be established; it is more than a preponderance of evidence, but less than that required to establish guilt beyond a reasonable doubt. *Hobson* v. *Eaton*, 399 F.2d 781 (6th Cir. 1968). It does not mean clear and unequivocal." *Fred C. Walker Agency, Inc.* v. *Lucas*, 215 Va. 535, 540–541, 211 S.E.2d 88, 92 (1975).

Several comments were received which suggested that §10.150 be changed to make the Federal Rules of Evidence applicable to disciplinary proceedings. The suggestion is not being adopted. The PTO has explained, in both the advance notice (49 F.R. 10020, column 2) and the notice of proposed rulemaking (49 F.R. 338001, columns 1 and 2) why it cannot adopt the Federal Rules of Evidence in disciplinary cases. The "Federal Rules of Evidence . . . do not apply to administrative proceedings . . . ." Davis, *Administrative Law Treatise*, §14.01 (Supp. 1970). The controlling law is set out in 5 U.S.C. 556(d) which provides in part: "Any oral or documentary evidence may be received, but the agency as a matter of policy shall provide for the exclusion of irrelevant, immaterial, or unduly repetitious evidence. A sanction may not be imposed or rule or order issued except on consideration of the whole record or those parts thereof cited by a party and supported by and in accordance with the reliable, probative, and substantial evidence." It appears to be the concern of some of the comments that the Administrative Procedure Act does not articulate an appropriate standard of evidence and that hearsay may be admitted. Suffice it to say that many adjudications occur daily under the Administrative Procedure Act, including disciplinary proceedings. The following language appearing in an opinion of the Eleventh Circuit in *TRW-United Greenfield Division* v. *National Labor Relations Board*, 716 F.2d 1391, 1394 (11th Cir. 1983), may be helpful:

> At the hearing the ALJ refused to allow five additional employees to testify that other employees told them that such a statement had been made. TRW contends it was denied a full and fair hearing by the exclusion of this testimony. The general rule is that administrative tribunals are not bound by the strict rules of evidence governing jury trials. *Opp Cotton Mills, Inc.* v. *Administrator of Wage & Hour Div.*, 312 U.S. 126, 155, 61 S.Ct. 524, 537, 85 L.Ed. 624 (1971). Thus, the admission of testimony which would be deemed incompetent in judicial proceedings would not invalidate the administrative order. *Tagg Bros. & Moorhead* v. *United States*, 280 U.S. 420, 442, 50 S.Ct. 220, 225, 74 L.Ed. 524 (1930). But this assurance of a desirable flexibility in administrative procedure does not go so far as to justify orders without a basis in evidence having rational probative force. Mere uncorroborated hearsay or rumor does not constitute substantial evidence. *Consolidated Edison Co.* v. *N.L.R.B.*, 305 U.S. 197, 230, 59 S.Ct. 206, 217, 83 L.Ed. 126 (1938). Therefore, the hearsay testimony of other employees would not have amounted to substantial evidence sufficient to support a finding for the company. We find that TRW was not denied a full and fair hearing by the judge's refusal to admit hearsay testimony.

See also *Steadman* v. *Securities and Exchange Commission*, 450 U.S. 91, 98 n. 17 (1981); *Richardson* v. *Perales*, 402 U.S. 389, 410–411 (1971); *Brown* v. *Gamage*, 377 F.2d 154, 158 (D.C.Cir.), *cert. denied*, 389 U.S. 858 (1967); Annotation, *Hearsay Evidence In Proceedings Before Federal Administrative Agencies*, 6 ALR Fed 76 (1971); and Davis, *Hearsay in Administrative Proceedings*, 32 Geo. Wash. L. Rev. 689 (1964).

A suggestion was received that §10.151 be changed to make the deposition rules of the Federal Rules of Civil Procedure applicable to disciplinary proceedings. This suggestion is not being adopted. The discovery provisions of the Federal Rules of Civil Procedure are not being adopted by the PTO in disciplinary cases. Except for discovery which the parties agree to make voluntarily, all discovery under these rules will require the prior permission of the ALJ. This prior permission is designed to insure that the ALJ retains control over the proceeding. By requiring prior approval of the ALJ to take a deposition, the rules insure that the deposition will relate to evidence the ALJ deems to be relevant and will afford the ALJ the option of determining whether he or she wishes to observe the witness.

Several comments were received which suggested that §10.152 be changed to permit more discovery. Some commentators urged adoption of the discovery provisions of the Federal Rules of Civil Procedure relating to requests for admissions, interrogatories, and requests for production of documents. Other commentators felt that the discovery proposed in the notice of proposed rulemaking was not sufficient and that more discovery should be authorized. These latter commentators, however, did not urge adoption of the discovery provisions of the Federal Rules of Civil Procedure. As one commentator noted:

> Disciplinary proceedings are not in the nature of civil actions and full discovery within the scope of the Federal Rules of Civil Procedure is probably not needed or desirable.

The PTO agrees that more discovery is appropriate than would have been authorized under §10.152 as proposed. The PTO does not agree, however, that discovery should be commensurate in scope with the discovery provisions of the Federal Rules of Civil Procedure.

One commentator at the hearing who urged adoption of the discovery provisions of the Federal Rules of Civil Procedure, correctly recognized the existence of "concerns of the Patent [and Trademark] Office regarding what are alleged to be general discovery abuses." There is ample basis for the PTO's concern. See e.g., Pollack, *Discovery—Its Abuse and Correction*, 80 F.R.D. 219 (1979) (reproducing remarks made by Judge Pollack at the Fifth Circuit Judicial Conference on April 26, 1978 at New Orleans). The same commentator at the hearing went on to note, however, that if the ALJ "gets on top of a case and monitors a case very actively, then no discovery abuses will occur, and if they do, they will be dealt with swiftly and properly."

Advocates of discovery "reform" seemingly rely on two principles which are claimed to be the cure-all for discovery abuse: (1) active control by the judge and (2) sanctions. See e.g. *Second Report of the Special Committee for the Study of Discovery Abuse*, 92 F.R.D. 137 (1980). The PTO is not in a position to impose the most effective sanction—costs. However, the PTO can invest the ALJ with control over discovery. It is because the PTO can invest the ALJ with control over discovery that the suggestion for more discovery is being adopted. Section 10.152 has been changed to permit discovery which the PTO believes will be effective. The scope of the discovery, however, will not be commensurate in scope with the Federal Rules of Civil Procedure.

Paragraph (a) of §10.152 will permit *limited* discovery *after* an answer is filed. Discovery is not authorized prior to the filing of an answer. A party seeking discovery will have to make out a clear and convincing case to the ALJ that discovery is necessary *and* relevant. If discovery is authorized, the ALJ may set conditions he or she deems appropriate to accomplish the discovery. For example, the ALJ may set the place and time for inspection of documents which are required to be produced or the ALJ can order a party to mail copies of the documents to the other party. Under paragraph (a) of §10.152, discovery is limited to a *reasonable* number of requests for admissions, interrogatories, or requests for production of documents and things. Consideration was given to setting numerical maximums for requests for admission, interrogatories and requests for production of documents and things. See e.g., Local Rule 11.1 of the U.S. District Court for the Eastern District of Virginia. However, numerical maximums are not presently specified. Should discovery become a problem, the PTO will give further consideration to limiting the number of discovery requests which a party may file.

Paragraph (b) of §10.152 specified certain matters which *cannot* be discovered. Matter which will be used by another party solely for impeachment or cross-examination cannot be discovered. Documents which will be used as part of the Director's case-in-chief or the respondent's case-in-rebuttal or affirmative defenses are subject to discovery. Patent applications not available to a respondent under 35 U.S.C. §122 are not subject to discovery. Matter relating to disciplinary proceedings commenced prior to the effective date of these rules is not available. For the most part, the reasons for a particular length of suspension or disbarment have not been stated in the past. Accordingly, disciplinary proceedings commenced prior to these rules are not particularly relevant. See *Poole* v. *United States*, 54 A.F.T.R. 2d (P-H) 84–5536 (D.D.C. June 29, 1984). Prior disciplinary proceedings which resulted in public discipline being imposed will continue to be available in the Office of the Director of Enrollment and Discipline. Respondents will continue to be free to inspect the files of those proceedings. Matters relating to experts, except as may be required by the ALJ under §10.152(e), likewise are not subject to discovery. Privileged matter and attorney work product are excluded from matter which can be discovered.

Paragraph (c) sets forth some factors the ALJ can consider in determining whether to authorize discovery or to limit discovery which is authorized. The factors include delay (which is a major consideration in disciplinary matters), burden on the party required to produce discovery, availability of the discovery sought to the public (in which case, discovery may not be necessary), the extent to which the matter sought to be discovered is equally available to both parties, and the extent to which discovery is available from another source.

Paragraph (d) of §10.152 requires a party desiring discovery to file a motion which explains, in detail, how each request is relevant to an issue raised in the complaint or the answer.

Paragraph (e) of §10.152 sets out matter which the ALJ can require a party to produce in a pre-hearing statement. Subparagraph (4) states the matter the ALJ can require disclosed related to experts.

The PTO has every reason to believe that the discovery authorized by §10.152 will be useful and that sufficient authority has been given to the ALJ to effectively control discovery and prevent abuses. The PTO intends to monitor discovery closely in the future and will consider amending these rules if abuses occur.

One comment suggested that §10.154(b) be modified by adding "any extenuating circumstances" as a matter to be considered in imposing a penalty. This suggestion is being adopted. Another comment suggested that §10.154 should address "probation." This suggestion is not being adopted. Nevertheless, the PTO has authority to place a practitioner on probation for all or a portion of any suspension and to revoke the probation upon a showing of a violation. See *In re Dula*, 1030 *Official Gazette* 20 (May 17, 1983).

One comment suggested that §10.155 be modified to specify that the Director should serve a copy of any appeal "on the respondent or on the attorney for respondent." This suggestion is not being adopted. However, in view of the suggestion the language "on the respondent" (both occurrences) in §10.155(a) is being deleted. Section 10.142(a) specifies how service is made on a respondent who is represented by an attorney.

A suggestion was received that §10.157 be modified to provide that a stay would be entered in every case where a respondent seeks judicial review of a decision of the Commissioner. This suggestion was rejected at the time the notice of proposed rulemaking was published (49 F.R. 33802) and is not being adopted. There are cases where a stay is not appropriate, e.g., when the disbarred practitioner is incarcerated. There are other times when a stay may be appropriate. Accordingly, stays will be granted in the discretion of the Commissioner.

Several comments were received discussing §10.158. Some commentators suggested that §10.158 was "too lenient" and another suggested that it was "too hard" on suspended and excluded practitioners. Section 10.158 is designed to advise suspended practitioners as to what they can and cannot do during any period of suspension. The PTO believes that §10.158 strikes a reasonable balance in a difficult area. See the discussion concerning §10.158 in the advance notice (49 F.R. 10021, columns 2 and 3). One comment suggested that §10.158 should be made applicable to corporations. This suggestion is being adopted by appropriate changes in §10.158(c) to refer to client-employers. Another comment suggested that §10.158(b)(1) and (2) be changed to refer to matters before the PTO. This suggestion is also being adopted.

An oral comment was received asking whether the Director could conduct an investigation in connection with a determination under §10.158(d). The Director may conduct whatever investigation is warranted to determine whether a suspended or excluded practitioner seeking reinstatement has complied with regulations relating to suspended and excluded practitioners.

A comment was received regarding §10.159(a) which suggested that the Director notify the American Bar Association National Discipline Data Bank when a practitioner is suspended or excluded. This suggestion is not being adopted as such. However, §10.159(a) has been changed to authorize the Director to notify "any appropriate bar association." The PTO is not inclined to mention any particular bar association by name in the rules. It will be the practice of the PTO to notify the National Discipline Data Bank, among others, when a practitioner is disciplined. Another comment suggested that the entire file of a disciplinary proceeding should not be open to the public when only some, but not all, charges are sustained. This suggestion is not being adopted. In most disciplinary matters, it would be highly inconvenient to segregate the relevant from the irrelevant. Moreover, once discipline is imposed, the principal rationale for keeping the file secret no longer exists. The disciplined practitioner will suffer whatever public embarassment results from discipline apart from whether part or all of the file is open to the public.

With respect to §10.160, one commentator suggested that the burden on the suspended or excluded practitioner for reinstatment be stated in the rules. This suggestion is being adopted and a "clear and convincing showing" requirement has been added to §10.160(c). Section 10.149 sets out the burden on the Director for proof of allegations in the complaint and upon the respondent for

proving affirmative defenses. The showing required by §10.158(d)(1) is by "clear and convincing evidence." One commentator suggested that the 5-year period of §10.160(b) should be changed to a 3-year period. This suggestion is not being adopted. According to the commentator, the PTO has failed to state why a 5-year period was proposed. The commentator believes a 3-year period is more appropriate, although no reason is given in support of the commentator's belief. The PTO, after considering the matter, has concluded that some period must be specified and there is no reason to change the 5-year period proposed. A commentator suggested that a practitioner suspended for less than six months should "automatically" be reinstated. This suggestion is not being adopted, because the Director, as a condition to any reinstatement, must find that the suspended practitioner complied with §10.158. Another commentator questioned whether the rules should provide for application for reinstatement during a period of probation. The PTO believes the rules need not make provision for application for reinstatement during probation. For example, if a practitioner is suspended for a period of three years and it is ordered that the practitioner be actually suspended for at least one year *and* that the last two years the practitioner be placed on probation, the practitioner would be able to apply for reinstatement after serving one year of the three year suspension.

The PTO disagrees with the following comment concerning§10.161(b). "This clause is ex post facto legislation as it seeks retroactively an increase of penalties regarding conduct which occurred prior to the legislation." No legislation is involved. Section 10.161(b) does not "increase penalties."

TABLE 1

Principal Source of Sections 10.2 through 10.19

Sec.	
10.1 (preamble)	35 USC 31; *Sperry* v. *Florida,* 373 U.S. 379, 402 (1963)
10.1	35 USC 25; 28 USC 1746
10.1(c)	5 USC 500(b)
10.1(q)	1 USC 1
10.1(aa)	35 USC 100(c)
10.2(a)	New
10.2(b) (1)	New, but see 37 CFR 1.341(i) (1983)
10.2(b) (2)	New, but see 37 CFR 1.348(a) (1983)
10.2(c)	New, but see 37 CFR 1.341(i) (1983)
10.3	37 CFR 1.341(i) (1983)
10.4(a)	New
10.4(b)	New, but see 37 CFR 1.348(a) (1983)
10.4(c)	New
10.5	37 CFR 1.341 (1983)
10.6(a)	37 CFR 1.341(a) (1983)
10.6(b)	37 CFR 1.341(b) (1983)
10.6(c)	37 CFR 1.341(e) (1983)
10.6(d)	37 CFR 1.341(f) (1983)
10.6(e)	37 CFR 1.341(g) (1983)
10.7(a), (b)	37 CFR 1.341(c) (1983)
10.7(c)	New
10.8	37 CFR 1.341(h) (1983)
10.9(a)	37 CFR 1.342 (1983)
10.9(b)	New
10.10	37 CFR 1.343 (1983)
10.11	37 CFR 1.347 (1983)
10.12	[reserved]
10.13	[reserved]
10.14	5 USC 500(b) and 37 CFR 2.12 (1983)
10.15	35 USC 32; 5 USC 500(d) (2); 37 CFR 1.343 (1983); and 37 CFR 2.12(f) (1983)
10.16	[reserved]
10.17	[reserved]
10.18(a)	37 CFR 1.346 (1983) and 37 CFR 2.15 (1983), see also Rule 11, FRCP
10.18(b)	35 USC 32 & Rule 11, FRCP
10.19	[reserved]

TABLE 2

Principle Source of Sections of 10.20 through 10.112, the PTO Code of Professional Responsibility

Abbreviations:
FRCP means Federal Rules of Civil Procedure
MCPR means Model Code of Professional Responsibility of the ABA (1980)
MRPC means Model Rules of Professional Conduct of the ABA (1983)
VCPR means the Virginia Code of Professional Responsibility (1984)

Sec.	
10.20	Preamble to MCPR (1980)
10.21	MCPR Canon 1 (1980)
10.22	MCPR DR 1–101 (1980)
10.23(a)	35 U.S.C. 32
10.23(b) (1)	35 U.S.C. 32 and MCPR DR 1–102(A) (1) (1980)
10.23(b) (2)–(6)	MCPR DR 1–102(A) (2)–(6) (1980)
10.23(c) (1)–(14)	PTO created
10.23(c) (15)	Rule 11, FRCP
10.23(c) (16)–(18)	PTO created
10.23(d)	*U.S.* v. *Beecroft,* 608 F.2d 753 (9th Cir. 1979)
10.24	MCPR 1–103 (1980)
10.25 through 10.29	(reserved)
10.30	MCPR Canon 2 (1980)
10.31(a)	35 U.S.C. 32
10.31(b)	5 U.S.C. 501
10.31(c)	37 CFR 1.345(c) (1983)
10.31(d)	Newly created
10.32	MRPC Rule 7.2 (1983)
10.33	MRPC Rule 7.3 (1983)
10.34	MRPC Rule 7.4 (1983)
10.35(a)	5 U.S.C. 501 and MRPC Rule 7.5 (1983)
10.35(b)	MRPC Rule 7.5 (1983)
10.36	MCPR DR 2–106 (1980)
10.37	MCPR DR 2–107 (1980)
10.38	MCPR DR 2–108 (1980)
10.39	MCPR DR 2–109 (1980)
10.40	MCPR DR 2–110 (1980)
10.41 through 10.45	(reserved)
10.46	MCPR Canon 3 (1980)
10.47(a), (c)	MCPR DR 3–101 (1980)
10.47(b)	New (but see e.g., *Crawford* v. *State Bar of California,* 7 Cal. Rptr. 746, 355 P.2d 490 (Cal. 1960))
10.48	MCPR DR 3–102 (1980)
10.49	MCPR DR 3–103 (1980)
10.50 through 10.55	(reserved)
10.56	MCPR Canon 4 (1980)
10.57	MCPR DR 4–101 (1980)
10.58 through 10.60	(reserved)
10.61	MCPR Canon 5 (1980)
10.62	MCPR DR 5–101 (1980)
10.63	MCPR DR 5–102 (1980)
10.64	MCPR DR 5–103 (1980)
10.65	MCPR DR 5–104 (1980)
10.66	MCPR DR 5–105 (1980)
10.67	MCPR DR 5–106 (1980)
10.68	MCPR DR 5–107 (1980)
10.69 through 10.75	(reserved)
10.76	MCPR Canon 6 (1980)
10.77	MCPR DR 6–101 (1980)
10.78	MCPR DR 6–102 (1980)
10.79 through 10.82	(reserved)
10.83	MCPR Canon 7 (1980)
10.84	MCPR DR 7–101 (1980)
10.85	MCPR DR 7–102 (1980)

TABLE II (cont.)

10.86	(reserved)
10.87	MCPR DR 7–104 (1980)
10.88	MCPR DR 7–105 (1980)
10.89	MCPR DR 7–106 (1980)
10.90	(reserved)
10.91	(reserved)
10.92	MCPR DR 7–109 (1980)
10.93	VCPR DR 7–109 (1984)
10.94 through 10.99	(reserved)
10.100	MCPR Canon 8 (1980)
10.101(a)	MCPR DR 8–101 (1980)
10.101(b)	37 CFR 1.341(f) (1983) and 41 Cp. Att'y Gen. 21 (1949), *reprinted in* 1949 Dec. Comm'r Pat. 1
10.102	MCPR DR 8–102 (1980)
10.103	MCPR DR 8–103 (1980)
10.104 through 10.109	(reserved)
10.110	MCPR Canon 9 (1980)
10.111	MCPR DR 9–101 (1980)
10.112	MCPR DR 9–102 (1980)

TABLE 3

Principal Source of Sections 10.130 through 10.161

Section	*Source*
10.130	35 U.S.C. 32
10.131(a)	New, but see 37 CFR 1.348(a)
10.131(b)	MCPR DR 1–103 (1980)
10.131(c)	New
10.132(a), (c)	New
10.132(b)	New, but see 37 CFR 1.348(b) (1983)
10.133	New
10.134	37 CFR 1.348(b) (1983)
10.135(a) (1)	New
10.135(a) (2)	37 CFR 1.348(b) (1983)
10.135(a) (3)	New
10.135(b)	New
10.135(c)	New
10.135(d)	5 USC 500(f)
10.136(a)	37 CFR 1.348(c) (1983)
10.136(b)	New
10.136(c)	37 CFR 1.348(c) (1983)
10.136(d)	37 CFR 1.348(c) (1983)
10.136(e)	New
10.137	37 CFR 1.348(c) (1983)
10.138	New
10.139(a)	5 USC 3105
10.139(b)	5 USC 556(c)
10.139(c)	New
10.139(d)	New
10.139(e)	New
10.140(a)	5 USC 500(b)
10.140(b)	New
10.141	New
10.142	New
10.143	New
10.144	New
10.145	New
10.146–10.148	[reserved]
10.149	New
10.150(a)	5 USC 556(d)
10.150(b)	37 CFR 1.348 (d) (3) (1983)
10.150(c)	New
10.150(d)	New
10.150(e)	New
10.151	37 CFR 1.348(d) (3) (1983)
10.152	New, see *Silverman* v. *CFTC,* 549 F.2d 28 (7th Cir. 1977)
10.153	New, but see 5 USC 557(c)
10.154	See 5 USC 557(b) and 35 USC 32
10.155	New
10.156	New
10.157	35 USC 32, Local Rule 1–26 (D.D.C.)
10.158	New
10.159	New
10.160	New
10.161	New
10.162–10.169	[reserved]
10.170	New, but see 37 CFR 1.183

Other Considerations: The rules will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rules are in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354) and Executive Order 12291.

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the rules will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). The rules regulate the conduct of attorneys and agents who represent individuals and juristic entities before the Patent and Trademark Office and would not be expected to result in an increase of fees charged by attorneys and agents to entities, including small entities.

The Patent and Trademark Office has determined that the rules are not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The information reporting requirements contained in the rules have been approved by the Office of Management and Budget, OMB Control No. 0651–0012 and OMB Control No. 0651–0017.

List of Subjects in 37 CFR Parts 1, 2 and 10.

Administrative practice and procedure, Authority delegations, Conflict of interests, Courts, Inventions and patents, Trademarks, Lawyers.

For the reasons given in the preamble and under the authority granted to the Commissioner of Patents and Trademarks by 5 U.S.C. 500; 15 U.S.C. 1123; and 35 U.S.C. 6, 31, 32, and 41. Parts 1, 2, and 10 of Title 37 of the Code of Federal Regulations are amended as set forth below:

Part 1—Rules of Practice in Patent Cases

1. Section 1.8 is amended by adding to paragraph (a) (12) a new subparagraph (xiii) to read as follows:

§1.8 Certificate of mailing.

(a) * * *
(2) * * *
(xiii) Papers filed in connection with a disciplinary proceeding under Part 10 of this Subchapter.

2. Section 1.21 is amended by adding to paragraph (a) two new subparagraphs (5) and (6) to read as follows:

§1.21 Miscellaneous fees and charges.

(a) * * *
(5) For review of a decision of the Director of Enrollment and Discipline under §10.2(c) 60.00
(6) For requesting regrading of an examination under §10.7(c) 60.00

* * * * *

3. Section 1.31 is revised to read as follows:

§1.31 Applicants may be represented by a registered attorney or agent.

An applicant for patent may file and prosecute his or her own case, or he or she may be represented by a registered attorney, registered agent, or other individual authorized to practice before the Patent and Trademark Office in patent cases. See §§10.6 and 10.9 of this Subchapter. The Patent and Trademark Office cannot aid in the selection of a registered attorney or agent.

4. Section 1.33 is amended by removing from paragraph (c) "1.341 and 1.347" and inserting in its place "10.5 and 10.11".

5. Section 1.34 is amended by revising paragraph (a) as follows:

§1.34 Recognition for representation.

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a patent case, his or her personal appearance or signature shall constitute a representation to the Patent and Trademark Office that under the provisions of this Subchapter and the law, he or she is authorized to represent the particular party in whose behalf he or she acts. In filing such a paper, the registered attorney or agent should specify his or her registration number with his or her signature. Further proof of authority to act in a representative capacity may be required.

* * * * *

6. Section 1.56 is amended by removing from paragraphs (f) and (h) "1.346" and inserting in its place "10.18".

7. The center heading preceding §1.341 is removed.

8. Sections 1.341 through 1.348 are removed.

9. Section 1.455 is amended by removing from paragraph (a) "1.341" and inserting in its place "10.10".

Part 2—Rules of Practice in Trademark Cases

10. Section 2.11 is revised to read as follows:

§2.11 Applicants may be represented by an attorney.

The owner of a trademark may file and prosecute his or her own application for registration of such trademark, or he or she may be represented by an attorney or other individual authorized to practice in trademark cases under §10.14 of this Subchapter. The Patent and Trademark Office cannot aid in the selection of an attorney or other representative.

11. Sections 2.12 through 2.16 are removed.

12. Section 2.17 is amended by revising paragraph (a) as follows:

§2.17 Recognition for representation.

(a) When an attorney as defined in §10.1(c) of this Subchapter acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a trademark case, his or her personal appearance or signature shall constitute a representation to the Patent and Trademark Office that, under the provisions of §10.14 and the law he or she is authorized to represent the particular party in whose behalf he or she acts. Further proof of authority to act in a representative capacity may be required.

* * * * *

13. Section 2.19 is revised to read as follows:

§2.19 Revocation of power of attorney or of other authorization to represent, withdrawal.

(a) Authority to represent an applicant or a party to a proceeding may be revoked at any stage in the proceedings of a case upon notification to the Commissioner; and when it is so revoked, the Office will communicate directly with the applicant or party to the proceeding or with such other qualified person as may be authorized. The Patent and Trademark Office will notify the person affected of the revocation of his or her authorization.

(b) An individual authorized to represent an applicant or party in a trademark case may withdraw upon application to and approval by the Commissioner.

14. The following Part 10 is added:

Part 10–Representation of others before the Patent and Trademark Office

Sec.	
10.1	Definitions
10.2	Director of Enrollment and Discipline
10.3	Committee on Enrollment
10.4	Committee on Discipline
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Authority: 5 U.S.C. 500: 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41

Part 10—Representation of others before the Patent and Trademark Office

§10.1 Definitions.

This part governs solely the practice of patent, trademark, and other law before the Patent and Trademark Office. Nothing in this part shall be construed to preempt the authority of each State to regulate the practice of law, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives. Unless otherwise clear from the context, the following definitions apply to this part:

(a) "Affidavit" means affidavit, declaration under 35 U.S.C. 25 (see §1.68 and §2.20 of this Subchapter), or statutory declaration under 28 U.S.C. 1746.

(b) "Application" includes an application for a design, plant, or utility patent, an application to reissue any patent, and an application to register a trademark.

(c) "Attorney" or "lawyer" means an individual who is a member in good standing of the bar of any United States court or the highest court of any State. A "non-lawyer" is a person who is not an attorney or lawyer.

(d) "Canon" is defined in §10.20(a).

(e) "Confidence" is defined in §10.57(a).

(f) "Differing interests" include every interest that may adversely affect either the judgment or the loyalty of a practitioner to a client, whether it be a conflicting, inconsistent, diverse, or other interest.

(g) "Director" means the Director of Enrollment and Discipline.

(h) "Disciplinary Rule" is defined in §10.20(b).

(i) "Employee of a tribunal" includes all employees of courts, the Office, and other adjudicatory bodies.

(j) "Giving information" within the meaning of §10.23(c)(2) includes making (1) a written statement or representation or (2) an oral statement or representation.

(k) "Law firm" includes a professional legal corporation or a partnership.

(l) "Legal counsel" means practitioner.

(m) "Legal profession" includes the individuals who are lawfully engaged in practice of patent, trademark, and other law before the Office.

(n) "Legal service" means any legal service which may lawfully be performed by a practitioner before the Office.

(o) "Legal System" includes the Office and courts and adjudicatory bodies which review matters on which the Office has acted.

(p) "Office" means Patent and Trademark Office.

(q) "Person" includes a corporation, an association, a trust, a partnership, and any other organization or legal entity.

(r) "Practitioner" means (1) an attorney or agent registered to practice before the Office in patent cases or (2) an individual authorized under 5 U.S.C. 500(b) or otherwise as provided by this Subchapter, to practice before the Office in trademark cases or other non-patent cases. A "suspended or excluded practitioner" is a practitioner who is suspended or excluded under §10.156. A

"non-practitioner" is an individual who is not a practitioner.

(s) A "proceeding before the Office" includes an application, a reexamination, a protest, a public use proceeding, a patent interference, an *inter partes* trademark proceeding, or any other proceeding which is pending before the Office.

(t) "Professional legal corporation" means a corporation authorized by law to practice law for profit.

(u) "Registration" means registration to practice before the Office in patent cases.

(v) "Respondent" is defined in §10.134(a)(1).

(w) "Secret" is defined in §10.57(a).

(x) "Solicit" is defined in §10.33.

(y) "State" includes the District of Columbia, Puerto Rico, and other federal territories and possessions.

(z) "Tribunal" includes courts, the Office, and other adjudicatory bodies.

(aa) "United States" means the United States of America, its territories and possessions.

§10.2 Director of Enrollment and Discipline.

(a) *Appointment.* The Commissioner shall appoint a Director of Enrollment and Discipline. In the event of the absence of the Director or a vacancy in the office of the Director, the Commissioner may designate an employee of the Office to serve as acting Director of Enrollment and Discipline. The Director and any acting Director shall be an active member in good standing of the bar of a State.

(b) *Duties.* The Director shall:

(1) Receive and act upon applications for registration, prepare and grade the examination provided for in §10.7(b), maintain the register provided for in §10.5, and perform such other duties in connection with enrollment and recognition of attorneys and agents as may be necessary.

(2) Conduct investigations into possible violations by practitioners of Disciplinary Rules, with the consent of the Committee on Discipline initiate disciplinary proceedings under §10.132(b), and perform such other duties in connection with investigations and disciplinary proceedings as may be necessary.

(c) *Review of Director's decision.* Any final decision of the Director refusing to register an individual under §10.6, recognize an individual under §§10.9 or 10.14(c), or reinstate a suspended or excluded petitioner under §10.160, may be reviewed by petition to the Commissioner upon payment of the fee set forth in §1.21(a)(5). A petition filed more than 30 days after the date of the decision of the Director may be dismissed as untimely. Any petition shall contain (1) a statement of the facts involved and the points to be reviewed and (2) the action requested. Briefs or memoranda, if any, in support of the petition shall accompany or be embodied therein. The petition will be decided on the basis of the record made before the Director and no new evidence will be considered by the Commissioner in deciding the petition. Copies of documents already of record before the Director shall not be submitted with the petition. An oral hearing on the petition will not be granted except when considered necessary by the Commissioner.

(OMB Control No. 0651–0012).

§10.3 Committee on Enrollment.

(a) The Commissioner may establish a Committee on Enrollment composed of one or more employees of the Office.

(b) The Committee on Enrollment shall, as necessary, advise the Director in connection with the Director's duties under §10.2(b)(1).

§10.4 Committee on Discipline.

(a) The Commissioner shall appoint a Committee on Discipline. The Committee on Discipline shall consist of the at least three employees of the Office, none of whom reports directly or indirectly to the Director or the Solicitor. Each member of the Committee on Discipline shall be a member in good standing of the bar of a State.

(b) The Committee on Discipline shall meet at the request of the Director and after reviewing evidence presented by the Director shall, by majority vote, determine whether there is probable cause to bring charges under §10.132 against a practitioner. When charges are brought against a practitioner, no member of the Committee on Discipline, employee under the direction of the Director, or associate solicitor or assistant solicitor in the Office of the Solicitor shall participate in rendering a decision on the charges.

(c) No discovery shall be authorized of, and no member of the Committee on Discipline shall be required to testify about, deliberations of the Committee on Discipline.

Individuals Entitled to Practice Before the Patent and Trademark Office

§10.5 Register of attorneys and agents in patent cases.

A register of attorneys and agents is kept in the Office on which are entered the names of all individuals recognized as entitled to represent applicants before the Office in the preparation and prosecution of applications for patent. Registration in the Office under provisions of this part shall only entitle the individuals registered to practice before the Office in patent cases.

§10.6 Registration of attorneys and agents.

(a) *Attorneys.* Any citizen of the United States who is an attorney and who fulfills the requirements of this part may be registered as a patent attorney to practice before the Office. When appropriate, any alien who is an attorney, who lawfully resides in the United States, and who fulfills the requirements of this part may be registered as a patent attorney to practice before the Office, *provided:* registration is not inconsistent with the terms upon which the alien was admitted to, and resides in, the United States and *further provided:* the alien may remain registered only (1) if the alien continues to lawfully reside in the United States and registation does not become inconsistent with the terms upon which the alien continues to lawfully reside in the United States or (2) if the alien ceases to reside in the United States, the alien is qualified to be registered under paragraph (c) of this section. See also §10.9(b).

(b) *Agents.* Any citizen of the United States who is not an attorney and who fulfills the requirements of this part may be registered as a patent agent to practice before the Office. When appropriate, any alien who is not an attorney, who lawfully resides in the United States, and who fulfills the requirements of this part may be registered as a patent agent to practice before the Office, *provided:* registration is not inconsistent with the terms upon which the alien was admitted to, and resides in, the United States, and *further provided:* the alien may remain registered only (1) if the alien continues to lawfully reside in the United States and registration does not become inconsistent with the terms upon which the alien continues to lawfully reside in the United States or (2) if the alien ceases to reside in the United States, the alien is qualified to be registered under paragraph (c) of this section. See also §10.9(b).

Note: All individuals registered prior to Nov. 15, 1938, were registered as attorneys, whether they were attorneys or not, and such registrations have not been changed.

(c) *Foreigners.* Any foreigner not a resident of the United States who shall file proof to the satisfaction of the Director that he or she is registered and in good standing before the patent office of the country in which he or she resides and practices and who is possessed of the qualifications stated in §10.7, may be registered as a patent agent to practice before the Office for the limited purpose of presenting and prosecuting patent applications of applicants located in such country, *provided:* the patent office of such country allows substantially reciprocal privileges to those admitted to practice before the United States Patent and Trademark Office. Registration as a patent agent under this paragraph shall continue only during the period that the conditions specified in this paragraph obtain.

(d) *Government employees.* Any officer or employee of the United States who is disqualified by statute (18 U.S.C. 203, 205) from practicing as an attorney or agent in proceedings or other matters before Government departments or agencies, may not be registered to practice before the Office. If any registered attorney or agent becomes an officer or employee of the United States who is disqualified by statute from practicing as an attorney or agent in proceedings and other matters before Government departments or agencies, his or her name shall be endorsed as inactive on the register during the period of any employment by the United States. An officer or employee of the United States whose official duties require the preparation and prosecution of applications for patent and who fulfills the requirements of this part may be registered to practice before the Office to the extent necessary to carry out his or her official duties. A written statement describing the official duties of the officer or employee and signed on behalf of the agency employing the officer or employee may be required by the Director.

(e) *Former Office employees.* No individual who has served in the Office will be registered after termination of his or her services, nor if registered before such service, be reinstated, unless he or she signs a written statement indicating that he or she has read 18 U.S.C. 207. No individual who has served in the patent examining corps of the Office will be registered after termination of his or her services, nor if registered before such service, be reinstated, unless he or she signs a written undertaking (1) not to prosecute or aid in any manner in the prosecution of any patent application pending in any patent examining group during his or her period of service therein and (2) not to prepare or prosecute or to assist in any manner in the preparation or prosecution of any patent application of another (i) assigned to such group for examination and (ii) filed within two years after the date he or she left such group, without written authorization of the Director. Associated and related classes in other patent examining groups may be required to be included in the undertaking or designated classes may be excluded from the undertaking. When an application for registration or reinstatement is made after resignation from the Office, the applicant will not be registered or reinstated if he or she has prepared or prosecuted or assisted in the preparation or prosecution of any patent application as indicated in this paragraph.

(OMB Control No. 0651–0012)

§10.7 Requirements for registration.

(a) No individual will be registered to practice before the Office unless he or she shall:

(1) apply to the Commissioner in writing on a form supplied by the Director and furnish all requested information and material and

(2) establish to the satisfaction of the Director that he or she is:

(i) of good moral character and repute;

(ii) possessed of the legal, scientific, and technical qualifications necessary to enable him or her to render applicants for patents valuable service; and

(iii) is otherwise competent to advise and assist applicants for patents in the presentation and prosecution of their applications before the Office.

(b) In order that the Director may determine whether an individual seeking to have his or her name placed upon the register has the qualifications specified in paragraph (a) of this section, satisfactory proof of good moral character and repute and of sufficient basic training in scientific and technical matters must be submitted to the Director. Except as provided in this paragraph, each applicant for registration must take and pass an examination which is held from time to time. Each application for admission to take the examination for registration must be accompanied by the fee set forth in §1.21(a)(1) of this Subchapter. The taking of an examination may be waived in the case of any individual who has actively served for at least four years in the patent examining corps of the Office. The examination will not be administered as a mere academic exercise.

(c) Within two months from the date an applicant is notified that he or she failed an examination, the applicant may request regrading of the examination upon payment of the fee set forth in §1.21(a)(6). Any applicant requesting regrading shall particularly point out the errors which the applicant believed occurred in the grading of his or her examination.

(OMB Control No. 0651–0012)

§10.8 Oath and registration fee.

Before an individual may have his or her name entered on the register of attorneys and agents, the individual must, after his or her application is approved, subscribe and swear to an oath or make a declaration prescribed by the Commissioner and pay the registration fee set forth in §1.21(a)(2) of this Subchapter.

(OMB Control No. 0651–0012)

§10.9 Limited recognition in patent cases.

(a) Any individual not registered under §10.6 may, upon a showing of circumstances which render it necessary or justifiable, be given limited recognition by the Director to prosecute as attorney or agent a specified application or specified applications, but limited recognition under this paragraph shall not extend further than the application or applications specified.

(b) When registration of a resident alien under paragraphs (a) or (b) of §10.6 is not appropriate, the resident alien may be given limited recognition as may be appropriate under paragraph (a) of this section.

§10.10 Individuals not registered or recognized to practice in patent cases.

Only practitioners who are registered under §10.6 or individuals given limited recognition under §10.9 will be permitted to prosecute patent applications of others before the Office.

§10.11 Removing names from the register.

(a) Registered attorneys and agents shall notify the Director of any change of address. Any notification to the Director of any change of address shall be separate from any notice of change of address filed in individual applications.

(b) A letter may be addressed to any individual on the register, at the address of which separate notice was last received by the Director, for the purpose of ascertaining whether such individual desires to remain on the register. The name of any individual failing to reply and give any information requested by the Director within a time limit specified will be removed from the register and the names of individuals so removed will be published in the *Official Gazette.* The name of any individual so removed may be reinstated on the register as may be appropriate and upon payment of the fee set forth in §1.21(a)(3) of this Subchapter.

(OMB Control No. 0651–0012)

§§10.12–10.13 [reserved]

§10.14 Individuals who may practice before the Office in trademark and other non-patent cases.

(a) *Attorneys.* Any individual who is an attorney may represent others before the Office in trademark and oth-

er non-patent cases. An attorney is not required to apply for registration or recognition to practice before the Office in trademark and other non-patent cases.

(b) *Non-lawyers.* Individuals who are not attorneys are not recognized to practice before the Office in trademark and other non-patent cases, except that individuals not arrotneys who were recognized to practice before the Office in trademark cases under this chapter prior to Jan. 1, 1957, will be recognized as agents to continue practice before the Office in trademark cases.

(c) *Foreigners.* Any foreign attorney or agent not a resident of the United States who shall prove to the satisfaction of the Director that he or she is registered or in good standing before the patent or trademark office of the country in which he or she resides and practices, may be recognized for the limited purpose of representing parties located in such country before the Office in the presentation and prosecution of trademark cases, *provided:* the patent or trademark office of such country allows substantially reciprocal privileges to those permitted to practice in trademark cases before the United States Patent and Trademark Office. Recognition under this paragraph shall continue only during the period that the conditions specified in this paragraph obtain.

(d) Recognition of any individual under this section shall not be construed as sanctioning or authorizing the performance of any act regarded in the jurisdiction where performed as the unauthorized practice of law.

(e) No individual other than those specified in paragraphs (a), (b), and (c) of this section will be permitted to practice before the Office in trademark cases. Any individual may appear in a trademark or other non-patent case in his or her own behalf. Any individual may appear in a trademark case for (1) a firm of which he or she is a member or (2) a corporation or association of which he or she is an officer and which he or she is authorized to represent, if such firm, corporation, or association is a party to a trademark proceeding pending before the Office.

§10.15 Refusal to recognize a practitioner.

Any practitioner authorized to appear before the Office may be suspended or excluded in accordance with the provisions of this part. Any practitioner who is suspended or excluded under this subpart or removed under §10.11(b) shall not be entitled to practice before the Office.

§§10.16–10.17 [reserved]

§10.18 Signature and certificate of practitioner.

(a) Every paper filed by a practitioner representing an applicant or party to a proceeding in the Office must bear the signature of, and be personally signed by, such practitioner except those papers which are required to be signed by the applicant or party. The signature of practitioner to a paper filed by him or her, constitutes a certificate that:

(1) the paper has been read by the practitioner;

(2) the paper's filing is authorized;

(3) to the best of his or her knowledge, information, and belief, there is good ground to support the paper, including any allegations of improper conduct contained or alleged therein; and

(4) it is not interposed for delay.

(b) Any practitioner knowingly violating the provisions of this section is subject to disciplinary action. See §10.23(c)(15).

§10.19 [reserved]

Patent and Trademark Office Code of Professional Responsibility

§10.20 Canons and Disciplinary Rules.

(a) Canons are set out in §§10.21, 10.30, 10.46, 10.56. 10.61, 10.76, 10.83, 10.100, and 10.110. Canons are statements of axiomatic norms, expressing in general terms the standards of professional conduct expected of practitioners in their relationships with the public, with the legal system, and with the legal profession.

(b) Disciplinary Rules are set out in §§10.22–10.24, 10.31–10.40, 10.47–10.57, 10.62–10.68, 10.77, 10.78, 10.84, 10.85, 10.87–10.89, 10.92, 10.93, 10.101–103, 10.111, and 10.112. Disciplinary Rules are mandatory in character and state the minimum level of conduct below which no practitioner can fall without being subjected to disciplinary action.

§10.21 Canon 1.

A practitioner should assist in maintaining the integrity and competence of the legal profession.

§10.22 Maintaining integrity and competence of the legal profession.

(a) A practitioner is subject to discipline if the practitioner has made a materially false statement in, or if the practitioner has deliberately failed to disclose a material fact requested in connection with, the practitioner's application for registration or membership in the bar of any United States court or any State court or his or her authority to otherwise practice before the Office in trademark and other non-patent cases.

(b) A practitioner shall not further the application for registration or membership in the bar of any United States court, State court, or administrative agency of another person known by the practitioner to be unqualified in respect to character, education, or other relevant attribute.

§10.23 Misconduct.

(a) A practitioner shall not engage in disreputable or gross misconduct.

(b) A practitioner shall not:

(1) Violate a Disciplinary Rule.

(2) Circumvent a Disciplinary Rule through actions of another.

(3) Engage in illegal conduct involving moral turpitude.

(4) Engage in conduct involving dishonesty, fraud, deceit, or misrepresentation.

(5) Engage in conduct that is prejudicial to the administration of justice.

(6) Engage in any other conduct that adversely reflects on the practitioner's fitness to practice before the Office.

(c) Conduct which constitutes a violation of paragraphs (a) and (b) of this section includes, but is not limited to:

(1) Conviction of a criminal offense involving moral turpitude, dishonesty, or breach of trust.

(2) Knowingly giving false or misleading information or knowingly participating in a material way in giving false or misleading information, to:

(i) A client in connection with any immediate, prospective, or pending business before the Office.

(ii) The Office or any employee of the Office.

(3) Misappropriation of, or failure to properly or timely remit, funds received by a practitioner or the practitioner's firm from a client to pay a fee which the client is required by law to pay to the Office.

(4) Directly or indirectly improperly influencing, attempting to improperly influence, offering or agreeing to improperly influence, or attempting to offer or agree to improperly influence an official action of any employee of the Office by:

(i) use of threats, false accusations, duress, or coercion,

(ii) an offer of any special inducement or promise of advantage, or

(iii) improperly bestowing of any gift, favor, or thing of value.

(5) Suspension or disbarment from practice as an attorney or agent on ethical grounds by any duly constituted authority of a State or the United States or, in the case of a practitioner who resides in a foreign country or is registered under §10.6(c), by any duly constituted authority of:

(i) a State,

(ii) the United States, or

(iii) the country in which the practitioner resides.

(6) Knowingly aiding or abetting a practitioner suspended or excluded from practice before the Office in engaging in unauthorized practice before the Office under §10.158.

(7) Knowingly withholding from the Office information identifying a patent or patent application of another from which one or more claims have been copied. See §§1.604(b) and 1.607(c) of this Subchapter.

(8) Failing to inform a client or former client or failing to timely notify the Office of an inability to notify to a client or former client of correspondence received from the Office or the client's or former client's opponent in an *inter partes* proceeding before the Office when the correspondence (i) could have a significant effect on a matter pending before the Office, (ii) is received by the practitioner on behalf of a client or former client and (iii) is correspondence of which a reasonable practitioner would believe under the circumstances the client or former client should be notified.

(9) Knowingly misusing a certificate of mailing under §1.8 of this Subchapter or a certificate of "Express Mail" under §1.10 of this Subchapter.

(10) Violating the duty of candor or good faith requirements of §1.56(a) of this Subchapter.

(11) Knowingly filing, or causing to be filed, an application which is subject to being stricken under §1.56(c) of this Subchapter.

(12) Knowingly filing, or causing to be filed, a frivolous complaint alleging a violation by a practitioner of the Patent and Trademark Office Code of Professional Responsibility.

(13) Knowingly preparing or prosecuting a patent application in violation of an undertaking signed under §10.6(e).

(14) Knowingly failing to advise the Director in writing of any change which would preclude continued registration under §10.6.

(15) Knowingly signing a paper filed in the Office in violation of the provisions of §10.18 or making a scandalous or indecent statement in a paper filed in the Office.

(16) Willfully refusing to reveal or report knowledge or evidence to the Director contrary to §10.24 or paragraph (b) of §10.131.

(17) Representing before the Office in a patent case either a joint venture comprising an inventor and an invention developer or an inventor referred to the registered practitioner by an invention developer when (i) the registered practitioner knows, or has been advised by the Office, that a formal complaint filed by a federal or state agency, based on any violation of any law relating to securities, unfair methods of competition, unfair or deceptive acts or practices, mail fraud, or other civil or criminal conduct, is pending before a federal or state court or federal or state agency, or has been resolved unfavorably by such court or agency, against the invention developer in connection with invention development services and (ii) the registered practitioner fails to fully advise the inventor of the existence of the pending complaint or unfavorable resolution thereof prior to undertaking or continuing representation of the joint venture or inventor. "Invention developer" means any person, and any agent, employee, officer, partner, or independent contractor thereof, who is not a registered practitioner and who advertises invention development services in media of general circulation or who enters into contracts for invention development services with customers as a result of such advertisement. "Invention development services" means acts of invention development required or promised to be performed, or actually performed, or both, by an invention developer for a customer. "Invention development" means the evaluation, perfection, marketing, brokering, or promotion of an invention on behalf of a customer by an invention developer, including a patent search, preparation of a patent application, or any other act done by an invention developer for consideration toward the end of procuring or attempting to procure a license, buyer, or patent for an invention. "Customer" means any individual who has made an invention and who enters into a contract for invention development services with an invention developer with respect to the invention by which the inventor becomes obligated to pay the invention developer less than $5,000 (not to include any additional sums which the invention developer is to receive as a result of successful development of the invention). "Contract for invention development services" means a contract for invention development services with an invention developer with respect to an invention made by a customer by which the inventor becomes obligated to pay the invention developer less than $5,000 (not to include any additional sums which the invention developer is to receive as a result of successful development of the invention).

(18) In the absence of information sufficient to establish a reasonable belief that fraud or inequitable conduct has occurred, alleging before a tribunal that anyone has committed a fraud on the Office or engaged in inequitable conduct in a proceeding before the Office.

(d) A practitioner who acts with reckless indifference to whether a representation is true or false is chargeable with knowledge of its falsity. Deceitful statements of half-truths or concealment of material facts shall be deemed actual fraud within the meaning of this part.

§10.24 Disclosure of information to authorities

(a) A practitioner possessing unprivileged knowledge of a violation of a Disciplinary Rule shall report such knowledge to the Director.

(b) A practitioner possessing unprivileged knowledge or evidence concerning another practitioner, employee of the Office, or a judge shall reveal fully such knowledge or evidence upon proper request of a tribunal or other authority empowered to investigate or act upon the conduct of practitioners, employees of the Office, or judges.

(OMB Control No. 0651–0017)

§§10.25–10.29 [reserved]

§10.30 Canon 2.

A practitioner should assist the legal profesion in fulfilling its duty to make legal counsel available.

§10.31 Communications concerning a practitioner's services.

(a) No practitioner shall with respect to any prospective business before the Office, by word, circular, letter, or advertising, with intent to defraud in any manner, deceive, mislead, or threaten any prospective applicant or other person having immediate or prospective business before the Office.

(b) A practitioner may not use the name of a Member of either House of Congress or of an individual in the service of the United States in advertising the practitioner's practice before the Office.

(c) Unless authorized under §10.14(b), a non-lawyer practitioner shall not hold himself or herself out as authorized to practice before the Office in trademark cases.

(d) Unless a practitioner is an attorney, the practitioner shall not hold himself or herself out:

(1) to be an attorney or lawyer or

(2) as authorized to practice before the Office in non-patent and trademark cases.

§10.32 Advertising.

(a) Subject to §10.31, a practitioner may advertise services through public media, including a telephone di-

rectory, legal directory, newspaper, or other periodical, radio, or television, or through written communications not involving solicitation as defined by §10.33.

(b) A practitioner shall not give anything of value to a person for recommending the practitioner's services, except that a practitioner may pay the reasonable cost of advertising or written communication permitted by this section and may pay the usual charges of a not-for-profit lawyer referreal service or other legal service organization.

(c) Any communication made pursuant to this section shall include the name of at least one practitioner responsible for its content.

§10.33 Direct contact with prospective clients.

A practitioner may not solicit professional employment from a prospective client with whom the practitioner has no family or prior professional relationship, by mail, in-person or otherwise, when a significant motive for the practitioner's doing so is the practitioner's pecuniary gain under circumstances evidencing undue influence, intimidation, or overreaching. The term "solicit" includes contact in person, by telephone or telegraph, by letter or other writing, or by other communication directed to a specific recipient, but does not include letters addressed or advertising circulars distributed generally to persons not specifically known to need legal services of the kind provided by the practitioner in a particular matter, but who are so situated that they might in general find such services useful.

§10.34 Communication of fields of practice.

A registered practitioner may state or imply that the practitioner is a specialist as follows:

(a) A registered practitioner who is an attorney may use the designation "Patents," "Patent Attorney," "Patent Lawyer," "Registered Patent Attorney," or a substantially similar designation.

(b) A registered practitioner who is not an attorney may use the designation "Patents," "Patent Agent," "Registered Patent Agent," or a substantially similar designation, except that any practitioner who was registered prior to November 15, 1938, may refer to himself or herself as a "patent attorney."

§10.35 Firm names and letterheads.

(a) A practitioner shall not use a firm name, letterhead, or other professional designation that violates §10.31. A trade name may be used by a practitioner in private practice if it does not imply a current connection with a government agency or with a public or charitable legal services organzation and is not otherwise in violation of §10.31.

(b) Practitioners may state or imply that they practice in a partnership or other organization only when that is the fact.

§10.36 Fees for legal services.

(a) A practitioner shall not enter into an agreement for, charge, or collect an illegal or clearly excessive fee.

(b) A fee is clearly excessive when, after a review of the facts, a practitioner of ordinary prudence would be left with a definite and firm conviction that the fee is in excess of a reasonable fee. Factors to be considered as guides in determining the reasonableness of a fee include the following:

(1) The time and labor required, the novelty and difficulty of the questions involved, and the skill requisite to perform the legal service properly.

(2) The likelihood, if apparent to the client, that the acceptance of the particular employment will preclude other employment by the practitioner.

(3) The fee customarily charged for similar legal services.

(4) The amount involved and the results obtained.

(5) The time limitations imposed by the client or by the circumstances.

(6) The nature and length of the professional relationship with the client.

(7) The experience, reputation, and ability of the practitioner or practitioners performing the services.

(8) Whether the fee is fixed or contingent.

§10.37 Division of fees among practitioners.

(a) A practitioner shall not divide a fee for legal services with another practitioner who is not a partner in or associate of the practitioner's law firm or law office, unless:

(1) The client consents to employment of the other practitioner after a full disclosure that a division of fees will be made.

(2) The division is made in proportion to the services performed and responsibility assumed by each.

(3) The total fee of the practitioners does not clearly exceed reasonable compensation for all legal services rendered to the client.

(b) This section does not prohibit payment to a former partner or associate pursuant to a separation or retirement agreement.

§10.38 Agreements restricting the practice of a practitioner.

(a) A practitioner shall not be a party to or participate in a partnership or employment agreement with another practitioner that restricts the right of a practitioner to practice before the Office after the termination of a relationship created by the agreement, except as a condition to payment of retirement benefits.

(b) In connection with the settlement of a controversy or suit, a practitioner shall not enter into an agreement that restricts the practitioner's right to practice before the Office.

§10.39 Acceptance of employment.

A practitioner shall not accept employment on behalf of a person if the practitioner knows or it is obvious that such person wishes to:

(a) Bring a legal action, commence a proceeding before the Office, conduct a defense, assert a position in any proceeding pending before the Office, or otherwise have steps taken for the person, merely for the purpose of harassing or maliciously injuring any other person.

(b) Present a claim or defense in litigation or any proceeding before the Office that is not warranted under existing law, unless it can be supported by good faith argument for an extension, modification, or reversal of existing law.

§10.40 Withdrawal from employment.

(a) A practitioner shall not withdraw from employment in a proceeding before the Office without permission from the Office (see §§1.36, and 2.19 of this Subchapter). In any event, a practitioner shall not withdraw from employment until the practitioner has taken reasonable steps to avoid foreseeable prejudice to the rights of the client, including giving due notice to his or her client, allowing time for employment of another practitioner, delivering to the client all papers and property to which the client is entitled, and complying with applicable laws and rules. A practitioner who withdraws from employment shall refund promptly any part of a fee paid in advance that has not been earned.

(b) Mandatory withdrawal. A practitioner representing a client before the Office shall withdraw from employment if:

(1) the practitioner knows or it is obvious that the client is bringing a legal action, commencing a proceeding before the Office, conducting a defense, or asserting a position in litigation or any proceeding pending before the Office, or is otherwise having steps taken for the client, merely for the purpose of harassing or maliciously injuring any person;

(2) the practitioner knows or it is obvious that the practitioner's continued employment will result in violation of a Disciplinary Rule;

(3) the practitioner's mental or physical condition renders it unreasonably difficult for the practitioner to carry out the employment effectively; or

(4) the practitioner is discharged by the client.

(c) Permissive withdrawal. If paragraph (b) of this section is not applicable, a practitioner may not request permission to withdraw in matters pending before the Office unless such request or such withdrawal is because:

(1) the petitioner's client:

(i) insists upon presenting a claim or defense that is not warranted under existing law and cannot be supported by good faith argument for an extension, modification, or reversal of existing law;

(ii) personally seeks to pursue an illegal course of conduct;

(iii) insists that the practitioner pursue a course of conduct that is illegal or that is prohibited under a Disciplinary Rule;

(iv) by other conduct renders it unreasonably difficult for the practitioner to carry out the employment effectively;

(v) insists, in a matter not pending before a tribunal, that the practitioner engage in conduct that is contrary to the judgment and advice of the practitioner but not prohibited under the Disciplinary Rule; or

(vi) has failed to pay one or more bills rendered by the practitioner for an unreasonable period of time or has failed to honor an agreement to pay a retainer in advance of the performance of legal services.

(2) the practitioner's continued employment is likely to result in a violation of a Disciplinary Rule;

(3) the practitioner's inability to work with co-counsel indicates that the best interests of the client likely will be served by withdrawal;

(4) the practitioner's mental or physical condition renders it difficult for the practitioner to carry out the employment effectively;

(5) the practitioner's client knowingly and freely assents to termination of the employment; or

(6) the practitioner believes in good faith, in a proceeding pending before the Office, that the Office will find the existence of other good cause for withdrawal.

§§10.41-10.45 [reserved]

§10.46 Canon 3.

A practitioner should assist in preventing the unauthorized practice of law.

§10.47 Aiding unauthorized practice of law.

(a) A practitioner shall not aid a non-practitioner in the unauthorized practice of law before the Office.

(b) A practitioner shall not aid a suspended or excluded practitioner in the practice of law before the Office.

(c) A practitioner shall not aid a non-lawyer in the unauthorized practice of law.

§10.48 Sharing legal fees.

A practitioner or a firm of practitioners shall not share legal fees with a non-practitioner except that:

(a) An agreement by a practitioner with the practitioner's firm, partner, or associate may provide for the payment of money, over a reasonable period of time after the practitioner's death, to the practitioner's estate or to one or more specified persons.

(b) A practitioner who undertakes to complete unfinished legal business of a deceased practitioner may pay to the estate of the deceased practitioner that proportion of the total compensation which fairly represents the services rendered by the deceased practitioner.

(c) A practitioner or firm of practitioners may include non-practitioner employees in a compensation or retirement plan, even though the plan is based in whole or in part on a profit-sharing arrangement, providing such plan does not circumvent another Disciplinary Rule.

§10.49 Forming a partnership with a non-practitioner.

A practitioner shall not form a partnership with a non-practitioner if any of the activities of the partnership consist of the practice of patent, trademark, or other law before the Office.

§§10.50-10.55 [reserved]

§10.56 Canon 4.

A practitioner should preserve the confidences and secrets of a client.

§10.57 Preservation of confidences and secrets of a client.

(a) "Confidence" refers to information protected by the attorney-client or agent-client privilege under applicable law. "Secret" refers to other information gained in the professional relationship that the client has requested be held inviolate or the disclosure of which would be embarrassing or would be likely to be detrimental to the client.

(b) Except when permitted under paragraph (c) of this section, a practitioner shall not knowingly:

(1) Reveal a confidence or secret of a client.

(2) Use a confidence or secret of a client to the disadvantage of the client.

(3) Use a confidence or secret of a client for the advantage of the practitioner or of a third person, unless the client consents after full disclosure.

(c) A practitioner may reveal:

(1) Confidences or secrets with the consent of the client affected but only after a full disclosure to the client.

(2) Confidences or secrets when permitted under Disciplinary Rules or required by law or court order.

(3) The intention of a client to commit a crime and the information necessary to prevent the crime.

(4) Confidences or secrets necessary to establish or collect the practitioner's fee or to defend the practitioner or the practitioner's employees or associates against an accusation of wrongful conduct.

(d) A practitioner shall exercise reasonable care to prevent the practitioner's employees, associates, and others whose services are utilized by the practitioner from disclosing or using confidences or secrets of a client, except that a practitioner may reveal the information allowed by parargraph (c) of this section through an employee.

§§10.58-10.60 [reserved]

§10.61 Canon 5.

A practitioner should exercise independent professional judgment on behalf of a client.

§10.62 Refusing employment when the interest of the practitioner may impair the practitioner's independent professional judgment.

(a) Except with the consent of a client after full disclosure, a practitioner shall not accept employment if the exercise of the practitioner's professional judgment on behalf of the client will be or reasonably may be affected by the practitioner's own financial, business, property, or personal interests.

(b) A practitioner shall not accept employment in a proceeding before the Office if the practitioner knows

or it is obvious that the practitioner or another practitioner in the practitioner's firm ought to sign an affidavit to be filed in the Office or be called as a witness, except that the practitioner may undertake the employment and the practitioner or another practitioner in the practitioner's firm may testify:

(1) If the testimony will relate solely to an uncontested matter.

(2) If the testimony will relate solely to a matter of formality and there is no reason to believe that substantial evidence will be offered in opposition to the testimony.

(3) If the testimony will relate solely to the nature and value of legal services rendered in the case by the practitioner or the practitioner's firm to the client.

(4) As to any matter, if refusal would work a substantial hardship on the client because of the distinctive value of the practitioner or the practitioner's firm as counsel in the particular case.

§10.63 Withdrawal when the practitioner becomes a witness.

(a) If, after undertaking employment in a proceeding in the Office, a practitioner learns or it is obvious that the practitioner or another practitioner in the practitioner's firm ought to sign an affidavit to be filed in the Office or be called as a witness on behalf of a practitioner's client, the practitioner shall withdraw from the conduct of the proceeding and the practitioner's firm, if any, shall not continue representation in the proceeding, except that the practitioner may continue the representation and the practitioner or another practitioner in the practitioner's firm may testify in the circumstances enumerated in paragraphs (1) through (4) of §10.62(b).

(b) If, after undertaking employment in a proceeding before the Office, a practitioner learns or it is obvious that the practitioner or another practitioner in the practitioner's firm may be asked to sign an affidavit to be filed in the Office or be called as a witness other than on behalf of the practitioner's client, the practitioner may continue the representation until it is apparent that the practitioner's affidavit or testimony is or may be prejudicial to the practitioner's client.

§10.64 Avoiding acquisition of interest in litigation or proceeding before the Office.

(a) A practitioner shall not acquire a proprietary interest in the subject matter of a proceeding before the Office which the practitioner is conducting for a client, except that the practitioner may:

(1) Acquire a lien granted by law to secure the practitioner's fee or expenses; or

(2) Contract with a client for a reasonable contingent fee; or

(3) In a patent case, take an interest in the patent as part or all of his or her fee.

(b) While representing a client in connection with a contemplated or pending proceeding before the Office, a practitioner shall not advance or guarantee financial assistance to a client, except that a practitioner may advance or guarantee the expenses of going forward in a proceeding before the Office including fees required by law to be paid to the Office, expenses of investigation, expenses of medical examination, and costs of obtaining and presenting evidence, provided the client remains ultimately liable for such expenses. A practitioner may, however, advance any fee required to prevent or remedy an abandonment of a client's application by reason of an act or omission attributable to the practitioner and not to the client, whether or not the client is ultimately liable for such fee.

§10.65 Limiting business relations with a client.

A practitioner shall not enter into a business transaction with a client if they have differing interests therein and if the client expects the practitioner to exercise professional judgment therein for the protection of the client, unless the client has consented after full disclosure.

§10.66 Refusing to accept or continue employment if the interests of another client may impair the independent professional judgment of the practitioner.

(a) A practitioner shall decline proffered employment if the exercise of the practitioner's independent professional judgment in behalf of a client will be or is likely to be adversely affected by the acceptance of the proffered employment, or if it would be likely to involve the practitioner in representing differing interests, except to the extent permitted under paragraph (c) of this section.

(b) A practitioner shall not continue multiple employment if the exercise of the practitioner's independent professional judgment in behalf of a client will be or is likely to be adversely affected by the practitioner's representation of another client, or if it would be likely to involve the practitioner in representing differing interests, except to the extent permitted under paragraph (c) of this section.

(c) In the situations covered by paragraphs (a) and (b) of this section a practitioner may represent multiple clients if it is obvious that the practitioner can adequately represent the interest of each and if each consents to the representation after full disclosure of the possible effect of such representation on the exercise of the practitioner's independent professional judgment on behalf of each.

(d) If a practitioner is required to decline employment or to withdraw from employment under a Disciplinary Rule, no partner, or associate, or any other practitioner affiliated with the practitioner or the practitioner's firm, may accept or continue such employment unless otherwise ordered by the Director or Commissioner.

§10.67 Settling similar claims of clients.

A practitioner who represents two or more clients shall not make or participate in the making of an aggregate settlement of the claims of or against the practitioner's clients, unless each client has consented to the settlement after being advised of the existence and nature of all the claims involved in the proposed settlement, of the total amount of the settlement, and of the participation of each person in the settlement.

§10.68 Avoiding influence by others than the client.

(a) Except with the consent of the practitioner's client after full disclosure, a practitioner shall not:

(1) Accept compensation from one other than the practitioner's client for the practitioner's legal services to or for the client.

(2) Accept from one other than the practitioner's client any thing of value related to the practitioner's representation of or the practitioner's employment by the client.

(b) A practitioner shall not permit a person who recommends, employs, or pays the practitioner to render legal services for another, to direct or regulate the practitioner's professional judgment in rendering such legal services.

(c) A practitioner shall not practice with or in the form of a professional corporation or association authorized to practice law for a profit, if a non-practioner has the right to direct or control the professional judgment of a practitioner.

§§10.69-10.75 [reserved]

§10.76 Canon 6.

A practitioner should represent a client competently.

§10.77 Failing to act competently.

A practitioner shall not:

(a) Handle a legal matter which the practitioner knows or should know that the practitioner is not competent to handle, without associating with the practitioner another practitioner who is competent to handle it.

(b) Handle a legal matter without preparation adequate in the circumstances.

(c) Neglect a legal matter entrusted to the practitioner.

§10.78 Limiting liability to client.

A practitioner shall not attempt to exonerate himself or herself from, or limit his or her liability to, a client for his or her personal malpractice.

§§10.79-10.82 [reserved]

§10.83 Canon 7.

A practitioner should represent a client zealously within the bounds of the law.

§10.84 Representing a client zealously.

(a) A practitioner shall not intentionally:

(1) Fail to seek the lawful objectives of a client through reasonably available means permitted by law and the Disciplinary Rules, except as provided by paragraph (b) of this section. A practitioner does not violate the provisions of this section, however, by acceding to reasonable requests of opposing counsel which do not prejudice the rights of the client, by being punctual in fulfilling all professional commitments, by avoiding offensive tactics, or by treating with courtesy and consideration all persons involved in the legal process.

(2) Fail to carry out a contract of employment entered into with a client for professional services, but a practitioner may withdraw as permitted under §§10.40, 10.63, and 10.66.

(3) Prejudice or damage a client during the course of a professional relationship, except as required under this part.

(b) In representation of a client, a practitioner may:

(1) Where permissible, exercise professional judgment to waive or fail to assert a right or position of the client.

(2) Refuse to aid or participate in conduct that the practitioner believes to be unlawful, even though there is some support for an argument that the conduct is legal.

§10.85 Representing a client within the bounds of the law.

(a) In representation of a client, a practitioner shall not:

(1) Initiate or defend any proceeding before the Office, assert a position, conduct a defense, delay a trial or proceeding before the Office, or take other action on behalf of the practitioner's client when the practitioner knows or when it is obvious that such action would serve merely to harass or maliciously injure another.

(2) Knowingly advance a claim or defense that is unwarranted under existing law, except that a practitioner may advance such claim or defense if it can be supported by good faith argument for an extension, modification, or reversal of existing law.

(3) Conceal or knowingly fail to disclose that which the practitioner is required by law to reveal.

(4) Knowingly use perjured testimony or false evidence.

(5) Knowingly make a false statement of law or fact.

(6) Participate in the creation or preservation of evidence when the practitioner knows or it is obvious that the evidence is false.

(7) Counsel or assist a client in conduct that the practitioner knows to be illegal or fraudulent.

(8) Knowingly engage in other illegal conduct or conduct contrary to a Disciplinary Rule.

(b) A practitioner who receives information clearly establishing that:

(1) A client has, in the course of the representation, perpetrated a fraud upon a person or tribunal shall promptly call upon the client to rectify the same, and if the client refuses or is unable to do so the practitioner shall reveal the fraud to the affected person or tribunal.

(2) A person other than a client has perpetrated a fraud upon a tribunal shall promptly reveal the fraud to the tribunal.

§10.86 [reserved]

§10.87 Communicating with one of adverse interest.

During the course of representation of a client, a practitioner shall not:

(a) Communicate or cause another to communicate on the subject of the representation with a party the practitioner knows to be represented by another practitioner in that matter unless the practitioner has the prior consent of the other practitioner representing such other party or is authorized by law to do so. It is not improper, however, for a practitioner to encourage a client to meet with an opposing party for settlement discussions.

(b) Give advice to a person who is not represented by a practitioner other than the advice to secure counsel, if the interests of such person are or have a reasonable possibility of being in conflict with the interests of the practitioner's client.

§10.88 Threatening criminal prosecution.

A practitioner shall not present, participate in presenting, or threaten to present criminal charges solely to obtain an advantage in any prospective or pending proceeding before the Office.

§10.89 Conduct in proceedings.

(a) A practitioner shall not disregard or advise a client to disregard any provision of this Subchapter or a decision of the Office made in the course of a proceeding before the Office, but the practitioner may take appropriate steps in good faith to test the validity of such provision or decision.

(b) In presenting a matter to the Office, a practitioner shall disclose:

(1) Controlling legal authority known to the practitioner to be directly adverse to the position of the client and which is not disclosed by opposing counsel or an employee of the Office.

(2) Unless privileged or irrelevant, the identities of the client the practitioner represents and of the persons who employed the practitioner.

(c) In appearing in a professional capacity before a tribunal, a practitioner shall not:

(1) State or allude to any matter that the practitioner has no reasonable basis to believe is relevant to the case or that will not be supported by admissible evidence.

(2) Ask any question that the practitioner has no reasonable basis to believe is relevant to the case and that is intended to degrade a witness or other person.

(3) Assert the practitioner's personal knowledge of the facts in issue, except when testifying as a witness.

(4) Assert the practitioner's personal opinion as to the justness of a cause, as to the credibility of a witness, as to the culpability of a civil litigant, or as to the guilt or innocence of an accused; but the practitioner may argue, on the practitioner's analysis of the evidence, for any position or conclusion with respect to the matters stated herein.

(5) Engage in undignified or discourteous conduct before the Office (see §1.3 of the Subchapter).

(6) Intentionally or habitually violate any provision of this Subchapter or established rule of evidence.

§10.90–10.91 [reserved]

§10.92 Contact with witnesses.

(a) A practitioner shall not suppress any evidence that the practitioner or the practitioner's client has a legal obligation to reveal or produce.

(b) A practitioner shall not advise or cause a person to be secreted or to leave the jurisdiction of a tribunal for the purpose of making the person unavailable as a witness therein.

(c) A practit ioner shall not pay, offer to pay, or acquiesce in the payment of compensation to a witness contingent upon the content of the witness' affidavit, testimony or the outcome of the case. But a practitioner may advance, guarantee, or acquiesce in the payment of:

(1) Expenses reasonably incurred by a witness in attending, testifying, or making an affidavit.

(2) Reasonable compensation to a witness for the witness' loss of time in attending, testifying, or making an affidavit.

(3) A reasonable fee for the professional services of an expert witness.

§10.93 Contact with officials.

(a) A practitioner shall not give or lend anything of value to a judge, official, or employee of a tribunal under circumstances which might give the appearance that the gift or loan is made to influence official action.

(b) In an adversary proceeding, including any *inter partes* proceeding before the Office, a practitioner shall not communicate, or cause another to communicate, as to the merits of the cause with a judge, official, or Office employee before whom the proceeding is pending, except:

(1) In the course of official proceedings in the cause.

(2) In writing if the practitioner promptly delivers a copy of the writing to opposing counsel or to the adverse party if the adverse party is not represented by a practitioner.

(3) Orally upon adequate notice to opposing counsel or to the adverse party if the adverse party is not represented by a practitioner.

(4) As otherwise authorized by law.

§§10.94-10.99 [reserved]

§10.100 Canon 8.

A practitioner should assist in improving the legal system.

§10.101 Action as a public official.

(a) A practitioner who holds public office shall not:

(1) Use the practitioner's public position to obtain, or attempt to obtain, a special advantage in legislative matters for the practitioner or for a client under circumstances where the practitioner knows or it is obvious that such action is not in the public interest.

(2) Use the practitioner's public position to influence, or attempt to influence, a tribunal to act in favor of the practitioner or of a client.

(3) Accept any thing of value from any person when the practitioner knows or it is obvious that the offer is for the purpose of influencing the practitioner's action as a public official.

(b) A practitioner who is an officer or employee of the United States shall not practice before the Office in patent cases except as provided in §10.6(d).

§10.102 Statements concerning officials.

(a) A practitioner shall not knowingly make false statements of fact concerning the qualifications of a candidate for election or appointment to a judicial office or to a position in the Office.

(b) A practitioner shall not knowingly make false accusations against a judge, other adjudicatory officer, or employee of the Office.

§10.103 Practitioner candidate for judicial office.

A practitioner who is a candidate for judicial office shall comply with applicable provisions of law.

§10.104-10.109 [reserved]

§10.110 Canon 9.

A practitioner should avoid even the appearance of professional impropriety.

§10.111 Avoiding even the appearance of impropriety.

(a) A practitioner shall not accept private employment in a matter upon the merits of which he or she has acted in a judicial capacity.

(b) A practitioner shall not accept private employment in a matter in which he or she had personal responsibility while a public employee.

(c) A practitioner shall not state or imply that the practitioner is able to influence improperly or upon irrelevant grounds any tribunal, legislative body, or public official.

§10.112 Preserving identity of funds and property of client.

(a) All funds of clients paid to a practitioner or a practitioner's firm, other than advances for costs and expenses, shall be deposited in one or more identifiable bank accounts maintained in the United States or, in the case of a practitioner having an office in a foreign country or registered under §10.6(c), in the United States or the foreign country.

(b) No funds belonging to the practitioner or the practitioner's firm shall be deposited in the bank accounts required by paragraph (a) of this section except as follows:

(1) Funds reasonably sufficient to pay bank charges may be deposited therein.

(2) Funds belonging in part to a client and in part presently or potentially to the practitioner or the practitioner's firm must be deposited therein, but the portion belonging to the practitioner or the practitioner's firm may be withdrawn when due unless the right of the practitioner or the practitioner's firm to receive it is disputed by the client, in which event the disputed portion shall not be withdrawn until the dispute is finally resolved.

(c) A practitioner shall:

(1) Promptly notify a client of the receipt of the client's funds, securities, or other properties.

(2) Identify and label securities and properties of a client promptly upon receipt and place them in a safe deposit box or other place of safekeeping as soon as practicable.

(3) Maintain complete records of all funds, securities, and other properties of a client coming into the possession of the practitioner and render appropriate accounts to the client regarding the funds, securities, or other properties.

(4) Promptly pay or deliver to the client as requested by a client the funds, securities, or other properties in the possession of the practitioner which the client is entitled to receive.

(OMB Control No. 0651-0017)

§§10.113-10.129 [reserved]

Investigations and Disciplinary Proceedings

§10.130 Reprimand, suspension or exclusion.

(a) The Commissioner may, after notice and opportunity for a hearing, (a) reprimand or (b) suspend or exclude, either generally or in any particular case, any individual, attorney, or agent shown to be incompetent or disreputable, who is guilty of gross misconduct, or who violates a Disciplinary Rule.

(b) Petitions to disqualify a practitioner in *ex parte* or *inter partes* cases in the Office are not governed by §§10.130 through 10.170 and will be handled on a case-by-case basis under such conditions as the Commissioner deems appropriate.

§10.131 Investigations.

(a) The Director is authorized to investigate possible violations of Disciplinary Rules by practitioners. See §10.2(b) (2).

(b) Practitioners shall report and reveal to the Director any knowledge or evidence required by §10.24. A practitioner shall cooperate with the Director in connection with any investigation under paragraph (a) of this section and with officials of the Office in connection with any disciplinary proceeding instituted under §10.132(b).

(c) Any non-practitioner possessing knowledge or information concerning a violation of a Disciplinary Rule by a practitioner may report the violation to the Director. The Director may require that the report be presented in the form of an affidavit.

§10.132 Initiating a disciplinary proceeding; reference to an administrative law judge.

(a) If after conducting an investigation under §10.131(a) the Director is of the opinion that a practitioner has violated a Disciplinary Rule, the Director shall after complying where necessary with the provisions of 5 U.S.C. 558(c), call a meeting of the Committee on Discipline. The Committee on Discipline shall then determine as specified in §10.4(b) whether a disciplinary proceeding shall be instituted under paragraph (b) of this section.

(b) If the Committee on Discipline determines that probable cause exists to believe that a practitioner has violated a Disciplinary Rule, the Director shall institute a disciplinary proceeding by filing a complaint under §10.134. The complaint shall be filed in the Office of the Director. A disciplinary proceeding may result in:

(1) a reprimand or

(2) suspension or exclusion of a practitioner from practice before the Office.

(c) Upon the filing of a complaint under §10.134, the Commissioner will refer the disciplinary proceeding to an administrative law judge.

§10.133 Conference between Director and practitioner; resignation.

(a) *General.* The Director may confer with a practitioner concerning possible violations by the practitioner of a Disciplinary Rule whether or not a disciplinary proceeding has been instituted.

(b) *Resignation.* Any practitioner who is the subject of an investigation under §10.131 or against whom a complaint has been filed under §10.134 may resign from practice before the Office only by submitting with the Director an affidavit stating his or her desire to resign.

(c) If filed prior to the date set by the administrative law judge for a hearing, the affidavit shall state that:

(1) the resignation is freely and voluntarily proferred;

(2) the practitioner is not acting under duress or coersion from the Office;

(3) the practitioner is fully aware of the implications of filing the resignation;

(4) the practitioner is aware (i) of a pending investigation or (ii) of charges arising from the complaint alleging that he or she is guilty of a violation of the Patent and Trademark Office Code of Professional Responsibility, the nature of which shall be set forth by the practitioner to the satisfaction of the Director;

(5) the practitioner acknowledges that, if and when he or she applies for reinstatement under §10.160, the Director will conclusively presume, for the limited purpose of determining the application for reinstatement, that:

(i) the facts upon which the complaint is based are true and

(ii) the practitioner could not have successfully defended himself or herself against (A) charges predicated on the violation under investigation or (B) charges set out in the complaint filed against the practitioner.

(d) If filed on or after the date set by the administrative law judge for a hearing, the affidavit shall make the statements required by subparagraphs (1) through (4) of paragraph (b) of this section and shall state that:

(1) the practitioner acknowledges the facts upon which the complaint is based are ture; and

(2) the resignation is being submitted because the practitioner could not successfully defend himself or herself against (i) charges predicated on the violation under investigation or (ii) charges set out in the complaint.

(e) When an affidavit under paragraph (b) or (c) of this section is received while an investigation is pending, the Commissioner shall enter an order excluding the practitioner "on consent." When an affidavit under paragraphs (b) or (c) of this section is received after a complaint under §10.134 has been filed, the Director shall notify the administrative law judge. The administrative law judge shall enter an order transferring the disciplinary proceeding to the Commissioner and the Commissioner shall enter an order excluding the practitioner "on consent."

(f) Any practitioner who resigns from practice before the Office under this section and who intends to reapply for admission to practice before the Office must comply with the provisions of §10.158.

(g) Settlement. Before or after a complaint is filed under §10.134, a settlement conference may occur between the Director and a practitioner for the purpose of settling any disciplinary matter. If an offer of settlement is made by the Director or the practitioner and is not accepted by the other, no reference to the offer of settlement or its refusal shall be admissible in evidence in the disciplinary proceeding unless both the Director and the practitioner agree in writing.

§10.134 Complaint.

(a) A complaint instituting a disciplinary proceeding shall:

(1) Name the practitioner, who may then be referred to as the "respondent."

(2) Give a plain and concise description of the alleged violations of the Disciplinary Rules by the practitioner.

(3) State the place and time for filing an answer by the respondent.

(4) State that a decision by default may be entered against the respondent if an answer is not timely filed.

(5) Be signed by the Director.

(b) A complaint will be deemed sufficient if it fairly informs the respondent of any violation of the Disciplinary Rules which form the basis for the disciplinary proceeding so that the respondent is able to adequately prepare a defense.

§10.135 Service of complaint.

(a) A complaint may be served on a respondent in any of the following methods:

(1) By handing a copy of the complaint personally to the respondent, in which case the individual handing the complaint to the respondent shall file an affidavit with the Director indicating the time and place the complaint was handed to the respondent.

(2) By mailing a copy of the complaint by "Express Mail" or first-class mail to:

(i) a registered practitioner at the address for which separate notice was last received by the Director or

(ii) a non-registered practitioner at the last address for the respondent known to the Director.

(3) By any method mutually agreeable to the Director and the respondent.

(b) If a complaint served by mail under paragraph (a)(2) of this section is returned by the U.S. Postal Service, the Director shall mail a second copy of the complaint to the respondent. If the second copy of the complaint is also returned by the U.S. Postal Service, the Director shall serve the respondent by publishing an a ppropriate notice in the *Official Gazette* for four consecutive weeks, in which case the time for answer shall be at least thirty days from the fourth publication of the notice.

(c) If a respondent is a registered practitioner, the Director may serve simultaneously with the complaint a letter under §10.11(b). The Director may require the respondent to answer the §10.11(b) letter within a period of not less than 15 days. An answer to the §10.11(b) letter shall constitute proof of service. If the respondent fails to answer the §10.11(b) letter, his or her name will be removed from the register as provided by §10.11(b).

(d) If the respondent is represented by an attorney under §10.140(a), a copy of the complaint shall also be served on the attorney.

§10.136 Answer to complaint.

(a) *Time for answer.* An answer to a complaint shall be filed within a time set in the complaint which shall be not less than thirty days.

(b) *With whom filed.* The answer shall be filed in writing with the administrative law judge. The time for filing an answer may be extended once for a period of no more than thirty days by the administrative law judge upon a showing of good cause provided a motion requesting an extension of time is filed within thirty days after the date the complaint is filed by the Director. A copy of the answer shall be served on the Director.

(c) *Content.* The respondent shall include in the answer a statement of the facts which constitute the grounds of defense and shall specifically admit or deny each allegation set forth in the complaint. The respondent shall not deny a material allegation in the complaint which the respondent knows to be true or state that respondent is without sufficient information to form a belief as to the truth of an allegation when in fact the respondent possesses that information. The respondent shall also state affirmatively special matters of defense.

(d) *Failure to deny allegations in complaint.* Every allegation in the complaint which is not denied by a respondent in the answer is deemed to be admitted and may be considered proven. No further evidence in respect of that allegation need be received by the administrative law judge at any hearing. Failure to timely file an answer will constitute an admission of the allegations in the complaint.

(e) *Reply by Director.* No reply to an answer is required by the Director and any affirmative defense in the answer shall be deemed to be denied. The Director may, however, file a reply if he or she chooses or if ordered by the adminstrative law judge.

§10.137 Supplemental complaint.

False statements in an answer may be made the basis of a supplemental complaint.

§10.138 Contested case.

Upon the filing of an answer by the respondent, a disciplinary proceeding shall be regarded as a contested case within the meaning of 35 U.S.C. 24. Evidence obtained by a subpoena issued under 35 U.S.C. 24 shall not be admitted into the record or considered unless leave to proceed under 35 U.S.C. 24 was previously authorized by the administrative law judge.

§10.139 Administrative law judge; appointment; responsibilities; review of interlocutory orders; stays.

(a) *Appointment.* An administrative law judge, appointed under 5 U.S.C. 3105, shall conduct disciplinary proceedings as provided by this part.

(b) *Responsibilities.* The administrative law judge shall have authority to:

(1) Administer oaths and affirmations;

(2) Make rulings upon motions and other requests;

(3) Rule upon offers of proof, receive relevant evidence, and examine witnesses;

(4) Authorize the taking of a deposition of a witness in lieu of personal appearance of the witness before the adminstrative law judge;

(5) Determine the time and place of any hearing and regulate its course and conduct;

(6) Hold or provide for the holding of conferences to settle or simplify the issues;

(7) Receive and consider oral or written arguments on facts or law;

(8) Adopt procedures and modify procedures from time to time as occasion requires for the orderly disposition of proceedings;

(9) Make initial decisions under §10.154; and

(10) Perform acts and take measures as necessary to promote the efficient and timely conduct of any disciplinary proceeding.

(c) *Time for making initial decision.* The administrative law judge shall set times and exercise control over a disciplinary proceeding such that an initial decision under §10.154 is normally issued within six months of the date a complaint is filed. The administrative law judge may, however, issue an initial decision more than six months after a complaint is filed if in his or her opinion there exist unusual circumstances which preclude issuance of an initial decision within six months of the filing of the complaint.

(d) *Review of interlocutory orders.* An interlocutory order of an administrative law judge will not be reviewed by the Commissioner except:

(1) when the administrative law judge shall be of the opinion (i) that the interlocutory order involves a controlling question of procedure or law as to which there is a substantial ground for a difference of opinion and (ii) that an immediate decision by the Commissioner may materially advance the ultimate termination of the disciplinary proceeding or

(2) in an extraordinary situation where justice requires review.

(e) *Stays pending review of interlocutory order.* If the Director or a respondent seeks review of an interlocutory order of an administrative law judge under paragraph (b)(2) of this section, any time period set for taking action by the administrative law judge shall not be stayed unless ordered by the Commissioner or the administrative law judge.

§10.140 Representative for Director or respondent.

(a) A respondent may be represented before the Office in connection with an investigation or disciplinary proceeding by an attorney. The attorney shall file a written declaration that he or she is an attorney within the meaning of §10.1(c) and shall state:

(1) the address to which the attorney wants correspondence related to the investigation or disciplinary proceeding sent and

(2) a telephone number where the attorney may be reached during normal business hours.

(b) The Commissioner shall designate at least two associate solicitors in the Office of the Solicitor to act as representatives for the Director in disciplinary proceedings. In prosecuting disciplinary proceedings, the designated associate solicitors shall not involve the Solicitor or the Deputy Solicitor. The Solicitor and the Deputy Solicitor shall remain insulated from the investigation and prosecution of all disciplinary proceedings in order that they shall be available as counsel to the Commissioner in deciding disciplinary proceedings.

§10.141 Filing of papers.

(a) The provisions of §1.8 of this Subchapter do not apply to disciplinary proceedings.

(b) All papers filed after the complaint and prior to entry of an initial decision by the administrative law judge shall be filed with the administrative law judge at an address or place designated by the administrative law judge. All papers filed after entry of an initial decision by the administrative law judge shall be filed with the Director. The Director shall promptly forward to the Commissioner any paper which requires action under this part by the Commissioner.

(c) The administrative law judge or the Director may provide for filing papers and other matter by hand or by "Express Mail."

§10.142 Service of papers.

(a) All papers other than a complaint shall be served on a respondent represented by an attorney by:

(1) delivering a copy of the paper to the office of the attorney; or

(2) mailing a copy of the paper by first-class mail or "Express Mail" to the attorney at the address provided by the attorney under §10.140(a) (1); or

(3) any other method mutually agreeable to the attorney and a representative for the Director.

(b) All papers other than a complaint shall be served on a respondent who is not represented by an attorney by:

(1) delivering a copy of the paper to the respondent; or

(2) mailing a copy of the paper by first-class mail or "Express Mail" to the respondent at the address to which a complaint may be served or such other address as may be designated in writing by the respondent; or

(3) any other method mutually agreeable to the respondent and a representative of the Director.

(c) A respondent shall serve on the representative for the Director one copy of each paper filed with the administrative law judge or the Director. A paper may be served on the representative for the Director by:

(1) delivering a copy of the paper to the representative; or

(2) mailing a copy of the paper by first-class mail or "Express Mail" to an address designated in writing by the representative; or

(3) any other method mutually agreeable to the respondent and the representative.

(d) Each paper filed in a disciplinary proceeding shall contain therein a certificate of service indicating:

(1) the date on which service was made and

(2) the method by which service was made.

(e) The administrative law judge or the Commissioner may require that a paper be served by hand or by "Express Mail."

(f) Service by mail is completed when the paper mailed in the United States is placed into the custody of the U.S. Postal Service.

§10.143 Motions.

Motions may be filed with the administrative law judge. The adminstrative law judge will determine on a case-by-case basis the time period for response to a motion and whether replies to responses will be authorized. No motion shall be filed with the administrative law judge unless such motion is supported by a written statement by the moving party that the moving party or attorney for the moving party has conferred with the opposing party or attorney for the opposing party in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If issues raised by a motion are resolved by the parties prior to a decision on the motion by the administrative law judge, the parties shall promptly notify the administrative law judge.

§10.144 Hearings.

(a) The administrative law judge shall preside at hearings in disciplinary proceedings. Hearings will be stenographically recorded and transcribed and the testimony of witnesses will be received under oath or affirmation. The administrative law judge shall conduct hearings in accordance with 5 U.S.C. 556. A copy of the transcript of the hearing shall become part of the record. A copy of the transcript shall be provided to the Director and the respondent at the expense of the Office.

(b) If the respondent to a disciplinary proceeding fails to appear at the hearing after a notice of hearing has been given by the administrative law judge, the administrative law judge may deem the respondent to have waived the right to a hearing and may proceed with the hearing in the absence of the respondent.

(c) A hearing under this section will not be open to the public except that the Director may grant a request by a respondent to open his or her hearing to the public and make the record of the disciplinary proceeding available for public inspection, *provided* agreement is reached in advance to exclude from public disclosure information which is privileged or confidential under applicable laws or regulations. If a disciplinary proceeding results in disciplinary action against a practitioner, and subject to §10.159(c), the record of the entire disciplinary proceeding, including any settlement agreement, will be available for public inspection.

§10.145 Proof; variance; amendment of pleadings.

In case of a variance between the evidence and the allegations in a complaint, answer, or reply, if any, the administrative law judge may order or authorize amendment of the complaint, answer, or reply to conform to the evidence. Any party who would otherwise be prejudiced by the amendment will be given reasonable opportunity to meet the allegations in the complaint, answer, or reply, as amended, and the administrative law judge shall make findings on any issue presented by the complaint, answer, or reply as amended.

§§10.146-10.148 [reserved]

§10.149 Burden of proof.

In a disciplinary proceeding, the Director shall have the burden of proving his or her case by clear and convincing evidence and a respondent shall have the burden of providing any affirmative defense by clear and convincing evidence.

§10.150 Evidence.

(a) *Rules of evidence.* The rules of evidence prevailing in courts of law and equity are not controlling in hearings in disciplinary proceedings. However, the administrative law judge shall exclude evidence which is irrelevant, immaterial, or unduly repetitious.

(b) *Depositions.* Depositions of witnesses taken pursuant to §10.151 may be admitted as evidence.

(c) *Government documents.* Official documents, records, and papers of the Office are admissible without extrinsic evidence of authenticity. These documents, records and papers may be evidenced by a copy certified as correct by an employee of the Office.

(d) *Exhibits.* If any document, record, or other paper is introduced in evidence as an exhibit, the administrative law judge may authorize the withdrawal of the exhibit subject to any conditions the administrative law judge deems appropriate.

(e) *Objections.* Objections to evidence will be in short form, stating the grounds of objection. Objections and rulings on objections will be a part of the record. No exception to the ruling is necessary to preserve the rights of the parties.

§10.151 Depositions.

(a) Depositions for use at the hearing in lieu of personal appearance of a witness before the administrative law judge may be taken by respondent or the Director upon a showing of good cause and with the approval of, and under such conditions as may be deemed appropri-

ate by, the administrative law judge. Depositions may be taken upon oral or written questions, upon not less than ten days written notice to the other party, before any officer authorized to administer an oath or affirmation in the place where the deposition is to be taken. The requirement of ten days notice may be waived by the parties and depositions may then be taken of a witness and at a time and place mutually agreed to by the parties. When a deposition is taken upon written questions, copies of the written questions will be served upon the other party with the notice and copies of any written cross-questions will be served by hand or "Express Mail" not less then five days before the date of the taking of the deposition unless the parties mutually agree otherwise. A party on whose behalf a deposition is taken shall file a copy of a transcript of the deposition signed by a court reporter with the administrative law judge and shall serve one copy upon the opposing party. Expenses for a court reporter and preparing, serving, and filing depositions shall be borne by the party at whose instance the deposition is taken.

(b) When the Director and the respondent agree in writing, a deposition of any witness who will appear voluntarily may be taken under such terms and conditions as may be mutually agreeable to the Director and the respondent. The deposition shall not be filed with the administrative law judge and may not be admitted in evidence before the administrative law judge unless he or she orders the deposition admitted in evidence. The admissibility of the deposition shall lie within the discretion of the administrative law judge who may reject the deposition on any reasonable basis including the fact that demeanor is involved and that the witness should have been called to appear personally before the administrative law judge.

§10.152 Discovery.

Discovery shall not be authorized except as follows:

(a) After an answer is filed under §10.136 and when a party establishes in a clear and convincing manner that discovery is necessary and relevant, the administrative law judge, under such conditions as he or she deems appropriate, may order an opposing party to:

(1) answer a reasonable number of written requests for admission or interrogatories;

(2) produce for inspection and copying a reasonable number of documents; and

(3) produce for inspection a reasonable number of things other than documents.

(b) Discovery shall not be authorized under paragraph (a) of this section of any matter which:

(1) will be used by another party solely for impeachment or cross-examination;

(2) is not available to the party under 35 U.S.C. §122;

(3) relates to any disciplinary proceeding commenced in the Patent and Trademark Office prior to Mar. 8, 1985;

(4) relates to experts except as the administrative law judge may require under paragraph (e) of this section.

(5) is privileged; or

(6) relates to mental impressions, conclusions, opinions, or legal theories of any attorney or other representative of a party.

(c) the administrative law judge may deny discovery requested under paragraph (a) of this section if the discovery sought:

(1) will unduly delay the disciplinary proceeding;

(2) will place an undue burden on the party required to produce the discovery sought; or

(3) is available (i) generally to the public, (ii) equally to the parties; or (iii) to the party seeking the discovery through another source.

(d) Prior to authorizing discovery under paragraph (a) of this section, the administrative law judge shall require the party seeking discovery to file a motion (§10.143) and explain in detail for each request made how the discovery sought is necessary and relevant to an issue actually raised in the complaint or the answer.

(e) The administrative law judge may require parties to file and serve, prior to any hearing, a pre-hearing statement which contains

(1) A list (together with a copy) of all proposed exhibits to be used in connection with a party's case-in-chief,

(2) a list of proposed witnesses,

(3) as to each proposed expert witness:

(i) an identification of the field in which the individual will be qualified as an expert;

(ii) a statement as to the subject matter on which the expert is expected to testify; and

(iii) a statement of the substance of the facts and opinions to which the expert is expected to tesify,

(4) the identity of government employees who have investigated the case, and

(5) copies of memoranda reflecting respondent's own statements to administrative representatives.

(f) After a witness testifies for a party, if the opposing party requests, the party may be required to produce, prior to cross-examination, any written statement made by the witness.

§10.153 Proposed findings and conclusions; post-hearing memorandum.

Except in cases when the respondent has failed to answer the complaint, the administrative law judge, prior to making an initial decision, shall afford the parties a reasonable opportunity to submit proposed findings and conclusions and a post-hearing memorandum in support of the proposed findings and conclusions.

§10.154 Initial decision of administrative law judge.

(a) The administrative law judge shall make an initial decision in the case. The decision will include (a) a statement of findings and conclusions, as well as the reasons or basis therefore with appropriate references to the record, upon all the material issues of fact, law, or discretion presented on the record, and (b) an order of suspension or exclusion from practice, an order of reprimand, or an order dismissing the complaint. The administrative law judge shall file the decision with the Director and shall transmit a copy to the representative of the Director and to the respondent. In the absence of an appeal to the Commissioner, the decision of the administrative law judge will, without further proceedings, become the decision of the Commissioner of Patents and Trademarks thirty (30) days from the date of the decision of the administrative law judge.

(b) The initial decision of the administrative law judge shall explain the reason for any penalty of reprimand, suspension or exclusion. In determining any penalty, the following should normally be considered:

(1) the public interest;

(2) the seriousness of the violation of the Disciplinary Rule;

(3) the deterrent effects deemed necessary; and

(4) the integrity of the legal profession; and

(5) any extenuating circumstances.

§10.155 Appeal to the Commissioner.

(a) Within thirty (30) days from the date of the initial decision of the administrative law judge under §10.154, either party may appeal to the Commissioner. An appeal by the respondent will be filed with the Director in duplicate and will include exceptions to the decisions of the administrative law judge and supporting reasons for those exceptions. If the Director files the appeal, the Director shall serve a copy of the appeal. Within thirty (30) days after receipt of an appeal or copy thereof, the other party may file a reply brief in duplicate with the Director. If the Director files the reply brief, the Director shall serve a copy of the reply brief. Upon the filing of an appeal and a reply brief, if any, the Director shall transmit the entire record to the Commissioner.

(b) The appeal will be decided by the Commissioner on the record made before the administrative law judge.

(c) The Commissioner may order reopening of a disciplinary proceeding in accordance with the principles which govern the granting of new trials. Any request to reopen a disciplinary proceeding on the basis of newly discovered evidence must demonstrate that the newly discovered evidence could not have been discovered by due diligence.

§10.156 Decision of the Commissioner.

(a) An appeal from an initial decision of the administrative law judge shall be decided by the Commissioner. The Commissioner may affirm, reverse, or modify the initial decision or remand the matter to the administrative law judge for such further proceedings as the Commissioner may deem appropriate. Entry of a decision by the Commissioner is a final agency action in a disciplinary proceeding. In making a final decision, the Commissioner shall review the record or those portions of the record as may be cited by the parties in order to limit the issues. The Comissioner shall tranmit a copy of the final decision to the Director and to the respondent.

(b) A final decision of the Commissioner may dismiss a disciplinary proceeding, reprimand a practitioner, or may suspend or exclude the practitioner from practice before the Office.

§10.157 Review of Commissioner's final decision.

(a) Review of the Commissioner's final decision in a disciplinary case may be had by a petition filed in the United States District Court for the District of Columbia. See 35 U.S.C. 32 and Local Rule 1-26 of the United States District Court for the District of Columbia.

(b) The Commissioner may stay a final decision pending review of the Commissioner's final decision.

§10.158 Suspended or excluded practitioner.

(a) A practitioner who is suspended or excluded from practice before the Office under §10.156(b) shall not engage in unauthorized practice of patent, trademark and other non-patent law before the Office.

(b) Unless otherwise ordered by the Commissioner, any practitioner who is suspended or excluded from practice before the Office under §10.156(b) shall:

(1) Within 30 days of entry of the order of suspension or exclusion, notify all bars of which he or she is a member and all clients of the practitioner for whom he or she is handling matters before the Office in separate written communications of the suspension or exclusion and shall file a copy of each written communication with the Director.

(2) Within 30 days of entry of the order of suspension or exclusion, surrender a client's active Office case files to (i) the client or (ii) another practitioner designated by the client.

(3) Not hold himself or herself out as authorized to practice law before the Office.

(4) Promptly take any necessary and appropriate steps to remove from any telephone, legal, or other directory any advertisement, statement, or representation which would reasonably suggest that the practitioner is authorized to practice patent, trademark or other non-patent law before the Office, and within 30 days of taking those steps, file with the Director an affidavit describing the precise nature of the steps taken.

(5) Not advertise the practitioner's availability or ability to perform or render legal services for any person having immediate, prospective, or pending business before the Office.

(6) Not render legal advice or services to any person having immediate, prospective, or pending business before the Office as to that business.

(7) Promptly take steps to change any sign identifying a practitioner's or the practitioner's firm's office and the practitioner's or the practitioner's firm's stationary to delete therefrom any advertisement, statement, or representation which would reasonably suggest that the practitioner is authorized to practice law before the Office.

(8) Within 30 days, return to any client any unearned funds, including any unearned retainer fee, and any securities and property of the client.

(c) A practitioner who is suspended or excluded from practice before the Office and who aides another practitioner in any way in the other practitioner's practice of law before the Office, may, under the direct supervision of the other practitioner, act as a para-legal for the other practitioner or perform other services for the other practitioner which are normally performed by lay-persons, *provided:*

(1) the practitioner who is suspended or excluded is:

(i) a salaried employee of:

(A) the other practitioner;

(B) the other practitioner's law firm; or

(C) a client-employer who employs the other practitioner as a salaried employee;

(2) the other practitioner assumes full professional responsibility to any client and the Office for any work performed by the suspended or excluded practitioner for the other practitioner;

(3) the suspended or excluded practitioner, in connection with any immediate, prospective, or pending business before the Office, does not:

(i) communicate directly in writing, orally, or otherwise with a client of the other practitioner;

(ii) render any legal services to a client of the other practitioner; or

(iii) meet in person or in the presence of the other practitioner with:

(A) any Office official in connection with the prosecution of any patent, trademark, or other case;

(B) any client of the other practitioner, the other practioner's law firm, or the client-employer of the other practitioner;

(C) any witness or potential witness which the other practitioner, the other practitioner's law firm, or the other practitioner's client-employer may or intends to call as a witness in any proceeding before the Office. The term "witness" includes individuals who will testify orally in a proceeding before, or sign an affidavit or any other document to be filed in, the Office.

(d) When a suspended or excluded practitioner acts as a para-legal or performs services under paragraph (c) of this section, the suspended or excluded practitioner shall not thereafter be reinstated to practice before the Office unless:

(1) the suspended or excluded practitioner shall have filed with the Director an affidavit which (i) explains in detail the precise nature of all para-legal or other services performed by the suspended or excluded practitioner and (ii) shows by clear and convincing evidence that the suspended or excluded practitioner has complied with the provisions of this section and all Disciplinary Rules, and

(2) the other practitioner shall have filed with the Director a written statement which (i) shows that the other practitioner has read the affidavit required by subparagraph (d) (1) of this section and that the other practitioner believes every statement in the affidavit to be true and (ii) states why the other practitioner believes that the suspended or excluded practitioner has complied with paragraph (c) of this section.

§10.159 Notice of suspension or exclusion.

(a) Upon issuance of a final decision reprimanding a practitioner or suspending or excluding a practitioner from practice before the Office, the Director shall give notice of the final decision to appropriate employees of the Office and to interested departments, agencies, and courts of the United States. The Director shall also give notice to appropriate authorities of any State in which a

practitioner is known to be a member of the bar and any appropriate bar association.

(b) The Director shall cause to be published in the *Official Gazette* the name of any practitioner suspended or excluded from practice. Unless otherwise ordered by the Commissioner, the Director shall publish in the *Official Gazette* the name of any practitioner reprimanded by the Commissioner.

(c) The Director shall maintain records, which shall be available for public inspection, of every disciplinary proceeding where a practitioner is reprimanded, suspended, or excluded unless the Commissioner orders that the proceeding be kept confidential.

§10.160 Petition for reinstatement.

(a) A petition for reinstatement of a practitioner suspended for a period of less than five years will not be considered until the period of suspension has passed.

(b) A petition for reinstatement of a practitioner excluded from practice will not be considered until five years after the effective date of the exclusion.

(c) An individual who has resigned under §10.133 or who has been suspended or excluded may file a petition for reinstatement. The Director may grant a petition for reinstatement when the individual makes a clear and convincing showing that the individual will conduct himself or herself in accordance with the regulations of this part and that granting a petition for reinstatement is not contrary to the public interest. As a condition to reinstatement, the Director may require the individual to:

(1) meet the requirements of §10.7, including taking and passing an examination under §10.7(b) and

(2) pay all or a portion of the costs and expenses, not to exceed $1,500, of the disciplinary proceeding which lead to suspension or exclusion.

(d) Any suspended or excluded practitioner who has violated the provisions of §10.158 during his or her period of suspension or exclusion shall not be entitled to reinstatement until such time as the Director is satisfied that a period of suspension equal in time to that ordered by the Commissioner or exclusion for five years has passed during which the suspended or excluded practitioner has complied with the provisions of §10.158.

(e) Proceedings on any petition for reinstatement shall be open to the public. Before reinstating any suspended or excluded practitioner, the Director shall publish in the *Official Gazette* a notice of the suspended or excluded practitioner's petition for reinstatement and shall permit the public a reasonable opportunity to comment or submit evidence with respect to the petition for reinstatement.

§10.161 Savings clause.

(a) A disciplinary proceeding based on conduct engaged in prior to the effective date of these regulations may be instituted subsequent to such effective date, if such conduct would continue to justify suspension or exclusion under the provisions of this part.

(b) No practitioner shall be subject to a disciplinary proceeding under this part based on conduct engaged in before the effective date hereof if such conduct would not have been subject to disciplinary action before such effective date.

§10.162-10.169 [reserved]

§10.170 Suspension of rules.

(a) In an extraordinary situation, when justice requires, any requirement of the regulations of this part which is not a requirement of the statutes may be suspended or waived by the Commissioner or the Commissioner's designee, *sua sponte*, or on petition of any party, including the Director or the Director's representative, subject to such other requirements as may be imposed.

(b) Any petition under this section will not stay a disciplinary proceeding unless ordered by the Commissioner or an administrative law judge.

GERALD J. MOSSINGHOFF
Dec. 21, 1984. *Commissioner of Patents and Trademarks.*

[1052 TMOG 4]

TRADEMARK APPLICATION EXAMINATION AND CONTENT

TRADEMARK NOTICES

(163) Interviews Involving Trademark Application

Interviews frequently result in a better understanding of the issues involved, shorten the prosecution and facilitate disposal of applications.

Interviews for discussion of registrability of the mark of a pending application will not be had before the first official Office action thereon and ordinarily not before filing the first response. Arrangements for an interview should be made in advance so that the Examiner may review the case and be familiar with the details involved.

Interviews on Friday will no longer be prohibited as a matter of policy but all interviews should be set at a time satisfactory to all parties concerned.

A memorandum summarizing the conclusions reached at the interview should be prepared by the Examiner and placed in the application file. The memorandum will be retained in the application file until the prosecution is completed. Such procedure will not, however, relieve the applicant of the responsibility of complying with the requirements of Trademark Rule 2.62.

HORACE B. FAY, JR.,
July 6, 1964. *Assistant Commissioner.*

This supersedes the notice of Feb. 10, 1958. (728 O.G. TM 1)

[804 O.G. TM 147]

(164) Trademark Examining Procedure for Amended Applications; Reporting Oldest Dates of Amended Trademark Applications

Effective immediately, the order in which amendments to trademark applications are examined is changed. Previously, Examiners have usually acted on amended cases in order of filing date of the application which the amendment concerned, i.e., amended cases with the oldest filing date were examined first. Under the new procedure, amended cases will normally be examined in the order in which the amendment or other response is received, i.e., amendments that are received first will normally be examined first.

Effective with this issue of the *Official Gazette* (Trademark Section) in order to reflect more accurately the condition of division dockets, the column reporting the date of the oldest amended application in each division has been changed to indicate the date of receipt of the oldest filed amendment. Under this new method of reporting the oldest date of receipt of a filed amendment upon which no action has been taken by an Examiner will be indicated for each division of the Trademark Examining Operation.

RENE D. TEGTMEYER,
July 15, 1971. *Assistant Commissioner.*

[889 O.G. TM 6]

(165) Trademark Office Actions

Effective immediately Applicants or their attorneys will be provided with only one carbon copy of any office action, and the mailing of an additional carbon copy will be discontinued.

This change is consistent with the current practice in the patent examining operations and should result in greater efficiency in the preparation and mailing of office actions.

ROBERT GOTTSCHALK,
Feb. 7, 1972. *Commissioner of Patents.*

[895 O.G. TM 238]

(166) Petition to Make Trademark Applications Special

The practice of expediting the prosecution of new trademark applications on request of the applicant (accelerated prosecution) was rescinded, effective Aug. 1, 1971 (36 F.R. 13231, July 16, 1971; 825 O.G. 2). This action was taken after a careful study of the practice, including a recommendation of the Public Advisory Committee for Trademark Affairs that the Patent Office terminate accelerated prosecution of trademark applications. The study considered both the effect of the procedure on the workload of the Trademark Operations and the broader interest of examining trademark applications in an order which is equitable to all applicants.

Since the termination of this practice, the Office has experienced some increase in the number of petitions requesting the Commissioner to invoke his supervisory authority pursuant to Rule 2.146 in order to advance the examination of applications out of their regular order. This was to be expected since applicants who might have been able to show special circumstances entitling them to advanced examination could previously achieve this special treatment without resorting to a petition. However, some of the petitions now being received are not considered sufficient to justify the extraordinary relief of invoking the supervisory authority of the Commissioner for the purpose of advancing the applications out of their regular order.

In particular, a number of such petitions have been based on the ground that the applicant is about to embark on an advertising campaign or to commit advertising or promotional expenditures in which the mark applied for is material. Such a ground is not considered to constitute appropriate circumstances justifying the advancement of the application out of its regular turn and the petitions based on such ground have been and will continue to be denied. The principal reason for the denial is that these circumstances are applicable to a substantial portion of the trademark applications filed in the Patent Office. The supervisory authority of the Commissioner should be exercised only where an extraordinary reason for such action has been disclosed. See *Anderson & Dyer* v. *Lewry,* 89 O.G. 1861, 1899 C.D. 230, and *Wilputte* v. *Van Ackeren,* 103 USPQ 235. Thus, the extraordinary remedy of invoking the supervisory authority of the Commissioner is not considered appropriate under these circumstances.

In the interest of equitable treatment of all applicants, the policy of the Office in granting such petitions will be restricted to those cases in which particular and very special circumstances exist, such as a demonstrable possibility of loss of substantial rights, rather than circumstances which would be equally applicable to a large number of other applicants for trademark registration.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. TM 2]

(167) Title 37—Patents, Trademarks, and Copyrights

Chapter I—Patent Office, Department of Commerce

Parts 2 and 6—Rules of Practice in Trademark Cases

International Trademark Classification

A proposal was published at 37 F.R. 6404 to revise §6.1 of the Rules of Practice in Trademark Cases. The Patent Office proposed to establish the "International Classification of Goods and Services to Which Trademarks Are Applied" (the subject of the "Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks" of 1957, as revised at Stockholm on July 14, 1967) as the primary classification of goods and services for registration of trademarks and service marks. Pursuant to the Notice, written comments have been received, and a public hearing was held on June 14, 1972. Full consideration has been given to all matter presented, and changes in the text of the original proposal have been made in view thereof. It has been determined that adoption of the international classification system is desirable.

The Patent Office has studied the international classification and, since Mar. 5, 1968, has indicated the appropriate international class in all publications and on all issued registrations and renewals as a subsidiary classification. Based on this experience and the comments received, it is now believed that adoption of the international schedule as the primary classification system is desirable. The international system is easier to administer because of fewer classes of goods and the availability of an alphabetical listing of goods and services.

The Nice Agreement provides for an International Committee of Experts whose objective is to keep the classification current. The classification of specific goods and services is set forth in the Alphabetical List entitled "International Classification of Goods and Services to Which Trademarks Are Applied" (published by the World Intellectual Property Organization). In addition, the International Trademark Classification List contains the names of the classes setting forth the basic contents of each class. The Alphabetical List also comprises explanatory notes which serve as guidelines for determining the appropriate international class for a specific product or service.

The alphabetical listing within the International Trademark Classification Manual is currently used by the Office as a guideline for determining the degree of particularity of identification of goods. See "Identification of Goods and Services in Trademark Applications," 36 F.R. 13232; July 16, 1971.

Applications for registrations filed on or after Sept. 1, 1973, and registrations issuing thereon, will be classified according to the international classification set forth in the new §6.1. Accordingly, the international classification is adopted under Section 30 of the Trademark Act of all purposes under the statute and rules; and, therefore, will be the criterion for determining, inter alia, fees.

Applications for the registration of marks filed on or before Aug. 31, 1973, appeals or petitions to revive or oppositions filed in connection with said applications, and affidavits, renewals and petitions for cancellation filed in connection with registrations issuing thereon, will continue to be processed under the classification system existing at the time the mark was registered.

All applications which are published and registrations which are issued will carry both the appropriate international classification and existing U.S. classification number.

An insufficient fee, in connection with an appeal or opposition on any application or in connection with an affidavit or renewal filed in connection with any registration, will not render the same unacceptable, if the proper fee is submitted within a time limit set forth in a notification of the defect, providing the proper fee for at least one class has been originally submitted within the applicable time limit. This will be the case even if the full fee is not received within the sixth year in the case of an affidavit filed under Section 8 or before the end of the twentieth year, including the grace period, in the case of renewal applications, or within the six-month statutory response period in the case of an appeal, or

within the thirty-day opposition period, or any extension thereof in the case of the filing of an opposition.

The existing classification system will continue to be used for searching registered and pending marks until all documents in the search file are organized on the basis of the international system of classification. Until this changeover is effected, the U.S. class designation will continue to be printed on all published applications and registrations issued under the existing or the international classification system to facilitate searching on the basis of the existing U.S. system of classification.

Until all applications filed on or before Aug. 31, 1973, have been disposed of, the trademark sections of the *Official Gazette*, which are organized by class, will include two sections: one for applications published or registrations issued on the basis of applications filed on or before Aug. 31, 1973, organized by class according to the U.S. schedule of classes; the other section for applications published or registrations issued on the basis of applications filed on or after Sept. 1, 1973, organized by class according to the new international schedule.

Certification marks and collective membership marks will continue to be classified as set forth in redesignated §§6.3 and 6.4.

Efforts will be made to have the International Trademark Classification List printed by the Government Printing Office or otherwise assure the availability of the List from local sources. Notification will appear in the *Official Gazette* when the List is available from local sources of the Government Printing Office.

The English edition of the "International Classification of Goods and Services to Which Trademarks Are Applied" can presently be ordered from:

Sales Branch, The Patent Office, Block C
Station Square House, St. Mary Cray
Orpington, Kent, England

Certain modifications and additions to the international trademark classification have been published as supplements and are also available from the British Office. In addition, and inasmuch as the World Intellectual Property Organization (WIPO) has issued the List in several languages, it is anticipated that an English version will be published by that organization.

We have been advised by the Patent Office of the United Kingdom that the only acceptable methods of payment for the International Trademark Classification List are by International Postal Money Order or by banker's draft payable in sterling and drawn on a bank in the United Kingdom.

* * * * *

ROBERT GOTTSCHALK,
Commissioner of Patents.
May 14, 1973.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

Published in 38 F.R. 41681, June 4, 1973

[911 O.G. TM 210]

(Note: Rule 2.85 (Classification schedules) was revised and Rule 6.1 (International schedule of classes of goods and services) was established as of September 1, 1973 by this notice; prior U.S. schedule of classes was redesignated as Rule 6.2.)

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(168) **Wording In Verification or Declaration of Trademark Application**

Applicants and attorneys are requested to use the following wording in the part of the verification or declaration of the trademark application which indicates the signer's belief that the mark applied for does not resemble another person's mark:

—that no other person, firm, corporation, or association, to the best of his knowledge and belief, has the right to use such mark in commerce either in the identical form thereof or in such near resemblance thereto *as to be likely, when applied to the goods of such other person, to cause confusion, or cause mistake, or to deceive:*—

The wording emphasized conforms to the language of both Sections 1(a)(1) and 2(d) of the Trademark Act of 1946.

Some applicants and attorneys, instead of using the wording emphasized above, are still using the now obsolete wording "as might be calculated to deceive" which was promulgated in the forms under the Trademark Act of 1905 and inadvertently continued by the Act of 1946 up to October 1962 in Section 1(a)(1) and in the forms connected with the Act. Section 1(a)(1) of the 1946 Act was amended by Act of October 9, 1962 (Public Law 772, 87th Congress, 76 Stat. 769) to conform it to the language of Section 2(d) of the 1946 Act, since the language of Section 2(d) reflects the thinking at the time the 1946 Act was written. The wording of the trademark forms for the 1946 Act has also been amended appropriately.

It is desirable that proper wording be used. However, since the differences in wording referred to above are considered to be differences of form rather than of substance. Examiners will not require new verifications or declarations. When the obsolete wording is observed and a letter is to be written for other reasons, Examiners will at that time call attention to the fact that the wording is obsolete and should be modified in applications in the future.

RENE D. TEGTMEYER,
Assistant Commissioner for Trademarks.
Mar. 25, 1974.

[921 O.G. TM 186]

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(169) **Standardized Disclaimers**

Beginning with the Nov. 9, 1982 issue of the *Official Gazette*, disclaimers in marks published for opposition and in those registered on the Supplemental Register will be printed in a standardized form, regardless of the text submitted. Certificates of registration for marks issued on the Supplemental Register will also contain the standardized disclaimer as of that date. Certificates of registration for marks issued on the Principal Register will contain the uniform statement beginning Feb. 1, 1983. The disclaimed matter will be taken from the disclaimer of record and inserted into a standardized disclaimer for printing and data base purposes. The new disclaimer text will take the following form:

No claim is made to the exclusive right to use ——, apart from the mark as shown.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.
Aug. 30, 1982.

[1022 TMOG 44]

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(170) **Trademark "Revivals" and "Reinstatements"**

It would be of great assistance to the Office if the heading or caption of "Petitions to Revive" or "Requests for Reinstatement" of abandoned trademark applications carried the following identifying data:

1. Address Paper to the Attention of:
   Office of Director, Trademark Examining Operation
2. Serial Number
3. Mark
4. Applicant's Name

5. A title indicating the nature of the paper

Use of this heading for "Petitions to Revive" or "Requests for Reinstatement" of abandoned trademark applications will help ensure that the papers are promptly routed to the proper Office, which will prevent needless delay in its consideration.

MARK M. NEWMAN,
Director, Trademark Examining Operation.
Aug. 13, 1984.

[1046 TMOG 13]

TRADEMARK POST REGISTRATION

(171) **Trademark Rule 2.165 Requirement Where A Section 8 Affidavit Or Declaration Is Held Insufficient**

Several recent Petitions to the Commissioner have indicated a failure on the part of registrants and their attorneys to follow the requirements of Trademark Rule 2.165. Therefore, reviewing certain basic elements of this rule is considered timely so as to alert registrants and attorneys to technical errors which might lead to the cancellation of a valuable trademark registration.

Part (*a*) of Rule 2.165 indicates that the examiner will notify the registrant when an affidavit or declaration of use under Section 8 of the Statute is insufficient and the reasons therefor. When the registrant wishes the examiner to reconsider the affidavit or declaration, or when the registrant has taken additional steps to rectify the deficiencies and desires to have the examiner reconsider the affidavit or declaration in light of those steps, the request for reconsideration must be submitted within 6 months of the date of mailing of the notice of insufficiency.

Note, however, that a supplemental or substitute affidavit or declaration required by Section 8 cannot be considered unless it is received before the expiration of the six year anniversary of the registration. Consequently, registrants should file their affidavits as early as possible during the sixth year following registration.

There are situations where correcting the deficiency in the affidavit or declaration requires recording an assignment with the Assignment Division of this Office. If the recording cannot be completed within 6 months, the registrant must at least respond to the examiner's notice of insufficiency within that period. The response must indicate the steps being taken to correct the deficiency. The examiner can then allow the registrant additional time or suspend action depending on the circumstances. Registrants must always observe the "six month response" period whenever responding to the examiner from an adverse action.

Part (*b*) of Rule 2.165 permits a registrant to request the Commissioner to review the action of the examiner when he is dissatisfied with that action. Review by the Commissioner should be sought only where it is believed that the examiner has erred in his action. In other words, the Commissioner's role is to review the correctness of the examiner's action and not to serve as an alter ego of the examiner before whom the registrant may seek to correct deficiencies.

When review by the Commissioner has been sought, the decision on that request constitutes the final action of the Patent and Trademark Office. If no review by the Commissioner is sought and if no request for reconsideration of an examiner's action is timely filed, the Commissioner will notify the registrant of the deficiency in the affidavit or declaration after the sixth year has expired. Such notice is never mailed prior to the expiration of the sixth year following registration nor until a reasonable time has elapsed following a six month period from the last action mailed by this Office. This notice constitutes the final action of the Patent and Trademark Office in those cases where the Commissioner's review has not been sought. Once this notice has been mailed, it is too late (under the Rules of Practice) to request the Commissioner to review the action of the examiner. Review would only be proper if an affiant could show circumstances sufficient to suspend the finality element of Rule 2.165(b) pursuant to Rule 2.148.

Registrants will be held to strict compliance with Rule 2.165 as it has been briefed above. Therefore, parties are urged to respond fully as soon as possible after an action is received from the examiner.

BERNARD A. MEANY,
Assistant Commissioner for Trademarks.
Dec. 12, 1977.

[966 TMOG 80]

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(172) **Late-Filed Renewal Fees**

Sections 9 and 31 of the Lanham Act (15 U.S.C. §§1095 and 1113) require that an additional five dollar ($5.00) fee be submitted by a registrant who files a renewal application during the three-month period following expiration of its registration. The language of the statute requires that this additional fee be submitted within the three-month grace period. A number of registrants who have failed to submit the additional fee within the prescribed period have petitioned the Commissioner to allow their renewal applications. The Commissioner has granted petitions of this kind where the registrant or its attorney maintained a Patent and Trademark Office deposit account which contained, on the date the renewal application was filed, sufficient funds to cover the additional fee. Specifically, the Commissioner has exercised discretion under Trademark Rules 2.146(a)(3) and 2.147 to deem the authorizations to charge the deposit accounts to have taken place at the time the registrants filed their renewal applications, even though the authorizations were not confirmed until a later date. This Office policy was established by the Commissioner's decision in *In re Ralston Purina Co.*, 191 USPQ 154 (Comr. Pats. 1976).

The policy established by the *Ralston Purina* decision is being changed. Henceforth, the Commissioner will no longer exercise discretion to charge deposit accounts *nunc pro tunc* for trademark renewal application fees. To allow an authorization to charge a deposit account to relate back to a date on which no actual authorization existed is, in effect, to allow late payment. It is inequitable to permit those registrants who have deposit accounts (or those whose attorneys have such accounts) to make late payment of renewal fees, while those without deposit accounts may not.

Petitions relying on *Ralston Purina* will, after the date of this notice, be denied, unless the events that gave rise to those petitions occurred before publication of this notice.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.
Feb. 20, 1981.

[1004 O.G. 29]

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(173) **Renewal Applications and Section 8 Affidavits**

There has been a noticeable increase in the number of petitions requesting provisional acceptance of defectively executed Section 8 Affidavits and Renewal Applications under 35 U.S.C. §26, the most common problem being a lack of notarization or a Rule 2.20 declaration. Often, such petitions are necessitated by the failure of registration owners to file the documents early enough to leave time in which to correct should they prove defective.

Section 8 Affidavits may be filed beginning with the fifth anniversary of the registration. The period for filing

expires on the sixth anniversary of the registration. The period for filing Renewal Applications begins six months before the twentieth anniversary of the registration and extends three months beyond the expiration of the twenty year term. While the Post Registration Division may allow up to six months to respond to a notice of defect, it may not allow corrective action beyond the period for filing established by the Trademark Act. It is therefore in the registrant's best interest to file such documents as close to the opening date as possible to allow time for correction, if necessary. Provisional acceptance under 35 U.S.C. §26 has been, and will continue to be, given narrow application. Registrants should not rely on 35 U.S.C. §26 as a means of acquiring an extension of time.

We have also become aware of many delays caused by defects in the chain of title. Registrants are encouraged to keep Patent and Trademark Office assignment records current with regard to ownership of registrations.

The filing of Post Registration documents at the earliest date and maintenance of assignment records will help to avoid the cancellation or expiration of registrations of trademarks currently in use, and will result in a savings of time and expense for both the registrant and the Patent and Trademark Office.

MARGARET M. LAURENCE,
Apr. 19, 1983. *Assistant Commissioner for Trademarks.*

[1030 TMOG 37]

(174) **Trademark Examining Operation**

Effective Dec. 1, 1983, all requests presented to the Patent and Trademark Office under the provisions of Section 7 of the trademark statute (15 U.S.C. 1057) will be considered by the Post Registration Section of the Trademark Examining Operation.

Necessary telephone inquiries concerning procedure or status should be directed to 703–557–1986.

MARGARET M. LAURENCE,
Dec. 2, 1983. *Assistant Commissioner for Trademarks.*

[1038 TMOG 256]

TRADEMARK INFORMATION AND CORRESPONDENCE

(175) **Powers of Attorney in Registered Trademark Files**

On and after Feb. 1, 1967, communications advising of changes in the powers of attorney for registered trademarks will be placed in the registration files, but will not be acknowledged by the Patent Office. The information will thus be available to those who inspect the files, but since these powers of attorney do not directly concern the Patent Office, acknowledgments are not believed to be necessary.

C.M. WENDT,
Jan. 30, 1967. *Director.*

[835 TMOG 95]

(176) **Initial Processing of Application**

On Feb. 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the forwarding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.
2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.
3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.
4. When an application is accompanied by a petition to the Commissioner under §2.146, the petition will not be considered until processing by the Application Section is complete.

Effective date. The procedure outlined in this notice will become effective Feb. 1, 1972.

RICHARD A. WAHL,
Jan. 11, 1972. *Acting Commissioner of Patents.*

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

Published in 37 F.R. 942; Jan. 21, 1972

[895 O.G. TM 193]

(177) **Mail Delays and Petitions to Revive (Trademarks)**

Since applications that become abandoned unintentionally present burdens to both the Patent office and the applicant, a simplified procedure has been devised to alleviate these burdens when the abandonment results from a delay in the mails. This procedure (which is similar to the procedure adopted for patent applications at 910 O.G. 402 and 910 O.G. TM 76) provides for an automatic petition to revive.

When a trademark communication which falls within the circumstances enumerated below is mailed to the Patent Office more than three full days prior to the due date, a conditional petition may be attached to the communication. If the communication is received in the Patent Office after the due date and the application becomes abandoned, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee, and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his attorney stating that the communication and petition were either placed in the United States mail as first class or air mail or placed in the mail outside the United States as air mail. Since mail handled in this manner may reasonably be expected to reach the Patent Office by the due date, any mail delays beyond such time will be considered to constitute unavoidable delay and sufficient cause to grant a petition to revive (Section 12(b) of the Trademark Act of 1946).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action which places the application in condition for publication or issue.
3. A notice of appeal and requisite fee.
4. An appeal brief.

A suggested declaration form for the petition is shown below:

Applicant:
Serial No.: Petition to Revive
Date Filed:
Mark:

I hereby declare that the attached communication is being deposited in ( ) the United States mail as first class or air mail, or ( ) the mail outside the United States as air mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on _____, which date is more than three full days prior to the due date, at _____, by _____.
(Location) (Name of individual)

In the event that such communication is not timely filed in the Patent Office, it is requested that this paper be treated as a petition to revive and that the delay in prosecution be held unavoidable.

The petition fee is authorized to be charged to Deposit Account No. _____ in the name of _____.

The undersigned declares further that all statements made herein of his own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or document or any registration resulting therefrom.

Date: (Signature of applicant or applicant's attorney)
And
Date: (Signature of person mailing, if other than the above)

Normal petition practices are not affected in those situations where this procedure is either not elected or not appropriate, nor does this procedure bar the granting of a petition in different fact situations where justified.

RENE D. TEGTMEYER,
Mar. 21, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 126]

(178) **Dissemination Of Trademark Information**

In order to clarify the policy regarding Trademark Examiners giving out Trademark information to the general public, the following directive has been promulgated:

Trademark Examiners are reminded that they may only be responsive to questions regarding applications pending before them. All other questions regarding Trademark matters must be directed to the Director of the Trademark Examining Operation, 703–557–3268.

BERNARD A. MEANY,
Feb. 15, 1978. *Assistant Commissioner for Trademarks.*

[968 TMOG 9]

(179) **Requests for Information on Status of Trademark Registrations**

The purpose of this notice is to explain the circumstances in which the Trademark Examining Operation can respond to written and telephone requests for information about the status of trademark registrations. Only limited information can be provided by telephone.

I. Orders for "Status" Copies

The most reliable means of obtaining status information concerning a registration is a written order for a "status" copy of the registration. Status copies show whether affidavits have been filed under Sections 8 and 15, whether the registration has been renewed or cancelled, and whether certain other actions have been taken with respect to the registration. The charge for copies of registrations showing status and/or title, if not certified, is $6.50, effective Oct. 1, 1982. The charge for a certified copy showing status and/or title is $10.00 effective the same date.

II. Telephone Information Available from the Search Library

If the caller has the registration number, he or she may leave a request for status information on an automatic answering machine in the Trademark Search Library (Search Room) at 703-557-3282. The Search Library staff will call back with the information requested within one working day. Callers are asked to limit their requests to two registration numbers per day.

The Search Library staff is not permitted to make "searches" to determine if particular marks are in the Office's search files. Neither is the staff able to supply information as to the ownership or assignment of registrations, or to read over the telephone lengthy passages of a registration, such as the identification of goods or services.

III. Telephone Information on Receipt of Section 8 and 15 Affidavits and Renewal Applications

The Post Registration Section can be reached by calling 703-557-2923. The staff of this section can advise only on whether an affidavit or a renewal application has or has not been received. Inquiries as to whether affidavits and renewals have been accepted should be directed to the Search Library.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Sept. 15, 1982.

[1023 TMOG 15]

(180) **Transmittals for Use of Deposit Accounts**

When statutory fees are to be charged to a deposit account, the processing of the application can be facilitated by submitting the applicant's transmittal letter or other correspondence specifying the account to be charged in triplicate. Submission of these documents in triplicate will eliminate the need for the Mail Room to photocopy the document and thereby reduce the processing time of incoming mail.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

Nov. 21, 1983.

[1037 TMOG 15]

(181) **Helpful Hints From The PTO**

Data To Be Included on Patent and Trademark Papers Filed In The PTO In Response To Office Actions—Perhaps the greatest cause of delay and wasted time in the support sections of the PTO is in trying to match papers bearing incorrect or incomplete data with applications. Because some Trademark Papers are not clearly identified as pertaining to Trademark applications, they are frequently misrouted to the Patent Examining Groups.

On all papers related to *Patent* applications, type the word "PATENT" in the upper right-hand corner of the document. Also, please include the correct serial number, filing date, inventor's name, and title of the invention. Additionally, include the examiner's name, and group art unit number or other identifying data found on the most recent letter from the PTO. (37 CFR 1.1(a)).

However, please note that an organizational restructuring of the Patent Examining Corps has resulted in many applications being reassigned to new Groups and Art Units. Your attention is directed to the NOTICE OF CHANGES IN THE PATENT EXAMINING CORPS that appeared in the OFFICIAL GAZETTE on June 26, 1984, (1043 OG 23), which identifies the Group Art Unit of each examiner (1043 OG 40 through 1043 OG 67). Letters mailed from the Groups after Apr. 15, 1984, should reflect the current identifying data.

For all papers related to *Trademark* applications, type the word "TRADEMARK" in the upper right-hand corner of the document. Also, please set forth the applicatant's name, correct serial number (including the series number which currently is "73"), filing date, law office, examining attorney and mark.

Documents for which no fee is required at the time of filing (e.g., amendments to applications and requests for extensions of time to file an opposition) continue to be addressed:

Box 5
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Mail directed to the Trademark Trial and Appeal Board should have mark "Attention: TTAB" on the envelope in additon to "Box 5."

- *Mailing Responses To The PTO*—In general, it would eliminate or greatly reduce processing steps by the PTO support staff, and will avoid interruption of the examiner's work, if a few simple, general rules were followed in regard to mailing of the responses to the PTO:

1. After a Patent or Trademark application is filed, please avoid filing additional papers (other than those requesting a filing receipt or those required by the Office) until the filing receipt or return post card identifying the Serial Number and Patent Examining Group Art Unit or Trademark Law Office has been received.
2. In *Patent* applications, requests for extensions of time, changes of address, proposed drawing corrections, and petitions are sometimes incorporated in the remarks section or at the beginning of papers entitled "Amendment" or "Response." In *Trademark* applications, change of address and powers of attorney are sometimes incorporated in the remarks section or at the beginning of papers entitled "Amendment" or "Response". Please present such items in separate papers, appropriately titled, since they are all handled by different personnel (37 CFR 1.4(c)). However, please include a statement in the amendment/response describing the paper being filed.
3. Where a supplemental or preliminary amendment is found necessary in *Patent* or *Trademark* applications, please telephone the examiner and request that the examiner delay action for a certain time in order to avoid crossing in the mails of the amendment and the Office action.
4. File *Patent* and *Trademark* documents which have no particular time or sequence requirement, with materials submitted in response to the statutory or regulatory requirements. Examples are certified copies of foreign documents to support priority and formal drawings in Patent applications or changes in Power of Attorney or Mailing Address following first action.
5. If a disclosure statement is to be filed before an Office action, file it when the application is filed. Some Group Art Units have greatly reduced the pendency to first action. Hence, many examiners are taking up new applications before an information statement is matched with the application.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

July 10, 1984.

(1044 TMOG 44)

(182) **Helpful Hints From The PTO**

- *Amendments After Final for Patent Applications*—Amendments under 37 C.F.R. 1.116 would be greatly expedited if they were headlined with the title "AMENDMENT after final rejection," with that title underlined in red. This would facilitate ready identification of these amendments by the PTO support staff and expedite docketing and delivery to the examiner for special treatment. In many cases this would avoid the necessity for extensions of time and/or filing unnecessary notices of appeal.
- *Extensions of Time for Patent Applications*—An extension of time under 37 C.F.R. 1.136(a) is not permitted in the following instances:

1. Where an applicant is so notified in an Office action as, for example, in a Reissue application involving a litigated patent;
2. Where the application is involved in an interference declared pursuant to 37 C.F.R. 1.207. See 37 C.F.R. 1.245 for provisions governing extensions of time in interference proceedings;
3. In reexamination proceedings. See 37 C.F.R. 1.550(c) for extensions of time in reexamination proceedings; and
4. In PCT international applications. In PCT applications, the only extensions permitted are for corrections of PCT Article 14 defects in international applications before the Receiving Office.

- *Data To Be Included On Patent and Trademark Papers Filed In The PTO In Response To Office Actions*—Perhaps the greatest cause of delay and wasted time in the support sections of the PTO is in trying to match papers bearing incorrect or incomplete data with applications. Because some trademark papers are not clearly identified as pertaining to trademark applications, they are frequently misrouted to the patent examining group. On all papers related to *patent* applications, type the word "PATENT" in the upper right-hand corner of the document. Also, please include the correct serial number, filing date, inventor's name, and title of the invention. Additionally, include the examiner's name, and group art unit number or other identifying data found on the most recent letter from the PTO. (37 CFR 1.1(a)). However, please note that an organizational [restructuring of the Patent Examining Corps has resulted in many applications being reassigned to new Groups and Art Units. Your attention is directed to the NOTICE OF CHANGES IN THE PATENT EXAMINING CORPS that appeared in the OFFICIAL GAZETTE on June 26, 1984, (1043 OG 23), which identifies the Group Art Unit of each examiner (1043 OG 40 through 1043 OG 67). Letters mailed from the Groups after Apr. 15, 1984, should reflect the current identifying data.

For all papers related to *trademark* applications, type the word "TRADEMARK" in the upper right-hand corner of the document. Also, please set forth the applicant's name, correct serial number (including series number which currently is "73"), filing date, law office, examining attorney and mark.

Trademark documents for which no fee is required at the time of filing (e.g., amendments to applications and requests for extensions of time to file an opposition) should continue to be addressed:

Box 5
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Mail directed to the Trademark Trial and Appeal Board should have "Attention TTAB" on the envelope in addition to "Box 5".

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

Sept. 4, 1984.

(1046 TMOG 40)

(183) **Published Trademark Applications**

Papers which are filed in the Patent and Trademark Office in connection with published trademark application files should be captioned to the attention of the Trademark Quality Review Clerk and addressed as follows:

Commissioner of Patents and Trademarks
Attention Box 5, Trademark Quality Review Clerk
Washington, D.C. 20231

This mailing should be used only for papers filed after publication but before issuance of the registration. This could include corrections to information which appears to have been inadvertently or incorrectly published in the Trademark Official Gazette, as well as changes of attorney or address papers or notification of filing an assignment. Corrections to information published in th TMOG must be received in the Office before the registration is issued.

Use of this mailing address for corrections will help ensure that such papers are properly routed within the Office. Telephone inquiries concerning corrections or other matters in relation to published trademark applications should be directed to (703) 557-4249.

MARGARET M. LAURENCE
Assistant Commissioner for Trademarks.

Dec. 10, 1984.

[1050 TMOG 316]

TRADEMARK PUBLICATIONS

(184) **Change in Format for Publishing Trademarks for Opposition**

Section 30 of the Trademark Act of 1946 as amended by Public Law 772, 87th Congress, approved October 9, 1962, 76 Stat. 769, provides for the filing of a combined application for the registration of a trademark in more than one class.

The present practice of publishing the mark with pertinent data under each class in which registration is sought results in needless duplication.

Beginning with the issue of November 3, 1964, "Marks Published for Opposition" will be divided into two sections. In Section 1, all marks presented in combined applications for registration in more than one class will be published with only one reproduction of each mark.

The reproduction of the mark will be followed by the class numbers and titles, and under each class will appear the description of the goods in connection with which the trademark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

Trademarks presented in applications for registration in a single class will be published, as in the past, in class order, in Section 2.

The same procedure will be followed in the notice of the issuance of registrations on the Supplemental Register.

EDWIN L. REYNOLDS,
First Assistant Commissioner.

Sept. 18, 1964.

[807 O.G. TM 51]

(185) **Separation of the Patent and Trademark Sections of the Official Gazette**

Effective February 2, 1971, the *Official Gazette* will be separated into two parts to be known as the *Patent Official Gazette and the Trademark Official Gazette.*

* * * * *

Orders for subscriptions should be addressed to Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Also effective February 2, 1971, the *Official Gazette* will no longer contain "Decisions in Patent and Trademark Cases." Decisions of the type heretofore found in the "Decisions in Patent and Trademark Cases" are published by non-Federal organizations such as, for example, the Bureau of National Affairs, Inc., 1231 25th St. NW., Washington, D.C. 20037, and West Publishing Co., 50 Kellogg Blvd., St. Paul, Minn. 55102.

Finally, the "Decisions Leaflet" of the *Official Gazette* will no longer be supplied as a separate subscription item after January 26, 1971. According to present plans, however, both the *Patent Official Gazette* and the *Trademark Official Gazette* will have identical "Patent Office Notices" sections containing notices of the various types heretofore published in the Gazette decision leaflet and

Trademark Section. Those notices of particular interest to Patent Office employees will be accumulated and published approximately every fourth week, and distributed separately to employees.

WILLIAM E. SCHUYLER, JR.,
Dec. 29, 1970. *Commissioner of Patents.*

[882 O.G. TM 33]

(186) **Changes in Format for Publishing Trademarks for Opposition**

Because of the adoption of the International classification of goods and services by the United States as of September 1, 1973 (see *Official Gazette* of June 26, 1973, 911 O.G. TM 210), it is necessary to change the arrangement in the *Official Gazette* of the marks published for opposition.

Beginning with the issue of May 7, 1974, the section of the *Official Gazette* entitled "Marks Published for Opposition" will be divided into four sections instead of the present two sections. (For the preceding change from one to two sections, see *Official Gazette* of October 13, 1964, 807 O.G. TM 51.) Sections 1 and 2 will be according to international classification and will contain marks in applications filed on or after September 1, 1973, and Sections 3 and 4 will be according to prior United States classification and will contain marks in applications filed on or before August 31, 1973.

In Section 1, all marks presented in combined applications filed on or after September 1, 1973 for registration in more than one international class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the international class numbers, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In Section 2, all marks presented in applications filed on or after September 1, 1973 for registration in a single class will be published in international class order.

In Section 3, all marks presented in combined applications filed on or before August 31, 1973 for registration in more than one prior United States class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the prior United States class numbers and titles, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In section 4, all marks presented in applications filed on or before August 31, 1973 for registration in a single class will be published in the prior United States class order.

The following explanation will appear under the heading "Marks Published for Opposition":

> The following marks are published in compliance with section 12(a) of the Trademark Act of 1946. Applications for the registration of marks in more than one class have been filed as provided in section 30 of said act as amended by Public Law 772, 87th Congress, approved Oct. 9, 1962, 76 Stat. 769. Opposition under Section 13 may be filed within thirty days of the date of this publication. See Rules 2.101 to 2.105.
>
> A separate fee of twenty-five dollars for opposing each mark in each class must accompany the opposition.

Sections 1 through 4 will appear immediately after the above explanation, the sections being designated as follows:

Section 1. International classification—Application in more than one class
Section 2. International classification—Application in one class
Section 3. Prior United States classification—Application in more than one class
Section 4. Prior United States classification—Application in one class

The same procedure of dividing into four sections will be followed in the notice of the issuance of registrations on the Supplemental Register.

RENE D. TEGTMEYER,
Mar. 22, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 122]

(187) **Change in Official Gazette Entry to Show Cancellation of Fewer Than All Classes in a Multiple Class Registration**

Effective with the *Official Gazette* issue of December 16, 1980, there will be a change in the *Official Gazette* listing entitled "Trademark Registrations Cancelled." Beginning with that issue, "Trademark Registrations Cancelled" will list:

(1) single class registrations cancelled;
(2) multiple class registrations cancelled in all classes;
(3) multiple class registrations cancelled in fewer than all classes.

For every entry in the listing, the specific classes cancelled will be included in parentheses, next to the registration number and mark.

For a single class registration and for a multiple class registration in which every class has been cancelled, the class number(s) shown in parentheses will represent every class to which the registration applied.

For a multiple class registration in which fewer than all classes have been cancelled, the *Official Gazette* entry will include the word "only" following the notation of classes in parentheses, for example: (Int. Cls. 12 and 20, only). In this example, the addition of the word "only" would indicate that there are classes in the registration in addition to Classes 12 and 20, but only Classes 12 and 20 have been cancelled.

MARGARET M. LAURENCE,
Oct. 29, 1980. *Assistant Commissioner, for Trademarks.*

[1000 TM 21]

(188) **Single Copies of the Trademark Official Gazette**

Members of the public ordering single copies of the Trademark Official Gazette from the Superintendent of Documents are reminded they must specify the date of the issue being ordered.

The date of the issue in which a mark will be published for opposition is shown on The Notice of Publication form mailed to applicants approximately two weeks before the publication date. This date must be included on each single copy order.

Orders received without an issue date may be filled from current weekly stock. The Superintendent of Documents cannot check on whether a particular mark is published in the issue then in stock. If the stock is exhausted at the time the order is received, the order will be returned unfilled.

MARGARET M. LAURENCE,
Mar. 3, 1981. *Assistant Commissioner for Trademarks.*

[1004 O.G. 36]

(189) **Inadvertently Issued Registration Numbers**

Effective Jan. 3, 1984, a new sub-section identified as "Inadvertently Issued Registration Numbers" will exist as the last category of cancellations listed under the "Trademark Registrations Canceled" section of the *Official Gazette.*

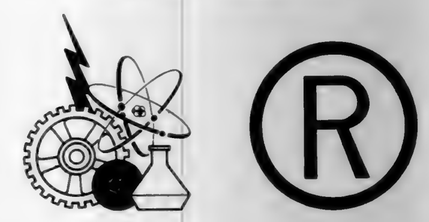
This new sub-section will provide public notice of the cancellation of registration numbers which have been inadvertently issued by the Patent and Trademark Office.

MARGARET M. LAURENCE,
Nov. 15, 1983. *Assistant Commissioner for Trademarks.*

[1037 TMOG 16]

(190) **Availability of Patents and Trademarks Style Manual**

The latest edition of Patents and Trademarks Style Manual will be available to the patent and trademark community soon. This edition will be published as a separate supplement to the GPO Style Manual. It is the first revision since 1973, and will be available in looseleaf form. The cover of this supplement is illustrated below:



Orders are now being accepted by the Superintendent of Documents. The stock number is 003–004–00606–4. Direct inquiries to:

Superintendent of Documents
U.S. Goverment Printing Office
Washington, D.C. 20402

Checks for orders should be made payable t o the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
June 29, 1984. *Assistant Commissioner for Administration.*

[1045 TMOG 3]

(191) **USTA Publications of Looseleaf Rules of Practice**

The United States Trademark Association has published *US Trademark Law; Rules of Practice, Forms and Federal Statutes.* The book, in looseleaf format to allow for supplements, includes the trademark Rules of Practice, sample forms, the Lanham Act and applicable provisions and cites of other statutes that deal with trademarks and the Patent and Trademark Office. In content and format, the USTA publication generally replaces the Government Printing Office looseleaf edition of the Rules of Practice which has been discontinued.

Information on ordering copies of *US Trademark Law; Rules of Practice, Forms and Federal Statutes* may be obtained from:

The United States Trademark Association
6 East 45th St.
New York, N.Y. 10017
(212) 986–5880

The Government Printing Office continues to publish the Rules of Practice as Title 37, Code of Federal Regulations, every July. Effective July 1, 1983, however, the CFR edition no longer includes forms.

MARGARET M. LAURENCE,
Apr. 30, 1984. *Assistant Commissioner for Trademark.*

[1042 TMOG 58]

(192) **Notice to Subscribers**

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the Official Gazette, Manual of Patent Examining Procedures Revisions, Annual Indices, or other patent and trademark publications. All correspondence and inquiries concerning subscription services including requests for reinstatement or renewal of subscriptions should be directed to:

Mr. Michael F. DiMario
Assistant Public Printer
Superintendent of Documents (SD)
U.S. Government Printing Office
Washington, D.C. 20401

Furthermore, the Superintendent of Documents advises that expiration notices are sent out approximately three months before the expiration date. However, subscribers should not rely on this schedule. If a notice is not received within two months of the expiration date, the subscriber should renew the subscription with the Superintendent of Documents. Attach a label from the envelope in which the publication is received, together with a check covering the amount of the subscription. if a deposit account with the Superintendent of Documents is to be used, include the deposit account number with the renewal.

This notice is effective with the publication date and supersedes the notice published on this subject in 969 O.G. 2, dated Mar. 14, 1978.

THERESA A. BRELSFORD,
Aug. 3, 1984. *Assistant Commissioner for Administration.*

[1045 TMOG 24]

(193) **Trademark Manual of Examining Procedure Revision**

The Patent and Trademark Office announces publication of Revision 6 of the Trademark Manual of Examining Procedure. It is a complete edition. Distribution to current subscribers began Sept. 10, 1984. The manual may be ordered, on a subscription basis, from:

Mr. Michael DiMario
Assistant Public Printer
The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20401

The cost is $24.00. Charges may be made to deposit accounts if the requestor is an account holder in good standing at the time the request is received. The deposit account number should be included with the order. Checks or money orders should be made payable to the Commissioner of Patents and Trademarks.

MARGARET M. LAURENCE
Sept. 13, 1984. *Assistant Commissioner for Trademarks.*

[0147 TMOG 23]

(194) **Notification of Errors in Trademark Official Gazette**

In view of the establishment of in-house photocomposition of the Trademark Official Gazette, it is important that errors noted by the public be directed to a single office within the Trademark Examining Operation for verification and correction.

Written notification of errors in the publication of marks in the Trademark Official Gazette should include the correspondent's telephone number and should be addressed to the Paralegal Specialist, Office of the Deputy Assista nt Commissioner for Trademarks, United States Department of Commerce, Patent and Trademark Office, Washington, D.C. 20231. Error notification may also be done by telephone to the Paralegal Specialist in the Office of the Deputy Assistant Commissioner for Trademarks, at 202–557–3268.

Applicants may use this procedure to notify the Office of errors in relation to marks published in the Official Gazette if the error is purely clerical (e.g. typographical error, drawing printed upside down, or incorrectly stated data). This procedure should not be used to dispute information that is actually of record in the application file. The Paralegal Specialist will review the notification of error and verify the existence of the clerical error, determine whether the error can be corrected without jurisdiction being restored to the Examining Attorney or republication being required, and coordinate the appropriate correction procedure.

Notification must be received by the Office within one week after the Official Gazette publication date to permit processing by the Office.

MARGARET M. LAURENCE
Apr. 11, 1985. *Assistant Commissioner for Trademarks.*

[1054 TMOG 4]

TRADEMARK MISCELLANEOUS

(195) **Recording of Documents Affecting Title**

The Patent Office is liberalizing its policy concerning the recording of documents, other than assignments, which affect title to trademark registrations and applications. Under Rule 2.185 of the Trademark Rules of Practice, instruments affecting title to a trademark registration or application, and licenses of trademarks which are the subject of trademark registrations or applications, will be recorded even though the recording thereof may not serve as constructive notice under Section 10 of the Trademark Act of 1946, as amended (15 U.S.C. 1060).

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13231; July 16, 1971

[889 O.G. TM 2]

(196) **International Protection of Government Emblems and Seals**

Change of Intent

The Patent and Trademark Office, Department of Commerce, intends to forward only the 50 State seals plus one department seal for each department listed in the publication "Seals and Other Devices in Use at the Government Printing Office" ("Seals") instead of the entire publication, as indicated on page 59366 of the Federal Register of Dec. 23, 1975.

Since the publication had been printed in 1975, it was assumed that few deletions and additions would be necessary. However, the response to the above notice, along with some necessary deletions, resulted in a large number of seals in the publication requiring deletion. This rendered the publication unacceptable for submission to the World Intellectual Property Organization (WIPO).

Therefore, the Patent and Trademark Office now intends to forward only the 50 State seals along with the departmental seal denoted "No. 1" for each department listed in the "Seals" publication. If this is not the preferred departmental or State seal, the department or State involved is requested to notify the Patent and Trademark Office by Sept. 21, 1976. This notification should either specify the number of the preferred seal, as it appears in the "Seals" publication, or provide a clear, black and white photograph, suitable for reproduction, of the preferred seal. The seal must be no larger than 1 1/2 inches in diameter.

These seals will then be forwarded to WIPO for protection under Article *6ter* of the Paris Convention for the Protection of Industrial Property.

Address all correspondence to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

C. MARSHALL DANN,
Aug. 18, 1976. *Commissioner of Patents and Trademarks.*

Published in 41 F.R. 35741

[950 O.G. TM 114]

(197) **Recording of "Territorial Assignments" in the Assignment Division of the Patent and Trademark Office**

It has been the practice of the Assignment Division for many years to refuse to record "territorial assignments," that is, assignments purporting to transfer rights in a trademark registration (not a concurrent use registration) for less than the entire United States. Hereinafter, such documents will be recorded as long as the requirements of the Rules of Practice are met by the documents submitted.

The Office is not addressing the validity or effect of such documents by recording same, but is merely recognizing that such transfers may affect title to a registered mark and therefore ought to be recorded. At the time a Section 8 affidavit or declaration or an application for renewal is filed, the Examiner of Trademarks will consider the effect of such a document.

BERNARD A. MEANY,
Oct. 7, 1977. *Assistant Commissioner for Trademarks.*

[964 TMOG 8]

(198) **Flexible Working Hours**

On Jan. 4, 1979 the Patent and Trademark Office is beginning a 15 month experiment with flexible working hours for its employees. Under the "flexitime" experiment many of the Office's employees will have flexibility to begin their workdays as early as 6:30 a.m. or as late as 9:30 a.m., and end their workdays between 3:00 p.m. and 6:30 p.m. Employees in every case shall of course work eight hours each day. All or most patent and trademark examiners will have flexible hours.

The public hours of the Patent and Trademark Office will continue to be 8:30 a.m. to 5:00 p.m. All units of the Office which deal directly with the public will be staffed to answer telephone calls and receive visitors during those hours. All employees will be on duty from 9:30 a.m. to 3:00 p.m. The patent public search room will continue to operate from 8:00 a.m. until 8:00 p.m. and the trademark search room from 8:00 a.m. until 5:30 p.m.

With the advent of flexible hours, it will be advisable for members of the public to make appointments in advance when they wish to interview examiners.

DONALD W. BANNER,
Dec. 13, 1978. *Commissioner of Patents and Trademarks.*

[978 TMOG 141]

(199) **THE RETENTION SCHEDULE FOR TRADEMARK RECORDS**

As with most government agencies, the Patent and Trademark Office disposes of old files, papers and records pursuant to a specific schedule. In an effort to clarify any questions concerning the procedures for disposing of Trademark records and in response to public inquiries, the present Retention Schedule for Trademark Records and other records including trademark matters which may be of interest to the public is set forth as follows:

International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports, records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interests of the Patent and Trademark Office. Includes drafts of legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
Trademark Adversary Proceedings Files. Consists of Trademark Opposition, Cancellation, Interference, and Concurrent-Use proceedings files.	The past schedule to destroy after 10 years is in the process of being changed. At this time, these records are not being disposed of pending the new amendment to this section.
Canceled Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after the date of cancellation.
Expired Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after expiration of registration.
Abandoned Trademark Application Files. Consists of original application and all related correspondence.	Destroy 2 years after date of abandonment.
Trademark Renewal Index. Index to trademark registrations that are renewed.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Indexes to Trademark Applications. Index shows applicant's name, serial number of application, filing date, name of mark description of goods, attorney's name, and final disposition of the application.	
A. Applicant's Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
B. Serial Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Proceedings Index to Trademark Adversary Proceedings. Index arranged by type of proceeding. Shows status of proceeding prior to and immediately after a decision by the Board.	Destroy 3 years after termination of the proceeding.
Trademark Adversary Proceeding Records. Card file showing records of Trademark Adversary Proceedings.	*PERMANENT.* Offer to National Archives when no longer needed for reference.

Trademarks Published in Official Gazette. Clippings of marks from *Official Gazette.*	
a. Those which have been opposed.	*Retain in agency until no longer needed for reference.*
b. All others.	*Destroy when mark is registered.*
Trademark Registrant's Index. Index to Trademark registrant's name, includes serial and registration numbers, date of registration, line of goods and other related information.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Class of Goods Index. Card index used to indicate into what class any conceivable goods may fall.	Destroy after information transferred to magnetic media.
Index to Trademark Trial and Appeal Board Cases. Record of trademark trial and appeal board cases.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Public Advisory Committee for Trademark Affairs Files.	
a. Agenda, minutes, correspondence, reports and related supporting files.	*PERMANENT.* Transfer to Federal Records when 10 years old. Offer to National Archives when 25 years old.
b. papers and reference materials.	Destroy when 10 years old or no longer needed for reference, whichever is sooner.
Seminar in Trademark practice and Procedure Files. Record set of training materials used in training trademark examiners.	*PERMANENT.* Transfer to Federal Records Center when 10 years old. Offer to National Archives when 25 years old.
Trademark Petitions Files. Petitions to the Commissioner relating to trademarks with related materials.	
a. Original Petitions in trademark case file.	Dispose of with related case file.
b. Other copies.	Destroy when 2 years old.
Trademark Protest Letters. Letters of protest to the Commissioner related to trademarks.	Destroy when no longer needed or when three years old, whichever is earlier.
International Patent and Trademark Activities Case Files. Project case files showing Patent and Trademark Office activity relating to international patent and trademark programs.	
a. Records that supplement the International Property Activities Case Files (Item 103).	*PERMANENT.* Transfer to office responsible for international affairs after case is closed.
b. Other materials.	Destroy 5 years after close of case or sooner if no longer needed.
International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports; records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interest of the Patent and Trademark Office. Includes drafts or legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
Bulky Trademark Specimens. Trademark applications specimens which do not strictly meet the basic requirements for physical form of specimens which state:	
1. That they be made of material suitable for being placed inside a manila file wrapper.	Destroy 30 days after applicant is notified that the specimens are unacceptable, unless picked up sooner by the applicant.

2. That they be capable of being arranged flat, such as being folded.

3. That they be of a size not to exceed 8 1/2 inches wide by 13 inches long. (Rule 2.56)

These requirements provide for specimens which will fit inside the application file wrapper, which is 9 × 14 inches in size and which will conveniently expand to about one inch thickness.

Specimens which do not meet the above requirements are referred to as "bulky" specimens and the Examiner must require that they be replaced by specimens of acceptable size and shape.

February 28, 1979.

SAUL LEFKOWITZ,
Acting Assistant Commissioner for Trademarks. February 28, 1979.

[980 TMOG 16]

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(200) **Public Advisory Committee for Trademark Affairs**

Reestablishment

In accordance with the provisions of the Federal Advisory Committee Act 5 U.S.C. App. (1976) and Office of Management and Budget Circular A-63 of Mar. 1974, and after consultation with GSA, it has been determined that the reestablishment of the Public Advisory Committee for Trademark Affairs is in the public interest in connection with the performance of duties imposed on the Department by law.

The Committee was first established in Sept., 1970, and its present charter expired on Jan. 10, 1979. Since its inception the purpose of the Committee has been to advise the Patent and Trademark Office concerning steps which can be taken to increase the efficiency and effectiveness of administration of the Trademark Act and to provide a continuing flow of knowledge from the private sector to the government in the field of trademarks. Approximately seventy-five per cent of the over one hundred twenty-five specific recommendations have been implemented at least in part. There is no question that the Committee has contributed greatly to the efficiency and effectiveness of the administration of the statute. In reviewing the Committee, the Secretary has sought continued effort towards this objective. The Committee's function cannot be accomplished by any organizational element or other committee of the Department.

As it was initially established, the Committee will continue to comprise the members of the Advisory Committee for Trademark Affairs of the United States Trademark Association. The membership is balanced and is under the control of the President of the Association. The Committee will continue to operate in compliance with the provisions of the Federal Advisory Committee Act.

Copies of the Committee's revised charter will be filed with appropriate committees of Congress.

Any inquiries or comments may be addressed to Patricia M. Davis, Committee Control Officer, Office of Trademark Program Control, U.S. Patent & Trademark Office; Washington, D.C. 20231; telephone (703) 557-3881.

GUY W. CHAMBERLIN,
Mar. 15, 1979. *Assistant Secretary for Administration.*

[FR Doc. 79-8929; Filed 3-22-79; 8:45 am]

[982 TMOG 14]

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(201) **Compressed Work Week**

The Office of Personnel Management has completed a study on compressed work schedules and has recommended that Congress enact permanent legislation authorizing use of alternative work schedules in the Federal Government. The authority for the program expires on Mar. 28, 1982.

The U.S. Patent and Trademark Office has been participating in this program, on an experimental basis, for nearly two years. Most of the Office's examiners and other employees are permitted to participate under one of two options:

1. 4/10 plan-Work ten hours four days a week and choose Monday, Wednesday, or Friday as a day off each week. The day selected can be changed only with supervisory approval.

2. 5/4-9 plan-Work nine hours for eight continuous days, eight hours on the ninth day, and choose Monday, Wednesday, or Friday as a day off once every two weeks. Again, the day off can only be changed with supervisory approval.

All employees must be on duty Tuesdays and Thursdays.

The U.S. Patent and Trademark Office is interested in considering any comments or recommendations you may have about the program in order to make the proper decision concerning the continuation, revision, or termination of alternative work schedules should the Congress enact legislation authorizing its continuation.

Please send any comments or recommendations you may have, no later than Mar. 2, 1982, to:

Commissioner of Patents and Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

GERALD J. MOSSINGHOFF,
Jan. 21, 1982. *Commissioner of Patents and Trademarks.*

[1015 TMOG 9]

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(202) **Certified Copies of Trademark Applications/Registrations**

The Trademark Operation is in the process of microfilming its records and, as this proceeds, requests for certified copies of applications and, eventually, registrations, will be furnished from the microfilmed records. Such certified copies will not contain copies of the file jacket.

MARGARET M. LAURENCE,
Jan. 17, 1984. *Assistant Commissioner for Trademarks.*

[1039 TMOG 140]

(203) TABLE OF OFFICIAL GAZETTE VOLUME NUMBERS: 1872–1990

A table which relates volume numbers of the Official Gazette comprising collections of weekly issues of that publication to the month of their publication has found good use in the Patent and Trademark Office and Patent Depository Libraries in a variety of applications. The need for such a table arises, in part, from the fact that Official Gazette volumes have not been uniformly numbered on a monthly basis over the 110 year history of that publication. From Jan. 1872 through June 1883, they were numbered on a semi-annual basis; from July 1883 through Dec. 1902, quarterly; from Jan. 1902 through Dec. 1908, bi-monthly; and since Jan. 1909, the volume of issues for each month has been separately numbered. To fulfill the interest which has been expressed in this table, it is published below:

Calendar Table of Official Gazette Volume Numbers
Month-by-Month Volume Numbers: Jan. 1872 to Present

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1872•	1	1	1	1	1	1	2	2	2	2	2	2
1873	3	3	3	3	3	3	4	4	4	4	4	4
1874	5	5	5	5	5	5	6	6	6	6	6	6
1875	7	7	7	7	7	7	7	8	8	8	8	8
1876	9	9	9	9	9	9	10	10	10	10	10	10
1877	11	11	11	11	11	11	12	12	12	12	12	12
1878	13	13	13	13	13	13	14	14	14	14	14	14
1879	15	15	15	15	15	15	16	16	16	16	16	16
1880	17	17	17	17	17	17	18	18	18	18	18	18
1881	19	19	19	19	19	19	20	20	20	20	20	20
1882	21	21	21	21	21	21	22	22	22	22	22	22
1883•	23	23	23	23	23	23	24	24	24	25	25	25
1884	26	26	26	27	27	27	28	28	28	29	29	29
1885	30	30	30	31	31	31	32	32	32	33	33	33
1886	34	34	34	35	35	35	36	36	36	37	37	37
1887	38	38	38	39	39	39	40	40	40	41	41	41
1888	42	42	42	43	43	43	44	44	44	45	45	45
1889	46	46	46	47	47	47	48	48	48	49	49	49
1890	50	50	50	51	51	51	52	52	52	53	53	53
1891	54	54	54	55	55	55	56	56	56	57	57	57
1892	58	58	58	59	59	59	60	60	60	61	61	61
1893	62	62	62	63	63	63	64	64	64	65	65	65
1894	66	66	66	67	67	67	68	68	68	69	69	69
1895	70	70	70	71	71	71	72	72	72	73	73	73
1896	74	74	74	75	75	75	76	76	76	77	77	77
1897	78	78	78	79	79	79	80	80	80	81	81	81
1898	82	82	82	83	83	83	84	84	84	85	85	85
1899	86	86	86	87	87	87	88	88	88	89	89	89
1900	90	90	90	91	91	91	92	92	92	93	93	93
1901	94	94	94	95	95	95	96	96	96	97	97	97
1902	98	98	98	99	99	99	100	100	100	101	101	101
1903•	102	102	103	103	104	104	105	105	106	106	107	108
1904	108	108	109	109	110	110	111	111	112	112	113	113
1905	114	114	115	115	116	116	117	117	118	118	119	119
1906	120	120	121	121	122	122	123	123	124	124	125	125
1907	126	126	127	127	128	128	129	129	130	130	313	131
1908	132	132	133	133	134	134	135	135	136	136	137	137
1909•	138	139	140	141	142	143	144	145	146	147	148	149
1910	150	151	152	153	154	155	156	157	158	159	160	161
1911	162	163	164	165	166	167	168	169	170	171	172	173
1912	174	175	176	177	178	179	180	181	182	183	184	185
1913	186	187	188	189	190	191	192	193	194	195	196	197
1914	198	199	200	201	202	203	204	205	206	207	208	209
1915	210	211	212	213	214	215	216	217	218	219	220	221
1916	222	223	224	225	226	227	228	229	230	231	232	233
1917	234	235	236	237	238	239	240	241	242	243	244	245
1918	246	247	248	249	250	251	252	253	254	255	256	257
1919	258	259	260	261	262	263	264	265	266	267	268	269
1920	270	271	272	273	274	275	276	277	278	279	280	281
1921	282	283	284	285	286	287	288	289	290	291	292	293
1922	294	295	296	297	298	299	300	301	302	303	304	305
1923	306	307	308	309	310	311	312	313	314	315	316	317
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1926	342	343	344	345	346	347	348	349	350	351	352	353
1927	354	355	356	357	358	359	360	361	362	363	364	365
1928	366	367	368	369	370	371	372	373	374	375	376	377
1929	378	379	380	381	382	383	384	385	386	387	388	389
1930	390	391	392	393	394	395	396	397	398	399	400	401
1931	402	403	404	405	406	407	408	409	410	411	412	413
1932	414	415	416	417	418	419	420	421	422	423	424	425
1933	426	427	428	429	430	431	432	433	434	435	436	437
1934	438	439	440	441	442	443	444	445	446	447	448	449
1935	450	451	452	453	454	455	456	457	458	459	460	461
1936	462	463	464	465	466	467	468	469	470	471	472	473
1937	474	475	476	477	478	479	480	481	482	483	484	485
1938	486	487	488	489	490	491	492	493	494	495	496	497
1939	498	499	500	501	502	503	504	505	506	507	508	509
1940	510	511	512	513	514	515	516	517	518	519	520	521
1941	522	523	524	525	526	527	528	529	530	531	532	533
1942	534	535	536	537	538	539	540	541	542	543	544	545
1943	546	547	548	549	550	551	552	553	554	555	556	557
1944	558	559	560	561	562	563	564	565	566	567	568	569
1945	570	571	572	573	574	575	576	577	578	579	580	581
1946	582	583	584	585	586	587	588	589	590	591	592	593
1947	594	595	596	597	598	599	600	601	602	603	604	605
1948	606	607	608	609	610	611	612	613	614	615	616	617
1949	618	619	620	621	622	623	624	625	626	627	628	629
1950	630	631	632	633	634	635	636	637	638	639	640	641
1951	642	643	644	645	646	647	648	649	650	651	652	653
1952	654	655	656	657	658	659	660	661	662	663	664	665
1953	666	667	668	669	670	671	672	673	674	675	676	677
1954	678	679	680	681	682	683	684	685	686	687	688	689
1955	690	691	692	693	694	695	696	697	698	699	700	701
1956	702	703	704	705	706	707	708	709	710	711	712	713
1957	714	715	716	717	718	719	720	721	722	723	724	725
1958	726	727	728	729	730	731	732	733	734	735	736	737
1959	738	739	740	741	742	743	744	745	746	747	748	749
1960	750	751	752	753	754	755	756	757	587	759	760	761
1961	762	763	764	765	766	767	768	769	770	771	772	773
1962	774	775	776	777	778	779	780	781	782	783	784	785
1963	786	787	788	789	790	791	792	793	794	795	796	797
1964	798	799	800	801	802	803	804	805	806	807	808	809
1965	810	811	812	813	814	815	816	817	818	819	820	821
1966	822	823	824	825	826	827	828	829	830	831	832	833
1967	834	835	836	837	838	839	840	841	842	843	844	845
1968	846	847	848	849	850	851	852	853	854	855	856	857
1969	858	859	860	861	862	863	864	865	866	867	868	869
1970	870	871	872	873	874	875	876	877	878	879	880	881
1971	882	883	884	885	886	887	888	889	890	891	892	893
1972	894	895	896	897	898	899	900	901	902	903	904	905
1973	906	907	908	909	910	911	912	913	914	915	916	917
1974	918	919	920	921	922	923	924	925	926	927	928	929
1975	930	931	932	933	934	935	936	937	938	939	940	941
1976	942	943	944	945	946	947	948	949	950	951	952	953
1977	954	955	956	957	958	959	960	961	962	963	964	965
1978	966	967	968	969	970	971	972	973	974	975	976	977
1979	978	979	980	981	982	983	984	985	986	987	988	989
1980	990	991	992	993	994	995	996	997	998	999	1000	1001
1981	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013
1982	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025
1983	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037
1984	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049
1985	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061
1986	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073
1987	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085
1988	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097
1989	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109
1990	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121

• SUMMARY OF CHANGES IN VOLUME NUMBERING:

Semi-annual:	*Jan. 1872 through Jun. 1883*
Quarterly:	*Jul. 1883 through Dec. 1902*
Bi-monthly:	*Jan. 1903 through Dec. 1908*
Monthly:	*Jan. 1909 to the present*

The *Official Gazette* was published on successive Wednesdays from 3 Jan. 1872 through 17 Jan. 1872. From 23 Jan. 1872 to the present, it has been published weekly on Tuesday.

(204) U.S. Department of Commerce Patent and Trademark Office Public Advisory Committee for Trademark Affairs Notice of Open Meeting

In accordance with Section 10(a)(2) of the Federal Advisory Committee Act (Public Law 92–463), announcement is made of the following Committee meeting:

The Public Advisory Committee for Trademark Affairs will meet from 9:30 a.m. until 5:00 p.m. on Sept. 11, 1985, at the U.S. Patent and Tademark Office in Rm. 11C24 of Bldg. 3, Crystal Plz., located at 2021 Jefferson Davis Hwy., Arlington, Va.

The agenda for the meeting is as follows:

(1) Quality of Trademark Examination
(2) Legislative changes to use requirements
(3) Reporting format of the finances of the Trademark Operation
(4) Activities of the Trademark Trial and Appeal Board
(5) Trademark Automated Systems — Practical enhancements to Public Services

The meeting will be open to public observation; approximately twelve (12) seats will be available for the public on a first-come first-served basis.

If time permits, oral comments by the public of three (3) minutes on each topic within the above agenda will be allowed. Written comments and suggestions will be accepted before or after the meeting on any of the matters discussed.

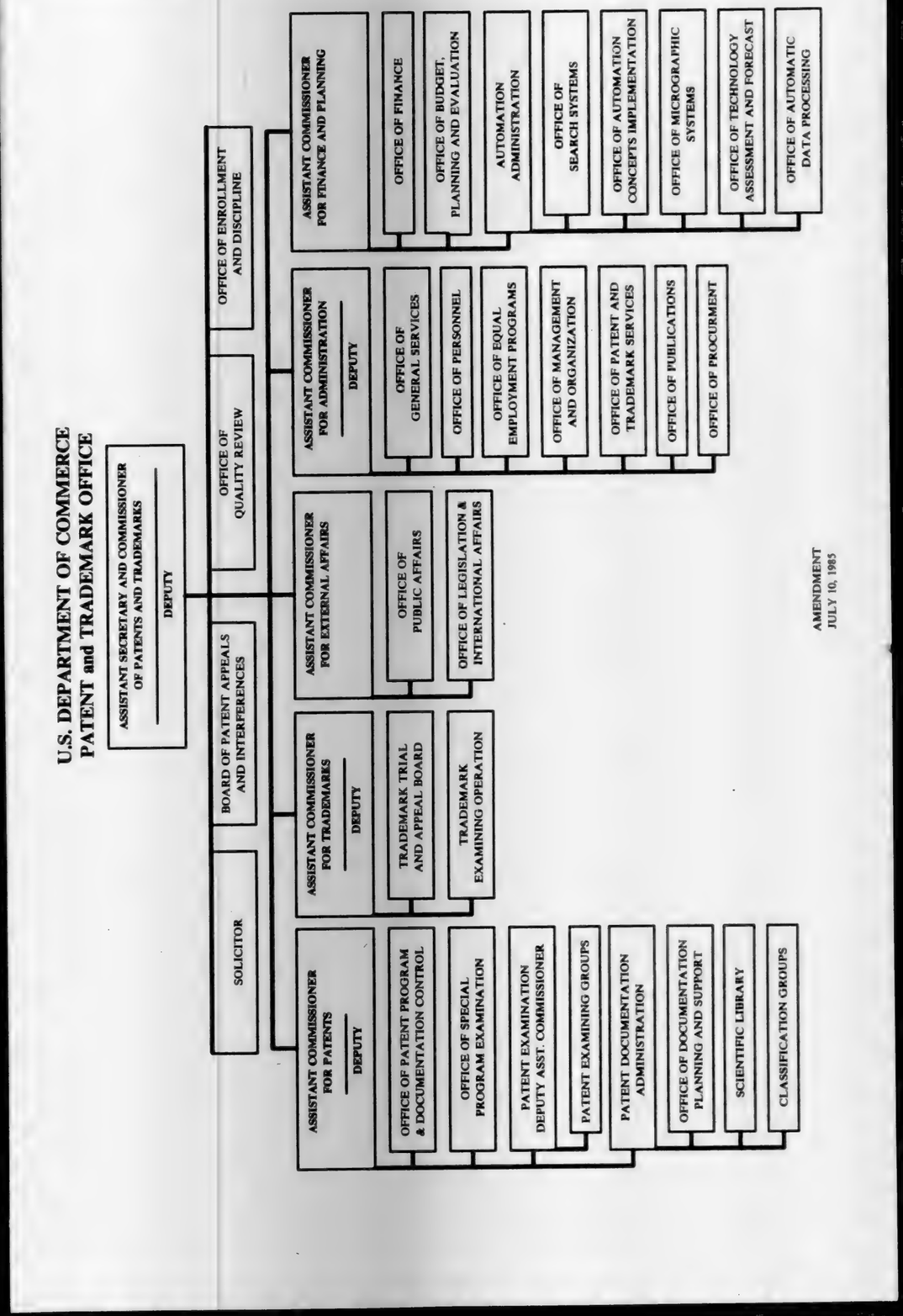
Copies of the minutes will be available upon request.

For further formation, contact Ellen J. Seeherman, Office of the Assistant Commissioner for Trademarks, Rm. CP3–11C17, Patent and Trademark Office, Washington, D.C. 20231. Telephone: 703–557–7464.

Aug. 5, 1985.

DONALD J. QUIGG,
Acting Assistant Secretary and Commissioner of Patent and Trademarks.

[1058 TMOG 3]



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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Oct. 12, 1985 and is announced in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

International PCT fees have been changed effective Oct. 29, 1985 and were announced in the *PCT Gazette* on Aug. 29, 1985 and in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority, all cases	750.00
International fees	
Basic fee (first 30 pages):	280.00
Basic Supplemental fee (for each page over 30):	6.00
Designation fee for the first 10 national or regional offices:	70.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Oct. 21, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 4, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,366,579 through 4,367,560
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, NO PATENTS EXPIRED ON OCT. 20, 1985, DUE TO FAILURE TO PAY MAINTENANCE FEES.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,462,720, Re. S.N. 791,539, Filed Oct. 25, 1985, Cl. 406/84, AIR TABLE SYSTEM, Ronald A. Lenhart, Owner of Record: *Precision Metal Fabricators, Lakewood, Colo.*, Attorney or Agent: Gary D. Fields, et al., Ex. Gp.: 313

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,911,928, Reexam. No. 90/000,913, Requested: Nov. 27, 1985, Cl. 128/418, ENDOCARDIAL ELECTRODE, Hans Lagergren, Owner of Record: *Inventor,* Attorney or Agent: Haseltine, Lake, et al., Ex. Gp.: 330, Requester: Medtronic, Inc., Minneapolis, Minn.

3,935,864, Reexam. No. 90/000,914, Requested: Nov. 27, 1985, Cl. 128/418, ENDOCARDIAL ELECTRODE, Hans Lagergren, Owner of Record: *Inventor,* Attorney or Agent: Haseltine, Lake, et al., Ex. Gp.: 330, Requester: Medtronic, Inc., Minneapolis, Minn.

4,290,713, Reexam. No. 90/000,909, Requester: Nov. 18, 1985, Cl. 404/69, EXPANSION JOINT SEALING STRUCTURES, Delmont R. Brown, et al., Owner of Record: *D. S. Brown Co., Baltimore, Ohio,* Attorney or Agent: None, Ex. Gp.: 350, Requester: Robert J. Schaap, Los Angeles, Calif.

4,494,365, Reexam. No. 90/000,912, Requested: Nov. 25, 1985, Cl. 56/256, Mower Cutting Unit, Lawrence L. Lloyd, Owner of Record: *Inventor,* Attorney or Agent: Townsend & Townsend, Ex. Gp.: 330, Requester: Toro Co., Minneapolis, Minn.

4,515,153, Reexam. No. 90/000,915, Requested: Nov. 27, 1985, Cl. 128/87B, STABILIZER FOR CERVICAL COLLAR, Anthony Calabrese, Owner of Record: *Charles Greiner & Co., Inc., Westville, N.J.,* Attorney or Agent: Seidel, Gonda, et al., Ex. Gp.: 330, Requester: Owner

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Survey of Registered Practitioners in Patent Cases

Pursuant to 37 CFR 10.11(b), a survey letter was mailed on Nov. 18, 1985 from the Office of Enrollment and Discipline (OED) to all practitioners in patent cases whose last names began with T through Z. Enclosed with the letter is a data sheet which must be completed and returned to OED as soon as possible. All data sheets returned to OED will be acknowledged. Failure by a practitioner to submit a completed data sheet within the time period specified in the survey letter will result in the practitioner being removed from the register in accordance with 37 CFR 10.11(b).

If your last name begins with T through Z and you have not received a data sheet or if you returned the data sheet to OED and you did not receive an acknowledgement within three (3) months after returning the data sheet to OED, please contact Patricia M. Jordan at (703) 557–1728.

Nov. 20, 1985. CAMERON WEIFFENBACH,
Director, Office of Enrollment & Discipline.

Policy and Plans Regarding Exchange Agreements Entered into by the Patent and Trademark Office to Competitive Procurement Contracts

Background

Under the authority of section 6(a) of title 35, United States Code, the Patent and Trademark Office (PTO) entered into exchange agreements with non-Federal entities to further the use of patent and trademark information and to facilitate the availability of that information. Some of these agreements will be converted to procurement contracts through competitive solicitations or assistance instruments, as appropriate. Toward this objective, the PTO establishes the following guidelines that shall apply to these conversions and to any subsequent business arrangements of a similar barter or exchange nature with private firms involving ADP resources. An inventory and description of the exchange agreements is also provided. Exchange agreements that will not be converted are identified and the reason for their exclusion explained.

Guidelines

From time to time the PTO needs goods and services to accomplish its goals for which it may offer other goods and services of comparable value as consideration rather than money. Such arrangements may be considered for a particular goal that might otherwise not be reached, in gaining access to published information and/or electronic data and/or in fostering the dissemination of intellectual property information. In return for goods and services it needs, the PTO may offer any or all of the following as full or partial compensation to the provider: (1) copies of PTO documents, (2) electronic data developed by the PTO from patents, trademark applications, trademark registrations, and other data sources, (3) Government-furnished equipment, and (4) other data and information resulting from special projects that may be undertaken. The use of consideration other than money will be in accord with the objectives of the Exchange Agreement provisions of P.L. 97–247.

Regardless of the barter or exchange nature and/or provisions of such arrangements, they will be developed as procurement contracts conforming to applicable procurement statutes and Federal Acquisition Regulations or assistance instruments as described in P.L. 95–224. Services which involve the delivery of ADP services will additionally conform to the Federal Information Resource Management Regulations. Agreements which have as their primary purpose the delivery of services to the public will be processed as assistance instruments under the provisions of the Grant and Cooperative Agreements Act of 1977, P.L. 95–224.

In seeking competitive procurements to replace exchange agreements, whenever possible, solicitation documents will (1) describe PTO needs in functional terms, (2) set forth the method that will be used in evaluating proposals, and (3) indicate the factors that will be considered and their relative weight or importance. Factors and weights will be based on the needs of the PTO and the interests of the public. When solicitation documents are ready for release, announcements will be published in the *Commerce Business Daily* (CBD) to inform prospective offerors of the date of the release. The PTO will competitively acquire the services of an independent audit or accounting firm to assign a fair market value to non-monetary considerations received or provided to assist in evaluating offers.

Contracts and assistance instruments will be awarded for one year with options for additional years, if required. The number of option years will be sufficient to provide an incentive for competitors to investment in an offering, but not for such a long period that future competition would be unreasonably limited.

Exclusive licenses will not be issued to any foreign owned firm or to any subsidiary or affiliate of a foreign owned firm. When feasible, competitive procurements will be structured to favor non-exclusive licenses. In any case, an exclusive license shall not impair the ability of the public to obtain data in a form historically provided by the PTO or in some equivalent form not subject to license restrictions. Licensees will not be entitled to obtain patent or trademark information not accessable by the public.

Exchange Agreements to be Converted by Competitive Procurement

Exchange agreements now in effect that are to be converted through competitive solicitations are listed below. The tentative date for issuance of the solicitation document is shown for each.

Exchange of Trademark Data and Information with Thomson and Thomson

Under an agreement with Thomson and Thomson (T&T), of 1 Monarch Dr., North Quincy, Mass. 02171, digitized images of the figurative elements of active trademark registrations in effect in 1983 and to be registered during the subsequent 10 year period were or are to be provided to the PTO. The same figurative elements were or are to be coded for retrieval using a coding system and manual developed jointly by T&T and the PTO. The textual information contained in the trademark applications and other trademark documents for the period from 1984 to 992 were or are to be provided. All data furnished or to be furnished by T&T were or are to be provided on magnetic tape in an agreed upon format and standard. In return for this electronic data, the PTO furnished or will furnish paper copies of registration, application, and other Office documents, copies of Trademark *Official Gazettes* (OG), certain microfilm equipment, reports from certain special studies and analyses and electronic data representing updates to the text data base of active trademark registrations for the period corresponding to the term of the agreement, from 1984 to 1992.

It is contemplated that the provisions of this exchange agreement will be ended and the substance of it will be converted by one or more competitive procurements for different types of data. The solicitations are planned to issue in Feb. or Mar., 1986.

Exchange of Patent Data and Information with Derwent

Under an agreement with Derwent, Inc., of 684 Elm St., Suite 500, McLean, Va. 22101, paper copies of copyrighted English Abstracts of Derwent's coverage of world patents and electronic data corresponding to the bibliographic data and alerting abstracts of certain Derwent files (CPI, WPI, and EPI) are provided to the PTO. In addition, a royalty credit of 300 hours connect time to Derwent data available on-line from time-sharing services is provided. The PTO furnishes Derwent paper or microfilm copies of foreign patents it receives from other patent offices, for pick-up at those offices, *OG* copies, and the following electronic U.S. patent data: patent bibliographic data with all claims, the Patent Master Classification File and the Patent Assignment Transaction Data File (backfile and updates).

This agreement, will be ended and the substance of it together with some additional data, data uses, and services will be converted by competitive procurement. The solicitation is planned to issue in Mar. or Apr., 1986.

Exchange of Services and Patent Data with Mead Data Central

Mead Data Central, of P.O. Box 933, Dayton, Ohio 54401, provides services related to the use of its on-line data systems (LEXPAT, LEXIS, NEXIS) in the amount of service credits of $77,000 annually to the PTO. In return, the PTO has or is furnishing to Mead Data Central, the following electronic data: the Patent Full Text File (backfile and updates), the Patent Assignment Transaction Data File, the Manual of Classification File, and the file of the Index to U.S. Patent Classification and paper copies of Certificates of Correction and Notices of Litigation.

This agreement will be converted by competitive replacement or, alternatively, will be terminated. If a competitive acquisition is to be undertaken, the solicitation is planned to issue approximately in Mar., 1986; if it is to be terminated, it is planned to be terminated by Oct., 1986.

Exchange of Patent Data and Information with Research Publications, Inc.

Under an exchange agreement with Research Publications, Inc., of 12 Lunar Dr., Woodbridge, Conn. 06525, the PTO receives COM-generated 16mm microfilm of its classification data files in two sequences. The magnetic tape files are provided to Research Publications every six months in the record format in which it is normally produced through the PTO maintenance program.

The PTO plans to terminate this exchange agreement in Sept. 1986.

Exceptions to Conversion by Competitive Acquisitions

Exchange agreements that are to be replaced by other than competitive procurements are listed below. The reason for the exception is given.

Exchange with Compu-Mark S.A. Related to Trademark Backfile Data

Under the exchange agreement with N.V. COMPUMARK S.A. (CM) of P.O. Box 61, B2510 Mortsel, Belgium, CM provided or will provide the PTO with electronic data on magnetic tape consisting of the text data in all trademark registrations active in 1983 and registered before 1980 and of the character data contained in the assignment index cards as of 1984. The PTO provided or is providing CM with paper copies of the active registrations found in its bound volumes, assignment index cards, and other PTO documents and electronic copies of the text data corresponding to new registrations and applications post-1979 and other trademark case data for the period from 1983 to 1992.

The PTO intends to procure data obtained from CM on a sole source basis, as previously advertised in the *CBD* on Dec. 15, 1984. To the knowledge of the PTO, CM is the only source of this collection of data that meets the specifications of the PTO. The negotiated price is expected to be less than the cost of its replacement by other, competitive means. Estimates of the replacement cost obtained from other, independent firms will be used to validate the final price, contract terms and conditions. The sole source award is planned to be completed by Jan. 1986.

Exchange of Services and Patent Data with Pergamon Infoline

Pergamon Infoline (Pergamon) of 1340 Old Chain Bridge Rd., McLean, Va. 22101, provided or is providing the PTO with the following: electronic data corresponding to the bibliographic data, including abstracts, of approximately 130,000 U.S. patents issued between 1970 and 1974 for which no other electronic data are available in the PTO, services consisting of royalty cred-

its in an amount of $10,000 annually applied to the use of Pergamon's on-line data base, and training of 300 patent examiners in the use of the Infoline system. The PTO furnishes Pergamon the following electronic data: the full text of the patent text backfile from 1975 to 1983, annual issuances of patent assignment transaction data, annual updates of patent bibliographic data with exemplary claims, annual issuances of the Patent Master Classification File; the annual issuance of the Attorney Roster File, periodic issuances of the Special Index Term File 364–200, and periodic issuances of the Special Index Term file 364–900.

The PTO plans to terminate this exchange agreement in Sept. 1986.

Administration

The PTO Administrator for Automation has been assigned responsiblity for administering all exchange agreements, their replacement, or their termination. Any requests for additional information about the agreements now in effect should be addressed to:

J. Howard Bryant
Administrator for Automation
Department of Commerce
U.S. Patent and Trademark Office
Washington, D.C. 20231

Information on the competitive solicitations should be addressed to:

Office of Procurement
Patent and Trademark Office
Box 6
Washington, D.C. 20231

At this time the PTO is seeking expressions of interest. Interested parties should write to the procurement office identified above citing the exchange agreement(s) for which subsequent receipt of a competitive solicitation is requested. Each competitive solicitation will be separately summarized in the CBD prior to issuance.

DONALD J. QUIGG,
Assistant of Secretary and Commissioner of Patents and Trademarks.

Dec. 2, 1985.

Industrial Property Organization for English-Speaking Africa (ESARIPO)

On Jan. 25, 1985, the U.S. Patent and Trademark Office and ESARIPO reached a general understanding on cooperation in the field of industrial property, including information and document exchanges on a continuing basis.

ESARIPO, headquartered in Harare, Zimbabwe, is a regional patent-granting organization which was established by an Agreement concluded in Lusaka, Zambia, on Dec. 9, 1976. The organization is empowered by a Protocol adopted on Dec. 10, 1982, in Harare, Zimbabwe, and in force since Apr. 25, 1985, to grant patents and to register industrial designs. There are currently seven Contracting States which are party to the Protocol. They are: Botswana, Ghana, Kenya, Malawi, Sudan, Uganda and Zimbabwe. The first ESARIPO patent was granted on July 3, 1985.

The system established by the Protocol enables applicants, by filing one application, to obtain patents and industrial design registrations with effect in all designated Contracting States. Applications are filed at the national industrial property office of any Contracting State, which then transmits the applications to ESARIPO. Thereafter, they are examined by the ESARIPO OFFICE for compliance with formal requirements and, in the case of patents, also regarding substantive conditions of patentability (the latter in cooperation with patent searching and examining authorities). If the examination shows that a patent may be granted or an industrial design registered, ESARIPO notifies the designated Contracting States of its intention to grant the patent or register the industrial design. Within six months, any designated State may object to the effect of such a grant or registration in its territory on grounds specified in the Protocol. If no State objects, the ESARIPO Office will grant the patent or register the industrial design effective in all designated States. If objections are communicated, it will grant the patent or register the industrial design effective only in those designated States which did not object.

Further information regarding the law, implementing regulations and procedure applicable to ESARIPO may be obtained either from the ESARIPO Office, P.O. Box 4228, Harare, Zimbabwe, or from the International Bureau of the World Intellectual Property Organization (WIPO), 34 chemin des Colombettes, 1211 Geneva 20, Switzerland.

MICHAEL K. KIRK,
Assistant Commissioner for External Affairs.

PATENT NOTICES

Certificates of Correction for the Week of Jan. 7, 1986

PP. 4,121	4,490,537	4,524,499	4,538,658
Re. 31,671	4,492,718	4,524,995	4,539,103
D. 280,683	4,493,063	4,525,298	4,539,153
D. 280,759	4,493,411	4,525,493	4,539,207
4,163,357	4,495,560	4,526,610	4,539,705
4,210,767	4,496,367	4,526,827	4,539,783
4,252,705	4,496,660	4,526,930	4,540,314
4,255,577	4,498,140	4,527,163	4,540,357
4,256,618	4,498,466	4,527,455	4,540,453
4,274,012	4,499,779	4,528,912	4,540,552
4,274,679	4,500,195	4,529,448	4,540,706
4,291,026	4,500,874	4,529,782	4,541,409
4,344,073	4,501,923	4,529,889	4,541,639
4,355,942	4,502,489	4,529,965	4,541,942
4,390,841	4,505,634	4,530,724	4,542,522
4,404,719	4,506,434	4,531,250	4,543,625
4,412,934	4,507,372	4,531,870	4,543,974
4,445,446	4,508,449	4,532,259	4,544,568
4,448,748	4,509,402	4,532,408	4,545,146
4,449,957	4,509,496	4,532,608	4,545,201
4,464,204	4,510,101	4,532,860	4,545,405
4,468,604	4,510,332	4,533,132	4,545,993
4,476,827	4,511,445	4,534,024	4,546,309
4,479,620	4,515,165	4,534,403	4,546,479
4,479,790	4,515,696	4,534,446	4,546,501
4,480,030	4,515,762	4,534,604	4,547,023
4,482,005	4,515,980	4,535,113	4,547,479
4,483,056	4,516,102	4,535,374	4,547,675
4,484,323	4,517,266	4,535,667	4,547,982
4,484,647	4,517,366	4,536,700	4,548,130
4,484,894	4,519,317	4,536,888	4,548,501
4,484,951	4,520,816	4,537,222	4,548,754
4,486,340	4,521,331	4,537,395	4,548,982
4,487,060	4,522,621	4,537,404	4,549,304
4,487,246	4,523,054	4,537,497	4,549,473
4,489,007	4,524,004	4,537,696	4,551,215
4,489,890	4,524,007	4,538,214	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 7, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-14-84
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-14-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-11-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-30-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-19-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during October 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,413,656 to 3,419,906, inclusive

Plant Patents . . . . . Numbers 2,847 to 2,855 inclusive

REEXAMINATIONS

JANUARY 7, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,257,937 (443rd)

MODIFIED POLYESTER COMPOSITIONS

Stuart C. Cohen, and Ronald L. Dieck, both of Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Reexamination Request No. 90/000,672, Nov. 23, 1984.
Reexamination Certificate for Patent No. 4,257,937, issued Mar. 24, 1981, Ser. No. 957,801, Nov. 6, 1978.
Int. Cl.[4] **C08L** *69/00, 67/02;* **C08K** *3/34*
U.S. Cl. 524—445

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **2, 3** and **9** are cancelled.

Claims **1** and **24** are determined to be patentable as amended.

Claims **4–8** and **10–23**, dependent on an amended claim, are determined to be patentable.

New claim **25** is added and determined to be patentable.

1. A thermoplastic resin composition comprising:
(a) a polyester resin base containing any of the following:
(i) a poly(1,4-butylene terephthalate) resin;
(ii) a blend of poly(1,4-butylene terephthalate) resin and a poly(ethylene terephthalate) resin;
(iii) a block copolyester of poly(1,4-butylene terephthalate) and an aromatic/aliphatic polyester;
(iv) a blend of (iii) and a poly(ethylene terephthalate) resin; or,
(v) a blend of (iii) and a poly(1,4-butylene terephthalate) resin; and,
(b) an impact modifier therefor comprising a combination of:
(i) a polyacrylate resin *comprising a multiple stage polymer having a rubbery first stage and a thermoplastic hard final stage and present in an amount of at least 5 parts per 100 parts by weight of (a) and (b) together*; and,
(ii) an aromatic polycarbonate resin, in an amount of *at least 10 parts and* up to 60 parts per 100 parts by weight of (a) and (b) together.

495–167 O.G.–86–14

STATUTORY INVENTION REGISTRATIONS

PUBLISHED JANUARY 7, 1986

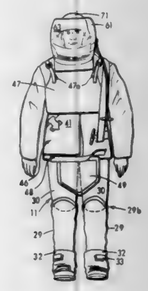
A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H7

EXPLOSIVE ORDNANCE DISPOSAL PROTECTIVE SUIT

Ralph Martone, Arlington, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 4, 1984, Ser. No. 596,778
Int. Cl.[4] F41H *1/02*
U.S. Cl. 2—2.5 **2 Claims**



2. Protective clothing providing protection for a human wearer against high velocity fragments and blast effects caused by exploding bombs comprising:

(a) trousers, said trousers containing ballistic protective inserts protecting the front of the body of the wearer;

(b) a detachable collar containing ballistic inserts;

(c) a protective helmet;

(d) a ballistic and blast protective breast plate-face shield combination, wherein said breast plate covers the front of the wearer from approximately the level of the diaphragm to the neck and said face shield covers the remainder of the wearer's neck and the face, said face shield being spaced from the face of the wearer to allow the wearer to make head movements without contacting the face shield, and

(e) a coat, the front of said coat having a pocket which supports the breast plate against the upper torso of the wearer and thereby positions and holds the face shield in front of the face of the wearer.

H8

THERMODYNAMIC WASTE HEAT TRANSFER SYSTEM

James E. Hays, Temple Hills, Md., assignor to The Government of the United States, Washington, D.C.

Filed Jun. 5, 1985, Ser. No. 742,601
Int. Cl.[4] F25B *7/00*
U.S. Cl. 62—79 **16 Claims**

1. A primarily thermodynamic waste heat transfer system comprising, in combination:

an evaporator at a first elevation;

a condenser at a second elevation;

piping connecting said evaporator and said condenser into an uninterrupted fluid path so that refrigerant may circulate between said evaporator and said condenser;

a preselected refrigerant in said evaporator, condenser, and piping;

a source of waste heat near said evaporator, hot exhaust air from said source carrying said waste heat toward said evaporator to thereby cause said refrigerant in said evaporator to change from a liquid to a gas phase; and

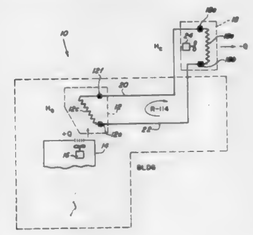
means for removing heat from said refrigerant in said condenser to cause said refrigerant in said condenser to change from a gas to a liquid phase;

whereby a primary thermodynamic cycle is established in which waste heat added to the refrigerant at said evaporator is removed from the system at said condenser without using a pump to assist said primary thermodynamic cycle.

10. A method of transferring waste heat from at least one communication transmitter, or comparable equipment, in operation, the method comprising the steps of:

circulating a preselected, nonflammable refrigerant in at least one uninterrupted continuous fluid path defined by piping interconnecting an evaporator at a first elevation to at least one condenser at a second elevation higher than said first elevation;

evaporating said refrigerant at said evaporator by positioning said evaporator near at least one communication transmitter, or comparable equipment, to catch hot exhaust air



carrying waste heat from said at least one communication transmitter, or comparable equipment;

condensing said refrigerant at said second elevation in said condenser;

utilizing said refrigerant to absorb waste heat contained in hot exhaust air provided by said at least one communication transmitter, or comparable equipment, to cause said refrigerant in said evaporator to change from a liquid to a gas that migrates to said second elevation;

utilizing condensation of said refrigerant in said condenser to remove waste heat from said refrigerant, to release said waste heat into ambient air, and to cause said refrigerant to change from a gas to a liquid at said second elevation;

thereby establishing a thermodynamic cycle in which waste heat added to said refrigerant at said first elevation is removed from said system at said second elevation while said refrigerant circulates through said fluid path.

H9

SHRINKABLE PACKAGE WITH VENT HOLES

Charles B. Ashmore, Greenville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Sep. 11, 1985, Ser. No. 775,066
Int. Cl.[4] B65D *65/00*
U.S. Cl. 206—497 **3 Claims**

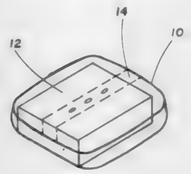
3. A package comprising:

(a) a product;

(b) an inner relatively narrow web of heat shrinkable, thermoplastic material relatively tightly wrapped around the product;

(c) a heat shrinkable thermoplastic film tightly wrapped around the inner web and product, said film having sealed ends, and sealed longitudinal edges in overlapping relationship; and

(d) at least one aperture extending through both overlapping longitudinal edges and in communication with the inner



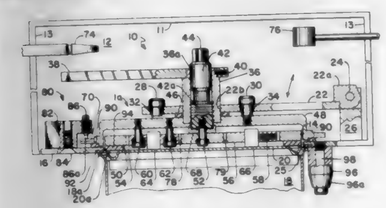
web; the package being substantially free from entrapped air.

H10

CAN-OUT HATCH ASSEMBLY WITH MAGNETIC RETENTION MEANS

Robert C. Frank, Crestwood, and Joseph C. Hoh, Naperville, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 3, 1985, Ser. No. 752,415
Int. Cl.[4] B65D *43/14*
U.S. Cl. 220—337 **22 Claims**



1. A hatch assembly for sealing an aperture within a wall of a sealed chamber in a first closed position while permitting the transfer of a contaminant from said chamber to a container positioned in sealed engagement with said wall around the aperture therein in a second open position, said container having a ferrous cover positioned thereon, said hatch assembly comprising:

an elongated member pivotally mounted at a first end thereof to an inner surface of the sealed chamber's wall and having a second end positioned over the aperture in the wall when said elongated member is in a first lowered position;

hatch means coupled to said elongated member adjacent to the second end thereof for covering the aperture in the sealed chamber's wall when said elongated member is in the first lowered position;

first displacement means coupled to said hatch means for rotationally displacing said hatch means;

locking means mounted to the inner surface of the wall for engaging and locking said hatch means in sealed engagement with the wall about the aperture therein when said hatch means is rotated in a first direction and for releasing said hatch means from sealed engagement with the wall when said hatch means is rotated in a second direction by said first rotational displacement means;

engaging means movably coupled to and positioned immediately below said hatch means for engaging the cover of the container; and

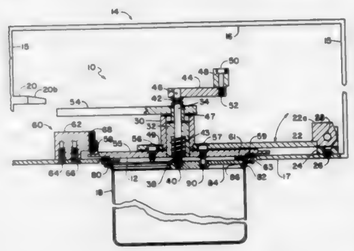
second displacement means coupled to said engaging means for moving said engaging means from a first raised position to a second lowered position wherein said engaging means engages the cover for removing the cover from the container prior to transfer of the contaminant when said elongated member is pivotally displaced to a second upraised position, wherein the container's cover shields said second displacement means from exposure to the contaminant, and for displacing the cover downward and in sealed engagement with the container following transfer of the contaminant when said elongated member is in the first lowered position.

H11

CAN-OUT HATCH ASSEMBLY AND POSITIONING SYSTEM

Paul J. Basnar, Western Springs; Robert C. Frank, Crestwood, and Joseph C. Hoh, Naperville, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 3, 1985, Ser. No. 752,416
Int. Cl.[4] B65D *43/14*
U.S. Cl. 220—337 **22 Claims**



1. A hatch assembly for sealing an aperture within a wall of a sealed chamber in a first closed position while permitting the transfer of a contaminant between said chamber and a container positioned in sealed engagement with said wall around the aperture therein in a second open position, said container having a cover positioned in sealed engagement thereon, said hatch assembly comprising:

an elongated member pivotally mounted at a first end thereof to an inner surface of the sealed chamber's wall and having a second end positioned over the aperture in the wall when said elongated member is in a first lowered position;

rotational displacement means coupled to said elongated member adjacent to the second end thereof;

a generally planar member coupled and responsive to said rotational displacement means and positioned over the aperture in the wall when said elongated member is in said first lowered position, wherein said planar member may be rotationally displaced by said rotational displacement means;

locking means mounted to the inner surface of the wall for locking said planar member in sealed engagement with the wall about the aperture therein when said planar member is rotated in a first direction and for releasing said planar member from the wall when said planar member is rotated in a second direction by said rotational displacement means;

connecting means mounted to said elongated member adjacent to the second end thereof for coupling said elongated member to the cover of the container when the container is positioned in sealed engagement with the wall around the aperture therein; and

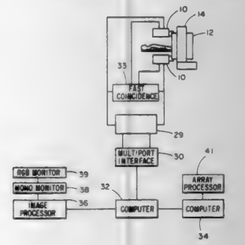
engaging means coupled to said planar member and rotationally displaced therewith by said rotational displacement means for engaging the cover of the container when positioned in sealed engagement with the wall around the aperture therein, wherein rotation of said engaging means in said first direction locks the cover in sealed engagement with the container and rotation of said engaging means in a second direction disengages the cover from the container permitting the cover to be removed from the container by said connecting means when said elongated member is pivotally moved to a second upraised position and wherein the cover is positioned over the lower surface of said planar member in shielding said planar member's lower surface from exposure to the contaminant.

H12

NUCLEAR MEDICINE IMAGING SYSTEM

Gerald W. Bennett, East Moriches; A. Bertrand Brill, Shoreham; Yves J. C. Bizais, Upton; R. Wanda Rowe, Upton, and I. George Zubal, Upton, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 11, 1983, Ser. No. 474,383
Int. Cl.[4] G01T *1/164*
U.S. Cl. 250—363 S **7 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 163 Pages)



1. A nuclear imaging system comprising:

a) a rotatable gantry having a horizontal axis of rotation;

b) a pair of large field of view scintillation cameras mounted on opposite sides of the gantry;

c) means for moving the cameras diametrically toward or away from each other;

d) means for rotating each camera about an axis perpendicular to the diametrical line of movement of the cameras, whereby the cameras may be positioned facing each other or may be positioned at an angle to each other; and

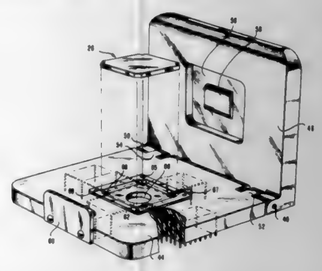
e) computing means for processing signals from the cameras to form images of radioactive subjects placed in the field of view of the cameras.

H13

CONNECTING A FLAT-PACK-PACKAGED CHIP TO A PRINTED CIRCUIT BOARD

Frederick Vratny, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 13, 1984, Ser. No. 639,863
Int. Cl.[4] H05K *1/00*
U.S. Cl. 339—17 CF **9 Claims**



1. Apparatus for electrically interconnecting an integrated-circuit chip to a printed-circuit board, said apparatus comprising

a flat-pack board having a multiple-pad integrated-circuit chip mounted on the topside of said flat-pack board,

first electrical conductors on the topside of said flat-pack board, said conductors including inner terminal portions adjacent said mounted chip and outer terminal portions disposed along the perimeter of said flat-pack board,

means electrically connecting the pads on said chip to respective ones of said inner terminal portions,

a socket assembly comprising a base having a recess formed in the topside thereof,

second electrical conductors mounted in said base and having inner terminal elements extending into the recess in said base around the perimeter of said recess and outer terminal elements extending from said base and adapted to be inserted into a female connector on a printed-circuit board, said inner terminal elements constituting topside-inclined cantilevered elements extending from the side walls defining the recess in said base, said cantilevered elements being adapted to respectively contact the outer terminal portions of said flat-pack board when the topside of said flat-pack board is positioned on said cantilevered elements,

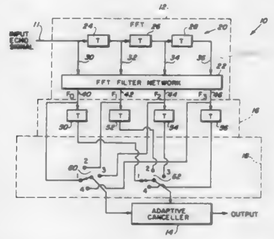
and a lid member, constituting a part of said socket assembly, adapted to be positioned in contact with said base for exerting force on the bottomside of said flat-pack and thereby causing the still inclined but slightly depressed cantilevered elements to establish stable electrical connections with said outer terminal portions.

H14

ADAPTIVE DOPPLER FILTER BANKS

Bernard L. Lewis, Satellite Beach, Fla., assignor to The Government of the United States, Washington, D.C.

Filed Aug. 19, 1985, Ser. No. 767,205
Int. Cl.[4] G01S *13/52, 7/30*
U.S. Cl. 343—7.7 **12 Claims**



1. A radar system for cancelling radar clutter with a minimum of hardware, said radar system having a radar signal with a doppler frequency space, a pulse repetition rate and an interpulse period, comprising;

a radar echo signal input;

an N subband doppler filter bank for dividing the doppler frequency space of said input signal into N frequency subbands and generating a separate subband output signal for each of said subbands.

an M degree-of-freedom adaptive moving-target indicator circuit, where M is equal to or greater than one;

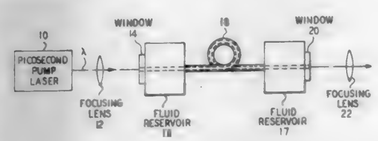
means for obtaining a set of M+1 consecutive samples from each of said subband output signals, sampled at a rate of the radar system's pulse repetition rate divided by N; and

means for consecutively applying each set of M+1 consecutive subband samples to said adaptive moving-target indicator circuit in a desired order to remove radar clutter.

H15
BROADBAND SOURCE OF PICOSECOND RADIATION

Andrew R. Chraplyvy, Matawan, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 28, 1983, Ser. No. 479,747
Int. Cl.⁴ H01S *3/30*
U.S. Cl. 372—3 **5 Claims**



1. Apparatus for producing broadband pulse radiation comprising

an input pump laser picosecond pulse source for providing a sequence of laser pulses at a predetermined wavelength; and

optical fiber means coupled to said input laser pulse source wherein said optical fiber means comprises a predetermined diameter D, a first index of a refraction n_C, and a core region including a liquid medium of molecules having a predetermined vibrational energy, said liquid medium having a second index of refraction n_L, wherein said first and said second indices of refraction satisfy the relation

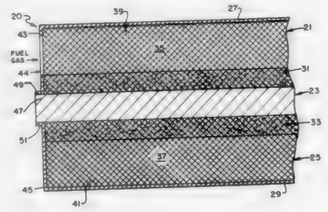
$$\frac{\pi D}{\lambda}(n_L^2 - n_C^2)^{\frac{1}{2}} \lesssim 2.4$$

so that said optical fiber means comprises a single mode optical fiber means, said liquid medium capable of inducing stimulated Raman scattering in said sequence of laser pulses for shifting said sequence of laser pulses to wavelengths related to the predetermined vibrational energy of the molecules, thus forming as a first output of said apparatus a Raman shifted sequence of pulse radiation, said sequence of laser pulses also combining in said core region with said Raman shifted sequence of pulse radiation to produce as a second output of said apparatus a continuum source of radiation at wavelengths other than those associated with said Raman shifted sequence, the combination of said first output and said second output thus being defined as broadband pulse radiation.

H16
FUEL CELL ELECTRODE AND METHOD OF PREPARATION

Thomas D. Kaun, New Lenox, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 2, 1984, Ser. No. 585,698
Int. Cl.⁴ H01M *4/86, 4/90, 4/96;* **B05D** *5/12*
U.S. Cl. 429—29 **20 Claims**



1. An electrode for a molten carbonate fuel cell comprising:

a generally incompressible porous plaque having interconnecting porosity for gas passage throughout the length and breadth thereof, and;

a coherent layer of particulate, electrochemically active catalyst material impregnated and sinter bonded into only one surface section of said plaque thickness leaving a major fraction of said plaque thickness open for gas flow into contact with said coherent layer, said porous plaque extending through the thickness of said coherent layer to restrain compressive creep.

REISSUES

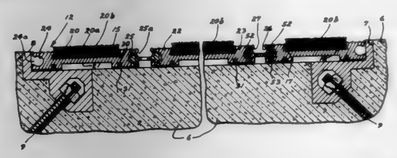
JANUARY 7, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,061
COUPLING MEMBER FOR FLOOR COVERING SECTIONS

Chester W. Ellingson, Jr., Burnsville, Minn., assignor to Reese Enterprises, Inc., Rosemount, Minn.

Original No. 4,381,324, dated Apr. 26, 1983, Ser. No. 356,336, Mar. 9, 1982. Application for reissue Jun. 11, 1984, Ser. No. 619,390
Int. Cl.⁴ E04C *1/30;* **E04F** *15/16*
U.S. Cl. 428—52 **4 Claims**



1. A floor covering consisting of coupled sections, having in combination

a floor covering section substantially rectangular in plan,

a flange formed at each side edge portion of said section,

each flange having a longitudinal bore therethrough, said bores respectively having oppositely facing slots,

a coupling member comprising

a pair of closely spaced rods,

a web connecting said rods, said web having a thickness less than the height of said slots,

said rods respectively being disposed through adjacent pairs of said slots connecting a pair of said sections[, and]

said rods having rotary movement in said slots, and

a tread surface carried by said sections.

PLANT PATENTS

GRANTED JANUARY 7, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,622

ROSE PLANT-MEIJASON VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conrad-Pyle Company, West Grove, Pa.

Filed Mar. 21, 1984, Ser. No. 592,429
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant, substantially as illustrated and described, which is capable of exhibiting the following combination of characteristics:
(a) a strong and vigorous upright growth habit,
(b) the ability to grow well under greenhouse conditions to produce cut flowers having a very long vase life which bear petals which detach cleanly,
(c) forms attractive fully double blossoms of a light cream yellow coloration which are lightly margined with luminous pink, and
(d) shows good resistance to fungus diseases.

5,623

NECTARINE TREE (TASTY-GOLD)

Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Apr. 12, 1984, Ser. No. 599,671
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, as illustrated and described, which is a regular and productive bearer of large, yellow flesh, freestone fruit with excellent eating quality and maturing 3 to 4 days earlier than Firebrite Nectarine (non-patent); the fruit is further characterized by coloring two to three weeks before maturity, having excellent shipping and storage quality and having the ability to hold firm on the tree 10 to 14 days after maturity (shipping ripe).

5,624

PLUM TREE ("AUTUMN GIANT")

Chris F. Zaiger, 537 Rosemore Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 2121 Elm Ave., all of Modesto, Calif. 95351

Filed Apr. 19, 1984, Ser. No. 602,064
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree, substantially as illustrated and described, particularly characterized by usually initiating the bearing of fruit in the second growing season; by blooming approximately nine days later than Santa Rosa; by a relatively late harvest and which is approximately with the Roysum; and by bearing of very large, firm, yellow-flesh, semi-freestone fruit larger than the Roysum and blushed with a higher degree of red skin color; the fruit, which is not susceptible to skin cracking or preharvest drop of immature fruit, being of good eating and long-distance shipping quality.

5,625

LILY PLANT: RHODOS

Gerardus C. Van der Salm, Rte. 1, Box 422, Woodland, Wash. 98674

Filed Nov. 14, 1983, Ser. No. 551,273
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its deep red flowers.

5,626

DISTINCT VARIETY OF STREPTOCARPUS NAMED SNOW BUNTING

Christian Hopka, 106 E. Lakeview St., Madison, Wis. 53716

Filed Dec. 12, 1983, Ser. No. 560,453
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

5,627

AFRICAN VIOLET PLANT NAMED NEW ORLEANS

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA", Rees Haffen, Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 477,688
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct African violet plant named New Orleans, as described and illustrated, and particularly characterized by upright flower stems, large frilled flowers lilac in color, with a more intense dark lilac on the frilled margins, vigorous growth habit with early flowering, attractive girl type leaves, and non-dropping and long lasting flowers.

5,628

CARNATION NAMED LONGORIN

Nicole Barberet, 136 Bld. Kennedy 06 601, and Yves Ducloux, Chemin des Ondes 06 601, both of Antibes, France

Filed Jul. 25, 1983, Ser. No. 516,568
Int. Cl.[4] A01G *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. The new and distinct spray carnation cultivar, substantially as herein shown and described, chracterized by the variegated light and dark red appearance of its small blossoms which are produced profusely on long, straight and strong flowering stems; and by its vigorous and upright growth habit, abundant foliage, and resistance to *Fusarium oxysporum.*

5,629

APPLE TREE 'SUMMER GRANNY'

Theodore J. Zee, R.D. #1, Box 398, Glassboro-Richwood Rd., Glassboro, N.J. 08028 (by Douglas S. Zee, legal representative), assignor to Douglas Zee, Jr. and Michael C. Zee, both of Glassboro, N.J., part interest to each

Filed Jan. 24, 1983, Ser. No. 460,573
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of Summer Apple Tree substantially as herein shown and described, characterized particularly as to novelty by the unique combination in the fruit produced thereby, of hard, juicy flesh, exceptional bruise resistance, and long-keeping quality, mostly round shape, greenish-yellow general over-all appearance, good resistance to insects and freedom from scab and russet.

PATENTS

GRANTED JAN. 7, 1986

ERRATA

For CLASS	See PATENT NO.
623–001	4,562,596
623–001	4,562,597
623–018	4,562,598
623–006	4,562,599
623–006	4,562,600
089–034	4,562,765
116–260	4,562,778
166–097	4,562,888
166–381	4,562,889
002–017	4,563,202
514–012	4,563,352
042–019	4,563,382
427–054	4,563,514
366–184	4,563,665

PATENTS

GRANTED JANUARY 7, 1986

GENERAL AND MECHANICAL

4,562,596

AORTIC GRAFT, DEVICE AND METHOD FOR PERFORMING AN INTRALUMINAL ABDOMINAL AORTIC ANEURYSM REPAIR

Elliot Kornberg, Suite 416, Cape Royal Bldg., 1980 N. Atlantic Ave., Cocoa Beach, Fla. 32931

Filed Apr. 25, 1984, Ser. No. 603,800

Int. Cl.⁴ A61F *1/24, 1/22;* **A61B** *17/00*

U.S. Cl. 623—1 **9 Claims**



1. An aortic graft that is specifically constructed for intraluminal insertion and comprising a flexible hollow, tubular material, having a generally cylindrical shape with an upper end and lower end and having a minor and major axis, and having disposed along its major axis a plurality of parallel struts, the struts having angled hooks with barbs at their upper ends, the upper ends of the struts extending beyond the upper end of the tubular material, thus allowing the graft to be securely attached to the inside of the aorta above the aneurysm.

4,562,597

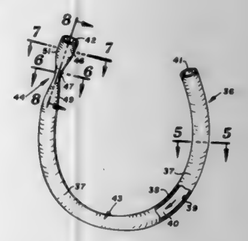
METHOD OF SUPPLYING BLOOD TO BLOOD RECEIVING VESSELS

Zinon C. Possis, and Demetre M. Nicoloff, both of Edina, Minn., assignors to Possis Medical, Inc., Minneapolis, Minn.

Division of Ser. No. 448,955, Dec. 13, 1982. This application Apr. 29, 1983, Ser. No. 489,798

Int. Cl.⁴ A61F *1/24, 1/00*

U.S. Cl. 623—1 **10 Claims**



1. A method for providing a continuous supply of flowing blood to at least one popliteal artery of a living body with an elongated biocompatible vascular graft having an inlet end and outlet end, a continuous passage extended from the inlet end to the outlet end for accommodating a continuous flow of blood and blood flow restriction means in the outlet portion thereof comprising: securing the inlet end of the graft to a femoral artery to supply blood under pressure to said passage to allow blood to flow in said continuous passage, securing at least one portion of the graft between the inlet end and the restriction means to at least one popliteal artery to continuously supply blood to said popliteal artery, and securing the outlet end of the graft to a popliteal vein whereby a continuous flow of blood flows through said passage from the inlet to the outlet end thereof and into said popliteal vein, said blood flow restriction means being operable to maintain flowing blood at a pressure in said passage sufficient to perfuse the popliteal artery.

4,562,598

JOINT PROSTHESIS

Curt Kranz, Berlin, Fed. Rep. of Germany, assignor to Mecron Medizinische Produkte GmbH, Berlin, Fed. Rep. of Germany

PCT No. PCT/DE82/00078, § 371 Date Dec. 1, 1982, § 102(e) Date Dec. 1, 1982, PCT Pub. No. WO82/03323, PCT Pub. Date Oct. 14, 1982

PCT Filed Apr. 1, 1982, Ser. No. 448,914

Int. Cl.⁴ A61F *1/00, 5/04*

U.S. Cl. 623—18 **22 Claims**



1. A joint prosthesis kit comprising

(a) a joint prosthesis for insertion in an intramedullary cavity; said joint prosthesis including

(1) an adapter having a tubular nipple and securing means; said tubular nipple being capable of supporting a joint bearing element;

(2) a hollow, flexible prepreg member of hardenable material attached to said adapter by said securing means; and

(b) a hollow, inflatable fluid-impervious pressing means being receivable in said prepreg member and being removable therefrom; said prepreg member, after introduction into said intramedullary cavity, is, by inflating said fluid-impervious pressing means inside said prepreg member by introduction of a fluid thereinto through said nipple, expandable against the surface of the intramedullary cavity such that the prepreg member conforms to the surface of the intramedullary cavity where, upon hardening, said prepreg member forms a hard shell constituting a sole anchoring member of the prosthesis.

4,562,599
INTRAOCULAR LENS

William H. Grinder, San Francisco, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 489,778, Jun. 2, 1983, Pat. No. 4,473,910, which is a continuation of Ser. No. 312,272, Oct. 16, 1981, abandoned, which is a continuation of Ser. No. 113,682, Jan. 21, 1980, abandoned. This application Aug. 22, 1984, Ser. No. 630,268

The portion of the term of this patent subsequent to Oct. 2, 2001, has been disclaimed.

Int. Cl.⁴ A61F *1/16, 1/24*

U.S. Cl. 623—6 **24 Claims**



1. An intraocular lens for positioning in the posterior chamber of the eye comprising a lens body, first and second support members extending from the lens body for engaging the outer portion of the posterior chamber of the eye, at least one of said support members comprising a resilient spring-like support loop extending outwardly from the periphery of said lens body, said support loop being foot-shaped with the ankle portion of the foot being attached to the lens body, said support loop having first and second end portions attached to the lens body at first and second attachment locations and said support loop being shaped to provide an outer contact portion extending a substantial distance outwardly beyond adjacent portions of the support loop, said outer contact portion being dimensioned and shaped to engage the outer portion of the posterior chamber of the eye with an outward radial force when positioned therein so that the outer contact portion of said resilient loop is deflected inwardly from the normal relaxed position by the outer portion of the posterior chamber of the eye to provide the support for the lens body in the posterior chamber.

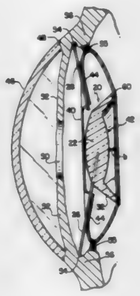
4,562,600
INTRAOCULAR LENS

Stephen P. Ginsberg, 9001 Potomac Station La., Potomac, Md. 20854, and Durward I. Faries, Jr., McLean, Va., assignors to Stephen P. Ginsberg, Potomac, Md.

Filed Oct. 18, 1983, Ser. No. 543,068

Int. Cl.⁴ A61F *4/16;* **A61C** *1/24*

U.S. Cl. 623—6 **25 Claims**



1. An intraocular lens for implantation in the posterior chamber of a human eye following extracapsular cataract extraction, comprising:

(a) a lens body comprising an inner lens optic having a central axis, and an outer circumferential flange extending posteriorly and radially outward from the edge of said lens optic at an oblique angle with respect to the central axis of the lens optic, said flange extending substantially completely around the circumference of the lens optic and having a substantially uniform length at all points along the circumference of the lens optic; and

(b) resilient means for supporting the lens body within the posterior chamber of the eye, and for exerting posterior pressure on the lens body to urge the outermost edge of said circumferential flange into substantially 360° contact with the posterior capsule.

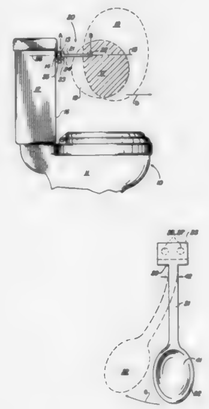
4,562,601
TOILET AID

Charles Aflitto, 1950 W. Aster, No. E5, Phoenix, Ariz. 85029

Filed Nov. 19, 1984, Ser. No. 672,468

Int. Cl.⁴ E03D *5/00*

U.S. Cl. 4—249 **7 Claims**



1. A toilet aid for improved actuation of a conventional flush-tank pivoted flush handle, said flush handle having a handle actuation end downwardly actuable by rotation of said flush handle in a plane parallel a conventionally seated user's torso, said rotation about a pivot axis adjacent an arm of said conventionally seated user, said arm defining an uncontorted flexure locus, said toilet aid comprising:

lever means extending from an attachment end adjacent said handle actuation end to a lever actuation end, said lever actuation end bounded by said uncontorted flexure locus; and

attachment means coupled to said lever means adjacent said attachment end and to said flush handle adjacent said handle actuation end, said lever means fixed by said attachment means within a pivotal plane, said pivotal plane defined by said pivot axis and said handle actuation end.

4,562,602
FLOOR DRAIN WITH WASTE PIPE REDUCTION

Casper Cuschera, 1047 - 77th Ave., Oakland, Calif. 94621

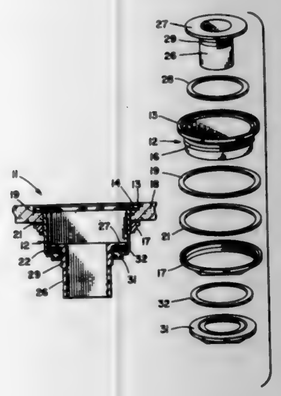
Filed Aug. 27, 1984, Ser. No. 644,637

Int. Cl.⁴ E03C *1/26*

U.S. Cl. 4—288 **8 Claims**

1. A floor drain which is adapted to fit a narrow waste pipe, including; a drain body having a bore of a first diameter, an upper flange extending radially outwardly from the upper end

of said drain body, a lower flange extending radially inwardly from the lower end of said drain body to define a lower bore opening, a coupling member including a tubular portion having a second diameter, said second diameter being substantially equal to the diameter of a narrower waste pipe, a coupling



flange extending from the upper end of said coupling member and adapted to overlay said lower flange in confronting fashion, first thread means for compressively engaging said floor surface and securing said drain body, and second thread means for sealing together said coupling flange and said lower flange.

4,562,603
CABLE SUPPORTED POOL STRUCTURE

Roger O. Paradis, Orleans, Canada, assignor to Nu-Tech Pools Inc., Ottawa, Canada

Filed Aug. 17, 1983, Ser. No. 523,845

Claims priority, application Canada, Aug. 18, 1982, 409613

Int. Cl.⁴ E04H *3/16, 3/18*

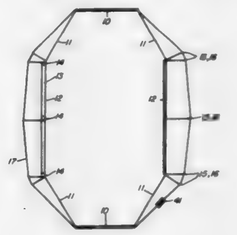
U.S. Cl. 4—506 **15 Claims**

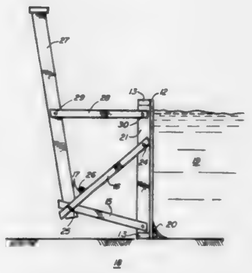
1. A pool wall support structure having side-walls for containing a liquid retained by a circumscribing structure comprising:

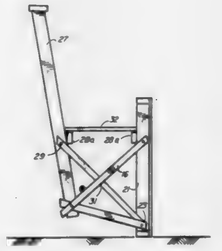
(a) outer cable means adapted to withstand a state of predetermined continuous tension mounted above the base of said side-walls;

(b) a plurality of compression sustaining spacing means disposed intermediate said side-walls and said outer cable means and coupled to said cable means at selected points; and

(c) means for maintaining said outer cable means in said state of predetermined continuous tension and thereby compressing said spacing means towards said side-walls wherein said







cable means changes direction at said selected points of coupling with said spacing means.

4,562,604
METHOD FOR DYEING CELLULOSE FIBER MATERIAL BY CONTROLLED ADDITION OF ALKALINE MATERIAL

Sture Damm, Borås, Sweden, assignor to Adcon AB, Borås, Sweden

Filed Mar. 14, 1984, Ser. No. 589,475

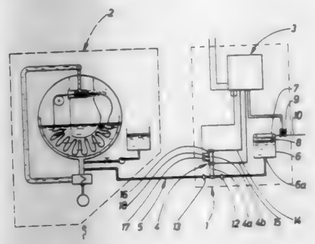
Claims priority, application Sweden, Mar. 18, 1983, 8301484

Int. Cl.⁴ D06B *3/02, 3/28*

U.S. Cl. 8—158 **3 Claims**

1. A method for dyeing cellulose fibers and mixtures thereof with other fibers in a bath containing at least one reactive dyeing agent in the presence of an alkaline material for fixation of said dyeing agent on said cellulose fibers, comprising establishing a bath containing said cellulose fibers and said dyeing agent, progressively adding to said bath in substantially continuous manner and over a predetermined time interval an alkaline material, the amount of said alkaline material being limited in an intitial phase of said time interval and increased to a largest amount in a final phase of said time interval, and auto-

matically controlling said addition according to a predetermined function of time until a sufficient amount of alkaline



material has been added to fix said dyeing agent on said cellulose fibers.

4,562,605

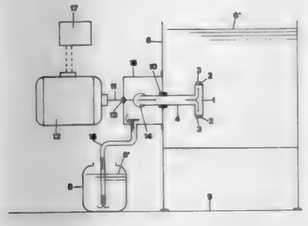
APPARATUS APPLICABLE FOR THE INTRODUCTION OF CONTROLLED AND MEASURED QUANTITIES OF A LIQUID, INTO ANOTHER BODY OF LIQUID

Claudio Quintarelli, Viale Algeria, 93, 00144 Roma, Italy

Filed Apr. 13, 1984, Ser. No. 599,953

Int. Cl.⁴ D06F *39/02*

U.S. Cl. 8—158 **4 Claims**



3. The method of sucking an exterior additive washing liquid into a liquid body of a washing machine from a rotating hollow body in the washing machine through a rotatable opening therein comprising the steps of rotating the body and opening in a single direction for sucking the additive liquid into the liquid body, providing deflection means radially extending from the rotating body adjacent to and on the side of the opening in the direction of the rotation with such shape to produce upon rotation in the liquid body lower fluid pressure in the liquid body at the opening to provide enough suction to suck the additive liquid from an exterior store into the liquid body, and coupling an exterior source of additive liquid to the opening for suction into the liquid body as a result of the rotation of the body.

4,562,606

METHOD OF PRODUCING FOOTWEAR WELT

Serge Foischweiler, Batawa, Canada, assignor to Bata Industries Limited, Batawa, Canada

Filed Sep. 27, 1982, Ser. No. 424,249

Int. Cl.⁴ A43C *13/08;* **B29H** *07/08*

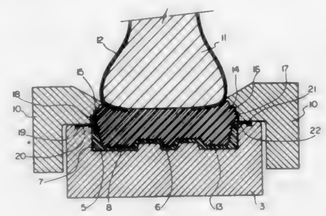
U.S. Cl. 12—142 RS **1 Claim**

1. A method of producing a footwear sole with a simulated welt comprising the steps of:

(a) molding an outer sole portion on a mold bottom;

(b) placing a lasted upper above said outer sole portion and mold bottom;

(c) molding an inner sole portion between said first sole portion and lasted upper to connect the outer sole portion to the upper, with a flange integral with said inner sole portion extending outwardly beyond the periphery of said outer sole portion, said flange including a profiled top surface defining a simulated welt and a bottom portion with a smooth periphery extending outwardly beyond the simulated welt around the entire periphery of the flange;



(d) coloring substantially the entire flange between the upper and the outer sole portion; and

(e) removing said bottom portion of said flange, whereby the remainder of the flange resembles a welt and a midsole above said outer sole portion, the colours of the welt, midsole and outer sole portion differing from each other.

4,562,607

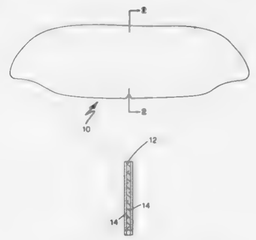
SHOE STIFFENER

Blair D. Trask, Haverhill, Mass., assignor to Bixby International Corporation, Newburyport, Mass.

Division of Ser. No. 518,040, Jul. 28, 1983, which is a continuation-in-part of Ser. No. 314,722, Oct. 26, 1981, and Ser. No. 485,389, Apr. 15, 1983. This application Oct. 22, 1984, Ser. No. 663,422

Int. Cl.⁴ A43B *23/16;* **B29C** *27/04*

U.S. Cl. 12—146 D **3 Claims**



1. The method of stiffening a shoe which comprises providing a shoe stiffener comprising a mixture of plastic resin and 25% to 35% by weight magnetic material, and activating said shoe stiffener through imposition of a high frequency magnetic field provided by a coil shaped to conform to the shape of said stiffener at frequency between 1 and 10 MegaHertz.

4,562,608

CHIMNEY CLEANING BRUSH

Harvey J. Weir, Henribourg, Saskatchewan, Canada S0J 1C0

Filed Jun. 29, 1984, Ser. No. 625,874

Claims priority, application Canada, Jun. 29, 1983, 431395

Int. Cl.⁴ A46B *7/02*

U.S. Cl. 15—163 **8 Claims**

1. A chimney cleaning brush apparatus adapted to be passed in one direction through a chimney in a folded configuration and to be passed in the other direction through the chimney in an unfolded configuration, the brush apparatus comprising a frame member and multiple pairs of brush members, each pair of brush members being pivotally secured to the frame member

such that the pivot axis of each brush member of the pair of brush members extends in generally parallel relation to the pivot axis of the other brush member of the pair of brush members, each pair of brush members being displaced on the frame member relative to each other pair of brush members in the direction on the frame member corresponding to that in which the frame member is adapted to extend in the chimney, that relative displacement being such that each pair of brush members does not act to limit the position assumed by any other pair of brush members when the apparatus is passed through the chimney in the folded configuration, each pair of brush members in the unfolded configuration extending such



that their respective cleaning edges contact a respective opposing pair of surfaces of the chimney, each brush member being pivotable around its pivot axis in only one direction from the unfolded configuration, the contact between the cleaning edges of the brush members and the surfaces of the chimney acting to maintain the brush apparatus in the unfolded configuration as it is passed through the chimney in the other direction, the orientation of the pivot axes of each pair of brush members being offset from the pivot axes of each other pair of brush members of the apparatus so as to stabilize the passage of the apparatus through the chimney in the unfolded configuration.

4,562,609

BROOM BODY WITH ARTIFICIAL BOUGHS

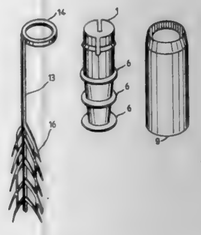
Jackie A. de Ruyter, 32, Rue de la Cigale, 68200 Mulhouse, France

Filed Jun. 26, 1984, Ser. No. 624,587

Claims priority, application France, Jun. 30, 1983, 83 11200; Mar. 22, 1984, 84 04793

Int. Cl.⁴ A46B *3/10*

U.S. Cl. 15—171 **6 Claims**



1. A broom body for a broom with artificial boughs comprising, an elongated tubular socket for receiving a broom handle axially therein, the socket having on a cylindrical part thereof two longitudinal slots for defining two half-shells capable of being elastically brought circumferentially closer, the socket having a portion in the shape of a truncated cone with three collars disposed axially spaced on said portion, said collars each having an outer diameter greater than the outer diameter of the socket, a plurality of similar artificial elements each configured and dimensioned similar to a bough with twigs thereon and each having a lateral ring at one thereof, the rings being disposed in assembly on the socket circumferentially of a corresponding collar, the artificial boughs being spaced circumferentially from each other on the socket, and an elongated cover sleeve having a length at least approximately that of the socket and removably mounted in use in assembly circumferentially of the socket and said rings spaced axially on the socket, and the cover sleeve having an internal dimension for effectively removably holding said rings on the respective collars to effectively hold said boughs in place assembled on the socket.

4,562,610

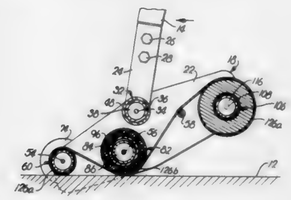
CLEANING APPARATUS FOR BOWLING LANES

John M. Davis, and David G. Jennings, both of St. Joseph, Mo., assignors to The Kegel Company, Inc., St. Joseph, Mo.

Filed Mar. 19, 1982, Ser. No. 359,695

Int. Cl.⁴ A63D *5/10;* **A47L** *13/24*

U.S. Cl. 15—228 **6 Claims**



1. Apparatus for use in cleaning bowling lanes and the like comprising:

a rockable frame;

a pair of transversely extending rollers carried by said frame in laterally spaced apart relationship;

a web of absorbent material stretched between said rollers and coiled around the same in such a manner that as one of the rollers is rotated to coil up the web, the other roller pays out the web to the one roller;

means for releasably retaining the rollers in selected rotative positions;

a web-engaging fulcrum carried by said frame between said rollers in offset relationship with an imaginary line intersecting the peripheries of the web coils around said rollers whereby the frame may be rocked fore-and-aft about said fulcrum to selectively bring either of said web coils and the fulcrum-engaged portion of the web to bear against the lane surface; and

means for rocking the frame about said fulcrum in one direction when the frame is moved forwardly along the lane surface and for rocking the frame in the opposite direction about the fulcrum when the frame is moved reversely along the lane surface,

at least one fore-and-aft extremity of said frame being provided with a pair of laterally spaced apart, freely rotatable wheels positioned outboard of opposite lateral extremities of the frame and projecting forwardly therefrom above lowermost extremities of said rollers for facilitating the clearance of obstacles by the frame in alignment with said wheels.

4,562,611

AUTOMATIC DUMPING DUST PAN

Alpo L. Marttinen, 423 Sydenham Rd., Sault Ste. Marie, Ontario, Canada P6C 2X8

Filed Jul. 30, 1984, Ser. No. 635,602
Claims priority, application Canada, Feb. 28, 1984, 448453
Int. Cl.⁴ A47L *13/52*
U.S. Cl. 15—257.7 **2 Claims**



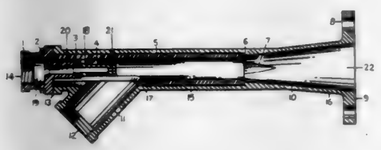
1. An apparatus for gathering refuse comprising:
(a) an elongated hollow handle having an upper end and a lower end,
(b) a dust pan including a bottom, a rear wall, and a partial top that extends parallel to the bottom,
(c) a hollow block secured to the lower end of said handle and projecting through said partial top of said dust pan,
(d) first means extending through said hollow block to secure said dust pan to said handle for pivotal movement relative thereto,
(e) said bottom of said dust pan having a recess formed therein,
(f) a detent located at the lower end of said hollow block for engagement with said recess in said dust pan, to lock said dust pan in a horizontal orientation,
(g) a rigid rod extending axially through the interior of said hollow handle,
(h) manually operable actuating means secured to the upper end of said hollow handle, and
(i) one end of said rod being secured to said actuating means and the other end of said rod being secured to said detent, whereby operation of said actuating means releases said detent from said recess in said dust pan to pivot into a depending, vertical position to discharge the contents of said pan.

4,562,612

FLUID-DRIVEN TRANSDUCER VACUUM TOOL

Raymond F. Williams, P.O. Box 488, Bolivar, Ohio 44612, and William H. Smith, 1337 Highbrook St., Akron, Ohio 44301

Filed Aug. 29, 1983, Ser. No. 527,071
Int. Cl.⁴ A47L *5/14*
U.S. Cl. 15—409 **9 Claims**



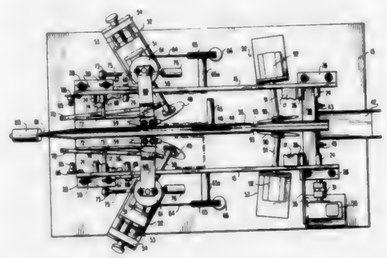
1. A portable vacuum tool including:
(a) a generally cylindrical-shaped casing having a central bore terminating in open ends;
(b) a pressurized fluid nozzle mounted on one of the casing open ends and extending into the bore;
(c) a vacuum inlet opening forming in the casing and communicating with the casing bore;
(d) a diffuser formed in the other of the casing open ends;
(e) a ceramic liner telescopically removably mounted within the bore and extending between the vacuum inlet opening and the diffuser; and
(f) means for removably clamping the liner in a fixed position within the casing bore.

4,562,613

POULTRY DISSECTING APPARATUS

Eugene J. Lewis, Rte. 1, Box 306, Demorest, Ga. 30535

Filed Apr. 27, 1984, Ser. No. 604,897
Int. Cl.⁴ A22C *21/00*
U.S. Cl. 17—11 **14 Claims**



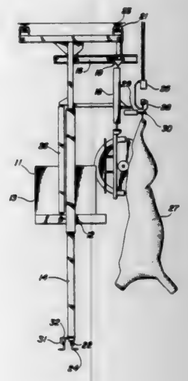
1. In a poultry carcass dissecting apparatus having an elongated spear adapted to support a carcass impaled thereon for movement along the spear by a conveyor supported in closely spaced adjacency to the spear through a carcass breast splitting means mounted for vertical motion in the plane of said spear for splitting into halves the carcass breast joined to the carcass backbone, the improvement of carcass appendage extension means spaced outwardly of each side of said spear to extend longitudinally thereof rearwardly from the spear forward end portion for contacting and maintaining the appendage on each side of the carcass in an outwardly extended position as the impaled carcass is conveyed along said spear, appendage severing means supported on each side of in close proximity of said spear forwardly of said breast splitting means for cutting through the joint joining the extended carcass appendages to the carcass backbone as the impaled carcass is moved along said spear, a pair of vertically depending breast shields, and means supporting each said breast shield in close adjacency to and on opposite sides of said spear for movement between a first position ahead of said appendange severing means and a second position rearwardly of said appendage severing means, said breast shield and supporting means being adapted for passage of said shield between said appendage severing means and said spear in moving between said first and second positions through contact with the impaled carcass moving along said spear.

4,562,614

CIRCULAR SAW FOR SPLITTING ANIMAL CARCASS

William Gerding, Beenleigh, Australia, assignor to Teys Bros. Pty. Ltd., Queensland, Australia

PCT No. PCT/AU82/00139, § 371 Date Apr. 25, 1983, § 102(e) Date Apr. 25, 1983, PCT Pub. No. WO83/00603, PCT Pub. Date Mar. 3, 1983
PCT Filed Aug. 26, 1982, Ser. No. 491,335
Claims priority, application Australia, Aug. 26, 1981, PF0442
Int. Cl.⁴ A22B *5/20*
U.S. Cl. 17—23 **8 Claims**



1. An animal carcass-splitting apparatus suitable for use with a continuously moving carcass conveyor, said apparatus comprising:
a support frame movable along guide means parallel to the direction of movement of a continuously moving carcass conveyor;
an operating station movably mounted on said support frame for selective elevation on an upright axis to an initially elevated position;
means for selectively elevating said operating station and said circular saw on an upright axis;
indexing means for selective engagement between said support frame and a movable conveyor component to enable automatic in-use movement and controlled descent of said support frame in concert with a carcass suspended from said conveyor;
a fluid-powered circular saw suspended from said operating station for selective elevation therewith relative to said support frame; and
said circular saw suspension means characterized as manually movable through several directions of movement for operator-controlled alignment with the center line of the moving carcass to be split.

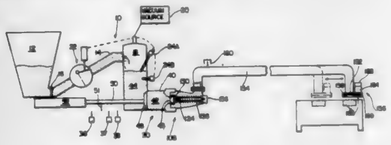
4,562,615

APPARATUS AND METHOD FOR DISPENSING UNIFORM QUANTITIES OF HAM PRODUCTS

James E. Anderson, and Terry L. Holmes, both of Madison, Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Apr. 26, 1984, Ser. No. 604,007
Int. Cl.⁴ A22C *11/02*
U.S. Cl. 17—32 **6 Claims**

1. Apparatus for dispensing uniform quantities of a ham product comprising:
(a) a vacuum chamber;
(b) means for introducing meat pieces into said vacuum chamber;
(c) means for evacuating said chamber to remove air from said meat pieces therein;
(d) pumping means for pumping meat product out of said vacuum chamber, said pumping means comprising:
(i) a pumping chamber at the bottom of said vacuum chamber having an outlet opening at an end wall of said pumping chamber for discharge of meat product therethrough; and
(ii) A piston moveable at the bottom of said vacuum chamber from a first position outside said pumping chamber to a second position within said pumping chamber, said position fitting closely with in said chamber;
(e) a conduit for conveying meat product from the outlet opening of said pumping chamber to a discharge opening for dispensing said meat product into a container wherein said conduit terminates at its distal end in a first plate having an aperture aligned with said conduit, said conduit being mounted substantially perpendicularly to said plate, wherein a further plate is secured in adjacency with said first plate, said further plate including an aperture in alignment with an opening in said first plate, and wherein said knife member is mounted between said plates and is moveable therebetween in a recess provided in at least one of said plates to accomodate the motion of said knife member therebetween, the remaining portions of the mating surfaces of said plates being in mutual contact;
(f) a hydraulically actuated knife member located adjacent said discharge opening and moveable to cut off meat product dispensed through said discharge opening by motion between a first, open, position adjacent said discharge opening and a second, closed, position in which said knife member covers said discharge opening wherein said knife member is planar and is moveable in a plane perpendicular to said conduit;



(g) hydraulic means for moving said knife member from said first position to said second position and from said second position to said first position; and
(h) check valve means in said conduit at the outlet opening of said pumping chamber and comprising;
(i) a valve seat in said outlet opening of said pumping chamber;
(ii) a valve member mounted in said conduit for seating against said valve seat to close said outlet opening of said pumping chamber; and
(iii) a unitary spring biasing said valve member against said valve seat, the compressive strength of said valve spring being such that a force of at least 15 psi gage is required in said pumping chamber to open said check valve;
whereby motion of said piston from said first postion to said second position in said pumping chamber moves a predetermined amount of meat product through said outlet opening of said pumping chamber and said conduit to dispense a predetermined quantity of meat product thorugh the discharge opening of said conduit, said conduit forming an open passageway free along its entire length of any obstruction other than said check valve.

4,562,616

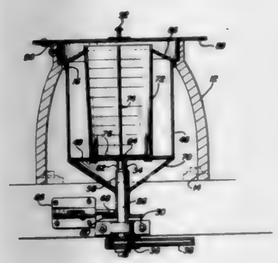
METHOD AND APPARATUS FOR EXTRACTING MEAT FROM CRAB CORES

Omar F. Hoelzel, 106 Parkview Ave., Portsmouth, Va. 23704

Filed Feb. 16, 1984, Ser. No. 581,111
Int. Cl.⁴ A22C *29/02*
U.S. Cl. 17—46 **14 Claims**

8. The method of extracting meat from hard shell crab cores,

said method including providing an upstanding generally cylindrical drum of an inside diameter of between one and three inches greater in diameter than the maximum horizontal dimension of a crab core to have crab meat extracted therefrom, stationarily supporting one or more juxtapositioned crab cores within said drum in substantially centered position therein with the open side edges of each crab core facing in generally opposite radial outward directions from the center axis of said drum, rotating said drum substantially about its center axis at a speed sufficient to centrifugally extract at least substantially all of the meat within said crab cores through the open side edges thereof and allowing said meat to impact with and be retained by the inner surfaces of said drum, terminating rotation of said drum, removing the empty crab cores from said drum and then removing the extracted meat from said drum.



4,562,617

METHOD AND APPARATUS FOR MAKING SAUSAGE AS A SLICED PRODUCT

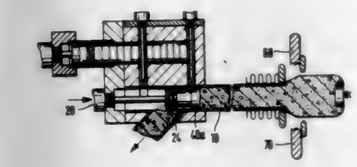
Günter Kollross, Am Wallerstädter Weg 20, D-6080 Gross Gerau-Dornheim, Fed. Rep. of Germany

Filed Apr. 1, 1983, Ser. No. 481,301

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212121

Int. Cl.⁴ A22C *11/00*

U.S. Cl. 17—49 **16 Claims**



1. A method of making a sausage which is closed at each end, the sausage being designed to subsequently undergo an intermediate treatment and thereafter be sliced; the method of sausage making comprising the steps of:

slipping a tubular packing sheath over a filling tube having a closed end of the sheath proximate the end of the filling tube;

introducing ground meat into the filling tube from a feed channel opening spaced from the end of the filling tube;

introducing closing pieces into the filling tube on each side of the feed channel opening from which the ground meat is introduced in the filling tube, the closing pieces having a flat side on the side engaging the ground meat and being sized equal to or smaller than the cross section of the filling tube;

filling the sheath with ground meat from the filling tube to a desired length with the closing pieces at each end of the length; and

closing the end opposite the closed end of the sheath such that the closing pieces are contained in such ends.

4,562,618

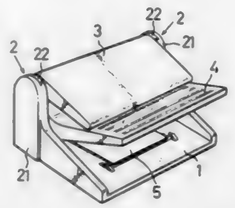
PAPER CLAMP

Michio Masuda, Osaka, Japan, assignor to N. K. Manufacturing Company Limited, Osaka, Japan

Filed Feb. 16, 1984, Ser. No. 580,944

Int. Cl.⁴ B42F *1/00*

U.S. Cl. 24—67.7 **3 Claims**



1. A paper clamp for holding documents together, the paper clamp comprising:

a base plate;

a pair of supports erected at opposite sides of the base plate, each support having a slot in its inner surface and a fixed member removably inserted in said slot;

a lower plate and an upper plate pivotally supported by said fixed members of said supports, said upper plate being pivotable in an opposite direction to that of the lower plate, said lower and upper plates each including a toothed portion, which are in engagement with each other so as to enable both plates to pivot in opposite directions, and said upper plate having a clamping end which terminates in an offset manner relative to an end of said lower plate; and

a leaf spring provided between said lower plate and said base plate, for biasing said lower plate into contact with said upper plate.

4,562,619

CLASPING DEVICE OF DOUBLE FUNCTION FOR NECKLACES, BRACELETS AND SIMILAR ARTICLES

Jaime P. Plaza, Infanta Carlota Joaquina 123-127 7°, Barcelona, Spain

Filed May 25, 1984, Ser. No. 614,726

Claims priority, application Spain, Dec. 28, 1983, 275.595

Int. Cl.⁴ F16G *15/04*

U.S. Cl. 24—116 R **8 Claims**



1. A clasping device for jewelry formed in an enclosed ring, such as necklaces, bracelets and the like, comprising: two juxtaposed parts, a first immovable part having a back face, and a second part having a back face and being pivotable relative to said first part between an unclasped position in which said first part and said second part are located in substantially perpendicular planes and a clasped position in which said first and said second part are located in substantially the same plane; and hooking and articulating means attached to each face of said first and said second part, said means including a continuous first ring solidly attached to said first part and being formed so that the closed ring of the jewelry is passable therethrough and permanently mountable therein, and an arc member having two ends, a first end connected to said first part and a second end connected to said second part at an articulation point so that said second part is pivotable on said second end of said arc member, said arc member forming a second ring when said second part is pivoted into said clasped position, the closed ring of jewelry being selectively hookable and unhookable on said second ring formed by said arc member when said second part is pivoted into said unclasped position, said second part and said arc member cooperating together so as to securely hold the closed ring of jewelry when said second part is in said clasped positon.

4,562,620

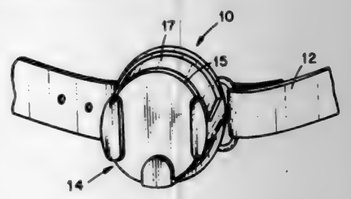
BELT BUCKLE FOR HOLDING A CAN OF SMOKELESS TOBACCO

W. Wayne Oliver, Jr., Rte. 13, Box 394A, Maryville, Tenn. 37801

Filed Aug. 2, 1983, Ser. No. 519,678

Int. Cl.⁴ A44B *11/00*

U.S. Cl. 24—163 K **3 Claims**



1. A buckle for a belt having two ends for receiving and holding upon insertion a can of smokeless tobacco having a bottom made of resilient material and having a lid, said buckle comprising:

a plate having dimensions larger than the diameter of the can of smokeless tobacco;

attachment means for attaching the ends of the belt to said plate;

a shallow cylindrically-shaped recess in said plate having a diameter slightly larger than the diameter of the bottom of the can of smokeless tobacco, said recess defining a rim on said plate about said recess;

a plurality of lugs mounted on said plate adjacent to the perimeter of said recess for guiding the can of smokeless tobacco into said recess when the can is inserted into the buckle and for holding the can of smokeless tobacco on said plate with the bottom of the can of smokeless tobacco being in said recess, said lugs being dimensioned to display the lid of the can of smokeless tobacco as an ornamental design on the belt buckle, said plurality of lugs includes two opposed lugs and an intermediate lug mounted on said plate, each of said lugs having a first portion extending outwardly from and in a direction generally perpendicular to said plate adjacent to the perimeter of said recess and a second portion attached to and supported by said first portion and extending inwardly over said recess in a direction generally parallel to said plate, said two opposed lugs being generally diametrically opposed relative to said recess and said second portions of said opposed lugs covering an area which is intersected by a diameter of said recess, said intermediate lug being spaced-apart from and disposed intermediate said two opposed lugs, and the distance between said second portions of each of said lugs and said plate in said recess being approximately equal and being such that area of said second portions of said two opposed lugs which are remote from said intermediate lug are operable to contact the lid of the can of smokeless tobacco when the can is partially inserted at an oblique angle into the buckle with part of the bottom of the can in contact with said plate in said recess and another part of the bottom in contact with said rim;

said opposed lugs and said rim acting upon the can of smokeless tobacco during insertion to subject the can to local deformation and, upon full insertion, the return of the can to its original configuration aids in holding the can in place in said recess; and

said intermediate lug being spaced-apart from and between said opposed lugs to define openings of sufficient size to allow a finger to pass between said intermediate lug and each of said opposed lugs, whereby the can may be removed from the buckle by a single hand by placing two fingers on the can at said openings, placing a thumb on the top of the can, using the thumb to cant the can away from the buckle to a position to clear said rim, and lifting the can out of the buckle with the fingers passing through said openings.

4,562,621

SLIDE FASTENER STRINGER

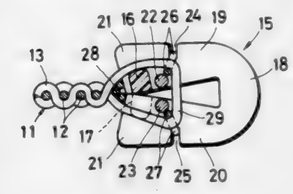
Kiyoshi Takeshima, Namerikawa; Ryukichi Mursi, Toyama, and Yoshinori Nakada, Kurobe, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Feb. 22, 1984, Ser. No. 582,556

Claims priority, application Japan, Mar. 3, 1983, 58-30744[U]

Int. Cl.⁴ A44B *19/34*

U.S. Cl. 24—408 **5 Claims**



1. A slide fastener stringer comprising:

(a) an elongate coupling element strip molded of a single material and having a succession of laterally spaced coupling elements, each of said coupling elements having a coupling head and a pair of first and second legs extending from said coupling head in a common direction and contacting each other at respective distal ends thereof;

(b) said strip further having a pair of series of first and second connecting portions interconnecting said coupling elements at said distal ends of said legs, said first connecting portions extending between alternate pairs of said first legs, said second connecting portions extending between alternate pairs of said second legs in staggered relation to said first connecting portions, each of said connecting portions being fully interrupted only between every second pair of said legs;

(c) a pair of connector threads extending transversely of said coupling elements along the full length of said strip and only partially embedded in said first and second legs, respectively, said connector threads being exposed between adjacent coupling elements, each of said exposed connector threads being disposed adjacent to a respective one of said first and second connecting portions on the coupling head side of each coupling element;

(d) each of said coupling elements having a pair of grooves extending transversely through said first and second legs, respectively, on their respective outer sides, each of said grooves being disposed remotely from a respective one of said first and second connecting portions and from a respective one of said connector threads;

(e) a pair of anchor threads disposed in said first and second grooves, respectively, along the full length of said strip; and

(f) a stringer tape woven of a plurality of warp threads and a single weft thread, said weft thread having a plurality of

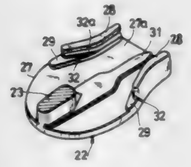
loops disposed along a longitudinal edge of said stringer tape, each of said loops encircling one of said first and second connecting portions, said exposed connector threads, and said anchor threads between an adjacent pair of said coupling elements, thereby securing said coupling elements to said longitudinal edge, said exposed weft loops being held out of contact with said connector threads.

4,562,622

SLIDE FASTENER SLIDER

Hideo Takabatake, Namerikawa, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jun. 20, 1983, Ser. No. 505,964
Claims priority, application Japan, Jun. 21, 1982, 57-92596[U]
Int. Cl.⁴ A44B *19/00*
U.S. Cl. 24—427 **1 Claim**



1. A slider, for a slide fastener including a pair of stringer tapes carrying along their inner longitidunal edges of a pair of rows of fastener elements in a form of coiled plastic filaments of substantially oval contour having upper and lower leg portions and coupling head portions, comprising:

(a) a slider body including a pair of upper and lower wings joined at their front end by a neck to define a Y-shaped guide channel between said upper and lower wings for the passage of the fastener element rows of the slide fastener, said upper wing having an aperture opening into said guide channel, said lower wing having a base and a pair of flanges respectively projecting from opposite lateral edges of said base;

(b) a pair of raised corner ledges on an inner face of said base of said lower wing adjacent to said flanges respectively, each of said corner ledges extending along an inner face of the respective flange through its length and having an inwardly sloping surface engageable with the lower leg portions of the respective fastener element row; and

(c) a pair of auxiliary ledges on the inner face of said base of said lower wing adjacent to respective front ends of said flanges, each of said auxiliary ledges having a top surface disposed below said sloping surface of the respective corner ledge for being engageable with the lower leg portion of the respective fastener element row, said auxiliary ledge having a uniform height throughout its whole area and extending from a midportion of the respective corner ledge beyond the front end thereof.

4,562,623

RELEASE MECHANISM

William W. Jeswine, P.O. Box 1287, Issaquah, Wash. 98027

Filed Jun. 15, 1983, Ser. No. 504,381
Int. Cl.⁴ B64D *17/32*
U.S. Cl. 24—573 **43 Claims**

1. A release mechanism for releasably joining two objects comprising;

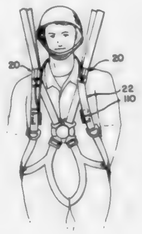
a. a first rigid pivoting member pivotable about a first end;

b. a second rigid pivoting member positionable in a substantially parallel relation to and opposite the first rigid member and pivotable about a first end;

c. a rigid root member having at least a portion thereof adjacent to the first ends of the first and second pivoting members and having at least two surface sections for pivotally engaging the first ends of the pivoting members when they are in a substantially parallel relationship and for transmitting tensile forces;

d. means for connecting the first object to be joined to the root member which is extendable between the first and second pivoting members when they are in their substantially parallel relationship with their first ends engaging the root member;

e. means for pivotally connecting the first pivoting member at a location spaced from its first end to the second object to be joined;



f. means for pivotally connecting the second pivoting member at a location spaced from its first end to the second object to be joined; and

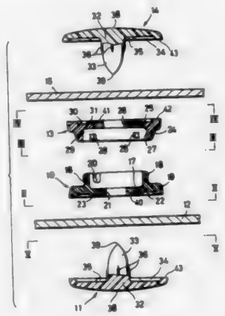
g. means for releasably securing the first and second pivoting members in their substantially parallel relationship so that upon release by the securement means the first and second pivoting members can pivot and disengage from the root member to allow separation of the joined objects.

4,562,624

SNAP FASTENER FOR USE ON GARMENTS

Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1982, Ser. No. 442,462
Claims priority, application Japan, Dec. 7, 1981, 56-181928[U]
Int. Cl.⁴ A44B *17/00*
U.S. Cl. 24—621 **1 Claim**



1. A snap fastener of resilient synthetic resin for use on garment pieces, comprising:

(a) a male member adapted to be mounted on one of the garment pieces and including a first bottom having a first cylindrical wall on one side thereof, a first central opening through said first bottom, a first annular recess on the other side of said first bottom around said first central opening, thereby defining inner and outer axially directed flanges, and a set of four first radial ribs of a triangular cross section extending radially outwardly from said inner flange entirely across said first annular recess;

(b) a first rivet said male member, having a first head with a first central shank receptive in said first central opening, said first rivet having a second annular recess around said first shank, thereby defining a further outer axially directed flange, said first rivet having a set of four second radial ribs of a triangular cross section extending radially outwardly from said first central shank into said second recess and terminating short of said further outer flange, said first central shank having a set of four first straight ridges of triangular cross-section extending axially from said first head for biting into said first bottom, and disposed angularly between said second radial ribs;

(c) a female member adapted to be mounted on another of the garment pieces and including a second bottom having a second cylindrical wall on one side thereof for snappingly axially receiving said first cylindrical wall, a second central opening through said second bottom, a third annular recess on the other side of said second bottom around said second central opening, thereby defining additional inner and outer flanges directed axially away from said flanges of said male member, and a set of four third radial ribs of a triangular cross section extending radially outwardly from said additional inner flange entirely across said third annular recess; and

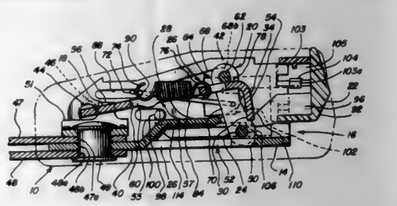
(d) a second rivet for said female member, having a second head with a second central shank receptive in said second central opening, said second rivet having a fourth annular recess around said second shank, thereby defining a still further outer axially directed flange, said second rivet having a set of four fourth radial ribs of a triangular cross section extending radially outwardly from said second central shank into said recess and terminating short of said still further outer flange, said second central shank having a set of four second straight ridges of triangular cross-section extending axially from said second head for biting into said second bottom, and disposed angularly between said fourth radial ribs.

4,562,625

SEAT BELT BUCKLE

Gerald A. Doty, Crown Point, and William E. Hunter, Jr., Highland, both of Ind., assignors to Gateway Industries, Inc., Hazel Crest, Ill.

Filed Dec. 21, 1983, Ser. No. 564,239
Int. Cl.⁴ A44B *11/28*
U.S. Cl. 24—640 **15 Claims**



1. A seat belt buckle comprising: a tongue plate; a buckle frame having an opening at its forward end for receiving the tongue plate; pivotal latching means movable between a latching position for retaining the tongue plate within the buckle frame and an open position for enabling the tongue plate to travel into and out of the buckle frame; locking means movable between a locked configuration for locking the latching means in its latching position and an unlocked configuration for enabling the latching means to move between its latching position and its open position; ejection means for engaging end of the tongue plate and being moved rearwardly with insertion of the tongue plate, a push button movable between a first position and a second position and operatively associated with the latching means to shift the latching means from latching position to open position when the pushbutton is moved from its first postion to its second position; and a single tensile spring which provides biasing force to bias the push button toward its first position and ejection force for the ejection means to urge the tongue plate forwardly of the buckle frame upon movement of latching means from latching position to open position

said tensile spring having a forward end connected to the latch means to pull the latch means to its open position,

a linkage means connected between the ejector means and the locking means, and

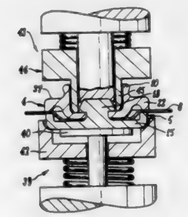
a rearward end of the tensile spring connected to linkage means to pull it and the locking means forwardly to shift the locking means into locking position upon release of the tongue plate by the wearer.

4,562,626

SNAP FASTENER AND METHOD OF ATTACHING SAME

Mark A. Lance, Pascoe Vale, Australia, assignor to W. A. Deutsher Proprietary Limited, Moorabbin, Australia

Filed Sep. 22, 1983, Ser. No. 534,903
Claims priority, application Australia, Nov. 23, 1982, PF6931
Int. Cl.⁴ A44B *17/00*
U.S. Cl. 24—689 **10 Claims**



1. A snap fastener including, a male part and a female part, each said part being formed of plastics material and comprising an operative component and a securing component to be coupled together with a sheet material therebetween, each said operative component having a base wall with an opening therethrough and a tubular fastening portion surrounding said opening and projecting from one side of said base wall, the said tubular fastening portion of each said operative component being of complementary configuration so as to be snap engageable with the corresponding portion of the other said operative component, and the securing components beings substantially identical, each said securing component having a pin projecting axially from a cap flange at one end thereof, said pin being adapted to pass through the sheet material and through the opening of a said operative component so that a terminal end portion thereof is located beyond said one side of the base wall, and said terminal end portion being deformable when so located to secure the two said components against separation, wherein said terminal end portion is of a generally conical, pointed configuration so as to pierce said sheet material thereby avoiding the need for a preformed hole in the sheet material.

4,562,627

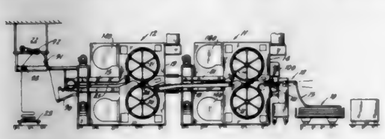
METHOD FOR FINISH DRYING OF TUBULAR KNITTED FABRICS

William D. Milligan, Matthews, N.C., assignor to Samcoe Holding Corporation, Woodside, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,801
Int. Cl.⁴ D06C *5/00, 21/00, 27/00*
U.S. Cl. 26—18.5 **7 Claims**

1. A process for finish treating of tubular knitted fabric in wet condition, which comprises

(a) furnishing the wet fabric in flat, tubular form having a relatively uniform moisture content of at least about 25%,
(b) guiding said fabric onto the entry section of a belt-type spreading device of a type characterized by having at least one set of driven entry belts for advancing and laterally distending said fabric,
(c) distending said fabric laterally to a width not less than about 115% of the desired finished width of the fabric, calculated to result in the delivery of dried fabric substantially at finished width,
(d) transferring said fabric to a second set of driven belts and advancing the wet distended fabric into a drying zone,
(e) while said fabric remains on said second driven belts, directing steam onto the wet fabric,
(f) transferring said wet, steamed and distended fabric through a transition zone onto the surface of a moving dryer reel in a manner to maintain said fabric as free as practicable of distorting tensions,
(g) said transition zone ending at the line of tangency of said fabric with said reel,
(h) supporting said fabric generally over its entire surface on said reel while advancing the fabric successively past a plurality of closely spaced nozzles directing individual streams of hot air in a generally radially inward direction at and through said fabric,
(i) maintaining the fabric substantially free of the action of said streams of air during passage of said fabric through said transition zone,
(j) transferring said fabric to a further rotating dryer reel,
(k) advancing the fabric by said further reel at a speed somewhat less than the speed of advance imparted by the first reel, to accommodate geometric adjustment of the fabric



in length and width while maintaining said fabric in flat tubular condition substantially free of distorting tensions,
(l) continuing to convey the fabric on said further reel successively past a further plurality of closely spaced air nozzles directed radially inward at said reel, while supporting said fabric generally over its entire surface,
(m) depositing said fabric on an exit conveyor while maintaining said fabric in flat tubular condition and at a width approximating the desired finished width of the fabric.

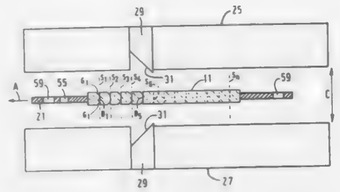
4. A process for finish treating of tubular knitted fabric in wet condition, which comprises
(a) furnishing the fabric in flat, tubular form having a relatively uniform moisture content of at least about 25% and having readily visible edge demarcations,
(b) guiding said fabric onto the entry section of a belt-type spreading device of a type characterized by having at least one set of driven entry belts for advancing and laterally distending said fabric,
(c) maintaining the edges of the incoming fabric substantially aligned with the sides of said spreading device,
(d) distending said fabric laterally to a width not substantially less than 115% of the desired finished width of the fabric calculated to enable the dried fabric to be delivered substantially at its desired finished width,
(e) while said fabric remains thus distended, directing steam onto the wet fabric,
(f) transferring said wet, steamed and substantially distended fabric through a transition zone and onto a moving open support surface in a manner to maintain said fabric in said zone as free as practicable of distorting tensions,
(g) supporting said fabric generally over its entire surface on said surface while advancing the fabric successively past a plurality of closely spaced nozzles directing individual streams of hot air in a direction at and through said fabric,
(h) the fabric in said transition zone being maintained substantially free of the action of air jets, from said nozzles,
(i) accommodating geometric adjustment of the fabric in length and width during advancement of the fabric, while maintaining said fabric in flat tubular condition substantially free of distorting tensions, and
(j) delivering fabric from said drier substantially in finished condition and substantially at the desired finished width.

4,562,628

METHOD FOR MANUFACTURING MULTILAYER CERAMIC CAPACITORS

Antonius C. Marneffe, Geldrop; Frederik G. A. Persoon, and Gerard J. Scholten, both of Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1984, Ser. No. 646,679
Claims priority, application Netherlands, Apr. 25, 1984, 8401320
Int. Cl.⁴ H01G *7/00*
U.S. Cl. 29—25.42 **3 Claims**



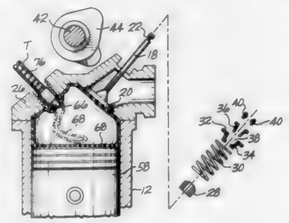
1. A method of manufacturing multilayer ceramic capacitors, in which electrode layers of electrode material are locally applied to sheets of dielectric ceramic material, the sheets provided with electrode layers are stacked and compressed to form a laminated plate and this plate is then subdivided into separate capacitor elements in such a manner that successive electrode layers are exposed at opposite end faces of the capacitor elements, after which the capacitor elements are sintered and are provided with an electrically conducting layer on the said end face, characterized in that the plate is subdivided into separate capacitor elements by notching the plate along division lines on both sides simultaneously in such a manner that along the notched division lines a spontaneous rupture occurs through the remaining thickness of the plate.

4,562,629

VALVE SUPPORTING TOOL AND METHOD

Glenn R. Cerio, P.O. Box 9402, Renton, Wash. 98056

Filed Sep. 17, 1984, Ser. No. 650,859
Int. Cl.⁴ B21K *1/20*; B23P *19/04*
U.S. Cl. 29—156.7 R **15 Claims**



1. A method of urging an engine valve member towards its

seated position while the seating for such valve member spring is disconnected, comprising:
removing a spark plug from an engine cylinder to expose the spark plug hole for such cylinder;
placing a balloon on an end of a tube member;
inserting the balloon and the adjoining end portion of the tube member through the spark plug hole to in that manner place the balloon inside of the cylinder, in a space between the piston and the vavle member; and
introducing compressed air through the tube member into the balloon, to inflate the balloon, to the extent necessary to cause the balloon to contact the valve member and force the valve member endwise outwardly toward its seated position; and
maintaining the compressed air within said balloon to in that manner maintain a force on the valve member urging it endwise outwardly, while performing work at the outer end of the valve member.

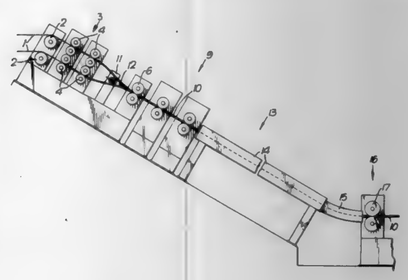
8. A hand tool for use in supporting an engine valve member in a substantially seated position while a seating spring is disconnected from an outer end portion of the valve member, so that the valve member will not fall into its cylinder of the engine, comprising:
an elongated tube having first and second ends;
means at the first end for receiving a balloon;
pump means at the second end, operable for pumping air through the tube into the balloon; and
said first end being sized so that it can be inserted into the cylinder of the engine, through a spark plug hole associated with such cylinder, with the balloon attached to it, for placing the balloon inside of the cylinder,
whereby the pump means can be operated when the balloon is inside of the cylinder for inflating the balloon so that the balloon will contact the inner end of the valve member and urge the valve member endwise outwardly toward its seated position, and such balloon will maintain the valve member in a relatively outward position until the air is released from the balloon.

4,562,630

METHOD FOR THE MANUFACTURE OF HEAT EXCHANGER ELEMENTS

Gunnar Larsson, Sonnenberg 3, D-7770 Überlingen, Fed. Rep. of Germany

Filed Oct. 8, 1981, Ser. No. 309,745
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039693
Int. Cl.⁴ B23P *15/26*; B21B *17/02*
U.S. Cl. 29—157.3 R **11 Claims**



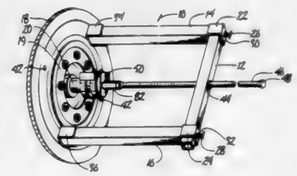
1. Method for the manufacture of heat exchanger elements comprising a pair of strips of weldable material welded together with at least two longitudinally extending weld seams spaced apart from one another with at least one longitudinal channel extending parallel to the weld seams and between them for the conduction of heating or cooling agents, said method comprising continuously providing a pair of strips of weldable material;
providing at least one strip of said pair of strips with a longitudinally extending groove;
covering said longitudinally extending groove with the other of said pair of strips to form a longitudinally extending channel and continuously welding said pair of strips together by forming at least two longitudinally extending welded seams, at least one of said welded seams fromed on each side of said channel;
feeding a liquid filler material into said longitudinal channel;
continuously conveying said pair of strips containing said liquid filler material in said longitudinal channel in a downwardly inclined path and freezing said liquid filler to form a supporting core by cooling said pair of strips to a temperature below the freezing point of said liquid filler;
continuously shaping said pair of strips containing said supporting core into a predetermined form by plastic deformation; and
thawing said frozen filler material and removing said thawed filler material from said shaped pair of strips.

4,562,631

ADJUSTING TOOL AND MEANS FOR ADJUSTING THE AXIAL POSITION OF A TRACTOR WHEEL AND HUB WITH RESPECT TO AN AXLE

William R. Welch, R.R. #2, Duncombe, Iowa 50532

Filed Oct. 5, 1984, Ser. No. 657,882
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—259 **2 Claims**



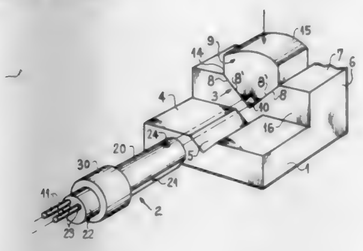
1. An adjustment tool for adjusting the axial position of a tractor wheel and hub with respect to an axle, said wheel and hub having a central opening surrounding said axle and being axially slidable along said axle, comprising:
tool frame means having at least two spaced apart wheel grasping means adapted to extend through said side openings of said wheel for retentively engaging said wheel;
a first member mounted to said tool frame means for movement into abutment with the end of said axle;
means associated with said first member for exerting an axial force towards or away from said end of said axle when in abutment with said end of said axle; and
axle grasping means on said first member for retentively engaging said axle so that exertion of a force towards or away from said end of said axle causes said wheel and hub to slide axially on said axle when said wheel grasping means is in retentive engagement with said wheel and said axle grasping means is in retentive engagement with said axle;
said axle grasping means having a U-shaped member adapted to extend substantially around said axle for said retentive engagement thereof.

4,562,632

DEVICE FOR MOUNTING OPTICAL FIBERS WITHIN A TERMINAL

Pierre Parchet, Paris, and Dominique Bertho, Sartrouville, both of France, assignors to Socapex, Suresnes, France

Filed Oct. 7, 1983, Ser. No. 539,961
Claims priority, application France, Oct. 8, 1982, 82 16905
Int. Cl.⁴ B25B *27/14*
U.S. Cl. 29—281.1 **23 Claims**



1. A device for mounting optical fibers in fiber attachment terminals, said device comprising:

(a) a base having:

(i) an abutment surface against which, during use of the device, a surface of fiber attachment terminals is positioned;

(ii) a first V-shaped groove defined by a linear apex and two planar side walls each of which extends from said abutment surface, said first V-shaped groove terminating at one end in a V-shaped opening in said abutment surface; and

(iii) first means for positioning fiber attachment terminals in alignment with said linear apex of said V-shaped groove such that, during use of the device, the axis of each fiber attachment terminal being processed is parallel to said linear apex of said first V-shaped groove;

(b) a first calibrated spacer member received in said first V-shaped groove adjacent said linear apex of said first V-shaped groove and having a face at least approximately coincident with said abutment surface; and

(c) a bearing member received in said first V-shaped groove outwardly of said first calibrated spacer member and extending toward the apex of said V-shaped groove but not making contact with said first calibrated spacer member, said bearing member having two flat faces extending in parallel to said linear apex of said first V-shaped groove,

(d) each of said two planar side walls of said first V-shaped groove, the adjacent surface of said first calibrated spacer member, and the adjacent one of said two flat faces of said bearing member defining a cavity sized, shaped, and positioned to receive and position an optical fiber extending from a fiber attachment terminal positioned by said first means such that the optical fiber makes contact with the adjacent one of said two planar side walls of said first V-shaped groove and with the adjacent surface of said first calibrated spacer member.

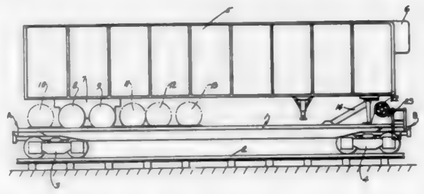
4,562,633

RAILWAY BOX CAR CONVERSION TO HIGHWAY TRAILER-CARRYING FLATCAR AND METHOD OF ACCOMPLISHING IT

Norman S. Adams, Cincinnati; Eugene T. Fehrenbach, Maineville, and John A. Ritter, Cincinnati, all of Ohio, assignors to Ortner Freight Car Company, Milford, Ohio

Filed Mar. 1, 1984, Ser. No. 585,228
Int. Cl.⁴ B61D *17/00;* **B23P** *17/04*
U.S. Cl. 29—401.1 **23 Claims**

1. A method of converting a conventional box car to a flatcar for carrying a highway trailer of the type having bogie mounted tire sets near one end and a hitch member near the other end, said method comprising the steps of providing a conventional box car of a length of at least 50 feet with an underframe mounted on railway trucks, a floor, sides, ends and a roof, said underframe comprising a longitudinally extending center sill, a pair of longitudinally extending side sill assemblies located to each side of said center sill and in parallel-spaced relationship therewith, means to pivotally mount said railway trucks to said center sill, a transversely extending bolster located at each railway truck mounting means, each bolster connecting said center sill and said side sill assemblies, a plurality of transversely extending cross bearers, each cross bearer connecting said center sill and said side sill assemblies, said cross bearers being located between said bolsters in parallel-spaced relationship thereto and to each other, aligned pairs of transversely extending cross ties, the cross ties of each aligned pair thereof extending from each side of said center sill to the adjacent one of said side sill assemblies, said aligned pairs of cross ties being located between said cross bearers and be-



tween said bolsters and the adjacent ones of said cross bearers in parallel-spaced relationship thereto and to each other, a plurality of floor stringers extending the length of said car in parallel-spaced relationship, said floor stringers being supported by and affixed to said bolsters, cross bearers and cross ties, said floor being supported by and affixed to said floor stringers, said method comprising the further steps of removing said sides, ends and roof substantially at the level of said floor, designating a highway trailer bogie supporting end and a hitch supporting end of said flatcar, reinforcing said side sill assemblies substantially throughout their length, reinforcing said cross ties at said bogie supporting end of said car, reinforcing spanning portions of the two out-board floor stringers nearest said side sill assemblies at said bogie supporting end of said flatcar, providing mounting means at said hitch supporting end of said flatcar adjacent said bolster for a conventional trailer hitch, and affixing a trailer hitch to said mounting means.

4,562,634

METHOD OF COVERING SURFACES WITH TENSILE SHEET MATERIALS

Warren G. Watts, 1 Little La., Westport, Conn. 06880

Continuation-in-part of Ser. No. 431,118, Sep. 30, 1982, abandoned, which is a division of Ser. No. 291,411, Aug. 10, 1981, Pat. No. 4,370,792. This application Nov. 14, 1983, Ser. No. 550,787
Int. Cl.⁴ B23Q *17/00*
U.S. Cl. 29—407 **4 Claims**

1. A method for covering a surface with a tensile sheet material comprising the steps of:

(a) attaching a first part of a two-part frame to the surface to be covered, said first part of the two-part frame being made to tracks having one longitudinal slot with a pair of confronting longitudinally ridge side walls;

(b) cutting a first material to a width slightly greater than the distance separating consecutive tracks plus twice the depth of said slot;

(c) inserting one edge of said first material and an elastic spline placed over said material into said slot, so that the spline is substantially flush with the face of said track, said slot being perpendicular to the surface being covered;

(d) inserting the opposite edge of said first material into a slot of an opposite track with an elastic spline over said first material so that the spline is substantially flush with the face of said opposite track, said slot being perpendicular to the surface being covered;

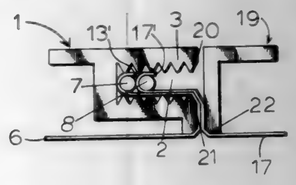
(e) setting said spline and said first material halfway to the bottom of said slot for one edge and then repeating it for the other edge of said first material;

(f) setting said first spline and said first material all the way to the bottom of said slot for one of said edges and then repeating it for the other said edge so that said first material is stretched completely taut between said tracks and having said edge invisibly concealed;

(g) setting a face side of a second material against the face side of said first material;

(h) applying a strip of double stick tape to a wall surface adjacent to the track which is mounted on said wall, the wall being parallel to the surface being covered;

(i) applying a pencil line about one half of an inch from the edge of the second material of said second fabric but on the back side of said second fabric;



(j) aligning said line to the edge of said previously applied strip of double stick tape which is parallel and contiguous to said wall;

(k) pressing a second fabric on said tape and holding it temporarily in place while said second fabric is rolled into said slot and inserting a second spline so that said second layer of fabric is securely set into said first slot and on top of said first fabric of said first fabric;

(l) cutting away the waste material of said second fabric with a knife inserted into one of said slot ridges;

(m) removing said waste material in conjunction with said double stick tape;

(n) securing a second track part of said frame; said second part having an "L" shaped cross-section of matching depth to said first part of said frame adjacent said first and second fabrics of said first part of said track frame, so that said seam is held in alignment and securely binded;

(o) pulling said second fabric panel around said "L" shaped second track part and securing it to the next progressive first part track frame for consecutive panel so that a plain seam is produced.

4,562,635

METHOD FOR INSTALLING AN AUTOMATIC VEHICLE GUIDE PATH IN WOOD BLOCK FLOORS

Ronald P. Carter, East Peoria, Ill., assignor to AGVS Installations, Inc., Peoria, Ill.

Filed Jul. 31, 1984, Ser. No. 636,352
Int. Cl.⁴ B23P *11/00*
U.S. Cl. 29—432 **7 Claims**

1. A method for installing at least one wire in a wood block floor in a selected pattern comprising the steps of:

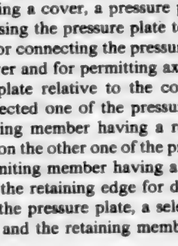
cutting a slot in said wood block floor corresponding to said selected pattern;

inserting a guide bar having an exposed slot therein in said slot in said wood block floor such that a volume of said slot in said wood block floor remains above said guide bar after insertion in said wood block floor slot;

anchoring said guide bar in said slot in said wood block floor;

inserting the wire in said slot in said guide bar;

inserting a mechanical seal in said slot in said guide bar above said wire so as to be substantially flush with an upper surface of said guide bar;



filling said volume of said slot in said wood block floor above said guide bar with sealer material; and

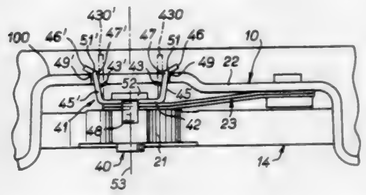
smoothing said sealer material flush with said wood block floor.

4,562,636

CLUTCH COVER ASSEMBLY MANUFACTURING METHOD

Roger F. L. Carmillet, Paris, France, assignor to Valeo, Paris, France

Filed Jun. 15, 1983, Ser. No. 504,398
Claims priority, application France, Jun. 21, 1982, 82 10786
Int. Cl.⁴ B21D *39/00;* **B23P** *11/00;* **B65D** *85/68;* **F16D** *13/44*
U.S. Cl. 29—513 **22 Claims**



1. A method of making a clutch cover assembly comprising the steps of:

providing component parts of the cover assembly having an axis and comprising a cover, a pressure plate and elastic means axially biasing the pressure plate toward a storage position, means for connecting the pressure plate for rotation with the cover and for permitting axial displacement of the pressure plate relative to the cover, a retaining member on a selected one of the pressure plate and the cover, the retaining member having a retaining edge, a limiting member on the other one of the pressure plate and the cover, the limiting member having a limiting surface cooperable with the retaining edge for defining the storage position for the pressure plate, a selected one of the limiting member and the retaining member comprising a lug;

assembling the component parts together including securing the elastic means to the cover;

after securing the elastic means to the cover, placing the pressure plate in the storage position; and

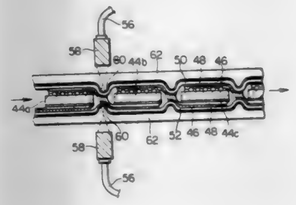
plastically deforming the lug to bring the retaining edge and the limiting surface into abutting relation therewith while holding the pressure plate in the storage position, with the lug thereupon defining the storage position of the pressure plate.

4,562,637

METHOD OF MANUFACTURING SOLAR BATTERY

Tadao Kushima, Ibaraki; Tasao Soga, Hitachi, and Takaya Suzuki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1984, Ser. No. 622,584
Claims priority, application Japan, Jun. 22, 1983, 58-110807
Int. Cl.[4] H01L 31/18
U.S. Cl. 29—572 11 Claims



1. In a method of manufacturing a solar battery in which a plurality of solar battery elements each having a light receiving surface and a back surface respectively formed with electrode patterns are arranged with a space therebetween, and the light receiving surface of each solar battery element is serially connected by means of a conductive member to the back surface of the preceding solar battery element which is located adjacent to said each solar battery element, the improvement comprising the steps of:

preparing a pair of flexible members, each of the flexible members having a plurality of conductive members formed along the direction of arrangement of said solar battery elements and spaced with substantially the same spacing as the solar battery element arrangement, each of said conductive members having a pattern wider in the direction of the solar battery element arrangement than the light receiving and back surfaces of the respective solar battery element;

disposing said pair of flexible members respectively on both sides of the solar battery element arrangement so that said conductive members of one of said flexible members respectively face the light receiving surfaces of said solar battery elements and said conductive members of the other of said flexible members respectively face the back surfaces of said solar battery elements, and that one end portion of said conductive member on the side of the light receiving surface of each solar battery element is positioned in the space adjacent said each solar battery element, and one end portion of said conductive member on the side of the back surface of the preceding solar battery element adjacent to said each solar battery element is positioned opposed to said one end portion of said conductive member on the side of the light receiving surface through the same space as said space adjacent said each solar battery element;

sandwiching each of said solar battery elements by said pair of flexible members, and pressing said pair of flexible members from the outside thereof at the entire portion thereof including a portion located at the space between adjacent solar battery elements by means of a pressing structure having projected portions each respectively located at a position corresponding to the space between adjacent solar battery elements to bring both said end portions of said conductive members into close contact with each other;

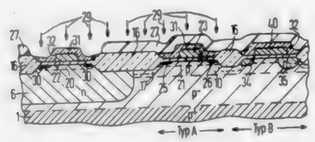
applying a light-heat beam respectively towards the light receiving surface side and towards the back surface side of each of said solar battery elements to weld together each of said electrode patterns and each of said conductive members, and to weld together both said end portions of said conductive members which have been in close contact with each other in the space adjacent said each solar battery element thereby to connect said solar battery elements in series.

4,562,638

METHOD FOR THE SIMULTANEOUS MANUFACTURE OF FAST SHORT CHANNEL AND VOLTAGE-STABLE MOS TRANSISTORS IN VLSI CIRCUITS

Ulrich Schwabe, Munich, and Christoph Werner, Krailling, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 18, 1984, Ser. No. 662,446
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340560
Int. Cl.[4] H01L 21/82
U.S. Cl. 29—577 C 3 Claims



1. A method for simultaneous manufacture of fast short-channel (type A) and voltage-stable (type B) MOS transistors as are employed in VLSI circuits wherein digital and analog functions are integrated on one chip, comprising the steps of:

(a) applying a first double layer of silicon oxide and silicon nitride to a p-doped silicon substrate;

(b) producing an n-tub region by means of an ion implantation wherein the ions are one of the elements selected from the group consisting of phosphorous, arsenic, or antimony ions after completion of masking of remaining regions with a photoresist layer and removal of said silicon nitride layer in said n-tub region;

(c) stripping said photoresist layer;

(d) executing a local oxidation porcess for generating a masking oxide for a following deep boron implantation outside of said n-tub region;

(e) stripping said silicon nitride layer and further driving in the ions for said n-tub;

(f) executing a first deep boron implantation;

(g) surface-wide stripping said oxide masking;

(h) applying a second double layer of silicon oxide and silicon nitride to a surface of the substrate and structuring said silicon nitride layer covered with a photoesist mask such that active transistor regions remain covered by said silicon nitride layer;

(i) stripping said photoresist mask;

(j) applying a further photoresist mask over said n-tub region;

(k) executing a second boron ion implantation for generating an n-channel field implanted region;

(l) stripping said further photoresist mask;

(m) generating a field oxide region by local oxidation by use of said silicon nitride layer as a masking;

(n) removing said silicon nitride layer and oxide layer lying therebelow and executing an oxidation process for manufacture of a gate oxide;

(o) executing a third, surface-wide boron implantation for doping an n-channel outside the n-tub region and a p-channel in the n-tub region and matching an implantation dosage to the other implantations such that as symmetrical as possible a threshold voltage $|U_T|$ is achieved for A-type and B-type transistors formed by the n-channel and transistor formed by the p-channel;

(p) depositing and structuring polysilicon for formation of gate regions for the three transistors;

(q) executing an oxidation process such that the oxide layer does not mask following source/drain impantations of the p-channel and type A and type B n-channel transistors, but can have a masking effect in a region of an edge of the polysilicon gates;

(r) applying a photoresist masking for the p-channel transistor, the A-type n-channel transistor, and the source region as well as an edge of the field oxide of the drain region of the B-type n-channel transistor;

(s) executing a phosphorous ion implantation in the drain region of the B-type n-channel transistor;

(t) in-diffusing the phosphorous ions after stripping said photoresist mask;

(u) executing a further phosphorous ion implantation for generating source/drain regions of the n-channel transistors of A-type and of B-type after masking the n-tub region with photoresist;

(v) executing a photoresist for masking the A-type and B-type n-channel transistor regions;

(w) executing a fourth boron ion implantation for generating source/drain regions of the p-channel transistors;

(x) removing the photoresist masking; and

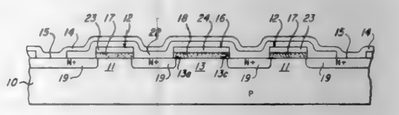
(y) providing insulating layers, contact holes and a metal interconnect level.

4,562,639

PROCESS FOR MAKING AVALANCHE FUSE ELEMENT WITH ISOLATED EMITTER

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 361,011, Mar. 23, 1982, Pat. No. 4,491,857.
This application Sep. 12, 1984, Ser. No. 649,629
Int. Cl.[4] H01L 21/326
U.S. Cl. 29—584 4 Claims



1. A method of making a semiconductor device of the programmed fuse type comprising the steps of:

applying a layer of conductive material on a face of a body of semiconductor material, and patterning the layer to form a program-element gate overlying a program-element area separated therefrom by thin insulator,

forming a heavily-doped drain region in said face adjacent said program-element area and a heavily-doped source-emitter region spaced from said gate,

applying conductive strips on said face to form connections to the heavily-doped regions and gate, and

selectively applying a voltage to said conductive strips at a level less than the dielectric breakdown of said thin insulator to create an electric short between said gate and drain of the program element.

4,562,640

METHOD OF MANUFACTURING STABLE, LOW RESISTANCE CONTACTS IN INTEGRATED SEMICONDUCTOR CIRCUITS

Dietrich Widmann, Unterhaching, and Reiner Sigusch, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

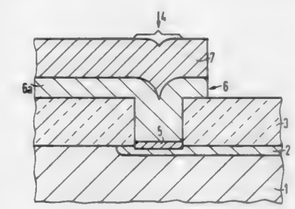
Filed Mar. 22, 1984, Ser. No. 592,402
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1983, 3314879
Int. Cl.[4] H01L 21/285
U.S. Cl. 29—591 9 Claims

1. A method of manufacturing stable, low resistance contacts in an integrated semiconductor circuit which comprises:

providing highly doped diffused regions in a silicon substrate,

forming a silicon dioxide layer over said highly doped diffused regions in the surrounding substrate,

forming contact holes of uniform size in said silicon dioxide layer in selected areas of said highly doped diffused regions, said contact holes being matched to the minimum dimensions of the circuit elements, with a plurality of such uniform contact holes being provided in diffused regions of larger area,



applying a layer including a metal silicide into said holes in contact with the underlying highly doped diffused region but insufficient to completely fill the contact holes,

applying an n^+-doped polysilicon layer into the contact holes and over the silicon dioxide layer, the thickness of said n^+-doped layer above the contact holes being approximately one-half the length of a side of said contact holes, and

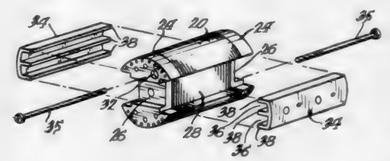
depositing a layer of predominantly aluminum over the doped polysilicon layer.

4,562,641

METHOD OF ASSEMBLING A MAGNETIC ROTOR

Philip C. Mosher, Rockford, and Mohd A. Aleem, Roscoe, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 17, 1983, Ser. No. 523,924
Int. Cl.[4] H02K 15/02
U.S. Cl. 29—598 6 Claims



1. A method for sequentially building up a rotor for an electric machine comprising the steps of:

providing a magnetic core having opposed ends and a rotational axis;

removably attaching a turn support at each end of the core to define a core subassembly;

machining the core subassembly to match the core and turn supports;

removing the turn supports from the core; providing an axial shaft fitting for each of the ends of the core subassembly;

aligning each of the turn supports with one of the shaft fittings;

machining the aligned turn supports and shaft fittings to effect matching;

disassembling the shaft fittings and turn supports;

reattaching the turn supports at the ends of the core; and

removably attaching a shaft fitting at each end of the core subassembly;

whereby said rotor can be readily disassembled for rework-

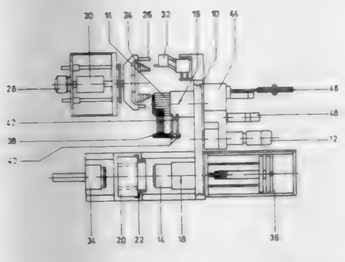
ing and reassembled with the alignment of the core, turn supports and shaft fittings precisely maintained.

4,562,642

APPARATUS FOR WINDING AND INSERTING OF COILS INTO STATORS OR ROTORS OF ELECTRICAL MACHINES

Karl-Heinz Fichtner, Von Eiff Str. 37 u. 41, 6450 Hanau/Main 7, Fed. Rep. of Germany

Filed Aug. 26, 1983, Ser. No. 526,792
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1982, 3232230
Int. Cl.⁴ H05K *15/10*
U.S. Cl. 29—734 **12 Claims**



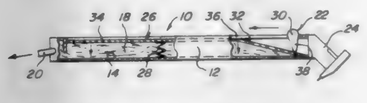
1. Apparatus suitable for winding and inserting coils together with covering strips into slotted devices such as the cores of stators or internally of rotors of electrical machines, said apparatus having: a winding station, comprising a template and a winding nozzle rotatable about said template; insertion tools comprising tongues, such that coils produced on said template can be transferred to said insertion tools; an insertion station, comprising a holding device for slotted devices, such that said coils and insulating strips can be inserted by said insertion tools into the slots of the slotted device; transport mechanism for transporting said insertion tools between said winding station and said insertion station; and covering strip mechanism for producing and introducing insulating strips into ducts between said tongues of the respective said insertion tools, wherein said covering strip mechanism is at said winding station and comprises rotationally movable guide mechanism for bringing said insulating strips to said ducts of a said insertion tool, such that said strips can be accommodated between said tongues of said insertion tool.

4,562,643

ALL IN ONE SHAVER

John Cataudella, c/o F. Cannati, 2317 Westlake Ct., Oceanside, N.Y. 11572

Filed Oct. 5, 1983, Ser. No. 539,092
Int. Cl.⁴ B26B *21/44*
U.S. Cl. 30—41 **2 Claims**



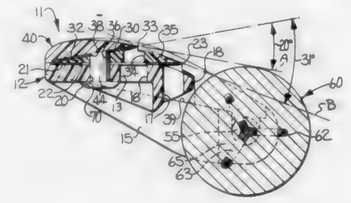
1. An all in one shaver which comprises:
(a) a housing having a hollow chamber, for retaining a quantity of shave gel, and an exit port;
(b) means for forcing the shave gel out of the exit port;
(c) a razor secured to said housing and extending diagonally downwards therefrom in a direction away from the exit port of said housing, wherein said means for forcing the shave gel out of the exit port comprises:
(d) a flexible tube having an open end containing the shave gel placed longitudinally within the chamber of said housing with the open end facing the exit port;
(e) a plate closing the other end of said flexible tube within the chamber of said housing;
(f) a spiral spring placed adjacent said plate within the chamber of said housing; and
(g) a button spaced apart from said plate by such spiral spring, and which slidably travels on said housing having a slot track, said button having an internal projection to engage said spring causing said spring to press said plate into said flexible tube forcing the shave gel out of the open end through the hollow chamber of said housing and out of the exit port.

4,562,644

LUBRICANT-APPLYING SAFETY RAZOR

Peter B. Hitchens, 2637 Bay St., Charlotte, N.C. 28205

Filed Aug. 10, 1984, Ser. No. 639,456
Int. Cl.⁴ B26B *21/44*
U.S. Cl. 30—41 **8 Claims**



1. A safety razor including a handle, a blade-supporting head carried by one end of said handle, cutting blade means supported in said blade-supporting head, a lubricant member supported by said blade-supporting head in a position in advance of said cutting blade means when said safety razor is moved along the skin of the user in a shaving motion, said lubricant member comprising an elongate cylindrical roll including a peripheral surface for engaging the skin of the user in advance of said cutting blade means and being provided to apply a lubricous film to the skin in advance of said cutting blade means for reducing the coefficient of friction between the wet skin surface and the lubricous film, said peripheral surface having a length extending throughout substantially the width of said cutting blade means and providing a guide surface initially positioning the skin surface of the user in a particular angular relationship with said cutting blade means, said peripheral surface of said lubricant member being frictionally worn away and lowered with continued use of said safety razor so that the blade tangent angle between said cutting blade means and said peripheral surface of said lubricant member is gradually increased within a limited angular range with use of said razor, shaft means extending through the center of said cylindrical lubricant roll, and stop means associated with said shaft means for normally maintaining said cylindrical lubricant roll and said shaft means in a non-rotating position.

4,562,645

RAZOR CARTRIDGE AND METHOD OF MANUFACTURE

Anthony L. Dato, Madison, and Carl A. Hultman, Derby, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 26, 1984, Ser. No. 654,422
Int. Cl.⁴ B26B *21/14*
U.S. Cl. 30—346.58 **10 Claims**

1. A razor cartridge defining a molded, one-piece plastic body having an elongated opening bounded by a first surface defining a first blade support, a second surface defining a second blade support, a rear wall formed with at least one through opening, and a one-piece blade element having two cutting edges in frictional engagement with said supports, said blade element having an opening falling into register with said wall opening.

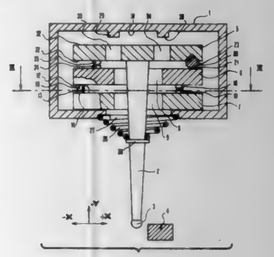


4,562,646

HEAD FOR CHECKING LINEAR DIMENSIONS

Carlo Dall'Aglio, Volta Reno di Argelato, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Oct. 24, 1984, Ser. No. 664,166
Claims priority, application Italy, Nov. 21, 1983, 3625 A/83
Int. Cl.⁴ G01B *7/28*
U.S. Cl. 33—169 R **20 Claims**



1. A head for checking linear dimensions, such as dimensions of workpieces, comprising a support; an arm movable with respect to the support; a feeler arranged at an end of the movable arm; connective means, for connecting the arm to the support, including members arranged substantially one over the other along a longitudinal geometric axis, the members being elongated mainly along directions perpendicular to said longitudinal axis, one of the members being secured to the support and another being secured to the arm, and fulcrum means for permitting mutual displacements of the members; thrust means for defining a rest position of the movable arm; and detecting means distinct from said fulcrum means and responsive to the displacements of the movable arm from the rest position, wherein said fulcrum means comprise elements arranged between the members and having surfaces slidably cooperating for permitting the mutual displacements of the members, said elements defining at least one rotation axis which is transversal and offset with respect to the longitudinal geometric axis, and the thrust means comprise thrust elements for applying to the elements of the fulcrum means and to the members forces adapted to keep into contact said slidably cooperating surfaces, both in said rest position and during said displacements, for guaranteeing the occurrence of said mutual displacements of the members as mutual rotations only.

4,562,647

ALIGNMENT JIG FOR ATTACHING NOCKS ON ARCHERY ARROWS

Björn Bengtson, Fagerangsvagen 34, S-141 37, Huddinge, Sweden

Filed Mar. 22, 1984, Ser. No. 592,022
Int. Cl.⁴ G01B *5/25*
U.S. Cl. 33—286 **19 Claims**

1. Alignment apparatus for use in attaching a nock on an archery arrow, the nock having a groove defined by two shanks, comprising:
a rigid base plate;
first support means and at least one additional support means attached to said base plate for supporting the arrow;
said additional support means being spaced a distance apart from said first support means;
first reference means arranged on said base plate in a plane extending through all of said support means and perpendicular to said base plate;



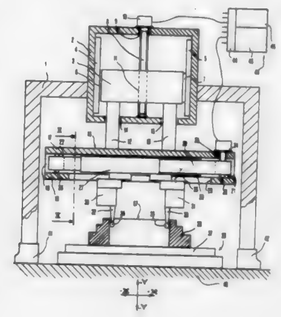
second reference means extending parallel to the first reference means and disposed in the plane on the opposite side of an arrow supported by said support means relative to said first reference means; and
sight means located adjacent to one of said support means and said first and second reference means, for aligning said pair of first and second reference means between the shanks of the nock of the arrow,
whereby the proper longitudinal alignment of the nock with the end of the arrow can be checked with good accuracy.

4,562,648

APPARATUS FOR MEASURING DIAMETRAL AND AXIAL DIMENSIONS

Franco Danielli, Zola Predosa, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Mar. 1, 1985, Ser. No. 707,144
Claims priority, application Italy, Apr. 4, 1984, 3409 A/84
Int. Cl.⁴ G01B *7/02*
U.S. Cl. 33—504 **18 Claims**



1. An apparatus for measuring dimensions of parts, comprising:
a support structure;
a support coupled to the support structure for supporting the part to be measured;
slide means including: a first slide movable with respect to the support structure along a longitudinal axis and a second slide and a third slide movable along opposite transversal directions;
transducer means coupled to the slides and the support structure for providing a first transducr signal representative of the position of the first slide with respect to the support structure and a second transducer signal representative of the mutual position of the second and third slides;
measuring means including two measuring heads carried

respectively by the second and third slides for cooperating with the part and providing relevant measurement signals; and

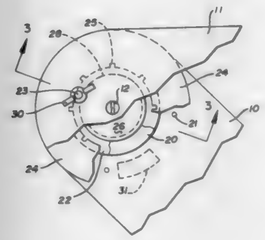
processing means connected to the transducer means and the measuring heads for providing output signals representative of the dimensions of the part.

4,562,649

ADJUSTABLE CARPENTER SQUARE

Frank Ciavarella, 2605 Tibbets Wick Rd., Hubbard, Ohio 44425

Filed Feb. 28, 1985, Ser. No. 706,781
Int. Cl.[4] B43L *7/06*
U.S. Cl. 33—419 **4 Claims**



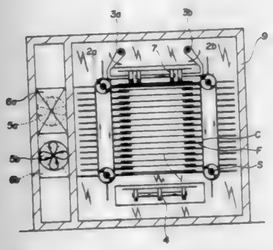
1. An adjustable carpenter square used for finding the relative angles from a given point comprises a pair of longitudinally extending arms pivoted together in overlapping relationship at one end, a locking support ring movably positioned between said longitudinal arms, said locking support ring having a locking stud extending therefrom with means on said locking stud for engaging one of said longitudinally extending arms, means for positioning said locking ring between said longitudinally extending arms, a degree ring secured to one of said longitudinally extending arms in overlying relationship to said locking support ring, means for positioning said longitudinally extending arms in predetermined fixed position, said positions corresponding to a given relative angle therebetween expressed in degrees.

4,562,650

BOARD DRYING APPARATUS

Kiyoshi Nagasawa, Chita; Eiichi Itoh, and Sadao Kato, both of Tokai, all of Japan, assignors to Hashimoto Denki Co., Ltd., Aichi, Japan

Filed Mar. 8, 1984, Ser. No. 587,703
Claims priority, application Japan, Mar. 23, 1983, 58-49292
Int. Cl.[4] F26B *15/20*
U.S. Cl. 34—149 **4 Claims**



1. A board drying apparatus comprising:

a substantially closed housing;

a pair of fork conveyors disposed vertically in said housing with spacing therebetween and having inner sides opposed to each other;

each fork conveyor having a plurality of extension arms fixed at ends thereof to said fork conveyor to extend substantially at right angles thereto, in such a manner that each of said extension arms of one of said fork conveyors has an associated extension arm at the same level on the other of said fork conveyors, and that the said extension arms on said inner sides of said fork conveyors are opposed to each other and are moved downwardly at the same speed;

means for feeding boards to be dried to the uppermost horizontally positioned said extension arms at said inner sides of said fork conveyors, said feeding means comprising a delivery conveyor provided above and between said pair of fork conveyors, said delivery conveyor including a pair of swingable arms operable to be opened at lower portions thereof in the manner of a gate;

means for discharging the dried boards from the lowermost position of said fork conveyors;

heating means for producing heated air in said housing;

blower means for circulating the heated air through space between said fork conveyors; and

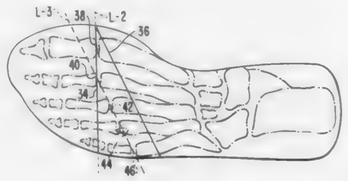
said blower means and said heating means being disposed in series in the horizontal direction at a side portion in the interior of said housing to cause the heated air to flow through said space between said fork conveyors in the lengthwise direction of the boards supported thereby.

4,562,651

SOLE WITH V-ORIENTED FLEX GROOVES

Edward C. Frederick, Kingston, and John R. Robinson, Newmarket, both of N.H., assignors to Nike, Inc., Beaverton, Oreg.

Filed Nov. 8, 1983, Ser. No. 549,659
Int. Cl.[4] A43B *5/00, 13/14, 13/08*
U.S. Cl. 36—102 **23 Claims**



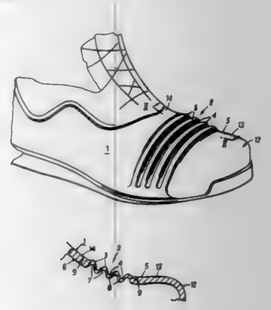
1. A sole for footwear comprising at least one layer of material adapted to be attached to an upper of the footwear, said sole having a forepart portion and a rearpart portion, said at least one layer of material having a first flexibility and a second greater flexibility for aiding the natural foot rolling motion from the lateral side at heelstrike to the medial side at forefoot stance by creating said second flexibility in the sole along lines directed toward the first metatarsal-phalanges joint, first flex means for creating the second flexibility of the material along a first line extending substantially parallel to a medial metatarsal-phalanges line which extends between the first and second metatarsal-phalanges joints and second flex means for creating the second flexibility of the material along a second line extending substantially parallel to a lateral metatarsal-phalanges line which extends along the second through fifth metatarsal-phalanges joints, said first and second lines joining one another at an area adjacent the medial side of the sole wherein said first and second flex means create said second greater flexibility while the remaining forepart portion of the sole retains said first flexibility.

4,562,652

SHOE OR BOOT

Adolf Hensler, Köflach, Austria, assignor to Koflach Sportgerate Gesellschaft m.b.H., Vienna, Austria

Filed Nov. 10, 1983, Ser. No. 550,459
Claims priority, application Austria, Nov. 12, 1982, 413282
Int. Cl.[4] A43B *01/10, 23/00*
U.S. Cl. 36—102 **2 Claims**



1. A shoe, boot or hiking boot comprising a shell of selected thickness constructed of elastomeric material, said shell being corrugated in a bellows like construction in the region of said shell corresponding to the roots of a users toes when said shoe, boot or hiking boot is worn, said corrugations being made up of ridges (3) and furrows (4) extending in a direction substantially transverse to the longitudinal axis of said shell, and when seen from the top of said shell, arranged asymmetrically and running obliquely backward towards the lateral portion (10) of the foot in an arch with the apex thereof directed toward the front of said shell, each ridge (3) on the outside of said shell lying opposite a furrow (7) on the inside of said shell, and each furrow (4) on the outside lying opposite a ridge (8) on the inside, the base of the furrows (4) on the outside and the base of the furrows (4) on the inside lying in approximately the same geometric enveloping surface equidistant to the surface of the shell, and the depth of the furrows (4) in the area of the side walls of said shell decreasing progressively as compared to the depth of the furrows in the top of said shell with the thickness of the shell in the region of said ridges (3) and furrows (4) being less than the thickness of the remaining portion of the shell.

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SKI BINDING AND BOOT

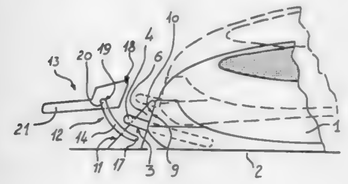
Georges P. J. Salomon, Annecy, France, assignor to Salomon S.A., Annecy, France

Division of Ser. No. 408,845, Aug. 17, 1982, Pat. No. 4,484,762, which is a continuation of Ser. No. 116,847, Jan. 30, 1980, Pat. No. 4,382,611. This application Apr. 27, 1984, Ser. No. 604,462
Claims priority, application France, Jan. 31, 1979, 79 02513
The portion of the term of this patent subsequent to Jan. 12, 1999, has been disclaimed.
Int. Cl.[4] A43B *5/04;* **A63C** *9/18*
U.S. Cl. 36—117 **15 Claims**

1. A shoe or boot for attachment to a ski with a binding, said shoe or boot comprising:

(a) a support zone at one end of said shoe or boot, wherein said one end comprises the toe of said boot; and

(b) a latching element extending forwardly from and spaced from the front end of said boot and having an open space between the front end of said boot and the front end of said latching element, said latching element being arranged such that, as said latching element is secured to said binding, said support zone is adapted to be forced



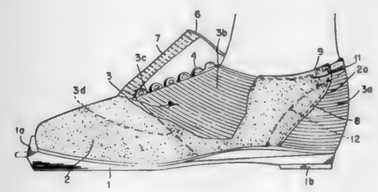
against an abutment zone of a support element of said binding.

4,562,654

SKI SHOE FOR CROSS-COUNTRY SKIING

Jean Hue, Annecy, France, assignor to Salomon S.A., Annecy, France

Filed Feb. 15, 1984, Ser. No. 580,218
Claims priority, application France, Feb. 22, 1983, 83 02817
Int. Cl.[4] A43B *5/04*
U.S. Cl. 36—117 **53 Claims**



1. A shoe for housing the instep and rear portions of a foot, wherein said shoe comprises:

(a) a sole

(b) a flexible overshoe having a posterior portion comprising an upper edge portion; and

(c) a vamp, inside said overshoe and comprising a posterior portion having an upper edge portion and tightening means for tightening said vamp around the instep of said foot, wherein at least a portion of said upper edge portion of said posterior portion of said overshoe is attached to said vamp along at least a portion of said upper edge portion of said posterior portion of said vamp, and wherein said overshoe is also attached to said vamp from said upper edge portion of said posterior portions of said vamp and overshoe to said sole.

4,562,655

HIGH MOMENTUM HEATING SYSTEM FOR AN IRONER

John Bosshart, Coral Springs; William W. Allen, Plantation, and C. Robert Safarik, Tampa, all of Fla., assignors to Jensen Corporation, Ft. Lauderdale, Fla.

Filed May 28, 1985, Ser. No. 737,796
Int. Cl.[4] D06F *65/02, 67/02*
U.S. Cl. 38—52 **12 Claims**

1. A gas heated direct fired center tube revolving ironer and dryer comprising:

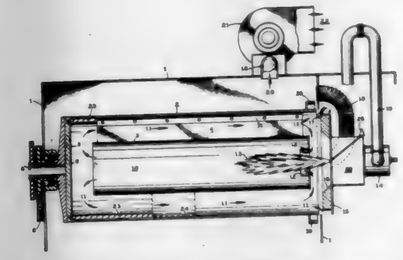
a rectangular frame enclosing a revolving cylinder the outer surface of which provides an ironing surface;

a tube concentrically supported within the cylinder by a plurality of spaced struts rigidly attached to the tube and cylinder whereby the tube and cylinder revolve together;

said cylinder being closed at one end and open at the other;

said tube being open at both ends and terminating short of said closed end of the cylinder to provide a chamber through which said tube communicates with the space between the tube and the cylinder;

a movable plate mounted by means such that it can be positioned adjacent to the open end of the cylinder; and



said movable plate having a means to be locked into a selected position;

said plate having a high velocity gas burner mounted in the center thereof allowing the flame to be projected down the center of said tube, and said burner having a full proportional flame temperature controller and a high temperature cut-off for said controller.

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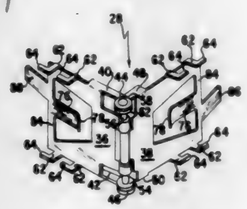
MOUNTING FRAMES

John F. Kristofich, 25 Jacob Rd., Washington Township, Warren County, N.J. 07882

Filed Nov. 8, 1982, Ser. No. 440,004

Int. Cl.⁴ A47G *1/06*; G09F *1/12*

U.S. Cl. 40—152 **11 Claims**



1. For interconnecting a first picture frame and a second picture frame together in which each picture frame has a back cover which includes a front surface, a rear surface, first aperture means and second aperture means, said first aperture means and second aperture means extending from the front surface to the rear surface of each back cover; an apparatus comprising:

first leg means operable for traveling through said first aperture means and for affixing the apparatus to the back covers of the first picture frame and second picture frame; and

second leg means operable for insertion within said second aperture means and for preventing the removal of said first leg means from said first aperture means so as to secure the apparatus to the back covers.

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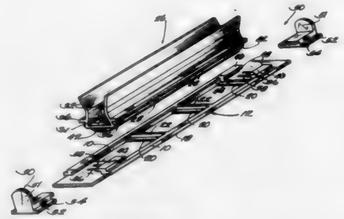
DISPLAY STRUCTURE

Ledell L. Murray, Noblesville, Ind., assignor to General Indicator Corporation, Pardeeville, Wis.

Filed May 16, 1984, Ser. No. 610,964

Int. Cl.⁴ G09F *11/18*

U.S. Cl. 40—518 **4 Claims**



1. A display module including,

a horizontally disposed opaque bezel having an aperture therein and having a front and a rear,

a horizontally disposed clear plastic light reflecting and support member having a curved front face projecting into said aperture in said bezel and having a rear portion lying behind said bezel, said member having a light transmission axis normal to the plane of the bezel and including reflective surfaces reflecting light entering the member from behind forwardly for emission through said front face of the member,

said member having on each horizontal end a shelf overlying said bezel,

guide means on the rear of said bezel adjacent said aperture close to each said horizontal end of said member,

a retainer slideably mounted in each said guide means for linear movement between an active position engaging and overlying the adjacent shelf and an inactive position disengaged from said adjacent shelf,

a pre-coiled indicia strip having coiled ends, said strip being mounted in the module with a portion thereof across said curved front face of said member to be illuminated by the light emitted through said front face and with the coiled ends of the strip separated and supported by the outside of the member while light is transmitted between said coiled ends,

said bezel has a plurality of apertures therein,

said bezel including dividers between said apertures,

said light reflecting and support member being a single piece provided with transverse grooves fitting over said dividers to locate the member relative to said bezel,

detent means acting between said retainer and said bezel to hold said retainer in said active position.

4,562,658

ADJUSTABLE MOUNT

Peter J. Govett, Castle Hill, Australia, assignor to Tetra Pharmaceuticals Pty. Limited, New South Wales, Australia

Filed Oct. 4, 1983, Ser. No. 539,061

Int. Cl.⁴ F41G *1/38*

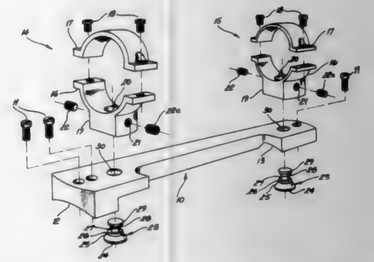
U.S. Cl. 42—1 ST **12 Claims**

1. A mount for the attachment of at least one sight to a rifle, said mount comprising:

(a) a mounting stud adapted to be secured to the rifle, said mounting stud having a groove portion in part defined by a conical face and having a cylindrical surface on each side of said groove portion;

(b) a body portion having a first aperture sized and shaped so that the opposing walls of said first aperture engage said cylindrical surfaces on said mounting stud in the direction parallel to the axis of the rifle, but so that said body portion can move freely relative to said mounting stud in the direction transverse to the axis of the rifle; and

(c) a pair of opposed adjustment screws threaded through said body portion in the direction transverse to the axis of the rifle and extending into said first aperture, said pair of opposed adjustment screws engaging with opposite sides of said conical face of said mounting stud so that loosening of one of said pair of opposed adjustment screws and tightening of the other one of said pair of opposed adjustment screws will move said body portion in relation to said mounting stud in the direction transverse to the axis of the rifle, each one of said pair of opposed adjustment screws having a conical end face which engages with said conical face of said mounting stud so that, when said pair of adjustment screws are tightened, said body portion is drawn down onto the rifle.



4,562,659

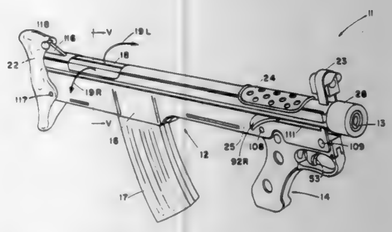
AUTOMATIC FIREARM

Yoave Neta, Havzle St 21, 55000 Kiron, Israel

Filed Sep. 26, 1983, Ser. No. 535,999

Int. Cl.⁴ F41C *5/02*; F41D *5/04*

U.S. Cl. 42—75 C **20 Claims**



1. An improved automatic firearm comprising:

a body assembly including body means comprising a one-piece drawn body cut to length, barrel means mounted in said body means, trigger assembly means mounted to said body means proximate to the front end of said barrel means, and magazine guide means in said body means spaced apart from and behind said trigger assembly means and being adapted to receive a magazine carrying cartridges therein.

4,562,660

FISHING NET HANGING JIG

Clifford A. Cantor, 841 Alder St., and Ben D. Barnes, 1120 Mission Lake Rd., both of Bethel, Ak. 99559

Filed Jan. 23, 1985, Ser. No. 694,119

Int. Cl.⁴ A01K *71/00*

U.S. Cl. 43—4 **7 Claims**

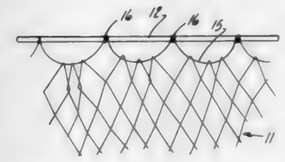
1. A fishing net hanging jig for use in tying, at accurately spaced apart points, the upper and lower edges of a fishing net mesh to the net float line and lead line respectively with a cord that is passed through a predetermined number of adjacent mesh loops and then is tied by a knot to the respective line, comprising:

a vertical support stanchion having a connection means at its lower end for rigidly fastening the stanchion upon a rigid support;

a narrowed, stiff, upwardly extending pointer on the upper end of the stanchion;

a rod-like elongated L-shaped member having a horizontal leg and a vertical leg;

attachment means on the stanchion, intermediate its upper and lower ends, for rigidly attaching the horizontal leg to the stanchion, with said attachment means being releasable and adjustable for horizontally adjusting and then



fixing the position of the horizontal leg relative to the stanchion so as to accurately position the vertical leg remotely from, and at a predetermined space from the stanchion;

a line receiving fork on the upper end of the vertical leg, with the fork being in substantial horizontal alignment with the pointer;

whereby the net line may be positioned for support in the fork at the last completed knot and stretched horizontally and held adjacent the pointer with the pointer accurately indicating the location of the next knot, so that a knot can be applied at the pointer, and thereafter, the net line may be re-positioned for the application of next sequential knot.

4,562,661

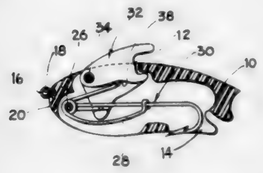
FISH LURE WITH CONCEALED HOOKS

Donald J. Messinger, 9621 Vermont Hill Rd., and William J. Zugger, S-8387 Vermont Hill Rd., both of Holland, N.Y. 14080

Filed Jan. 10, 1985, Ser. No. 690,209

Int. Cl.⁴ A01K *83/02*

U.S. Cl. 43—35 **6 Claims**



1. In a fish lure construction including a hollow body having slots through opposed dorsal and ventral surfaces thereof, a retractable fishhook having a shank terminating in a barbed hook at the distal end and pivotally secured at its proximal end adjacent an end of the lure on a first transverse axis within said hollow body, said hook being positioned to pivot to and fro from a position within said hollow body to a projecting position wherein the barbed hook portion projects externally through one of said slots; wherein the improvement comprises biasing means directly engageable with said hook for urging said hook to said external position, a lever pivotally mounted on a second transverse axis displaced from said first transverse axis, said lever having an external portion extending outwardly

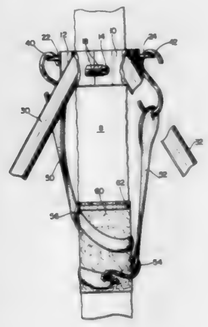
through the other of said slots and an internal portion extending into said hollow body, said biasing means extending into engagement with said lever and urging said lever to its outermost position, a keeper on said internal portion and a catch on said shank, said keeper and said catch being directly engageable for retaining said hook within said hollow body against the urging of said biasing means, said lever being pivotable from a position for retaining said keeper and catch in direct engagement to a position to release said catch on said shank from said keeper when said lever is depressed whereby said biasing means causes said hook to project externally of said body.

4,562,662

TREE SUPPORT DEVICE

Carl E. Ten Pas, 330 E. Union Ave., Cedar Grove, Wis. 53013

Filed Oct. 17, 1984, Ser. No. 661,706
Int. Cl.[4] A01G *17/12*
U.S. Cl. 47—43 **5 Claims**



1. A tree support device comprising in combination
(a) a pair of arcuate semicircular collar members that are sized to surround the trunk of a tree at a spaced distance away from the outer circumference of the tree,
(b) means for fastening said pair of collar members together into a substantially vertical cylinder having a longitudinal axis closely approximating the axis of the tree it surrounds,
(c) at least one leg member extending downwardly and outwardly from each collar member, the total number of leg members being at least three,
(d) a pair of elastic strap members extending downwardly from opposite sides of said vertical cylinder,
(e) fastening means for fastening the upper end of each strap member to said vertical cylinder, and
(f) connector means for connecting the lower end of each strap member to a point on the strap member which is above the lower end of the strap member to thereby form a loop in the lower end of the strap member, which loop is of a size to tightly surround the trunk of the tree that the support device is to be used with.

4,562,663

ANALOGS OF BOTANIC SEED

M. Keith Redenbaugh, Davis, Calif., assignor to Plant Genetics, Inc., Davis, Calif.

Filed Oct. 12, 1982, Ser. No. 433,688
Int. Cl.[4] A01C *1/06*; **A01G** *9/10*
U.S. Cl. 47—58 **19 Claims**

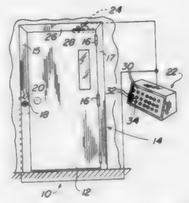
1. A process for creating an analog to natural botanic seed, which comprises:
isolating meristematic tissue, which tissue has the potential to differentiate to produce an entire plant body and is free from botanical accessory structures; and
encapsulating said isolated meristematic tissue in a hydrated gel capsule which will permit development of said plant body.

4,562,664

DOOR POSITION MONITOR WITH AUTOMATIC ADJUSTMENT

Raymond V. Kambic, Joliet, Ill., assignor to R. R. Brink Locking Systems, Inc., Plainfield, Ill.

Filed Dec. 12, 1983, Ser. No. 560,156
Int. Cl.[4] G08B *13/08*
U.S. Cl. 49—14 **14 Claims**



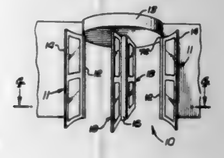
1. A door position monitoring assembly for a security door installation including a door having a vertical edge hingedly mounted to a door frame, said monitoring assembly comprising: switching means capable of being operated to attain a first condition and a second condition, each of which conditions can be detected by suitable circuit means; and control arm having one end thereof coupled for movement with said door; pivot means for pivotally mounting said control arm proximate the other end thereof such that movement of said door upon said hinged mounting thereof will produce pivotal movement of said control arm relative to said pivot means; and acutator means for operatively coupling pivotally mounted end of the control arm with the switching means such that when the door is open said switching means will be in said first condition, rotation of said control arm upon movement of the door to a substantially closed position producing said second condition of said switching means and initial movement of the door away from said substantially closed position permitting said switching means to return to said first condition; and wherein said actuator means includes self-aligning means automatically positionable prior to commencing installation of said monitoring assembly such that upon initial movement of said door from said open position to a fully closed position, said operation of said switching means in response to further movement of said door is assured, substantially without regard to manufacturing or installation irregularities or to variations occurring while in service, in the relative proportions, positioning or alignment of said door installation, said switching means, said control arm or said actuator means, wherein said actuator means further includes, lever arm means having one end freely pivotally mounted at said pivot means and mounted for operative engagement with said switching means proximate an opposite end thereof, stop means for limiting pivotal movement of said lever arn in either direction, and abutment means engageable with said lever arm means; said self-aligning means comprising mounting means for said abutment means which includes relatively movable spring-biased components biased into engagement with the abutment means such that the abutment means will normally pivot in unison with the control arm to engage and pivot the lever arm, said spring-biased components permitting relative slippage of the abutment means with respect to said control arm upon engagement of the lever arm means with said stop means, thereby permitting said control arm and said abutment means to attain a properly aligned relationship through movement of the control arm.

4,562,665

BREAKAWAY FOR REVOLVING DOORS

Michael D. Blackston, Brooklyn Park, Minn., assignor to Heise Mfg., Inc., Minneapolis, Minn.

Filed Sep. 29, 1983, Ser. No. 537,272
Int. Cl.[4] E05D *15/02*
U.S. Cl. 49—44 **2 Claims**



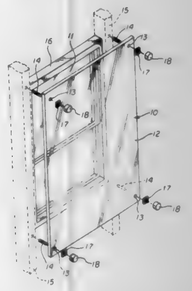
1. In an electrically powered revolving door having door panels, side panels, and frames, the panels radially attached to a central shaft and having electrically operated release means for permitting said panels to pivot from their radial positions, the improvement comprising switch means mounted on at least one panel and frame for sensing the position of the panel and disconnecting power to a door rotating device when said panel and frame are not proximate each other.

4,562,666

BURGLAR GUARD

Archie Young, III, P.O. Box 228, Hockley, Tex. 77447

Filed Apr. 18, 1983, Ser. No. 485,953
Int. Cl.[4] E05B *65/04*
U.S. Cl. 49—62 **1 Claim**



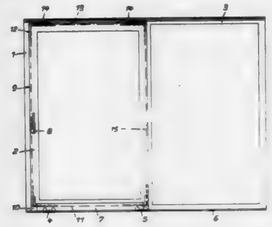
1. A burglar guard system comprising, in combination,
a building having at least one exterior window supported by supporting building frame members,
a removable burglar guard for said window comprising a generally planar, rectangular panel constructed of substantially unbreakable, bullet-resistant, thick sheet of transparent, polycarbonate plastic positioned to cover the inside of said window,
said rectangular panel having apertures in each of its corners, and
means located inside said building, inaccessible from outside the structure, cooperable with said apertures for attaching said panel over the inside of said window in a fixed secure relation to said frame members and covering said window, whereby said guard is effective to secure said window against forcible entry,
said attaching means comprising threaded studs having one end portion with wood screws mounted in said supporting frame members and having metal screws on the opposite ends to cooperate with said panel apertures,
washers cooperable with said studs and apertures, and
threaded knobs of a size for hand operation, hand threadable onto said studs, and inaccessible from outside said building to secure said rectangular panel firmly in position.

4,562,667

PANEL CLOSURE ASSEMBLY FOR WINDOW, DOOR OR THE LIKE

Julius M. von Resch, Stuttgart, Fed. Rep. of Germany, assignor to Gretsch-Unitas GmbH, Ditzingen, Fed. Rep. of Germany

Filed Mar. 14, 1984, Ser. No. 589,555
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3310020
Int. Cl.[4] E05D *15/22*
U.S. Cl. 49—176 **20 Claims**



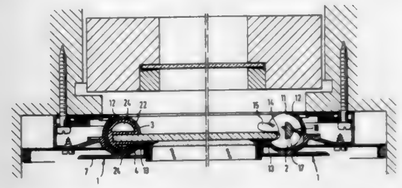
1. A panel closure assembly for a window, door or the like comprising a frame member, a panel member mounted on said frame member for movement between a closed position and an open position, said panel member being tiltable relative to said frame member at the lower end thereof and also adapted to be laterally offset parallel to itself relative to the frame, and panel latching means including an actuating element and linkage means operable through said actuating element extending from said actuating element at least along said lower end of said panel, said panel member at said lower end thereof being coupled for outward movement with said frame member through lock means adapted to be released by said linkage means, said lock means being adapted to be moved to a release position to enable said outward movement of said lower panel end thereby to enable said laterally offset position of said panel member.

4,562,668

WINDOW STRUCTURE, A HINGE AND A LATCH SUITABLE FOR IT AND A COVER PROFILE FOR SAID STRUCTURE

Niilo Karhu, Vantaa, and Jussi Pesola, Helsinki, both of Finland, assignors to Lemminkainen Oy, Helsinki, Finland

Filed Jun. 5, 1984, Ser. No. 617,539
Claims priority, application Finland, Jun. 16, 1983, 832196; Oct. 27, 1983, 833942
Int. Cl.[4] E05D *15/00*
U.S. Cl. 49—381 **20 Claims**



1. A window structure comprising:
a frame capable of being secured to a window opening, hinges fitted in the frame for movably securing the pane to the frame, and latches for opening and closing the pane, wherein said frame is made up of a profile the cross section

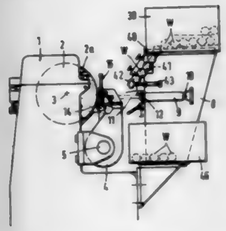
of which is the same all around the frame, the interior part of the frame, which receives the pane, being made up of an open tube from which an axial mantle section has been removed, in which open tube there is fitted at least one latch turnable in the open tube to an extreme position which locks the pane and, after release of the locking, in the opposite direction, and in which open-tube part of one side of the frame there is fitted at least one hinge made up of a cylindrical hinge piece, turnable in the open tube, the edge of the pane being fitted to be secured to this hinge piece.

4,562,669

MACHINE FOR GRINDING CYLINDRICAL WORKPIECES

Erich Baltzer, Nordhorn, and Willi Caspers, Mettmann, both of Fed. Rep. of Germany, assignors to Peter Wolters, Rendsburg, Fed. Rep. of Germany

Filed Jul. 13, 1983, Ser. No. 513,253
Int. Cl.⁴ B24B *5/34*
U.S. Cl. 51—103 WH **9 Claims**



1. A workpiece apparatus for a grinding machine having a frame and a grinding roller rotatably mounted thereon for grinding the peripheral surface of a cylindrical workpiece having a rotatable axle extending therefrom, comprising:

a support member pivotally mounted on the frame;

a support spring resiliently urging said support member towards the grinding roller;

a drivable support roller rotatably mounted on said support member adjacent the grinding roller with its axis of rotation extending parallel to the axis of rotation of the grinding roller for supporting and rotatably driving the workpiece during grinding;

a gripper for releasably gripping the axle of the workpiece;

means for moving said gripper with respect to the grinding roller;

a mechanism for exerting a force on said gripper in the direction of said support roller; and

means for providing a predetermined constant advance of the workpiece during grinding comprising,

a first fluid pressure cylinder mounted on said support member,

a piston operatively mounted in said first cylinder for movement in the feeding direction,

means connected to said piston and abutting the machine frame,

a second fluid pressure cylinder mounted on said support member,

a piston operatively mounted in said second cylinder to form a chamber on both sides of said piston,

a piston rod connected to said piston of said second cylinder and adapted to abut the machine frame,

two parallel fluid flow conduits each interconnecting said chambers,

a check valve in one of said conduits to control the flow of fluid between said chambers, and

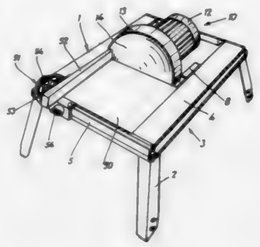
an adjustable throttle valve in the other of said conduits for controlling the flow of fluid between said chambers to regulate the constant advance rate.

4,562,670

BENCH

Peter Maier, Gerokstrasse 1, 7311 Neidlingen, and Günter Arnold, Albstrasse 5, 7441 Kohlberg, both of Fed. Rep. of Germany

Filed Dec. 22, 1983, Ser. No. 564,247
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1982, 3248627
Int. Cl.⁴ B24B *41/02*; B27C *9/00*
U.S. Cl. 51—166 R **18 Claims**



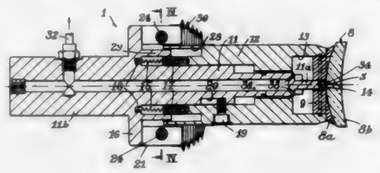
1. A bench comprising a frame made up of lengths of sections, bench legs fitted to said frame and dependent therefrom, two segment-like cradles and at least one bench top mounted on said frame and able to be slidingly moved thereon with said cradles, and a driving unit mounted on said cradles for rocking motion, said bench top being designed for use as a work support, said frame having two first parallel sections at two sides of said frame with one of said cradles being mounted on each of said first sections, said driving unit having trunnions for rocking motion thereof about a common trunnion axis, and said trunnions being fitted respectively to said cradles.

4,562,671

LENS HOLDING SPINDLE FOR A LENS GRINDING MACHINE

Serge Bouillon, Creteil; Jean-Francois Cailloux, Le Raincy, and Christian Chevalier, Vincennes, all of France, assignors to Essilor International (Compagnie Generale d'Optique), France

Filed Feb. 24, 1984, Ser. No. 583,579
Claims priority, application France, Mar. 7, 1983, 83 03674
Int. Cl.⁴ B24B *41/04*
U.S. Cl. 51—216 LP **8 Claims**



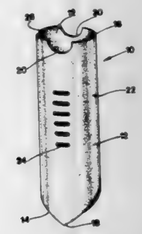
1. A lens holding spindle for a lens grinding machine, comprising a substantially cylindrical body to be fixed to said lens grinding machine, a cylindrical sleeve slidably mounted on said cylindrical body for axial movement in relation thereto, said cylindrical sleeve having in a first end thereof a recess means for accommodating and holding therein a lens holding block fitted to a finished face of a lens, an opposite face of which is to be ground to a desired shape and to a predetermined thickness, as measured between apexes of the two faces of said lens, said lens holding block having a central hole registering with the apex of the finished face of the lens, said cylindrical body having a first end portion projecting axially into the recess of said sleeve, said first end portion of said cylindrical body being axially engageable into said central hole of said lens holding block and having an end face which forms both a fixed reference surface for defining the lens thickness and an axial bearing surface for the finished face of the lens when said cylindrical body is fixed to the grinding machine, when the lens and the lens holding block are fitted and held in the recess of said sleeve and when said sleeve is moved axially in one direction together with said lens holding block and said lens to bring the apex of the finished face into contact with the end face of the first end portion of said cylindrical body, and clamping means mounted on one of said cylindrical body and of said sleeve and operable, when actuated, to clamp the other of said cylindrical body and of said sleeve to prevent any relative axial movement between said sleeve and said cylindrical body when the apex of the finished face of the lens has been brought into contact with the end face of the first end portion of said cylindrical body.

4,562,672

STAKE FOR CONCRETE SMOOTHING OPERATION

Adrian Westplate, 7612 33rd Ave., Kenosha, Wis. 53142

Filed Jul. 8, 1983, Ser. No. 511,875
Int. Cl.⁴ E04F *21/06*
U.S. Cl. 52—105 **13 Claims**



1. An improved screed guide supporting stake for use in concrete-smoothing operations, comprising a unitary hollow open-ended ground-receiving tube with a wall of substantially coincident cross-sections substantially along its length, said unitary tube having an upper edge having cradle means to receive one of said screed guides thereacross and a lower edge having point means for ground cutting, said lower edge being substantially coincident with said wall.

4,562,673

EARTHQUAKE SAFETY SUPPORT FOR TRANSPORTABLE BUILDINGS

Fred S. Barari, 1941 Hamilton Ave., San Jose, Calif. 95125

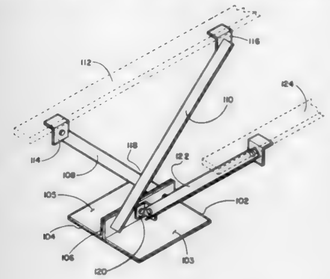
Continuation of Ser. No. 259,867, May 4, 1981, abandoned. This application Dec. 28, 1983, Ser. No. 566,956
Int. Cl.⁴ E04D *15/00*
U.S. Cl. 52—167 **3 Claims**

1. A stabilizing support for a transportable building, the underside of the building having a plurality of parallel beams arranged to be supported above the ground, said support consisting of:

a base disposed for resting on the ground, said base having a single planar vertically extending flange;

a pair of rigid support arms of substantially equal length, each of the support arms extending diagonally upward from the base for attachment to a first of said plurality of parallel beams, each of the support arms having a lower end affixed to the vertically extending flange of the base and an upper end disposed to be connected to said first of said beams with both support arms in a vertical plane generally in an x-shaped configuration; and

a single rigid stabilizing arm extending diagonally upward from the base to a second of said plurality of parallel beams, having one end affixed to the vertically extending



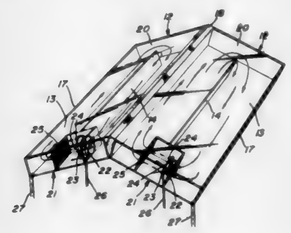
flange of the base and the other end disposed to be connected to said second of said beams.

4,562,674

REPLACEABLE FOAM INSULATION SYSTEM

Richard C. Nelson, 31 Sunrise Crescent, Pointe Claire, Quebec, Canada

Filed Oct. 18, 1982, Ser. No. 435,063
Int. Cl.⁴ E04B *1/76*
U.S. Cl. 52—171 **17 Claims**



1. A replaceable foam insulation system for a cavity in walls or a roof of a building structure, the system comprising,

divider wall means within the system forming at least one enclosed substantially horizontal continuous recirculating passageway within the cavity,

a fan disposed within said passageway for recirculating gas through said passageway,

mesh screen means disposed downstream of said fan,

said mesh screen means including foam producing means for providing foam to substantially fill the continuous passageway in the cavity when operative together with said fan and said fan, when operative alone, destroying substantially all the recirculated foam, said recirculated foam passing along said continuous passageway from downstream of the fan through said continuous passageway and upstream of the fan to pass through said fan.

4,562,675

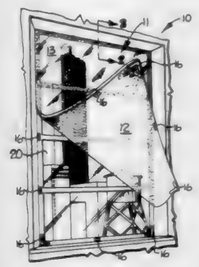
WINDOW ASSEMBLY WITH LIGHT TRANSMISSIVE INSULATOR AND METHOD

Joseph F. Baigas, Jr., and C. Carey Hobbs, both of Waco, Tex., assignors to Clark Bros. Felt Co., Groesbeck, Tex.

Filed Jul. 25, 1983, Ser. No. 516,660
Int. Cl.⁴ E06B *3/26*
U.S. Cl. 52—202 **17 Claims**

1. A window assembly having heat insulative properties with an R value of at least about 3 characterized by being

transmissive to incident light, said window assembly comprising a window, and an insulator extending along and covering one side of said window, said insulator comprising a high loft body of bonded together synthetic fibers and a sheet of plastic



positioned to extend along and cover one side of said body of fibers, said high loft body having a thickness many times that of said sheet of plastic, and said insulator being positioned on said window so that the body of fibers is sandwiched between the window and said sheet of plastic.

4,562,676

WINDOW GLASS MOUNTING ARRANGEMENTS

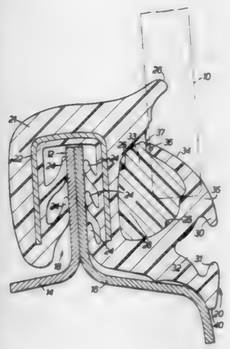
Werner Kruschwitz, Viersen, Fed. Rep. of Germany, assignor to Draftex Industries, Ltd., Edinburgh, Scotland

Filed May 15, 1984, Ser. No. 610,500

Claims priority, application United Kingdom, May 20, 1983, 8314080

Int. Cl.⁴ E06B *3/62, 7/16*

U.S. Cl. 52—208 **11 Claims**



1. A window glass mounting arrangement, comprising

support means for supporting the arrangement on a frame of the window opening,

the support means defining a ledge shaped surface of flexible material running at least partly around the window opening for sealingly receiving the window glass,

a flap of flexible material integral with the flexible material of the said ledge-shaped surface,

the flap extending integrally from one longitudinal margin of the said surface and being integrally attached to the opposite longitudinal margin thereof by a rupturable strip so that the flap and the said surface define a hollow longitudinally extending enclosure, and

mastic substantially filling the said hollow enclosure,

the rupturable strip being ruptured to permit the flap to be bent away from the said surface thereby permitting entry of the window glass onto the said surface and into contact with the mastic,

whereby, before the window glass is in position, the flap lies along an external edge surface of the window glass so as to obscure the mastic from external visibility.

4,562,677

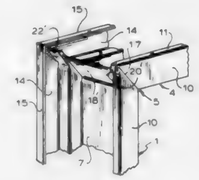
METAL DOOR FRAME CONSTRUCTED OF A CHANNEL SECTION AND METHOD OF MAKING SAME

František Hrabák, Pilsen, Czechoslovakia, assignor to Stavební Strojirenství a Lehka Prefabrikace Generální Reditelství, Prague, Czechoslovakia

Filed Dec. 8, 1983, Ser. No. 559,316

Int. Cl.⁴ E06B *1/04*

U.S. Cl. 52—211 **7 Claims**



1. A method of manufacture of a metal door frame made of a channel iron open from outside, which is formed by rolling an endless band, wherein the rolled channel iron is cut to the length of two jambs and a header, measured on the outer side of the channel iron of the finished frame, in the spot of bends of corners one cuts, in an unfolded state of the corner, straight-sided openings having up to four sides, two of which converge toward each other, by means of a tool having an edge following the shape of the channel iron and perpendicular to the plane of the channel iron, forming the inner side of the frame, the center of the surfaces of the channel irons, limited by the length of the hypotenuse of the said straight-sided openings and lying in the plane of the channel iron, forming the inner side of the frame and in planes being parallel to it is to be deflected a little in the direction being opposite to the direction of the next bend of the channel iron into the shape of the frame, then the channel iron is bent in the area of corners of the frame into the shape of an inverted U, simultaneously the surfaces of the channel iron, which have been deflected a little in advance, are deflected into the counterdirection of the main bends of the frame and they form a double-walled structure, which after its sides have been pressed, forms tongues disposed at an angle of 135° to the plane of the jamb and of the header.

4,562,678

GRAIN BIN FLOORING

Michael W. Carroll, Roselle; Michael E. Harwood, Palatine, and John H. Aldag, Chicago, all of Ill., assignors to North American Agricultural, Inc., Schaumburg, Ill.

Filed Jan. 26, 1984, Ser. No. 573,969

Int. Cl.⁴ E04B *1/70*

U.S. Cl. 52—303 **8 Claims**

1. A grain floor with an aeration system for grain stored thereon, said floor comprising:

an underlying air frame,

a grain floor mounted on said underlying air frame,

a plurality of rectangular floor plates, each having a longitudinal direction and supported on the air frame,

said plates being formed with corrugations extending in the longitudinal direction of the plates and with said corrugations being formed in a drawing operation,

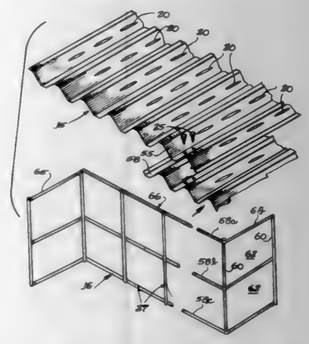
said corrugations including a top and a bottom wall and downwardly and outwardly inclined walls extending between the top and bottom walls,

said corrugated plates being uniform in size and being nestable with the corrugations of one plate fitting in the corrugations of the other plate for storage and during transportation thereof,

said corrugations being less than one-half inch in depth to facilitate broom sweeping of grain from the corrugations,

a plurality of elongated air holes in the inclined side walls of the corrugations,

the air holes being elongated in the longitudinal direction of



the plates and being located in the middle of the inclined sidewalls of the corrugations,

upper elongated hoods formed in the inclined sidewalls of the corrugations projecting outwardly from the inclined sidewall and over the holes to at least partially cover the holes to limit the straight vertical drop of grain through the holes, and

lower hoods projecting from lower edges of the air holes to provide strength to the plate.

4,562,679

HOLDER OF CONNECTING BARS FOR PROVIDING A POSITIVE CONNECTION OF TWO STRUCTURAL MEMBERS

Job Pattiselanno, Hinterkappelen, Switzerland, assignor to Losinger AG, Bern, Switzerland

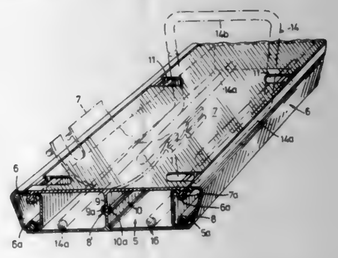
PCT No. PCT/CH81/00119, § 371 Date Aug. 19, 1982, § 102(e) Date Aug. 19, 1982, PCT Pub. No. WO82/02223, PCT Pub. Date Jul. 8, 1982

PCT Filed Nov. 3, 1981, Ser. No. 413,345

Claims priority, application European Pat. Off., Dec. 29, 1980, 80810414.5

Int. Cl.⁴ E04B *1/38*

U.S. Cl. 52—378 **1 Claim**



1. Holder of connecting bars for setting in concrete of two structural concrete members to provide a positive connection between themselves, having a basic part in which first sections of connecting bars, to be connected to the one structural concrete member are accommodated, and a cover part having a central line and longitudinal edges, said part covering the first sections of connecting bars and being detachably connected to the basic part, characterized in that the basic part has the shape of a trough open at both ends, and the cover part **7** is made of flexible material and is provided with lateral slots **11** directed from the longitudinal edges of the cover part toward the central line of the same, through which slots **11** pass second **14***b* sections of the connecting bars **14** intended to be bound into another structural member to be concreted, and

said basic part being formed by a bottom part **5**, whereby the bottom part **5** and the cover part **7** each are provided with a rib **9**, **10** running in the central line of the respective part, which ribs **9**, **10** are aligned in a vertical plane and connected to one another by means of a snap fastener (**8**') provided on the ribs to form a reinforcing partition dividing the holder in two equal hollow rooms.

4,562,680

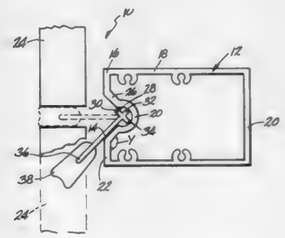
BUILDING BUTT GLAZING SYSTEM AND METHOD FOR BUTT GLAZING

Ronald D. Sukolics, 1637 Fairhills Dr., St. Louis, Mo. 63146

Filed Apr. 9, 1984, Ser. No. 598,264

Int. Cl.⁴ E04B *2/88*

U.S. Cl. 52—403 **13 Claims**



1. In a building butt glazing system having a plurality of closely spaced adjacent panels secured to structural members by an adhesive the improvement comprising a vertical mullion structure having a front wall portion, a pair of sidewalls and a back wall portion, said front wall portion having a first pair of opposed sections extending from said pair of sidewalls toward each other in a plane substantially parallel to the plane made by said adjacent panels, a second pair of angled sections extending from said first pair of opposed sections toward said back wall portion so as to form an obtuse angle between the first pair of opposed sections and the second pair of angled sections and a third radial portion between and connecting said second pair of angled sections, said radial portion defining a semi-circular slot in said front wall portion facing said adjacent panels.

4,562,681

WEB SECTION FOR A SPACE FRAME

Todd R. Smith, Whitmore Lake, Mich., assignor to GTE Products Corporation, Stamford, Conn.

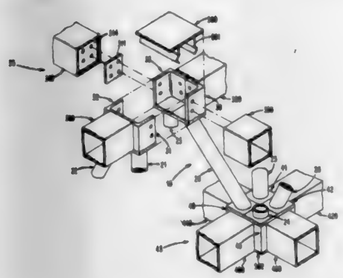
Filed Feb. 5, 1985, Ser. No. 698,507

Int. Cl.⁴ E04C *3/02*

U.S. Cl. 52—648 **4 Claims**

1. A web section for a space frame comprising a web member, a first node member, and a second node member, said first node member being one quarter of a first nodal section of said space frame, said space frame having a first planar level of chords and a second planar level of chords being parallel to said first planar level of chords; said first nodal section being an interconnection of four web sections and chords from said first planar level of chords of said space frame, said second node member of said web section being one quarter of a second nodal section of said space frame, said second nodal section being an interconnection of four web sections and chords from said second planar level of chords of said space frame; said web

member having a first and a second end, said first end of said web member being attached to said first node member and said second end of said web member being attached to said second



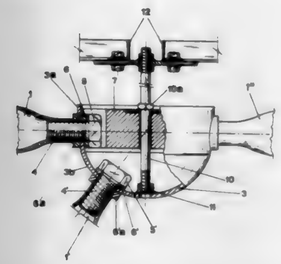
node member to form said web section; said web member of said web section being non-parallel and non-perpendicular to said chords of said space frame.

4,562,682

THREE-DIMENSIONAL RETICULATED STRUCTURE WITH RODS HAVING TAPERED ENDS

Giovanni Arvedi, Cremona; Giovanni Goslo, Rovato, and Renzo Piano, Genoa, all of Italy, assignors to Ingegneria Siderurgica S.r.l., Cremona, Italy

Filed Sep. 15, 1983, Ser. No. 532,530
Claims priority, application Italy, Sep. 16, 1982, 23301 A/82
Int. Cl.⁴ E04C 3/02; E04H 12/06
U.S. Cl. 52—648 7 Claims



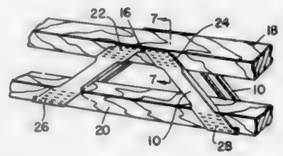
1. A space lattice structure comprising tubular metal rods, each rod being an integral single piece, junction knots in which at least one of said metal rods converge, said single-piece rods being tapered and their walls at both their ends being thickened and internally threaded, each of said knots comprising a metal cup open at one end and provided with non-threaded bores, a knot covering and strengthening element removably fixed in each cup in the zone of its greatest diameter so that said knot cannot be deformed, each end of each rod being fixed to a corresponding cup by means of a bolt screwed therein which is accessible from the inner side of the cup, and washers of non-parallel surfaces respectively in contact with inner and outer surfaces of the cup.

4,562,683

HINGED METAL WEBS FOR TRUSS STRUCTURES

Robert Gottlieb, Miami, Fla., assignor to Gang-Nail Systems, Inc., Miami, Fla.

Continuation of Ser. No. 381,220, May 24, 1982, Pat. No. 4,483,120. This application Mar. 30, 1984, Ser. No. 595,514
Int. Cl.⁴ E04B 3/02
U.S. Cl. 52—693 17 Claims



1. A hinged metal web member for interconnecting elongated wooden members which are arranged so as to extend parallel to each other with a spacing therebetween, thus forming a truss or joist assembly capable of bearing substantial loads, said hinged metal web member having a V-shaped formation in the operative position and being formed from a sheet metal plate, said hinged metal web member comprising: a pair of leg members; means for hingedly connecting said leg members at respective end portions thereof to form the apex of said V-shaped formation, each of said respective apex end portions including a connector plate; said hingedly connecting means including a pair of overlapping tab members which are interconnected so as to pivot about a common axis, one of said tab members being attached to each of said apex end portions, each tab member being formed along the inner edge of the apex end portion of a respective leg member; a connector plate located at the extremity of each of said legs opposite said apex; each connector plate having struck out therefrom a plurality of teeth, all of said teeth extending from the same side of said hinged metal web member, and stop means attached to said apex end portions for allowing said leg members to be maintained in position to form said V-shaped formation, each tab member being of short length relative to the length of the connector plate of the respective apex end portion and with the inner sides of each connector plate extending generally parallel to the respective leg member so that, when the legs are folded together, the inner edges of said apex end portions are adjacent each other along the connector plate portions thereof so as to provide a compact configuration in which the leg members are parallel, and including means located on at least one of the connector plates at the extremities of said legs opposite said apex for connecting said hinged metal web to an adjacent web member.

4,562,684

APPARATUS FOR APPLYING A TUBULAR MEMBER OVER A CONTAINER

Hans C. Dreher, Dallas, Pa., assignor to Culbro Corporation, New York, N.Y.

Filed Aug. 4, 1983, Ser. No. 520,245
Int. Cl.⁴ B67B 5/03; B65B 57/00, 53/02
U.S. Cl. 53—64 5 Claims

1. A apparatus for applying a tubular member over an article at an application station comprising:

means for supplying a continuous web of flattened tubular material;

means for selectively drawing a portion of said web so as to provide a slack reservior of tubular material;

means for cutting an individual tubular member from the terminal portion of the web;

a pair of opposed gripping members movable between said supply means and said applications station along an arcuate path, wach of said gripping members being movable towards and away from each other;

means for moving said gripping members from said supply means to said application station and back;

scanning means disposed adjacent the supply means for detecting when said gripping members are approaching said supply means;

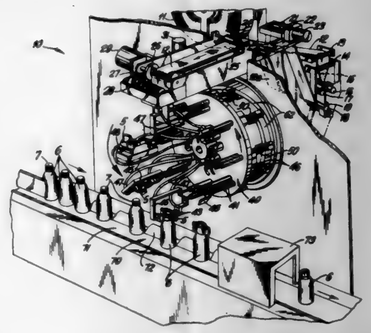
feed rollers for feeding a predetermined amount of the web from said reservior to said cutting means;

means for rotating said feed rollers a predetermined distance corresponding to the amount of the web to be cut into an individual tubular member;

control means responsive to said scanning means for actuating said rotating means upon detecting that the gripping members are approaching the supply means;

control means responsive to the rotation of said feed rollers said predetermined distance for actuating said cutting means;

means responsive to the dissipation of the web from the reservior for selectively operating said drawing means for a predetermined period of time so as to recreate a new reservoir of web material;



means for moving said gripping members towards each other as they are moved towards said supply means such that said gripping members mechanically grip a tubular member from said supply means;

means for moving said gripping members away from each other as they are being moved to the application station;

means for selectively applying a vacuum to said gripping members after they have mechanically gripped the tubular member and as said gripping members are moved away from each other such that said tubular member is opened when it is adjacent to the application station;

conveyor means for conveying the article to the application station at a speed greater than that at which the gripping members are moved to the application station such that at the application station the article meets and is threaded into the opened tubular member and pulls the tubular member fully open around the article; and

means for selectively disconnecting the vacuum to the gripping members when they are at the application station such that the tubular member is released therefrom and can rest around the article.

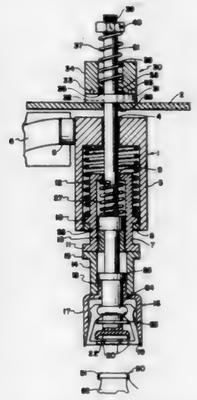
4,562,685

BOTTLE CAPPING APPARATUS

Yoshiaki Tomita, 1393, Johsuishinmachi, Kodaira-shi, Tokyo; Toshio Ohtsuka, 6-12, Fukazawa 8-chome, Setagaya-ku, Tokyo, and Yasunori Tanaka, 3-341 Nobadanchi, Noba-cho, Konan-ku, Yokohama-shi, Kanagawa-ken, all of Japan

Filed Feb. 2, 1984, Ser. No. 576,102
Int. Cl.⁴ B67B 3/14; B65B 7/28
U.S. Cl. 53—201 4 Claims

1. Apparatus for interchangeably mechanically capping both glass and semirigid containers comprising a vertically fixed support wall, an axially reciprocating cap applying head mounted on said support wall, said head having a centrally disposed cap seating means and circumferentially disposed cap deforming means surrounding said cap seating means, drive means for axially advancing said cap applying head relative to said support wall into capping position, a single, quick release



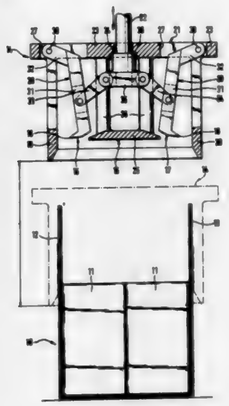
dual position stop means acting between said support wall and said cap applying head for controlling said axial advancement including a first unrestrained preset position for capping glass bottles and a second restrained preset position for capping semirigid containers.

4,562,686

APPARATUS FOR CLOSING FOLDED CARDBOARD BOXES

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed Aug. 24, 1983, Ser. No. 525,925
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233471
Int. Cl.⁴ B65B 7/16; B31B 1/25
U.S. Cl. 53—374 6 Claims



1. In a device for closing the closing flaps (12, 13; 37, 38) of a filled box (10) made of foldable material, a scoring device for scoring the inside surfaces of the closing flaps along folding

lines which coincide with the upper level of the box contents (11) comprising:

a vertically movable sensing ram (15) for sensing the upper level of the box contents;

an actuating rod (22) connected to said sensing ram for vertically moving said sensing ram;

a supporting plate (23);

scoring blades (16, 17; 39, 40) each with a scoring edge (18);

supporting arms (28, 29) pivotably attached to said supporting plate (23) about joints (30), each supporting arm being connected to a respective scoring blade, whereby each of said scoring blades is movable along an arc defined by the scoring blade's supporting arm as it pivots about a joint (30); and

toggle levers (33, 34; 41, 42), one end of each toggle lever being pivotably connected to said actuating rod (22), the other end of each toggle lever being pivotably connected to a respective supporting arm (28, 29),

said actuating rod (22) being positioned movably within an opening (24) of said supporting plate (23) such that the pivot points of the toggle levers on said actuating rod are all located below the joints (30) about which the supporting arms (28, 29) pivot relative to the supporting plate (23).

4,562,687

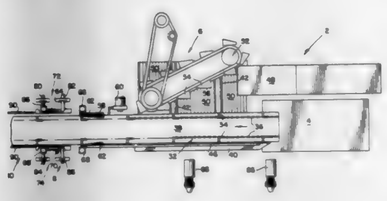
TRAY CARTON END PANEL FOLDING AND SEALING ASSEMBLY

James B. P. Green, Jr., West Monroe, La., assignor to Southern Tool Company, West Monroe, La.

Filed Jun. 7, 1983, Ser. No. 501,951

Int. Cl.⁴ B65B *49/12*

U.S. Cl. 53—383 **4 Claims**



1. In a machine for packaging articles in a tray carton having a central bottom panel, side panels hingedly joined to the bottom panel, end panels hingedly joined to the bottom panel and end flaps hingedly joined to the ends of the side panels, said machine including a tray carton conveyor for conveying the tray cartons downstream through the machine, means on an article loading side of the tray carton conveyor for folding the end flaps of the tray cartons on the loading side of the conveyor inward to extend toward each other, means disposed on either side of the tray carton conveyor for applying glue to the end panels of the tray cartons and means for folding the end panels against the end flaps and pressing the end panels and end flaps together to seal the tray cartons comprising a pair of end panel folding plates movably mounted directly opposite each other on either side of and adjacent the tray carton conveyor each said plate defining a planar lower surface and a contiguous upper surface flared outwardly and each said plate having a longitudinal dimension substantially equal to the dimension of one of the length and the width of the tray carton and means for moving said folding plates in unison upward and in a downstream direction to fold the end panels against the end flaps.

4,562,688

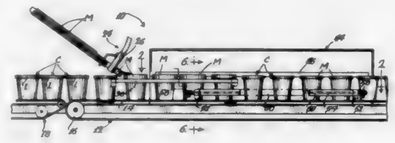
APPARATUS AND METHOD FOR APPLYING HEAT-SHRINKABLE MEMBERS TO CONTAINERS

Martin Mueller, Wonder Lake, Ill., assignor to Osgood Industries, Inc., Northbrook, Ill.

Filed Jun. 20, 1983, Ser. No. 506,018

Int. Cl.⁴ B65B *53/02*

U.S. Cl. 53—399 **27 Claims**



1. A method of applying heat-shrinkable members to containers, comprising the steps of:

providing feed magazine means for holding a quantity of said members;

moving said containers on conveyor means positioned in association with said feed magazine means;

transferring each said member from said magazine means into respective association with one of said containers with transfer means which releasably retains each said member for engagement by its respective container by applying suction to each said member for releasably retaining each said member at an acute angle with respect to the direction of movement of said containers on said conveyor means, whereby said containers respectively move said members from said transfer means as said containers are moved with respect to said transfer means; and

heating said members for heat-shrinking said members into conformance with said containers.

4,562,689

METHOD OF AND APPARATUS FOR SHRINKING AN ENVELOPE AROUND A STACK OF GOODS

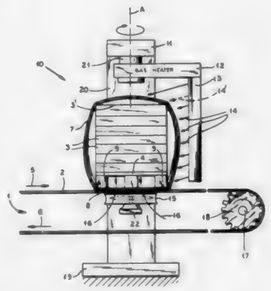
Reiner W. Hannen, Goch, Fed. Rep. of Germany, assignor to MSK -Verpackungs-Systeme Gesellschaft Mit Beschrankter Haftung, Kleve, Fed. Rep. of Germany

Filed Dec. 28, 1983, Ser. No. 566,330

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1982, 8236854[U]

Int. Cl.⁴ B65B *31/00, 11/58, 53/06*

U.S. Cl. 53—434 **8 Claims**



1. A method of packaging, in an outer covering of thermally shrinkable plastic material, a stack of goods at least one of which is enclosed in an inner covering material capable of being bonded to said plastic material of said outer covering, comprising the steps of:

(a) placing said stack of goods on an apertured supporting surface;

(b) placing a hood of said thermally shrinkable plastic material, which hood is closed at one of its ends and open at the other of its ends, open end down over and around said stack of goods, and turning the edge region of said hood which bounds its said open end peripherally in under said stack of goods so as to clamp said edge region between said stack of goods and said supporting surface;

(c) introducing air at substantially ambient temperature into said hood from below through said supporting surface to inflate said hood and create significant clearances between the inner surface of said hood and said inner covering material of said goods in said stack;

(d) heating said hood from the outside to a temperature sufficient to generate shrinkage stresses in said thermally shrinkable plastic material and thereby to cause said hood to shrink against the air inflation pressure therein;

(e) during the heating step controlling the intensity of the heat applied to said hood so as to be less in any zone where contact exists between the inner surface of the inflated hood and said inner covering material of said goods in said stack than in any zone where no such contact exists, thereby to minimize the risk of said hood becoming bonded to said inner covering material of said goods in any such contact zone; and

(f) releasing the inflation pressure from the interior of said hood after an initial degree of shrinking of said hood to permit completion of the shrinking of said hood into closely confining relation to said stack of goods.

4,562,690

METHOD OF HEAT SEALING AND FORMING A VIDEO TAPE CASSETTE PACKAGE

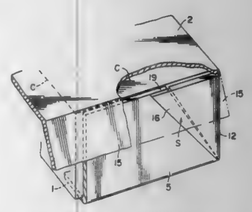
Yoshihiro Sato, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 455,944, Dec. 15, 1982, Pat. No. 4,520,927. This application Mar. 15, 1985, Ser. No. 712,078

Claims priority, application Japan, Jan. 30, 1982, 57-10821; Apr. 7, 1982, 57-49369; May 10, 1982, 57-151220

Int. Cl.⁴ B65B *43/10*

U.S. Cl. 53—456 **4 Claims**



1. A method of fabricating a package for a tape cassette susceptible to damage upon exposure to heat employed during fabrication of the package, said method comprising the steps of:

forming a heat-sealable package blank comprising:

an elongated backstrip;

first and second panels of approximately the same shape and size formed on opposite sides of the backstrip and foldable into a right-angular relationship with the backstrip;

a pair of foldable back flaps extending from the opposite longitudinal ends of the backstrip, each back flap having substantially the shape of a right-angled triangle with one of its two right-angular sides joined to the backstrip, and having a sloping edge;

a pair of foldable side flaps extending from opposite sides of the first panel and each having a sloping edge lying adjacent the sloping edge of one of the back flaps, the sloping edges of the first pair of side flaps being inclined away from the sloping edges of the back flaps as they extend away from the first panel, the sloping edges of the back flaps and the first pair of side flaps being adapted to form at least partly overlapping seams when the package blank is folded into a package; and

a second pair of foldable side flaps extending from opposite sides of the second panel for overlying the back flaps and the first pair of side panels when the package blank is folded into a package;

locating said sloping edges of said first pair of side flaps adjacent said sloping edges of said back flaps;

placing a tape cassette having four side surfaces, a top and a bottom on said first panel;

folding said first pair of side flaps into a right angle relation with said first panel and placing said first pair of side flaps flat against a first side surface and a second side surface of said tape cassette respectively;

folding said second panel, said back flaps and second pair of side flaps in at least three steps comprising:

folding said package blank wherein said first panel overlies one of the top and bottom of said tape cassette and said second panel overlies the other of said top and bottom of said tape casette;

folding said back flaps of said blank first against said first and second side surfaces of said tape cassette thereby forming at least partly overlapping seams with the sloping edges of said first pair of the side flaps and the sloping edges of said back flaps, and

folding said second pair of side flaps relative to said first pair of side flaps and forming wedge-shaped spaces between said second pair of side flaps and said first pair of side flaps;

directing heated air into said wedge-shaped spaces to melt the opposing surfaces of said first and second pairs of side flaps;

preventing intrusion of said heated air against said tape cassette with said overlapping seams; and

pressing said second pair of side flaps against said first pair of side flaps thereby forming a heat-sealed seam.

4,562,691

VERTICAL PACKAGING MACHINE FOR BAGS WITH ERECTABLE SELF-SUPPORTING TENSILE STRUCTURE WITH FLAT BOTTOM

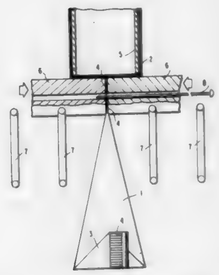
Gino Rapparini, viale Roma 17, I 40139 Bologna, Italy

Filed Mar. 18, 1983, Ser. No. 476,942

Claims priority, application Italy, Mar. 18, 1982, 3373 A/82

Int. Cl.⁴ B65B *31/04*

U.S. Cl. 53—552 **2 Claims**



1. A vertical packaging machine comprising a frame, a vertically disposed hollow rectangular mandrel adapted to have a tubular web pass downwardly thereover, a pair of opposed crimping jaws pivotally mounted on said frame below said mandrel for lateral movement transversely of said mandrel for crimping the tubular web across the entire width thereof against the bottom of said mandrel to form a vertically disposed sealed flap, cutting means mounted for lateral reciprocation in at least one of said jaws for severing the formed flap into upper and lower sealed portions, laterally moveable shovel

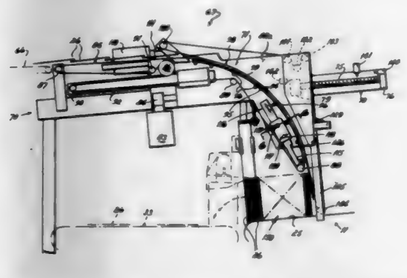
means on said frame moveable across the bottom of said mandrel for folding said upper sealed flap portion into a horizontal position and folding the laterally extending portions of the flap upwardly against the sides of the tubular web on said mandrel and a pair of opposed pressure heads on said frame laterally moveable against said folded up portions to secure said folded up portions to the sides of said tubular web.

4,562,692

ACCUMULATING APPARATUS BETWEEN A CARTONER AND A SIDE SEAM GLUER

Eric W. Scarpa, Cincinnati, Ohio, and David Landsiedel, Lawrenceburg, Ind., assignors to R. A. Jones & Co. Inc., Covington, Ky.

Filed Aug. 31, 1983, Ser. No. 527,961
Int. Cl.⁴ B65B *43/14, 43/34;* B65H *31/06;* G65G *60/00*
U.S. Cl. 53—566 **5 Claims**



1. In combination with a cartoner having a carton feeder and a side seam gluer having a discharge end above the cartoner and downstream of the carton feeder:

means normally supplying cartons from said side seam gluer faster than said cartoner can erect and fill them,

apparatus for conveying flat folded cartons from said gluer to said carton feeder and providing a controlled accumulation of cartons at the feeder which may vary up to about twenty-four inches in a horizontal dimension comprising,

a frame,

an overhead conveyor mounted on said frame for conveying cartons from said side seam gluer toward said carton feeder,

a downwardly-directed discharge chute at the discharge end of said conveyor,

a generally horizontal magazine below said discharge chute and adjacent said feeder, said magazine including an endless conveyor for accumulating and carrying generally vertically-oriented cartons to said feeder,

means for moving said chute horizontally away from said feeder as the number of cartons in said magazine increases, and toward said feeder as the number of cartons in said magazine diminishes, whereby said side seam gluer can operate continuously while said chute is moving away from said feeder and can shut down completely while said chute is moving toward said feeder,

said chute and moving means comprising:

a horizontally-movable support mounted on said frame,

an outer endless belt mounted on said support and having an arcuate run extending from said overhead conveyor to said horizontal magazine,

an inner endless belt having an arcuate run mounted on said support and extending adjacent to and substantially parallel to the arcuate run of said outer belt,

said inner belt having a rearward extension passing over a roll mounted on said frame adjacent said overhead conveyor for incoming cartons, over a forward roll mounted on said frame and over a rearward roll mounted on said support, said rearward extension permitting said support to move back and forth while maintaining said inner belt adjacent the conveyor for incoming cartons,

and means connected to one of said rolls for driving said inner belt.

5. In combination with a cartoner having a carton feeder and a side seam gluer having a discharge end above the cartoner and downstream of the carton feeder:

means normally supplying cartons from said side seam gluer faster than said cartoner can erect and fill them,

apparatus for conveying flat folded cartons from said gluer to said carton feeder and providing a controlled accumulation of cartons at the feeder which may vary up to about twenty-four inches in a horizontal dimension comprising,

a frame,

an overhead conveyor mounted on said frame for conveying cartons from said side seam gluer toward said carton feeder,

a downwardly-directed discharge chute at the discharge end of said conveyor,

a generally horizontal magazine below said discharge chute and adjacent said feeder, said magazine including an endless conveyor for accumulating and carrying generally vertically-oriented cartons to said feeder,

means for moving said chute horizontally away from said feeder as the number of cartons in said magazine increases, and toward said feeder as the number of cartons in said magazine diminishes, whereby said side seam gluer can operate continuously while said chute is moving away from said feeder and can shut down completely while said chute is moving toward said feeder,

a pair of horizontally-spaced microswitches operatively connected to said side seam gluer to start it and stop it,

said switches being mounted on said frame in the path of and engageable by said discharge chute,

one of said switches near to said discharge chute is operative when engaged to start said side seam gluer,

the other of said switches remote from said chute is operative to stop said side seam gluer,

a third microswitch inward of said near switch and spaced therefrom a distance to provide a minimum desired accumulation,

said third switch being operatively-connected to said cartoner and engaged by said chute to shut said cartoner down when the supply of cartons in said magazine is substantially depleted.

4,562,693

REAPING, BINDING AND SHOCKING MACHINE FOR SESAME PLANTS

Gloria E. Felix, 16783 Beach Blvd., Huntington Beach, Calif. 92647

Filed Aug. 22, 1983, Ser. No. 525,554
Int. Cl.⁴ A01D *45/00*
U.S. Cl. 56—131 **7 Claims**

1. A sesame plant row crop reaping, binding and shocking machine, comprising:

a pair of discs mounted to rotate about respective axes that are at an angle to the ground, said discs coacting to sever the stalk of a sesame plant at its base, leaving a stubble behind;

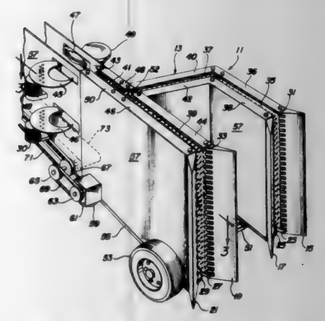
a first stalkway with an opening at its forward end, said stalkway being about two-thirds the height of the sesame plants being harvested;

a pair of endless conveyor belts substantially the width of the stalkway vertically disposed within said stalkway, each conveyor belt including a plurality of rubber fingers mounted thereon so as to reach into the stalkway in an interlocking manner, said pair of conveyor belts interacting to move the cut stalks of the sesame plant rearwardly in an upward position;

a first tying means for gathering and tying a plurality of individual sesame plants into a bundle;

a second tying means for gathering and tying the bundles of sesame plants into stacks; and

ramp means for moving the upright stacks of sesame plants into engagement with the stubble of the cut sesame plants, thereby holding the stacks in an upright position for natural drying wherein said ramp means has a plurality of parallel slots therein extending from the bottom of the ramp, thereby allowing the stubble of the cut sesame plants to extend upright therethrough and engage the stalks of sesame plants as they slide down the ramp.

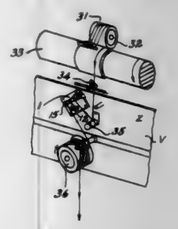


4,562,694

DEVICE FOR ATTACHMENT TO DRAWTWISTER MACHINES TO PRODUCE MULTIFILAMENT YARNS WITH S OR Z TWIST EFFECT

Cesar P. Sumar, El Pinar 172, Santiago, Chile

Filed Jul. 7, 1983, Ser. No. 511,703
Int. Cl.⁴ D02G *1/08, 1/02;* D01H *7/92*
U.S. Cl. 57—288 **7 Claims**



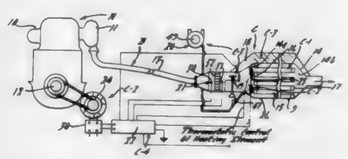
1. A device to be attached to drawtwister machines for drawtwisting synthetic textile multifilament yarns to produce yarns with S or Z twist, said device comprising a mounting plate, a cylindrical roll which can rotate freely around a shaft secured to said plate and a roll in the form of a substantially truncated cone whose lateral walls are defined by a conical-concave zone and a cylindrical zone, which truncated roller can rotate freely around a shaft secured to said plate and positioned at a substantially right angle to the shaft of said cylindrical roll, said truncated roller being spaced a predetermined distance from said cylindrical roll.

4,562,695

PARTICULATE TRAP SYSTEM FOR ENGINE EXHAUST USING ELECTRICALLY POWERED REGENERATION

Vemulapalli Durga N. Rao, Bloomfield Township, Hartford County; Wallace R. Wade, Farmington Hills, and Michael G. Aimone, Westland, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/02044, § 371 Date Dec. 27, 1983, § 102(e) Date Dec. 27, 1983, PCT Pub. No. WO85/02882, PCT Pub. Date Jul. 4, 1985
PCT Filed Dec. 27, 1983, Ser. No. 598,552
Int. Cl.⁴ F01N *3/02*
U.S. Cl. 60—286 **17 Claims**



1. An apparatus for removing oxidizable particulates from a stream of exhaust gases from an automotive engine having a driven output member, comprising:

(a) a particulate filter trap disposed in said stream;

(b) electrically heated elements proximate to said filter to promote oxidation of particulates collected in said filter;

(c) alternator means for converting the motion of said engine driven output member to a supply of electrical energy connectable to said elements and effective to heat said elements to at least the incineration temperature of said particulates while said engine is at least at an idle condition;

(d) electrically actuated means for diverting said stream of exhaust gases away from at least a portion of said filter trap and for delayedly admitting a flow of a fluid medium effective to transfer heat between said elements and collected particulates and to supply oxygen for supporting oxidation of said particulates; and

(e) control means for (i) selectively connecting said supply of energy to said elements while energizing said electrically actuated means to divert exhaust gas from at least a portion of said filter trap, and (ii) further actuating said actuating means to admit said flow of fluid medium to said filter trap portion when said elements have been substantially heated to said incineration temperature.

4,562,696

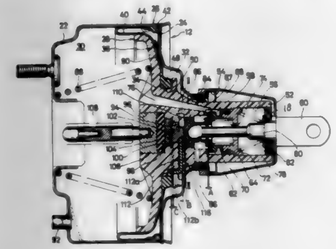
FLUID PRESSURE SERVOMOTOR

Yohichi Furuta, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 3, 1980, Ser. No. 203,154
Claims priority, application Japan, Nov. 9, 1979, 54-145895
Int. Cl.⁴ F15B *9/10*
U.S. Cl. 60—554 **25 Claims**

1. In a braking force producing device, a fluid pressure operated servomotor including a housing, a pressure differential responsive movable wall member operable in said housing and having a retracted position, a follow-up control valve mechanism carried by said wall member and having one position to establish equivalent pressures on opposite sides of said wall member to render said wall member inactive and a second position to establish differential pressures on opposite sides of said wall member to render said wall member active to effect a force applying stroke thereby, and a spring member normally urging said wall member toward said retracted position; said follow-up control valve mechanism including a vacuum seat on said wall member, a movable member having a sliding fit in said wall member and operatively connected to a manually operable brake pedal, an air seat on said movable member for

movement with respect to said vacuum seat, a poppet valve member mounted in said wall member and normally spring-urged toward alternate engagement with said vacuum seat and said air seat, and a key member loosely fit on both of said movable member and said wall member and abuttingly engage-



able with said housing whereby said vacuum seat and said air seat are relatively positioned when said key member is in abutting engagement against said housing such that said one position of said follow-up control valve mechanism with said vacuum seat disengaged from said poppet valve member at a minimum distance is achieved.

4,562,697

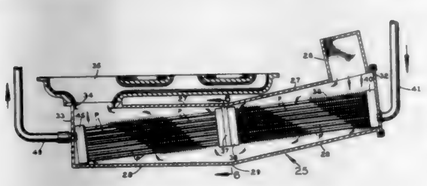
INTERCOOLER FOR TURBOCHARGED INTERNAL COMBUSTION ENGINE

William Lawson, Fort Lauderdale, Fla., assignor to Merlin Marine Engine Corp., Ft. Lauderdale, Fla.

Filed Dec. 10, 1984, Ser. No. 679,918

Int. Cl.⁴ F02B *29/04*

U.S. Cl. 60—599 **14 Claims**



1. An intercooler for an internal combustion engine having an intake manifold and a turbocharger which delivers pressurized air, said intercooler comprising:

a heat exchanger core having:

(a) a plurality of elongated, substantially straight pipes for conducting a coolant,

(b) means for passing the coolant through the pipes of the core, and

(c) a plurality of heat conducting fins on said pipes extending transverse to the pipes closely spaced apart along the pipes to define passages for air across the pipes;

a housing enclosing said heat exchanger core and having:

(a) a first side wall on one side of the core extending next to the core at an intermediate point along the length of the core and diverging laterally from the core in each direction along the core from said intermediate point,

(b) a second side wall on the opposite side of the core from said first side wall, said second side wall extending next to said core at each end and diverging laterally from the core from each end to said intermediate point and

(c) additional walls closely confining the core from said first side wall to said second side wall to form

a first space between said first side wall and the core from one end of the core to said intermediate point along the core,

second and third, adjoining spaces between the core and said second side wall from one end of the core to its opposite end, and

a fourth space between the core and said first side wall from said intermediate point to said opposite end of the core;

means for introducing pressurized air from the turbocharger into said first space;

and means for passing air from said fourth space into the engine intake manifold after the air flows from said first space across the core between the fins into said second space, and from said second space into said third space, and from said third space back across the core between the fins into said fourth space.

4,562,698

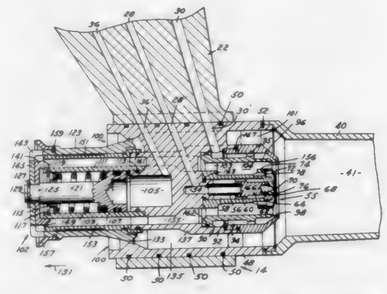
VARIABLE AREA MEANS FOR AIR SYSTEMS OF AIR BLAST TYPE FUEL NOZZLE ASSEMBLIES

Robert M. Halvorsen, and William F. Helmrich, both of Birmingham, Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Continuation of Ser. No. 212,281, Dec. 2, 1980, abandoned. This application Oct. 17, 1983, Ser. No. 542,336

Int. Cl.⁴ F02C *7/22;* **F02M** *23/02*

U.S. Cl. 60—740 **16 Claims**



1. An air blast type fuel nozzle assembly with a variable area air system means useful with a gas turbine engine having engine case means; comprising:

a. support means connectable to the engine case means and having fluid pressure conduit means;

b. nozzle means fixedly connected to said support means and having the air supply means internal thereof, said nozzle means including:

1. an orifice adjacent a downstream discharge end thereof to discharge fuel, and

2. a pressure responsive variable area air metering means on an upstream end of the nozzle means including an air inlet means on said upstream end in air flow communication with said internal air supply means and sleeve means fixedly disposed on the nozzle means extending upstream thereof for forming a piston-receiving means and a valve means disposed in said air inlet means for controlling air flow entering the nozzle means at said upstream end and flowing through said internal air supply means, said air metering means including piston means slidably received within the sleeve means disposed on the nozzle means with said piston means having a downstream face portion inside the nozzle means for operative connection with a source of actuating fluid pressure through the conduit means of said support means when said assembly is connected to the engine case means and having piston rod means extending upstream of the face portion operatively connected to said valve means for actuating said valve means relative to said air inlet means.

4,562,699

MIXING CHAMBERS FOR CONTINUOUS FLOW ENGINES

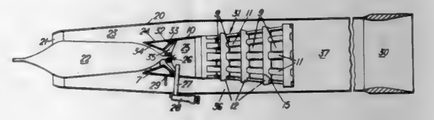
Rodney A. Rowe, and David S. Norbury, both of Bristol, England, assignors to Rolls-Royce Limited, Bristol, England

Filed Oct. 22, 1962, Ser. No. 232,673

Claims priority, application United Kingdom, Oct. 23, 1961, 37906/61

Int. Cl.⁴ F23R *3/02*

U.S. Cl. 60—759 **5 Claims**



1. A combustion system comprising a tubular structure having an upstream end and defining within it a longitudinal passage, and a tubular wall surrounding the structure and defining with the structure a further longitudinal passage, of annular cross section, means for introducing a minor flow of combustible fluid mixture into a first one of the passages at the upstream end of the structure and for igniting that minor flow, and means for introducing a major flow of combustible fluid mixture into a second one of the passages at the upstream end of the structure, the structure consisting of a plurality of longitudinally extending, circumferentially spaced staves and longitudinally spaced coaxial hoops attached to the staves and defining with the staves a number of openings for the passage of fluid, the staves being each of channel section presenting a longitudinally continuous trough towards the first passage, and a substantially flat face towards the second passage, and the hoops being each substantially frusto-conical, with a first edge which is nearer the upstream end and radially offset towards the second passage relatively to the flat faces of the staves, and a second edge which is further from the upstream end and from the second passage, whereby the hoops deflect successive boundary layer portions of the major flow of combustible fluid mixture from the second passage through the openings as jets which penetrate into the first passage, and the troughs of the staves define sheltered zones for longitudinal propagation of flame from the minor flow of combustible fluid to all the jets.

4,562,700

REFRIGERATION SYSTEM

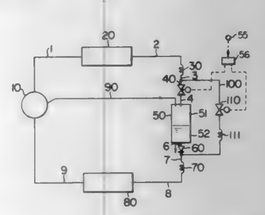
Akira Atsumi, Shimizu; Takao Senshu, Ibaraki; Kensaku Oguni, Shimizu; Hirokiyo Terada, Shizuoka, and Kazuo Yoshioka, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,372

Claims priority, application Japan, Jun. 17, 1983, 58-107654

Int. Cl.⁴ F25B *41/00*

U.S. Cl. 62—174 **18 Claims**



1. A refrigeration system having a main refrigerant circuit including a compressor, a condenser, a first pressure reducer, a gas-liquid separator including an inlet and outlet pipe, a second pressure reducer and an evaporator connected in series to form a closed loop, and a gas injection passage providing a communication between a gaseous phase part of said gas-liquid separator and a compression chamber of said compressor, a stop valve means disposed in the inlet and outlet pipes of said gas-liquid separator for opening and closing the inlet and outlet pipes when injection of a refrigerant to said compressor is conducted and when the injection is not conducted, respectively, and a bypass passage directly connecting an outlet pipe of said condenser to an inlet pipe of said evaporator to bypass said gas-liquid separator, said stop valve means being adapted to be controlled such that, when the gas injection to said compressor through gas injection passages is not conducted, the refrigerant flows through said bypass passage bypassing said gas-liquid separator, while said gas-liquid separator functions as a receiver for adjusting the amount of refrigerant circulated in said main refrigerant circuit.

4,562,701

COOLING APPARATUS

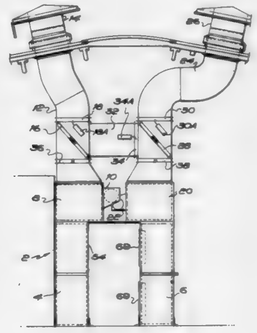
George Newsome, Halifax, and Eric Newton, Dewsbury, both of England, assignors to Newsome Air Conditioning Limited, Elland, England

Filed Jul. 6, 1984, Ser. No. 628,696

Claims priority, application United Kingdom, Jul. 8, 1983, 8318604

Int. Cl.⁴ F25D *17/04*

U.S. Cl. 62—187 **7 Claims**



1. Apparatus for cooling bakery products comprising:

an air delivery chamber;

an air extraction chamber spaced from and opposing said air delivery chamber to define a cooling zone therebetween through which said bakery products pass;

said air delivery chamber and said air extraction chamber being in fluid communication with said cooling zone;

ducting means for connecting together said air delivery chamber and said air extraction chamber to provide recirculation of air from said air extraction chamber to said air delivery chamber, for supplying fresh air to said air delivery chamber and for extracting air from said air extracting chamber;

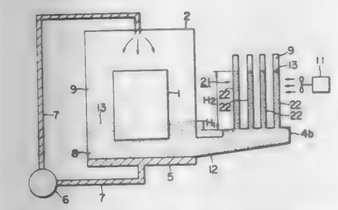
first fan means associated with said air delivery chamber for supplying at least one of fresh air and recirculated air to said air delivery chamber;

second fan means associated with said air extraction chamber for removing air from said cooling zone and through said air extraction chamber;

a plurality of mutually co-operable damper means in said ducting means for selectively controlling the ratio of recirculated air to fresh air supplied by said first fan means to said cooling zone to prevent excessive drying of said bakery products; and

perforated face plate means in said air delivery chamber for delivering air that has been supplied to said air delivery chamber, to said cooling zone.

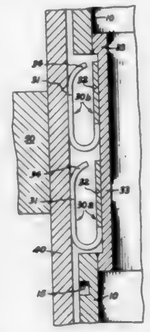
4,562,702
EVAPORATION COOLED GAS INSULATED ELECTRICAL APPARATUS
Michitada Endo, Suita, and Minoru Kimura, Takarazuka, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 6, 1984, Ser. No. 668,872
Claims priority, application Japan, Nov. 10, 1983, 58-209802; Nov. 10, 1983, 58-209803; Nov. 10, 1983, 58-209804
Int. Cl.⁴ F25D *17/02*
U.S. Cl. 62—376 11 Claims



1. An evaporation cooled gas insulated electrical apparatus comprising:
an electric device generating heat when in operation;
a tank containing therein said electric device;
an electrically insulating noncondensable gas disposed within said tank;
an electrically insulating condensable liquid refrigerant disposed within said tank and having an interface with said noncondensable gas, said condensable liquid refrigerant being capable of evaporating into vapor refrigerant at the operating temperature of said electric device, and the specific weight of said vapor refrigerant being greater than the specific weight of said noncondensable gas; and
a condenser connected to said tank for dissipating heat from said condensable refrigerant to condense said refrigerant into liquid comprising a first header connected to a lower portion of said tank, a plurality of upstanding cooling ducts extending from said header, and means including said first header connecting said cooling ducts in fluid communication with said tank and providing, under predetermined operating temperatures, an interface level between the vapor refrigerant and the noncondensable gas in the cooling ducts, which is higher than the interface level in the tank, to improve the cooling efficiency of the cooling ducts.

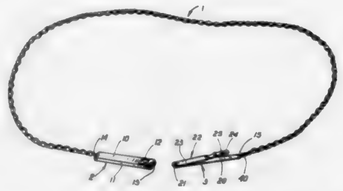
4,562,703
PLUG TUBE FOR NMR MAGNET CRYOSTAT
Russell S. Miller, Ballston Spa, N.Y., and Thomas E. Price, Ellendale, Del., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 29, 1984, Ser. No. 676,368
Int. Cl.⁴ F25B *19/00*
U.S. Cl. 62—514 R 12 Claims

1. A plug tube for a cryostat, especially one for use with horizontal cryostat penetrations, said plug tube comprising:
at least two thin walled cylindrical conduit sections, said conduit sections being disposed coaxially;
at least one joining ring having an external surface in contact with the interior surfaces of the conduit sections, each said ring being sealably affixed between adjacent conduit sections so as to form a single cylindrical structure having at least one circumferential groove, said groove being substantially defined by the edges of said conduits and the outer surface of said joining ring; and
a plurality of spaced apart, substantially U-shaped springs disposed within at least one of said circumferential



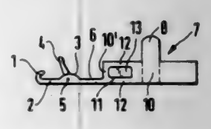
grooves so that a long side of substantially most of said springs is in thermal contact with said ring.

4,562,704
JEWELRY CLASP
Herman Benedek, and Mike Fischbein, both of Brooklyn, N.Y., assignors to Elegant Merchandising Inc., New York, N.Y.
Filed May 16, 1984, Ser. No. 610,967
Int. Cl.⁴ A44C *25/00*
U.S. Cl. 63—2 5 Claims



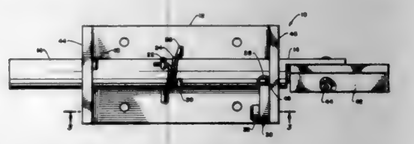
1. In a jewelry item comprising a chain, a clasp for said chain, and a designer element formed to fit onto the chain and having a central opening, the improvement which comprises:
a. a female clasp element attached to one end of said chain and being sized so as to prevent removal of said designer elements from said chain; and
b. a male clasp element formed of a material having spring-like properties, said male element including resilient expandable and compressible means for cooperation with said female element to clasp and unclasp said clasp elements and for preventing removal of said designer element from said chain when said male element is in an expandd unclasped condition, but permitting placement of said designer elements onto said chain, or removal of said designer elements from said chain, when said male member is unclasped and compressed;
said male elements and said female elements being adapted to be united so as to close the ends of said chain.

4,562,705
COMPOSITE PUNCHED KNITTING ELEMENT, FOR EXAMPLE KNITTING MACHINE KNITTING NEEDLE
Hardo Berentzen, Albstadt, Fed. Rep. of Germany, assignor to Theodor Groz & Söhne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft, Albstadt-Ebingen, Fed. Rep. of Germany
Filed Apr. 24, 1984, Ser. No. 603,886
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314809
Int. Cl.⁴ D04B *35/04*
U.S. Cl. 66—121 27 Claims



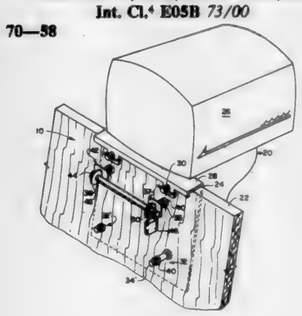
1. Composite punched knitting element for use in a knitting machine having
an elongated shaft (7) having an upper edge and a lower, or back-of-needle edge;
a head (1, 2) located at one end of the knitting element;
and at least one butt (8, 9) extending from the shaft,
said shaft defining at least two spaced solid guide portions (10) extending from an upper edge of the shaft to the lower edge of the shaft, at least one of said guide portions being located in alignment with the butt;
and wherein the shaft comprises the combination of
at least one connecting bridge portion (12) connecting two neighboring guide portions (10), said bridge portion being of up to 1.1 mm height and defining an opening which is bounded by the at least one connecting bridge portion and facing edges of the spaced neighboring solid guide portions within a plan outline of the shaft (7)
with
vibration-damping or oscillation-damping material (13) filling said opening and securely connected to the edges of the at least one bridge portion (12) and the spaced solid guide portions (10, 10', 10'', 10*a*) facing said opening.

4,562,706
MECHANICAL RELOCKER FOR LOCKING BOLTS
Teddy L. Pickett, Ventura, and Henry L. Self, Oxnard, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 6, 1984, Ser. No. 577,100
Int. Cl.⁴ E05B *63/00*
U.S. Cl. 70—1.5 8 Claims



1. In a safe or like security closure:
a. An elongated bolt mounted for reciprocation between a forward locking position and a reward unlocking position;
b. bolt-operating means including actuating linkage for said bolt;
c. relocking means for said bolt responsive to the severance of said actuating linkage, said relocking means comprising:
(1) means biasing said bolt to rotate from a first position to a second position when said actuating linkage is severed; and,
(2) said bolt having means for preventing the moving of said bolt from the locking position to said unlocking position when rotated to said second position.

4,562,707
OUTBOARD MOTOR ASSEMBLY LOCKING SYSTEM
Charles H. Graham, III, RD #2, Box 325 Pleasant View Dr., Manheim, Pa. 17545
Filed Jul. 15, 1982, Ser. No. 398,680
Int. Cl.⁴ E05B *73/00*
U.S. Cl. 70—58 1 Claim



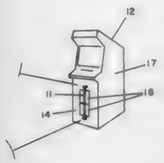
1. In a system for locking an outboard motor (26), held in assembly on a boat transom, by bolts (34) having threads, the bolts passing as a spaced pair (32, 32') through a mounting plate (24) for the outboard motor (26) and through the transom (22) and held by nuts (40) at the forward face of the transom, the bolts having round heads as means for preventing purchase on the heads for turning the bolts and having respective threaded portions protruding from the nuts (40), the improvement comprising: a perforate threaded means (42) for engaging each bolt threaded protruding portion (34') and jamming against the respective nut (40) on the bolts (34), a headed stud means (44) for extending between and sliding through the perforation (46) of each perforate threaded means (42) and preventing rotation thereof, locking means (48) for preventing unauthorized withdrawal of the headed stud means from said perforate threaded means, each said bolt (34) having a noncircular shaped neck means for engaging said mounting plate and preventing turning of said bolt, the perforate threaded means (42) including a threaded tubular portion (35) with a shielding means (37) fixed flat across an end thereof with said perforation being in a substantially planar part (39) fixed in on-edge relation centrally to said shielding means (37), said locking means comprising a padlock with a hasp, and said hasp passing through at a hole in said headed stud means.

4,562,708
VIDEO GAME SECURITY GUARD APPARATUS
Lawrence J. Gros, P.O. Box 186, Labadieville, La. 70372
Continuation of Ser. No. 431,344, Sep. 30, 1982, abandoned. This application Dec. 24, 1984, Ser. No. 686,099
Int. Cl.⁴ E05B *65/00*
U.S. Cl. 70—94 7 Claims

1. A security locking device for a coin-operated video game machine comprising:
a. a coin-operated video game provided in a housing having:
i. a front panel;
ii. at least two side panels and a service panel;
iii. a coin box interior of said video game machine housing; and
iv. an access means to said coin box provided in said front panel;
b. means for preventing access to said coin box of said video game machine housing through said access means, said means comprising:

i. a first elongated locking bar having a slot at one end thereof and the other end having a curved lip portion;
ii. means mounted on the upper portion of said front panel for receiving said curved lip portion of said first bar;
iii. means adapted to receive said slotted end of said first bar and mounted on the lower portion of said front panel; and
iv. a lock for removably fastening said first bar to said front panel said lock engaging said means adapted to receive said slotted end of said first bar; and

c. means for preventing access to the interior of said housing through said service panel of said video game machine housing, said means comprising:



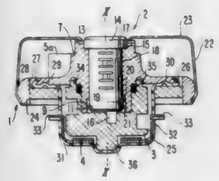
i. a second elongated bar having a slot at one end thereof and the other end having a curved lip portion;
ii. means for receiving said curved lip portion of said second bar, said means being mounted to the first of said side panels of said video game machine housing, said first side panel abutting said service panel;
iii. means for abutting said slotted end portion of said second elongated bar, said means being mounted to the second of said side panels opposite said first side panel and abutting said service panel; and
iv. a lock for removably fastening said second bar to said housing said lock engaging said means for abutting said slotted end of said second bar and said curved lip portion of said second elongated bar.

4,562,709

CAP FOR A CONTAINER AND IN PARTICULAR FOR A FUEL TANK FOR AN AUTOMOBILE VEHICLE

Jean C. Canadas, and Michel Steiner, both of Remiremont, France, assignors to Compagnie Industrielle de Mecanismes en abrege C.I.M., France

Continuation of Ser. No. 337,544, Jan. 6, 1982, abandoned. This application Jul. 27, 1984, Ser. No. 635,325
Int. Cl.⁴ B65D *55/14*
U.S. Cl. 70—169 **6 Claims**



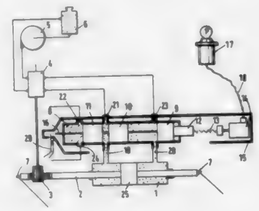
1. A filler cap for a container comprising means defining an opening, said container being in particular, a fuel tank of an automobile vehicle, the cap comprising a body, means for attaching the cap to said opening of the container, key-actuated means for locking the cap in the attached position independent from the attaching means, said locking means comprising a barrel which receives a key and is rotatively mounted in said body, at least one locking element which is radially movable in said body, an aperture in said body through which aperture said locking element is movable so as to be capable of assuming selectively a projecting position relative to said aperture and a retracted position within said body, the barrel being associated with the locking element so as to cause the radial movement of the locking element selectively to said projecting position and said retracted position upon rotation of the barrel relative to the body, and an elastically yieldable strip having a free end portion which constitutes the locking element and an opposite end portion which is fixed to and coaxially positioned in said body.

4,562,710

SECURITY DEVICE FOR HYDRAULICALLY BLOCKING THE STEERING OF MOTOR VEHICLES

Paul Lipschütz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

PCT No. PCT/EP83/00017, § 371 Date Sep. 28, 1983, § 102(e) Date Sep. 28, 1983, PCT Pub. No. WO83/02592, PCT Pub. Date Aug. 4, 1983
PCT Filed Jan. 25, 1983, Ser. No. 545,389
Claims priority, application France, Jan. 28, 1982, 82 01310
Int. Cl.⁴ B60R *25/02*
U.S. Cl. 70—252 **11 Claims**



1. A security device for an automotive vehicle comprising, in combination with:
a steering linkage of said vehicle, a hydraulic cylinder having a piston displaceable in said cylinder and provided with a piston rod connected to said linkage whereby said piston rod and said linkage are jointly displaceable for steering of said vehicle, said cylinder having ports on opposite sides of said piston, of:
a steering lock which comprises means defining a pair of passages respectively communicating with said ports, and a member shiftable on said means between a position in which said passages are unblocked for normal steering operation and a position wherein said passages are blocked and said piston is thereby locked against displacement to lock said linkage, and an actuator operatively connected to said member for displacing said member between said positions.

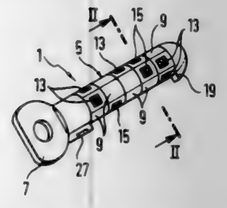
4,562,711

MAGNETICALLY CODED LOCKING SYSTEM

Hans Fliege, Obertheres, Fed. Rep. of Germany, assignor to SACHS-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 17, 1984, Ser. No. 611,415
Claims priority, application Fed. Rep. of Germany, May 21, 1983, 3318624
Int. Cl.⁴ E05B *47/00*
U.S. Cl. 70—276 **9 Claims**

1. A locking system comprising:
(a) a magnetic key having a plurality of magnets, arranged one behind another in a pattern of a plurality of rows lying parallel side by side to form a locking code of the magnetic key, at least the magnets of the pattern positions of each row which are immediately adjacent in the row direction being polarised in opposite directions,
(b) a reading device into which the magnetic key is insertable in the direction of the rows of its magnets and which comprises magnetic field sensors for the serial reading of the locking code formed by the magnets, each row of magnets being read by a pair of two magnetic field sensors, a first magnetic field sensor of each pair responding selectively to magnetic fields of a predetermined polarity and a second magnetic field sensor of each pair responding selectively to magnetic fields with a polarity opposite to the predetermined polarity, and



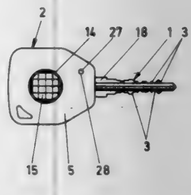
(c) a control circuit which compares the information of the read locking code with the information of a predetermined locking code and generates a control signal in dependence upon the conformity or difference of the locking codes.

4,562,712

KEY

Heinz Wolter, Meiswinkel 3, 5067 Kürten, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 576,997
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305822; European Pat. Off., Jan. 20, 1984, 84100621.6
Int. Cl.⁴ A47G *29/10*
U.S. Cl. 70—456 R **19 Claims**



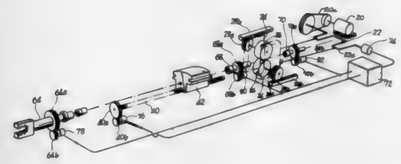
1. In a key with a key bit and a handle, an end of the key bit extending in form-interlocked manner into a channel in the handle, the channel being directed towards a narrow side of the handle, the improvement comprising
means for a disengageable insertion detent locking between said bit and handle,
said means for detent locking comprises
a mandrel, and
spring means for displacing said mandrel in a direction transverse of the handle,
said mandrel having an actuation surface exposed on a wide side of the handle,
said key bit defining a recess extending from a narrow side of the key bit,
a portion of the periphery of said mandrel form-interlocking into said recess.

4,562,713

COLD PILGER MILL

Yukio Kondoh, Osaka, Japan, assignor to Sumitomo Metal Industries, Ltd., Japan

Filed Dec. 14, 1983, Ser. No. 561,355
Int. Cl.⁴ B21B *37/00, 21/04*
U.S. Cl. 72—24 **8 Claims**



1. A cold pilger mill comprising:
a rolling mechanism for intermittently rolling a tubular material over a mandrel to produce reduced diameter pipe, said rolling mechanism including a pair of grooved rolls rotatably supported by a pair of saddles, said grooved rolls being arranged to embrace said tubular material from opposite sides thereof, said saddles being reciprocated to define a material rolling stroke by a crank shaft rotated by a first motor, each of said grooved rolls having fixed thereto a pinion in mesh with a stationary rack for rotation with the respective roll;
a detector communicating with said rolling mechanism for detecting the rolling phase in said rolling mechanism;
a feeding mechanism driven by a second motor for feeding said tubular material in an axial direction;
a mandrel chuck driven by a third motor for grasping a tail end of said mandrel;
an entry turning chuck driven by a fourth motor, said turning chuck being located near an entry side of said saddles in the rolling direction of said saddles for holding said tubular material over said mandrel;
an exit turning chuck driven by a fifth motor, said exit turning chuck being located adjacent a side of said saddles opposite said entry turning chuck in the rolling direction of said saddles for holding said tubular material over said mandrel; and
a main controller receiving signal input from said detector and supplying an operation signal to the respective motors of said feeding mechanism, said mandrel chuck and said turning chucks so that said feeding mechanism and said chucks are operated upon completion of each rolling stroke.

4,562,714

PRECOAT METAL AND ITS PRODUCTION

Michio Tanaka, Takatsuki; Kohji Nasu, Nishinomiya, and Masanori Okamura, Amagasaki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 212,684, Dec. 3, 1980, abandoned. This application Nov. 14, 1983, Ser. No. 550,991
Claims priority, application Japan, Dec. 21, 1979, 54-167037; Jun. 19, 1980, 55-83689
Int. Cl.⁴ B21B *45/00;* **B32B** *27/40*
U.S. Cl. 72—46 **1 Claim**

1. A method for shaping a pre-coat metal which comprises:
(a) coating a metal plate with a composition comprising (i) bis-(isocyanatomethyl)cyclohexane or its adduct wherein one or more of the isocyanate groups are blocked with a blocking agent selected from the group consisting of phenols, oximes, lactams and imines, and (ii) at least one member selected from the group consisting of a polyester polyol, an acrylic polyol produced by copolymerizing (1) one or more hydroxyl containing monomers with (2) one or more copolymerizable α,β-ethylenically unsaturated

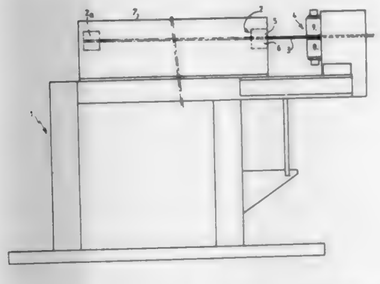
monomers and an epoxy polyol resin, the ratio of (i) to (ii) being about 0.5 to 2.0,
(b) heating the so coated plate for curing, and then
(c) subjecting said coated metal plate to OT bending.

4,562,715

PROCESS AND APPARATUS FOR DETERMINING THE QUALITY OF A THIN COATED OR UNCOATED STEEL SHEET

Charles G. H. Brun, Montataire; Jean F. Bailleul; Freddy Lecesdre, both of Grande-Synthe, and Francoise Coolen, Dunkerque, all of France, assignors to Union Siderurgique du Nord et de l'Est de la France, Puteaux, France

Filed May 9, 1984, Ser. No. 608,992
Claims priority, application France, May 9, 1983, 83 07719
Int. Cl.⁴ B21D *11/08, 22/00*
U.S. Cl. 72—167 **9 Claims**



1. A process for determining the quality of a thin steel sheet, said process comprising cutting a strip in a direction transverse to a direction of rolling of a reel of steel sheet, subjecting said strip to a drawing operation by passing said strip longitudinally in a given direction between a first structure having two edges defining a space which is substantially perpendicular to said given direction, and a second structure defining a projection substantially perpendicular to said given direction, while urging said two structures toward each other so as to cause said projection to enter said space with said strip interposed between said projection and said two edges and thereby compress said strip between said two edges and said projection and cause said strip to bend along said edges, and simultaneously pulling on said strip so as to draw it between said projection and said two edges, and subsequently searching for cracking which might appear on the surface of the draw strip.

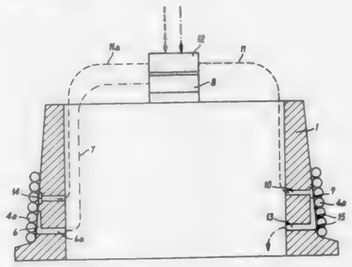
6. An apparatus for determining the quality of a thin steel sheet, said apparatus comprising a frame, pulling means for pulling on the steel strip in a given direction and carried by said frame, and a head for effecting a drawing of the sheet by compression and a bending of the sheet and connected to said frame and through which head the steel strip is passed under the action of said pulling means, said head comprising a first structure having two edges defining a space which extends substantially perpendicularly to said given direction, and a second structure having a projection which extends substantially perpendicularly to said given direction, said two structures being movable toward and away from each other and said projection being capable of entering said space and coming into contact with said two edges, and means for urging said two structures toward each other under pressure for the purpose of compressing said sheet between said projection and said two edges of said first structure.

4,562,716

WIRE COOLING SYSTEM FOR USE IN A WIRE DRAWING MACHINE

Jacques Coratte, and Dominique Petkovic, both of Chelles, France, assignors to Office Technique des Trefiles, Chelles, France

Filed Jan. 25, 1984, Ser. No. 573,680
Claims priority, application France, Feb. 2, 1983, 83 01598
Int. Cl.⁴ B21C *9/00, 1/02*
U.S. Cl. 72—286 **3 Claims**



1. A wire cooling system for use in a wire drawing machine of the type wherein a wire is pulled through a die, said system comprising:
a wire pulling capstan mounted for rotation about a vertical axis, said capstan having an outer periphery, with a wire to be drawn brought onto said periphery at a lower portion thereof and wound therearound upwardly in a helical pattern to form a wire jacket, thereby defining between said periphery and said jacket a space in the form of a continuous helical chamber;
means for cooling said wire jacket, said cooling means comprising at least one first port formed in said capstan and opening onto said periphery adjacent said lower portion thereof, and means for supplying a cooling liquid to said at least one first port and thereby passing said cooling liquid into and through said helical chamber in an upward helical direction;
means for draining downwardly and recovering said cooling liquid from said helical chamber, said draining and recovering means comprising at least one second port formed in said capstan and opening onto said periphery thereof, and means for supplying compressed gas to said at least one second port;
means for limiting the upward helical movement of said cooling liquid in said helical chamber, said limiting means comprising at least one third port formed in said capstan and opening onto said periphery thereof at a location spaced axially above said at least one first port, and means for supplying compressed gas to said at least one third port; and
said means for supplying compressed gas to said second and third ports also operating as means for drying said wire.

4,562,717

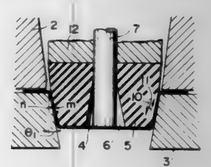
DRAWING PUNCH FOR DRAWING FOIL

Keiichi Shimizu, Hikari; Junichi Tanabe, Yanai, and Yoshikazu Kondo, Kudamatsu, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1984, Ser. No. 633,428
Claims priority, application Japan, Jul. 28, 1983, 58-136851
Int. Cl.⁴ B21D *22/00*
U.S. Cl. 72—347 **3 Claims**

1. A drawing punch for use in drawing foils in a die which converges in the direction of drawing, comprising:
a rigid core;
a cylindrical elastic body on said core and surrounding said core and

opening out of the end of said body facing the direction of drawing;
a rigid support member fixed on said core against which the other end of said body is supported;
the radial cross-sectional area of said cylindrical elastic body increasing from the firstmentioned end of said body toward the other end;
the peripheral surface of said cylindrical elastic body being at a positive angle to the axis of said punch of from 0° to 20°;



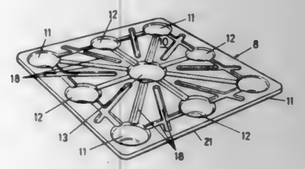
said cavity having a volume just slightly less than the difference between the volume of the material of the elastic body in the uncompressed condition plus the volume of the cavity plus the volume of the rigid core and the volume of the die into which the punch is moved to draw the foil; whereby as said drawing punch is forced into the die for drawing a foil, the material of said elastic body is deformed into and fills said cavity, and thereby the friction between the die and the foil is effectively used to increase the drawing ratio.

4,562,718

PALLET AND METHOD OF PRODUCTION

Robert J. Dunk, Beverley, Australia, assignor to Precision Tool & Gauge Pty. Ltd., Beverly, Australia

Filed Mar. 8, 1984, Ser. No. 587,480
Claims priority, application Australia, Mar. 11, 1983, PF8401
Int. Cl.⁴ B21D *22/26*
U.S. Cl. 72—349 **5 Claims**



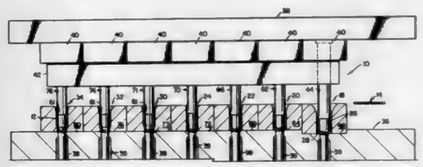
1. A method of pallet production, comprising pressing a planar sheet metal workpiece in a first draw operation in a press so as to form a cup-like central depression and eight cup-like peripheral depressions, all of generally circular shape in plan and all having bases at least portions of which are of curved cross-sectional shape, the depressions being in a symmetrical pattern, the eight cup-like peripheral depressions being of identical shape and size, but the central depression being of larger diameter and less depth than any of the peripheral depressions,
subjecting the workpiece to a further draw operation in a press so as to further form all said depressions to a greater depth and smaller diameter, and a discoid end in each of the peripheral depressions, and at least partly flattening the end of the central depression, said further draw operation forming the peripheral depressions to approximately the same depth, but the central depression to a lesser depth, and
subjecting the workpiece to a still further draw operation so as to form a minor depression in the end of the central depression only, such that all depressions then have the same depth.

4,562,719

METHOD FOR DRAWING HEAVY WALL SHELLS WITH A MULTI-STEP INSIDE EDGE

John D. Budrean, DeMotte, Ind., and John A. Kirkpatrick, Chicago Heights, Ill., assignors to Verson Allsteel Press Company, Chicago, Ill.

Division of Ser. No. 535,064, Sep. 23, 1983, Pat. No. 4,527,413, which is a continuation-in-part of Ser. No. 408,015, Aug. 13, 1982, Pat. No. 4,509,356. This application Feb. 25, 1985, Ser. No. 705,357
Int. Cl.⁴ B21D *22/00*
U.S. Cl. 72—349 **7 Claims**



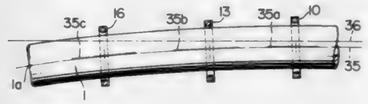
1. A method of forming a material into a part having side walls comprising the steps of:
contacting the material with a first draw punch, said first draw punch having a diameter variation along its length to define a primary draw shoulder thereon;
drawing the material through a first draw die with said first draw punch to form the material;
forming a primary step on the side walls of the part between the draw shoulder on said first draw punch and said first draw die at an angle to the axis of the part;
contacting the material with a second draw punch, said second draw punch having at least two diameter variations along its length to define a first and second draw shoulder;
drawing the material through a second draw die with said second draw punch to form the material; and
forming a secondary step on the side walls of the part between the draw shoulder on said second draw punch and said second draw die at an angle to the axis of the part such that said second draw shoulder contacts said primary step on the side walls of the part.

4,562,720

IRONING APPARATUS

Hirotaka Nishikawa, Sagamihara, Japan, assignor to Toyo Seikan Kaisha, Limited, Tokyo, Japan

Filed Oct. 9, 1984, Ser. No. 658,848
Claims priority, application Japan, Mar. 2, 1984, 59-38645
Int. Cl.⁴ B21D *22/00*
U.S. Cl. 72—349 **2 Claims**



1. An ironing apparatus for forming a cup-like metallic article which comprises: a punch provided on a tip of a ram adapted to reciprocate in the horizontal direction and a plurality of ring dies cooperating with the punch, in which the punch reciprocates such that the center of the end face thereof moves along a locus curved downwardly with the gravity, and the die is disposed to be slightly inclined with respect to a vertical plane such that the axis of the die extends substantially in the tangential direction of the locus at the location of the die.

4,562,721

MACHINE FOR FOLDING SHEET METAL BLANKS

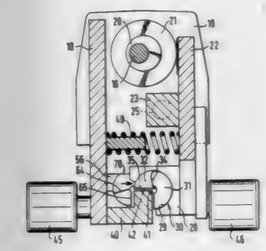
Franz Bleyer, Vienna, Austria, assignor to Peter Wukovich OHG, Vienna, Austria

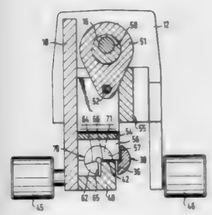
Filed Feb. 24, 1984, Ser. No. 583,105

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1983, 3308219

Int. Cl.⁴ B21D *17/02*

U.S. Cl. 72—384 **12 Claims**





1. A machine for folding sheet metal blanks, comprising a stationary jaw and an opposite jaw movable between a retracted position and a bending position for performing a movement of beating against said stationary jaw, said driven jaw being provided with a folding surface curved to form a progressive fold as sheet metal blanks are progressively acted upon by said jaws, characterized in that a first folding member comprising said curved folding surface is mounted in a holder for pivotal movement about a longitudinal axis, while being prevented from an axial movement for adjustment of said folding surface in response to momentaneous resistance of said sheet metal blanks to deformation, a second folding member disposed downstream of said driven jaw as seen in the direction of operation, said second folding member being associated with a drive for performing a beat movement transverse to the direction of movement of said driven jaw and being provided with a folding surface, said second folding member serving to fold the sheet metal blank already folded by the driven jaw a second time and said second folding member being mounted in a holder for pivotal movement about its longitudinal axis while being prevented from an axial movement.

4,562,722

IMPACT WRENCH TORQUE CALIBRATOR

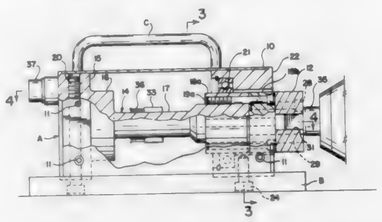
Donald E. Schuele, Lyndhurst, and John W. Wilhelm, Jr., Moreland Hills, both of Ohio, assignors to Skidmore-Wilhelm Manufacturing Co., Cleveland, Ohio

Filed Aug. 10, 1984, Ser. No. 639,576

Int. Cl.⁴ G01L *5/24, 25/00*

U.S. Cl. 73—11 **16 Claims**

1. An apparatus for measuring the output torque of an impact wrench having a driving portion delivering torque in a series of short impulses of known duration comprising a unitary beam comprised of a stationary end plate, a rod portion and a free end portion; and an adapter fixed to the free end portion of said beam adapted to receive said driving portion; said beam, adapter and driving portion having a natural period of oscillation significantly greater than said impulse duration; at least one strain gauge fixed to said rod portion and oriented to respond to angular displacement of said rod portion with a



change in the resistance of said strain gauge; means producing a signal proportional to the resistance of said strain gauge; peak detector means detecting the extreme value attained by said proportional signal and holding said extreme value; means displaying said extreme value in a visually perceptible form.

4,562,723

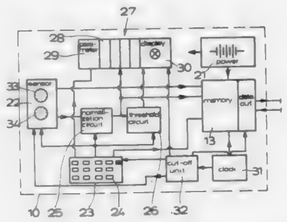
METHOD OF AND APPARATUS FOR THE MEASUREMENT OF SUBTERRANEAN ATMOSPHERIC PARAMETERS

Hans J. Hubner, Katthagen 24, 4400 Münster, Fed. Rep. of Germany

Filed Jul. 27, 1984, Ser. No. 635,324

Int. Cl.⁴ G01N *27/12*

U.S. Cl. 73—23 **50 Claims**



1. A method of measuring and evaluating a parameter of an atmosphere at least at a site at which a dangerous environmental condition can arise which comprises the steps of:

measuring said parameter to obtain a measured value thereof;

normalizing said measured value by modifying said measured value in accordance with a predetermined amount corresponding to said measured value to produce a normalized value of said parameter;

storing at least one of said measured and normalized values; and

displaying at least one of said normalized and measured values, with said normalized value being displayed at least part of the time, said measured value being normalized in accordance with a corresponding predetermined normalization function, said normalization function being an approximating polygon trace.

4,562,724

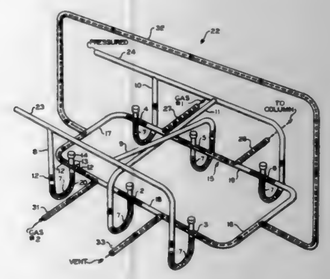
GAS SAMPLING VALVE

Richard L. Scott, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 5, 1984, Ser. No. 628,065

Int. Cl.⁴ G01N *31/08*

U.S. Cl. 73—23.1 **6 Claims**



1. A sampling valve comprising multiple ports from a loop conduit, between each port and within said loop conduit is positioned a medium porosity glass-frit disc, where every other port is connected to and in open communication with a conduit containing metal fluid which is further connected to means for injecting said metal fluid into said loop conduit to provide a valving means.

4,562,725

MOISTURE SENSOR AND A PROCESS FOR THE PRODUCTION THEREOF

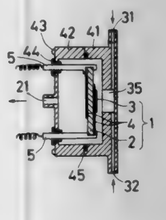
Shotaro Oka, Muko; Shu Tahara, Nagaokakyo, and Junya Kobayashi, Kyoto, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jul. 25, 1983, Ser. No. 516,959

Claims priority, application Japan, Jul. 31, 1982, 57-134310; Feb. 28, 1983, 58-33254; Mar. 31, 1983, 58-57513

Int. Cl.⁴ G01N *31/00*

U.S. Cl. 73—29 **22 Claims**



1. A moisture sensor comprising a piezoelectric material as solid substrate; a pair of electrodes in contact with said substrate; and a highly crosslinked plasma polymerized polymer thin film having an outer surface layer incorporating hydrophilic groups, said hydrophilic groups having been incorporated by chemical treatment, said film being in contact with at least one of said electrodes.

10. A process for preparing a moisture sensor comprising depositing a pair of electrodes on a piezoelectric material as a solid substrate, subjecting the resulting substrate to plasma polymerization in the presence of a desired monomer vapor to form a plasma polymerized polymer film adhering to the substrate between the electrodes or on at least one of the electrodes and incorporating hydrophilic groups into the surface layer of the polymer thin film by a chemical treatment.

4,562,726

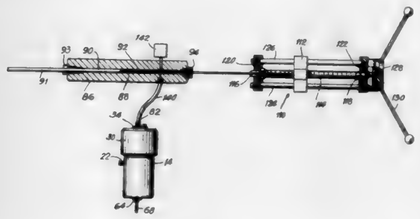
METHOD AND APPARATUS FOR TESTING THE COMPRESSIBILITY OF SUBTERRANEAN SAMPLES

Harold T. Barnaby, Duncanville, Tex., assignor to Core Laboratories, Inc., Dallas, Tex.

Filed Jul. 2, 1984, Ser. No. 626,631

Int. Cl.⁴ G01N *15/08*

U.S. Cl. 73—38 **28 Claims**



10. Compressibility test apparatus comprising holder means having a sample chamber for holding a sample in the environment of a confining pressure, said sample having a pore volume; confining pressure supply means for supplying a confining pressure to said sample; internal pressure supply means for supplying an internal pressure to said sample separate from said confining pressure, said sample pore volume and the volume of said internal pressure supply means being included in an internal system volume; internal volume adjustment means comprising a channel coupled to and includable in said internal system volume, a differential piston having a first section of larger cross-sectional area and a second section of smaller cross-sectional area, said differential piston being movable in said channel, and drive means connected to said second section of said differential piston and operable to retract said first section into said channel initially to minimize said internal system volume, whereby said internal pressure exerts a tension force on said differential piston, said drive means being further operable during a test to advance said second section of said differential piston into said channel to increase said internal system volume and thereby decrease said internal pressure.

4,562,727

OLEFIN SULFONATE-IMPROVED STEAM FOAM DRIVE

Richard E. Dilgren, Houston, and Kenneth B. Owens, Spring, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 500,195, Jun. 1, 1983, Pat. No. 4,488,976, which is a division of Ser. No. 247,425, Mar. 25, 1981, Pat. No. 4,393,937. This application Nov. 21, 1984, Ser. No. 673,645

Int. Cl.⁴ G01N *15/00*

U.S. Cl. 73—60.1 **2 Claims**



1. A process for testing the steam mobility-reducing capability of an olefin sulfonate-containing surfactant formulation for reducing the mobility of steam of a selected quality within a selected subterranean oil-containing reservoir, comprising:

comparing steam of the selected quality with a steam-containing fluid which has substantially the same steam quality but contains said surfactant formulation, an electrolyte

and a noncondensable gas in proportions which are at least near optimum for steam foam formation by upflowing the fluids being compared through columns of permeable porous mediums containing the reservoir oil, or an oil of substantially equivalent viscosity and steam-foam-debilitating properties, at mass flow rates which are substantially equivalent to a selected flow rate suitable for use in the near-well portion of the reservoir;

measuring the steady-state pressures developed within said columns at internal locations which are substantially free of end effects; and

utilizing the measured pressures to calculate the permeability reduction factor of said surfactant formulation.

4,562,728

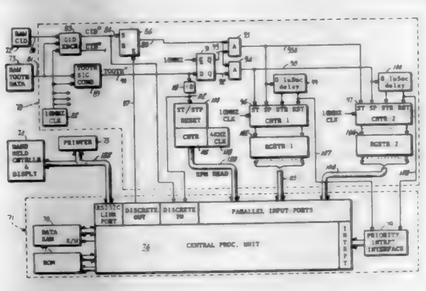
ABSOLUTE COMPRESSION TEST

George E. Timmerman, Tucson, Ariz., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 3, 1984, Ser. No. 677,764

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—116 **17 Claims**



1. A method of measuring the absolute compression of each cylinder in an internal combustion engine having known ideal performance parameters, comprising the steps of:

sensing the absolute angular speed of the crankshaft of an engine during at least one noncombustive engine cycle;

relating particular subcyclic absolute speed variations to particular cylinders;

calculating the work of expansion and the work of compression for each cylinder;

identifying as a faulted cylinder each cylinder for which the compression work and the expansion work are each less than the work of compression and expansion, respectively, which would be performed by an ideal cylinder;

firstly correcting, if more than one faulted cylinder is identified, for the apparent effects of the diminished work of each faulted cylinder on the calculated work of each of the other faulted cylinders;

secondly correcting for the apparent effects of the diminished work of each faulted cylinder on the calculated work of each of the nonfaulted cylinders; and

computing the absolute compression pressure for each cylinder during said cycle based on said corrected work calculations.

4,562,729

ELECTRIC CONTROL SIGNAL MONITORING AND SIMULATING APPARATUS FOR TROUBLESHOOTING AUTOMATIC TRANSMISSIONS

John G. Maloney, 1825 Leaning Pine Dr., Diamond Bar, Calif. 91765

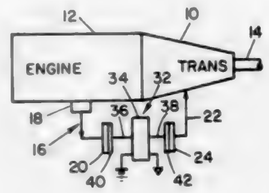
Filed Feb. 22, 1984, Ser. No. 582,264

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—118 **10 Claims**

1. Electric control signal monitoring apparatus for use with an automobile automatic transmission which normally receives, through a preexisting electrical conduit, electric control signals from the automobile engine and its controls or the like; said apparatus comprising:

(a) means for receiving and monitoring said electric control signals provided to an automatic transmission by said engine and its controls or the like; and



(b) means for connecting said receiving and monitoring means in electrical series with said preexisting electrical conduit through which the electric control signals are provided to the transmission so as to enable said receiving and monitoring means to monitor said control signals passing therethrough.

4,562,730

METHOD AND APPARATUS FOR DYNAMIC BALANCE DETECTION OF A CALENDER STRIP

Jerry A. Gowman, Oklahoma City, Okla., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 8, 1985, Ser. No. 732,031

Int. Cl.⁴ G01B *21/08*

U.S. Cl. 73—150 R **28 Claims**

1. A method for dynamically detecting the balance of a moving calender strip of material formed by at least a single ply of relatively inextensible material contained within a strip of pliable material, including the steps of:

(a) passing a length of the calender strip having first and second outer surfaces about a pair of rolls with the first surface of the strip contacting one of said rolls for rotating said one roll at a certain speed and with the second surface of the strip contacting the other roll for rotating said roll at another speed with said rolls rotating in opposite directions;

(b) generating a first signal in relationship to the rotational speed of said one roll of the pair;

(c) generating a second signal in relationship to the rotational speed of said other roll of the pair; and

(d) comparing the first and second signals to generate a third signal dependent upon the relationship between the rotational speeds of the two rolls of the roll pair indicating the position of the relatively inextensible material with respect to the first and second outer surfaces.

4,562,731

AIR FLOW METER

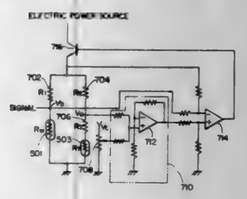
Yutaka Nishimura, Katsuta; Hiroshi Kuroiwa; Tadashi Kirisawa, both of Hitachi, and Yoshishige Oyama, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 168,736, Jul. 14, 1980, Pat. No. 4,373,387. This application Nov. 3, 1982, Ser. No. 438,773

Claims priority, application Japan, Jul. 24, 1979, 54-94725

Int. Cl.⁴ G01F *5/00, 1/68*

U.S. Cl. 73—202 **4 Claims**



1. An air flow meter comprising:

a bridge circuit including an air velocity measuring resistor and a temperature compensation resistor disposed in an air bypass passage formed parallel with an air intake passage for measuring an air velocity therein;

a switching transistor for controlling current flow to said bridge circuit;

a differential amplifier having two input terminals each of which are respectively coupled to two intermediate points of said bridge circuit, the voltage at one of the two intermediate points of said bridge circuit representing the air velocity signal, and an output terminal electrically coupled to said switching transistor so as to maintain the temperature of the air velocity measuring resistor at a predetermined amount;

an adjustable voltage source electrically coupled to one of the two input terminals of said differential amplifier for applying a predetermined D.C. voltage thereto so as to increase the predetermined temperature of the air velocity measuring resistor during a low air velocity for correcting the characteristic that the ratio of an air volume of the air bypass passage to an air volume of the air intake passage decreases during a low air velocity.

4,562,732

DEVICE FOR DETECTING LIQUID AMOUNT IN A VESSEL

Junji Kitagawa; Junji Mizuno; Shigeyuki Akita, and Akira Fukami, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 27, 1983, Ser. No. 488,983

Claims priority, application Japan, Apr. 28, 1982, 57-71820; Apr. 30, 1982, 57-71358; Apr. 30, 1982, 57-71359; Feb. 7, 1983, 58-17469

Int. Cl.⁴ G01F *23/00, 23/20*

U.S. Cl. 73—291 **11 Claims**

1. A device for detecting an amount of liquid in a vessel, said device comprising:

torsion structure means connected to said vessel for allowing torsion displacement by the weight of said vessel and the liquid in said vessel;

means for detecting a torsion displacement of said torsion structure means and generating signals representative of said torsion displacement; and

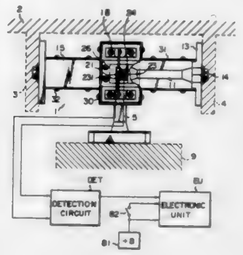
an electronic unit for receiving said signals from said detection means;

wherein said electronic unit comprises:

means for generating a pulse width signal corresponding to the amount of said liquid on the basis of said signals from said detection means;

means for detecting the pulse width by generating a signal indicating the number of pulses proportional to the pulse width of said generated pulse width signal;

means for generating timing pulses having a predetermined interval; and



average value calculation and display means for calculating average values at predetermined intervals from the values corresponding to the number of pulses of the signal from said pulse width detection means by using said generated timing pulses, and for displaying said calculated values as an indication of said amount of liquid.

4,562,733

DEVICE FOR THE ELECTRIC MEASUREMENT OF A LIQUID LEVEL

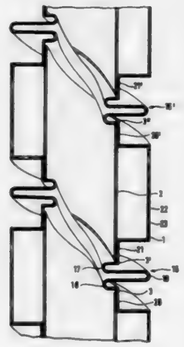
Bernhard Kant, Eschborn, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 15, 1984, Ser. No. 620,851

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321559

Int. Cl.⁴ G01F *23/00*

U.S. Cl. 73—295 **8 Claims**



1. In a device for the electric measurement of the level of a liquid contained in a container, the device having a conductive foil such as a temperature-dependent externally electrically heated resistance foil immersed in the liquid and surrounded by a protective tube, and wherein the total resistance of which foil is detectable by an evaluation circuit and is dependent on the level of liquid in the container, or alternatively wherein the device has a capacitance foil bearing two conductors which form a capacitor, and additionally wherein the conductive or capacitive foil is developed in strip-shape and is held in a helical shape by holding elements acting on its longitudinal edges within the protective tube in such a manner that a surface of the conductive or capacitive foil is washed over on

both sides by the liquid, and the longitudinal edges of the conductive or capacitive foil being spaced apart by a correspondingly large pitch from turn to turn, the improvement wherein

a helically extending flexible protective-tube region is provided in the protective tube between the longitudinal edges of the conductive or capacitive foil.

4,562,734

SYSTEM FOR MEASURING QUANTITY OF LIQUID CONTAINED IN TANK

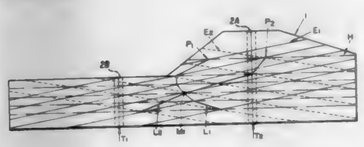
Hiroshi Kobayashi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 6, 1983, Ser. No. 511,384

Claims priority, application Japan, Jul. 12, 1982, 57-104424[U]

Int. Cl.⁴ G01F *23/10*

U.S. Cl. 73—311 **12 Claims**



1. A liquid quantity measuring system, comprising:

a liquid tank for mounting on a vehicle, said tank having a first cross section which is vertical when said tank is in a normal horizontal position and which is unsymmetrical so that a normal liquid surface, a first inclined liquid surface and a second inclined liquid surface, which would be formed by a liquid of a given quantity in said tank when said tank is in said normal horizontal position, and in first and second oppositely inclined positions, respectively, in which said tank is rotated about a first rotation axis perpendicular to said first cross section through a first predetermined angle from said normal position in opposite directions, have such a spacial relation that a first equal-level point at which a horizontal intersection line between said normal and first inclined liquid surfaces intersects said first cross section, and a second equal-level point at which a horizontal intersection line between said normal and second inclined liquid surfaces intersects said first cross section, are normally located apart from each other at a distance which varies when the liquid quantity in said tank is varied;

first and second liquid level detecting means disposed, respectively, in first and second vertical planes within said tank for detecting a liquid level in said first and second vertical planes, said first and second vertical planes being perpendicular to said first cross section, and vertical when said tank is in said normal horizontal position, said first and second vertical planes being symmetrical with respect to a first reference point which is substantially an intersection between a first path traveled by said first equal-level point when the liquid quantity in said tank is varied, and a second path traveled by said second equal-level point when the liquid liquid in said tank is varied, each of said first and second detecting means producing an output signal indicative of the detected liquid level; and

adding means, connected with said first and second detecting means, for producing a liquid quantity output signal obtained from the sum of the output signals of said first and second detecting means.

4,562,735

INSTALLATION FOR MONITORING PARAMETERS OF AN OBJECT

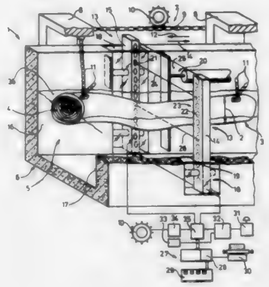
Gunther Krippner, Kuhreiterweg 23, A-4040 Linz, and Karl Kletzmaier, Durnberg 63, A-4100 Ottensheim, both of Austria

Filed Oct. 3, 1983, Ser. No. 538,103

Claims priority, application Austria, Oct. 8, 1982, 3727/82

Int. Cl.⁴ G01B *7/04, 5/10, 11/10*

U.S. Cl. 73—432 R **7 Claims**



1. Installation for determining or monitoring the physical size of sequential sections of an elongated object, which comprises

(a) a device for measuring the physical size of the sequential sections,

(b) conveying means for transporting the elongated object past the measuring device whereby the sequential sections are aligned with the measuring device for measuring the physical size thereof, and

(d) means for supporting the sequential sections in response to the measured physical size whereby the sequential sections of the elongated object are relieved of their own weight and are free to assume a position corresponding to their natural contour during measuring.

4,562,736

METHOD OF DEFECT EVALUATION FOR CERAMIC PRODUCTS

Hideo Iwasaki, Sagamihara, and Mamoru Izumi, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 20, 1984, Ser. No. 591,498

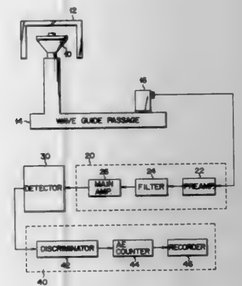
Claims priority, application Japan, Mar. 25, 1983, 58-48748

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—587 **7 Claims**

1. A method of nondestructive defect evaluation for a ceramic product, which comprises:

heating the ceramic product to produce a temperature difference within a range from 500° K. to 800° K. and form a temperature gradient directed from a surface toward an inner part of the product so as to produce tensile stress in an inner part of said ceramic product by thermal stress; and



detecting acoustic emissions from the ceramic product from cracks 20 to 50 microns in size produced by the tensile stress during the heating of the ceramic product.

4,562,737

ULTRASONIC TESTING

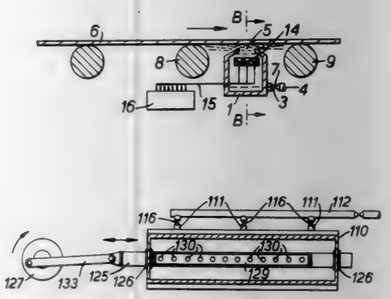
David H. Davies, Cleveland, England, assignor to British Steel Corporation, England

Filed Aug. 18, 1983, Ser. No. 524,343

Claims priority, application United Kingdom, Aug. 19, 1982, 8223954; Oct. 15, 1982, 8229604

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—622 **3 Claims**



1. Apparatus for ultrasonically testing a metallic workpiece, utilising water as a coupling medium between ultrasonic transducers and a metallic product moving relative to the testing apparatus along a generally predetermined pathway; which apparatus comprises guide means defining the pathway to be followed by the metal product, one or more reservoirs below the pathway each incorporating a top opening through which water can overflow to contact successive parts of the piece to be tested located thereabove, and a plurality of ultrasonic transducers located in one or more groups within the reservoir or reservoirs and directed towards the testpiece, at least one of the groups of transducers being connected to a beam, said beam being connected to a crank wheel for reciprocating said beam along a linear path such that a sinusoidal testing path is described along the length of the workpiece as the workpiece passes over the reciprocating beam.

4,562,738

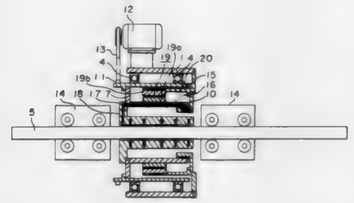
AUTOMATIC FLAW DETECTION DEVICE

Kazuo Nakayama; Yukio Naito, and Eiji Munesue, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1984, Ser. No. 596,700

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—622 **4 Claims**



1. An automatic flaw detection apparatus for detecting flaws in a piece of material which is elongated in a first direction, comprising:

two sets of pinch rollers for supporting said material, which are aligned in said first direction to move said material in said first direction;

a fixed supporting frame being placed between said sets of pinch rollers and around said material, having a length in said first direction which is less than the distance between said sets of rollers;

a rotating frame inside said supporting frame and around said material, having a length in said first direction of about the same length as said supporting frame;

bearings mounted between said supporting frame and said rotating frame to allow said rotating frame to rotate freely;

motor means mounted on said supporting frame;

power transmission means connecting said motor means and said rotating frame for driving said rotating frame;

a hollow shaft mounted inside said rotating frame and around said material, having a length in said first direction of about the same length as said supporting frame and said rotating frame;

a flaw detection signal repeater extending from said hollow shaft to said rotating frame so that said hollow shaft is supported by said rotating frame therethrough and is rotated with said rotating frame;

a searching unit holder inside said hollow shaft and around said material, having a length in said first direction of about the same length as said supporting frame, said rotating frame and said hollow shaft, said searching unit holder being supported by said hollow shaft and rotated therewith;

ultrasonic searching units contained in said searching unit holder for detecting flaws in said material;

signal transmission device having a first part fixedly connected to said hollow shaft on the surface of said hollow shaft facing said rotating frame, and a second part mounted on a supporting member connected to said supporting frame, said supporting member extending between said rotating frame and said hollow shaft so as to be adjacent to said first part, so that signals may be transmitted therethrough;

a water supply mounted on said supporting frame in communication with a water channel connected to said hollow shaft and said searching unit holder, so as to provide water to the space to the space between said material and said searching unit holder;

said supporting frame, said rotating frame, said hollow shaft and said searching unit holder being concentrically arranged about said material so as to provide a short distance between said sets of pinch rollers so that curving of the material between the pinch rolers is minimized.

4,562,739

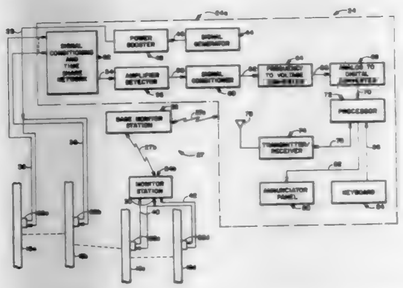
PRODUCTION MONITORING SYSTEM

F. Allen Lehman, Oklahoma City; William M. Sleffel, Moore, and Malcolm G. Ray, Norman, all of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Division of Ser. No. 403,281, Jul. 29, 1982, Pat. No. 4,481,503. This application May 14, 1984, Ser. No. 609,687

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—632 **5 Claims**



1. A monitoring system utilizing an ultrasonic transducer, comprising:

a signal generator providing transducer operating signals for reception by the ultrasonic transducer; and

a power booster receiving the transducer operating signals and raising the power level of such received transducer operating signals while maintaining the gain about unity, the transducer operating signals being connected to the ultrasonic transducer by a signal path and the power booster permitting a relatively longer signal path to be utilized in connecting such transducer operating signals to the ultrasonic transducer.

4,562,740

VIBRATION SENSOR AND THE METHOD OF AND APPARATUS FOR MANUFACTURE THEREOF

Hugh C. Webber, Detroit, and David V. Tinder, Dearborn, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Apr. 20, 1984, Ser. No. 602,251

Int. Cl.⁴ B21D *39/00*; H01L *41/00*

U.S. Cl. 73—651 **16 Claims**

1. In the manufacture of a vibration sensor of the type having a support stem on which is supported a flexing plate, a piezoelectric element being affixable to said flexing plate, the flexing plate having an opening therethrough and said stem having a neck portion and a shoulder portion, said stem neck portion extending through said plate opening and said plate being supported by said stem shoulder portion, said stem neck portion being deformable to retain said plate mounted on said stem, the method of controlling the resonant frequency of the flexing plate comprising the steps of:

forming a preliminary assembly of said plate of said stem;

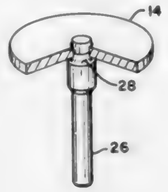
applying a vibrational stimulus to said preliminary assembly for causing said plate to vibrate at its actual resonant frequency;

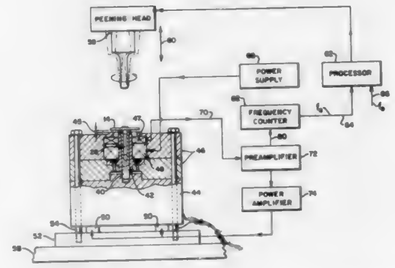
sensing said actual resonant frequency of said vibrating plate and providing a representation thereof;

comparing said representation of the actual resonant frequency of said plate with a representation of a desired resonant frequency of said plate;

progressively deforming said stem neck portion to vary the resonant frequency of said plate; and

terminating said step of deforming said stem neck portion when a predetermined relationship between said actual





and said desired resonant frequencies of said plate has been achieved.

4,562,741

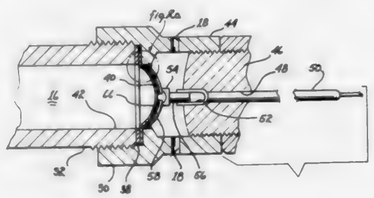
PRESSURE RELIEF VALVE WITH PRESSURE INDICATING MEANS

Craig Hosterman, 131 NW. 4th St., No. 263, Corvallis, Oreg. 97330

Filed Apr. 20, 1984, Ser. No. 602,393

Int. Cl.⁴ F16K *17/40*; G01L *9/12*

U.S. Cl. 73—714 **6 Claims**



1. A pressure relief valve apparatus operatively attached to a high pressure cylinder for providing an indication of the pressure within the cylinder, said apparatus comprising in combination:

(a) impedance means disposed within the pressure relief valve for providing an impedance representative of the pressure within the cylinder, said impedance means comprising a capacitor having a first disc flexibly responsive to the pressure within the cylinder for defining one plate of said capacitor and a second disc for defining another plate of said capacitor, said second disc including means responsive to said first disc for displacing the center portion of said second disc commensurate with deformation in curvature of said first disc;

(b) means for sensing the impedance of said capacitor and for indicating at least a relative value for the pressure within the cylinder; and

(c) means for electrically interconnecting each of said first and second discs with said sensing and indicating means.

4,562,742

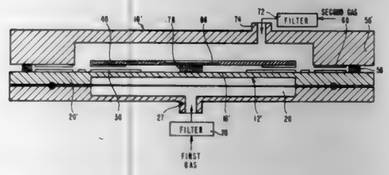
CAPACITIVE PRESSURE TRANSDUCER

Robert L. Bell, Chatsworth, Calif., assignor to Bell Microcomponents, Inc., Newbury Park, Calif.

Continuation of Ser. No. 638,491, Aug. 7, 1984, abandoned. This application May 24, 1985, Ser. No. 738,539

Int. Cl.⁴ G01L *9/12*; H01G *7/00*

U.S. Cl. 73—718 **30 Claims**



20. A capacitive pressure transducer comprising:

a diaphragm having a substantially flat deformable surface, the diaphragm including an annular sensor electrode disposed about a central deformable region thereof concentric with a central axis, an annular reference electrode, said electrodes each terminating in a conductive contact path to the exterior, an electrically grounded guard electrode and positioned between said sensor electrode and said reference electrode, said sensor electrode, said reference electrode, and said guard electrode being concentric about the central axis, and said diaphragm further including thin film conductive means in the central region of said diaphragm including a conductive path to the exterior of the transducer;

means communicating with at least one side of the diaphragm for introducing a fluid whose pressure is to be determined into contact with the diaphragm to deform same;

a substantially planar reference plate disposed in facing relation to the deformable surface of the diaphragm, said reference plate having an annular sensor electrode disposed about the central region and facing the sensor electrode on the diaphragm to form a sensing capacitor therewith, and thin film conductive means in the central region of said reference plate, including a conductive path to said sensor electrode on said reference plate;

conductive spacer means interconnecting the diaphragm and the reference plate in the central region thereof to maintain a substantially fixed dimension in the central region between the diaphragm and the reference plate while permitting deformation of the diaphragm, said spacer means interconnecting the thin film conductive means on said diaphragm with the thin film conductive means on the reference plate, whereby an electrical connection from the sensor electrode on the reference plate is taken through the spacer means; and

a cover disposed about the reference plate, said cover comprising a depending flange connected to the outer periphery of the diaphragm, and including an annular reference electrode in facing relation to the reference electrode on the diaphragm, to form a reference capacitor therebetween, said reference electrode on said cover terminating in a conductive path to the exterior.

4,562,743

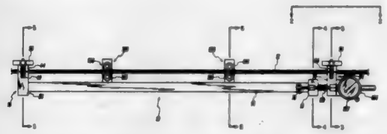
CABLE ELONGATION MEASUREMENT APPARATUS

Richard L. Bonine, Portland, Tex., assignor to Gearhart Industries, Inc., Fort Worth, Tex.

Filed May 21, 1984, Ser. No. 612,325

Int. Cl.⁴ G01N *3/08*

U.S. Cl. 73—828 **9 Claims**



1. Apparatus for measuring a change in the elongation of a flexible cable or the like as a result of changing a tensile load on said cable, comprising:

an elongated beam including a first clamp assembly disposed at one end of said beam for releasably clamping said apparatus to said cable;

a second clamp assembly supported on said beam and movable relative to said beam and said first clamp assembly;

indicator means for measuring the distance of movement of said second clamp assembly relative to said beam; and

means for supporting said apparatus on said cable independent of said clamp assemblies and permitting linear transversal of said cable relative to said beam between said clamp assemblies when said clamp assemblies are engaged with and released from said cable, said means for supporting said apparatus including at least first and second rollers supporting on and spaced apart along said beam for supporting said apparatus on said cable, said first roller being disposed on a first member connected to said beam and supporting a third roller for rotation relative to said first member, one of said first and third rollers being mounted on a support plate movable relative to said first member, and said first and third rollers being yieldably biased toward each other to engage said cable between said first and third rollers for supporting said apparatus on said cable.

4,562,744

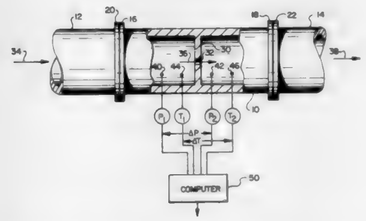
METHOD AND APPARATUS FOR MEASURING THE FLOWRATE OF COMPRESSIBLE FLUIDS

Kenneth R. Hall, College Station, and James C. Holste, Bryan, both of Tex., assignors to Precision Measurement, Inc., Dallas, Tex.

Filed May 4, 1984, Ser. No. 607,280

Int. Cl.⁴ G01F *1/36*

U.S. Cl. 73—861.02 **11 Claims**



11. Apparatus for determining the flowrate of a stream of compressible fluid, comprising:

a conduit for carrying the fluid;

a plate in said conduit having orifice therein, whereby the fluid flow may be impeded to create pressure and temperature differential thereacross;

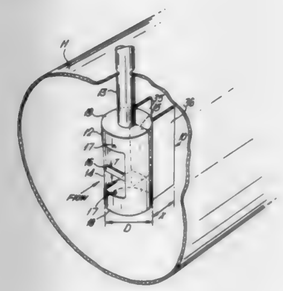
a first pressure sensor in said conduit on the upstream side of the plate;
a second pressure sensor in said conduit on the downstream side of said plate;
a first temperature sensor in said conduit on said upstream side of said plate;
a second temperature sensor in said conduit on said downstream side of said plate; and
means in communication with said first and second temperature sensors for computing the flowrate of said stream of fluid in accordance with the following formula:

(15)

$$\dot{m} = \frac{\pi D_1^2 P_1}{Z_1 T_1}\left[\frac{Mg_c}{8R\psi}\left\{ \int_{T_2 0}^{P_2}\left[\frac{\partial Z}{\partial 1/T}\right]_{P,x}\frac{dP}{P} - \int_{T_1 0}^{P_1}\left[\frac{\partial Z}{\partial 1/T}\right]_{P,x}\frac{dP}{P} + \int_{T_1}^{T_2}\frac{C_p^{id}}{R}\,dT \right\}\right]^{\frac{1}{2}}$$

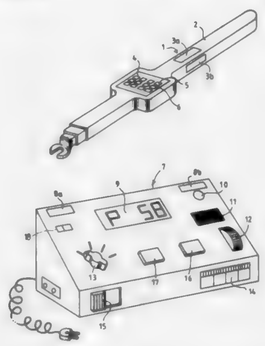
where
P means Pressure
T means Temperature
R means Gas Constant
Z means Compressibility Factor
D means Diameter
M means Molar Mass
m means Mass Flowrate
C_p^{id} means Ideal Gas Specific Heat per Mole
ψ means f(temperature and Pressure of Fluid Points 1 and 2, and of the geometry also at points 1 and 2)
g_c means Mass/Force Conversion Factor.

4,562,745
FLOWMETER
Jaime A. D. Parra, Winchester, England, assignor to Sarasota Automation Limited, Winchester, England
Filed Dec. 12, 1983, Ser. No. 560,596
Claims priority, application United Kingdom, Dec. 17, 1982, 8235943
Int. Cl.⁴ G01F *1/32*
U.S. Cl. 73—861.22 **8 Claims**



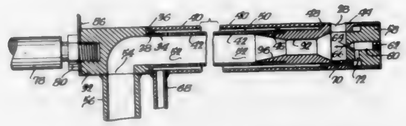
6. A flowmeter for insertion in a fluid conduit, the flowmeter comprising a tubular member for the passage therethrough of a fluid which flows through said conduit and whose flow rate is to be measured; a bluff body which is mounted in the tubular member so as to produce, in said fluid, oscillations whose frequency varies with said flow rate; sensor means responsive to said fluid oscillations for indicating said flow rate; vortex reducing means for reducing the separation of vortices from the tubular external surface of the tubular member and an axially extending support for mounting the tubular member normal to the fluid flow through the conduit, the tubular member having upstream and downstream apertures therein to permit the fluid to flow through the tubular member in a direction normal to the axis of the latter.

4,562,746
DYNAMOMETRIC TIGHTENING APPARATUS
Jean-Pierre Petit, Palaiseau, France, assignor to Facom, Morangis, France
Filed Mar. 19, 1984, Ser. No. 591,334
Claims priority, application France, Mar. 17, 1983, 83 04381
Int. Cl.⁴ B25B *23/142*
U.S. Cl. 73—862.23 **16 Claims**



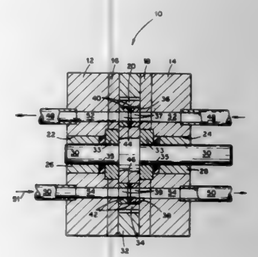
12. A method effecting a dynamometric tightening of a part to be tightened by means of a tool such as a spanner, a screwdriver or the like, said method comprising generating and transmitting in said tool batches of pulses, each batch comprising a part representing the code of the considered tool and a part representing the torque applied to the part to be tightened, and comprising transmitting the successive batches of pulses at randomly determined intervals over a predetermined and repeated period of time.

4,562,747
SAMPLER FOR DRY MATERIALS
Ben E. Jaeger, 50 Hunter La., Plano, Ill. 60545
Filed Sep. 7, 1984, Ser. No. 648,144
Int. Cl.⁴ G01N *1/20*
U.S. Cl. 73—863.54 **24 Claims**



1. Apparatus for obtaining samples of product from a vessel, comprising a probe having an inlet for communication with the interior of the vessel and an outlet; valve means operable to establish and interrupt communication between said inlet and the interior of the vessel, whereby when communication is established a path is established for a flow of product from the vessel into said inlet, through said probe and to and through said outlet; and means for introducing a flow of fluid into said probe in proximity to said inlet and along said path when communication is established to assist in moving product into said inlet and through said probe to and through said outlet.

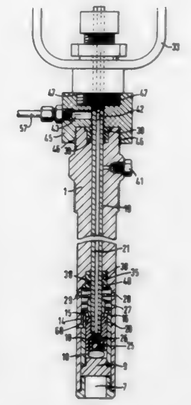
4,562,748
DISC VALVE FOR SAMPLING EROSIVE PROCESS STREAMS
John E. Mrochek, Oak Ridge; Stanley R. Dinsmore, Norris, and Edward W. Chandler, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Aug. 16, 1984, Ser. No. 641,223
Int. Cl.⁴ G01N *1/10*
U.S. Cl. 73—863.73 **1 Claim**



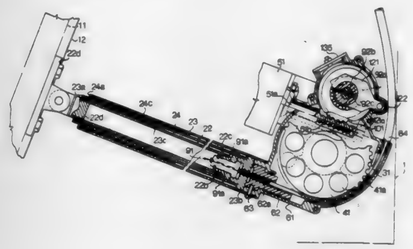
1. A four-port disc valve for sampling a high temperature erosive process stream, comprising:
a rotatable disc defining first and second sampling cavities spaced 180° apart;
first and second faceplates disposed respectively on each side of said rotatable disc;
silicon carbide inserts being provided in each of said faceplates in contact with said rotatable disc;
said first and second faceplates respectively defining first and second flow passageways spaced 180° apart and positioned to be alternatively in axial alignment with said first and second sampling cavities;
said sampling cavities being provided with α silicon carbide liners comprised of hollow tubular liner segments separated within each of said sampling cavities by compressible gaskets which urge said linear segments against said silicon carbide inserts;
means for passing at least part of said process stream through one of said first and second flow passages in said faceplates;
means communicating with the other of said first and second passageways for recovering sample materials from said sampling cavities; and
means for rotating said disc to transfer samples of said process stream from one of said flow passageways to the other.

4,562,749
SAMPLER
Rex K. Clark, Fawley, England, assignor to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Sep. 13, 1982, Ser. No. 416,947
Claims priority, application United Kingdom, Apr. 2, 1980, 8011004; Mar. 11, 1981, 8107670
Int. Cl.⁴ G01N *1/14*
U.S. Cl. 73—863.84 **14 Claims**

1. A fluid sampler comprising a casing having two ports in the wall thereof so that the casing can be arranged in communication with a pipeline, one of the ports enabling fluid in the pipeline to flow into the sampler and the other port enabling fluid in the sampler to flow out of it, a sample isolating sleeve reciprocably mounted within the casing, a sample ejecting piston reciprocably mounted within the sleeve, and actuator means operable for selectively changing the relative axial positions of the casing, sleeve and piston such that in a first relative axial position, the sleeve allows communication between the two ports, in a second relative axial position the sleeve cuts off communication between the two ports and thereby isolates a sample of the fluid from the fluid flow within an internal space bounded by the piston, sleeve and casing, and in a third relative position the volume of said space is reduced for forcibly discharging fluid in said space from the fluid sampler through a passageway in communication with said space.



4,562,750
CARRIER-DRIVING DEVICE
Kureo Arai, Tomioka, Japan, assignor to Yokowo Manufacturing Co., Ltd. and Sony Corporation, both of Tokyo, Japan
Filed Nov. 18, 1981, Ser. No. 322,341
Claims priority, application Japan, Nov. 22, 1980, 55-168053[U]; Nov. 22, 1980, 55-168054[U]; Jan. 8, 1981, 56-1422[U]; Jan. 8, 1981, 56-1423[U]; Feb. 28, 1981, 56-28029[U]
Int. Cl.⁴ F16H *27/02*
U.S. Cl. 74—89.21 **9 Claims**



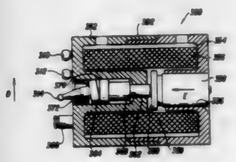
1. A carrier-driving device for use in a video projection system, comprising
a projector mirror; two supporting arm assemblies each having telescopically elongatable hollow arms by means of which the mirror is supportable; a pair of driving cables each for moving a respective one of the hollow arms telescopically, each cable having a belt-like shaped central portion, sinewy side portions integrally formed on both sides of the central portion and a plurality of holes defined by said central portion so as to be aligned in the longitudinal direction of the cable at a predetermined pitch; a pair of driving wheels each engagable respectively with a respective cable and having a plurality of teeth formed on the periphery thereof and each wheel capable of engaging with said defined holes in said respective cable so as to move that cable; and motor means for rotating the wheels.

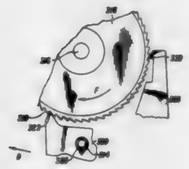
4,562,751

SOLENOID DRIVE APPARATUS FOR AN EXTERNAL INFUSION PUMP

Clyde K. Nason, 25745 N. Player Dr., Valencia, Calif. 91355, and Gordon W. Culp, 13832 Haynes St., Van Nuys, Calif. 91401

Filed Jan. 6, 1984, Ser. No. 568,615
Int. Cl.[4] F16H *27/02*
U.S. Cl. 74—111 8 Claims





1. A drive apparatus comprising:

a housing;

solenoid electrical means within said housing for controlling a mechanical output of said drive apparatus;

drive transmission means within said housing responsive to said solenoid electrical means, said drive transmission means including an actuator member and a follower member that linearly move in a first linear direction in response to electrical energy applied to said solenoid electrical means;

driver means within said housing responsive to said drive transmission means, said driver means translating the motion in the first linear direction to motion in a second linear direction;

shaft means disposed through a portion of said housing;

ratchet means disposed at a first end of said shaft means;

ratchet drive means slidably attached to said housing having a first portion connected to said driver means and having a second portion engaging said ratchet means, the first portion of said ratchet drive means being driven with a first force by said driver means in said second linear direction by the response of said solenoid electrical means, thereby causing said ratchet means to rotate, thereby turning said shaft means;

stop means rotatably attached to said housing and having at least one portion engaging said ratchet means;

first biasing means for biasing said ratchet drive means into engagement with said ratchet means with a second force that is less than said first force; and

second biasing means for biasing said portion of the stop means into engagement with said ratchet means;

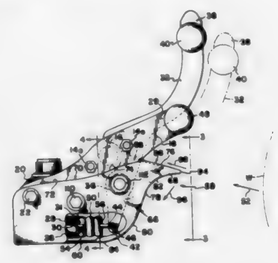
wherein after said ratchet drive means has been displaced a maximum amount, and after said solenoid electrical means has ceased to drive said ratchet drive means to its maximum displaced position, said first biasing means, in the absence of said first force, causes said ratchet drive means, driver means, follow member and actuator means to assume a position each means and member had prior to being displaced by said solenoid electrical means.

4,562,752

MOTORBIKE APPARATUS

Kenneth D. Hurley, 1384 S. Airport, Saginaw, Mich. 48601

Filed Sep. 2, 1982, Ser. No. 414,480
Int. Cl.[4] F16P *1/00*; G05G *25/00*; B62D *25/20*; B60T *11/26*
U.S. Cl. 74—608 12 Claims



1. A housing for a motorcyle brake assembly or the like, comprising:

a pair of upstanding laterally spaced apart side walls;

a bottom closure wall spanning the lower ends of said side walls;

a forward end closure wall joined to said bottom wall and spanning the forward ends of said side walls; and

a top wall joined to said forward wall and spanning said side walls but terminating forwardly of the rearward ends of said side walls;

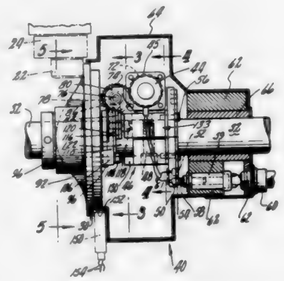
said forward end wall including a lower upstanding end wall portion and an upper forwardly projection portion which cooperate to define means for diverting foreign matter upwardly and downwardly.

4,562,753

APPARATUS FOR ADJUSTING INDIVIDUAL CAMS OF A PUSHER CONVEYOR

Charles M. Kingsbury, Manchester, and Bruce R. Beckwith, Unionville, both of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Aug. 31, 1983, Ser. No. 528,008
Int. Cl.[4] F16H *53/04*
U.S. Cl. 74—838 5 Claims



1. An apparatus for adjusting the radial orientation of a cam relative to a drive shaft to provide a drive source for a further mechanism in accordance with the cam profile, wherein said cam is frictionally mounted to said drive shaft for rotation therewith, the force between said cam and said further mechanism being less than the frictional force between said cam and said drive shaft, said apparatus comprising:

a motor mounted to said drive shaft for rotation therewith, having a motor shaft;

a plurality of interconnected gears linking said motor shaft to said cam;

slip rings secured relative to said drive shaft for rotation therewith;

stationary brush means operatively connected to said slip rings for providing power thereto; and

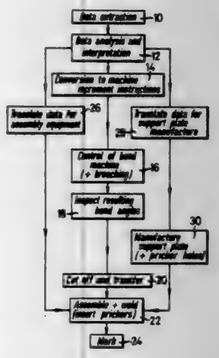
control means for selectively providing power to said brush means, wherein the motor, acting on said cam through the plurality of interconnecting gears, exerts a sufficient force on said cam to overcome the mounting friction between said cam and said cam shaft, and thereby causes the relative radial motion thereof.

4,562,754

METHODS FOR CONSTRUCTING CUTTING TOOLS

John R. Archer, Royston, and Peter F. Ross, Foxton, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Feb. 28, 1983, Ser. No. 470,384
Claims priority, application United Kingdom, Mar. 4, 1982, 8206355
Int. Cl.[4] B21K *5/20*; B26F *1/46*; B21D *7/024*, *7/12*
U.S. Cl. 76—107 C 2 Claims



1. A method of constructing a press knife including a knife blade secured to a support plate, for cutting out sheet materials such as leather comprising the steps of:

(1) generating data relating to the outline or profile of a sheet material blank which is to be cut out,

(2) converting the data relating to the profile into a plurality of channels of machine instructions,

(3) supplying one of said channels of information to a support plate manufacturing means for manufacturing the support plate,

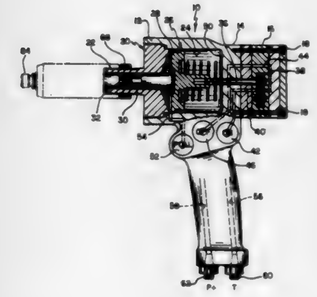
(4) conjointly supplying a second of said channels of information to a bending machine for forming strip material into the knife blade profile.

4,562,755

INSTALLATION TOOL FOR STUD/INSERT WITH LOCK RING

Marvin P. Reece, Dana Point, Calif., assignor to Rexnord Inc., Brookfield, Wis.

Filed Apr. 3, 1984, Ser. No. 596,227
Int. Cl.[4] B25B *13/50*
U.S. Cl. 81—53.2 1 Claim



1. An adapter for adapting a power unit having a housing from which projects a fixed nose, in which extends a spindle which can be rotated in either direction and axially retracted under power for installing a stud insert having a threaded base and a serrated bourrelet above the threaded base, and a lock ring having internal serrations adapted to mesh with the serrated bourrelet and external serrations adapted to lock into a workpiece when the lock ring is pressed into the peripheral rim of a hole in said workpiece into which the stud insert is threaded, said adapter comprising:

a reaction sleeve adapted to be mounted on said power unit nose, and having a cylindrical bore coaxial with a spindle of a power unit;

a drive member having a cylindrical body closely fitting within said reaction sleeve bore and rotationally and axially slidable therein and an internally threaded bore;

coupling means for torsionally and axially coupling said drive member with the spindle; and

engaging means on said drive member for torsionally and axially connecting said drive member to a stud insert;

said engaging means including an internally and externally threaded socket threaded into said internally threaded bore in said drive member and rotatable therein to adjust its axial position along said drive member so as to accommodate studs of different shank length, said socket being adapted to threadedly engage one threaded end of said stud, said engaging means further including means for releasably fixing said socket against rotation in said drive member bore and to fix the axial position of said socket,

said socket fixing means including a longitudinal slot in said drive member, a longitudinal slot in said socket and a key fitted into said drive member slot and projecting radially into said bore and into said corresponding longitudinal slot in said socket;

said drive member further having a shoulder for contacting the top edge of said serrated bourrelet on said insert when said stud insert is fully assembled to said adapter so as to accurately locate said stud insert relative to said drive member, so that when said stud insert is screwed into said workpiece hole until said lock ring seats against the top surface of said workpiece, the top edge of said serrated bourrelet will be within 0.0–0.010 inches below the top surface of said workpiece;

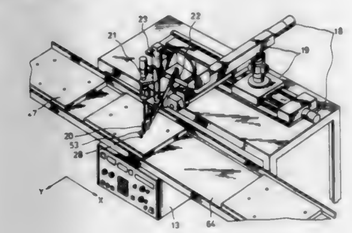
said reaction sleeve having a press face for engaging said lock ring when said spindle is retracted relative to said nose and said nose advances relative to said spindle, thereby forcing said press face of said reaction sleeve against said lock ring to press said lock ring into said workpiece such that the top surface of said lock ring is flush with the top surface of said workpiece.

4,562,756

NUMERICAL CONTROL SCREW TIGHTENING MACHINE

Toshinori Otsuki, Yawata, and Teruo Maruyama, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 16, 1984, Ser. No. 631,538
Claims priority, application Japan, Jul. 19, 1983, 58-132418; Jul. 27, 1983, 58-138414
Int. Cl.⁴ B25B *29/00*
U.S. Cl. 81—57.4 8 Claims



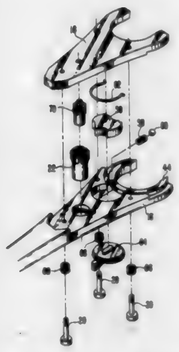
1. A numerical control screw tightening machine comprising:
- a screw tightening apparatus having a movable table and an electrical driver fixed to said table,
- hole position detecting means comprising an ultrasonic element fixed to said screw tightening apparatus for transmitting and receiving ultrasonic beam thereby cooperatively obtaining an information with regard to a position of hole of a work, the hole of said work being disposed preliminarily roughly by a transfer means, and
- a numerical control apparatus supplied with said information with regard to said hole position from said hole position detecting means, for controlling said table, said electrical driver and said hole position detecting means.

4,562,757

HIGH TORQUE EXPANDABLE SOCKET RATCHET WRENCH

James Furey, 36 Harborhead Dr., Point Pleasant Beach, N.J. 08742

Continuation of Ser. No. 475,361, Mar. 14, 1983, abandoned.
This application Feb. 12, 1985, Ser. No. 700,727
Int. Cl.⁴ B25B *13/46*
U.S. Cl. 81—63 4 Claims



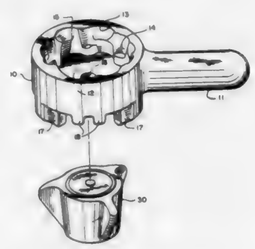
1. A high torque socket ratchet wrench assembly, which comprises:
- a driving socket assembly, said driving socket assembly being circular and comprised of a pair of complemental, substantially semi-circular socket members formed with a curved head including exterior ratchet teeth and interior wrench land surfaces, said socket members cooperating to define in a closed position a polygonal opening by said land surfaces and defining an axis of rotation of said driving socket assembly, said socket members formed with upper and lower guide channels defined by a circular bottom wall and an inner and outer cylindrically-shaped side wall; and
- an elongated handle assembly for receiving said driving socket assembly, said elongated handle assembly comprised of an elongated handle member formed with an upper yoke member having a semi-circular interior disposed rib member defined by a semicircularly-shaped end wall and inner and outer cylindrically-shaped walls depending downwardly from said semi-circularly disposed end wall, a lower yoke member formed with a semi-circular interior rib member defined by a semi-circularly-shaped end wall and inner and outer cylindrically-shaped walls depending downwardly from said semi-circularly disposed end wall, said lower yoke member mounted to said elongated handle member to move into an expanded open position with respect to said upper yoke member of said elongated handle member whereby said upper and lower yoke members in said expanded open position permit positioning of said driving socket assembly between said upper and lower yoke members, said rib members of said upper and lower yoke members engaging said upper and lower guide channels of said socket members forming said driving socket assembly in a closed position of said upper and lower yoke members by cooperation between said inner and outer cylindrically-shaped side walls of said rib members with said inner and outer cylindrically-shaped inner and outer side walls of said guide channels, respectively, means for transversely expanding said upper yoke member relative to said lower yoke member, means to maintain said upper yoke member relative to said lower yoke member in planar parallel relationship when in sid expanded open and closed positions, and a pawl member disposed in said elongated handle assembly to cooperate with said ratchet teeth of said pair of semi-circular socket members forming said driving socket assembly, said pawl member being spring-biased.

4,562,758

VALVE AND FAUCET HANDLE TOOLS

Allan D. Stirling, 187 Sheldon Ave., Pittsburgh, Pa. 15220

Filed Mar. 5, 1984, Ser. No. 586,367
Int. Cl.⁴ B25B *13/06*
U.S. Cl. 81—124.4 4 Claims



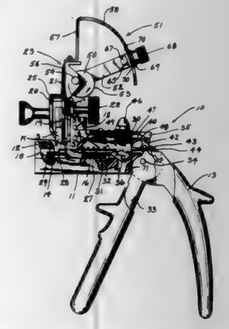
1. A valve and faucet handle turning tool comprising a cylindrical body having a cavity extending axially in one end thereof, a generally radially extending handle on the periphery of said body, said cavity having nonaligned identations in the sidewall thereof at at least three different levels and at least two different diameters graduating from the open end of the cavity downwardly, said indentation at each level having different configurations to engage a plurality of dissimilar shaped valve and faucet handles, and a plurality of projections extending parallel to the axis of the body on the end opposite the cavity, terminating at at least two levels and spaced from the cylinder axis to engage faucet handles of a plurality of different configurations.

4,562,759

UNIVERSAL CAM FOR KEY CUTTING MACHINE

Thomas W. Schmitt, 316 N. 111th St., Wauwatosa, Wis. 53226

Filed Feb. 2, 1984, Ser. No. 576,276
Int. Cl.⁴ B26F *1/12*
U.S. Cl. 83—414 3 Claims



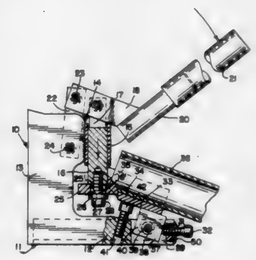
1. An adjustable depth gauge assembly for a key-cutting device having a vertically and transversely movable key blank support means mounted on a body that sequentially positions a key blank in selected cutting relationship to a cutting means, the combination comprising:
- a rotatable gauge member carried by and movable with said key blank support means, said gauge member includes a cylinder member having a continuous uninterrupted cylindrical outer surface that defines a cam surface sequentially engageable with an abutment means carried by said body to selectively limit vertical movement of said key blank support means, said cylinder member is rotatable on a shaft defining an eccentric axis extending longitudinally through said cylinder member and transversely with respect to said body;
- means for rotating said gauge member to a desired position to vary the depth of cuts in a key blank in accordance with a pre-established code pattern, said means for rotating said gauge member includes an arm connected to said shaft that extends transversely with respect to said shaft, said arm includes indicator means at its free end, and further including a bracket member carried by and movable with said key blank support means in a canteilevered manner which includes a scale thereon for cooperation with said indicator means so that said gauge member is rotated to a desired position in accordance with said preestablished code pattern; and
- means for locking said gauge member in the desired position, wherein the free end of said bracket member is arc-shaped and includes a longitudinally extending slot therein, and said locking means includes a plate member connected to said arm and extending along one side of the arc-shaped end of said bracket, a screw member having a head positioned on the other side of the arc-shaped end of said bracket member and a shank portion extending through said slot and threadedly engaged in said plate member, and a washer member positioned between said head and said other side of said bracket member, said washer member including a projection extending into said slot so that a positive lock of said gauge member is provided when said screw member is turned into said plate member.

4,562,760

TUBE NOTCHING APPARATUS

Robert J. Kinsley, Elmhurst, Ill., assignor to Vogel Tool & Die Corp., Stone Park, Ill.

Filed Sep. 29, 1982, Ser. No. 427,720
Int. Cl.⁴ B26D *1/12*
U.S. Cl. 83—693 21 Claims



1. Apparatus for notching the end portion of a tube comprising:
- an upright support including a base member,
- a singular tubular ram guide on said upright support,
- a ram member movably supported within said ram guide and having a lower terminal end portion spaced above said base member,
- leverage means movably connected to said ram member to said upright support for reciprocating said ram member,
- a notching punch carried by and reciprocally movable with said ram member,
- a tube support carried by said base member, said tube support providing cradle means for supporting an end of a tube,
- said tube support including a cutting die portion cooperative with the punch during movement of said ram and notching punch to shear an end portion of said tube,
- said terminal end portion and said punch having connecting means removably affixing the punch to the terminal end portion of the ram member,
- said punch and said connecting means defining with the base member a quick removal clearance space between the punch and connecting means above and the base member below to permit quick removal of the connecting means and punch from the terminal end portion of the ram member,
- said terminal end portion providing a greater removal space in a non-cutting position above the cutting die portion and a lesser removal space in the cutting position at the cutting die portion during notching.

4,562,761

ARTICULATED SAW

Carl J. Alexander, 54092 Wilbur Rd., Three Rivers, Mich. 49093

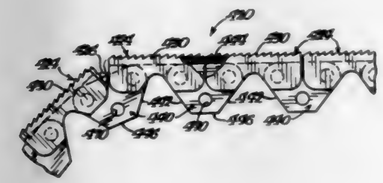
Division of Ser. No. 338,235, Jan. 11, 1982, Pat. No. 4,464,964, which is a continuation-in-part of Ser. No. 59,985, Jul. 23, 1979, and a continuation-in-part of Ser. No. 944,202, Sep. 19, 1978, Pat. No. 4,309,931, and a continuation of Ser. No. 697,978, Jun. 21, 1976, abandoned. This application Aug. 13, 1984, Ser. No. 640,683
Int. Cl.⁴ B27B *17/02*
U.S. Cl. 83—830 7 Claims

1. A saw blade comprising:
- an endless array of substantially planar cutting members which are disposed substantially end to end to form a substantially planar, articulated band;
- each substantially planar cutting member in said endless array having a pair of opposed top and bottom longitudinal margins, a pair of end margins, and a plurality of

cutting teeth disposed along said top margin to define a cutting face thereon;

said planar cutting members being situated in said array so as to present a circumferential row of cutting teeth about the periphery of said articulated band, said array of cutting members being adapted to define at least a cutting segment of said band wherein said cutting faces of a plurality of said cutting members define and lie along a cutting surface;

each said cutting member including a pair of spaced-apart sidewalls open along the cutting member bottom longitudinal margin opposite the cutting teeth and connected together inwardly of said bottom longitudinal margin of the cutting member by a cross wall that defines a generally planar exterior upper end surface at each cutting member end margin, each said exterior upper end surface extending from an end of said cutting face in a generally perpendicular orientation relative to said cutting face, each said sidewall at each said cutting member end margin defining a generally planar exterior lower end surface extending from said exterior upper end surface and also being oriented substantially perpendicular to said cutting face, each said exterior lower end surface extending from one of said exterior upper end surfaces of said cross wall toward said bottom longitudinal margin of said cutting member in the plane defined by said one exterior upper end surface;



said saw blade further comprising planar link members in spaced end-to-end relationship, each said link member having a pair of end margins and a pair of opposed top and bottom longitudinal margins;

each said link member being disposed with one of its end margins received between said spaced-apart sidewalls at one end of one of said cutting members and with the other end margin received between said spaced-apart sidewalls at one end of another of said cutting members;

said saw blade further comprising means for pivotally connecting each end margin of each link member to the receiving sidewalls of an adjacent cutting member;

each said link member having an upwardly facing abutment surface at said top longitudinal margin of said link member;

each said cutting member having a downwardly facing engaging surface between said spaced-apart sidewalls for engaging the abutment surface of a connected link member; and

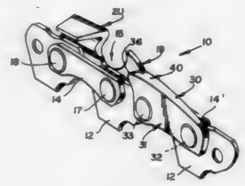
the relationship between said abutment surface of one link member and the engaging surfaces of two cutting members pivotally connected to said one link member being one of engagement when the two connected cutting members are oriented to lie in a generally straight line, said engagement thereby preventing rotation of the cutting faces of the two connected cutting members toward each other from said straight line orientation but permitting rotation of the cutting faces away from each other.

4,562,762

LOW KICK SAW CHAIN

Richard D. Dubler, Charlotte, N.C., assignor to Textron Inc., Providence, R.I.

Filed Dec. 28, 1982, Ser. No. 454,097
Int. Cl.⁴ B27B *33/14*
U.S. Cl. 83—834 **17 Claims**



1. A low kick saw chain comprising:

a series of center drive links, and pairs of side links all pivotally joined to said center links to form an articulated chain;

a first pair of side links comprising: a non-cutting tie link on one side of the chain; and a cutter link bearing an upstanding depth gauge at the front of the link and a cutter tooth rearward of the depth gauge, the cutter link on the opposite side of the chain from the non-cutting tie link; and

a second pair of side links immediately preceding each cutter link and comprising: a non-cutting tie link on the same side of the chain as the following cutter link; and a non-cutting guard link on the opposite side of the chain from the following cutter link;

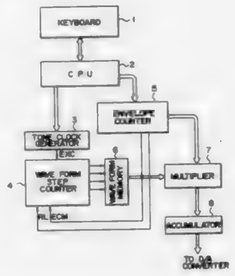
said guard link having a base portion including front and rear rivet receiving openings, and a top portion extending above said base portion, terminating in a nose portion adjacent the depth gauge of the following cutter link, said nose being rearward of the entire rear rivet receiving opening of said guard link, and said nose having a width substantially equal to the width of said guard link base portion plus the width of a center link, to provide a facial area that minimizes the possibility the cutter will be buried in wood being cut.

4,562,763

WAVEFORM INFORMATION GENERATING SYSTEM

Youzi Kaneko, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1984, Ser. No. 570,903
Claims priority, application Japan, Jan. 28, 1983, 58-13377
Int. Cl.⁴ G10H *1/057, 7/00*
U.S. Cl. 84—1.01 **6 Claims**



1. A waveform information generating system comprising:

a waveform memory means for storing waveform information, and which is divided into a plurality of steps in accordance with a plurality of addresses thereof;

tone information inputting means for inputting tone information;

tone clock signal generating means coupled to said tone information inputting means for generating a tone clock signal having a frequency corresponding to the input tone information;

control signal generating means for generating a control signal which changes an address incrementing rate of said waveform memory means; and

read signal generating means coupled to said tone clock signal generating means and to said control signal generating means, said read signal generating means including:

an address counting means for generating a read signal to access said waveform memory means by counting the tone clock signal supplied from said tone clock signal generating means; and

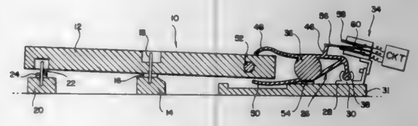
control means for controlling the incrementing rate of said counting means, when said tone clock signal is supplied to said address counting means, in accordance with said control signal delivered from said control signal generating means, thereby generating a waveform other than a waveform stored in said waveform memory means.

4,562,764

ELECTRONIC MUSICAL PERFORMANCE

Neal Marshall, Bolton, Mass., assignor to Kurzweil Music Systems, Inc., Waltham, Mass.

Filed Jun. 8, 1984, Ser. No. 618,468
Int. Cl.⁴ G10H *3/00*
U.S. Cl. 84—1.1 **2 Claims**



1. In combination with a keyboard having an array of pivoted keys, an action arm assembly for interacting with each keyboard key and comprising:

(a) means defining a pivotal action arm and pivot defining means therefor associated with each key,

(b) means defining a weighting of each action arm,

(c) means defining spring extensions of the action arm bracketing the associated key with one such spring constructed to yield initially on key depression and restore so that the action arm pivots,

(d) means for converting action arm movement into a key-movement-related signal and wherein the action arm has an A-yoke form with a weighted A-bar and legs defining said springs as leaf-form springs for bracketing a key end.

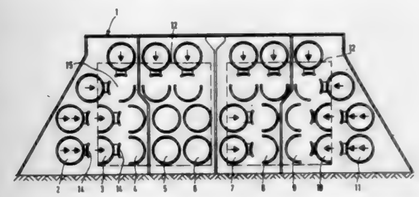
4,562,765

AMMUNITION BUNKER IN WHICH THE SHELLS ARE INSERTED IN INDIVIDUAL STORAGE TUBES

Peter Grünewald, Fuldabrück, and Heinz-Jürgen Schlömer, Vellmar, both of Fed. Rep. of Germany, assignors to Wegmann & Co. GmbH, Kassel, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 560,020
Int. Cl.⁴ F42B *37/02*
U.S. Cl. 89—34 **6 Claims**

1. An ammunition bunker comprising: a plurality of storage tubes arrayed in rows next to and above each other; and each receptive of shells therein through an extraction opening at the rear end thereof; a doorway at the rear ends of the tubes and through which shells are inserted and removed from the tubes, wherein the doorway extends over an area which is less than that of the array of tubes, whereby given tubes lie outside the area of the doorway; means mounting the given tubes at the front end thereof for pivoting movement of the rear end toward the doorway area; and wherein storage tubes disposed adjacent the given tubes in the direction of pivot have cut out



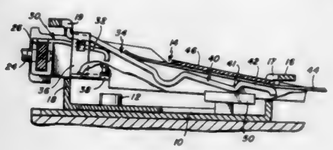
portions to enable the extraction openings of the pivoted given storage tubes to be in approximately the same position as the extraction openings of the cut out storage tubes.

4,562,766

STRING TUNING AND FASTENING ARRANGEMENT

Donald T. Scholz, 13 Rich Valley Rd., Wayland, Mass. 01778

Filed Jun. 6, 1983, Ser. No. 501,441
Int. Cl.⁴ G10D *3/14*
U.S. Cl. 84—297 R **14 Claims**



1. String tuning and fastening apparatus for a stringed musical instrument secured to the instrument for supporting one end of each string and comprising;

a lever member having means defining a pivot point thereof and means defining a clamping segment thereof adjacent said pivot point,

a support piece for said lever member having means defining a fulcrum arranged to cooperatively receive said pivot point with the lever member free to pivot in said support piece about said pivot point,

means on said lever member for locking said lever member to said support piece with the clamping segment of said lever member adapted to clamp the string,

and means supported adjacent said lever member for releasing said means for locking and in releasing said lever member to permit removal of the clamping force of the clamping segment on the string.

4,562,767

MUZZLE RECOIL DAMPENER

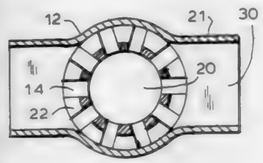
Karl-Egon Janssen, Meerbusch, and Heinz G. Breuer, Duisburg, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 20, 1983, Ser. No. 459,689
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203807
Int. Cl.⁴ F41C *21/18*
U.S. Cl. 89—14.3 **7 Claims**

1. In a gun barrel, an improved muzzle dampening or brake device having a housing with a pair of diametrically opposite gas emission outlets mounted thereon which outlets extend substantially normally to the longitudinal axis of the gun barrel, said device is adapted to be coaxially mounted on the muzzle end of a gun barrel, the improvement comprising:

(a) the interior diameter of said muzzle dampening or brake device is identical to the caliber of the gun barrel;

(b) said device having a plurality of through-bores for placing the interior of the device in communication with the ambient atmosphere, the through-bores are equiangularly disposed about the axis of the device in a plurality of parallel planes which are normal with respect to the longitudinal axis of the gun barrel;
(c) a plurality of annular parallel grooves disposed on the outer periphery of the device normally with respect to the axis of the device, each of said grooves being in communi-



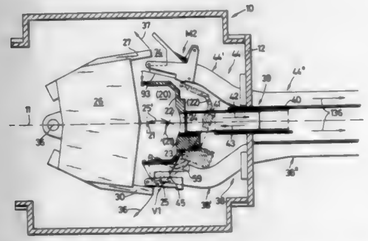
cation with the through-bores disposed in one of said parallel planes;
(d) said device is of cylindrical shape, said housing being coaxially gas-tightly mounted over said device, said housing having a pair of diametrically opposite horizontally projecting extensions defining said pair of opposite gas emission outlets which are in fluid communication with said plurality of annular grooves; said housing having a sufficient axial length so as to cover all of said annular parallel grooves.

4,562,768

ALTERNATIVE AMMUNITION BELT FEEDER FOR AN AUTOMATIC MACHINE CANNON

Udo Weinfurth; Helmut Fischer, and Walter Sauerwald, all of Duesseldorf, Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 9, 1984, Ser. No. 588,126
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1983, 3308676
Int. Cl.⁴ F41D *10/38*
U.S. Cl. 89—33.04 **16 Claims**



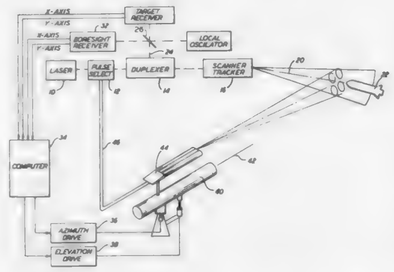
1. An improved discharge arrangement for use with an automatic fire arm, in particular a machine cannon, having a gun mount in which an alternate ammunition belt feeder mechanism is operatively mounted, the improvement comprising the following features in combination,
(a) said alternate ammunition belt feeder has two outlets for respectively discharging therethrough empty ammunition belt clips of two different types of ammunition,
(b) said machine cannon has a cradle with a built-in gun barrel and a discharge opening for permitting the discharge of empty cartridge casings,
(c) said arrangement having two discharge ducts, each duct is adapted to coact with one outlet of said two outlets of said alternate ammunition belt feeder to discharge empty belt clips therethrough;
(d) said two ducts are stationary over their entire lengths relative to said gun mount;
(e) a discharge duct having an inlet for empty cartridge casings, is mounted between said empty belt clips discharge ducts and confronts said inlet of said discharge duct for empty cartridge casings of said machine cannon;
(f) said alternate ammunition belt feeder is operatively movably mounted in said gun mount;
(g) said cradle together with the built-in gun barrel is operatively movably mounted relative to the gun mount for control purposes;
(h) means are operatively mounted in at least one of said two discharge ducts for holding empty belt clips therein;
(i) the upper one of said two discharge ducts has a first inlet region in which means are provided for positionally adapting said upper discharge duct in dependence to the position of said alternate ammunition belt feeder to receive empty belt clips therefrom; and
(j) said holding means and adapting means are actuated in dependence to the positional shift of said alternate ammunition belt feeder.

4,562,769

SPATIALLY MODULATED, LASER AIMED SIGHTING SYSTEM FOR A BALLISTIC WEAPON

Hans A. Heynau, Norwalk, and Charles F. Hoover, Ridgefield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1983, Ser. No. 565,494
Int. Cl.⁴ F41G *3/06*
U.S. Cl. 89—41.06 **1 Claim**



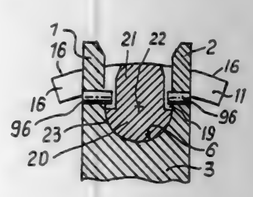
1. A precision weapon aiming system for accurately orienting the boresight of a weapon toward a target, comprising:
an optical source for generating a series of illuminating pulses;
optical scan means for directing said illuminating pulses along a first axis which is scanned over a transmit field of view, and for receiving pulses reflected by said target in a receive field of view;
firest receiver means for providing direction signal associated with the orientation of said first axis;
pattern projector means mounted to direct a preselected series of optical pulses in a quadrature format along a second axis, said second axis being colinear with the boresight of said weapon;
second receiver means positioned to receive return optical signals from said optical scan means, and for providing quadrature signals in which the relative magnitude thereof is indicative of the orientation of said second axis;
pulse selector means for coupling preselected illuminating pulses along a quadrature waveguide to said pattern projector means, said pulse selector means being disposed between said optical source and said optical scan means; and
means for redirecting the boresight of said weapon until said quadrature signals are equal thereby precisely and accurately orienting said boresight of said weapon on said target.

4,562,770

RADIAL PISTON MOTOR OR PUMP

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Filed Apr. 23, 1984, Ser. No. 603,050
Int. Cl.⁴ F01B *13/04*; F16J *1/14*
U.S. Cl. 91—491 **1 Claim**



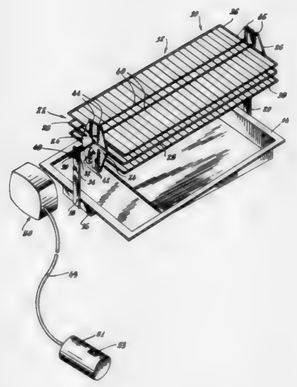
1. In a radial piston type device, wherein fluid flows through substantially radially arranged cylinders, the combination of pistons which reciprocate in said cylinders, piston shoes interposed between a piston stroke actuator guide means and said pistons with said piston shoes pivotably borne on bearing beds in said pistons; each individual piston of said pistons bearing one piston shoe of said piston shoes, each individual shoe of said shoes forming an "H-form" when seen from above with said "H-form" provided by the slide portion of said shoe with said slide portion sliding with its slide face along the piston stroke guide face of said actuator means, said slide portion provided above the pivot portion of said shoe below said slide portion of said shoe, said pivote portion borne in said bearing bed of the respective individual piston of said pistons, said "H-form" further defined by slots which extend radially fully through said slide portion and from the medial portion above said pivot portion between axial end portions of said slide portions in forward and rearward directions respectively and relative to the direction of movement of said shoe along said piston stroke guide face, holding means engaging said piston and shoe to prevent escape of said shoe from said piston, and an improvement,
wherein said improvement consists in the provision of two radial extensions on each individual piston of said pistons with said extensions extending radially outwardly from the radial outer end of the body of said piston with said extensions diametrically oppositely located relative to the axis of said piston,
wherein said extensions extend from said bearing bed of said individual piston in radial outward direction towards said slots in said individual shoe of said shoes and radially beyond the pivot center of said shoe in said piston into said slots of said shoe,
wherein said holding means include pins which are fastened in said piston while two diametrically opposed located recesses are provided in said pivot portion and said medial portion of said individual shoe with said recesses forming holding walls radially below said pins and below said pivot center, and,
wherein said pins extend individually into the respective recess of said recesses while said holding walls are slightly distanced from said pins to permit a pivotal movement of said shoe in said piston and of said pins in said recesses.

4,562,771

FLIP-OVER DRIVE SYSTEM FOR A REMOVABLE OVEN ROTISSERIE

James E. Williams, Stamford, Conn., assignor to Cuisinarts, Inc., Greenwich, Conn.

Filed Sep. 19, 1984, Ser. No. 652,339
Int. Cl.⁴ A47J *37/04*
U.S. Cl. 99—397 **36 Claims**



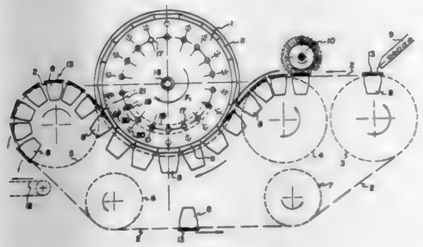
1. A flip-over drive system for a rotisserie, comprising:
drive means;
gear train means driven by said drive means;
cam means mechanically coupled to said gear train means for rotation in response to the driving of said gear train means by said drive means, said cam means including a downwardly extending projection and a downwardly extending peripheral portion which extends partially around the periphery of said cam to provide a window in said peripheral portion;
rotatable escapement means positioned relative to said cam means for periodic rotation through the window on said cam means in the same direction of rotation as the direction of rotation of the cam means upon engagement of the escapement means by the downwardly extending projection on said cam means;
socket means mechanically coupled to said escapement means for rotation therewith, said socket means being configured to receive the end of a rotisserie shaft, whereupon said socket means and the rotisserie shaft received therein are rotated to a first predetermined angular position upon engagement of said escapement means by the downwardly extending projection on said cam means and remain in the first predetermined angular position for a predetermined dwell period until the downwardly extending projection on said cam means re-engages the opposite end of said escapement means whereupon said socket means and the rotisserie shaft are rotated to a second predetermined angular position and remain in the second predetermined angular position for a predetermined dwell period.

4,562,772

TOMATO PEELING DEVICE OPERATING THROUGH VACUUM AND TEMPERATURE

Isidoro N. Battistini, Godoy Cruz, Argentina, assignor to Talleres Metalurgicos "Condor" Battistini & Cia, S.A., Mendoza, Argentina

Filed Nov. 16, 1984, Ser. No. 671,974
Claims priority, application Argentina, Nov. 16, 1983, 294839
Int. Cl.[4] A23N *7/00*
U.S. Cl. 99—472 **3 Claims**



1. A device for peeling tomatoes and the like under vacuum upon receipt from previous and sufficient heating means for swelling the pulp thereby rupturing the skin, including means for discharging said heated tomatoes or the like into a plurality of containers, means for coupling each of said containers to respective vacuum suction openings, means for exhausting said suctioned air thereby separating the ruptured skin from the pulp while said plurality of containers continually progress on a first endless conveyor, comprising:

means for admitting air at atmospheric pressure into said continually progressing containers;

means for depositing said peeled tomatoes or the like on a second conveyor means;

rotating drum means having a plurality of compartments located in the cylindrical periphery thereof for sealingly engaging said plurality of container means;

said rotating drum having an internal cavity in communication with a vacuum pump and with each of said compartments;

said container means having an upper inlet in the shape of a flat rectangular frame corresponding to respective flat rectangular inlet frames on said compartments;

a plurality of first valve means operatively associated with said vacuum suction openings, wherein each of said vacuum suction openings is coupled to one of said plurality of container means;

a plurality of second valve means operatively associated with said means for admitting air at atmospheric pressure, wherein each of said plurality of second valve means for admitting air at atmospheric pressure is coupled to one of said plurality of container means;

said rotating drum means being operatively engaged to said first valve means throughout a first arcuate portion of said rotating drum means;

said rotating drum means being operatively engaged to said second valve means throughout a second arcuate portion of said rotating drum means;

said first arcuate portion defining a distance over which said vacuum suction is applied for separating the ruptured skin from the pulp;

said second arcuate portion defining a distance over which the air at atmospheric pressure is admitted into said container;

the sum of said first and second arcuate portions defining a distance over which said containers are in contact with said associated compartments on said rotary drum; and

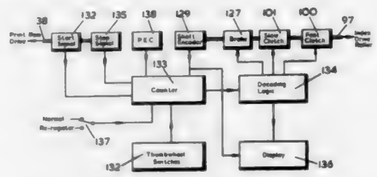
sweeper means for continuously cleaning said upper rectangular frame inlets of said plurality of container means.

4,562,773

PRINTING MACHINE WITH LABEL STOCK INDEXING MECHANISM

Steven J. Diggle, Bury, England, assignor to Markem Systems Limited, Salford, England

Filed Nov. 30, 1984, Ser. No. 676,934
Claims priority, application United Kingdom, Nov. 30, 1983, 8331899
Int. Cl.[4] B31F *1/07*; B32B *31/00*
U.S. Cl. 101—27 **9 Claims**



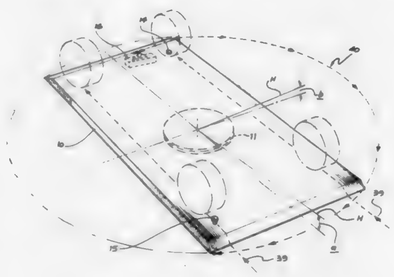
1. A printing machine for printing labels, for example, and comprising an indexing mechanism for use in indexing predetermined lengths of stock or web through a printing mechanism, the indexing mechanism comprising an indexing roller, a motor for driving the roller, a transmission operatively connecting the motor and the indexing roller and including a driven shaft coupled to the indexing roller and mounting a fast clutch, a slow clutch and a brake, and control circuitry for controlling the clutches and the brake and including means for pre-setting the length of stock or web to be indexed, signal-generating means operated by the printing mechanism to generate a "start" signal adapted to load the pre-set indexed length into a counter, encoding means operated from the indexing roller drive transmission to provide a pulsed output, one pulse equalling a predetermined distance of length travel, and to decrement the counter, and gating logic driven from the counter output to control the clutches and break either to give a fast and subsequently slow pull to each pre-set index length or a slow pull to the pre-set index length dependent upon the value of the pre-set indexed length.

4,562,774

MOTOR VEHICLE TURNTABLE

Alexander Dehring, Nowra, Australia, assignor to K. G. Coles & Co. Pty Limited, New South Wales, Australia

Filed Dec. 14, 1983, Ser. No. 561,232
Int. Cl.[4] B60S *13/02*
U.S. Cl. 104—42 **4 Claims**



1. A turntable comprising:

(a) a generally planar rectangular support having:

(i) a first corner, a second corner, a third corner, and a fourth corner;

(ii) a first short side connecting said first corner and said second corner, a first long side connecting said second corner and said third corner, a second short side connecting said third corner and said fourth corner, and a second long side connecting said fourth corner and said first corner; and

(iii) a longitudinal axis perpendicular to and bisecting said first and second short sides and a transverse axis perpendicular to and bisecting said first and second long sides;

(b) a bearing supporting said support at the intersection of said longitudinal and transverse axes, said bearing supporting said support for rotation about an axis which is inclined from the vertical by an angle a in the longitudinal direction and an angle b in the transverse direction; and

(c) detent means for releasably holding said support in either a first position in which said first corner is tilted upwardly and said third corner is tilted downwardly about a diametric line connecting said second and fourth corners or a second position in which said first corner is tilted downwardly and said third corner is tilted upwardly about the diameteric line connecting said second and fourth corners, said detent means comprising first and second latch means located at diagonally opposite positions on said support in position to be released by contact with a wheel of a vehicle driven onto said support,

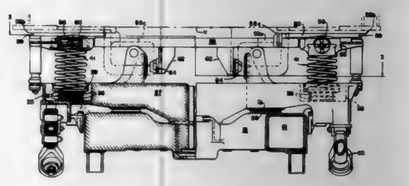
whereby, when a vehicle is driven onto said support such that the center of gravity of the vehicle is located between the inclined axis of said bearing and said first short side and one of said first and second latch means is released, said support will rotate by 180° under the influence of the force of gravity, changing the direction of the vehicle.

4,562,775

RAILWAY VEHICLE WITH END AND INTERMEDIATE TRUCKS

Keith L. Jackson, Creve Coeur, Mo.; W. Clifford Jones, Granite City, and John L. Schauster, Highland, both of Ill., assignors to Lukens General Industries, Inc., Coatesville, Pa.

Filed Mar. 29, 1984, Ser. No. 594,878
Int. Cl.[4] B61F *5/02*
U.S. Cl. 105—186 **36 Claims**



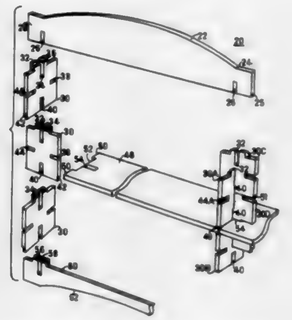
20. In a railway vehicle truck, a pair of axles spaced apart longitudinally, a gauged pair of railway flanged wheels on each said axle, a truck frame supported on said axles, a transversely extending bolster pivotally mounted on said truck frame to swivel about a vertical axis with respect thereto, spring devices supported on the ends of said bolster and being yieldable transversely of said truck, a superbolster directly supported on said spring devices, means transversely movably supporting the vehicle body on said superbolster, means limiting transverse movement of said superbolster with respect to said bolster to normal lateral motion, said body-supporting means accommodating movement of the superbolster transversely of the body beyond the limited transverse movement permitted between said superbolster and said bolster to accommodate lateral excursions of said truck frame with respect to the body in excess of normal lateral motion.

4,562,776

MODULAR EXPANSIBLE INTERLOCKING SUPPORT STRUCTURE

Pedro A. Miranda, Calle 4, #A-18, Prado Alto Guaynabo, Puerto Rico 00657

Filed Aug. 22, 1984, Ser. No. 643,240
Int. Cl.[4] A47B *47/04*
U.S. Cl. 108—111 **20 Claims**



1. A modular interlocking structural system, expansible in size and shape and requiring no fasteners or external support, which interlocking structural system comprises:

a series of vertically interlocking planar structural support elements, each comprising a substantially rectangular flat rigid surface with at least two opposing edges each provided with a slot from the edge into the planar surface approximately one fourth the distance between the opposing edges, wherein the slot width is approximately equal to the thickness of the planar support element, and further comprising, at one slotted edge, a protruding tab extending beyond the edge a distance equal to the thickness of a planar support element centrally positioned on approximately half the edge and split by the slot, and further protruding from the tab, a tab extension means, and on an edge opposite to the tab edge, a recessed portion sufficiently large to receive a tab extension means, and wherein planar support elements are interlocked in alternating angular alignment by intersecting a tab edge of a first planar support element with a recessed edge of a second planar support element so that the slots interconnect thereby interlocking the two elements for half the length of each, and interconnecting a recessed edge of a third planar support element with the tab edge of the second planar support element at an angle so that the slots interconnect overlapping the second and third elements for half the length of each and thereby inserting the tab extension means of the first planar support element into the aligned recessed edge of the third planar support element, and thereby leaving lateral slots between the first and third planar support elements, so that all planar support elements are rigidly interconnected and multiple interlocked planar support elements form a vertical support structure;

a series of elongated planar members each comprising a long flat surface with at least one slot in each end extending from an edge into the surface of the elongated member for approximately one fourth the width of a planar support element, wherein each slot is approximately equal in width to the thickness of a planar support element;

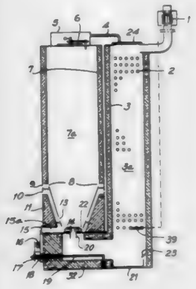
wherein the elongated planar members are inserted into the vertical support structure by interlocking slots with at least one pair of vertical support structures serving to support at least one elongated planar member therebetween.

4,562,777

HEAT GENERATOR

Eduard T. J. van der Voort, Meloenstraat 158, The Hague, Netherlands

Filed Apr. 30, 1984, Ser. No. 605,691
Claims priority, application Netherlands, May 6, 1983, 8301598
Int. Cl.⁴ F23B *7/00*
U.S. Cl. 110—234 **12 Claims**



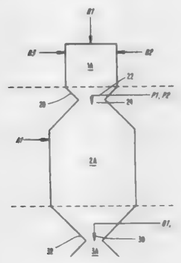
1. A heat generator, comprising: a fuel supply chamber having an upper fuel supply section provided with a feed port with a lid, said chamber having at its lower end an inwardly tapered section and including at said tapered section lower end a burner plate with mixing strips and a combustion pipe with collar, in which a continuous gas flow can be maintained from the tapered section and concentrating into the combustion pipe, said inwardly tapered section being provided with a supply line emerging in the tapered section upper part for primary air, a supply line emerging in the tapered section lower part at a level just above the level of the burner plate for secondary air, and a supply line emerging in the tapered section lower part at a level just below the level of the burner plate and at the level of the mixing strips for tertiary air, whereby a continuous gas flow is provided from said combustion pipe towards a gas discharge pipe connected therewith.

4,562,778

HIGH TEMPERATURE REACTION APPARATUS

Philippe Bernard, Paris, and Francois Prudhon, Versailles, both of France, assignors to Rhone-Poulenc Chimie de Base, Courbevoie, France

Filed May 21, 1984, Ser. No. 612,541
Claims priority, application France, May 20, 1983, 83 08394
Int. Cl.⁴ F23C *1/02*
U.S. Cl. 110—260 **19 Claims**



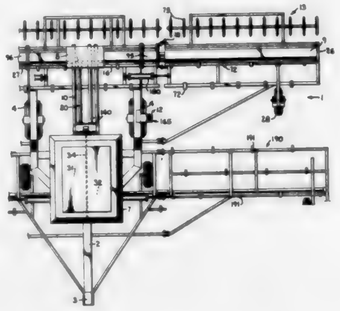
1. A high temperature reaction apparatus comprising:
a reaction chamber formed of a hollow body having an internal wall which is symmetrical about a longitudinal axis,
means for feeding a gaseous reactant to said reaction chamber, comprising:
a plurality of annular spaces surrounding said reaction chamber, each having the form of a torus,
at least one first conduit for delivering the gaseous reactant to each annular space,
a plurality of second conduits communicating each annular space with said reaction chamber and arranged to introduce the gaseous reactant tangentially into said chamber to establish a symmetrical helical flow of gaseous reactant therein, and
cooling means disposed between said annular spaces and said reaction chamber.

4,562,779

FOLDABLE DRILL IMPLEMENT

Stanley E. Briggs, Minneapolis, Kans., assignor to Briggs Manufacturing, Inc., Minneapolis, Kans.

Filed Jan. 26, 1984, Ser. No. 574,264
Int. Cl.⁴ A01C *5/00, 7/16, 7/20*
U.S. Cl. 111—1 **25 Claims**



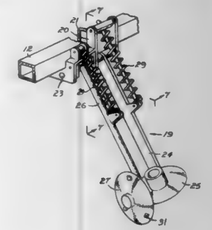
1. A foldable drill implement comprising:
(a) an implement frame having a tow bar for connection to a prime mover and a plurality of ground-engaging wheels for movable support over the ground in a first direction;
(b) a supply hopper mounted to said frame;
(c) a broadcast hopper mounted to said frame and spaced from said supply hopper, and extending generally transversely to said first direction;
(d) said implement frame having a center frame section and a plurality of wing frame sections oppositely positioned adjacent said center frame section and having ground-engaging wheels for support, said center frame section including pivot means connecting said wing frame sections to opposite ends of said center frame section for folding;
(e) said broadcast hopper including a central drill box mounted on said center frame section;
(f) said broadcast hopper including a plurality of wing section drill boxes mounted on a respective said wing frame section and extending generally longitudinally of said central drill box and in flow communication therewith, each of said wing section drill boxes having outer ends;
(g) a plurality of planter means supported by said frame and disposed along said broadcast hopper, said broadcast hopper being in flow communication with said planter means for broadcast of said material in the ground upon operational movement of said implement frame; and
(h) a first supply auger supported by said frame and extending generally in said first direction, said first supply auger being connected to said supply hopper and to said broadcast hopper and being in flow communication therebetween;
(i) a first distribution auger supported by said frame and extending generally transversely to said first directon along said broadcast hopper, said first distribution auger being in flow communication with said first supply auger and adapted to transfer material from said supply auger to said central and wing drill boxes of said broadcast hopper;
(j) motive means connected to and driving said first supply auger and said first distribution auger;
(k) control means at said wing section drill box outer ends and sensitive to the presence of excess material delivered by respective said wing distribution augers, said control means being adapted to deactuate said first supply auger upon said presence of said excess material.

4,562,780

TRASH FARMING MEANS AND METHOD

Gordon F. Leiblich, P.O.Box 157, Kimba, South Australia, Australia

Filed May 5, 1983, Ser. No. 491,743
Claims priority, application Australia, May 5, 1982, PF3860
Int. Cl.⁴ A01C *7/20*; A01B *21/08*
U.S. Cl. 111—88 **19 Claims**



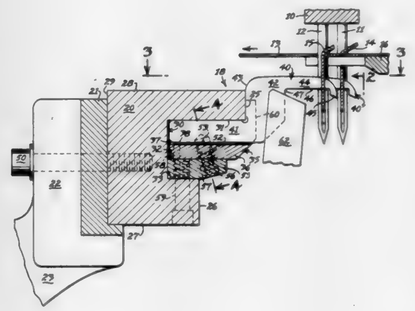
1. A trash farming implement adapted to travel in a given direction, comprising:
frame means;
generally horizontally disposed rotatable tillage means supported on said frame means inclined with respect to the ground so that as said tillage means is moved along the ground, the lowermost peripheral portion thereof is in contact with the ground, said lowermost portion being disposed forwardly and to one lateral side of the central region of the tillage means, with respect to said given direction of travel, whereby said tillage means, in operation, displaces soil in a first direction rearwardly and laterally toward said one side of said tillage means;
generally vertically disposed soil replacement plate means;
means mounting said soil replacement plate means on said frame means for movement along the ground, said soil replacement plate means being positioned such that the lowermost portion of the periphery thereof is adapted to contact the soil displaced by said tillage means adjacent the periphery of said tillage means at a location on said one side rearwardly of said lowermost peripheral portion of the latter, whereby soil displaced by said tillage means is displaced in said first direction toward said soil replacement means and is redirected by the latter in a direction so as to generally replace the soil in substantially its original position.

4,562,781

HOOK BAR CLAMP ASSEMBLY FOR TUFTING MACHINE

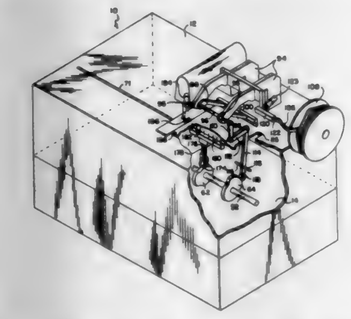
Jerry T. Green, Hixson, Tenn., assignor to Tuftco Corporation, Chattanooga, Tenn.

Filed Nov. 29, 1984, Ser. No. 676,738
Int. Cl.⁴ D05C *15/00*
U.S. Cl. 112—79 R **11 Claims**



1. A looper apparatus for a multiple needle tufting machine including looper hooks, each hook comprising a neck portion having an upright rear shoulder, a shank portion projecting rearward from the neck portion, and a bill projecting forward from the neck portion, comprising:
(a) a hook bar of solid material having a front face, a rear face, a top portion, a bottom portion, and a transverse dimension,
(b) an elongated recess opening through the front face of said hook bar, projecting rearward into said hook bar, and extending transversely of said hook bar,
(c) said recess having a top surface and a bottom surface,
(d) an elongated gauge member having front, rear, upper and lower portions, and received within said recess, the longitudinal axis of said gauge member extending transversely of said recess,
(e) a plurality of transversely spaced hook slots in said gauge member having the same gauge as the needles in the multiple-needle tufting machine,
(f) said hook slots being disposed vertically and extending front-to-rear through said gauge member and opening through the front portion of said gauge member, each of said hook slots being adapted to receive the shank portion of a corresponding looper hook projecting rearwardly into said recess,
(g) a clamp cavity within said lower portion of said gauge member intersecting a pair of adjacent hook slots,
(h) a clamp member within said clamp cavity movable between an upper clamping position projecting into the lower portions of said adjacent hook slots for engaging the shank portions of a pair of looper hooks received in said adjacent hook slots, and a lower non-clamping position disengaging the shank portions of the looper hooks received in said hook slots,
(i) screw means for each clamp member within said lower portion of said gauge member in alignment with said clamp cavity for moving said clamp member to said upper clamping position,

4,562,782
MACHINE FOR FORMING FLY CONSTRUCTION
Eugene F. Doucette, Burlington, Mass.; Donald Richardson, Atkinson, N.H., and Joop F. Hoekstra, Medfield, Mass., assignors to Reece Corporation, Waltham, Mass.
Filed Sep. 26, 1983, Ser. No. 535,714
Int. Cl.⁴ D05B *3/12*
U.S. Cl. 112—104 **28 Claims**

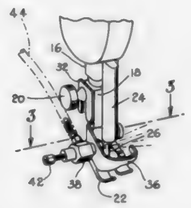


1. In a machine for forming one half of a fly structure on a garment panel having a fly flap portion integral therewith comprising,
first and second stations on said machine,
clamp means at said first station for initially clamping said garment panel adjacent the juncture line of the fly flap and main body portion in a predetermined position on said machine,
tucking means at said first station for forming a slit type pocket along the juncture line of the fly flap and main body portion of said garment panel and inserting the tape portion of one half of a slide fastener stringer in said pocket,
underfolding means at said first station for folding under the free edge of the fly flap portion,
holding means at said first station for retaining said slide fastener stringer in said pocket,
a portion of said clamp means cooperating with said underfolding means to transfer said garment panel to said second station while retaining said slide fastener stringer in said pocket, and
securing means located at said second station for permanently attaching the tape portion of the slide fastener in said pocket.

16. In a machine for securing a predetermined length of slide fastener tape to a garment panel comprising,
a first station at which the slide fastener tape is placed in position on the garment panel,
a second station spaced from said first station at which is located a sewing machine for securing said slide fastener tape to the garment panel by stitching,
transfer means for clamping the garment panel and the slide fastener tape at the first station and then transporting the garment panel and the slide fastener tape from said first station to said second station, and
sensing means at said second station indicating the arrival of said garment panel to start the sewing machine.

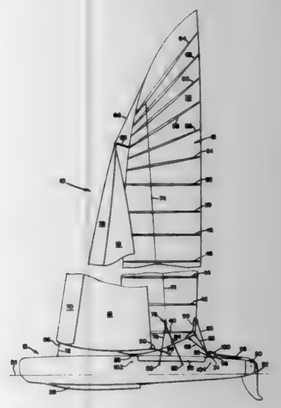
25. In a machine for securing a length of slide fastener tape to a garment panel comprising
a first station at which the slide fastener tape is placed in predetermined position on the garment panel,
a second station at which is located a sewing machine for securing said slide fastener tape to the garment panel by stitching, and
transfer means for clamping the garment panel and the slide fastener tape in fixed relative position to each other at said first station and then transporting the garment panel and the slide fastener tape from said first station to said second station.

4,562,783
NEEDLE FINGER GUARD AND COOLING DEVICE FOR A SEWING MACHINE
Dale McClellan, Rte. 7, Box 684, Easley, S.C. 29640
Filed Sep. 19, 1983, Ser. No. 533,410
Int. Cl.⁴ D05B *83/00*
U.S. Cl. 112—281 **2 Claims**



1. A combined needle cooling device and protector for use on a sewing machine, said sewing machine having a reciprocating needle and a presser foot, said presser foot including a slot through which said reciprocating needle passes during operation, a vertically extending support arm, and a foot pivotally attached to said vertically extending support arm, said combined needle protector cooling device comprising:
a bracket attached to said vertically extending support arm and extending forward along side of said needle;
said bracket having an inner end portion, an intermediate portion, and an outer portion,
an air jet facing said needle carried by said intermediate portion of said bracket;
said inner end portion of said bracket having a vertically elongated slot carried thereon;
said vertically elongated slot allowing said bracket to be adjustably and demountably attached to said vertically extending support arm;
said intermediate portion being substantially constant vertical thickness spaced above said pressure foot and extending horizontally over substantially the length of said pivotally attached presser foot;
said air jet being mounted substantially perpendicular to said intermediate portion of said bracket;
means for connecting said source of pressurized air to said air jet producing a stream of air for cooling said reciprocating needle while sewing said fabric; and
the outer portion comprising a substantially U-shaped member located above the tips of the inside and outside legs of the presser foot carried horizontally adjacent said intermediate portion of said bracket partially encircling said reciprocating needle providing a finger guard for said needle wherein the vertical thickness of said U-shaped portion substantially diminishes between two points located above said tips of the inside and outside leg portions of the presser foot with the clearance between the bottom edge of said bracket and the surface of the inside presser foot leg tip being substantially greater than the clearance between said bottom edge and surface for the outside presser foot leg tip.

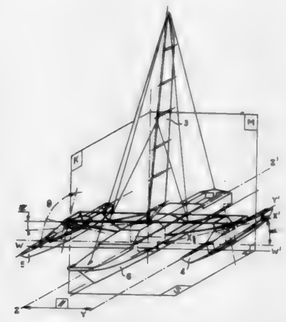
4,562,784
SAILING CRAFT
Donald R. Lineback, Ellsworth, Kans., assignor to Linecat Industries, Inc., Ellsworth, Kans.
Continuation of Ser. No. 278,095, Jun. 28, 1981, Pat. No. 4,463,699. This application Jul. 13, 1984, Ser. No. 630,851
The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.
Int. Cl.⁴ B63H *9/00*
U.S. Cl. 114—39 **11 Claims**



1. A shroud line cleat comprising first and second cleat shells joined through at least two upstanding side wall portions thereof extending upwardly from the two inner surfaces of each of said shells, a pair of top and bottom teeth sets integrally molded to each of said side wall portions and to each of said inner shell surfaces of each of said first and second cleat shells, openings at opposing ends of said cleat for enabling entry of two shroud lines, at least one of said teeth sets of each pair thereof having the height of the teeth varying across the shell inner surface length thereof, and each of said top and bottom teeth sets adapted to contact two spaced surface areas of each of said shroud lines at diagonal angles with respect to perpendicular planes across said shroud lines and configured to diverge inwardly away from said two side wall portions and adapted to force the shroud lines into contact within said cleat.

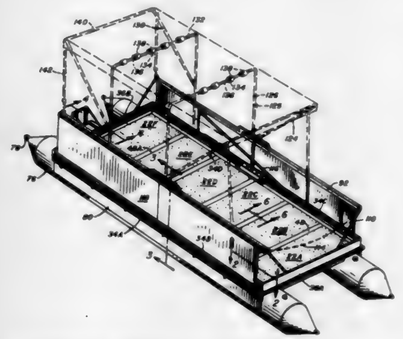
4,562,785
SELF-STABLE TRIMARAN
Patrice M. Priam-Doizi, F-17920 Breuillet, France
PCT No. PCT/FR82/00035, § 371 Date Oct. 29, 1982, § 102(e) Date Oct. 29, 1982
PCT Filed Mar. 1, 1982, Ser. No. 438,900
Claims priority, application France, Feb. 27, 1981, 81 03915
Int. Cl.⁴ B63B *43/14*
U.S. Cl. 114—39 **3 Claims**

1. A self-stabilizing trimaran containing a central hull and a mast attached to said hull, the self-stabilizing apparatus comprising:
a first float rotatably attached about the hull's center of buoyancy and on the starboard side of the hull through a connecting arm;
a second float rotatably attached about the hull's center of buoyancy and on the port side of the hull through a connecting arm;
wherein each float contains first and second fluidtight volumes, the first fluidtight volume located in front of the point of attachment to the connecting arm, and the second fluidtight volume located behind the point of attachment to the connecting arm; and
wherein each float has a freedom of rotation between a first abutment wherein the float is in a substantially horizontal



position and a second abutment wherein the float is in a substantially vertical position.

4,562,786
COLLAPSIBLE PONTOON BOAT
Gene M. Pruonto, P.O. Box 69, Duncansville, Pa. 16635
Filed Mar. 27, 1984, Ser. No. 593,904
Int. Cl.⁴ B63B *1/12, 7/08*
U.S. Cl. 114—61 **22 Claims**



1. A collapsible pontoon boat comprising:
a deck assembly;
a plurality of inflatable pontoons for receiving and supporting said deck assembly;
said deck assembly including a plurality of deck panels, end rails and side rails assemblable into a deck frame for receiving said deck panels in generally coplanar adjacent relation to each other, a support member positionable between adjacent deck panels, means for securing the deck panels to the side rails and end rails, and means for securing said pontoons to the deck assembly in underlying relationship to the deck immediately adjacent the side rails;
said means for securing said pontoons to the deck assembly including at least one outside flap attached to and extending over at least a major portion of the outside face of the pontoon, which flap includes fastener means, and cooperating fastener means provided on the outside of each side rail.

4,562,787

FORKED BOOM OR SPREADER GAFF FOR SAILBOARDS

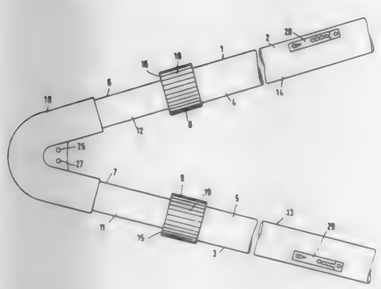
Joachim Adamek, Munich, Fed. Rep. of Germany, and Albert Gaide, Monnaz, Switzerland, assignors to Mistral Windsurfing AG, Nurensdorf, Switzerland

Filed Feb. 8, 1983, Ser. No. 464,891

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1982, 8204104[U]

Int. Cl.⁴ B63H *9/10*

U.S. Cl. 114—97 **21 Claims**



1. A wishbone boom for sailboards, having two outwardly bent booms, a tack fitting and an aft or clew fitting, which tack fitting is intended to be mounted to the mast of a sailboard and which aft or clew fitting is intended to mount the clew of a sail spanned between said two booms, which booms serve as manipulating members to control the sail, which booms are interconnected by the tack fitting and by the aft or clew fitting and consist of tubes, said booms comprising each a forward and rearward boom section, which said boom sections are telescopically movable relative to each other, which said rearward boom sections are interconnected by means of said aft or clew fitting and said forward boom sections are interconnected by means of said tack fitting, each of said two booms comprising further a form-locked coupling which allows a step-wise locking of an adjusted position of said two boom sections relative to each other, wherein said form-locked coupling means further comprise locking bodies and recesses distributed along the lengths said rear boom sections, said recesses being located in rails of a plastic material and said rearward boom sections each being provided with a groove in which said rails are held in a form locked condition, said locking bodies being insertable into said recesses in order to engage said recesses.

4,562,788

SEA ANCHOR OR CHANGEABLE DRAG

William J. Abernethy, 192A George St., East Melbourne, Australia (3002)

PCT No. PCT/AU83/00170, § 371 Date Jul. 23, 1984, § 102(e) Date Jul. 23, 1984, PCT Pub. No. WO84/02111, PCT Pub. Date Jun. 7, 1984

PCT Filed Nov. 23, 1983, Ser. No. 634,227

Claims priority, application Australia, Nov. 23, 1983, PF6934

Int. Cl.⁴ B63B *21/48*

U.S. Cl. 114—311 **6 Claims**

1. A sea-anchor or like device including:

a hollow body,

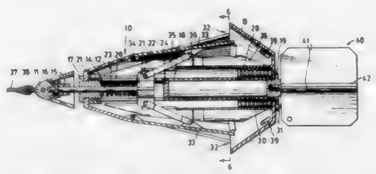
attachment means, movable longitudinally in relation to the body for attaching a hawser to the body,

a plurality of ports formed in the body,

closures for the ports,

spring-loading means urging the closures to closed position, and

actuating means so connecting the attachment means to the closures that, upon the application of predetermined tension through a hawser to the attachment means, the closures are moved to open position against the action of the



spring-loading means to increase the resistance of the body to passage through water.

4,562,789

ARRANGEMENT FOR REMOTE SWEEPING OF MINES SENSITIVE TO MAGNETIC FIELDS

Wolfgang Bornhofft, Seevetal, and Gerhard Irenkler, Braunschweig, both of Fed. Rep. of Germany, assignors to Thomson-CSF, Paris, France

Filed May 1, 1984, Ser. No. 605,813

Claims priority, application Fed. Rep. of Germany, May 3, 1983, 3316005

Int. Cl.⁴ B63B *21/00*

U.S. Cl. 114—312 **5 Claims**



1. A device for conducting mine sweeping operations for mines having ignition systems sensitive to magnetic fields, comprising:

a self-drive remote control float for surface or undersea operations;

a plurality of identical permanent magnets located in said float wherein each of said magnets are spaced apart from each other such that a main axis of each one of said magnets is parallel to the main axes of the others of said magnets and wherein said permanent magnets generate a magnetic field required for sweeping said mines;

a plurality of rotation means respectively associated with each of said plurality of magnets for rotating each of said magnets about their respective main axis; and

control means for the controlling of said plurality of rotating means of said magnets whereby said control means provides for said rotation means to cause a predetermined amount of rotation of said magnets about said main axis in correspondence with respective different ignition systems of mines which are being swept and the extent of the area which is being swept.

4,562,790

IN-LINE EGG OILER

Robert C. Leffke, Fort Myers, and Sylvester Sauder, North Fort Myers, both of Fla., assignors to Frank J. Cismoski, Oak Lawn, Ill.

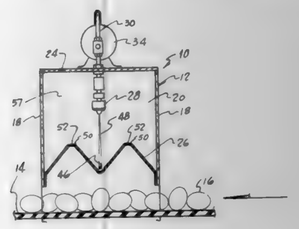
Filed Aug. 7, 1984, Ser. No. 638,629

Int. Cl.⁴ B05B *1/04, 15/00*

U.S. Cl. 118—24 **8 Claims**

1. An in-line part oiler mounted over a conveyor transporting articles to be oiled, said oiler comprising a closed enclosure having a bottom, a spray nozzle mounted in said enclosure, means for supplying oil under pressure to said spray nozzle, an air inlet into said enclosure, means for supplying air under pressure to the interior of said enclosure through said air inlet,

a surface in said enclosure upon which a spray of oil from said nozzle impinges, whereby said spray of oil is finely atomized in said enclosure and dispersed in the air in said enclosure as a fine mist, and apertures through the bottom of said enclosure for passing said mist from said enclosure upon the articles traveling on said conveyor, wherein said spray of oil is fan-shaped,



said surface is the bottom of said enclosure forming a trough extending substantially in the same direction as said fan-shaped spray for causing said spray to impinge at the bottom of said trough, and said apertures passing said oil mist to said articles traveling on said conveyor are formed at the top of said trough.

4,562,791

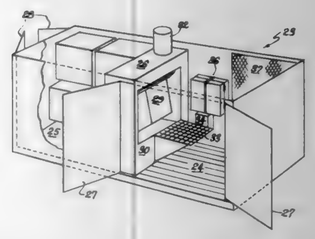
CONTAINERIZED THERMAL SPRAYING PLANT

Julian Porter, and Larry Suhl, both of 4674 Alvarado Canyon Rd., San Diego, Calif. 92120

Continuation of Ser. No. 475,413, Mar. 14, 1983, abandoned. This application Nov. 15, 1984, Ser. No. 671,591

Int. Cl.⁴ B05B *15/12;* **B05C** *15/00*

U.S. Cl. 118—326 **3 Claims**



1. A containerized thermal coating plant which comprises:

a first portable, self-contained rectangular enclosure having the outside dimension of a standard, transportable marine shipping container, and within said enclosure;

a spraying chamber and an equipment chamber separated by a molten particle recovery unit spanning the two longest walls of the rectangular enclosure, each chamber being accessible directly from the outside through a separate securable door;

said particle recovery unit comprising a water-wash screen facing the spraying chamber, a recovery vat under said water-wash screen, and an exhaust hood above it;

the spraying chamber including:

means for simultaneously melting and spraying a solid material within and outside said enclosure;

means for feeding said material to said means for melting; and

a foldable work bench mounted against the particle recovery unit, the equipment chamber including;

a source of air;

means for pressurizing and extracting moisture, oil and associated particulates from said air; and

means for regulating the flow of said air to said means for melting and spraying;

a second, self-contained portable rectangular enclosure having the outside dimension of a standard, transportable marine shipping container, said enclosure containing two blasting chambers separated by a machine room spanning the two longest walls of said second rectangular enclosure;

each blasting chamber being accessible directly from the outside through a separate securable door and containing means for directing a blasting medium against a workpiece within said blasting chambers or outside said second rectangular enclosure; and

said machine room containing a blast generator for propelling said blasting medium into said directing means and means for recovering said blasting medium from said blasting chambers.

4,562,792

APPARATUS FOR CONTROLLING LEAD DISTANCE OF A DOG LEASH

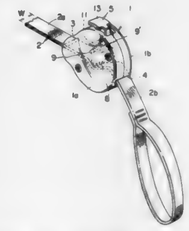
In B. Pak, #16 Eu Ju Ro 2 Ga Chung-Ku, and Soon Kim, Apt. 527-1410 #27 Jam Sil-Dong Kangoong-Ku, both of Seoul, Rep. of Korea

Filed Oct. 10, 1984, Ser. No. 659,441

Claims priority, application Rep. of Korea, Dec. 7, 1983, 10366/83; Feb. 28, 1984, 1674/84

Int. Cl.⁴ A01K *27/00*

U.S. Cl. 119—109 **5 Claims**



1. An apparatus for controlling the length of a dog leash, said apparatus comprising

a round flat case to fit the palm of a hand, said case having a slotted hole at a front thereof, a slotted hole at a rear thereof, an interior passageway connected with each said slotted hole for passage of a leash therethrough, and an inclined plane within said passageway for abutting the leash;

a thumb-actuated lever rotatably mounted in said case within said passageway for pivoting forwardly and away from said inclined plane to release the leash from said inclined plane and a spring in said case biasing said lever against said inclined plane for pressing a leash in said passageway against said inclined plane.

4,562,793

HONDA RETAINER

Roy G. Simpson, Cookeville, Tenn., assignor to Adams Plastics, Inc., Cookeville, Tenn.

Filed Jul. 19, 1983, Ser. No. 515,344

Int. Cl.⁴ A01K *15/00*

U.S. Cl. 119—153 **6 Claims**

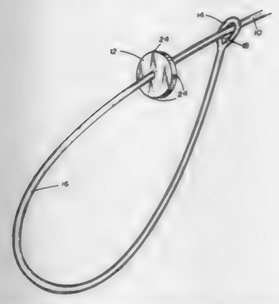
1. A honda retainer for a lariat having a honda to prevent a lasso from completely closing down on the catch during training and practice, the honda having an aperture that is dimensioned to receive and slid along the lariat, comprising:

a squat member having a generally central bore, said central bore having a diameter slightly larger than the diameter of the lariat so that the lariat fits snugly in said central bore

to admit the lariat therethrough, said squat member being dimensioned to be larger than the aperture of the honda so that said squat member cannot pass through the honda;

at least one lateral bore in said squat member extending from the outside surface of said squat member into said central bore; and

at least one elongated member having a pointed end and having sufficient length to extend from the outside surface of said squat member through said lateral bore and into said central bore for the pointed end to extend into the



lariat to secure the honda retainer to the lariat, said elongated member having a diameter slightly greater than the diameter of said lateral bore so that when said elongated member is inserted into said lateral bore, frictional engagement of said elongated member with said squat member resists removal of said elongated member;

whereby, the snug fit of the central bore provides for secure attachment of said squat member to said lariat with the elongated members extending only a short distance into the lariat.

4,562,794

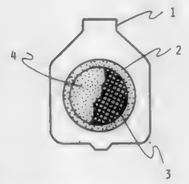
PEST CONTROL IN ANIMALS

Calvin A. Speckman, Bend, Oreg., assignor to Bend Research, Inc., Bend, Oreg.

Filed Jan. 30, 1984, Ser. No. 575,002

Int. Cl.⁴ A01K *13/00*

U.S. Cl. 119—156 **22 Claims**



1. A device for the control of pests on an animal comprising attachment means attachable either directly or in close proximity to the body of said animal and a controlled-release dispenser capable of dispensing essentially all of an active ingredient comprising a pesticide or repellent contained in said dispenser at a zero-order effective rate of release, said dispenser comprising a membrane controlling the rate of release of said active ingredient by diffusion through said membrane, and a porous reservoir material which is highly permeable to said active ingredient and in which said active ingredient is essentially isoluble, said porous reservoir material having interconnected pores capable of retaining said active ingredient by capillary forces, said dispensation of active ingredient taking place through said rate-controlling membrane by diffusion, and said rate-controlling membrane forming a continuous surface over said porous reservoir material and sealed at the edges thereof.

4,562,795

PROCESS AND EQUIPMENT FOR REDUCING THE EMISSION OF POLLUTANTS IN FLUE GASES FROM FURNACE INSTALLATIONS

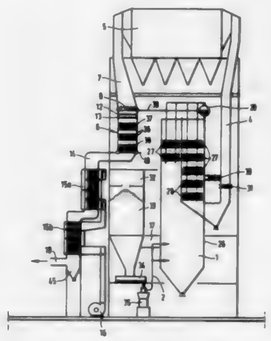
Willibald Kraus, deceased, late of Zierenberg, Fed. Rep. of Germany (by Edith Kraus, Reinhild Kraus, Martin Kraus, heirs), assignor to Firma Ferdinand Lentjes Dampfkessel- und Maschinenbau, Düsseldorf-Oberkassel, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,445

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326100; Aug. 13, 1983, 3329337; Sep. 1, 1983, 3331545

Int. Cl.⁴ F22B *33/00*

U.S. Cl. 122—1 R **19 Claims**



1. Process of reducing the emission of pollutants in flue gases from a furnace arranged to provide a selected thermal output comprising the steps of providing a first combustion stage and a second combustion stage, supplying excess air and fuel into the first combustion stage, flowing the flue gases with residual oxygen therein from the first combustion stage into the second combustion stage and supplying additional fuel into the second combustion stage in the stoichiometric range based on the residual oxygen for effecting combustion therein with the first and second combustion stages providing the combustion heat for the selected thermal output of the furnace, and supplying the preponderant amount of the combustion heat in the first combustion stage in a conventional combustion operation with the excess air adapted to the fuel utilized, and catalytically reducing nitrogen oxides in the flue gases from the second combustion stage into nitrogen.

2. Process of reducing the emission of pollutants in the flue gases from a furnace setup arranged to provide a selected thermal output comprising dividing the furnace setup into a first furnace installation forming a first combustion stage and a second furnace installation forming a second combustion stage separated from the first furnace installation and interconnecting the first and second furnace installations for conveying the flue gases from the first combustion stage to the second combustion stage, supplying fuel and excess air into the first combustion stage and burning the fuel so that flue gases containing residual oxygen are generated, flowing the flue gases and residual oxygen from the first combustion stage into the second combustion stage and supplying additional fuel into the second stage in the stoichiometric range of the residual oxygen and burning the additional fuel and residual oxygen in the second combustion stage, removing the flue gases from the second combustion stage and catalytically reducing nitrogen oxides in the flue gases to nitrogen.

4,562,796

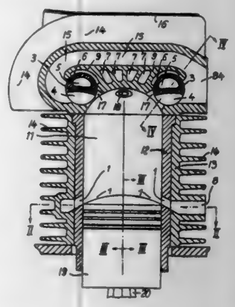
RECIPROCATING PISTON ENGINE

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Division of Ser. No. 807,975, Jun. 20, 1977, abandoned. This application Feb. 16, 1982, Ser. No. 348,633

Int. Cl.⁴ F02B *75/02*

U.S. Cl. 123—65 BA **2 Claims**



1. A reciprocating combustion engine including substantially a structure of a cylinder, a piston recirprocating in said cylinder, a top for closing one end of said cylinder; inlet means and outlet means extending to and from said cylinder for the intake of combustible gas charge and the expellation of burned exhaust gases, ignition means for the ignition of said gas charge, cooling means applied on said cylinder and on said top, a turbine of a turbocharger communicated to said outlet means and a compressor of said turbo charger communicated to said inlet means, said outlet means formed by slots in the bottom portion of said cylinder and said inlet means are applied in said top, said gas charge including air, said air being pressed through said inlet means into said cylinder by said compressor, at least one second cylinder fastened relatively to said cylinder, a second piston reciprocating in said second cylinder, a common drive means attached to said piston and said second piston for driving said pistons to compression strokes in said cylinders at alternating times, said second cylinder including second outlet means communicated also to said turbine, said top includes second inlet means communicating with said second cylinder and said compressor,

wherein a common collection chamber is provided in said top, communicated to said inlet means of said cylinders and to said compressor and attached to said cooling means of said top for the cooling to said air, when said exhaust gases drive said turbine and said compressor presses at least said air through said common collection chamber and said inlet means into the said cylinders,

wherein said cylinder forms a top wall of a partially hollow configuration, while said piston forms a piston top of substantially complementary configuration relatively to said top wall to at least partially and temporarily enter into said configuration to move close towards said top wall and close to said inlet means to obtain a high ratio of compression for a high efficiency and high power operation of said engine,

wherein said inlet means consists of two rotary valves which are located in said cylinder head to revolve therein in unison,

wherein passage means extend from said inlet valves to said cylinder,

wherein said passage means are short and said inlet valves are close to said cylinders to prevent dead space,

wherein said passage means port into and through said top wall of said cylinder;

wherein said rotary valves contain cooling passages and flow control ports,

wherein cooling spaces are provided close to said common collection chamber and close to the outer walls of said rotary valves,

wherein cooling fluid streams are passed through said cooling passages and through said cooling spaces,

wherein said turbocharger contains at least two compressor spaces and at least two compressor outlets,

wherein one of said outlets is communicated to said cylinder(s) and at least one other of said outlets is communicated to said cooling passages and to said cooling spaces to pass at least one of the flows of said outlets to and through said cylinder(s) and at least another of the flows of said outlets to and through said cooling passages and cooling spaces, and;

wherein said turbocharger has three separated compression chambers with compressor blades therein driven in unison by said turbine, while each of said compression chambers has a separated outlet,

wherein one of said outlets supplies air to said cylinder(s), the second of said outlets supplies air to and through said cooling passages of said valve(s) and,

wherein the third of said outlets supplies air to and through said cooling chambers in said cylinder head.

4,562,797

FOUR-CYCLE ENGINE FOR MARINE PROPULSION DEVICE

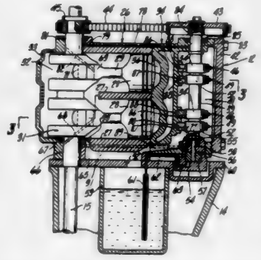
Tomonori Suzuki, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 23, 1984, Ser. No. 643,644

Claims priority, application Japan, Aug. 25, 1983, 58-154173

Int. Cl.⁴ F01M *9/10*

U.S. Cl. 123—90.34 **18 Claims**



1. In a lubricating system for an internal combustion engine including a camshaft journaled by said engine, a lubricating system for said engine including a lubricant pump for delivering lubricant under pressure to at least some components of said engine, the improvement comprising porous means adapted to engage a surface of said camshaft to be lubricated and means for delivering lubricant from said lubricant pump to said porous means.

4,562,798

CYLINDER HEAD LOCKING CONSTRUCTION

Cornelis J. van Os, Emmen, Netherlands, assignor to Noord-Nederlandsche Machinefabriek B.V., Winschoten, Netherlands

Filed Dec. 20, 1983, Ser. No. 563,579

Claims priority, application Netherlands, Dec. 23, 1982, 8204972

Int. Cl.⁴ F01B *21/00*

U.S. Cl. 123—193 CH **14 Claims**

1. A hydraulic expansible chamber device comprising:

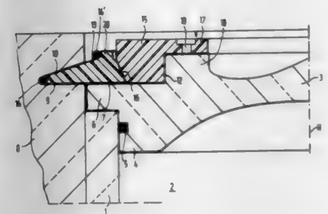
a casing;

at least one cylinder located in said casing, said cylinder having a cylinder head having a longitudinal axis, a cir-

cumferential flange having a top surface, and a central raised portion;

an annular groove formed in said casing adjacent the top surface of said cylinder head flange;

a ring divided into a plurality of segments and having an inner circumferential portion and an outer circumferential portion, said outer circumferential portion being positioned in said annular groove, and said inner circumferential portion projecting from said annular groove having an upwardly extending means on top thereof spaced from said casing, said inner circumferential portion resting on the top surface of said cylinder head flange;



clamping ring means positioned around and abutting against said central raised portion of said cylinder head and secured to said cylinder head, for pressing said segmented ring towards the top of said cylinder head flange and preventing radially inward movement of said segmented ring; and

thrust means positioned adjacent a side of said upwardly extending means of said inner circumferential portion of said segmented ring for urging each of said segments radially inwardly into contact with said clamping ring means.

4,562,799

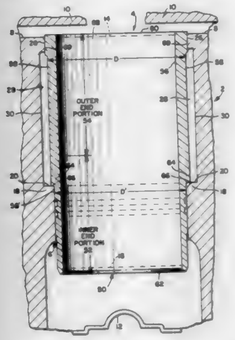
MONOLITHIC CERAMIC CYLINDER LINER AND METHOD OF MAKING SAME

Melvin E. Woods; Chi Cheng, and Roy Kamo, all of Columbus, Ind., assigaors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jan. 17, 1983, Ser. No. 458,557

Int. Cl.⁴ F02F *1/04*

U.S. Cl. 123—193 C **10 Claims**



1. An internal combustion engine assembly for an engine cooled by the circulation of a liquid engine coolant, said assembly comprising

(a) an engine block containing at least one cylinder cavity completely isolated from said liquid engie coolant circulation having a liner stop positioned within said cylinder cavity at a substantial distance from the outer end of said cavity and having a predetermined diameter over a substantial portion of the longitudinal distance from the liner stop to said outer end of said cavity; and

(b) a monolithic hollow cylindrical body formed of hot pressed silicon nitride having an inner end portion and an outer end portion, said body including

(1) press fit means on the outer surface of said hollow cylindrical body adjacent the outer end of said outer end portion for preventing radial movement of said outer end portion by forming a radial press fit with the inside surface of said cylinder cavity by compressively and frictionally engaging the inside surface of said cylinder cavity when presaed thereinto; and

(2) a stop means formed on said hollow cylindrical body spaced axially inwardly of said press fit means for positioning said body within the cylinder cavity, said stop means including a stop engaging surface for engaging the engine block liner stop, said hollow cylindrical body between said press fit means and said stop means having an outer diameter which is less than said predetermined diameter to form a clear, unobstructed annular air space surrounding said hollow cylindrical body between said body and the adjacent cylinder cavity wall.

4,562,800

ENGINE INTAKE PIPE ARRANGEMENT FOR AUTOMOTIVE VEHICLE

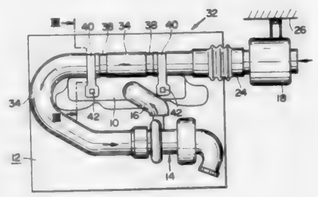
Yoshiyuki Tsujibayashi, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Jun. 22, 1984, Ser. No. 623,557

Claims priority, application Japan, Jul. 11, 1983, 58-107527[U]

Int. Cl.⁴ F02B *77/00*

U.S. Cl. 123—195 A **11 Claims**



1. An engine intake pipe arrangement for an automotive vehicle comprising:

an intake pipe;

a support; and

means for supporting and holding said intake pipe in a floating and spaced relationship on said support, said means including a springy resilient mounting member interposed in a resilient state between said intake pipe and said support enabling the intake pipe to be movable away from and toward said support, and a springy resilient fastening member connected in a stretched state between said intake pipe and support and urging said intake pipe toward said support against the resilience of said mounting member.

4,562,801

ENGINE CONTROL SYSTEM FOR MARINE PROPULSION DEVICE

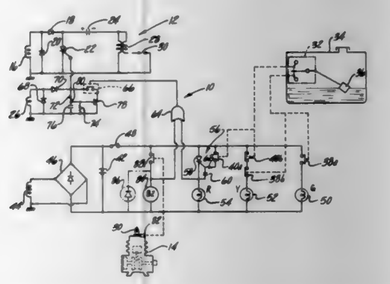
Takashi Koike, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Jul. 27, 1984, Ser. No. 634,982

Claims priority, application Japan, Jul. 28, 1983, 58-136830; Oct. 15, 1983, 58-193193

Int. Cl.⁴ F02B *77/08*

U.S. Cl. 123—196 S **20 Claims**



1. A control system for an internal combustion engine, comprising:

means for detecting a predetermined condition;

means for controlling a predetermined operating parameter of said engine in response to the detection of said predetermined condition;

means for manually terminating said control of said predetermined operating parameter of said engine; and

means for maintaining said control of said predetermined operating parameter of said engine after said predetermined condition has ceased until said control is manually terminated.

4,562,802

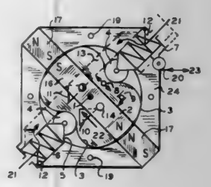
FLEXIBLE CYLINDER ENGINE

Theodore O. Groeger, 2 Collamore Cir., West Orange, N.J. 07052

Continuation-in-part of Ser. No. 313,559, Oct. 22, 1981, Pat. No. 4,453,508. This application Nov. 14, 1983, Ser. No. 551,745

Int. Cl.⁴ F02B *53/00*

U.S. Cl. 123—200 **12 Claims**



1. An engine comprising: a housing, a shaft connected to a rotor, both rotatably mounted on said housing and extending in its longitudinal axis, at least one flexible sheet so attached to said rotor that a radial distance between its curved surface and said axis is maintained, a pair of parallel end plates mounted on said housing perpendicular to said axis and contacting said sheet's end surface, thereby forming chambers within the boundaries of said housing, sheet and plates, inlet and exhaust means within either of said end plates, a roller attached to said housing and contacting said sheet's curved surface at radial distances smaller and up to said chambers' maximum radius, thereby varying their volume, and means for igniting combustible mixtures within one of said chambers.

4,562,803

INTAKE SYSTEM FOR ROTARY PISTON ENGINE

Tomoo Tadokoro; Haruo Okimoto; Hideo Shiraishi, and Toshimichi Akagi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

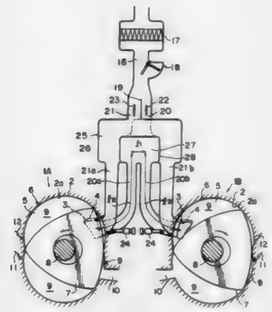
Filed Dec. 1, 1983, Ser. No. 556,941

Claims priority, application Japan, Dec. 2, 1982, 57-212428

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

Int. Cl.⁴ F02B *53/04*

U.S. Cl. 123—216 **7 Claims**



1. A two rotor type rotary piston engine comprising:

a casing comprised of

a pair of rotor housings, each rotor housing having an inner wall of trochoidal configuration,

an intermediate housing located between the rotor housings, and

a pair of side housing secured to outer sides of the respective rotor housings to define rotor cavities in the respective rotor housings,

a pair of substantially polygonal rotors disposed in the respective rotor cavities with apex portions in sliding engagement with the inner walls of the respective rotor housings to define working chambers of cyclically variable volumes,

eccentric shaft means carrying said rotors so that said rotors are rotated with 180° phase difference in terms of angle of rotation of said eccentric shaft means,

intake means including

two first intake port means provided in at least one of said intermediate and said side housings, each of said two first intake ports opening to one of the rotor cavities and being cyclically closed by said rotors as the rotors rotate, and

two second intake port means provided in at least one of said intermediate and said side housings, each of said two second intake ports opening to one of the rotor cavities and being cyclically closed by said rotor as the rotor rotates,

intake passage means including throttle valve means, said intake passage means including

two first individual passage means leading respectively to said two first intake port means,

first communicating passage means communicating with said two first individual passage means,

two second individual passage means leading respectively to said two second intake port means,

second communicating passage means communicating with said two second individual passage means,

said first intake port means, said first individual passage means and said first communicating passage means

having respectively port timings and passage lengths for transmitting a compression wave produced in one of said two first individual passage means in opening timing of one of said two first intake port means to the other of said two first intake port means just before said other of said two first intake port means is closed to obtain an additional intake charge under a first engine speed,

said two second intake port means, said two second individual passage means and said second communicating passage means having respectively port timings and passage lengths for transmitting a compression wave produced in one of said two second individual passage means in opening timing of one of said two second intake port means to the other of said two second intake port means just before said other of said two second intake port means is closed to obtain an additional intake charge under a second engine speed which is different from said first engine speed by more than 1000 rpm.

4,562,804

INTAKE SYSTEM FOR ROTARY PISTON ENGINE

Tomoo Tadokoro; Haruo Okimoto, and Ikuo Matsuda, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

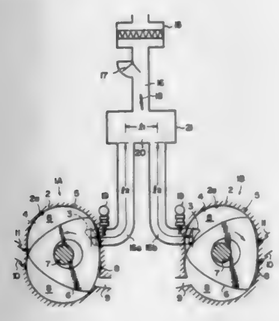
Filed Oct. 17, 1983, Ser. No. 542,584

Claims priority, application Japan, Oct. 15, 1982, 57-181961; Oct. 22, 1982, 57-186354; Nov. 30, 1982, 57-210349

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

Int. Cl.⁴ F02B *53/04*

U.S. Cl. 123—216 **9 Claims**



1. A two rotor type rotary piston engine comprising:

a casing comprised of

a pair of rotor housings, each rotor housing having an inner wall of trochoidal configuration,

an intermediate housing located between the rotor housings, and

a pair of side housing secured to outer sides of the respective rotor housings to define rotor cavities in the respective rotor housings,

a pair of substantially polygonal rotors disposed in the respective rotor cavities with apex portions in sliding engagement with the inner walls of the respective rotor housings to define working chambers of cyclically variable volumes,

eccentric shaft means carrying said rotors so that said rotors are rotated with 180° phase difference in terms of angle of rotation of said eccentric shaft means,

intake means including

two individual intake port means provided in at least one of said intermediate and side housings to open to the respective rotor cavities and being cyclically closed by said rotors as the rotors rotate,

intake passage means including throttle valve means, and two individual passage means leading respectively to said two individual intake port means,

communicating passage means located downstream of said throttle valve means and communicating with said two individual passage means,

said two individual intake port means having an opening period of 270° to 320° in terms of the angle of rotation of said eccentric shaft means,

said communication passage means and said two individual passage means leading to the respective rotor cavities having an overall length between 0.57 to 1.37 m for transmitting a compression wave produced in one of said two individual passage means in opening timing of one of said two individual intake port means to the other of said two individual intake port means just before said other of said two individual intake port means is closed to obtain an additional intake charge in an engine speed range of 5000 to 7000 rpm.

4,562,805

INTAKE SYSTEM FOR ROTARY PISTON ENGINE

Tomoo Tadokoro; Haruo Okimoto, and Hideo Shiraishi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

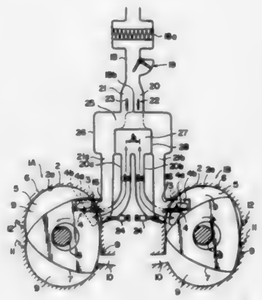
Filed Dec. 1, 1983, Ser. No. 556,910

Claims priority, application Japan, Dec. 2, 1982, 57-212427

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

Int. Cl.⁴ F02B *53/04*

U.S. Cl. 123—216 **8 Claims**



1. A two rotor type piston engine comprising:

a casing comprised of

a pair of rotor housings, each rotor housing having an inner wall of of trochoidal configuration,

an intermediate housing located between the rotor housing, and

a pair of side housing secured to outer sides of the respective rotor housing a to define rotor cavities in the respective rotor housings,

a pair or substantially polygonal rotors disposed in the respective rotor cavities with apex portions in sliding engagement with the inner walls of the respective rotor housings to define working chambers of cyclically variable volumes,

eccentric shaft means carrying said rotors so that said rotors are rotated with 180° phase difference in terms of angle of rotation of said eccentric shaft means,

intake means including

two first individual intake port means provided in at least one of said intermediate and said side housings and opening to the respective rotor cavities and being cyclically closed by said rotors as the rotors rotate, and

two second individual intake port means provided in at least one of said intermediate and said side housings and opening to the respective rotor cavities and being cyclically closed by said rotors as the rotors rotate,

changing means for changing port closing timing of the second individual intake port means at a predetermined engine speed range, and

intake passage means including throttle valve means, said intake passage means including

two first individual passage means leading respectively to said two first individual intake port means,

first communicating passage means located downstream of said throttle valve means and communicating with said two first individual passage means,

two second individual passage means leading respectively to said two second individual intake port means,

said two first individual intake port means, said two first individual passage means and said first communicating passage means having respectively a port timing and an overall length for transmitting a compression wave produced in one of said two first individual passage means in opening timing of said one of said two first individual intake port means to the other of said two first individual intake port means just before said other of said two first individual intake port means is closed to obtain an additional intake charge substantially at said predetermined engine speed range in which the port closing timing of said second individual intake port means is changed by said changing means.

4,562,806

CYLINDER HEAD FOR INTERNAL COMBUSTION ENGINES WITH COMPRESSION IGNITION

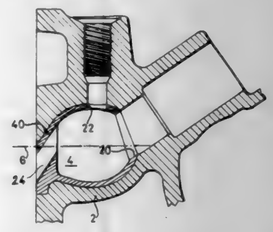
Jacques Gonnord, Ruell Malmaison, and Bernard Guillot, Suresnes, both of France, assignors to Regie Natonale des Usines Renault, Boulogne-Billancourt, France

Filed Mar. 29, 1984, Ser. No. 594,914

Claims priority, application France, Mar. 29, 1983, 83 05108

Int. Cl.⁴ F02F *1/00*

U.S. Cl. 123—270 **2 Claims**



1. A cylinder head for an internal combustion engine having compression ignition, said cylinder head comprising:

a one piece cylinder head member;

ceramic precombustion chambers;

ceramic intake and exhaust ports and ceramic valve seats and guides respectively associated with respective cylinders of the engine, wherein said precombustion chambers, exhaust ports and valve seats comprise elements entirely cast and positioned within said cylinder head member during casting of said cylinder head member so as to be free from machining while within said cylinder head member, and wherein said precombustion chambers define holes for fuel injection into said precombustion chambers for communication with a glow plug and for communication with a main combustion chamber of said engine, said precombustion chambers being in surface contact with said cylinder head member, and being narrow adjacent said hole for communication with said main combustion chamber, as compared with a remaining portion of said precombustion chambers, whereby the shape of said precombustion chambers prevents removal thereof from said cylinder head members.

4,562,807

DIRECT INJECTION TYPE INTERNAL COMBUSTION ENGINE

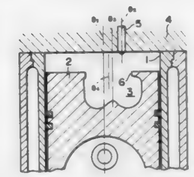
Yukio Matsui, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 30, 1984, Ser. No. 605,106

Claims priority, application Japan, May 4, 1983, 58-78624

Int. Cl.⁴ F02B *23/06, 23/00*

U.S. Cl. 123—276 **7 Claims**



1. In an internal combustion engine

means defining a bore having a bore axis, said bore axis lying in a first plane;

a piston reciprocatively disposed in said bore, said piston having a crown;

a fuel injector having a center, said center being offset with respect to said bore axis so as to lie in a second plane, said first and second planes being parallel to each other and normal to a line intersecting said bore axis and said center;

a cavity in said crown, said cavity having an axis of rotation which is offset from said second plane in a direction toward said first plane; and

a curved inwardly extending lip formed about the upper periphery of said cavity, said lip having a center which is offset from said axis of rotation of said cavity.

4,562,808

ENGINE IDLING SPEED CONTROL

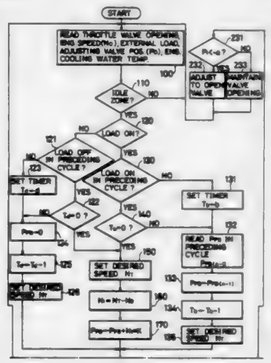
Kazunori Tominaga, and Yoshitaka Tanikawa, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 27, 1984, Ser. No. 654,875

Claims priority, application Japan, Sep. 27, 1983, 58-181597

Int. Cl.⁴ F02D *11/10*

U.S. Cl. 123—339 **18 Claims**



1. An engine idling speed control system including engine speed detecting means for detecting an engine speed and pro-

ducing an actual engine speed signal, load detecting means for detecting external load applied to the engine, engine intake air adjusting valve means for adjusting intake air flow to the engine, means for comparing the actual engine speed signal with a reference signal produce a feedback control signal, actuating means for actuating said intake air adjusting valve means in accordance with said feedback control signal so that the intake air flow is adjusted to make the actual engine speed approach to a desired speed corresponding to the reference signal, signal modifying means responsive to an output of the load detecting means for adding a modifying value to said feedback control signal when the external load is applied to the engine, feedback interrupting means for interrupting feedback control based on said feedback control signal for a predetermined time when the external load is applied to the engine, means for determining the reference signal in accordance with an engine temperature, and control means for providing a final control value based on a basic control signal corresponding to the reference signal, the feedback control signal and the modifying value.

4,562,809

DEVICE FOR REGULATING THE IDLING SPEED OF AN INTERNAL COMBUSTION ENGINE

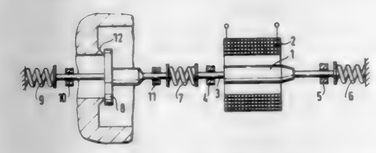
Andreas Sausner, Frankfurt am Main, and Gerhard Ruschek, Hattersheim, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 626,096, Jun. 29, 1984, abandoned. This application Aug. 1, 1985, Ser. No. 762,016

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325548

Int. Cl.⁴ F02D *33/02*

U.S. Cl. 123—339 **9 Claims**



1. A device for regulating the idling speed of an internal combustion engine by controlling an air feed via a valve element, the device comprising an electromechanical actuator having a drive member operatively coupling the actuator to the valve element, and at least one return spring which acts on the drive member, the improvement wherein

a prestressed decoupling spring is disposed between said drive member and said valve element, and

an opposing spring is connected directly to said valve element on a side thereof opposite said return spring.

4,562,810

FUEL INJECTION PUMP

Masahiko Miyaki, Oobu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 19, 1984, Ser. No. 622,236

Claims priority, application Japan, Jun. 23, 1983, 58-113126; Nov. 4, 1983, 58-208018

Int. Cl.⁴ F02D *7/00*

U.S. Cl. 123—380 **14 Claims**

1. A fuel injection pump for delivering fuel to a plurality of cylinders of an internal combustion engine, comprising:

a pump housing with a pump chamber defined therein to which fuel is supplied from a fuel tank;

fuel compression and delivery means for compressing fuel in said pump chamber and delivering said compressed fuel to said engine cylinders, said fuel compression and delivery means including a pump plunger adapted to be reciprocated so as to introduce fuel into said pump chamber and to pressurize said introduced fuel;

spill means for spilling to a low-pressure side on a fuel tank side said compressed fuel which was pressurized in said pump chamber to be delivered from said pump chamber toward said engine cylinders, said spill means including a spill passage communicating with said pump chamber of said pump housing and including a solenoid valve disposed in said spill passage for opening and closing said spill passage with a predetermined timing;

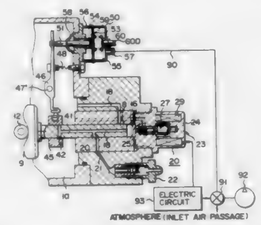
escape means for allowing said compressed fuel pressurized in said pump chamber to escape to said low-pressure side on said fuel tank side, said escape means including

an escape passage formed in said pump plunger so as to be coaxial therewith and communicating with said pump chamber, one end of said escape passage opening to an outer peripheral surface of said pump plunger,

a gate unit for opening and closing said escape passage, said gate unit having an escape ring fitted in a liquid-tight manner on said outer peripheral surface of said pump plunger so as to allow said pump plunger to reciprocate freely, said escape ring being adapted to open said escape passage when said pump plunger reaches a predetermined compression stroke,

a rocking lever, one end of which is coupled to said escape ring and a central portion of which is rockably supported to define a pivot,

actuator means for rocking said rocking lever, said actuator means having a pneumatic casing mounted on an outer wall of said pump housing,



a diaphragm arranged in said pneumatic casing so as to define in the interior of said pneumatic casing an atmosphere chamber and an operating chamber, said diaphragm being movable from an initial position in response to the difference in pressure between said atmosphere and operating chambers, and

an actuating rod, one end of which is coupled to another end of said rocking lever and another end of which penetrates outer walls of said pump housing and pneumatic casing so as to couple to said diaphragm;

a vacuum pump connected to said operating chamber of said pneumatic casing through an air pipe and driven by said engine; and

a solenoid-operated cross valve located in said air pipe, said solenoid-operated cross valve having a first switching position for establishing a connection between said operating chamber and said vacuum pump, and a second switching position for breaking said connection and opening said operating chamber to the atmosphere;

wherein said actuating rod is moved together with said diaphragm in the axial direction of said rod in response to difference in pressure between said operating chamber and pneumatic chamber when said solenoid-operated cross valve is in said second switching position, thereby causing said rocking lever to rotate about said pivot on said pump plunger so as to adjust the position of said escape ring relative to said escape passage.

4,562,811

IGNITION CIRCUIT

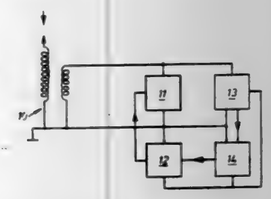
Bo C. Andreasson, Gothenburg, Sweden, assignor to EMAB Electrolux Motor Aktiebolag, Huskvarna, Sweden

Filed Oct. 11, 1983, Ser. No. 540,343

Claims priority, application Sweden, Oct. 18, 1982, 8205901

Int. Cl.⁴ F02P *5/04*

U.S. Cl. 123—416 **6 Claims**



1. An electronic ignition circuit device for i.c. engines having a magnetic ignition system for generating pulses of ignition energy, an ignition coil with a primary winding connected to an ignition switch switchable by triggering and a secondary winding connected to a spark plug, and a logic unit supplied by the magnetic system and provided with a detector responsive to said pulses of ignition energy for establishing a reference point for every pulse, the improvement wherein the logic unit includes an oscillator means for generating pulses at a frequency which is a multiple of the frequency of said pulses of ignition energy, a pulse counter connected to the oscillator means and logic circuits which upon the occurence of said reference point starts the counter for counting the pulses and a decoder connected to the counter and adjustable to a critical number, said decoder being connected to output a signal for controlling said ignition switch when the counter counting said pulses reaches the critical number, said ignition energy having first and second half waves, and the detector establishing the reference point at the top of the first half wave of the generated energy of every spark.

4,562,812

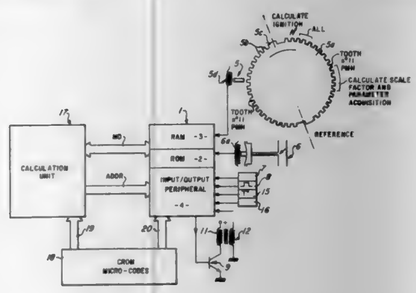
ELECTRONIC IGNITION CONTROL FOR INTERNAL COMBUSTION ENGINE

Gerard Chauvel, Cagnes, France, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 20, 1984, Ser. No. 572,500

Int. Cl.⁴ F02P *5/00*

U.S. Cl. 123—417 **12 Claims**



1. A control system for controlling the ignition of an internal combustion motor comprising:

means for generating a pulse signal having a frequency proportional to the speed of rotation of the motor;

a plurality of sensing means for detecting time varying operating parameters of the motor;

a peripheral unit coupled to said pulse signal generating means and to said sensor means;

ignition means coupled to said peripheral unit for causing ignition of a cylinder upon receipt of a signal from said peripheral unit;

a calculating unit coupled to said peripheral unit by an address buss and a data buss; and

a micro-code memory coupled to said calculating unit and to said peripheral unit for producing a cylinder ignition signal from said peripheral unit upon a new calculation generated by said calculating unit at least as fast as each half motor revolution.

9. A process for control of an internal combustion motor comprising the steps of:

generating a pulse signal having a frequency proportional to rotational speed of the motor;

providing a micro-code memory programmed to control ignition upon a motor position calculation generated at least as often as each half motor revolution;

calculating in accordance with the micro-code an instant of ignition of an ignition cycle, wherein the instant of ignition is expressed in terms of the period of the pulse signal;

counting fractions of pulse signal period from a reference moment indicating the start of the ignition cycle in progress; and

triggering ignition after a selected number of pulse signal period fractions have been counted.

4,562,813

KNOCK CONTROL SYSTEM

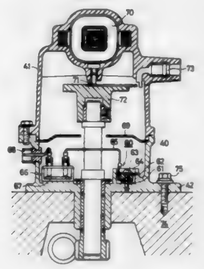
Terumi Okado, Katsuta; Seiji Suda; Noboru Sugiura, both of Mito; Takashi Yoshinari, Katsuta; Hitoshi Minorikawa, Mito; Kazutoshi Kobayashi, and Hiroshi Fujiwara, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 556,118

Claims priority, application Japan, Nov. 29, 1982, 57-207681

Int. Cl.⁴ F02P *5/14*

U.S. Cl. 123—425 **6 Claims**



1. A knock control system for an internal combustion engine, the knock control system comprising a distributor means having a housing means and a base means for enabling an attachment of the distributor means to a block of the engine, means for detecting vibrations of the engine indicative of a knock condition and for converting the detected vibrations into into an electrical output signal, circuit means for processing the output signal and for providing a signal indicative of an occurrence of a knock in dependence upon the output signal from said means for detecting, and wherein said circuit means and said detection means are mounted within said distributor means.

4,562,814

SYSTEM AND METHOD FOR CONTROLLING FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE

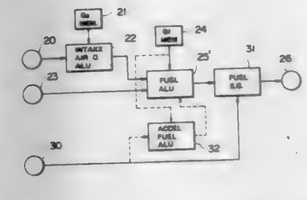
Toshimi Abo, Yokohama, and Takashi Ueno, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 2, 1984, Ser. No. 576,474

Claims priority, application Japan, Feb. 4, 1983, 58-16150; Aug. 24, 1983, 58-153061; Aug. 24, 1983, 58-153062

Int. Cl.⁴ F02B *3/00*

U.S. Cl. 123—488 **40 Claims**



1. A system for controlling an amount of fuel supplied into an internal combustion engine having means for supplying the amount of fuel into the engine in response to a pulse signal inputted thereto, comprising:

(a) a first means for calculating an actual quantity of intake air sucked into each engine cylinder (Ac(n)) on a basis of an intake air quantity indicative signal outputted by a first sensor for detecting and signalling the intake air quantity sucked into an intake air system of the engine and an air dynamic characteristic model representing the dynamic characteristic of the intake air from the appearance of the output signal of said first sensor to the quantity of intake air actually sucked into each engine cylinder;

(b) a second means for calculating a currently required amount of fuel for each engine cylinder (Fc(n)) on a basis of a value of the actual quantity of intake air sucked into each engine cylinder obtained by said first means; and

(c) a third means for calculating an amount of fuel to be currently supplied into each engine cylinder (Ff(n)) on a basis of the currently required amount of fuel for each engine cylinder calculated by said second means and a fuel dynamic characteristic model representing the dynamic characteristic of fuel from the appearance of the output fuel of said fuel supplying means to the quantity of fuel actually sucked into each cylinder by the output fuel of said fuel supplying means and outputting the pulse signal representing the amount of fuel to be currently supplied into the engine to said fuel supplying means.

4,562,815

FUEL INJECTION PUMP

Yoshiya Takano, Katsuta, and Yoshikazu Hoshi, Toukai, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 6, 1984, Ser. No. 577,501

Claims priority, application Japan, Feb. 4, 1983, 58-16050; Feb. 18, 1983, 58-24652

Int. Cl.⁴ F02M *59/20*

U.S. Cl. 123—450 **7 Claims**

1. A fuel injection pump comprising:

rotary shaft means adapted to be rotated within a sleeve means in a predetermined timed relationship with respect to a rotation of an internal combustion engine;

a first high pressure chamber means axially formed inside said rotor shaft for determining an injected amount of fuel;

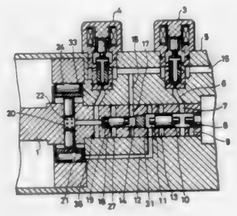
shuttle means disposed in said first high pressure chamber means for dividing the same into an injection fuel chamber means and a pressurization chamber means, said shuttle means being freely movable in said first high pressure chamber means;

plunger means for pressurizing fuel in said second high pressure chamber means in a predetermined timed relationship with respect to the rotation of the internal combustion engine;

first fuel supply passage means formed in the sleeve means for supplying injection fuel to said injection fuel chamber means;

discharge passage means formed in said sleeve means for discharging fuel in said pressurization chamber means to a lower pressure side when fuel is supplied to said injection fuel chamber means;

a second high pressure chamber means for determining an injection timing of fuel, said second high pressure chamber means being fuild-tightly isolated from said pressurization chamber means when fuel is supplied to said injection fuel chamber means;



second fuel supply passage means formed in said sleeve means for supplying fuel for determining the injection timing to said second high pressure chamber means when fuel is supplied to said injection chamber means;

connection passage means formed in said sleeve means for communicating said pressurization chamber means with said second high pressure chamber means when fuel in said second high pressure chamber means is pressurized by said plunger means; and

fuel outlet passage means formed in said sleeve means for introducing fuel in said injection fuel chamber to a fuel injection valve means when fuel in said second high pressure chamber means is pressurized.

4,562,816

FUEL FEED SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Konrad Dörr, Leonberg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 623,928

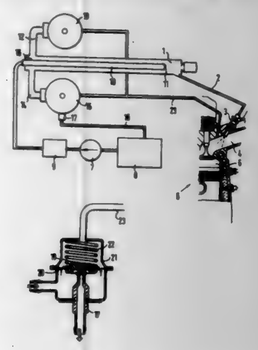
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1983, 3322547

Int. Cl.⁴ F02M *37/04*

U.S. Cl. 123—456 **7 Claims**

1. A fuel feed system for an internal combustion engine in which fuel supplied by a pump is distributed to injection valves coordinated to individual combustion chambers, comprising a fuel line means connecting the pump and injection valves, a regulator means for regulating fuel pressure, and a damper means for damping fuel oscillations, the regulator means and damper means using substantially identical structural parts including a spring-loaded diaphragm disposed within a housing and a valve, said regulator means and damper means having approximately the same natural frequency, said fuel line means including a distributor pipe, said regulator means and damper means being so attached to said distributor pipe that they form a resonator-antiresonator system oscillating in opposite phase, within which fuel can oscillate to and fro with relatively low flow resistance, said resonator-antiresonator system thereby generally precluding a buildup of alternate pressures which might cause mixture-leaning during fuel distribution by the injection valves, wherein

the damper means and regulator means are connected to opposite sides of the distributor pipe by way of connecting



pipes substantially aligned with one another and extending substantially transversely thereto.

4,562,817

FUEL INJECTION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE AND CONTROL METHOD THEREFOR

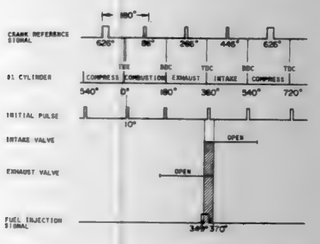
Teruyuki Ito, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 30, 1982, Ser. No. 445,552

Claims priority, application Japan, Dec. 22, 1981, 56-206064

Int. Cl.⁴ F02D *5/02*

U.S. Cl. 123—478 **17 Claims**



1. A fuel injection control system for a multi-cylinder fuel injection internal combustion engine having an intake and exhaust port for each cylinder and a fuel injection valve disposed adjacent the intake port of each cylinder and directed towards the intake port, and an intake and exhaust valve for opening and closing the intake and exhaust ports respectively of each cylinder, and a crank shaft, said control system comprising:

first means for detecting engine load and for producing a first signal indicative of said engine load;

second means for detecting the angular position of said crank shaft and for producing a second signal each time the crank shaft passes a predetermined angular position;

third means for operating the intake and exhaust valves in synchronism with the crank shaft angular position, said intake and exhaust valves being operated with a predetermined valve overlap period during which both the intake and exhaust valves are open;

fourth means for determining a fuel injection amount based on said first signal and for producing a control signal for controlling the fuel injection valves of each cylinder to inject said fuel injection amount, said fourth means being further operable for determining a timing of said control signal based on said second signal to normally effect fuel injection at the injection valve of each cylinder during the valve overlap period of each cylinder said fourth means also being responsive to said first signal to advance the timing of said control signal to a time prior to said valve-overlap period when the engine load exceeds a predetermined threshold and, otherwise, to maintain the timing of said control signal within said valve overlap period.

4,562,818

METHOD AND APPARATUS FOR CONTROLLING THE AIR-FUEL RATIO IN AN INTERNAL COMBUSTION ENGINE

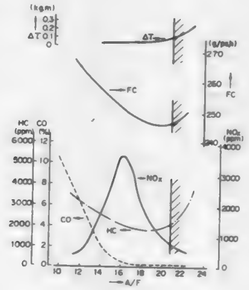
Tokio Kohama, Nishio; Hideki Obayashi, Okazaki; Hisasi Kawai, Toyohashi; Toshikazu Ina, Aichi; Takashi Shigematsu, and Setsuo Tokoro, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 3, 1984, Ser. No. 627,621

Claims priority, application Japan, Jul. 5, 1983, 58-120997; Dec. 7, 1983, 58-229831

Int. Cl.⁴ F02B *3/02;* **F02D** *5/02*

U.S. Cl. 123—478 **22 Claims**



1. A method for controlling the air-fuel ratio in an internal combustion engine, comprising the steps of:

calculating a combustion variation by detecting a difference between values of an engine output parameter at two predetermined crank angle positions for every firing stroke of a predetermined cylinder of said engine;

calculating a first standard deviation of a plurality of said calculated combustion variations extending over one of a predetermined time period and a crank angle;

calculating a reference standard deviation of combustion variations in accordance with predetermined parameters of said engine; and

controlling the air-fuel ratio of said engine so that said first calculated standard deviation approaches said calculated reference standard deviation.

4,562,819

METHOD AND APPARATUS FOR CONTROLLING FUEL SUPPLY OF AN INTERNAL COMBUSTION ENGINE

Nobuyuki Kobayashi, Toyota, and Toshiaki Isobe, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 25, 1983, Ser. No. 479,133

Claims priority, application Japan, Mar. 27, 1982, 57-048114; Mar. 27, 1982, 57-048118

Int. Cl.⁴ F02D *5/02*

U.S. Cl. 123—491 **28 Claims**

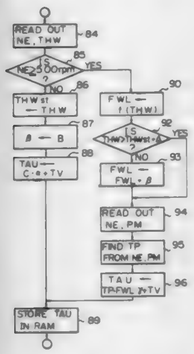
1. A method of controlling fuel supply of an internal combustion engine comprising the steps of:

detecting whether said engine starts or not to produce a first electrical signal which indicates the detected result;

detecting, in response to said first electrical signal, an engine temperature when said engine starts;

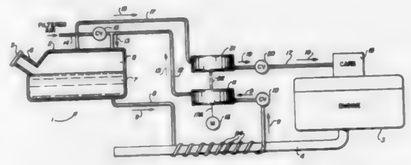
detecting an actual engine temperature after said engine starts;
detecting an engine operating condition to produce a second electrical signal which indicates the detected operating condition;
calculating, in response to said second electrical signal, a value which corresponds to a basic fuel supply to said engine;
calculating a warming-up increment coefficient according to said detected actual engine temperature after the start of said engine;
correcting said warming-up increment coefficient, in response to said first electrical signal, said detected engine temperature at the start of said engine and said detected actual engine temperature after the start of said engine, to increase by an increment value during a period from the start of said engine to the time that said detected actual engine temperature after the start of said engine exceeds said detected temperature at the start of said engine by a first predetermined temperature; and
adjusting, in accordance with the value for the fuel supply and said corrected warming-up increment coefficient, an actual fuel supply to said engine.

15. An apparatus for controlling the fuel supply of an internal combustion engine comprising:
means for detecting whether said engine starts or not to



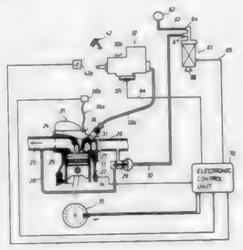
produce a first electrical signal which indicates the detected result;
means for detecting, in response to said first electrical signal, an engine temperature when said engine starts;
means for detecting an actual engine temperature after said engine starts;
means for detecting an engine operating condition to produce a second electrical signal which indicates the detected operating condition;
means for calculating, in response to said second electrical signal, a value which corresponds to a basic fuel supply to said engine;
means for calculating a warming-up increment coefficient according to said detected actual engine temperature after the start of said engine;
means for correcting said warming-up increment coefficient, in response to said first electrical signal, said detected engine temperature at the start of said engine and said detected actual engine temperature after the start of said engine, to increase by an increment value during a period from the start of said engine to the time that said detected actual engine temperature after the start of said engine exceeds said detected engine temperature at the start of said engine by a first predetermined temperature; and
means for adjusting, in accordance with the value for the fuel supply and said corrected warming-up increment coefficient, an actual fuel supply to said engine.

4,562,820
CAVITATION-PRODUCING CARBURATION APPARATUS AND METHOD
Miguel A. Jiminez, 419 Sixth St., Douglas, Ariz. 85607
Filed Mar. 12, 1984, Ser. No. 588,910
Int. Cl.⁴ F02M *31/00*
U.S. Cl. 123—557 **16 Claims**



1. In a carburation system for a liquid gasoline burning engine, a method of vaporizing liquid gasoline, said method comprising the steps of:
(a) conducting liquid gasoline from a tank through a first tube into an inlet of a centrifugal pump;
(b) causing the rotor of said centrifugal pump to rotate at a sufficiently high rate to cause cavitation of liquid gasoline flowing into said centrifugal pump through said inlet thereof, thereby causing a substantial quantity of the liquid gasoline in the cavitation regions to vaporize;
(c) conducting said vaporized gasoline and some unvaporized gasoline from an outlet of said centrifugal pump through a second tube back into said tank, so that the returned liquid gasoline mixes with the rest of the liquid gasoline in the tank and the gasoline vapor accumulates in the region of the tank above the surface of the liquid gasoline therein;
(d) conducting gasoline vapor in said region through a third tube to as carburation apparatus of said engine; and
(e) causing said gasoline vapor to be introduced into and burned by said engine to operate it.

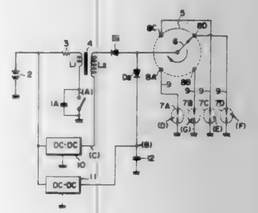
4,562,821
SYSTEM FOR CONTROLLING THE AMOUNT OF RECIRCULATED EXHAUST GAS FOR A DIESEL ENGINE
Shinji Ikeda, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed May 11, 1984, Ser. No. 609,184
Int. Cl.⁴ F02M *25/06*
U.S. Cl. 123—569 **5 Claims**



1. A system for controlling exhaust gas recirculation for a diesel engine having a recirculation path, said system comprising:
first signal generating means for generating a speed signal indicative of the current engine speed;
second signal generating means for generating a load signal indicative of the current engine load;

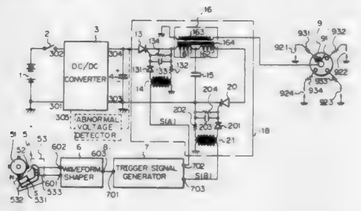
means for deriving a basic exhaust gas recirculation value as a function of said speed signal and said load signal;
third signal generating means for generating a peak value signal representative of the peak value of intensity of flame light in a combustion chamber;
fourth signal generating means for generating an exhaust gas recirculation control signal as a function of said basic exhaust gas recirculation value and of a correction factor representative of said peak values signal; and
means responsive to said exhaust gas recirculation control signal for setting the amount of exhaust gas recirculation for said diesel engine.

4,562,822
IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Yasuki Ishikawa; Hiroshi Endo, both of Yokosuka; Masazumi Sone, Tokyo, and Akio Kawai, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Dec. 20, 1982, Ser. No. 451,288
Claims priority, application Japan, Jan. 29, 1982, 57-11792
Int. Cl.⁴ F02P *3/04, 3/08*
U.S. Cl. 123—620 **4 Claims**



1. An ignition system for an internal combustion engine, comprising:
(a) a plurality of spark plugs each located within a corresponding engine cylinder;
(b) a low DC voltage supply;
(c) an ignition coil including a primary winding connected to said low DC voltage supply and a separately wound secondary winding, and means which operatively interrupts a current flow through said primary winding from said low DC voltage supply so as to generate a high voltage surge at said secondary winding whenever the engine rotates through a predetermined angle;
(d) a distributor which sequentially connects one end of the secondary winding of said ignition coil to said individual spark plugs according to an ignition order;
(e) two DC-DC converters which boost a low DC voltage from said low DC voltage supply to provide first and second highly boosted DC voltages, said first highly boosted DC voltage being supplied by one of said DC-DC converters to the secondary winding of said ignition coil so as to continue the supply of energy through the secondary winding of said ignition coil into one of said spark plugs via said distributor; and
(f) a capacitor for charging to said second highly boosted DC voltage produced by the other of the DC-DC converters, said distributor being operative to rapidly discharge said second voltage on said capacitor through one of said spark plugs so as to sustain an arc discharge immediately after the spark discharge initiated by the application of the high voltage surge generated at said secondary winding through said one of said spark plugs, said one of said DC-DC converters being connected between said low DC voltage supply and the other end of said secondary winding via a first rectifier for producing said first highly boosted DC voltage and the other DC-DC converter being connected between said low DC voltage supply on one side, and said capacitor and said distributor on another side for producing said second highly boosted DC voltage, said other DC-DC converter being connected to said distributor via a second rectifier.

4,562,823
IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINE
Mitiyasu Moritugu, Okazaki; Hisasi Kawai, Toyohashi, and Norihito Tokura, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Jul. 13, 1984, Ser. No. 630,726
Claims priority, application Japan, Jul. 15, 1983, 58-127735; Dec. 27, 1983, 58-251574; Jan. 10, 1984, 59-3284; Jan. 17, 1984, 59-6908
Int. Cl.⁴ F02P *9/00*
U.S. Cl. 123—620 **16 Claims**

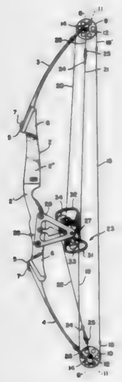


1. An ignition device for an internal combustion engine, comprising:
a DC power source for generating a DC voltage;
an ignition coil having a primary coil and a secondary coil, at least said primary coil being divided into first and second parts by an intermediate tap;
a spark gap connected to said secondary coil;
a capacitor connected to said intermediate tap of said primary coil;
a first switching element for forming a first closed circuit together with the first part of said primary coil, said capacitor and said DC poser source, said capacitor charging through said primary coil first part and a high voltage for ignition being generated across said secondary coil when said first switching element conducts;
a second switching element for forming a second closed circuit together with said second part of said primary coil and said capacitor, said capacitor discharging through said primary coil second part and a high voltage for ignition being generated across said secondary coil when said second switching element conduts; and
a signal generating circuit, responsive to an ignition command signal, for generating a plurality of ON signals during a predetermined period of ignition timing so as to alternately turn on said first and second switching elements at predetermined timings during said predetermined period.

4,562,824
COMPOUND BOW
Thomas P. Jennings, Sun Valley, Calif., assignor to Kidde Recreation Products, Inc., North Brook, Ill.
Filed Feb. 7, 1984, Ser. No. 577,897
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—23 R **18 Claims**

1. A compound bow including, a center handle section, upper and lower resilient limbs extending from opposite ends of said handle section and each having an outermost tip, a single integrated cam assembly, attachment means having single pivot means mounting said cam assembly to the lower portion of said handle section, said cam assembly provided

with upper and lower string cams and upper and lower power cams, all said cams comprising substantially planar elements, said lower string and power cams disposed in planes substantially close to and on opposite sides of the centerline of the bow, said upper string and power cams substantially offset from and disposed in planes inclined with and on one side of the centerline of the bow, a bowstring having opposite ends and substantially spanning the distance between said limb tips, upper and lower string cables each having opposite ends respectively joined to one said bowstring end and one said string cam, upper and lower power cables each having opposite ends respectively joined adjacent one said limb tip and to one said power cam, means for fixedly connecting said upper and lower string and power cams together as a unitary assembly without



any relative pivotal movement between said cams as said cam assembly is displaced about said single pivot means, said fixedly connecting means including removable fastener means affixing said upper power cam on solely one side of said upper string cam and said lower power cam on solely one opposite side of said lower string cam, a profiled track in all said cams receiving said respective string cables and power cables whereby as said bowstring is drawn from an at-rest condition said string cables received in said string cable cam tracks pivotally displace said cam assembly about said single pivot means while concurrently said power cams apply tension to said power cables following which the full bow draw length is achieved as said power cables are further sheaved within said power cam tracks.

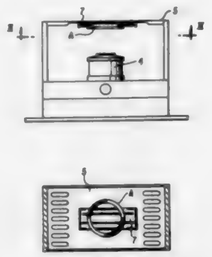
4,562,825

FLAME-RISE STOPPING MEANS FOR A KEROSENE STOVE

Hideo Nishikawa; Kenzo Okamoto, both of Osaka; Hiroichi Sakai, Moriguchi, and Fumihiko Kitada, Neyawawa, all of Japan, assignors to Imanishi Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 16, 1984, Ser. No. 600,865
Claims priority, application Japan, Jun. 16, 1983, 58-91235[U]
Int. Cl.⁴ F24C *5/04*
U.S. Cl. 126—96 **2 Claims**

1. A flame-rise stopping means for a kerosene stove having a chimney and a top plate, comprising:
(a) an annular reticulated flame-rise stopping element having a cylindrical portion with a base, said cylinder having a diameter substantially equal to or slightly larger than the outer diameter of said chimney, and a flange portion extending inwardly substantially at a right angle from the base of the cylindrical member, said flange portion having a width of between 75% and 100% of the axial length of said cylinder, said flame-rise stopping element having a pore size and distribution equivalent to a standard sieve having a mesh designation between 10 and 13; and
(b) a holder plate secured to a position at the underside of the



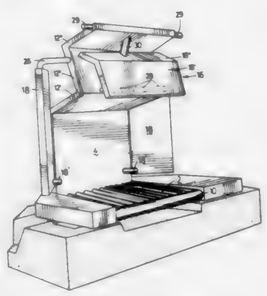
top plate of the stove directly above the chimney and having a plurality of hooks formed therein for removably mounting the reticulated element by engagement therewith.

4,562,826

HEAT EXCHANGER FOR FIREPLACES WITH ZIG-ZAG PATH OF THE FLAMES

Angelo Litta, Via Calzolese, 33, 00030 S. Cesareo (Province of Rome), Italy

Filed Jun. 11, 1984, Ser. No. 619,327
Claims priority, application Italy, Apr. 11, 1984, 48024 A/84
Int. Cl.⁴ F24B *9/04*
U.S. Cl. 126—132 **3 Claims**



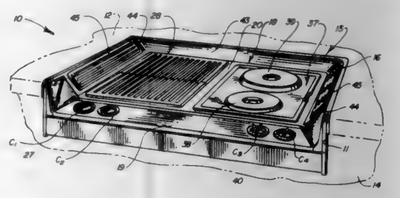
1. Heat exchanger for a fireplace having a front opening, rear wall, side walls, and hood above the opening having an inner wall leading to the flue, comprising:
a substantially horizontal grate comprised of a plurality of parallel tubes extending from a position adjacent the front opening of the fireplace to a position adjacent the rear wall of the fireplace;
a front tubular header extending transversely to said parallel tubes adjacent the front of the opening and operatively connected to the front ends of said tubes to allow intercommunicating fluid flow therebetween;
a tubular branch header on each side of said grate extending parallel to said grate tubes and connected to said front header;
a double walled vertical back panel adapted to fit against the rear wall of the fireplace and operatively connected to the rear ends of said grate tubes adjacent the lower edge thereof to allow intercommunicating fluid flow therebetween, said back panel having a height of about three-quarters the height of the fireplace opening;
a Z-shaped double walled panel having the same width as said back panel comprised of a lower planar section inclined upwardly from said back panel toward the fireplace opening at substantially 25° with respect to horizontal and communicating along its lower edge with the upper edge of said back panel, a middle planar section extending substantially perpendicular to said lower section toward the rear of the fireplace, and an upper section extending substantially perpendicular to said middle section toward the inner wall of the hood;
an inverted substantially V-shaped counter panel in spaced relationship with the front of said middle section comprised of a lower planar section and an upper planar section at substantially 130° with respect to each other, said upper section of said counter panel being inclined upwardly toward said Z-shaped panel to form a throat between said Z and V-shaped panels having a progressively narrower cross-section upwardly for the flow of combustion products rising from the fireplace hearth;
a vertical double walled side panel on each side of the heat exchanger extending from a position adjacent each side edge of said back panel toward the fireplace opening in symmetrical diverging relationship with respect to the back panel so that the diverging angle formed by said side panels is bisected by the front to rear vertical median plane of the fireplace and having a height approximately one and one-half times the height of said back panel; and
means to connect the inner space of each of said side panels with the inner space of each of said back panel and Z-shaped panel, and the inner space of said Z-shaped panel to the inner space of said counter panel for fluid flow therethrough.

4,562,827

DOWNDRAFT COUNTERTOP COOKING RANGE

Joseph J. Cerola, Noblesville, Ind., assignor to Roper Corporation, Kankakee, Ill.

Filed Nov. 21, 1984, Ser. No. 674,106
Int. Cl.⁴ F24C *15/30*
U.S. Cl. 126—299 R **14 Claims**



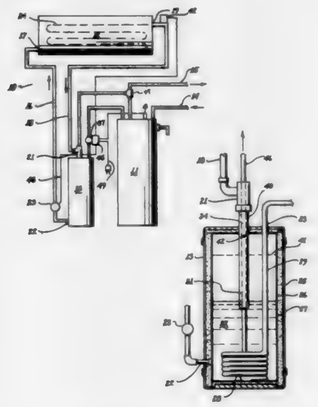
1. A downdraft range adapted for countertop mounting and comprising in combination:
(a) a main top frame adapted to overlie a recess in a countertop and having an overlapping marginal edge portion suspending the range in said recess;
(b) a cooking panel in said main top frame recessed substantially below said overlapping marginal edge portion;
(c) an upstanding rear panel interposed between said cooking panel and said overlapping marginal edge portion of said top from;
(d) a pair of outwardly diverging side panels extending from the level of said cooking panel to the level of said overlapping margimal edge portion of said top frame, each said side panel having a front-to-back depth substantially equal to the depth of said cooking panel;
(e) a ventilating louver in each said upwardly diverging side panel having openings commencing at about the level of said cooking panel; and
(f) means including a suction fan situated below said main top frame and communicating with said ventilating louvers to exhaust smoke and cooking odors from said cooking panel.

4,562,828

SOLAR WATER HEATING SYSTEM AND HEAT EXCHANGER FOR USE WITH EXISTING HOT WATER SYSTEMS

Marvin O. Koskela, 4222 E. Calle Redonda, Phoenix, Ariz. 85018

Filed Jan. 4, 1982, Ser. No. 336,663
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—435 **6 Claims**



1. A solar water heating system which comprises:
(a) solar collector means containing a fluid flow path therein;
(b) water storage means for containing a reservoir of water and adapted to provide water to an external circuit;
(c) a heat transfer circuit coupled to said water storage means;
(d) heat exchanger means including a top surface and having a first input port located at said top surface and a first output port, both of said first ports being coupled to the fluid flow path of the collector means, said heat exchanger means providing a reservoir therein for at least a portion of the fluid contained in said flow path, said heat exchanger means further including a second input port and a second output port, each of said second ports being located at said top surface and being coupled to said heat transfer circuit with at least a portion of said heat transfer circuit residing within the reservoir in the heat exchanger means, said first input port and second output port being coaxially located on said heat exchanger means to enhance heat transfer between said fluid circuits; and
(e) vacuum break means located within said heat exchanger means proximate to said first input port for supplying air to the solar collector means upon the cessation of flow in the fluid flow path.

4,562,829

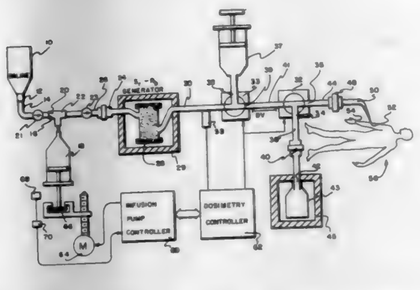
STRONTIUM-RUBIDIUM INFUSION SYSTEM

Brian C. Bergner, Lawrenceville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 1, 1984, Ser. No. 605,758
Int. Cl.⁴ A61N *5/52*
U.S. Cl. 128—1.1 **12 Claims**

1. A strontium-rubidium infusion system comprising:
(a) means for generating rubidium-82 in a solution which can be infused into a patient;
(b) means for collecting a predefined volume of solution containing rubidium-82;
(c) means for measuring the radioactivity present in said

predefined volume before it is infused into said patient; and



(d) means for quickly infusing said predefined volume of rubidium-82 into said patient as a single bolus.

4,562,830

SUCTION DEVICE FOR AN ENDOSCOPE

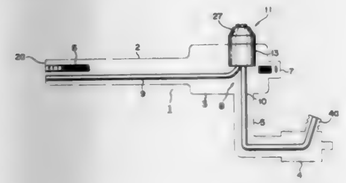
Hisao Yabe, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 415,977, Sep. 8, 1982, abandoned. This application Dec. 28, 1984, Ser. No. 685,618

Claims priority, application Japan, Sep. 17, 1981, 56-146523; Sep. 26, 1981, 56-152689

Int. Cl.[4] A61B *1/00*

U.S. Cl. 128—4 **6 Claims**



1. A suction device for an endoscope, which endoscope includes an insertion section, a control section connected to one end of said insertion section and a cord extending from the control section to the outside, comprising;

a suction changeover valve provided on the control section and including a cylinder with a longitudinal passage having a longitudinal axis and a downwardly inclined passage disposed at an angle of less than ninety degrees to said longitudinal axis of said longitudinal passage and intersecting said longitudinal passage, an opening at one end of said passage, said cylinder having a bottom wall and a peripheral wall, said bottom wall having first and second holes adjacent to each other, and a piston held in said longitudinal passage and removable axially through said opening thereof;

a first suction tube section extending through the insertion section to communicate with said inclined passage through the first hole of the bottom wall; and

a second suction tube section extending through the cord to communicate with said longitudinal passage through the second hole of the bottom wall, whereby a linear cleaning instrument can be inserted through said inclined and longitudinal passages into said first and second holes and first and second suction tube sections without significant deflection of that instrument from a linear configuration when said piston is removed from said longitudinal passage.

4,562,831

ENDOSCOPE SYSTEM USING SOLID STATE IMAGING DEVICE

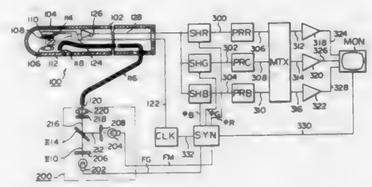
Makoto Murakoshi, Tokyo, and Kunio Ando, Omiya, both of Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa and Fuji Photo Optical Co. Ltd., Saitama, both of, Japan

Filed Nov. 26, 1982, Ser. No. 444,387

Claims priority, application Japan, Dec. 14, 1981, 56-201371

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—6 **26 Claims**



1. An endoscope system for developing an image of an object comprising:

solid state imaging means having an array of photosensitive cells for producing video signals associated with the image of an object as formed on said array;

a color filter disposed between the object and said array of photosensitive cells and consisting essentially of alternately and two-dimensionally disposed filter segments of cyan and yellow;

illuminating means for illuminating the object alternately with a first beam of green light and a second beam of magenta light;

video display means for visualizing the image of the object in color from said video signals produced by said solid state imaging device;

control circuit means for synchronizing the video signals produced by said imaging means in conjunction with said illuminating means to cause said imaging means to produce a first video signal including green information and associated with a first field of a displayed image when said illuminating means illuminates the object with the first beam, and to produce alternately second and third video signals including at least red and blue information, respectively, and associated with a second field of the displayed image when said illuminating means illuminates the object with the second beam; and

video circuit means, responsive to said control circuit means, for forming the first field including green pixels from the first video signal, and the second field including red and blue pixels disposed alternately from the second and third video signals, said video circuit means driving said video display means to visualize the first and second fields alternately.

4,562,832

MEDICAL INSTRUMENT AND LIGHT PIPE ILLUMINATION ASSEMBLY

Joseph R. Wilder, 151 W. 86th St., Apt. 9D, New York, N.Y. 10024, and Franklin G. Reick, 228 West Pl., Westwood, N.J. 07675

Filed May 21, 1984, Ser. No. 612,149

Int. Cl.[4] A61B *1/06, 17/02*

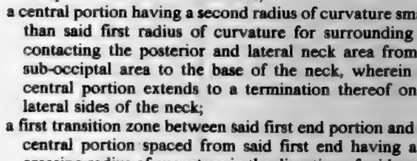
U.S. Cl. 128—20 **5 Claims**

1. A disposable medical instrument and light pipe assembly comprising:

A. an instrument molded of synthetic plastic material and provided with an operative section which, when the instrument is used, lies adjacent the field of interest;

B. a short, flexible light-transmitting pipe joined to the instrument, the pipe having a core surrounded by a cladding tube, both formed of synthetic plastic material, said pipe having an optical inlet end adapted to be coupled to a light source and an outlet end next to said operative section to project light transmitted through the pipe toward the field of interest; and

C. a bendable tubular neck of dead-soft material ensheathing the outlet end to render it orientable, the material being



without memory so that when the neck is manually bent and then released, it retains its deformed state without springing back, whereby by bending the neck the user without changing the position of the instrument can direct and redirect light from the outlet toward a desired region in the field.

4,562,833

DEVICE FOR CERVICAL/OCCIPITAL SUPPORT

Charles Pujals, Jr., 119 Fayette St., Bridgeton, N.J. 08302

Filed Dec. 19, 1983, Ser. No. 563,160

Int. Cl.[4] A61H *1/02*

U.S. Cl. 128—75 **20 Claims**

1. A cervical and occipital support for use in supporting a user's head and neck, comprising:

a semi-rigid preformed U-shaped shell fabricated of a solid, resiliant material, contoured to fit the occipital bone area of the skull posterolaterally and the neck posterolaterally to the base of the neck having:

a first end portion having a first radius of curvature defining said U-shape for laterally supporting and cradling the occipital bone between the ears;

a central portion having a second radius of curvature smaller than said first radius of curvature for surrounding and contacting the posterior and lateral neck area from the sub-occiptal area to the base of the neck, wherein said central portion extends to a termination thereof on the lateral sides of the neck;

a first transition zone between said first end portion and said central portion spaced from said first end having a decreasing radius of curvature in the direction of said central portion for receiving and longitudinally supporting the occipital bone;

a second end portion having a third radius of curvature larger than said second radius of curvature for contacting and resting on the suprascapular region; and

a second transition zone between said central portion and said second end portion and having an increasing radius of curvature in the direction of said second end;

whereby, said user's head and neck are supported by said shell without completely immobilizing those areas and said solid material acts to retain the user's body heat.

4,562,834

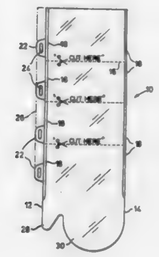
WATERPROOF LIMB COVERING

Norman Bates, 194 Fenn Ave., Willowdale, Ontario, Canada M2P 1Y1 and Carl M. Naumoff, 169 Hammersmith Ave., Toronto, Ontario, Canada M4E 2W7

Filed Dec. 12, 1983, Ser. No. 560,480

Int. Cl.[4] A61F *13/00*

U.S. Cl. 128—82 **14 Claims**



1. A limb covering, comprising a generally tubular sleeve which is made of a flexible waterproof material and which has an open top end for receiving said limb and a closed bottom end, the sleeve being adapted to be laid in a flat configuration in which opposite side edges are defined longitudinally of the sleeve, the sleeve being provided with a plurality of cutting sites spaced along the sleeve and extending between said side edges at which the covering can be cut to one of a plurality of different lengths, the sleeve having adjacent each cutting site a tab which projects from the sleeve and which is adapted to co-operate with a strap to encircle and seal the sleeve about the limb after the sleeve has been cut to length along at a said cutting site.

4,562,835

STREAMLINED T-SHAPED INTRAUTERINE DEVICE

Gregory K. Anderson, Scarborough, Canada, assignor to Ortho Pharmaceutical (Canada) Ltd., Don Mills, Canada

Filed Jan. 23, 1984, Ser. No. 573,080

Int. Cl.[4] A61F *5/46*

U.S. Cl. 128—130 **7 Claims**



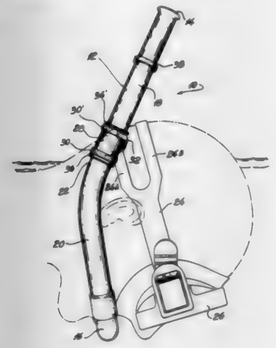
1. A T-shaped intrauterine contraceptive device comprising a stem, a left arm and a right arm, each of said stem and arms having an essentially circular cross-section, wherein the arms each comprise:

a first portion; and

a second portion which has a diameter smaller than the first portion and is located at the terminus of the arm; and

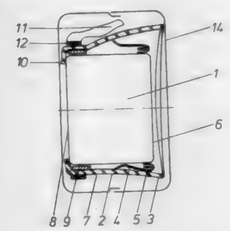
a length of copper tubing disposed on the second portion of each of said arms and attached thereto, the outside diameter of said copper tubing being equal to the outside diameter of said first portion of each of said arms.

4,562,836
BREATHING TUBE
Roger Perron, Montreal, Canada, assignor to AMF Incorporated, White Plains, N.Y.
Filed Nov. 12, 1982, Ser. No. 440,902
Int. Cl.⁴ A62B 7/00
U.S. Cl. 128—201.11 **9 Claims**



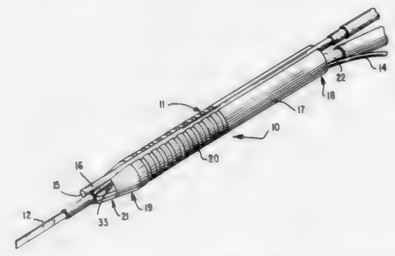
1. A breathing tube for underwater activities, comprising:
an elongated tube having a free end and an opposite mouth-receiving end;
means for attaching said tube to a user's underwater mask having a strap portion, said attachment means comprising a tubular sleeve in free slideable engagement with said tube for relative sliding displacement and means on said sleeve for connecting said sleeve to said mask, said means comprising a pair of spaced-apart rings elastically gripping said sleeve and a link element interconnecting said rings to define with said sleeve a loop for receiving the strap portion of said mask; and
stop means on said tube for preventing disengagement between said sleeve and said tube.

4,562,837
AIR ESCAPE FILTER APPARATUS
Joachim Schlobohm, Bad Oldesloe, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany
Filed Sep. 28, 1983, Ser. No. 536,516
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1982, 3236028
Int. Cl.⁴ A62B 7/00
U.S. Cl. 128—206.17 **6 Claims**



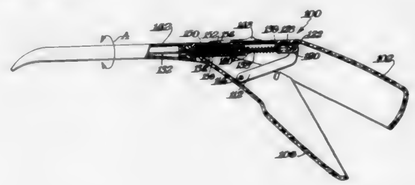
1. An air escape filter apparatus for emergency use by a person comprising a filter having an exterior filter housing, a half mask defining a space and adapted to engage around the nose and mouth of a person, said half mask having an opening and a sleeve portion defined around said opening, a guide ring carried by said sleeve portion and engaged around said filter housing, said filter housing being slidable on said guide ring from a retracted standby position in and substantially filling said half mask space to an extended use position extending at least partly out of said half mask space in said half mask opening, said filter housing having a length substantially co-extensive to a length of said half mask space, and a bellows connected between filter housing and said half mask for permitting movement of said filter housing between its retracted standby position and its extended use position whereby, with said filter housing in its extended use position, at least some of said half mask space is available for the nose and mouth of a person.

4,562,838
ELECTROSURGERY INSTRUMENT
William S. Walker, 229 E. D Ave., Kalamazoo, Mich. 49004
Filed Jan. 23, 1981, Ser. No. 227,658
Int. Cl.⁴ A61B 17/39
U.S. Cl. 128—303.14 **6 Claims**



1. An electrosurgery instrument comprising:
(a) a hollow, elongated tube having an inner surface defining an internal longitudinally extending fluid conduit, the tube also having a mounting channel extending longitudinally along the length of the tube;
(b) an active electrode;
(c) a nose piece mounted in the tube and holding the active electrode, the periphery of the nose piece being provided with at least one longitudinal flute which together with the inner surface of the tube defines a duct in fluid communication with the remainder of the fluid conduit, the duct being positioned to guide a fluid stream past the active electrode; the nose piece being constructed of an electrically nonconducting material;
(d) an electrical lead connected to the active electrode; and
(e) a light transmitting cable slidably received within the mounting channel with the light emitting end of the cable positioned adjacent to the active electrode to illuminate a region around the electrode.

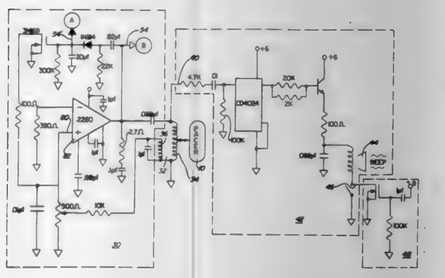
4,562,839
SURGICAL INSTRUMENT
Joseph W. Blake, III, and Paul C. DiCesare, both of 88 Main St., New Canaan, Conn. 06840
Filed Jan. 6, 1983, Ser. No. 456,163
Int. Cl.⁴ A61B 17/12
U.S. Cl. 128—326 **6 Claims**



1. A surgical instrument for applying clips to a surgical site,

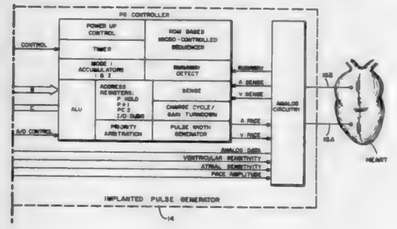
comprising applicator means having a pair of cooperating jaws which are movable between an open and a closed position; supply means for feeding surgical clips to said jaws in a predetermined path for insertion of a clip therebetween while said jaws are in said open position so as to become cinched when said jaws move to said closed position; and mounting means mounting at least part of said supply means for angular displacement about said path so as to vary the orientation at which said clip is being presented to said site, said mounting means comprising a handle and an elongated hollow barrel at least in part accommodating said supply means, said barrel having a longitudinal axis and being mounted in said handle for turning movement relative thereto about said axis, said barrel having a leading end and a trailing end, said trailing end being provided with an extension of circular cross section, said mounting means further including a groove formed in said extension and extending lengthwise and also circumferentially of said axis, and an operating member slidable in said handle lengthwise of said axis and including a connecting portion riding in said groove so that translatory sliding of said slide member lengthwise of said axis is converted into turning movement of said barrel about said axis.

4,562,840
TELEMETRY SYSTEM
William P. Batina, and Lamar H. Gipson, both of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.
Filed Mar. 23, 1984, Ser. No. 592,517
Int. Cl.⁴ N61N 1/00
U.S. Cl. 128—419 PT **9 Claims**



1. A telemetry system for communicating with a tank circuit contained in an enclosure implanted in a patient, which comprises:
a patient's coil for positioning externally on the patient substantially overlying the implanted enclosure;
a varying frequency FM oscillator connected to said patient's coil;
capacitive means connected to said patient's coil and said varying frequency oscillator, with said capacitive means and said patient's coil forming a resonant tank which sets the frequency of said oscillator;
said oscillator with said resonant tank being connected for generating a varying frequency and amplitude waveform in response to telemetry signals from the implanted tank circuit;
means for detecting the waveform generated by said oscillator, whereby the telemetry signals are detected;
said detector means comprising an AM detector coupled to the output of the FM oscillator, said AM detector providing a dc representation of the distance of the patient's coil to the implanted enclosure;
an offsetting gain circuit to the output of the AM detector for stripping off said dc representation;
a low pass filter coupled to the output of the offsetting gain circuit,
an automatic gain control circuit coupled to the output of the low pass filter to provide a corrected gain notwithstanding the position of the patient's coil to the implanted enclosure; and
output means coupled to the output of the automatic gain control circuit for displaying the communicated message.

4,562,841
PROGRAMMABLE MULTI-MODE CARDIAC PACEMAKER
Brian P. Brockway, Minneapolis; Robert D. Dreher, Roseville; Daniel E. Huntwork, White Bear Lake; Brock S. Lindstedt; Douglas C. Morrison, both of St. Paul, and Perry A. Mills, Roseville, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.
Filed Aug. 5, 1982, Ser. No. 405,711
Int. Cl.⁴ A61N 1/36
U.S. Cl. 128—419 PG **27 Claims**



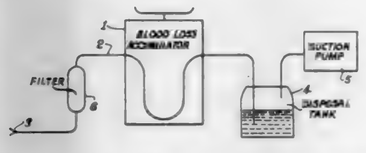
1. An implantable, programmable cardiac pacemaker system comprising:
(a) external programmer means for transmitting and receiving radio frequency encoded signals, said encoded signals defining at least one of a plurality of selectable pacing modes and a plurality of selectable pacing parameters associated with the selected pacing mode;
(b) implantable pulse generator means responsive to ones of said encoded signals for cyclically producing pacing pulses for at least one chamber of the heart, said pulse generator means including:
(1) pulse controller means for performing a plurality of inter-cycle operations associated with the selected pacing mode during the production of pacing pulses for each cardiac cycle and further including:
(i) means for storing ones of said encoded signals,
(ii) means for storing a plurality of inter-cycle instructions, each instruction designating at least one of a plurality of the inter-cycle operations,
(iii) means for sensing a plurality of analog conditions including electrical activity of the heart,
(iiii) means responsive to said stored encoded signals and said inter-cycle instructions for prioritizing the inter-cycle operations of the selected pacing made, and
(2) input/output controller means responsive to received ones of said encoded signals for selectively writing the selected pacing mode and its associated pacing parameters into said encoded signal storage means during a write mode and including means for selectively reading ones of said encoded signal storage means and ones of said analog conditions and further including means for transmitting encoded radio frequency signals corresponding thereto to said external programmer means during a read mode; and
(c) means for coupling said pacing pulses to the appropriate chambers of the heart and said sensed analog conditions to said pulse generator means.

4,562,842

BLOOD-LOSS MEASUREMENT APPARATUS

Diane E. Morfeld, 7268 Casper Dr., San Diego, Calif. 92119, and Henri J. A. Charmasson, San Diego, Calif., assignors to Diane E. Morfeld, San Diego, Calif.

Filed Feb. 21, 1984, Ser. No. 581,792
Int. Cl.⁴ A61B *5/00*
U.S. Cl. 128—638 **12 Claims**



1. An apparatus for continuously accumulating the volume of a first fluid having a known density and being part of a mixture flowing intermittently through a conduit, the remaining part of the mixture being substantially comprised of a variable quantity of a second fluid having a known but different density than the density of the first fluid, which comprises:

means for drawing the mixture of the first and second fluids through said conduit;

means for measuring the volume of repetitive samplings of the mixture intermittently held within a predetermined section of the conduit;

means for measuring the weight of said samplings;

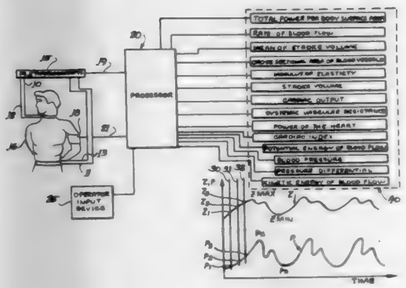
means, responsive to both of said means for measuring, for calculating the corresponding volume of the first fluid in each said sampling from the respective known densities of the first and second fluids in said mixture.

4,562,843

SYSTEM FOR DETERMINING CHARACTERISTICS OF BLOOD FLOW

Ljubomir Djordjevich, 4170 Marine Dr., Chicago, Ill. 60613, and Max S. Sadove, 1021 Lathrop Ave., River Forest, Ill. 60305

Continuation-in-part of Ser. No. 191,387, Sep. 29, 1980, Pat. No. 4,437,469. This application Jul. 6, 1981, Ser. No. 280,321
The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—672 **80 Claims**



1. A method for measuring a hemodynamic characteristic of a living body having elastic blood vessels comprising the steps of:

measuring a characteristic value across a section of said body, said characteristic value being at least representative of the variation in cross-sectional area of the blood vessels within that section;

measuring blood pressure in said body simultaneously with the measurement of said characteristic value; and

processing signals representative of the characteristic value and the blood pressure measurements with a processing means to obtain an electrical signal representing the hemodynamic characteristic; said processing step including the step of utilizing at least one hemodynamic equation which relates said characteristic value, said blood pressure and the modulus of elasticity of the blood vessels within said section as a function, and including the step of calculating said modulus of elasticity.

4,562,844

MULTIPURPOSE SYRINGE

Tristram Carpenter, Norwood, and Michael Gorker, Sharon, both of Mass., assignors to Jett Labs, Inc., Norwood, Mass.

Filed Nov. 27, 1984, Ser. No. 675,140
Int. Cl.⁴ A61B *5/00*
U.S. Cl. 128—675 **19 Claims**



1. A multipurpose syringe for obtaining a blood sample and for storing and shipping it comprising:

a barrel having openings at its forward and rearward ends in communication with its interior, a plunger within the barrel slidable in sealing engagement with the inner wall of the barrel between forward and retracted positions, a plunger rod, one end of which mounts the plunger and the other end of which extends out of the rearward end of the barrel and,

means to releasably lock the plunger in retracted position comprising:

a pair of spaced flanges of discernible configuration extending outwardly from the axis of the rod and located adjacent the plunger,

a cap removably secured to the rearward end of the barrel and having an opening which is larger than the flanges and of similar discernible configuration to permit passage of the flanges through the cap,

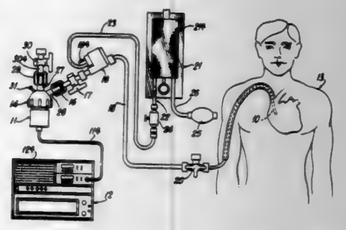
mating interference means associated with the flanges and the opening in the cap and constructed to permit both flanges to pass through the opening in the cap when the interference means are angularly aligned with each other and to lock one flange to the cap when it has been withdrawn through the opening and the rod is rotated about its axis to position the interference means out of alignment with each other.

4,562,845

METHODS AND APPARATUS FOR TESTING A BLOOD PRESSURE MONITORING SYSTEM OF THE HYDRAULIC TYPE

Emanuel F. Furst; Louis F. Lampe, and William L. Woods, all of Tucson, Ariz., assignors to The University of Arizona Foundation, Tucson, Ariz.

Division of Ser. No. 35,609, May 3, 1979, Pat. No. 4,499,903. This application Nov. 13, 1984, Ser. No. 670,208
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—675 **9 Claims**



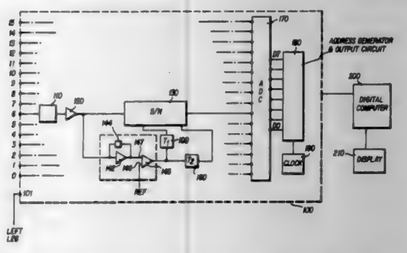
1. A method of determining the presence of apparatus faults or the presence of gaseous bubbles in a liquid column of a blood pressure monitoring system of the hydraulic type wherein a pressure sensitive element is disposed in fluid communication with said liquid column and said liquid column is in fluid communication with a circulatory system of a patient wherein blood pressure variations of a patient are sensed through said liquid column at a point remote from the patient, which comprises inserting a solid member into a portion of said liquid column defined between said pressure sensitive element and said patient to change the volumetric size of said liquid column portion by a predetermined amount, and indicating the change in the liquid column pressure pattern resulting from said change in the volumetric size of said liquid column portion.

4,562,846

SYSTEM AND PROCESS FOR MONITORING MYOCARDIAL INTEGRITY

James L. Cox, St. Louis, Mo.; T. Bruce Ferguson, Jr.; Gary K. Lofland, both of Durham, N.C., and Barry Branham, St. Louis, Mo., assignors to Duke University, Durham, N.C.

Filed Sep. 15, 1983, Ser. No. 532,383
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—696 **10 Claims**



1. A process for the on-line monitoring of the viability of myocardial tissue of a patient during and after a surgical procedure comprising the steps of:

implanting multiple electrodes in said tissue prior to said surgical procedure;

sensing the instantaneous unipolar electrical potentials of said electrodes prior to said surgical procedure;

registering the peak-to-peak voltage values of said instantaneous unipolar electrical potentials for a period of time occurring prior to said surgical procedure for each of said electrodes which have a negative slope exceeding a predetermined value;

performing said surgical procedure;

sensing the instantaneous unipolar electrical potentials which have a negative slope exceeding said predetermined value of each of said electrodes during and after said surgical procedure;

comparing said registered values for each of said electrodes with said sensed potentials during and after surgery for each of said electrodes; and

providing an output indication of injured tissue when said registered values exceed said sensed potentials during and after surgery by a predetermined amount for at least one of said electrodes.

2. A method according to claim 1 wherein said multiple electrode are plunge electrodes each containing at least one intramural unipolar contact electrode wherein one of said plunge electrodes is implanted in the right ventricle, wherein a second of said plunge electrodes is implanted in the anterior left ventricle, wherein a third of said plunge electrodes is implanted in the lateral left ventricle and wherein a fourth one of said plunge electrodes is implanted in the posterior left ventricle.

4,562,847

INSTRUMENT FOR OBTAINING SAMPLES FROM UTERUS OF ANIMALS

Claes Nydahl, Nya Vilsättravägen 19, S-752 46 Uppsala, Sweden, and Odd Knudsen, Uppsala, Sweden, assignors to Claes Nydahl, Uppsala, Sweden

Filed Feb. 14, 1983, Ser. No. 466,028
Claims priority, application Sweden, Feb. 18, 1982, 8201017
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—757 **8 Claims**



1. A sampling instrument of disposable type for simultaneous sampling of cell samples and bacteriological samples from the uterus of animals comprising a flexible tube, a rod having an operating end extending outside of said tube and a sampling end extending inside of said tube, said rod being moveable relative to said tube in such a manner that said sampling end can be reciprocated out of and back into said tube, and means attached to said sampling end for taking a first cell sample from said uterus when said tube is inserted into said uterus and said sampling end is moved out of said tube a first distance, subsequently taking a second distinct bacteriological sample from said uterus when said sampling end is moved out of said tube an additional second distance, and for allowing said first and second samples to be moved back into said tube prior to the removal of said tube from the uterus.

4,562,848

CAR CLEANING SYSTEM FOR CAR WASHES

Horst Messing, Lindlar, Fed. Rep. of Germany, and Joseph Enning, Charlottesville, Va., assignors to Mr. Wash Auto-Service AG, Düsseldorf, Fed. Rep. of Germany

Filed May 7, 1984, Ser. No. 607,850
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1983, 3341650
Int. Cl.⁴ B60S *3/06*
U.S. Cl. 134—123 **8 Claims**

1. A car cleaning apparatus, of the type where a car to be cleaned is conveyed in a path of travel of said car through the apparatus, comprising:

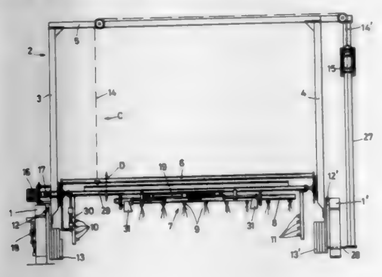
a pair of lever arms having a lower end and an upper end, and being pivotally mounted adjacent the lower end;

a cleaning element extending transverse to the path of travel of said car through the apparatus and being mounted moveably up and down said lever arms defining a travel path on said lever arms;

said cleaning element being pivotally mounted with respect to said pair of lever arms;

first means for moving said cleaning element from a lower end of said travel path of said lever arms at the beginning and end respectively of the cleaning process,

second means for swinging said pair of lever arms to swing away from the car to a position extending obliquely downwardly opposite the direction of conveyance of the on-



coming said car at the start of said cleaning process and to swing away from the car in a position extending obliquely downwardly to the same direction as the direction of conveyance of said car at the end of said cleaning process, respectively, and

third means for pivoting said cleaning element with respect to said pair of lever arms.

4,562,849

UMBRELLA UNIT, AND CAR AND THE LIKE PROVIDED THEREWITH

Vladimir Sirota, 130 E. 67th St., New York, N.Y. 10023

Filed Dec. 23, 1983, Ser. No. 565,167
Int. Cl.⁴ A45B *3/00*
U.S. Cl. 135—16 **12 Claims**



1. A motor-driven umbrella unit, particularly for mounting on a car, comprising

a housing mountable on a car and having an inner hollow;

an umbrella having a protector and protector-actuating means operative for closing and opening said protector;

a first motor drive;

a first transmission arranged to connect said first motor drive with said protector-actuating means for closing and opening of said protector;

first actuation means allowing said first motor to be actuatable by a user;

a second motor drive;

a second transmission arranged to connect said second motor drive with said umbrella so as to turn said umbrella into said inner hollow of said housing and out of said inner hollow of said housing;

second actuation means allowing said second motor to be also actuatable by a user, said first transmission having a driven gear member connected with said protector-actuating means, and a driving gear member which meshes with said driven gear member, said driven gear member being disengageable from said driving gear member so that said umbrella with said protector can be removed from the motor-driven unit as a part of the latter and used separately and manually by a user, and said driven gear member being also engageable with said driving gear member for returning said umbrella with said protector into the unit and acting upon by said motor drives so as to complete the motor-driven unit;

a support which supports said driven gear umbrella and is movable in one direction away of said driving gear member for disengagement of said driven gear member from said driving gear member and in another direction for engagement of said driven gear member with said driving gear member; and

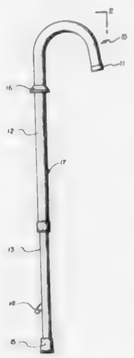
locking means actuatable by a user to move between a locking position in which said locking means locks said support and prevents its movement in said one direction thereby retaining said driven member in engagement with said driving member, and a releasing position in which said locking means releases said support and allows its movement in said one direction and also in said other direction thereby allowing disengagement of said driven gear member from said driving gear member for removal of said umbrella and its separate manual use, and bringing said driven gear member into engagement with said driving gear member for completing the motor-driven unit, respectively.

4,562,850

COMBINATION WALKING CANE, PATH LIGHT AND UPRISAL DEVICE

Ronald Earley, 212 Westbrook Dr., and Marvin Higginson, 2941 Flowerbrook Ct., both of Springfield, Ill. 62702

Filed Aug. 8, 1984, Ser. No. 638,806
Int. Cl.⁴ A45B *3/04, 9/02*
U.S. Cl. 135—66 **5 Claims**



1. A combination walking cane path light and uprisal assistance device comprising a cylindrical hollow first shaft means and a cylindrical hollow second shaft means,

said second shaft means including a U-shaped handle on an upper end, a plurality of aligned, spaced apertures in a wall of said second shaft means extending from a lower end toward said U-shaped handle in a linear alignment,

a fixed flange means surrounds said second shaft means and is secured thereto between said U-shaped handle and said aligned apertures in a wall thereof,

said first shaft means having an outer diameter substantially the same as an inner diameter of said second shaft means and including an upper end that extends into said lower end of said second shaft means,

said first shaft means provided with foot means on the lower end thereof,

a spring biased releasable button on said upper end of said first shaft means for reception by one of said spaced apertures in said second shaft means for adjusting said first shaft means relative to said second shaft means in order to adjust an overall length of said cane,

a light means secured to said first shaft means along the length thereof and extending downwardly therefrom at an angle relative to the wall surface thereof,

battery means secured within said first shaft means between a bottom end and said light means,

a light switch means within and surrounded by the end of said second shaft means formed by said U-shaped handle, and

electrical conductor means extending between said battery means, said light means and said switch means for operation of said light means,

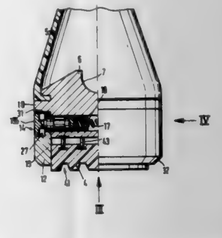
whereby a user may operate said light by use of said switch and may be assisted in arising from a non-standing position by use of said flange means secured to said second shaft means.

4,562,851

HOLDING FIXTURE FOR EXCHANGEABLE SOLE PIECES FOR WALKING AIDS

Xaver Frank, Lengenwang, Fed. Rep. of Germany, assignor to S & F Orthopadietechnik GmbH, Gorisried, Fed. Rep. of Germany

Filed Dec. 8, 1983, Ser. No. 559,228
Claims priority, application European Pat. Off., Dec. 10, 1982, 8211480.8; Aug. 26, 1983, 83108427.2
Int. Cl.⁴ A45B *9/04;* **A61H** *3/02*
U.S. Cl. 135—78 **50 Claims**



1. A holding fixture for exchangeable sole pieces of walking aids having a support pod with a downwardly extending bottom mounting rim to which a resilient ground engaging sole piece having a radial flange is releasably attached, the sole piece being affixed by means of a push-on sleeve having an inwardly extending radial shoulder that can be slid over both the sole piece and the mounting rim in form-fitting manner with the radial flange secured between the rim and shoulder and that said push-on sleeve is secured against being pulled off by an externally releasable snap lock mounted on the support pod and cooperating with the push-on sleeve.

4,562,852

SAFETY VALVE

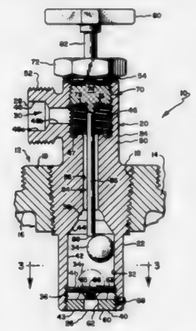
Franklin J. Britt, 3744 Hartland Rd., Gasport, N.Y. 14067

Filed Aug. 20, 1984, Ser. No. 642,201
Int. Cl.⁴ F16K *17/40, 43/00*
U.S. Cl. 137—68.1 **15 Claims**

1. A combination safety and service valve for a high-pressure tank, said valve comprising:

a body having a sealing portion positioned within the tank and an external portion positioned externally of the tank, said sealing portion defining an inlet port, said external portion defining an outlet port, said body defining a flow passage extending between said inlet and said outlet ports so that a portion of said flow passage is provided by said sealing portion and another portion of said flow passage is provided by said external portion of said body, said portion of said flow passage provided by said sealing portion including a ball chamber, said ball chamber having an inlet end and an outlet end, said outlet end having a contoured surface positioned within the tank opening between an inlet and an outlet of the tank opening;

a spherical ball being loosely received by said ball chamber and adapted to engage said contoured surface to thereby close said flow passage, said ball being of such size that when the fluid pressure at said ball chamber inlet end is higher than the fluid pressure at said ball chamber outlet end, about one-half of said ball is biased into engagement with said contoured surface of said ball chamber and substantially all of said ball being disposed within the tank



opening between said inlet and said outlet of the tank opening;

an actuatable valve member connected to said external portion of said body for opening and closing said flow passage; and

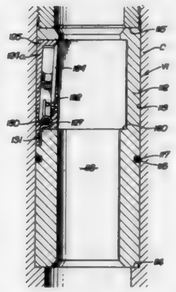
stop means associated with said valve member for preventing said ball from engaging said contoured surface in all open positions of said valve member until said external portion of said body is severed from said sealing portion.

4,562,853

DOWNHOLE FIRE CONTROL

John E. Tschirky, Long Beach, Calif., and Wayne M. Sullivan, Houston, Tex., assignors to Smith International, Inc., Newport Beach, Calif.

Division of Ser. No. 124,588, Feb. 25, 1980, abandoned, which is a division of Ser. No. 838,890, Oct. 3, 1977, Pat. No. 4,213,508.
This application May 4, 1981, Ser. No. 260,358
Int. Cl.⁴ F16K *13/04*
U.S. Cl. 137—75 **1 Claim**



1. A valve structure comprising: an elongated tubular body adapted to be installed in the bore of a drill pipe string, said body having an axial passage therethrough substantially as large as said bore, a flap valve member pivotally mounted at one side of said body for movement between a position transverse of said passage and a position pivoted to said side of said body, fusible means holding said flap valve in said position at said side of said body, and means providing a transverse seat

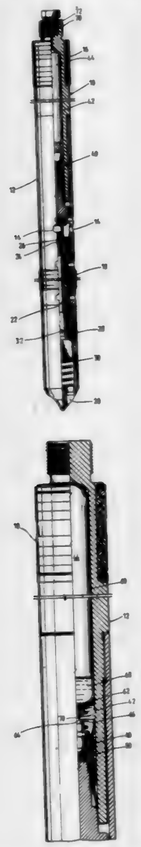
surrounding said passage and engaged by said flap valve upon melting of said fusible means, said body having a side pocket receiving said flap valve when said flap valve is pivoted to said side of said body, said fusible material having said flap valve embedded therein and filling said pocket.

4,562,854

PISTON ACTUATED CHEMICAL INJECTION VALVE

Ronald E. Pringle, Houston; Arthur J. Morris, Magnolia, and John J. Johnson, Houston, all of Tex., assignors to Camco, Incorporated, Houston, Tex.

Filed Sep. 27, 1984, Ser. No. 655,480
Int. Cl.⁴ F04F *1/08*
U.S. Cl. 137—155 **12 Claims**



1. In an injection valve for injecting chemicals into a well having a body with spaced seal means on the exterior of the body for sealing in a well conduit, said body including an inlet port between the seal means for receiving chemicals and a passageway leading from the inlet port to an outlet port, and a valve seat and valve element positioned in the passageway, the improvement of an operating mechanism comprising,

a piston in the body above said inlet port connected to the valve element, said piston including an upwardly directed metal cup seal, a downwardly directed metal cup seal, and

a gas pressure charge in said body above said piston acting on the piston in a direction to close said valve element on said valve seat.

11. In an injection valve for injecting chemicals into a well having a body with spaced seal means on the exterior of the body for sealing in a well conduit, said body including an inlet port between the seal means for receiving chemicals and a passageway leading from the inlet port to an outlet port, and a valve seat and valve element positioned in the passageway, the improvement of an operating mechanism comprising,

pressure responsive means in the body above said inlet port connected to the valve element, and

a closed gas container positioned in the body above the pressure responsive means containing the gas pressure charge, said container including a rupturable portion, and

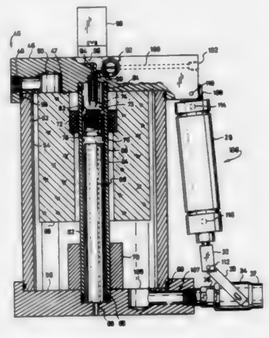
piercing means adjacent said rupturable portion for opening said container.

4,562,855

AUTOMATIC DRAIN VALVE

Ernie W. Cummings, 140 Essex Dr., Concord, Tenn. 37720, and Nick Valk, Rte. 10, Box 323, Greeneville, Tenn. 37743

Continuation-in-part of Ser. No. 299,966, Sep. 9, 1981, Pat. No. 4,444,217. This application Jul. 21, 1983, Ser. No. 516,209
Int. Cl.⁴ F16K *31/08*
U.S. Cl. 137—195 **10 Claims**



1. An automatic drain valve system for collecting and draining a liquid and/or contaminants contained within a reservoir including a level sensing float, said reservoir being defined by the system housing, said system including:

inlet means for introducing such liquid into said reservoir;

outlet means for draining said liquid from said reservoir;

a control valve responsive to the liquid level contained within said reservoir, said control valve including a valve seat, a movable valve plug cooperating with said seat, an annular magnetic member carried by said float and a cooperating magnetic member having a normally opposite polarity to that of said annular magnet member serving as an actuator for said valve plug positioned substantially along the central axis of said annular magnetic member, said magnetic members being magnetically coupled such that said cooperating magnetic member is moved between first and second positions along said central axis in response to the opposite movement of said annular magnetic member carried by said float;

a pneumatically operated drain valve means operatively associated with said control valve, said drain valve means selectively opening said outlet means when said liquid within said reservoir reaches a first and upper preselected level causing said control valve means to assume its first position, said drain valve means being closed in response to the operation of said control valve and movement of said cooperating magnetic member to its second and lower position when said liquid within said reservoir is drained to a second preselected level; and

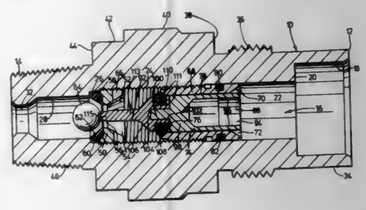
a pneumatic source means connected to, and operative of, said drain valve means in response to said control valve.

4,562,856

CONNECTOR ASSEMBLY FOR A GAS

Paul W. Garvey, and John K. Kert, both of Mississauga, Canada, assignors to Union Carbide Canada Limited, East Toronto, Canada

Filed Oct. 1, 1984, Ser. No. 656,813
Int. Cl.⁴ F16K *43/00*
U.S. Cl. 137—329.3 **6 Claims**



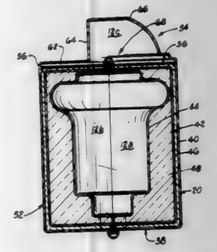
1. A valve assembly for dispersing a gas into a connector of a gas using device, comprising: an outer body having a forward end and a rearward end and having an internal passageway for gas, the passageway containing a valve seat and a valve member which is lifted from said valve seat by rearward pressure, and an inner body having an internal passage and a plunger within said passage, the plunger including a forward hollow sleeve portion and two arm portions extending rearwardly from the sleeve portion at diametrically opposite locations, the arm portion being linked at their rearward ends by a bridge portion from which rearwardly extends an activating member adapted to hold the valve member away from the valve seat, said bridge portion having substantially parallel sides and an integral rearwardly projecting post, said post being recessed tightly in a bore of a boss which is integral with said activating member, a sealing member on the plunger forwardly of the activating member for closing said internal passage when the plunger is in a forward position, the inner body defining two opposed, internal, longitudinal grooves for receiving said arm portions thus interlocking the plunger and the inner body so that rotation of the plunger requires rotation of the inner body, the bridge portion being engagable by a forked tool for rotating the same, both said sleeve portion and said boss being too large to pass the location of the inner body which has the internal longitudinal grooves.

4,562,857

THERMAL INSULATION ARTICLE

Randell D. Ball, 1141 Elk, Yukon, Okla. 73099

Filed Sep. 19, 1983, Ser. No. 533,238
Int. Cl.⁴ F16L *7/00*
U.S. Cl. 137—375 **12 Claims**



1. An article for thermally insulating a valve at a well site, said valve having a first port and a second port, said article comprising:

a housing having a cavity defined therein for receiving said valve, having a first opening defined therein in communication with said cavity to provide access to said first port, having a second opening defined therein in communication with said cavity to provide access to said second port, and having a third opening defined therein in communication with said cavity, said housing including:

a first housing member having an exterior shape defined by a first surface having two edges and by a second surface having beveled side portions extending between said two edges of said first surface at oblique angles thereto so that the outer cross section of said first housing member is characterized by a first polygon;

a second housing member having an exterior shape defined by a third surface having two edges and by a fourth surface having beveled side portions extending between said two edges of said third surface at oblique angles thereto so that the outer cross section of said second housing member is characterized by said first polygon; and

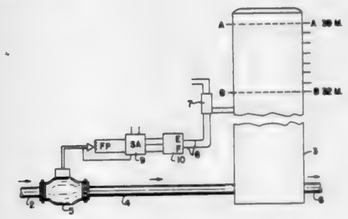
connecting means for connecting said first housing member to said second housing member about said valve so that said first surface is adjacent said third surface and said first polygonal outer cross sections of said first and second housing members are combined to provide said housing with an outer cross section characterized by a second polygon different from said first polygon, said second polygon defining a shape for avoiding interference with said valve and adjacent structures with which said valve is associated.

4,562,858

PROGRAMMABLE STEPPER FOR TRANSDUCER CONTROLLED APPARATUS

Louis E. Salina, and Joseph E. Lescovich, both of Bridgeville, Pa., assignors to GA Industries Inc., Mars, Pa.

Filed Mar. 28, 1983, Ser. No. 479,161
Int. Cl.⁴ F17D *3/01*; F16K *31/02*
U.S. Cl. 137—392 **24 Claims**



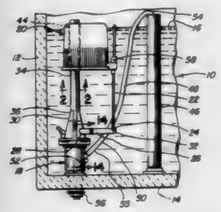
1. In the combination comprising an apparatus, the operation of which is monitored by a transducer that responds to variations in a selected physical condition that occur within the apparatus and wherein the transducer modulates a constant electric current in response to variations in the selected condition that occur in the normal operation of said apparatus and wherein the modulated electric current so produced is transmitted to a servo amplifier which, in turn, controls the apparatus to keep overall variations in electric current within a selected range, the improvement wherein there is included between the transducer and the servo amplifier means to which the modulated current output of the transducer is transmitted which, in turn, nullifies the frequent and unimportant fluctuations in the modulated current from the transducer and transmits electric signals of definite stepped magnitude, up or down, to the servo amplifier whereby only voltage variations of significant importance to the functioning of the apparatus are reflected in the operation of the servo amplifier and unimportant variations are eliminated to thereby substantially reduce the frequency with which control signals from the servo amplifier to the apparatus which it controls are transmitted.

4,562,859

BALLCOCK ASSEMBLY

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Jan. 4, 1985, Ser. No. 688,730
Int. Cl.[4] F16K *31/34, 33/00*
U.S. Cl. 137—414 12 Claims



1. In a ballcock valve formed by connected upper and lower housing members that include therein separate upper and lower resilient valving members, the upper housing member having a central axial aperture and the lower housing member including an inflow tube for introducing water into the ballcock valve through an upper annular terminus which provides valve seat means, the improvement comprising, in combination:

a removable silencer having downward directed nozzle means positioned annularly around the inflow tube;

the upper resilient valving member being a grommet means with an interior, central, through axial bore for insertion into the upper housing member aperture;

the lower resilient valving member including a shallow depth cup with an annular transverse diaphragm means having a central bore, and an upward projecting peripheral flange, all spaced away from said upper resilient valving member, said lower resilient valving member being located between said upper and lower housing members and being directly supported by said silencer;

the upper housing member providing retaining means for cooperating with said silencer to hold said flange substantially rigidly in sealed relationship to the bottom of the upper housing member to provide, with said grommet means inserted, a pressure chamber between the upper and lower valve members, said pressure chamber communicating outwardly only through the interior bore of said grommet means and through said central bore of said lower valving member; and

pin means inserted through said grommet means axial bore and into said central bore of said lower valving member for controlling the pressure in the pressure chamber by sliding axially upward and downward; and

the pressure in said pressure chamber positioning said diaphragm with respect to said valve seat means to control the flow of water out of the inflow tube.

4,562,860

BALL VALVE HAVING EASY MAINTENANCE FEATURES FOR EXTREME ENVIRONMENTS

John F. Walter, North Kingstown; Bruce M. Costa, Little Compton, and Harry E. Eminger, East Greenwich, all of R.I., assignors to Wilmington Trust Company and William J. Wade, both of Wilmington, Del.

Filed Jul. 6, 1983, Ser. No. 511,365
Int. Cl.[4] F16K *25/00*
U.S. Cl. 137—454.6 2 Claims

1. A valve assembly comprising:

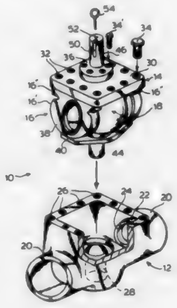
a valve body defining a valve chamber having an upper access opening;

a ball member rotatably mounted within said valve chamber, said ball member having a passage extending therethrough;

a bonnet removably secured to said valve body and closing said upper access opening; and

two opposed seat retaining assemblies removably mounted to said bonnet, each including a body portion having an opening therein and a pair of projecting members extending laterally with respect to said body portion, said projecting members defining top portions of each of said seat retaining assemblies and being bolted to said bonnet, said assemblies further including at least one seat for sealingly engaging said ball member;

said bonnet, seat retaining assemblies, seat and ball member being arranged such that they are removable as a unit from said valve body upon detachment of said bonnet from said valve body.

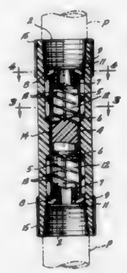


4,562,861

DOUBLE-ENDED LIQUID LINE THERMAL INSULATOR

Kenneth J. Payton, Snohomish County, Wash., assignor to Jay O. Payton, Bothell, Wash., a part interest

Filed Jul. 11, 1984, Ser. No. 629,643
Int. Cl.[4] F16K *17/26;* E03B *7/12*
U.S. Cl. 137—493.9 7 Claims



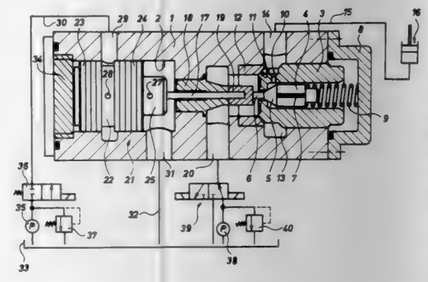
1. A thermal insulator comprising a barrel of thermal insulating material having a connecting passage therein in communication with opposite ends of said barrel including a constricted section and expanded sections at opposite sides of said constricted section, respectively, a slider received in said barrel and reciprocable in said connecting passage, said slider being sufficiently smaller than said constricted section as to always enable at least some flow of liquid through said constricted section in either direction, and opposed spring means always clamping said slider therebetween and operable to lodge said slider in said passage constricted section when the pressure of the liquid in the opposite ends of said barrel is equalized for restricting communication through said connecting passage between the opposite ends of said barrel, said opposed spring means being arranged in tandem and having their adjacent ends always engaging opposite ends of said slider, respectively, and always exerting opposed spring pressure on said slider in all reciprocated positions of said slider, for reciprocation of said slider out of said passage constricted section in either direction into a passage expanded section by differential liquid pressure exceeding differential spring means pressure on opposite ends of said slider to enable the flow of liquid through said connecting passage to increase and returnable into said passage constricted section by differential spring means pressure when the pressure of the liquid in the opposite ends of said barrel again becomes equalized.

4,562,862

HYDRAULICALLY UNBLOCKABLE NON-RETURN VALVE

Norbert Mucheyer, Rechtenbach, and Heinz Schulte, Marktheidenfeld, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Fed. Rep. of Germany

Filed Dec. 16, 1983, Ser. No. 562,202
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247420
Int. Cl.[4] F16K *15/18*
U.S. Cl. 137—522 9 Claims



1. A hydraulically unblockable non-return valve comprising:

a valve housing;

a seat element in the valve housing;

closing means movable in the valve housing for cooperating with the seat element;

spring means for holding the closing means against the seat element;

control piston means having a low pressure side and a high pressure side arranged coaxially to the closing means for cooperating with the closing means to open and close the valve;

said housing having a first bore on the low pressure side of the control piston means;

said housing having a second bore which is connected to a control line;

a first throttle means in the control piston means arranged between the high pressure side and low pressure side of the control piston means;

a second throttle means arranged between the control line and the high pressure side of the control piston means; and

ram means connected to said piston means for moving said closing means away from the seat element to open the valve;

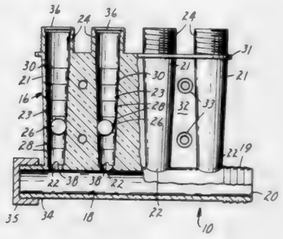
wherein said control piston means is provided with a blind bore on the high pressure side and the second throttle means is arranged on the control piston means between the second bore and the blind bore.

4,562,863

LIQUID FLOW INDICATOR FOR FARM IMPLEMENTS

Robert L. Claussen, 3049 Utah Ave. North, Crystal, Minn. 55427, and Steven W. Claussen, 1720 Nevada Ave., Benson, Minn. 56215

Filed Jan. 27, 1984, Ser. No. 574,395
Int. Cl.[4] F16K *37/00;* B67D *5/38*
U.S. Cl. 137—559 11 Claims



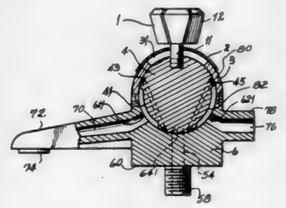
1. A flow indicator for use in a multi-outlet line, pump pressurized, liquid delivery system for liquid fertilizers, herbicides, insecticides, or the like, on an implement, said flow indicator comprising a unitary molding including first wall means defining a manifold having a straight central axis adapted to be connected in said system for receiving liquid output from said pump, transparent wall means defining a plurality of generally parallel closely spaced tubular members having inlet ends coupled to said first wall means, similarly sized through openings communicating with said manifold and increasing in diameter in a predetermined pattern from said inlet end, and having outlet ends adapted to be coupled to said outlet lines, said tubular members each having a straight central axis intersecting said manifold and disposed at about a right angle to the axis of said manifold and webbing wall means bridging said tubular members for providing rigidity for the molding; and a similarly sized indicating member in the through opening of each of said tubular members so that with said tubular members generally vertically disposed with said outlet ends uppermost, equal flow rates through said tubular members will produce visible horizontally aligned indicating members, and one of the float members out of alignment will indicate unequal flow rates through the tubular members and thus the outlet lines.

4,562,864

SINGLE HANDLE MIXING VALVE WITH OUTLET SELECTION

Tai-Her Yang, 5-1 Tay Pyng St., Shi Hwu Jenn, Jang Huah Shiann, Taiwan

Filed Nov. 2, 1983, Ser. No. 547,923
Int. Cl.[4] F16K *11/087*
U.S. Cl. 137—597 16 Claims



1. A valve for mixing a first fluid with a second fluid, comprising:

means for defining a spherical cavity;

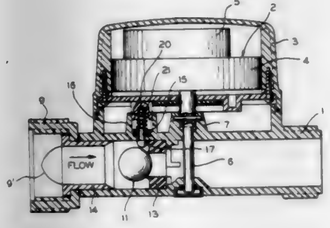
means for defining a first inlet port communicating with said spherical cavity for injecting a first fluid into said cavity;
means for defining a second inlet port communicating with said spherical cavity for injecting a second fluid into said cavity;
means for defining a first outlet port communicating with said spherical cavity for discharging liquid from said cavity;
means for defining a second outlet port communicating with said spherical cavity for discharging liquid from said cavity;
spherical guide body means for mixing said first and second injected fluids, said body means including means for defining at least one mixing cavity therein and means for defining a first substantially annular groove surrounding said mixing cavity;
first seal means, disposed in said first groove, for preventing fluid from escaping from said spherical cavity through said first outlet port when said mixing cavity is in registry with said first outlet port but not with either of said first and second inlet ports; and
handle means, connected to said guide body means, for selectively moving said mixing cavity alternately in registry with said first and second outlet ports, and for selectively moving said mixing cavity in registry with controllable portions of the areas of said first and/or second inlet ports.

4,562,865

TIMED WATER SHUT-OFF DEVICE

Jack L. Lemkin, Cincinnati; Eugene A. Zilber, and Carl A. Peterson, both of Columbus, all of Ohio, assignors to O. M. Scott & Sons Company, Marysville, Ohio

Filed May 18, 1984, Ser. No. 611,601
Int. Cl.⁴ F10K *21/06*
U.S. Cl. 137—624.12 **2 Claims**



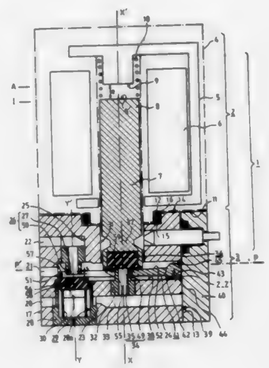
1. A timed water shut-off device comprising
a conduit for the passage of water therethrough,
said conduit containing a valve therein for the control of the passage of water through said conduit, said valve containing a ball having a seated and an unseated position within said conduit,
a timer enclosed within a timer housing rotatably mounted on one end of a shaft, the other end of said shaft being anchored within said conduit so as to rotatably couple said timer and timer housing directly to said conduit, said timer and timer housing being adapted upon rotation in a first direction on said shaft to return said timer and housing to their original position in a preselected time, said timer and timer housing together forming a single unit substantially sealed against entry of water into said timer,
said timer housing having on its underside a cammed surface facing said conduit,
said conduit having a plunger mounted therein, one end of which protrudes through an upper portion of the conduit and is in alignment with the cammed surface on the underside of the timer housing, the other end of the plunger being in alignment with the ball of the valve,
said plunger being spring biased toward said cammed surface so that upon rotation of said timer and housing in a first direction, the plunger is adapted to engage and unseat said ball permitting passage of water and, upon return of said timer and housing to their original position, to disengage from contact with said ball thereby allowing the ball to assume a seated position.

4,562,866

LOWER POWER ELECTROMAGNETICALLY CONTROLLED FLUID OPERATING VALVE

Michel Nicolas, Plaisir, and Michel Lèpine, Levallois Perret, both of France, assignors to La Telemecanique Electrique, France

Filed Aug. 9, 1984, Ser. No. 639,047
Claims priority, application France, Aug. 12, 1983, 83 13249
Int. Cl.⁴ F16K *31/10*
U.S. Cl. 137—625.65 **8 Claims**



1. An electromagnetically controlled fluid-operating valve comprising:
i. an electromagnet having a yoke, an axially guided ferromagnetic movable elongate core, a first spring mounted between said yoke and a first end of said elongate core for biasing said core into an axial rest position, and an electrically energized coil producing a magnetic field attracting the said first end of said core against the action of said first spring in a working position in which it abuts on a surface portion of said yoke, and a cavity formed at the second end of said core, said yoke, said coil and said core forming an integral body having an assembling surface from which the said second end of the core is outwardly projecting;
ii. a packing housed in said cavity;
iii. a valve body having an assembling surface and an elongate well in axial alignment with the said core and in which the second projecting end of said core is housed, the assembling surfaces of the electromagnet body and of the valve body being tightly assembled together;
iv. a chamber provided in said valve body, said chamber transversely extending with respect to the said elongate well;
v. a first bore provided in said valve body and coaxially extending the said elongate well, said bore having an orifice and a first valve seat arranged around said first bore, said first valve seat bearing on the said packing for sealing the said orifice in the rest position of the core, the said first bore communicating with the said chamber in the working position of the core;
vi. A pressurized fluid inlet conduit provided in said valve body and communicating with said first bore;
vii. a second bore provided in said valve body, said second bore communicating with the said chamber and having a bearing surface portion;
viii. a valve member axially guided in the second bore;
ix. a second spring bearing at one end thereof on the said bearing surface portion of the second bore and at the other end thereof on one face of said valve member;
x. a pressurized fluid outlet conduit communicating with said second bore
xi. an exhaust conduit and a second valve seat arranged around said exhaust conduit, said second valve seat being adapted for cooperating with an opposite face of said second valve member to seal the exhaust conduit;
xii. a lever housed in said chamber and pivotally mounted at a first point thereof, said lever having a first bearing surface on which the said second end of the core bears in the rest position of said core and a second bearing surface which bears on the said valve member to separate the said valve member from the said second valve seat against the action of the said second spring in the rest position of said core; whereas, in the working position of said core, the said second end of the core releases the lever and, under the action of the second spring, the second valve member, pushes the lever and the said opposite face of the second valve member seals the exhaust conduit.

4,562,867

FLUID OSCILLATOR

Ronald D. Stouffer, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Columbia, Md.

Filed Nov. 13, 1978, Ser. No. 960,195
Int. Cl.⁴ B05B *1/08*
U.S. Cl. 137—811 **10 Claims**

10. A fluid oscillator comprising:
nozzle means for forming and issuing a jet of fluid in response to application thereto of fluid under pressure;
an oscillation chamber having means forming inlet and outlet openings therein, said oscillation chamber being positioned to receive said jet of fluid from said nozzle means through said inlet opening, said oscillation chamber including:
oscillation means within said chamber for cyclically oscillating said jet back and forth across said chamber in a direction substantially transverse to the direction of flow in said jet, said oscillation means including impingement means disposed in said oscillation chamber in the path of said jet, for forming, on each side of said jet, vortices of said jet of fluid which alternate in both strength and chamber position in phase opposition, said impingement means comprising a far wall of said chamber remote from said inlet opening; flow directing means for directing fluid from the cyclically oscillated jet out of said chamber through means forming a pair of outlet passages leading to said outlet opening,
said nozzle means being positioned to issue said jet generally radially across said oscillation chamber towards said impingement means,
said outlet passages being defined as spaces between opposing walls of said chamber and said far wall, and said inlet opening,
said means forming said outlet opening being constituted by a first of said pair of outlet passages positioned at one side of said nozzle means to receive fluid flowing to said outlet opening along said one side of said jet, and
a second of said pair of outlet passage positioned at the opposite side of said nozzle means to receive fluid flowing to said outlet opening along the opposite side of said jet.

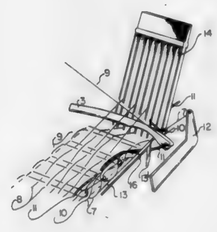
4,562,868

METHOD FOR MAKING A WOVEN BAND

Michel Jammes, 4300 LePux, Haute-Loire, France

Continuation-in-part of Ser. No. 123,902, Feb. 22, 1980, abandoned. This application Feb. 22, 1983, Ser. No. 468,778
Claims priority, application France, Feb. 28, 1979, 79 05814
Int. Cl.⁴ D03D *13/00*
U.S. Cl. 139—118 **14 Claims**





1. A method for making scallops on at least one selvedge of a woven elastic band comprising, forming the scallops on each selvedge, hooking at least one elastic thread in the direction of the warp and shifting at least one elastic thread transverse to the body of the band, the shifting of at least one elastic thread being effected according to a predetermined cycle, at least one elastic thread being thereinafter incorporated within the selvedge.

4,562,869

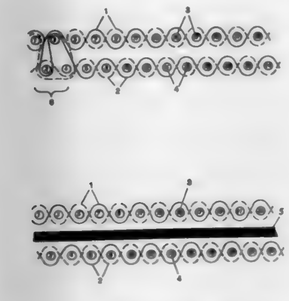
HEAT-STERILIZABLE BLANKET, AND A PROCESS FOR ITS MANUFACTURE

Otto Blum, Fussach, Austria, assignor to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Jan. 31, 1984, Ser. No. 575,934
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3303688
Int. Cl.⁴ D03D *11/00*
U.S. Cl. 139—413 **7 Claims**

1. A blanket with surfaces made of absorbent material, having light weight and good thermal insulation properties, which can be repeatedly sterilized by boil washing and subsequent treatment at temperatures of up to 135° C. without losing these thermal insulation properties and therefore can be used without a cover, said blanket comprising a double cloth forming outer layers made of plain-woven cellulosic fibers, and an intermediate wadding pick which is fixed in position between the outer layers by a regularly spaced piquelike binding of the

outer layers, which wadding pick floats over wide stretches between the binding points of the piquelike binding and is a



low-twist uncrimped polypropylene fiber yarn with a linear density of 100 to 1000 tex.

4,562,870

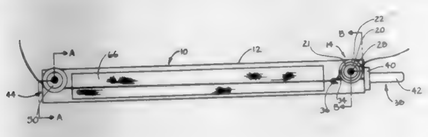
DUBBING TWISTER DEVICE

Larry Calvin, P.O. Box 1706, Bozeman, Mont. 59715

Filed Apr. 30, 1984, Ser. No. 605,265

Int. Cl.⁴ B21F *7/00*

U.S. Cl. 140—149 **5 Claims**



1. A device for making dubbed thread used in fly tying wherein dubbing material is positioned on a length of thread and the thread is drawn over the dubbing material to form a loop of thread with the dubbing material sandwiched in the loop and wherein the loop of thread is twisted to form a dubbed thread, the device comprising:

an elongate base;

a thread twisting means having a first portion for holding an end of the loop of thread and further having means for twisting the loop of thread;

a gripping means for gripping a length of thread;

a first means located at one end of the elongate base for holding the thread twisting means and to which the gripping means is secured;

a second means located at the other end of the elongate base to that held by the thread twisting means for resiliently gripping the free ends of the thread forming the loop whereby the loop of thread may be stretched between the first and second means.

4,562,871

REHYDRATOR

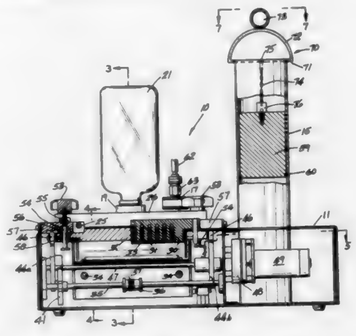
Thomas W. Astle, 607 Harborview Rd., Orange, Conn. 06477

Filed Mar. 16, 1984, Ser. No. 590,337

Int. Cl.⁴ B65B *3/10*

U.S. Cl. 141—129 **24 Claims**

1. A rehydrator for rehydrating material in spaced apart wells aligned in columns and rows in a titration tray, comprising means defining a plurality of spaced apart and aligned orifices, a tray platform movable beneath said orifice defining means between two reference positions so as to sequentially present a row of wells beneath said row of orifices, a liquid reservoir defining means coupled to said orifice defining means, means applying a constant pressure to said liquid in said reservoir, valve means connecting said reservoir defining means to said orifice defining means, valve actuating means, indexing means for incrementally indexing said platform, and drive means coupled to said indexing means and said valve actuating means to first index said platform a distance between



the rows of wells of said tray and then to operate said valve actuating means to dispense a controlled volume of liquid under the constant pressure.

4,562,872

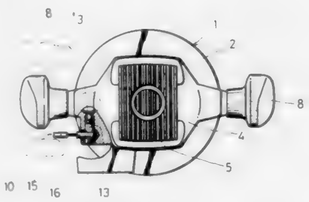
LOCKING SYSTEM IN A PORTABLE ELECTRIC ROUTER

Fusao Fushiya, and Tetsuhisa Kaneko, both of Anjo, Japan, assignors to Makita Electric Works, Ltd., Aichi, Japan

Filed Dec. 13, 1984, Ser. No. 681,140

Int. Cl.⁴ B25F *5/00*

U.S. Cl. 144—134 D **9 Claims**



1. In a portable electric router including a motor housing having a pair of hand grips secured to opposite sides thereof, a driving motor encased in said motor housing and having a driving shaft extending downwardly from the lower end of said motor housing, said driving shaft having a cutting tool holding chuck secured thereto, and a base having guide means extending upwardly therefrom, said motor housing being vertically movable with respect to said guide means, means for locking said motor housing in a preselected downwardly extended position comprising a locking pin disposed within said motor housing and adapted to move in a direction perpendicular to and into locking engagement with said guide means, and a locking lever pivotally disposed adjacent one of said hand grips and operative to axially move said locking pin, said locking lever being adapted to press said locking pin against said guide means when said locking lever is pivoted toward said grip.

4,562,873

METHOD OF AND ARRANGEMENT FOR MILLING ROOT BUTTS OF ROUND TIMBER

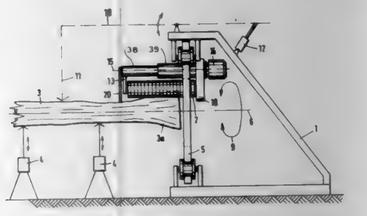
Harro Kröcher; Dieter Krautzenberger, both of Bad Kreuznach; Hans Sybertz, Hargesheim, and Uwe Becker, Friedberg, all of Fed. Rep. of Germany, assignors to Hombak Maschinenfabrik GmbH & Co. KG., Bad Kreuznach, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 584,095

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1983, 3306569; Sep. 20, 1983, 3333910

Int. Cl.⁴ B27B *1/00*

U.S. Cl. 144—356 **20 Claims**



1. A method of milling root butts of round timber comprising the steps of holding a trunk in a fixed non-rotatable location; sensing an outer surface of the trunk at least at one point beyond the region of the root butts; displacing a milling tool to abutment against the trunk; milling the trunk by the milling tool in the abutment region of the root trunk until it reaches a radial depth obtained and fixed by said sensing; and moving the rotating milling tool, after attainment of said radial depth, around the trunk while simultaneously controlling of its respective radial depth by a simultaneously conducted sensing of the respective outer surface contour of the trunk.

3. An arrangement for milling root butts of round timber, comprising at least one rotary shaft arranged to carry a milling tool; adjusting means for moving said milling tool so that it abuts against a trunk; rotary means rotatable about a hypothetical axis of the trunk and supporting said milling tool with said adjusting means; and a sensor movable to abutment against an outer surface of the trunk and arranged to control said adjusting means and also supported by said rotary means.

4,562,874

TIRE PRESSURE CONTROL SYSTEM

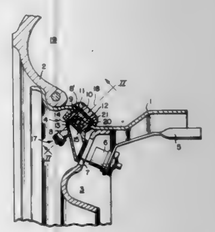
Franz X. Scheller, Weinstadt, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Fed. Rep. of Germany

Filed Feb. 28, 1984, Ser. No. 584,409

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3310052

Int. Cl.⁴ B60C *29/00, 23/02*

U.S. Cl. 152—427 **18 Claims**



1. A tire pressure control system with a pressure switch assembly installed in a rim, which pressure switch, as part of a tuned circuit, damps, across an air gap, an HF transmitter, installed in a wheel web and having downstream analysis electronics, the pressure switch assembly comprising a support body having a diaphragm pressure cell with a reference pressure located in it and having a filling connection and the diaphragm of the pressure cell being subjected on one side to the reference pressure and on the other side to the tire pressure and being effectively connected to a contact switch which is part of the tuned circuit and is also located in the support body, further comprising a first valve means with an air inlet opening located in the support body of the pressure switch, which air inlet opening, when the tire is being filled, is in connection, via a first valve seat, with the tire volume and, via a second valve seat effectively in series with the first valve means, is also in connection, via the filling connection, with the reference volume of the diaphragm pressure cell.

16. A tire pressure control system for a vehicle wheel having a rim and tire comprising

a pressure switch means mounted in the rim for sensing pressure in the volume of the tire and comprising a diaphragm, a first side of which is exposed to pressure in the tire volume and a second side of which is exposed to a reference air pressure in a diaphragm pressure cell and a coil means positioned in response to the pressure in the tire volume,

means for filling the tire to a predetermined pressure and, means comprising an air inlet opening connected to the reference volume for establishing the reference pressure in the reference volume equal to the pressure in the tire volume in response to actuation of the means for filling.

4,562,875

DIE-CASTING METHOD AND APPARATUS

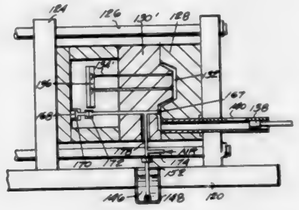
Yutaka Ogoshi, Kariya; Mitsuyoshi Yokoi, Takahama; Fumitaka Takehisa, Anjou, and Sumi Yoshikawa, Nakashima, all of Japan, assignors to Nippondense Co., Ltd., Kariya, Japan

Filed Aug. 29, 1984, Ser. No. 645,395

Claims priority, application Japan, Aug. 30, 1983, 58-159382; Jul. 6, 1984, 59-140965

Int. Cl.⁴ B22C *23/02;* **B22D** *17/04*

U.S. Cl. 164—72 **11 Claims**



5. A method of die-casting employing a fixed die, a movable die defining a die cavity between the inner surface thereof and the inner surface of said fixed die when said movable die contacts said fixed die, and a shot sleeve opening into said cavity through which molten metal is injected, said method comprising the steps of:

moving said movable die to contact said fixed die, so that said die cavity is formed;

introducing tip lubricant into said shot sleeve so as to keep substantially all of said tip lubricant in said shot sleeve;

pouring metal molten metal into said shot sleeve;

injecting said molten metal into said die cavity to cause said tip lubricant to be conveyed into said die cavity by the movement of said molten metal so as to coat the inner surface of said die cavity prior to said molten metal touching said die cavity inner surface;

solidifying said metal in said die cavity; and

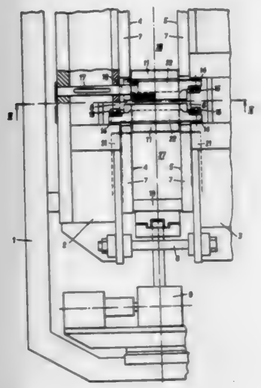
detaching said movable die from said fixed die and detaching the solidified metal from said die cavity.

9. A die-casting apparatus comprising:
a fixed die;
a movable die forming a die cavity between an inner surface thereof and an inner surface of said fixed die when said movable die contacts said fixed die;
a shot sleeve opening to said die cavity, said shot sleeve having a pouring port through which molten metal is introduced;
shot plunger means for injecting said molten metal in said shot sleeve toward said die cavity; and
nozzle means provided at a passageway between said shot sleeve and said die cavity and extending toward said shot sleeve from said die cavity for injecting tip lubricant only toward said shot sleeve.

4,562,876
APPARATUS FOR CONTINUOUS CASTING OF BARS OF DIFFERENT SIZES

Reinhard Hargassner, and Alois Scheinecker, both of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 8, 1983, Ser. No. 502,220
Claims priority, application Austria, Jun. 23, 1982, 2425/82
Int. Cl.⁴ B22D *11/00*
U.S. Cl. 164—459 **22 Claims**



21. Apparatus for continuous casting of metal bars selectable as to slab bloom cross-section or of at least two metal bars of smaller cross-section comprising an interchangeable mold unit for casting metal bars with slab bloom cross-section including:
a water tank,
narrow side walls of the mold supported by the water tank;
wide side walls for the mold supported by the water tank and comprising copper plates; and
an interchangeable mold unit for casting at least two metal bars of relatively smaller cross-section including:
a water tank,
narrow side walls of the mold supported by the water tank;
wide side walls of the mold supported by the water tank and comprising copper plates separated in their shape by a recess in the direction of the advancing metal bar, and
intermediate narrow side walls disposed between the narrow side walls and having surfaces disposed opposite to the narrow side walls and where the intermediate narrow side walls are in each case inserted into the recesses and are supported within the recesses by the support constructions of the copper plates of the wide side walls.

4,562,877
METHOD OF RAPIDLY SOLIDIFYING THIN METALLIC STRIPS

Pascal Fournier, Paris, and Jean-Claude Peraud, Mandres Les Roses, both of France, assignors to Pont-a-Mousson S.A., Nancy, France

Division of Ser. No. 284,346, Jul. 17, 1981, Pat. No. 4,520,859.
This application Dec. 21, 1984, Ser. No. 684,834
Claims priority, application France, Jul. 18, 1980, 80 15918
Int. Cl.⁴ B22D *11/06, 27/15*
U.S. Cl. 164—463 **26 Claims**

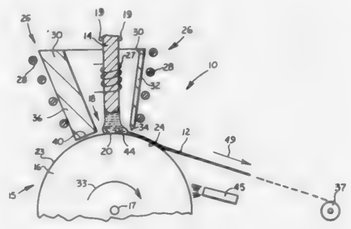


1. A process of manufacturing a thin metal strip which comprises
projecting a jet of molten metal or alloy on a cold substrate moving at great speed in an atmosphere under reduced pressure, and thereby forming the strip in contact with the substrate in said atmosphere under reduced pressure, and
bringing the strip into an atmosphere of higher pressure before its temperature reaches the temperature of vitrification of said metal or alloy.

4,562,878
ELECTROMAGNETIC SHAPING OF THIN SEMICONDUCTOR RIBBON STRIP CAST ONTO A CHILL BLOCK

Brian G. Lewis, Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 27, 1984, Ser. No. 584,222
Int. Cl.⁴ B22D *11/06*
U.S. Cl. 164—467 **32 Claims**

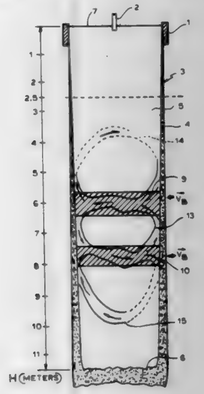


25. A process for producing a thin ribbon of material, comprising the steps of:
providing a moving chill block;
depositing said material in a molten state onto said chill block;
generating a first electromagnetic field for applying pressure to shape the deposited molten material on said chill block into said thin ribbon; and
squeezing the molten material against said chill block with the pressure of the first electromagnetic field to form said thin ribbon.

4,562,879
ELECTROMAGNETICALLY STIRRING THE MELT IN A CONTINUOUS-CASTING MOLD

Jean-Pierre Birat, Semecourt; Patrick Neu, Hagondange, and Denis Senaneuch, Dunkerque, all of France, assignors to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France

Filed Jun. 17, 1983, Ser. No. 504,845
Claims priority, application France, Jun. 18, 1982, 82 10844
Int. Cl.⁴ B22D *11/00*
U.S. Cl. 164—468 **5 Claims**



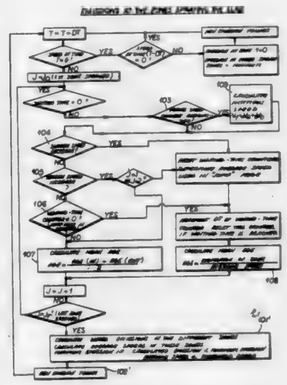
1. In a continuous-casting method wherein:
molten steel is continuously introduced into a continuous-casting mold to form therein a strand having a free surface in the mold, a pair of relatively wide faces, and a pair of relatively narrow faces;
the mold and the steel therein are continuously cooled to externally solidify the molten-steel strand while leaving same internally molten; and
the externally solid and internally molten strand is continuously withdrawn from the lower end of the mold, the core of the strand solidifying increasingly as it moves from the mold and terminating downstream of the mold at a pool bottom, the improvement comprising the steps of:
forming at each of a plurality of locations spaced apart about 1 m to 2 m longitudinally along the strand between the mold and the pool bottom a respective magnetic field, the fields passing through the strand from between about 3 m to 7 m beneath the free surface to about 2 m to 6 m from the pool bottom; and
displacing the fields transversely of and generally parallel to the side faces of the strand with each field moving opposite to the adjacent field or fields so as to magnetically transversely and oppositely displace respective portions of the molten core of the strand.

4,562,880
PROCESS FOR ADJUSTING THE SECONDARY-COOLING RATE OF A CONTINUOUS-CASTING MACHINE

Michel Larrecq; Denis Tromp, both of Metz, and Jean-Pierre Birat, Semecourt, all of France, assignors to Institut de Recherches de la Siderurgie Francaise, St.-Germain-en-Laye, France

Filed Jan. 30, 1984, Ser. No. 575,041
Claims priority, application France, Jan. 28, 1983, 83 01404
Int. Cl.⁴ B22D *11/124*
U.S. Cl. 164—455 **6 Claims**

1. A process for the control of secondary cooling of elongate workpieces leaving a forming stage of a continuous-casting machine, comprising the steps of:
(a) effecting the cooling by jets of a cooling fluid trained at several cooling zones upon a workpiece traversing same;
(b) modifying the cooling fluid flow in response to variations in the casting speed of the advancing workpiece;
(c) generating a value of a fictitious speed, taking into account expected speed changes due to a foreseeable event,

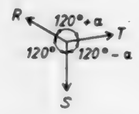


lying between a measured real-time speed and an anticipated speed, and substituting said fictitious speed for said real-time speed in the computation of an average speed at each cooling zone, said anticipated speed being an advance image of a significant variation of future speed expected within a lead time, said cooling fluid flow being modified in step (b) at least in part in response to said computation of said average speed.

4,562,881
METHOD FOR STIRRING IN CONTINUOUS CASTING

Sten Kollberg, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Continuation-in-part of Ser. No. 204,530, Nov. 6, 1980, abandoned. This application Oct. 18, 1982, Ser. No. 434,736
Int. Cl.⁴ B22D *11/10, 27/02*
U.S. Cl. 164—468 **4 Claims**



1. A method of asymmetrically stirring in continuous casting, said method comprising tapping molten metal into a continuous casting mold having an open bottom so as to produce a molded casting strand traveling from said bottom, the said strand gradually solidifying first at its surface so as to form a skin containing non-solidified metal, and stirring the non-solidified metal in said strand by a multi-phase electromagnetic stirrer positioned opposite to the strand below said mold, by supplying the stirrer with multi-phase stirring current having the phase angle of one of its phases differing from the phase angle of another of its phases by at least 5° so as to induce asymmetrical stirring currents in said non-solidified metal.

4,562,882

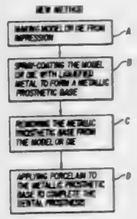
METHOD OF MAKING A DENTAL PROSTHESIS

Vincent V. Alleluia, 146-21 - 13th Ave., Whitestone, N.Y. 11357

Filed Feb. 29, 1984, Ser. No. 584,644

Int. Cl.[4] B22C *1/00*; B22D *23/00*

U.S. Cl. 164—529 **7 Claims**



1. A method of making a dental prothesis from an upper or a lower impression of the oral cavity of a patient, which comprises filling said impression with a castable mixture comprising (1) a ceramic composition containing a major proportion of magnesia and a significant minor proportion of each of alumina and ammonium dihydrogen phosphate, and (2) an aqueous composition containing silica as the essential ingredient, the ratio of the aqueous silica composition to the ceramic composition being such as to render the latter flowable; permitting said mixture to harden in the impression, and removing the resulting hardened model from the impression; selecting from said model the portion requiring said dental prosthesis, effecting drying thereof, and spray-coating a liquefied metal composition on to said selected portion of said model to form a metallic prosthetic base; and separting said metalic prosthetic base from said selected portion of said model and applying a porcelain coating to the exterior surface of said separated metallic prosthetic base to provide said dental prosthesis.

4,562,883

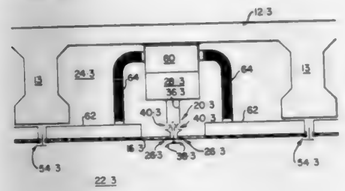
AIR CONDITIONING METHOD AND INSTALLATION

Charl E. Janeke, 261 Loveday St., Muckleneuk, Pretoria, Transvaal Province, South Africa

Continuation of Ser. No. 267,820, May 27, 1981, abandoned. This application May 17, 1984, Ser. No. 611,376

Int. Cl.[4] F24H *3/00*

U.S. Cl. 165—1 **3 Claims**



1. A method of serving a building with cool air during daytime while using air-conditioning apparatus, the building having

a space to be supplied with cool air,

a plenum chamber above said space defined by the building structure,

a partition between the space and the plenum chamber, and at least one air return opening through the partition intercommunicating the space and the plenum chamber,

the method comprising the steps of, cyclically,

during the night, venting the plenum chamber defined by the building structure, bringing cool air into said plenum chamber and cooling said building structure defining said plenum chamber,

during a subsequent day introducing primary cool air, cooled by air-conditioning apparatus, by a primary air stream into said space,

creating a secondary air flow from said space to said plenum chamber through said air return opening by evacuating the cooled air from said plenum chamber into said space,

bringing the replacement air entering said plenum chamber into heat exchange relationship with precooled building structure defining said plenum chamber

whereby the replacement air is cooled for inclusion in further air flow into said space.

4,562,884

HEAT-EXCHANGER ARRANGEMENT

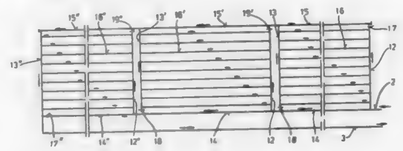
Rolf Möller, Wangen; Gerhard Hirscher, and Erich Bopp, both of Vogt, all of Fed. Rep. of Germany, assignors to Gebrüder Uhl, GmbH & Co. KG, Vogt, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 432,400

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146659

Int. Cl.[4] F28F *9/26*; F24J *3/02*

U.S. Cl. 165—76 **45 Claims**



1. An arrangement for exchanging heat between the environment and a heat-transfer fluid, especially a solar heat absorber, comprising: a plurality of heat-exchanger units, each unit including at least one hollow elongated heat exchange element having two end positions and bounding at least one passage for the fluid and extending longitudinally of said element and having two open ends at the respective end portions of said element, a pair of collector pipes each so connected to one of said end portions of said element as to extend substantially transversely of the latter and beyond the same at each side of said element and each bounding a collecting channel communicating with the respective open end of said passage for respectively supplying the fluid thereto and receiving the same therefrom, a pair of connecting pipes, and means for so securing said connecting pipes to said collector pipes as to form a fluid-tight self-supporting frame therewith, including respective corner parts which are rigid with the respective connecting and collector pipes; throttling members oriented in the supply collector pipe of a first heat-exchanger unit; closing caps located on one of said pair of collector pipes of following heat-exchanger units ahead of said securing means to said connecting pipe, said throttling members and closing caps acting to provide means for controlling flow conditions; and means for causing the fluid to flow through said heat-exchanger unit.

4,562,885

PLATE HEAT EXCHANGER AND PRESSURE BLAST CLEANER

Josef Pausch, Minnetonka, Minn., assignor to General Resource Corporation, Hopkins, Minn.

Filed Aug. 29, 1983, Ser. No. 526,972

Int. Cl.[4] F28G *7/00*

U.S. Cl. 165—84 **5 Claims**

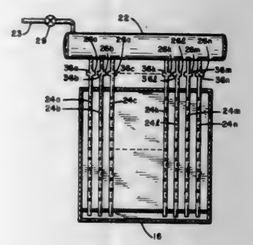
1. A plate heat exchanger and cleaning apparatus, comprising

(a) a rectangular housing having a plurality of parallel plate heat exchanger channels extending therethrough, said housing having respective open ends to permit gas flow through said channels;

(b) a plurality of pressure pipes positioned adjacent one end of said heat exchanger channels, one pipe being aligned with each of said channels, and each pipe having a plurality of pressure jet openings aligned in facing relationship to said channels;

(c) a controllable pressure relief valve attached to each of said pipes; said pressure relief valve having an opening and closing response time of not more than 1/10 second;

(d) a pressure tank closely positioned to said relief valves, including means for directly coupling said pressure tank to all of said relief valves, said pressure tank having a volume



capacity at least ten times greater than the volume capacity of any single pressure pipe;

(e) means for developing a linear pressure wave across the entire open end of each of said parallel heat exchanger channels, including means for discharging substantially the entire pressure volume of said tank into one of said pipes by momentary actuation of the controllable pressure relief valve attached to said pipe for a time duration in the range of 1/10 to 2/10 seconds; and

(f) means for selectively actuating each of said pressure relief valves sequentially.

4,562,886

TUBE CLEANER

Per T. Holm, Granvägen 5, Skoghall, Sweden (663 00)

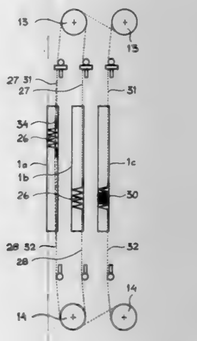
PCT No. PCT/SE82/00307, § 371 Date Jun. 7, 1983, § 102(e) Date Jun. 7, 1983, PCT Pub. No. WO83/01296, PCT Pub. Date Apr. 14, 1983

PCT Filed Sep. 30, 1982, Ser. No. 504,055

Claims priority, application Sweden, Oct. 9, 1981, 8105998

Int. Cl.[4] F28G *1/06, 1/64, 1/10*

U.S. Cl. 165—94 **16 Claims**



1. A device for internal cleaning during operation, of the tubes of a heat exchanger containing a plurality of substantially straight tubes having both ends fastened to tube sheets; and head chambers outside the tube sheets for the medium flowing through the tubes comprising cleaning members in each of the tubes, driving means comprising cable drums, cables in contact with said drums to pull the cleaning members through the tubes, each end of each cleaning member being attached to a cable end; and wherein each of the cleaning members comprises a substantially cylindrical helical spring having an axis extending along a tube axis, the spring being open centrally to permit straight and free flow of said medium, the spring having an external diameter which, in the unloaded condition of the spring, is slightly smaller than the internal diameter of the tube in which the spring is located, and the cable attachment point to at least one of the spring ends is located offset from the spring axis.

4,562,887

WATER-COOLED CONDENSER TUBE-PLATE ATTACHMENT

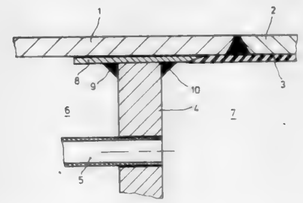
Werner Muri, Baden, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 18, 1984, Ser. No. 601,679

Claims priority, application Switzerland, Apr. 28, 1983, 2278/83

Int. Cl.[4] F28F *9/02*

U.S. Cl. 165—158 **4 Claims**



1. In a water-cooled condenser having a shell structure and a tube-plate secured to said shell structure, said shell structure comprising a condenser shell and a water box shell, said condenser shell constructed from steel sheet and enclosing a steam space, said tube-plate having a steam space side facing said steam space, said condenser also having a plurality of condenser tubes constructed from titanium, said tubes being secured to said tube-plate, the improvement comprising said tube-plate constructed from titanium, a plating of explosion-plated titanium on said condenser shell coextensive with said tube-plate and a water-tight weld between said titanium plating and said tube-plate on said steam space side.

4,562,888

TUBING HEAD ADAPTER AND VALVE

James R. Collet, 120 Exploration Rd., Broussard, La. 70518

Filed Jan. 12, 1984, Ser. No. 570,183

Int. Cl.[4] E21B *34/02*

U.S. Cl. 166—97 **3 Claims**

1. A tubing head adapter for insertion above an oil well casing head in an oil well or deep hole well, comprising:

a. a substantially cylindrical casing, having an internal longitudinal axial bore;

b. means for fixedly attaching the outer casing to the oilwell casing head;

c. a ball valve means inserted within the cylindrical casing in fluid communication with the internal axial bore, adapted to be actuated between a first open and a second closed position; wherein the ball valve means further comprises:

i. a lower valve seat positioned annularly within the axial bore of the cylindrical casing;

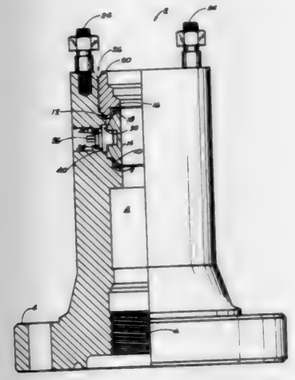
ii. a lower tapered ball seat ring member disposed on top of said lower seat;

iii. a floating ball member contactingly supported upon

said lower seat ring, wherein said ball member is provided with an opening diametrically therethrough;

iv. an upper tapered ball seat ring member contactingly disposed on top of said ball member;

v. an upper valve seat positioned annularly within the axial bore of the cylindrical casing atop said upper seat ring; and



vi. a threaded gland member threadingly engaged within said cylindrical casing to clamp said upper valve seat against said upper seat ring and said ball member, thereby preventing said ball member from vertical displacement while allowing its floating rotation.

4,562,889

METHOD AND APPARATUS FOR ROTATING AND RECIPROCATING WELL BORE LINER

Britt O. Braddick, P.O. Box 35729, Houston, Tex. 77235

Filed Apr. 13, 1984, Ser. No. 600,108

Int. Cl.⁴ E21B *19/00*

U.S. Cl. 166—381 **11 Claims**



1. In an arrangement for supporting on a work string to rotate and reciprocate a liner before setting it by hanger means on a casing in a well bore and for rotating the liner after it is set on the casing wherein an outer member has a liner secured thereto, with hanger means supported on the outer member for hanging the liner on the casing and bearing means on the outer member to accommodate rotation between the outer member and liner relative to the casing and hanger means, and wherein an inner member is telescopically received in the outer member, the inner member having a noncircular mandrel connected with the work string, the invention including:

means on the inner and outer members to reciprocate and rotate the liner by manipulating the work string before the liner is set on the casing, said means to rotate being disengageable upon relative longitudinal movement between the inner and outer members after the liner has been hung;

means supporting the outer member and liner on the inner member, said means including left-hand thread means on the outer member and disengaging nut means threadedly secured on said thread means and telescopically receiving the mandrel whereby rotation of the work string after the liner is hung on the casing disconnects said disengaging nut from said thread means and disconnects the outer member from the inner member and work string; and

additional means on the inner and outer member engageable after the inner and outer members are disconnected from each other to rotate the outer member and liner relative to the hanger means and casing upon rotating the work string.

11. In an arrangement for supporting on a work string to selectively rotate and/or reciprocate a liner before setting it on a casing in a well bore and for rotating the liner after it is set on the casing wherein an outer member has a liner secured thereto and bearing means on the outer member to accommodate rotation between the outer member and liner relative to the casing and wherein an inner member is telescopically received in the outer member, the invention including:

means supporting the outer member and liner on the inner member;

means on the inner and outer members to selectively rotate and/or reciprocate the liner by manipulating the work string before the liner is set on the casing; and

additional means on the inner and outer members to rotate the outer member and liner after the liner is set on the casing.

4,562,890

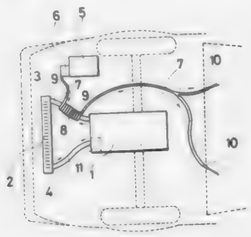
APPARATUS FOR WARMING WINDOW WASHER LIQUID FOR A MOTOR VEHICLE

Nobushige Matoba, Osaka, Japan, assignor to Matex Co., Ltd., Osaka, Japan

Filed Nov. 22, 1983, Ser. No. 554,494

Int. Cl.⁴ B60H *1/06*; **F28D** *7/10*

U.S. Cl. 165—41 **1 Claim**



1. For a motor vehicle having a window washer system which includes a window washer liquid tank, a washer liquid pump, washer liquid hoses, and window nozzles, an apparatus for warming the window washer liquid, comprising:

a flexible heat exchanger tube wound around an engine coolant circulation hose;

coupling means for connecting said heat exchanger tube to the washer liquid hoses in line between the washer liquid pump and the window nozzles;

wherein said coupling means is comprised of:

a hose coupling element for connecting one end of said heat exchanger tube to a washer liquid hose;

a tie belt for securing said heat exchanger tube and said coupling element to the engine coolant hose; and

a slitted ear projecting from said coupling element for receiving said tie belt thereby securing said heat exchanger tube and said coupling element to the engine coolant hose.

4,562,891

FRONT VEHICLE BLADE MOUNT

Dietrich Ranner, Salzburg, Austria, assignor to Bomadier-Rotax-Wien Produktions- und Vertriebsgesellschaft mbH, Vienna, Austria

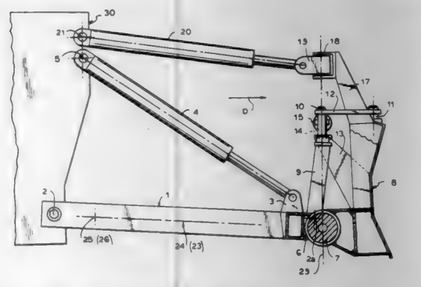
PCT No. PCT/AT83/00023, § 371 Date Mar. 28, 1984, § 102(e) Date Mar. 28, 1984, PCT Pub. No. WO84/00570, PCT Pub. Date Feb. 16, 1984

PCT Filed Jul. 28, 1983, Ser. No. 600,112

Claims priority, application Austria, Jul. 30, 1982, 2956/82

Int. Cl.⁴ E02F *3/76*

U.S. Cl. 172—821 **7 Claims**



1. A hitch for mounting an implement on the front end of a vehicle relative to the normal travel direction thereof, the hitch comprising:

a main frame having a rear end pivoted on the vehicle about a generally horizontal rear main axis and a front end spaced forward therefrom in the travel direction;

actuator means connected between the front end and the vehicle for pivoting the main frame about the main axis;

a swivel joint at the front end carrying the implement, whereby the implement can swivel freely on the front end by means of the joint;

a rigid yoke pivoted on the front end about a front axis parallel to the rear axis, having an upper end, and movable only about the front axis on the main frame;

an inextensible link extending generally in the travel direction and having relative thereto a rear end pivoted on the upper end of the yoke and a front end pivoted on the implement, whereby when the implement pivots about a horizontal implement axis perpendicular to the direction and parallel to the main axis the link pivots the yoke with it about the front axis;

a fitting on the implement horizontally offset from the upper end of the yoke; and

actuator means extending generally horizontally and transverse to the direction and having an outer end coupled to the fitting and an inner end coupled to the upper yoke end for tipping the implement about a horizontal axis extending in the travel direction through the swivel joint.

4,562,892

ROLLING CUTTERS FOR DRILL BITS

Gunes M. Ecer, Irvine, Calif., assignor to CDP, Ltd., Newport Beach, Calif.

Filed Jul. 23, 1984, Ser. No. 633,508

Int. Cl.⁴ E21B *10/08*

U.S. Cl. 175—371 **24 Claims**

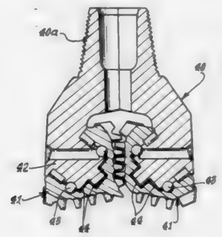
1. A roller bit cutter, comprising, in combination:

(a) a tough, metallic, generally conical and fracture resistant core having a hollow interior, the core defining an axis,

(b) an annular, metallic, radial bearing layer carried said core at the interior thereof to support the core for rotation, said bearing layer extending about said axis,

(c) a wear resistant outer metallic layer on the exterior of the core,

(d) metallic teeth integral with the core and protruding outwardly therefrom, at least some of said teeth spaced about said axis,



(e) and an impact and wear resistant layer on each tooth to provide hard cutting edges as the bit cutter is rotated about said axis,

(f) said core consisting essentially of steel alloyed with elements that include carbon, manganese, silicon, nickel, chromium, molybdenum, and vanadium, said elements having the following weight percents:

carbon	0.1 to 0.65
manganese	0.25 to 2.0
silicon	0.15 to 2.2
nickel	0.01 to 3.75
chromium	0.01 to 1.2
molybdenum	0.01 to 0.40
vanadium	0 to 0.3

4,562,893

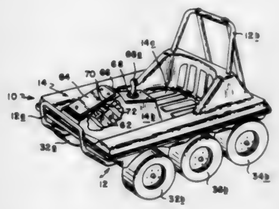
TOY VEHICLE

Joel C. Cunard, Bedford, Pa., assignor to Hedstrom Corporation, Bedford, Pa.

Filed Dec. 19, 1983, Ser. No. 563,221

Int. Cl.⁴ B62D *11/04*

U.S. Cl. 180—6.5 **8 Claims**



1. A toy vehicle comprising

A. a frame having a front, a rear and a pair of opposite sides;

B. at least three substantially equal diameter wheels rotatively mounted to each side of the frame at locations distributed between the front and rear of the frame so that the bottoms of all of the wheels lie in substantially the same plane;

C. first drive means mounted to the frame, said first drive means including

(1) a relatively small DC electric motor;

(2) a speed reduction unit having an input gear driven by the motor and an output gear rotatively coupled to a first wheel at the front or rear of the frame;

D. second drive means mounted to the frame, said second drive means including

(1) a second relatively small DC electric motor;

(2) a second drive unit having an input gear driven by the second motor and an output gear rotatively coupled to a second wheel at the front or rear of the frame and being located on the opposite side of the frame from said first wheel;

E. first means for rotatively coupling said first wheel and the wheel at the opposite end of the frame on the same side thereof;

F. second means for rotatively coupling said second wheel and the wheel at the opposite end of the frame on the same side thereof; and

G. wherein a wheel located between the coupled-together wheels on each side of the frame is an idler wheel;

H. a vehicle body mounted on the frame;

I. battery means supported by the frame;

J. means for electrically connecting the battery means to the motors, said connecting means including hand-operated control means having a plurality of operative positions for applying battery means voltage of either polarity to each drive motor whereby an occupant of the vehicle can drive the vehicle forward or in reverse or cause it to revolve in either direction without the vehicle's slipping or stalling.

4,562,894

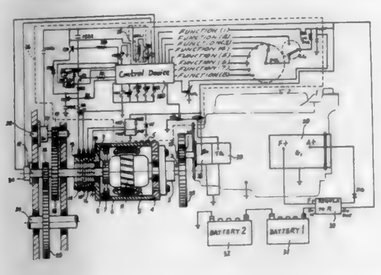
COUPLING MULTI DRIVING SYSTEM

Tai-Her Yang, 5-1 Tay Pyng St., Shi Hwu Jenn, Jang Huah Shiann, Taiwan

Continuation of Ser. No. 345,945, Feb. 3, 1982, abandoned. This application Sep. 6, 1984, Ser. No. 648,346

Int. Cl.⁴ B60K *1/00*

U.S. Cl. 180—65.2 **9 Claims**



1. An apparatus for producing rotational energy, including:

engine means for producing rotational energy;

power storage means for storing electrical power; and

a unitary rotary drive mechanism, operatively coupled to said power storage means and mechanically coupled to said engine means and to a load, for coupling the rotational energy produced by said engine means to said load and for converting power stored in said power storing means to rotational energy, said mechanism selectively increasing the angular velocity of rotational energy applied to said load to greater than the angular velocity of the rotational energy produced by said engine means.

4,562,895

MOTOR VEHICLE ENGINE COOLING ARRANGEMENT

Karl Kirchweger, Graz, Austria, assignor to AVL Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik, Graz, Austria

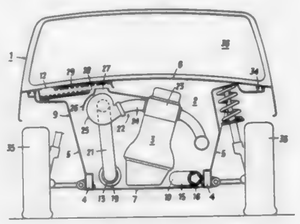
Filed Apr. 6, 1984, Ser. No. 597,420

Claims priority, application Austria, Apr. 8, 1983, 1266/83

Int. Cl.⁴ B60K *11/00*

U.S. Cl. 180—68.1 **3 Claims**

1. A motor vehicle, comprising a frame and a body, outer walls, an engine compartment, an internal combustion engine mounted in said compartment to power the vehicle and having a cylinder head and an exhaust system at a predetermined elevation connected thereto, encapsulating elements sealed against parts of said frame and said body to form a completely enclosed sound-insulating capsule for said engine compartment, said capsule including sound-absorbing inlet and outlet openings for ventilation of said capsule, one of said outlet openings being disposed at an elevation above said predetermined elevation so as to be located in an area where heated air rises from said exhaust system, a separate exhaust casing mounted wholly within said capsule and having an outlet in



open communication with said one of said outlet openings, said exhaust casing comprising a roof-type cover having no bottom, said cover being attached to said engine and shielding at least parts of said exhaust system lying adjacent said cylinder head, said cover having an outlet fitting defining said outlet thereof, an absorption muffler on an outer wall of the vehicle, said outlet fitting opening into said muffler and being out of contact therewith so as to form an essentially ring-shaped gap therewith, and said one of said outlet openings in communication with said exhaust casing outlet being located in one of said outer walls of the vehicle.

4,562,896

POWER STEERING CONTROL APPARATUS

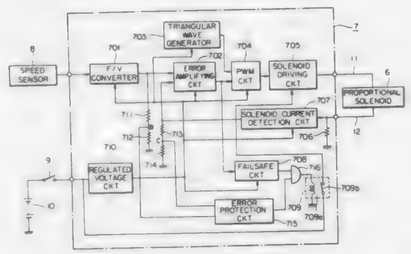
Mitsuharu Morishita, and Shinichi Kouge, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1984, Ser. No. 670,228

Claims priority, application Japan, Nov. 15, 1983, 58-213198

Int. Cl.⁴ B62D *5/06*

U.S. Cl. 180—142 **15 Claims**



1. A power steering control apparatus comprising a car speed sensor, a power source, an electric control circuit connected to said car speed sensor and said power source, and a proportional solenoid, responsive to the output of said electric control circuit, for providing a steering reaction oil pressure;

said electric control circuit including:

first means for producing a command signal in inverse proportion to the output of said car speed sensor;

second means for detecting a current signal flowing through said proportional solenoid;

third means for comparing said command signal with said current signal as a feedback signal to develop an error signal therebetween with a high amplification gain;

fourth means for developing from said error signal a driving signal for said proportional solenoid;

fifth means, responsive to said error signal, for detecting a predetermined abnormal condition in which said amplified error signal exceeds a first predetermined value and holding said abnormal condition;

sixth means, responsive to the output of said fifth means, for passing the electrical energy from said power source to said fourth means in the normal condition while interrupting said electrical energy to said fourth means in said predetermined abnormal condition;

seventh means for comparing said command signal and said feedback signal to provide an output signal only when said output signal is larger than a second predetermined value; and

eighth means for enabling the output of said fifth means when the output of said seventh means is provided.

4,562,897

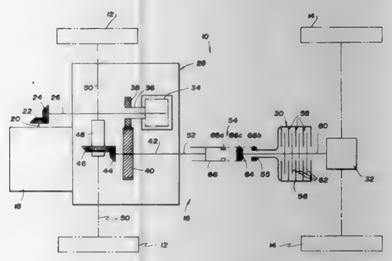
VEHICLE DRIVETRAIN INCLUDING VISCOUS CLUTCH

Dennis N. Renneker, Troy, Mich., assignor to American Motors Corporation, Southfield, Mich.

Filed Oct. 25, 1983, Ser. No. 545,199

Int. Cl.⁴ B60K *17/34*

U.S. Cl. 180—233 **5 Claims**



1. In a vehicle including an engine having a rotary output, an improved drivetrain comprising: a transaxle having an input rotatively driven by the output of the engine and having a primary output for driving a first pair of wheels; said transaxle also having an auxiliary output; a viscous clutch having a rotary input and also having a rotary output connected to a second pair of wheels; and a selector for selectively: (a) disconnecting the auxiliary output of the transaxle from the second pair of wheels to provide driving by only the first pair of wheels, (b) connecting the auxiliary output of the transaxle with the rotary input of the viscous clutch to provide driving of the second pair of wheels through the viscous clutch along with the first pair of wheels when there is more than a predetermined difference in the average speeds of the first and second pairs of wheels or (c) connecting the auxiliary output of the transaxle directly to the second pair of wheels in a bypassed relationship to the viscous clutch to provide driving of the second pair of wheels along with the first pair of wheels.

4,562,898

TUNABLE POWERTRAIN MOUNT

Bernard Huang, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 4, 1984, Ser. No. 616,983

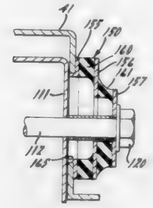
Int. Cl.⁴ B60K *1/00;* **F16F** *7/00*

U.S. Cl. 180—292 **6 Claims**

1. A tunable powertrain mount for the powertrain of a vehicle including:

a shear disc suspension adapted to be coupled between a frame rail and a cross member of an automobile, said cross member being adapted to be coupled to the vehicle powertrain;

said shear disc suspension including a first and a second elastomer disc, said first disc being positioned between a first and a second support plate and said second elastomer disc being positioned between said second and a third



support plate, said first and second elastomer discs being tunable so that deflection of said powertrain with respect to said frame rail deflects said first elastomer disc to a maximum deflection and further deflection depends upon the resistance provided by said second elastomer disc; and

said shear disc suspension is in accordance with the formula in matrix form:

$$\begin{pmatrix} F_1 \\ F_2 \end{pmatrix} = G\gamma \begin{pmatrix} a_1 \\ a_2 \end{pmatrix} ; \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \gamma h \begin{pmatrix} 1 + \dfrac{a_1}{a_2} \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} k_1 \\ k_2 \end{pmatrix} = \begin{pmatrix} F_1/x_1 \\ (F_2 - F_1)/(x_2 - x_1) \end{pmatrix} = \frac{Ga_1}{h} \begin{pmatrix} \dfrac{1}{1 + \dfrac{a_1}{a_2}} \\ \dfrac{a_2}{a_1} \end{pmatrix}$$

$$\begin{pmatrix} f_1 \\ f_2 \end{pmatrix} = \frac{1}{2\pi} \begin{pmatrix} \sqrt{\dfrac{2k_{18}}{F}} \\ \sqrt{\dfrac{1}{\dfrac{2k_{28}}{F_2 - F_1}}} \end{pmatrix}$$

wherein, f is load at each deformation stage; x is displacement at each deformation stage; k is stiffness at each deformation stage, f is frequency at each deformation stage; a is area of each disc layer; m is related to the support mass; g is the shear modulus of the elastomer; q is the maximum shear strain; and h is the thickness at each elastomer stage; and wherein there are two shear disc suspensions at each end of said cross member and a first extremity of each of said two shear disc suspensions is coupled to said cross member and a second extremity of each of said two shear disc suspensions is coupled to said frame rail.

4,562,899

DIAPHRAGM OF ELECTROACOUSTIC TRANSDUCER AND METHOD OF MANUFACTURING THE SAME

Akira Nakamura, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jun. 14, 1983, Ser. No. 504,192

Claims priority, application Japan, Jun. 16, 1982, 57-102261; Jun. 16, 1982, 57-88706[U]

Int. Cl.⁴ G10K *13/00;* **H04R** *7/02*

U.S. Cl. 181—169 **12 Claims**

1. A diaphragm of an electroacoustic transducer comprising

a plurality of composite sheets each including fibers having a high Young's modulus to density ratio and a matrix bonding together said fibers, said composite sheets being laminated into an integral structure, each composite sheet further comprising a plurality of adjoining sections having joints therebetween and formed by dividing the composite sheet about a central



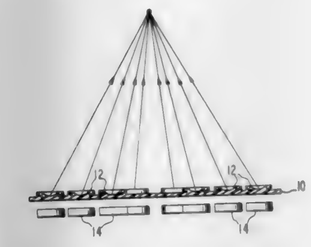
axis of said diaphragm, said composite sheets further being laminated such that the joints between the adjoining sections of one composite sheet are not disposed circumferentially at the same positions as the joints between the adjoining sections of the other composite sheet, such joints being of sufficient mechanical strength to withstand the vibrations encountered in service in a diaphragm.

4,562,900

LENS SYSTEM FOR ACOUSTIC TRANSDUCER ARRAY

Weston A. Anderson, Palo Alto, and William G. Turnbull, Cupertino, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 20, 1984, Ser. No. 684,232
Int. Cl.⁴ G10K *11/00*
U.S. Cl. 181—176 **3 Claims**



1. An acoustic energy delivery system, comprising:
a multiplicity of acoustic transducers;
means for exciting said transducers; and
means for directing and focussing acoustic energy from said multiplicity of acoustic transducers onto a target, said means for directing and focussing including a monolithic tray of plastic incorporating a multiplicity of Fresnel lenses and prisms in portions thereof.

4,562,901

SOUND ABSORPTIVE STRUCTURAL BLOCK WITH SEQUENCED CAVITIES

Miguel C. Junger, 90 Fletcher Rd., Belmont, Mass. 02178, and Klaus Kleinschmidt, Lexington, Mass., assignors to Miguel C. Junger, Belmont, Mass.

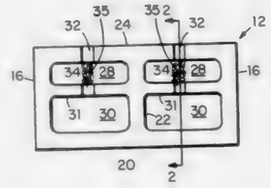
Filed Oct. 12, 1983, Ser. No. 541,019
Int. Cl.⁴ E04B *1/00, 5/52*
U.S. Cl. 181—285 **11 Claims**

1. In a sound-absorptive block of molded structural material having a front wall, a rear wall, two end walls, a top wall and an opening opposite said top wall where at least the exterior surface of said front wall receives the sound energy to be absorbed, said walls formed integrally with one another to provide a load bearing capability and defining an interior space, the improvement comprising

at least one interior wall that divides said interior space into sequenced cavities including at least a first cavity adjacent said sound receiving wall and a second cavity separated from said first cavity by said interior wall,

a first orifice formed in said sound receiving wall, said first orifice and said first cavity forming a first acoustical resonator that dissipates sound energy at a natural frequency f_1, and

a second orifice formed in said at least one interior wall to couple acoustically said sequenced cavities, wherein said second cavity is coupled to said sound receiving wall only through said first cavity, said second orifice and said second cavity forming a second acoustical resonator that dissipates sound energy at a natural frequency f_2, where $f_1 > f_2$.

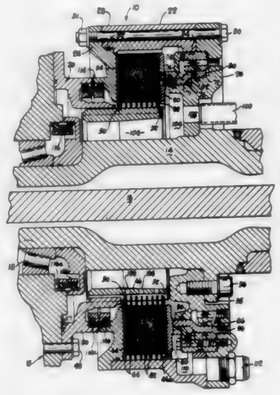


4,562,902

BRAKE SYSTEM

Harold R. Scibbe, Chardon, Ohio, assignor to Clark Equipment Company, Buchanan, Mich.

Filed May 9, 1980, Ser. No. 148,538
Int. Cl.⁴ F16D *65/32*
U.S. Cl. 188—72.4 **35 Claims**



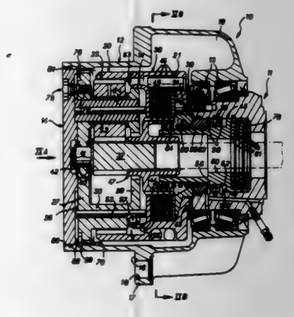
1. In a friction device, an operating means comprising a piston means slidably carried in a piston housing, said piston means and housing being shaped to define a plurality of non-communicating fluid chambers, said chambers communicating with associated effective pressure areas on said piston means such that the presence of fluid pressure on certain of said areas urges the piston means in a brake application direction and the presence of fluid pressure on other of said areas urges said piston means in a brake release direction, said operating means further including a valve means operative to concurrently provide pressur-ized fluid from a source to all of said fluid chambers to effect brake application, said valve means including means for concurrently releasing the pressure in all of the chambers and for delaying the return flow of fluid from the chambers communicating with the other effective pressure areas until the pressure in the fluid chambers communicating with the certain of said effective pressure areas is substantially reduced, to obtain brake release.

4,562,903

WHEEL HUB WITH INTEGRAL BRAKE AND REDUCER

Léonce Rogier, Saint Denis, France, assignor to So.M.A. Europe Transmissions and Societe Nouvelle Mecanique Et Automobile, both of Saint Etienne, France

Filed Nov. 2, 1983, Ser. No. 547,844
Claims priority, application France, Nov. 3, 1982, 82 18404
Int. Cl.⁴ B60T *1/06;* **F16D** *55/36*
U.S. Cl. 188—18 A **14 Claims**



1. A wheel hub assembly with a disc brake and gear reduction mechanism, said wheel hub assembly comprising a fixed hollow stub support, a generally tubular hollow body mounted for rotation on said fixed hollow stub support, a removable cover normally closing off one end of said hollow body axially remote from said fixed hollow stub support, means for mounting a wheel provided on the outside of said hollow body, means for removably securing said cover to said hollow body independent of said means for mounting a wheel, a wheel shaft rotatable inside of said fixed hollow stub support, said disc brake comprising at least one brake disc fixed for rotation with said wheel shaft, a control unit remote from said cover relative to said brake disc for applying a clamping force to said brake disc, means for transmitting said clamping force from said brake disc to said cover so that said cover acts as a bearing support, said reduction gear mechanism also being disposed inside said hollow body and including a pinion carrier fixed for rotation with said hollow body, said pinion carrier being a part formed separate from said cover and said hollow body, axial abutment means for said pinion carrier fixed on said hollow body, said pinion carrier being disposed immediately inwardly of said cover, said means removably securing said cover being adapted to be loosened for unclamping said brake disc, said pinion carrier defining means for preventing contamination of the interior of said hollow body upon loosening or removing of said cover for unclamping said brake disc.

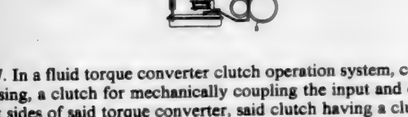
4,562,904

STOP SYSTEM FOR A CENTER PIVOT IRRIGATION SYSTEM

Donald C. Kelley, Rte. 2, Earth, Tex. 79031

Filed Mar. 19, 1984, Ser. No. 590,998
Int. Cl.⁴ B60T *3/00*
U.S. Cl. 188—32 **13 Claims**

1. A stop mechanism for use in interrupting the travel of a self propelled traveling irrigation apparatus of the type which is propelled by driven ground engaging wheels, comprising:
an elongated frame adapted to lie flat on the ground and having opposed confronting side members, lateral members connected to said side members for supporting a wheel when the wheel travels across said frame in a direction longitudinally of said side members;
a pair of rollers arranged laterally respective to said side members, each roller of said pair of rollers having opposed ends journaled respective to said side members; said rollers and said lateral members are spaced in close proximity to one



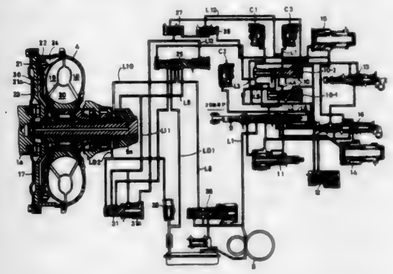
another to enable a driven wheel to travel in supported relationship thereacross in a longitudinal direction respective to said side members;
means for selectively securing each said roller against rotation so that the wheels can drive the irrigation apparatus out of either end of the stop mechanism; said means for selectively securing each said roller in a bore formed laterally through part of said roller; the bore of one roller can be brought into axial alignment with the bore of an adjacent roller; an elongated rigid member of a diameter to be received within each said bore, said elongated member, when extended into each bore, locks one roller to the adjacent roller.

4,562,905

CLUTCH OPERATION CONTROL SYSTEM FOR FLUID TORQUE CONVERTERS

Sadanori Nishimura; Masakazu Maezono, and Keiichi Ishikawa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1984, Ser. No. 602,376
Claims priority, application Japan, Apr. 22, 1983, 58-70055
Int. Cl.⁴ F16D *47/06*
U.S. Cl. 192—0.032 **7 Claims**



7. In a fluid torque converter clutch operation system, comprising, a clutch for mechanically coupling the input and output sides of said torque converter, said clutch having a clutch plate and being constructed as a hydraulically actuated type having first and second oil chambers disposed on opposite sides of said clutch plate to be actuated by an application force according to the difference between the internal pressures of said first and second oil chambers, means for providing an external signal and causing said pressure difference to be increased or decreased in response to said external signal, means providing communication between said two oil chambers, a regulating means, a drain oil line leading from said first oil chamber to said regulator means, and said regulating means being responsive to said external signal and being exposed in opposite directions to the internal pressures of said two oil

chambers so that said pressure difference may be controlled to a predetermined level according to said external signal.

4,562,906

CONTROL DEVICE FOR A HYDROSTATIC TRANSMISSION IN AN EARTH MOVING MACHINE

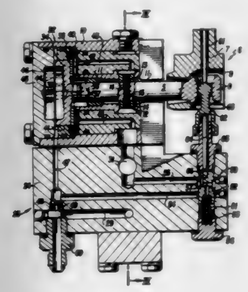
Rino O. Barbagli, Borgaretto, and Gaetano Marras, Vinovo, both of Italy, assignors to Fiatallis Europe S.p.A., Lecce, Italy

Filed Apr. 25, 1983, Ser. No. 487,967

Claims priority, application Italy, May 3, 1982, 67578 A/82

Int. Cl.⁴ B60K *41/26, 20/14*; G05G *5/00*

U.S. Cl. 192—4 A **8 Claims**



1. A vehicle transmission control mechanism including a hydraulically-actuated friction stop for releasably holding a transmission shift lever in a set position through the use of a fluid pressure used for controlling the operation of a hydrostatic transmission, wherein the hydraulically-actuated friction stop may be selectively disengaged enabling movement of a transmission shift lever without interrupting the operation of the hydrostatic transmission, comprising

a transmission shift lever operatively connected to a control shaft for effecting movement of a vehicle in accordance with the positioning of the control shaft in response to the movement of said shift lever,

said control shaft operatively connected to a hydraulically-actuated friction stop such that engagement of the hydraulically-actuated friction stop releasably holds said control shaft and thereby said shift lever in a set position,

hydraulic pressure valve means actuatable for controlling the operation of a hydrostatic transmission in response to hydraulic fluid coupled thereto through said hydraulic pressure valve means, said hydraulic pressure valve means being actuated to couple hydraulic fluid to the hydrostatic transmission by movement of said control shaft,

a hydraulically-actuated friction stop actuatable for holding said control shaft and thereby said transmission shift lever in a set position in response to the presence of a source of fluid pressure coupled thereto,

a source of fluid pressure coupled in fluid communication to said hydraulic pressure valve means and said hydraulically-actuated friction stop for the actuation thereof in response to the presence of said fluid pressure,

a flow restrictor coupled into fluid communication between said source of fluid pressure and said hydraulically-actuated friction stop for establishing a pressure drop thereacross such that a reduction in fluid pressure communicated to said hydraulically-actuated friction stop will not inactivate the operation of the hydrostatic transmission through said hydraulic pressure valve means, and

release means to selectively reduce the fluid pressure coupled to said hydraulically-actuated friction stop for the disengagement thereof so that said shift lever and thereby said control shaft may be moved from the set position.

4,562,907

WET TYPE CLUTCH/BRAKE DEVICE MOUNTED IN A FLYWHEEL

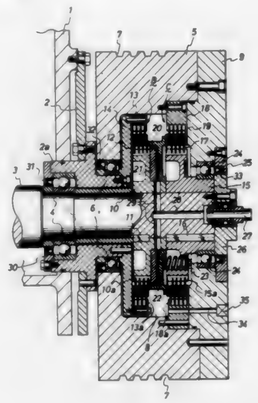
Nobuyoshi Maeda, Kanagawa, Japan, assignor to Aida Engineering, Ltd., Kanagawa, Japan

Filed Jan. 21, 1983, Ser. No. 460,048

Claims priority, application Japan, Jan. 27, 1982, 57-8808[U]

Int. Cl.⁴ B60K *41/24*

U.S. Cl. 192—18 A **2 Claims**



1. In an assembly of the type including a fixed machine body, a shaft mounted for rotation with respect to said body, a flywheel mounted about said shaft for rotation with respect thereto and for rotation with respect to said body, brake means operable when engaged to prevent rotation of said shaft relative to said body and operable when disengaged to enable rotation of said shaft relative to said body, and clutch means operable to be engaged when said brake means is disengaged to transmit rotation of said flywheel to said shaft and operable to be disengaged when said brake means is engaged to interrupt transmission of rotation of said flywheel to said shaft, the improvement comprising:

a recess formed in said flywheel and extending axially from an open end thereof spaced from said body to a closed end adjacent said body, said shaft extending coaxially through said recess, said reces defining an annular chamber between said shaft and said flywheel;

a cover member closing said open end of said recess, said cover member being fixed to said flywheel and rotatable therewith;

said brake means comprising an annular brake hub fixed to said shaft within said recess adjacent said closed end thereof, said brake hub having outer peripheral teeth, an annular brake housing fixed to said body and positioned within said recess at said closed end thereof, said brake housing having inner peripheral teeth surrounding said outer peripheral teeth of said brake hub, a plurality of inner friction plates engaged with said outer teeth of said brake hub, and a plurality of outer friction plates engaged with said inner teeth of said brake housing, said inner and outer friction plates being arranged alternately between and in engagement with each other;

said clutch means comprising an annular clutch hub fixed to said shaft within said recess adjacent said cover member, said clutch hub having outer peripheral teeth, an annular clutch housing fixed to said flywheel and positioned within said recess adjacent said cover member, said clutch housing having inner peripheral teeth surrounding said outer peripheral teeth of said clutch hub, a plurality of inner friction plates engaged with said outer teeth of said clutch hub, and a plurality of outer friction plates engaged with said inner teeth of said clutch housing, said outer and inner friction plates being arranged alternately between and in engagement with each other;

a cylinder member surrounding said shaft between said clutch means and said brake means within said annular chamber of said recess, said cylinder member having first and second opposite axial annular ends directed toward said friction plates of said brake means and said friction plates of said clutch means, respectively, for alternate abutment therewith;

a piston member positioned radially with said cylinder member and defining therewith a cylinder chamber;

spring means positioned between said clutch hub and said cylinder member for biasing said cylinder member in a first axial direction toward said friction plates of said brake means and away from said friction plates of said clutch means, and thereby for engaging said brake means and disengaging said clutch means;

an air passage extending through said shaft and connected to said cylinder chamber;

means for supplying compressed air through said air passage into said cylinder chamber for moving said cylinder member against the force of said spring means in a second axial direction toward said friction plates of said clutch means and away from said friction plates of said brake means, and thereby for engaging said clutch means and disengaging said brake means; and

means extending through said cover member for supplying oil into said recess for cooling said brake means and said clutch means.

4,562,908

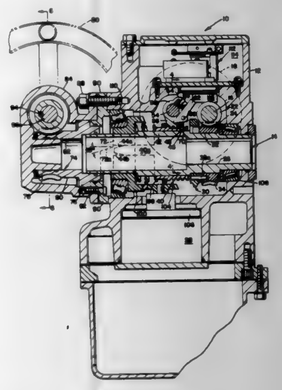
ROTARY ACTUATOR

John Zouzoulas, Havertown, Pa., assignor to Andco Actuator Products, Inc., Cheektowaga, N.Y.

Filed Oct. 27, 1983, Ser. No. 546,166

Int. Cl.⁴ F16D *47/02*

U.S. Cl. 192—48.5 **15 Claims**



1. An actuator comprising:

a drive motor;

an output member capable of being coupled to an output drive rod;

drive means including a worm wheel mounted around said output member and freely rotatable relative thereto, said worm wheel being arranged so as to be rotated by said drive motor, and a driving portion mounted on said worm wheel for transmitting power from said worm wheel to said output member;

clutch means mounted on said output member at a location adjacent said driving portion for rotation therewith but being axially movable along said output member, said clutch means having at least one lug member at one end capable of engaging said driving portion and having at least one extension member at its other end coupling said clutch means to said output member so that said clutch means couples said output member to said driving portion of said drive means when said clutch means is arranged in a first position in which said lug member of said clutch means engages said driving portion of said drive means;

bias means for normally biasing said clutch means into its first postion;

declutch means capable of causing said clutch means to be moved into a second position so that said lug member is moved out of engagement with said driving portion and remain out of engagement when said driving portion is not rotated;

said extension members capable of engaging said clutch means to said output member immediately upon movement of said clutch means out of the first position and into the second position;

a hand wheel;

said output member including a worm gear adapter means capable of manual rotation by said hand wheel when said clutch means is in said second position to rotate said output member through said last named engagement of said clutch means to said output member; and

said output member arranged to be in engagement with said drive means solely when said clutch means is in the first position or to be in engagement with said worm gear adapter means solely when said clutch means is in the second position whereby said clutch means is movable from the first position into the second position without passing through a neutral position.

4,562,909

CLUTCH DEVICE FOR MARINE VESSEL DRIVE

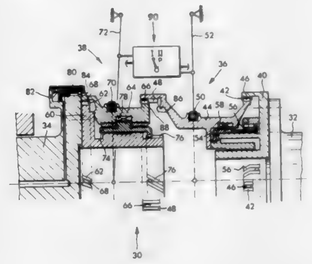
Hans Sigg, Mutschellen, and Otto Staedeli, Menzingen, both of Switzerland, assignors to MAAG Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Jan. 23, 1984, Ser. No. 573,219

Claims priority, application Switzerland, Jan. 24, 1983, 373/83

Int. Cl.⁴ F16D *23/02, 47/00*

U.S. Cl. 192—48.91 **6 Claims**



1. A clutch device, especially a clutch device for marine vessel propulsion systems, comprising:

a driving shaft;

a driven shaft;

synchronous clutch means disposed between said driving shaft and said driven shaft;

a first synchronous clutch releasably engaging said driving shaft;

said synchronous clutch means defining a second synchronous clutch releasably engaging said driven shaft and cooperating with said first synchronous clutch;

said first synchronous clutch comprising self-operative engagement means responsive to relative rotational speeds for engaging said first synchronous clutch to said drive

shaft such that said first synchronous clutch automatically engages when the rotational speed of the driven shaft begins to exceed that of the driving shaft; and

the second synchronous clutch comprising self-operative engagement means responsive to relative rotational speeds for engaging said second synchronous clutch to said driven shaft such that said second synchronous clutch automatically engages when the rotational speed of the driving shaft begins to exceed that of the driven shaft.

4,562,910

DIAPHRAGM SPRING CLUTCH COVER ASSEMBLIES

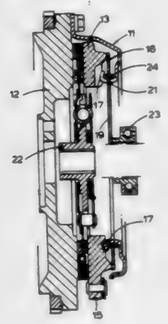
Ian C. Maycock, Lillington, England, assignor to Automotive Products plc, Leamington Spa, England

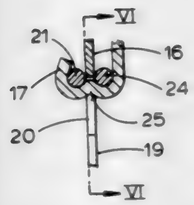
Filed Jul. 8, 1983, Ser. No. 511,982

Claims priority, application United Kingdom, Jul. 31, 1982, 8222147

Int. Cl.⁴ F16D *13/71*

U.S. Cl. 192—70.27 **6 Claims**





1. A diaphragm spring clutch cover assembly comprising:

a cover;

a pressure plate mounted for rotation with the cover;

a diaphragm spring acting between the cover and the pressure plate and having a plurality of inwardly directed fingers separated by slots, the radially outer ends of the slots terminating as windows in the diaphragm spring;

a fulcrum support means on the cover side of the diaphragm spring and a fulcrum ring on the opposite side of the diaphragm spring to the cover to provide axial support for the diaphragm spring;

a circular array of tabs on the cover, the tabs extending through the windows in the diaphragm spring to embrace the fulcrum ring, each tab having a deformed portion which protrudes radially outwardly intermediate the fulcrum support means and the fulcrum ring to radially locate said diaphragm spring.

4,562,911

QUICK-COUPLING DEVICE

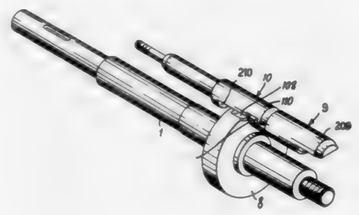
Renato Manservisi, Bologna, and Sandro Corticelli, Castello d'Argile, both of Italy, assignors to SASIB S.p.A., Bologna, Italy

Filed Dec. 22, 1983, Ser. No. 564,737

Claims priority, application Italy, Dec. 22, 1982, 12695 A/82

Int. Cl.⁴ F16D *43/26, 1/06*

U.S. Cl. 192—86 **11 Claims**



1. A controlled, in-line axial-engagement quick-coupling device of reversible and invertible type, for use with a machine having a driving portion and a driven portion to provide timed transmission of periodically occuring intermittent rotation from the driving portion to the driven portion of the machine, the intermittent rotation having steps of rotary motion separated by dwell periods, comprising:

a drive shaft interposed operatively between said driving portion and said driven portion of the machine;

a rotary driving member keyed to said drive shaft to receive the intermittent rotation from said driving portion;

a driven member rotatably mounted on said drive shaft to transmit the intermittent rotation of the drive shaft to said driven portion of the machine; and

a controlled, reversible and invertible keying mechanism means operatively mounted between said drive shaft and said driven member for alternately assuming, substantially during said dwell periods, one of a first engagement control arrangement wherein said driven member is locked to said drive shaft, and a second control arrangement wherein said driven member is uncoupled from the drive shaft and rotation of said driven member is temporarily prevented during at least one step of the intermittent rotation.

4,562,912

CLUTCH DISC

Yoshiaki Kabayama, Kadoma, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

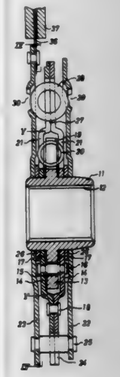
Filed Jan. 6, 1984, Ser. No. 568,682

Claims priority, application Japan, Jan. 6, 1983, 58-616[U]

Int. Cl.⁴ F16D *3/14*

U.S. Cl. 192—106.2 **3 Claims**

1. A clutch disc comprising a hub adapted to be connected to a shaft and provided at the outer periphery with an integral radial hub plate; a pair of hub flanges made of sheet metal, disposed at opposite sides of the hub plate with friction members therebetween and fitted at the inner peripheries onto the outer periphery of the hub; a stud pin connecting radially inner portions of the flanges together and projecting through a circumferentially long aperture in the hub plate; fixing means fixing radially outer portions of the flanges together radially outside of the hub plate; relatively weak elastic means disposed in openings provided in the flanges and the hub plate and circumferentially connecting the flanges and the hub plate together; side plates fixed together and disposed at opposite sides of the flanges with friction means therebetween; and relatively strong elastic means disposed in openings in the flanges and the side plates and connecting the flanges and the side plates together; said relatively weak elastic means being isolated from said side plates so that no direct mechanical connection exists therebetween, whereby any resistance to torque ultimately exerted on said side plates by said relatively



weak elastic means is exerted indirectly via a torsional path which includes said flanges, said friction means and said relatively strong elastic means.

4,562,913

FRICTION CLUTCH DRIVEN PLATE

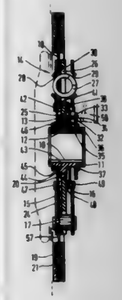
Luigi Cucinotta, and Luigi Bambini, both of Castelbellino, Italy, assignors to Automotive Products plc, Leamington Spa, England

Filed Dec. 7, 1983, Ser. No. 559,100

Claims priority, application Italy, Dec. 10, 1982, 24663 A/82

Int. Cl.⁴ F16D *3/14*

U.S. Cl. 192—106.2 **14 Claims**



1. A clutch driven plate comprising:

a hub; a friction facing carrier mounted on the hub co-axially therewith and comprising two axially spaced side plates and connecting means uniting said side plates together; an intermediate drive means mounted on the hub co-axially therewith; a first driving connection operative between the intermediate drive means and the carrier allowing limited angular rotation therebetween; a second driving connection operative between the hub and the intermediate drive means allowing limited angular rotation therebetween; main torsion damping springs supported by the side plates and acting between said intermediate drive means and carrier to control angular movement therebetween; the intermediate drive means extending outward between the side plates from its driving connection with the hub to engage the main damping springs; an auxiliary torsion damping spring connection operative between said hub and intermediate drive means to control angular movement therebetween; an inward extension from one side plate to one side of the intermediate drive means providing co-axial location for the carrier with respect to the hub; the other side plate terminating at an inner periphery thereof spaced radially outwardly from said hub, thereby defining an annular recess in said driven plate exteriorly of said hub, beside said intermediate drive means and interiorly of said other plate; the auxiliary spring connection being located within said recess.

4,562,914

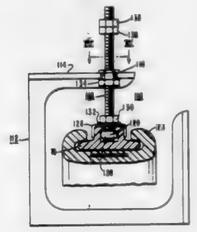
HANDRAIL APPARATUS

Henry Boltrek, Freeport, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 28, 1983, Ser. No. 547,296

Int. Cl.⁴ B66B *23/22, 23/24*

U.S. Cl. 198—336 **1 Claim**



1. Continuously self-adjusting handrail apparatus for reducing the magnitude of the forces which act to dislodge a handrail of transportation apparatus from its guide, comprising:

handrail guide means which defines a substantially continuous loop having upper and lower portions joined by first and second curved end portions,

a continuous handrail disposed on said guide means, with the handrail being available to be grasped and thereby loaded by passengers while it is on the upper portion of said guide means,

drive means coupled to said handrail while it is on the lower portion of said guide means which pushes and pulls said handrail about said handrail guide means,

said handrail guide means including first and second curved sections in the lower portion, adjacent to the first and second curved end portions, respectively, whose lengths change in opposite directions, in response to load induced forces in said handrail,

and floating guide means associated with at least one of said first and second curved sections which permits unrestricted movement of the section in a vertical plane, and which prevents movement of the curved section transverse to said vertical plane.

4,562,915

LUBRICATION TUBE INTERCONNECTIONS FOR IDLER ROLLS

Daniel J. DiAntonio, Nutley, N.J., assignor to Litton Systems, Inc., Del.

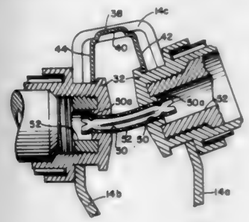
Continuation of Ser. No. 928,588, Jul. 27, 1978, abandoned, which is a continuation of Ser. No. 545,804, Jan. 31, 1975, abandoned, which is a continuation of Ser. No. 395,401, Sep. 10, 1973, abandoned. This application Jan. 15, 1981, Ser. No. 225,445

Int. Cl.⁴ B65G *45/02*

U.S. Cl. 198—501 **3 Claims**

1. A lubrication conduit for a pair of idler rolls rotatively mounted one proximate the other; comprising:

(a) a first lubrication passageway provided in one end of a first one of the idler rolls;
(b) a second lubrication passageway provided in one end of a second one of the idler rolls;
(c) said first lubrication passageway and said second lubrication passageway being disposed proximate one another when the idler rolls are relatively mounted one proximate the other;
(d) said first and said second lubrication passageways each having formed therein, at their respective innermost ends, a restricting means in the form of a knife-edge;
(e) each said first and second lubrication passageways being formed with a predetermined diameter for a major length thereof and with a diameter at said knife-edge which is smaller than said predetermined diameter;
(f) a resilient lubrication tube having an external diameter which proximates said predetermined diameter and is



larger than the diameter of said knife-edge and having one of its ends disposed in said first lubrication passageway so as to cooperate with said restricting means formed therein, and its other end disposed in said second lubrication passageway so as to cooperate with said restricting means formed therein;
(g) said lubrication tube having notches removed from its opposite ends so that said lubrication tube can be flexed inwardly more readily when engaged by said knife-edge;
(h) said cooperation between said respective restricting means and said lubrication tube ends being such that said knife-edge radially deforms said lubrication tube and the resiliency of said lubrication tube resists such deformations to thus constrict said lubrication tube at locations removed from but proximate the ends thereof while permitting said lubrication tube to assume a non-constricted configuration to either side of said respective constrictions.

4,562,916
METHOD AND APPARATUS FOR TRANSFERRING CIGARETTES FROM TWO MAKERS INTO A FILTER TIPPING MACHINE

Willi Filter, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Aug. 20, 1984, Ser. No. 642,529
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1983, 3331065
Int. Cl.⁴ B65G *47/26*
U.S. Cl. 198—432 **17 Claims**

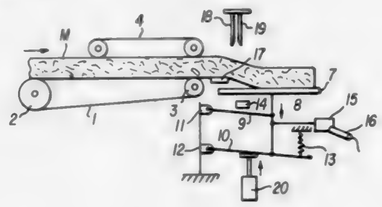


1. A method of manipulating rod-shaped articles of the tobacco processing industry, particularly for transferring plain cigarettes from two cigarette makers to a common filter tipping machine, comprising the steps of establishing for the articles discrete first and second paths which are parallel to each other, which are spaced apart from one another by a first distance, and which have adjacent discharge ends; establishing a plurality of third paths which are parallel to the first and second paths, which are spaced apart from one another by second distances deviating from said first distance, and which have intake ends disposed in a plane adjacent to the discharge ends of the first and second paths; circulating the third paths about an axis which is parallel to and equidistant from such third paths; advancing the articles axially along the first and second paths; and individually propelling into successive third paths first an article from one and thereupon an article from the other of the first and second paths so that each third path receives a pair of coaxial articles.

4,562,917
FIXED QUANTITY FEED APPARATUS FOR BEAN SPROUTS

Tomosaburo Suzuki, Tsukui, and Sanji Kawakami, Josui-Minami, both of Japan, assignors to Kabushiki Kaisha Daisei Kikai, Tokyo, Japan

Filed Aug. 30, 1983, Ser. No. 527,845
Claims priority, application Japan, Sep. 20, 1982, 57-163757
Int. Cl.⁴ G01G *11/02, 11/08, 13/16*
U.S. Cl. 198—505 **8 Claims**



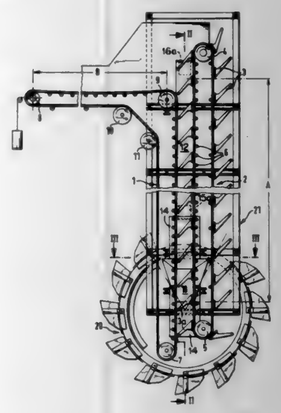
1. A fixed quantity feed apparatus for material, which comprises:
a feeding device for shaping said material to be quantitatively fed into the form of belt and conveying them;
a weighing device to which the material coming out of the feeding device is fed, and which further comprises means for detecting a predetermined weight of said material; and
a dividing-feeding device located between said feeding device and said weighing device for splitting up the material after the weighing device has detected the predetermined weight.

4,562,918
EN-MASS CONVEYOR FOR VERTICLE OR STEEP DELIVERY OF BULK MATERIAL

Günther Tschernatsch, Schwabach, and Peter Kurz, Nuremberg, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg, Nuremberg, Fed. Rep. of Germany

Filed Apr. 17, 1984, Ser. No. 600,565
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1983, 3315078
Int. Cl.⁴ B65G *17/36*
U.S. Cl. 198—509 **7 Claims**

1. An en-mass conveyor for bulk material, comprising:
first and second primary-conveyor, flat, endless belts and means arranging them with facing, correspondingly-progressing runs for defining therebetween a belt shaft along which the bulk material is conveyed;
flights projecting from one primary-conveyor belt to the other along the belt shaft for aiding the material conveyance;
first and second secondary-conveyor, flat, endless belts laterally closing the belt shaft between the primary-conveyor belts along at least a substantial part of the belt shaft; and

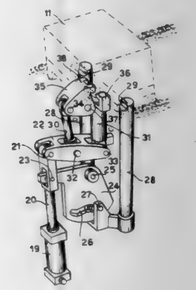


a closure plate at one, upstream end of at least one of the secondary-conveyor belts, continuing the lateral closing of the belt shaft, and having an opening therethrough to the belt shaft for admitting the bulk material into the belt shaft between consecutive flights for conveyance therealong.

4,562,919
DEVICE FOR POSITIONING A MOBILE MEMBER RELATIVE TO A FIXED MEMBER

Alberto Cattani, Modena, Italy, assignor to Comau S.p.A., Grugliasco, Italy

Filed Nov. 15, 1983, Ser. No. 552,064
Claims priority, application Italy, Nov. 22, 1982, 53972/82[U]
Int. Cl.⁴ B65G *25/00*
U.S. Cl. 198—750 **4 Claims**

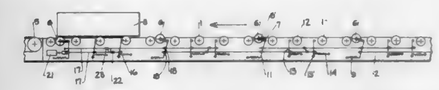


1. A device for positioning a tool head support plate of a machine tool crib in a head change position, in which a head support plate is carried along a path by a crib chain provided with rollers slidable along fixed guides, comprising first means for contacting the tool head support plate and for locking it along said path, and second means for anchoring the plate in fixed positions; said first means comprising members for contacting abutments on said plate and for locking said abutments against said members; said second means comprising means for pulling said rollers against said guides.

4,562,920
DEVICE FOR THE PRESSURELESS ACCUMULATION OF LOADS ON ROLLER CONVEYORS

Félicien Jaffre, Samovie, Rue Cdt le Prieur Kéryado, Lorient, France 56100

PCT No. PCT/FR82/00129, § 371 Date Mar. 29, 1983, § 102(e) Date Mar. 29, 1983, PCT Pub. No. WO83/00479, PCT Pub. Date Feb. 17, 1983
PCT Filed Jul. 27, 1982, Ser. No. 479,910
Claims priority, application France, Jul. 30, 1981, 81 15009
Int. Cl.⁴ B65G *13/06*
U.S. Cl. 198—781 **6 Claims**



1. An accumulator conveyor for transporting loads from an upstream end to a downstream end comprising:
a plurality of rollers in direct contact with said loads, said rollers forming sucessive load carrying sections from said upstream end to said downstream end;
at least one endless belt in direct contact with said rollers for frictionally driving said rollers;
each of said load carrying sections having: a sensing means responsive to said load in a downstream corresponding section, said sensing means being pivotable about an axis parallel to said plurality of rollers and comprising a link, and means biasing said sensing means to a rest position; a means for blocking at least one of said rollers against rotation in each of said load carrying sections, said means for blocking including a pivotal pawl lockingly engagable with a complimentary roller comprising one of said plurality of rollers, said pawl being out of engagement with said complimentary roller in the rest position and means biasing said pawl into engagement with said complimentary roller in said blocking position; and elongated connecting means coupled to said sensing means and to said means for blocking, and coupled to said sensing means and said means for blocking in said downstream corresponding section so that said rollers in each of said load carrying sections can only be blocked against rotation when an adjacent downstream corresponding section is itself loaded, said complimentary roller including a ratchet wheel; said elongated connecting means including an abutment affixed to said connecting means for bearing forwardly against said pawl in the rest position of said sensing means, said connecting means further comprising abutments affixed thereto for engagement with said link of said sensing means and said link of said sensing means of said downstream corresponding section.

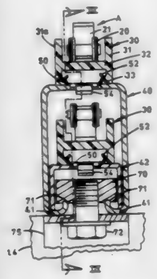
4,562,921
TRACK FOR CONVEYOR CHAIN

Hendrik Leemkuil; Samuel J. Deman, both of Grand Rapids, and Peter M. Perdok, Ada, all of Mich., assignors to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Nov. 3, 1983, Ser. No. 548,459
Int. Cl.⁴ B65G *15/60*
U.S. Cl. 198—841 **11 Claims**

1. A track for supporting both the advance and return runs of a conveyor chain, said track comprising: an inverted U-shaped outer channel having inwardly directed flanges along its lower side; an H-shaped guide rail having a central web forming a chain support surface; clip means for securing said guide rail to the top of said channel with said guide rail resting on the top surface of said channel; a rigid inner channel seated

within said channel and a second guide rail seated thereon for supporting the return run of said chain within said outer chan-



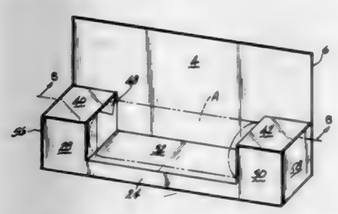
nel; clip means securing said second rail support to said inner channel.

4,562,922

SEAL END DISPLAY CARTON

Kenneth J. Midura, Chicopee, Mass., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 11, 1984, Ser. No. 619,217
Int. Cl.⁴ B65D *5/50*
U.S. Cl. 206—45.19 **2 Claims**



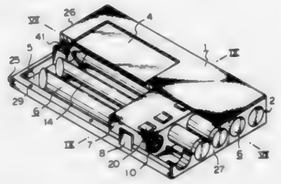
1. A display carton for displaying an article packaged therein, said carton comprising:
(a) a header card comprising a pair of header card panels disposed in face-to-face arrangement;
(b) a bottom wall hinged to one of said header card panels;
(c) a front wall hinged to said bottom wall; said front wall including a medial part of reduced height and opposite end strap parts of full height;
(d) a platform panel hinged to said front wall along an upper edge of said medial part of said front wall and said platform panel also being hinged to a header card panel;
(e) a pair of compound side closure panels on said carton, one of said compound side closure panels being interposed between each of said end strap parts of said front wall and the header card panel to which said bottom wall is hinged, each of said compound side closure panels including an outer partition panel, a connecting panel hinged to said outer partition panel, an inner partition panel hinged to said connecting panel, and a glue tab hinged to said connecting panel, and a glue tab hinged to said inner partition panel, said outer partition panels being hinged to opposite ends of one of said end strap parts of said front wall and said header card panel to which said bottom wall is hinged, said glue tabs being adhesively secured to the panel to which said outer partition panels are hinged, and said compound side closure panels being movabe between a flattened configuration wherein said outer partition panel, said connecting panel and said inner partition panel on each side closure panel are coplanar and parallel the the panel to which each side closure panel is hinged, and an expanded configuration wherein said inner and outer partition panels are spaced apart and parallel to each other and are perpendicular to the panel to which each side closure panel is hinged and wherein said inner partition panels are outwardly spaced from end edges of said platform panel.

4,562,923

COSMETICS CASE

Hirofumi Katada, Suginami; Tetsuya Taniguchi, Meguro, and Koji Ikarashi, Yokohama, all of Japan, assignors to Pola Chemical Industries Inc., Shizuoka, Japan

Filed Mar. 19, 1984, Ser. No. 591,331
Claims priority, application Japan, Mar. 18, 1983, 58-39310[U]
Int. Cl.⁴ A45C *11/00, 11/34;* **B65D** *83/02, 85/28*
U.S. Cl. 206—235 **10 Claims**



1. A cosmetic case comprising:
(a) a flat box-like hollow container body having side walls and at least one opening in a front end plate;
(b) at least one cosmetic pencil holder means for detachably holding one end of a cosmetic pencil in said container body;
(c) at least one holding body for holding the at least one cosmetic pencil holder means and adapted to slide in the container body in a longitudinal direction of the cosmetic pencil contained in the holder means between a retracted position in which the contained cosmetic pencil is fully retracted in the container body and a projected position in which a portion of said at least one cosmetic pencil holder means projects beyond the at least one opening in the front end plate of the container body;
(d) spring means, provided in the container body, for urging the at least one holding body to said projected position;
(e) first releasable means, provided on the at least one holding body, for engaging with at least one side wall of the container body and for retaining that at least one holding body against said spring means in said retracted position; and
(f) second releasable means, provided in the at least one holding body, for engaging with and holding the at least one cosmetic pencil holder means at the projected position of the at least one holding body;
whereby the at least one cosmetic pencil holder means is prevented from being totally projected out of the container body.

4,562,924

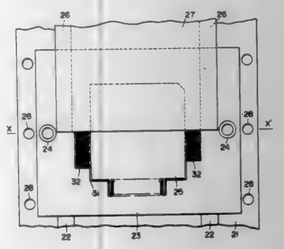
FLAT PACKAGE INTEGRATED CIRCUIT CHIP STORING APPARATUS

Arata Okamoto, Akigawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 23, 1984, Ser. No. 663,952
Claims priority, application Japan, Oct. 26, 1983, 58-200221
Int. Cl.⁴ B65D *73/02*
U.S. Cl. 206—330 **6 Claims**

1. Apparatus for carrying flat package integrated chips disposed in chip carriers, comprising:
backing paper having first and second faces and left and right sides, a plurality of holes being disposed in said paper on said left and right sides and extending in a lengthwise direction of said paper;

at least one adhesive tape connected to said backing paper first face, for holding said carriers; and



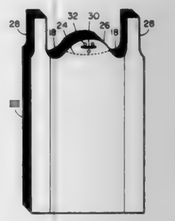
a plurality of chip carriers adhered to said adhesive tape and uniformly spaced along said paper lengthwise direction, each said chip carrier having first and second alignment holes which are aligned with said backing paper holes.

4,562,925

THERMOPLASTIC BAG, BAG PACK AND METHOD OF MAKING THE SAME

Timothy W. Pistner, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1984, Ser. No. 672,756
Int. Cl.⁴ B65D *85/62, 30/00*
U.S. Cl. 206—554 **7 Claims**



1. A thermoplastic bag structure comprising a front and rear bag wall, a bottom and an open mouth top portion, said open mouth portion being characterized by having two pairs of single film handle loops each of which are located at opposite ends of said open mouth portion, the handles of each pair being side-by-side and each handle being an integral looped single film extension of said front and rear bag walls.

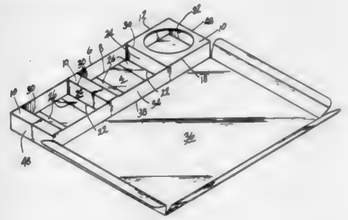
4,562,926

COMPARTMENTED FOOD PLACEMAT

Duane R. Mode, Bloomington, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 4, 1984, Ser. No. 657,626
Int. Cl.⁴ B65D *5/48, 1/34*
U.S. Cl. 206—563 **1 Claim**

1. A food serving article formed from a one-piece blank of paperboard material, said article comprising:
(a) a placemat panel;
(b) an inner side wall panel foldably connected to a first edge of said placemat panel;
(c) a top wall panel foldably connected to said inner side wall panel;
(d) an outer side wall panel foldably connected to said top wall panel;
(e) a bottom wall panel foldably connected to said outer side wall panel, said bottom wall panel lapping and being secured to a bottom surface of said placemat panel;
(f) said top wall panel including at least one article-receiving opening formed by a pair of opposed deflectable panels cut from the material of said top wall panel and foldably connected thereto;
(g) said inner side wall panel being pivotable from a collapsed position coplanar with said placemat panel and said top wall panel to an erected position perpendicular to said placemat panel and said top wall panel while said outer side wall panel is pivotable concurrently from a collapsed position coplanar with said bottom wall panel to an erected position perpendicular to said bottom wall panel and said top wall panel wherein said top wall panel is spaced apart from said bottom wall panel;
(h) said deflectable panels being pivotable from a collapsed position coplanar with said top wall panel to an erected position wherein a first portion of each of said deflectable panels is disposed perpendicular to said top wall panel, and a second portion of each of said deflectable panels foldably connected to said first portion overlies said bottom wall panel whereby said deflectable panels are operable to retain said top wall panel and side wall panels in their erected positions;



(i) flange panels foldably connected to second, third and fourth edges of said placemat panel, said flange panels being free of hinged connections with each other so as to form peripheral walls about said placemat panel wherein the individual flange panels may be pivoted with respect to said placemat panel independently of each other, whereby said flange panels allow gripping of the food serving article in planes substantially coplanar with said placemat panel, and provide a peripheral barrier for objects on said placemat panel in planes substantially perpendicular to said placemat panel; and
(j) end wall panels foldably connected to opposite ends of one of said bottom and top wall panels, said end wall panels having terminal tuck tabs foldably connected to ends thereof, said end wall panels being foldable toward the other of said bottom and top wall panels and said tuck tabs being insertable behind the other of said bottom and top wall panels to further brace said top and side wall panels in their erected positions.

4,562,927

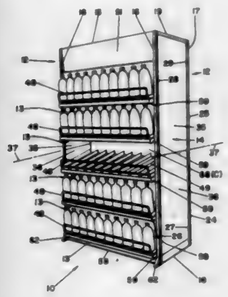
DISPLAY RACK

Howard J. Fredrickson, Cannon Valley Township, Goodhue County, Minn., assignor to Cornelius Cannon Inc., Cannon Falls, Minn.

Filed May 6, 1983, Ser. No. 492,067
Int. Cl.⁴ A47F *7/00*
U.S. Cl. 211—59.2 **20 Claims**

1. A display rack comprising:
a. a pair of opposed end sides, each side having a front stanchion, a rear stanchion and fore-aft structures separating the stanchions, the fore-aft distance between the stanchions defining the depth of the sides, each side being segmented into an upper half and a lower half;
b. shelves in between the sides, said shelves being supported by the sides; and
c. a segmented back panel securing the rear stanchions and the sides to each other, said back panel comprising a

plurality of discrete rectangular sheet segments stacked one on top of the other, each segment having a height



equal to a majority of the depth of the side, one of the back panel segments overlapping onto both the upper half and the lower half of both sides.

4,562,928

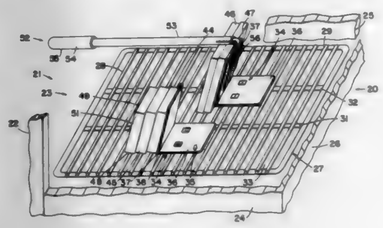
DISPLAY RACK FOR FROZEN FOOD PACKAGES

Elton D. Erickson, 16 Otis St., Lowell, Mass. 01853

Filed Sep. 25, 1984, Ser. No. 653,882

Int. Cl.⁴ A47F *5/00*

U.S. Cl. 211—184 **4 Claims**



1. In combination with the wire grille shelves of a frozen food case, the wires of the grille shelves running from side to side, in parallelism with spaces therebetween, in said case, said rack comprising:

a one piece rack of sheet material having a flat planar base plate resting on said wires, a flat planar support plate upstanding from, and integral with, one edge of said base plate and extending in a plane parallel to said wires and at least two integral tabs, slit from the material of said base plate and bent downwardly and rearwardly therefrom, to both enter a space between adjacent said wires, said tabs being shaped and dimensioned to extend downwardly in a plane parallel to said wires and releasably embrace one of the wires of said grille to prevent tilt of said rack while said rack supports a plurality of frozen food packages upstanding on one edge in shingle formation.

4,562,929

BACKSTOP ASSEMBLY FOR USE WITH CUSHIONING DEVICE IN SILL OF RAILWAY CAR

Mark P. Scott, Boiling Springs, and Steve A. Brough, Camp Hill, both of Pa., assignors to Keystone Industries, Inc., Rolling Meadows, Ill.

Filed Apr. 1, 1983, Ser. No. 481,341

Int. Cl.⁴ B61G *9/16*

U.S. Cl. 213—20 **2 Claims**

1. A backstop assembly for use with a cushioning device in the sill of a railway car, the sill having a top wall and parallel side walls, the cushioning device having a body slidable endwise in the sill carrying a car coupler at its outer end and having a piston contained therein centered on the sill axis and with a piston rod projecting from its inner end, the piston rod terminating in an enlarged end collar of circular cross section, the backstop assembly comprising, in combination, a backstop of a rectangular box shape fitted in the sill in seated relation and rigidly secured thereto, the backstop having a transaxial inner end wall for axially abutting engagement with the collar on the piston rod and an outer end wall arranged parallel thereto to define a central chamber, the backstop in addition having side walls adjacent the side walls of the sill, the end walls and side walls of the backstop forming a rigid and integrated unit and the end walls being axially spaced to provide loose but axially captive accommodation of the collar on the piston rod, the outer end wall having an arch-shaped clearance opening centered therein providing loose captive accommoda-



tion of the piston rod, the backstop being open at the bottom for transaxial insertion of the rod and its collar upwardly of the sill into captive position in the backstop, a locator plate fixedly mounted within said chamber intermediate said outer and inner end walls, said locator plate having a relatively thin cross sectional thickness as compared to said outer and inner end walls and being formed with a circular opening at the center for snug accommodation of the collar and having outer dimensions which correspond to the dimensions of the chamber, the plate having secured to its lower edge a bridge member spanning the walls of the sill, and means for securing the ends of the bridge member to the walls of the sill for maintaining the plate in transaxial position in the chamber with the circular opening precisely centered on the sill axis so that upon buff impact the piston rod engages the inner wall of the backstop in a position precisely aligned with the sill axis and which is frictionally maintained during buildup of compressive reaction force in the cushioning device.

4,562,930

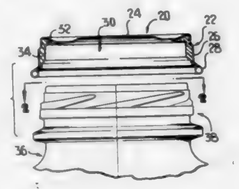
CONTAINER FINISH FOR RESEALING WITH PT CLOSURE

Frank H. Lecinski, Jr., Harwood Heights, and Chester F. Grzemski, Darien, both of Ill., assignors to Continental White Cap, Inc., Northbrook, Ill.

Filed Mar. 13, 1984, Ser. No. 589,259

Int. Cl.⁴ B65D *23/00*

U.S. Cl. 215—31 **11 Claims**



1. A glass container of the jar and bottle type, said glass container comprising a neck finish having a surface configuration means particularly configurated for use with a closure of the push-on-twist-off type having a skirt with a generally cylindrical liner of deformable plastic material, said neck finish having plural lead threads which form complementary threads

in said liner when said closure is applied, said neck finish being improved by resealing means for facilitating the re-engagement of said neck finish threads with said complementary threads in said liner, said sealing means including said threads increasing in width from lead ends thereof to terminal ends thereof in a smooth transition free of steps whereby a complementary thread which will be molded in a deformable plastic skirt liner will have a wide entrance portion for receiving a relatively narrow end of a neck finish thread.

4,562,931

PILFER-PROOF CLOSURE WITH TEAR-AWAY HOLDING CLAWS

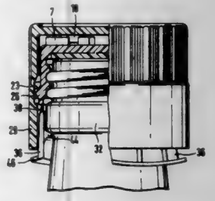
Ulrich Brach, and Alois Persch, both of Zell, Fed. Rep. of Germany, assignors to Zeller Plastik, Koehn, Gribner & Co, Zell, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,750

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336908

Int. Cl.⁴ B65D *55/02*

U.S. Cl. 215—220 **14 Claims**



1. A plastic, original-seal closure means for threaded mouths with retaining lips on containers, in particular bottles, characterized by the following features:

(a) The closure means includes a screw (sealing) cap (1) to which is fastened a hood (14) with axial play, studs (7, 18; 64) or studs and recesses being provided both at the hood and at the screw cap, which studs or studs and recesses can engage and disengage within the axial play;

(b) Tear-off elements (36) are provided at the screw cap (1) and comprise claws (44) for engaging underneath the retaining lip (32) of the threaded mouth;

(c) The hood (14) comprises a special cylindrical edge zone (29) which in the position of secured original seal includes the tear-off elements (or at least a substantial axial part of the tear-off elements) between the hood (14) and the threaded mouth (2) and which keeps the claws (44) behind the retaining lip (32).

4,562,932

CAP CLOSURE FOR A CONTAINER WITH PHARMACEUTICAL CONTENTS

Hartmut Finnern, Karlsruhe, Fed. Rep. of Germany, assignor to Franz Pohl Metall- und Kunststoffwarenfabrik GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Sep. 19, 1984, Ser. No. 652,679

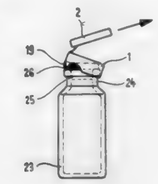
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1983, 3336344

Int. Cl.⁴ B65D *41/58*

U.S. Cl. 215—249 **11 Claims**

1. In a cap closure for a container with pharmaceutical contents, especially for bottle-shaped containers containing substances destined for injection, infusion or transfusion and having a container neck closed by a stopper with an edge portion resting on an upper rim surface of the container neck, said cap closure being of the type including a closing cap fitting over the stopper and having a tear-open tab for opening the cap closure, said tab being defined by a tearing line, and a grip piece attached to said tab for tearing said tearing line and removing said closing cap, the improvement wherein:

said closing cap includes a lifting-off part for engaging with the stopper; and



said tear-open tab and said grip piece together form a pulling element for removing the stopper from the container neck by said engagement thereby of said lifting off part.

4,562,933

BOTTLE HAVING CAP WITH SAFETY FEATURE AND COUNTER

Christopher J. Dennis, Sunnyside Farm, Brearton, Harrogate, N. Yorkshire, England

Filed Mar. 22, 1984, Ser. No. 592,111

Claims priority, application United Kingdom, Mar. 25, 1983, 8308231

Int. Cl.⁴ B65D *88/38*

U.S. Cl. 215—219 **5 Claims**

1. A container comprising a bottle and a cap engageably removable therewith, the container having a fixed stop and the cap including first and second members providing between them indicating means for indicating the number of times the bottle has been opened, said members being movable relative to each other in a first direction to increment said indicating means and having means to prevent relative movement in an opposite direction; said first member having means for engaging the bottle by relative movement therebetween and said second member having means to engage said stop during bottle engaging movement to fix said second member relative to the bottle, so that further bottle engaging movement increments said indicating means.

4,562,934

GLASS FIBER REINFORCED RESIN TANK WITH PARTICULAR JOINT STRUCTURE

George K. Hammond, Toledo, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 605,034, Apr. 30, 1984. This application Feb. 5, 1985, Ser. No. 699,211

Int. Cl.⁴ B65D *25/14*

U.S. Cl. 220—75 **3 Claims**

1. In a glass fiber reinforced resin tank adapted to contain corrosive liquids and being of the type wherein two tank halves, each having an inner liner comprising corrosion resistant resin and an outer structural wall portion comprising corrodible resin exposed at an open end of the tank half, are secured relatively to each other, with open ends adjacent each other in closely spaced, non-abutting relationship, by means

including an external lay-up of reinforced resin, an improvement over the former construction wherein at least one of the tank halves was provided with a manway to permit application of an internal lay-up of reinforced corrosion resistant resin in bridging relationship to the open ends of the tank halves, said improvement comprising a flexible gasket installed from out-



side the tank before application of the external lay-up and sealed to the liners of said tank halves around their inner peripheries respectively adjacent their open ends, the gasket comprising corrosion resistant resin and shielding the exposed structural wall portions respectively at the open ends of the tank halves from corrosive liquid when corrosive liquid is stored in the tank.

4,562,935

INSIDE PROTECTOR FOR BOTTOM WALL PORTION OF UNDERGROUND TANK BENEATH FILL TUBE

Mark E. Greenwood, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 597,584, Apr. 9, 1984, abandoned, which is a continuation of Ser. No. 352,609, Feb. 26, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 648,618
The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.
Int. Cl.⁴ B65D *90/48*; G01F *23/04*
U.S. Cl. 220—85 R **5 Claims**



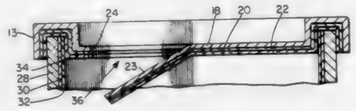
1. For use with a cylindrical underground storage tank having an opening in an upper wall portion thereof and having an inner fill tube communicating with the opening, extending downwardly therefrom, and ending closely adjacent to but in spaced relationship from a bottom wall of the tank, an inside protector for the portion of the bottom wall beneath the fill tube, the protector comprising a generally circular bottom plate, a resilient pad secured to the lower surface of the plate, a plurality of arcuately spaced rods having lower ends portions secured to the plate, and an upper ring secured to upper end portions of the rods, the protector being adapted to be lowered down the fill tube to a position wherein the resilient pad is in contact with the bottom wall of the tank and the upper ring is retained within the fill tube, whereby a dipstick dropped down the fill tube strikes said circular bottom plate rather than impinging directly on the bottom wall of the tank.

4,562,936

EASY-OPEN LAMINATED CONTAINER WITH OPTIONAL RECLOSING MEANS AND METHOD OF MAKING

Joseph F. Deflander, Haacht, Belgium, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 12, 1985, Ser. No. 700,781
Int. Cl.⁴ B65D *17/32*
U.S. Cl. 220—268 **37 Claims**



1. A substantially gas-impermeable, easy-open container having a continuously sealed thermoplastic product-contacting inner surface prior to opening, said container comprising:
(a) a laminated body portion, a laminated bottom end panel, and a laminated top end panel all having a substantially rigid outer layer, a substantially gas-impermeable intermediate layer bonded to said outer layer, and a thermoplastic inner layer bonded to said intermediate layer, said body portion, said bottom end panel, and said top end panel being continuously sealed to one another by fusing of their said thermoplastic inner layers to one another at points of contact therebetween, thereby defining said continuously sealed thermoplastic product-contacting inner surface;
(b) a line of weakness and a hinge connecting the end points of said line of weakness to one another only in said substantially rigid outer layer of said laminated top end panel defining a hingedly-connected push-in section of predetermined size and shape, said push-in section having an upper surface and adapted to be separated from said laminated top end panel along said line of weakness and pushed into said container about said hinge along with a substantially coinciding portion of said intermediate layer bonded to said push-in section and a substantially coinciding portion of said thermoplastic inner layer bonded to said substantially coinciding intermediate layer when sufficient force is applied to said top surface of said push-in section, thereby creating a dispensing aperture in said laminated top end panel.

4,562,937

INTERNALLY-SEATING CONTAINER CLOSURE

Mike Iyengar, Chicago, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 28, 1983, Ser. No. 518,244
Int. Cl.⁴ B65D *39/00*
U.S. Cl. 220—307 **3 Claims**



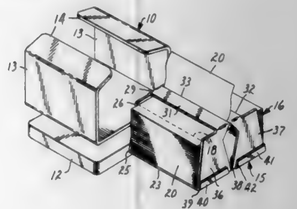
1. A circular, one-piece closure of thermoplastic material for fitting inside and sealing the opening of a cylindrical container comprising:
a circular, resilient cover portion having a substantially flat, annular ring surrounding a raised, circular center area; said circular center area having a shoulder projecting downwardly and outwardly from the outer edge of the center area to the inner edge of said annular ring portion;
a circular rim portion surrounding the outer edge of said cover portion and having an upstanding, annular wall;
said upstanding wall having a substantially planar annular flange disposed at the top edge of said wall and projecting outwardly therefrom; said planar annular flange being disposed substantially parallel to said cover portion, and having a sealing means disposed adjacent its bottom surface for engaging the inner surface of the lip of the container at its opening and providing a sealing surface for engagement with the upper edge of the container opening; said sealing means comprising a rim projecting outwardly from the upstanding wall; and
an outwardly-projecting annular flange for engaging the container along a substantially unbroken line at the outermost edge of said flange; said flange projecting outwardly from the upstanding wall and being disposed between the sealing means and the lower portion of said annular wall.

4,562,938

SHEET DISPENSER

Harry A. Loder, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 2, 1984, Ser. No. 595,235
Int. Cl.⁴ B65H *1/00*
U.S. Cl. 221—46 **10 Claims**



1. A dispenser for sheets of material releasably adhered together along opposite edges of adjacent sheets so the sheets in a stack have an accordion appearance and can be peeled apart, said dispenser comprising
a cartridge adapted to fit about a stack of rectangular sheet material, said cartridge comprising two cover portions with adjacent edged in mating relationship and extending in a direction generally parallel to and centrally of the opposite edges of a stack of sheet material, each cover portion being joined to a pair of side members at the ends of said edges, said members extending from said cover portions toward pivot means for affording translational separation of said edges upon application of a lifting force at said mating edges.

4,562,939

PILL CONTAINER

Jerome F. Pallat, 427 Third St., Fairport Harbor, Ohio 44077

Filed Jan. 20, 1984, Ser. No. 572,547
Int. Cl.⁴ B65G *59/00*
U.S. Cl. 221—312 R **4 Claims**



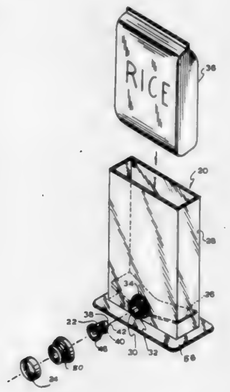
1. A pill container comprising a pill receiving body, the body being an elongated conically shaped member adapted to be vertically positioned with the largest end of said conically shaped member lowermost, a cavity extending through said body and being positioned near the lower largest end of the body to receive a pill therein, and a cover for said cavity mounted on said body, said cover being movable upwardly and downwardly on said body to open and close said cavity, said cover being normally retained in closed condition by gravity, the cavity being sealingly covered by the cover when the same is in its lowermost position, and may be moved out of cavity covering position with minimum effort.

4,562,940

DISPENSER MECHANISM FOR FLOWABLE PARTICULATE MATERIALS

Frank X. Asphar, 9 Sage Pl., Eastchester, N.Y. 10707

Filed Jun. 30, 1983, Ser. No. 509,650
Int. Cl.⁴ B67B *7/24*
U.S. Cl. 222—88 **12 Claims**



1. A dispenser unit adapted to hold a package containing a flowable, particulate material, to cut an opening in the package, to dispense the desired amount of particulate material, and to cover the opening in the package when dispensing is not desired, comprising:
(a) a support for a package containing flowable particulate material, the support comprising a bottom and an upstanding peripheral side wall portion, the side wall portion having an opening therethrough;
(b) a tubular fitting extending outwardly from said side wall and about said opening;
(c) a tubular cutting member dimensioned to be closely received within said tubular fitting and said opening and adapted to move transversely to said side wall to penetrate said package, said cutting member at one end having a retention flange and at the other end having a piercing member, whereby upon insertion said cutting member cuts an opening in said package enabling unrestricted flow of particulate material from said package and said retention flange abuts the end of said tubular fitting; and
(d) a spout member attached to said tubular fitting in abutment with said retention flange on said tubular cutting member; and
(e) closure means adapted to cover said spout member.

4,562,941

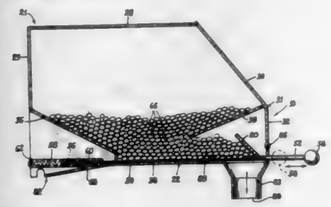
BULK PRODUCT DISPENSER

Jasper B. Sanfilippo, Box 367, Barrington Hills, Ill. 60010

Filed Jun. 29, 1983, Ser. No. 509,816
Int. Cl.⁴ B67D *1/16, 5/60, 5/06*
U.S. Cl. 222—108 **2 Claims**

1. A system of dispensers for bulk material, comprising
a free-standing rack;
a plurality of dispensers for bulk food products, said dispensers having bottom panels and being mounted on the free-standing rack and arranged in a plurality of tiers of rows

of aligned, side-by-side units, each dispenser being made of a transparent material and including an enclosed container, an access door on the upper portion of the container, a spout having a mouth and connected to the bottom panel and defining an outlet in the bottom of the container, a gate over the mouth of said outlet, a taper formed inside the container in the lower portion thereof, the taper having a narrow portion directed downwardly, the narrow portion being offset from the outlet, a passage extending generally longitudinally between and communicating with the narrow portion of the taper and the outlet, and a planar feed slide assembly slidably disposed on the inside of the bottom panel under the narrow portion of the taper and in the bottom of the passage, said feed slide assembly including gripping means connected at one end for manually sliding said assembly in to-and-fro movements longitudinally thereof and spring means at the other end of the slide assembly, one end of said slide assembly forming said discharge gate over the mouth of said outlet, whereby the feed slide assembly can effect both move-



ment of bulk material in the container toward the outlet and discharge thereof in the outlet in variable, controlled amounts directly by manual operation; and

a plurality of trays mounted on said rack, one tray extending across each row of dispensers below the outlets thereof, said access door including an inclined face and a vertical front face on the front end of each dispenser, the discharge spout being located at the front end of each container, and each of said trays being inclined at substantially the same angle as the inclined front face of the access door and being disposed along the top side of the access doors of any dispensers mounted beneath the tray to block the opening of the doors below the tray.

4,562,942

ROLLING DIAPHRAGM BARRIER FOR PRESSURIZED CONTAINER

George B. Diamond, Anthony & Woodglen Rds., Glen Gardner, N.J. 08826

Continuation-in-part of Ser. No. 627,431, Jul. 3, 1984. This application Oct. 5, 1984, Ser. No. 658,274

Int. Cl.⁴ B67D *1/04*

U.S. Cl. 222—386.5 **15 Claims**



1. A pressurizable container for containing a fluent product under pressure and for dispensing the product through a discharge valve, said container comprising:

a can with a peripheral wall surrounding and defining a top opening of said can through which said can is filled with product; said peripheral wall being of a material which is resilient and slightly expands upon the can being pressurized and restores its unexpanded condition as the can pressure is reduced; said peripheral wall having a diameter which increases by at least approximately one one-thousandth (1/1000) of its length in the unexpanded condition as the pressure in the can goes from the unexpanded condition to a pressure of 100 psi;

a flexible diaphragm mounted in said can and dividing said can into a product chamber comprising the volume above said diaphragm for containing a fluent product to be stored and dispensed and a propellant chamber comprising the volume below said diaphragm for containing a propellant adapted to provide gas pressure upon said diaphragm to urge said diaphragm upwardly into said product chamber for expelling the product; said diaphragm being comprised of material that is impervious to the product and propellant in their respective said chambers;

a ring in said can for securing said diaphragm to said peripheral wall of said can and for defining a seal for preventing propellant and product from leaking past said ring and said diaphragm as said can expands under pressure; said ring cooperating with said can for also permitting said ring to be disposed at various locations along the height of said can without requiring that said ring be placed at a particular height along said can, at least one of said ring and said can being sufficiently resilient to deform resiliently upon installation of said ring in said can to create and maintain such seal and also to resiliently press said ring against said can wall to continue to maintain said seal as said can wall expands;

said flexible diaphragm being extendible into said can below said ring when said product chamber is initially filled with sufficient quantity of a fluent product and being gradually extensible above said ring through pressure generated by propellant in said propellant chamber to expel the fluent product out of said can past said top opening; said diaphragm is extended away from said ring when said diaphragm is extended into either of said product chamber and said propellant chamber.

4,562,943

METHOD OF AND DEVICE FOR CONTROLLING THE POURING OF A MELT

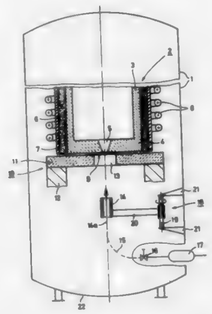
Friedrich-Carl Freytag, Munich; Josef Gediga, Bruchköbel; Rolf Ruthardt, Hanau am Main, and Wolfgang Wagner, Neuberg, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 8, 1983, Ser. No. 511,861

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1982, 3231316

Int. Cl.⁴ B22D *37/00, 45/00*

U.S. Cl. 222—590 **7 Claims**



1. Method of controlling the pouring of a melt resulting from melting a solid starting material out of a crucible with an opening in the crucible bottom, comprising the steps of: blocking the opening while the material is being melted with a meltable closure plate made of material compatible with the melt, said closure plate melting through locally due to heat transferred from the melt, cooling said closure plate from below while the starting material is being melted and before said closure plate is melted through by directing a flow of gas against said closure plate at an underside of said plate, and at least reducing said cooling to initiate pouring of melted material through said opening.

3. Apparatus for controlling the pouring of a melt resulting from melting a solid starting material out of a crucible with an opening in the crucible bottom, comprising: a meltable closure plate covering said opening and made of material compatible with the melt, said plate being melted through locally due to heat transferred from the melt, said closure plate being cooled from below while the starting material is being melted and before said closure plate is melted through, a nozzle below the opening in the bottom of the crucible and having an axis aligned with said opening for directing a flow of gas against said closure plate at an underside of said plate for preventing said closure plate from melting through, and means for at least reducing said cooling to initiate pouring of melted material through said opening.

4,562,944

ADJUSTABLE CONNECTIONS ON CYCLE REAR CARRIER

W. Shaun Jackson, Ann Arbor, and Leslie E. Bohm, Southfield, both of Mich., assignors to Eclipse, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 8,801, Feb. 1, 1979, Pat. No. 4,266,702, which is a division of Ser. No. 768,467, Feb. 14, 1977, Pat. No. 4,174,795. This application May 8, 1981, Ser. No. 527,763

Int. Cl.⁴ B62J *7/04*

U.S. Cl. 224—39 **3 Claims**



1. A carrier rack for a cycle vehicle, comprising:

a substantially horizontally extending load support adapted to extend over the rear wheel of said cycle;

bracket means extending downwardly from said load support for supporting said load support on said cycle;

a pair of laterally spaced extension members projecting forwardly from said load support;

means for attaching the forward ends of said extension members to said cycle;

a pair of laterally spaced channel means on said load support for respectively slideably receiving the rear ends of said extension members therein; and

means for releasably securing said channel means and said extension members against sliding movement relative to each other;

said pair of channel means each including a forwardly extending track portion within which a channel is defined;

each of said track portions including a lateral opening communicating with the respective channel and extending along a substantial length of the channel; and

said securing means being connected to said rear ends of said extension members and being disposed in registration with the corresponding openings in said track portions.

4,562,945

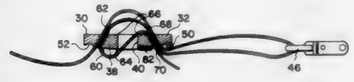
GUN SLING

Dale L. Erlandson, P.O. Box 2, Antigo, Wis. 54409

Continuation of Ser. No. 513,656, Jul. 14, 1983, abandoned. This application Sep. 26, 1984, Ser. No. 655,296

Int. Cl.⁴ F41C *27/00*

U.S. Cl. 224—150 **14 Claims**



1. A strap suitable for use as a gun sling for carrying a firearm and steadying it for aiming and also suitable for carrying other articles, said strap comprising:

a. an elongated web having sufficient strength for supporting a gun or other article suspended therefrom;

i. said web being sufficiently flexible to permit it to be folded back on itself;

ii. said web being folded back on itself along a portion near each of its ends to form a loop at each end and an intermediate web section;

b. a sliding type fastener disposed at the base of each of said loops between said loops and said intermediate web section;

i. said web being threaded through said fasteners and said fasteners being generally aligned with said loops and said intermediate web section, with said intermediate web section and one of said loops extending outwardly from opposite ends of each of said fasteners, said fasteners securing the sizes of said loops by restricting movement of the web relative to said fasteners when said fasteners are permitted to equilibriate in position relative to said web;

ii. each of said fasteners having a forced position relative to said web in which intermediate web lengths may pass through said fasteners to become part of and enlarge a loop, and a part of the web forming a loop can pass through a fastener to become part of said intermediate web section and decrease the size of the loops, the extreme end portions of said web remaining fixed in position relative to said fasteners while other portions of said web are moved through said fasteners; and

iii. said extreme end portions being engaged with but not directly attached to said fasteners and being held therein by said intermediate web lengths.

4,562,946

TAPE TRANSPORT

Dennis M. Ryan, San Mateo, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sep. 16, 1982, Ser. No. 418,905

Int. Cl.⁴ G01D *5/34*

U.S. Cl. 226—95 **8 Claims**

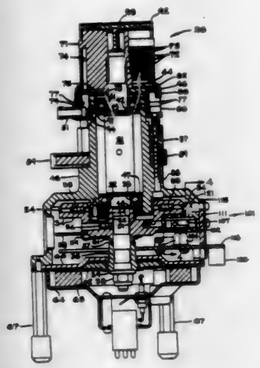
1. A capstan construction comprising:

a circular-cylindrical capstan element mounted for axial rotation and having air passages communicating with the cylindrical face thereof;

a housing and manifold portion thereof having air passages communicating with the passages of said capstan in an axial direction of the capstan for the passage of air therebetween;

said manifold portion of said housing being formed as an

element separate from the remainder of said housing and mounted thereon as by means of at least three circumferentially spaced mounting screws adapted for adjusting the tilt and spacing of said manifold and block.



4,562,947

APPARATUS FOR TREATMENT OF CONTINUOUS WEB MATERIAL

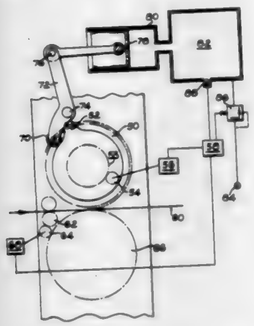
Thomas D. Bishop, Solihull, and David J. G. Bishop, Birmingham, both of England, assignors to The Deritend Engineering Company Ltd., Birmingham, England

Filed Jul. 23, 1982, Ser. No. 401,291

Claims priority, application United Kingdom, Jul. 25, 1981, 8123046

Int. Cl.⁴ B65H *20/04*

U.S. Cl. 226—121 **2 Claims**



1. Apparatus for treating web material, comprising means for feeding the web material at a constant speed, two pairs of rolls through which the web material passes in succession, means for rotating one roll of each pair at a peripheral speed equal to the speed of the web, web treating means which is carried by the other roll of each pair and which extends over a portion of the periphery of said other roll, a separate motor for driving each of said other rolls, and separate apparatus for controlling each of said motors (a) to drive its roll at a peripheral speed equal to the speed of the web during the time while the web is in contact with the web treating means on its roll, and (b) to vary the speed of its roll at other times in order to complete each revolution of its roll in a period of time which is equal to twice the period of time during which the web is in contact with said web treating means, wherein the improvement comprises a gas cylinder for each of said other rolls, provided with a piston having an inactive position, and an active position in which it compresses gas in the cylinder, means for controlling the gas pressure which exists in the cylinder when the piston is in its inactive position, and mechanism which is connected to the piston and to its roll to move the piston from its inactive position to its active position when the speed of the motor driving its roll is being decreased, and to move the piston from its active position to its inactive position when the speed of the motor driving its roll is being increased.

4,562,948

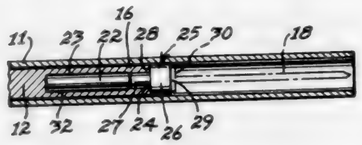
NAIL DRIVING TOOL

Robert M. Floyd, 702 Temple Ave., Nashville, Tenn. 37215

Filed Nov. 14, 1984, Ser. No. 671,423

Int. Cl.⁴ B25C *7/00, 5/02*

U.S. Cl. 227—147 **6 Claims**



1. A driving tool for an elongated fastener of ferro-magnetic material comprising;

(a) an elongated, non-magnetic, tubular body having front and rear end portions, and a uniform bore,

(b) a hand gripping member fixed on said tubular body adjacent said rear end portion,

(c) an enlogated, non-magnetic drive rod, longer than, and telescopingly received in said bore, said rod having a rear strike end and a front drive end,

(d) an elongated cavity within said drive rod and opening through said drive end,

(e) an elongated Indalloy permanent magnet received within said cavity, said magnet having a length less than the length of said cavity,

(f) a driver head member having an enlarged ferro-magnetic head of a transverse dimension greater than said cavity and not greater than said drive rod,

(g) means securing said head member against said front drive end to close said cavity, so that the axial forces produced by an impact upon said strike end are transmitted totally through said drive rod to said head, without the transmission of any substantial forces through said magnet.

4,562,949

AUTOMATIC LATTICE FABRICATION APPARATUS

Wayne M. Knoth, Belmont, and Dennis O. Corbin, Caledonia, both of Mich., assignors to Universal Forest Products, Inc., Grand Rapids, Mich.

Filed Jun. 25, 1984, Ser. No. 623,975

Int. Cl.⁴ B27F *7/17*

U.S. Cl. 227—7 **11 Claims**

1. Lattice fabrication apparatus for forming lattice from lattice strips comprising:

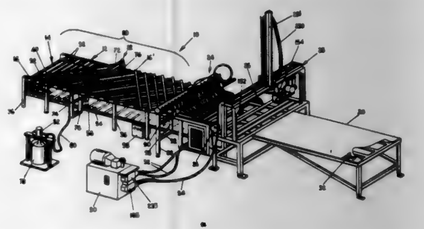
an elongated frame;

an elongated conveyor positioned on the frame and having a generally horizontal conveying surface thereon, the conveyor having positioning means thereon for positioning the lattice strips in their desired overlapping position, the conveyor having a lattice lay-up portion at an upstream position of the conveyor;

automatic stapling apparatus positioned above the conveyor downstream of the lay-up portion, the stapling apparatus including a staple bridge extending over and across the conveyor, the stapling apparatus comprising a series of staple guns mounted side-by-side on the bridge across the conveyor so as to be in alignment with the overlapping portions of the lattice as they pass under the staple guns, the stapling apparatus including stapler mounting means for movably mounting the staple guns on the bridge for vertical movement to accommodate lattice strips of different thicknesses, the stapler apparatus further including ramp means facing upstream from each staple gun to urge the lattice strips below the staple gun and urge the staple gun upwardly over the lattice strips;

longitudinally oriented powered rip saws positioned downstream of the stapler mechanism on the sides of the frame that trim excess lattice from the sides of the lattice;

a cross-cut saw mechanism positioned downstream of the stapler mechanism and aligned for receipt of stapled lattice, said cross-cut saw mechanism ordinarily permitting the lattice to pass unimpeded therethrough but being responsive



to the length of said lattice to automatically stop the lattice and conveyor when a section of lattice passing through the cross-cut saw mechanism reaches a predetermined length, thereafter cutting off said section and then resuming transfer of lattice through the apparatus; and

control means for sensing lattice position and automatically actuating the staple guns when the overlapping lattice strips are properly positioned under the guns, the control means sensing lattice section length and automatically stopping the conveyor and actuating the cross-cut saw mechanism to cut off the lattice when each section reaches a predetermined length, the control means actuating the cross-cut saw and moving the cross-cut saw into engagement with the lattice to cut the lattice at said predetermined length and thereafter moving the cross-cut saw out of engagement with the lattice.

4,562,950

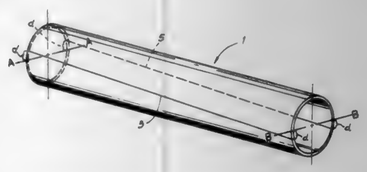
METHOD OF FORMING TAPERED TUBES

Oliver C. Fuller, 116 N. Clay, Hinsdale, Ill. 60521, assignor to Oliver C. Fuller, Moab, Utah

Filed Apr. 4, 1983, Ser. No. 481,679

Int. Cl.⁴ B23K *31/02*

U.S. Cl. 228—170 **8 Claims**



1. The method of forming tapered tubes comprising the steps forming a pair of tube parts by making a pair of cuts generally lengthwise and through the full length of a cylindrical tube with one cut on each on its opposite sides and not parallel to a diametral plane in the same direction to form respective edges defining a small arc and a large arc at each end of each part, and assembling at least two parts so formed to each other along the cut edges by affixing one edge directly to another to form a tube section having a larger diameter at one end than the other.

4,562,951

METHOD OF MAKING METALLIC GLASS-METAL MATRIX COMPOSITES

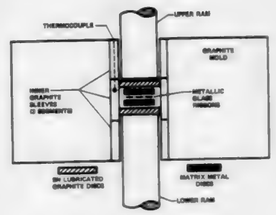
Sheldon J. Cytron, Mountain Lakes, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 367,693, Apr. 12, 1982, abandoned.

This application Mar. 19, 1984, Ser. No. 591,295

Int. Cl.⁴ B23K *31/02*

U.S. Cl. 228—234 **1 Claim**



1. In an improved process of making composites of metallic matrices with a metallic glass reinforcement therebetween, the improvement consisting of dispersing a layer of $Ni_{60}Nb_{40}$ glass reinforcement between layers of metallic matrices to form a structure, heating the structure to a temperature between 450° C. and 500° C., and compressing the structure at 2500 psi to bond the layer of galls reinforcement to the metallic matrices in order to form a composite with said glass reinforcement therebetween, wherein each metallic matrix is composed of 90% Al by weight, 5% Ca by weight and 5% Zn by weight.

4,562,952

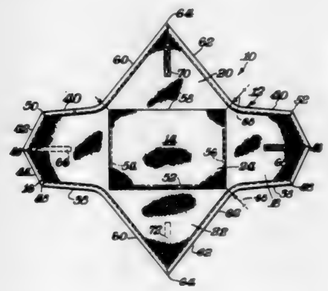
WRAPPER FOR CLOTHING

Carole Chinman, c/o Connolly and Hutz, 1220 Market St., P.O. Box 2207, Wilmington, Del. 19899-2207

Filed Sep. 28, 1984, Ser. No. 655,587

Int. Cl.⁴ B65D *65/10, 85/18*

U.S. Cl. 229—87 A **37 Claims**



1. A wrapper for clothing and the like comprising a flexible member having a central area and a plurality of wing sections extending outwardly from said central area, a rigid reinforcing base having a geometric shape being located in said central area, a rigid shape retainer having the same geometric shape as said base but being of lesser dimension than said base whereby individual articles of clothing or the like may be selectively folded about said shape retainer to be folded to said geometric shape and then the articles may be placed on said base, said shape retainer being capable of being disposed in said folded flexible member generally parallel to and remote from said base to provide a stiffening means on opposite sides of the

articles, said wing sections being foldable over said base and said shape retainer with the articles therebetween to envelop the articles within the folded flexible member, said wing sections comprising means for maintaining said base at a fixed location at said central area and for maintaining said shape retainer directly above said base when said wing sections are folded whereby the articles are confined between said base and said shape retainer to maintain the articles in a flat condition, and fastening means for maintaining said flexible member in a folded condition.

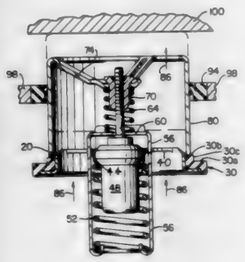
35. A method of wrapping clothing and the like comprising providing a flexible member having a central area and a plurality of wing sections extending outwardly from the central area, locating a rigid reinforcing base in the central area, providing a rigid shape retainer which has the same geometric shape as the base but has a lesser dimension with the shape retainer being unattached to any fixed surface, wrapping an article of clothing or the like around the shape retainer so that the article of clothing or the like is folded to a shape generally conforming to the shape and size of the base, removing the shape retainer from the folded article, placing the folded article on the base, placing the shape retainer on the article directly above the base whereby the article is thereby disposed between the rigid base and rigid shape retainer, folding the wing sections over the base and article and shape retainer to envelop the article within the folded flexible member, confining the base at a fixed location at the central area and confining the shape retainer directly above the base with the article therebetween by means of the wing sections folding step, and fastening the wing sections together by manipulating adjustable fasteners which are capable of securing the wing sections together over a range of dimensions in accordance with the spacing of the shape retainer from the base to maintain the flexible member in a folded condition.

4,562,953

VALVE SEAT STRUCTURE FOR AUTOMOTIVE THERMOSTATIC FLUID CONTROL VALVE DEVICE

Wayne R. Duprez, Waltham, Mass., and Bradley J. McKenzie, Kingston, N.H., assignors to Standard-Thomson Corporation, Waltham, Mass.

Filed Oct. 1, 1984, Ser. No. 656,685
Int. Cl.⁴ F01P *7/02*
U.S. Cl. 236—34.5 **6 Claims**



1. A thermostatic fluid control valve device adapted to be positioned within a coolant fluid conduit system of an internal combustion engine in which the valve device has stationary valve structure which is retained between two parts of the coolant fluid conduit system, the stationary valve structure forming a fluid port, and in which the valve device is provided with movable valve structure, the movable valve structure being movable toward and away from the stationary valve structure and being movable into engagement with the stationary valve structure to control flow of fluid through the fluid port, the valve device also being provided with a thermally responsive actuator operably joined to the movable valve structure for movement thereof,

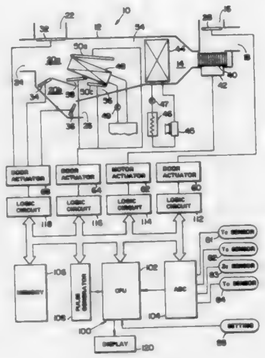
the improvement wherein the stationary valve structure comprises a rigid cylindrical wall forming a flow passage and provided with a given minimum axial dimension, an annular elastomeric sealing member resiliently encompassing the rigid cylindrical wall, the annular elastomeric sealing member having an axial dimension less than the minimum axial dimension of the rigid cylindrical wall so that the rigid cylindrical wall has an extending engagement portion which extends beyond the elastomeric sealing member and which is engageable by fluid flow and which protects the annular elastomeric sealing member against fluid flow, the annular elastomeric sealing member including an annular clamping portion spaced from the rigid cylindrical wall and being adapted to be clamped between two parts of a fluid conduit system, the elastomeric sealing member also including an annular abutment portion which is positioned between the annular clamping portion and the rigid cylindrical wall and which is engageable by the movable valve structure to prevent flow of fluid between the rigid cylindrical wall and the movable valve structure, the annular clamping portion of the annular elastomeric sealing member having a diameter greater than the diameter of the annular abutment portion, the movable valve structure being movable by the thermally responsive actuator to a position spaced from the elastomeric sealing member to permit flow of fluid between the rigid cylindrical wall and the movable valve structure.

4,562,954

METHOD AND APPARATUS FOR AIR CONDITIONER CONTROL

Shunsuke Kajita, Hiratsuka, Japan, assignor to Nissan Shatai Company, Limited, Hiratsuka, Japan

Filed Apr. 25, 1984, Ser. No. 603,829
Claims priority, application Japan, Sep. 14, 1983, 58-169743
Int. Cl.⁴ G05D *23/00*
U.S. Cl. 237—2 A **14 Claims**



1. An air conditioner for treating air in a compartment to regulate its temperature, comprising:

an air passage having a chamber divided into first and second mixing chambers, said first mixing chamber having a defroster outlet opening into said compartment toward its ceiling and a vent outlet opening transversely into said compartment, said second mixing chamber having a floor outlet opening into said compartment toward its floor;

means for controlling the temperatures of air flows into said respective mixing chambers, the temperature control being made separately for each of the air flows;

a sensor for sensing a condition of ambient temperature;

a control circuit for selecting one of heat, vent and bi-level modes based upon the sensed condition of ambient temperature, said control circuit including means for comparing the sensed ambient temperature with a first predetermined value, and means for selecting the heat mode when the sensed ambient temperature is less than or equal to said first predetermined value; and

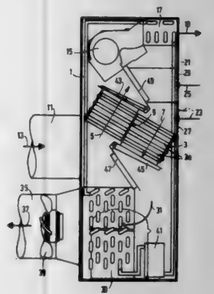
outlet means for opening said defroster and floor outlets in response to a selection of the heat mode, said vent and floor outlets in response to a selection of the bi-level mode, and said vent outlet in response to a selection of the vent mode.

4,562,955

AIR-CONDITIONER

Horst Hörster, Roetgen, and Klaus Klinkenberg, Aachen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,088
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315444
Int. Cl.⁴ F24F *13/00*
U.S. Cl. 237—2 B **3 Claims**



1. An air conditioner comprising an air-to-air heat exchanger; a fresh air supply duct, a fresh air by-pass duct, a used air exhaust duct, and a used air by-pass duct, said fresh air supply duct and said used air exhaust duct being respectively connected to said air-to-air heat exchanger, said fresh air supply duct having a part in common with said used air by-pass duct, and said used air exhaust duct having a part in common with said fresh air by-pass duct; a condenser provided in said common part of the fresh air supply duct, and an evaporator provided in said common part of the used air exhaust duct, said condenser and said evaporator being parts of a heat pump; a blower provided in the common part of said fresh air supply duct and connected to the used air by-pass duct, and a separate blower provided in the common part of said used air exhaust duct and connected to the fresh air by-pass duct; a first three-way valve arranged in the used air exhaust duct in front of the air-to-air heat exchanger, and a second three-way valve arranged in the fresh air supply duct behind the air-to-air heat exchanger view in the direction of fresh air supply for switching the air conditioner into first, second and third modes wherein the air conditioner functions as a heat pump, a heat pump and a fresh air supplier, and a fresh air supplier, respectively.

4,562,956

DOMESTIC HOT WATER ZONE VALVE CONTROLLED EXTERNAL COIL

Robert F. Check, 130 Wahl Ave., Inwood, N.Y. 11696

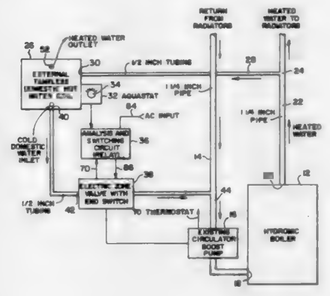
Filed Jan. 29, 1985, Ser. No. 696,067
Int. Cl.⁴ F24D *3/00*
U.S. Cl. 237—8 R **2 Claims**

1. A domestic hot water zone valve controlled external coil comprising in combination:

(a) an external tankless domestic hot water coil which acts as a heat exchanger whose heat source is the output of a hydronic boiler wherein heated water is cycled from the outlet of said hydronic boiler through said external tankless domestic hot water coil and back to the inlet of said hydronic boiler whereby cold water enters said external tankless domestic hot water coil and is heated thus providing domestic hot water;

(b) an aquastat whose electrical contacts close when the temperature of said domestic hot water falls below some predetermined value; and,

(c) an electric zone valve with end switch placed in the fluid circuit between the return line of said external tankless domestic hot water coil and the inlet line of a circulator boost pump used on an existing heating zone, whereby, when said circulator boost pump is operating and said contacts of said aquastat close, an analysis and switching circuit causes said electric zone valve and end switch to actuate thereby allowing said heated water to flow through said external tankless domestic hot water coil,



said analysis and switching circuit which determines whether said electric zone valve or said domestic hot water circulator pump operates comprises two AND gates whose inputs are an aquastat contact closure signal and a circulator boost pump operating signal whereby one of said AND gates has an output signal which activates a relay which in turn activates said electric zone valve with end switch when both AND gate inputs are positive which corresponds to a condition in which said existing circulator boost pump is operating and said aquastat calls for increased hot water and whereby the other of said AND gates which has an inverter in said circulator boost pump operating signal input has an output signal which activates a relay which in turn activates said existing hot water circulator pump when said aquastat contact closure signal is positive and when said circulator boost pump operating signal is negative which corresponds to a condition in which said existing circulator boost pump is not operating and said aquastat calls for increased hot water.

4,562,957

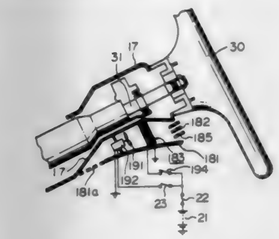
AIR CONDITIONING/HEATING APPARATUS FOR AUTOMOBILES

Mitsuru Nakagawa, Chiryu; Yasuo Kondo, and Atsushi Hashikawa, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 341,501, Jan. 21, 1982, abandoned. This application Nov. 22, 1983, Ser. No. 553,886
Claims priority, application Japan, Feb. 3, 1981, 56-13746; Mar. 24, 1981, 56-42656; Mar. 25, 1981, 56-42940[U]; Apr. 3, 1981, 56-48653[U]; Sep. 8, 1981, 56-133243[U]
Int. Cl.⁴ B60H *1/02*
U.S. Cl. 237—12.3 R **33 Claims**

1. An air conditioning/heating apparatus for an automobile having a steering column, a steering wheel thereon, and a fixed

cover for the column, comprising a main duct, a motor driven air fan in the main duct, a heating heat exchanger arranged in the main duct, and a bifurcated air duct communicating with said main duct downstream of said fan, a damper located at the junction of the bifurcated duct with the main duct for selectively establishing or breaking communication between the



two ducts, said bifurcated duct extending to the steering column cover and having an air outlet opening for directing at least some the air therefrom between the rim and hub of the wheel onto the driver, and an electrical heating element arranged in the bifurcated air duct for heating the air passing therethrough.

4,562,958

METHOD AND DEVICE FOR SPRAYING A LIQUID OR A SUSPENSION

Georg W. Busch, Hamburg, Fed. Rep. of Germany, assignor to Mantis ULV-Spruehgeraete GmbH, Hamburg, Fed. Rep. of Germany

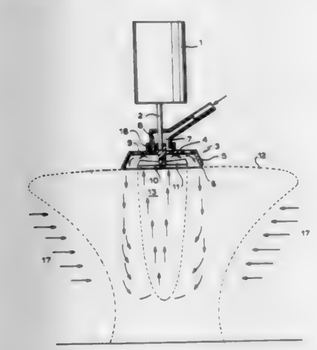
PCT No. PCT/EP82/00041, § 371 Date Oct. 27, 1982, § 102(e) Date Oct. 27, 1982, PCT Pub. No. WO82/03026, PCT Pub. Date Sep. 16, 1982

PCT Filed Feb. 27, 1982, Ser. No. 438,898

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108292

Int. Cl.⁴ B05B *3/10*

U.S. Cl. 239—7 **18 Claims**



17. A method for spraying liquid or a suspension, comprising the steps of supplying a liquid or a suspension to a centrifugal disc having an outer annular skirt; rotating said centrifugal disc about an axis of rotation so that the liquid flows toward and along said outer annular skirt and then off the latter so as to generate a spray cone of small droplets; rotating a rotor with said centrifugal disc to generate a gas stream directed from inside said spray cone in an axial direction toward said centrifugal disc so as to form a centripetal gas flow extending in a direction transverse to said axial directions and reducing the diameter of said spray cone.

4,562,959

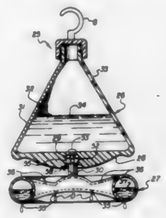
DRIP IRRIGATOR FOR HANGING BASKETS

Odell Pointer, Jr., 1317 Finch St., Houston, Tex. 77009

Division of Ser. No. 72,348, Sep. 4, 1979, Pat. No. 4,270,696. This application Jan. 15, 1981, Ser. No. 225,450

Int. Cl.⁴ A01G *9/02*

U.S. Cl. 239—38 **3 Claims**



1. A drip irrigator adapted for use with a hanging basket comprising hook means and a hollow, single reservoir being of generally conical shape and having a narrow upper neck secured to said hook means and tapering downwardly to a broad circular area base, said reservoir having a multiplicity of small openings through said base and dispersed over said circular area, whereby a fluid or solution in said reservoir may drip through said openings to wet a circular area of said hanging basket below, a relatively large filler opening adjacent said neck, and being sealed from the surrounding atmosphere except through said openings,

said generally conical reservoir having its smaller end secured to said hook means, and said base being modified to provide its upper, interior surface with two levels of surfaces, higher level surfaces and lower level surfaces, said lower level surfaces being the bottoms of a group of interconnected channels or troughs connected to said upper level surfaces by sidewalls of said channels or troughs.

4,562,960

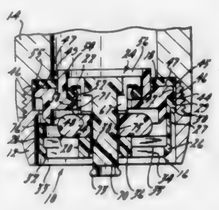
PRESSURE RESPONSIVE AERATOR

Garry R. Marty, Holly; Dennis W. Crawford, Pontiac, and Trevor M. Wingfield, Davisburg, all of Mich., assignors to Masco Corporation of Indiana, Taylor, Mich.

Filed Mar. 14, 1983, Ser. No. 474,807

Int. Cl.⁴ E03C *1/084*

U.S. Cl. 239—72 **3 Claims**



1. An aerator device characterized by:

a housing having an inlet and outlet;

seat means in said housing for seating a movable valve element and having a passage for allowing fluid to pass by said valve element;

said valve element including a downwardly depending leg;

said leg extending downstream and having a downstream end being engageable from said outlet whereby upon a manually exerted upward force, said leg lifts said valve element upward against the pressure of a fluid supply to provide for increased flow by said valve element;

air passage means for introducing air into said fluid flowing by said valve element;

a mixing body being slidably mounted for axial movement along said leg below said seat means such that fluid passes through said passage and mixes with said air upon impinging on said mixing body when said valve element is in a normal position and vibrates up and down on said leg to produce an audible noise when said leg and valve element are in a raised position and said increased flow occurs.

4,562,961

NOZZLE END-PIECE FOR HOT GUNITING

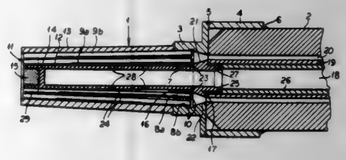
Claude Guenard; Hugues Zanetta, both of Metz, and Jean-Claude Grosjeam, Senecourt, all of France, assignors to IRSID Institut de Recherches de la Siderurugie Francaise, St.-Germain-En-Laye, France

Filed Sep. 12, 1983, Ser. No. 531,914

Claims priority, application France, Sep. 13, 1982, 82 15461

Int. Cl.⁴ B05B *1/24*

U.S. Cl. 239—79 **5 Claims**



1. An end piece for a guniting nozzle adapted to project a refractory powder through a flame, said nozzle having a passage for a combustion-sustaining gas, and a passage for a fuel gas entraining the refractory powder, said end piece comprising:

an axially extending cylindrical inner pipe communicating at one end with said passage for said combustion-sustaining gas and provided with means forming a closure at an opposite end of said inner pipe;

at least one circular array of tubes extending the length of said inner pipe and surrounding same, said array being coaxial with said inner pipe and the tubes of said array communicating with said passage for the fuel gas and refractory powder, said tubes being open and lying in a common plane at respective ends of said tubes substantially flush with said opposite end of said inner pipe; and

an outer pipe coaxially surrounding said inner pipe and defining with said inner pipe interstices between said tubes opening at said plane, said inner pipe being provided along its length with a plurality of through-going bores connecting the interior of said inner pipe with said interstices whereby said fuel gas and refractory powder emerge from said tubes at said plane while said combustion-sustaining gas is delivered to said interstices and emerges from between said tubes at said plane.

4,562,962

SPRINKLING SYSTEM AND VALVE THEREFOR

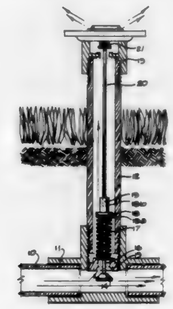
Woody W. Hartman, 73-135 Guadalupe Ave., Palm Desert, Calif. 92260

Filed May 20, 1983, Ser. No. 496,431

Int. Cl.⁴ B05B *15/06*

U.S. Cl. 239—200 **7 Claims**

1. A water and other fluid distributing system which comprises a fluid supply conduit, one or more subsidiary conduits each having one end affixed to and communicating at its base with said supply conduit and the other end affixed to and communicating with a fluid distributing head, a valve means positioned within each said subsidiary conduit at its base comprising a valve seat and a valve head associated therewith, a valve stem attached to said valvehead at one end and to a compression plate at the other end, a spring surrounding said valve stem positioned between said valve seat and said compression plate, said valve head being maintained in open position during fluid flow to said distributing head with respect to said valve seat while said spring is under compression between said compression plate and said valve seat and in closed position when said compression is removed, a displaceable com-



pression rod positioned concentrically within said subsidiary conduit between and in engagement with the base of said distributing head and said compression plate, the length of said rod being such that said rod and spring are under compression to maintain the valve in open position during water flow whereby disruption or removal of said rod will release compression of said spring and permit closure of said valve head upon said valve seat.

4,562,963

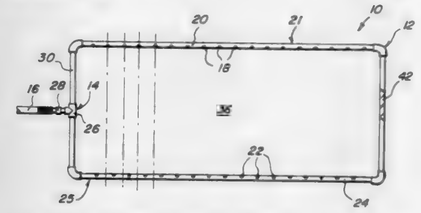
GARDEN SPRINKLER

Maynard H. Butler, 608 Asharoken Blvd., Bay Shore, N.Y. 11706

Filed Oct. 17, 1983, Ser. No. 542,421

Int. Cl.⁴ B05B *1/20, 15/06*

U.S. Cl. 239—273 **2 Claims**



1. A garden sprinkler which comprises

a hollow tubular frame in the shape of a rectangular closed path having a pair of long arms and a pair of short connecting arms, said closed path having a first set of only inwardly facing apertures along one long arm of the rectangle forming a first spray tube and a second set of only inwardly facing apertures along the opposite long arm of the rectangle forming a second spray tube, wherein the first set and second set of inwardly facing apertures are at approximately a 30 degree angle with the horizontal and offset from each other to get maximum spraying coverage available, the short connecting arms having no spray apertures; and

(b) means for removably connecting a standard garden hose to a short connecting arm of said tubular frame, the opposing short connecting arm being solid and preventing any flow therethrough so that when said tubular frame is placed on a ground surface and water pressure through

the garden hose is low, the spray tube will spray water inside the endless closed path area and when water pressure through the garden hose is high the spray tube will overshoot the closed path area and spray water to the outer areas of the ground surface.

4,562,964

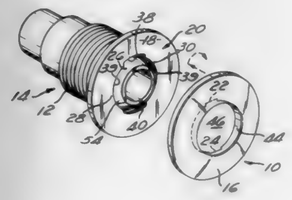
COVER PLATE FOR FLUID NOZZLES AND THE LIKE

Harvey E. Diamond, 12953 Woodbridge St., Studio City, Calif. 91604

Continuation of Ser. No. 572,689, Mar. 8, 1984, abandoned, which is a continuation of Ser. No. 314,229, Oct. 23, 1981, abandoned. This application Mar. 8, 1985, Ser. No. 709,540

Int. Cl.⁴ B05B *15/00*

U.S. Cl. 239—288.5 **6 Claims**



1. A plate for covering the outwardly-facing face portion of a flange at an outer end of a fluid nozzle body adapted to be mounted in a bathtub wall, which flange face portion has a finish thereon, and for enabling a change, to a different finish, of the finish of the flange face portion, which flange further includes portions defining an opening therein, and an inner surface thereof, which cover plate is adapted to be movable into and out of alignment with the opening-defining portions of the flange, and to be freely rotable into and out of engagement with, and positions relative to, the inner surface of the flange, so as to be retained in or released from engagement with, and freely rotatable into and out of positions relative to, the flange, comprising:

(a) a body portion, adapted to interfit in the opening in the flange and cover the face portion of the flange, including an outwardly-facing portion having a shape generally complementary to the shape of the face portion of the flange, the finish of which outwardly-facing portion of the plate is different from the finish of the face portion of the flange, and portions defining an opening having a shape generally complementary to the shape of the opening in the flange, the body portion being adapted to be movable, and freely rotatable, into and out of positions relative to the flange; and

(b) a retainer portion, which projects from the rearmost part of the opening-defining portions of the body portion, in a plane generally transverse to the axis of such opening-defining portions of the body portion, the retainer portion having a shape generally complementary to the shape of the opening-defining portions of the flange, which retainer portion is adapted to be movable into and out of alignment with the opening-defining portions of the flange, and to be freely rotatable into and out of positions of abutment with the inner surface of the flange, so as to be retained in or released from engagement with, and to be freely rotatable in relation to, the inner surface of the flange.

4,562,965

COMPRESSED FLUID SPRAYING PISTOL

Manfred Ihmels, Layestr. 1a, 2905 Edewecht, and Hartmut Ihmels, Hauptstr. 23, Edewecht, both of Fed. Rep. of Germany

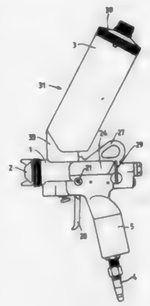
PCT No. PCT/DE81/00068, § 371 Date Dec. 28, 1981, § 102(e) Date Dec. 28, 1981, PCT Pub. No. WO81/03131, PCT Pub. Date Nov. 12, 1981

PCT Filed Apr. 28, 1981, Ser. No. 336,386

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 3016419

Int. Cl.⁴ B05B *7/30*

U.S. Cl. 239—346 **10 Claims**



1. A spraying pistol especially for applying hardening fluids onto surfaces and operated by a pressure medium including a tank for the spraying medium, a spraying head with a distributing chamber surrounding essentially concentrically a nozzle, a jet needle having a piston means, said jet needle contacted by a pull-off for opening the nozzle against the pressure of a closing spring which is supported in a locking cap at the body of the pistol, characterized by that said nozzle with its jet needle and tank together with a connecting channel form an exchangeable medium inset insertable into a seat of the pistol body and is locked by said locking cap with said piston means holding closed said connecting channel in a rest position and opening said connecting channel when said jet needle and said piston means move together to an operating position with said nozzle open allowing said pressure medium to cause hardening fluid to flow from said tank through said connecting channel out the open nozzle.

4,562,966

ATOMIZER

Donald A. Smith, Haddam, and Richard C. LaFlesh, Suffield, both of Conn., assignors to Canadian Patents and Development Limited/Societe Canadienne des Brevets et d'Exploitation Limitee, Ottawa, Canada

Filed Jul. 29, 1983, Ser. No. 518,551

Int. Cl.⁴ B05B *7/04*

U.S. Cl. 239—433 **3 Claims**

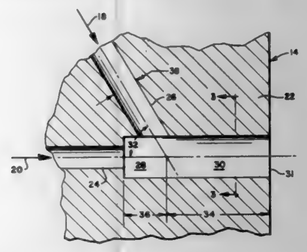
1. An atomizer for producing a finely dispersed spray of a substantially liquid fuel, said atomizer having disposed therein:

an internal mixing chamber of elongated flow cross-section for receiving and completely commingling the substantially liquid fuel and a gaseous atomizing medium;

a spray outlet passage having an elongated flow cross-section corresponding to the flow cross-section of the mixing chamber and in fluid communication therewith, said spray outlet passage opening at the surface of the atomizer for discharging the commingled liquid fuel and atomizing medium therefrom as a finely dispersed spray, the spray outlet passage and mixing chamber further defining a spray outlet flow length, a mixing chamber flow length, and a total slurry hydraulic diameter such that the ratio of the spray outlet passage flow length to the mixing chamber flow length is approximately 2.3 and the ratio of the spray outlet passage flow length to the total slurry hydraulic diameter has a value between approximately 4.65 and 6.25, inclusive;

an atomizing medium inlet passage, colinear with the spray outlet passage, for conducting the atomizing medium into the mixing chamber; and

a slurry inlet passage opening into the mixing chamber at an oblique angle with respect to the atomizing medium inlet passage, for conducting the substantially liquid fuel into the mixing chamber.



4,562,967

MULTI-NOZZLE HEAD

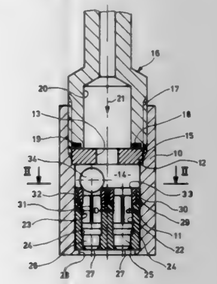
Wolfgang Grothe, Reutlingen, and Robert Weible, Dettingen, both of Fed. Rep. of Germany, assignors to Lechler GmbH & Co. KG, Fellbach, Fed. Rep. of Germany

Filed Oct. 20, 1983, Ser. No. 543,869

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3239009

Int. Cl.⁴ B05B *1/12, 1/16*

U.S. Cl. 239—436 **15 Claims**



1. A multi-nozzle head to be exchangeably mounted on jet tubes, in particular in spray cleaning apparatus, with a cavity into which issues at the rear a feed aperture opposite which are arranged, at the front end side of this cavity, several discharge apertures to which are connected preferably different nozzles, at least one freely moving generally spherical valve sealing element being located in said cavity that on the basis of gravity can be moved in front of one of the discharge apertures, each discharge aperture being provided with one valve seat, a support ring holding said valve seat, and, as seen in the direction of flow, a joining jet-aligner preferably with the cross-sectional shape of a cross and connected to the nozzle,

characterized in that the valve seat (**33**), the support ring (**30**) and the jet-aligner (**31**) form one integral component (**29** or **39**) and consist of a sintering material with wear-resistant additives, preferably of a PTFE compound material with an additive of molybdenum-disulfide or graphite.

4,562,968

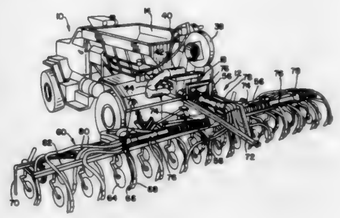
PNEUMATIC SPREADER

Gerald L. Widmer and Larry J. Gray, both of Loda, Ill., assignors to Dry Sprayer, Inc., Paxton, Ill.

Filed Mar. 19, 1984, Ser. No. 590,707

Int. Cl.⁴ A01C *15/04*

U.S. Cl. 239—655 **39 Claims**



1. A pneumatic spreader for the distribution of materials to the ground comprising:

a distribution chamber;

material inlet means for introducing the materials to be spread into said distribution chamber;

gas inlet means for introducing gas into said distribution chamber;

outlet means in said distribution chamber for discharging the materials and the gas from said distribution chamber, said gas inlet means and said outlet means being constructed and arranged to define a venturi which draws the materials from the distribution chamber and propels the materials through said outlet means;

a first conduit coupled with said outlet means for receiving the materials and the gas discharged from said outlet means;

a plurality of second conduits joined to and communicating with said first conduit for receiving the materials and gas therefrom;

discharge means on each of said second conduits for discharging said materials from said second conduits to the ground;

flow distributor means adjacent the juncture of said first and second conduits for substantially equally dividing the materials and gas in said first conduit between said second conduits, whereby uniform amounts of said materials are discharged to the ground from each of said discharge means, said flow distributor including a deflector in said first conduit; and

mounting means for mounting said deflector to move relative to said second conduits adjacent the juncture of said second conduits with said first conduit and closer to ones of said second conduits than other of said second conduits.

4,562,969

PROCESS FOR PREPARING GROUNDWOOD PULP AS SHORT FIBER AND LONG FIBER FRACTIONS

Jonas A. I. Lindahl, Domsjo, Sweden, assignor to Mooch Domsjo Aktiebolag, Oraskoldsvik, Sweden

Filed Mar. 5, 1984, Ser. No. 586,454

Int. Cl.⁴ B02C *19/12*

U.S. Cl. 241—21 **4 Claims**

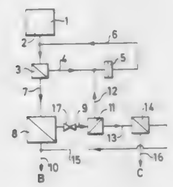
1. A process for preparing groundwood pulp at a low energy consumption as

(i) a short-fiber fraction that is essentially shive-free and has a low freeness, low surface roughness and high opacity; and

(ii) a long-fiber fraction that has a low resin content, as well as a high freeness; which comprises the steps of:

(1) grinding lignocellulosic material to form an aqueous groundwood pulp fiber suspension;

(2) screening the groundwood pulp fiber suspension through a coarse screen having screen openings not less than about 5 mm;
(3) defibrating reject lignocellulosic material separated out on the coarse screen;
(4) recycling the defibrated lignocellulosic material to the groundwood pulp fiber suspension from the grinding step (1);
(5) separating the groundwood pulp fiber suspension from step (2) into
(a) an accepts fraction and
(b) a rejects fraction, the latter comprising from about 30% up to about 85% by weight of the fiber suspension;
(6) screening the rejects fraction 5(b) through a screen, having screen openings of less than about 5 mm;
(7) separating the fiber suspension from step (6) into
(a) an accepts fraction and



(b) a rejects fraction;
(8) recycling the rejects fraction 7(b) to the defibrating step (3) and then to the groundwood pulp fiber suspension from the grinding step (1);
(9) screening the accepts fraction 7(a) to form
(a) a short-fiber accepts fraction of which from about 15 to about 60% comprises fibers passing through a sieve No. 150 in a Bauer-McNett classifier; and
(b) a long-fiber rejects fraction of which at least 80% comprises long fibers retained on a sieve No. 150 in a Bauer-McNett classifier;
(10) withdrawing the long-fiber rejects fraction 9(b) as groundwood pulp product (ii);
(11) blending the short-fiber accepts fraction 9(a) with accepts fraction 5(a); and
(12) withdrawing the resulting blend as short-fiber accepts fraction groundwood pulp product (i).

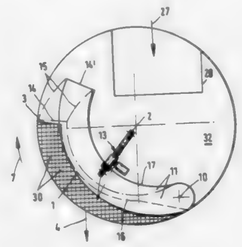
4,562,970

APPARATUS FOR OPENING AND CLOSING THE OUTLET APERTURE OF A PROCESSING MACHINE

Walter Eirich, Spessartweg 18; Paul Eirich, Bahnhofstr. 11, and Hubert Eirich, Sandweg 1, all of Hardheim, Fed. Rep. of Germany

Filed Jan. 20, 1984, Ser. No. 572,706
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302110
Int. Cl.⁴ B02C *17/18*
U.S. Cl. 241—65 **13 Claims**

1. In a rotationally drivable drum apparatus for processing material, wherein the drum is provided with a stationary cover at an end thereof, wherein said cover has an outlet aperture located at a generally lower region of the drum relative to a generally upward path of travel of material processed in the drum wherein the cover is provided with a movable closure member movably mounted on said cover and movable between positions opening said aperture and at least partly closing said aperture, the improvement comprising:
(a) said outlet aperture being of crescent shape and of increasing aperture size in the direction of rotation of said drum;
(b) said closure member comprising a closure plate in articulated mounting on said cover plate; and



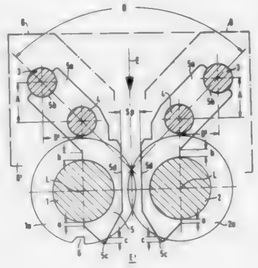
(c) adjustable drive means for pivotally moving said closure member on its said mounting about a pivot.

4,562,971

ROLLER SYSTEM FOR PAPER SHREDDERS

Hermann Schwelling, Bahnhofstrasse 115, D-7777 Salem 3/Neufrach, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,238
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311331
Int. Cl.⁴ B02C *18/18*
U.S. Cl. 241—236 **7 Claims**



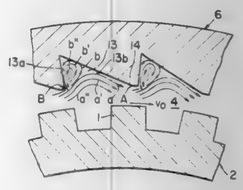
1. Shredder apparatus for cutting and tearing material such as paper or the like comprising: a pair of cutting and tearing roller members having longitudinal axes extending parallel to each other and spaced apart to define therebetween an intake through which material to be shredded may be introduced into said shredder in an intake direction; and a pair of shredder bearing support members supporting said roller members, said shredder bearing support members comprising roller engaging portions having semicylindrical recesses therein within which said roller members are respectively supported, said semicircular recess opening in diametrically opposed directions facing away from said intake gap, a pair of shredder support arms extending from said roller members in said intake direction and two pairs of support shafts, one supporting each of said support arms, each of said pairs of shafts having longitudinal axes which extend parallel to said longitudinal axes of said roller members and which are spaced apart a distance A taken in said intake direction, each of said roller members comprising a cutting disc having a generally circular circumference and wherein each of said shredder bearing support members comprise a free end extending forwardly on the output side of said shedder apparatus in the feed direction of the material passing through said shredder apparatus, said free ends extending beyond the boundaries of said circumference of said cutting discs by a slight distance with a pointed shape.

4,562,972

MICROPULVERIZER

Tatsuo Hagiwara, Funabashi, and Shozi Nagano, Chiba, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Apr. 9, 1984, Ser. No. 598,453
Claims priority, application Japan, Apr. 13, 1983, 58-64803; Apr. 19, 1983, 58-68805; Apr. 19, 1983, 58-68806; Apr. 22, 1983, 58-71263; Apr. 28, 1983, 58-75329
Int. Cl.⁴ B02C *23/38*
U.S. Cl. 241—260 **15 Claims**



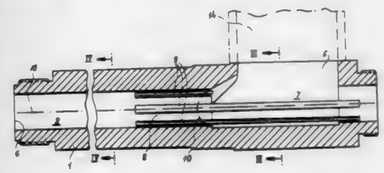
1. In a pulverizer comprising a generally cylindrical vertically extending casing with a vertically extending axis, a top and a bottom, having at the bottom thereof a feed inlet for particles to be pulverized and air conveying the particles and having at the top thereof a pulverized product discharge outlet, a rotor having a generally cylindrical outer surface and being rotatably supported within the casing by a vertically extending rotating shaft having an axis, said rotor having along generatrices of said outer surface thereof a large number of vertical ridges, and a stator provided around an inner wall surface of the casing and having along generatrices of said inner wall surface a large number of vertically extending ridges confronting the ridges of the rotor with a gap between said ridges of said stator and said ridges of said rotor, said ridges of the stator making relative movement with respect to said ridges of said rotor as said rotor is rotated around said rotating shaft, the improvement wherein:
said gap is no greater than 1 mm;
said ridges of said stator are of sawtooth shape as viewed in cross section, each ridge of said stator having a leading flank and a trailing flank with respect to the relative movement between said rotor and said stator so that said trailing flank of one ridge of said stator is opposite to said leading flank of a ridge immediately adjoining said one ridge in the direction of said relative movement, said trailing flank lying in a vertical extending plane passing substantially through said axis of said shaft and forms an acute dihedral angle of 45 to 60 degrees with the opposite leading flank of said immediately adjoining ridge, thereby defining a trough of triangular cross section between said trailing flank of said one ridge and said leading flank of said immediately adjoining ridge, said leading flank lying in a vertically extending plane that is substantially tangential to said outer surface of said rotor; and
at least one tier of a classification ring provided around said inner wall surface of said stator forming flow-blocking barriers across at least some of said troughs.

4,562,973

EXTRUDER FOR REPLASTIFYING THERMOPLASTIC STRIPS, FOILS OR WEBS

Hans Geng, Bongard, Fed. Rep. of Germany, assignor to Plastik-Maschinenbau GmbH & Co. KG., Kelberg, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,016
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010825
Int. Cl.⁴ B02C *19/22*
U.S. Cl. 241—260.1 **6 Claims**



1. A worm extruder for replastifying foil strips comprising:
an elongate barrel having at one end an axial egress and at an opposite end a radial feed opening elongated in a direction parallel to a longitudinal axis of said barrel, said barrel being provided with a chamber extending along and communicating with said opening for receiving plastic webs and a cylindrical bore concentric with said axis and extending from said chamber to said egress, said bore having at least one inwardly open elongated catch groove extending from said chamber substantially parallel to said axis;
a shaft journaled in said bore and provided with at least one worm thread, and a portion traversing said chamber and forming a spindle therein about which said plastic webs can be wound up;
loading means connected to said feed opening for delivering plastic webs to said chamber; and
drive means for rotating said shaft about said axis, whereby a plastic web fed to said chamber is wound about said portion and subsequently caught by said groove and ground up between said thread and a surface of said bore, said feed opening being bounded in part by a vertical surface extending parallel to said axis and wherein said chamber is defined in part by a polished cylindrical surface formed in said barrel concentrically with said axis and in part by a polished additional surface extending into said bore toward said egress and joined on one side to said cylindrical surface at a cuspidal line extending parallel to said axis and on an opposite side to said vertical surface in a smooth connection, said additional surface spiraling outward from said cuspidal line to said vertical surface, whereby said chamber is formed with an eccentric peripheral space sickle-shaped in cross section transverse to said axis.

4,562,974

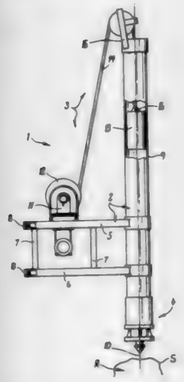
ROCK BREAKING APPARATUS

Ian G. Bezette, "Talisker", Evandale, Tasmania, and David B. Sugden, Tasmania, both of Australia, assignors to Ian G. Bezette and John Bennetto, both of, Australia

PCT No. PCT/AU82/00196, § 371 Date Nov. 24, 1981, § 102(e) Date Jul. 20, 1983, PCT Pub. No. WO83/01977, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 24, 1982, Ser. No. 522,301
Claims priority, application Australia, Nov. 24, 1981, PF1683
Int. Cl.⁴ B02C *1/00*
U.S. Cl. 241—283 **26 Claims**

1. A tool assembly for working a material, including: a tool mounting having a tubular fixed sleeve, and a tubular movable sleeve mounted for telescopic movement relative to the fixed sleeve in a working direction and an opposite return direction, the fixed and movable sleeve being laterally spaced apart

thereby forming a space therebetween, the movable sleeve having a nose portion projecting out from the fixed sleeve which moves away from the fixed sleeve during movement of the movable sleeve in the working direction and moves toward the fixed sleeve during movement of the movable sleeve in the return direction; a tool mounted at the nose portion of the movable sleeve for movement relative thereto in the working and return directions, and having limit means adapted to abut the movable sleeve to limit that movement of the tool relative to the movable sleeve to between a tool operative position and a tool operated position, the tool during a working stroke thereof engaging material to be worked and being thereafter struck by a plunger block moving into and sliding along within the movable sleeve to apply a working force to the tool, the tool under action of the working force moving in the working direction from the operative position to the operated position



and thereafter in unison with the movable sleeve relative to the fixed sleeve thereby to work the material; and, a plurality of biasing members stacked in seriatim along the space formed between the fixed and movable sleeves so as to extend between opposed abutment faces on the fixed and movable sleeves, the biasing members at least substantially filling the space with at least some of the biasing members slidably engaging both the fixed and movable sleeves, whereupon movement of the movable sleeve in the working direction resiliently compresses the biasing members between the fixed sleeve and the movable sleeve to absorb applied tool working forces transferred from the tool to the movable sleeve when the limit means abuts the movable sleeve as the tool reaches the tool operated position during a working stroke, compression of the biasing members providing a restoring force to the movable sleeve for returning the movable sleeve in the return direction upon conclusion of the working stroke of the tool.

4,562,975

APPARATUS FOR WINDING TUBULAR STRUCTURAL COMPONENTS

Peter M. Wackerle, Ottobrunn; Franz Sperber, Kolbermoor, and Walter Weber, Assling, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

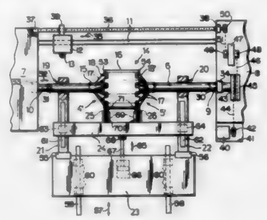
Filed Dec. 10, 1984, Ser. No. 680,276

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1983, 3345011

Int. Cl.⁴ B65H *81/06, 65/00*

U.S. Cl. 242—7.21 **8 Claims**

1. An apparatus for producing tubular structural components by winding fiber strands onto a winding support member, comprising machine frame means, winding arbor means forming said winding support member, arbor mounting means for removably and rotatably supporting said winding arbor means in said machine frame means, first drive means connected to said mounting means for rotating said winding arbor means, strand guide means for guiding said fiber strands during a winding operation, support means for movably supporting said strand guide means for cooperation with said winding arbor means, second drive means connected to said strand guide means and cooperating with said first drive means for driving said strand guide means in synchronism with the rotating of said winding arbor means, a winding cage (**16**), friction clutch means operatively securing said winding cage on said winding arbor means for rotating said winding cage together with the winding arbor means, stop means operatively arranged for temporarily stopping rotation of said winding cage, said winding cage (**16**) having at least one circumferential end edge and cut-outs in said circumferential end edge for receiving wound fiber strands in said cut-outs, said cut-outs (**18, 18'**) having such angular spacings from each other in the circumferential direction of said winding cage (**16**) so that a back-and-forth movement of said strand guide means and the angular position of said winding cage are coordinated to each other for laying fiber strands into said cut-outs when the winding cage is released by said stop means for rotation with said winding arbor means, whereby said fiber strands are laid along a non-geodesic line on an axial section of said winding arbor means determined by said winding cage.



4,562,976

ARM ROLLER SUPPORTING DEVICE FOR A SPINNING REEL

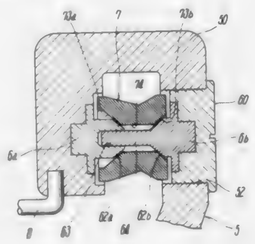
Masuo Ban, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jun. 13, 1983, Ser. No. 503,734

Claims priority, application Japan, Jun. 22, 1982, 57-94084

Int. Cl.⁴ A01K *89/00*

U.S. Cl. 242—84.2 G **4 Claims**



1. A supporting device which supports an arm roller to an arm cam at a spinning reel comprising:

a support means at said arm cam of said reel for rotatably supporting said arm roller, said support means having an inverted U-like-shape and at one of two opposing walls a fitting groove and at the other of said opposing walls a threaded bore;

a center pin mechanism having one end fitted nonrotatably into said fitting groove and another end fitted to a screw member screwed with said threaded bore, said center pin mechanism having spaced apart outer conical shaped supporting faces slanted with respect to the axis of said center pin mechanism, said arm roller having at opposite axial ends recesses containing conical inner surfaces respectively engaging with the conical shaped supporting faces of said center pin mechanism to transmit to said support means a load acting on said arm roller, so that said arm roller contacts with said support means at a contact portion where the contacting direction is slantwise with respect to the axis of rotation of said arm roller.

4,562,977

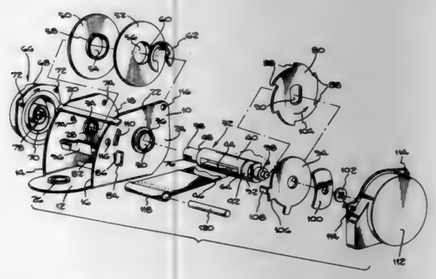
EASILY ASSEMBLED SEAT BELT RETRACTOR AND METHOD

William Hollowell, Pacific Palisades, Calif., assignor to American Safety Equipment Corp., Troy, Mich.

Filed Sep. 27, 1983, Ser. No. 536,292

Int. Cl.⁴ A62B *35/00;* **B65H** *75/48*

U.S. Cl. 242—107.4 D **12 Claims**



1. A safety belt retractor comprising:

a retractor frame having a bottom and left and right side walls, said side walls having inside faces facing each other and outside faces, said side walls each also having a belt storage spool shaft receiving opening for rotatable mounting of a belt storage spool shaft and wherein said left spool shaft receiving opening has a smaller diameter than said right spool shaft receiving opening;

a belt storage spool shaft having a left end, a middle portion, and right end, said belt storage spool shaft being sufficiently long so that said left and right spool shaft ends extend outward through their respective left and right side wall belt storage spool shaft receiving openings to position at least a portion of said belt storage spool shaft ends on the outside of said retractor frame when said belt storage spool shaft is rotatably mounted to said retractor frame, and wherein said spool shaft left end has a smaller diameter than said spool shaft right end, said belt storage spool shaft including a left shoulder portion between said left end and said middle portion to abut against said left wall inside face in said retractor frame when said spool shaft is mounted therein, said left shoulder portion having a diameter equal to or less than the diameter of said spool shaft right end, and said spool shaft middle portion having a diameter equal to or less than the diameter of said spool shaft right end;

means for rotatably mounting said belt storage spool shaft within said belt storage spool shaft receiving openings in said retractor frame side walls, said means for rotatably mounting said spool shaft including retainer spring means mountable on said belt storage spool shaft adjacent said right wall inside face when said storage spool shaft is mounted to said retractor frame for maintaining the position of said storage spool shaft left shoulder adjacent said left wall inside face during rotation of said belt storage spool shaft;

a left belt rub protector disc having a centrally located storage spool shaft receiving opening;

means for mounting said left belt rub protector disc on said belt storage spool shaft adjacent said left side wall inside face;

a right belt rub protector disc having a centrally located belt storage spool shaft receiving opening;

means for mounting said right belt rub protector disc on said belt storage spool shaft adjacent said left side wall;

a safety belt;

means for mounting said safety belt to said belt storage spool shaft, said safety belt being extendable between a retracted position where said belt is wound around said belt storage spool shaft and an extended position where said belt is unwound from said belt storage spool shaft;

means associated with said belt storage spool shaft left end and mounted to said left side wall outside face for biasing said belt storage spool shaft in a belt retraction direction; and

ratchet means for preventing extension of said belt upon actuation at selected positions between said belt retracted and extended positions;

actuation means for actuating said ratchet means at said selected belt extension positions.

4,562,978

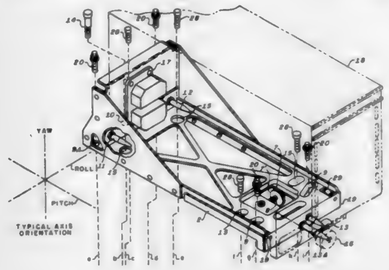
ADJUSTABLE MOUNTING TRAY FOR AIRCRAFT INERTIAL REFERENCE UNITS AND THE LIKE

Larry L. Durbin; Roy A. Zaborowski, both of Phoenix, Ariz., and Thomas R. Wolf, Goleta, Calif., assignors to Sperry Corporation, New York, N.Y.

Filed Nov. 21, 1983, Ser. No. 553,936

Int. Cl.⁴ B64D *43/00*

U.S. Cl. 244—1 R **11 Claims**



1. An adjustable mounting tray for aircraft for precisely aligning reference apparatus relative to the aircraft longitudinal axis without physically locating said axis and making measurements therefrom, said adjustable mounting tray comprising:

(a) A base member adapted to be mounted in the aircraft so that it is substantially level about the roll and pitch axes and substantially aligned with said longitudinal axis,

(b) an apparatus receiving tray member supported on said base member including means cooperable with said base member for maintaining said tray level in roll and pitch relative to said base member,

(c) means coupled between said base member and mounting tray for adjusting the alignment of said tray relative to said base member, and said aircraft longitudinal axis to remove any cross-axis coupling between said roll axis and said longitudinal axis with the aircraft tilted about its pitch axis, and

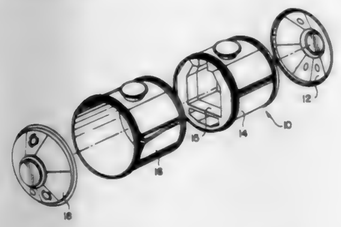
(d) means for clamping said mounting tray to said base member after adjusting said adjusting means.

4,562,979

EXPANDABLE SPACECRAFT

Thomas C. Taylor, P.O. Box 1547, Wrightwood, Calif. 92397, assignor to Aeritalia, Torino, Italy and Thomas C. Taylor, Wrightwood, Calif.

Filed Mar. 21, 1983, Ser. No. 477,482
Int. Cl.⁴ B64G *1/12*
U.S. Cl. 244—158 R **21 Claims**



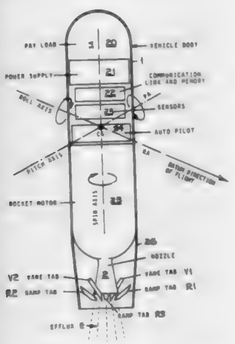
1. An expandable spacecraft module which comprises:
(a) at least one main generally cylindrical body member, said body member comprising a waffle-type structure which includes a plurality of flanges extending generally radially outwardly from said cylinder;
(b) an auxiliary housing which is adapted to increase the volume of said body member, and means for connecting said housing to said body member, said connecting means being attached to a plurality of flanges, said housing comprising a generally tubular portion attached to said connecting means, said connecting means in turn being attached to said outwardly extending flanges, wherein said connecting means comprises a cap attached to said outwardly extending flanges, said spacecraft module further comprising an annular spline joint which is adapted to releasably connect said cap to said cylinder; and
(c) means for sealing said spacecraft module from the exterior of said module.

4,562,980

ROCKET VEHICLE

Arnold L. Deans, Tea Tree Gully; Alan J. Smith, East Bentleigh, and Malcolm J. Crozier, Balwyn, all of Australia, assignors to The Commonwealth of Australia, Canberra, Australia

PCT No. PCT/AU81/00160, § 371 Date Jul. 2, 1982, § 102(e) Date Jul. 2, 1982, PCT Pub. No. WO82/01745, PCT Pub. Date May 27, 1982
PCT Filed Nov. 11, 1981, Ser. No. 396,914
Claims priority, application Australia, Nov. 14, 1980, PE6501
Int. Cl.⁴ F41G *7/00;* **F02K** *1/00*
U.S. Cl. 244—3.22 **14 Claims**



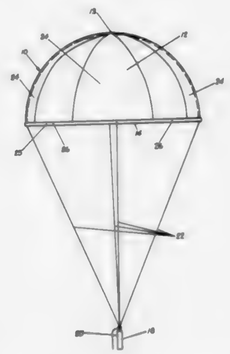
1. The method of controlling the flight including in a substantially horizontal plane of a primarily vertically oriented rocket vehicle which includes a nozzle discharging an efflux, said method comprising projecting generally symmetrically spaced inwardly rearwardly projecting spoiler ramp tabs both collectively yet differentially into the efflux of the discharge nozzle to control lift and direction, and projecting rotation producing tab vane means between the ramp tabs into the efflux to control a rotation about the vehicle longitudinal axis whereby rotation is controlled independently of the lift and direction control.

4,562,981

PARACHUTE AND HANG GLIDER SAFETY DEVICE

David S. Smith, and Geoffrey A. Smith, both of Unit 7, 189 Coode St., South Perth, Western Australia, Australia 6151

Filed Jun. 20, 1983, Ser. No. 505,937
Claims priority, application Australia, Jun. 24, 1982, PF4582; Sep. 20, 1982, PF5963
Int. Cl.⁴ B64D *17/02*
U.S. Cl. 244—146 **9 Claims**



1. A parachute assembly comprising a canopy having an apex and a basal perimeter, a harness connected to the canopy by lines, a plurality of generally triangular gussets each joined to a surface of said canopy so as to define one of a plurality of generally triangular, selectively inflatable envelope means, each envelope means and gusset extending from adjacent said apex to adjacent said basal perimeter and tapering outwardly toward said basal perimeter,
the assembly further including a source of pressurized gas, a plurality of flexible conduit means each connecting said source to an envelope means, valve means for releasing the gas from said source into the conduit means and manually operable means for opening the valve means to release the pressurized gas into the conduit means to inflate the envelope means.

4,562,982

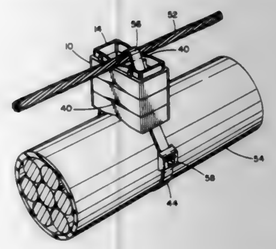
STACKABLE CABLE SPACER

William E. McSherry, Country Club Hills, and Robert L. Sokol, Orland Park, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Feb. 15, 1984, Ser. No. 580,415
Int. Cl.⁴ F16L *3/00*
U.S. Cl. 248—61 **24 Claims**

15. A spacer assembly for securing and spacing adjacent cables, or the like, said assembly effecting variable spacing of the adjacent cables, and said assembly being adjustable to accommodate varying diameter cables, said assembly comprising:
locking strap means reeved around each of the cables for securing said assembly to the adjacent cables;

stackable spacer means contiguously interposed between adjacent cables, said spacer means being adapted to be utilized individually or to be utilized with other spacer means in a mating contiguous relationship to provide variable spacing at a least two cables, said strap means securing each of said spacer means between the cables;
wherein said spacer means includes a tubular body member having an internally disposed passageway for containing and positioning said strap means; a male annular lip integrally formed with said body member and coaxially disposed relative to said passageway; and a female annular lip integrally formed with said body member and coaxially disposed relative to said passageway, said female annular lip being adapted to matingly receive said male annular lip of another contiguously stacked spacer;
wherein said body member includes a first longitudinal body protion disposed parallel to a second longitudinal body



portion, and a first lateral body portion disposed parallel to a second lateral body portion, all four of said body portions being respectively and contiguously joined at four corner edges;
wherein said male annular lip includes a first annular edge of said body member and wherein said female annular lip includes a second annular edge of said body member defined by the continuous interior edge of said joined first and second longitudinal body portions and said first and second lateral body portions; and
further including rib means medially disposed in said passageway to connect opposing inner faces of at least two of said body portions and to define a plurality of individual passageways for containing and positioning said strap means and wherein said cradle means includes said male and female annular lips each having medially disposed and aligned V-shaped depressions, said depressions being disposed to align with each respective contiguous cable.

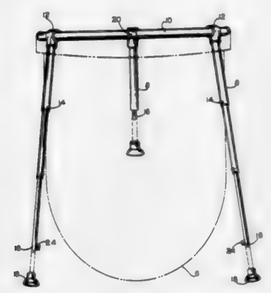
4,562,983

BAG HOLDERS

Robert J. Klefbeck, 3 Dresden Ct., Albany, N.Y. 12203

Filed Jul. 23, 1980, Ser. No. 151,965
Int. Cl.⁴ A63B *55/04*
U.S. Cl. 248—97 **1 Claim**

1. A collapsible trash bag holder which comprises:
a frame member for holding the mouth of a trash bag in an open position, said frame member defining a substantially enclosed plane of predetermined thickness;
a plurality of legs for supporting the frame member during use of the bag holder, said legs being adjustable in length between an advanced and a retracted position;
means connecting an end of each leg to the frame member for pivoting each leg between a support position for supporting the frame member during use of the bag holder and a collapsed position for storage in which position the legs lie in a substantially common plane with each other within the boundary of the frame member, said common plane having a thickness substantially equal to the thickness of a single leg, the thickness of the frame plane not exceeding the leg thickness;
a plurality of clamps, one for each leg, adapted to align with each other when the legs are in their collapsed position; and



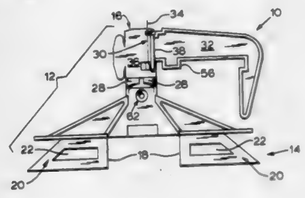
a locking member adapted to engage each clamp, whereby all the legs are interconnected and locked together in their collapsed position.

4,562,984

DRAINAGE BAG SUPPORT

Paul Sherlock, San Francisco, Calif.; Benjamin Brausen, Cromwell, Conn., and Phillip P. Klein, Dallas, Tex., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Aug. 8, 1983, Ser. No. 520,954
Int. Cl.⁴ B65B *67/12*
U.S. Cl. 248—95 **29 Claims**



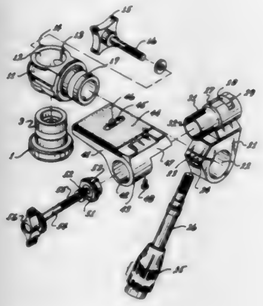
1. A support for suspending a body fluid drainage bag from a structure comprising:
a generally planar one-piece body having first and second opposed ends, said body including a hanger at said first end to which a drainage bag can be attached;
a support arm depending from the second end of the body, said support arm being connected via a living hinge to the body, said body, living hinger and support arm being of one piece;
said support arm being movable from a first position substantially in the plane of the body to a second position substantially perpendicular to the plane of the body; and
locking means integral with the body and the support arm for locking the support arm in the second position with respect to the body, said locking means when the support arm is locked in the second position having an axis extending therethrough from the second end of the body generally toward the first end of the body, said locking means including first cooperating members disposed on the support arm and second cooperating members disposed on the body, which first and second cooperating members are physically spaced in the first position;
said living hinge having an axis about which the support arm is rotatable from its first to its second position, said living hinge axis being generally parallel to but spaced from the axis of the locking means.

4,562,985

PAN HEAD

Koma Nakatani, Tokyo, Japan, assignor to Velbon International Corporation, Torrance, Calif.

Filed Aug. 23, 1984, Ser. No. 643,832
Int. Cl.⁴ F16M *11/12*
U.S. Cl. 248—183 **4 Claims**



1. A pan head comprising;
a table;
a tilt arm;
a single tube affixed at one end to one of said table or said tilt arm and having a free open end, an axis bore formed in the other of said table or said tilt arm for receiving said axis tube such that said other is rotatable about and supported on said tube;
a rod extending within said tube and connected at an inner end to said one, said rod having a knob attached to an outer end, said knob cooperating with said other to prevent separation of said one from said other and consequent withdrawal of said tube from said bore; and
a body of tapering cross section on said rod, said body being pressed into said open end of the tube responsive to manual rotation of said knob by said rod for dilating the cross section of said tube within said bore when said rod is threaded into said one to thereby lock together the table and the tilt arm against rotation about said tube.

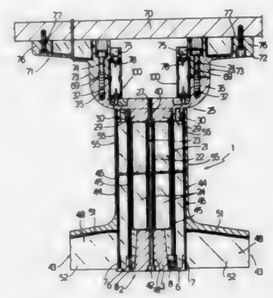
4,562,986

SUPPORT FOOT FOR FURNITURE, IN PARTICULAR OFFICE FURNITURE

Francesco Frascaroli, Bologna, and Carlo Biondi, S.Giovanni in Persiceto, both of Italy, assignors to C.O.M. Cooperativa Operai Metallurgici S.C.R.L., Bologna, Italy

Filed Apr. 18, 1984, Ser. No. 601,852
Claims priority, application Italy, Apr. 22, 1983, 4848/83[U]
Int. Cl.⁴ F16M *11/20*
U.S. Cl. 248—188.1 **7 Claims**

1. A support foot for furniture, in particular office furniture, having a frame comprising:
a. a base having a prismatic center portion defining a top panel and a pair of first couplings oppositely spaced from the central portion, each coupling being connected to the central portion by a transverse rib to form two aligned slots between the coupling and central portion;
b. a top piece having a central portion defining a bottom panel and first and second pairs of fins extending radially from the central portion, the fins of the first pair extending in opposite directions through respective second couplings aligned with the base couplings, the first pair of fins terminating in respective plates that extend above the second couplings;
c. a central upright extending between the base top panel and top piece bottom panel ;
d. a pair of lateral elements spaced transversely from the base central portion and arranged on opposite sides of and substantially parallel to the upright, the lateral elements being disengageably connected to the base and top piece by means of the aligned pairs of first and second couplings; and



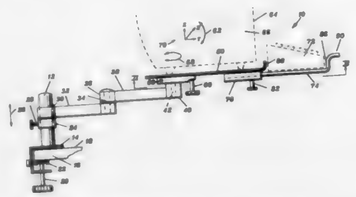
e. screw means extending through the base, upright, and top piece for holding the internal frame together.

4,562,987

COMPUTER TERMINAL SUPPORT WITH FIVE DEGREES OF FREEDOM

Richard Leeds, Lawrence; Bruce Leeds, Jericho, and Robert Leeds, New York, all of N.Y., assignors to Global Equipment Company, Hempstead, N.Y.

Filed May 14, 1984, Ser. No. 610,133
Int. Cl.⁴ E04G *3/00*
U.S. Cl. 248—278 **17 Claims**



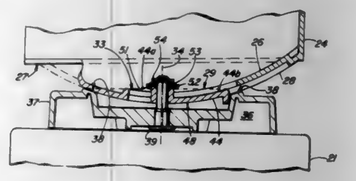
1. A computer terminal support for providing an adjustable and extensible mount for a computer terminal including at least a visual display screen, comprising:
a king post;
means for affixing said king post with a first axis thereof disposed in a substantially vertical position;
first pivoting means rotatable in a substantially horizontal direction about said first axis;
means for adjusting a vertical position of said first pivoting means along said first axis;
a first swivel arm affixed to said pivoting means for concerted rotation therewith about said first axis;
second pivoting means at a distal end of said first swivel arm rotatable in a substantially horizontal direction about a second substantially vertical axis;
a second swivel arm affixed to said second pivoting means for concerted rotation therewith about said second axis;
a third pivoting means at a distal end of said second swivel arm rotatable in a substantially horizontal direction about a third substantially vertical axis;
a horizontally-disposed intermediate support tray affixed to said third pivoting means and movable therewith in a substantially horizontal direction about said third axis;
a terminal support tray overlying said intermediate support tray and sized to support a computer terminal thereon;
fourth pivoting means connecting said terminal support tray to said intermediate support tray for tilting movement about a fourth substantially horizontal axis whereby adjustment of a position of said computer terminal with five degrees of freedom is provided; and
tilt-control means for manually moving and retaining said terminal support tray about said fourth axis to selected tilted positions, whereby said visual display screen is adjusted to the view of the user.

4,562,988

VIDEO DISPLAY MOUNTING MECHANISM PROVIDING PIVOTING AND TILTING OF THE DISPLAY

Donald L. Bumgardner, South Lyon, Mich., assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 27, 1984, Ser. No. 625,258
Int. Cl.⁴ F16M *11/12*
U.S. Cl. 248—349 **3 Claims**



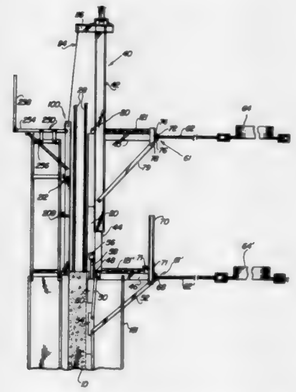
1. A mechanism for mounting an upper unit to a lower unit so as to allow relative motion between said two units along two generally orthogonal axes of rotation, said mechanism comprising:
a partial sphere-shaped member protruding from the lower part of said upper unit;
said partial sphere-shaped member containing a slot in which is held, in a moving relationship, a slider means for traversing said slot from one end to another, said slider means having an aperture therein;
a circular rim-shaped member protruding from the upper part of said lower unit, for mating with said partial sphere-shaped member; and
a stud means located within the periphery of said rim-shaped member, and fixed to said lower unit, said stud means passing through the aperture in said slider means and joined to said slider means so as to allow said slider, and consequently said upper unit, to pivot about said stud means, whereby said upper unit is supported by said rim-shaped member engaging said partial sphere-shaped member, said upper unit pivots about said stud means, said upper unit tilts by moving relative to said slider means, and said upper unit and said lower unit are in a captive arrangement;
wherein said slider means is constructed so as to fit said slot that a first part of the slider means is on a first side of said slot, a second part of said slider means is on a second side of said slot, and a third part of said slider means passes through said slot and joins the first part of said slider means to the second part of said slider means and
a bearing surface on the first part of the slider means mates against a bearing surface on a first surface of the partial sphere-shaped member, and
a bearing surface on the second part of the slider means mates against a bearing surface on a second surface of the partial sphere-shaped member.

4,562,989

APPARATUS FOR CONSTRUCTION OF CONCRETE WALLS

Herman Scheller, Barrington, Ill., assignor to Peabody Continental-Heine Co., Des Plaines, Ill.

Filed Oct. 2, 1984, Ser. No. 657,111
Int. Cl.⁴ E04G *11/20*; E04B *1/16, 1/04*
U.S. Cl. 249—17 **23 Claims**



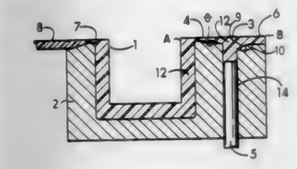
1. Apparatus for constructing a concrete wall comprising:
a plurality of generally vertical jacking beams spaced apart along the inside of the wall being formed, each jacking beam comprising at least two separate sections detachably joined together at their ends;
a plurality of jacking beam fastener means for detachably connecting and reconnecting said jacking beams to the wall, wherein at least some of the fastener means are contained in the wall previously formed, and wherein the lower portion of each jacking beam is held by the jacking beam fastener means contiguous to the surface of the wall previously formed while the upper portion of the jacking beam extends above the portion of the wall previously formed;
a plurality of jacking frames, one jacking frame being mounted on each jacking beam;
jacking means for advancing each of the jacking frames upwardly along the jacking beams as the wall is formed;
an inner concrete shaping form supported by the jacking frames and positioned along and on the inside of the wall being formed adjacent its top; an outer concrete shaping form suspended from the jacking frames and positioned along and on the outside of the wall being formed adjacent to its top; the inner and outer concrete shaping forms being supported solely by the jacking frames, each of the inner and outer concrete shaping forms having a generally vertical casting surface to define a continuous mold on top of the previously poured portion of the wall into which concrete is poured, whereby as the concrete hardens the jacking frames and inner and outer concrete shaping forms are moved upwardly on the jacking beams to form a new level of wall and, at intervals, lower sections of the jacking beams are detached from the bottom of each jacking beam and attached to the top thereof to provide a continuous track for the jacking frames;
at least one central structural member for providing radial support; and
radial support means for transferring lateral loads from said inner and outer concrete shaping forms to the central structural member, wherein the inner concrete shaping forms, the jacking beams, the jacking frames, the central structural members and the radial support means cooperate to resist lateral movements.

4,562,990

DIE VENTING APPARATUS IN MOLDING OF THERMOSET PLASTIC COMPOUNDS

Robert H. Rose, 13850 Forest Groove Rd., Brookfield, Wis. 53005

Filed Jun. 6, 1983, Ser. No. 501,645
Int. Cl.[4] B29C *1/14*
U.S. Cl. 249—141 6 Claims



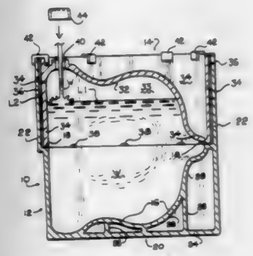
1. Die venting apparatus in molding of thermoset plastic compounds, comprising a vent well outside of a die, said vent well connected to said die by means of a vent path.

4,562,991

REUSABLE ICE MOLD

Gerald Wu, 13423½ Village Dr., Cerritos, Calif. 90701

Filed Nov. 13, 1984, Ser. No. 670,499
Int. Cl.[4] B29C *1/00*
U.S. Cl. 249—141 9 Claims



1. An ice mold comprising:

a lower portion provided with a concave, upwardly facing first mold surface, a first lip provided around a mouth of said first mold surface, an outer retainer wall extending upwardly from said first lip, and a support surface for supporting said lower portion in a substantially upright position; and

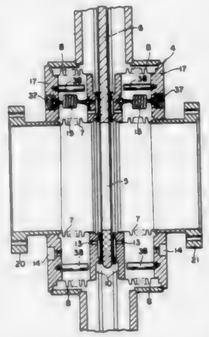
an upper portion provided with a concave, downwardly facing second mold surface which cooperates with said first mold surface to form a mold cavity, a second lip provided around a mouth of said second mold surface which is a mirror image of and which is engagable with said first lip, an inner retainer wall extending upwardly from said second lip such that an annular void is formed between said inner retainer wall and said outer retainer wall which freely communicates with and extends at least to the height of said mold cavity, and filler means provided in said upper portion which permits a liquid to be poured into said ice mold to fill said mold cavity and said annular void.

4,562,992

SEAL DEVICE FOR GATE VALVE

Kenzaburo Sugisaki; Mutsuro Onoda, both of Tokyo, Japan, and Hajime Ishimaru, 128-102, 2-chome, Namiki, Sakuramura, Niihara-gun, Ibaraki-ken, Japan, assignors to Fuji Seiko Kabushiki Kaisha, Tokyo and Hajime Ishimaru, Ibaraki, both of, Japan

Filed Oct. 10, 1984, Ser. No. 659,412
Claims priority, application Japan, Dec. 26, 1983, 58-244231
Int. Cl.[4] F16K *25/00*
U.S. Cl. 251—159 2 Claims



1. A gate valve sealing arrangement, comprising in combination:

(a) a valve cage (4) with an outer structure and a hollow cylindrical inner chamber, said inner chamber having coaxial rear and front openings (1, 2), said rear and front openings defining a flow path, also, outer wall members (17) around the chamber;

(b) a gate valve member (6), with parallel flat front and rear surfaces, said gate valve member (6) being disposed to move in a direction normal to the defined flow path substantially across the center of said chamber, also, said gate valve member (6) having a through aperture (5);

(c) annular members (10), one annular member being disposed on each side of the gate valve member (6) and spaced apart from said outer wall members (17), the annular members (10) each having an annular recess (9) with an open side facing the gate valve member (6);

(d) inner and outer bellows (7, 8) in the valve cage (4) on opposite sides of the gage valve member (6) around the outer structure of the valve cage (4), said inner and outer bellows (7, 8,) being spaced apart from each other and having inner and outer ends, the inner ends being coupled to the annular member (10), the outer ends being connected to the outer wall members (17) so that the outer wall members (17), the annular members (10), and the inner and outer bellows (7, 8) define annular open spaces (12) around the valve cage outer structure;

(e) first and second aligned retaining means (37, 16, 32, 33) intermediate said inner and outer bellows, the first retaining means being connected to said outer wall members (17), the second retaining means being connected to said annular members (10), inwardly biasing spring means (15) held by said retaining means, stoppers (38) partially extending from one of said members (10,17) towards the other of said members preventing the collapse of the annular members (10) towards the outer wall members (17), a communication aperture (13) in each of said annular members extending from its annular recess (9) to the annular open spaces (12), pressure application ports (14) in the valve cage (4) open to the annular open spaces (12);

(f) a thin plate (11) having an annular mirror surface finish on the side of each annular member (10) facing the gate valve member (6), said thin plate (11) closing the open side of said annular recess (9); and,

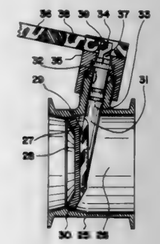
(g) thick edge portions (19) around the annular mirror surface finish of the thin plate (11) so affixing the thin plate to the annular member (10) that the total surface of the mirror surface finish thin plate (11) closing the opening of the annular recess (9) is parallel to the flat front and rear surfaces of the gate valve member (6).

4,562,993

DUAL ACTION HANDLE FOR FLOATING DISC VALVE AND BALL-PLUG VALVE

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 417,484, Aug. 31, 1982, Pat. No. 4,450,732. This application May 25, 1984, Ser. No. 614,292
Int. Cl.[4] F16K *39/02*
U.S. Cl. 251—161 2 Claims



1. A dual action valve handle comprising in combination:

(a) a jack screw with a centrally disposed hole rotatably engaged by a valve stem, said jack screw threadedly connected to a stem housing rigidly affixed to a valve body wherein said valve stem rotatably and slidably engages and extends through a hole included in said stem housing;

(b) an elongated member with one extremity connected to said jack screw in a pivoting relationship wherein said elongated member is pivotable about a pivoting axis substantially perpendicular to the central axis of said valve stem over a range intermediate a first position substantially perpendicular to the central axis of said valve stem and a second position substantially perpendicular to the central axis of said valve stem, wherein the sweeping motion of said elongated member about an axis substantially parallel to the central axis of said valve stem in a first direction and a second direction respectively rotates said jack screw in a first direction and a second direction;

(c) means for engaging and disengaging said sweeping motion of said elongated member and rotating motion of said valve stem wherein said means couples said sweeping motion of said elongated member and the rotating motion of said valve stem when said elongated member is pivoted substantially to said first position and said means uncouples said sweeping motion of said elongated member and said rotating motion of said valve stem when said elongated member is pivoted substantially to said second position; and

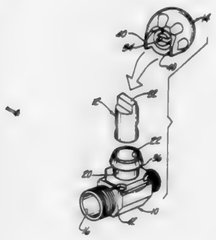
(d) means for coupling linear movement of said jack screw in a direction substantially parallel to the central axis of said valve stem and axial movement of said valve stem in a direction substantially parallel to the central axis of said valve stem in one way, wherein rotation of said jack screw in a first direction moves said valve stem in said one way substantially parallel to the central axis of said valve stem while rotation of said jack screw in a second direction opposite to said one direction does not move said valve stem in the other way opposite to said one way.

4,562,994

VALVE

Robert D. MacDonald, Mesa, Ariz., assignor to Brass Craft Manufacturing Company, Southfield, Mich.

Filed Mar. 18, 1985, Ser. No. 713,136
Int. Cl.[4] F16K *25/00*
U.S. Cl. 251—175 8 Claims



1. A plumbing valve comprising:

a valve body having an inlet bore and an outlet bore;

a cylindrical resilient control sleeve located within said valve body, said sleeve being open at one axial end and closed at the other axial end, said sleeve having at least one port in its cylindrical side wall;

said control sleeve having an outer diameter selected to be snugly but rotatably received within a sleeve bore within said valve body, said sleeve bore intersecting said outlet bore and communicating with said inlet bore;

a handle having connecting formations integrally formed thereon for establishing a rotary driving connection with complementary driving formations integrally formed on said closed other end of said control sleeve for rotating said control sleeve within said sleeve bore;

said control sleeve being rotatable by said handle between a closed position wherein said side wall blocks communication between said inlet bore and said outlet bore, thereby preventing fluid flow through the valve, and an open position wherein flow-permitting communication is established between said inlet bore and said outlet bore via said port and the interior of said control sleeve;

said valve body and said control sleeve being constructed to maintain continuous communication between said inlet bore and said interior of said control sleeve, to thereby pressurize said interior and resiliently bias said cylindrical side wall radially outwardly against said valve body sleeve bore (1) to aid in establishing a leakage-preventing seal between said side wall and the perimeter of said outlet bore at its intersection with said sleeve bore when said control sleeve is in its closed position, and (2) to aid in establishing a leakage-preventing seal between said side wall and said sleeve bore;

and retaining means integrally formed on said handle for cooperating with complementary retaining means on said valve body for rotatably connecting said handle and said control sleeve to said said valve body without separate fastening elements.

4,562,995

WORKING FLUIDS FOR RANKINE CYCLE

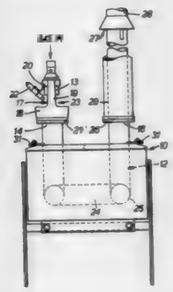
Naonori Enjo, Suita; Hideki Aomi; Masahiro Noguchi, both of Osaka, and Satoshi Ide, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 28, 1983, Ser. No. 479,178
Claims priority, application Japan, Mar. 31, 1982, 57-54642; Mar. 31, 1982, 57-54645
Int. Cl.[4] F01K *25/08*
U.S. Cl. 252—67 3 Claims

1. A method for converting thermal energy into mechanical energy which comprises a cycle consisting of

(1) vaporizing, with heating, a mixture selected from the group of
(a) 60 to 95% by weight of chlorodifluoromethane and 5 to 40% by weight of difluoroethane; and
(b) 3 to 40% by weight of chlorodifluoromethane and 60 to 97% by weight of dichlorotetrafluoroethane;
(2) expanding the vapor in an expansion device to produce mechanical energy; and
(3) compressing the vapor by a pump and cooling the vapor to condense the vapor.

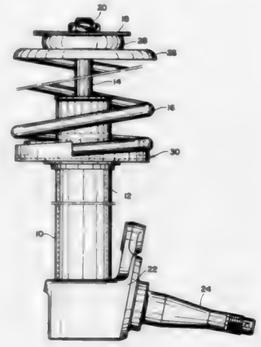
4,562,996
APPARATUS FOR MELTING METAL
Thomas B. Stamp, "Laurentides", Haymes Rd., Cleeve Hill, Cheltenham, Gloucestershire, England
Filed Sep. 13, 1983, Ser. No. 531,652
Int. Cl.[4] F27B *5/14*
U.S. Cl. 266—242 **6 Claims**



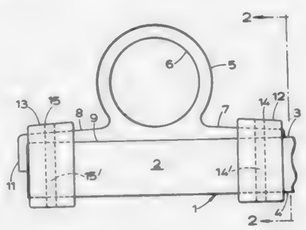
1. Apparatus for melting metal, comprising a reservoir for metal, an integral one-piece heat exchange tube defining an inlet and an outlet above the level of metal in the reservoir, the tube extending from the inlet down into the reservoir around a generally U-shaped path and up to the outlet, a burner having a nozzle, means for mounting the burner above the inlet, and a flue attached to the outlet and extending above the reservoir a substantial distance such that air heated by the burner passing up the flue creates a natural draft that causes air from the surrounding atmosphere and hence the burner flame, to be induced into and along the tube to heat the metal.

4,562,997
SHOCK ABSORBER ASSEMBLY FOR AUTOMOTIVE VEHICLE SUSPENSION
Kazuro Iwata, Zushi; Naoto Fukushima, Kamakura, and Toji Takemura, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Japan
Filed Feb. 24, 1983, Ser. No. 469,414
Claims priority, application Japan, Apr. 14, 1982, 57-62180; Aug. 31, 1982, 57-151199
Int. Cl.[4] F16F *1/12*
U.S. Cl. 267—8 R **21 Claims**

1. A shock absorber assembly for an automotive vehicle suspension, comprising:
a suspension strut;
a shock absorber disposed within said suspension strut;
a piston rod extending from a reciprocating piston disposed within said shock absorber to the vehicle body;
a suspension coil spring wound around said suspension strut and said piston rod;
a pair of spring seats retaining the ends of said suspension coil spring, one of said spring seats being fixed onto the outer periphery of said suspension strut and the other being secured to said piston rod near the top thereof; and
resilient means incorporated in at least one of said spring seats for resiliently absorbing vibrations transmitted via said suspension coil spring, said resilient means being responsive to relatively low-amplitude vibrations to absorb the vibrations and to reduce their transmission between said shock absorber and said suspension strut and being responsive to relatively high-amplitude vibrations to become substantially rigid thereto.

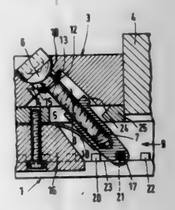


4,562,998
LEAF SPRING ASSEMBLIES
Terence H. Ward, Walsall, England, assignor to Rubery Owen Holdings Limited, Walsall, England
Filed Apr. 18, 1983, Ser. No. 485,852
Claims priority, application United Kingdom, Apr. 23, 1982, 8211754
Int. Cl.[4] F16F *1/18, 1/36*
U.S. Cl. 267—54 R **5 Claims**



1. A leaf spring assembly comprising a spring leaf of composite fibre reinforced synthetic resin material having opposed upper and lower substantially planar surfaces at an end portion thereof, an attachment member comprising an eye-end having an eye carried between two oppositely-directed extension portions of flange form having ends remote from said eye, and a flat surface in flush contact with one of said planar surfaces of said spring leaf at said end portion and extending longitudinally of said spring leaf, said extension portions having inclined surfaces facing away from said flat surface and converging towards said flat surface towards said ends of said extension portions, and two endless clamping bands fitted about said end portion and said respective extension portions, one clamping band on each side of said eye and having an inclined surface which is complementary to said inclined surface of said extension portion with which it engages, said clamping bands acting respectively between said inclined surfaces and the other of said planar surfaces of said spring leaf whereby said extension portions and said end portion are clamped together in intimate engagement.

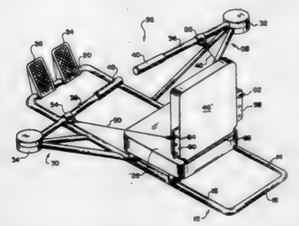
4,562,999
VISE
Urs D. Ryser, Muntelier, Switzerland, assignor to Fribosa AG., Murten, Switzerland
Filed Apr. 27, 1983, Ser. No. 489,165
Int. Cl.[4] B23Q *3/06*
U.S. Cl. 269—137 **10 Claims**



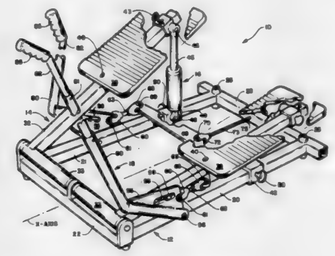
1. A vise comprising a bed (1), a fixed jaw (2) on said bed, a movable jaw (3) movable along said bed, a pair of elements (5,7) consisting of an inclined helically threaded spindle (5) and a spindle nut (7) movably engaged therewith, a series of downwardly open transverse slots (20, 21, 22) on said bed (1), said bed (1) extending in the longitudinal direction of movement of said movable jaw (3), one element (5) of said pair of elements being supported in the movable jaw (3) for the pivotal mounting of the element pair (5, 7) thereon, a cross pin (17) on the other element (7) of said pair of elements, said other element (7) of said pair of elements being selectively retainable by means of said cross pin (17) in respectively one slot of said series of downwardly open transverse slots (20, 21, 22) of the bed (1), each of said slots (20,21,22) having a pair of faces, one of said faces of said pair of faces is opposite to the fixed jaw (2), whereby, with said cross pin (17) retained in one of said slots (20, 21, 22), upon tighting said spindle (5), said cross pin (17) is urged against said one face of said pair of faces of the respective slot, thereby moving the movable jaw (3) forwards (FIG. 4), a spring (18) connected between the movable jaw (3) and said pair of elements for biasing said pair of elements (5, 7) in the direction of its pivotal movement about said pivotal mounting toward said fixed jaw (2), said one element (5) of said pair of elements (5, 7) that is supported in the movable jaw (3) is connected in an axially fixed position on said movable jaw (3), the other face of said pair of faces of each slot is on the side of the slot closest to the fixed jaw (2) and is planar at least in a zone adjoining the open side of the slot and extends at least approximately perpendicularly to the longitudinal axis of the bed (1), and said transverse slots (20, 21, 22) are of such a depth and said spring (18) of such a dimension that with said cross pin retained in one of said slots (20, 21, 22), said spring, upon release of said spindle (5), holds said cross pin (17) on said other face of the respective slot facing the fixed jaw, so that the movement of said cross pin (17) acting on the planar face of the slot, pushes said movable jaw (3) backwards (FIG. 5) away from said fixed jaw (2).

4,563,000
ROWING APPARATUS
John C. Gall, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Oct. 26, 1984, Ser. No. 665,050
Int. Cl.[4] A63B *69/06*
U.S. Cl. 272—72 **22 Claims**

1. An improved rowing apparatus, comprising:
an elongate support frame;
a seat movably engaged on said frame;
a pair of oar arms pivotably mounted on said frame for resistive motion in at least one direction; and
means for selectively applying the muscle forces of an operator to said seat and oar arms, said means including tension means coupled between said oar arms and an operator back bearing surface, said surface bearing against the back of the operator to increase the energy which can be dissipated in the rowing exercise to substantially maximize the forces which can be applied by the leg, arm and back muscles.

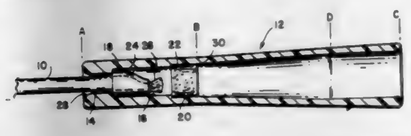


4,563,001
PORTABLE EXERCISING DEVICE
Juris Terauds, 2450 Lozana Rd., Del Mar, Calif. 92014
Filed Dec. 16, 1983, Ser. No. 562,069
Int. Cl.[4] A63B *21/00, 23/04*
U.S. Cl. 272—72 **10 Claims**



1. A portable exercising device comprising:
a base frame assembly having a longitudinal axis extending from its forward end to its rearward end;
a pair of laterally spaced lever arm members each of which is substantially oriented in parallel alignment with the longitudinal axis of said base frame assembly;
means for pivotally securing the forward ends of said lever arm members to said base frame assembly adjacent its forward ends;
a foot pedal plate mounted on each of said lever arms adjacent their rearward ends;
a pair of resistance cylinders each of which has a top end and a bottom end;
first attachment means for pivotally attaching the top end of said respective resistance cylliner to said respective lever arm members;
second attachment means for pivotally attaching the bottom ends of said resistance cylinders to said base frame assembly;
action-reaction means for causing one of said lever arm members to pivot upwardly in response to said other lever arm member being pivoted downwardly and also vice versa; and
wherein said action-reaction means comprises a pair of laterally spaced pivot plate members, said pivot plate members being vertically oriented and each of which has its lower end pivotally attached to said base frame assembly.

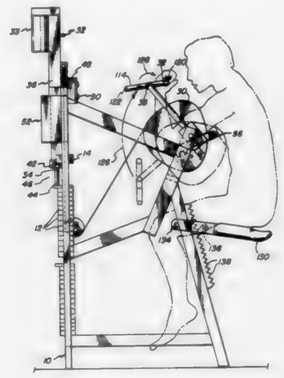
4,563,002
JUMP ROPE
George W. Jardine, 12 Lake Rd., Waltham, Mass. 02154
Filed Nov. 25, 1983, Ser. No. 555,053
Int. Cl.[4] A63B *5/20*
U.S. Cl. 272—75 1 Claim



1. A jump rope provided at its opposite ends with handles structured to enable swinging the rope without imparting twists thereto comprising a flexible rope of predetermined length and diameter, each handle comprising a rigid, elongate, hollow structure of circular cross section from end-to-end, said structure defining in axial alignment commencing at one end a first cylindrical opening of a larger diameter than the rope to rotatably receive one end of the rope with a clearance therebetween, a second cylindrical opening of larger diameter than the first cylindrical opening such that there is a first annular shoulder at the junction of the first and second cylindrical openings, a third cylindrical opening of larger diameter than the second cylindrical opening such as to define a second annular shoulder at the junction of said second and third cylindrical openings and a tapering opening of progressively increasing diameter extending from the second annular shoulder to the opposite end of the handle, said rope being rotatably positioned in the first cylindrical opening with an end extending into the second cylindrical opening, a deformable metal sleeve of larger diameter than the first cylindrical opening applied to the rope within the second cylindrical opening with an end abutting the first annular shoulder at the junction of the first and second cylindrical openings and the other end spaced from the end of the rope and pinched into clamping engagement therewith, said rope end protruding from the pinched sleeve, and a stopper force-fitted into the third cylindrical opening against the second shoulder at the junction of the second and third cylindrical openings, for preventing axial movement of the rope in the handle said first cylindrical opening being internally flared at its outer end to inhibit wear at the point of entrance of the rope into the sleeve, that portion of the sleeve coextensive with the first, second and third openings being of uniform external diameter and the remainder of the sleeve of tapering, progressively increasing diameter from the aforesaid uniform diameter to a larger diameter at the distal end.

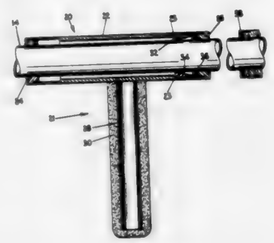
4,563,003
WEIGHT LIFTING APPARATUS HAVING INCREASED FORCE ON THE RETURN STROKE
Fernando Bugallo, 36 Greenwood Ave., Darien, Conn. 06820, and Rafael Giamba, 632 Newfield Ave., Stamford, Conn. 06905
Filed Apr. 15, 1983, Ser. No. 485,320
Int. Cl.[4] A63B *21/06*
U.S. Cl. 272—118 13 Claims

1. A weight-lifting apparatus operable by a person for weight training comprising:
a frame;
a plurality of weights mounted on said frame for generally vertical reciprocal movement from a rest position upwardly against gravity force to an upper position during a lifting stroke, and downwardly from said upper position under said gravity force to said rest position during a negative stroke;
actuating means operable to lift said weights against said gravity force and lower said weights under said gravity force; and;
means imposing a force in addition to said gravity force of said weights on said actuating means during at least a portion of said downward movement of said weights to



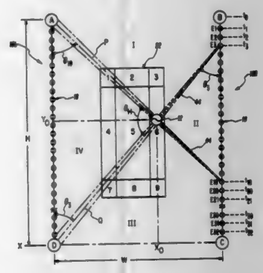
provide for restraint of a greater force on the negative stroke than on the lifting stroke.

4,563,004
FRICTION TYPE ISOKINETIC EXERCISE MECHANISM
Ernest M. Mattox, 3008 House Ct., NE., Belmont, Mich. 49306
Filed Oct. 18, 1982, Ser. No. 434,739
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—131 11 Claims



1. An exercise mechanism comprising:
an elongated rail;
a slide member mounted on said rail for sliding movement therealong; and
brake means on said slide member for frictionally resisting the movement of said slide member on said rail by a user, said brake means comprising a friction generating washer on said rail, ramp forming means in bearing relationship with said friction generating washer for transferring a component of a user's force on said slide member to said friction generating washer, said component of force being perpendicular to the axis of said rail and proportional to the force applied by a user to said slide member, whereby said brake means is adapted to provide frictional resistance to the movement of said slide member along said rail in direct proportion to the linear force applied to said slide member.

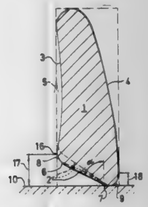
4,563,005
APPARATUS FOR EVALUATING BASEBALL PITCHING PERFORMANCE
Richard A. Hand, Arlington, and John L. Watkins, Plano, both of Tex., assignors to Fortune 100, Inc., Arlington, Tex.
Filed Jan. 10, 1984, Ser. No. 569,779
Int. Cl.[4] A63B *71/02, 71/06*
U.S. Cl. 273—26 R 9 Claims



1. Apparatus for detecting the presence of a projectile in a target zone comprising, in combination:
an optical receiver disposed adjacent to a target zone;
an array of optical emitters disposed in spaced relation adjacent the target zone, each optical emitter of said array being aimed for optical communication with said receiver; and,
a pulse circuit coupled to said emitters for sequentially energizing said emitters and emitting optical beam pulse signals to said receiver during a timed scan cycle.

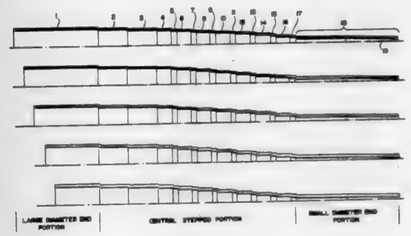
8. A method for detecting the presence of a projectile in a target zone comprising the steps:
sequentially emitting optical beams during a scan cycle of timed pulse intervals across a target zone by an array of optical emitters which are focused on a common receiver; and,
generating of a sequence of digital data words representing the reception and non-reception by said common receiver of the optical beams emitted during each pulse interval in the scan cycle.

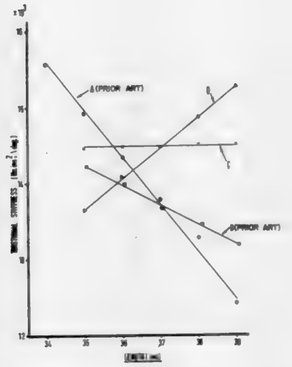
4,563,006
ICE-HOCKEY STICK HAVING BEVELLED LOWER SURFACE
Karl O. S. Hollner, Skaldvägen 6, 183 43 Täby, Sweden
Filed Apr. 12, 1984, Ser. No. 599,716
Claims priority, application Sweden, Apr. 29, 1983, 8302451; Canada, Oct. 13, 1983, 438894
Int. Cl.[4] A63B *59/14*
U.S. Cl. 273—67 A 17 Claims



1. An ice-hockey stick comprising an elongated blade which is slightly curved in its longitudinal direction, the blade having a bottom side and two main sides, a first main side being longitudinally concave due to the curved form of the blade, the first side being the forehand side of the blade and a second main side, being longitudinally convex due to the curved form of the blade, the second side being the backhand side of the blade, characterized in that the bottom side (2) of the blade (1) is constructed to have an effective bevel shape along a substantial portion of the length of the blade (1) with the bottom side (2) sloping from the forehand side (3) to the backhand side (4) of the blade (1), so that the blade face height is less on the forehand side than on the backhand side of the blade.

4,563,007
GOLF CLUB SHAFTS
George T. Bayliss, North Stourbridge; Edward S. Ahmad, and John A. Hutchcocks, both of Birmingham, all of England, assignors to Tl Accles & Pollock Limited, West Midlands, England
Continuation of Ser. No. 242,292, Mar. 10, 1981, abandoned. This application Sep. 27, 1982, Ser. No. 423,520
Claims priority, application United Kingdom, Mar. 13, 1980, 8008593
Int. Cl.[4] A63B *53/00*
U.S. Cl. 273—77 A 5 Claims





1. A method of producing a set of golf club shafts in which the length of each shaft within the set varies from the other shafts, each shaft being of tubular construction, the outer diameter of which reduces from a large diameter end portion, through a central stepped portion to a small diameter end portion, comprising; forming each shaft of desired length by varying the length of the large diameter end portion while keeping the lengths of the central stepped portions and small diameter end portion constant, and varying the wall thickness with the length of the shaft in order that the torsional stiffness of each shaft within the set as a function of their lengths, lie within 5% of a straight line having a gradient lying between zero and a positive value.

4,563,008

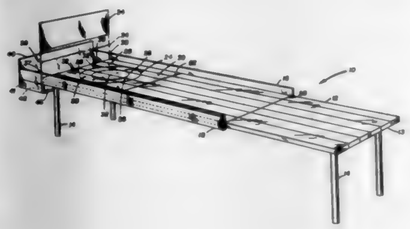
DEVICE FOR PLAYING A PLURALITY OF GAMES

Byron G. Fields, 6 W. 7th Ave., Baltimore, Md. 21225

Continuation-in-part of Ser. No. 395,721, Jul. 6, 1982, abandoned. This application Jul. 16, 1984, Ser. No. 631,341

Int. Cl.⁴ A63F *3/00*

U.S. Cl. 273—126 R **10 Claims**



1. A game structure for a plurality of games, comprising:
a playing surface, said playing surface having first and second ends, first and second sides, and a thickness;
an adjustable removable support means, said support means being suitably removably affixed to an underside surface of said playing surface, said support means adjustably elevating said playing surface to a suitable height for playing games thereon;
a catch pit, said catch pit being suitably assembled and affixed to said first end of said playing surface;
at least two side members, said side members being suitably affixed to said playing surface without spacing between said side members and said playing surface, one of said side members being affixed to said first side and one of said side members being affixed to said second side of said playing surface, said side members extending along only a portion of said sides of said playing surface, said side members being spaced from said second end of said playing surface;
a plurality of markings, said plurality of markings being permanently and suitably affixed to the uppermost surface of said playing surface, said plurality of markings consisting of at least two transverse lines across and spaced apart upon said playing surface, at least two concentric circles spaced apart, a plurality of small spaced apart circular spots, and a plurality of spaced apart numerals representing score amounts, a first line of said at least two transverse lines across said playing surface being spaced from said first end of said playing surface, and a second line of said at least two transverse lines across said playing surface being spaced from said second end of said playing surface which is opposite to said first end, said second line of said at least two transverse lines across said playing surface being in close proximity to ends of said side members spaced from said second end of said playing surface, said at least two concentric spaced apart circles being centrally located on and within that portion of said playing surface between said first end of said playing surface and said first of said at least two transverse lines, said plurality of small spaced apart circular spots are set in a triangular configuration, said triangular configuration having one single spot in a first row at the apex of said triangular configuration, two spaced spots in a second row spaced from said first row, three spaced spots in a third row spaced from said second row, and four spaced spots in a fourth row spaced from said third row, said fourth row being the base of said triangular configuration, said triangular configuration of said plurality of spots being centrally located between said at least two side members, said apex of said triangular configuration being spaced a greater distance from said first line of said at least two transverse lines than said fourth row of said spots is spaced from said first end of said playing surface, plurality of numerals representing score amounts are symmetrically located on and within the area of the playing surface between said first end of said playing surface and said first transverse line, said plurality of numerals being outside the outermost circle of said two concentric circles;
a plurality of game components, a first portion of said plurality of game components being removably affixed to said playing surface, a second portion of said plurality of game components being removably placed upon the surface of said playing surface, and a third portion of said game components being removably affixed to said side members, said game components being affixed and placed in a variety of combinations for a plurality of games, but at no time are all said game components affixed to or placed upon said playing surface for a specific game;
a plurality of playing pieces, said plurality of playing pieces further consisting of a plurality of a first playing piece, a plurality of a second playing piece, and a plurality of a third playing piece, each said first, second, and third playing piece being used for different games of said plurality of games, but at no one time is there more than one separate plurality of playing pieces used upon said playing surface for a specific game.

4,563,009

GOLF PUTTING PRACTICE DEVICE

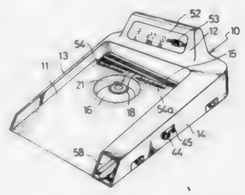
Haruki Nagasaki; Shoji Fujikawa, and Koichi Iwanaga, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 26, 1984, Ser. No. 654,565

Claims priority, application Japan, Oct. 24, 1983, 58-198853

Int. Cl.⁴ A63B *69/36*

U.S. Cl. 273—179 B **9 Claims**



8. A golf putting practice device comprising a ramp having a hole made therein for receiving a golf ball putted by a player, means disposed on the rear side of said ramp for conveying said ball caused to roll through said means to one lateral side of the ramp, means including a member rockable between a non-actuated position inside the hole to receive the ball dropped into the hole and an actuated position outside the hole for lifting the ball to have it discharged out of the hole rearward to said conveying means, and means disposed on said one lateral side of the ramp to receive the ball from the conveying means for returning the ball back to the player resiliently along the one lateral side of the ramp, said ramp surrounded on its rear and both lateral sides by a housing, said housing comprising a main housing part lying along the rear side and two side wall parts integrally connected to said main housing part and lying respectively along each of the lateral sides of the ramp, said ball conveying means comprises a ball rolling track extending along said main housing part as sloped into one of said side wall parts of said housing, and said ball returning means is disposed inside and on the rear side of said one side wall part of the housing through which a ball return path is provided, said main housing part provided with a count display to which an IN signal is provided from a pair of contactors operatively associated with said rockable member of said ball lifting means, and OUT detectors are provided on both sides of said hole to provide OUT signals to said display.

4,563,010

TRAINING DEVICE FOR GOLFERS

Kim C. McDorman, 717 U.S. 1, #606, Jupiter, Fla. 33450; William B. Boyington, 1517 15th Ct., Palm Beach Gardens, Fla. 33410, and Ronald K. Wynn, 9164 Sunrise Dr., Palm Beach, Fla. 33410

Filed Dec. 27, 1982, Ser. No. 453,623

Int. Cl.⁴ A63B *69/36*

U.S. Cl. 273—187 R **13 Claims**



1. A golf teaching device comprising:
an alignment assembly having a longitudinal axis and provided with a sight means for permitting a golfer, while addressing a golf ball, to see a substantial distance forwardly of the golfer along a line generally parallel to the desired flight of a golf ball;
an extension assembly adjustably attached to said alignment assembly;
a golf club facer assembly; and
means for adjustably attaching said golf club facer assembly to said extension assembly for aligning the face of a golf club perpendicular to the desired line of flight established by the alignment of said assembly and for positioning said golf club facer assembly at a desired distance from said alignment assembly.

4,563,011

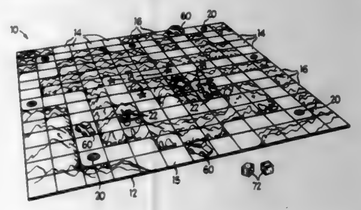
BOARD GAME

Michael J. Ferris, Chicago, and Wayne A. Kuna, Oak Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 19, 1983, Ser. No. 563,095

Int. Cl.⁴ A63F *3/00*

U.S. Cl. 273—243 **15 Claims**



1. A board game for two to four players comprising:
a game board divided into a grid work of spaces including a plurality of first and a plurality of second spaces;
each of the first spaces being contiguous with more than one and less than three of the other first spaces and having graphic indicia defining a contiguous, single space wide, tortuous road including generally parallel portions;
each of the second spaces having graphic representations of rough, off-road terrain;
generally parallel portions of the road being separated from each other by one or more of the second spaces;
a first token for each player including means distinguishing each player's first token from the first token of each other player movable upon the spaces;
means on the board designating a different starting space for the first token of each of the players;
the first token representing a four wheel drive vehicle and having shiftable indicator means for designating whether the first token is in "two wheel" drive for movement upon the first spaces or is in "four wheel" drive for movement upon the second spaces;
a second movable token for each player including means distinguishing each player's second token from the second token of each other player selectively placeable upon one of the first spaces;
means on at least four preselected ones of the first spaces designating the preselected ones as a starting space for a second token;
the second token representing a car and including means for alternatively representing an uncrushed car or a crushed car; and
chance means for determining the number of moves a player may make in a turn.

4,563,012

SEALING ARRANGEMENT FOR COUNTER-ROTATING SHAFTS

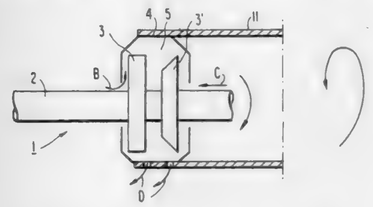
Horst Zimmermann, Munich, and Joachim Lorenz, Dachau, both of Fed. Rep. of Germany, assignors to MTU Motoren und Turbinen-Union Munich GmbH, Fed. Rep. of Germany

Filed Mar. 22, 1984, Ser. No. 592,249

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311121; Jan. 27, 1984, 3347779

Int. Cl.⁴ F16J *15/42, 15/44*

U.S. Cl. 277—13 **22 Claims**



1. A non-contacting sealing arrangement utilizing a fluid sealing medium between a first rotating part counter-rotating relative to a second rotating part, the sealing arrangement including centrifugal disk means disposed on one of said first rotating part and said second rotating part for centrifuging the sealing medium and means enabling introduction of the sealing medium between the first rotating part and the counter-rotating second rotating part.

4,563,013

DRILL CHUCK FOR A HAND-HELD DRILLING DEVICE

Josef Hunger, Olching; Hans-Christian Donner, Munich, and Anton Neumaier, Furstenfeldbruck, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan Fürstentum, Liechtenstein

Filed Mar. 20, 1984, Ser. No. 591,516

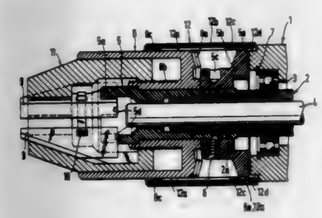
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1983, 3310372

Int. Cl.⁴ B23B *31/12*

U.S. Cl. 279—64 **8 Claims**

1. A drill chuck for a hand-held drilling device, such as a percussion drill, a hammer drill or the like, arranged to receive and hold the tool shank of a drilling tool, a chuck body having a front end and a rear end and having a central axis extending in the direction between the front end and the rear end thereof, at least two clamping jaws mounted in said chuck body and being radially displaceable relative to the central axis of said chuck body for releasably securing a tool shank in the chuck,

adjusting means for selectively positioning said clamping jaws, said adjusting means comprises an adjusting sleeve having a front end and a rear end and an axis extending between the front end and the rear end and parallel to the axis of said chuck body, and a bracing sleeve in engagement with and axially displaceable relative to said adjusting sleeve, said clamping jaws being slidably supported in said bracing sleeve and being mounted in said chuck body, said adjusting sleeve being rotatable relative to said chuck body for axially displacing said clamping jaws relative to said bracing sleeve for selectively securing or releasing said clamping jaws relative to a tool shank, said adjusting sleeve having gear teeth thereon arranged to be in meshed engagement with a ring gear key, said chuck body having an opening therein arranged to receive the key when the key is in meshed engagement with said gear teeth on said adjusting sleeve, a locking sleeve encircling and mounted



on said adjusting sleeve and being axially displaceable between a first position and a second position, said gear teeth are located adjacent the rear end of said adjusting sleeve, the rear end of said adjusting sleeve being located between the front end and the rear end of said chuck body, said opening in said chuck body located between the rear end of said adjusting body and the rear end of said chuck body, said locking sleeve providing a cover over said opening in said chuck body in the first position of said locking sleeve for preventing the engagement of the key in said opening and the meshed engagement of the key with said gear teeth so that said adjusting sleeve cannot be rotated relative to said chuck body, and said cover being displaceable in the axial direction of said chuck body in the second position of said locking sleeve for affording engagement of the key in said opening and the meshed engagement of the key with said gear teeth for rotating said adjusting sleeve relative to said chuck body.

4,563,014

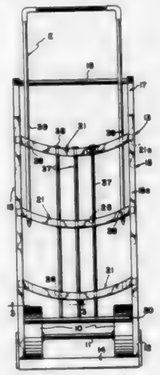
TWO-WHEELED HAND TRUCKS

Carl N. Mortenson, Midland, Mich., assignor to Magline Inc., Bay City, Mich.

Filed May 17, 1983, Ser. No. 494,779
Int. Cl.⁴ B62B *1/00*
U.S. Cl. 280—47.18 **20 Claims**

1. In a two-wheeled hand truck structure incorporating a pair of wheels; a primary frame, adapted in use to assume a vertically inclined position and having a forwardly projecting, load supporting, nose portion, supported on said wheels; the frame comprising an open framework with side rails connected by cross rails and at its upper end having a handle portion which can be grasped by the user to propel the truck; the improvement wherein: at least one of the cross rails comprises a generally U-shaped plastic bar having a base wall portion, spaced apart opposing side wall portions extending generally parallelly therefrom, and end wall portions integrally joining the base wall portion and opposing side wall portions; fastener means securing the ends of said one cross rail to said side rails; bar reinforcing tubular socket portions, spaced inwardly from said side rails and fasteners, and dispersed in spaced relation along said cross rail, having side walls projecting within said bar axially perpendicularly to said base wall portion along axes parallel to said opposing side wall portions of the bar; and rib sections extending integrally from said base wall portion at angles one to another, at least some of the rib sections being inclined with respect to said end wall portions at spaced intervals over the length of the cross rail and integrally also joined with the said opposing side wall portions and said socket side walls.

14. In a two-wheeled hand truck structure incorporating a pair of wheels; a primary frame, adapted in use to assume a vertically inclined position and having a forwardly projecting, load supporting, nose portion, supported on said wheels; the frame comprising an open framework extruded metal side rails connected by cross rails and at its upper end having a handle



portion which can be grasped by the user to propel the truck; the improvement wherein: at least one of the cross rails comprises a longitudinally curvilinear ,plastic bar with linearly extending end sections of square cross section; the rails having front and rear side walls and being recessed to snugly receive said end sections between said front and rear side walls whether the cross rail is disposed to present a rearwardly projecting, curvilinear surface to a curvilinear load or disposed in a position rotated 90 degrees thereto to present a flat surface to a flat surfaced load; and means for releasably securing said end sections to said rails.

4,563,015

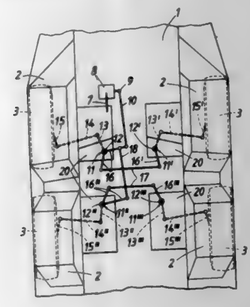
STEERING MECHANISM MOUNTING ARRANGEMENT

Hugo Lenhard-Backhaus, Vienna, and Anton Strassgürtl, Schwadorf, both of Austria, assignors to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Nov. 22, 1983, Ser. No. 554,263
Claims priority, application Austria, Dec. 1, 1982, 4360/82
Int. Cl.⁴ B62D *7/14*
U.S. Cl. 280—95 A **1 Claim**

1. A motor vehicle comprising
(a) a floor pan having stepped portions,
(b) at least one steerable axle and a pair of steerable wheels associated with the steerable axle and suspended from the floor pan adjoining the stepped portions on the outside thereof, and
(c) a steering mechanism for the pair of steerable wheels including
(1) a pitman arm,
(2) a pair of idler levers, each idler lever having an inner idler arm disposed above the floor pan and an outer idler arm disposed below the floor pan, the idler arms having radially outer portions, the outer portion of the inner idler arm being downwardly offset and the outer portion of the outer idler arm being upwardly offset,
(3) a respective shaft supporting each one of the idler levers and extending through the floor pan,

(4) a respective bearing for each one of the shafts mounted on a respective one of the stepped floor pan portions,
(5) a steering rod connected between the pitman arm and one of the idler levers,
(6) a centrally disposed tie rod disposed above the floor pan and connecting the inner idler lever arms,



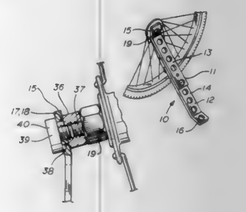
(7) a respective knuckle arm connected to a respective one of the steerable wheels, and
(8) a respective laterally disposed tie rod connecting the outer idler lever arms to a respective one of the knuckle arms.

4,563,016

REMOVABLE AND FOLDABLE STAND FOR BICYCLES

William K. Holleron, Jr., 2331 Cades Cove, Spring, Tex. 77373

Filed Feb. 27, 1984, Ser. No. 583,952
Int. Cl.⁴ B62H *1/02*
U.S. Cl. 280—293 **17 Claims**



13. A stand releasably attached to the end of the rear axle portion of a bicycle in a fixed position and extending at a small angle from the vertical to support the bicycle in a near vertical position, including
means releasably fitting over the end of the rear axle portion of a bicycle to secure said stand in said fixed position, comprising first and second support members in the form of elongated rectangular plate members each having a flat body portion and an angularly bent end portion,
means for pivotally connecting said first and second support members and allowing relative movement therebetween from a first extended position to a second folded and nested position,
means on one of said support members for locking the same in said first extended position or in said second folded and nested position,
said releasably-fitting means comprises a hexagonal opening disposed in at least one of said bent end portions to fit snugly over the axle nut of the bicycle wheel.

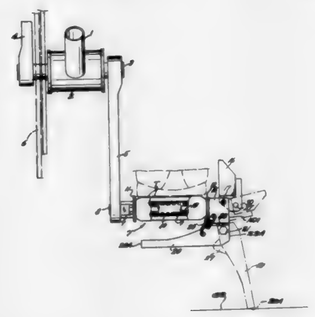
14. A stand releasably attached to the end of the rear axle portion of a bicycle in a fixed position and extending at a small angle from the vertical to support the bicycle in a near vertical position, including
means releasably fitting over the end of the rear axle portion of a bicycle to secure said stand in said fixed position, comprising first and second support members in the form of elongated rectangular plate members each having a flat body portion and an angularly bent end portion,
means for pivotally connecting said first and second support members and allowing relative movement therebetween from a first extended position to a second folded and nested position,
means on one of said support members for locking the same in said first extended position or in said second folded and nested position,
at least one of said bent ends having an opening therein,
said releasably attaching means comprises
a nut having one end supported on said bent end adjacent to said opening and being threadable onto the exposed threaded end of said axle,
a cap screw having a threaded portion smaller in diameter than said opening and a cap portion larger in diameter than said opening,
said threaded portion extending through said opening and threadedly secured in the extended end of said nut to secure the same tightly on said bent end portion, and
said nut being threadable onto the threaded end of said bicycle axle by rotation of said support members when in said extended position.

4,563,017

SUPPORT FOR A BICYCLE AND RIDER

James F. Kimball, 83617 Rattlesnake Rd., Dexter, Oreg. 97431

Filed Jan. 19, 1984, Ser. No. 571,942
Int. Cl.⁴ B62H *1/08*
U.S. Cl. 280—294 **5 Claims**



1. A pedal and stand combination for a two-wheeled vehicle to support same and a rider during momentary stops, said combination comprising,
a pedal assembly adapted at one end for attachment to the vehicle,
a stand assembly including,
a base in place on the remaining end of said pedal,
an arm pivotally mounted on said base and having a ground engageable end,
foot actuated trigger means slidably carried by said base and having cam means thereon,
said arm urged downwardly to an extended position during movement of said trigger means,
said arm having surfaces thereon engaged by said cam means, and means retracting said arm to a raised stowed position.

4. A pedal and stand combination for supporting a rider occupied two-wheeled vehicle while momentarily stopped and comprising,

a pedal assembly having inner and outer end plates and adapted at one end for attachment to the vehicle,

a stand assembly including,

a base in place on and extending outwardly from said outer end plate,

an arm pivotally mounted on said base and having a ground engageable end,

a foot trigger pivotally attached to said base and normally in an elevated position extending upwardly from the base.

a link pivotally attached at its end to said trigger and said arm,

means carried by said base and urging said arm to a retracted position and said trigger to its elevated position.

4,563,018

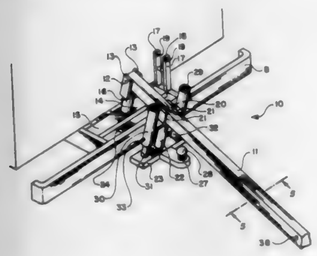
TOWING DEVICE

Edward C. Stage, P.O. Box 1133, and Gerald E. Rister, 1880 #E. Linda Ave., both of Marysville, Calif. 95901

Filed Oct. 7, 1983, Ser. No. 539,990

Int. Cl.⁴ B60P 3/06

U.S. Cl. 280—402 5 Claims



2. A vehicular towing device, comprising in combination:

a framework fastened to a rear portion of the frame of a towing vehicle proximate to the rear bumper,

an elongate, pivotally mounted elevation arm supported on one end by said framework,

said elevation arm having on an opposed end thereof an upwardly disposed socket adapted to receive therein a ball operatively associated with a towed vehicle, and

elevation means supported on said framework proximate said elevation arm and adapted to engage said elevation arm and raise and support same,

whereby a towed vehicle is engaged by said elevation arm and lifted above the ground surface so that one set of wheels is disengaged from contact with the ground so that the towed vehicle is trailered in an elevated position to improve tracking and reduce wear on the towed vehicle; and

wherein said framework has a support column, and wherein said elevation arm further comprises,

an elongate channel supported on one end by a horizontally disposed axle fastened to the upper end of said support column, so that said elevation arm can pivot in a vertical plane.

said support column having an outer cylinder overlying a fixed inner cylinder so that said elevation arm can rotate on a horizontal plane from an operative position to a storage position substantially parallel to the rear bumper of the towing vehicle, and

a socket on an opposed end of said elevation arm,

said socket directed upwardly to receive a downwardly directed ball affixed to the towed vehicle.

4,563,019

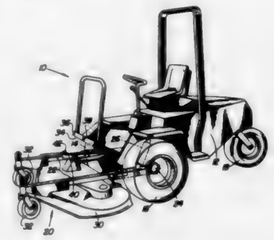
LATCH ASSEMBLY FOR HOLDING A FRONT MOUNTED IMPLEMENT IN RAISED POSITION

John B. Kuhn; Lloyd A. Wykhuis, both of Mayville, and David K. Stricker, Juneau, all of Wis., assignors to Deere & Company, Moline, Ill.

Filed Dec. 22, 1983, Ser. No. 564,600

Int. Cl.⁴ B60D 3/00; A01D 35/26

U.S. Cl. 280—481 1 Claim



1. In a vehicle having an implement mounted to the forward end thereof by a pair of hitch arms hydraulically controlled for movement between raised and lowered positions with said vehicle having a forward end structure extending above said implement and defining an upright, transverse wall, the improvement comprising: a hold-up link, in the form of a rigid strap, pivotally mounted to a top structure of the implement for swinging about a horizontal transverse axis; said hold-up link having a hook provided at a free end thereof and hook engaging means in the form of a hole being provided in said wall for selectively releasably receiving said hook when the hitch arms are raised whereby the implement may be selectively retained in its raised position without need of hydraulic power.

4,563,020

SKI VIBRATION DAMPER

Simon Arieh, and Guy Courvoisier, both of Geneva, Switzerland, assignors to Skis Dynastar SA, Sallanches, France

Filed Jun. 10, 1983, Ser. No. 503,350

Claims priority, application Switzerland, Jun. 11, 1982, 3619/82

Int. Cl.⁴ A63C 5/07

U.S. Cl. 280—602 17 Claims



7. A ski comprising a ski blade and a damping device mounted on said ski blade, said device comprising a receptacle provided with guide means defining an axis of oscillation substantially perpendicular to said blade, and an oscillating assembly in said receptacle including a plate shiftable on said guide means along said axis of oscillation and composed of a material having a specific gravity greater than 10 and having a thickness/diameter ratio between substantially 1/3 and 1/30, and a pair of plastic foam rings disposed on opposite sides of said plate, the ratio between the axial dimension of said plate and the axial length of said assembly being less than substantially 1/4, the mass of said plate and the resilience of said rings being such that said device reduces the acceleration by at least a factor of 2 for a frequency in the range between substantially 100 and 200 Hz, the axial dimension of said assembly being at most equal to 4 times the thickness of said blade at the finish portion thereof, said device being received at least in part within the thickness of said blade, said blade having an upturn

front end receiving said device, said receptacle being formed from two housing portions and having a cylindrical outer wall received in a cylindrical bore of said blade.

4,563,021

RELEASE MECHANISM FOR SAFETY SKI BINDINGS

Gerd Klubitschko, Oberau, Fed. Rep. of Germany, assignor to Marker International Company, Salt Lake City, Utah

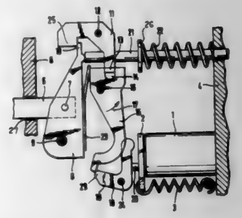
PCT No. PCT/EP82/00175, § 371 Date Apr. 15, 1983, § 102(e) Date Apr. 15, 1983, PCT Pub. No. WO83/00633, PCT Pub. Date Mar. 3, 1983

PCT Filed Aug. 17, 1982, Ser. No. 495,341

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132465

Int. Cl.⁴ A63C 9/086

U.S. Cl. 280—612 11 Claims



1. A release mechanism for safety ski bindings which generate release signals to effect unlatching of the binding, said mechanism being movable between a cocked and a releasing condition, and said mechanism comprising;

release means for releasing a ski binding latching mechanism from a latching to an unlatching condition, said release means including a release lever movable between a cocked position and a releasing position for releasing the binding to the unlatching condition;

biasing means for biasing said release means from a cocked to a releasing position, said biasing means including drive means movable between a cocked position and a releasing position for driving said release lever to the releasing position of said release lever, and spring means for urging said drive means to the releasing position of said drive means, said drive means assuming the releasing position in response to the generation of release signals;

retaining means for retaining said release lever in its cocked position; said retaining means movable between a retaining and a releasing condition;

holding means for holding said retaining means in its retaining condition; said holding means being movable between a holding and a releasing position;

said holding means moving to the releasing position in response to a release signal from the binding, to release said retaining means to its releasing condition enabling said release means to release the latching mechanism.

4,563,022

VEHICLE SUSPENSION SYSTEMS

Anthony W. Harrison, Birmingham, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

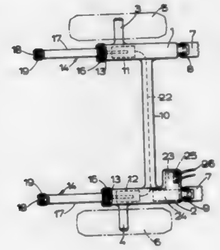
Filed Oct. 27, 1983, Ser. No. 545,826

Claims priority, application United Kingdom, Nov. 2, 1982, 8231339

Int. Cl.⁴ B60G 3/12

U.S. Cl. 280—708 13 Claims

1. A suspension system for a pair of wheels of a vehicle, said vehicle having a body, and said pair of wheels comprising first and second wheels, said system comprising first and second torsionally stiff members, each said torsionally stiff member being connected to said body, said first torsionally stiff member carrying an axle for said first wheel, and said second torsionally stiff member carrying an axle for said second wheel, first and second gas springs, each said gas spring having a volume of gas for supporting the load on a respective wheel, said first gas spring being mounted in said first torsionally stiff member and said second gas spring being mounted in said second torsionally stiff member, and lever means for transmitting relative movement of said body and said first wheel to said first gas spring, and for transmitting relative movement of said body and said second wheel to said second gas spring, said lever



means also being connected to said body, and comprising first and second levers, said first lever having a pivotal connection to said first torsionally stiff member, a first point, spaced from said pivotal connection, for connection to said body and a second point, spaced from said first point and said pivotal connection, at which said first lever acts on said first gas spring, said second lever having a pivotal connection to said second torsionally stiff member, a first point, spaced from said pivotal connection, for connection to said body, and a second point, spaced from said first point and said pivotal connection, at which said second lever acts on said second gas spring.

4,563,023

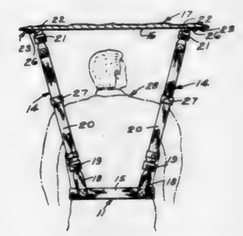
AMBULANCE SAFETY STABILIZER HARNESS FOR PARA-MEDICS

Larry E. Clarkson, 215 S. Main St., Nevada, Ohio 44849

Filed Dec. 21, 1983, Ser. No. 563,782

Int. Cl.⁴ B60R 21/10

U.S. Cl. 280—748 1 Claim



1. An ambulance safety stabilizer harness for para-medics, comprising, in combination, a nylon web belt, a quick release buckle on one end of said belt for adjustably receiving an opposite end of said belt; a pair of elastic loops received on said belt; a pair of adjustable support strap assemblies each of which comprises a short strap and a long strap, one end of each said short strap being fixedly stitched to a rear face of said belt and along spaced apart locations of said belt, said short straps extending angularly therefrom in diverging directions, a quick release buckle on an opposite end of each said short strap receiving one end of said long strap, an elastic loop received on said long strap and a common buckle on an opposite end of said long strap, and both said short and long straps being made of nylon webbing; and a pair of latch receivers for being mounted

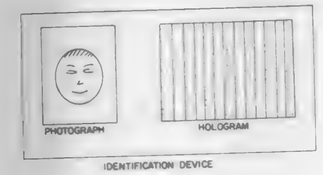
on an underside of a vehicle roof, each said latch receiver comprising a flat plate having a single mounting opening receiving a bolt fastener secured to said roof, and an angularly extending tongue formed on one edge of said plate being received in said common buckle of said long strap.

4,563,024

HOLOGRAM IDENTIFICATION DEVICE

Jeffrey Blyth, Third Dimension Ltd., Unit C5, Aladdin Works, Long Dr., Greenford, Middlesex UB6 8UH, England

Filed Mar. 16, 1983, Ser. No. 476,554
Int. Cl.⁴ B42D *15/00*; G03H *1/18*
U.S. Cl. 283—91 **13 Claims**



IDENTIFICATION DEVICE

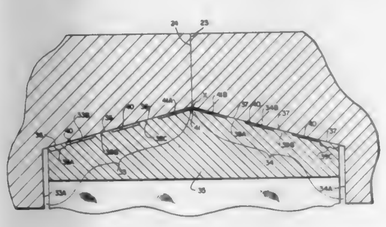
1. An identification device which incorporates a multi-colour hologram, the colours of which are visible by reflection of incident natural light, said hologram including a film emulsion which has been permanently deformed selectively in differing areas of the hologram, thereby to produce the multiple colours.

4,563,025

CONDUIT CONNECTOR STRUCTURE AND SEALING-RING THEREFOR

Jack L. Poe, Riverton, Utah, assignor to Rocky Mountain Nuclear Manufacturing and Engineering, Inc., West Valley City, Utah

Filed Jul. 1, 1983, Ser. No. 509,873
Int. Cl.⁴ F16L *25/00*
U.S. Cl. 285—334.2 **12 Claims**



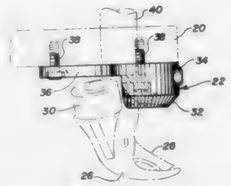
1. In combination, a pair of flange members having mutually-facing faces each provided with a mutually corresponding annular recess, such recesses having inner respective depths and forming inner, annular, inclined, conically straight-sided seal-seat surfaces, a metal, fluid sealing ring having a central interior axis and disposed in said recesses, said sealing ring having oppositely tapered, conically straight-sided opposite annular sides peripherally matching said recesses, each side being provided with vacant relief-groove means defining plural, ring-integral, mutually-spaced annular peripheral sealing lands engaging respective ones of said seal-seat surfaces, and means for advancing said flange members toward each other to compression-load at said sealing lands said sealing ring in radial directions throughout its length perpendicular to its central axis whereby to pressure-seat and thus seal said sealing lands of said ring against said seal-seat surfaces and thereby provide fluid seals thereat.

4,563,026

REPLACEABLE CAM MEMBER FOR KNOTTERS

LeRoy A. Crawford, New Holland; Robert E. Jackson, Terre Hill, and Earl A. Hudson, Leola, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Sep. 10, 1984, Ser. No. 648,919
Int. Cl.⁴ B65H *69/04*
U.S. Cl. 287—2 **5 Claims**



1. In a knotter including a main frame, a billhook supported on said main frame having a pair of jaws, a cam follower carried on one of said pairs of jaws for engaging a cam surface on a cam member, the improvement comprising said cam member having a cam section on which said cam surface is formed and a flange section, and fastener means extending through said flange section into said main frame detachably fastening said cam member to said main frame said flange section having a hole formed therein adjacent said cam section, and said billhook including a shaft extending through said hole.

4,563,027

DOOR SECURITY BRACE

Dardis W. Chechovsky, P.O. Box 751, Cherokee Village, Ark. 72525, and Joe H. Jenkins, Horseshoe Bend, Ark. 72512

Filed Jul. 19, 1984, Ser. No. 632,425
Int. Cl.⁴ E05C *17/54*
U.S. Cl. 292—339 **3 Claims**



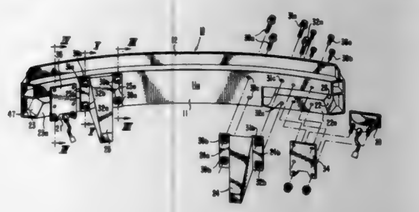
1. A door security brace comprising a length adjustable and lockable brace bar, a floor-engaging foot piece pivotally attached to the lower end of the brace bar on a horizontal pivot axis and having a bottom friction facing, a bifurcated door knob shank-engaging yoke pivotally attached to the top of the brace bar on a horizontal pivot axis which is parallel to the pivot axis of the foot piece, whereby the foot piece and yoke may assume horizontal and vertical perpendicular positions respectively during use with the yoke exerting upward pressure on a door knob shank perpendicular to the axis of the shank while the yoke is parallel to the plane of a door being secured, the foot piece having a substantially flat plate body and said friction facing comprising a compressible anti-slip pad secured to and covering the bottom face of said flat plate body, said yoke comprising a rigid substantially flat plate bifurcated by notching its top and bottom ends, the top end notch of the yoke being adapted to engage under and around a door knob shank and the bottom end notch of the yoke straddling the top of said brace bar, and said brace bar comprising a pair of inter-engaging longitudinally adjustable sections and means to lock said sections in selected adjusted positions.

4,563,028

REINFORCEMENT MEMBER FOR A VEHICLE BUMPER

Osamu Ogawa, Toyota, and Fumio Wakamatsu, Okazaki, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 29, 1983, Ser. No. 508,924
Claims priority, application Japan, Jul. 1, 1982, 57-100112[U]
Int. Cl.⁴ B60R *19/08*
U.S. Cl. 293—122 **6 Claims**



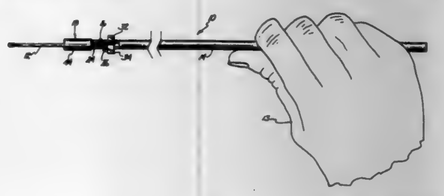
1. A reinforcement member for a vehicle bumper comprising:
a hollow and longitudinal reinforcement,
at least one opening formed on the back surface of the reinforcement,
at least one recess portion housing a direction indicator lamp formed on the front surface of the reinforcement by positioning the front surface of the reinforcement against said at least one opening, and
connecting means fixed to the back surface of the reinforcement and to said at least one recess portion and substantially closing said at least one opening, and the direction indicator lamp being connected to the connecting means.

4,563,029

MATCH HOLDER

Louis L. Luberacki, Minneapolis, Minn., assignor to Louis Joseph Luberacki, Minneapolis, Minn.

Filed May 11, 1983, Ser. No. 493,679
Int. Cl.⁴ B25J *1/04*; F23Q *25/00*
U.S. Cl. 294—19.1 **14 Claims**



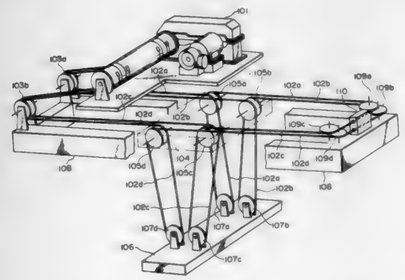
1. A match holder for holding a match while the match is lit, the holder comprising:
an elongated member having first and second ends;
match retaining means for frictionally holding the match within a bore positioned proximate the second end, the match retaining means including spaced first and second resilient members connected to the elongated member defining a slot therebetween and having first and second inner surfaces, respectively, defining the bore and resiliently clamping the match so that the match is frictionally held by the resilient members;
an ejector having a first section positioned and slidable within the slot and having a second section connected to the first section having a match engaging end, the second section being movable within through the bore to engage and eject the match when the ejector is moved from a non-ejecting position to an ejecting position; and
means for moving the ejector from the non-ejecting to the ejecting position to eject the match from the match retaining means.

4,563,030

ORIENTATION-CONTROLLING APPARATUS FOR A SUSPENDER OF A CRANE

Kazuhiro Makino, Kudamatu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 1, 1983, Ser. No. 547,584
Claims priority, application Japan, Nov. 1, 1982, 57-190858
Int. Cl.⁴ B66C *13/06*
U.S. Cl. 294—81.4 **11 Claims**



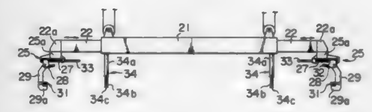
1. An apparatus for controlling an orientation of a suspender means of an overhead crane, the apparatus comprising: at least four cable means for supporting said suspender means from the overhead crame, a frame means, means for selectively moving said frame means so as to enable an adjustment of the cable means, a first threaded means mounted on said frame means for movement relative to said frame means in a first direction, a second threaded means mounted on said frame means for movement relative to said frame means in a direction opposite to said first direction, said first and second threaded means being arranged substantially in parallel to a direction of movement of said frame means, and wherein an end of two of said cable means is attached to said first threaded means and an end of the other two cable means is attached to said second threaded means.

4,563,031

TUBE HANDLING DEVICE

Takashi Kishimoto, Kawanishi; Kensaku Shimizu, Miki, and Yukito Nagai, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Sep. 19, 1984, Ser. No. 652,114
Claims priority, application Japan, Sep. 21, 1983, 58-176046
Int. Cl.⁴ B66C *1/28*
U.S. Cl. 294—81.21 **2 Claims**



1. A tube handling device comprising:
first beam means located horizontally and capable of moving vertically while maintaining a horizontal posture;
a plurality of second beam means supported for axial sliding movement with respect to said first beam means;
at least one claw support member supported at each of end portions of said plurality of second beam means for move-

ment in a direction perpendicular to the length of the second beam means;

claw members supported by said claw support members for sliding movement axially of the second beam means and pivotal movement about an axis perpendicular to the length of the second beam means;

first sensor means located on the underside of the first beam means or second beam means for sensing the relative positions of the beam means and tubes to be handled; and

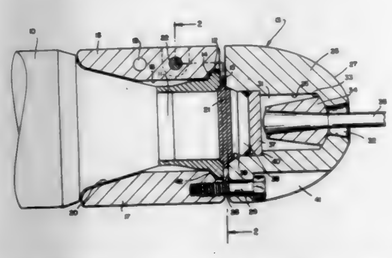
second sensor means attached to the claw members for sensing the horizontal relative positions of the claw members and the tubes to be handled.

4,563,032

PULLING HEAD FOR REMOVABLY ENGAGING A CONDUIT END

John P. Knowles, Quito, Ecuador, assignor to Texaco Limited, London, England

Filed Feb. 13, 1984, Ser. No. 579,639
Int. Cl.⁴ B66C *1/28*
U.S. Cl. 294—90 **11 Claims**



1. The combination with a conduit having an end fitting including a seal member carried at the face of the latter, and having a pressure rim for exerting a longitudinal pulling force on the conduit of;

a pulling head adapted to removably engage the conduit end fitting with a force applying means, whereby to exert said longitudinal pulling force, said pulling head comprising;

a plurality of discrete ring segments that cooperatively define an elongated sleeve having an axial opening therethrough which circumferentially registers about said conduit end fitting,

means forming a peripheral bearing lip in said axial opening,

a plurality of bolts which extend between adjacent ring segments removably engaging the plurality of ring segments to fix the latter into said elongated sleeve configuration and to position said peripheral bearing lip in abutting engagement with said pressure rim,

and a nose piece removably engaged in axial alignment with said elongated sleeve to form a liquid tight joint therebetween.

4,563,033

APPLIANCE CARRIER AND STORAGE DEVICE

Richard W. Schmutzler, R.D. 2 Box 245, Walton, N.Y. 13856

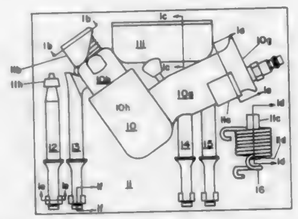
Filed Mar. 30, 1984, Ser. No. 595,057
Int. Cl.⁴ A45C *11/24*
U.S. Cl. 294—146 **8 Claims**

1. A device for carrying and storing a pistol shaped appliance which comprises:

(a) a rigid structural member in the shape of a plane;

(b) at least two projections from the plane of the structural member at least one of which is a releasable clamplike projection, the pistol shaped appliance being contacted at least two places on the under side for support and at least one place on the side away from the structural member to releasably secure the pistol shaped appliance to the structural member for carrying and storing;

(C) a reel means for receiving the electric cord or air hose of the pistol shaped appliance as it is wound, said reel means comprising a plurality of projections from the structural member near the periphery of the structural member, each said reel projection being spaced in from the periphery of



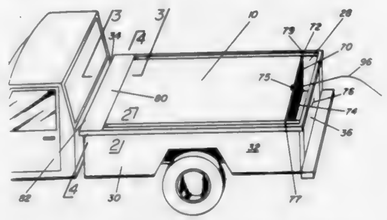
the structural member to allow the portion of the structural member between the reel projection and the periphery of the structural member to form one side of the reel and each said reel projection having a tab bent on it's outboard end parallel to the structural member and pointing away from the center of the structural member, the tabs on the outboard end of the reel projections forming the other side of the reel.

4,563,034

RETRACTABLE TRUCK BED COVER FOR PICK-UPS

Joe H. Lamb, 117 W. Fireclay Ave., Salt Lake City, Utah 84107

Continuation-in-part of Ser. No. 496,014, May 19, 1983, abandoned. This application Jul. 26, 1984, Ser. No. 634,750
Int. Cl.⁴ B60J *7/10*
U.S. Cl. 296—98 **11 Claims**



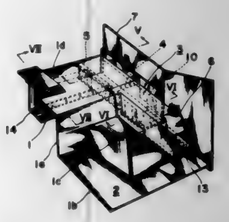
1. A cover for enclosing a bed of a truck having two side walls, a forward wall and a tailgate wall comprising a flexible impervious cover having a rigid leading edge, a rear section and two parallel beaded side edges for slidably engaging a pair of parallel tracks, one fixed to each of the side walls, said cover's rear section being fixed to a biased rotatable drum mounted to the said bed's side walls in a plane below a plane generated by the walls of said truck's bed, a holding means for retaining said cover fully extended, a flap fixed to said forward wall for extending over said biased rotatable drum said flap having an underhang sealing space for receiving and engaging a tongue fixed to the top side of said cover when said cover is fully extended.

4,563,035

AUTOMOBILE REAR BODY STRUCTURE

Kiyomi Hirakami, and Kosuke Murakami, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 4, 1984, Ser. No. 596,616
Claims priority, application Japan, Apr. 7, 1983, 58-62617
Int. Cl.⁴ B62D *25/08*
U.S. Cl. 296—195 **4 Claims**



1. An automobile rear body structure of a type comprising a rear floor panel having a rear end portion thereof stepped down from the remainder thereof to define a stepped-down area which forms a bottom part of a rear luggage compartment, and also having a pair of spaced openings one for each side of the body structure, said spaced openings being defined in the stepped-down area of the rear floor panel, and also comprising a pair of spaced longitudinal frames extending generally linearly through the associated openings in the rear floor panel in a direction lengthwise of the body structure, each of said longitudinal frames being constituted by a first frame member of generally U-shaped cross section, which is rigidly connected to the underside of the rear floor panel and a second frame member of generally U-shaped cross-section which is rigidly connected to an upper surface of the rear floor panel and arranged inside the luggage compartment, said first and second frame members being connected together at a peripheral lip region of the spaced openings in the rear floor panel.

4,563,036

VEHICLE ROOF WITH A COVER WHICH CLOSES A ROOF OPENING AND IS AT LEAST CAPABLE OF BEING SWUNG OUT

Kurt Bauer, Eberstadt, Fed. Rep. of Germany, assignor to Karosseriewerke Weinsberg GmbH, Weinsberg, Fed. Rep. of Germany

Filed Jan. 20, 1983, Ser. No. 459,670
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1982, 3201806
Int. Cl.⁴ B60J *7/10, 7/18*
U.S. Cl. 296—218 **10 Claims**



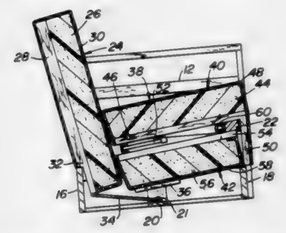
1. A vehicle roof having a roof opening, a cover for closing the roof opening and being movable between a closed position and an open position, said cover having a first end and a second end spaced apart in the normal travel direction of the vehicle and a pair of sides extending between said first and second ends, said first end leading said second end in the normal travel direction, said cover can be swung out from the closed position to the open position and in the area of its first end is hinged pivotally about a pivot axis extending generally parallel to said first end, a lifting device arranged for pivoting said cover between the open position in which it projects upwardly from the plane of said roof and the closed position in which said cover is located in the plane of said roof, said lifting device is arranged along at least one of said sides at a distance spaced from the pivot axis, wherein said lifting device comprises at least one unitary segment-shaped support having oppositely directed curved surfaces extending and curved in the direction between the first end and second end, a friction bearing having curved bearing surfaces shaped to correspond to and to movably guide said curved surfaces on said support, said support being positioned within and movable relative to said friction bearing, means for guiding said support comprising a first slot guide secured to said cover, said support having a first cantilevered lug extending outwardly therefrom transversely of the direction of said sides into said first slot guide, said first slot guide having two serially arranged sections disposed angularly relative to one another, with one said section serving to equalize the relative motion between said curved segment-shaped support and said cover, and said other section, aligned parallel to the path of motion of said segment-shaped support, serving to secure said cover in its closed position, wherein the improvement comprises that said first cantilevered lug is located adjacent the end of said support closer to said first end, a second cantilevered lug (**55**) extending outwardly from the same surface of said support as said first lug is arranged adjacent the opposite end of said curved segment-shaped support (**10**) from said first lug, a second slot guide separate and spaced from said first slot guide (**56**) is secured to said cover (**3**) and is open on both ends spaced apart in the direction of said sides extending between the first and second ends and is located closer to the second end of said cover relative to said first slot guide and in the closed position of said cover slopes upwardly towards the second end of said cover (**3**), and said first lug remains in said first guide slot in the open and closed position of said cover while said second lug is located in said second slot guide in the closed position of said cover and is displaced from said second slot guide in the open position of said cover.

4,563,037

CONVERTIBLE FURNITURE

H. Robert Tiffany, Philadelphia, Pa., assignor to Tiffany & Tiffany, Philadelphia, Pa.

Filed Nov. 4, 1983, Ser. No. 548,752
Int. Cl.⁴ A47C *13/00*
U.S. Cl. 297—105 **6 Claims**



1. In a convertible seating unit which converts from a seating configuration to a sleeper configuration, having a seat section extendable forwardly from the unit when the unit is in a sleeper configuration, the improvement comprising:

a frame having a bottom for resting on the floor;

a back section having a bottom edge, a top edge, a back side and a front side;

abutment means on the frame which cooperate with back side of back section for preventing rearward motion of the back section when it is in a seating configuration;

a link with the first end rotatably attached at the bottom edge of the back section at a point which is below the seat

sections when when the unit is in the seating configuration, and a second end rotably attached near the bottom of the frame at a location defining a radius of travel for the first end of the link to a point contiguous with the seat section when in the sleeper configuration;

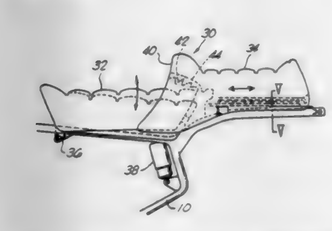
support means on the frame for supporting the back side of the back section in approximately coplanar relationship with the seating section when the unit is in the sleeper configuration.

4,563,038

MOTORCYCLE SEAT ASSEMBLY

Mutsuo Hirose, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 518,011
Claims priority, application Japan, Aug. 4, 1982, 57-136094
Int. Cl.⁴ B62J *1/00*
U.S. Cl. 297—243 **10 Claims**



1. A seat assembly for motorcycles, comprising

a first seat mounted on a motorcycle;

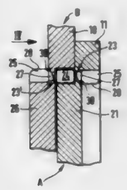
a second seat mounted on the motorcycle aft of said first seat and extending over a portion of said first seat, said second seat being adjustable fore and aft relative to said front seat, said second seat being in the form of an inverted channel extending over said first seat.

4,563,039

HINGE JOINT FOR USE IN THE SEATS OF MOTOR VEHICLES AND THE LIKE

Horst Jörg, Neuhemsbach, Fed. Rep. of Germany, assignor to Keiper Recaro GmbH & Co., Remscheid, Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,710
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3322178
Int. Cl.⁴ A47C *1/24;* **B21K** *1/30*
U.S. Cl. 297—362 **13 Claims**



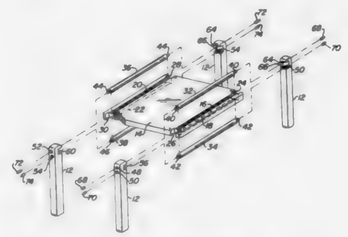
1. A hinge joint, particularly for changing the mutual positions of two parts of a seat in a motor vehicle or the like, comprising substantially plate-like first and second components each of which constitutes a stamping, said components having first sides facing each other and second sides facing away from each other, said first component having a depressed inner section and an outer section surrounding said inner section, said inner section extending beyond the first side of the outer section and constituting a spur gear having an annulus of active teeth at the first side and an annulus of passive teeth disposed at the second side of said inner section and alternating with said active teeth, said active teeth having rear sides at the second side of said inner section, said second component including a depressed inner portion and an outer portion surrounding said inner portion and said inner portion extending beyond the second side of said outer portion and constituting an internal gear having an annulus of active internal teeth at the first side of said inner portion and an annulus of passive teeth disposed at the second side of said inner portion and alternating with said internal teeth, said internal teeth having rear sides at the second side of said inner portion, said spur gear extending into said internal gear and at least one internal tooth being in mesh with the neighboring active teeth of said spur gear, at least one of said components having punched indentations disposed between the passive teeth thereof and provided in the rear sides of the respective active teeth; and means for coupling said components for angular movement relative to each other, said coupling means defining two pivot axes, one for each of said components.

4,563,040

FURNITURE ASSEMBLY

Ralph Alster, 1120 Belle Ave., Teaneck, N.J. 07666

Filed Oct. 15, 1982, Ser. No. 434,640
Int. Cl.⁴ A47C *4/02;* **A47B** *47/04*
U.S. Cl. 297—440 **15 Claims**



1. A furniture assembly comprising:

an elongated rigid panel;

securing means at opposite ends of the panel, the securing means including at least one coplanar channel extending along two opposite ends of the panel and a pair of notches at respective opposite ends of the channels;

elongated rods adapted to be received and rigidly supported in respective channels at the opposite ends of the panel;

a plurality of support members spaced about the edges of and abutting the panel, in alignment with the ends of said elongated rods, each support member including a hole at the upper ends of the member and adapted to receive the end of the respective rod, and a matching notch in an inner surface at the ends adjacent the holes engageable with respective notches at the channel ends; and

means for releasably fastening the opposing ends of the rods to the respective support member to rigidly secure the panel between the rods and to the support members, the rods, channels and matching notches coacting with the panel and support members to prevent rolling and rotation of the panel member with respect to the support members.

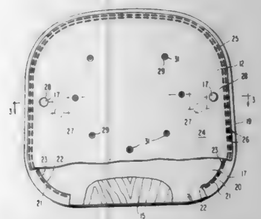
4,563,041

UPHOLSTERED SEAT FOR CLEAN ROOM USE

James W. Frobose, Haskins, Ohio, assignor to The Jasper Corporation, Easton, Md.

Filed Nov. 15, 1983, Ser. No. 551,914
Int. Cl.⁴ A47C *7/18*
U.S. Cl. 297—452 **4 Claims**

1. In upholstered furniture for industrial clean rooms, a body support portion comprising a substantially rigid panel member, a yielding cushion on and substantially covering one face of said panel member, a filtering element adjacent to the other face of said panel member and being formed of thin hydrophylic sheet material capable of preventing the passage therethrough of particles substantially as small as 0.2 microns, an air impermeable sheet material cover for said body support portion surrounding and enclosing said panel member and cushion and being in hermetically sealed relationship with the panel member and the filtering element, the panel member and said cover being provided with opening means whereby air can



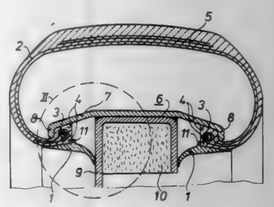
enter and leave the body support portion while passing through said filtering element, said filtering element comprising a filtering sheet which substantially covers said other face of the panel member and is hermetically sealed to the panel member around the margins of the panel member and filtering sheet by a continuous layer of air impermeable sealant, and said opening means comprising air passage openings formed through the panel member on one side of the filtering sheet and air passage openings formed through said cover on the other side of the filtering sheet.

4,563,042

COVERING RING FOR A VEHICLE WHEEL

Hans Seitz; Udo Frerichs, both of Langenhagen; Heinz-Dieter Rach, Garbsen, and Siegmund Spendel, Betheln, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Oct. 7, 1983, Ser. No. 540,194
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1982, 3237544
Int. Cl.⁴ B60B *7/00;* **B60C** *5/16*
U.S. Cl. 301—37 ST **9 Claims**



1. A covering ring for a vehicle wheel on which is mounted a pneumatic, belted tire having pull-resistant and compression-resistant cores in the tire beads; said wheel has a rim well, a rigid rim, and radially inwardly extending rim flanges, with a respective seating surface for receiving said tire being provided on the radially inner periphery of said rim next to each rim flange; that portion of the radially inner periphery of said rim between each seating surface and the rim well extends in such a way that it has an average diameter which is greater than the average diameter of said seating surfaces;

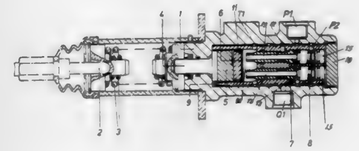
said covering ring being an annular body which has such a width that in the installed state covers the space between a given tire bead, the rim well, and that portion of said rim which extends axially outwardly from said rim well toward said given tire bead; said covering ring, in the installed state, has a radially inwardly facing surface which, when viewed in the transverse direction, extends in a direction ranging from being horizontal to being outwardly inclined in such a way that the radially inner diameter thereof increases from said rim well in the direction toward the axially outer part of said covering ring; at no point of the space which is to be covered is this radially inner diameter of said covering ring greater than the radially inner diameter of the mounted tire in the bead regions thereof.

4,563,043

DUAL-CIRCUIT MASTER VALVE

Hans Scheuering, Ebern, Fed. Rep. of Germany, assignor to FAG Kugelfisher Georg Schafer Kommanditelgesellschaft Auf Aktien, Fed. Rep. of Germany

Filed Dec. 30, 1983, Ser. No. 567,267
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1983, 3300267
Int. Cl.⁴ B60T *15/06*
U.S. Cl. 303—52 **6 Claims**



1. A dual-circuit master valve for hydraulically actuated power brakes, comprising:

a housing defining a pressing chamber and first and second valve slide openings connecting to the pressing chamber and extending in a first direction therefrom;

first and second valve slides slidably mounted in the first and second valve slide openings, respectively, each valve slide having an open end generally facing a second direction opposite the first direction and further having a fluid opening in the open end for flowing fluid; each valve slide being slidable in the first and second directions for controlling the flow of fluid in a respective brake circuit;

bias means for exerting a biasing force in the second direction for holding the first and second valve slides in a rest position; and

pressing means mounted in the pressing chamber for exerting a pressing force in the first direction against the open ends of the first and second valve slides in response to an actuating force, the pressing force overcoming the biasing force and sliding the valve slides in the first direction, the pressing means comprising a pressing member slidably mounted in the pressing chamber and having a pressing end disposed toward the open ends of the first and second valve slides, an elastic material being mounted to the pressing end for fitting against the open ends of both the first and second valve slides for covering the respective fluid openings, the elastic material being deformable for equalizing pressure in the brake circuits.

4,563,044

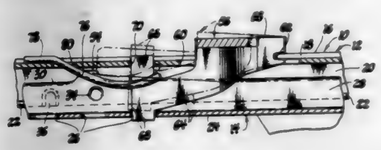
LATCHING ARRANGEMENT FOR SEAT SLIDE STRUCTURES

Richard W. A. Rees, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 8, 1985, Ser. No. 709,882
Int. Cl.⁴ F16C *29/10*
U.S. Cl. 308—3.8 **3 Claims**

1. A seat slide comprising, in combination, a pair of generally U-shaped internested track members, one track member

including a base wall located in opposed spaced relationship to a base wall of the other track member, bearing means movably supporting the one track member on the other track member for movement relative thereto, the base wall of the one track member including a first opening therein and a second-opening spaced from the first opening, the base wall of the other track member including a series of openings therein, each pairable with the second opening of the first track member, a latch member including a body portion fitting within the first opening of the one track member and a latch portion located between the base walls of the track members and including a pair of oppositely extending latch arms, cooperating means on the



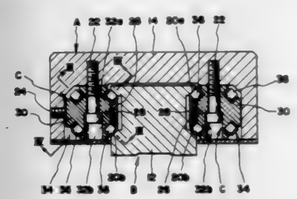
body portion of the latch member and an edge portion of the first opening of the one track member for pivotally mounting the latch member on the one track member for movement between: (1) a latched position wherein one latch arm of the latch member projects outwardly of the second opening of the one track member and the other latch arm projects outwardly of a paired opening of the other track member, and, (2) an unlatched position wherein the one latch arm projects further outwardly of the second opening of the one track member and the other latch arm is located inwardly of and out of engagement with any of the openings of the other track member, and resilient means biasing the latch member to latched position.

4,563,045

BEARING UNIT FOR SLIDING DEVICE

Ichiro Katayama, No. 23-1, 2-chome, Chuo, Ohta-ku, Tokyo, Japan

Filed Jul. 6, 1984, Ser. No. 628,628
Claims priority, application Japan, Oct. 14, 1983, 58-190645
Int. Cl.[4] F16C *29/06*
U.S. Cl. 308—6 C **2 Claims**



1. A bearing unit for a sliding device in which a sliding unit slides along a guiding member having guiding surfaces, said bearing unit comprising:

a bearing unit body mounted between the sliding unit and the guiding member, said bearing unit body having a generally quadrangular cross-section with two pairs of diagonally opposing edge portions and two end portions;

a first guiding slot forming a first circulating path with a first return section having an open side, said first circulating path being provided on one pair of diagonally opposing edge portions and around both end portions of the bearing unit body;

a second guiding slot forming a second circulating path with a second return section having an open side, said second circulating path being provided on the other pair of diagonally opposing edge portions and also around both end portions of the bearing unit body;

a first roller unit having a first plurality of rolls out of contact with but connected to each other in an endless chain and being slidably arranged in the first circulating path formed by the first guiding slot;

a second roller unit having a second plurality of rolls out of contact with but connected to each other in an endless chain and being slidably arranged in the second circulating path formed by the second guiding slot;

said first guiding slot having a depth greater than the depth of the second guiding slot at one of the two end portions of the bearing unit body;

said second guiding slot having a depth greater than the depth of the first guiding slot at the other of the two end portions of the bearing unit body;

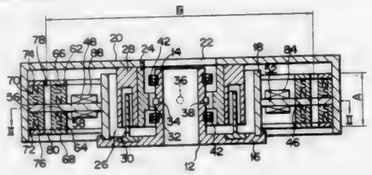
whereby the first and second pluralities of rolls encounter no friction on the open sides of the first and second return sections of the first and second circulating paths and, further, whereby each of the first and second pluralities of rolls remain completely out of contact with each other while traveling in the first and second circulating paths so that no friction is likewise encountered between the rolls.

4,563,046

FLYWHEEL APPARATUS

Yoshiharu Shimamoto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki and Director-General of National Aerospace Lab., Tokyo, both of, Japan

Filed Jun. 28, 1984, Ser. No. 625,617
Claims priority, application Japan, Jun. 30, 1983, 58-119313
Int. Cl.[4] F16C *39/06*
U.S. Cl. 308—10 **12 Claims**



1. A flywheel appartus of magnetic bearing type comprising:

a base having a central axis;

a rotor arranged to be rotatable around the central axis of the base;

a magnetic bearing device which is interposed between the rotor and the base to support the rotor, said magnetic bearing device including:

a first annular plate member of a magnetic material mounted on the base to be coaxial with the central axis of the base,

a second annular plate member of a magnetic material mounted on the rotor to be coaxial therewith and opposite of the first annular plate member along a radial direction of the apparatus, the first and second annular plate members defining a first annular gap therebetween substantially concentric with the rotor, and

magnetic circuit means having at least two closed magnetic circuits between the first and second annular plate members and having the first annular gap as a common magnetic path, the magnetic circuit means having, at least at the first annular plate member, a pair of first annular permanent magnets arranged to sandwich the first annular plate member, the first annular permanent magnets being magnetized in opposite directions along the axial direction of said rotor;

magnetic flux varying means for varying the density of the magnetic fluxes passing through the common magnetic path at a plurality of positions along a circumferential direction of the first annular gap;

detecting means associated with said base and rotor for detecting the eccentricity of the axis of the rotor with respect to the central axis of the base along the radial direction of the apparatus; and

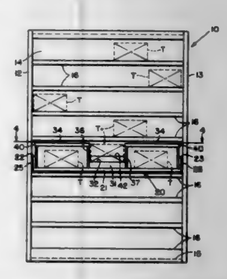
rotary driving means, interposed between the base and the rotor, for driving a rotation of the rotor around the central axis of the base.

4,563,047

CHECK FILING CABINET

Peter M. Braunschweig, Orchard Park, and Thomas J. Ruffles, Jr., Tonowanda, both of N.Y., assignors to Astronics Corporation, Orchard Park, N.Y.

Filed Aug. 8, 1983, Ser. No. 520,984
Int. Cl.[4] A47B *17/00*
U.S. Cl. 312—350 **3 Claims**



1. In a check filing cabinet including a frame having a pair of spaced, parallel side walls, and a plurality of vertically spaced, stationary shelves secured to and extending transversely between said side walls, and disposed releasably to support check-holding trays thereon, and a movable shelf mounted on said frame between a pair of said stationary shelves for limited horizontal sliding movement between an extended position in which it projects part way from the front face of said cabinet, and a retracted position in which it is fully seated in said cabinet with its forward edge registering approximately with the front face of said cabinet, said movable shelf having thereon a first, centrally disposed, plane operating surface that extends horizontally rearwardly from a straight portion of the forward edge of the movable shelf at least part way toward the rear edge thereof, and disposed releasably to support thereon a single one of said trays, the improvement comprising

means forming a pair of spaced, horizontally disposed, arm-supporting surfaces located adjacent opposite sides, respectively, of said plane operating surface and equispaced thereabove a predetermined distance equal approximately to the height of said one tray thereby to line in a common horizontal plane which registers with the upper end of the tray disposed on said operating surface,

said forming means comprising a pair of laterally spaced housings formed on top of said movable shelf adjacent the opposed side edges thereof, and flanking opposite sides, respectively, of said plane operating surface,

said housings projecting said predetermined distance above said operating surface, and being closed at their upper ends by coplanar top walls which define said spaced, arm-supporting surfaces, and

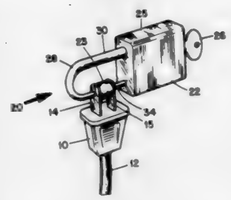
said housings and said plane operating surface being movable horizontally with said movable shelf between retracted positions within said cabinet and extended positions in which they also project from the front face of said cabinet, when the movable shelf is in its extended position.

4,563,048

LOCKING DEVICE FOR AN ELECTRICAL PLUG

Kwan S. Im, 5155 W. Winona, Chicago, Ill. 60630

Filed Jan. 11, 1985, Ser. No. 690,595
Int. Cl.[4] H01R *13/44*
U.S. Cl. 339—37 **9 Claims**



1. A locking device for preventing insertion of a male electrical plug into a receptacle, the plug having a pair of spaced prongs each defining an aperture spaced from its respective free end, the apertures having centers aligned along a common axis, the locking device including a lock having a housing with a locking mechanism and a shackle adapted to be moved between open and closed positions with the housing, the shackle being generally U-shaped and having two spaced end portions, one end portion being movably mounted to the housing and the other end portion being movable into and out of closed position with the housing, the combination comprising:

said other end portion of the shackle defining a section at the free end thereof with a cross-sectional diameter slightly less than the inner diameter of the prong apertures; and

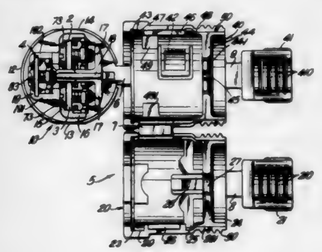
an electrically nonconductive spacer having a longitudinal bore extending therethrough adapted to receive said free end section of the shackle, whereby the plug is disabled when said spacer is placed between the prongs, said free end section is inserted through the prong apertures and said spacer bore, and the shackle is closed in locking engagement with the locking mechanism thereby preventing insertion of the prongs into a receptacle.

4,563,049

ELECTRICAL PLUG OF DEAD FRONT DESIGN

Ronald Thibeault, Canton, Conn., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation of Ser. No. 339,829, Jan. 15, 1982, abandoned. This application Jan. 28, 1985, Ser. No. 695,420
Int. Cl.[4] H01R *13/62*
U.S. Cl. 339—83 **19 Claims**



19. An electrical connector of the dead front type comprising:

a terminal block of insulating material having electrical terminal prongs extending therefrom, said electrical terminal prongs comprising a ground terminal prong and a pair of line terminal prongs, each terminal prong having a rear portion with a threaded opening therein, a wiring screw threaded into each threaded opening, the axes of the

threaded openings of each rear portion being substantially parallel to one another whereby the wiring screws of said ground and line terminal prongs are all commonly oriented in the same direction to facilitate wiring of the terminals;

a pair of housing portions;

a first hinge means integrally formed with said housing portions for hingedly interconnecting said housing portions along a first pivot axis; and

a second hinge means integrally formed with said terminal block and one of said housing portions for pivoting said terminal block about a second pivot axis perpendicular to said first pivot axis to a position interposed between said housing portions.

4,563,050

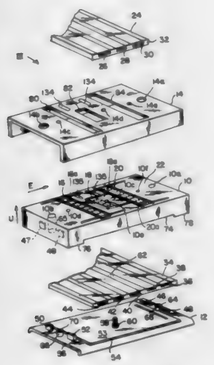
DEVICE FOR FLAT MULTICONDUCTOR CABLE CONNECTION

William S. Greenwood, Nutley, and Karl Weinmann, Watchung, both of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed Jul. 13, 1984, Ser. No. 630,794

Int. Cl.⁴ H01R *9/07, 29/00*

U.S. Cl. 339—99 R **22 Claims**



1. An electrical connection device for use in electrically connecting a first flat conductor cable having a given number of conductors to a second flat conductor cable having conductors in number greater than said give number, said device comprising:

(a) contact support means having first and second opposite side respectively for juxtaposition with said first and second cables; and

(b) first and second contact element sets having corresponding insulation-piercing contact elements interconnected to one another, said support means retentively supporting said first set of contact elements in fixed disposition at said first side thereof for registration with individual conductors of said first cable, said support means retentively supporting said second set of contact elements at said second side thereof for selective positioning into registry with individual conductors of said second cable so that by changing such positions of the second contact element set, while the positions of the contact elements of the first set remain fixed, a conductor of the first cable may be joined electrically to different ones of the conductors of the second cable.

4,563,051

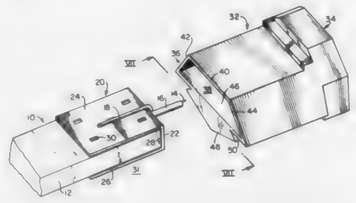
SHIELDED CABLE TERMINATION AND APPARATUS AND COMPONENTS THEREFOR

Joseph P. Slachetka, Ringoes, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Sep. 17, 1984, Ser. No. 651,403

Int. Cl.⁴ H01R *4/18*

U.S. Cl. 339—143 R **31 Claims**



1. Apparatus for terminating elongate, insulatively jacketed, shielded cable of the type having a signal conductor and a drain wire, comprising:

(a) a member for receiving said cable therein and compressible onto such received cable to resist mutual longitudinal movement therebetween, such compressible member providing longitudinal shielding for said cable, permitting passage of said signal conductor therethrough and defining seating surface for disposition of said drain wire; and

(b) a connector housing defining a channel for retentively receiving such compressible member with said cable therein, said housing including deformable wall means bounding said channel and responsive to deforming force applied thereto both for compressing said compressible member onto said cable and for electrically interconnecting said drain wire and said housing.

4,563,052

HIGH-FREQUENCY-PROOF ROUND PLUG CONNECTOR

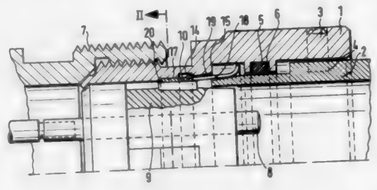
Bernhard Dietrich, Eichenau, Fed. Rep. of Germany, assignor to SDS Relais AG, Deisenhofen, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 419,833

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137261

Int. Cl.⁴ H01R *13/54, 13/06*

U.S. Cl. 339—143 R **3 Claims**



1. A cable connector comprising a cylindrical plug and a cylindrical socket insertable into one end of said plug and being secured thereto by cooperating bayonnet locking means, an O-ring set between said plug and socket to seal said one end of said plug, a contact inset supporting a cable inserted into the other end of said plug and cooperativing with said plug to seal said other end, and a resilient contactor ring slidably arranged within the sealed interior of the plug about said contact inset, said contactor ring comprising a comb-like spring strip having a crosspiece lying between the contact inset and the plug, comb roots extending radially outward toward said plug and comb teeth extending axially toward said socket having comb

and radially turned in a direction away from the central axis of the cable connector, the outer diameter of the contactor ring in the area of said comb teeth ends being greater than the exterior diameter of the socket when inserted into said plug, said plug having a pair of axially spaced annular grooves into which said comb root and comb teeth ends fit, said socket engaging said contactor ring to radially distend said comb roots and comb teeth to seat said contactor ring firmly in contact with said plug and socket.

4,563,053

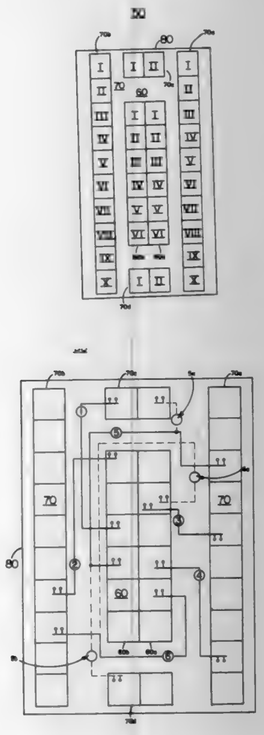
POLE MOUNTED CROSS-CONNECT TERMINAL

Laszlo Pavel, Palatine, Ill., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Mar. 21, 1984, Ser. No. 591,771

Int. Cl.⁴ H01R *13/14*

U.S. Cl. 339—242 **10 Claims**



1. An arrangement of feeder and distribution terminal blocks adapted for mounting in the enclosure of a cross-connect terminal comprising:

(a) feeder field means comprising:

(i) a first column having only a single end to end array of a predetermined number of said feeder blocks;

(ii) a second column having only a single end to end array of a predetermined number of said feeder blocks;

said first and second columns being mounted substantially in the center of said enclosure, parallel to each other and having an equal predetermined number of said feeder blocks; and

(b) distribution field means comprising:

(i) a first group having only a single end to end array of a predetermined number of said distribution blocks;

(ii) a second group having only a single end to end array of a predetermined number of said distribution blocks;

said first and said second groups being mounted parallel to each other and substantially at the periphery of said enclosure in a manner such that said columns separate said groups from each other, said groups having an equal predetermined number of said distribution blocks, the ratio of said distribution blocks predetermined number to said feeder blocks predetermined number being greater than one to one;

said feeder and said distribution blocks each having terminals thereon for interconnection with each other by jumper wires routed therebetween, said arrangement being such that said jumper wires are never routed outside of the perimeter of the rectangle formed by the outer edges of said distribution blocks to thereby allow for minimum routing of said jumper wires.

4,563,054

SPRING-PRESSURE CONNECTOR FOR ELECTRICAL CONDUCTORS

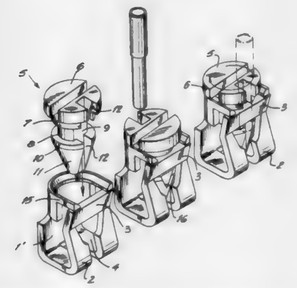
Manfred Wilmes, Detmold, Fed. Rep. of Germany, assignor to C. A. Weidmuller GmbH & Co, Detmold, Fed. Rep. of Germany

Filed Sep. 2, 1983, Ser. No. 528,762

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1982, 3238699

Int. Cl.⁴ H01R *11/22, 4/50*

U.S. Cl. 339—254 R **12 Claims**



1. In a spring-contact connector for electrical conductors, having a contact spring, an activating element and means mounting the activating element for rotation, the improvement wherein the activating element is substantially rotationally symmetrical and includes a conductor seating at one side thereof and along the longitudinal axis, a transverse slot intersecting the seating, a continuous positioning groove around the activating element at the level of the transverse slot, a head and a shoulder below the head and above the continuous positioning groove and transverse slot and wherein the means mounting the activating element comprises a counter bearing member having a top surface abutting the shoulder to limit downward movement of the activating element and a contact web at a free end of the spring, wherein the contact spring and web are integral with and bent out of the counterbearing member into a substantially U-shaped configuration having two arms and a base receiving the activating element therein with the counterbearing member forming one arm, the web and a portion of the spring forming the other arms and another portion of the spring forming the base, said other arm and said base being cantilevered from said one arm, wherein the contact web is aligned with the transverse slot and has a recess below the web configured to receive a portion of the activating element such that the contact web is received in the slot upon rotation

of the activating element between the contact web and the counterbearing member with a portion of the web above the recess abutting the positioning groove to limit upward movement of the activating element.

4,563,055

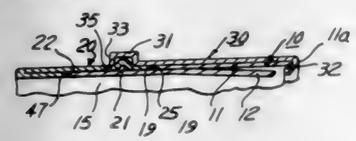
CONTACT ASSEMBLY FOR AN ELECTRICAL CONNECTOR

Valentine J. Hemmer, Sidney, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 499,689, May 31, 1983, abandoned. This application Feb. 4, 1985, Ser. No. 698,283

Int. Cl.⁴ H01R *13/11, 4/10*

U.S. Cl. 339—262 R **1 Claim**



1. An electrical contact assembly comprising:

a one piece inner sleeve formed from a unitary piece of sheet metal and adapted to receive a pin contact at the forward end and an electrical conductor at the rear end, said inner sleeve comprising a plurality of tines at the forward portion of said inner sleeve extending forwardly and adapted to mate with the pin contact, and a tubular hood portion having a forward end that is spaced from and surrounding said tines and a rearward end that terminates intermediate said inner sleeve in a rearwardly facing shoulder;

an outer sleeve telescopically mounted on the rear wire receiving portion of said inner sleeve, said outer sleeve having a forward end that abuts the rearwardly facing shoulder of said tubular hood portion of said inner sleeve, said outer sleeve further including a forwardly facing shoulder on the outside surface thereof; and

a second outer sleeve telescopically mounted over the tubular hood portion of said inner sleeve, said second outer sleeve including an enlarged portion having an internal rearwardly facing shoulder that engages the forwardly facing shoulder of said first outer sleeve, said enlarged portion being formed around the forwardly facing shoulder on said first outer sleeve to prevent axial movement of said first outer sleeve.

4,563,056

OPTICAL SYSTEM FOR LASER PRINTER

Takao Tagawa, Kashihara, and Toshio Urakawa, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 9, 1982, Ser. No. 396,828

Claims priority, application Japan, Jul. 28, 1981, 56-118766

The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.

Int. Cl.⁴ G02B *27/17*

U.S. Cl. 350—6.8 **8 Claims**

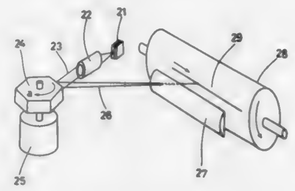
1. An optical system adapted for an apparatus for recording the information content of an electrical signal on the surface of a light sensitive medium by means of a plurality of scan traces across said medium, comprising:

source means for providing a light beam of high intensity modulated in accordance with electrical information supplied thereto;

reflector means having a plurality of contiguous reflective faces rotatable about a central axis;

rotation means for rotating said reflector means about said central axis;

focus lens means, disposed between said source means and said reflector means, for receiving and transmitting said light-beam emitted from said source means, said focus lens means including adjustment means for focusing the light beam on the light sensitive medium as a beam spot by rotating the focus lens means around its lens central axis; and



cylindrical lens means disposed between said reflector means and said light sensitive medium, for receiving and focusing said light beam to a substantially focused spot having a cross section of an approximate circle at the surface of said light sensitive medium.

4,563,057

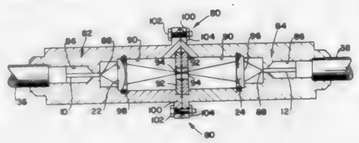
FIBER OPTIC CABLE CONNECTOR

Jacques E. Ludman, Westford; Joseph L. Horner, Cambridge, and Henry J. Caulfield, Nagog Woods, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 31, 1982, Ser. No. 413,295

Int. Cl.⁴ G02B *5/14*

U.S. Cl. 350—96.18 **10 Claims**



1. An optical fiber connector for coupling a pair of adjacent optical fibers together comprising:

first means for fixedly securing an end of a first optical fiber therein, said first optical fiber securing means having means therein optically aligned with said end of said first optical fiber for focusing an enlarged image of said end of said first optical fiber to a predetermined position;

second means for fixedly securing an end of a second optical fiber therein, said second optical fiber securing means having means therein optically aligned with said end of said second optical fiber for focusing an enlarged image of said end of said second optical fiber to a predetermined position; and

means for removably attaching said first optical fiber securing means to said second optical fiber securing means such that said predetermined position of said enlarged image of said end of said first optical fiber and said predetermined position of said enlarged image of said end of said second optical fiber coincide with each other when said first and said second optical fiber securing means are attached together.

4,563,058

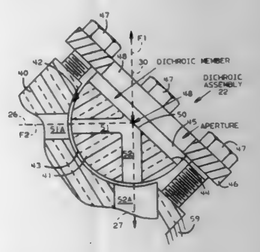
OPTICAL SIGNAL RECORDER EMPLOYING A TRANSDUCER HAVING AN ADJUSTABLE DICHROIC MIRROR

Raymond Yardy, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1984, Ser. No. 625,496

Int. Cl.⁴ G02B *5/14*; G01D *15/14*

U.S. Cl. 350—166 **17 Claims**



1. An adjustable dichroic mirror assembly, including, in combination:

a spherical optical member having a substantially planar optical surface means having a pivot point and which permits a light beam of a first frequency to pass therethrough and reflects a light beam of a second frequency different from said first frequency and means in the spherical optical member for internally transmitting light beams to and from a first face of said planar surface at about said pivot point through a spherically convex surface having a first radius about said pivot point and connected to said planar surface means and for transmitting light beams to and from a second face of said planar optical surface means at about said pivot point and which faces opposite to said first face, said optical surface means lying in a plane defined by two orthogonal axes;

an optical support member having compatible optical characteristics to said spherical optical member and having a hemispherically-concave outwardly-opening cavity having said first radius about said pivot point and movably receiving said hemispherical optical member along its spherically-convex surface for pivoting the spherical optical member about said pivot point; and

a retainer plate means adjustably secured to said optical support member for independent adjustments along said two axes of said planar surface means for pivoting said spherical optical member in said hemispherically-concave cavity about said pivot point, and said retainer plate means having an aperture coextensive with at least a predetermined portion of said optical surface means for permitting light beams having said first frequency to pass to and from said optical surface means with at least a predetermined portion of its Gaussian energy level.

4,563,059

SURFACE STABILIZED FERROELECTRIC LIQUID CRYSTAL DEVICES

Noel A. Clark, 3106 Kittrell Ct., Boulder, Colo. 80303, and Sven T. Lagerwall, 30 Snackvagen, Goteborg, Sweden

Continuation-in-part of Ser. No. 456,844, Jan. 10, 1983, abandoned, which is a continuation of Ser. No. 110,451, Jan. 8, 1980, Pat. No. 4,367,924. This application Jul. 7, 1983, Ser. No. 511,733

The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.

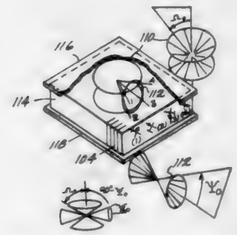
Int. Cl.⁴ G02F *1/137*

U.S. Cl. 350—330 **21 Claims**

1. A liquid crystal device comprising:

a quantity of ferroelectric liquid crystal having a plurality of adjacently disposed layers each comprised of a plurality of molecules, each molecule having a long axis, said molecules of said layers in a bulk of said liquid crystal forming helices having axes perpendicular to said layers; and

first and second means, each transverse to and contiguous with said layers, for containing said liquid crystal, at least said first means aligning the long axes of said molecules adjacent thereto at an angle $\Omega(\alpha)$ from the normal to said first means, said angle $\Omega(\alpha)$ being a predetermined function of an angle α, said angle α being an angle between a reference vector in a plane parallel to said first means and a projection of said long axes of said molecules onto said plane, the distance between said first and second means being less than the distance at which said helices form in the absence of an electric field, said first and second means causing said long axes to assume one of a plurality of stable orientations.



4,563,060

MICROSCOPE OBJECTIVE

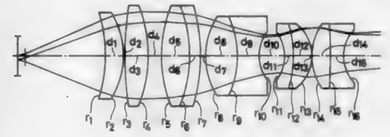
Masaaki Yamagishi, Tōkyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1984, Ser. No. 627,294

Claims priority, application Japan, Jul. 6, 1983, 58-122550

Int. Cl.⁴ G02B *9/62, 21/02*

U.S. Cl. 350—414 **6 Claims**



1. A microscope objective comprising a first, second, third, fourth, fifth and sixth lens components wherein said first lens component is a positive meniscus lens concave toward the object side, said second lens component comprises a positive lens component, said third lens component comprises a positive lens component, said fourth lens component is a cemented negative meniscus lens convex toward the object side, said fifth lens component is a cemented negative meniscus lens convex toward the image side, and said sixth lens component is a cemented positive meniscus lens concave toward the image side and said microscope objective fulfills the following conditions:

(1) $1.5f<|f_{IV\text{-}VI}|<2.5$, $f_{IV\text{-}VI}<0$

(2) $|r_1|>2.0f$, $r_1<0$

(3) $1.5<r_1/r_2<2.5$

(4) $0.8f<|1/\phi_{10}|<1.1f$, $\phi_{10}<0$

(7) $0.5<|f_V/f_{VI}|<1.5$, $f_V/f_{VI}<0$

where, reference symbols r_1 and r_2 respectively represent radii of curvature of the surface on the object side and surface on the image side of the first lens component, reference symbol f represents the focal length of the lens system as a whole, reference symbol $f_{IV\text{-}VI}$ represents the total focal length of the fourth, fifth and sixth lens components, reference symbol f_V represents the focal length of the fifth lens component, reference symbol f_{VI} represents the focal length of the sixth lens component, and reference symbol ϕ_{10} represents refractive power of the surface on the image side of the fourth lens component.

4,563,061

NIGHT VISION VIEWING SYSTEMS

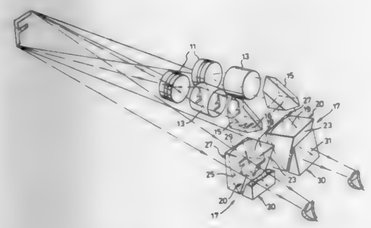
Stafford M. Ellis, West Sussex, England, assignor to Marconi Avionics Limited, England

Filed Jul. 24, 1984, Ser. No. 633,810

Claims priority, application United Kingdom, Aug. 3, 1983, 8320945

Int. Cl.[4] G02B *23/12, 23/06, 23/18, 23/10*

U.S. Cl. 350—503 **2 Claims**



1. An ergonomically attractive night vision binocular viewing system for use in high performance aircraft comprising:

(A) a helmet having a face aperture;

(B) a night vision goggle arrangement supported on the helmet from a position above said face aperture, said night vision goggle arrangement comprising:

(i) two independent viewing arrangements, one for each eye of a wearer of the helmet, each said viewing arrangement comprising:

(a) a frame part;

(b) supported by said frame part, an optical projector comprising:

(I) an objective;

(II) a roof prism; and

(III) an image intensifier arranged in conjunction with said objective and roof prism so that, when the helmet is worn, an intensified image of a portion of a scene ahead of the wearer is projected in a generally downwards direction in relation to said face aperture; and

(c) below said projector, in front of a respective one of the eyes of the wearer, an eyepiece of light refractive material having:

(I) an upper surface;

(II) fore and aft further surfaces spanned by said upper surface, said fore further surface possessing light reflecting and light transmitting properties, being concavely curved towards said aft further surface, and being positioned between fore and aft parallel planar external surfaces of said eyepiece;

(III) said upper and said fore and aft further surfaces being angularly mutually disposed so that rays of said intensified image from said optical projector

(i) enter said eyepiece at said upper surface

(ii) are substantially totally internally reflected by said aft further surface towards said fore further surface,

(iii) are reflected at said fore further surface rearwardly towards said aft further surface, and

(iv) finally are transmitted through said aft further surface to the respective wearer's eye, thereby to provide the wearer at that eye with a view of said intensified image superimposed on a direct view of said scene ahead of the wearer through said eyepiece;

(c) wherein the improvement comprises:

(i) in the optical projector of each said viewing arrangement for each eye the associated image intensifier is positioned between the objective and the roof prism;

(ii) said upper surface is constituted by an external planar face of a first part of said eyepiece for that eye,

(iii) said aft further surface is constituted by a second planar face of said first part,

(iv) said fore further surface is at an interface between a third face of said first part and a first face of a second part of said eyepiece,

(v) said fore planar external surface is constituted by a second face of said second part, and,

(vi) said aft planar external surface is constituted by a first face of a third part of said eyepiece, a second planar face of said third part being disposed in parallel spaced relation with said second planar face of said first part.

4,563,062

MICROSCOPE OPTICAL SYSTEM AND METHOD FOR MICROSCOPIC EXAMINATION

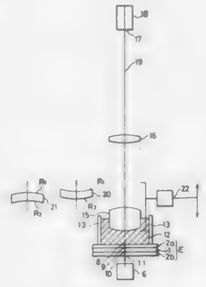
Fujio Kanatani, Yokosuka, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 370,479, Apr. 21, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 641,402

Claims priority, application Japan, Apr. 25, 1981, 56-61910

Int. Cl.[4] G02B *7/02*

U.S. Cl. 350—520 **14 Claims**



1. A microscope optical system for observation of two surfaces of an object maintaining both image position and image magnification constant, one of two object surfaces being positioned at a predetermined optical path length position from an objective lens and the other object surface being positioned at a different optical path length position from the objective lens, said optical system comprising:

a first objective lens for converting light rays from one of the object surfaces into parallel light rays, said first objective lens being movable along the optical axis thereof;

a second objective lens for converging the parallel light rays from the first objective lens;

means for moving the first objective lens along the optical axis with respect to said second objective lens so as to convert light rays from the other surface of the object into parallel light rays and then to attain focusing on said other object surface of the object; and

meniscus lens means having weak optical power insertable between said first objective lens and said second objective lens, said meniscus lens means including a meniscus lens having its concave surface directed toward the object side and having compensation function for spherical aberration resulting from the increase in the optical path length between said other surface of the object and said first objective lens as compared with the predetermined reference optical path length, said meniscus lens being disposed between said first objective lens and said second objective lens only when the optical path length between said other object surface of the object and said first objective lens is larger than the predetermined reference optical path length.

4,563,063

SUN SHADE AND HOLDING DEVICE

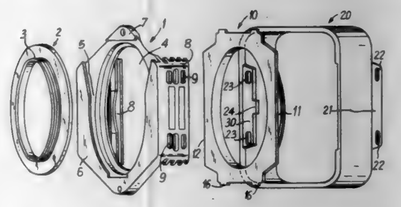
Jean C. Coquin, 15, rue Jean Bologne, 75016 Paris, France

Division of Ser. No. 244,951, Mar. 18, 1981, Pat. No. 4,443,061. This application Dec. 22, 1983, Ser. No. 564,320

Claims priority, application France, Mar. 20, 1980, 80 06225

Int. Cl.[4] G03B *11/04*

U.S. Cl. 350—580 **8 Claims**



1. A sun shade for releasable connection with radially-extending, opposite clips on an annular accessory for the lens of a still camera, said sun shade including an annular shade portion and two opposite latches projecting from the annular portion in an axial direction, each of said latches having at least one opening therein facing in a radial inward direction relative to the annular portion to receive clips on the accessory.

4,563,064

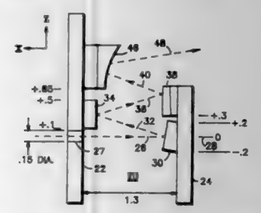
CONICAL FIELD-OF-VIEW RADAR TRANSMITTER SYSTEM

Anthony G. Garas, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 30, 1982, Ser. No. 403,392

Int. Cl.[4] G02B *17/06, 5/10*; H01Q *19/18*

U.S. Cl. 350—620 **8 Claims**



1. An optical transmission assembly comprising:

an off-axis cylindrical mirror element adapted for illumination by an optical pencil beam;

a flat mirror element oriented to receive a first reflection of said optical pencil beam from said off-axis cylindrical mirror;

a spherical toric mirror element oriented to receive a second reflection of said pencil beam from said flat mirror; and

a parabolic toric mirror element oriented to receive a third reflection of said pencil beam from said spherical toric mirror element, said parabolic toric mirror producing a segment of a conic-shell optical pattern having a conic half-angle in the range of from 15 degrees to 90 degrees.

4,563,065

PROTECTIVE GLASSES WITH TEAR-OFF LENSES

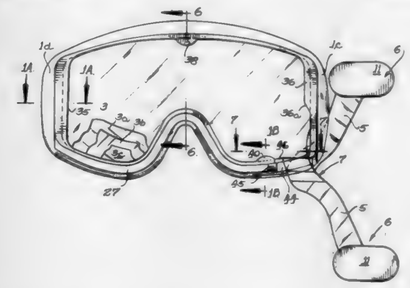
Franz Kreissl, Traun, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.

Filed Dec. 9, 1983, Ser. No. 559,788

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311456

Int. Cl.[4] G02C *1/00, 7/08*

U.S. Cl. 351—86 **7 Claims**



1. Protective glasses with removable lenses adapted to be torn away when dirty to reveal a new clean lens, said protective glasses comprising:

an eyeglass body for affixing to the head of the wearer;

a packet of tear-off lenses stacked for removal from the packet;

means on the eyeglass body to releasably retain each of the tear-off lenses in operative position to protect the eyes of the wearer,

gripping tabs connected to each lens at substantially the same location, and

hinge means for each grippng tab allowing the tab to be folded upwardly about its hinge so as to extend upwardly in a stowed position adjacent one side of the eyeglass body, the lower adjacent edge of the immediately underlying tear-off lens engaging and holding the tab of the immediately underlying lens in an upstanding, stowed position, and means on upper ends of the gripping tabs for causing the outermost tab to fall downwardly and to pivot about its hinge means to an operative downwardly extending grippig position as the lens immediately preceding in the packet is torn from the packet.

4,563,066

END PIECE OF A SPECTACLE FRAME EARPIECE

Walter Bononi, Zeppelinstrase 9, 7012 Feilbach-Schmiden, Fed. Rep. of Germany

Filed Oct. 6, 1983, Ser. No. 539,718

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1982, 3237501

Int. Cl.[4] G02C *5/14*

U.S. Cl. 351—122 **15 Claims**

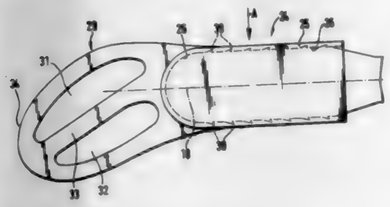
1. End piece of a spectacle frame earpiece having a metallic tang, a sheath of synthetic plastic material seated on said tang, said material being composed of silicone rubber having a Shore-D hardness of between 10–30 according to the DIN 53,505 standard, and the improvement wherein:

the end of said tang has a flattened cross-section in the lateral direction with barbs directed away from said tang over a length of between 0.5–1. cm.,

a very small synthetic plastic sleeve of flattened cross-section composed of substantially harder material is seated on said barbed region, said plastic sleeve has a blind hole with

a flattened cross-section that accommodates said barbed region with contracting stress, the points of said barbs biting into said plastic sleeve at its inner surface,

a small plate extends integrally on said plastic sleeve, said plate has a flattened cross-section approximately as long as said plastic sleeve and has at least one transverse orifice therein,



said sheath surrounds said plastic sleeve and said plate, forming one coherent part which is pushed to a seating position on said tang,

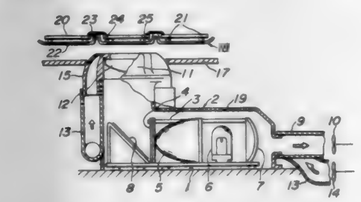
said tang is connected with said sheath inwards from said plastic sleeve, (viewed from the end of said tang) by an adhesive connection comprised of a primer on said tang and an adhesive on said primer.

4,563,067

COOLING DEVICE FOR OVERHEAD TYPE SLIDE PROJECTORS

Jiro Ozeki, Tokyo, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,164
Claims priority, application Japan, Mar. 31, 1983, 58-53732
Int. Cl.⁴ G03B *21/16*
U.S. Cl. 353—60 **8 Claims**



1. An overhead type transparency projector adapted to project pictures of transparencies carried in a transparency carrier, said projector comprising:

a framework with a base, a lamp house housing a light-source lamp and a first condenser lens spaced from the lamp, the lamp house having an open top end and a lower end thereof fixed to said base, a translucent diffusing plate mounted on an upper portion of said framework above said lamp house, a second condenser lens, and a lens-holder member for holding the periphery of said second condenser lens and fixed to an upper portion of the lamp house so as to extend upwards through said translucent diffusing plate, said lens holder member defining cooling passages between said member and said second condenser lens to permit cooling air to flow therethrough and into said lamp house;

supporting means for supporting a transparency above said second condenser lens; and

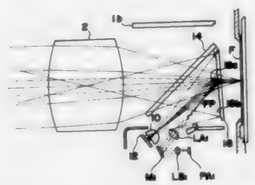
cooling means including a blowing fan, an air-blowing nozzle disposed below said transparency and adjacent to said lens-holder member and oriented obliquely relative to the axis of said second condenser lens and toward said transparency supporting means, a connecting tube extending between the discharge side of said blowing fan and said air-blowing nozzle, and a suction fan in communication with said lamp housing at a point on the opposite side of the light source from the side thereof on which the second condenser lens is positioned, whereby at least a part of the air from said air-blowing nozzle flows to a transparency being carried by said transparency supporting means to cool the transparency, and another part of the air therefrom passes through the passages in said lens-holder member and into said lamp house to cool the second condenser lens and the lamp house.

4,563,068

LIGHT MEASURING DEVICE FOR A SINGLE LENS REFLEX CAMERA

Kazuo Kimura, Sakai; Yasuo Yamazaki, Mino, and Hiromu Mukai, Kawachinagano, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 16, 1984, Ser. No. 580,872
Claims priority, application Japan, Feb. 18, 1983, 58-26844
Int. Cl.⁴ G03B *3/00, 7/099*
U.S. Cl. 354—402 **7 Claims**



1. A light measuring device for a single lens reflex camera having an objective lens and a finder system, comprising:

means, having a light dividing area, for dividing light which has passed through the objective lens into light reflected toward the finder system and light passed through said light dividing area toward a film plane;

means for reflecting the light which has passed through said light dividing area of said dividing means, said reflecting means being located behind the dividing means and in almost a parallel relationship to said film plane, said reflecting means having a first reflecting means constituted by a plane mirror for reflecting light incident on a predetermined area defined so as to be smaller than an area surrounded by marginal rays of a predetermined F-number of the objective lens, said marginal rays being incident on a point on which the optical axis of the objective lens intersects the film plane, and second reflecting means, provided around said first reflecting means, for reflecting light incident thereon, said second reflecting means having a diffusive characteristic;

means for detecting a focusing condition of the objective lens, said detecting means including at least a photo sensor array which has plurality of light receiving elements arranged in a row, said photo sensor array being directed to receive the light reflected from said first reflecting means; and

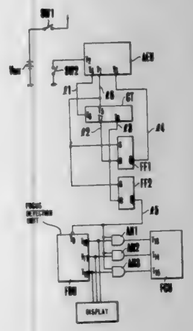
means for measuring light which has passed through said objective lens, said measuring means including at least a first light receiving element positioned to receive the light reflected from said second reflecting means, and means for condensing the light reflected from said second reflecting means into said first light receiving element, said condensing means being located near said first light receiving element.

4,563,069

CONTROL SYSTEM FOR CARRYING OUT FOCUS DETECTION AND LIGHT MEASUREMENT OF A CAMERA

Shinji Sakai, Tokyo, and Takashi Kawabata, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 459,986, Jan. 21, 1983, abandoned. This application Jan. 10, 1985, Ser. No. 690,381
Claims priority, application Japan, Feb. 3, 1982, 57-14821
Int. Cl.⁴ G03B *3/00, 7/093, 7/08*
U.S. Cl. 354—402 **12 Claims**



1. A control system for carrying out focus detection and light measuring of a camera comprising:

(a) light measuring means for measuring the light passing the photographing lens of the camera;

(b) focus signal producing means for detecting the light passing the photographing lens of the camera so as to produce a focus signal;

(c) exposure-in-progress signal generating means for producing a signal representing that an exposure is being made;

(d) first prohibiting means for prohibiting the operation of said light measuring means;

(e) second prohibiting means for prohibiting the operation of the focus signal producing means; and

(f) time means responsive to detection of the termination of the film exposure by the signal produced from said exposure-in-progress signal generating means for starting time count, said timer means having:

(A) a first terminal for carrying an output signal of suitable duration for rendering said first prohibiting means operative to prohibit said light measuring means from being substantially driven; and

(B) a second terminal for carrying an output signal of suitable duration for rendering said second prohibiting means operative to prohibit said focus signal-producing means from being substantially driven, said duration being longer than that of the signal produced at the first terminal.

4,563,070

EXPOSURE CONTROL APPARATUS

Syuichiro Saito, Kanagawa, and Tadashi Okino, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1983, Ser. No. 565,618
Claims priority, application Japan, Dec. 28, 1982, 57-230077
Int. Cl.⁴ G03B *7/085*
U.S. Cl. 354—416 **9 Claims**

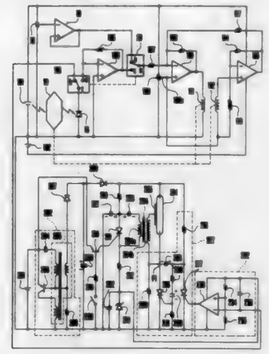
1. An exposure control apparatus comprising:

(a) diaphragm means having an aperture and arranged for controlling the amount of an exposure on a focal plane;

(b) light metering means for metering light through the aperture of said diaphragm means;

(c) control means for servo controlling said aperture by an output of said light metering means;

(d) signal output means for producing a signal for controlling the amount of light emitted from a flash device; and



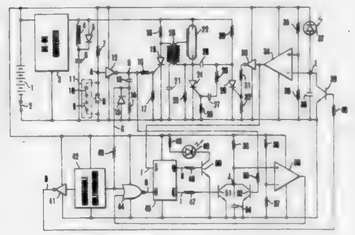
(e) changeover means for directing an output of said light metering means to either one of said control means and said signal output means.

4,563,071

CORRECT EXPOSURE ANNUNCIATOR CIRCUIT

Hiroyuki Katsuoka, Saitama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 429,511, Sep. 30, 1982. This application Nov. 19, 1984, Ser. No. 672,856
Claims priority, application Japan, Oct. 13, 1981, 56-163146
Int. Cl.⁴ G03B *15/05*
U.S. Cl. 354—473 **7 Claims**



1. A correct exposure annunciator device for a camera comprising:

correct exposure annunciator means;

timer means for producing a timing signal after the lapse of a certain predetermined time after a synchronization switch has operated; and

control means for operating the correct exposure annunciator means in accordance with generation of a correct exposure representing signal and deenergizing the correct exposure annunciator means with the generation of the timing signal from the timer means.

4,563,072

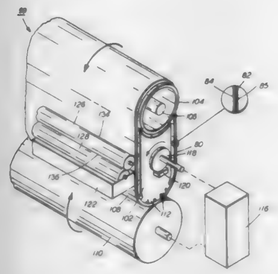
Patent Not Issued For This Number

4,563,073

LOW MASS HEAT AND PRESSURE FUSER AND RELEASE AGENT MANAGEMENT SYSTEM THEREFOR

Scott D. Reynolds, Endwell, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1984, Ser. No. 666,713
Int. Cl.[4] G03G *15/20*
U.S. Cl. 355—3 FU **26 Claims**



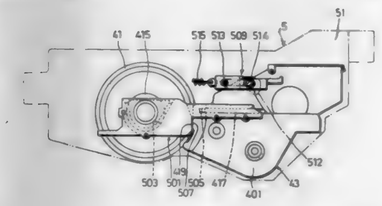
1. Heat and pressure fuser apparatus for fixing powder images to substrates, said apparatus comprising:
a low mass endless belt structure;
means cooperating to form a nip with said belt structure and simultaneously apply pressure to said belt structure;
means remote from said pressure applying means for elevating the temperature of said belt whereby said powder images are simultaneously subjected to heat and pressure as said substrates pass through said nip, said means for elevating the temperature of said belt being in contact with said belt;
means for effecting movement of said belt structure through said nip; and
a low mass release agent management system contacting said belt structure for applying release agent material without adversely affecting the fusing capability thereof.

4,563,074

ENGAGEMENT MECHANISM FOR A DEVELOPING MEANS IN ELECTROSTATIC COPYING MACHINE

Eiji Tsutsui, Amagasaki; Masahiro Yoshioka, Matsubara, and Masahiro Murakami, Shijonawate, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Nov. 27, 1984, Ser. No. 675,170
Claims priority, application Japan, Nov. 28, 1983, 58-225239; Aug. 30, 1984, 59-181136
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 DD **13 Claims**



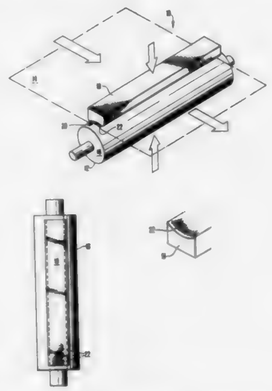
1. An engagement mechanism for a developing means in an electrostatic copying machine characterized in that
an original image is projected on a photoreceptor arranged on a rotary drum via a focusing device, forming an electrostatic latent image on said photoreceptor and positively changing the electrostatic latent image into a toner image by the developing means,
said mechanism comprising a supporting part supporting the rotry drum in freely movable fashion, a contact surface controlling a horizontal position of the developing means, and a supporting member having a guide which controls a vertical position; said supporting part, said contact surface, and said supporting member being provided on a supporting frame body which can be drawn out from a vertical front plate of a copying machine body, an engagement member rotatable in one direction from the standard position and movable toward the rotary drum in the standard position and arranged with a constant impetus thereto separately from the supporting frame body, and an engagement part which moves the developing means toward the rotary drum by engaging with an engagement part arranged at a fixed position of the developing means and which is provided in a fixed position on said engagement member.

4,563,075

DEVICE FOR PRESSURE FUSING IMAGES ON TO PAPER IN ELECTROSTATIC COPIERS

Michael B. Mosholder, Powell, Ohio, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 25, 1983, Ser. No. 545,462
Int. Cl.[4] G03G *15/20*
U.S. Cl. 355—3 FU **12 Claims**



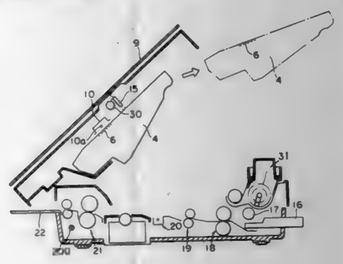
1. A pressure fixing device for a copying machine comprising:
a single driven roller for conveying a copy sheet onto which an image is to be fixed, said single driven roller having a contact area for contacting the surface of the copy sheet and applying a fusing pressure;
a housing adjacent said single driven roller said housing having a length substantially equal to the length of said single driven roller so that a nip is formed between said housing and said single driven roller and
a plurality of independent, freely movable rollers retained in said housing, each of said rollers having a contact area for contacting the the copy sheet and applying a fusing pressure to the copy sheet and applying a fusing pressure to the copy sheet, said contact area of each of said independent rollers being substantially less than the contact area of said single driven roller.

4,563,076

IMAGING APPARATUS

Sadao Takahashi, and Yukihiro Ohno, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jul. 27, 1984, Ser. No. 635,260
Claims priority, application Japan, Jul. 28, 1983, 58-117811
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 CH **8 Claims**



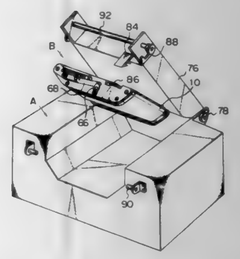
1. An imaging apparatus comprising:
a main housing;
a corona discharger mounted on said housing, said corona disacharger including a corona emitting means and a casing partly surrounding said corona emitting means and defining an opening;
an internal frame which is detachably mounted in position in said housing, said internal frame supporting an image bearing means and a grid electrode which is located opposite to said opening when said internal frame is mounted in position, thereby allowing said corona discharger to cooperate with said grid electrode for uniformly charging said image bearing means;
means mounted on said housing for forming an electrostatic latent image on said image bearing means by having the uniform charge dissipated selectively according to image information; and
developing means mounted on said housing for developing said latent image on said image bearing means thereby converting said latent image into a toner image.

4,563,077

REMOVABLE BELT MECHANISM FOR IMAGE RECORDING APPARATUS

Kenya Komada, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 455,611, Jan. 4, 1983, abandoned. This application May 29, 1985, Ser. No. 738,813
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 BE **2 Claims**



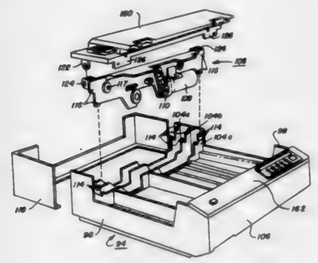
1. An image recording apparatus comprising:
a housing; and
an upper unit comprising a recording medium member shaped as an endless belt and a plurality of instruments which are arranged above said recording medium member to sequentially perform a series of predetermined recording steps, said upper unit being movable to an open position in which the upper unit becomes spaced from the housing;
the upper unit comprising a support member for integrally supporting the recording medium member and the instruments arranged thereabove, said support member being pivotally mounted on the housing;
the recording medium member comprising a belt cassette which is pivotally mounted on the support member in such a manner that when the upper unit is in the open position the belt cassette is pivotable away from the support member to a position at which the belt cassette is spaced from both the instruments and the housing;
the recording medium member comprising an endless belt, a drive roller member for drivably supporting the endless belt and a mechanism for imparting a predetermined tension to the endless belt;
the recording medium member further comprising a mechanism for allowing the tension to be automatically removed from the endless belt when the upper unit is moved to the open position.

4,563,078

ELECTROSTATOGRAPHIC APPARATUS FRAME WITH PLURAL ALTERNATIVE MOUNTING ELEMENTS

Joseph Fantuzzo, Webster; Edwin R. Monkelbaan, Fairport, and Henry R. Till, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1984, Ser. No. 645,962
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R **12 Claims**



1. An automatic reproducing apparatus comprising a frame assembly for mounting thereto individual reproducing apparatus components, said frame assembly including a lower frame member having a plurality of alternate mounting elements attached thereto for mounting at least one reproducing apparatus component thereto, said mounting elements being spaced from each other and arranged in parallel fashion in one direction from one side of the frame member to the opposite side of the frame member whereby components may be mounted to said lower frame member at one of said alternate mounting elements of the plurality of mounting elements to provide the assembly of automatic reproducing machines having one of a plurality of process widths corresponding to the distance from said one side of the frame member to said one of said alternate mounting elements.

4,563,079

IMAGE FORMATION APPARATUS WITH VARIABLE SCANNING STROKE

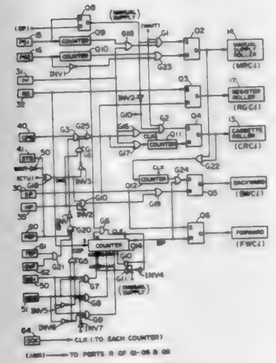
Tsuneki Inuzuka, Machida; Yoshihiro Kawatsura, and Masato Ishida, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 486,874, Apr. 21, 1983, abandoned, which is a continuation of Ser. No. 149,430, May 13, 1980, abandoned. This application Apr. 12, 1984, Ser. No. 598,545

Claims priority, application Japan, May 17, 1979, 54-60786; May 17, 1979, 54-60788; Jul. 16, 1979, 54-98986[U]

Int. Cl.⁴ G03G *15/28*

U.S. Cl. 355—8 **22 Claims**



1. A copying apparatus having:

a container for holding a number of copy sheets;

an image formation station;

first feed means for feeding a copy sheet from said container to said image formation station;

second feed means for feeding a manually supplied copy sheet to said image formation station;

means for exposure-scanning an original image with one of predetermined different scanning stroke lengths to form a copy image on a copy sheet at said image formation station;

first detector means for detecting the size of the copy sheets in said container and generating a first signal indicative thereof;

second detector means for detecting the size of a manually supplied copy sheet and generating a second signal indicative thereof; and

control means for controlling the movement of said scanning means by selecting one of first, second and third scanning stroke lengths in response to a first signal generated by said first detector means in the case of copying on a copy sheet fed by said first feed means, and by selecting one of said first and second scanning stroke lengths in response to a second signal generated by said second detector in the case of copying on the copy sheet fed by said second feed means.

8. An image formation apparatus comprising:

an image forming station;

means for forming an image at said image forming station on a manually supplied sheet;

means for detecting the insertion of said sheet;

means for feeding said sheet to said image forming station; and

control means for driving said feeding means and initiating an image forming operation with a delay of predetermined time after the detection of said sheet by said detecting means, wherein the control means does not initiate said image forming operation even after the lapse of said predetermined time if the sheet is removed before the lapse of the predetermined time after the sheet detection by said detecting means.

4,563,080

ELECTROPHOTOGRAPHIC LIQUID DEVELOPING APPARATUS AND METHOD

Thomas W. Ottley, Orwell, England, assignor to P.A. Management Consultants Limited, London, England

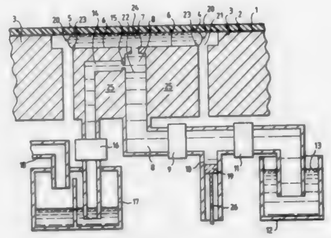
PCT No. PCT/GB83/00142, § 371 Date Jan. 16, 1984, § 102(e) Date Jan. 16, 1984, PCT Pub. No. WO83/04113, PCT Pub. Date Nov. 24, 1983

PCT Filed May 19, 1983, Ser. No. 589,095

Claims priority, application United Kingdom, May 19, 1982, 8214631

Int. Cl.⁴ G03G *15/10*

U.S. Cl. 355—10 **18 Claims**



1. A method of applying liquid toner to a predetermined part of an electrophotographic film, which comprises:

(1) supporting on a support means the electrophotographic film at a predetermined distance from an electrode having a flat surface defining a toner supply orifice, such that the predetermined part of the electrophotographic film is adjacent to said flat surface of the electrode and such that the support means is in contact with the electrophotographic film at regions spaced from said predetermined part; and

(2) delivering a predetermined quantity of liquid toner through said toner supply orifice so as to form a region of toner between, and in contact with, (a) the electrode and (b) the predetermined part of the electrophotographic film, the quantity of liquid toner delivered being such that the region of toner between the electrode and the electrophotographic film is retained, by surface tension, in position over said predetermined part and out of contact with said support means.

4,563,081

APPARATUS FOR CONTROLLING IMAGE FORMING CONDITION

Yasushi Sato, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1983, Ser. No. 456,380

Claims priority, application Japan, Jan. 12, 1982, 57-2314; Jan. 12, 1982, 57-2315

Int. Cl.⁴ G03G *15/00*

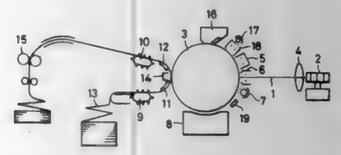
U.S. Cl. 355—14 CH **20 Claims**

1. An image recording apparatus comprising:

image recording means for forming spaced images on a continuous recording member;

detecting means for repeatedly detecting an image recording condition associated with an area between the images on said recording member during a continuous image recording operation; and

control means for controlling said image recording means in accordance with an output signal from said detecting means, said control means being adapted, when said image recording condition detected by said detecting means falls outside of a predetermined range, to control said image recording means so as to bring said image recording condition into said predetermined range.



4,563,082

COPYING MACHINE WITH AUTOMATIC DOCUMENT FEEDER

Yukio Sato, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

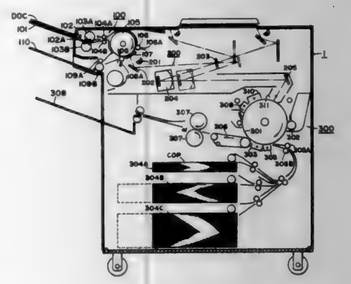
Continuation of Ser. No. 320,706, Nov. 12, 1981. This application Jun. 25, 1984, Ser. No. 624,291

Claims priority, application Japan, Nov. 18, 1980, 55-161426; Nov. 18, 1980, 55-161427; Nov. 20, 1980, 55-162571; Nov. 20, 1980, 55-162572; Nov. 21, 1980, 55-163197; Nov. 29, 1980, 55-167378; Nov. 29, 1980, 55-167379

The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—14 SH **15 Claims**



1. A copying machine having an automatic document feeder comprising:

movement and feed out means for moving and feeding out an original to be scanned, said means moving the original circulatively in one direction;

image forming means for forming an image on a recording material according to the original at a selectable magnification;

feeding means for feeding the recording material to said image forming means; and

control means for controlling the operation of said feeding means in accordance with a timing signal which is varied according to the selected magnification and for causing a moving velocity of the original moved by said movement and feed out means and an image forming velocity of said image forming means to vary relatively to each other in accordance with the selected mangification.

4,563,083

PHOTOGRAPHIC PRINTING APPARATUS

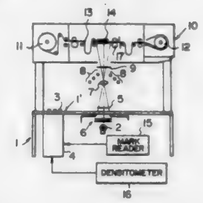
Kazuo Shiota, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1984, Ser. No. 594,243

Claims priority, application Japan, Apr. 11, 1983, 58-63287

Int. Cl.⁴ G03B *27/80*

U.S. Cl. 355—38 **7 Claims**



1. A photographic printing apparatus for photometrically detecting the density information on three primary colors consisting of red, green and blue in an original recorded in a negative film, and for determining exposure conditions of said negative film by combining said density information with printing setting conditions in said photographic printing apparatus and an exposure correction amount according to a picture pattern,

wherein the improvement comprises the provision of a means for discriminating exposure information located on a first print, means for memorizing exposure conditions of said first print corresponding to said exposure information, and keyboard means for inputting an exposure correction amount of a remake print with respect to said first print, whereby exposure conditions of said remake print are determined by combining said exposure conditions of said first print with said exposure correction amount of said remake print with respect to said first print.

4,563,084

METHOD AND APPARATUS FOR FORMING COMPLEX PHOTOGRAPHIC IMAGES FROM A SET OF OBJECT-FIGURES

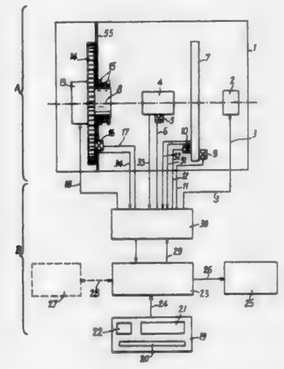
Eric S. Hayat, 5, rue Paulin Mery, 75013 Paris, and Max P. de Ferran, 4 Grande Rue, Bazainville, 78550 Houdan, both of France

Filed Jun. 13, 1983, Ser. No. 503,844

Claims priority, application France, Jun. 23, 1982, 82 10969

Int. Cl.⁴ G03B *27/52*

U.S. Cl. 355—40 **8 Claims**



1. A device for forming composite images on a photosensi-

tive support from a pre-defined set of object-figures in accordance with a computer program corresponding to a specific desired application, the device comprising:

a light source controllably adapted to flash;

means for selectively controlling the flashing of the light source in accordance with the computer program;

a photographic optical system;

a photosensitive support positioned on the optical axis of the photographic optical system to allow an image to be formed thereon;

a support having mounted thereon an array of object-figures, the object-figures being arranged in frames of identical formats, the photosensitive support having the same format as the format of the object-figures;

a substantially ambient light-tight enclosure for housing the light source, light source control means, optical system, photosensitive support and object-figure support;

means for rotating the photosensitive support about the optical axis relative to the object-figure support;

means for selecting and positioning an object-figure in an object position on the optical axis of the photographic optical system;

means for shifting the selected object-figure relative to the photosensitive support along two directions perpendicular to the optical axis;

calculating means programmed in accordance with a predetermined combination of object-figures according to the specific application, for controlling the photosensitive support rotating means, the object-figure selection means and the object-figures shifting means; and

a key board having data input keys for causing the photosensitive support to be exposed by sequential flashing of the light source, wherein selected object-figures are positioned individually in the object position along the optical axis and the photosensitive support is positioned rotatively about the optical axis in a sequence automatically controlled by the computer program of the calculating means based on data initially supplied in a single operation by the operator.

4,563,085

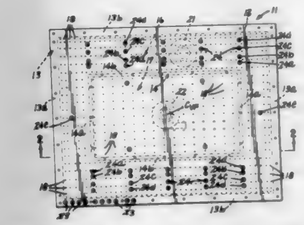
METHOD OF PRODUCING LITHOGRAPHIC PLATES

Norman A. Ternes, 387 Minnesota Ave., St. Paul, Minn. 55111

Division of Ser. No. 500,426, Jun. 2, 1983, Pat. No. 4,529,303. This application May 28, 1985, Ser. No. 723,272

Int. Cl.⁴ G03B *27/02*

U.S. Cl. 355—132 **7 Claims**



1. A method of producing an image on a lithographic plate having a light-sensitive printing area with a predetermined reference point thereon for use on a printing cylinder of corresponding size, comprising the steps of:

forming a plurality of apertures in the lithographic plate in an array having a predetermined relation to the reference point of said printing area;

placing the lithographic plate on a flat working surface having a predetermined reference point with said plurality of apertures in register with a selected first plurality of registering pins projecting from said working surface, said selected first plurality of pins being arranged in an array having the same relation to the working center reference point as the lithographic plate apertures to the printing area reference pont;

forming a plurality of apertures in an image carrier having a reference point and an image disposed in predetermined relation to said reference point, the apertures being formed in an array having a predetermined relation to the reference point of the image carrier;

placing the image carrier over the lithographic plate on said flat working surface with said plurality of apertures in register with a selected second plurality of pins projecting from said working surface, said second plurality of pins being arranged in an array having the same relation to the reference point on said working surface as the image carrier apertures to the image carrier reference point, so that all of said reference points coincide;

and exposing the assembly of lithographic plate and image carrier to light, whereby the image of the image carrier is exposed on the light sensitive printing area in a controlled manner.

4,563,086

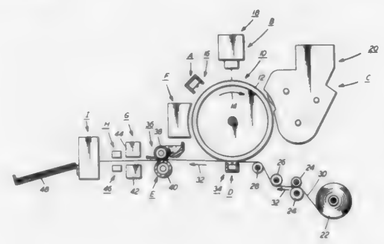
COPY QUALITY MONITORING FOR MAGNETIC IMAGES

John F. Knapp, Fairport; Robert J. Gruber, Pittsford, and Steven B. Bolte, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 22, 1984, Ser. No. 663,610

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—14 D **12 Claims**



1. An electrophotographic printing machine of the type in which a magnetic toner image is transferred to a copy sheet from a photoconductive member and fused thereto, including:

means for magnetizing the toner image fused to the copy sheet; and

means for detecting the intensity of the magnetic field generated by the toner image fused to the copy sheet with the magnetic field intensity being proportional to the ratio of the mass of toner particles to area of toner particles on the copy sheet.

4,563,087

PROCESS AND DEVICE FOR SIMULTANEOUSLY MEASURING THE GEOMETRICAL CHARACTERISTICS OF AN OPTICAL FIBRE

Yannic Bourbin, and Hervé Arditty, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 13, 1983, Ser. No. 494,253

Claims priority, application France, May 14, 1982, 82 08479

Int. Cl.⁴ G01B *11/12*

U.S. Cl. 356—73.1 **8 Claims**

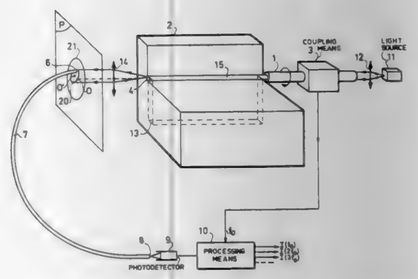
1. A process for measuring the geometrical characteristics of an optical fibre having at least one optical core, a mechanical sheath and a protective sheath wherein said measurement includes the measurement of at least the concentricity of said optical core and said mechanical sheath, as well as the measurement of the core ellipticity, said process comprising the steps of:

preparing said fibre to be measured including the steps of baring said mechanical sheath by a length of said fibre at one end of said fibre and sawing and polishing the face of said one end of said fibre;

positioning an incoherent light source producing a light beam wherein said light source faces the other end of said fibre and wherein said beam is passed into said fibre at said other end;

analysing the near field of said fibre at said one end involving the steps of forming in a plane a magnified image of the outlet face of said one fibre end by placing a photodetector in said plane and including the step of carrying out a relative rotation with respect to the center of said sheath between said image and said photodetector with said rotation being performed at a first frequency f_o;

processing the signal received by said photodetector including the steps of calibrating the measurement by comparison with reference signals, detecting and measuring the amplitude of the signal received by said photodetector at frequencies which are multiples of said first frequency f_o, and determining the concentricity of said optical core and said sheath and the ellipticity of said optical core of said fibre on the basis of said measured amplitudes at said first frequency f_o and at a second frequency 2 f_o, respectively.



4,563,088

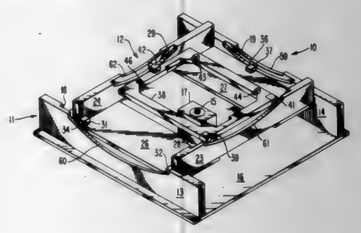
DEVICE FOR MAINTAINING A MOVING CURVED SURFACE A CONSTANT DISTANCE FROM A STATIONARY POINT

Larry S. Gullman, Pittsboro, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 15, 1983, Ser. No. 466,594

Int. Cl.⁴ G01N *21/01*

U.S. Cl. 356—244 **20 Claims**



1. A device for maintaining a curved surface a substantially constant distance from a stationary point as said surface moves relative to said point, said curved surface having first and second curved axes, said device comprising:

fixed caddy means arranged at a particular position with respect to said stationary point, said fixed caddy means including fixed rails extending parallel to and curving in the same direction as said first curved axis; and

moveable caddy means for positioning said curved surface said constant distance from said point, said moveable caddy means being moveably supported by said fixed rails and including carrier means for receiving said curved surface, said moveable caddy means including second rails extending parallel to and curving in the same direction as said second curved axis, whereby said curved surface substantially remains said constant distance from said stationary point as said curved surface moves along either of said axes.

4,563,089

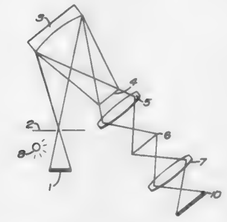
METHOD AND APPARATUS FOR CONVERTING SPECTRAL AND LIGHT INTENSITY VALUES DIRECTLY TO DIGITAL DATA

Donald L. Kramer, Wakarusa, and James A. White, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 14, 1983, Ser. No. 475,091

Int. Cl.⁴ G01J *3/38*

U.S. Cl. 356—319 **8 Claims**



5. An apparatus for converting spectral and light intensity values directly to digital data, comprising:

a. an image sensor having at least one row of sensor elements each element which changes state and produces a corresponding digital output signal when a predetermined charge threshold is exceeded by the light intensity of an illuminating light source;

b. means for illuminating the image sensor with a reference light source having a known intensity and an unknown light source, comprising a neutral density gradient filter through which light passes to the sensor;

c. first means receptive the digital output of the sensor for said row to produce digital data corresponding to the number of state changes in the row for the reference and unknown sources; and

d. second means for determining the intensity of the unknown light source in digital form for said row as a function of the digital data from said first means and the known intensity of the reference light sources.

4,563,090

GRATING SPECTROMETER

Wolfgang Witte, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Jun. 10, 1983, Ser. No. 502,991

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224736

Int. Cl.⁴ G01J *3/18*

U.S. Cl. 356—328 **3 Claims**

1. A grating spectrometer, the grating of which is used in several grating orders, comprising, in combination:

a grating for spectrally dispersing light incident thereon;

a light source for emitting light onto said grating;

a plurality of filters disposed on a filter changing device, each said filter having a known transmission characteristic, said filter changing device being operative to consecutively position each said filter in the path between said light source and said grating;

detector means disposed to intercept light dispersed from said grating;

a memory means responsive to said detector means to store spectra data from said detector means while each said filter is disposed in the path between said source and said grating, said memory means also storing transmission characteristic data for each said filter; and

computer means, to which said stored transmission characteristics of each said filter and said stored signal spectra data are applied from said memory means, said computer means calculating, as a function of wavelength, a signal spectrum having the spectral composition of said incident light beam.

4,563,091

METHOD FOR IDENTIFYING AN OBJECT AND MEASURING ITS POSITION AND ORIENTATION, AND DEVICE FOR CARRYING OUT THE METHOD

René Dändliker, Corcelles, Switzerland, assignor to Gretag AG, Regensdorf, Switzerland

Filed Jun. 29, 1982, Ser. No. 393,261
Claims priority, application France, Jun. 30, 1981, 81 13002
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—349 **18 Claims**



1. A method for identifying an object and measuring its position and its orientation, comprising the steps of:

producing a first uniform beam of coherent light at a first frequency;

producing a modulated beam representative of shape, orientation and position of said object by spatially modulating said first uniform beam in response to said object;

causing said modulated beam to form a first converging beam having a first plane of convergence;

producing first data in response to luminous intensity in at least a part of said first plane of convergence;

causing said modulated beam to form a second converging beam having a second plane of convergence;

producing a second uniform beam of coherent light at a second frequency different from said first frequency;

causing said second converging beam to interfere with said second uniform beam in said second plane of convergence; and

producing second data in response to variation of light intensity in at least a part of said second plane of convergence;

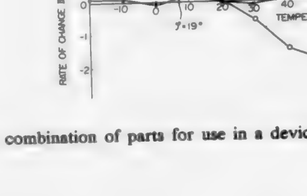
whereby said first data is representative of the shape and the orientation of said object, and said second data is representative of the position of said object.

4,563,092

LASER ROTATION RATE SENSOR

Joachim Kaiser, Düsseldorf, Fed. Rep. of Germany, assignor to Teldix GmbH, Heidelberg, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,157
Int. Cl.⁴ G01C *19/64*
U.S. Cl. 356—350 **4 Claims**



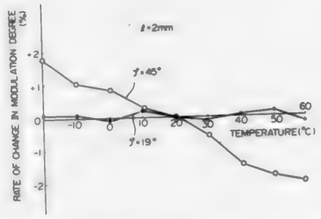
1. A laser rotation rate sensor wherein two light beams counterrotate in a polygon equipped with reflectors in its corners, a signal being derived from their frequency difference which depends on the rate of rotation, said rotation rate sensor comprising a reflector having a magneto-optic element for the suppression of lock-in and including a prism whose base boundary face is disposed adjacent a layer of a gyrotropic material, characterized in that the index of refraction of the gyrotropic material is approximately equal to or greater than that of the prism; a further layer of a dielectric material is disposed adjacent the gyrotropic layer, said further layer having a smaller index of refraction than that of the prism material and that of the material of the gyrotropic layer, in such a manner that total reflection occurs at the interface between the layer of gyrotropic material and the further layer.

4,563,093

VOLTAGE AND ELECTRIC FIELD MEASURING DEVICE USING LIGHT

Kohji Tada; Yoshiki Kuhara; Masami Tatsumi, and Akihiko Kawakami, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 22, 1982, Ser. No. 452,326
Claims priority, application Japan, Dec. 24, 1981, 56-212235
Int. Cl.⁴ G01J *4/00*
U.S. Cl. 356—368 **7 Claims**



1. A combination of parts for use in a device using light

traveling along a given path and passing through an electro-optic crystal to measure either a voltage applied to the electro-optic crystal or an electric field in which the electro-optic crystal is immersed and which device is used in an environment wherein the temperature varies within a given temperature range, said combination comprising:

a polarizer, an electro-optic crystal, and an analyzer each located in said given path and arranged in the stated order in the direction of advancement of light along said path, and a quarter-wave plate located in said path between said polarizer and said analyzer, said electro-optic crystal consisting of a material having an optical rotatory power, and said analyzer having its orientation rotated through an angle substantially equivalent to an angle ψ given by the following equation:

$$\psi \approx \theta l$$

relative to the optical axis of said electro-optic crystal, where θ represents the optical rotatory power, with respect to the applied light, of said electro-optic crystal near a point at the center of said given temperature range, and l represents the thickness of the electro-optic crystal measured in the direction of advancement of light along said path.

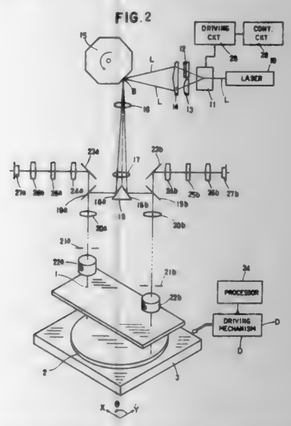
4,563,094

METHOD AND APPARATUS FOR AUTOMATIC ALIGNMENT

Yasuyoshi Yamada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1983, Ser. No. 534,828
Claims priority, application Japan, Oct. 2, 1982, 57-173674
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—401 **14 Claims**

FIG. 2



1. A scanning apparatus comprising in combination:

producing means for selectively producing a first light beam of a slit-like cross-section extending in one direction and a second light beam of a slit-like cross-section extending in another direction;

deflecting means for receiving the first light beam and the second light beam from said beam producing means and deflecting each to scan a surface to be scanned and be reflected thereby;

control means for actuating said producing means to change from producing said first light beam to producing said second light beam during one scanning deflection operation by said deflecting means after the start of said one scanning deflection operation and before the end of said one scanning deflection operation; and

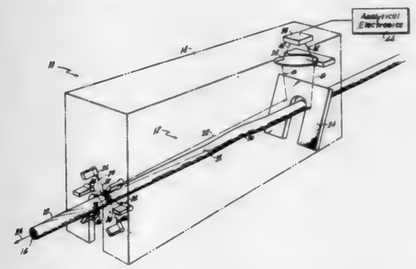
receiving means for receiving the beam reflected by the surface to be scanned and generating at least one detection signal therefrom.

4,563,095

METHOD AND APPARATUS FOR MONITORING THE SURFACE OF ELONGATED OBJECTS

LeRoy G. Puffer, Vernon, Conn., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Dec. 20, 1982, Ser. No. 451,632
Int. Cl.⁴ G01N *21/32*
U.S. Cl. 356—430 **13 Claims**



1. Apparatus for detecting flaws characterized by particular changes in the normally-smooth surface of an elongated object, such as a coated cable, the object being longitudinally movable along a path relative to the apparatus, the apparatus comprising:

means for providing a source of electromagnetic radiation and for directing said radiation at the surface of said object such that it is incident therewith in a zone extending substantially entirely around the perimeter of said object and at an angle which scatters radiation in a particular direction longitudinally of the object and within a limited angle to the object substantially only when a said flaw is present;

a detector positioned outside the object path, said detector being responsive to electromagnetic radiation for providing an electrical signal;

optical means for directing flaw-scattered radiation to said detector, said optical means including a mirror positioned in proximate, substantially concentric relation with said object path for deflecting, along an optical path to said detector, substantially only said electromagnetic radiation scattered by a flaw in said particular direction longitudinally of and within said limited angle to said object, said mirror including a slot therein, said slot being sized and positioned to permit said positioning of said mirror relative to said object path while said object is in said path and extending radially to a side of said object path opposite to the direction in which said radiation is reflected from the mirror towards said dectector; and wherein sad radiation incident in said zone at the surface of said object is of a relatively greater, compensating intensity in a limited angular portion of said zone aligned angularly with said mirror slot.

4,563,096

APPARATUS FOR ASSISTING THE VISUAL ASSESSMENT OF TEST OBJECTS HAVING MULTIVARIATE VISIBLE CHARACTERISTICS, AND ITS USE

John W. Chidlow, Basingstoke, England; Jan Van Duijn, and Jan Siebesma, both of Vlaardingen, Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

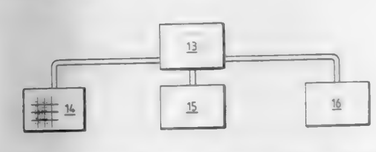
PCT No. PCT/GB81/00083, § 371 Date Jan. 8, 1982, § 102(e) Date Jan. 8, 1982, PCT Pub. No. WO81/03223, PCT Pub. Date Nov. 12, 1981

PCT Filed May 8, 1981, Ser. No. 339,443

Claims priority, application United Kingdom, May 9, 1980, 8015430

Int. Cl.⁴ G01N *21/01*

U.S. Cl. 356—440 **6 Claims**



1. Apparatus for use in and for assisting the visual assessment by a human operator of test objects, in each of which test objects a multiplicity of test locations each has one or more visible characteristics capable of exhibiting any one of a number of conditions to be assessed, the apparatus comprising:

(a) means for positively locating the test object in registration with selective illuminating means;

(b) means for illuminating selected test locations of the test object;

(c) means for controlling the illuminating means so that the test locations can be selectively illuminated either singly or in groups, according to a program-determined sequence;

(d) means to enable the operator manually to actuate and control stepping along the sequence;

(e) means arranged for actuation by the operator for recording and storing data input corresponding to the operator's visual assessment of the selectively illuminated location or locations; and

(f) means for presenting to the operator a visual check display corresponding to the data input recorded in respect to the test locations under illumination to enable the operator to check the correctness of the data recorded by visually comparing the display with the test location, said apparatus comprising a two-dimensional array of test locations, in which illuminating means (a) includes means for producing, at each step of the sequence, a mark or pattern of marks, adjacent to the test location or locations to be assessed, against a back-ground of general illumination derived either by admission of daylight or from a diffuse light source.

4,563,097

METHOD OF EVALUATING COOLING PERFORMANCE OF HEAT TREATMENT AGENT AND APPARATUS THEREFOR

Tadashi Katafuchi, Ichihara, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Nov. 15, 1984, Ser. No. 671,723

Claims priority, application Japan, Nov. 16, 1983, 58-215560

Int. Cl.⁴ G01N *25/20*

U.S. Cl. 374—43 **11 Claims**

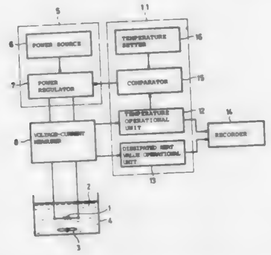
7. An apparatus for evaluating the cooling performance of a heat treatment agent, comprising:

a sensor having a known relationship between its electric resistance value and its temperature;

a power supply section connected in circuit with said sensor and being capable of varying a voltage and a current value supplied to said sensor;

a voltage-current measurer for measuring a voltage value and a current value supplied to said sensor;

a control section for seeking a temperature and a dissipated heat value of said sensor from voltage values and current



values obtained by said voltage-current measurer and for comparing said temperature with a preset temperature value to thereby effect a controlling of said power supply section to effect a raising of the temperature of said sensor at a predetermined rate; and

a recorder for recording said temperature and said dissipated heat value thus obtained by said control section.

4,563,098

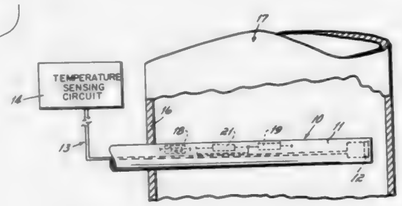
GRADIENT COMPENSATED TEMPERATURE PROBE AND GRADIENT COMPENSATION METHOD

David S. Bartran, 21223 Parkwick, Katy, Tex. 77450

Filed Aug. 12, 1983, Ser. No. 522,869

Int. Cl.⁴ G01K *7/00*

U.S. Cl. 374—172 **8 Claims**



1. A gradient compensated temperature probe arrangement comprising:

a probe body;

a temperature responsive element in the probe body couplable to a temperature sensing apparatus;

a heating element in the probe body spaced apart from the temperature responsive element;

first means independent of the temperature responsive element for sensing a temperature gradient between the heating element and the temperature responsive element along the probe body at a location spaced apart from the temperature responsive element including at least two temperature dependent electrical components positioned along the probe body between the heating element and the temperature responsive element; and

second means, responsive to the sensing of a temperature gradient by the first means, for activating the heating element.

4,563,099

ROLLING BEARING UNIT

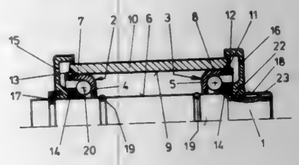
Manfred Brandenstein, Eussenheim; Roland Haas, Hofheim, and Rüdiger Hans, Niederwerrn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 10, 1984, Ser. No. 598,883

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1983, 8311154[U]

Int. Cl.⁴ F16C *9/02, 23/06*

U.S. Cl. 384—458 **3 Claims**



1. A rolling bearing unit comprising a bearing shaft having a threaded portion, first through third annular grooves, and an axial groove along said threaded portion, a housing having a bore, first and second angular contact ball bearings, each of said bearings having an inner ring arranged on said shaft and an L-shaped outer ring inserted at the respective end of said bore, a locking ring arranged in said first annular groove of said shaft, and first and second covers each having a boss, wherein said first cover is arranged on said shaft and abuts said locking ring, said inner ring of said first bearing abuts said first cover, and said second cover is adjustably arranged on said threaded portion and abuts said inner ring of said second bearing, said second cover being locked on said shaft by means of an indentation formed in the boss of said second cover to engage said axial groove of said shaft.

4,563,100

RIBBON-POSITION SWITCHING DEVICE FOR PRINTER

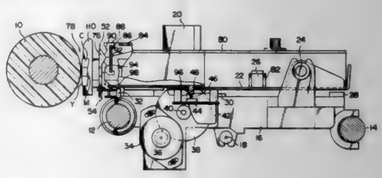
Yoshihiro Hamamichi, Mishima, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1984, Ser. No. 674,079

Claims priority, application Japan, Nov. 30, 1983, 58-226647

Int. Cl.⁴ B41J *35/14*

U.S. Cl. 400—208 **5 Claims**



1. In a printer having a carriage carrying a printing head mounted thereon and capable of being moved in directions parallel to a platen, a cartridge holder for removably holding a cartridge accommodating a multi-colored ink ribbon on which a plurality of different color zones are arranged in rows in the width direction, said cartridge holder being rockably mounted on the carriage so as to be able to move the multi-colored ink ribbon in the width direction relative to the printing head, and a ribbon-position switching device for driving the cartridge holder to bring a desired color zone on the multi-colored ink ribbon to a position corresponding to an end of the printing head for using the desired color zone, the ribbon-position switching device for a printer comprising:

a motor with a control means for driving the cartridge holder, said motor being mounted on said carriage;

a step member provided on one of the carriage and the cartridge and having engagement recesses corresponding in number to the number of color zones on the multi-colored ink ribbon in the cartridge, the plurality of engagement recesses being arranged at a predetermined pitch in the width direction of the multi-colored ink ribbon in the cartridge held on the carriage holder;

an engaging projection member provided on the other of the carriage and the cartridge and biased to be in engagement with one of the plurality of engagement recesses of the step member, the engaging projection member being released from the engagement against the biasing force by sliding contact of the engaging surface of the one engagement recess with the engaging projection member, said sliding contact being caused by the movement of the cartridge holder, said engaging projection member subsequently being brought into engagement with another engagement recess among the engagement recesses; and

a fine adjustment mechanism for finely adjusting the relative positions of the carriage and the cartridge held on the cartridge holder to each other by causing a movement of at least one of the step member and the engaging projection member in the width direction of the multi-colored ink ribbon on the cartridge held on the cartridge holder at a pitch less than the pitch of arrangement of the plurality of engagement recesses of the step member.

4,563,101

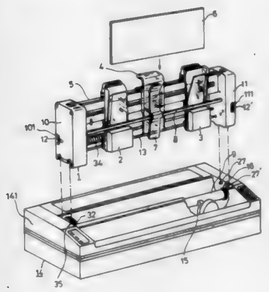
PRINTER

Yasushi Okamura, and Kiichiro Tanaka, both of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 402,805, Jul. 28, 1982, abandoned. This application Sep. 11, 1984, Ser. No. 649,988

Int. Cl.⁴ B41J *13/12*

U.S. Cl. 400—603 **1 Claim**



1. A printer comprising:

a main part comprising a platen rotatably held by a platen shaft,

an electrical system for controlling operation of the printer,

a driving means for driving said platen shaft responsive to input signals thereto,

a printing head for printing on a recording sheet held on said platen,

a card feeding means for feeding cards to said printer, said card feeding means including frame means for being detachably mounted on said main part, said frame means including a pair of posts at opposite ends thereof,

a drive shaft rotatably mounted to and extending between said pair of posts,

driving force coupling means positioned in one of said pair of posts for effecting mechanical coupling between the motion of said platen shaft and said drive shaft when said

frame means is mounted on said main part, electrical coupling means positioned in the other of said pair of posts for coupling said card feeding means directly to the electrical system of said printer, said electrical coupling means including a receptacle having means defining relatively large openings at each end thereof, said receptacle being mounted in a loose fashion by elastic bushings positioned within said relatively large openings and being secured to said printer so that the receptacle is movable and a connector mounted to said card feeding means, said connector and receptacle each having electric contacts, and fixing means positioned in each of said pair of posts for fixing said frame means to said main part when mounted thereon, wherein

one of said posts being formed on the right side of said frame means and having a substantially hollow interior for receiving said driving force coupling means therein so that said driving force coupling means fit over and engage said platen shaft driving means, and

the other of said posts being formed on the left side of said frame means and having a substantially hollow interior portion for receiving said connector portion of said electric coupling means wherein the loose mounting of said receptacle allows horizontal movement so that coupling between the electric contacts of said connector and said receptacle can easily mesh together when said card feeding means is mounted on said main part,

said frame member further including front and rear guide rail members connected to and extending between said pair of posts,

first and second guide members slidingly positioned on said rear guide rail, each of said first and second guide members having a lower pocket portion containing a driving roller drivingly engaged about said drive shaft,

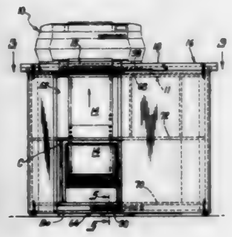
a rear guide member slidingly positioned on said rear guide rail and in between said first and second guide members and a front guide member slidingly positioned on said front guide rail wherein said driving force coupling means comprises an idler gear which is rotatably borne on a switchable lever, said one of said pair of posts including means defining a slot in the side thereof, said lever including means extending outwardly thereof and through said slot means so as to allow movement of said lever between at least first and second positions, said idler gear providing engagement between a platen gear of said main part and a driving gear for driving said drive shaft when the lever is in one of its first or second positions.

4,563,102

ROTATABLE APPARATUS FOR STORING PAPER FORMS FOR FEEDING TO A PRINTER

Edward L. Sanders, Jr., and Edward L. Sanders, III, both of P.O. Box N, La Plata, Md. 20646

Filed Oct. 20, 1983, Ser. No. 543,950
Int. Cl.⁴ B41J *29/02*
U.S. Cl. 400—691 **11 Claims**



1. A storing apparatus for storing forms to be fed to a means for operating on the forms, comprising:

a rotatable shelf assembly comprising a plurality of horizontal shelves one above the other;

a plurality of sidewalls on each shelf, the sidewalls on each shelf other than the top shelf supporting the next higher shelf; said sidewalls consisting of diametrically transverse sidewalls intersecting at the center of each shelf at right angles to each other, and extending outwardly of the shelf a distance at least equal to the length of the forms to be stored, and diametrically offset perpendicular sidewalls, one on each side of each diametrically transverse sidewall and spaced outwardly from the intersection of said diametrically transverse sidewalls a distance just slightly greater than the width of the forms to be stored and extending perpendicular to one diametrically transverse sidewall and parallel to the other diametrically transverse side wall to define with said diametrically transverse sidewalls compartments for accommodating the forms and which open laterally of said shelf assembly;

bearing means at least beneath the bottom shelf and rotatably supporting said shelf assembly for rotation around a vertical axis through the centers of the shelves; and

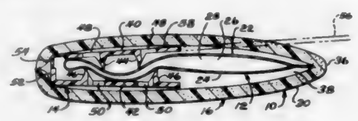
support means above said shelf assembly for supporting the means for operating on the forms.

4,563,103

SCRUB SPONGE WITH OPPOSED PUNCTURING PROJECTIONS

Ronald R. Van Overloop, Palatine, Ill., and Frank N. Miller, Racine, Wis., assignors to The Kendall Company, Boston, Mass.

Filed Apr. 25, 1983, Ser. No. 488,520
The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.
Int. Cl.⁴ B43K *5/14*; A45D *40/26*
U.S. Cl. 401—134 **16 Claims**



1. A scrub sponge, comprising:

a packet having a rupturable wall and a closed chamber containing a liquid scrub agent;

a cover of foam material having a cavity to receive said packet and enclosing said packet; and

a puncture member intermediate said cover and the packet and having a pair of generally aligned and spaced arms on opposed sides of the packet beneath the cover, hinge means connecting said arms adjacent one end of the packet, and at least one sharp projection on each of the arms directed toward the packet to pierce the wall when the arms are pressed toward each other to release the scrub agent into the cover, and an opening extending through the arms adjacent each of the projections.

4,563,104

LIQUID DISPENSING PIPETTE AND STIRRER DEVICE

Elmer Saint-Amand, San Fernando, Calif., assignor to Saint Amand Manufacturing, Inc., San Fernando, Calif.

Filed May 9, 1983, Ser. No. 493,017
Int. Cl.⁴ B65D *47/18*
U.S. Cl. 401—139 **8 Claims**

1. A liquid dispensing and spreading device for use in uniformly dispensing one or more drops of liquid of a precise, predetermined volume onto a surface and for uniformly spreading the dispensed liquid over the surface, said device comprising:

(a) an elongated hollow tube having a centrally disposed, axially extending fluid passageway and first and second ends, said first end being open and located within a plane extending perpendicularly to the longitudinal axis of said tube;

(b) a yieldably deformable hollow bulb connected at a first location to said second end of said tube, the interior of said bulb being in communication with said fluid passageway of said tube, said bulb having an aperture formed therein at a second location axially spaced from said first location;



(c) a generally cylindrically shaped hollow stiffening section closed at one end and connected at the other end to said bulb at said second location, the interior of said stiffening section being in communication with the interior of said bulb; and

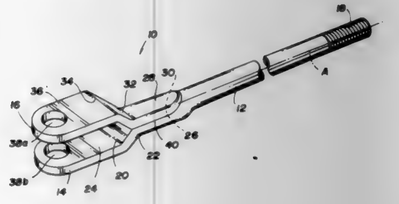
(d) a flexible, generally planar paddle disposed about said stiffening section and within a plane the center of which is co-planar with the plane containing the longitudinal axis of said stiffening section and of said tube.

4,563,105

CLEVIS AND METHOD OF MANUFACTURE

Benedict J. Stahl, 12282 Woodbine Ave., Gregory, Mich. 48239

Filed Mar. 12, 1984, Ser. No. 588,699
Int. Cl.⁴ F16C *11/00*
U.S. Cl. 403—157 **16 Claims**



1. A clevis comprising:

a shaft,

first and second tangs bifurcating from one end of the shaft, said first tang being formed as an integral extension of the shaft, and

said second tang being affixed to the shaft by a welded joint extending along the axial dimension of the shaft wherein at least one of said tangs is coined.

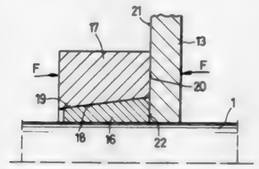
4,563,106

FRICTION-TRANSMITTING SHAFT/FLANGE CONNECTION

Hartwig Stüwe, Sprockhövel, Fed. Rep. of Germany, assignor to Stüwe GmbH & Co. KG, Hattingen, Fed. Rep. of Germany

Filed Oct. 28, 1983, Ser. No. 547,051
Int. Cl.⁴ F16B *7/04*
U.S. Cl. 403—370 **6 Claims**

1. A friction-transmitting shaft/flange connection, comprising a pressure ring arranged to be seated on a shaft having an axis, said pressure ring having a conical ascending surface; and a clamping ring having a pressing surface with which it is clamped on said ascending surface of said pressure ring by displacing said clamping ring over said pressure ring in an axial direction toward the flange, said pressure ring having an end surface which is arranged to face toward the flange, and said clamping ring having an end surface arranged so that it is simultaneously engageable with a flange in a friction-transmitting manner.

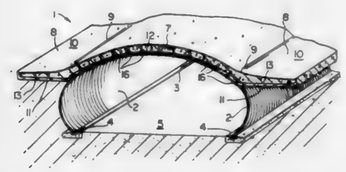


4,563,107

ARCH BEAM STRUCTURE

Carl W. Peterson, Edmonton, Canada, assignor to Nova Span International Ltd., Lethbridge, Canada

Filed Apr. 26, 1982, Ser. No. 494,444
Claims priority, application Canada, Jun. 17, 1981, 380017
Int. Cl.⁴ E01F *5/00*
U.S. Cl. 405—124 **10 Claims**



1. In a subsurface culvert structure of the type including an elongated conduit having top, bottom and side surfaces, the improvement comprising an arch-beam structure comprising a concrete panel extending across the top surface of said conduit beyond the side edges thereof, the panel including a central portion connected with said conduit to form a composite structure of panel and conduit and including a bottom surface, said central portion bottom surface substantially conforming to the shape of the top surface of said conduit; and an arm extending outwardly, substantially horizontally from each side of said central portion for distributing forces when in use.

4,563,108

PRESSURE ACTUATED RELEASE MECHANISM

Ray R. Ayers, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 495,560, May 18, 1983, abandoned, which is a division of Ser. No. 402,172, Jul. 26, 1982, Pat. No. 4,399,601, which is a continuation of Ser. No. 135,835, Mar. 31, 1980, abandoned. This application May 15, 1985, Ser. No. 734,751
Int. Cl.⁴ F16L *1/04*; B63B *22/14*
U.S. Cl. 405—171 **6 Claims**

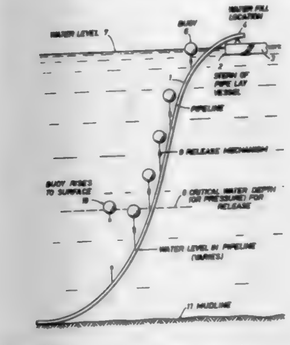
1. Apparatus for use in deploying a structure below the surface of water by a controlled descent comprising:

flotation means;

fastening means for releasably securing said flotation means to the structure; and

actuating means partially buckled at a preselected pressure

and susceptible to further buckling only after the preselected pressure has been reached at a critical water depth,



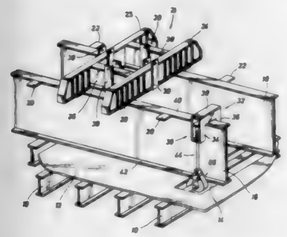
said further buckling being operative to release said fastening means.

4,563,109

CLAMPING APPARATUS FOR USE ON OFFSHORE PLATFORMS

Leon D. Ortemond, Rte. 2, Box 2290, Abbeville, La. 70510

Filed Feb. 10, 1984, Ser. No. 579,025
Int. Cl.[4] E02B *17/00*
U.S. Cl. 405—195 **12 Claims**



1. A clamping apparatus for securing a structural member to an offshore platform having generally horizontally extending, fixed framework beams comprising:

engagement means for operatively engaging a first side of said structural member, the opposite side of which engages said fixed framework beams;

releasable grip means for releasably gripping at least one of said beams; and

connecting means individually interconnecting said grip means and said engagement means, said connecting means including means operative to cause relative movement between said engagement means and said grip means to thereby clamp said structural member between said beam and said engagement means.

4,563,110

SHORING APPARATUS AND METHOD

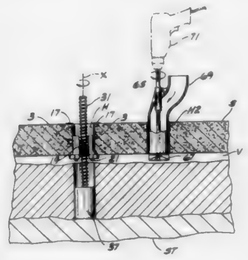
George F. Langenbach, Jr., Crestwood, and John F. Langenbach, St. Louis, both of Mo., assignors to New T'ings Inc., St. Louis, Mo.

Filed Apr. 18, 1983, Ser. No. 485,838
Int. Cl.[4] E02D *27/48*
U.S. Cl. 405—230 **41 Claims**

1. Apparatus for shoring a structure such as a slab of concrete having a small-diameter hole therethrough, said hole having a central vertical axis, comprising:

support means having slab-engaging portions engageable with the bottom of said slab on opposite sides of said hole, said support means being adapted for movement from an initial position in which it has a relatively narrow profile for passage down through said hole to a final position in which it has a wider profile and in which said slab-engaging portions are adapted to project radially outwardly with respect to said axis of the hole beyond the hole below the slab for engagement with the bottom of the slab on opposite sides of the hole;

guide means associated said support means having an internal screw thread, said guide means being adapted to be positioned generally on the central vertical axis of said hole; and



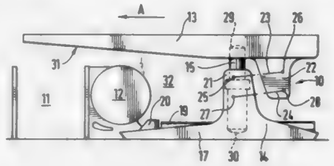
piling means having an external screw thread adapted to mate with the internal screw thread of said guide means, said piling means being adapted to be rotated about a generally vertical axis for threading it down through said guide means into the ground below the slab and into engagement with load-bearing underground strata, said guide means being engageable with said support means when the latter is in said final position for exerting on said support means an upward force in reaction to the downward force exerted by said piling means on said load-bearing strata thereby to shore said slab.

4,563,111

MINE ROOF SUPPORTS

James Seddon, Heskin, Near Chorley, England, assignor to Dobson Park Industries Plc., Nottingham, England

Filed Mar. 5, 1984, Ser. No. 585,927
Claims priority, application United Kingdom, Mar. 8, 1983, 8306354
Int. Cl.[4] E21D *15/44*
U.S. Cl. 405—295 **18 Claims**



1. A mine roof support comprising:

(a) a floor engaging base having a front end and a rear end, the base being in the form of a pair of elongate, spaced-apart skids;

(b) at least one first projection extending upwardly from the base, positioned towards the rear end of the base;

(c) a substantially rigid roof engaging structure having a front end and a rear end;

(d) at least one second projection extending downwardly from the roof engaging structure, positioned towards the rear end of the structure;

(e) at least one pair of parallel links of equal length, each link of the pair extending from a first pivotal axis on the said first projection to a second pivotal axis of the said second projection, the said axes extending transversely of the base, the links thus controlling the orientation of the roof engaging structure with respect to the base;

(f) extensible hydraulic jack means acting between the floor engaging base and the roof engaging structure and operable to move the roof engaging structure with respect to the floor engaging base over a range of movement which causes the parallel links to move through a horizontal position;

(g) a hydraulic advancing jack positioned substantially horizontally between the skids of the base, the jack extending parallel to the skids and perpendicular to the pivotal axes of the said links;

(h) means attaching one part of the advancing jack to the base; and

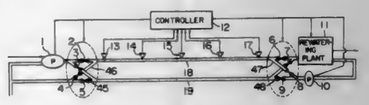
(i) means for attaching another part of the advancing jack to an abutment so that the advancing jack can act between the base and the abutment to move the mine roof support forwardly in a substantially horizontal direction perpendicular to the pivotal axes of the said links.

4,563,112

SLURRY TRANSPORT SYSTEM

Kinji Mokuya, Yokohama; Isso Tsushima, Yamato, and Masakatsu Sakamoto, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 505,712, Jun. 20, 1983, abandoned. This application Apr. 15, 1985, Ser. No. 722,439
Claims priority, application Japan, Jun. 23, 1982, 57-106940
Int. Cl.[4] B65G *53/66*
U.S. Cl. 406—11 **3 Claims**



1. A slurry transport system comprising:

a transport pipeline for transporting a slurry therethrough;

a return pipeline for returning to a point of origin a transport medium removed from the slurry, the slurry being a mixture of solids and the transport medium;

detecting means mounted on said transport pipeline to detect an abnormal condition of said transport pipeline; and

pipeline switching mens responsive to said detecting means and mounted in said transport pipeline and return pipeline to form a slurry transport and a transport medium return pass through the abnormal condition for enabling immediate switching of the pipelines for transportation of the slurry through said transport medium return pipeline while returning the transport medium to the point of origin through said slurry transport pipeline.

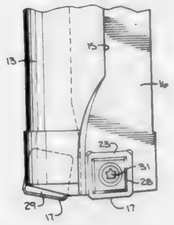
4,563,113

INDEXABLE INSERT DRILL

Sebastian Ebenhoch, Menomonee Falls, Wis., assignor to Waukesha Cutting Tools, Inc., Waukesha, Wis.

Filed Apr. 14, 1983, Ser. No. 485,003
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—223 **7 Claims**

1. In a tool for producing a hole in a workpiece by relative rotary motion between the tool and workpiece, a cylindrical tool body formed with a pair of axially extending, diametrically opposed flutes having a back wall and opening toward the leading end of the body, an indexable carbide cutting insert having a cutting face defining a plurality of cutting edges at the periphery thereof and releaseably secured at the leading end of the body in the back wall of each flute with the cutting face of each insert facing in the direction of relative cutting motion, each said insert presenting an active cutting edge generally disposed in a transverse plane containing the axis of the tool and in axially leading relation relative to the tool body, the active cutting edge of the inner of said inserts generally extending outwardly from the tool axis and the active cutting edge of the outer of said inserts generally extending inwardly toward the tool axis from a location beyond the periphery of the tool body, said inserts together being adapted to cut a hole of given



diameter with the active cutting edges of the respective inserts providing for overlap therebetween, said active cutting edges of the respective inserts having an axially leading point adjacent to their inner extremity disposed in a common plane generally normal to the tool axis and said active cutting edges extending obliquely at a trailing angle relative to said common plane with the active cutting edge of the inner insert having a lesser trailing angle than the active cutting edge of the outer insert, the location and orientation of said inserts in the tool body providing for their respective active cutting edges to cut paths that intercept each other such that each insert will cut a pair of radially spaced chip segments as the tool progresses relative to a workpiece.

4,563,114

METHOD FOR MACHINING STEEL WITH DIAMOND TOOLS

John M. Casstevens, Greenville, Tex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Apr. 25, 1983, Ser. No. 488,301
Int. Cl.[4] B23C *5/28;* **B24B** *55/02*
U.S. Cl. 409—131 **3 Claims**

1. In the art of machining a steel workpiece with a diamond cutting tool, a method for decreasing the wear rate of the cutting tool, comprising the step of providing a gaseous hydrocarbon atmosphere at the interface between the cutting tool and the workpiece during the machining of the latter with the concentration of the gaseous hydrocarbon being adequate to inhibit the conversion of diamond carbon to graphite carbon at the point of contact of the diamond tool with the workpiece.

4,563,115

CUTTING MACHINE HAVING STOCK SUCTION MEANS

Hitoshi Abe, and Sadao Kojima, both of Utsunomiya, Japan, assignors to Kyoritsu Seiki Corporation, Utsunomiya, Japan

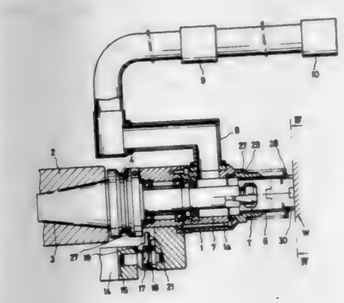
Filed Sep. 19, 1983, Ser. No. 533,694
Claims priority, application Japan, Sep. 17, 1982, 57-161018
Int. Cl.[4] B23C *7/00;* **B23B** *47/34;* **B23Q** *11/06*
U.S. Cl. 409—134 **2 Claims**

1. A cutting machine having a frame and a spindle rotatable in said frame comprising:

a hollow cylindrical case (1) having a rear end portion removably secured to a spindle (2) by means allowing relative rotation of the case and spindle, said case receiving

therein a cutting tool (T) secured to said spindle for rotation therewith,

a suction nozzle (6) mounted at a front end portion of said cylindrical case (1) surrounding said cutting tool (T) and being slidable axially on said cylindrical case, suction nozzle (6) being urged outwardly on said case by spring means (29),



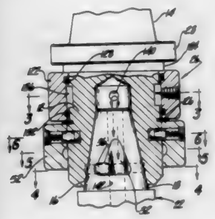
suction means (10) connected to said cylindrical case (1) through a suction pipe (8) communicated with the hollow interior of said cylindrical case (1), and stopper means (11) on the outer peripheral portion of said cylindrical case engageable with means on said frame (1) for stopping rotation of said cylindrical case.

4,563,116

TOOL HOLDER WITH COOLANT INDUCER

Rudolph R. Edens, 911 S. Oxford, Grosse Pointe Woods, Mich. 48236

Filed May 16, 1984, Ser. No. 610,693
Int. Cl.[4] B23C 5/26, 5/28
U.S. Cl. 409—136 4 Claims



1. A tool holder adapted to supply a coolant to a tool therein, said holder comprising:

a holder body having a drive shank at its upper end adapted for rotation by a machine and having an axially disposed tapered bore in its lower end,

a pair of locking pins extending transversely of said tapered bore in said holder body and disposed on opposite sides of said tapered bore and each having a portion extending into said bore,

a tool including a tapered shank adapted to mate with said tapered bore and having a pair of diametrically opposed flat surfaces thereon which clear said opposed locking pins upon entry of said shank into said bore, a pair of cam grooves extending circumferentially from the lower edge of said flat surfaces, respectively, and adapted to receive said locking pins upon rotation of said shank in a direction opposite to normal tool rotation and to urge said tapered shank into fluid-tight, drive transmitting engagement with said bore, whereby said engagement is continuously tightened by normal tool rotation during operation,

a pair of locking cams in said body, a cam lock ring rotatably mounted on said body and coacting with said cams to cam them into engagement with said pair of flat surfaces, respectively, when said locking ring is turned from an unlocked position to a locked position, thereby maintaining said fluid-tight, drive transmitting engagement of the tapered shank with the tapered bore during rotative drive of said tool by said tool holder,

a coolant inducer ring rotatably mounted on said holder body between said cam lock ring and said drive shank, a conduit fitting mounted on said coolant inducer ring,

said coolant inducer ring and said holder body defining an annular chamber communicating with said conduit fitting, seal means disposed between the coolant inducer ring and said holder body to maintain said chamber fluid tight during relative rotation of said holder body and coolant inducer ring,

a passage extending through said holder body from said chamber to the upper end of said tapered bore,

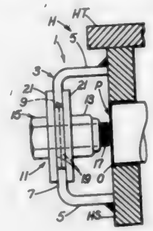
said tool including a fluid passage at the upper end thereof opening into the upper end of said tapered bore and extending to the lower end of said tool whereby fluid coolant may be supplied from said fitting through said coolant inducer ring and said holder body to said tool during rotation thereof.

4,563,117

TRAILER HITCH RETAINER PIN RETENTION APPARATUS

John A. Krug, St. Charles, and Angelo J. Buffone, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, Earth City, Mo.

Filed Jun. 4, 1984, Ser. No. 617,101
Int. Cl.[4] A47B 97/00
U.S. Cl. 410—56 4 Claims



1. In a railroad car for hauling trailers, the car having a hitch assembly for securing the trailer, the hitch assembly including a pair of stanchions on opposite sides of the car and a head extending transversely of the longitudinal axis of the car and attached to the stanchiions, and a retainer pin extending through the head also transversely of the longitudinal axis of the car, the improvement comprising:

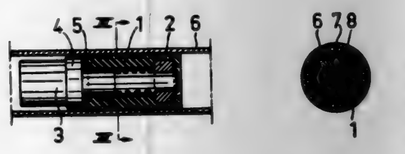
retaining means for maintaining the retainer pin in place in the head and for facilitating removal and replacement of the retainer pin during maintenance on the car, the retaining means including clip means attached to each side of the head adjacent an opening in the side of the head through which the retainer pin is installed and removed, each said clip means projecting outwardly from the respective side of the head and having an opening therein in registry with the opening in the side of the head and the diameter thereof, said clip means opening being so sized and positioned relative to the pin so as to permit removal of and installation of said pin from the head therethrough, and, fastening means removably attachable to each clip means through the opening in the clip means, a portion of the fastening means substantially abutting the outer end of the retainer pin when the fastening means is assembled with the clip means thereby preventing substantial longitudinal movement of the retainer pin, the fastening means being readily removable during maintenance on the car for ease of replacement of the retainer pin.

4,563,118

EXPANDING MEANS

Gunnar Liljedahl, Alvik 7555, Luleå, Sweden S-951 90

Continuation of Ser. No. 347,318, Feb. 9, 1982, abandoned. This application Oct. 19, 1984, Ser. No. 662,541
Int. Cl.[4] F16B 13/04
U.S. Cl. 411—34 1 Claim



1. A removable fastening device for locking together two telescoping cylindrical members, comprising in combination:

(A) an outer tubular cylindrical member;

(B) an inner cylindrical member telescopically inserted in said outer member; and

(C) fastening means attached to the inserted end of said inner member for removably fastening said members to one another, said fastening means comprising:

an elastic cylindrical tube having a plurality of circumferentially spaced axially extending grooves extending the entire length of its outer surface;

an axially extending bar running the entire length of each groove integrally formed with said tube and projecting radially outwardly beyond the outer surface of the elastic tube in contacting engagement with the inner surface of said outer tubular member to prevent rotation of said elastic tube with respect to said outer tubular member, each bar projecting from substantially the central portion of each groove and having a smaller width than said groove to form axially extending spaces on opposite sides of said bar between said sides and the surface of said groove so that said bar is partly receivable in said spaces when the bar is flexed during use;

an internally threaded piece fixedly mounted within one end of said elastic tube adjacent said one end and axially inwardly thereof;

a shouldered screw threaded member rotatingly mounted coaxially within said elastic tube having an enlarged shoulder adjacent the other end of said tube, said screw threaded member threadingly engaging said threaded piece;

a friction-reducing washer positioned between said shoulder and said other end;

said screw threaded member being fixed to the inserted end of said inner cylindrical member, so that rotation of said inner member in one direction with respect to said outer tubular member draws said threaded piece and shoulder toward each other to axially compress and radially expand said elastic tube into fastening engagement with said outer member; and

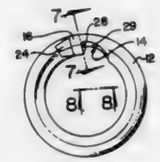
each bar having a radial height from the surface of said groove sufficient so that each bar always projects radially beyond the outer surface of said elastic tube when said tube is not fully radially expanded.

4,563,119

HOOK CUTOUT FOR TANGLESS HELICALLY COILED INSERT

Frank J. Cosenza, San Pedro, Calif., assignor to Rexnord Inc., Brookfield, Wis.

Filed Feb. 21, 1984, Ser. No. 581,839
Int. Cl.[4] F16B 37/12
U.S. Cl. 411—438 1 Claim



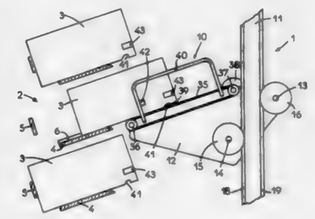
1. A screw thread insert comprising a substantially cylindrical body of a helically wound wire, said body forming an inner and outer screw thread, and two free end coils being generally located in the transverse plane of said cylindrical body, each said free end coil having a hook means recess on said inner screw thread for engagement with an installation tool, and a terminal end on each said free end coil being slightly reduced along the longitudinal axis of said wire so that during insertion the outer screw thread adjacent said tapered terminal end first contacts the parent material, said hook means recess having a camming surface coincident with the crest of the inner thread and a lead surface transverse to the crest of the inner thread, said camming surface formed at an angle to the longitudinal axis of the wire and the lead surface formed at an angle to the transverse vertical plane of the wire.

4,563,120

DEVICE FOR STORING AND/OR RETRIEVING OBJECTS

Marie R. Josserand, Voiron, France, assignor to Maatel, Grenoble, France

Filed Mar. 29, 1983, Ser. No. 480,032
Claims priority, application France, Apr. 2, 1982, 82 06105
Int. Cl.[4] B65G 1/04
U.S. Cl. 414—273 3 Claims



1. Apparatus for conveying individual objects between a service station and the compartments of a set of storage supports, said objects being provided with identifying codes, comprising,

a set of storage supports having an access face in front of which the object to be conveyed is moved and having storage compartments for receiving said objects,

a set of electronic circuits for controlling said conveying apparatus,

a code means carried by each object to be stored in said set of storage supports,

code reading means for detecting the code of said objects,

a set of memories for keeping in memory the code of each object stored in a compartment of said set of storage

supports and the code of this compartment, so as to have in memory the code of each compartment associated to the code of the object which is therein and an image of the occupied and/or unoccupied compartments of said set of storage supports,

an interface for entering the code of one of the objects placed in said set of storage supports,

a micro computer means linked to the interface and to the set of memories for managing thereof, said micro computer means being operable to control said conveying means to convey the object whose code has been entered on the interface to the service station from the compartment having the code associated to the code of this object,

said micro computer also being operable, when the apparatus is storing objects, to select an unoccupied compartment for an object and to control the conveying means to store the object in said selected compartment,

said apparatus having a carriage which is movable in front of the access face of said set of storage supports, and drive means for moving an object carried by the carriage from the carriage to its location in the set of storage supports and vice versa, said carriage carrying the code reading means for reading the code of the objects.

4,563,121

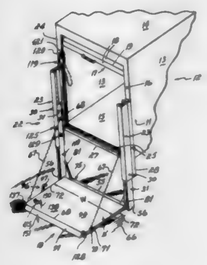
CARGO ELEVATOR SYSTEM

Robert E. Drews, Winston Park, Ky., assignor to Leyman Manufacturing Corp., Cincinnati, Ohio

Filed Feb. 22, 1983, Ser. No. 468,126

Int. Cl.⁴ B60P *1/44*

U.S. Cl. 414—545 **10 Claims**



1. A cargo elevator system comprising

a cargo platform adapted to swing between a vertically upright storage position and a horizontal elevator position,

a mast assembly having a mast and a mast guide, said mast guide being fixed relative to ground and said mast being movable within said mast guide during use of said system, said cargo platform being pivotally connected on a pivot axis to said mast, said platform's pivot axis having an overall stroke length that permits said platform to move between uppermost and lowermost elevator use positions,

a flexible tension member connecting the free edge of said platform with said mast, said flexible tension member permitting said platform to swing between said vertically upright storage position and said generally horizontal elevator use position,

a first safety element on said cargo platform adjacent a front corner of said platform,

a second safety element on said mast, said second safety element being positioned on said mast a distance from the pivot axis of said cargo platform which is substantially equal to the distance of said first safety element from the pivot axis of said platform, said first and second safety elements abutting against one another when said platform is swung from horizontal to vertical prior to said platform being finally stored,

a third safety element on said mast guide, said third safety element being of a length substantially the same as but slightly shorter than the stroke length of said platform's pivot axis, said first safety element being captured between said second safety element and said third safety element when said platform is moved between a vertically upright intermediate position adjacent the base of said pivot axis' travel path and a final vertically upright storage position above ground level for insuring that said cargo platform does not inadvertently swing away from its vertical position while being moved between said intermediate position and finally stored position, said first and second safety elements cooperating to prevent said platform from being swung beyond said vertically upright position at all times when said platform is positioned at any location where said first safety element does not contact said third safety element as said platform is swung between said upright and horizontal positions,

a latch hook connected to said platform, and a latch pin connected to said mast, said latch hook and said latch pin engaging one with the other in latched relation as said platform is moved from a horizontal position into a vertical position, thereby restraining said platform in a vertical latched position with said mast,

manual handle structure connected to said latch hook, said handle structure being positioned on the underside of said platform, said handle structure being easily usable by an operator standing adjacent the underside of said vertically oriented platform when said platform is latched with said mast, said handle structure abutting the underside of said platform to establish a latch hook ready position for interengagement of said latch hook with said latch pin when said latch hook and latch pin are not connected in latched relation,

a spring continuously biasing said latch hook to said ready position, said spring permitting said latch hook to latchingly engage said latch pin as said platform achieves said vertical position, said spring also functioning to retain said latch hook in latched relation with said latch pin, and

two horizontal safety elements mounted on said mast and two horizontal safety elements mounted on said platform, said platform mounted elements being disposed in generally diametrically opposite locations relative to the pivot axis of said platform, and said mast mounted elements cooperating to define a support plane generally parallel to ground during use of said system, said horizontal safety elements cooperating one with another to prevent said platform from swinging downwardly beyond said horizontal elevator position.

4,563,122

INDUSTRIAL ROBOT

Peter Daly, Lyme Regis, England, and Maurice Jeanmairet, Boudry, Switzerland, assignors to Microbo S.A., Neuchatel, Switzerland

Filed Apr. 26, 1984, Ser. No. 604,341

Claims priority, application Switzerland, May 6, 1983, 2505/83

Int. Cl.⁴ B25J *17/62*

U.S. Cl. 414—732 **3 Claims**

1. An industrial robot comprising:

a movable arm;

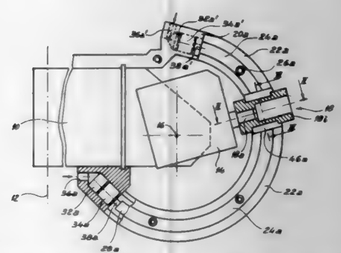
a wrist pivotally mounted about an axis at one end of the arm;

a cylindrical shaft perpendicular to the pivotal axis of the wrist and rotatably mounted on the wrist; and,

mechanical locking means able to act on the shaft both to prevent the shaft from rotating and the wrist from pivoting; said mechanical locking means including:

a pair of jaws disposed on opposite sides of the shaft symmetrically in relation to the diametral plane of the shaft that is perpendicular to the pivotal axis of the wrist, such that the shaft may be gripped by the jaws;

a pair of circularly curved parallel rails having a common center substantially coinciding with the pivotal axis of the wrist and being fixedly mounted on the arm symmetrically in relation to the diametral plane such that in any position of the wrist the shaft lies between the rails; and,



clamping means borne by the rails for applying the jaws against the shaft to prevent the shaft from rotating and the wrist from pivoting.

4,563,123

DIRECT COUPLING OF A VORTEX INJECTOR TO A CENTRIFUGAL PUMP

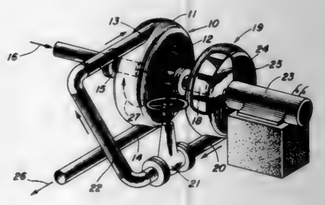
Jeffrey L. Beck, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Sep. 12, 1983, Ser. No. 531,517

The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.

Int. Cl.⁴ F03B *11/08*

U.S. Cl. 415—52 **5 Claims**



1. A method for reducing the wear on the impeller and increasing the efficiency of a centrifugal pump when used to pump a slurry stream containing from large dimensioned to fine dimensioned material in a fluid comprising:

a. forming a vortex by injecting fluid tangentially into a circular chamber and removing a portion of said fluid tangentially from said chamber;

b. injecting said slurry axially into said chamber, said vortex separating said large dimensioned material from the remainder of said slurry and fluid;

c. removing said remainder of said slurry and fluid axially from said chamber and injecting same into the inlet of a centrifugal pump;

d. using the output from said centrifugal pump as the injected fluid for said vortex;

whereby said large dimensioned material is moved to the periphery of said vortex and removed resulting in small to intermediate dimensioned material and fluid being injected into said centrifugal pump thereby reducing the wear on said impeller and allowing said pump to be operated at a higher rotational speed and consequent improvement in efficiency.

4,563,124

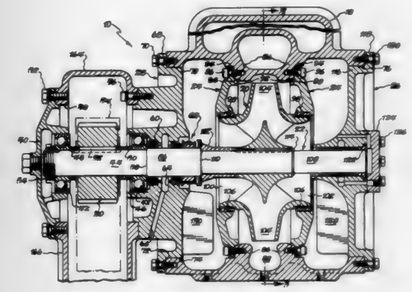
DOUBLE SUCTION, SINGLE STAGE VOLUTE PUMP

William F. Eskew, Horseheads, N.Y., assignor to Figgie International Inc., Willoughby, Ohio

Filed Feb. 24, 1984, Ser. No. 583,581

Int. Cl.⁴ F04D *29/42*

U.S. Cl. 415—98 **3 Claims**



1. A double suction single stage volute pump assembly suitable for use in firefighting equipment comprising:

a single piece pump casing having

a single volute defining portion provided with a pair of generally circular coaxial shroud receiving openings in the sides thereof and a discharge portion lying in a plane intermediate the shroud receiving openings,

exterior sidewalls disposed on opposite sides of said volute defining portion, each of said sidewalls being provided with a housing receiving opening coaxial with the shroud receiving openings,

a pair of opposed inlets lying in the plane of the discharge portion, one inlet being disposed to one side of a vertical plane passing through the center line of the pair of generally circular shroud receiving openings, and the outer inlet being disposed to the other side of said vertical plane,

a pair of opposed discharge headers in fluid communication with the discharge portion of the volute, one of said discharge headers lying to one side of said vertical plane, and the othr discharge header lying to the other side of said vertical plane, and

a pair of passageways extending from each inlet to eithr side of the volute defining portion;

a rotary impeller assembly including an impeller and an impeller shaft, the impeller being mounted within the volute defining portion of the pump casing, the diameter of said impeller assembly being less than the diameter of said housing receiving openings and said shroud receiving openings so that said impeller may be inserted through a housing receiving opening and a shroud receiving opening for assembly or disassembly;

a pair of removable impeller shrouds normally secured to the sides of the volute defining portion of the pump casing about said shroud receiving openings, each of said shrouds having a diameter less than the diameter of said housing receiving openings so that said impeller shrouds may be inserted through an associated housing receiving opening for assembly to or disassembly from the volute defining portion of the single piece pump casing; and

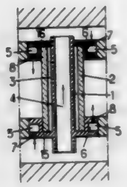
a pair of housings secured to the exterior sidewalls of the pump casing, said housings supporting the impeller shaft.

4,563,125

CERAMIC BLADES FOR TURBOMACHINES

Serge Boudigues, Sceaux; Georges Frattacci, Issy les Moulineaux, and Alain Ponthieux, Meudon, all of France, assignors to Office National D'Etudes et de Recherches Aerospatiales, France

Filed Dec. 14, 1983, Ser. No. 561,082
Claims priority, application France, Dec. 15, 1982, 82 21041
Int. Cl.⁴ F01D *5/18, 5/28*
U.S. Cl. 415—115 **6 Claims**



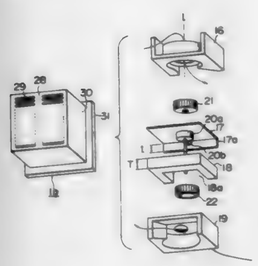
1. A turbine blade, suitable for use in a gas turbine, comprising:
a metal core;
a ceramic shell surrounding said metal core;
at least one longitudinal cooling channel provided in said metal core;
a space between the metal core and the ceramic shell in the middle part of the blade;
two contact areas between the metal core and the ceramic shell respectively at the two end parts of the blade;
means for cooling at least one of said two contact areas, said cooling means comprising a metallic annular cooling chamber outwardly surrounding the ceramic shell in front of said at least one contact area, said annular cooling chamber defining a circumferential cooling path which extends around said ceramic shell.

4,563,126

CASING OF BLOWER AND VENTILATING FAN UTILIZING THE CASING

Kazuo Kobayashi; Seijiro Asano, both of Chiba; Mituo Nakamura, Tokyo; Daijiro Ida, Narashino; Hiroshi Asabuki, and Hiromoto Ashiwara, both of Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,735
Claims priority, application Japan, Mar. 18, 1981, 56-38003; Apr. 24, 1981, 56-61172; Sep. 18, 1981, 56-146227; Sep. 18, 1981, 56-146228; Sep. 18, 1981, 56-146229
Int. Cl.⁴ F04D *29/66*
U.S. Cl. 415—119 **21 Claims**



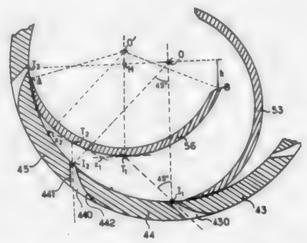
1. A casing of a blower comprising:
a frame formed of rigid material; and
a plurality of spiral cases arranged in said frame, said spiral cases being formed of a material having suitable elasticity with respect to the frame and having outer dimensions slightly larger in their natural unassembled condition than the inner dimensions of the frame whereby the spiral cases are compressed as arranged in their assembled condition in said frame so that the spiral cases can be held in place in the frame by virtue of their own elasticity.

4,563,127

HYDRAULIC TURBINE

Georges Flandin-Blety, 8 Impasse des Muges, 13008 Marseille, France

Continuation of Ser. No. 626,475, Jul. 2, 1984, abandoned, which is a continuation of Ser. No. 498,035, May 31, 1983, abandoned, which is a continuation of Ser. No. 174,407, Aug. 1, 1980, abandoned. This application Mar. 29, 1985, Ser. No. 717,488
Claims priority, application France, Aug. 3, 1979, 79 19936
Int. Cl.⁴ F03B *3/02, 13/00*
U.S. Cl. 415—184 **8 Claims**



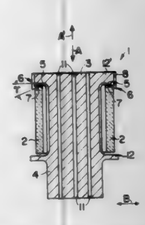
1. A hydraulic turbine comprising a stator having a hollow body, a plate adapted to close said body, means for fixing said plate on said body at its periphery, a circular inner wall provided in said body which delimits a cylindrical inner chamber and a peripheral distributing chamber, said circular inner wall comprising a plurality of circular ring portions forming therebetween a plurality of successive injecting gaps for the passage of water between said distributing chamber and said cylindrical chamber, a water admission opening which communicates with said distributing chamber, first and second opposed circular openings coaxial to said cylindrical chamber respectively providing said body and said plate, a rotor located in said cylindrical chamber which comprises a driving shaft passing through said first circular opening, a hollow shaft which is journalled in said second circular opening and serves as exhaust duct, a first disc coaxially fixed to the driving shaft and a second disc provided with an axial escape opening, which is coaxially fixed to the hollow shaft, said first and second discs having a diameter substantially equal to that of the cylindrical chamber and being coaxial thereto, and four blades fixed to said two discs and extending therebetween, said blades each having a profile of an arc of circle with an inner end and an outer end, and being respectively centered on four center points located on a circle coaxial to said cylindrical chamber and situated two by two on two respective orthogonal axes, the inner end of said blades extending tangentially to said circle and the outer end of said blades being level with said circular wall, said injector gaps having a plane terminal face inclined at 45° with respect to the corresponding radius of the corresponding ring portion and forming with a plane tangential to the surface of a corresponding blade an angle which varies at uniform rate, when the rotor is rotating, between a first value obtained when the injector gap begins to cooperate with said corresponding blade and a second value obtained when said corresponding blade occupies a position in which an adjacent blade is at the point of cooperating with the same injector gap, said first value being equal to 120° with a tolerance of plus or minus 5° and the second value being equal to 135° with a tolerance less than plus or minus 5°.

4,563,128

CERAMIC TURBINE BLADE HAVING A METAL SUPPORT CORE

Axel Rossmann, Karlsfeld, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 17, 1984, Ser. No. 581,198
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1983, 3306896
Int. Cl.⁴ F01D *5/18, 5/28*
U.S. Cl. 416—92 **20 Claims**



1. In a hot gas turbine blade having a metal support core and a ceramic blade member held by said metal support core for use under superheated gas operating conditions, said ceramic turbine blade member having a longitudinal blade axis extending substantially radially relative to a rotational turbine axis, the improvement comprising a metal support head at a radially outer end of said metal support core, said metal support head having blade support shoulders with surfaces facing substantially radially inwardly, said blade support surfaces of said blade support shoulders being inclined at an angle (γ) relative to said turbine axis to form a dovetail configuration, said ceramic turbine blade member having blade bearing shoulders with correspondingly inclined radially outwardly facing surfaces at a radially outer end of the respective blade member, said inclined surfaces of said blade bearing shoulders engaging said blade support surfaces of said metal support head in a form-locking manner for forming a dovetail type connection between said metal support head and said ceramic turbine blade and for applying a compressive stress to said ceramic turbine blade member in operation, said compressive stress being effective substantially in a direction extending perpendicularly to said longitudinal axis of said turbine blade member, said radially inwardly and said radially outwardly facing surfaces cooperating with each other for permitting shifting of the blade member along said surfaces for compensating thermal expansion differences between the ceramic blade member and the metal support core.

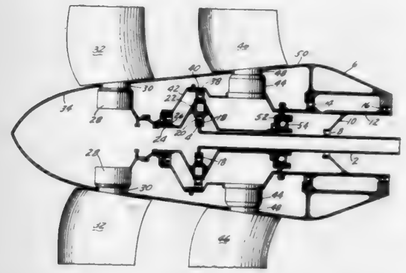
4,563,129

INTEGRATED REDUCTION GEAR AND COUNTERROTATION PROPELLER

Gino Pagluica, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 8, 1983, Ser. No. 559,599
Int. Cl.⁴ B64C *11/48*
U.S. Cl. 416—129 **6 Claims**

1. In a counterrotation propeller drive and reduction gear,
a sun gear,
a shaft carrying the sun gear,
a series of pinion gears surrounding the sun gear and in mesh therewith,
a set of casings for the bearings for the forward set of propellers,
an annular member surrounding the shaft and supporting the pinions, and axially spaced therefrom, also supporting the set of casings for the bearings for the forward set of propellers forwardly of the pinions,
a ring gear surrounding and in mesh with the pinions,
a set of casings for the bearings for the rearward propellers,
a second annular member supporting the ring gear, and axially spaced from the ring gear, also supporting the set of casings for the bearings for the rearward set of propellers,
a support structure rearwardly of both sets of casings and having spaced bearings therein in which the second annular member is journalled, and



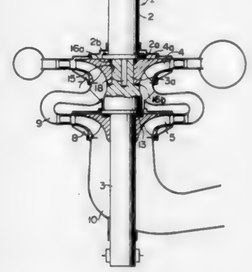
spaced bearings within said second annular member for supporting the first annular member, one of said spaced bearings and the ring gear being located axially between the sets of casings.

4,563,130

MULTISTAGE PUMP-TURBINES

Kentaro Ichikawa, Chigasaki, and Shunji Etoh, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 24, 1984, Ser. No. 583,361
Claims priority, application Japan, Feb. 28, 1983, 58-32161; Feb. 28, 1983, 58-32162
Int. Cl.⁴ F01D *5/06;* **B23K** *31/02*
U.S. Cl. 416—213 R **5 Claims**



1. A multistage pump-turbine provided with a turbine shaft on which a plurality of runners, each provided with a runner crown and a runner cone, are assembled, said turbine shaft comprising at least two parts of upper and lower shaft parts connected at a runner portion of a highest pressure stage of the multistage pump turbine, said runner portion of the highest pressure stage being provided with an axially vertical hole into which an upper end portion of the lower shaft part of said turbine shaft is inserted, said inserted upper end portion being welded to a wall of said vertical hole, said vertical hole being formed throughout the runner cone and the runner crown of the runner portion of the highest pressure stage, said upper end portion of the lower shaft part being provided with a welding strain absorbing hole along the axis thereof.

4,563,131

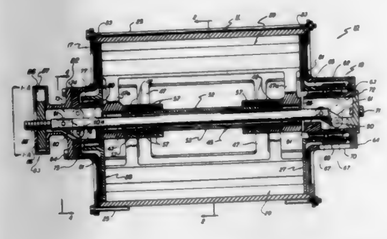
VARIABLE DISPLACEMENT BLOWER

Charles C. Bookout, Niskayuna; Robert E. Stotts, Clifton Park; Douglass R. Waring, Ballston Spa, all of N.Y., and Lawrence R. Folsom, Ohain, Belgium, assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Apr. 30, 1984, Ser. No. 605,480

Int. Cl.[4] F04B *1/06, 29/00*

U.S. Cl. 417—221 **8 Claims**



1. A variable blower for moving a working substance that includes

a casing having an elongated cylindrical compartment and an inlet and outlet port circumferentially displaced in the wall of compartment

a cylindrical rotor unit rotatably mounted within the compartment having a plurality of axially extended piston chambers formed therein, said rotor unit being coaxially aligned with said compartment,

a rectangular shaped piston mounted in each of the piston chambers for rotation therewith,

an axially disposed shaft mounted in said casing compartment to which each piston is connected,

mounting means for movably supporting both ends of the shaft within the casing so that said shaft can move within the compartment toward and away from the axis of the rotor unit along a radial line of the compartment,

means for sensing the position of the shaft in relation to the axis of the rotor, and

adjusting means responsive to the sensing means for changing the position of said shaft whereby the displacement of the blower can be controlled.

4,563,132

COMPOUND TURBOCHARGER SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

John E. Grimmer, Franklin, Ind. 46131

Division of Ser. No. 321,089, Nov. 13, 1981, Pat. No. 4,496,291.

This application Jan. 28, 1985, Ser. No. 695,352

The portion of the term of this patent subsequent to Jan. 29, 2002, has been disclaimed.

Int. Cl.[4] F04B *17/00*

U.S. Cl. 417—247 **5 Claims**

1. A compound turbocharger system, comprising

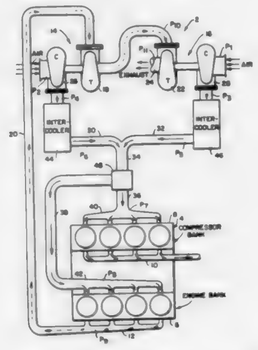
(a) an internal combustion engine containing at least one engine cylinder and an intake manifold for supplying air to said engine cylinder;

(b) a compressed air utilizing means for consuming a substantial amount of compressed air as compared with the amount of air supplied by said intake manifold to said internal combustion engine during the operation; and

(c) compressed air generating means connected with said compressed air utilizing means for producing compressed air in sufficient quantities to satisfy the requirements of said compressed air utilizing device and said engine when both said internal combustion engine and said compressed air utilizing device are operated simultaneously, said compressed air generating means including

(1) first turbocharger means to turbocharge said internal combustion engine by receiving exhaust gas from said at least one engine cylinder and by supplying air under pressure to said intake manifold, said first turbocharger means including a first turbine connected to receive exhaust gases directly from said engine cylinder and a first impeller-type compressor mechanically driven by said first turbine for compressing air received from the atmosphere and supplying the compressed air to said compressed air to said compressed air utilizing means,

(2) second turbocharger means to turbocharge said internal combustion engine by supplying air under pressure to said intake manifold, said second turbocharger means including a second turbine fluidically connected to receive exhaust gases in series from said first turbine and a second impeller-type compressor mechanically driven by said second turbine for operating in combination with said first compressor by compressing air received from the atmosphere and supplying the compressed air in combination with said first impeller-type compressor to said compressed air utilizing means.



4,563,133

FUEL CUT SOLENOID VALVE FOR FUEL INJECTION PUMP

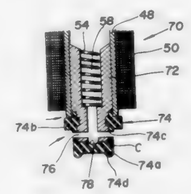
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 9, 1984, Ser. No. 608,413

Claims priority, application Japan, May 17, 1983, 58-84957

Int. Cl.[4] F04B *49/02, 39/08;* **F16K** *31/02;* **F02M** *41/00*

U.S. Cl. 417—295 **8 Claims**



1. In a fuel injection pump having a fuel passage, a fuel cut solenoid valve for opening and closing the fuel passage, comprising:

a cylinder made of non-magnetic metal and having first and second ends;

a hollow plunger arranged to move in the cylinder, and arranged to move between a first position opening said fuel passage and a second position closing said fuel passage, wherein a first end of the plunger protrudes from the cylinder when the plunger is in the first position;

a solenoid placed around said cylinder, and, when energized, for urging the plunger toward the first position, wherein magnetic field lines are directed through the plunger and out of said first end of the plunger when the solenoid is energized;

a clearance space between the hollow plunger and the cylinder, wherein magnetic field lines passing through the plunger are directed away from the clearance space;

a spring for biasing the plunger toward the second position;

a stopper made of a non-magnetic material, mounted on the plunger and, when the solenoid is energized, for abutting the first end of the cylinder and thereby holding the plunger in the first position, wherein the stopper physically separates the first end of the plunger from the clearance space;

a chamber defined by the cylinder and the hollow plunger, wherein the volume of the chamber varies as the plunger moves;

a relatively large-diameter transverse port disposed substantially near said first end of the plunger, and for providing constant communication between the chamber and the fuel passage;

a well opening into said transverse port and for collecting magnetic particles, wherein the well is centrally disposed in the plunger and nearer to the first end of the plunger than the transverse port, and wherein magnetic field lines are conducted through the plunger substantially near the well.

4,563,134

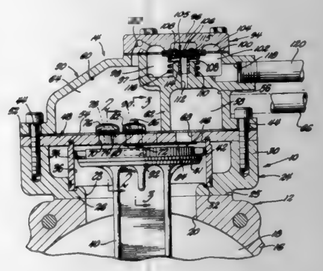
CYLINDER HEAD WITH PRESSURE REGULATOR VALVE

Alan L. Hitzelberger, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 24, 1985, Ser. No. 748,177

Int. Cl.[4] F04B *49/02*

U.S. Cl. 417—295 **3 Claims**



1. In a boost pump for providing gas at a pump discharge pressure which exceeds a variable above-ambient inlet pressure of said gas from a gas source by a constant absolute pressure difference, said boost pump including a piston disposed in a cylinder for reciprocation in intake and exhaust strokes, a cylinder head assembly comprising, a cylinder head body cooperating with said cylinder and with said piston in defining a variable volume pumping chamber, means on said cylinder head body defining an inlet chamber, first one-way valve means between said inlet and said pumping chambers open only during said piston intake strokes, second one-way valve means between said discharge and said pumping chambers open only during said piston exhaust strokes, means on said cylinder head body defining a cavity, a flexible diaphragm on said cylinder head body dividing said cavity into an inlet control chamber exposed to one side of said diaphragm and a feedback chamber exposed to the opposite side of said diaphragm, means defining an inlet passage between said inlet control chamber and said inlet chamber, a valve element on said diaphragm, means connecting said gas source to said inlet control chamber so that said gas at said inlet pressure urges said diaphragm and said valve element away from said inlet passage thereby to allow gas flow to said inlet chamber, spring means urging said diaphragm and said valve element away from said inlet passage with a spring force proportional to said constant absolute pressure difference, and means defining a feedback passage between said discharge chamber and said feedback chamber whereby gas at said pump discharge pressure urges said diaphragm and said valve element toward said inlet passage so that gas flow through said inlet passage is progressively throttled, said pump discharge pressure increasing until static equilibrium is established across said diaphragm with gas flow through said inlet passage throttled by an amount just sufficient to maintain said pump discharge pressure in excess of said inlet pressure by said constant absolute pressure difference.

4,563,135

PUMP FOR CONCRETE OR THE LIKE

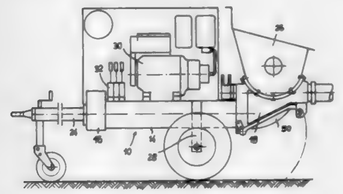
Rudolf Riker, Potsdamer Str. 16, D-8940 Memmingen, Fed. Rep. of Germany

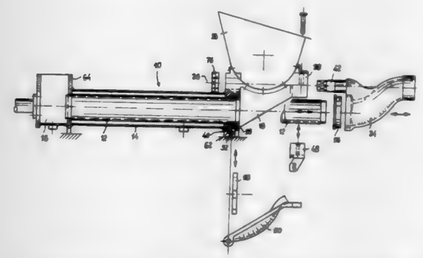
Filed Feb. 6, 1984, Ser. No. 577,346

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304985

Int. Cl.[4] F04B *7/00*

U.S. Cl. 417—517 **8 Claims**





1. An improvement in a pump for conveying concrete or the like, the pump comprising a pair of parallel pump cylinders communicating between a water rinsing box and a valve housing, a feeding hopper arranged on said valve housing, a tubular swing valve body mounted for swivelling movement within said housing about a swivelling axis arranged in a central plane between said pair of pump cylinders and arranged above the axes of the pump cylinders, said water rinsing box and said valve housing connected with one another by rigid connecting means and thereby forming a rigid structure unit, said pair of pump cylinders formed as flangeless cylinder tubes respectively rotably mounted in said structure unit at both ends thereof, and detachable fastening means provided at one end of each of said pair of pump cylinders, securing said pair of pump cylinders at said structure unit; THE IMPROVEMENT COMPRISING:

said rigid structure unit being formed as an integral structure undetachably connecting the water rinsing box with the valve housing by welding; the valve housing being provided with a movable closing means closing a maintenance opening thereof and arranged at a position such that imaginary axial projections of the peripheries of both said pump cylinders intersect said closure means, whereby after having opened said closure means and removed said fastening means, each one of said pair of pump cylinders are axially extractable through said maintenance opening of the unremovable valve housing.

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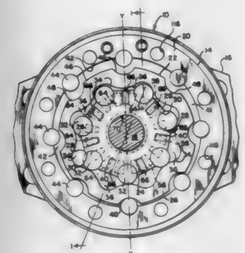
HIGH TORQUE LOW SPEED HYDRAULIC MOTOR WITH ROTARY VALVING

Edward H. Gervais; Carle A. Middlekauff, both of Cumberland Center, and Donald C. Wescott, West Baldwin, all of Me., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 394,648, Jul. 2, 1982, abandoned, which is a continuation of Ser. No. 148,995, May 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 90,274, Nov. 1, 1979, abandoned. This application Apr. 12, 1985, Ser. No. 722,331

Int. Cl.⁴ F03C *2/08*; F04C *2/113*

U.S. Cl. 418—1 **30 Claims**



1. A method of utilizing pressurized fluid to produce rotary motion comprising the steps of:

injecting said fluid into a motor housing; directing said fluid to a plurality of commutator ports;

selectively transmitting said fluid through rotary valve means carrying N valve ports rotatable about a central axis to N sealed variable volume chambers formed between a gear like N toothed inner member with tooth root sections and intermediate tooth crown sections located between said tooth root sections mounted for rotation about said central axis and an annular outer member having a further axis circularly moveable about said central axis without rotation about said further axis, said outer member having an inner peripheral surface of N+1 generated arcuate teeth, said teeth's profile having a continuously changing radius of curvature which provides for continuous cooperative contact with said toothed inner member to form said N sealed variable volume chambers and wherein such selective transmission of fluid occurs when the valve ports are aligned with the tooth root sections of the inner member;

selectively expanding some of said sealed chambers by providing a pressure differential between said sealed chambers in order to produce a rotary motion with said inner member;

withdrawing through said valve means said fluid from chambers that have reached their maximum expansion; and

removing said fluid from said housing.

4,563,137

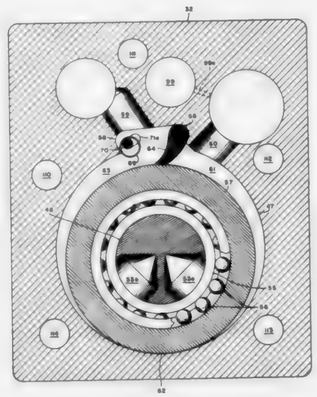
ROTARY HYDRAULIC ENERGY-CONVERSION DEVICE WITH TWO DAMS ENGAGING A ROTATABLE RING

Arthur E. Rineer, P.O. Box 115, Beulah, Mich. 49617

Continuation of Ser. No. 467,216, Feb. 17, 1983, abandoned. This application Mar. 25, 1985, Ser. No. 715,369

Int. Cl.⁴ F03C *2/00*; F04C *2/00, 15/00*

U.S. Cl. 418—63 **1 Claim**



1. An hydraulic energy-conversion device, comprising:

a housing having a chamber defined by a cylindrical peripheral surface and opposite end surfaces and a portion extending outwardly radially beyond said peripheral surface;

a shaft rotatably mounted in said housing for rotation coaxially with said cylindrical surface, said shaft having an eccentric portion disposed between said end surfaces;

a ring surrounding said eccentric portion, and interposed between said eccentric and said peripheral surface, said ring being fully rotatable with respect to said eccentric portion and to said housing;

means forming relatively high-pressure and low-pressure ports in said housing communicating with said chamber;

a first dam moveably mounted in said housing between said ports, and adapted to close off the cross-section of the portion of said chamber between said ring and said peripheral surface in all positions of said ring; and

a second dam moveably mounted in said housing and adapted to close off the cross-section of said chamber between said ring and said peripheral surface in response to an excess of pressure in said high-pressure port over the pressure in the adjacent portion of said chamber, said second dam being disposed on the opposite side of said high-pressure port from said first dam, said second dam being a cylindrical sleeve, a pin being mounted in said portion of said chamber parallel to the axis of said cylindrical peripheral surface and said cylindrical sleeve being loosely received over said pin.

4,563,138

COMPRESSOR SYSTEM WITH OIL SEPARATION

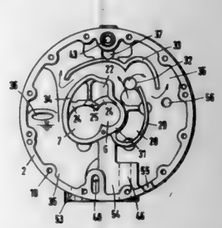
Rudolf Hofmann, Hofheim, and Kurt Magdhuber, Geretsried, both of Fed. Rep. of Germany, assignors to Isartaler Schraubenkompressoren GmbH, Geretsried, Fed. Rep. of Germany

Continuation of Ser. No. 448,400, Dec. 9, 1982, abandoned. This application Oct. 23, 1984, Ser. No. 664,081

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149245

Int. Cl.⁴ F04C *29/02, 29/04*

U.S. Cl. 418—97 **15 Claims**



1. A compact oil-injected compressor comprising:

a housing (1) with a pair of walls (31,34) defining two bores (6,7) therein;

rotors (4,5) within the bores (6,7), a compression space being defined between the rotors (4,5);

an outlet (26) from the compression space;

a channel (28) connected to said outlet (26) to guide air from said outlet (26) about one of said walls (31,34) in a direction substantially tangential to one of said rotors (4,5), said channel (28) extending generally vertically upward from the bottom outlet (26) around one of the bore walls (31);

a ring-shaped cavity (35) in the housing (1) about the walls (31,34) and channel (28) for air guidance, for pre-separation of oil, and for receiving injected oil;

a mouth orifice (32) opening the channel (28) into the cavity (35);

a deflecting wall (33) opposite the mouth orifice (32), said deflecting wall (33) being adapted to divide the air from the mouth orifice (32) into opposite directions in the cavity (35); and

an outflow orifice (37) from said cavity (35), wherein the deflecting wall (33) is disposed between the mouth orifice (32) and the outflow orifice (37).

4,563,139

MOLD CLAMPING MECHANISM FOR TIRE CURING MACHINES

Kageki Yokoyama, and Itaru Amano, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 20, 1984, Ser. No. 572,254

Claims priority, application Japan, Jan. 27, 1983, 58-12334

Int. Cl.⁴ B29H *5/02*

U.S. Cl. 425—47 **6 Claims**

1. A mold clamping mechanism for a tire curing press, comprising:

a press base;

a platen support fixed to said press base;

a lower mold cavity positioned above said press base and surrounding said platen support;

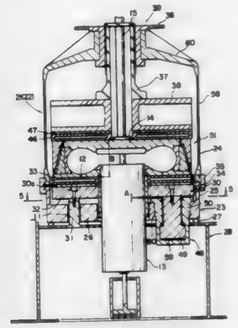
a lower mold positioned on said platen support;

an upper mold cavity having an upper mold positioned therein and opposingly mounted to said lower mold cavity and vertically movable toward and away from said lower mold cavity;

a center mechanism provided at the center of said upper and lower mold cavities, respectively;

lock means for releasably locking said upper and lower mold cavities to each other;

mold pressing means located beneath and connected to said lower mold cavity and connected to said upper mold



cavity via said lock means for simultaneously pressing said lower and upper mold cavity downwardly; and

means for resiliently supporting said lower mold cavity on said press base.

4,563,140

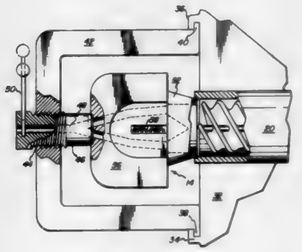
APPARATUS FOR COATING ALIGNED CORDS

Donald J. Turecek, North Branford, Conn., assignor to Armstrong Rubber Company, New Haven, Conn.

Filed Nov. 14, 1983, Ser. No. 551,096

Int. Cl.⁴ B29F *3/10*

U.S. Cl. 425—114 **16 Claims**



1. A cord-alignment baffle means for use in association with an extrusion die assembly for applying a coating onto a plurality of spaced cords comprising:

a solid support plate having a plurality of cord-alignment apertures extending therethrough along parallel axes, wherein each of said apertures comprises a guide position and an enlarged knot-passing position.

4,563,141

APPARATUS FOR MAKING AN ELONGATED COMPOSITE ARTICLE

Robert A. Zoller, Bay Village, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Mar. 20, 1984, Ser. No. 590,261

Int. Cl.⁴ B29C *47/02*

U.S. Cl. 425—114 **5 Claims**

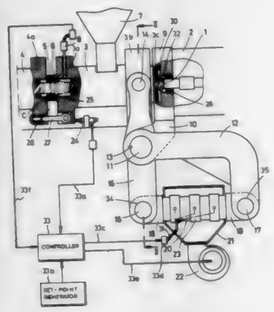
1. A device for extruding an elongated thermoplastic article, said article having a body with at least one film strip bonded to at least a predetermined portion thereof, said device comprising:

a die assembly;
an extrusion passageway extending in a generally longitudinal direction in said die assembly, said extrusion passageway being adapted for extruding a thermoplastic material therethrough;
a guide passageway extending in a generally longitudinal direction in said die assembly and being adapted for passing a film strip therethrough, said guide passageway being separate and isolated from said extrusion passageway; and
a bonding passageway downstream of said extrusion and



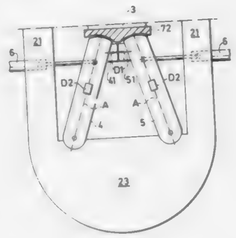
guide passageways and extending in a generally longitudinal direction in said die assembly and having a predetermined lateral cross-section configuration shaped to obtain the desired lateral cross-section of said elongated article, said bonding passageway being enlarged relative to said extrusion and guide passageways and further being adapted to allow said thermoplastic material from said extrusion passageway to swell into contact with said film strip in said bonding passageway in order to bond said film strip to said predetermined portion of said elongated thermoplastic article.

4,563,142
APPARATUS FOR CONTROLLING THE FLOW RESISTANCE IN A SCREW OR WORM EXTRUDER
Karl Klingenberg, Porta-Westfalica, Fed. Rep. of Germany, assignor to Battenfeld Extrusionstechnik GmbH, Bad Oeynhausen, Fed. Rep. of Germany
Filed Aug. 17, 1984, Ser. No. 642,047
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1983, 3329947
Int. Cl.⁴ B29F *3/06*
U.S. Cl. 425—145 **21 Claims**



1. A worm extruder, comprising:
a housing having a continuous bore through which a flow medium is conveyed and a worm for conveying said medium, said housing including in series, a stationary cylindrical housing portion and two cylindrical housing portions simultaneously movable with respect to said stationary housing portion;
constriction means for providing a narrowing of said bore at a location between said two housing portions, said constriction means having a first member disposed within a space formed between said two housing portions and a second stationary member, wherein said first and second members cooperate with each other to define a variable gap at said location;
a heat-responsive unit of predetermined thermal expansion coefficient;
lever means for transmitting the expansion of said unit to said constriction means, said lever means connecting one end of said unit to one of said two housing portions and the other end thereof to said stationary housing portion so that depending on the expansion of said heat responsive unit, said two housing portions are moved relative to said stationary housing portion thereby moving the first member relative to the second member to adjust the gap and to control the flow resistance; and
means for controlling the temperature of said unit to regulate the width of the gap.

4,563,143
ISOSTATIC PRESS
Ola Pettersson, Höganäs, Sweden, assignor to KB Cold Isostatic Press Systems CIPS, Höganäs, Sweden
Filed Mar. 20, 1984, Ser. No. 591,340
Claims priority, application Sweden, Apr. 19, 1983, 8302201
Int. Cl.⁴ B28B *3/00*
U.S. Cl. 425—151 **20 Claims**

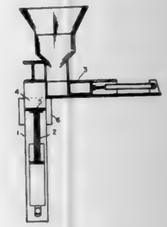


1. An isostatic press including a press frame having two frame legs, said press frame comprising opposed first and second yokes which are interconnected by said frame legs, a pressure chamber positioned within the frame and bearing against said first yoke of the frame, a pressure chamber closure which carries a press tool and is displaceable along a path through the frame substantially perpendicularly to a plane of the frame between the pressure chamber and said second yoke of the frame, means for reciprocally moving said chamber closure between said path and said pressure chamber, and means for supporting the chamber closure during pressurization of the pressure chamber wherein said means for supporting the chamber closure includes two support legs pivotally mounted in said plane of the frame on opposite sides of said path, a lower end of each support leg being mounted on the second frame yoke portion and an upper end of each support leg being provided with an arcuately contoured surface for mating with a corresponding surface of the chamber closure formed along a side of the chamber closure opposite the pressure chamber.

4,563,144
HYDRAULIC BLOCK PRESS
Andrew F. Rose, P.O. Box 325, Greeley, Colo. 80632
Filed Jan. 22, 1985, Ser. No. 693,610
Int. Cl.⁴ B29C *3/06*
U.S. Cl. 425—166 **5 Claims**

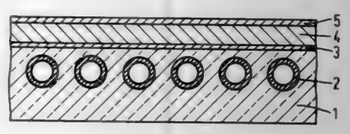
1. A hydraulic press comprising the combination of:
a frame including two pairs of opposed side members which form a mold cavity and a crown member above said side

members, one pair of said opposed side members extending above said mold cavity with said crown member being fixedly supported to the tops of said one pair of opposed side members,
a moveable box section perpendicular to and slidable over the tops of the other pair of said opposed side members,
said box section to supply stock to said mold cavity and to form an upper bearing surface when positioned over mold cavity,



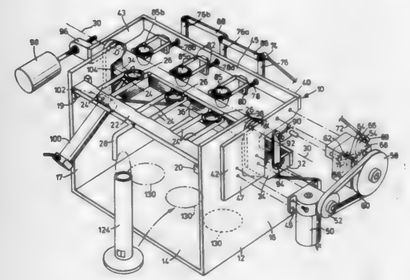
means attached to said box section for moving said box section horizontally over said mold cavity ejecting a compressed shape formed in said mold cavity,
a vertically moveable press pad within said mold cavity,
means on said frame to lower said press pad while said mold cavity is filled from said box section, and
to raise said press pad to compress said stock within said mold cavity between said press pad and said upper bearing surface.

4,563,145
ALTERNATELY HEATABLE AND COOLABLE MOULDING BLOCK
Johannes P. de Meij, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 17, 1984, Ser. No. 682,230
Claims priority, application Netherlands, Dec. 22, 1983, 8304399
Int. Cl.⁴ B29C *35/08*
U.S. Cl. 425—174.8 R **4 Claims**



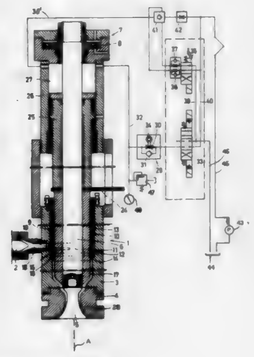
1. An alternately heatable and coolable moulding block for manufacturing a plate-shaped information carrier from thermoplastic material, the block comprising a plate of an electrically insulating material which carries a metal mould containing the information and in which plate a duct for a cooling liquid is provided, and an electrical conductor wound to form a flat induction coil, charactrerized in that between the mould and the insulating plate there are provided a layer of a material of good thermal conductivity, which layer is in contact with the mould, and a layer of an electrically conductive ferromagnetic material.

4,563,146
APPARATUS FOR AUTOMATICALLY FLUXING AND CASTING SAMPLES
John H. Kelly, Burlington, and Leonard E. Guest, Binbrook, both of Canada, assignors to Stelco Inc., Hamilton, Canada
Filed Apr. 18, 1984, Ser. No. 601,687
Claims priority, application Canada, Mar. 1, 1984, 448611
Int. Cl.⁴ B22D *37/00, 41/06*
U.S. Cl. 425—256 **24 Claims**



1. An apparatus comprising:
frame means,
a crucible having a central axis and a bottom,
support means supporting the crucible,
motion means for moving said crucible so that said central axis moves to describe a substantially conical surface having an apex located substantially on said central axis and spaced from the bottom of the cruciole by a distance substantially equal to or less than the crucible height, the crucible being restrained against rotation about its axis.

4,563,147
APPARATUS FOR EXTRUDING A TUBE
Günter R. Langecker, Meinerzhagen, Fed. Rep. of Germany, assignor to Battenfeld Maschinenfabrik GmbH, Meinerzhagen, Fed. Rep. of Germany
Continuation of Ser. No. 294,036, Aug. 18, 1981, abandoned. This application Apr. 8, 1983, Ser. No. 483,361
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031333
Int. Cl.⁴ B29D *23/04*
U.S. Cl. 425—376 A **1 Claim**



1. An apparatus comprising:
a nozzle having

an outer nozzle element having an inner surface and centered on an axis, and

an inner nozzle element coaxially within the outer element and having an outer surface radially confronting the inner surface and forming therewith an annular passage having an axial inner end and an axial outer end;

means for feeding a plastic mass under pressure to the inner end at a plurality of angularly equispaced locations therein, whereby the mass moves axially outward along the passage and emerges from the outer end as a tube;

means including a flow restriction at the outer end for impeding flow of the mass out of the passage to maintain the mass in the passage at least at a predetermined intermediate pressure;

a sleeve piston displaceable between the inner and outer elements between an inner position generally out of the passage and an outer position in and greatly reducing the volume of the passage; and

means including

a pressurizable chamber;

a source of a fluid under pressure having a high-pressure side and a low-pressure side;

valve means connected to both of the sides;

at least one fluid line connected between the valve means and the chamber;

at least one flow restriction in the fluid line; and

a check valve in parallel to the flow restriction and permitting flow through the line toward the chamber

for urging the piston into the outer position and for alternately pressurizing the chamber with a relatively low pressure below the intermediate pressure and with a relatively high pressure above the intermediate pressure, whereby the sleeve piston reciprocates in the passage synchronously with the pressure alternations.

4,563,148

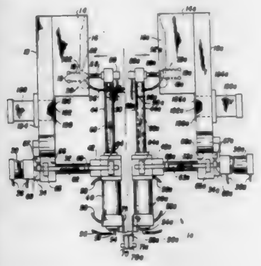
BLOW MOLDING LABEL TRANSFERRING APPARATUS

Siegfried C. Hasl, 80 Liberty Corner, Warren, N.J. 07060, and Werner F. F. Jahnel, 2 Eichenstr, 8061 Rumeltshausen, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,236

Int. Cl.⁴ B29C *17/07;* **B65H** *3/08, 3/46*

U.S. Cl. 425—503 **9 Claims**



1. A blow molding machine having

a pair of opposed platens mounted on tie rods for movement toward and away from each other, each platen mounting a mold half thereon, wherein the mold halves mate with each other when closed, thereby forming the shape of the object to be molded,

a label magazine fixedly mounted to the said platen and including a means for supporting a pack of labels in a stack to be picked from the stack one at a time,

a support arm also fixedly connected to the platen,

said support arm supporting a piston and cylinder unit which has an extendable element which is extendable toward and away from the mold half between and extended position and a retracted position,

a placement means located on the end of the extendable element,

the placement means facing the mold cavity when the extendable element is in its said extended position, and said placement means facing the label magazine when the extendable element is in its retracted position,

said placement means having a suction head and said placement means being extendable and retractable relative to the extendable element of the piston and cylinder unit, wherein, when the extendable element of the piston and cylinder unit is in its retracted position the placement means is extendable to pick up a label from the label magazine and retract, holding a label thereon by suction, and wherein when the extendable element of the piston and cylinder unit is in its extended position the placement means is extendable into the mold half to place the label against the interior thereof,

and means for extending and retracting the support arm in a direction generally parallel to the direction of movement of the platens and mold halves towards and away from each other, between a retracted position at which the extendable element is moved toward its platen and an extendable position at which the extendable element is moved to a location for said movement between the mold halves for movement of its placement means into a mold half.

4,563,149

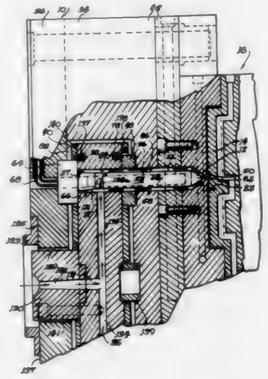
INJECTION MOLDING APPARATUS

H. Richard Landis, Oak Lawn, Ill., assignor to Landis Plastics Inc., Chicago Ridge, Ill.

Filed Apr. 20, 1984, Ser. No. 602,400

Int. Cl.⁴ B29C *45/20, 45/22*

U.S. Cl. 425—547 **2 Claims**



1. In a hot runner injection molding apparatus for molding plastic articles, the combination comprising:

a mold frame comprising a plurality of frame blocks with one of said blocks having a mold face with portions thereof defining a plurality of separate mold cavities each for receiving molten plastic therein,

a plurality of channel means in said mold frame each terminating in an injection nozzle opening at each of the mold cavities,

a substantially cylindrical heater probe extending through each of said channel means and having a substantially conical tip extending to and defining a portion of the injection nozzle opening at each of the mold cavities, said heater probes heating the plastic flowing into the mold cavities,

a one piece integral manifold block disposed internally within the mold frame and having a plurality of distributing passageways therein each delivering molten plastic to one of the channel means, said one piece integral manifold block having a plurality of heater receiving passageways therein,

a tubular heater in said heater receiving passageways in the manifold block to heat the same and the plastic flowing through said distributing passageways,

said manifold block being mounted internally within the mold frame blocks and being spaced from portions thereof by clearance spaces allowing the manifold block to expand relative to the frame blocks when the plastic is passing through the manifold distributing passageways to the respective channel means,

means having substantially cylindrical openings aligned about an axis through one of said heater probes which is extending therethrough and defining therewith a channel means of substantially annular shape about the probes leading to the injection nozzles,

an internal rod shaped tubular heater disposed internally within each of said probes for heating the plastic flowing through the substantially annular channel means to the injection nozzles, and

means on the probe for securing the probe to one of the mold frame blocks to hold the probe rigid within the substantially annular channel means as the manifold block expands and contracts said one piece integral manifold block having heater removal passageways therein axially aligned with the internal rod shaped tubular heater to allow replacement of the rod shaped heaters through the manifold block without disassemblying of the mold frame.

4,563,150

ILLUMINATING DEVICE

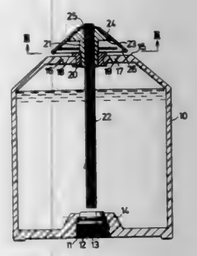
Leif Nilsson, Blåbärsvägen 1, S-260 40 Viken, Sweden

Filed Feb. 7, 1984, Ser. No. 577,859

Claims priority, application Sweden, Feb. 17, 1983, 8300891

Int. Cl.⁴ F23D *3/18*

U.S. Cl. 431—320 **2 Claims**



1. An illuminating device comprising a container adapted to be filled with an inflammable liquid and having a flat top and a flat bottom, means in said bottom permitting the filling of said container with fuel up to a predetermined fuel level and securing a minimum air filled space in the container above said level, said filling means comprising a central axial boss protruding into the container a predetermined distance and having a threaded fuel filling bore therethrough, a screw adapted to be screwed into said bore to close the container upon the filling of the same, said air space through at least one opening communicating with the ambient atmosphere in order to equalize the pressure in said space irrespective of fuel expansion and retraction in said container, said at least one opening being so dimensioned that the fuel owing to its intrinsic surface tension only is prevented from escaping through said opening even if the device is tilted or turned upside down, whereas the passage of air therethrough is always secured, a burner having a frustoconical tip with its smaller end turned upwards and its other end provided with a central depending shaft, said shaft having its free end screw threaded and having an axial channel containing a wick, the upper end of which protrudes somewhat above the upper end of the frustoconical tip and its lower end being immersed into the liquid fuel in order to transport fuel by capillarity action by said wick up to a flame site at said tip, an annular burner holder arranged centrally in said flat top of the container and having a central axial threaded hole therethrough adapted to receive the free threaded end of the shaft of said burner, a flame snuffer means allowing the flame to burn freely when the container is positioned upright but arranged to extinguish said flame if the container is excessively tilted or even inverted, said snuffer means being a conical ring resting loosely upon said frusto conical burner tip and having the same taper as said tip, the top opening of said ring having a slightly greater diameter than said smaller end of said burner tip and the bottom opening of said ring having a greater diameter than the lower end of said burner tip, the lower edge of said ring in the upright position of the illuminating device being spaced from said flat top of the container, and mounting means for mounting said snuffer means upon the burner tip in such a way that it is capable of restricted movements in the axial direction of the burner and in right angled direction thereto when said device is tilted or inverted in order to contact and cover the flame site, said mounting means comprising resilient and mutually parallel tongues projecting diagonally from the inner surface of said conical ring and having their free ends somewhat spaced from an opposite part of the inner surface of said conical ring, said tongues furthermore being vertically spaced from the lower end side of the burner tip and from an under edge of said ring and from said flat top of the container and wherein said tongues are guided one on each side of the shaft of said burner with a slip fit thereto, the lower end of said frustoconical tip serving as a stop for the vertical movement of the conical ring and said spacing to said opposite part making the detachment of the ring from the burner possible by means of an inclined pulling force exerted upon said ring to spread out the free ends of the resilient tongues and bend them downwards to give sufficient room for the passage of the burner tip between said free ends and the under edge of the conical ring in order to make the burner accessible for detachment for exchange of wick.

4,563,151

METHOD OF AND APPARATUS FOR TREATING GRANULAR MATERIAL

Alfredo Vogel, Malvern, England, assignor to Cosworth Research & Development Limited, Worcester, United Kingdom

Division of Ser. No. 330,864, Dec. 15, 1981, Pat. No. 4,437,834. This application Jan. 9, 1984, Ser. No. 569,463

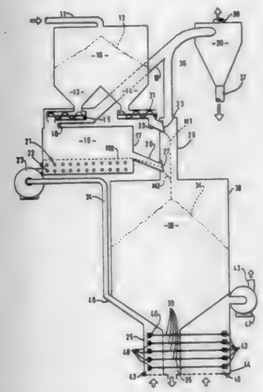
Claims priority, application United Kingdom, Dec. 16, 1980, 8040281; Nov. 23, 1981, 8135225

Int. Cl.⁴ F27B *15/00*

U.S. Cl. 432—15 **26 Claims**

1. An apparatus for reclaiming used foundry sand containing an organic binder comprising means for separating a mass of said sand from a casting, sand supply means to supply the separated sand to a heating station, a plurality of heating elements at the heating station to heat the sand to an elevated temperature, fluidizing means to introduce combustion supporting gas into the sand at the heating station at a plurality of locations to fluidize the sand while the sand is heated, sand passage means to pass the heated sand to a treatment station, gas feed means to feed combustion supporting gas to the sand

at the treatment station so as to continue the reclamation of the sand utilizing heat applied to the sand at the heating station,



and means for removing reclaimed sand from the treatment station.

4,563,152

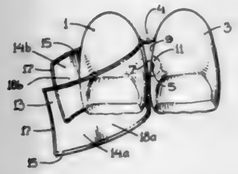
COMBINATION MATRIX AND INTERPROXIMAL SANDING DEVICE

Scott G. McClure, 304 E. Mission Rd., Fallbrook, Calif. 92028

Filed Jan. 14, 1985, Ser. No. 691,004

Int. Cl.[4] A61C *00/00*

U.S. Cl. 433—39 **9 Claims**



1. A combination matrix and interproximal sanding device for use in curable dental restorations comprising a flexible strip having opposed sides, each side having a surface coextensive therewith, adapted for insertion between proximal tooth surfaces, having a smooth surface portion on one said side for contact with the proximal surfaces surrounding a prepared cavity and the restoration material to be received therein and further having a roughened surface portion on the same side for later use in abrading and removing excess, cured restorative material that has escaped the cavity preparation without removing said strip from interproximate said teeth.

4,563,153

DENTAL COMPOSITION CONTAINING PIGMENT AND METHODS OF USING THE SAME

Roland Schaefer, Friedrichsdorf, Fed. Rep. of Germany, assignor to Kulzer & Co. GmbH, Wehrheim, Fed. Rep. of Germany

Filed Nov. 29, 1983, Ser. No. 556,025

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245172; Sep. 7, 1983, 3332179

Int. Cl.[4] C08F *2/50, 236/20;* C08K *3/22*

U.S. Cl. 433—223 **20 Claims**

1. A dental opaquing composition comprising

(a) at least one polymerizable ester selected from esters of acrylic acid and methacrylic acid;

(b) a photopolymerization catalyst; and

(c) 30 to 90 percent by weight, based on the weight of said composition, of a pigment mixture consisting essentially of 50 to 66.67% by weight zirconium dioxide and 33.33 to 50% by weight titanium dioxide.

4,563,154

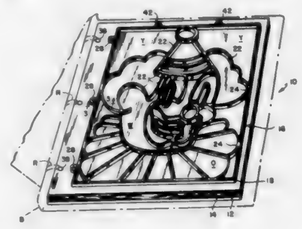
TRACING STENCIL TABLET

James W. Vandervort, Winchester, Mass., and Wim Hartevelt, Baarle-Hertog, Belgium, assignors to S.D.V. Incorporated, Winchester, Mass.

Filed Feb. 16, 1984, Ser. No. 580,895

Int. Cl.[4] B43L *13/20*

U.S. Cl. 434—87 **14 Claims**



1. A drawing stencil tablet comprising

A. relatively rigid planar stencil plate, said plate including

(1) a first set of edges extending around its periphery;

(2) means defining one or more interior openings that form a second set of edges which outline one or more characters or shapes; and

(3) a plurality of spaced-apart locating means projecting from the plate adjacent edges of said first set of edges and extending perpendicular to the general plane of the plate;

B. a relatively stiff planar base, said base being geometrically similar to said stencil plate but of larger area so that the plate can be placed flush against an interior area of the base with a base margin extending all around the plate; and

C. means defining a plurality of spaced-apart holes in the base, said holes being in register with and adapted to snugly receive, the plate locating means when the plate is against said base interior area so as to prevent movement of the plate parallel to the base.

4,563,155

STEERING POST MOUNTED PROPULSION ASSEMBLY

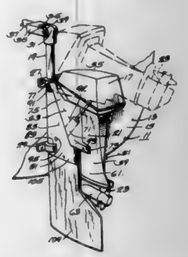
Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 1, 1980, Ser. No. 211,642

Int. Cl.[4] B63H *25/42*

U.S. Cl. 440—51 **2 Claims**

1. A marine propulsion device for a boat hull having a transom, said device comprising a steering post having a longitudinal axis and adapted to be connected to the boat transom for rotation about said longitudinal axis, a propulsion assembly including a drive shaft housing, a bracket fixed to said drive shaft housing for common movement therewith and extending forwardly therefrom, and a rotatably mounted propelling element, a tilt pin extending between and pivotally connecting said bracket and said steering post about an axis which is horizontal when said steering post is boat mounted so as to provide for common pivotal movement of said steering post and said propulsion assembly about said longitudinal axis and for movement of said propulsion assembly relative to said steering post between a running position and an elevated position above the running position, and extendable means connected between said steering post and said bracket for selectively displacing



said propulsion assembly between said running position and said elevated position.

4,563,156

RESCUE APPARATUS

Josef E. Bissig, 175 Emil Frey-Strasse, CH-4142 Münchenstein, Switzerland

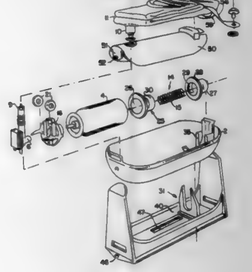
PCT No. PCT/CH83/00064, § 371 Date Feb. 2, 1984, § 102(e) Date Feb. 2, 1984, PCT Pub. No. WO83/04234, PCT Pub. Date Dec. 8, 1983

PCT Filed May 19, 1983, Ser. No. 589,065

Claims priority, application Switzerland, Jun. 2, 1982, 3405/82; Jun. 2, 1982, 3406/82; Jun. 2, 1982, 3407/82

Int. Cl.[4] B63C *9/16*

U.S. Cl. 441—99 **14 Claims**



1. In a rescue unit which includes a perforated housing containing an inflatable floating element, a valved bottle of compressed gas which is movable from a first position within the housing wherein the valve thereon is closed to a second position wherein the valve thereon is open, a connection means for conveying compressed gas from said bottle when in said second position to said inflatable floating element for inflation, a plurality of water-sensitive support elements which are positioned to prevent said bottle of compressed gas from moving from said first position to said second position until contacted by water flowing into said perforated housing, and a preloading device which can move said bottle of compressed gas from said first position to said second position; said preloading device including a fixedly mounted bush guide having an outwardly-extending flange edge, a bush having an outwardly extending flange which is movably positioned within said bush guide, a spring for biasing said bush away from said bush guide so as to tend to move said bottle of compressed gas from said first position to said second position and a locking element which is movably positioned between said flanged edge of said bush guide and said flange of said bush to lock them in position near one another or else to release them to enable said spring to move them apart, said locking element having a base portion which extends outwardly of said housing,

the improvement wherein said rescue unit includes a retainer to which said housing is removably attachable, and wherein the base portion of the locking element of said preloading device is fixedly attached to said retainer, such that when said housing is manually separated from said retainer, said locking element will be removed from between the flanged edge of the bush and the flange of the bush guide of said preloading device, thus enabling said spring to move them apart.

4,563,157

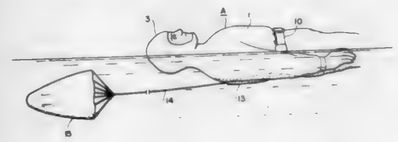
COLD-PROOF WATER-PROOF GARMENT

Takahiro Hoshino, Yokohama, Japan, assignor to Toyo Bussan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1984, Ser. No. 596,385

Int. Cl.[4] B63C *9/12*

U.S. Cl. 441—104 **3 Claims**



1. Cold-proof water-proof garment of which upper and lower body portions and a hood are formed integrally of a water-proof material, said cold-proof water-proof garment being also provided with integral gloves at the ends of sleeves and integral shoes at the ends of leg portions thereof, said garment having dolman sleeves and a fastening means easily accessible from the front of the garment by a hand in the other glove and sleeve along the underside of each sleeve from the armpit to a point adjacent to but spaced from the end of the sleeve so that upon entry of the wearer into the water the size of said sleeves can be increased sufficiently to permit withdrawal of the hands from said gloves and said sleeves into the upper body portion of said upper body portion to reduce the likelihood of frostbite, said garment further including

a sea anchor;

securing means; and

a rope secured at one end to the rear of the garment and to said sea anchor at the other end thereof,

said securing means being carried by said upper portion for removably securing said sea anchor to the rear of said upper portion and including means accessible to the wearer from the front of the garment for selectively unsecuring said sea anchor from said upper portion.

4,563,158

FUEL IGNITION DEVICE AND METHOD OF ASSEMBLING SAME

Helmut P. Meyer, Sidney, N.Y., assignor to Allied Corporation, Morristown, N.J.

Filed Apr. 27, 1983, Ser. No. 488,949

Int. Cl.[4] H01T *21/02*

U.S. Cl. 445—7 **2 Claims**

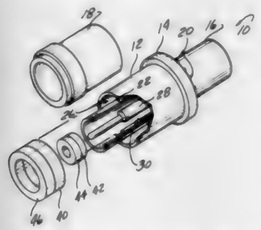
1. A method of assembling a spark discharge fuel ignition device of the type including the combination of a conductive tubular shell having a shoulder (in) at one end thereof and defining an annularly shaped outer electrode, the surface of said shoulder extending from the inner wall of said shell being inclined toward said one end of said shell, an elongated central electrode coaxially disposed within said shell, one end of said electrode being coterminous with said one end of said shell, an insulator within said shell for insulating said central electrode from said shell, said insulator having a longitudinally extending bore therein through which said central electrode extends, one

end of said insulator having a circumferential bevelled surface adapted to contact conformingly said inclined surface of said shoulder, a first annular glass powder bead seal between said shell and said insulator for preventing combustion gasses from passing between said shell and said insulator and a second annular glass powder bead seal between said insulator and said central electrode for preventing combustion gasses from passing between said insulator and said central electrode, comprising the steps of:

(A) positioning said tubular shell with said one end thereof in abutment with a stop fixture;

(B) installing said insulator within said shell with said one end of said insulator seated against said inclined surface of said shoulder;

(C) positioning said central electrode within said bore with



said one end of said electrode abutting said stop fixture at said one end of said shell;

(D) sleeving said first and second seals respectively over the ends of said insulator and said central electrode opposite said one ends of said insulator and said central electrode;

(E) sleeving first and second push rings respectively over the ends of said insulator and said central electrode opposite said one ends of said insulator and said central electrode;

(F) applying longitudinal force to said first and second push rings to move said push rings into engagement with said seals and to maintain said one ends of said shell and said central electrode in engagement with said stop fixture; and

(G) heating said first and second seals to a temperature sufficient to fuse the powder of said seals while maintaining said longitudinal force on said first and second push rings.

4,563,159

TOY CONVERTIBLE AMONG MULTIPLE CONFIGURATIONS

Kenneth B. Hills, Roslyn Heights, and Vlasta Cihlar, Jackson Heights, both of N.Y., assignors to Animal Toy Imports, Inc., Brooklyn, N.Y.

Filed Jan. 22, 1985, Ser. No. 693,376

Int. Cl.⁴ A63H *3/00*

U.S. Cl. 446—74 **1 Claim**

1. A toy for simulating the transport of a pet in a carrier in one of multiple stuffed toy configurations, comprising:

a figurine portion having a hollow torso part bounding an interior figurine cavity, a head part mounted on the torso part, a pair of arm parts mounted on opposite lateral sides of the torso part, and a pair of leg parts mounted on the torso part, each of said head, arm and leg parts having an interior space stuffed with a stuffing material;

a bag portion having a hollow container part bounding an interior bag cavity, and a pair of carrying handle parts connected to the container part;

means for sewing the figurine portion to the bag portion on a common wall bounding a common opening which communicates with both the interior figurine and bag cavities;

said torso, arm and leg parts of the figurine portion being foldable and collapsible to a first compact state, and being stuffable in the first compact state in one direction through the common opening into the interior bag cavity to stuff the same and convert the toy to a combination figurine-tote bag in which the head part of the figurine portion is exposed and located exteriorly of the container part of the bag portion, thereby simulating the transport of the partially visible pet in the carrier;

said entire figurine portion being foldable and collapsible to a second compact state, and being stuffable in the second compact state in said one direction through the common opening into the interior bag cavity to stuff the same and convert the toy to a stuffed tote bag, thereby simulating the carrier itself;

said bag portion being foldable and collapsible to a third compact state, and being stuffable in the third compact state in a direction opposite to said one direction through



the common opening into the interior figurine cavity to stuff the same and convert the toy to a stuffed figurine, thereby simulating the pet itself; and

a double-pull zipper on the common wall for opening the common opening from either side of the common wall, and for at least partially closing the common opening after one of the torso, arm and leg parts in the first compact state, the entire figurine portion in the second compact state, and the bag portion in the third compact state has been stuffed into a respective one of the bag and figurine cavities,

whereby the toy is easily converted among a combination figurine-tote bag configuration, a tote bag configuration and a figurine configuration to increase the overall play value of the toy.

4,563,160

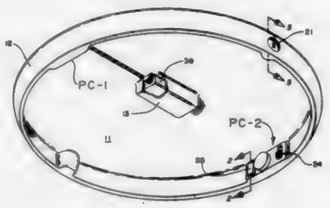
LIGHTING SYSTEM FOR ROTATABLE TOY

William B. Lee, 252 S. 800 East, Salt Lake City, Utah 84102

Continuation-in-part of Ser. No. 373,427, Apr. 30, 1982, Pat. No. 4,435,917. This application Mar. 9, 1984, Ser. No. 588,071

Int. Cl.⁴ A63H *27/00, 1/24, 33/26*

U.S. Cl. 446—47 **7 Claims**



1. In a toy of the type having a body rotatable about a central axis and at least one lamp with battery and associated circuit to flash the lamp at a first interval for a fixed duration when the toy is at rest and to decrease the flash interval when the toy rotates above a certain rate the improved circuit comprising a solid state astable multivibrator circuit adapted when closed to generate pulses to light said lamps for predetermined on times and intervals, said circuit including a first resistor, a first capacitor and a second capacitor connected in said circuit so that said first resistor and said first and second capcitors determine said interval, a normally closed switch which when closed presents maximum designed capacitance to said circuit for controlling flash interval and when open presents reduced capacitance to said circuit for controlling flash interval, and means on said switch to effect opening of said switch when rotation of said toy exceeds a predetermined rate.

4,563,161

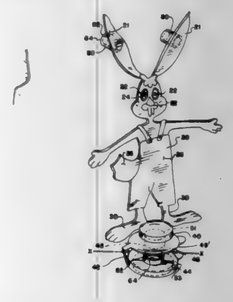
SUBMERSIBLE TOY

Jack I. Zimmerman, Box 317 Rte. 1, Putnam Valley, N.Y. 10579

Continuation-in-part of Ser. No. 540,269, Oct. 11, 1983. This application Jun. 11, 1984, Ser. No. 619,547

Int. Cl.⁴ A63H *23/00*

U.S. Cl. 446—156 **7 Claims**



1. A toy article which is fitted with means to submerge the said toy article in water and to cyclically rise to the surface and then submerge again, in which

said means comprise an internal chamber communicating by a vent hole to a recess open to the exterior of the said article, so that a moistened powder may be located within said chamber so as to form a gas bubble which flows through said vent into said recess to displace water out of said recess of said article and so increase the buoyancy of the article causing it to initially rise when in water, with the article then losing this increase of buoyancy after the said bubble further enlarges and detaches from the said article resulting in the article then again submerging in the water, in which

said article is fitted with air suspension means to provide further buoyant effect to said article, said air suspension means serving to assist in the orientation of the article in various positions during the cycle of rising and submerging and to enable the article to oscillate with a pendulum—type motion during said cycle, where

said air suspension means comprises a projection extending from the article, which projection is formed with a recess open to the exterior through an open mouth section of the projection,

in which said recess and said mouth section is of a size and shape with relation to surface tension of water to prevent captive air in the said recess from escaping from the said recess while said projection is immersed in water regardless of the orientation of the said open mouth section when said projection is immersed in water, such that said air is entrapped in the said recess of the projection and acts to furnish lift to the article when the projection is so immersed.

4,563,162

TOY CAR REMOTELY CONTROLLABLE BY FIBER OPTIC MEANS

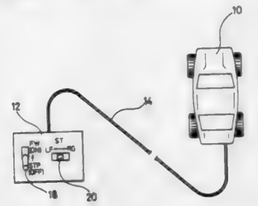
Zenichi Ishimoto, Tokyo, Japan, assignor to Nikko Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,818

Claims priority, application Japan, Apr. 5, 1983, 58-49679[U]

Int. Cl.⁴ A63H *30/00, 17/36, 33/26*

U.S. Cl. 446—175 **8 Claims**



1. A remote-controllable toy car which comprises a car body and an operating device spacially separated from the car body and comprising lamp means for emitting a light beam when energized, and means for passing or blocking the light beam in a selectable sequence thereby to provide optical ON-OFF signals in the selected sequence, fiber optic means for optically interconnecting said operating device with said vehicle body, said body containing photo-electric converter means for converting said optical ON-OFF signals into electrical ON-OFF signals supplied to an output thereof, said optical fiber means being in confronting relation to said blocking means and said photo-electric converter means whereby to sense the optical ON-OFF signals for transmission by said optical fiber means to said photo-electric converter means, and circuit means in said vehicle body having input means supplied from the output of said photo-electric converter means for controlling diverse movements of said vehicle body as a function of the ON-OFF signals sensed by the photo-electric converter means.

4,563,163

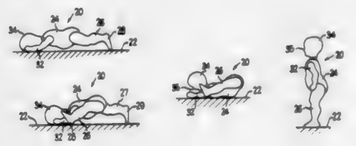
STAND UP DOLL

Horst-Dieter Herbstler, Bolingbrook; Rouben T. Terzian, Chicago, both of Ill., and Lewis R. Dyson, Milford, Ohio, assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 29, 1985, Ser. No. 696,173

Int. Cl.⁴ A63H *13/00*

U.S. Cl. 446—354 **19 Claims**



1. A doll movable from a face-down prone position on a generally horizontal surface to an upright standing position on the generally horizontal surface comprising:

an elongated torso having an upper end and a lower end;

a motor and drive mechanism housed in the torso;

a pair of legs, each mounted at one end of the leg adjacent the lower end of the torso for pivotal movement with respect to the torso about a leg axis transverse to the length of the torso;

the other end of each leg being formed with a foot having a generally flat bottom;

the foot of each leg being behind the respective leg axis when the doll is in the prone position and forward of the respective leg axis in a sitting type position;

a pair of arms, each mounted adjacent the upper end of the

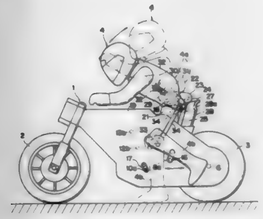
torso for pivotal movement with respect to the torso about an arm axis transverse to the length of the torso;
a head mounted atop the upper end of the torso for pivotal movement about a head pivoting axis;
the drive mechanism including first, second and third drive means;
the first drive means initially pivoting a first one of the legs from a first position generally parallel to the length of the torso and with the foot behind the leg axis to a second position alongside the torso with the foot ahead of the leg axis and at least a portion of the foot contacting the surface;
the second drive means then pivoting the second leg from a first position generally parallel to the length of the torso and with the foot behind the leg axis to a second position alongside the torso with at least a portion of the foot contacting the surface ahead of the leg axis;
the first and second drive means together next rotating the torso away from the first and second legs in the second position back to the generally aligned first position; and
the third drive means pivoting the head from a first forward position to a second rearward position during movement of the first and second legs from their respective first position to their respective second position to assist in shifting the center of gravity of the doll rearward for moving the doll to the upright standing position when the first and second drive means together rotate the torso back to the generally aligned first position and then returning the head from the second rearward position back to the first forward position upon the first and second drive means rotating the torso back to the generally aligned first position with respect to both of the legs.

4,563,164

TWO WHEELED TOY VEHICLE

Masahiro Tao, Narashino, Japan, assignor to Asahi Corporation, Tokyo, Japan

Filed Mar. 21, 1984, Ser. No. 592,014
Int. Cl.⁴ A63H *17/16, 29/24, 17/25*
U.S. Cl. 446—440 **4 Claims**



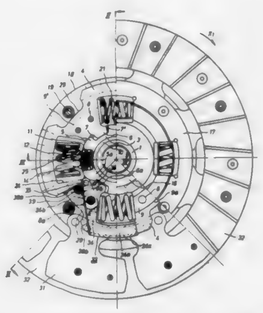
1. A two wheeled toy vehicle having a body, a front wheel supported on a first wheel axle, a frictionally driven rear wheel supported on a second wheel axle, an inertia type flywheel mounted on a flywheel axle, and a driving mechanism provided in a casing, said two wheeled toy vehicle comprising:
a. a first driving mechanism for transmitting the frictional rotation of the rear wheel when frictionally driven, to the inertia type flywheel, and having a gear train including
a gear wheel mounted on the second wheel axle,
a clutch gear means mounted on a movable clutch axle movably supported within parallel slots provided on side walls of a casing, and being in engagement with the gear wheel,
a floatable gear means mounted on a floatable axle movably supported within parallel slots provided on the side wall of said casing and engaging releasably with the clutch gear means, and
a first non-displaceable gear means mounted on an axle, the floatable gear means releasably engaging said first non-displaceable gear means,
a flywheel gear mounted on the flywheel axle and engaging the first non-displaceable gear means;
b. a second driving mechanism for transmitting the rotation of the flywheel back to the rear wheel and having a gear train including
a second non-displaceable gear means mounted on an axle, and being coupled to the flywheel gear via the first non-displaceable gear means and being engageable with the clutch gear means when said clutch gear means is released from the floatable gear means and is biased against the second non-displaceable gear means,
said gear wheel engaging the clutch gear means;
c. an operating member for actuating a clutch gear driving means; and
d. said clutch gear driving means connected on the movable clutch axle to move the clutch gear means between the gear wheel and one of the floatable gear means and the second non-displaceable gear means;
said clutch gear driving means comprises a connecting shaft pivotally supported on a crank arm extending from a crank shaft pivotally supported on brackets of the side walls of the casing of the first driving mechanism, an extended piece of the crank arm being in engagement with a leaf spring member, and the operating member for the clutch gear driving means comprises a doll driver movable coupled via spring means to the crank shaft and including legs pivotally mounted on the side walls by pins and movably connected to a lower portion of the upper part of the doll driver by connecting shafts which are covered by a thigh member, the legs of the doll driver being mounted astride the toy vehicle and supporting the toy vehicle when the flywheel is energized, and the legs being removed from a frictional surface to a rearward position when the rotation of the flywheel is transmitted to the rear wheel.

4,563,165

CLUTCH WITH DAMPER DISC ASSEMBLY

Hiroshi Takeuchi, Higashiosaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Aug. 15, 1984, Ser. No. 640,826
Claims priority, application Japan, Aug. 29, 1983, 58-158661
Int. Cl.⁴ F16D *3/14*
U.S. Cl. 464—64 **4 Claims**



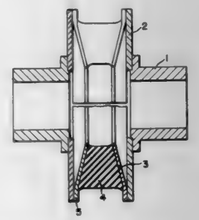
1. A damper disc assembly comprising an outward flange of a hub divided into an inner peripheral portion and an outer peripheral portion, an external tooth of the flange inner peripheral portion being meshed with an internal tooth of the flange outer peripheral portion with a circumferential clearance left therebetween, the inner peripheral portion and the outer peripheral portion of the flange being elastically interconnected through a weak first torsion spring extending in a circumferential direction, a plate being positioned on each side of the flange and the flange outer peripheral portion being elastically interconnected with the plates through a strong second torsion spring extending in the circumferential direction; a locking member being provided between the flange and one of the plates, at least a portion of the locking member being operable to enter a clearance between the external tooth and the internal tooth through means of centrifugal force generated by rotation of the damper disc assembly, a spring mechanism urging the locking member in the direction extending out of said clearance is provided, and a rigidity of the spring mechanism is determined such that the rigidity of the spring mechanism overcomes the centrifugal force on the locking member at a low rotation speed and the centrifugal force on the locking member overcomes the rigidity of the spring mechanism at a high rotational speed wherein said locking member has an approximately L-shaped rotating part, an outer peripheral portion of the rotating part extends in the circumferential direction to serve also as a weight and carry a pin parallel to a disc center line at an inner peripheral portion of the rotating part, a roller is fitted onto the pin, the roller being allowed to enter said clearance between the external tooth and the internal tooth.

4,563,166

EXTRA-RESILIENT SHAFT COUPLING

Jürgen Walter, Haltern-Hullern; Ulrich Falz, and Manfred Lunke, both of Dortmund, all of Fed. Rep. of Germany, assignors to Hackforth GmbH & Co. KG, Herne, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,865
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310695
Int. Cl.⁴ F16D *3/56*
U.S. Cl. 464—96 **6 Claims**



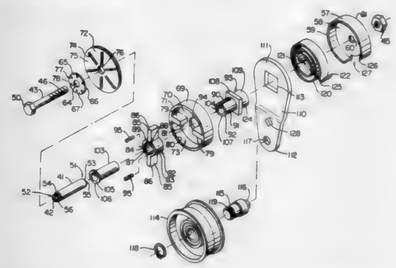
1. An extra-resilient shaft coupling comprising in combination a resilient intermediate member for transmitting torque between two rigid coupling parts; said resilient intermediate member comprising:
two metal ring members, each of which is secured to a different one of said coupling parts and consists of one or more circumferentially extending parts; each ring member including a radially inner peripheral edge having an approximately v-shaped cross-section, the tip of which is rounded, and that side thereof which is remote from the other ring member being recessed peripherally and continuously relative to that side of said ring member which is remote from the other ring member, thus forming a circumferentially extending recess; and
an annular member of elastomeric material for interconnecting said ring members, said annular elastomeric member similarly consisting of one or more circumferentially extending parts; said annular elastomeric member having a radially outer edge region and a radially outer peripheral surface, in the vicinity of which each of said ring members is provided with an axially projecting peripheral annular shoulder which abuts said radially outer region of said annular elastomeric member provided thereby with effective radial support, which prevents peak stresses therewith and also counteracts centrifugal force in said annular member of elastomeric material by absorbing such centrifugal force thereby to avoid any affect upon adhesive surfaces of said annular elastomeric member due to torque and centrifugal force cooperating otherwise to result in overstressing and overloading along such adhesive surfaces which would result in premature damaging and also destruction of the elastomeric material in edge regions thereof; in the vicinity of said inner peripheral edge of each of said rings members, said annular elastomeric member being provided with an integrally-formed lip which surrounds said inner peripheral edge and fills said circumferentially extending recess of said ring member in such a way that said lip is flush with that side of said ring member which is remote from the other ring member and that free spring length of said annular member of elastomeric material is increased and thus reduces stretching thereof caused by deformation due to torque, said integrally-formed lip also displacing an end of metal/elastomeric material boundary towards a back of a respective ring member out of force-transmitting location and to avoid overstressing of elastomeric material in locations adjacent to the metal ring member respectively.

4,563,167

BELT TENSIONER AND METHOD OF MAKING THE SAME

Randy C. Foster, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 427,074, Sep. 29, 1982, abandoned, which is a continuation-in-part of Ser. No. 391,643, Jun. 25, 1982, abandoned, which is a continuation-in-part of Ser. No. 301,351, Sep. 11, 1981, Pat. No. 4,413,982. This application Jan. 14, 1985, Ser. No. 691,239
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.⁴ F16H *7/12, 7/14*
U.S. Cl. 474—135 **6 Claims**



1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, mechanical spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, and dampening means operatively associated with said support means and said belt engaging means to dampen the movement of said belt engaging means relative to said support means, said dampening means having a movable means and a longitudinal axis on which said movable means moves, said spring means having a longitudinal axis and being spiraled about said axis thereof, said support means comprising a shaft means having a longitudinal axis and being fixed from movement relative to said belt engaging means, the improvement wherein said shaft means carries said dampening means and said spring means in spaced apart side-by-side relation thereon with said axis of said shaft means being substantially coaxial with said axes of said

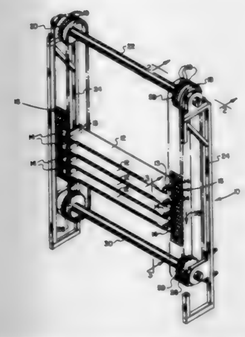
dampening means and said spring means whereby said dampening means and said spring means are coaxially spaced apart and are coaxially aligned by said shaft means, said belt engaging means having a portion thereof disposed between said dampening means and said spring means and being rotatably carried by said shaft means so as to rotate relative to said shaft means whereby said dampening means and said spring means are coaxially spaced apart from each other by said portion of said belt engaging means, said shaft means having an opening means passing therethrough for receiving a fastening member that will fasten said support means to a bracket or the like, said opening means being disposed coaxially through said dampening means and said spring means, said shaft means comprising a tubular member disposed coaxially through said dampening means and said spring means, said tubular member having opposed open ends whereby said tubular member defines said opening means that passes completely therethrough, a sleeve means rotatably disposed on said tubular member, said belt engaging means comprising an arm having opposed ends, one of said opposed ends of said arm being interconnected to said sleeve means to rotate in unison therewith, said belt engaging means further comprising a pulley for engaging said belt, said pulley being rotatably carried by the other of said opposed ends of said arm, said spring means comprising a coiled torsion spring having an inner end and an outer end, said inner end of said spring being operatively interconnected to said sleeve means and said outer end of said spring being operatively interconnected to said tubular member, and a cup-shaped housing having a closed end and an open end, said closed end of said housing being secured to one of said ends of said tubular member and said open end of said housing being disposed closely adjacent said one end of said arm to be effectively closed thereby, said spring being disposed in said housing, said outer end of said spring being operatively interconnected to said housing.

4,563,168

LOAD DISTRIBUTING CHAIN DRIVE ARRANGEMENT

Daniel J. Schneider, Rte. 1 Box 81, Justin, Tex. 76247

Filed Sep. 28, 1982, Ser. No. 425,379
Int. Cl.⁴ F16G *13/06*
U.S. Cl. 474—207 **12 Claims**



1. An endless power transmission chain adapted for transmitting power from a fluid dynamic foil system to at least one rotatable sprocket member having a plurality of spaced apart generally radially projecting teeth, said chain comprising:

a plurality of interconnected chain links formed by pairs of spaced apart cylindrical pins, each of said pins being connected at their respective opposite ends to respective ones of a pair of outer chain link plates;

each of said links being connected to an adjacent link by pairs of inner chain link plates journalling said pins between said outer link plates, ones of said pairs of outer link plates and said inner link plate means being rotatable with respect to said pins to form a flexible chain; and

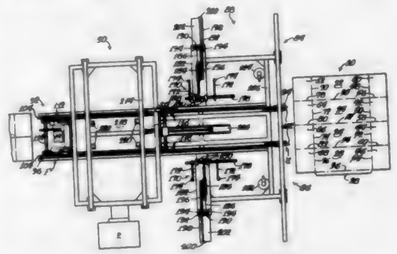
resilient non-metal cylindrical tubular bushings mounted on said pins between said inner link plates for direct engagement with said sprocket teeth whereby deflection of one or more bushings under forcible engagement with said teeth provides for distribution of chain driving forces between said teeth engaged with said chain, said bushings being formed of a material which is sufficiently lubricated by water as to provide minimal wear on said bushings and said sprocket during said engagement.

4,563,169

METHOD AND APPARATUS FOR FOLDING CONTAINER BLANKS

Arthur W. Virta, 209 Withorn La., Mt. Prospect, Ill. 60056, and John R. Lane, 16W615 Honeysuckle 24F, Hinsdale, Ill. 60521

Filed Jun. 1, 1982, Ser. No. 383,581
Int. Cl.⁴ B31B *7/00*
U.S. Cl. 493—96 **55 Claims**



1. Apparatus for folding and gluing container blanks comprising: frame means having a blank loading end and a blank discharge end; conveyor means mounted for movement relative to said frame means from the blank loading end thereof to the blank discharge end thereof; at least two gripper means on said conveyor means, each said gripper means having a gripper jaw mechanism adapted to receive and securely hold the leading edge of a container blank when the gripper means is located at the blank loading end of said frame means; dispensing means on said frame means downstream of said blank loading end for applying glue to a flap on said blank; folding means on said frame means downstream of said dispensing means for folding said blank about parallel score lines and to position said flap in juxtaposed relationship with respect to a side panel of the blank; compression means on said frame means downstream of said folding means for holding said flap against said side panel whereby said flap is adhered to said side panel; release means on said frame means downstream of said compression means for opening the gripper jaw mechanism and releasing said blank therefrom; and abutment means associated with the following gripper means engageable with a trailing edge of the released blank for discharging the folded and glued blank from the discharge end of the frame means.

4,563,170

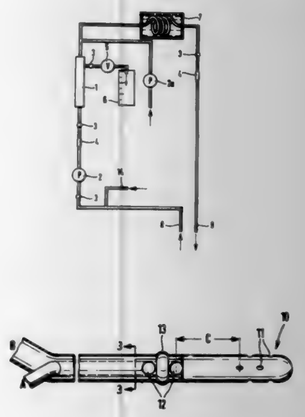
DEVICE FOR IN VIVO PURIFICATION OF BLOOD

Karl Aigner, 6301 Pohlheim 1, Fed. Rep. of Germany

Filed Jul. 29, 1983, Ser. No. 518,449
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1982, 3228438
Int. Cl.⁴ A61M *1/03*
U.S. Cl. 604—5 **4 Claims**

1. An in-vivo blood purification system for use in intra-arterial chemotherapy, said system comprising:

a substantially cylindrical double-lumen catheter insertable into the vena cava up to the vicinity of the heart and being formed to provide therein a first channel (B) and, generally parallel thereto, a second channel (A), each said channel being at least partially bounded by the wall of said catheter, and the catheter having a closed tip and a plurality of openings (11) which are laterally positioned in the vicinity of the catheter tip and communicate with said first channel (B), and said second channel (A) terminating with at least two openings (12) in said wall of the catheter, the distance between the lateral opening (11) farthest from the catheter tip and the closest opening (12) of the second channel (A) being not less than 40 mm and not more than 50 mm, and the opening (12) at the end of the second



channel (A) having the same size as the inner cross-sectional area of said channel (A);

means (8, etc.) connected to said second channel (A) for pumping large amounts of blood out of the vena cava through said channel;

means (1, etc.) for sujecting said blood to ultrafiltration; and

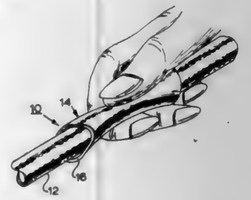
means (9, etc.) connected to said first channel (B) for returning, simultaneously with the withdrawal of blood from said second channel (A), the filtrate to the vena cava through said first channel (B) together with a requisite amount of substitute fluid.

4,563,171

METHOD FOR DISPLACING FLUID IN TUBING

Raymond O. Bodicky, St. Louis, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.

Continuation of Ser. No. 135,062, Mar. 28, 1980, abandoned. This application Jan. 18, 1985, Ser. No. 692,876
Int. Cl.⁴ A61M *27/00*
U.S. Cl. 604—51 **13 Claims**



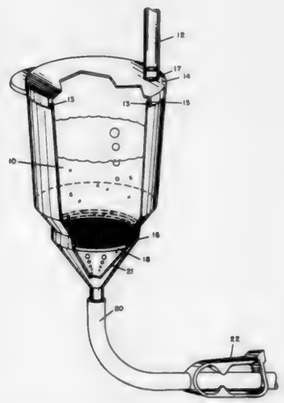
1. A method of draining body fluid from a body cavity through a medical tube a fluid collection container and displacing obstructions in the lumen of the tube when such occurs to assist the flow of body drainage fluid to the container, comprising the steps of providing a manually collapsible, resilient tube having a normally uncollapsed lumen and an outer surface with a relatively high coefficient of friction, and a manually collapsible flexible sleeve of predetermined length having an inside diameter somewhat larger than the outside diameter of the tube and disposed on the tube in surrounding relation therewith with the inner surface of the sleeve engageable with the outer surface of the tube, the sleeve having an inner surface with a coefficient of friction substantially less than that of the outer surface of the tube, connecting the tube in fluid communication between a body cavity and a fluid collection container, grasping the outer surface of the sleeve with the hand and collapsing the sleeve and the tube by manually applying compressive forces thereto to collapse the tube lumen at the sleeve, while applying compressive forces and holding the sleeve and the tube lumen collapsed, advancing the sleeve longitudinally along the tube with the inner surface of the sleeve in sliding contact with the outer surface of the tube for displacing an obstruction in the tube lumen, and removing the manually applied compressive forces to release the sleeve and tube and allow the resiliency of the tube to return the tube lumen to an uncollapsed condition at the sleeve for allowing drainage fluid to flow through the lumen from the body cavity to the fluid container.

4,563,172

EMBRYO COLLECTOR AND COLLECTION METHOD

Bruce S. Ferguson, Buxton, Me., assignor to ImmunoSystems, Incorporated, Biddeford, Me.

Filed Jan. 3, 1984, Ser. No. 567,745
Int. Cl.⁴ A61M *31/00*
U.S. Cl. 604—55 **2 Claims**



2. A method for the collection and concentration of embryos out of an irrigant fluid from a mammalian uterus, comprising:

passing said embryo-carrying fluid out of said uterus;

collecting said fluid in a substantially transparent collection chamber having a removable fluid-tight cover by passing said fluid through an aperture defined in said cover;

providing a filter at the base of said collection chamber;

passing said fluid through said filter;

retaining said embryos in said collection chamber by action of said filter;

collecting said fluid after passing it through said filter in a receipt chamber;

discharging the fluid from said receipt chamber through a discharge tube;

controlling the rate of flow of fluid in said discharge tube by a flow control member;

observing the fluid level in said collection chamber;

maintaining a sufficient level of fluid in said collection cham-

ber to keep said embryos in suspension by controlling the flow of said fluid by allowing said fluid to back up through said receipt chamber and filter into said collection chamber;

gently agitating said fluid in said collection chamber;

maintaining said embryos in suspension in said fluid in said collection chamber while discharging said fluid;

preventing said embryos from falling against said filter by said maintaining said embryos in suspension and said gentle agitation;

maintaining sufficient fluid in said collection chamber to keep said embryos in suspension at the completion of passing said embryo-carrying fluid from said uterus;

removing said cover from said collection chamber;

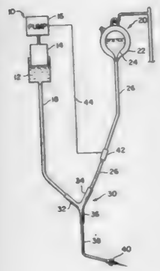
pouring the concentrated collected embryos, after the completion of the passing of said fluid through said collection chamber except for said sufficient fluid necessary to maintain said embryos in suspension, into a container for examination thereof.

4,563,173

PUMP-ACTUATED SEQUENCING VALVE AND SYSTEM

Robert S. Ledley, Silver Spring, Md., assignor to National Biomedical Research Foundation, Washington, D.C.

Filed Apr. 19, 1983, Ser. No. 486,600
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—81 **10 Claims**



1. A pump-actuated sequencing system for sequentially administering to a patient two fluids contained in first and second respective reservoirs, wherein fluid is pumped from said first reservoir by means of a pump, said system comprising a pump-actuated sequencing valve, said valve comprising:

a first portion;

means for fluidly connecting said first portion to said first reservoir;

a second portion connected to said first portion; and

means for fluidly connecting said second portion to said second reservoir;

said second portion including ball valve means for selectively blocking flow of fluid to and from said second reservoir in response to operation of the pump, and for selectively permitting flow of fluid from said second reservoir in response to non-operation of the pump;

said valve further comprising a third portion connecting each of said first and second portions to the patient for conveying fluid to the patient;

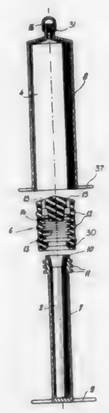
said system further comprising a further valve disposed between said second reservoir and said second portion, and control means operatively connecting said pump to said further valve for opening said further valve in response to non-operation of the pump so as to permit flow of fluid from said second reservoir to said second portion.

4,563,174

DEVICE FOR MIXING SEVERAL COMPONENTS

Philippe Dupont, 3 rue Colbert, Clermont-Ferrand, Puy-de-Dome, and Jean Lontrade, 124 avenue Thermale, Chamalieres, Puy-de-Dome, both of France

Continuation-in-part of Ser. No. 466,343, filed as PCT FR 82/00111, Jun. 29, 1982, § 102(e) date Feb. 7, 1983, abandoned.
This application Feb. 28, 1983, Ser. No. 470,972
Claims priority, application France, Jun. 29, 1981, 81 13193
Int. Cl.[4] A61M *5/18*
U.S. Cl. 604—89 **3 Claims**



1. A device for mixing several components, comprising:

a first tubular member forming a receptacle for a first component and having a wide-open end;

a second tubular member forming a receptacle for a second component and having an open extremity projecting into said wide-open end; and

a plug slidable but nonrotatably fitted into said wide-open end in engagement with said extremity, said plug forming with said extremity an outlet for said second component closable by relative rotation of said plug and said second tubular member, said plug and said second tubular member together constituting a sealable unit bodily withdrawable from said first tubular member for filling with said second component and closure of said outlet prior to reintroduction into said first tubular member, said plug having a body with an annular groove bounded by concentric inner and outer peripheral surfaces receiving said extremity therebetween, said outlet including two internal passages of said body respectively terminating at said peripheral surfaces and opening radially toward one another and communicating with each other through a lateral port formed in said extremity in a predetermined relative rotary position of said second tubular member, one of said passages being open axially to the interior of said first tubular member, the other of said passages being open axially to the interior of said second tubular member.

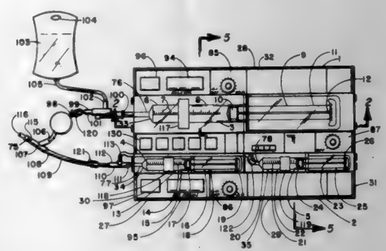
4,563,175

MULTIPLE SYRINGE PUMP

Margaret LaFond, R.R. 2 - Box 219-L15, Kankakee, Ill. 60901

Filed Dec. 19, 1983, Ser. No. 562,910
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—155 **16 Claims**

1. A multiple syringe pump, comprising a pump housing, first seating means of a first size to receive a first syringe therein, second seating means of a second different size to receive a second syringe therein, first drive means connectible to said first syringe to empty its contents at a first independently controlled rate of flow, second drive means connectible to said second syringe to empty its contents at a second independently controlled rate of flow, and control means to independently control said first and second drive means and the flow rate at which each respectively empties the syringe to which is connected, whereby the said rate of flow from said first syringe may be different than the said rate of flow from said second syringe, said first drive means including a first motor, said second drive means including a second motor, said first motor being operable at one rate of speed, said second motor is operable at a different rate of speed, said first and second motors being operable at the same time to move said drive means in the direction to empty said syringes, and either of said first and second motors being additionally operable while the other is not operating.



4,563,176

DEVICE FOR STERILE STORAGE OF A CATHETER

Bengt Gustavsson, Bergsbogatan 29, Västra Frölunda, Sweden (421 79); Johan Curelaru, Dr. Lindsgatan 3, Göteborg, Sweden (413 25), and Lars E. Linder, Varbergsvägen 319, Billdal, Sweden (427 00)

PCT No. PCT/SE82/00428, § 371 Date Aug. 10, 1983, § 102(e) Date Aug. 10, 1983, PCT Pub. No. WO83/02065, PCT Pub. Date Jun. 23, 1983
PCT Filed Dec. 15, 1982, Ser. No. 532,027
Claims priority, application Sweden, Dec. 18, 1981, 8107600
Int. Cl.[4] A61M *5/32*
U.S. Cl. 604—163 **12 Claims**



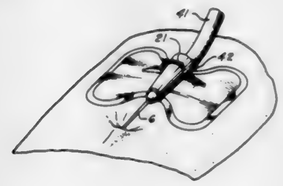
1. A device for sterile storage of a catheter and sterile advancing of a given length thereof directly into a blood vessel, comprising a cannula, a catheter, a transparent, flexible sheath enclosing said catheter, and a connecting piece, through which said catheter is fed, coupling said cannula to said protective sheath, wherein the protective sheath is provided with a length scale which has its highest value nearest the connecting piece and which is so arranged that the reading of the length scale against the catheter length remaining in the protective sheath corresponds to the fed out catheter length; and means for allowing extension of the protective sheath from a wrinkled to a stretched position without simultaneous withdrawal of the catheter.

4,563,177

CATHETER STABILIZATION PAD

Dean L. Kamen, 44 Gage Rd., Bedford, N.H. 03102

Filed Dec. 22, 1983, Ser. No. 564,519
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—177 **3 Claims**



1. A stabilization pad for securely holding to the body of a patient a catheter, having a hub with a stop member projecting radially therefrom and a catheter tube extending therefrom, the pad comprising:

a flexible sheet having:

(i) a central contoured portion defining an inside surface substantially conformal to a portion of the external profile of the catheter hub, such central portion having an aperture extending entirely therethrough for receiving the stop member and securing the hub, and

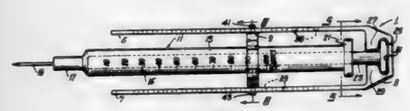
(ii) a pair of laterally extending flap portions disposed on either side of the central portion, each of such flap portions having on the same side of the sheet as the inside surface a layer of adhesive for adhering the pad to the skin of a patient, wherein a sufficiently large region of each flap portion proximate to the central contoured portion is devoid of adhesive, so that the catheter may be removed from the patient by pinching together the flap portions to separate the central portion from the hub to permit removal of the catheter without detaching the pad from the skin.

4,563,178

SYRINGE DOSAGE LIMITER

Joseph J. Santeramo, 185 Walnut St., Teaneck, N.J. 07666

Filed Feb. 6, 1985, Ser. No. 698,814
Int. Cl.[4] A61J *1/06*
U.S. Cl. 604—208 **8 Claims**



1. A syringe dosage limiter for controlling the amount of medication administered by a hypodermic syringe of the type including a barrel provided with an outwardly extending flange and a plunger provided with a handle, which limiter comprises:

(a) a substantially U-shaped body including a base portion and a pair of leg portions;

(b) a guide member including a passageway therethrough for

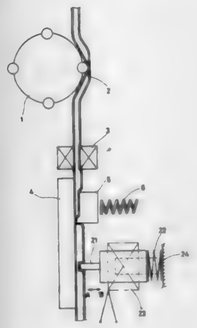
slidably receiving the barrel of a syringe and engageable with the outwardly extending flange of the barrel;
(c) means for permitting the guide member to be detachably and pivotally secured to the leg portions at any one of a plurality of locations spaced therealong; and
(d) the base portion including means for detachably securing the handle of the plunger thereto.

4,563,179

BLOCKING CONDITION DETECTION DEVICE IN A FLUID INJECTION SYSTEM

Eiichi Sakai, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1983, Ser. No. 489,290
Claims priority, application Japan, Apr. 28, 1982, 57-62309[U]; Oct. 20, 1982, 57-159519[U]; Jan. 28, 1983, 58-12544[U]
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—244 **8 Claims**



1. A fluid injection system comprising:
a flexible conduit;
supply means for supplying a pressurized fluid through said flexible conduit;
movable means to force the flexible conduit in a stressing direction said movable means including a spring means and a movable element wherein said spring means provides a stress via said movable element to cause creep in said flexible conduit; and
blocking condition detection means comprising a coil means and core means to form a resonance circuit for detecting whether or not the flexible conduit is forced in an anti-stressing direction opposed to said stressing direction thereby indicating that a blocking condition has developed in said flexible conduit, wherein movement of said movable means is detected in terms of the change of a resonance frequency, said resonance frequency increasing when the movable means stresses the flexible conduit to create a creep condition in said conduit and said resonance frequency decreasing when the movable means is forced in said anti-stressing direction separated from the flexible conduit.

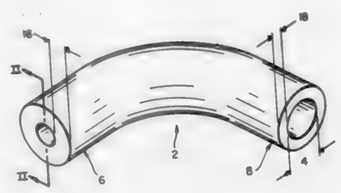
4,563,180

HIGH FLOW CATHETER FOR INJECTING FLUIDS

James E. Jervis, Atherton, and Dennis A. Caponigro, Pleasanton, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 29, 1984, Ser. No. 626,269
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 604—280 **6 Claims**

1. A catheter for injecting fluids into a mammalian body, the catheter having an inside diameter, a proximal end for attachment to a fluid source, and a distal end for insertion into the body; the inside diameter of the catheter varying over its length from a minimum at the proximal end to a maximum at



the distal end, and having a wall thickness varying over its length from a maximum at the proximal end to a minimum at the distal end.

4,563,181

FUSED FLEXIBLE TIP CATHETER

Bandula Wijayarathna, Friendswood, Tex., and Ronald M. Hopkins, Chesterfield, Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Feb. 18, 1983, Ser. No. 467,939
Int. Cl.⁴ A61B *6/00*
U.S. Cl. 604—280 **10 Claims**



1. An intravascular catheter comprising
a tubular body formed from a nylon having desired stiffness characteristics for torqueability, burst strength and longitudinal rigidity,
a soft flexible tip having one end thereof fused on one end of the tubular body to form a catheter having a relatively stiff tubular body and a relatively soft flexible tip, and
said tip being formed from a material including a polyether-polyamide co-polymer having ester linkage in sufficient quantities to render the material soft and flexible to avoid trauma to blood vessels.

4,563,182

RECTAL INSERT

Vladimir A. Stoy, and George P. Stoy, both of Princeton, N.J., assignors to Health Products Research, Inc., Somerville, N.J.

PCT No. PCT/US83/00300, § 371 Date Nov. 1, 1984, § 102(e) Date Nov. 1, 1984, PCT Pub. No. WO84/03434, PCT Pub. Date Sep. 13, 1984
PCT Filed Mar. 4, 1983, Ser. No. 667,265
Int. Cl.⁴ A61M *31/00*
U.S. Cl. 604—285 **16 Claims**

1. A package means for treatment of rectal disorder comprising
a disposable substantially form retaining package of predetermined shape enveloping a water swellable polymer in gel form comprising at least 35% by weight of water, said gel being selected to provide an insert of sufficient rigidity to be inserted into the rectum after said insert has been cooled to below 0° C.



said insert, when frozen, comprising a substantially cylindrical body provided with a substantially conical nose at one end thereof and a rearward collar proximate to the other end thereof, said nose facilitating insertion and said collar preventing initial total passage of the insert beyond the sphincter muscle of the rectum.

4,563,183

FEMALE EXTERNAL CATHETER

Patricia M. Barrodale, 2102 Dunstan St., Houston, Tex. 77005; Mary A. Young, 2419 Charriton Dr., Houston, Tex. 77039; Joan H. Humphreys, 402 Live Oak, Stafford, Tex. 77477, and James M. Lowrey, Jr., 3815 Monterey Pl., Boulder, Colo. 80301

Filed Apr. 6, 1983, Ser. No. 482,583
Int. Cl.⁴ A61M *1/00*
U.S. Cl. 604—329 **23 Claims**

22. A female external catheter, which comprises:
a urinary tube;
means for adhering an end of said urinary tube to the tissue of the vestibule of a female user;
and an interlabial adhesive body positioned about said urinary tube and adapted for positioning interior of the labia majora to adhere to the external aspect of the labia minora of the female user to hold the labia minora together to support said urinary tube.

4,563,184

SYNTHETIC RESIN WOUND DRESSING AND METHOD OF TREATMENT USING SAME

Bernard Korol, 11908 Country Club Dr., St. Louis, Mo. 63131

Filed Oct. 17, 1983, Ser. No. 542,754
Int. Cl.⁴ C08K *5/41, 5/34, 5/15, 5/10;* A61L *15/01, 15/06, 15/03*
U.S. Cl. 604—368 **39 Claims**

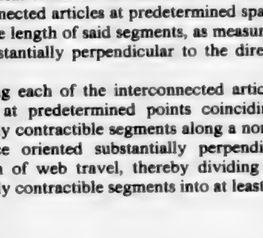
2. A synthetic resin wound dressing of the bonding type comprising a particulate, hydrophilic, water swellable polymer of an acrylate or acrylamide, an inert, non-toxic water miscible organic solvent of polyethylene glycol, the improvement which comprises, a hydrogen bonding plasticizer mixed with said polymer and solvent, said plasticizer is a material selected from the group consisting of dimethylsulfoxide, dimethylphthalate, 2,3-butylene carbonate, dimethylformamide, dimethyltetramethylene sulfone, diethylsulfone, methylene glycolate, methylpropyl sulfone, and butyrolactone, said polymer ranging between 30%-55% by weight of said dressing, with said solvent ranging between about 20%-60% by weight of said dressing, and said plasticizer ranging up to about 20% by weight of said dressing.

4,563,185

DISPOSABLE DIAPER HAVING ELASTICIZED WAISTBAND WITH NON-LINEAR SEVERED EDGE

Godfrey Reiter, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 549,345, Nov. 4, 1983, Pat. No. 4,543,154. This application May 17, 1985, Ser. No. 734,987
Int. Cl.⁴ A41B *13/02*
U.S. Cl. 604—385 A **1 Claim**



1. A disposable diaper having at least one waistband, said diaper comprising a topsheet, a backsheet, and an absorbent element interposed between said topsheet and said backsheet, said waistband having an elastic element interposed between said topsheet and said backsheet and being coextensive with the outer margin of said waistband, said outer margin of said waistband being nonlinear along its length, said diaper being formed by a method comprising the steps of:
(a) subjecting a web of elastomeric material capable of exhibiting dimensionally heat stable and dimensionally heat unstable states to stretching while said web is at an elevated temperature which is less than its crystalline melting temperature;
(b) allowing said elastomeric web to cool to ambient temperature while in a stretched condition to establish a heat unstable state in the material comprising said web;
(c) feeding said web of elastomeric heat unstable material in a direction substantially parallel to a moving web of interconnected articles;
(d) severing discrete segments of said elastomeric heat unstable material from said elastomeric web in a direction substantially perpendicular to the direction of web travel, whereby each of said discrete segments of elastomeric material has its length oriented parallel to the direction of said lateral stretching and its width oriented in a direction substantially parallel to the direction of web travel;
(e) transferring said discrete, severed segments of elastomeric material in a substantially untensioned condition with their lengths oriented substantially perpendicular to the direction of web travel to said moving web of interconnected articles at isolated, predetermined locations along the length of said web;
(f) securing said discrete segments of substantially untensioned, heat unstable elastomeric material to said web of interconnected articles at predetermined spaced locations along the length of said segments, as measured in a direction substantially perpendicular to the direction of web travel;
(g) severing each of the interconnected articles from one another at predetermined points coinciding with said elastically contractible segments along a nonlinear line of severance oriented substantially perpendicular to the direction of web travel, thereby dividing each of said elastically contractible segments into at least two portions

and forming a multiplicity of discrete articles each having at least one portion of said segment of substantially untensioned elastomeric material in a heat unstable condition fused to said article along at least a portion of said nonlinear severed edge; and

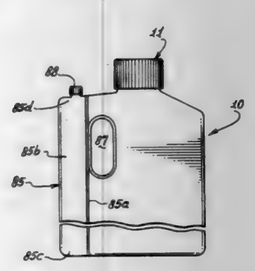
(h) heating said discrete articles to an elevated temperature which is less than the crystalline melting temperature of said heat unstable segments of substantially untensioned elastomeric material, thereby causing said elastomeric material to contract along the fused portions of said nonlinear severed edge, to become heat stable and elastic, and to shirr said articles in a direction substantially parallel to the orientation of said nonlinear severed edge.

4,563,186

MULTI-FUNCTIONAL LAUNDRY PRODUCT AND EMPLOYMENT OF SAME DURING FABRIC LAUNDERING

Brian P. Flynn, Lakewood; Deborah S. Winetzky, Torrance, and George D. Evans, Tustin, all of Calif., assignors to Purex Corporation, Lakewood, Calif.

Filed Apr. 5, 1984, Ser. No. 597,127
Int. Cl.⁴ D06M *11/04*; C11D *17/00*
U.S. Cl. 8—137 **20 Claims**



1. In the method of laundering fabric, the steps that include:
(a) providing a first volume of detergent a portion of which is to be added to fabric laundry wash water,
(b) providing a second and smaller volume of a prespotter composition in close transported association with said first volume of detergent for presentation at the time of laundering,
(c) and separating some of said prespotter composition from said close association with the detergent volume and applying same to a soiled portion or portions of fabric that is thereafter laundered in said wash water containing said added portion of detergent,
(d) said first volume of detergent being provided in a relatively large container, provided with a neck,
(e) said prespotter composition being provided in a fitment substantially smaller than said relatively large container,
(f) said (b) step including locating the fitment in the relatively large container, via said neck,
(g) and gaining access to the fitment in the large container and via said neck so that prespotter composition may be dispensed, and at the time of also gaining access to the detergent in the large container, via said neck prior to said step (c) application.

4,563,187

COMPOSITION FOR CLEANING TEXTILE SURFACES

Otto Mesmer, Wuppertal; Wolfgang Polligkeit, Schwelm; Wolfgang Tröger, Pulheim, and Andreas Wolter, Wuppertal, all of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,859
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304887
Int. Cl.⁴ C11D *17/06, 3/37*
U.S. Cl. 8—137 **3 Claims**

1. A cleaning composition for textile surfaces, including textile floor coverings, which comprises:
(a) a porous, powdery carrier material of urea-formaldehyde resin foam, said carrier material prepared by comminuting a urea-formaldehyde foam having a density of 20 to 60 kg/m^3 into particles of 0.01 to 12 mm, and having a bulk density of 50 to 150 g/l, and
(b) a tenside-containing aqueous solution adhering within said comminuted carrier material, stored uniformly in said comminuted carrier material, and having a maximum resulting formaldehyde content of 0.20%, which contains:
(i) 0.01 to 0.5% by weight of an antistatic agent promoting the ability to withdraw the composition from an applied surface by suction;
(ii) 0.01 to 2% by weight of ammonia;
(iii) 0.05 to 5% by weight of a polymer-tenside which prevents resoiling of the applied surface;
(iv) 0.1 to 5% by weight of urea;
(v) 0.01 to 2% by weight thiosulfate;
(vi) 0.01 to 2% by weight of sulfite ion provided by a salt of sulfurous acid capable of converting free formaldehyde associated with the comminuted carrier material into a hydroxy-methane sulfonate salt as well as liberating hydroxide ion, so that the pH of the tenside-containing aqueous solution is adjusted to a level of 6 to 9; and
(vii) balance water.

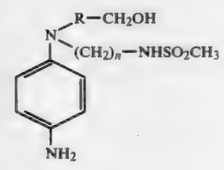
4,563,188

PARA-PHENYLENEDIAMINES WHICH CAN BE USED IN OXIDATIVE HAIR DYEING

Andreé Bugaut, Boulogne-Billancourt, and Patrick Andrillon, Aulnay-sous-Bois, both of France, assignors to L'Oreal, Paris, France

Filed Apr. 5, 1979, Ser. No. 27,383
Claims priority, application France, Apr. 6, 1978, 78 10275
Int. Cl.⁴ A61K *7/12*; C07C *143/74*
U.S. Cl. 8—410 **33 Claims**

1. A compound having the general formula:



(I)

in which n is an integer from 2 to 6 and R denotes an unsubstituted or mono- or poly-hydroxy substituted linear or branched alkylene group containing up to 6 carbon atoms which alkylene group can optionally contain one or more ether groups, or an inorganic or organic acid addition salt thereof, the said compound or salt being anhydrous or hydrated.

4. A composition suitable for dyeing hair which comprises at least one compound of formula I as claimed in claim 1 in an aqueous vehicle.

30. Composition according to claim 4 which is in the form of a liquid, cream, gel or aerosol.

31. Composition according to claim 4 which is suitable for dyeing human hair.

4,563,189

TREATMENT OF FIBERS WITH ARYLATING AGENTS TO ENHANCE DISPERSE DYEABILITY

David M. Lewis, Otley, England, assignor to Wool Development International Ltd., London, England

Filed Feb. 6, 1984, Ser. No. 577,131
Claims priority, application United Kingdom, Feb. 11, 1983, 8303850
Int. Cl.⁴ D06M *13/34*; D06P *5/22*
U.S. Cl. 8—493 **12 Claims**

1. The method of treating cellulosic and wool fibres to enhance their affinity to disperse dyestuffs which comprises treating the fibres with an aqueous solution or a dispersion of an arylating agent selected from the group: 2,4 dichloro-s-triazin-6ylaminobenzene; 1-(2,4 dichloro-s-triazin-6ylamino)-4-butyl benzene; 2,chloro-4,6-dianilino-s-triazine; 1-(2,4-dichloro-s-triazin-6ylamino)-4-dodecyl benzene; N-(2,4-dichloro-s-triazin-6yl)diphenylamine; potassium benzenesulphonylethyl sulphate; benzene vinyl sulphone; sodium N-benzamidoaminobenzene-4-sulphato ethyl sulphone; sodium 1'-(2-chloro-4-anilino-s-triazin-6yl)-amino benzene 4'-sulphato ethyl sulphone; sodium 2-chloro-4,6-di(amino benzene 4'-sulphato

ethyl sulphone)-s-triazine; sodium 2,4,6-tri(amino benzene 4'-sulphato ethyl sulphone)-s-triazine; sodium benzoyl thioglycollate; sodium 1-naphthoyl thioglycollate; disodio terephthaloyl-bis thioglycollate; benzene carboxymethylcarbodithioate; and sodium benzene carbamoyl sulphonate.

4,563,190

DYEING ASSISTANT AND USE THEREOF FOR DYEING OR PRINTING SYNTHETIC POLYAMIDE FIBRE MATERIAL

Rosemarie Töpfl, Dornach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 31, 1983, Ser. No. 528,027

Claims priority, application Switzerland, Mar. 9, 1982, 5249/82

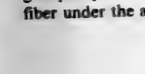
Int. Cl.⁴ D06P *1/56, 3/24;* **C09B** *67/26*

U.S. Cl. 8—524 **23 Claims**

1. A dyeing assistant which comprises at least

(A) a sulfonated condensation product of a hydroxyaryl compound and formaldehyde or a sulfonated N-arylmelamine derivative, and

(B) a quaternary ammonium compound which contains a basic nitrogen atom to which is attached at least one polyglycol ether chain and at least one aliphatic radical of 10 to 22 carbon atoms, said polyglycol ether chain containing at least one grouping of the formula



wherein one of Y_1 and Y_2 is hydrogen and the other is phenyl.

4,563,191

PROCESS FOR DYEING, IN THE GEL STATE, FIBER MATERIAL COMPOSED OF WET SPUN ACRYLONITRILE POLYMERS USING DYES WITH TWO BASIC GROUPS

Manfred Hähnke, Kelkheim; Reinhard Mohr, Offenbach am Main, and Kurt Hohmann, Neu-Isenburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 571,151, Jan. 17, 1984, abandoned, which is a continuation of Ser. No. 491,780, May 9, 1983, abandoned, which is a continuation of Ser. No. 388,933, Jun. 16, 1982, abandoned, which is a continuation of Ser. No. 283,351, Jul. 14, 1981, abandoned. This application Sep. 4, 1984, Ser. No. 647,269

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1980, 3026948

Int. Cl.⁴ D01F *6/18;* **D06F** *1/06;* **D06P** *1/41;* **C09B** *23/16*

U.S. Cl. 8—538 **19 Claims**

1. In a process for dyeing a fiber material containing an acid-modified polymer or copolymer of acrylonitrile formed by a conventional wet spinning method,

wherein after fiber-forming and removal of the majority of the non-aqueous spinning solvent, either before or during or after the concluding fiber stretching operation, the undyed spun product in a swollen gel-like state and in a substantially aqueous dyeing medium is treated with an aqueous solution of at least one dyestuff with which dyeing is effected by an acid-base reaction between the dyestuff and the fiber,

the improvement which comprises treating the undyed spun product with a dyestuff which acts as a base towards the acid groups of the fiber substance and which contains in its chromophoric molecular portion more than one basic group capable of entering into salt formation with the fiber under the applied dyeing conditions.

4,563,192

PROCESS FOR DYEING FIBRE MATERIAL MADE OF SYNTHETIC POLYAMIDES WITH ANIONIC DYES AND AN AUXILIARY MIXTURE

Heinz Salathé, Bretzwil, Switzerland; Hermann Flensberg, Weil am Rhein, and Harry Schaetzer, Wehr, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

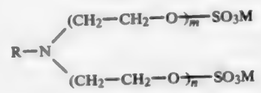
Filed Sep. 14, 1984, Ser. No. 651,034

Claims priority, application Switzerland, Sep. 19, 1983, 5080/83

Int. Cl.⁴ D06P *3/24*

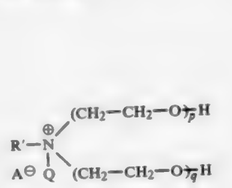
U.S. Cl. 8—554 **18 Claims**

1. In a process for dyeing synthetic polyamide fibre material with dyes or dye mixtures in the presence of a mixture of dyeing assistants, the improvement which comprises using for the dyeing of these materials an aqueous liquor which contains at least one anionic dye which, under the dyeing conditions of the process, at 1/1 standard depth exhausts to at least 95%, and a dyeing assistant mixture containing an anionic compound of the formula



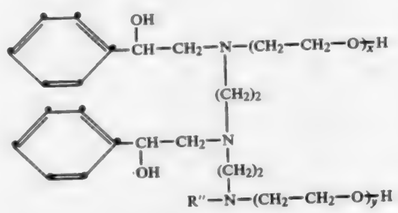
(1)

in which R is an alkyl or alkenyl radical having 12 to 22 carbon atoms, M is hydrogen, an alkali metal or ammonium, and m and n are integers such that m and n add up to 2 to 14, a quaternary compound of the formula



(2)

in which R', independently of R, is defined in the same way as R, A is an anion, Q is a substituted or unsubstituted alkyl radical, and p and q are integers such that p and q add up to 20 to 50, and a nonionic compound of the formula



(3)

in which R'', independently of R, is defined in the same way as R, and x and y are integers such that x and y add up to 80 to 140, and which liquor can also contain an alkali metal salt and an organic acid and finishing the dyeing at pH 5 to 7 and at a temperature of 95° to 130° C.

4,563,193

ASYMMETRIC 1:2 CHROME COMPLEX DYES CONTAINING AN AZO AND AN AZOMETHINE COMPOUND

Fabio Beffa, Riehen, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

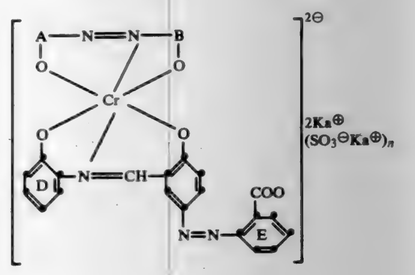
Filed Nov. 7, 1983, Ser. No. 549,037

Claims priority, application Switzerland, Nov. 16, 1982, 6667/82

Int. Cl.⁴ C09B *45/26*

U.S. Cl. 8—685 **9 Claims**

1. A 1:2 chrome complex dye of the formula



wherein

A is the radical of a diazo component of the benzene or naphthalene series, which carries the hydroxyl group in the o-position with respect to the azo group,

B is the radical of a coupling component which carries the hydroxyl group in the position adjacent to the azo group,

n is 1 or 2, and

$Ka^{\oplus}$ is a cation,

and wherein ring D is not further substituted or is momo- or disubstituted with a substituent selected from a group consisting of sulfo, nitro, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylsulfonyl, and sulfonamide;

ring E is not further substituted or is substituted by a substituent selected from the group consisting of chlorine, sulfo, methyl, and carboxyl; with the proviso that when B is a 2-naphthol radical, ring D is substituted only by a nitro group para to the nitrogen atom, and ring E has no substituent at positions 3-6 thereof, then A may not be 1-amino-2-hydroxynaphthelene-4-sulfonic acid.

4,563,194

WATERWALL FOR A TWIN TOWER GASIFICATION SYSTEM

James J. Simon, Windsor, Conn., assignor to Cool Water Coal Gasification Program, Daggett, Calif.

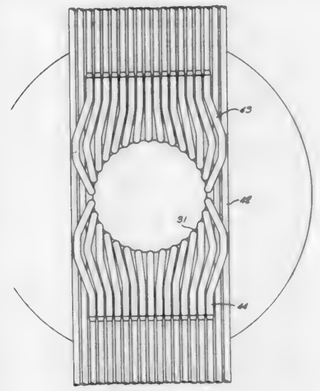
Filed Apr. 10, 1984, Ser. No. 598,845

Int. Cl.⁴ C10J *3/48, 3/76, 3/86*

U.S. Cl. 48—77 **10 Claims**

1. Apparatus comprising a first tower and a second tower fluidically connected intermediate their ends,

comprising tubes which are diametrically joined together to form a continuous inner surface; wherein a portion of said tubes which extend along the walls of the first tower extend through a connecting duct to the second tower and a portion of said tubes which extend along the walls of the second tower extend through said connecting duct to the first tower such that said portions of said tubes that extend through said connecting duct define a cylinder and are formed into a helix such that said portion of said tubes which extend along the walls of the first tower and which



defines the lower half of said cylinder at the first tower, defines the upper half of said cylinder at the second tower.

4,563,195

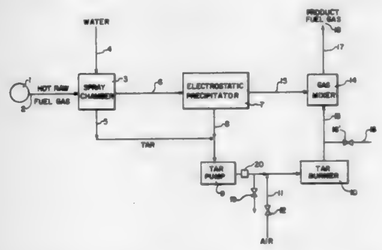
METHOD FOR TREATMENT OF TAR-BEARING FUEL GAS

Leonard L. Frauen, Murrysville, and Stanley Kasper, Pittsburgh, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Nov. 13, 1984, Ser. No. 670,170

Int. Cl.⁴ C10K *1/02, 1/10*

U.S. Cl. 48—197 R **6 Claims**



1. In a process of producing a fuel gas which contains condensable tar vapor when it leaves a gasifier, the improvement wherein the tar-bearing gases are treated to remove tar therefrom, comprising:

(a) continuously conducting hot fuel gas from a gasifier to and discharging it into a spray chamber where the hot tar-bearing gas is contacted with a fine spray of water thereby cooling the tar vapor and evaporating the water to produce a fog-like dispersion of tar in an atmosphere of fuel gas with the temperature in the spray chamber maintained above the dew point of water;

(b) continuously transferring the fuel gas and said dispersion of tar and water to an electrostatic precipitator and precipitating therein at least most of the condensed tar as a liquid;

(c) removing the liquid tar so precipitated and conducting at least most of it to a tar burner;

(d) burning the tar with no more than the stoichiometric supply of oxygen provided by air to produce oxygen-free and tar-free hot combustion gases;

(e) conducting said hot combustion gases directly into a mixer into which the fuel gas and water vapor flows from the precipitator, thereby adding to the fuel gas the sensible heat of said combustion gases; and

(f) conducting the mixture so produced to a place of use as a hot fuel gas mixture.

4,563,196

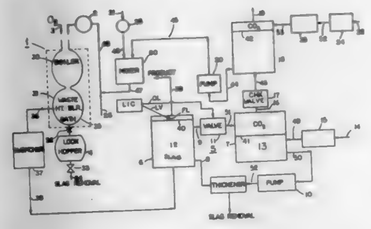
COAL CHARGING IN A COAL GASIFICATION INSTALLATION

Jürgen Seipenbusch, Essen, Fed. Rep. of Germany, assignor to Ruhrkohle Aktiengesellschaft, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 165,495, Jul. 3, 1980, abandoned. This application Mar. 19, 1984, Ser. No. 591,201

Int. Cl.⁴ C10J *3/46*

U.S. Cl. 48—210 **8 Claims**



1. In a coal gasification process using a reactor producing a product gas which contains carbon dioxide, a method of charging a liquid suspension of coal into said reactor so as to increase the fluidity of said liquid coal suspension, said method comprising the steps of:

(a) separating carbon dioxide gas from reactor product gas for selective feedback into said reactor, said fed-back carbon dioxide gas not actively participating in and not thermally affecting the reaction in said reactor;

(b) absorbing said separated carbon dioxide, of step (a), to form a reacted solid chemical compound form for feeding back into said liquid coal suspension in controlled quantities; and

(c) admitting a predetermined quantity of said chemical compound into said liquid suspension to liberate carbon dioxide gas in a bubble form into said liquid suspension which enters said reactor, said liberated carbon dioxide gas causing increased fluidity of said liquid suspension and facilitating dispersion of said liquid coal suspension at its entry into said reactor.

4,563,197

PROCESS FOR THE PRODUCTION OF ETHYLENE AND OTHER HYDROCARBONS FROM COAL

Meyer Steinberg, Huntington Station, and Peter Fallon, East Moriches, both of N.Y., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

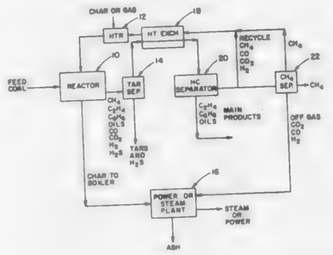
Continuation-in-part of Ser. No. 349,225, Feb. 16, 1982, abandoned. This application Feb. 15, 1984, Ser. No. 580,500

Int. Cl.⁴ C10J *3/46*; C07C *1/00*

U.S. Cl. 48—210 **6 Claims**

1. A process for the production of ethylene from coal in commercially significant yields greater than 10% (% carbon converted to product) comprising the steps of:

(a) reacting coal particulates entrained in a flow of gas consisting essentially of methane with said methane gas at a temperature in the approximate range of 850° C. to 1000° C. and at a partial pressure of approximately 50 psi for a period of time of approximately 1.5 seconds; and



(b) recovering ethylene gas produced in said reaction from the product stream comprising in addition to said ethylene, said methane and other reaction products.

4,563,198

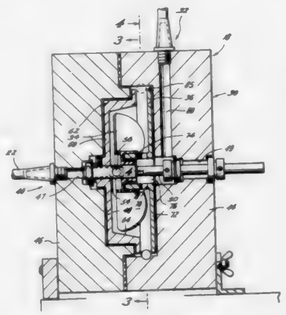
METHOD AND APPARATUS FOR FLUID SEPARATION

Bruce A. Houtchens, Houston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed Dec. 4, 1984, Ser. No. 677,794

Int. Cl.⁴ B01D *19/00*

U.S. Cl. 55—41 **31 Claims**



1. A device adapted for separating a fluid into gas and liquid components comprising:

a housing;

a chamber within the housing, the chamber having an axis and an outer periphery;

means for introducing the fluid into the chamber;

propeller means rotatably mounted in the chamber, the propeller means being operable for receiving fluid from the introduction means and for directing a portion of said fluid;

disc means rotatably mounted in the chamber, the disc means being operable for receiving fluid from the propeller means and for biasing liquid component of the fluid radially outward;

outlet means in communication with the chamber and disposed along the outer periphery of the chamber remote from the axis, said outlet means being operable for passing liquid component out of the chamber; and

exhaust means in communication with the chamber and located adjacent the axis of the chamber, said exhaust means being operable for allowing passage of gaseous component out of the chamber.

4,563,199

PAINT SPRAY BOOTH EMISSIONS CONTROL PROCESS

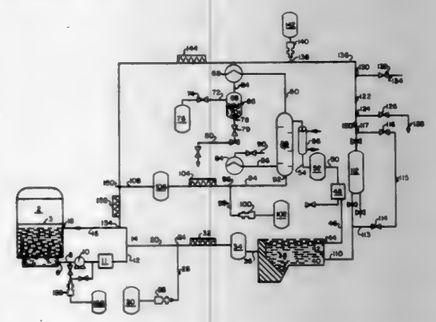
William H. Lindenberger, Naperville; Theodore P. Sieder, and Edwin C. Zuerner, both of Bolingbrook, all of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 305,882, Sep. 28, 1981, Pat. No. 4,396,405. This application May 4, 1983, Ser. No. 491,155

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.⁴ B01D *47/00*

U.S. Cl. 55—85 **5 Claims**



1. A method for the continuous removal of volatile organic paint carriers from the solvent-laden air in paint spray booths which comprises the steps of:

A. forming an oil-in-water emulsion of water and a high-boiling oil with an oil-in-water emulsifier, said volatile organic paint carrier being soluble in the high-boiling oil;

B. contacting the emulsion with particulates and oversprayed paint in the paint spray booth;

C. continuously withdrawing at least a portion of the emulsion from the paint spray booth;

D. breaking the portion of emulsion withdrawn from the paint spray booth and recovering a carrier-rich, high-boiling oil phase and a water phase;

E. removing particulates from the high-boiling oil phase;

F. distilling carrier-rich, high-boiling oil phase to recover volatile organic paint carrier therefrom and to recover high-boiling oil;

G. combining the water phase of step D with the recovered high-boiling oil of step F to reform an oil-in-water emulsion; and then,

H. repeating steps B–G above.

4,563,200

AIR FILTRATION

Robert S. Gladstone, Abergavenny, Wales, assignor to Coopers Filters Limited, Berkshire, England

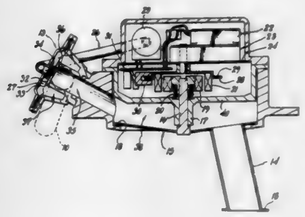
Filed Nov. 2, 1984, Ser. No. 667,728

Claims priority, application United Kingdom, Nov. 8, 1983, 8329726

Int. Cl.⁴ B01D *46/04*

U.S. Cl. 55—294 **8 Claims**

1. An air blast control system for a self-cleansing air cleaner comprises means for driving an air blast nozzle with substantially constant speed around a path including at least two filter element sections, means for generating air blasts timed to coincide with the arrival of the nozzle at each of said sections in turn, together with means responsive to each blast to temporarily halt the nozzle during at least part of the duration of the



blast and to thereafter re-synchronise the nozzle movement with that of the driving means.

4,563,201

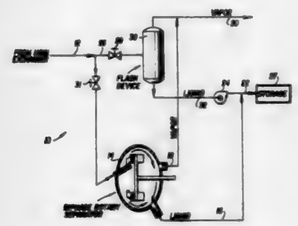
METHOD AND APPARATUS FOR THE PRODUCTION OF LIQUID GAS PRODUCTS

Virgil L. Brundige, Jr., Grand Prairie, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 16, 1984, Ser. No. 631,686

Int. Cl.⁴ F25J *3/00*

U.S. Cl. 62—11 **7 Claims**



1. An apparatus for producing liquified gas with a reduced amount of gas vapor in a liquid gas manufacturing facility, comprising:

means for supplying a stream of liquid gas from a liquid gas manufacturing facility;

a first flow conduit for receiving said stream of liquid gas and passing it directly to a bi-phase rotary separator;

a bi-phase rotary separator having an inlet connected to said first flow conduit, a vapor outlet, and a liquid outlet;

means for coupling the liquid outlet of said bi-phase rotary separator directly to a liquid gas storage means, wherein said coupling means is a direct conduit connection between said liquid outlet and storage means with pumping pressure for liquid supplied to said storage means being provided by said rotary separator; and

means for conducting gas vapor from said vapor outlet.

4. A method for producing liquified gas with a reduced amount of gas vapor in a liquid gas manufacturing facility, comprising the steps of:

supplying a stream of liquid gas from a liquid gas manufacturing facility;

feeding said stream of liquid gas without passage through a flash device directly into a bi-phase rotary separator, said separator separating said stream into respective liquid and vapor phases, and supplying said liquid and vapor phases at respective liquid and vapor outlets thereof; and

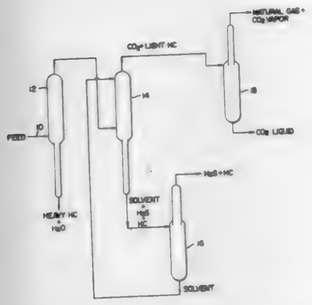
feeding the liquid phase at the liquid outlet of said separator directly to a storage facility without further pressurizing said liquid phase.

4,563,202

METHOD AND APPARATUS FOR PURIFICATION OF HIGH CO_2 CONTENT GAS

Jame Yao; Jong J. Chen, and Douglas G. Elliot, all of Houston, Tex., assignors to DM International Inc., Houston, Tex.

Filed Aug. 23, 1984, Ser. No. 643,368
Int. Cl.⁴ F25J 3/04
U.S. Cl. 62—17 **19 Claims**



1. A method for recovery of carbon dioxide from a hydrocarbon feed stream containing carbon dioxide, methane and higher boiling hydrocarbon constituents, hydrogen sulfide, and water, comprising:

dehydrating and phase separating the feed stream in a stabilizer column containing a glycol compound, forming thereby a glycol/water phase, a liquid phase of heavy hydrocarbons, and a gas phase containing carbon dioxide, hydrogen sulfide and light hydrocarbons;

removing hydrogen sulfide and a portion of the light hydrocarbons from the gas phase in a carbon dioxide fractionation step which includes injecting a solvent into a fractionator column to absorb hydrogen sulfide and hydrocarbons and to increase the relative volatility between the carbon dioxide and hydrogen sulfide, wherein the solvent, hydrogen sulfide and hydrocarbons exit the fractionator as a bottom product; and

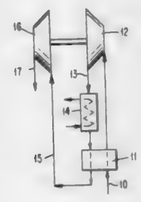
separating and recovering carbon dioxide from the residual hydrocarbons left in the overhead from the fractionator by distilling the overhead in a demethanizer column under conditions which produce liquid carbon dioxide as a bottom product.

4,563,203

REFRIGERATION FROM EXPANSION OF TRANSMISSION PIPELINE GAS

Irving Weiss, Merrick, and Hans P. Schorr, Douglaston, both of N.Y., assignors to Kryos Energy Inc., New York, N.Y., by said Irving Weiss and The Brooklyn Union Gas Company, Brooklyn, N.Y., by said Hans P. Schorr

Filed Apr. 16, 1984, Ser. No. 601,013
Int. Cl.⁴ F25J 3/00
U.S. Cl. 62—20 **17 Claims**



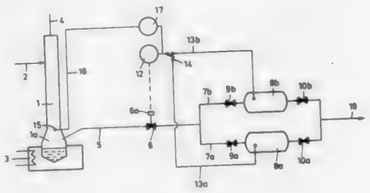
1. A process for delivering transmission pipeline gas at elevated pressure to a branch pipeline at a predetermined lower high pressure, which comprises recovering commercially saleable refrigeration by injecting methanol into said transmission pipeline gas, expanding said transmission pipeline gas containing said methanol with the performance of work to a reduced pressure at least 50 psi below said predetermined high pressure but not reduced enough to drop the temperature of the expanded gas below about −100° F., separating an aqueous methanol condensate from the cold expanded gas, recovering said commercially saleable refrigeration from said cold expanded gas, and thereafter compressing solely with said performance of work said expanded gas to said predetermined high pressure for delivery to said branch pipeline.

4,563,204

METHOD AND APPARATUS FOR WITHDRAWING A BOTTOM PRODUCT FROM A LOW-TEMPERATURE RECTIFYING COLUMN

Martin Schaub, and Alexander Stucheli, both of Winterthur, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 30, 1983, Ser. No. 556,319
Claims priority, application Switzerland, Dec. 3, 1982, 7036/82
Int. Cl.⁴ B01D 3/42; F25J 3/02
U.S. Cl. 62—21 **8 Claims**



1. A method of withdrawing a bottom product from a vaporization chamber of a low-temperature rectifying column, said method comprising the steps of

connecting a vacuum tank to the vaporization chamber to receive bottom product therefrom at ambient temperature;

controlling the amount of bottom product delivered to the tank in response to the pressure of the bottom product in the tank and at a rate of less than one mol per hour;

disconnecting the tank from the chamber at a time no later than when there is substantially a pressure equalization between the pressure in the tank and the pressure in the chamber;

thereafter feeding the bottom product in the tank to a consumer within a time period shorter than the time period of filling of the tank; and

thereafter connecting the tank to the chamber for re-filling of the tank.

4,563,205

PROCESS FOR THE PRODUCTION OF SLAB-SHAPED LENS HAVING GRADIENT OF REFRACTIVE INDEX IN THICKNESS DIRECTION ONLY

Yoshiyuki Asahara; Hiroshi Sakai; Seiichi Shingaki, all of Tokyo, and Shigeaki Ohmi, Saitama, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jan. 20, 1984, Ser. No. 572,241
Claims priority, application Japan, Feb. 4, 1983, 58-16109
Int. Cl.⁴ C03C 21/00, 19/00
U.S. Cl. 65—30.13 **1 Claim**

1. A process for producing a slab-shaped optical lens having a gradient of refractive index only in the direction of thickness thereof, which comprises:

stuffing a solution comprising a solvent and a dopant into micropores of a plate-shaped porous glass product, the plate-shaped product having length, width and thickness and corresponding axes,

leaching said plate-shaped product to unstuff a part of the dopant to form a gradient of dopant concentration in the porous glass product, the gradient being in the thickness and width directions of the porous glass product,

precipitating the dopant in the micropores, drying the porous glass product to evaporate the solvent remaining in the micropores,



collapsing the micropores by applying a heat treatment to form a gradient of refractive index in the porous glass product, the gradient being in the thickness and width directions of the plate-shaped porous glass product,

cutting off a slice from each side of the plate-shaped glass product to decrease the width of the plate-shaped glass product, the width of each slice being large enough such that the refractive index gradient in the width direction of the plate-shaped glass product is eliminated, and a slab-shaped optical lens having a gradient of refractive index only in the direction of thickness thereof is effected, such that light is converged in the direction toward the center of the thickness axis as it flows along the lens.

4,563,206

APPARATUS FOR TEMPERING GLASS SHEETS SUSPENDED IN A VERTICAL ORIENTATION

Claude Benard, Croissy Sur Seine, France, assignor to Saint-Gobain Vitrage, Courbevoie, France

Filed Mar. 7, 1984, Ser. No. 586,982
Claims priority, application France, Mar. 10, 1983, 83 03918
Int. Cl.⁴ C03B 27/04
U.S. Cl. 65—348 **8 Claims**

1. Apparatus for tempering glass sheets suspended in a vertical orientation comprising:

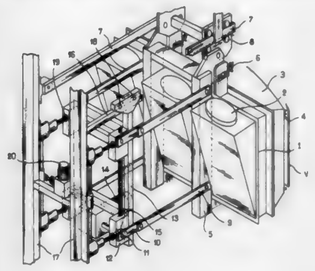
a manifold into which a fluid is introduced and from which a fluid is directed at a glass sheet to temper it,

a frame on which the manifold is mounted,

first means for varying the orientation of the manifold relative to the glass sheet by tilting the position of the manifold relative to the frame,

second means for repetitively moving the frame and therefore the manifold horizontally toward and away from a desired position at which the glass sheet is tempered, and

third means for adjusting the horizontal position of the frame, said second repetitively moving means being mounted on said third means so that adjustment of said



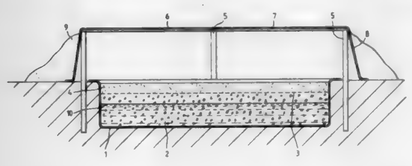
third means changes the position at which the manifold is located when the glass sheet is tempered.

4,563,207

CLAY-BREAKING AND FERTILIZING COMPOSITION AND METHOD OF BREAKING AND FERTILIZING HEAVY AND COMPACTED SOILS

David L. McKenzie, 26 Rivermead, Cullompton, Devon, United Kingdom

Filed Sep. 21, 1983, Ser. No. 534,246
Int. Cl.⁴ C05F 3/00
U.S. Cl. 71—21 **9 Claims**



1. A clay-breaking and fertilizing composition consisting essentially of intimate mixture of from 20% to 60% by weight of dried protein-rich manure, from 6% to 35% by weight of a water-soluable potassium compound, and from 20% to 60% by weight of a combination of a basic phosphate and calcium carbonate in a weight ratio of substantially 1:4 such that, when spread on clay soil and watered, the composition has a clay-breaking and fertilizing effect.

4,563,208

FERTILIZERS CONTAINING NITROGEN AND MICRONUTRIENTS

Peter S. Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Calif.

Division of Ser. No. 471,452, Mar. 7, 1983, Pat. No. 4,494,976, which is a continuation of Ser. No. 259,067, Apr. 30, 1981, abandoned. This application Oct. 19, 1984, Ser. No. 662,593
Int. Cl.⁴ C05C 9/00
U.S. Cl. 71—28 **13 Claims**

1. A method for producing free-flowing nitrogenous chemical fertilizer particles comprising the steps of:

(a) applying a coating consisting essentially of at least one metal oxide to urea particles;

(b) moistening the coated particles with water; and

(c) heating the coated particles to effect a condensation reaction between the metal oxide and urea.

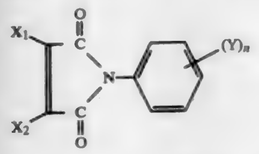
4,563,209

AQUATIC ORGANISM INHIBITING COMPOSITION

Kogoro Mori; Hideo Ohi, both of Shizuoka, and Chihiro Yazawa, Kanagawa, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 165,122, Jun. 20, 1979, Pat. No. 4,318,730.
This application Oct. 21, 1981, Ser. No. 313,249
Claims priority, application Japan, Jan. 20, 1978, 53-5029
Int. Cl.⁴ A01N *55/04, 43/36*
U.S. Cl. 71—66 **1 Claim**

1. An aquatic organism inhibiting composition in the form of a paint, solution or emulsion which comprises 80–95 wt. percent of at least one N-arylmaleimide having the formula



wherein X_1 and X_2 are the same or different and respectively represent hydrogen or a halogen atom; and Y represents a halogen atom or a lower alkyl or a lower alkoxy group and n is 0 or an integer of 1 to 3 and 5–20 wt. percent of at least one organo-tin compound selected from the group consisting of bis(tri-n-butyl tin)mesodibromosuccinate, triphenyl tin monochloroacetate, triphenyl tin hydroxide and bis(tri-n-butyl tin-)oxide.

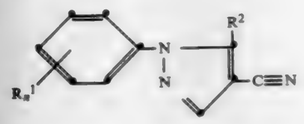
4,563,210

HERBICIDAL 5-HALO-1-HALOPHENYL-1H-PYRAZOLE-4-CARBONITRILES

James R. Beck, Indianapolis, and Michael P. Lynch, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 549,138, Nov. 7, 1983, abandoned. This application Sep. 13, 1984, Ser. No. 650,135
Int. Cl.⁴ A01N *43/56;* **C07D** *231/14, 231/16*
U.S. Cl. 71—92 **27 Claims**

1. A compound of the formula



wherein each R^1 independently is halogen; R^2 is halo or trifluoromethyl; and n is 1–5;

with the provisos that when n is 1, R^1 is other than fluorine, and when n is 2 and each R^1 is chlorine, at least one R^1 is located at a para or ortho position on the phenyl ring.

19. A method for controlling undesired plants which comprises applying to the plants a growth inhibiting amount of a compound of claim 1.

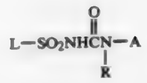
4,563,211

HERBICIDAL SULFONAMIDES

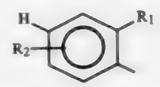
Barry A. Wexler, Wilmington, Del., and William T. Zimmerman, Landenberg, Pa., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Mar. 19, 1984, Ser. No. 590,882
Int. Cl.⁴ C07D *239/47;* **A01N** *47/36*
U.S. Cl. 71—92 **15 Claims**

1. A compound of the formula:

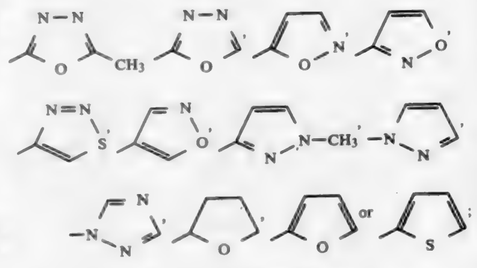


wherein
R is H or CH_3;
L is

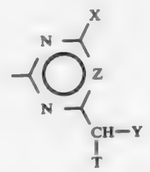


L-1

R_1 is C_1–C_4 alkyl, C_1–C_4 alkoxy, $OCH_2CH_2OCH_3$, F, Cl, Br, NO_2, CF_3, CO_2R_{15}, $SO_2NR_{16}R_{17}$, $SO_2N(OCH_3)CH_3$, OSO_2R_{18}, $S(O)_nR_{19}$, WCF_3, $WCHF_2$, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_6H_5, C_1–C_2 alkyl substituted with OCH_3 or OCH_2CH_3,

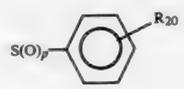


R_2 is H, F, Cl, Br, CF_3, CH_3, OCH_3 or SCH_3;
R_{15} is C_1–C_4 alkyl, $CH_2CH_2OCH_3$, CH_2CH_2Cl or $CH_2CH{=}CH_2$;
R_{16} is C_1–C_2 alkyl;
R_{17} is C_1–C_2 alkyl;
R_{18} is C_1–C_3 alkyl or $N(CH_3)_2$;
R_{19} is C_1–C_3 alkyl or $CH_2CH{=}CH_2$; and
W is O, S or SO_2;
A is

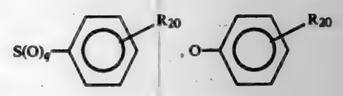


A-1

X is CH_3, OCH_3, OC_2H_5, F, Cl, Br, CF_3 or $OCHF_2$;
T is H, $SeCH_3$, SeC_6H_5, SCH_3 or



Y is $SeCH_3$, SeO_6H_5,



$OSi(CH_3)_3$, CH_2OH or $CH_2OSi(CH_3)_3$;
Z is CH;
R_{20} is H, CH_3, CF_3, OCH_3, F, Cl, Br or NO_2;
p is 0, 1 or 2; and
q is 0, 1 or 2;
provided that
the sum of p and q is less than or equal to 2;
and their agriculturally suitable salts.

4,563,212

HIGH CONCENTRATION ENCAPSULATION BY INTERFACIAL POLYCONDENSATION

David Z. Becher, St. Louis, and Ralph W. Magin, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1983, Ser. No. 566,108
Int. Cl.⁴ A01N *37/18*
U.S. Cl. 71—118 **19 Claims**

1. A composition consisting essentially of microcapsules suspended in an aqueous liquid comprised of a water-immiscible material contained within an encapsulating wall of polymeric material wherein:

(a) the concentration of said water-immiscible material is from about 480 grams to about 700 grams per liter of composition;

(b) wherein said encapsulating wall of polymeric material is the reaction product of a first shell wall component which is a difunctional or polyfunctional reactant that is soluble in said water-immiscible material and a second shell wall component which is water soluble and which is a difunctional or polyfunctional reactant and wherein concentration of first shell wall component is from about 3.5% to about 21.0% relative to the weight of said water-immiscible material and wherein the concentration of said second shell wall component is from about 1.5% to about 9.0% relative to the weight of said water-immiscible material; and

(c) wherein said water contains from about 0.5% to about 15% of an emulsifier relative to the weight of said water-immiscible material, said emulsifier being selected from the group consisting of sulfonated naphthalene formaldehyde condensates and sulfonated polystyrenes.

5. A composition as described in claim 1 wherein said water-immiscible material is an herbicide, insecticide, plant growth regulant or an herbicidal antidote.

4,563,213

EXTRACTION AND STRIPPING COBALT VALUES

Gale L. Hubred, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 422,816, Sep. 24, 1982. This application Aug. 2, 1984, Ser. No. 637,652
Int. Cl.⁴ C22B *23/00*
U.S. Cl. 75—119 **8 Claims**

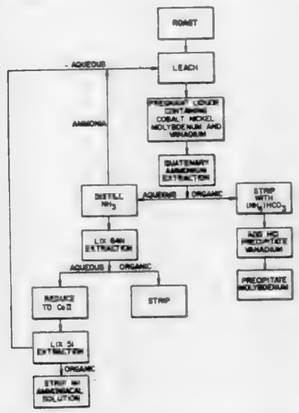
1. A process for recovering cobalt values from an aqueous solution containing nickel comprising:

(a) removing nickel from a first aqueous solution containing cobalt (III) values by extracting said nickel with an alpha-hydroxy oxime;

(b) reducing cobalt (III) values to cobalt (II) values;

(c) extracting the resulting cobalt (II) values with a beta-diketone chelating metal extractant;

(d) stripping the cobalt values from said beta-diketone chelating metal extractant at a pH in the range of between 10 and 12 with a second aqueous solution containing ammonia and ammonium carbonate, to form a cobalt-containing aqueous solution.

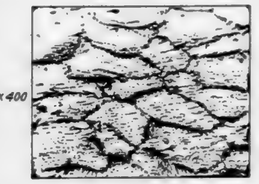


4,563,214

END CLOSURE MEMBERS FOR DISCHARGE LAMPS

Richard J. Seddon, Leicester; Keith E. Parker, Melton Mowbray, and Peter Hing, Leicester, all of England, assignors to Thorn EMI plc, London, England

Filed Nov. 17, 1983, Ser. No. 552,976
Claims priority, application United Kingdom, Nov. 18, 1982, 8232968
Int. Cl.⁴ C22C *32/00*
U.S. Cl. 75—234 **5 Claims**



1. An electrically conducting cermet comprising a sintered compact of refractory oxide granules having diameters of from 50 to 800 microns, and a conductive network extending throughout the cermet wherein said network is provided by a layer of metal, said layer comprising niobium and, optionally, at least one other metal selected from titanium, zirconium, hafnium, vanadium, tantalum, molybdenum and tungsten, said layer constituting a volume fraction of 0.06 to 0.2 of the cermet and the minimum niobium content of said layer constituting a volume fraction of 0.06 of the total cermet, and wherein said granules comprise 0.01 to 0.25 percent by weight of the refractory oxide of finely divided magnesium oxide and either:

(a) a refractory oxide selected from the group consisting of aluminium oxide, yttrium oxide or a spinel, or

(b) a refractory oxide such as aluminium oxide, yttrium oxide or a spinel and at least one metal selected from titanium, zirconium, hafnium, vanadium, tantalum, chromium, molybdenum, tungsten, iron, cobalt and nickel in a volume fraction of from 0.01 to 0.15 of the total volume of the granules.

4,563,215

TITANIUM NITRIDE BASE CERMETS WITH HIGH TOUGHNESS

Yoshihiro Yamamoto, Iwakura, and Junichiro Suzuki, Gifu, both of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Jan. 21, 1983, Ser. No. 459,938
Claims priority, application Japan, Jan. 25, 1982, 57-9792
Int. Cl.⁴ B22F *3/12*; C22C *29/00*
U.S. Cl. 75—238 15 Claims

1. A titanium nitride base cermet with high toughness consisting essentially of, by weight, 42 to 95% of TiN, 2 to 20% of one or more of Mo, W and the carbides thereof, 2.85 to 30% of Ni, Co or a mixture thereof, and 0.15 to 8.0% of Al_4C_3, with the balance being inevitable impurities.

4. A titanium nitride base cermet with high toughness consisting essentially of, by weight, 35 to 95% of TiN, 2 to 20% of one or more of Mo, W and the carbides thereof, 2.85 to 30% of Ni, Co or a mixture thereof, and 0.15 to 8.0% of Al_4C_3, with the balance being inevitable impurities, wherein half or less, by weight, of TiN is replaced with one or more of the carbides and/or carbonitrides of metals selected from the group consisting of Ti, Zr, Hf, V, Nb and Ta, with the proviso that the remaining amount of TiN is no less than 30% in the cermet.

4,563,216

COMPOSITIONS AND PROCESSES FOR COATING FERROUS SURFACES WITH COPPER

Mark B. Knaster, Ambler, and Carmen M. Carandang, Oaks, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Filed Jun. 15, 1984, Ser. No. 621,272
Int. Cl.⁴ C23C *3/00*
U.S. Cl. 106—1.23 28 Claims

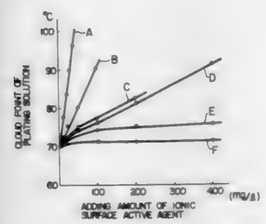
1. An aqueous copper coating composition, for coating the surfaces of ferrous-containing materials by contacting said surfaces with said composition, said composition comprising:
(a) from about 10 to about 30 grams/liter of cupric ions;
(b) from about 1 to about 10 grams/liter of chloride ions;
(c) from about 0.1 to about 10 grams/liter of at least one aminepolyacetic acid compound; and
(d) either
(i) from about 0.01 to about 10 grams/liter of acriflavine hydrochloride and from about 0.1 to about 20 grams/liter of a polyalkylene oxide C_{12}–C_{18} alkyl or alkenyl amine; or
(ii) from about 0.1 to about 10 grams/liter of the reaction product of ortho-toluidine and formaldehyde.

4,563,217

ELECTROLESS COPPER PLATING SOLUTION

Hiroshi Kikuchi, Zushi; Akira Tomizawa, and Hitoshi Oka, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 22, 1984, Ser. No. 623,173
Claims priority, application Japan, Jul. 25, 1983, 58-134328; Dec. 13, 1983, 58-233599
Int. Cl.⁴ C23C *3/02*
U.S. Cl. 106—1.23 23 Claims



1. An electroless copper plating solution comprising:
(a) copper ions,
(b) a copper(II) ion complexing agent,
(c) a reducing agent selected from the group consisting of formaldehyde, paraformaldehyde and borohydrides,
(d) a pH adjustor,
(e) a polyoxyethylene series surface active agent selected from the group consisting of amine series polyoxyethylene surface active agents, alkylamine series polyoxyethylene surface active agents, alkyl ester series polyoxyethylene surface active agents, alkyl aryl ether series polyoxyethylene surface active agents and acetylene-bond-containing polyoxyethylene surface active agents, and mixtures thereof,
(f) a copper(I) ion complexing agent, and
(g) (i) an inorganic compound containing at least silicon or germanium, or
(ii) a cationic surface active agent, or
(iii) an inorganic compound containing at least silicon, germanium or vanadium and a cationic surface active agent.

4,563,218

ANTISLIP AGENT

Jakob Schuler, Rechbergweg 49, 7900 Ulm/Donau, Fed. Rep. of Germany

Filed Sep. 28, 1984, Ser. No. 655,886
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3335522
Int. Cl.⁴ C09K *3/14*
U.S. Cl. 106—36 6 Claims

1. An antislip agent for application to a piece of sporting equipment engageable by the hand of a sports person comprising:
10 to 50% by weight rosin, 10 to 40% by weight microcrystalline wax and 10 to 50% weight dammar resin.

4,563,219

INORGANIC BINDER COMPOSITION AND REFRACTORY-BINDER COATED FABRIC COMPOSITIONS PREPARED THEREFROM

Stephen George, and Thomas H. George, both of Clinton, N.J., assignors to Subtex, Inc., Hartsdale, N.Y.

Division of Ser. No. 585,909, Mar. 2, 1984, Pat. No. 4,507,355.
This application Jan. 4, 1985, Ser. No. 688,709
Int. Cl.⁴ C09K *3/00*; C04B *35/02*
U.S. Cl. 106—287.19 6 Claims

1. An inorganic binder composition comprising:
(a) colloidal silica;
(b) monoaluminum phosphate;
(c) aluminum chlorohydrate; and
(d) an amount of an alkyl tin halide catalyst effective to increase the bonding of said composition when applied to a substrate.

4,563,220

PRODUCTION OF BISMUTH OXIDE/CHROMIUM OXIDE MIXED PHASE PIGMENTS

Peter Köhler, and Heinrich Heine, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 29, 1983, Ser. No. 509,252
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226892
The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.
Int. Cl.⁴ C04B *31/00*
U.S. Cl. 106—288 B 9 Claims

1. A process for the production of bismuth oxide/chromium oxide mixed phase pigments ranging in color from yellow-orange to orange-red, comprising mixing metallic bismuth intensively with at least one of a chromium (III) and a chromium (VI) compound, calcining the homogeneous mixture in an oxidizing atmosphere at a temperature of about 500° to 800° C., and crushing the product to pigment size.

4,563,221

PIGMENTS AND THEIR MANUFACTURE

John P. Humphreys, Hartlepool, England, assignor to Tioxide Group PLC, London, England

Continuation-in-part of Ser. No. 553,958, Nov. 21, 1983, abandoned. This application Mar. 15, 1985, Ser. No. 712,040
Claims priority, application United Kingdom, Dec. 16, 1982, 8235870
Int. Cl.⁴ C09C *3/00, 1/36*
U.S. Cl. 106—300 10 Claims

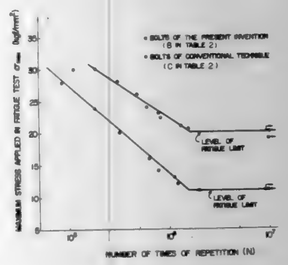
1. A pigment comprising particulate titanium dioxide free of an inorganic coating but treated with a cationic emulsifying agent of a fatty alkyl amine in which the alkyl chain contains from 8 to 22 carbon atoms and isostearic acid and dodecyl benzene sulphonic acid, said isostearic acid being present in an amount of from 0.1 to 10% by weight of the pigment and said dodecyl benzene sulphonic acid being present in an amount of from 1 to 25% by weight of the isostearic acid and said cationic emulsifying agent being present in an amount of from 50% to 250% by weight of isostearic acid.

4,563,222

HIGH STRENGTH BOLT AND METHOD OF PRODUCING SAME

Heiji Sugita, Ichikawa, and Takehiko Kato, Kobe, both of Japan, assignors to Sugita Wire Mfg. Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 509,046, Jun. 29, 1983, abandoned. This application Aug. 27, 1984, Ser. No. 644,158
Int. Cl.⁴ C21D *1/20*
U.S. Cl. 148—12 F 2 Claims



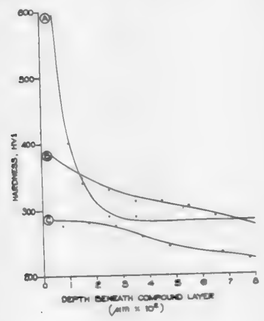
1. A method of manufacturing a bolt, having higher impact resistance and superior fatigue strength, comprising the steps of:
heating a steel alloy consisting essentially of 0.15 to 0.3 wt % C, 1 to 2 wt % Mn and the balance Fe and inevitable impurities, to a temperature not lower than Ac_3 transformation point of the alloy to produce solely an austenite phase in the alloy;
inserting said heated steel alloy into means for isothermal heat-treatment directly after heating, to subject said steel alloy to isothermal transformation at 450° to 580° C.;
subjecting, after cooling, said steel alloy to cold wire drawing at a reduction rate in the range of 15% to 40%; and
cold-forging said steel alloy into a bolt so that the impact resistance of the thus formed bolt is not less than 17 kg-m/cm².

4,563,223

CORROSION RESISTANT STEEL COMPONENTS AND METHOD OF MANUFACTURE THEREOF

Cyril Dawes, Sutton Coldfield; John D. Smith, and Colin G. Smith, both of Solihull, all of England, assignors to Lucas Industries, Birmingham, England

Filed Apr. 5, 1984, Ser. No. 596,930
Claims priority, application United Kingdom, Apr. 14, 1983, 8310102
Int. Cl.⁴ C23C *11/16*
U.S. Cl. 148—16.5 28 Claims



1. A method of manufacturing a corrosion-resistant steel component comprising the steps of heat treating the component in a gaseous carburizing or carbonitriding atmosphere to provide a carbon rich zone at the surface, and subsequently heat treating the component in a gaseous atmosphere to form an epsilon iron carbonitride layer on the carbon rich zone.

4,563,224

SOLDERING FLUX CONTAINING A TEMPERATURE SENSITIVE CHEMICALLY REACTIVE COLORANT

Tamar G. Gen, Palo Alto, and Edward A. Cydzik, San Mateo, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 308,867, Oct. 5, 1981, Pat. No. 4,505,421.
This application Dec. 19, 1984, Ser. No. 683,909
Int. Cl.⁴ B23K *35/362*
U.S. Cl. 148—23 7 Claims

1. A flux composition which comprises solder flux and a chemically reactive component said flux composition undergoing a chemical reaction resulting in a visible color change at a critical temperature.

4,563,225

AMORPHOUS ALLOY FOR MAGNETIC HEAD AND MAGNETIC HEAD WITH AN AMORPHOUS ALLOY

Hiroshi Tateishi, Kanagawa, and Masakatsu Haga, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 24, 1984, Ser. No. 573,408
Claims priority, application Japan, Mar. 31, 1983, 58-53769
Int. Cl.⁴ C04B *35/00*
U.S. Cl. 148—31.55 6 Claims

1. An amorphous alloy for a magnetic head, comprising a composition formula represented as follows and having an magnetic permeability of at least 350 in 5 MHz and a coercive force lower than 0.05 Oe after being gradually cooled from 500° C. at a rate of 3° C. per minute:

$$Co_{100-T-X-Y-Z}Ni_THf_XB_YSi_Z$$

where T, X, Y and Z respectively represent the atomic densities of elements Ni, Hf, B and Si, and satisfy the following inequalities of formulae (1) to (6), as follows:

$$0.75 \leq T \leq 14 \quad (1)$$

$$6 \leq X \leq 15 \quad (2)$$

$$3 \leq Y \leq 14 \quad (3)$$

$$0 \leq Z \leq 11 \quad (4)$$

$$3 \leq Y+Z \leq 13 \quad (5)$$

$$11 \leq X+Y+Z \leq 25 \quad (6).$$

4,563,226

PROCESS FOR PRODUCING A GRAIN-ORIENTED ELECTRICAL STEEL SHEET

Muneteugu Matsuo; Fumio Matsumoto, both of Kawasaki, and Tadashi Nakayama, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 16, 1982, Ser. No. 442,084

Claims priority, application Japan, Nov. 16, 1981, 56-182286

Int. Cl.⁴ H01F *1/04*

U.S. Cl. 148—111 **7 Claims**

1. A process for producing a grain-oriented electrical magnetic steel sheet having a high flux density and a low watt loss successively comprising the steps of:

hot rolling a silicon steel containing from 3.0% to 5.0% by weight of silicon, and not more than 0.085% by weight of carbon,

annealing the hot-rolled strip at a temperature within the range of from 850° C. to 1200° C., followed by rapid cooling;

heating the annealed strip within a temperature range, in which both the minimum temperature, which is at least 200° C. and at least equal to $T_L(°C.)=(x-3.0)^2\times 100$, x being the silicon content in weight percent, and the maximum temperature which is not more than 400° C. and not more than $T_H(°C.)=200\times \log 1/y$ y being the strain rate (second^{-1}) during the cold-rolling;

heavily cold-rolling the heated strip having a temperature within said temperature range at a reduction of from 75% to 95%;

decarburization-annealing of the cold-rolled strip; and

final high temperature-annealing of the decarburization-annealed strip.

4,563,227

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Hiroyuki Sakai; Kenji Kawakita; Tsutomu Fujita, all of Osaka, and Toyoki Takemoto, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 428,991, Sep. 30, 1983, abandoned. This application Oct. 12, 1984, Ser. No. 660,255

Claims priority, application Japan, Dec. 8, 1981, 56-198934; Dec. 22, 1981, 56-20856; Feb. 19, 1982, 57-26245; Feb. 19, 1982, 57-26247

Int. Cl.⁴ H01L *21/38, 21/467*

U.S. Cl. 148—187 **12 Claims**

1. A method of manufacturing an intermediate product for use in manufacturing a semiconductor device, comprising the steps of:

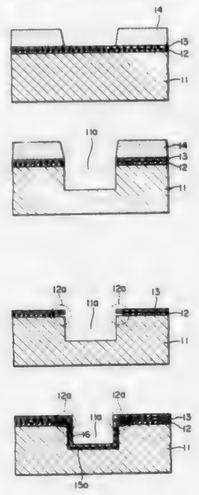
(a) sequentially forming a first insulating film and a first antioxidant insulating film on a semiconductor region of one conductivity type;

(b) selectively etching said first antioxidant insulating film and said first insulating film to form an opening;

(c) substantially vertically etching said semiconductor region by an anisotropic dry etching method in the pattern of said opening formed in first antioxidant insulating film to form a groove having sidewalls and a bottom;

(d) side etching said first insulating film using said first antioxidant insulating film as a mask to form side etched portions;

(e) forming second antioxidant insulating film portions on the side walls of said groove including said side etched



portions of said semiconductor region and excluding the bottom of said groove; and

(f) oxidizing a portion of said semiconductor region defining said groove so as to form a third insulating film.

4,563,228

METHOD AND APPARATUS FOR REGULATING THE PERMEABILITY OF WRAPPING MATERIAL FOR ROD-SHAPED SMOKERS PRODUCTS

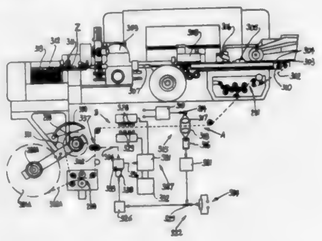
Elke Lüders, Strohdeich, and Kurt-Eckhard Petersen, Wentorf, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Dec. 27, 1977, Ser. No. 864,441

Claims priority, application Luxembourg, Dec. 29, 1976, 76490

Int. Cl.⁴ B32B *31/12*

U.S. Cl. 156—64 **15 Claims**



1. A method of regulating the permeability of a running web of wrapping material which is converted into tubular wrappers surrounding the fillers of rod-shaped articles constituting or forming part of smokers' products, comprising the steps of advancing the web and the fillers to a wrapping station; draping the running web around the fillers at said station; making holes in the material of the running web; monitoring the permeability of the running web ahead of said station; comparing the monitored permeability with a predetermined value denoting the desired permeability of the web; and changing the combined cross-sectional area of holes per unit area of the material of the running web when the monitored permeability deviates from said predetermined value.

4,563,229

METHOD AND MEANS FOR THE CONTINUOUS MANUFACTURE OF A FLEXIBLE MULTI-LAYER COMPOUND STRUCTURE OF CONTROLLED PERVIOUSNESS

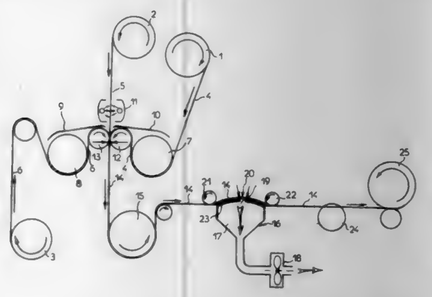
Jean-Claude Sorez, Roubaix, France, assignor to Prouvost S.A., Roubaix, France

Filed Feb. 10, 1984, Ser. No. 579,214

Claims priority, application France, Nov. 21, 1983, 83 18771

Int. Cl.⁴ B65C *1/00*

U.S. Cl. 156—64 **18 Claims**



1. Process for continuously producing flexible laminated material pervious to air and water vapor, comprising a film of thermoplastic material sandwiched between two layers of supple material permeable to air and water vapor which comprises:

continuously supplying said thermoplastic film and said two layers of supple material at substantially the same rate,

separately and independently heating said film and said layers to independently controlled temperatures, said film being heated to a sufficiently high temperature to soften said film at least superficially and thereby impart a predetermined adhesiveness thereto,

bringing said film and said two layers of supple material together with said film interposed between said two layers of supple material and passing the thus assembled film and layers of supple material between pressure rollers at controlled speed and with controlled pressure to weld said film and layers of supple material together to form laminated material,

the permeability of the laminated material thus formed to air and water vapor being a function of the following parameters, namely the temperature to which said layers of supple material and particularly said film are heated, the pressure exerted on the assembled film and layers by said pressure rollers and the speed at which said assembled film and layers are pressed between said pressure rollers,

continuously measuring the permeability to air of the laminated material exiting from said pressure rollers and varying at least one of said parameters to obtain a predetermined permeability.

4,563,230

METHOD OF MAKING DOUBLE LAYER SHEET METAL PANELS WITH DUCTS FORMED BY INFLATION

Luigi Nocivelli, Veroiannova, Italy, assignor to C.G.A. Compagnia Generale Alluminio S.p.A., Cividale del Friuli, Italy

Filed Jun. 22, 1984, Ser. No. 623,349

Claims priority, application Italy, Jun. 24, 1983, 21785 A/83

Int. Cl.⁴ B29C *65/00*

U.S. Cl. 156—80 **5 Claims**



1. A method of making sheet metal panels of two layers between which ducts are formed, comprising the successive steps of:

spreading an anti-welding material on one layer in correspondence with the ducts to be formed,

bonding the two superimposed layers together by rolling,

providing a predetermined quantity of liquid,

inflating the ducts by introducing the said quantity of liquid between the layers and

evacuating the ducts after inflation thereof,

wherein the said inflating step is effected by means of a liquid which is gaseous at ambient temperature and pressure, and

wherein the said evacuating step is effected by evaporation of the said liquid to the gaseous state.

4,563,231

TUBULAR CASING, PROCESS FOR ITS MANUFACTURE, AND ITS USE AS A SAUSAGE CASING

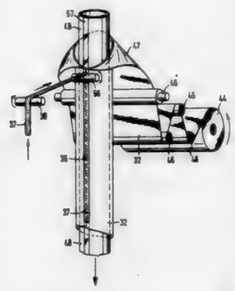
Herbert Porrmann, Niedernhausen; Walter Seifried, Wiesbaden; Ludwig Klenk, Hallgarten, and Karl Stenger, Ruedesheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 325,041, Nov. 25, 1981, Pat. No. 4,401,136. This application May 26, 1983, Ser. No. 498,524

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045086

Int. Cl.⁴ B32B *33/00*

U.S. Cl. 156—90 **15 Claims**



1. A process for the manufacture of a tubular casing from a fiber-reinforced web of regenerated cellulose, comprising the steps of:

coating a web-like fiber reinforcement with a viscose;

regenerating said viscose to produce a cellulose hydrate gel;

washing and drying said cellulose hydrate gel to free acids and salts from said cellulose hydrate gel and to produce said fiber-reinforced regenerated cellulose;

preventing shrinkage of said fiber reinforcement during at least said regenerating and said drying steps by holding

the longitudinally running edges of said fiber-reinforcement;

transversely stretching said fiber reinforcement during drying by about 5 to 15% relative to the width of said fiber reinforcement before said viscose coating step;

forming said fiber-reinforced regenerated cellulose into a tube; and

bonding said longitudinally running edges of said fiber-reinforced regenerated cellulose by means of a film strip.

4,563,232

PROCESS FOR THE PREPARATION OF REINFORCED THERMOPLASTIC COMPOSITES

Steven L. Peake, Ridgefield, Conn., assignor to American Cyanamid Co., Stamford, Conn.

Continuation-in-part of Ser. No. 575,095, Jan. 30, 1984, abandoned. This application Oct. 24, 1984, Ser. No. 664,182

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—182 **20 Claims**

1. A process for the preparation of a polyimide resin-fibrous reinforced composite comprising the steps of

(i) impregnating a fibrous reinforcement with a solution in an organic solvent of a thermoplastic polyimide, and

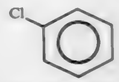
(ii) removing the organic solvent from said impregnated reinforcement, said organic solvent comprising in admixture a polychlorinated alkane (a) of the formula



wherein X is H or $—CH_2Cl$, and Y is H or Cl, or a mixture of such compounds and (b) either a chlorinated alkene of the formulae



or a chlorinated aromatic compound of the formula



the amount of (b) in said solvent being at least sufficient to reduce the evaporation rate of the admixture but not in excess of an amount which causes separation of said polyimide therefrom.

2. A process as defined in claim 1 which also includes

(iii) providing a plurality of layers of said impregnated reinforcement, alone, or in combination with layers of one or more other impregnated reinforcements and

(iv) consolidating the plurality of layers under heat and pressure into a laminate.

4,563,233

APPLICATION OF SURFACING SHEET TO PANELS, COLUMNS AND THE LIKE

Pieter M. Henderson, Bedfordview, South Africa, assignor to Karl-Heinz Schmitt, Rynfield, South Africa, a part interest

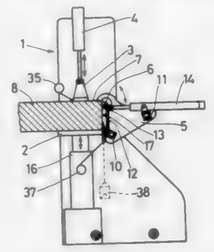
Filed May 8, 1984, Ser. No. 608,207

Claims priority, application South Africa, Sep. 16, 1983, 83/6887

Int. Cl.⁴ B32B *3/04*

U.S. Cl. 156—479 **17 Claims**

1. Apparatus for applying a surfacing sheet around an edge or corner of a carrier member, said apparatus comprising a frame, a support arrangement for the carrier member for supporting it in a roughly predetermined position, an applicator bar associated with the frame and extending along the required length of the support arrangement, means for urging the applicator bar towards the surface of a carrier member supported in the apparatus, means for causing simultaneous lateral move-



ment of the applicator bar relative to said surface whilst in contact therewith and lateral restraining means for inhibiting uncontrolled or undesired lateral movement of the applicator bar, the apparatus including a support for a protective sheet to be located between the surfacing sheet and applicator bar in operation.

4,563,234

APPARATUS FOR WINDING VIDEO TAPE ON REELS OF A CASSETTE

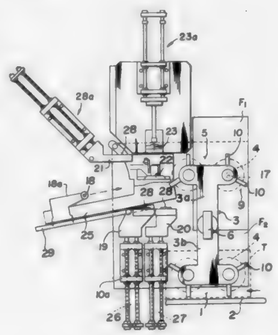
Yoshiharu Kubo, Tokushima, Japan, assignor to Awa Engineering Co., Ltd., Tokushima, Japan

Continuation-in-part of Ser. No. 450,544, Dec. 16, 1982, abandoned. This application Jun. 15, 1984, Ser. No. 622,058

Claims priority, application Japan, Dec. 17, 1981, 56-205792

Int. Cl.⁴ B31F *5/00*; **G03D** *15/04*

U.S. Cl. 156—505 **2 Claims**



1. An apparatus for winding tape on a pair of reels to be inserted into a cassette, said apparatus comprising:

a pair of winding shafts for receiving reels onto which the tape is to be wound, at least one of said shafts being movable from a first position adjacent and laterally spaced from the other shaft a distance substantially the same as the reels are spaced in the cassette to a second position spaced a substantial distance from other said shaft, and means for driving said other shaft;

feeding means for picking up a pair of empty reels spaced from each other a distance substantially the same as the reels are spaced in the cassette and, while said one shaft is in said first position, mounting said empty reels on said shafts, and for, after the tape has been wound on the reels, removing the reels from said shafts;

a guide extending from adjacent said first position to a position adjacent said second position and a shaft holder having said one shaft thereon movably mounted on said guide for movement therealong for moving said one shaft reciprocally between said one position and said second position; and

a tape connecting means positioned between said first and second positions and having tape holding means, supply means for tape to be wound, tape cutting means, and tape adhering means all of said means being movable into and out of the path of movement of said one shaft between said first and second positions for moving into the path of movement of said one shaft and holding a short tape extending between the reels when the one shaft is in said second position, cutting the short tape, connecting a tape to be wound on the reels to the short tape coming from the reel on the other shaft, and after said driving means for the other shaft has driven the other shaft to wind the desired amount of tape on the reel on the other shaft, cutting the tape being wound, connecting the end of the tape being wound to the short tape from the reel on said one shaft, and moving out of the path of movement of said one shaft to permit said one shaft to move back to said first position.

4,563,235

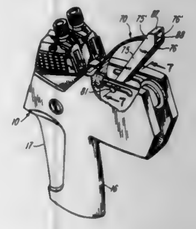
HAND-HELD LABELER

Donald L. Karn, Springboro, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Apr. 22, 1985, Ser. No. 725,615

Int. Cl.⁴ B65C *11/00*

U.S. Cl. 156—577 **6 Claims**



1. A hand-held labeler for applying labels from a composite web wound into a label roll, the composite web including a series of labels releasably secured to a carrier web, the labeler comprising: a housing having a handle, means for mounting a label roll on the housing, means for delaminating labels from the carrier web, means for applying delaminated labels, means for advancing the carrier web, means defining a feed path from the label roll to the delaminating means where the labels are successively delaminated from the carrier web and to the advancing means, wherein the advancing means includes a manually engageable actuator disposed at the handle, a leaf spring cantilevered to the housing, a pair of spaced fingers cantilevered to the leaf spring and in straddling operative relationship with the sides of the label roll for obviating excessive telescoping of the label roll, the leaf spring being deflectable by the composite web as the carrier web is advanced by the advancing means, and cooperating means on the fingers and on the housing for retaining the fingers in the operative relationship while enabling the leaf spring to deflect.

4,563,236

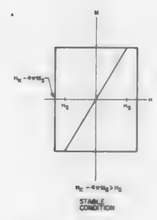
METHOD FOR MAKING LARGE AREA STABLE DOMAINS

William E. Ross, Woodland Hills, and George R. Pulliam, Anaheim, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Nov. 13, 1981, Ser. No. 321,149

Int. Cl.⁴ C30B *1/00, 29/28*

U.S. Cl. 156—601 **10 Claims**



1. A method to select magnetic film material that exhibits magnetically bistable regime characteristics for single magnetic domains in the absence of a bias magnetic field characterized by the steps of

(a) establishing the value of a saturation field (H_s) of the magnetic film by the steps of:

(1) exposing the film to a variable magnetic field to develop a plurality of magnetic domains,

(2) increasing the strength of the magnetic field, and

(3) sensing the reversal of magnetic polarity of a last one of said plurality of magnetic domains which coincides with the complete magnetic reversal of the film which is determinative of the value of the saturation field (H_s);

(b) establishing the value of magnetization (M_s) of the film by sensing an induced voltage generated by the change in magnetic flux at said complete magnetic reversal of the film;

(c) establishing the value of an anisotropy constant (K_u) of the film from the ration $2K_u/M_s$ which is determinative of the anisotropy field (H_k); and,

(d) accepting said magnetic film material when the value of the initial saturation field (H_s) is less than the value of the anisotropy field (H_k) reduced by the value of a demagnetization factor (4π) times the magnetization value (M_s) of the film material so that said selected magnetic film material exhibits the desired bistable regime characteristics.

4,563,237

ORIENTED STRAND LAY-UP

Mark T. Churchland, Vancouver, and Walter W. Schilling, Delta, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

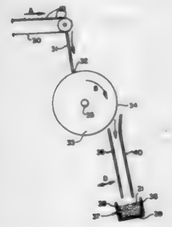
Filed Nov. 1, 1983, Ser. No. 547,578

Int. Cl.⁴ B29J *5/02, 5/04*

U.S. Cl. 156—62.2 **12 Claims**

1. A process for continuously forming a composite product having elongated resin coated members at least about one foot long which are oriented, compressed and bonded to provide a composite product which comprises depositing said elongated members on a moving carrier in a lay-up trough with an orientation that is substantially parallel to the direction of movement of said carrier, said members being deposited on said carrier over a length of carrier that is at least as long as about one and one-half times the length of said elongated members and is at least as long as about 30 times the final thickness of the composite product, thereafter compressing and bonding said elon-

gated members producing said composite product where the average vertical orientation of said elongated members in said composite product is not more than about 2 degrees in a longitudinal direction.



4,563,238

CHEMICAL DEBURRING SYSTEM WITH A SOLUBLE MASK

Lawrence J. Rhoades, Pittsburgh, Pa., assignor to Extrude Hone Corporation, Irwin, Pa.

Filed Sep. 5, 1984, Ser. No. 647,533
Int. Cl.⁴ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—637 **27 Claims**

1. A process for chemically deburring, or micromachining, a workpiece, or chemically milling edges of a workpiece comprising the steps of:

coating said workpiece with a soluble masking material;

allowing said masking material to pull away from sharp projections on said workpiece, such as burrs or edges, so that said sharp projections are thinly coated or not coated;

exposing said coated workpiece to a corrosive solution so that said thinly or not coated sharp projections are chemically attacked by said corrosive solution; and

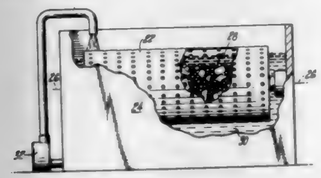
stopping said chemical attack of said corrosive solution.

4,563,239

CHEMICAL MILLING USING AN INERT PARTICULATE AND MOVING VESSEL

Robert G. Adinolfi, Manchester; Melvin C. Barlow, East Hampton, and Raymond M. Hammond, Enfield, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 16, 1984, Ser. No. 661,494
Int. Cl.⁴ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—639 **8 Claims**



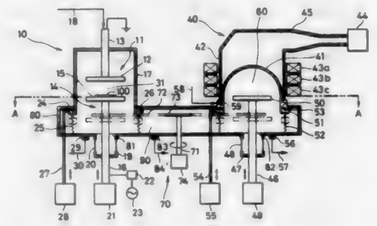
1. The method of chemical milling thin edged workpieces which comprises placing the workpieces in a vessel where there is present an etchant having a specific gravity less than that of the workpieces, characterized by mixing with the workpieces a particulate media which is inert to the etchant and has a specific gravity intermediate the specific gravity of the etchant and the specific gravity of the workpieces; imparting motion to the vessel or contained mass of workpieces, media and etchant, to cause relative motion among the several constituents; wherein the proportions of the particulate media and metal workpieces are sufficient to keep the workpieces from hitting each other with any force and thereby causing damage to the workpiece edges.

4,563,240

METHOD AND APPARATUS FOR PLASMA PROCESS

Fumio Shibata; Katsuaki Nagatomo; Hidetomo Fukuhara; Gen Marumoto, all of Kudamatsu, and Sadayuki Okudaira, Oume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 2, 1984, Ser. No. 636,997
Claims priority, application Japan, Aug. 10, 1983, 58-144941
Int. Cl.⁴ B44C *1/22*; C03C *15/00, 25/06*; C23F *1/02*
U.S. Cl. 156—643 **12 Claims**



1. A plasma-processing method comprising a step of processing samples with a radio-frequency plasma, and another step of processing the radio-frequency plasma processed samples with a microwave plasma.

4,563,241

METHOD OF FORMING PATTERNS

Toshihiko Tanaka; Norio Hasegawa, and Tetsuya Hayashida, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 27, 1984, Ser. No. 625,240
Claims priority, application Japan, Jun. 29, 1983, 58-115846; Jun. 29, 1983, 58-115847
Int. Cl.⁴ B44C *1/22*; C03C *15/00, 25/06*; C23F *1/02*
U.S. Cl. 156—643 **20 Claims**



1. A method of forming patterns comprising the steps of:

sequentially laminating and forming, on a film to be processed which is formed, on a surface of a substrate, a bottom layer film substantially made of an organic high molecular weight compound, an intermediate film having a dry etching resisting property larger than that of said bottom layer film, and a top layer film having photosensitivity;

selectively radiating the light onto desired portions of said top layer film and thereafter developing it, thereby forming a pattern of the top layer film having a desired shape;

removing the exposed portions of said intermediate film;

removing the exposed portions of said bottom layer film; and

removing the exposed portions of said film to be processed,

wherein each difference between the light refractive index of said intermediate film, the light refractive index of said top layer film and the light refractive index of said bottom layer film is not larger than 12%.

4,563,242

METHOD FOR PLATING POLYAMIDE RESIN MOLDED ARTICLE

Hideyuki Shigemitsu, Ohtake, Japan, assignor to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1984, Ser. No. 671,305
Claims priority, application Japan, Nov. 16, 1983, 58-215493
Int. Cl.⁴ B29C *17/08*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—651 **4 Claims**

1. A method for plating a polyamide resin molded article which comprises carrying out, before plating treatment, etching treatments, comprising the first etching treatment with an aqueous stannic chloride solution and the second etching treatment with an aqueous acid solution.

4,563,243

APPARATUS AND A METHOD FOR PRODUCING WOOD PULP IN A HOLLOW CYLINDER CONTAINING A ROTATABLE SCREW

Klaus Koch, Laatzen, and Gerhard Syrbius, Grossburgwedel, both of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 624,195
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3322924
Int. Cl.⁴ D21B *1/16*
U.S. Cl. 162—18 **17 Claims**



1. Apparatus for producing wood pulp from moisture-containing cellulosic material comprising:

(a) a hollow cylinder having first and second ends, the interior wall of said cylinder defining in a first portion thereof a pressure zone terminating adjacent said first end and extending toward said second end, and in a second portion thereof a grinding and bleaching zone downstream of said pressure zone and in which higher pressures are created, groove means formed in the inner wall of said cylinder in said pressure zone for inhibiting rotation of the material with said screw in said pressure zone, thereby causing a pressure build up in said pressure zone, said groove means terminating before said second end of the hollow cylinder;

(b) a single rotatable screw mounted for rotation in said cylinder through both of said zones, said screw having a core and helical flights disposed around said core;

(c) material feed means mounted adjacent said first end of said cylinder and through which material can be fed into the pressure zone of said cylinder;

(d) material discharge means at the second end of said cylinder and communicating with said grinding and bleaching zone for controlling the discharge of treated material from the cylinder;

(e) radially extending stationary pins projecting into the grinding and bleaching zone of said cylinder and terminating adjacent said core, said pins being situated in longitudinally spaced pin planes each of which contains at least three arcuately spaced pins, said helical flights being interrupted in the planes of said pins to accommodate the same during rotation of said screw, said stationary pins being engaged by said material as a result of rotation of said screw, thereby achieving a further increase in pressure in said grinding and bleaching zone, and

(f) means for injecting bleaching or other treatment agents into the grinding and bleaching zone,

whereby partial defibrillation of the material is effected under pressure in said pressure zone, and fine defibrillation is effected in said grinding and bleaching zone due to the relatively higher pressure therein created by said pins and the injection of bleaching or other treatment agents into said bleaching zone.

12. A method for producing pulp from moisture-containing cellulosic material in a screw press, said screw press comprising a hollow cylinder having first and second ends, a single rotatable screw having helical flights disposed within said hollow cylinder between said ends, a material feed inlet disposed in said first end of said cylinder and a wood pulp discharge outlet disposed in said second end, said hollow cylinder defining a pressure zone adjacent said feed inlet and a grinding and bleaching zone adjacent said discharge outlet and downstream of said pressure zone, grooves formed in the inner wall of said cylinder in said pressure zone, and a plurality of stationary radially extending pins projecting into said hollow cylinder in said grinding and bleaching zone, comprising the steps of:

(a) introducing said cellulosic material into said pressure zone through said material feed inlet;

(b) applying pressure to said material in said pressure zone by rotating said screw and inhibiting by said grooves the rotation of the material relative to said screw to cause partial defibrillation of said material;

(c) conveying said partially defibrillated material into said grinding and bleaching zone;

(d) further defibrillating said material in said grinding and bleaching zone by further rotating said screw so that said material is pressed against said pins thereby increasing the pressure in said grinding and bleaching zone;

(e) injecting bleaching or other treatment agents into said grinding and bleaching zone to enhance further defibrillation and produce wood pulp; and

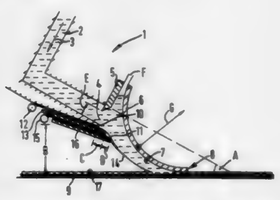
(f) discharging said pulp through said discharge outlet.

4,563,244

APPARATUS FOR CONTROLLING DEPOSITION OF A LIQUID ONTO A MOVING SURFACE

Alexander Syed, London, and Rowena Smillie, High Wycombe, both of England, assignors to The Wiggins Teape Group Limited, England

Filed Nov. 23, 1983, Ser. No. 554,696
Claims priority, application United Kingdom, Nov. 24, 1982, 8233569
Int. Cl.⁴ D21F *1/02*
U.S. Cl. 162—344 **8 Claims**



1. Apparatus for controlling the deposition of a liquid onto a horizontally extending moving surface, comprising a reservoir spaced from and above said moving surface and having an outlet extending transversely of said surface, said outlet being defined by upper and lower edges, and a curved guide member extending downwardly from the upper edge of said outlet so as to present a downwardly convex face, for guiding a film of liquid projecting from said outlet down said face so that the direction of liquid flow approaches the direction of travel of the moving surface, the apparatus further comprising two flexible aprons extending substantially from the lower edge of the said outlet beneath and into engagement with the liquid

film flowing down the guide member, the first of the said aprons extending only part of the distance towards the moving surface and having a lower edge, the second of the said aprons extending beneath the said first apron and having a free end substantially in contact with the moving surface, the arrangement being such that the lower edge of the first apron is in engagement with an upper surface on the second apron.

4,563,245

PRESS DEVICE, PARTICULARLY FOR THE REMOVING OF WATER FROM A WEB OF PAPER

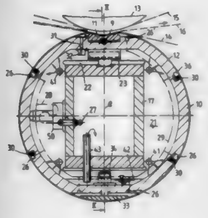
Wilhelm Wanke; Lüdwig Haüser, both of Heidenheim, and Karl Steiner, Herbrechtingen, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,187

Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317455

Int. Cl.⁴ D21F *3/02, 3/06*

U.S. Cl. 162—358 **18 Claims**



1. A press for web material, comprising:
a counter-roll;
a stationary support body with a continuous, generally cylindrical outer surface, the body being hollow within itself; an elastically deformable, tubular shell supported around the support body and rotatable therearound;
a press shoe attached to the outer surface of the support body and non-movable radially of the support body; the press shoe having a pressing surface which is concavely shaped in the circumferential direction of the support body and which faces outwardly of the support body and faces toward the counter-roll for pressing against the shell and a web between the shell and the counter-roll, thereby defining a press nip in which a pressing force is exerted between the press shoe and the counter-roll;
a flexing beam extending through the hollow support body;
hydraulic supporting means for exerting a force for supporting the support body, the hydraulic supporting means being located between the beam and the support body;
means for varying the force exerted by the hydraulic supporting means both for adjusting the pressing force between the press shoe and the counter-roll and for controlling sagging of the support body.

4,563,246

APPARATUS FOR RETORTING PARTICULATE SOLIDS HAVING RECOVERABLE VOLATILE CONSTITUENTS

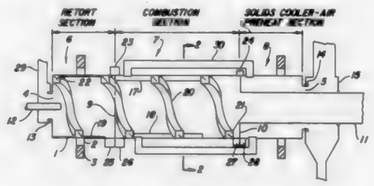
Leland M. Reed, Loveland; William A. Reed, Cincinnati, both of Ohio, and Walter C. Saeman, Cleveland, Tenn., assignors to PEDCo, Inc., Cincinnati, Ohio

Division of Ser. No. 495,423, May 17, 1983, Pat. No. 4,477,331. This application Apr. 9, 1984, Ser. No. 598,002

Int. Cl.⁴ C10B *1/10, 7/00*

U.S. Cl. 202—100 **16 Claims**

1. Apparatus for retorting a feedstock of particulate solids having a recoverable volatile constituent comprising
a rotatable elongated chamber for rotation about a substantially horizontal axis, said chamber having a retorting section at an upstream end with an inlet for receiving said feedstock solids and a separate combustion section at a downstream end with an outlet for hot spent feedstock solids, said sections in horizontal series with one another and separated by a solid intercompartmental divider extending across the entire cross-sectional area of said chamber for retorting and combusting said feedstock solids,
means for rotating said chamber about its horizontal axis,
means for introducing said feedstock solids into said chamber retorting section to provide retorted solids and a volatilized constituent,
means for recovering said volatilized constituent,



means for transferring said retorted feedstock solids into said separate combustion section for combustion therein, said combustion section having lifting means for lifting and cascading said retorted solids through a moving stream of combustion supporting gas to form said spent solids, and
means for recycling hot spent feedstock solids from said combustion section to said retorting section for mixing said spent solids with said feedstock solids to volatilize said constituent.

4,563,247

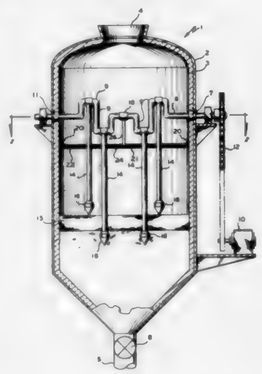
RETORT WITH ANTI-BRIDGING MECHANICAL AGITATOR

Richard D. Kuerston, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 10, 1984, Ser. No. 608,846

Int. Cl.⁴ C10B *7/04*

U.S. Cl. 202—265 **3 Claims**



1. An apparatus for use in retorting of hydrocarbonaceous solids comprising:
a hollow retort vessel;
at least one pushrod having a longitudinal axis disposed within said vessel;
means for moving said at least one pushrod reciprocatively downward and upward through a portion of the retort;
at least one scoop arm pivotally attached to said at least one pushrod, said at least one scoop arm being attached to no member other than said at least one pushrod.

4,563,248

SOLAR DISTILLATION METHOD AND APPARATUS

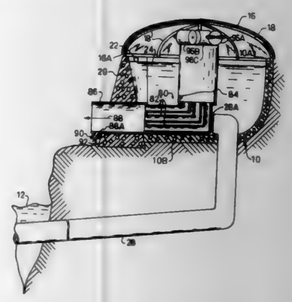
Max F. Anderson, R.R. #1, Stewardson, Ill. 62463

Division of Ser. No. 53,828, Jul. 2, 1979, Pat. No. 4,442,887. This application Jan. 23, 1984, Ser. No. 572,881

The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.

Int. Cl.⁴ F24J *3/02*

U.S. Cl. 203—10 **6 Claims**



1. A solar distillation method comprising
pumping water into a covered basin,
heating water contained in the basin by solar radiation passed through the basin cover for evaporation thereof,
providing a surface-type heat exchanger adjacent the bottom of the basin having air inlet means above the water surface of the covered basin and air outlet means outside the covered basin,
directing water pumped into the basin for flow along the heat exchanger for cooling air therein which flows by action of gravity out through the air outlet means, and
condensing water vapor contained in air passing through the heat exchanger for production of distilled water.

4,563,249

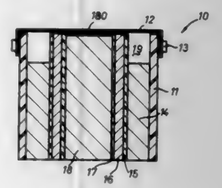
ELECTROANALYTICAL METHOD AND SENSOR FOR HYDROGEN DETERMINATION

John M. Hale, Meinier, Switzerland, assignor to Orbisphere Corporation Wilmington, Succursale de Collonge-Bellerive, Collonge-Bellerive, Switzerland

Filed May 10, 1983, Ser. No. 493,316

Int. Cl.⁴ G01N *27/46*

U.S. Cl. 204—1 T **13 Claims**



1. In the method of quantitative electroanalytical determination of elemental hydrogen in a fluid medium by means of an amperometric cell comprising at least two electrodes in contact with an aqueous electrolyte to provide a reaction impedance of said cell, said electrolyte being separated from said fluid medium by a membrane that is permeable to said elemental hydrogen but substantially impermeable to said electrolyte to provide a membrane impedance of said cell, said at least two electrodes comprising a first or anodic hydrogen sensing electrode and a second or cathodic counter electrode; the improvement consisting essentially of said first or anodic hydrogen sensing electrode having a substantially smooth sensing surface consisting essentially of a platinum metal, and of selecting said membrane impedance to exceed said reaction impedance sufficiently so as to provide for a membrane-controlled operation of said amperometric cell.

4,563,250

METHOD FOR PRODUCING MULTICHANNEL PLATES

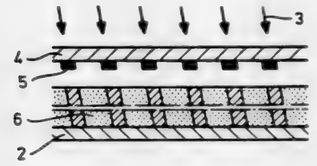
Erwin Becker, and Wolfgang Ehrfeld, both of Karlsruhe, Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Mar. 6, 1985, Ser. No. 708,841

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1984, 3408848

Int. Cl.⁴ C25D *1/02, 1/10*

U.S. Cl. 204—6 **6 Claims**



1. A method for producing a multichannel plate containing a plurality of generally parallel channels for use in structures for amplifying or converting optical images or other two-dimensional signal patterns by secondary electron multiplication, said method comprising:
(a) producing a positive mold of the plate, by the steps of:
(i) providing a body having the external shape of the plate to be produced and made of a material whose ability to be removed from the body is altered by exposure to a selected radiation;
(ii) irradiating the body with the selected radiation in a pattern corresponding to the plate to be produced and in a manner to render the portions of the body corresponding to the channels more easily removable than the remaining portions of the body; and
(iii) removing the more easily removable portions of the body;
(b) forming a metal negative mold, by the steps of:
(i) attaching the positive mold to a metal electrode;
(ii) electrolytically depositing metal on the electrode and in the openings created in the positive mold by said step of removing more easily removable portions; and
(iii) removing the positive mold from the deposited metal; and
(c) forming the multichannel plate from the negative mold.

4,563,251

LAYERED MULTICHANNEL METAL PLATES FOR IMAGE AMPLIFIERS

Erwin Becker; Wolfgang Ehrfeld, both of Karlsruhe, and Frank Becker, Munich, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Mar. 6, 1985, Ser. No. 708,842

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1984, 3408849

Int. Cl.⁴ C25D *1/02, 1/10*

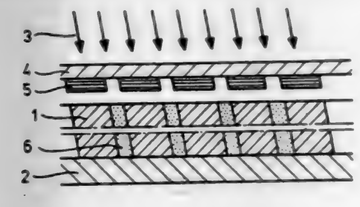
U.S. Cl. 204—6 **15 Claims**

1. In a method for producing a multichannel plate containing metal dynodes and having a plurality of generally parallel channels for use in structures for amplifying or converting optical images or other two-dimensional signal patterns by

secondary electron multiplication, the improvement comprising:

(a) producing a negative mold of the plate, which negative mold has structures corresponding to the channels and is mounted on a metal electrode, the negative mold being produced pursuant to a fabrication procedure including the steps of:

(i) providing a body having at least the thickness of the plate to be produced and made of an electrically insulating material whose ability to be removed from the body is altered by exposure to a selected radiation;



(ii) irradiating the body with the selected radiation in a pattern corresponding to the plate to be produced and in a manner to render portions of the body having the form of a grid surrounding the channels more easily removable than the remaining portions of the body; and

(iii) removing the more easily removable portions of the body to leave columnar structures corresponding to the channels in the plate;

(b) depositing metal layers and intermediate layers alternatingly in the openings in the negative mold, the metal layers being deposited electrolytically and forming dynodes which are spaced apart in the direction of the channels; and

(c) removing the negative mold from the deposited layers.

4,563,252

MAKING A WAVE GUIDE

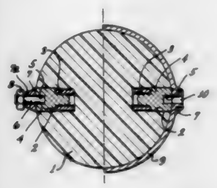
Elke Weisner, Windeck; Werner Sczepaniak, Eitorf; Paul Thiele, Lastzen; Detlef Block, Hanover, and Karl-Heinz Reimann, Langenhagen, all of Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,441

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1983, 3306017

Int. Cl.⁴ C25D *1/02, 17/12*

U.S. Cl. 204—9 **11 Claims**



1. Method of making a wave guide with components which will extend into the interior of the wave guide comprising the steps of:

providing a cylindrical die and template member;

releasably fastening fittings having cross section of a trapezoidal contour, and having bores, to the die member at particular locations of the die member, these fittings as well as the surface of the die member being electrically conductive;

inserting the thus assembled die into an electrolytic bath and connecting it to assume cathodic potential so as to obtain electrolytic plating and depositing whereby the fittings become embedded into the wall of the thus electrolytically generated part;

removing the die from the electrolytically generated part; and

inserting pins into the bores of the embedded fittings to reach into the interior of the hollow wave guide thus made.

4,563,253

METHOD OF MAKING CORROSION INHIBITED METAL

Henry Leidheiser, Jr., Bethlehem, and Hidetaka Konno, Allentown, both of Pa., assignors to Lehigh University, Bethlehem, Pa.

Continuation-in-part of Ser. No. 437,148, Oct. 27, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 548,970

Int. Cl.⁴ C25D *9/02*

U.S. Cl. 204—37.6 **9 Claims**

1. A method of forming a corrosion-resistant surface on a metal substrate comprising first forming a thin oxide layer on the surface of said substrate and then treating said oxidized substrate in an electrolytic bath, with said substrate forming one of the electrodes thereof, said bath including an organic compound, capable under the influence of said electrolytic bath of reacting at the oxidized surface of said substrate to form an insoluble and relatively non-reactive complex with the metal of which said substrate is composed wherein said organic compound is selected from the group consisting of N-benzoyl-N-phenyl-hydroxylamine, cupferron, diphenylguanidine, 8-hydroxyquinoline, 1-nitroso-2-naphthol, phenylthiourea, salicylamide, salicylanilide, benzohydroxamic acid, 4-hydroxyquinoline, 7-hydroxyquinoline, 5-nitro-8-hydroxyquinoline, 8-nitroquinoline, o-phenylene diamine, salicylaldehyde hydrozone, 1,8-diaminonaphthalene, 8-aminoquinoline, 2,3-diaminonaphthalene and quinoline and wherein said metal substrate is iron or steel.

4,563,254

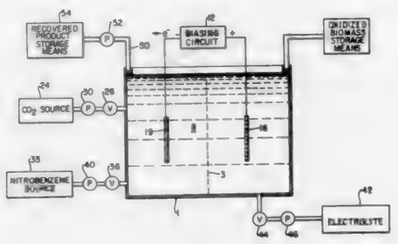
MEANS AND METHOD FOR THE ELECTROCHEMICAL CARBONYLATION OF NITROBENZENE OR 2-5 DINITROTOLUENE WITH CARBON DIOXIDE TO PROVIDE A PRODUCT

Abraham Morduchowitz, Monsey, N.Y.; Anthony F. Sammells, Naperville, and Ronald L. Cook, Aurora, both of Ill., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 7, 1985, Ser. No. 699,521

Int. Cl.⁴ C25C *3/00*

U.S. Cl. 204—59 R **58 Claims**



1. A method for the carbonylation of nitrobenzene to provide a product comprising the steps of:

providing a biomass electrolyte solution including a non-aqueous electrolyte with a supporting electrolyte,

dividing the electrolyte solution into two portions a first and second portion with a non-ionic specific membrane,

providing carbon dioxide to the first portion of the electrolyte solution,

providing nitrobenzene to the first portion of electrolyte solution,

providing a direct current voltage across the two portions of the electrolyte solutions so as to cooperate in a reaction between the carbon dioxide, and nitrobenzene in the electrolyte solution to provide a product, and

removing the product from the second portion of the electrolyte solution.

4,563,255

PROCESS AND DEVICE FOR CONTROLLING A CRUST BREAKING FACILITY

Ulrich Heinzmann, Zumikon, Switzerland, and Werner Braun, Rheinfelden, Fed. Rep. of Germany, assignors to Swiss Aluminum Ltd., Chippis, Switzerland

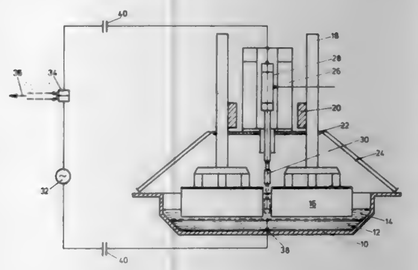
PCT No. PCT/CH84/00019, § 371 Date Oct. 1, 1984, § 102(e) Date Oct. 1, 1984, PCT Pub. No. WO84/03108, PCT Pub. Date Aug. 16, 1984

PCT Filed Feb. 9, 1984, Ser. No. 667,488

Claims priority, application Switzerland, Feb. 10, 1983, 739/83

Int. Cl.⁴ C25C *3/06, 3/14*

U.S. Cl. 204—67 **12 Claims**



1. Process for controlling a crust breaker for use with a fused salt electrolytic cell which comprises: providing a fused salt electrolytic cell having a molten electrolyte therein and a crust on top of the molten electrolyte, moving a chisel up and down to penetrate said crust and make contact with the molten electrolyte, detecting the contact made between the chisel and the molten electrolyte by means of an active impedance measuring circuit such that changes in signal caused by changes in impedance between chisel and molten electrolyte are detected for control purposes using the chisel as a sensor in an electric measuring circuit.

4,563,256

SOLVENT EXTRACTION PROCESS FOR RECOVERY OF ZINC

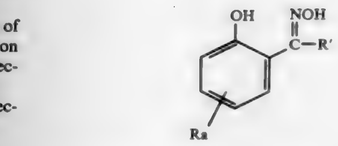
R. Brantley Sudderth; Joseph M. Sierakoski, and Roy G. Lewis, all of Tucson, Ariz., assignors to Henkel Corporation, Minneapolis, Minn.

Filed Dec. 31, 1984, Ser. No. 687,611

Int. Cl.⁴ C25C *1/12, 1/16*

U.S. Cl. 204—108 **13 Claims**

1. In a process for recovering zinc values from an aqueous ammoniacal solution containing said zinc values in which said process comprises contacting said aqueous ammoniacal solution with an extractant contained in a water-immiscible solvent for said extractant to provide an organic phase of the solvent containing the extracted zinc values, separating the organic phase from the aqueous raffinate depleted in the zinc values and recovering said zinc value from said organic extract, the improvement which comprises using as said extractant an oxime of the formula:



wherein R is a saturated aliphatic group of 1–25 carbon atoms or an ethylenically unsaturated aliphatic group of 3–25 carbon atoms, or —OR″ where R″ is a saturated ethylenically unsaturated group as defined. a is an integer of 0, 1, 2, 3 or 4, and R′ is hydrogen or a saturated aliphatic group of 1–25 carbon atoms or an ethylenically unsaturated aliphatic group of 3–25 carbon atoms with the proviso that the total number of carbon atoms in R and R′ is from 3–25.

4,563,257

METHOD OF ELECTROLYTICALLY POLISHING A WORKPIECE COMPRISED OF A NICKEL-, COBALT-, OR IRON-BASED ALLOY

Vladimir Sova, Mellingen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Aug. 21, 1984, Ser. No. 642,656

Claims priority, application Switzerland, Aug. 23, 1983, 4580/83-2

Int. Cl.⁴ C25F *3/22, 3/24*

U.S. Cl. 204—129.85 **12 Claims**

1. A method for electrolytically polishing a workpiece composed of a nickel-, a cobalt-, or an iron-based alloy by means of an electrolyte comprising concentrated H_2SO_4 in an amount of 20 to 60 vol.%, C_2H_5OH in an amount of 10 to 50 vol.%, glycerine in an amount of 5 to 40 vol.%, HBF_4 in an amount of 5 to 40 vol.%, and a fluorinated surfactant in an amount of at least 0.1 vol.%; wherein the said workpiece is first degreased, then electrolytically polished and subsequently rinsed and dried.

4,563,258

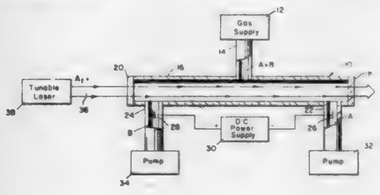
METHOD AND APPARATUS FOR SEPARATING ISOTOPES USING ELECTROPHORESIS IN A DISCHARGE

William B. Bridges, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 152,444, May 22, 1980, abandoned, which is a continuation of Ser. No. 700,362, Jun. 28, 1976, abandoned. This application May 6, 1982, Ser. No. 375,505

Int. Cl.⁴ B01D *59/00*

U.S. Cl. 204—157.15 **5 Claims**



1. A method for separating isotopes of a gaseous mixture containing elementary particles of first and second isotopes comprising the steps of:

exposing said gaseous mixture in a region between first and second electrodes to radiation at a predetermined frequency to excite elementary particles of said first isotope without substantially exciting elementary particles of said second isotope;

establishing an electric discharge in said gaseous mixture

between said first and second electrodes to produce preferential positive ionization of elementary particles of said first isotope by collisions with discharge electrons, and such that cataphoresis in said discharge causes preferential migration of elementary particles of said first isotope to a first location in the vicinity of one of said electrodes and preferential migration of elementary particles to said second isotope to a second location in the vicinity of the other of said electrodes; and

removing from said first and second locations respective portions of said gaseous mixture enriched in said first and second isotopes, respectively.

4,563,259

POLYOLEFIN COMPOSITIONS AND ARTICLES STERILIZABLE BY IRRADIATION

Martin G. Rayner, Codicote, England, assignor to Imperial Chemical Industries PLC, Great Britain

Filed Sep. 28, 1982, Ser. No. 426,130

Claims priority, application United Kingdom, Oct. 12, 1981, 8130687

Int. Cl.⁴ C08F *8/00*; C08K *5/34*

U.S. Cl. 524—99 **15 Claims**

1. A polyolefin composition comprising a substantially crystalline polymer of an aliphatic mono-alpha-olefin the molecule of which contains from 2 to 6 carbon atoms wherein the molecular weight distribution ratio of the polymer (Mw/Mn) does not exceed 7.0 and from 0.01 to 2.0% by weight of a polymer of a hindered amine or its salt, N-oxide, N-hydroxide or N-nitroxide wherein the amino nitrogen is contained in a carbon-nitrogen-carbon chain which forms part of a non-aromatic heterocyclic ring and wherein each of the two carbon atoms of the chain is bonded to two lower alkyl groups which may be the same or different, each lower alkyl group containing from 1 to 12 carbon atoms, or to an alicyclic group containing from 4 to 9 carbon atoms, which groups sterically hinder the amine, and wherein the composition is sterilized by exposure to a sterilizing amount of high energy irradiation.

4,563,260

MODIFIED LIQUID PERMEABLE ASBESTOS DIAPHRAGMS WITH IMPROVED DIMENSIONAL STABILITY

Louis W. Hruska, Geneva, and Shan-Pu Tsai, Mentor, both of Ohio, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Continuation-in-part of Ser. No. 461,565, Jan. 27, 1983, Pat. No. 4,447,566. This application Nov. 28, 1983, Ser. No. 555,807

Int. Cl.⁴ C25B *11/03*

U.S. Cl. 204—283 **16 Claims**

1. In a method for producing a hydraulically permeable diaphragm separator for an electrolytic chlor-alkali cell of the percolating type by deposition of solids from an aqueous slurry of solids including asbestos fibers and finely divided resin particles to form a matted coating of said solids on a foraminous cathode, the improvement which comprises preparing an aqueous slurry comprising asbestos fibers and two distinctly different forms of finely divided fluorocarbon resin particles consisting of between 5% and about 40% of highly fibrous particles and between about 1% and about 9% of chunky particles based upon the total weight of the asbestos fibers plus both forms of fluorocarbon resin particles and wherein the proportion by weight of fibrous to chunky resin particles is between about 2 to 1 and about 8 to 1, dewatering said slurry on a foraminous cathode to deposit a matted coating thereon of asbestos fibers and said resin particles, drying said matted coating thereon, and heating the dried coating to between 10° and 100° C. above the crystalline melting point of said chunky particles to effect sintering of fluorocarbon resin therein and convert said coating to a composite, resin-modified diaphragm separator.

4,563,261

GAS DIFFUSION ELECTRODE WITH A HYDROPHILIC COVERING LAYER, AND PROCESS FOR ITS PRODUCTION

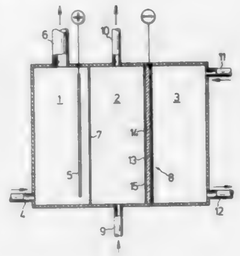
Rudolf Staab, and Jürgen Russow, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany and Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 6, 1984, Ser. No. 648,014

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332566

Int. Cl.⁴ C25B *11/00*

U.S. Cl. 204—290 R **8 Claims**



1. A gas diffusion electrode for the reduction of oxygen, containing a hydrophobic electro-catalyst layer having a current collector in the form of a mesh, wherein one side of the electro-catalyst layer is covered with a hydrophilic layer having a thickness of between 1 and 200 mg/cm², the hydrophilic layer comprising at least one transition metal or an oxide or mixed oxide of transition metals.

4,563,262

CONSUMABLE CATHODE FOR ELECTRIC-ARC METAL VAPORIZER

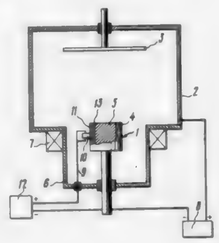
Leonid P. Sablev, P. Morozova, 3, kv. 3, and Rimma I. Stupak, Valtera, 12, kv. 32, both of Kharkov, U.S.S.R.

PCT No. PCT/SU81/00014, § 371 Date Oct. 21, 1982, § 102(e) Date Oct. 21, 1982, PCT Pub. No. WO82/02906, PCT Pub. Date Sep. 2, 1982

Continuation-in-part of Ser. No. 438,855, Oct. 21, 1982, abandoned. This PCT application Feb. 23, 1982, Ser. No. 626,472

Int. Cl.⁴ C23C *14/26*; B05D *3/06*

U.S. Cl. 204—298 **6 Claims**



1. (Four times amended) In an electric-arc metal vaporizer, the improvement comprising utilizing a consumable cathode having layers of separate metals to be electrically vaporized and constituting a unitary consumable cathode, the metals and the number of the layers of metals constituting the consumable cathode being equal to the metals and the number of metals constituting the components of a coating on an article, the metal layers of said consumable cathode being disposed in the order in which the value of the cathode drop of potential of the metals decreases from the geometric axis of the consumable cathode to the periphery thereof to maintain a uniform vaporization of the consumable cathode.

4,563,263

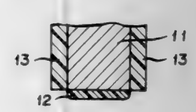
SELECTIVELY PERMEABLE FILM AND ION SENSOR

Noboru Oyama, Higashikurume; Hiroaki Matsuda, Musashino; Eishun Tsuchida, Sekimachi; Yukio Ohnuki, Suifu; Takeshi Shimomura, Kawasaki, and Norihiko Ushizawa, Honmachi, all of Japan, assignors to Terumo Corporation, Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,715

Int. Cl.⁴ G01N *27/26*

U.S. Cl. 204—418 **8 Claims**



1. A system for measuring the concentration of hydrogen ions in a test solution by electrode potential response or current response, comprising:

a hydrogen ion sensor adapted to contact said test solution; and

means coupled to said hydrogen ion sensor for measuring the electrical potential difference between said hydrogen ion sensor while contacting said test solution and a reference potential;

said hydrogen ion sensor consisting essentially of an electroconductive element having applied to a surface thereof a polymer film derived from at least one aromatic compound selected from the group consisting of nitrogen-containing aromatic compounds selected from the group consisting of aniline, 2-aminobenzotrifluoride, 2-aminopyridine, 2,3-diaminopyridine, 4,4'-diaminodiphenyl ether, 4,4'-methylenedianiline, tyramine, N-(o-hydroxybenzyl)aniline, and pyrrole and a hydroxy aromatic compound selected from compounds having the formula

$$\mathrm{Ar}\text{—}(\mathrm{OH})_l$$

wherein Ar is an aromatic ring, R is selected from the group consisting of alkyl, aryl, alkylcarbonyl, arylcarbonyl hydroxyalkyl, carboxyl, aldehyde, and hydroxyl, and l is zero or the valency number of the Ar group.

4,563,264

METHOD OF DRY DISTILLATION OF VOLATILE SUBSTANCES FROM MINERAL MATTER CONTAINING SAME

Hans J. Weiss, Oberursel; Roland Rammler, Königstein; Helmut Hahn, Hanau, and Ingo Dreher, Oberursel, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 17, 1984, Ser. No. 581,083

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1983, 3305994

Int. Cl.⁴ C10G *1/00, 1/02*

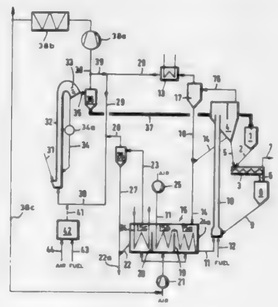
U.S. Cl. 208—11 R **13 Claims**

1. A process for subjecting mineral matter containing bituminous or oil volatile substances and constituting devolatilizable material, to dry distillation which comprises the steps of:

(a) drying and preheating the devolatilizable material in a preheating zone while conveying the same upwardly through at least one riser in direct contact with heat-exchanging mixed gases at a temperature of 350° to 750° C. whereby said mixed gases and devolatilizable material during the preheating thereof pass in uniflow through said riser;

(b) mixing the devolatilizable material from said preheating zone in a distillation zone having a temperature of about 70° to 250° C. with a hot fine-grain heat transfer medium at a temperature of about 600° to 900° C. to heat said devolatilizable material in said distillation zone to a temperature of about 450° to 800° C. and expel volatile substances therefrom in the form of overhead gases and vapors;

(c) recovering said overhead gases and vapors from said distillation zone whereby a hot solid distillation residue is formed upon the release of said volatile substances from said devolatilizable material, withdrawing said distillation residue from said distillation zone and feeding a part of it to a pneumatic conveyor, in said conveyor producing combustion gases and by means of said combustion gases



heating said distillation residue and conveying it upwardly to a collecting bin, from said collecting bin feeding at least part of said distillation residue as said hot fine-grain heat transfer medium to said distillation zone, from said bin withdrawing said combustion gases;

(d) feeding hot distillation residue into a cooling zone and fluidizing and cooling said distillation residue therein by direct contact with a cooling gas, said hot distillation residue in said cooling zone being supplied at least in part from said bin or from said distillation zone;

(e) combining at least a first and a second component to produce said mixed gases, said first component being said cooling gas withdrawn from said cooling zone and said second component being said combustion gases from said bin, the temperature of said mixed gases being 350° to 750° C.; and

(f) feeding the mixed gases formed in step (e) to step (a) for the preheating of said devolatilizable material.

4,563,265

USE OF A CATALYST IN A HYDROGENOLYSIS PROCESS

Tsuneo Yoshii, Nara, and Toshitaka Ueda, 5-23, Yagi-cho 3-chome, Kashihara-shi, Nara-ken, both of Japan, assignors to Toshitaka Ueda, Nara, Japan

Division of Ser. No. 500,914, Jun. 3, 1983, Pat. No. 4,467,049. This application Jun. 12, 1984, Ser. No. 620,049

Claims priority, application Japan, Feb. 2, 1983, 58-16522

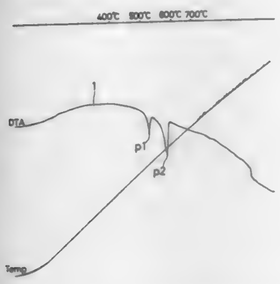
Int. Cl.⁴ C10G *47/02, 19/067*

U.S. Cl. 208—108 **9 Claims**

1. A method for hydrogenolysis of heavy petroleum oils, which comprises contacting said oils with a catalyst in a hydrogen atmosphere having a hydrogen initial pressure of 50 kg/cm² at a temperature sufficient to effect said hydrogenolysis, said catalyst being prepared by a process which comprises:

reacting at least one member selected from the group con-

sisting of carbonyl compounds of molybdenum, salts of molybdenum, oxides of molybdenum, metallic molybdenum and alloys containing molybdenum, with an alkali and water at a temperature from 220° to 450° C. under a carbon monoxide atmosphere,



reducing the resultant reaction product in the presence of a phenol at a temperature from 400° to 450° C. under a hydrogen atmosphere, and

recovering said reduced reaction product.

4,563,266

CATALYTIC DEWAXING PROCESS

P. Donald Hopkins, St. Charles; Thomas D. Nevitt, and Eugene E. Unmuth, both of Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 24, 1984, Ser. No. 686,077

Int. Cl.⁴ C10G *45/62*

U.S. Cl. 208—110 **19 Claims**

1. A process for catalytically dewaxing thereby reducing the pour point of hydrocarbon feeds which process comprises contacting the feed with hydrogen under catalytic dewaxing conditions in the presence of a catalyst composition comprising a crystalline borosilicate molecular sieve and at least one Group VIII noble metal hydrogenation component.

4,563,267

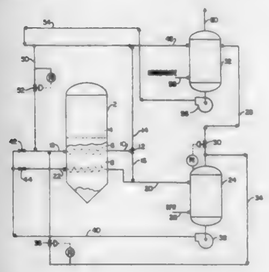
PROCESS FOR REDUCING THERMAL SHOCK IN FLUIDIZED BED STEM COILS CYCLED IN AND OUT OF SERVICE

James J. Graham, Wayland; Darrell D. Kinzler, Framingham, and Edward P. Hunt, North Attleboro, all of Mass., assignors to The Badger Company, Inc., Cambridge, Mass.

Filed Jul. 30, 1984, Ser. No. 635,550

Int. Cl.⁴ C10G *35/22*, *11/10*; F22B *15/00*

U.S. Cl. 208—159 **18 Claims**



1. In the operation of a reactor having (1) a fluidized bed in which an exothermic reaction is occurring and (2) a service steam generator coil in said bed which is cycled into and out of service, the method of reducing the magnitude of the thermal shock induced in said service coil as it is brought into service comprising the steps of:

(a) generating steam by continuously passing water through a second coil disposed in said bed;

(b) superheating said steam and cooling said service coil by passing said steam through said service coil;

(c) directing said superheated steam to a header; d initiating flow of water to said service coil while maintaining a flow of steam to said service coil from said second coil;

(d) terminating flow of steam from said second coil to said service coil and maintaining said flow of water to said service coil so that about 50–80% of said water is vaporized into steam; and

(e) directing to said header the steam generated in said service coil by vaporization of said water.

4,563,268

METHOD OF DISCHARGING PARTICLES FROM A VIBRATING FILTER SCREEN

Gregory A. Smith, Coraopolis, Pa., assignor to Polysar Financial Services S.A., Fribourg, Switzerland

Filed Oct. 9, 1984, Ser. No. 658,631

Int. Cl.⁴ B07B *1/28*

U.S. Cl. 209—257 **7 Claims**



1. A method for continuously removing dry or semi dry sticky agglomerated oversized particles from a solid in liquid dispersion comprising passing the dispersion through a filter screen and pan assembly which is subject to circulatory and vibratory motion wherein the pan assembly comprises a hollow cylindrical frame, having therein a discharge vertically spaced from the bottom of the frame and a helical ramp commencing substantially in the bottom plane of the frame and travelling about the interior wall of the frame in a circular direction terminating in front of and substantially in the plane of said discharge collecting said oversized particles from the outer surface of said filter screen, moving said oversized particles upwardly from the bottom of the frame onto said helical ramp and discharging said oversized particles from said helical ramp onto said discharge.

4,563,269

CLASSIFIER

Toshio Furukawa, Chiba, Japan, assignor to Kikkoman Corporation, Chiba, Japan

Division of Ser. No. 603,163, Apr. 23, 1984, Pat. No. 4,536,284, which is a division of Ser. No. 358,371, Mar. 10, 1982, Pat. No. 4,461,702. This application Mar. 5, 1985, Ser. No. 708,491

Claims priority, application Japan, Mar. 16, 1981, 56-37615

Int. Cl.⁴ B07B *1/18*

U.S. Cl. 209—305 **7 Claims**

1. A classifier for separating particulate matter into relatively coarse and fine particles, comprising:

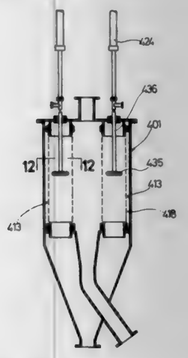
a casing adapted to permit said particulate matter to flow therein along a predetermined direction;

said casing including at least one inlet port, at least one course particle outlet port, and at least one fine particle outlet port, said ports being separated from each other;

at least one cylindrical screen assembly stationarily mounted in said casing, said cylindrical screen assembly including a cylindrical screen extending substantially axially along said predetermined direction so as to force the fine particles to traverse said cylindrical screen so as to be separated from the coarse particles;

said inlet port of said casing communicating with the exterior of each said screen and with said coarse particle outelt port, and said fine particle outlet port of each said casing communicating with the interior of each said screen through a lower opening thereof;

at least one air purge pipe disposed in said casing and connected to a source of compressed air, said air purge pipe having an opening facing the inner surface of said cylindrical screen assembly so as to blow particles off said screen assembly to prevent clogging thereof;



said air purge pipe being separated from said screen assembly such that said opening of said air purge pipe is spaced a predetermined distance from the surface of said cylindrical screen, said predetermined distance between said opening of said air purge pipe and said surface of said cylindrical screen being constant;

said air purge pipe being in the form of an annular tube; and

drive means for moving said air purge pipe along the length of said cylindrical screen so that the entire surface area of said screen may be exposed to said blowing by said air purge pipe.

4,563,270

SELF CLEANING, PERFORATED PLATE FOR OSCILLATING SIEVE

Kurt Wolff, Flurstrasse 42, Dinslaken, Fed. Rep. of Germany

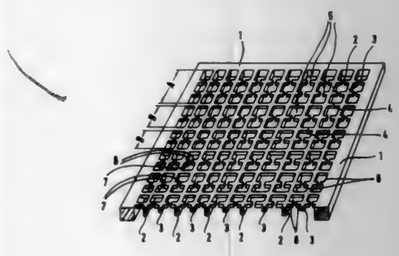
PCT No. PCT/EP80/00141, § 371 Date Dec. 4, 1981, § 102(e) Date Dec. 4, 1981, PCT Pub. No. WO81/02398, PCT Pub. Date Sep. 3, 1981

PCT Filed Dec. 1, 1980, Ser. No. 314,095

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006364

Int. Cl.⁴ B07B *1/46*

U.S. Cl. 209—379 **7 Claims**



1. A screen panel for use in a vibrating screening machine comprising a one piece element which includes a boundary member defining the outer periphery of said panel, a first plurality of spaced crosspiece members disposed in parallel relation to one another and extending between portions of said boundary member, a second plurality of spaced crosspiece members disposed in parallel relation to one another and to said first plurality of spaced crosspiece members between portions of said boundary member, the crosspiece members in said first and second pluralities being disposed in alternating relation to one another whereby a crosspiece member in said first plurality is disposed between a pair of crosspiece members in said second plurality and vice versa, a third plurality of spaced crosspiece members disposed in parallel relation to one another and extending transversely to said first and second pluralities of spaced crosspiece members between other portions of said boundary member, said boundary member and said first, second and third pluralities of crosspiece members being integral with one another and being fabricated of the same material respectively in said one piece element, said boundary member and said transversely disposed crosspiece members defining therebetween a plurality of screen openings, said boundary member being constructed to exhibit a bending resistance that is different from the bending resistances of said first, second and third pluralities of crosspiece members, said first plurality of crosspiece members being constructed to exhibit bending resistances that differ from the bending resistances of said second plurality of crosspiece members whereby two opposite sides of each of said screen openings in said screen panel are defined respectively by a pair of members whose bending resistances differ from one another, and a plurality of tongues integral with and extending outwardly from said boundary member and from said first and second pluralities of crosspiece members, said tongues being spaced from and extending in directions parallel to said third plurality of spaced crosspiece members, at least two of said tongues being located in each of said screen openings and extending respectively toward one another from said boundary members and said first and second crosspiece members, the said two tongues in each of said screen openings having free ends which are spaced from one another to define a slot therebetween.

4,563,271

PERCUSSION JIG

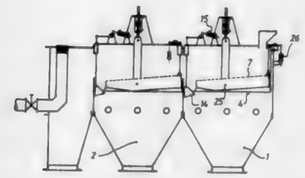
Norbert Schroder, Oelde; Günter Milewski; Manfred Neusser, both of Ennigerloh; Hermann Dorr, Mulheim an der Ruhr; Armin Supp, Essen; Heinz Rasch, Oelde; Otto Heinemann, Ennigerloh; Heinz-Dieter Baldus, Ahlen, and Harald Manthey, Mulheim, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed May 31, 1984, Ser. No. 615,559

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1983, 3322138; Jun. 20, 1983, 3322137

Int. Cl.⁴ B03B *5/24*

U.S. Cl. 209—427 **9 Claims**



1. A percussion jig comprising a settling tub having an inlet end and an outlet end adapted to contain a quantity of liquid; a carrier within said tub adapted to support material to be separated; reciprocable drive means coupled to said carrier in the region of the latter's centroidal vertical axis for reciprocating said carrier vertically relatively to said tub; cooperable

guide means coupling said tub and said carrier for guiding the latter vertically with respect to the former; a quadrangular screen means for supporting said material to be separated and mounted on said carrier for adjustment of the inclination of said screen means relative to the horizontal; and adjustment means coupled to said screen means for adjusting its said inclination to a selected position of adjustment relative to the carrier.

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DEMINERALIZER

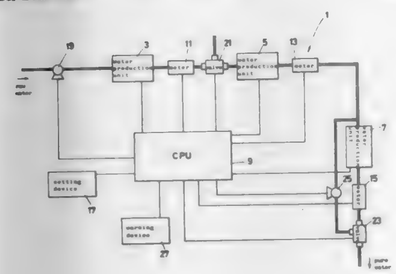
Naoki Yoshida, Sagamihara; Hideo Goto, Koshigaya, and Tomoaki Hayashi, Tokyo, all of Japan, assignors to Yamato Scientific Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1983, Ser. No. 529,598

Claims priority, application Japan, Oct. 16, 1982, 57-181771; Oct. 16, 1982, 57-181775

Int. Cl.⁴ C02B *1/22*

U.S. Cl. 210—93 **4 Claims**



1. A demineralizer for the treatment of water comprising:
a first pump;
a first pure water production unit provided downstream from said first pump;
a first meter provided downstream from said first pure water production unit for detecting the purity of water outputted from said first pure water production unit;
a first valve provided downstream from said first meter and having an inlet port communicating with said first meter for receiving water therefrom, a drain port for discarding water of purity lower than a first prescribed value, and an outlet port for outputting water of purity higher than said first prescribed value;
a second pure water production unit provided downstream from said first valve outlet port;
a second meter provided downstream from second pure water production unit for detecting the purity of water outputted from said second pure water production unit;
a second valve provided downstream from said second meter and having an inlet port for receiving water from said second meter, a by-pass port for outputting water of purity lower than a second prescribed value, and an outlet port for outputting water of purity higher than the second prescribed valve;
a second pump provided on a by-pass conduit which communicates said by-pass port of said second valve with said inlet port of said second water production unit;
a central processing unit for receiving purity information from said first and second meters and for controlling said first and second pumps and said first and second valves responsive to the purity information detected by said first and second meters;
warning means for indicating an abnormal condition of the demineralizer according to an instruction of the central processing unit, and setting means by which said first and second prescribed values may be inputted into said central processing unit.

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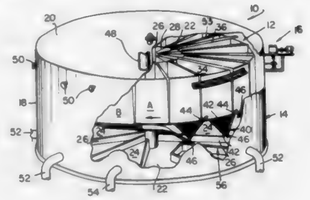
PROCESS AND APPARATUS FOR SEPARATING FINES FROM MICELLA STREAMS

Donald A. Gessler, Verona, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1981, Ser. No. 248,046

Int. Cl.⁴ B01D *29/04*

U.S. Cl. 210—94 **15 Claims**



1. A screening assembly for continuously treating a miscella stream including fines to substantially remove said fines from said miscella stream prior to treating miscella to recover solvent and an extracted product, which comprises:
a housing assembly including a liquid recovery zone;
inlet conduit means for continuously introducing said miscella stream including fines into said housing assembly, said inlet conduit means being disposed above said liquid recovery zone;
screening assembly angularly disposed beneath said inlet conduit means and over said liquid recovery zone including screen means for continuously separating fines from said miscella stream;
conduit outlet means for continuously withdrawing said miscella from said liquid recovery zone; and
solid outlet conduit means for withdrawing from said housing assembly fines separated from said miscella stream.

4,563,274

SEPARATION SYSTEM INCLUDING A FLOATATION TANK HAVING LEVEL CONTROL MEANS

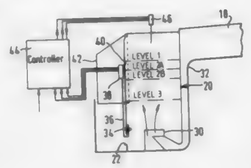
Stephen Rothon, South Woodford, and Ronald Collis, Sutton, both of England, assignors to Haden Drysys International Limited, London, England

Filed Aug. 20, 1984, Ser. No. 642,193

Claims priority, application United Kingdom, Sep. 12, 1983, 8324354

Int. Cl.⁴ B01D *21/24*

U.S. Cl. 210—101 **23 Claims**



1. A system for separating matter from a support liquid in which it is suspended, comprising a floatation tank having a base, an inlet arranged at or near said base, and an outlet arranged at or near said base, supply means for supplying the support liquid and the suspended matter to said inlet, said inlet being arranged to direct the support liquid and the suspended matter upwardly of said floatation tank, and gate means mounted for movement relative to said outlet such that movement of said gate means is arranged to vary the size of said outlet, said system further comprising sensor means arranged to sense the level of a surface of the support liquid and the suspended matter within the system, and level control means responsive to said sensor means and arranged to maintain said surface at a preselected level, said level control means comprising means for comparing the level of said surface with said preselected level, and means arranged to cause movement of said gate means when the level of said surface differs from said preselected level.

4,563,275

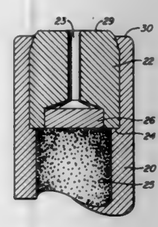
CHROMATOGRAPHY COLUMN AND END PLUG ASSEMBLY

Dan L. McEachern, Alameda, Calif., assignor to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Aug. 1, 1984, Ser. No. 636,512

Int. Cl.⁴ B01D *15/08*

U.S. Cl. 210—198.2 **6 Claims**



1. A chromatographic column cartridge comprising:
a cylindrical tube of formable metal having open ends and a pair of shoulders extending around the internal circumference thereof, one shoulder facing each said end; and
a pair of resilient seal plugs shaped to fit inside said tube ends and to rest on said shoulders, each said plug containing a longitudinal passage communicating the exposed end surface thereof with the interior of said tube, the outer terminal portion of each said plug having the form of a frustum tapering outward, extending across and terminating beyond said tube end.

4,563,276

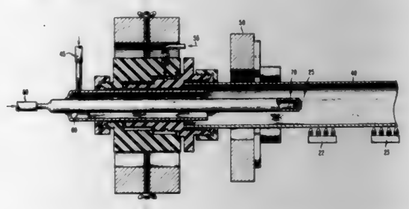
CHROMATOGRAPHIC APPARATUS AND PROCESS

Linda A. Clark, Plainfield, N.J., and Luis Soto, New York, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 561,962, Dec. 16, 1983, abandoned. This application Jul. 1, 1985, Ser. No. 750,247

Int. Cl.⁴ B01D *15/08*

U.S. Cl. 210—198.2 **10 Claims**



1. An apparatus for chromatographically separating components of a mixture, said apparatus comprising a fused silica capillary chromatographic structure and means for detecting said components as they emerge from said capillary characterized in that the surface of said capillary bore includes a dopant that is essentially uniformly distributed and that said dopant (1) induces said separation through differential interaction with said components or (2) enhances the wetting of an organic compound that induces said separation through differential interaction with said components.

4,563,277

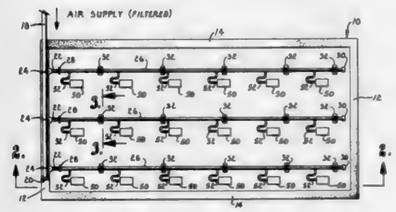
APPARATUS FOR AERATING AND MIXING WASTE WATER

Charles E. Tharp, Boone County, Mo., assignor to Environmental Dynamics, Inc., Columbia, Mo.

Continuation-in-part of Ser. No. 434,848, Oct. 18, 1982, abandoned. This application Nov. 27, 1984, Ser. No. 675,992

Int. Cl.⁴ C02F *3/02*

U.S. Cl. 210—220 **7 Claims**



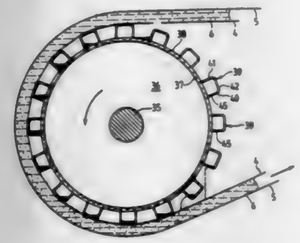
1. Apparatus for aerating waste water in a basin, said apparatus comprising:
a main supply pipe for receiving the air under pressure;
a plurality of branch pipes each communicating with said main supply pipe to receive air therefrom, each branch pipe extending generally along the bottom of the basin and each branch pipe being a plastic pipe subject to longitudinal expansion and contraction in response to temperature changes in the waste water;
a plurality of aerators for each branch pipe, each aerator and being adapted to release a plurality of fine air bubbles when air is supplied to the aerator and each aerator being provided with ballast to hold the aerator down on the bottom of the basin;
a flexible conduit connecting each aerator with the corresponding branch line to provide communication between the branch lines and the corresponding aerators, thereby applying air to the aerators for release of air bubbles therefrom to effect aeration of the waste water, wherein each flexible conduit has a length at least as great as the distance between the corresponding branch pipe and the surface of the waste water to permit each aerator to be raised to the surface of the waste water while the corresponding branch pipe remains on the bottom of the basin and connected to the flexible conduit;
a flexible line for each aerator connected therewith at one end and having an opposite end disposed at the surface of the waste water;
a float for each line connected with said opposite end thereof, said floats floating on the surface of the waste water to maintain said lines accessible from the surface for lifting of the aerators to the surface of the waste water; and
at least one hold down bracket for each branch pipe provided with ballast to hold the bracket down on the bottom of the basin, said bracket having means for holding down the branch pipe while permitting the branch pipe to longitudinally expand and contract, whereby said brackets accommodate thermally induced expansion and contraction of the branch pipes and said flexible conduits allow the aerators to remain stationary as the branch pipes expand and contract.

4,563,278

BELT FILTER PRESS WITH RIBS FOR FILTERING A HEAVY LIQUID

Willi Matzenberg, Kriegstetten, and Albert Deuscher, Alle, both of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

Filed Feb. 9, 1983, Ser. No. 465,318
Claims priority, application Switzerland, Feb. 16, 1982, 962/82
Int. Cl.⁴ B01D *33/04*
U.S. Cl. 210—401 8 Claims



1. In a belt filter press for filtering a heavy liquid by separating the same into a filtrate and into a filter cake, having two endlessly circulating belts for receiving the heavy liquid which are guided by rotating pulleys over one or more rollers to squeeze liquid out and form a filter cake, the circumferential surface of at least one of the rollers being provided with spaced ribs directed outwardly from the surfaces of the roller and having an outer face on which said screen belt may be supported, the improvement wherein each of said ribs is formed of a hollow tubular member having a pair of spaced radial walls and a circumferential wall forming said outer face and a cross-sectional profile defining a cavity between the circumferential surface of the roller and the outer face of said rib, each tubular member having on the wall remote from the rotational direction of the roller means defining at least one opening adjacent to the circumferential surface of the roller whereby, on rotation of said roller, liquid can be received and retained within said tubular member during rotation of said roller about an arc subsequent thereto.

4,563,279

SPIRAL SEPARATORS

Douglas C. Wright, 'Hibiscus Grove', Terranora Rd., Terranora, New South Wales, Australia (2485)

Continuation of Ser. No. 629,744, Jul. 10, 1984, abandoned, which is a continuation of Ser. No. 391,932, Jun. 24, 1982, abandoned. This application Dec. 13, 1984, Ser. No. 681,708
Claims priority, application Australia, Jul. 3, 1981, PE9589
Int. Cl.⁴ B01D *21/26;* B03B *5/52*
U.S. Cl. 210—512.1 16 Claims

1. A spiral separator supported with its axis substantially vertically which is adapted to receive at an upper end thereof a pulp of water and minerals to be separated, said spiral separator including a plurality of helical turns wherein each turn includes an inner bottom wall portion and an outer portion with the outer portion being inclined upwardly relative to the inner portion and characterized in that said inner portion includes a first inner part and a second outer part whereby said second outer part is inclined upwardly relative to the first inner part at a steeper angle to horizontal than said first inner part throughout part of the length of the spiral separator whereby generally non-turbulent or laminar flow of pulp is achieved



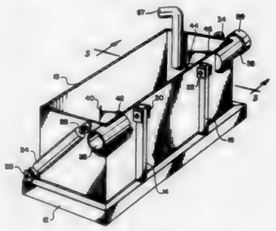
along said part of the length of the spiral separator and sand barring is inhibited.

4,563,280

SELF-CLEANING MUD PIT

James R. Pool, 402 Colorado St., Athens, Henderson County, Tex. 75751

Filed Feb. 13, 1984, Ser. No. 579,412
Int. Cl.⁴ B01D *21/24*
U.S. Cl. 210—523 10 Claims



1. Apparatus for separation of immiscible fluids having different densities that are transferred from a fluid source comprising:

an open ended container disposed after a fluid source for holding the fluids and rotatable about an axis to decant the contents thereof;

inlet means connected to said container for allowing a flow of fluid into said container from the fluid source;

outlet means connected to said container for allowing flow of fluid from said container to an external reservoir;

said container being cuboidal in shape and the rotational axis thereof being proximate the open end thereof and adjacent a cuboidal edge of said container such that rotation of said container decants fluid through said outlet means;

said inlet and outlet means disposed along the rotational axis of said container such that rotation of said container does not result in displacement of said inlet and outlet means; and

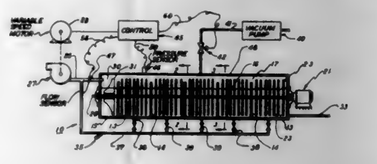
means for rotating said container about its rotational axis to decant the fluids therefrom.

4,563,281

ANAEROBIC CONTACTOR

Alexander A. Friedman, Fayetteville, N.Y., and Peter L. Podolak, Westminster, Md., assignors to Syracuse University, Syracuse, N.Y.

Filed Jul. 9, 1984, Ser. No. 628,904
Int. Cl.⁴ C02F *3/28*
U.S. Cl. 210—614 6 Claims



1. A method of treating wastewater containing anaerobically digestable nutrients and substrates that include the steps of

passing wastewater influent through a gas-tight reactor to establish a sealed headspace over the surface of the wastewater in said reactor,

rotating a plurality of partially immersed contactors through the wastewater contained in said reactor, each contactor having a biofilm thereon whereby the biofilm is sequentially passed through the wastewater and the headspace,

evacuating the atmosphere in the headspace to establish a subatmospheric pressure therein;

sensing the pressure in the headspace,

sensing the rate of flow of influent at the entrance to the reactor,

relating the sensed pressure to the sensed rate of flow of the influent to determine the chemical oxygen demand (COD) removal rate,

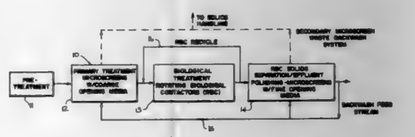
automatically adjusting the pressure in the headspace and the rate of flow of the influent to continually maintain the reactor at a desired operating condition.

4,563,282

WASTEWATER TREATMENT PLANT AND METHOD

John W. Wittmann, New Berlin; Robert C. Winkelman, Wales; Douglas F. Mooers, Glendale, and Richard L. Davie, Oconomowoc, all of Wis., assignors to Envirex Inc., Waukesha, Wis.

Filed Jun. 22, 1984, Ser. No. 623,480
Int. Cl.⁴ C02F *3/08*
U.S. Cl. 210—619 14 Claims



1. A method of wastewater treatment comprising:

introducing wastewater into a first rotating microscreen drum having a relatively course mesh size on the order of 50 to 100 mesh as substantially the sole form of removal of primary solids;

passing said microscreened water through at least one rotating biological contactor;

introducing said water subsequent to said treatment with said rotating bioligical contactor through a second rotating microscreen drum as substantially the sole form of secondary solids separation and without the use of clarification tanks, and said secondary microscreen drum having a relatively fine mesh size on the order of 6 to 44 microns; and

said mesh sizes of said first and second rotating microscreens being of relative coarseness so that a sufficient amount of primary solids is removed by said first microscreen drum in order that the amount of secondary solids remaining will not cause excessive solids loading on said second microscreen drum.

7. A biological waste treatment system comprising:

a first screening treatment tank having a relatively coarse-mesh rotatable microscreen drum operatively mounted therein as substantially the sole form of primary solids separation and having a mesh size on the order of from 50 to 200 mesh;

at least one additional treatment tank having a rotating biological contactor operatively mounted therein;

a second screening treatment tank having a relatively fine-mesh rotatable microscreen drum operatively mounted therein as substantially the sole form of secondary solids separation and having a mesh size on the order of from 6 to 44 microns;

said mesh sizes of said first and second rotating microscreens being of relative coarseness so that a sufficient amount of primary solids is removed by said first microscreen drum in order that the amount of secondary solids remaining will not cause excessive solids loading on said second microscreen drum; and

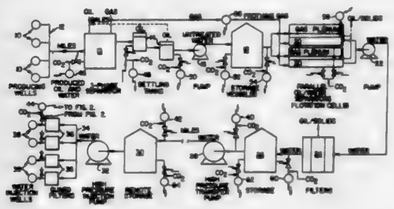
fluid inlet and outlet means constructed and arranged to permit the passage of wastewater into said first screening treatment tank, said additional treatment tank and said second screening treatment tank in said stated order.

4,563,283

PROCESS FOR CLARIFYING BICARBONATE BEARING WATERS USING MEASUREMENT AND CONTROL OF CARBON DIOXIDE CONTENT

Stephen W. Nicksic, Brea, Calif., assignor to Phoenix Project Partnership, Larkspur, Calif.

Filed Feb. 15, 1984, Ser. No. 580,443
Int. Cl.⁴ C02F *5/08*
U.S. Cl. 210—696 8 Claims



1. In a water treatment process for the treatment of bicarbonate bearing produced waters from a subsurface earth formation with facilities comprising at least a three phase (gas-/oil/water) separator and a flotation (oil/water/solid) cell at the surface of said earth formation designed to create treated waters from said produced water for reinjection into said subsurface earth formation through an injection well, said surface water treatment facilities, said subsurface injection well and the subsurface injection formation being subject to possible damage by precipitation of gelatinous organic and inorganic solids from said treated waters originating from an imbalance in the bicarbonate/carbonate equilibria in said treated waters during said treatment and reinjection into said subsurface earth formation, the method of operating said treatment process to avoid said imbalance in said bicarbonate/carbonate equilibria comprising;

(a) measuring the gas phase carbon dioxide level of the bicarbonate bearing produced waters to determine the initial bicarbonate/carbonate equilibria of said produced water at the input to said surface water treatment facilities,

(b) measuring the gas phase carbon dioxide level of the treated waters throughout said surface water treatment facilities to identify any change in said gas phase carbon dioxide level which change could cause an imbalance in said bicarbonate/carbonate equilibria in said treated waters,

(c) and controlling said measured gas phase carbon dioxide level throughout said treatment facilities by addition of sufficient gas phase carbon dioxide to prevent precipitation of gelatinous organic or inorganic solids from said treated water in said treatment facilities and injection well resulting from an imbalance of said determined initial bicarbonate/carbonate equilibria.

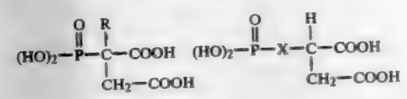
4,563,284

INHIBITION OF SALT PRECIPITATION IN AQUEOUS SYSTEMS

Zahid Amjad, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 6, 1984, Ser. No. 638,154
Int. Cl.⁴ C02F *5/14*
U.S. Cl. 210—699 **8 Claims**

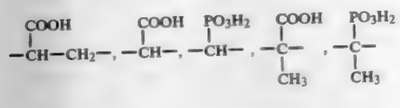
1. Method for dispersing inorganic matter and for inhibiting precipitation of scale, including calcium sulfate scale, in an aqueous system containing calcium sulfate comprising the step of adding to said aqueous system about 0.05 to 500 ppm of a first active material selected from at least one phosphonocarboxylic acid and a second active material selected from at least one polymeric phosphinocarboxylic acid or a salt or a derivative thereof; said phosphonocarboxylic acid is selected from the group defined by the following two formulas:



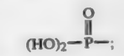
where R is selected from hydrogen; alkyl, alkenyl, and alkinyl radicals having 1 to 4 carbon atoms; aryl, cycloalkyl, and aralkyl radicals; and radicals selected from the following:



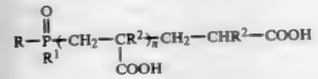
where R′ is selected from hydrogen, alkyl radicals of 1 to 4 carbon atoms, and carboxyl radicals, and where X is selected from the following



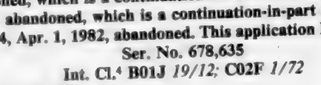
where the —PO_3H_2moiety is the phosphono group



wherein said polymeric phosphinocarboxylic acid is defined as follows:



where R is selected from hydrogen, straight or branched alkyl groups of 1 to 18 carbon atoms, cycloalkyl groups of 5 to 12 carbon atoms, —OX groups where X is selected from hydrogen, and straight or branched alkyl groups of 1 to 4 carbon atoms, and groups defined as follows:



where R^2 is selected from hydrogen, methyl and ethyl groups, and where the sum of m and n is up to about 100; where R^1 is selected from —OX groups where X is selected from hydrogen, and straight and branched alkyl groups of 1 to 4 carbon atoms; and wherein the relative ratio of the active materials is in the range of about 0.1 to 5 weight parts of said polymeric phosphinocarboxylic acid per 1 weight part of said phosphonocarboxylic acid.

4,563,285

METHOD FOR DEWATERING PHOSPHATE SLIMES

Krishnapillai V. Nair, and Ponisseril Somasundaran, both of Nyack, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Aug. 9, 1984, Ser. No. 639,253
Int. Cl.⁴ C02F *1/52*
U.S. Cl. 210—714 **8 Claims**

1. A method for dewatering phosphate slimes and recovering a water solution comprising adding calcium sulfate hemihydrate to the slimes, in an amount equivalent to the total weight percent of solids in the slime, mixing the resulting admixture to effect formation of calcium sulfate dihydrate crystals in the admixture, and dewatering the admixture to recover a water solution from the resulting crystal-containing admixture.

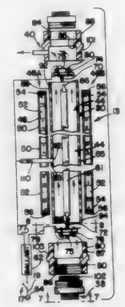
2. A method to claim 1, wherein the calcium sulfate hemihydrate addition is followed by the addition of calcium sulfate dihydrate in an amount sufficient to enhance the separation of solids from the slime.

4,563,286

SYSTEM OF IONIZED OXYGEN ALLOTROPE GAS WATER PURIFICATION AND METHOD AND APPARATUS THEREFOR

Dennis E. J. Johnson, and Scott J. Johnson, both of 1025 Garfield Ave., Aurora, Ill. 60506

Continuation-in-part of Ser. No. 599,626, Apr. 12, 1984, abandoned, which is a continuation of Ser. No. 403,801, Aug. 5, 1982, abandoned, which is a continuation-in-part of Ser. No. 363,254, Apr. 1, 1982, abandoned. This application Dec. 6, 1984, Ser. No. 678,635
Int. Cl.⁴ B01J *19/12*; C02F *1/72*
U.S. Cl. 210—721 **24 Claims**



23. The method of treating a flow stream of ambient air to convert atmospheric oxygen in same to ionized gaseous oxygen allotrope oxidant gas that remains in the air flow stream, which method comprises:

establishing a gas flow path for the air flow stream and an ionized oxygen allotrope forming site in same that includes multiple magnetic flux fields of fixed intensity characterized by multiple north-south magnetic polar relations having varient orientations of which the magnetic lines of force therefrom are concentrated within and are interlaced across and along the path at the site,

enveloping the flux fields from a source within the flow path at the site with ultraviolet wave length electron-volt emissions having oxygen ionizing characteristics,

continuously passing the ambient air flow stream from an ambient air source through the gas flow path including said site while using the magnetism of said flux fields to concentrate atmospheric oxygen in the flow stream at the site and shielding the electron-volt emissions source from blockage,

converting at said site the atmospheric oxygen of the flow stream passing therethrough into oxygen allotrope ions by photo bombarding of same in the presence of said flux fields to form the oxidant gas of the air flow stream, while simultaneously passing the atmospheric nitrogen of the flow stream through the site free from chemical change,

and continuously passing the flow stream, including the converted atmospheric oxygen in gaseous form, from the gas flow path.

4,563,287

AQUEOUS FIRE-EXTINGUISHING COMPOSITION

Iwao Hisamoto, Osaka; Chiaki Maeda; Takasige Esaka, both of Kyoto, and Masaru Hirai, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Aug. 16, 1983, Ser. No. 523,601
Claims priority, application Japan, Aug. 16, 1982, 57-142443
Int. Cl.⁴ A62D *1/00*
U.S. Cl. 252—2 **25 Claims**

1. An aqueous non-foaming cooking oil fire-extinguishing composition comprising an aqueous solvent and a water-soluble high molecular compound, said water-soluble high molecular compound containing a fluoroalkyl group and one or more water-solubilizable groups per each fluoroalkyl group; having an average molecular weight of not less than 5000 and fluorine content of not less than 15% by weight; being soluble in water in an amount of at least 0.1% by weight of 25° C.; and the surface tension of which is not more than 50 dyn/cm when measured on 0.1 to 5.0% by weight aqueous solution at 25° C.; and the amount of the water-soluble high molecular compound being from 0.1 to 60% by weight on the basis of the weight of said aqueous solvent.

4,563,288

N-ALKYL ISOSTEARAMIDE ANTISTATIC AGENTS, DETERGENT COMPOSITIONS CONTAINING SUCH AGENTS, AND PROCESSES FOR WASHING LAUNDRY IN THE PRESENCE OF SUCH AGENTS, AND WITH SUCH COMPOSITIONS

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 404,794, Aug. 3, 1982, Pat. No. 4,497,715. This application Nov. 23, 1984, Ser. No. 674,194
The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.
Int. Cl.⁴ C11D *3/32*; D06M *13/40*
U.S. Cl. 252—8.8 **20 Claims**

1. Antistatic compounds of the formula:

RCONHR′

wherein RCO is an acyl of isostearic acid and R′ is selected from the group consisting of cocoalkyl, tallowalkyl and hydrogenated tallowalkyl, and mixtures thereof.

6. An antistatic detergent composition for laundering fabrics comprising an effective antistatic amount of the isostearamide antistatic compound of claim 1 and a detersive proportion of a detergent selected from the group consisting of anionic, nonionic and amphoteric detergent materials.

4,563,289

IMPREGNATION OF NON-WOVEN WEBS

Ronald J. Thompson, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Continuation of Ser. No. 598,928, Apr. 10, 1984, abandoned. This application Aug. 9, 1985, Ser. No. 763,892
Int. Cl.⁴ D06M *15/26*; B05D *3/02*
U.S. Cl. 252—8.8 **5 Claims**

1. In a method of saturating a non-woven web of natural or synthetic fibers comprising impregnating a web having a dry weight of from 5 to 130 g/yd² with from about 30 to 50% by dry weight, based on the dry weight of the web of a composition consisting essentially of a latex containing from about 30 to 65% by weight of a polymer formed by polymerizing a monomeric mixture consisting of:

(i) from about 42 to 68 parts by weight of a C_{8-12} vinyl aromatic monomer which may be unsubstituted or substituted by a C_{1-4} alkyl or alkanol radical or a chlorine or bromine atom;

(ii) from about 20 to 58 parts by weight of a C_{4-8} conjugated diolefin;

(iii) from about 0.5 to 8.0 parts by weight of a C_{3-9} ethylenically unsaturated carboxylic acid or an anhydride of a C_{4-9} ethylenically unsaturated dicarboxylic acid;

the improvement comprising using a latex which has been neutralized to a pH of from about 5 to about 9 with an alkali metal or an alkali metal hydroxide and drying and curing the web in the absence of a poly valent metal ion.

4,563,290

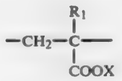
WATER-SOLUBLE COPOLYMERS USEFUL FOR ENHANCED OIL RECOVERY

Masashi Okada, Nagaokakyo; Kimihiko Noda, Uji, and Masami Shikata, Otsu, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed May 8, 1984, Ser. No. 608,100
Claims priority, application Japan, Jun. 1, 1983, 58-98687
Int. Cl.⁴ C09K *3/00*
U.S. Cl. 252—8.55 D **21 Claims**

1. A water-soluble copolymer useful for enhanced oil recovery, which has improved mechanical shear stability and improved viscosity-increasing properties, consisting essentially of:

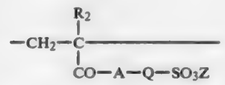
at least one copolymerized unit (a) of the formula:



(1)

wherein R_1 is H or methyl and X is a counter cation;

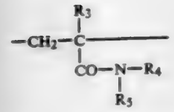
at least one copolymerized unit (b) of the formula:



(2)

wherein R_2 is H or methyl, A is NH or O, Q is a divalent hydrocarbon radical containing at least four carbon atoms and Z is a counter cation; and

at least one copolymerized unit (c) of the formula:



(3)

wherein R_3, R_4 and R_5 are, independently H or methyl, said copolymer containing 10–30 mole % of said unit (a), 1–10 mole % of said unit (b) and 60–89 mole % of said unit (c) and having an inherent viscosity of 10–25 dl/g.

4,563,291

METHOD OF PREPARATION OF SUBSTITUTED AMINO-ALKYL SULFONIC ACID COMPOUNDS AND USE IN THE TREATMENT OF SUBTERRANEAN FORMATIONS

Glenn S. Penny, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 20, 1984, Ser. No. 632,770
Int. Cl.[4] E21B *43/26*
U.S. Cl. 252—8.55 R **11 Claims**

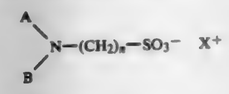
1. A gelled fluid for use in the treatment of subterranean formations comprising:

an aqueous fluid;

a solvatable and hydratable polymer having a molecular weight in excess of about 100,000 present in an amount of from about 10 to about 300 pounds per 1000 gallons of aqueous fluid;

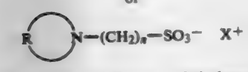
an amino-alkyl sulfonic acid or salt of the general formula:

(Formula I)



or

(Formula II)



wherein A and B are each independently an alkyl group containing from 1 to 18 carbon atoms or an aryl group, n is from about 2 to 3,



is a five to nine member cyclic radical comprising one to three ring nitrogen atoms, zero to two ring oxygen atoms and the remainder of the ring being carbon atoms and X is hydrogen or any element having a positive charge capable of forming a water soluble salt present in an amount of at least about 1 pound per 1000 gallons of aqueous fluid; and

a pH adjusting agent present in an amount sufficient to adjust the pH level of the gel formed by hydration of the polymer by the aqueous fluid to a level in the range of from about 6 to 8.

4,563,292

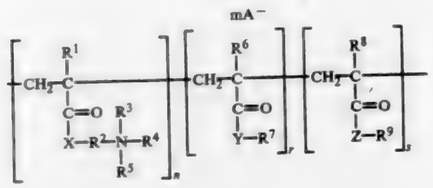
METHODS FOR STABILIZING FINES CONTAINED IN SUBTERRANEAN FORMATIONS

John K. Borchardt, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 2, 1984, Ser. No. 636,943
Int. Cl.[4] E21B *43/12, 43/25*
U.S. Cl. 252—8.55 R **19 Claims**

1. A method of preventing or reducing the migration of fines in a permeable Subterranean Formation comprising:

contacting said fines in said permeable structure with an effective amount of an organic copolymer having recurring structural monomer units formed in a random fashion of the formula:



I II III

wherein

X is independently selected from the group consisting of oxygen and NH;

R^1, R^6, and R^8 are independently selected from the group consisting of hydrogen and methyl;

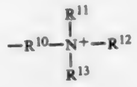
R^2 is an alkylene group having 1 to about 4 carbon atoms;

R^3 and R^5 are independently selected from the group consisting of methyl and ethyl;

R^4 is optionally present and is selected from the group consisting of:

(1) an alkyl group having from 1 to about 6 carbon atoms; and

(2) a quaternary ammonium group having the general formula:



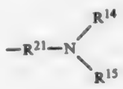
wherein:

R^{10} is selected from the group consisting of an alkylene group having from about 2 to about 6 carbon atoms and a substituted alkylene group having from about 2 to about 6 carbon atoms and containing a hydroxyl group or from 1 to about 3 ether groups;

R^{11}, R^{12}, and R^{13} are independently selected from the group consisting of methyl and ethyl;

Y is selected from the group consisting of oxygen and NR^{16} wherein R^{16} is selected from the group consisting of hydrogen, methyl and ethyl;

R^7 is selected from the group consisting of an alkyl group having from 1 to about 3 carbon atoms; and,

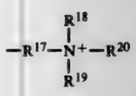


wherein:

R^{14} and R^{15} are independently selected from the group consisting of methyl and ethyl; and,

R^{21} is selected from the group consisting of methylene, ethylene, and trimethylene;

R^9 is selected from the group consisting of hydrogen, an alkyl group containing 1 to about 4 carbon atoms, a substituted alkyl group having from 1 to about 4 carbon atoms and containing a hydroxyl group, a carboxyl group, or $—SO_3J$ wherein J is selected from the group consisting of hydrogen, sodium and potassium, and,



wherein

R^{17} is selected from the group consisting of methylene, ethylene, and trimethylene; and,

R^{18}, R^{19}, and R^{20} are independently selected from the group consisting of methyl and ethyl;

Z is selected from the group consisting of oxygen and NH and provided further when Z is oxygen, R^9 may further be selected from the group consisting of sodium and potassium;

A is an anion selected from the group consisting of chloride, bromide, iodide, methyl sulfate, and sulfate;

m is an integer equal to the number of anions required to maintain electronic neutrality;

n, r, and s are integers the sum of which equals the total number of monomer units in the copolymer required to give a molecular weight in the range of from about 50,000 to about 1,000,000; and,

monomer unit I is present in the range of from about 25 to about 95 mole percent in the copolymer; monomer unit II is present in the range of from about 5 to about 75 mole percent of the copolymer; and, monomer unit III is present in the range of from about 0 to about 35 mole percent of the copolymer.

4,563,293

METHOD FOR IMPROVING FUEL ECONOMY OF INTERNAL COMBUSTION ENGINES USING BORATED 1,2-ALKANEDIOLS

Vernon R. Small, Jr., Rodeo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 520,789, Aug. 5, 1983, abandoned, which is a continuation of Ser. No. 289,422, Aug. 3, 1981, abandoned. This application Jul. 31, 1984, Ser. No. 636,186
Int. Cl.[4] C10M *1/48, 1/54*
U.S. Cl. 252—32.7 E **1 Claim**

1. A method for reducing the fuel consumption of an internal combustion engine by treating the moving surfaces thereof with a composition comprising:

(a) a major amount of an oil of lubricating viscosity; and

(b) an amount of each of the following:

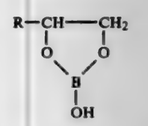
(1) about 1 to 20% by weight of an alkenyl succinimide or alkenyl succinate or mixtures thereof,

(2) about 0.1 to 4% by weight of a Group II metal salt of a dihydrocarbyl dithiophosphoric acid,

(3) about 0.3 to 10% by weight of a neutral or overbased alkali or alkaline earth metal hydrocarbyl sulfonate or mixtures thereof,

(4) about 0.2 to 27% by weight of a neutral or overbased alkali or alkaline earth metal, alkylated phenate, or mixtures thereof,

(5) about 0.1 to 5% by weight of a mixture of a borated long-chain 1,2-alkane diol friction modifier of the formula



wherein R in said mixture is alkyl containing from 13 to 16 carbon atoms.

4,563,294

AQUEOUS LUBRICANT FOR SAW CHAINS

Peter Geymayer, and Erich Leidl, both of Burgkirchen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 25, 1983, Ser. No. 478,698
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1982, 3211352
Int. Cl.[4] C10M *3/04*
U.S. Cl. 252—49.3 **8 Claims**

1. A lubricant for saw chains consisting essentially of

(A) 30 to 60 percent by weight water,

(B) 15 to 60 percent by weight of a water-soluble antifreeze agent selected from the group consisting of alkylene glycols having 2 to 6 carbon atoms and oxalkylene glycols having 4 to 14 carbon atoms,

(C)+(D) 0.5 to 5 percent by weight of a corrosion inhibitor and a wear inhibitor,

(E) 0.05 to 1 percent by weight of an adhesion promoter having a molecular weight of at least 500,000, selected from the group consisting of water-soluble polyethylene glycol and water-soluble acrylamide copolymer which contains sulfonic acid groups, and

(F) 5 to 50 percent by weight of a water-soluble polyethylene oxide/polypropylene oxide adduct having a viscosity of 1,000 to 20,000 mPa.s at 50° C.

4,563,295

HIGH TEMPERATURE ABSORBENT FOR WATER VAPOR

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Continuation-in-part of Ser. No. 428,483, Sep. 29, 1982, Pat. No. 4,454,724. This application Aug. 4, 1983, Ser. No. 520,305
Int. Cl.[4] C09K *5/04*; F25B *15/06*
U.S. Cl. 252—69 **11 Claims**

10. A process comprising evaporating water to produce cooling, and absorbing the vapor into an aqueous absorbent in which the anhydrous component of the absorbent consists essentially of at least 20 mole percent $LiNO_3$, 20 mole percent KNO_3, and 10 mole percent $NaNO_3$.

4,563,296

PLASTICIZER BLEND FOR POLYVINYL BUTYRAL

I. Luis Gomez, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 12, 1983, Ser. No. 522,932
Int. Cl.[4] B32B *27/36*
U.S. Cl. 252—182 **7 Claims**

1. A plasticizer blend for polyvinyl butyral comprising a monoester of a glycol and a C_{16} to C_{20} unsaturated fatty acid having a hydroxyl group attached to the acid molecule and a multiester of an alcohol having 2 to 4 hydroxyl groups and said unsaturated fatty acid, said monoester being present on a weight basis in an amount equal to or greater than the multiester in said blend.

4,563,297

FLUORESCENT COMPOSITION

Hiroshi Kukimoto, Yokohama; Kiyoshi Morimoto, and Hitoshi Toki, both of Mobara, all of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Continuation of Ser. No. 118,914, Feb. 6, 1980, abandoned. This application Jun. 8, 1981, Ser. No. 271,695
Int. Cl.[4] C09K *11/477*
U.S. Cl. 252—301.4 R **8 Claims**

1. A fluorescent composition, comprising:

a red light emitting phosphor of high electric resistance which emits said red light under high velocity electron excitation in combination with an oxide mixture consisting essentially of Eu_2O_3 in In_2O_3, wherein the amount of Eu_2O_3 in said mixture with In_2O_3 ranges from 0.001% to 10 mole % as the rare earth metal.

4,563,298

METAL OXIDE/SILICA SOLS

Bruce A. Keiser, Naperville, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 30, 1983, Ser. No. 509,745

Int. Cl.⁴ B01J *13/00*; **C04B** *35/14*

U.S. Cl. 252—313.2 **2 Claims**

1. An aqueous alkaline hydrous metal oxide/silica sol having a pH of at least 8.5 which contains from 5–40% by weight SiO_2, from 1–10.5% by weight of hydrous metal oxide, and a water-soluble anionic stabilizing compound selected from the group consisting of water-soluble anionic surfactants having an HLB greater than 8 and water-soluble carboxylic acid polymers having a molecular weight in the range between about 1,000–1,000,000 with the ratio of hydrous metal oxide to water-soluble anionic stabilizing compound being within the range of 0.3:1 to 15:2, with the pH of said sol being produced by the presence of a water-soluble amine.

4,563,299

PHOSPHORUS-CONTAINING REACTION PRODUCTS AS ANTIWEAR AND LOAD CARRYING ADDITIVES FOR LUBRICANTS

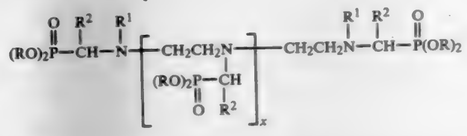
Gerassimos Frangatos, Haddonfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 548,056, Nov. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 418,350, Sep. 15, 1982, abandoned, which is a continuation-in-part of Ser. No. 120,797, Feb. 12, 1980, abandoned. This application Oct. 1, 1984, Ser. No. 656,295

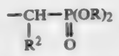
Int. Cl.⁴ C10M *1/20, 1/32, 1/44*; **C07F** *9/28*

U.S. Cl. 252—49.9 **18 Claims**

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefore and a minor antiwear or load-carrying amount of a product comprising a compound of the formula



wherein the R groups are the same or different and are selected from alkyl groups containing 1 to 30 carbon atoms, R^2 is hydrogen or a C_1 to C_{30} hydrocarbyl group, x is 1 to 8 and R^1 is hydrogen or a



group wherein R and R^2 are as defined herein.

4,563,300

ELECTRICALLY CONDUCTIVE COFACIALLY CRYSTALLIZING ORGANOMACROCYCLE COMPOSITIONS, ARTICLES AND FABRICATION METHODS

Kenneth J. Wynne, Falls Church, Va.; Tobin J. Marks, and Tamotsu Inabe, both of Evanston, Ill., assignors to Northwestern University, Evanston, Ill.

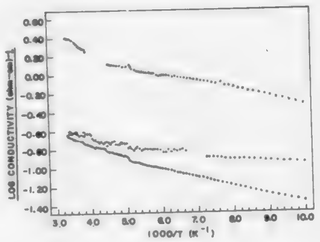
Filed Dec. 20, 1982, Ser. No. 451,408

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

Int. Cl.⁴ H01B *1/12, 1/20*

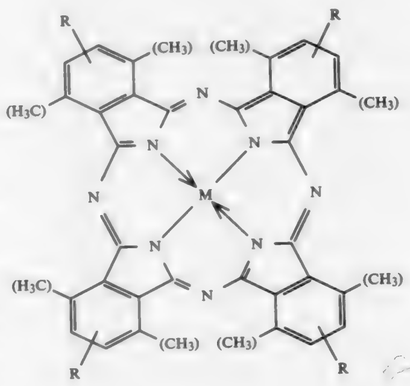
U.S. Cl. 252—518 **11 Claims**

1. A formed structurally integral, low dimensionally electroconductive article comprising a blend of (a) a matrix of ionically bonding cofacially stacking organomacrocyclic porphyrazines of the general formula $(Pc)M_n$ where Pc comprises pyrrole nuclei linked by nitrogen atoms to form a conjugated planar ligand having in a neutral state a 22 pi electron conjugation system, M comprises a ion selected from the group consisting of hydrogen ion and polyvalent transition metal ions and n is an integer, and (b) an aromatic amide for providing structural integrity.

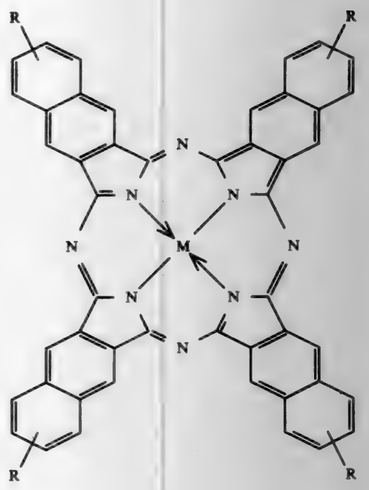


5. A cofacially crystallizing electroconductive article of predetermined form comprising a cofacially stacking ionically bonding fractional valence porphyrazine polymer, formed from a monomer selected from the group of:

(a)

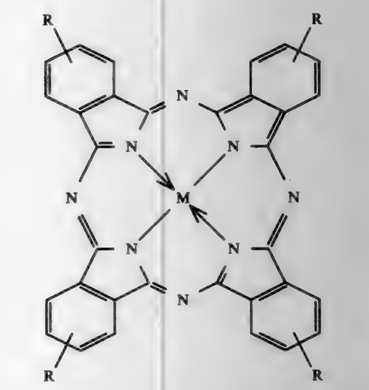


-continued



and

(c)



where M=a divalent transition metal; R=H, CH_3 or an alkyl group; and an aromatic polyamide for providing structural integrity to said article, said polyamide having aromatic nuclei devoid of substituents capable of disrupting the cofacial stacking of said porphyrazine component on forming.

4,563,301

ELECTRICALLY CONDUCTIVE LOW DIMENSIONAL ORGANOMACROCYCLE COMPOSITIONS, ARTICLES AND FABRICATION METHODS

Tobin J. Marks, and Tamotsu Inabe, both of Evanston, Ill., assignors to Northwestern University, Evanston, Ill.

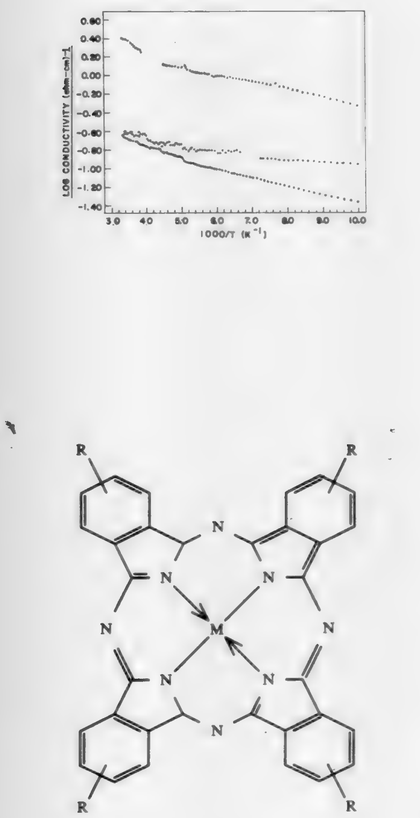
Filed Dec. 13, 1982, Ser. No. 449,419

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

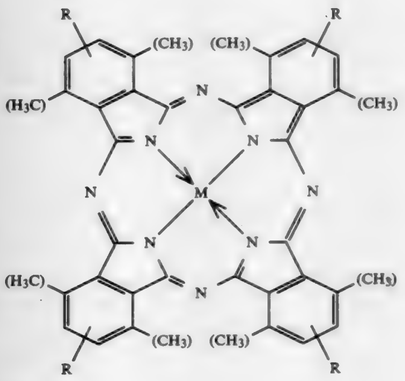
Int. Cl.⁴ H01B *1/12, 1/20*

U.S. Cl. 252—519 **11 Claims**

1. A low dimensional electroconductive article of predetermined form comprising a covalently binding cofacially stacking fractional valence porphyrazine polymer, formed from a monomer selected from the group of:

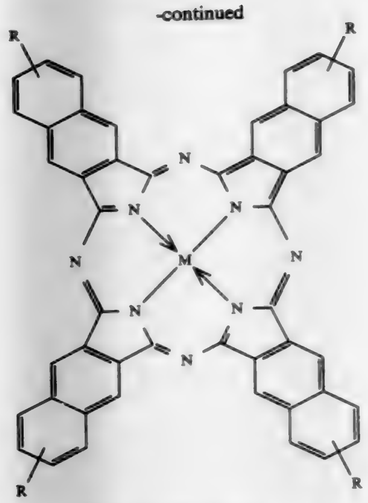


(b)



and,

-continued



where M=a divalent transition metal; R=H; CH_3 or an alkyl group; and an aromatic polyamide for providing structural integrity to said article, said polyamide having aromatic nuclei devoid of substituents capable of disrupting the cofacial stacking of said porphyrazine component on forming.

8. A low dimensional electroconductive article of predetermined form, comprising a cofacially stacking fractional valence porphyrazine polymer, said porphyrazine polymer having the general formula $[M(Pc)O]_n$, where M is a divalent transition metal and Pc is an organomacrocyclic porphyrazine, said porphyrazine polymer being supported by an alloying aromatic amide polymer having aromatic nuclei devoid of substituents capable of disrupting the cofacial stacking of said porphyrazine polymer on forming and a fractional valence counterion component.

4,563,302

SULFURIZED OLEFIN PROCESS

Paul G. Griffin, Collinsville, Ill., and William Y. Lam, St. Louis, Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.

Filed Dec. 1, 1983, Ser. No. 556,968

Int. Cl.⁴ C10M *1/38*

U.S. Cl. 252—45 **24 Claims**

1. A process for making a sulfurized olefin having improved solubility in lubricating oil said process comprising:

(A) reacting a sulfur halide selected from S_2Cl_2 and scl_2 with an aliphatic monoolefin contianing 3–6 carbon atoms to produce an adduct

(B) reacting said adduct with sulfur, Na_2S, an alkyl mercaptan containing 1–12 carbon atoms and from 0–0.5 grams NaSH per mol sulfur halide in an aqueous alcohol medium at a temperature of 50° C. up to reflux to form said sulfurized olefin

(C) recovering said sulfurized olefin from said aqueous alcohol medium.

(c)

4,563,303

METHOD FOR PURIFICATION OF FILAMENTOUS HEMAGGLUTININ

Akihiro Ginnaga; Shin Sakuma; Tsukasa Nishihara; Tomitaka Tashiro; Sadao Susumi; Tetsuo Kawahara, and Hiroshi Mizokami, all of Kumamoto, Japan, assignors to Judicial Foundation The Chemosero-Therapeutic Research Institute, Kumamoto, Japan

Filed Apr. 12, 1985, Ser. No. 722,381

Claims priority, application Japan, Apr. 14, 1984, 59-075314; Apr. 25, 1984, 59-084778; May 7, 1984, 59-091631

Int. Cl.⁴ C07G *7/00*; A61K *39/10*

U.S. Cl. 260—112 R **12 Claims**

1. A method for the purification of Filamentous Hemagglutinin (F-HA) produced by a microorganism of the genus Bordetella, which comprises contacting an F-HA-containing solution with a gel selected from the group consisting of a cellulose sulfate gel, a polysaccharide gel chemically bound with dextran sulfate and a crosslinked polysaccharide sulfate gel to adsorb the F-HA and eluting the adsorbed F-HA from the gel.

4,563,304

PYRIDINE COMPOUNDS MODIFYING PROTEINS, POLYPEPTIDES OR POLYSACCHARIDES

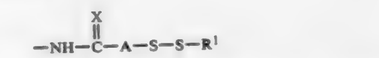
Jan P. E. Carlsson, Upsala; Rolf E. A. V. Axén, Bälinge; Hakan N. Y. Drevin, Brunna, and Göran E. S. Lindgren, Almunge, all of Sweden, assignors to Pharmacia Fine Chemicals AB, Uppsala, Sweden

Continuation of Ser. No. 238,853, Feb. 27, 1981, abandoned, which is a continuation of Ser. No. 98,302, Nov. 28, 1979, abandoned, which is a continuation of Ser. No. 946,140, Sep. 27, 1978, abandoned, which is a division of Ser. No. 882,546, Mar. 2, 1978, Pat. No. 4,149,033. This application Feb. 23, 1984, Ser. No. 582,911

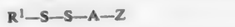
Int. Cl.⁴ C07G *7/00*; C07H *1/00*; C12N *9/26*; C07B *37/00*

U.S. Cl. 260—112 R **5 Claims**

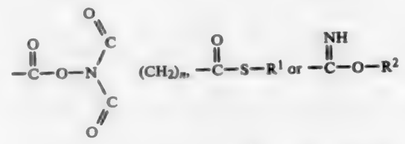
1. A modified protein, polypeptide, polysaccharide or polysaccharide derivative containing amino groups and being soluble in aqueous liquids, wherein at least one amino group ($-NH_2$) of said protein, polypeptide, polysaccharide or polysaccharide derivative has been converted to a group of the formula



wherein R^1 is 2-pyridyl, 5-nitro-2-pyridyl or 4-pyridyl, A is a hydrocarbon residue having 1–10 carbon atoms and X is O or NH, by reaction with a compound having the formula



wherein R^1 and A are as defined above and Z is from the group



or acid addition salts of the last mentioned group, where n is 2 or 3, R^1 has the same significance as R^1 above and is equal thereto, and R^2 is methyl or ethyl.

4,563,305

RADIOLABELLED SUBSTRATES FOR ASSAYING MAMMALIAN ENZYMES

James W. Ryan, and Alfred Chung, both of Miami, Fla., assignors to University of Miami, Miami, Fla.

Filed Jan. 7, 1981, Ser. No. 222,980

Int. Cl.⁴ C07C *103/52*

U.S. Cl. 260—112.5 R **18 Claims**

1. A compound of the general formula X-T, W-Y or X-(Pep)-Y wherein

X is a radiolabelled benzoyl or hydroxyphenylpropanoyl group,

T is the amino acid or peptide residue of a known chromogenic or fluorogenic substrate containing at least one amino acid moiety and having a free terminal —NH— group which forms an amido bond with X, which residue may be substituted with one or more organic groups,

W is the amino acid or peptide residue of a known chromogenic or fluorogenic substrate containing at least one amino acid moiety other than the aspartyl or lysyl moiety and having a free terminal



group which forms an amido bond with Y, which residue may be substituted with one or more organic groups,

Y is a radiolabelled benzylamine group, and

(Pep) is difunctional or polyfunctional peptide residue from a known chromogenic or fluorogenic substrate containing at least two amino acid moieties in peptide linkage with one another and having a free terminal —NH— group which forms an amido bond with X and a free terminal



group which forms an amido bond with Y, which residue may be substituted with one or more organic groups.

4,563,306

PEPTIDES AND PROCESS FOR PREPARING THE SAME

Hiroshi Sugano, Nara; Ryuichi Ishida, Suita, and Michio Yamamura, Tondabayashi, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Japan

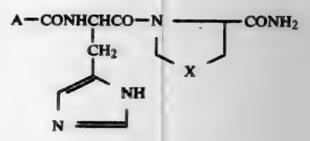
Filed Aug. 17, 1984, Ser. No. 641,978

Claims priority, application United Kingdom, Sep. 7, 1983, 8323909

Int. Cl.⁴ C07C *103/52*; A61K *37/00*

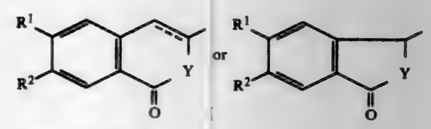
U.S. Cl. 260—112.5 TR **9 Claims**

1. A compound of the formula:



(I)

wherein A is a group of the formula:



or

R^1 and R^2 are the same or different and each hydrogen atom, nitro, amino, a protected amino, hydroxy or lower alkoxy,

Y is oxygen atom or a group of the formula: $—NR^3—$,

R^3 is hydrogen atom or lower alkyl,

X is methylene or sulfur atom and the dotted line is an optional double bond, or a pharmaceutically acceptable acid addition salt thereof.

4,563,307

POLYFUNCTIONAL AZIRIDINES FOR USE IN CROSSLINKING APPLICATIONS

Frank C. Briden, Morristown, N.J., assignor to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Jul. 13, 1983, Ser. No. 513,454

Int. Cl.⁴ C07D *403/12, 403/14*

U.S. Cl. 260—239 E **10 Claims**

1. Bis- and tris-aziridines which are reaction products of (1) ethylene imine and (2) acrylates of alkoxylated polyols selected from the group consisting of the adduct of trimethylol propane, neopentyl glycol, pentaerythritol or glycerol and about 2 to about 12 moles of at least one alkylene oxide selected from the group consisting of ethylene oxide and propylene oxide, said aziridines being substantially free of unreacted acrylate.

4,563,308

RECOVERY OF CAPROLACTAM FROM CAPROLACTAM-CONTAINING DISTILLATION RESIDUE

Otto G. Plantema, Nederweert-Eind; Arnold G. M. Jetten, Ulestraten, and Nicolaas F. Hassen, Sittard, all of Netherlands, assignors to Stamicarbon B.V., Licensing Subsidiary of DSM, Geleen, Netherlands

Filed Aug. 21, 1984, Ser. No. 643,026

Claims priority, application Netherlands, Aug. 31, 1983, 8303028

Int. Cl.⁴ C07D *201/04*

U.S. Cl. 260—239.3 A **14 Claims**

1. Process for recovering caprolactam from the residue remaining following the distillation, under reduced pressure, of impure caprolactam obtained by rearrangement of cyclohexanone oxime with sulphuric acid or oleum, comprising:

distilling said residue under reduced pressure whereby a caprolactam-containing distillate is obtained;

hydrogenating said caprolactam-containing distillate in an aqueous medium to obtain a hydrogenation product;

and recovering caprolactam from the resulting hydrogenation product.

4,563,309

PRODUCTION OF CARBOXYLIC ANHYDRIDES FROM METHYL CARBOXLYATES USING RHODIUM COMPLEX CATALYSTS

Richard W. Wegman, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 16, 1984, Ser. No. 641,219

Int. Cl.⁴ C07C *51/56*

U.S. Cl. 260—549 **18 Claims**

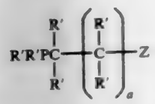
1. A process for the production of carboxylic acid anhydrides of the formula $RC(O)O(O)CCH_3$ which comprises the catalytic reaction of a methyl carboxylate ester of the formula $RC(O)OCH_3$ and carbon monoxide in contact with a homogeneous catalyst system consisting essentially of rhodium metal atom, a phosphorus containing ligand in which there is present at least one oxo oxygen atom attached to a phosphorus atom or a carbon atom to form a Z group and the



group in said Z group is located at least one carbon atom

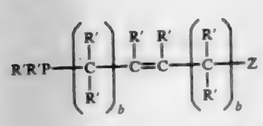
removed from the phosphorus atom of the molecules represented by the formulas

(V)



or

(VI)



and a halogen source; wherein R is an alkyl group having from 1 to 30 carbon atoms, or aryl, aralkyl or alkaryl groups having 6 to 10 ring carbon atoms with from 1 to 10 carbon atoms in the alk-moiety thereof, or alkenyl having from 2 to 30 carbon atoms; R′ is aryl, aralkyl or alkaryl having from 6 to 10 ring carbon atoms and the alkyl moiety of said aralkyl or alkaryl group having from 1 to 10 carbon atoms, or an alkyl group having from 1 to 10 carbon atoms; and wherein 1 or more of said R′ groups can be substituted with a Z group but not more than 3 of said R′ groups in the molecule are so substituted; a is an integer from 0–4; b is an integer from 0–3; and Z is a member selected from the group consisting of



wherein R″ is R′ or —H and said reaction is carried out under mild reaction conditions.

4,563,310

PHENOXYPHENYL PHOSPHINATES

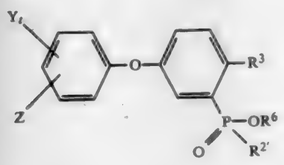
Shy-Fuh Lee, Sunnyvale, and Clive A. Henrick, Palo Alto, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 369,306, Apr. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 340,580, Jan. 18, 1982, abandoned, which is a continuation-in-part of Ser. No. 276,444, Jun. 22, 1981, abandoned, which is a continuation-in-part of Ser. No. 272,422, Jun. 10, 1981, abandoned, which is a continuation-in-part of Ser. No. 264,259, May 18, 1981, abandoned. This application Feb. 16, 1984, Ser. No. 580,768

Int. Cl.⁴ C07F *9/32*

U.S. Cl. 260—941 **10 Claims**

1. A compound of the following formula:



wherein,

Y is hydrogen, lower alkyl, lower alkoxy, lower haloalkyl, lower haloalkoxy, halogen, cyano or nitro;

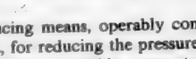
Z is independently selected from the values of Y;

t is zero, one or two;

$R^{2'}$ is lower alkyl or aryl;

R^3 is cyano or nitro;

R^6 is lower alkenyl, lower alkynyl, lower haloalkenyl, lower haloalkynyl, lower alkoxyalkyl, lower alkylthioalkyl, or the group



W′ is oxygen or sulfur;

R^{13} is hydrogen or lower alkyl; and

R^{14} is hydrogen, sodium, potassium, calcium, lower alkyl, lower haloalkyl, lower alkoxyalkyl, lower alkenyl, lower haloalkenyl, lower alkynyl or lower alkylcarbonylalkyl.

4,563,311

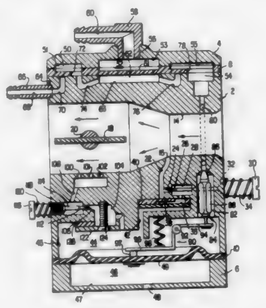
CARBURETOR VALVE

Ralph E. Agnew, Gardena, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Feb. 23, 1984, Ser. No. 582,821

Int. Cl.⁴ F02M *17/04*

U.S. Cl. 261—35 **25 Claims**



1. A diaphragm carburetor for supplying a mixture of an oxygen-containing gas and a liquid, at least partially vaporizable fuel to an internal combustion engine having a crankcase comprising:

passage means for introducing an oxygen-containing gas, having a given pressure, into the internal combustion engine;

pressure reducing means, operably connected to said passage means, for reducing the pressure of said gas;

fuel mixing means, operably connected to said pressure-reducing means, for mixing said fuel with said reduced pressure gas;

fuel control means for supplying a controlled amount of said fuel to said fuel mixing means; and

throttle means, operably connected to said passage means, for controlling the amount of said mixture of said gas and said fuel supplied to said internal combustion engine;

wherein said fuel control means comprises

fuel regulator means for containing a predetermined quantity of said fuel;

fuel inlet means for supplying a controlled amount of said fuel to said fuel regulator means;

fuel outlet means for supplying fuel from said fuel regulator means to said fuel mixing means;

pressure control means, operatively connected to said fuel inlet means, for varying the amount of fuel fed to said fuel regulator means from said fuel inlet means in response to the pressure differential between said reduced-pressure gas and said gas having a given pressure; and

temperature control means, operatively connected to said fuel inlet means, for varying the amount of fuel fed to said fuel regulator means from said fuel inlet means in response to the temperature of said fuel in said fuel regulator means.

4,563,312

GAS SUPPLYING APPARATUS

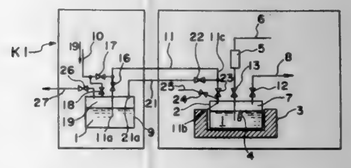
Hiroaki Takimoto; Tetsuo Miyajiri; Kiminobu Yoshida, and Tamio Turita, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 3, 1984, Ser. No. 677,588

Claims priority, application Japan, Dec. 2, 1983, 58-226750

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—59 **12 Claims**



1. A gas supplying apparatus for supplying gaseous raw material of an article to a processing apparatus, comprising:

at least one main vessel for storing liquid raw material of said article, which generates said gaseous raw material constituted by vapor of said liquid raw material mixed with carrier gas drawn into said main vessel so as to supply said gaseous raw material to said processing apparatus;

an auxiliary vessel for storing liquid raw material replenishment for said liquid raw material;

a main pipe for delivering to said main vessel said liquid raw material replenishment stored in said auxiliary vessel, which has an inlet end and an outlet end;

said inlet end being dipped in said liquid raw material replenishment in said auxiliary vessel, while said outlet end is disposed in said main vessel;

a return pipe having a distal end, which is branched, in the vicinity of said outlet end, from a branch portion of said main pipe such that said distal end is disposed in said auxiliary vessel and above a liquid level of said liquid raw material replenishment in said auxiliary vessel;

a first control valve which is provided in said return pipe;

a second control valve which is provided, between said outlet end and said branch portion, in said main pipe; and

a feed means for feeding, through said main pipe, to said main vessel said liquid raw material replenishment in said auxiliary vessel.

4,563,313

HUMIDIFIER

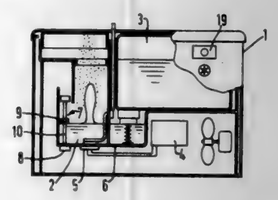
Hajime Tsuaki, Aichi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 2, 1983, Ser. No. 557,586

Claims priority, application Japan, Dec. 24, 1982, 57-232989

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—81 **3 Claims**



1. An air humidifying apparatus comprising:

means defining a water reservoir for retaining a predetermined level of water therein;

water vaporizing means operatively associated with said reservoir for gradually and controllably vaporizing the water retained therein;

detecting means for detecting said water level in said reservoir and for responsively generating a high level signal corresponding to a water level in said reservoir above said predetermined level and for generating a low level signal corresponding to a water level in said reservoir below said predetermined level; and

indicating means operatively connected to said detecting means for visually indicating whether the water level in said reservoir is above or below said predetermined level in response to said high and low level signals, respectively, said indicating means including first and second light-emitting diodes and means to selectively energize said first or second light-emitting diodes in response to said high or low level signals, respectively, to selectively cause light to be emitted thereby corresponding to said high and low water levels to provide visual indication thereof; wherein

each said first and second light-emitting diodes is connected in series to a transistor, the base current of said transistor being controlled by said detecting means.

4,563,314

APPARATUS FOR COOLING COOLING WATER

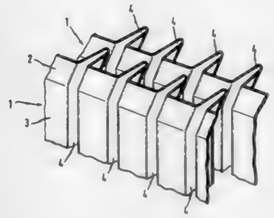
Günter Ernst, Strasse des Roten Kreuzes, D-7500 Karlsruhe 41, and Dieter Wurz, Pfinztal-Söllingen, both of Fed. Rep. of Germany, assignors to Günter Ernst, Fed. Rep. of Germany

Continuation of Ser. No. 216,496, Dec. 15, 1980, abandoned. This application Mar. 25, 1985, Ser. No. 715,466

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950803

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—153 **26 Claims**

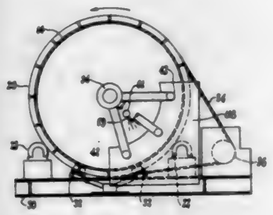


1. In an apparatus for the cooling of cooling water comprising substantially vertical trickler plates arranged essentially in parallel, one side of each trickler plate being essentially wet and the other side of each trickler plate being essentially dry, and two immediately adjacent trickler plates being spaced from each other to form ducts through which cooling air flows, the improvement wherein the trickler plates are provided with a plurlity of depressions in the wet side thereof protruding from the dry side thereof over an area including substantially the vertical height thereof, said depressions being arranged and dimensioned such that (a) the effective contact area for heat exchange between (1) the cooling air flow and (2) the dry side of each of said trickler plates is greater than (b) the effective contact area for heat exchange between (1) the cooling air flow and (2) the wet side of each of said trickler plates.

4,563,315
PRODUCTION OF PARTICULATE SOLIDS IN ROTARY FLUIDIZER

Karl H. Walter, Healey South, and Robert L. Hill, Panorama, both of Australia, assignors to Adelaide & Wallaroo Fertilizers Ltd., Adelaide, Australia

Filed Sep. 27, 1983, Ser. No. 536,320
Claims priority, application Australia, Sep. 27, 1982, PF6073
Int. Cl.⁴ B29B *9/00*
U.S. Cl. 264—8 **12 Claims**



1. Apparatus for the formation of granular solids, said apparatus comprising: a vessel defined by a cylindrical shell having its axis substantially horizontal, a respective end plate at each end of the shell, means for charging a treatment gas into the vessel from a source thereof, and means for charging processing liquid into the vessel from a source thereof, said vessel being open at said ends to enable particulate raw material solids to be charged continuously through one end thereof into the shell and to enable granular solids to be discharged continuously from the other end thereof; said shell being rotatable at from 20% to 80% of its critical speed of rotation so that a tumbling bed of said particulate solids is formed and retained during rotation substantially within the second one, in the direction of said rotation, of the lower quadrants of the shell; said gas charging means comprising a gas supply pipe passing into the vessel through an end thereof, and a plurality of gas discharge conduits in communication with the gas supply pipe and extending within and along substantially the full length of the shell; each of said gas discharge conduits being fixed, within said second quadrant, against rotation with the shell, and having port means comprising a plurality of outlets spaced along substantially its full length; said conduits being fixed within said second quadrant at a location such that during rotation of the shell, each of said conduits is within said tumbling bed by engagement therewith, and at a location such that each of said conduits is spaced from, and discharges said gas from its outlets downwardly toward said shell to cause the gas to be discharged within said bed and to effect contact between said gas and particulate material of the bed at substantially below the elutriation velocities for particles of said material; the means for charging processing liquid having at least one outlet fixed within the shell at a location such that, during rotation of the shell, said liquid charging means is spaced above the bed and liquid discharged therefrom contacts the bed from above along a major portion of the length of said shell with said portion being spaced from said other end of the shell by a minor portion of said length; said gas discharge means being adapted to maintain said tumbling bed in a quasi-fluidized condition along substantially the full length of said shell under the action of said downwardly discharged gas from said outlets and mechanical dispersion of the particulate material of the bed by said conduits, and further adapted to dry said particulate material with respect to liquid from said liquid charging means prior to discharge from said minor portion of said length of the shell.

7. A method for the formation of granular solids, said method comprising the steps of:

(a) charging particulate raw material feed solids to one end of a vessel comprising a horizontally disposed rotating shell and a respective end plate at each end of the shell, to form a tumbling bed of particulate solids which bed is substantially retained in the second one, in the direction of rotation of the shell, of the lower quadrants of the vessel;

(b) simultaneously with rotation of said shell, charging treatment gas from a source thereof to a supply pipe passing into the vessel from one end thereof, and from the supply pipe to a plurality of discharge conduits each extending within and along substantially the full length of said shell, each said conduit having port means comprising a plurality of downwardly opening gas outlets spaced along substantially its full length and being fixed against rotation with said shell at a location, within said tumbling bed and spaced from the shell, such that each of said conduits mechanically disperses particulate material of the bed by engagement therewith and discharges said gas downwardly within said bed and toward the shell to effect contact between said gas and particulate material in which said bed is maintained in a quasi-fluidized condition along substantially the full length of said shell under the action of said downwardly discharged gas from said outlets and mechanical dispersion, said contact being substantially below elutriation velocities for particles of said material;

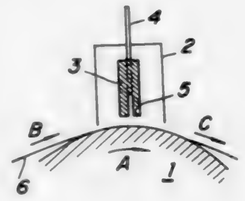
(c) simultaneously with charging said treatment gas, charging processing liquid into said vessel so as to be released therein from at least one outlet spaced above the bed such that the processing liquid contacts the bed from above along a major portion of the length of said shell which portion is spaced from said other end of the shell; and

(d) simultaneously with charging said treatment gas and processing liquid, discharging granular solids from the other end of the vessel, said discharged solids being substantially dried with respect to said liquid by said gas.

4,563,316
PRODUCTION OF POLYOLEFIN SHAPED PRODUCT

Tsutomu Isaka, and Hiroshi Nagano, both of Inuyama, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Oct. 7, 1983, Ser. No. 540,144
Claims priority, application Japan, Oct. 8, 1982, 57-178126; Jan. 26, 1983, 58-11912
Int. Cl.⁴ B29D *7/20*
U.S. Cl. 264—22 **2 Claims**



1. A process for enhancing the adhesion property of the surface of a polyolefin shaped product which comprises applying corona discharge to said polyolefin surface as it continuously moves between a discharge electrode and another electrode disposed opposite thereto while jetting a gaseous material, other than air itself, onto that portion of the said surface to which the corona discharge is being applied so as to achieve the following relationships among the carbon atoms, the nitrogen atoms and the oxygen atoms present within 100 Å from the said surface:

(a) $-3.5 \leqq ([O]/[C]-[O']/[C'])/([N]/[C]-[N']/[C']) \leqq 1.8$

(b) $3.0 \leqq [N']/[C']$

wherein [C], [N] and [O] are respectively the numbers of the carbon atoms, the nitrogen atoms and the oxygen atoms within 100 Å from said surface before the application and [C'], [N'] and [O'] are respectively the numbers of the carbon atoms, the nitrogen atoms and the oxygen atoms within 100 Å from said surface after the application, the number of the carbon atoms being always taken as 100.

4,563,317
PROCESS OF PRODUCING POROUS THERMOPLASTIC RESIN ARTICLE

Eiichi Kamei, and Yasushi Shimomura, both of Hirakata, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Dec. 27, 1984, Ser. No. 686,654
Claims priority, application Japan, Dec. 28, 1983, 58-247312; Dec. 28, 1983, 58-247313; Oct. 4, 1984, 59-209181
Int. Cl.⁴ B29C *55/02, 55/22, 35/16*
U.S. Cl. 264—28 **19 Claims**

1. A process of producing a porous polypropylene hollow yarn which comprises a step for forming a large number of micropores in the surrounding wall of said yarn by drawing a polypropylene hollow yarn, which is characterized in that the drawing process is performed in a medium selected from the group consisting of nitrogen, oxygen, argon, carbon monoxide and a hydrocarbon at a temperature in the range of the freezing point to 50° C. above the boiling point of said medium.

12. A process of producing a porous thermoplastic resin film which comprises a step for forming a large number of micropores in said film by drawing a thermoplastic resin film, which is characterized in that the drawing process is performed in a medium selected from the group consisting of nitrogen, oxygen, argon, carbon monoxide, methane and ethane at a temperature in the range of the freezing point to 50° C. above the boiling point of said medium under the condition that the temperature for the drawing is not higher than −70° C.

4,563,318
POLYVINYL CHLORIDE MOLDING COMPOSITION, A PROCESS FOR ITS PRODUCTION, AND ITS USE

Karsten Flatau, Haltern, Fed. Rep. of Germany, assignor to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 406,430, Aug. 9, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 641,933
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1981, 3131609
Int. Cl.⁴ C08L *25/14, 27/06;* **C08J** *5/18*
U.S. Cl. 264—119 **4 Claims**

1. In the Luvitherm method for preparing polyvinyl chloride sheet stock comprising calendering a polyvinyl chloride molding composition at a low temperature into sheet stock using rollers, thereby obtaining a sheet having low mechanical strength, then sintering the latter at a higher temperature for a short time, and thereafter stretching the film,

the improvement wherein the polyvinyl chloride molding composition consists essentially of, as processing aid, 0.5–3.0% by weight of a simple copolymer consisting essentially of 40–90% by weight of vinyl monomers whose corresponding homopolymers have a glass temperature below 0° C. and of 10–60% by weight of styrene; and the balance being emulsion polyvinyl chloride;

wherein, in the processing aid copolymer, the monomer with a glass temperature below 0° C. is an acrylic acid ester whose esterifying moiety is a C_{4-12}-alkyl group.

4,563,319
METHOD OF MAKING QUADRUPLE PROFILE TUBING

Steven Ausnit, New York, N.Y., and Donald L. Van Erden, Wildwood, Ill., assignors to Minigrip, Inc., Orangeburg, N.Y.

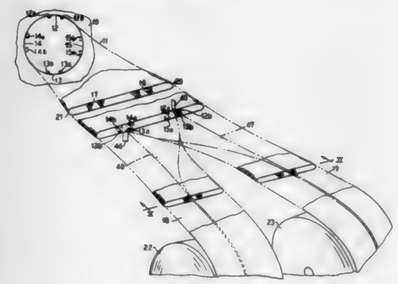
Filed Mar. 3, 1983, Ser. No. 471,740
Int. Cl.⁴ B29C *53/36*
U.S. Cl. 264—146 **14 Claims**

11. A method of making a plastic film structure for forming bags with integral pressure interlocking rib and groove elements on the confronting top edges comprising the steps of:

forming a continuous one-piece tube hang on the inner surface thereof a first pair of closely spaced interlocking elements, a second pair of closely spaced interlocking elements,

providing a third pair of closely spaced interlocking elements intermediate the first and second pairs, and a fourth pair of closely spaced interlocking elements positioned diametrically opposed to the third pair,

each of said pairs including a rib and groove element with the rib and groove elements alternating in a circumferential direction around the tube;

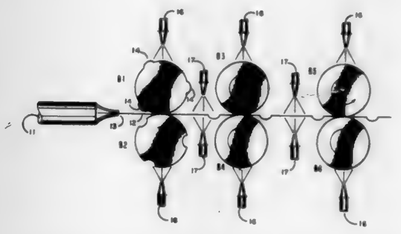


flattening said tube so that the first and fourth pair are aligned and the second and third pair are aligned to form first and second sets; slitting the tube longitudinally through one layer of the first set and through the opposite layer of the second set; and folding one of the elements of the first set adjacent the first slit over onto the second set and folding another of said elements of the second set adjacent the second slit being over onto the first set.

4,563,320
MAKING THERMOPLASTIC ITEMS

Allan C. Morgan, Manchester, Mass., assignor to Hummor, Inc., Manchester, Mass.

Continuation-in-part of Ser. No. 459,461, Jan. 20, 1983, abandoned. This application Nov. 26, 1984, Ser. No. 674,599
Int. Cl.⁴ B29C *17/00;* **B29D** *7/02*
U.S. Cl. 264—151 **10 Claims**



1. A method of continuously making thermoplastic polymer items which method includes the steps of,

expelling from an extruder outlet an extrudate band of thermoplastic polymer at a temperature at the low end of the extruding range substantially between 350° and 550° F.,

cooling said extrudate band into the 200° F. range just above the glass transition temperature of said polymer as it moves away from said extruder outlet through a liquid bath,

continuing to move the cooled band away from said extruder outlet and said liquid bath through a gas region to allow the temperature of said cooled band to homogenize,

directing the band with homogenized temperature along a predetermined path further from said extruder outlet

between meshing dies moving with said band while forming a predetermined shape therein,
separating the meshing dies while they move with said band to leave the impression of an item therein,
and further cooling said band to harden the shape of the item formed therein.

4,563,321

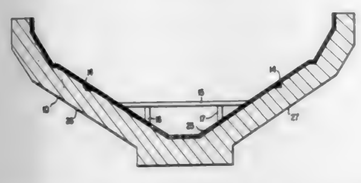
METHOD OF PRODUCING A PLASTIC UNITARY CURVED STRUCTURE WITH TWO SURFACES AND A HONEYCOMB SHAPED CORE

James D. Gessford, P.O. Box 5856, Bancroft, Id. 83217

Continuation of Ser. No. 841,974, Oct. 13, 1977, abandoned, which is a division of Ser. No. 700,214, Jun. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 513,072, Oct. 8, 1974, abandoned. This application Sep. 17, 1980, Ser. No. 188,111

Int. Cl.⁴ B32B *31/04*

U.S. Cl. 264—255 **13 Claims**



1. In a method of forming a unitary curved structure with a honeycomb core having impervious surfaces on both sides of said core, the steps of applying a catalyzed liquiform resin containing styrene with a matrix of material performing the function of holding a reservoir of said catalyzed resin in place onto a curved form; placing a honeycomb-type structure capable of being saturated by said liquiform resin as used in the method into said reservoir of catalyzed resin; sealing the top of said honeycomb structure with an impervious layer, permitting said catalyzed resin to be wicked into said honeycomb structure whereby it substantially saturates throughout and coats the walls of the honeycomb structure without filling the cells thereof and reaches a gel stage while said seal is applied; removing said seal and venting styrene gas and vapor from said honeycomb structure; applying a further layer comprised of said catalyzed resin and a fibrous mat over said honeycomb structure which substantially bridges said cells, said further layer fusing with said resin coat and being sufficiently permeable so that further styrene gases and vapors liberated during the curing of said resin throughout the structure are vented from said cells through said further layer; and said gases and vapors have been sufficiently vented from said cells applying more resin over said further layer permanently to seal and strengthen said further layer.

4,563,322

METHOD AND APPARATUS FOR CONTINUOUSLY FILLING GROOVES IN SASH BARS WITH HEAT INSULATING MATERIAL

Yoshitaka Nagai, and Nobushige Doguchi, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 564,025

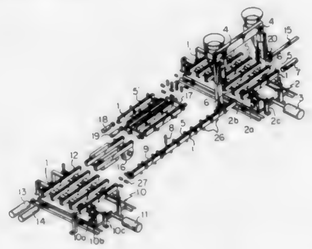
Claims priority, application Japan, Dec. 25, 1982, 57-226544

Int. Cl.⁴ B29D *27/04*; **B29C** *13/02*

U.S. Cl. 264—267 **5 Claims**

1. A method for continuously filling grooves in metal sash bars with heat insulating synthetic resin which comprises:
closing the opposite ends of said groove of each of said metal sash bars with an end cap having a thinned top edge;
continuously moving said metal sash bars one after another through a path below an injection device with the grooves facing upwardly and with at least said top edges of said end caps of the preceding sash bar and the succeeding sash bar being in close contact with each other on the upstream of said injection device by moving the bar beneath the injection device at a first speed and by moving the succeeding sash bar at a rapid second speed higher than the first speed until the end cap of the leading end makes contact with the end cap of the trailing end of the sash bar moving at the first speed, then moving both of the bars at the first speed; and
continuously injecting a solution of said heat insulating synthetic resin from said injection device into said grooves of said sash bars at a constant injecting rate while continuously moving said sash bars one after another along the path therebelow.

5. An apparatus for continuously filling grooves in metal sash bars with heat insulating synthetic resin which comprises:
means for closing the opposite ends of said groove of each of said metal sash bars by attaching end caps having end walls with a thinned top edge;
means for continuously injecting a solution of heat insulating synthetic resin including an injection device being positioned downstream of the means for closing; and



means for continuously moving said metal sash bars one after another through a path below said injection device with the grooves facing upwardly and with at least said top edges of said end caps of the preceding sash bar and the succeeding sash bar being in close contact with each other on the upstream of said injection device, said means for continuously moving including a first feed device and a rapid second feed device, said first feed device being positioned near the injection device to move the sash bars beneath the injection device at a first speed and said second feed device being positioned upstream of the first device and moving the succeeding sash bar toward the preceding sash bar which is receiving a solution from the injection device at a higher rate of speed until a leading end of the succeeding bar contacts a trailing end of the preceding bar, said second feed device then advancing the succeeding bar at said first speed so that both bars move at the first speed beneath the injection device and the groove of the sash bars moving in the path below the means for injecting are filled with the solution one after the other.

4,563,323

METHOD AND APPARATUS FOR THE MANUFACTURE OF A CONTINUOUS SERRATED BELT

Rüdolf Breher, Porta Westfalica, Fed. Rep. of Germany, assignor to BRECO Kunststoffverarbeitungs-GmbH & Co. KG, Porta Westfalica, Fed. Rep. of Germany

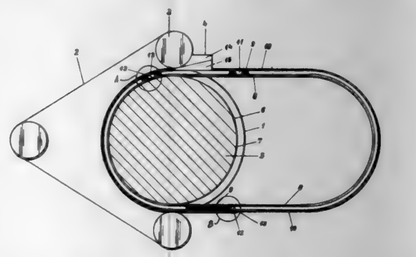
Filed Dec. 9, 1983, Ser. No. 560,013

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1982, 3248264

Int. Cl.⁴ B29B *45/03*

U.S. Cl. 264—279.1 **15 Claims**

1. A method for the production of an endless reinforced toothed belt from a mouldable material with embedded reinforcing elements extending along the longitudinal direction of the toothed belt comprising placing a reinforcing coil on the exterior of a moulding ring having alternate teeth and depressions, said moulding ring being flexible as regards bending and being substantially elastically non-stretchable in a longitudinal direction, securing the ends of said reinforcing coil to the moulding ring, said moulding ring having a larger circumferential length than the circumference of said moulding wheel such that a portion of said moulding ring is circumferentially spaced from said moulding wheel, forming part of a mould cavity utilizing said moulding ring and a moulding wheel by disposing said moulding ring in a channel in said moulding wheel with the sides of said channel having side flanges forming part of said mould cavity, positioning a cover in contact with the outer periphery of said flanges such that said cover closes said mould cavity, closing a beginning portion of said mould cavity with an injection means by disposing said injection means in sealing engagement with said moulding ring, said flanges and said cover, introducing said moulding material into said beginning portion of said mould cavity by said injection means to mould the beginning of said belt in said beginning portion of said mould cavity, rotating said moulding wheel and advancing said moulding ring, continuing to introduce said moulding material until said beginning of said moulded belt re-enters the beginning portion of said mould cavity, joining said beginning of said moulded belt to the end of said moulded belt by continuing to introduce said mouldable material into the beginning portion of said mould cavity as said beginning of said moulded belt enters said beginning portion of said mould cavity, removing the moulding ring with the formed endless



toothed belt from the moulding wheel, and separating the toothed belt from the moulding ring.

10. Apparatus for the production of an endless reinforced toothed belt from a mouldable material with embedded reinforcing elements extending generally along the longitudinal length of the belt, comprising a moulding ring having alternate teeth and depressions, said moulding ring being flexible as regards bending and being substantially elastically non-stretchable in a longitudinal direction, a coil of reinforcing elements disposed about said moulding ring, a moulding wheel having a channel defined by a circumferential surface and two lateral flanges having a diameter greater than the diameter of said circumferential surface, said moulding ring having a diameter greater the diameter of said flanges such that a portion of said moulding ring is circumferentially spaced from said flanges, said moulding ring being disposed within said channel between said two flanges, said alternate teeth and depressions of said moulding ring together with said flanges of said moulding wheel defining part of the mould cavity for the toothed belt being formed, a cover means engaging the outer periphery of said flanges such that said cover means defines another part of said mould cavity, injection means for injecting mouldable material into said mould cavity, said injection means being sealingly in contact with the outer radial ends of said teeth of said moulding ring and sealingly in contact with said cover means so as to provide a closed mould cavity into which said mouldable material is injected, said moulding wheel being rotated to advance said moulding ring one revolution to thereby form a closed loop toothed belt.

4,563,324

METHOD OF INJECTION MOULDING

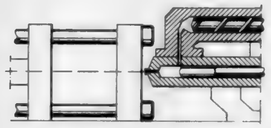
Josef Kubát, Solparksvägen 3, S-1710 35 Solna, and Jan-Anders E. Manson, Abborrstige, S-28b 00 Örkelljunga, both of Sweden

Continuation of Ser. No. 317,422, Nov. 2, 1981, abandoned, which is a division of Ser. No. 196,553, May 20, 1980, abandoned. This application Nov. 7, 1983, Ser. No. 549,636

Claims priority, application Sweden, Sep. 29, 1978, 7810264

Int. Cl.⁴ B29F *1/00*

U.S. Cl. 264—328.13 **5 Claims**



1. A method of injection moulding with a machine having injection means comprising:
firstly injecting melt with the injection means into a mould cavity under a first pressure not exceeding normal injection moulding pressure;
secondly, applying a second pressure of the order of 200–1000 MPa in the mould cavity independently of the injection means and substantially greater than said first pressure, while preventing flow back of melt from the mould cavity into the injection means during application of said second pressure;
releasing said second pressure immediately prior to opening the mould cavity; and
opening the mould cavity and ejecting a moulded article therefrom.

4,563,325

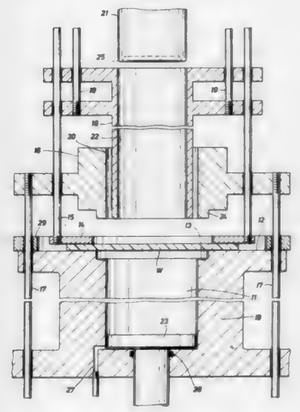
FORMING PLASTIC ARTICLES IN SOLID STATE

Paul M. Coffman, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 20, 1983, Ser. No. 489,628

Int. Cl.⁴ B29C *51/06, 51/08*

U.S. Cl. 264—550 **5 Claims**



1. The method of forming an integral hollow article having

a bottom and contiguous side walls which comprises (1) placing a solid-state deformable thermoplastic blank of larger size than the area defined by the rim of the article, at a forming temperature below its crytalline melting point, above the opening of the female die; (2) holding said blank loosely in place; (3) forcing a forming plunger down on said blank to only a part of the depth of the final draw to pull said blank partly into a die cavity; (4) forcing a rim holding plunger down to push to the rim of said blank into a recessed annular seat and clamp it into place; and (5) forcing said forming plunger, adapted to stretch-form the blank, completely down into the die cavity to achieve full depth of the final draw, so that the portion of said blank which was outside the area defined by said rim of said hollow article is incorporated in said wall of said hollow article thus increasing the thickness of said wall of said hollow article.

4,563,326

HIGH TEMPERATURE NUCLEAR POWER PLANT WITH A HOT-GAS PIPELINE WHICH CAN BE SEPARATED FROM THE REACTOR VESSEL

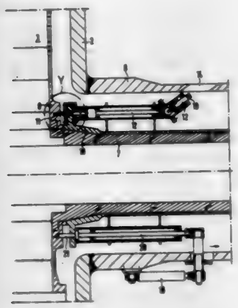
Manfred Ullrich, Bergisch-Gladbach, and Rainer Sahler, Cologne, both of Fed. Rep. of Germany, assignors to Interatom Internationale Atomreaktorbau GmbH, Bergisch-Gladbach, Fed. Rep. of Germany

Filed May 27, 1983, Ser. No. 498,879

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1982, 3220610

Int. Cl.⁴ G21C *15/02*

U.S. Cl. 376—292 **2 Claims**



1. In a high-temperature nuclear power plant, including a reactor, an inner vessel completely enclosing said reactor except for an opening formed in said inner vessel, an outer metallic reactor pressure vessel disposed outside said inner vessel, a stub integral with said outer vessel, and a hot gas pipeline disposed in said stub, the improvement comprising a screw connection inside the outer vessel for fastening the hot gas pipeline to the inner vessel at said opening, means accessible from outside the outer vessel for releasing said screw connection from outside the outer vessel, and means connected to the hot gas pipeline for applying a force to the hot gas pipeline separating the hot gas pipeline from the inner vessel after said screw connection has been released.

4,563,327

LIQUID URANIUM ALLOY-HELIUM FISSION REACTOR

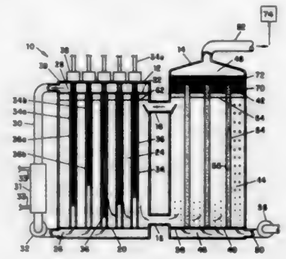
Vladimir Minkov, Skokie, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 13, 1984, Ser. No. 620,308

Int. Cl.⁴ G21C *1/24, 3/52*

U.S. Cl. 376—359 **10 Claims**

1. A nuclear fission reactor, comprising a core vessel and a heat exchanger vessel and passage means coupling the vessels together at their respective upper and lower ends to define a continuous loop for the unidirectional flow of a liquid through the vessels, means for supporting and moving a plurality of control elements adjustably within the core vessel operable to vary their relative presence therein, fissionable fuel confined in the liquid phase in the vessels at a depth up to the upper passage means, a lattice of a poison or moderator material in the passages and in the heat transfer vessel to preclude any fission



therein, means to admit a heat transfer gas into the lower end of the heat exchanger vessel, said gas thereupon being effective to bubble through the liquid fuel therein and cause said liquid to circulate upwardly in the heat exchanger vessel and downwardly in the cooled core vessel, and means to direct the heat transfer gas from the upper end of the heat exchanger vessel to conventional energy conversion means outside of the reactor heat exchanger vessel.

4,563,328

NUCLEAR REACTOR FUEL ASSEMBLY

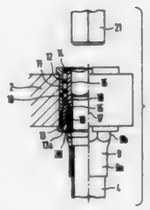
Alexander Steinke, Ebermannstadt, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

Filed Oct. 25, 1983, Ser. No. 545,064

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1982, 3240061

Int. Cl.⁴ G21C *3/30*

U.S. Cl. 376—446 **6 Claims**



1. Nuclear reactor fuel assembly with two support plates and a holding rod connecting the two support plates rigidly with mutual spacing, the holding rod having a longitudinal axis passing through both support plates, and being held at one end in a lead-through in one of the two support plates, said one support plate being formed of a single plate, comprising, in the lead-through, an elongated holding body for receiving the holding rod therein, said holding body having a longitudinal axis coinciding with that of the lead-through and being rotatable about the longitudinal axis thereof and displaceable in a direction of the longitudinal axis thereof; said lead-through being formed with a stop shoulder at an outer side of the one support plate, said stop shoulder being spaced from a first holding shoulder in the axial direction of said lead-through; means for rotating said holding body or the holding rod relative to one another about said longitudinal axis so as either to connect said holding body rigidly to an end of the holding rod and tighten it against a second holding shoulder formed in the one support plate or so as to detach said holding body, from the holding rod; said second holding shoulder, as viewed in a direction of said longitudinal axis of the holding rod, being located between said stop shoulder and the other side of said one support plate; and a spring element braced against said stop shoulder and pressing said holding body elastically against said holding shoulder; said spring element being braced at one end thereof against said stop shoulder and, at the other end thereof, against said first holding shoulder at the outside of said holding body.

4,563,329

POWDER ALLOY SHEET FOR FORMING A WEAR RESISTANT LAYER ON A WORKPIECE

Tuyoshi Morishita; Sigemi Ohsaki, and Yashuhumi Kawado, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 31, 1983, Ser. No. 547,102

Claims priority, application Japan, Nov. 1, 1982, 57-193125

Int. Cl.⁴ B22F *5/00*

U.S. Cl. 419—9 **14 Claims**

1. A powder alloy sheet including powders of wear-resistant Fe—M—C type ternary eutectic alloy and acrylic resin binder, wherein M is at least one of Mo, P and B, said ternary alloy being contained in a quantity of 85 to 97% by volume and having 10 to 50 vol. % of liquid phase at a temperature of about 1000° to 1150° C., said acrylic resin binder being contained in a quantity of 15 to 3% by volume.

11. A method for forming a wear-resistant layer on a workpiece comprising steps of providing a powder alloy sheet comprised of 85 to 97 vol. % of powders of wear-resistant Fe—M—C type ternary eutectic alloy wherein M is at least one of Mo, P and B and 15 to 3 vol. % of acrylic resin binder, said eutectic alloy having 10 to 50 vol. % of liquid phase at a temperature of about 1000° to 1150° C., coating acrylic resin on one side of the sheet, bonding the sheet on a workpiece surface, heating the workpiece under a non-oxidizing atmosphere at a heat-up rate wherein a sufficient liquid phase is produced but an excessive amount of gas is not produced to a semi-liquid phase sintering temperature to sinter the alloy powders.

4,563,330

SAMARIUM-COBALT MAGNET ALLOY CONTAINING PRASEODYMIUM AND NEODYMIUM

Kalatur S. V. L. Narasimhan, Moaroeville, and Francis S. Snyder, Coraopolis, both of Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Filed Sep. 30, 1983, Ser. No. 538,026

Int. Cl.⁴ C22C *19/07*

U.S. Cl. 420—435 **1 Claim**

1. A magnet alloy consisting essentially of, in weight percent, 10 to 30 samarium, total 10 to 21.7 of praseodymium and neodymium, 0.5 to 2 total of equal amounts of iron and tin and balance cobalt.

4,563,331

SYSTEM FOR MEASURING BIOLUMINESCENCE FLASH KINETICS

Jon R. Losee, and David Lapota, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 21, 1983, Ser. No. 553,656

Int. Cl.⁴ G01N *21/62, 21/70*

U.S. Cl. 422—52 **15 Claims**

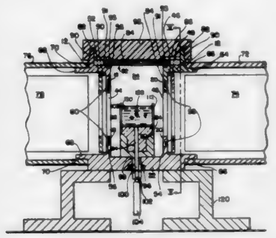
1. A test chamber for determining bioluminescent signatures of organisms comprising:

a light tight test chamber having a first light port in a first surface thereof, having a doorway in a second surface thereof and having a chamber base;

a door pivotally mounted on said light tight chamber having opened and closed positions and covering said doorway when in said closed position;

a sample holder support fixture secured to said chamber base within the interior of said test chamber, having a passageway extending from the interior of said test chamber to the exterior of said test chamber;

an organism sample holder removably positioned within said sample holder support fixture and being removable to the exterior of said test chamber, having a top portion and a base portion, said base portion having a passageway extending at one end through said base portion for alignment



with said sample holder support fixture passageway and extending at its other end to said top portion;

means positioned within said sample holder top portion and covering said base portion passageway for preventing said organisms from entering said passageway while permitting fluids containing the organisms to be drawn into said passageway;

first light detecting means secured to said light tight chamber adjacent said first light port for providing an electrical output when irradiated by light, emitted from said organisms, passing through said first light port.

4,563,332

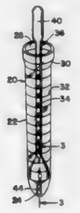
LIQUID SAMPLING APPARATUS WITH RETENTION MEANS

Vance C. Mitchell, Irvine, and Thomas A. Safstron, Orange, both of Calif., assignors to ICL Scientific, Inc., Fountain Valley, Calif.

Filed Apr. 27, 1983, Ser. No. 489,030

Int. Cl.⁴ G01N *1/10, 1/18*

U.S. Cl. 422—100 **11 Claims**



1. Apparatus for use in preparing a sample of a liquid for examination and analysis, the apparatus comprising:

a tube for receiving and containing a liquid sample, said tube having a first sealing surface on an interior wall portion thereof; and

an elongated pipette dimensioned for axial insertion into said tube to isolate a portion of the liquid therein, said pipette having a flexible second sealing surface thereon for sealingly contacting said first sealing surface to isolate a portion of fluid, and further having elongated peripherally

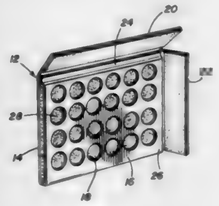
enlarged surface means positioned on said second sealing surface essentially parallel to the elongated dimension of said pipette, and dimensioned for frictionally engaging the wall of said tube to maintain the sealing contact between said first sealing surface and said second sealing surface, over a short range of axial movement of the pipette as the sealing surfaces are brought into contact, said elongated peripherally enlarged surface is positioned and dimensioned on said second sealing surface which is sufficiently flexible to maintain a sealing relationship between said first and second sealing surfaces.

4,563,333

DEODORIZING FITTING FOR AIR FILTERS

Walter J. Frigon, 591 California Ave., Bricktown, N.J. 08753

Filed Aug. 22, 1984, Ser. No. 643,413
Int. Cl.[4] A62B *7/08*
U.S. Cl. 422—122 **2 Claims**



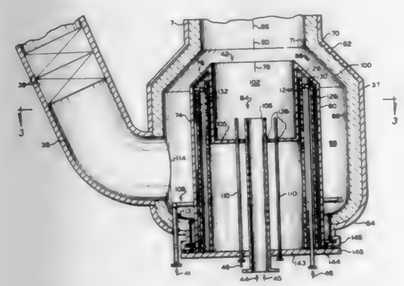
1. For use in scenting circulating air in a domestic dwelling or other building having air circulation ducting and mounting means in the ducting for an air filter, a packet containing air scenting material, and means for securing the packet to the filter in a position for scenting the air passing through the filter, wherein the packet is flat and rectangular and formed of perforated sheet material containing the scenting material, and the securing means comprises a fold-back adhesive-backed tab on one edge of the packet perpendicular to the plane of the packet.

4,563,334

CATALYTIC CRACKING UNIT

George E. Hays; Richard K. Young, and Richard H. Nielsen, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 2, 1983, Ser. No. 557,551
Int. Cl.[4] B01J *8/18*
U.S. Cl. 422—140 **10 Claims**



1. Apparatus comprising
(a) an inner tubular wall member having a first end and a second end;
(b) an outer tubular wall member generally concentrically positioned around the inner tubular wall member and having a first end and a second end, an annulus being defined between the inner wall member and the outer wall member;
(c) an end wall member connecting the first end of the inner wall member to the first end of the outer wall member;
(d) a closure across the second end of the inner tubular wall member, an atomization chamber being defined between the first end of the inner tubular wall member and the closure;
(e) a first tubular baffle having a first end and a second end and apertures therethrough and wherein the first baffle is positioned in the annulus between the inner wall member and the outer wall member;
(f) a second tubular baffle having a first end and a second end and apertures therethrough positioned in the annulus between the inner wall member and the outer wall member between the first tubular baffle and the inner wall member,
(g) a closure across the second end of the outer tubular wall member; and
(h) means extending through the closure across the second end of the inner tubular wall member for supplying an atomizing fluid to the atomization chamber.

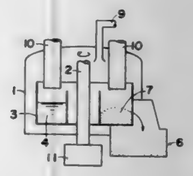
8. Apparatus comprising:
a catalyst lift pot having a longitudinal axis, an upper end, a lower end and an interior surface;
a riser reactor having an upper end and a lower end with the lower end connected to the upper end of the lift pot;
a tubular member extending into the lift pot from the lower end of the lift pot, said tubular member comprising
an inner tubular wall member having a first end and a second end;
an outer tubular wall member generally concentrically positioned around the inner tubular wall member and having a first end and a second end, an annulus being defined between the inner wall member and the outer wall member;
an end wall member connecting the first end of the inner wall member to the first end of the outer wall member;
a closure across the second end of the inner wall member, an atomization chamber being defined inside the inner tubular member between the first end and the second end;
a first tubular baffle having apertures therethrough positioned in the annulus between the inner wall member and the outer wall member; and
a second tubular baffle having apertures therethrough positioned in the annulus between the inner wall member and the outer wall member between the first tubular baffle and the inner wall member;
the outer tubular wall member having a generally cylindrical exterior surface and the catalyst lift pot having a generally cylindrical interior surface generally concentric with the exterior surface of the outer tubular wall member to form a catalyst lift chamber of generally annular cross-section between the exterior surface of the outer tubular wall member and the interior surface of the lift pot;
a means extending through the end wall member of the tubular member for introducing an oil feedstock into the atomization chamber for atomization therein and flow generally longitudinally into the lower end of the riser reactor; and
a means for introducing a hot fluidizable cracking catalyst into the catalyst lift chamber.

4,563,335

APPARATUS FOR CONTINUOUSLY CONCENTRATING AND DENITRATING NITRATE SOLUTION BY MICROWAVE

Hideo Akiyama, Katsuta; Akio Todokoro, Ibaraki, and Osamu Takanobu, Katsuta, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,613
Claims priority, application Japan, Dec. 21, 1982, 57-224560
Int. Cl.[4] B01J *1/10*
U.S. Cl. 422—159 **6 Claims**



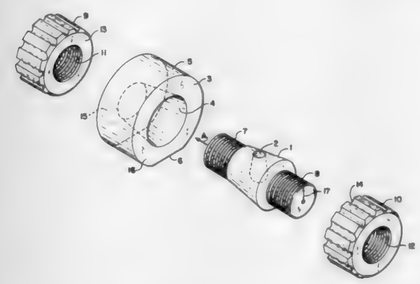
1. An apparatus for continuous treatment of a nitrate solution of nuclear fuel material by heating, evaporating, concentrating and denitrating said nitrate solution to produce a denitrated powder, said apparatus comprising:
an oven into which microwave energy is applied through waveguide means;
an evaporation concentrator vessel disposed within said oven, said evaporation concentrator vessel including a stationary cylindrical vessel body and a tubular waveguide inserted into said cylindrical vessel body, said tubular waveguide having openings at the end and on the sides thereof, said cylindrical vessel body having a size for limiting the amount of material to be treated to less than that necessary for maintaining criticality for safety of material to be treated;
a concentrating and denitrating vessel disposed within said oven, said concentrating and denitrating vessel including a circular vessel body supported rotatably about its center and a plurality of partition plates positioned radially inside said vessel body so as to divide the interior of said vessel body into a plurality of compartments, each of said compartments having a size for limiting the amount of material to be treated to less than that necessary for maintaining criticality for safety of material to be treated;
a first pipe for supplying a nitrate solution of nuclear fuel material from the outside of the oven into said evaporation concentrator vessel;
a second pipe for supplying a concentrated solution produced in said evaporation concentrator vessel into one of said compartments in said concentrating and denitrating vessel;
a pan for receiving a denitrated powder produced from said concentrated nitrate solution in one of said compartments in said concentration and denitrating vessel, said pan being positioned adjacent to a portion of the outer periphery of said concentrating and denitrating vessel;
means for transferring said denitrated powder from one of said compartments in said concentrating and denitrating vessel into said pan; and
a gas discharging pipe for discharging gas produced during the treatment from said oven; said continuous treatment by heating, evaporating and concentrating the supplied nitrate solution being accomplished continuously in said evaporation concentrator vessel to form the concentrated nitrate solution and said continuous treatment by further heating, evaporating, concentrating and denitrating the concentrated nitrate solution being accomplished continuously and in sequence in each of said compartments in said concentrating and denitrating vessel during one rotation thereof to form the denitrated powder.

4,563,336

REACTION CHAMBER ASSEMBLY

Robert C. McKnight, 1404 Neptune Ave., Leucadia, Calif. 92024

Filed Mar. 5, 1984, Ser. No. 586,433
Int. Cl.[4] B01J *19/02;* **B01L** *3/00*
U.S. Cl. 422—240 **16 Claims**



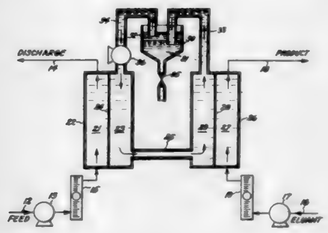
1. A reaction chamber assembly comprising: a pin member having tapered portion along at least part of its length and having a radial surface portion extending along said tapered portion, said pin member having at least one chamber in its tapered portion, said at least one chamber having a single opening therein, said opening being located on the radial surface of the tapered portion of said pin member; a collar member having a through bore which is tapered along its length, the bore taper corresponding to the tapered portion of the pin member; and a closure mechanism urging said tapered portion of the pin member into said bore such that there is a sealing engagement between the radial surface portion of said tapered portion and said collar member to seal said opening of said at least one chamber.

4,563,337

METHOD AND APPARATUS FOR CONTINUOUS ION EXCHANGE

Bang M. Kim, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 13, 1982, Ser. No. 407,963
The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.
Int. Cl.[4] C01G *3/00, 37/14;* **B01D** *11/00;* **B01F** *1/00*
U.S. Cl. 423—24 **16 Claims**



1. A method for continuous recovery of selected metal ions from an aqueous solution containing at least one metal ion species, said method comprising the steps of:
contacting said metal ion containing solution with a first side of a first membrane disposed in a first chamber;
contacting the second side of said first membrane in said first chamber with an organic liquid ion exchange material for selective extraction of at least one of said metal ion species from said metal ion containing solution said liquid ion

exchange material being chosen to selectively extract at least one metal ion specie from said aqueous solution;

circulating said liquid ion exchange material that has been in contact with said second side of said first membrane in said first chamber, so as to contact a first side of a second membrane disposed in a second chamber with said circulating liquid ion exchange material;

passing the liquid ion exchange material that has been in contact with the first side of said second membrane through aqueous separation means for removal of water from said liquid ion exchange material;

recirculating the treated liquid ion exchange material from said separator so as to recontact the second side of said first membrane in said first chamber; and

passing an eluant solution in contact with the second side of said second membrane so as to selectively extract at least one of said metal ion species, said eluant being chosen to selectively extract at least one of said metal ion species, extract at least one metal ion species from in said liquid ion exchange material.

3. An apparatus for continuous metallic ion recovery from an aqueous metallic ion containing solution, said apparatus comprising:

first, open-loop means for contacting said metallic ion containing solution with a first side of a first membrane;

second, closed-loop means for circulating an organic liquid ion exchange material in a continuous loop, in contact with a second side of said first membrane, in contact with a first side of a second membrane, and through aqueous separation means; and

third, open-loop means for contacting an eluant solution with a second side of said second membrane for selective extraction of said at least one metallic ion species from said liquid ion exchange material.

4,563,338

SELECTIVE CHLORINATION METHOD FOR MIXTURES OF METALLIC OXIDES OF NATURAL OR SYNTHETIC ORIGIN

Francoise Séon, Montreuil; Gérard Picard, Charenton-le-Pont; Bernard Tremillon, Bures sur Yvette, and Yves Bertaud, Saint Jean de Maurienne, all of France, assignors to Aluminium Pechiney, Paris, France

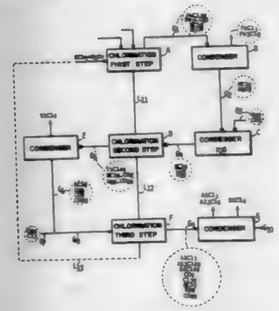
PCT No. PCT/FR82/00160, § 371 Date May 25, 1983, § 102(e) Date May 25, 1983, PCT Pub. No. WO83/01249, PCT Pub. Date Apr. 14, 1983

PCT Filed Sep. 29, 1982, Ser. No. 504,037

Claims priority, application France, Oct. 1, 1981, 81 18825

Int. Cl.⁴ C01B *33/08;* **C01F** *7/60;* **C01G** *23/02, 49/10*

U.S. Cl. 423—76 **18 Claims**



1. A method for the selective chlorination of a mixture of simple or complex metallic oxides of iron, titanium, aluminum and silicon, wherein said mixture is ground, calcined, and placed in suspension in a bath of melted salts, comprising, in a first step, injecting into said bath a chlorination mixture selected from the group consisting of (a) the mixture of HCl gas and H_2O vapor, and (b) the mixture of Cl_2 gas, O_2 gas and HCl gas, to selectively chlorinate the iron oxide and then extracting the ferric chloride produced, in a second step, injecting into said bath a chlorination mixture of HCl gas, CO gas and H_2 gas to selectively chlorinate the titanium oxide and then extracting the titanium chloride produced, and in a third step, injecting into said bath a chlorination mixture selected from the group consisting of a (a) the mixture of C_2 gas, CO gas and HCl gas, and (b) the mixture of $COCl_2$ gas and HCl gas to chlorinate the aluminum and silicon oxides and then extracting the aluminum chloride and silicon chloride produced.

4,563,339

PROCESS FOR THE PREPARATION OF MAGNESIUM CHLORIDE FOR USE AS AN ELECTROLYTE IN ELECTROLYTIC PRODUCTION OF MAGNESIUM METAL

Panchapagesa Subramanian, Kottaiyur; Arunachalam Selvakesavan, Karaikudi; Laguduva K. I. Srinivasan, Karaikudi; Poonamalle Srinivasadesikan, Karaikudi; Kadathur S. Srinivasan, Karaikudi; Gajavalli N. R. Kannan, Karaikudi; Somasundaram Sukumaran, Karaikudi; Narasimhan Rajagopalan, Karaikudi; Koyalmannam S. Dhandapani, Kandanur; Chanassery O. Augustin, Karaikudi; Thangaraj S. Devasahayam, Karaikudi; Srinivasa Srikantan, Karaikudi, and Handady V. Udupa, Karnataka, all of India, assignors to Council of Scientific and Industrial Research, New Delhi, India

Filed Mar. 6, 1984, Ser. No. 586,811

Int. Cl.⁴ C01F *5/32, 5/34*

U.S. Cl. 423—178 **17 Claims**

1. A process for the preparation of anhydrous magnesium chloride cell feed for use for electrolytic production of magnesium comprising a first stage partial dehydration of a purified magnesium chloride solution containing small quantities of chlorides of alkali or alkaline earth metals or both to obtain a partially dehydrated magnesium chloride powder of a composition $MgCl_2$, 0.5 to 1.5 molecules of H_2O, per molecule of $MgCl_2$ along with 4 to 8% by mole of magnesium oxide, followed by second stage dehydration wherein the partially dehydrated magnesium chloride obtained at the first stage is admixed and compacted with carbon and the compacted material is heated in a current of chlorine gas to obtain a completely anhydrous magnesium chloride containing over 90% magnesium chloride with less than 2% magnesium oxide and no moisture.

4,563,340

PROCESS FOR THE SECONDARY OBTENTION OF SODIUM CARBONATE FROM FLP WASTE LIQUOR

José Polendo-Loredo, Monterrey, Mexico, assignor to Industria del Alcali, S.A., Nuevo Leon, Mexico

Filed Oct. 24, 1983, Ser. No. 544,625

Claims priority, application Mexico, Jul. 12, 1983, 197998

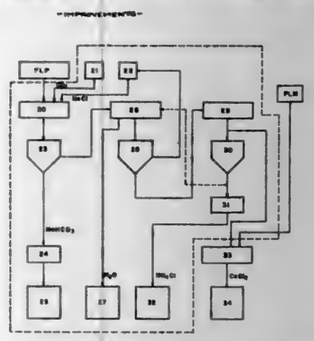
Int. Cl.⁴ C01D *17/18*

U.S. Cl. 423—186 **8 Claims**

1. A process for the secondary obtension of sodium carbonate from FLP waste liquor in a Solvay process, said liquor containing ammonium bicarbonate, ammonium chloride, sodium chloride and carbon dioxide, which is obtained in a filtering section within the Solvay process for the primary obtention and production of sodium carbonate, and comprising;

adding to the FLP waste liquor a soluble compound containing sodium ions together with a stream of gaseous carbon dioxide to saturate the FLP waste liquor with respect to sodium chloride while precipitating sodium bicarbonate into a first remaining liquor, separating the sodium bicarbonate from the first remaining liquor,

then precipitating substantially pure sodium chloride from the first remaining liquor and into a second remaining liquor by subjecting it to a partial evaporation step,



and then calcining the sodium bicarbonate for the obtention of a secondary production of sodium carbonate and carbon dioxide.

4,563,341

METHOD AND MEANS FOR CONVERTING GRAPHITE TO DIAMOND

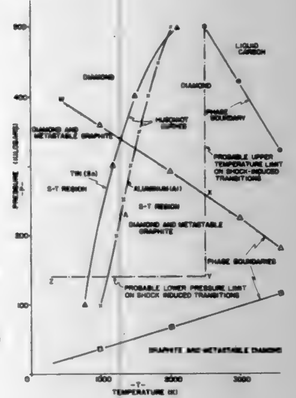
Hugh G. Flynn, 55 Council Rock Ave., Rochester, N.Y. 14610

Continuation-in-part of Ser. No. 907,737, May 19, 1978, Pat. No. 4,333,796. This application Jun. 7, 1982, Ser. No. 385,816

The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.

Int. Cl.⁴ C01B *35/10;* **B01J** *3/06*

U.S. Cl. 423—278 **37 Claims**



1. A method of effecting the allotropic transformation of a nongaseous substance from a first form thereof to a second form by the phenomenon of cavitation, comprising

placing in a sealed chamber a host liquid which contains a plurality of small bubbles of an inert gas,

applying a time-varying acoustical pressure to said liquid to create therein a cavitation zone in which at least certain of said small bubbles of gas expand and then collapse violently to form shock waves which radiate outwardly from the centers of the collapsed bubbles,

placing said substance in said first form thereof in said cavitation zone for exposure to said shock waves, and

maintaining said substance and said liquid at an ambient temperature and static pressure sufficient to effect substantial spontaneous transformation of said substance into its second form by action of the said shock waves.

4,563,342

METHOD FOR PRODUCING BASIC ALUMINUM SULPHATE (III)

Leasart K. Gunnarsson, Helsingborg, and Rolf O. Nilsson, Mölle, both of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Oct. 12, 1983, Ser. No. 541,016

Claims priority, application Sweden, Nov. 2, 1982, 8206207

Int. Cl.⁴ C01F *7/74, 7/02*

U.S. Cl. 423—556 **7 Claims**

1. A method for producing sulphate poor, polynucleate aluminium hydroxide sulphate complexes of the general formula

$$[Al(OH)_x(SO_4)_y(H_2O)_z]_n$$

in which

n is an integer

x is 1.5 to 2.0

y is 0.5 to 0.75

x+2y is 3

z is greater than 4

which comprises:

neutralising a solution consisting essentially of an aluminium salt of a strong acid to a pH of 5 to 7 with an alkali hydroxide to precipitate amorphous aluminium hydroxide,

separating the precipitated amorphous aluminium hydroxide from the solution, and

reacting the precipitated aluminium hydroxide while it is still in an amorphous form with aluminium sulphate, sulphuric acid or a mixture thereof in an amount such that y is 0.5 to 1.12 under conditions effective to form the polynucleate complexes in solution.

4,563,343

CATALYZED ALKALI METAL ALUMINUM HYDRIDE PRODUCTION

Gunner E. Nelson, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 450,032, Dec. 15, 1982, Pat. No. 4,528,176. This application May 2, 1983, Ser. No. 490,791

The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.

Int. Cl.⁴ C01B *6/24*

U.S. Cl. 423—644 **26 Claims**

1. A process for the production of an alkali metal aluminum tetrahydride comprising pressure hydrogenating an alkali metal reactant and aluminum in an innocuous reaction medium at about 65°–300° C. and at least about 100–5,000 psi in the presence of an aluminate catalyst formed by heating sodium aluminum tetrachloride under hydrogen pressure in the presence of alkali metal and aluminum.

4,563,344

CONTROLLED RELEASE AGGLOMERATED CARRIER

Michael E. Kotz, Toledo, and Jacobus J. Van der Zwan, Perrysburg, both of Ohio, assignors to The Andersons, Maumee, Ohio

Filed Apr. 4, 1983, Ser. No. 481,905

Int. Cl.⁴ A01N *25/00, 63/00;* **A01M** *1/20*

U.S. Cl. 424—17 **25 Claims**

1. A controlled release agglomerated carrier including a quicker releasing component and a slower releasing component, said quicker releasing component comprising separated ground pith and fine and coarse chaff portions of a corncob, said slower releasing component comprising separated ground woody ring portions of a corncob, said components being combined in said carrier such that said carrier contains not more than 95% by weight of said quicker releasing component

and not less than 5% by weight of said slower releasing component, said quicker and slower releasing components being a particle size that will pass through a 10 mesh (U.S. standard series) screen before being agglomerated, said quicker releasing component being impregnated with a pesticide capable of binding with organic matter at one concentration level and said slower releasing component being impregnated with a pesticide capable of binding with organic matter at a second concentration level.

19. A method of baiting insect larvae in a breeding area comprising applying to said breeding area a controlled release agglomerated carrier which acts as a bait including a quicker releasing component and a slower releasing component, said quicker releasing component comprising separated ground pith and fine and coarse chaff portions of a corncob, said slower releasing component comprising separated ground woody ring portions of a corncob, said components being combined in said carrier such that said carrier contains not more than 95% by weight of said quicker releasing component and not less than 5% by weight of said slower releasing component, said quicker and slower releasing components being of a particle size that will pass through a 20 mesh (U.S. standard series) screen before being agglomerated, said quicker and slower releasing components being impregnated with a pesticide capable of binding with organic matter before being agglomerated.

4,563,345

CHEWING GUM

Robert A. Arrick, 87 Indian Ave., Portsmouth, R.I. 02871

Filed Jan. 23, 1984, Ser. No. 572,988
Int. Cl.[4] A61K *9/68, 7/18*
U.S. Cl. 424—48 **10 Claims**

1. A piece of liquid center chewing gum comprising

a first phase comprising chewing gum, and a high viscosity viscous second phase comprising a tooth decay inhibiting amount of between 0.3 and 0.5 g. of sodium fluoride USP, toxic in large doses, as an effective fluorine salt and between 50 and 250 g. of a 5–25% solution of a thickening agent adapted to impart sufficiently high viscosity to adhere some of the fluoride ions to tooth enamel,

said first phase enclosing said second phase and not being admixed therewith,

said high-viscosity viscous, fluoride-containing second phase being released into the mouth immediately upon sufficient chewing to rupture said first phase whereby a portion of said viscous second phase adheres to the teeth, providing topical protection, while the remainder of the fluoride is ingested, in smaller than toxic doses, for additional protection.

4,563,346

TOPICAL DELIVERY SYSTEM AND SKIN TREATMENT COMPOSITIONS EMPLOYING SUCH SYSTEM

George E. Deckner, Westfield, N.J., assignor to Charles of the Ritz Group Ltd., New York, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,283
Int. Cl.[4] A61K *7/15, 7/38, 7/42, 7/44*
U.S. Cl. 424—59 **16 Claims**

1. A sunscreen composition consisting essentially of a thin water-in-volatile silicone emulsion having a viscosity of less than 10 centipoises, which consists essentially of an interior aqueous phase containing from about 40 to about 85% by weight water; and an exterior silicone phase consisting essentially of from about 5 to about 40% by weight of a volatile silicone, and from about 1 to about 10% by weight of an emulsifier therefor said emulsifier comprising a non-ionic lipophilic low HLB emulsifier having a hydrophilic-lipophilic balance of less than about 7, wherein said emulsifier is selected from the group consisting of dioleyl methyl glucaside, glyceryl monoisostearate, triglyceryldiisostearate, polyethylene glycol (22) dodecyl polymer, triglyceryl diisostearate, sorbitan monooleate, polyglyceryl-2-sesquioleate, sorbitan diisostearate, and mixtures of any two or more thereof, all of said % by weight being based on the total weight of said water-in-volatile silicone emulsion, and from about 1 to about 15% by weight based on the weight of the total sunscreen composition of a sunscreen agent, which sunscreen agent is part of said silicone phase, said sunscreen composition being free of silicon block polymers or copolymers.

4,563,347

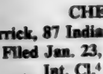
COMPOSITIONS USED TO CONDITION HAIR

Michael S. Starch, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 380,178, May 20, 1982, abandoned, and Ser. No. 453,855, Dec. 27, 1982, abandoned. This application Mar. 30, 1984, Ser. No. 595,224
Int. Cl.[4] A45D *19/00;* **A61K** *7/06*
U.S. Cl. 424—70 **6 Claims**

1. A hair conditioning composition which is a stable dispersion of silicone and is formed by dispersing with shear a siloxane polymer into an aqueous phase, the composition consisting essentially of 0.1 to 61 percent by weight of

(A) a siloxane having the general formula $R_aX_{3-a}Si(OSiX_2)_n(OSiX_bR_{2-b})_mOSiX_{3-a}R_a$ wherein R is a monovalent radical having the general formula $—C_yH_{2y}Z$ wherein y has a value of 2 to 8 and Z is selected from the group consisting of $—NR'CH_2CH_2NR'_2$, —COOH, $—SCH_2COOH$,



$—NR'_2$, $—N^+R'_3A^-$, $—N^+R'H_2A^-$, and $—NR'CH_2CH_2N^+R'H_2A^-$, wherein R; is selected from the group consisting of hydrogen, phenyl, benzyl, and monovalent saturated hydrocarbon radicals composed of 1 to 20 carbon atoms and A^- is a halogen; X is selected from the group consisting of hydrogen, phenyl, hydroxyl, and saturated hydrocarbon radicals composed of 1 to 8 carbon atoms; a has a value of 0 to 3; b has a value of 0 to 1; and n+m has a value of 1 to 2000 with n having a value of 0 to 1999 and m having a value of 1 to 2000;

0.02 to 11.6 percent by weight of

(B) a surfactant selected from the group consisting of cationic, nonionic, and anionic surfactants;

0.003 to 2 percent by weight of

(C) a water soluble polyhydroxy alcohol; and

0.16 to 99.88 percent by weight of

(D) water.

4,563,348

SEC-BUTYL (Z)-7-TETRADECENOATE AND ITS USE AS A SEX ATTRACTANT FOR THE GRAPELEAF SKELETONIZER

Edwin L. Soderstrom, Fresno; William F. Haddon, Larkspur, and Joel Myerson, Belmont, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 31, 1983, Ser. No. 462,491
Int. Cl.[4] A01N *25/00;* **C11B** *11/00, 1/00*
U.S. Cl. 424—84 **13 Claims**

1. The substantially pure compound sec-butyl (Z)-7-tetradecenoate.

4. A sex attractant composition for the grapeleaf skeletonizer, Harrisina species, which comprises an effective attractant amount of the substantially pure compound sec-butyl (Z)-7-tetradecenoate and a carrier.

8. A method of eliciting a behavioral response in a grapeleaf skeletonizer, Harrisina species adult comprising applying to the locus thereof an effective amount of sec-butyl (Z)-7-tetradecenoate.

4,563,349

SUPEROXIDE DISMUTASE, ITS IMMOBILIZED FORM, AND THEIR PRODUCTION AND USE

Kouichi Miyata; Kazutaka Maejima, and Katsumi Tomoda, all of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 396,091, Jul. 7, 1982, abandoned, which is a continuation-in-part of Ser. No. 285,316, Jul. 22, 1981, abandoned. This application Oct. 1, 1984, Ser. No. 656,418
Claims priority, application Japan, Jul. 30, 1980, 55-105645; Jan. 14, 1982, 57-4750
Int. Cl.[4] A61K *37/50;* **C12N** *9/02, 11/12;* **C12R** *1/43*
U.S. Cl. 424—94 **9 Claims**

1. Superoxide dismutase having the following properties:

(a) Activity: to dismutate a superoxide ion into a hydrogen peroxide molecule and an oxygen molecule;

(b) Substrate specificity: to act on superoxide ion;

(c) Optimum pH range: about 7 to 8;

(e) Stable pH range: about 6 to 11;

(e) Optimum functional temperature range: about 20° to 45° C.;

(f) Thermostability: stable at 37° C. for 60 minutes; Inactivated about 50% at 50°–60° C. in 60 minutes; Inactivated about 100% at 80° C. in 5 minutes;

(g) Molecular weight: about 4.8×10^4 (by gel filtration method);

(h) Elemental analysis: C. 48.90±2.0%, H. 7.05±2.0%, N. 14.80±2.0%,

(i) Absorptions in the visible region of the spectrum; 470–475 nm (max.), 375–380 nm (min.), about 610 nm (shoulder);

(j) Molar extinction coefficient: about $1.08\times10^5\ M^{-1}.cm^{-1}$ at 280 nm;

(k) Amino acid analysis:

Amino acid	Number of residues
Glycine	23.5
Leucine	28.3

wherein the values denote the number of amino acid residues per molecule of the enzyme.

4,563,350

INDUCTIVE COLLAGEN BASED BONE REPAIR PREPARATIONS

Ranga Nathan, Newark; Saied Seyedin, Mountain View; Karl Piez, Menlo Park, and Hanne Bentz, Palo Alto, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Filed Oct. 24, 1984, Ser. No. 664,158
Int. Cl.[4] A61K *35/32*
U.S. Cl. 424—95 **14 Claims**

1. A hypoimmunogenic composition suitable for implantation to effect bone repair in a vertebrate which comprises an osteoinductively effective amount of a protein osteoinductive factor (OF) derived from bone, which OF is sufficiently pure to be hypoimmunogenic in a xenogeneic host in admixture with a carrier which is hypoimmunogenic in a xenogeneic host containing at least 5% by weight of non-fibrillar collagen.

4,563,351

SELF-GELLING THERAPEUTIC COMPOSITIONS FOR TOPICAL APPLICATION

Vera B. Caslavsky, Lexington, Mass., and Poul Gron, Salem, N.H., assignors to Forsyth Dental Infirmary for Children, Boston, Mass.

Continuation of Ser. No. 518,951, Aug. 1, 1983, which is a division of Ser. No. 381,530, May 24, 1982, Pat. No. 4,411,889. This application Jun. 6, 1984, Ser. No. 617,977
Int. Cl.[4] A61K *33/16*
U.S. Cl. 424—151 **21 Claims**

1. A self-gelling aqueous therapeutic gel composition for the sustained release of a therapeutic agent from the gel composition, which composition comprises:

(a) a low-viscosity liquid aqueous emulsion of a monomer or preopolymer of alkyl orthosilicate in an amount ranging from about 5 to 50 percent by weight of the composition;

(b) a water-soluble fluoride compound in an amount up to about 1,000 parts per million of the composition;

(c) a surface-active agent in an amount of up to about 10 percent by weight of the composition and sufficient to provide in combination with the water-soluble fluoride compound, the in situ gelation of the low-viscosity solution on admixing from a liquid to a gel state;

(d) a therapeutic agent other than the water-soluble fluoride compound, in an amount of up to about 20 percent by weight of the compositions, the therapeutic agent selected to treat the condition for which the composition is to be administered or applied; and

(e) an accelerator compound to accelerate the time period between the conversion of the admix liquid composition to a gel state which comprises from about 0.01 to about 10 percent by weight of imidazole or an alkyl or hydroxyl substituted imidazole and the pharmaceutically-acceptable salts thereof.

4,563,352

HUMAN PANCREATIC GRF

Jean E. F. Rivier, La Jolla; Joachim Spiess, Encinitas, and Wylie W. Vale, Jr., La Jolla, all of Calif., assignors to The Salk Institute For Biological Studies, San Diego, Calif.

Filed Oct. 4, 1982, Ser. No. 432,663
The portion of the term of this patent subsequent to May 14, 2002, has been disclaimed.
Int. Cl.[4] C07C *103/52;* **A61K** *37/02*
U.S. Cl. 514—12 **13 Claims**

1. A synthetic peptide having the formula: H-Tyr-Ala-Asp-Ala-Ile-Phe-Thr-Asn-Ser-Tyr-Arg-Lys-Val-Leu-D-Ala-Gln-Leu-Ser-Ala-Arg-Lys-Leu-Leu-Gln-Asp-Ile-Met-Ser-Arg-Gln-Gln-Gly-Glu-Ser-Asn-Gln-Glu-Arg-Gly-R_{40}-Y wherein R_{40} is Ala or des-R_{40}, and Y signifies the carboxyl moiety of the amino acid residue at the C-terminal and is the radical —COOH or $—CONH_2$, or a fragment thereof extending from the N-terminus to a residue in position 28 through 39 which is biologically active to effect the release of GH from the pituitary, or a nontoxic salt thereof.

4,563,353

HAIR GROWER FOR ANIMALS

Kenji Hara, Ichikai, and Eiji Iijima, Utsunomiya, both of Japan, assignors to KAO Corporation, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,713
Int. Cl.[4] A61K *35/78*
U.S. Cl. 424—195.1 **3 Claims**

1. A method for promoting hair growth in animals having normal hair growth comprising feeding said animals with an effective amount for promoting hair growth of Coix Ma-yuen Roman seeds or an extract thereof obtained by extracting said seeds with water, water-soluble organic solvents or mixed solvents of water and water-soluble organic solvents.

4,563,354

OIL-IN-WATER EMULSION FOR PARENTERAL ADMINISTRATION

Stephen S. Chang, E. Brunswick, N.J., and Lars Lindmark, Stockholm, Sweden, assignors to Kabivitrum AB, Stockholm, Sweden

Filed Oct. 26, 1983, Ser. No. 545,752
Int. Cl.[4] A61K *35/78, 31/23*
U.S. Cl. 424—195.1 **20 Claims**

1. A soybean phospholipid emulsifier adapted for use in nutritive oil-in-water emulsions suitable for parenteral administration, said emulsifier comprising a fraction of soybean lecithin produced by:

extracting soybean lecithin with a lower alkyl alcohol having up to 3 carbon atoms;
chilling the filtrate of said extraction to between about −20° and −85° C. and at alcohol concentrations between 2.5:1 and 40:1, solvent:phospholipid, for a time effective to precipitate insoluble materials comprising toxic materials; and
recovering the soluble soybean lecithin fraction from the solution as the emulsifier.

4,563,355

FOOD COMPOSITIONS FOR PIGS AND PROCESSES FOR THE FEEDING OF PIGS

Ignace Gage, Braine-l'Alleud, and Guillaume Coppens, Brussels, both of Belgium, assignors to INTEROX (Societe Anonyme), Brussels, Belgium

Filed Jun. 23, 1982, Ser. No. 391,408
Claims priority, application France, Jul. 2, 1981, 81 13209
The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.
Int. Cl.⁴ A23K *1/00*
U.S. Cl. 426—2 **1 Claim**

1. A process for feedings pigs consisting essentially of feeding to pigs a pig feed ration together with calcium peroxide in an amount of 0.3 to 0.7% of the weight based on the total feed ration whereby the quality of pig carcasses are substantially improved.

4,563,356

LACTIC ACID FERMENTATION PRODUCTS OF SUNFLOWER SEED MILK

Koichi Fujisawa; Akiko Yokoyama, and Gohfu Suzukamo, all of Osaka, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Dec. 6, 1983, Ser. No. 558,664
Claims priority, application Japan, Dec. 6, 1982, 57-213778; Dec. 6, 1982, 57-213779
Int. Cl.⁴ A23L *1/36*
U.S. Cl. 426—44 **6 Claims**

1. A lactic acid fermented sunflower seed milk which is prepared by a process comprising pulverizing sunflower seed in the presence of water to produce a slurry; heat-treating the slurry at a temperature between 65° C. and the boiling point of the slurry; adjusting the pH of the slurry to 6.5 to 7.5; removing solid matter from the slurry and then fermenting the resultant liquid at a temperature between 35° C. and 50° C. for between 3 hours and 20 hours using lactic acid producing bacteria to produce said fermented sunflower seed milk.

4,563,357

MODIFICATION OF SOY ISOLATE

Paul R. Witt, Jr., and Pamela A. Krone, both of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Filed Jul. 25, 1983, Ser. No. 516,940
Int. Cl.⁴ A23L *1/20*
U.S. Cl. 426—46 **11 Claims**

1. A process for producing a soy protein which comprises:
forming an aqueous slurry of a soy protein material at a pH of from about 5.7 to 7.5,
subjecting the aqueous slurry to an elevated temperature and physical working,
separating solids from the heated and worked slurry,
isoelectrically precipitating soy isolate from the heated and worked liquid material,
adjusting the pH of the precipitated material to 5.0–7.5 before, after, or while, treating the precipitated soy isolate with a plant protease enzyme at a temperature of about 70° C. to 85° C. for a period of not more than about 5 minutes to reduce the viscosity thereof, and
then inactivating the plant protease enzyme and recovering a thinned soy isolate.

4,563,358

COMPOSITE FOOD PRODUCT AND METHOD FOR MAKING THE SAME

Frank B. Mercer, Blackburn; Maurice S. Joffery, West Midlands, and Keith F. Martin, Whalley, all of England, assignors to F. B. Mercer Limited, Blackburn and Cadbury Schweppes Limited, London, both of, England

Filed Jan. 29, 1979, Ser. No. 7,597
Int. Cl.⁴ A23L *1/00, 1/08;* **D04H** *3/16*
U.S. Cl. 426—89 **38 Claims**

1. A composite food product consisting essentially of:
(1) a tube whose wall is composed of a net having mesh strands and intersections which are integrally formed of a first edible material by an extrusion process; and
(2) a filling of a second edible material within the tube and in contact with an inner surface of the tube wall, wherein the edible material forming the net is a material based on one or more of the group consisting of cereal and potato.

4,563,359

COATED COMPOUND SEASONING COMPOSITIONS

Tetsuzi Shimizu, Yokohama; Tadashi Mizutani, Ebina, and Hideko Furukawa, Tokyo, all of Japan, assignors to Ajinomoto Company, Limited, Tokyo, Japan

Continuation of Ser. No. 447,635, Dec. 7, 1982, abandoned. This application Sep. 17, 1984, Ser. No. 651,080
Claims priority, application Japan, Dec. 7, 1981, 56-196674; Jul. 27, 1982, 57-130621
Int. Cl.⁴ A23L *1/228*
U.S. Cl. 426—96 **4 Claims**

1. A glutamate compound seasoning composition, which comprises a mixture of
glutamic acid,
a first edible salt containing Na ions as a coating which is selected from the group consisting of Na glutamate, Na glutamate monohydrate, NaCl, NaOH, Na phosphates, and Na carbonates, wherein said sodium salt is pulverized to a size of 200 microns or less, and
a second edible salt containing K ions which is selected from the group consisting of K glutamate, K glutamate monohydrate, KCl, KOH, K phosphates, and K carbonates, wherein said second edible salt is not pulverized,
wherein the gram equivalent of Na:K is 1:4 to 5:2 and the number of moles of glutamic acid: the total gram equivalent number of K and Na is 0.1:1 to 1.2:1.

4,563,360

EDIBLE XANTHAN GUM-PROTEIN FIBROUS COMPLEXES

William G. Soucie, Gurnee, and Wen-Sherng Chen, Glenview, both of Ill., assignors to Kraft, Inc., Glenview, Ill.

Filed Dec. 30, 1983, Ser. No. 567,096
Int. Cl.⁴ A23J *3/00;* **A23L** *1/00*
U.S. Cl. 426—104 **18 Claims**

1. A method for manufacturing edible protein fibers comprising the steps of providing an aqueous protein fiber generating solution comprising a solubilized edible protein component selected from the group consisting of soy protein, peanut protein, casein, egg protein, cottonseed protein, sunflower protein, pea protein and mixtures thereof, and a solubilized xanthan gum hydrocolloid component selected from the group consisting of xanthan gum, xanthan gum/hydrocolloid adducts and mixtures thereof, the weight ratio of said xanthan gum to said protein component being in the range of from about 1:4 to about 1:10, and the total weight of said solubilized edible protein component and said solubilized xanthan gum hydrocolloid component being in the range of from about 0.1 to about 4 weight percent, based on the total weight of said aqueous protein fiber generating solution, adjusting the pH of the fiber generating solution while mixing said solution to provide xanthan-protein fibers and a whey solution, and separating the fibers from the whey solution.

4,563,361

METHOD OF DOSING EMULSIFIERS IN CHOCOLATE MASS

Jürgen Hörig, Heidenau, German Democratic Rep., assignor to Veb Kombinat Nagema, Dresden, German Democratic Rep.

Filed Jul. 2, 1984, Ser. No. 626,623
Claims priority, application German Democratic Rep., Jul. 1, 1983, 252641
Int. Cl.⁴ G01N *33/02;* **A23J** *7/00*
U.S. Cl. 426—231 **6 Claims**

1. A method of dosing lecithin or similar emulsifier into a continuous stream of chocolate mass, comprising the steps of detecting the weight rate of flow of the continuous stream of chocolate mass, then determining from the detected weight rate of flow a first time interval corresponding to a next charge of the emulsifier to be dosed in the continuous stream of chocolate mass, then determining a second time interval which is a fraction of the first time interval, and then electronically controlling the addition of the emulsifier into the continuous stream of chocolate mass during the second time intervals.

4,563,362

MEAT ANALOG HAVING A PROTEIN-GUM-STARCH MATRIX

Michael E. Thomas, Jackson, N.J.; Rita W. Brander, New Rochelle, N.Y.; Teresa A. Rasp, Ridgefield, Conn., and Marshall M. Rankowitz, Englishtown, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 26, 1984, Ser. No. 593,213
Int. Cl.⁴ A23L *1/04*
U.S. Cl. 426—104 **11 Claims**

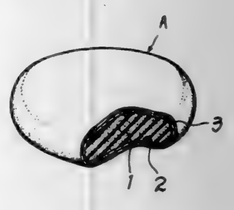
1. A meat analog formed from a composition comprising water, protein in an amount of from about 10 to about 25 weight percent of the composition, said protein including an edible coaguble proteinaceouss material, a hydrocolloid in an amount of from about 0.05 to about 3 weight percent of the composition selected from the group consisting of xanthan gum and locust bean gum, and mixtures thereof, a particulate unmodified waxy maize starch of branched chain amylopectin polymers in an amount of from about 3 to about 30 weight percent of the composition and a liquid or semi-liquid fat or oil in an amount of up to about 45 weight percent of the composition.

4,563,363

METHOD FOR MANUFACTURING A JELLY CONFECTIONERY COATED WITH CHOCOLATE

Young-No Yoon, Seoul, Rep. of Korea, assignor to Crown Confectionery Co., Seoul, Rep. of Korea

Filed Aug. 25, 1983, Ser. No. 526,291
Claims priority, application Rep. of Korea, Aug. 31, 1982, 3916/1982; Sep. 29, 1982, 7704/1982
Int. Cl.⁴ A21D *15/08;* **A23G** *3/00*
U.S. Cl. 426—303 **7 Claims**



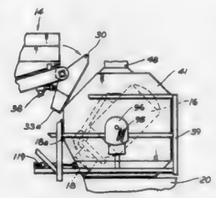
1. A method for manufacturing a jelly confectionery product which comprises:
providing a jelly containing less than 75° Brix sugar;
enrobing the outward surfaces of a baked biscuit with said jelly;
passing the resultant enrobed biscuit through a cooling tunnel maintained at a temperature ranging from −10° C. to +10° C. to cool said enrobed product;
drying said cooled product to a temperature ranging from 30° C. to 40° C.; and
coating the surfaces of the resulting dried product with a nutrient material
whereby the jelly functions as a layer for maintaining an even moisture content in the interior of said baked biscuit.

4,563,364

METHOD FOR STEAM BLANCHING FOODSTUFFS IN A PRESSURE VESSEL

D. Murphy Carmichael, and Hans G. Haimberger, both of Milton-Freewater, Oreg., assignors to Key Technology, Inc., Milton-Freewater, Oreg.

Filed Jun. 11, 1984, Ser. No. 619,280
Int. Cl.⁴ A23B *7/06*
U.S. Cl. 426—510 **3 Claims**



1. A method for pressure blanching a batch of foodstuffs in a blancher having a pressure vessel with a vessel opening which is opened and closed by a lid assembly, the vessel being mounted for rotation about an approximately horizontal axis of rotation, comprising:
opening the lid assembly;
placing the batch of foodstuffs through said vessel opening and into the pressure vessel;
injecting pressurized steam into the vessel at a point removed from said vessel opening to purge air from the vessel and foodstuffs contained therein;
thereafter closing said lid assembly to seal the vessel into a pressure tight condition;
thereafter continuing to inject pressurized steam into the vessel until the pressure within the vessel reaches a predetermined maximum pressure;
rotating the closed vessel about the horizontal axis of rotation to tumble the foodstuffs while maintaining the pressure within the vessel at the predetermined maximum pressure for a first predetermined period of time by injecting steam into the vessel;
blocking steam flow to and from the vessel after said first predetermined period of time;
allowing the pressure within the vessel to decrease as heat is absorbed by the foodstuffs and heat is lost from the vessel; the pressure decreasing during a second predetermined period of time which is sufficient to allow the pressure within the vessel to approximate atmospheric pressure;
exhausting remaining pressurized steam from the vessel after said second predetermined period of time;
opening the lid assembly; and
discharging blanched foodstuffs from the vessel through said vessel opening for further processing.

4,563,365

FLAVORING WITH 5-METHYL-HEPT-2-EN-4-ONE

Roland Emberger; Manfred Köpsel; Jürgen Brüning; Rudolf Hopp, and Theodor Sand, all of Holzminden, Fed. Rep. of Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,180

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1983, 3345784

Int. Cl.⁴ A23L *1/226*

U.S. Cl. 426—534 3 Claims

1. An edible composition comprising a foodstuff and an amount of 5-methyl-hept-2-en-4-one effective to impart a nut flavor to the composition.

4,563,366

NON-HEATED GELLAN GUM GELS

John K. Baird, and Jaewon L. Shim, both of San Diego, Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 499,594, May 31, 1983, Pat. No. 4,503,084.

This application Dec. 17, 1984, Ser. No. 682,516

The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.

Int. Cl.⁴ A23L *1/04;* A23C *9/154*

U.S. Cl. 426—573 5 Claims

1. A gelled food product comprising a matrix having one or more food ingredients dispersed therein, said food ingredients being selected from the group consisting of vegetable, fruit, meat, fish, sugar, milk, and mixtures thereof wherein said food product is prepared by:

(a) forming an aqueous slurry of the food ingredients and 0.05–3% (wt./wt.) gellan gum at 0°–70° C., and

(b) adding to said slurry an effective amount of free cations selected from H^+, Li^+, Na^+, K^+, Rb^+, Cr^+, Fr^+, Be^{++}, Mg^{++}, Ca^{++}, Sr^{++}, Ba^{++}, Ra^{++}, B^{+++}, Al^{+++}, Ga^{+++}, In^{+++}, or Tl^{+++} at 0° C.–70° C.

4,563,367

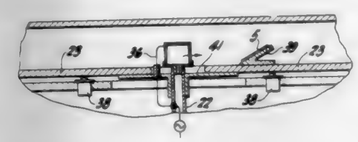
APPARATUS AND METHOD FOR HIGH RATE DEPOSITION AND ETCHING

Arthur Sherman, Palo Alto, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed May 29, 1984, Ser. No. 614,944

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—39 14 Claims



1. A deposition chamber system adapted for etching dielectric films such as silicon nitride or silicon oxide from the interior walls of the deposition chamber, comprising a first chamber adapted for deposition of semiconductor dielectric films and including vacuum means for maintaining the deposition chamber at subatmospheric exhaust pressure; a second enclosed chamber within the deposition chamber having inlet means for receiving etching gas, and further mounting electrode means therein for generating an RF-discharge etching plasma of the etching gas; the inner chamber also having at least one orifice of selected dimension and location such that the subatmospheric outer chamber pressure and resulting pressure differential between the chambers directs the plasma to a selected region of the outer chamber; means for moving the inner chamber orifice relative to the outer chamber to increase the area of the selected regions; and power supply means for applying RF energy to the electrode means.

7. A method for performing at least one function selected from etching and depositing films on a substrate within a first, vacuum chamber, comprising: providing within the first chamber a second, substantially enclosed chamber having an internal RF electrode, a gas inlet and at least one gas outlet orifice of predetermined size and location; applying subatmospheric pressure to the first chamber; maintaining the first chamber at lower internal pressure than the second chamber; applying RF power to the electrode; supplying gas selected from etching and deposition compositions via the gas inlet means to the interior of the second chamber, to thereby generate a discharge from the gas and transport the resulting reactive species via the outlet orifice to a selected region of the first chamber; and moving the second chamber along at least one path within the first chamber.

4,563,368

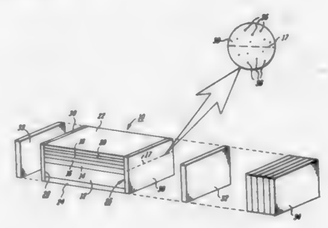
PASSIVATION FOR SURFACES AND INTERFACES OF SEMICONDUCTOR LASER FACETS OR THE LIKE

Peter Tihanyi, Palo Alto, and Robert S. Bauer, Portola, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 466,763, Feb. 14, 1983, abandoned. This application Sep. 4, 1984, Ser. No. 647,292

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 427—82 3 Claims



1. The method of making a facet coating for a semiconductor light emitting device, such as a semiconductor laser or the like, comprising the steps of:

depositing a thin layer of a reactive material selected from the group consisting of Al, Si, Ta, V, Sb, Mn, Cr and Ti on the cleaved facet to getter oxygen and other reactive contaminants therefrom,

the thickness of the deposition of said layer characterized to be sufficiently thick to react with an optimum amount of said contaminants but sufficiently thin in order that the reactive material is sufficiently consumed in the gettering process and to render the thin layer electrically nonconductive, if initially conductive in nature, and

depositing at least one protective overlayer over said thin layer.

4,563,369

TITANIUM CHELATE MODIFIED NYLON MAGNET WIRE INSULATION COATING

Francois A. Lavallee, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Division of Ser. No. 660,197, Oct. 12, 1984. This application May 10, 1985, Ser. No. 732,763

Int. Cl.⁴ B05D *5/12*

U.S. Cl. 427—118 4 Claims

1. A method of coating a magnet wire substrate comprising applying to an electrically conductive wire substrate at least one layer of an enamel composition comprising nylon reacted with 0.25% to 20% by weight of a titanium chelate.

4,563,370

PRESSED BATTERY PLATE

Claude J. Menard, 6384 Aspenwood Plz., Woodbury, Minn. 55125

Division of Ser. No. 483,764, Apr. 11, 1983, Pat. No. 4,476,205.

This application May 4, 1984, Ser. No. 606,941

Int. Cl.⁴ B05D *5/12;* H01M *4/04*

U.S. Cl. 427—123 7 Claims



1. A method of making a cadmium electrode for a rechargeable alkaline cell, said method comprising providing a rigid conductive substrate having particle-receiving recesses therein; providing a slurry of cadmium oxide particles, binder and a vaporizable carrier liquid, the binder to form a coating on the cadmium oxide particles when the carrier liquid is vaporized; vaporizing said carrier liquid; adding cadmium particles devoid of binder coating the same to the dried binder-coated particles; and then pressing the resulting dry mix into and upon the recesses of said substrate so that the cadmium particles are in conductive relation with the cadmium oxide particles and the substrate.

4,563,371

PROCESS FOR PREPARING METALLIZED POROUS SOLID BODIES

Kirkor Sirinyan, Bergisch Gladbach; Peter M. Lange; Rudolf Merten, both of Leverkusen, and Alfred Mitschker, Odenthal-Holz, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 23, 1983, Ser. No. 565,081

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1982, 3248778

Int. Cl.⁴ B05D *3/04, 3/10, 1/18;* B01J *31/08*

U.S. Cl. 427—305 10 Claims

1. In a process for preparing a metallized porous solid body including loading the surfaces of a metal-free porous solid body substrate with Ni or Co ions and conducting activation with a collodial metal activating solution containing palladium or an organometallic activating solution containing palladium, wherein the improvement comprises activating the substrates after said loading and subsequently contacting said substrates with a reducing bath containing 10 to 200 g/liter of a reducing agent and wherein said reducing bath consists essentially of solvent and reducing agent or solvent, reducing agent and complexing agent.

5. A process according to claim 1, wherein said porous solid body substrate is an ion exchange material.

6. A process according to claim 1, wherein the porous solid body substrate contain anchor groups suitable for fixing ions, said anchor groups including

$-SO_3N$, $-COOH$, $-\overset{\overset{O}{\|}}{C}-X$ (where X is H, Cl, F, Br, or I), NH_2,

$-\overset{\overset{O}{\|}}{C}-NH_2$, $-\overset{\overset{O}{\|}}{C}-N_3$, $-OH$, $-\overset{\overset{O}{\|}}{C}-O-\overset{\overset{O}{\|}}{C}-$, $-P(C_6H_5)_2$,

$-P(C_6H_5)_3$, $-N\begin{matrix}CH_2-COOH\\ \diagdown\\ \diagup\\ CH_2-COOH\end{matrix}$,

where

n is 0 to 6,

m is 1 to 6, and

Y is OH, Cl, F, Br or I.

4,563,372

TOP COAT COMPOSITION CONTAINING MICROGEL PARTICLES

Takeo Kurauchi, Neyagawa; Keizou Ishii, Ashiya; Atsushi Yamada, Nishinomiya, and Jun Nozue, Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Sep. 5, 1984, Ser. No. 647,499

Claims priority, application Japan, May 25, 1984, 59-107220; Aug. 3, 1984, 59-164082

Int. Cl.⁴ B05D *1/36;* C08L *67/08*

U.S. Cl. 427—409 14 Claims

1. In a coating composition for use as a clear top coat comprising:

(a) a film-forming polymer having a plurality of cross-linkable functional groups,

(b) a volatile, organic liquid diluent capable of carrying said film-forming polymer,

(c) a cross-linking agent dissolved in said diluent, and

(d) microgel particles of 0.01 to 10 micron particle size of an internally cross-linked polymer which are insoluble in the mixture of said film-forming polymer, said diluent and said cross-linking agent but stably dispersible in said mixture, the proportion of said microgel particles ranging from 0.2 to 30% by weight of the total solid contents of said composition, the improvement wherein said microgel particles are produced by emulsion-polymerizing a mixture of ethylenically unsaturated comonomers including at least one cross-linking comonomer having a formulation which is so preselected as to satisfy the relationship:

$$|nDd-nDf| \leqq 0.05$$

wherein nDd is the refraction index of said microgel particles, and nDf is the refraction index of a clear film formed from said film-forming polymer and said cross-linking agent.

4,563,373

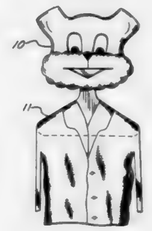
ANIMATED HANGER FOR CLOTHES AND OTHER ARTICLES

Burton Barnett, 12592 Martha Ann Dr., Rossmoor, Calif. 90720

Filed Apr. 11, 1983, Ser. No. 465,812

Int. Cl.⁴ A63H *3/00, 11/04*

U.S. Cl. 428—16 7 Claims



1. A garment hanging apparatus for providing a change in the expression of an animated figure when a garment is hung on the apparatus, the apparatus comprising:

a first member bearing the configuration of the animated figure, said first member having first and second openings, respectively in the place of each of the two eyes of the animated figure, and a third opening in the place of the mouth of the animated figure, the first member being adapted for being mounted to a wall or the like;

a second member mounted to the first member in a linearly sliding relationship behind the first member to occupy two extreme positions relative thereto, the first member including means for permitting linear motion of the second member relative to the first member, the second member bearing a pictorial representation of the two eyeballs of the animated figure, and having a tongue for the animated figure, the second member further having appendage means for accepting a garment hung on the appendage means, and

spring means for normally positioning the second member into the first extreme position relative to the first member wherein the eyeballs are disposed in a first position to show through the first and second openings and wherein the tongue is substantially hidden from view behind the first member, the spring means being adapted to be overcome by the weight of a garment hung to the appendage means, whereby the weight of the garment causes the second member to linearly slide into the second extreme position relative to the first member, in said second extreme position the eyeballs occupying a second position to show through the first and second openings of the first member, and the tongue member protruding from the third opening in the second extreme position.

4,563,374

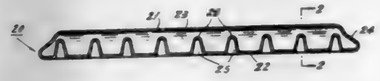
BLOW MOLDED DECORATIVE OR PROTECTIVE STRIP WITH TEMPERATURE COMPENSATION

Willi Treber, Wuppertal; Rolf Schlenz, Velbert; Gunter Fritsch, Ennepetal, and Joseph Hansmann, Geretsried, all of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 312,822, Oct. 19, 1981, abandoned. This application May 23, 1984, Ser. No. 613,515

Int. Cl.⁴ B29D *23/03;* **B32B** *3/30*

U.S. Cl. 428—31 **10 Claims**



1. An elongate covering strip for an object, the strip being in the form of a closed, hollow, blow molded body of plastic material; the strip having a bottom shaped for being applied over an object to be covered; the strip having a top that is over and secured on the bottom of the strip; the strip being hollow within between the top and the bottom; the top having a contour for defining a contour for the hollow elongate strip;

the bottom of the strip including length compensation structures for compensating the length of the bottom with respect to the length of the top due to temperature variations between the top and the bottom of the strip and along the length of the strip; the length compensation structures comprising a plurality of transversely extending groove shaped depressions spaced at intervals along the length of the strip and each having a long dimension extending transversely of the strip and a shorter dimension extending lengthwise of the strip; each of the transversely extending depressions being tall enough in the bottom of the strip for corrugating the bottom of the strip for enabling the bottom of the strip to expand and contract with respect to the top of the strip upon the temperature variations.

4,563,375

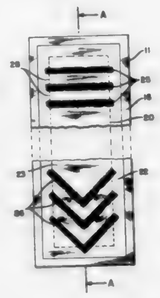
FLAT BAG FILLED WITH THERMALLY CONDUCTING LIQUID OR PASTE

Bohdan Ulrich, Kehrsatz, Switzerland, assignor to Hasler AG, Bern, Switzerland

Filed Aug. 15, 1984, Ser. No. 640,966

Int. Cl.⁴ B32B *7/04;* **F28F** *7/00*

U.S. Cl. 428—35 **14 Claims**



1. A flat bag filled with a fluid of good thermal conductivity comprising

a bag made of metal foil and separated into compartments by line connection areas between opposite foils of the bag;

a filling of a fluid of good thermal conductivity in the bag without gas enclosure, which filling occupies only a small percentage of the maximum filling volume of the bag.

4,563,376

TUBULAR FOOD CASING HAVING A COATING ON ITS INSIDE SURFACE, A PROCESS FOR ITS MANUFACTURE AND USE AS A SAUSAGE SKIN

Klaus-Dieter Hammer, Mainz; Erwin Kindl, Wiesbaden; Heinz Luchterhand, Wiesbaden, and Hermann Winter, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 471,208

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1982, 3208283

Int. Cl.⁴ F16L *11/00;* **A22C** *13/00*

U.S. Cl. 428—36 **22 Claims**

1. A tubular food casing, comprising:

a support based on cellulose hydrate comprising water and from about 15 to 30% by weight, relative to the total weight of said support tubing, of a plasticizer; and

a coating layer applied to the inside surface of said support tubing, comprising an admixture which includes a first component and a second component, wherein said first component comprises a synthetic triglyceride mixture of vegetable fatty acids having from 4 to 14 carbon atoms in the carbon chain or a natural oil selected from olive oil, linseed oil, sunflower oil, rape oil, palm oil or coconut oil, or a mixture thereof, and said second component comprises a water-insoluble cured cationic resin.

4,563,377

HIGH-STRENGTH TUBULAR BEAM OF FOLDED CORRUGATED CARDBOARD

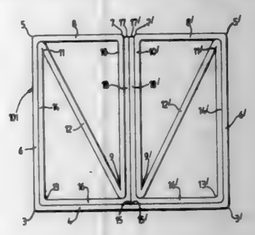
Ilario Melli, S. Ilario d'Enza, Italy, assignor to Finsen S.p.A., Reggio Emilia, Italy

Filed Feb. 14, 1983, Ser. No. 465,925

Int. Cl.⁴ B65D *19/34*

U.S. Cl. 428—36 **6 Claims**

1. A tubular beam of folded corrugated cardboard which has a high resistance to bending and to transverse crushing comprising a single corrugated cardboard sheet (1) having its corrugations orthogonal to its longitudinal axis (2), said sheet (1) being folded back several times on itself parallel to its axis (2) to form an overall section of right angled configurations (4, 6', 8', 8, 6), and divided into two adjacent half sections (4, 6', 8',



18') - (4, 6, 8, 18), which mate along the longitudinal symmetrical axis of the beam 17, 17', and which each comprise two triangular channel configurations (16', 14', 12') - (8', 10', 12'), (10, 8, 12) - (16, 14, 12) which mate along a common diagonal (12'), (12), and are mutually inverted.

4,563,378

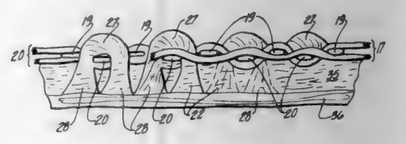
AUTOMOTIVE CARPET CONSTRUCTION AND METHOD OF MANUFACTURE THEREOF

David W. Roth, Grosse Pointe Park, Mich., assignor to The 2500 Corporation, Birmingham, Mich.

Filed Mar. 9, 1984, Ser. No. 587,802

Int. Cl.⁴ B32B *3/02*

U.S. Cl. 428—86 **31 Claims**



1. An improved carpet construction including in combination:

(a) a primary layer;

(b) a plurality of vertical loops tufted into said primary layer and having severed ends extending below said primary layer; and

(c) a bonding layer below and in intimate contact with said primary layer completely covering said severed ends and thereby embedding said severed ends therein.

4,563,379

SEALING WEB

Gerhard Krüger, Mörlenbach, Fed. Rep. of Germany, assignor to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

Filed May 2, 1984, Ser. No. 606,338

Claims priority, application Fed. Rep. of Germany, May 4, 1983, 3316302

Int. Cl.⁴ B32B *3/00, 25/14;* **C09J** *5/00, 5/02*

U.S. Cl. 428—61 **13 Claims**



1. Sealing covering comprising at least one layer containing copolymers selected from the group consisting of ethylene propylene diene terpolymer (EPDM) and ethylene propylene copolymer (EPM), said copolymers having an ethylene content of at least 50 parts by weight, a reinforcement resin in admixture with the copolymers, said copolymers and reinforcement resin being free of vulcanization accelerators and forming an unvulcanizable interpenetrating network, by heat treatment, of the chemically non-cross-linked copolymers and chemically cross-linked reinforcement resin, said interpenetrating network imparting to the sealing covering the property of welding by heat sealing or solvent welding.

4,563,380

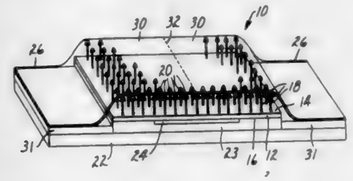
FASTENER ASSEMBLY WITH IMPROVED TEMPORARY ATTACHMENT LAYER

Philip D. Black, Hudson, Wis., and Dale G. Rhoe, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 629,330, Jul. 10, 1984, abandoned. This application Aug. 31, 1984, Ser. No. 646,900

Int. Cl.⁴ A44B *21/00*

U.S. Cl. 428—100 **4 Claims**



1. In an elongate fastener assembly comprising a polymeric backing strip having first and second major surfaces;

a multiplicity of stems each secured at one end to said backing strip, projecting generally normally to the first surface of said backing strip, and having enlarged heads at their ends opposite said backing strip adapted to engage loops on materials pressed against said heads;

an open porous permanent attachment layer atached to the second major surface of said backing strip, said permanent attachment layer having sufficient open areas to afford movement of foam into said permanent attachment layer to permanently attach said fastener assembly to a foamed article; and

a temporary attachment layer comprising ferromagnetic material sandwiched between the second major surface of said backing and said attachment layer, said temporary attachment layer being adapted to be attracted by magnets to temporarily hold said fastner assembly in position during the foaming process;

the improvement wherein the temporary attachment layer comprises ferromagnetical particles dispersed within a polymeric bonding material, said bonding material exhibiting essentially the same shrinkage as said backing strip when said fastener assembly is exposed to temperatures around 125° C., so that the temperatures resulting from the foaming process will not cause a substantial relative change in length between the backing strip and the temporary attachment layer.

4,563,381

PLASTIC HINGE

Rommel J. Woodland, Soccasunna, N.J., assignor to Petro Plastics Company, Inc., Garwood, N.J.

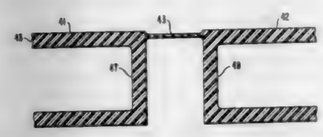
Filed Nov. 5, 1984, Ser. No. 668,385

Int. Cl.⁴ B32B *3/26, 27/00*

U.S. Cl. 428—156 **4 Claims**

1. A one-piece thermoplastic extrusion comprising a first portion of rigid thermoplastic material having a respective predetermined cross-sectional thickness along a defined linear region thereof, said rigid thermoplastic material being selected from the group consisting of rigid polyvinyl chloride (PVC),

acrylonitrile-butadyene-styrene (ABS), impact modified or general purpose acrylic, and high impact styrene and a second



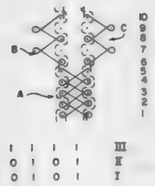
portion of polyester elastomer joined to said first portion at said defined linear region.

4,563,382

OPEN-WORK KNITTED AND BONDED TEXTILE STRUCTURE AND METHOD OF OBTAINING SAME

Maurice Viel, Ecully, France, assignor to Bat Taraflex & Notex S.A., Pontcharra-sur-Turdine, France

Filed Jan. 30, 1984, Ser. No. 575,150
Claims priority, application France, Feb. 4, 1983, 83 01995
Int. Cl.⁴ B32B *27/14*
U.S. Cl. 428—198 **8 Claims**



1. An open-work textile structure of the warp-knit type using yarns coated with a thermoplastic material to produce a knitted fabric based on a weave using at least three bars and having an open-work structure in the form of regular polygons at least certain edges of which are slanted with respect to the length of the structure, wherein the stitches of the knitted fabric imprison a weft yarn which extends in a substantially straight line in parallel to the edges of the formed open-work, and wherein said coating is partly melted and resolidified to bond the yarns together in those areas where they are in contact.

4,563,383

DIRECT BOND COPPER CERAMIC SUBSTRATE FOR ELECTRONIC APPLICATIONS

James E. Kuneman, Liverpool, and Joseph F. Dickson, Camden, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,557
Int. Cl.⁴ B32B *15/04*
U.S. Cl. 428—216 **10 Claims**

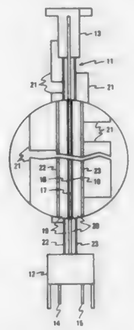
1. A thin direct bond copper ceramic substrate of high strength and good thermal conductivity for electronic applications, comprising:

A. a first layer of ceramic, having a first surface for mounting electronic circuitry,

B. a second layer of copper foil having a first surface, permanently bonded by a liquid copper oxygen eutectic adhesive to a second surface of said first layer, the copper foil being sufficiently thin, and the ductility of the copper sufficiently high at eutectic temperature for wetting forces to draw the foil into intimate contact with the first layer to form a continuous bond,

C. a third layer of ceramic, having a first surface for mounting electronic circuitry, said first and third layers having equal thicknesses, and symmetrically matched continuous extensions for equalization of bending stresses,

D. a fourth layer of copper foil having a first surface, permanently bonded by a liquid copper oxygen eutectic adhesive to a second surface of said third layer, the copper foil being sufficiently thin, and the ductility of the copper sufficiently high at eutectic temperatures for the wetting forces to draw the foil into intimate contact with the third layer to form a continuous bond, and



E. a fifth layer of copper having a first surface permanently bonded by a liquid copper oxygen eutectic adhesive to a second surface of said second layer and a second surface bonded by a liquid copper oxygen eutectic to a second surface of said fourth layer, cooling after bonding causing tensile stresses in said inner copper layers and compressive stresses in said outer ceramic layers at working temperatures to form a thin mechanically strong substrate of high thermal conductivity suitable for supporting heat dissipating electronic circuitry.

4,563,384

ELASTIC FLAT-SURFACED WOVEN FABRIC AND ITS MANUFACTURE

Hans R. Wiehe, and Herbert Hueber, both of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 3, 1984, Ser. No. 606,481
Claims priority, application Fed. Rep. of Germany, May 4, 1983, 3316266
Int. Cl.⁴ D03D *15/08*
U.S. Cl. 428—231 **5 Claims**

1. An elastic flat-surfaced woven fabric having a stretchability of from 20 to 35%, comprising elastic spinning fibre yarns having a proportion of 3 to 15% by weight of elasthan filament yarn, based on the total weight of the elastic spinning fibre yarn, and spinning fibre yarn which consists essentially of 50 to 70% by weight of a fibre selected from the group consisting of polyamide and polyester fibres, and 30 to 50% by weight of cellulose fibres.

4,563,385

HYBRID GLASS CLOTH FOR PRINTED CIRCUIT BOARDS

Anilkumar C. Bhatt, Endicott, N.Y.; Donald E. Doran, New Milford, Pa., and James W. Knight, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1984, Ser. No. 622,513
Int. Cl.⁴ B32B *7/00*
U.S. Cl. 428—251 **6 Claims**



1. A substrate material comprising:

a glass woven fabric for printed circuit substrates, wherein the warp yarns are plied yarns and the fill yarns are unplied yarns.

4,563,386

FRICTION ELEMENT COMPRISED OF HEAT RESISTANT HETEROGENEOUS THERMOSETTING FRICTION MATERIAL

Hugo D. Schwartz, Herslia Pituach, Israel, assignor to Cercasbest Corp., Tel Aviv, Israel

Filed Sep. 19, 1984, Ser. No. 652,071
Int. Cl.⁴ C08G *51/08*; F16D *69/02*
U.S. Cl. 428—283 **6 Claims**

1. A heterogeneous friction element comprising a continuous phase and at least one discrete granular phase embedded randomly throughout said continuous phase, wherein each phase consists of dissimilar thermosetting reinforced plastic friction material, each friction material comprising 10–80% reinforcing filler, 20–40% thermosetting binder and 0–70% modifiers, and wherein the discrete phase comprises particles retained on an 8 mesh screen and further comprises 55–85% of the total by weight, and wherein said friction element exhibits a higher cold coefficient of friction than the continuous phase, a higher hot coefficient of friction than the discrete phase, and a higher resistance to wear then the continuous phase.

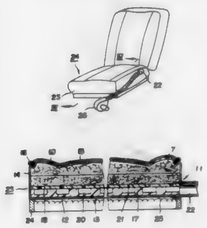
4,563,387

CUSHIONING MATERIAL

Sadaaki Takagi, Okazaki; Shigetsugu Yura, Aichi; Masaki Fukuda, and Yukio Oikawa, both of Okazaki, all of Japan, assignors to Takagi Chemicals, Inc., Okazaki, Japan

Filed Jun. 27, 1984, Ser. No. 624,970
Claims priority, application Japan, Jun. 30, 1983, 58-118798
Int. Cl.⁴ D04H *1/48, 1/64*
U.S. Cl. 428—300 **6 Claims**

1. A cushioning material, comprising a lower filament cushioning layer of relatively high rigidity and high perviousness to air obtained by compression molding in a stated shape three-dimensional curled short fibers of polyester filaments of a relatively large denier number thereby producing a shaped mass of filaments and applying adhesive agent to the shaped mass thereby binding the points of mutual contact of filaments therein and an upper filament cushioning layer of relatively



low rigidity obtained by compression molding in a stated shape three-dimensionally curled short fibers of polyester filaments of a smaller denier number than said polyester filaments thereby producing a shaped mass of filaments and applying adhesive agent to the shaped mass thereby binding the points of mutual contact of filaments therein, with said upper layer superposed on said lower layer.

4,563,388

POLYOLEFIN SUBSTRATE COATED WITH ACRYLIC-TYPE NORMALLY TACKY AND PRESSURE-SENSITIVE ADHESIVE AND A METHOD OF MAKING SAME

Thomas J. Bonk, Stillwater, and J. Thomas Simpson, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 479,517, Mar. 28, 1983, abandoned. This application Feb. 27, 1984, Ser. No. 583,896
Int. Cl.⁴ B32B *3/26*
U.S. Cl. 428—304.4 **11 Claims**

1. A normally tacky and pressure-sensitive adhesive-coated product comprising:

(a) a polyolefin substrate,

(b) A monomer composition graft-polymerized to at least a portion of said substrate by ionizing radiation, said monomer composition having at least one monomer selected from the group consisting of acrylic acid, methacrylic acid and esters thereof; acrylamide; methacrylamide; sterically non-hindered tertiary alkyl acrylamides and methacrylamides; secondary alkyl acrylamides and methacrylamides having three or less carbon atoms in the alkyl group; and N-vinyl pyrrolidone, and

(c) firmly adherently bonded to the graft-polymerized monomer an acrylic type normally tacky and pressure-sensitive adhesive.

4,563,389

Patent Not Issued For This Number

4,563,390

FABRICATED TOY ANIMAL WHISKER CONSTRUCTION AND METHODS AND APPARATUS FOR PRODUCING AND APPLYING SAME

Richard L. Bedell, 27 Pine St., Dover, Mass. 02030, and Joseph J. Bushee, Watertown, Mass., assignors to Richard Lund Bedell, Dover, Mass.

Continuation of Ser. No. 466,127, Feb. 14, 1983, abandoned. This application May 3, 1985, Ser. No. 731,324
Int. Cl.⁴ B32B 5/16; D02G 3/00
U.S. Cl. 428—357 10 Claims



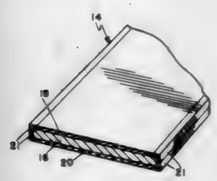
1. A fabricated filament construction for attachment to a cover material including textile bodies, said fabricated filament construction comprising a plurality of flexible filaments secured together at one end by a midportion of an elongated anchor barb means, the anchor barb means being of a size and shape and oriented relative to the filaments such that it is adapted to be pressed through textile cover material and thereafter assume a position substantially normal to the filaments.

4,563,391

RIBBON ROD FOR USE IN OIL WELL APPARATUS

Curtis J. Tanner, San Diego; Richard E. Bender, Escondido; Anton K. Simson, Poway, and Hugh McCutchen, Jr., San Diego, all of Calif., assignors to Henlan, Inc., Midland, Tex.

Continuation of Ser. No. 292,590, Aug. 13, 1981, Pat. No. 4,416,329. This application Nov. 16, 1983, Ser. No. 552,267
Int. Cl.⁴ D02G 3/00
U.S. Cl. 428—365 15 Claims



1. A ribbon rod for use in oil well tubing as a replacement for a conventional steel sucker rod, comprising an elongated ribbon having a core of relatively stiff material that still has a degree of flexibility such that said ribbon is capable of being wound onto and dispensed from a rotatable reel and can support the weight of oil pumping apparatus attached to a downhole portion of the ribbon, said ribbon core having opposed side surfaces and relatively narrow end surfaces joining said side surfaces, a ply of fabric overlying said side surfaces to provide transverse strength to said ribbon rod, and corner tows extending over said end surfaces to provide damage resistance to said ribbon rod as it is raised and lowered in the oil well tubing.

4,563,392

COATED EXTENDED CHAIN POLYOLEFIN FIBER

Gary A. Harpell, Morristown; Sheldon Kavesh, Whippany; Igor Palley, Madison, and Dusan C. Prevorsek, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 359,976, Mar. 19, 1982, abandoned. This application Nov. 22, 1983, Ser. No. 554,171
Int. Cl.⁴ D02G 3/00
U.S. Cl. 428—394 21 Claims

1. A coated polyolefin fiber having increased adhesion to matrix materials and increased transverse strength, said polyolefin fiber comprising:

(a) a monofilament or multifilament fiber of polyethylene or polypropylene of weight average molecular weight at least about 500,000 having, in the case of polyethylene, a tenacity of at least about 15 g/denier and a tensile modulus of at least about 300 g/denier and, in the case of polypropylene, a tenacity of at least 8 g/denier and a tensile modulus of at least about 160 g/denier; and

(b) a coating on the monofilament and on at least a portion of the filaments of the multifilament containing a polymer having ethylene or propylene crystallinity, said coating being present in an amount between about 0.1% and about 200%, by weight of fiber.

4,563,393

LAMINATE OF POLYVINYLIDENE FLUORIDE BONDED TO THERMOPLASTIC RESIN

Yozo Kitagawa, Kamagaya; Akinori Nishioka, Yokkaichi; Yasuo Higuchi, Ageo; Tadahiko Tsutsumi, Suzuka; Takashi Yamaguchi, and Tadashi Kato, both of Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1985, Ser. No. 694,682
Claims priority, application Japan, Feb. 1, 1984, 59-15020; Jun. 5, 1984, 59-113852
Int. Cl.⁴ B32B 27/00
U.S. Cl. 428—412 21 Claims

1. A laminate consisting essentially of a layer of a thermoplastic resin (A) and a layer of a vinylidene fluoride resin (B), characterized in that the layer of the resin (A) contains polymerized units (C) of an ethylenic unsaturated carboxylic acid ester, the content of which is 3 to 80% by weight based on the weight of the layer of the resin (A).

4,563,394

SHAPED ARTICLE OF SYNTHETIC RESIN HAVING IMPROVED SURFACE

Nobuo Ishikawa, Yokohama, Japan, assignor to Kuraray Co., Ltd., Okayama and Daikin Industries Ltd., Osaka, both of, Japan

Filed Jul. 27, 1984, Ser. No. 635,071
Claims priority, application Japan, Jul. 29, 1983, 58-139940
Int. Cl.⁴ B32B 27/00
U.S. Cl. 428—422 11 Claims

1. A shaped article of a synthetic resin having an improved surface which comprises a synthetic resin having hydroxy groups of 0.01 to 25 meq/g in said resin wherein at least one improved surface includes synthetic resin having hydroxy groups treated with an oligomer of a fluoroalkylene oxide represented by the formula:

$$X-CF_2-CF_2-O\left(\begin{matrix}CF-CF_2-O\\ |\\ X\end{matrix}\right)_{n-2}\begin{matrix}CF-CF\\ |\quad\ \|\\ X\quad O\end{matrix}$$

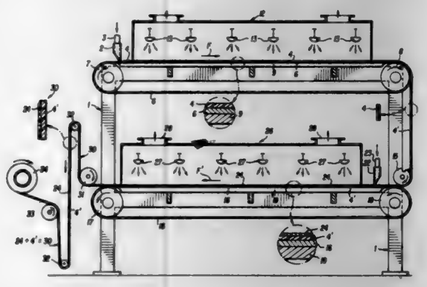
wherein X is F or CF_3 and n is an integer of 2 to 12.

4,563,395

PROCESS AND DEVICE FOR PRODUCING TRANSPARENT PLASTIC FILMS, SHEETS OR STRIPS OF AT LEAST TWO LAYERS, BY CASTING

Manfred Gillner, and Juergen Sieckmann, both of Aachen, Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Jul. 23, 1984, Ser. No. 633,460
Claims priority, application France, Jul. 22, 1983, 83 12140
Int. Cl.⁴ B29D 11/00
U.S. Cl. 428—423.3 22 Claims



1. A process for producing transparent plastic material having at least two layers, comprising:

(a) casting at least one plastic layer precursor from a casting means onto an essentially horizontal plane casting support, where said horizontal plane casting support is in movement in relation to said casting means;

(b) allowing said plastic layer precursor to harden into a first plastic layer through polymerization or solvent evaporation;

(c) detaching said first plastic layer from said essentially horizontal plane casting support;

(d) turning over said first plastic layer;

(e) placing said first plastic layer on an essentially horizontal plane casting support in a fashion such that the face of said first plastic layer in contact with said plane casting support is now exposed;

(f) casting a plastic layer precursor on a face of the first plastic layer to form a second plastic layer thereto;

wherein said plastic layer precursors comprise a solution melt or a reaction mixture; said transparent plastic material possessing high optical qualities.

11. A plastic sheet of optical high quality obtained by the process of claim 1.

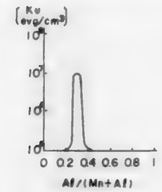
4,563,396

MAGNETIC RECORDING MEDIUM

Kazumasa Fukuda, and Seitoku Saito, both of Tokyo, Japan, assignors to TDK Electronics Company Ltd., Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,762
Claims priority, application Japan, Jun. 3, 1981, 56-86169
Int. Cl.⁴ G11B 5/64
U.S. Cl. 428—457 1 Claim

1. A magnetic recording medium for perpendicular magnetic recording having a magnetic recording layer of a thickness of 500 Å to 5 μm comprising an alloy consisting essentially of Mn in a proportion of 65–75% by weight, Al in a proportion of 25–35% by weight, and a positive amount up to 10% by weight of at least one of Fe, Co and Ni, said magnetic recording layer having an easy magnetization axis in the perpendicular direction to the layer surface and having an anisotropic energy from 5×10^6 to 1×10^7 erg/cc.



4,563,397

PROCESS FOR PRODUCING A MAGNETIC RECORDING MATERIAL AND ARTICLE PRODUCED

Ikuo Ishiguro, Samukawa, and Hiroyuki Nagao, Hiratsuka, both of Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1984, Ser. No. 649,299
Claims priority, application Japan, Sep. 19, 1983, 58-173682
Int. Cl.⁴ C25D 9/06, 9/08; G11B 5/62
U.S. Cl. 428—469 4 Claims

1. A process for producing a magnetic recording material comprising:

subjecting aluminum or aluminum alloy the surface of which bears an anodic oxide film formed by a primary anodic oxidation treatment in an acidic bath containing sulfuric acid or oxalic acid to a secondary anodic oxidation treatment in an acidic bath containing phosphoric acid and an immersion treatment in an acidic bath selected from the group consisting of phosphoric acid, sulfuric acid, oxalic acid, sulfosalicylic acid, sulfamic acid and mixtures thereof; and

subjecting the so-treated aluminum or aluminum alloy to an electrolytic deposition treatment in an electrolyte containing a magnetic substance.

4. A magnetic recording material obtained according to a process of claim 1.

4,563,398

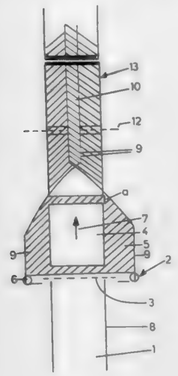
BLANK USEFUL IN THE PRODUCTION OF A TAMPON FOR FEMININE HYGIENE

Scarlet Sustmann, Viersen, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 27, 1983, Ser. No. 536,176
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236541
Int. Cl.⁴ A61F 13/20
U.S. Cl. 428—542.8 6 Claims

1. A blank useful in the production of a tampon for feminine hygiene comprising a desired length of a strip of cottonwool or rayon staple or combination thereof encompassed in a moisture-pervious fluff-free or fuzz-free nonwoven covering material consisting at least partially of thermoplastic fibers where any edges of said length of a strip of cottonwool or rayon staple or combination thereof remaining open or exposed after combination of said nonwoven covering material with said length of a strip of cottonwool or rayon staple or combination

thereof are sealed solely by the application of heat by line or spot welding or bonding to enclose the length of a strip of



cottonwool or rayon staple or combination thereof in fluff-proof or fuzz-proof form.

4,563,399

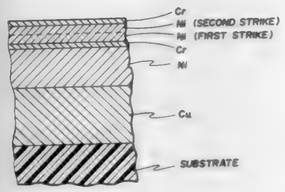
CHROMIUM PLATING PROCESS AND ARTICLE PRODUCED

Leslie S. Wright, Jr., Plainwell, Mich., assignor to Michael Ladney, Grosse Pointe Shores, Mich.

Filed Sep. 14, 1984, Ser. No. 650,857

Int. Cl.⁴ C25D *5/14*

U.S. Cl. 428—626 **12 Claims**



1. A process for electroplating a chromium finish on a substrate comprising the steps of:

a. preparing the substrate for the application of a first chromium layer;

b. electrochemically depositing the first chromium layer onto the prepared substrate;

c. electrochemically depositing a strike of dissimilar metal onto the first chromium layer by live entry of the substrate into a plating composition; and

d. electrochemically depositing a second chromium layer onto the strike of dissimilar metal.

4,563,400

PRIMER FOR METAL FILMS ON NONMETALLIC SUBSTRATES

Russell C. Criss, Pittsburgh, and F. Howard Gillery, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 530,553, Sep. 9, 1983, Pat. No. 4,512,863. This application Feb. 19, 1985, Ser. No. 702,977

Int. Cl.⁴ C03C *27/02*

U.S. Cl. 428—630 **9 Claims**

1. An article of manufacture comprising:

a. a nonmetallic substrate capable of oxidative bonding with a metal primer layer;

b. a primer layer of a metal which bonds oxidatively with the substrate surface; and

c. a coating of a metal selected from the group consisting of silver, copper, gold, platinum, palladium and mixtures thereof deposited on said primer layer.

4,563,401

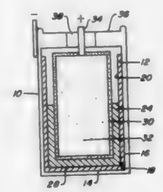
ELECTROCHEMICAL CELL WITH ADJUSTABLE STEP-LIKE OUTPUT VOLTAGE

Philip F. Kane, East Weymouth, and Nikola Marincic, Winchester, both of Mass., assignors to Battery Engineering, Inc., Hyde Park, Mass.

Continuation of Ser. No. 521,184, Aug. 8, 1983, abandoned. This application Dec. 24, 1984, Ser. No. 686,614

Int. Cl.⁴ H01M *10/48*

U.S. Cl. 429—91 **12 Claims**



1. An electrochemical cell, comprising:

alkali anode means comprising at least two surface members of the same electrochemically active material and of different thicknesses, each member having a surface area exposed to the interior of said cell;

oxyhalide cathode means comprising one or more surface members having surface areas coextensive with said exposed surface areas of said anode means;

electrolyte means disposed between said coextensive surface areas of said anode means and said cathode means;

said anode means, cathode means and electrolyte means being formed of respective materials adapted to provide a substantially constant output voltage until depletion of one of said anode members; and

said one anode surface member of lesser thickness and not coextensive being depleted prior to said other anode surface member of greater thickness and coextensive to produce a step change in said output voltage from a higher substantially constant output voltage to a lower substantially constant output voltage.

4,563,402

LEAD STORAGE BATTERY WITH IMPROVED BOND BETWEEN THE TERMINAL POLE AND THE COVER

Kenji Kobayashi; Yasuhiko Uchida, and Tsuyoshi Utsunomiya, all of Kanagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

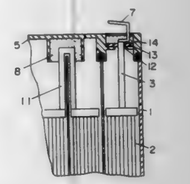
PCT No. PCT/JP84/00139, § 371 Date Nov. 27, 1984, § 102(e) Date Nov. 27, 1984, PCT Pub. No. WO84/03999, PCT Pub. Date Oct. 11, 1984

PCT Filed Mar. 27, 1984, Ser. No. 680,339

Claims priority, application Japan, Mar. 28, 1983, 58-44491; Mar. 28, 1983, 58-44492

Int. Cl.⁴ H01M *2/30*

U.S. Cl. 429—178 **6 Claims**



1. A lead storage battery, comprising:

a plastic container having an open top end;

a cover covering said open top end;

a group of battery plates having poles, housed in said plastic container;

terminals having first ends connected to said poles and second poles projecting upward through said cover; and

bonding agent partly embedding said terminals at said first ends and fixing said cover and said container together;

said plastic container having a terminal receiving recess below and covered by said cover, each of said terminals having a bend betwen said first and second ends, inserted in said recess and positioned below said bonding agent so as to define a space in said recess between said bend and said bonding agent so as to prevent overall surface contact therebetween.

4,563,403

ELECTROLYTE FOR ELECTRO-CHEMICAL CELLS

John D. Julian, Flötzersteig 203, Vienna A-1140, Austria

Continuation-in-part of Ser. No. 286,572, Jul. 24, 1981, abandoned. This application Feb. 23, 1984, Ser. No. 583,100

Int. Cl.⁴ H01M *10/26*

U.S. Cl. 429—198 **9 Claims**

1. In a current producing cell or an accumulator with electrodes comprising active materials and a single dilute aqueous electrolyte conducting ions between the electrodes, wherein the improvement comprises up to 4 grams, per 100 ml of the dilute electrolyte, of a potassium or sodium ferro- or ferricyanide additive increasing the ion conductivity of the electrolyte and reducing the electrode solubility.

4,563,404

CELL GELLING AGENT

William S. Bahary, Pearl River, N.Y., assignor to Duracell Inc., Bethel, Conn.

Filed Jun. 18, 1984, Ser. No. 621,831

Int. Cl.⁴ H01M *4/26, 4/62*

U.S. Cl. 429—206 **19 Claims**

1. A method of gelling anodes for alkaline cells comprising the step of gelling an anode active material with hydrolyzed polyacrylonitrile and an alkaline electrolyte solution.

4,563,405

PROCESSING SOLUTION HAVING BLEACHING ABILITY FOR LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Masao Ishikawa; Kazuhiro Kobayashi, and Shigeharu Koboshi, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1984, Ser. No. 620,459

Claims priority, application Japan, Jun. 23, 1983, 58-111868; Jun. 27, 1983, 58-114367; Dec. 19, 1983, 58-237964

Int. Cl.⁴ G03C *5/38*

U.S. Cl. 430—460 **13 Claims**

1. A processing solution having bleaching ability for light-sensitive silver halide photographic material, which comprises; an oxidizing agent comprising a diethylenetriaminepentaacetic acid iron (III) complex salt; and at least one metal ion selected from the group consisting of nickel, cobalt, zinc, cerium, ruthenium, yttrium, samarium, magnesium, calcium, bismuth, strontium, manganese, aluminum, tin, barium, indium, thallium and zirconium; and a chelating agent other then diethylenetriaminepentaacetic acid or salt thereof.

4,563,406

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL WITH WHITE LAYER AND COLORANT CONTAINING LAYER

Keiji Ohbayashi, and Kaoru Onodera, both of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 424,273, Sep. 27, 1982, abandoned. This application Jul. 12, 1984, Ser. No. 630,333

Claims priority, application Japan, Oct. 7, 1981, 56-160747

Int. Cl.⁴ G03C *1/84*

U.S. Cl. 430—513 **10 Claims**

1. A light-sensitive silver halide photographic element comprising a support having successively thereon a colorant containing layer, a white pigment containing layer and at least one silver halide emulsion layer; said colorant containing layer containing a colorant selected from the group consisting of a yellow colloidal silver, a grey colloidal silver, a blue colloidal silver and a filter dye, said colorant containing layer being capable of transmitting light in an amount of up to 50% and being capable of being made substantially colorless by a photographic treatment; said white pigment containing layer being permeable to a photographic treating solution and wherein the white pigment in said white pigment containing layer is present in an amount sufficient to maintain the white color of the pigment when viewing said element.

4,563,407

PHOTO-MASK BLANK COMPRISING A SHADING LAYER HAVING A VARIABLE ETCH RATE

Shigekazu Matsui; Kenichi Kagaya; Masao Ushida, and Kouichi Maruyama, all of Tokyo, Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Nov. 15, 1983, Ser. No. 552,156

Claims priority, application Japan, Nov. 16, 1982, 57-199786; Nov. 16, 1982, 57-199787

Int. Cl.⁴ G03F *9/00*

U.S. Cl. 430—5 **17 Claims**

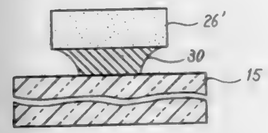
1. A photo-mask blank for use in a lithography technique, comprising a transparent substrate member having a principal surface and a shading layer of chromium having a first surface in contact with said principal surface and a second surface opposite said first surface, said shading layer comprising:

a first portion which is adjacent said principal surface and which provides said first surface, said first portion having a first etch rate; and

a second portion which is farther from said first surface than said first portion and which provides said second surface,

said second portion having a second etch rate lower than first etch rate,





both of said first and second portions including either one of nitrogen or carbon dispersed therein to provide said first and second etch rates.

4,563,408

PHOTOCONDUCTIVE IMAGING MEMBER WITH HYDROXYAROMATIC ANTIOXIDANT

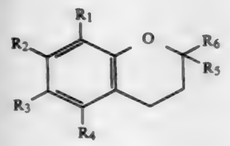
John W. P. Lin; Lesley P. Dudek, both of Webster; William W. Limburg, Penfield, and Eric J. Schneider, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 24, 1984, Ser. No. 686,045

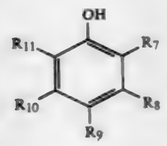
Int. Cl.⁴ G03G *5/14*

U.S. Cl. 430—59 **13 Claims**

1. An electrophotographic imaging member comprising a conductive layer, a charge transport layer comprising an aromatic amine charge transport or hydrazone molecule in a continuous polymeric binder phase, and a contiguous charge generation layer comprising a photoconductive material, a polymeric binder and from about 0.01 percent by weight to about 20 percent by weight of a hydroxyaromatic antioxidant based on the total weight of said charge generation layer, said hydroxyaromatic antioxidant selected from the group consisting of a hydroxyaromatic compound having the structural formula



wherein R_1, R_2, R_3, and R_4 are independently selected from the group consisting of hydrogen, a hydroxyl group, an alkoxy group containing 1 to 6 carbon atoms, and an alkyl group containing 1 to 6 carbon atoms, wherein at least one of said R_1, R_2, R_3, and R_4 is a hydroxyl group, and R_5 and R_6 are independently selected from the group consisting of hydrogen, an alkenyl group containing 2 to 40 carbon atoms, and an alkyl group containing 1 to 40 carbon atoms, and monomeric or polymeric phenolic compounds having the structural formula



wherein R_7, R_8, R_9, R_{10}, and R_{11} are independently selected from the group consisting of hydrogen, a hydroxyl group, a linear alkyl group containing 1 to 20 carbon atoms, a branched alkyl group containing 1 to 20 carbon atoms, an alkenyl group containing 1 to 20 carbon atoms, an ester group containing 1 to 20 carbon atoms, an unsubstituted phenyl group, a substituted phenyl group, a napthyl group, an ester group, and an alkoxy group containing 1 to 20 carbon atoms.

4,563,409

AZO MOIETY CONTAINING METAL COMPLEXES IN TONERS

Nobuo Suzuki, Shobu; Takeo Kurahashi, Yokohama; Katsuichi Motohashi, Urawa; Genpei Sugiyama, and Takayuki Sakai, both of Tokyo, all of Japan, assignors to Hogohaya Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 668,323

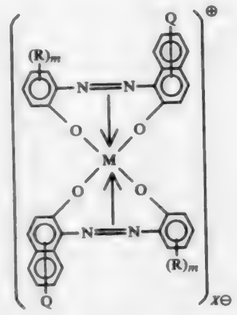
Claims priority, application Japan, Nov. 4, 1983, 58-205879; Nov. 4, 1983, 58-205880; Nov. 8, 1983, 58-208256; Nov. 8, 1983, 58-208257

Int. Cl.⁴ G03G *9/08*

U.S. Cl. 430—106 **4 Claims**

1. A symmetric 2:1 metal complex represented by the general formula:

(I)



where R is a hydrogen atom, an alkyl group having from 1 to 10 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, an alkoxycarbonyl group having from 2 to 5 carbon atoms, an acyl group having from 2 to 5 carbon atoms, an aminocarbonyl group, an alkylaminocarbonyl group having from 2 to 5 carbon atoms, an alkylsulfonyl group having from 1 to 3 carbon atoms, an aminosulfonyl group, an acylamino group having from 2 to 5 carbon atoms, a nitro group, a cyano group or a halogen atom, m is an integer of from 1 to 4, when m is 2 or more, the plurality of R may be the same or different substituents, Q is —NHCO—Y—Z or —CONH—Y—Z (where Y is an alkylene group having from 1 to 4 carbon atoms, and Z is a quaternary ammonium group), M is a chromium atom or a cobalt atom, and $X^{\ominus}$ is an anion.

3. An electrophotographic toner containing from 1 to 50% by weight of the metal complex of the formula I as defined in claim 1, and from 50 to 99% by weight of a resin.

4,563,410

METHOD FOR THE PREPARATION OF A PLANOGRAPHIC PRINTING PLATE USING NIS CONTAINING NUCLEI

Antoine A. De Jaeger, Kessel; Alfons J. Bertels, Oles; Albert L. Poot, Kontich; René M. De Keyzer, Bornem, and Francis J. Sels, Kontich, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

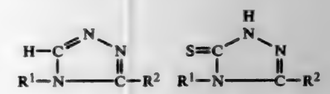
Continuation of Ser. No. 466,656, Feb. 15, 1983, abandoned. This application Aug. 15, 1984, Ser. No. 640,551

Claims priority, application United Kingdom, Feb. 19, 1982, 8205022

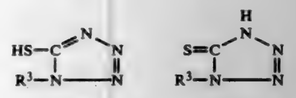
Int. Cl.⁴ G03C *5/54*; G03F *7/06*

U.S. Cl. 430—204 **8 Claims**

1. A method for the preparation of a planographic printing plate which comprises treating a sheet material having an outer gelatin colloid layer on the surface of which is concentrated a silver image formed by the silver complex diffusion transfer process on development nuclei the major proportion of which is concentrated at the top of said outer layer, wherein said nuclei are NiS or mixed crystal NiS.Ag_2S nuclei in which the molar ratio of NiS to Ag_2S is not smaller than 1:1 and the hydrophilic colloid to nuclei weight ratio in said outer colloid layer is at least 1:1 but not higher than 4:1, with an aqueous liquid for hydrophibizing said silver image, wherein said liquid is free of any oxidizing agent, developing agent and silver halide solvent, has a pH in the range of 5 to 6, and contains in dissolved state a heterocyclic compound corresponding to one of the following tautomeric structures (A) and (B) or (C) and (D):



(A) (B)



(C) (D)

wherein:

R^1 represents hydrogen, amino or acylamino,

R^2 represents an alkyl group having 5–16 carbon atoms, and

R^3 represents an alkyl group having 5–16 carbon atoms, or an alkanamido-arylene group,

whereby the hydrophobic ink-receptivity of the unoxidized silver image is improved.

4,563,411

COPOLYMERIC MORDANTS AND PHOTOGRAPHIC PRODUCTS AND PROCESSES CONTAINING SAME

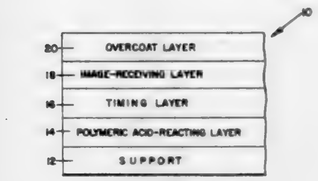
Irena Y. Bronstein-Bonte, Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

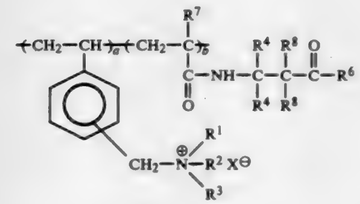
Filed Aug. 17, 1984, Ser. No. 641,766

Int. Cl.⁴ G03C *1/40, 5/54*

U.S. Cl. 430—213 **40 Claims**

1. An image-receiving element which comprises a support carrying an image-receiving layer comprising a copolymeric mordant having recurring units according to the formula





wherein each of R^1, R^2 and R^3 is methyl; $X\ominus$ is an anion; each R^4 is methyl; R^6 is alkyl of from 1 to 4 carbon atoms; R^7 is hydrogen; each R^8 is hydrogen and wherein the molar ratio of the respective recurring units represented by integers a and b is in the range of from about 0.3:1 to about 3:1.

4,563,412

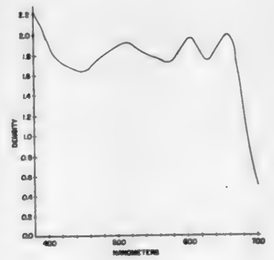
BLACK IMAGE DYE-PROVIDING MATERIALS AND PHOTOGRAPHIC PRODUCTS AND PROCESSES UTILIZING SAME

Patrick F. King, No. Quincy, and Stephen G. Stroud, Allston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 564,016, Dec. 21, 1983, abandoned. This application Sep. 26, 1984, Ser. No. 654,774

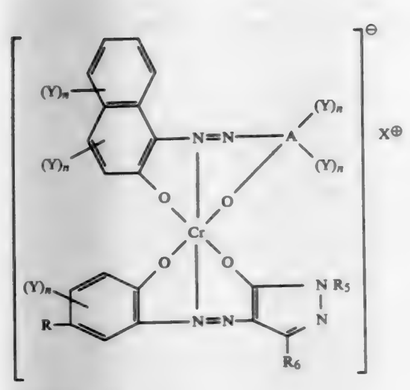
Int. Cl.⁴ G03C *1/40, 5/54*

U.S. Cl. 430—223 **17 Claims**

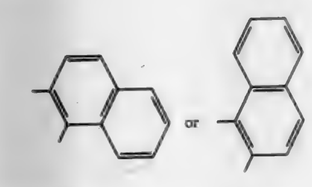


9. A diffusion transfer film unit comprising

(a) a photosensitive element comprising a support, a silver halide emulsion in a layer carried by said support, and an image dye-providing material in a layer carried by said support on the same side thereof as said silver halide emulsion, wherein said image dye-providing material is a compound represented by the formula



wherein A is



R is hydrogen $—NO_2$, $—SO_3H$ or $—SO_2NR_1R_2$; R_1 and R_2 are the same or different and each is hydrogen, alkyl, substituted alkyl, aryl or substituted aryl; R_5 and R_6 are the same or different and each is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl or $(Y)_n$, Y is a substituent including at least one diffusion control moiety, n is 0 or 1, provided that at least one n is 1; and X is a cation;

(b) a second sheet-like element adapted to be superposed on said photosensitive element prior to, during or after photoexposure;

(c) an image receiving layer positioned in one of said photosensitive or second sheet-like elements; and

(d) a rupturable container releasably holding an aqueous alkaline processing composition and so positioned as to be adapted to distribute said processing composition between predetermined layers of said elements.

4,563,413

PHOTOPOLYMER PROCESS AND COMPOSITION EMPLOYING A PHOTOOXIDIZABLE COMPONENT CAPABLE OF FORMING ENDOPEROXIDES

Wayne R. Messer, Landenberg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 23, 1984, Ser. No. 602,784

Int. Cl.[4] G03C *1/68, 1/70*

U.S. Cl. 430—281 **2 Claims**

1. In a photosensitive composition comprising (1) from about 5% to about 98% of a free radical polymerizable ethylenically unsaturated component selected from the group consisting of ethylenically unsaturated monomers, ethylenically unsaturated polymers and mixtures thereof, capable of forming a high molecular weight polymer by addition polymerization or crosslinking, (2) a photooxidizable component in an amount which will contribute to the photosensitive composition at least 1.0×10^{-3} moles of olefinic unsaturation per 1000 cc. of the composition, (3) a photooxygenation sensitizer, (4) from about 5% to about 90% by weight of the photosensitive composition of a saturated polymer component as a viscosity regulating agent, and (5) from about 0.001% to about 5%, based on total solids of a catalyst for decomposition of oxidation products, selected from metal catalysts and nonmetallic reducing agents, the improvement wherein said photooxidizable component comprises a cyclic cisoid conjugated diene capable of 1,4-addition with singlet oxygen to form an endoperoxide.

4,563,414

METHOD OF PRODUCING A MASK TO BE USED FOR THE PRODUCTION OF A CERAMIC FILTER

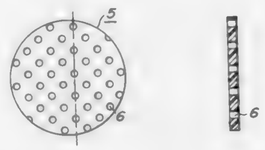
Yutaka Ogawa; Shoji Asai, both of Nagoya, and Masashi Otaka, Mie, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Oct. 18, 1983, Ser. No. 543,119

Claims priority, application Japan, Mar. 25, 1983, 58-48946

Int. Cl.[4] G03C *5/00;* **B32B** *3/12*

U.S. Cl. 430—325 **20 Claims**



1. A method of producing a mask to be used in the production of a ceramic filter from a porous ceramic honeycomb structural body, comprising producing an ultraviolet ray-transmitting film which does not transmit ultraviolet rays through portions corresponding to through holes of a porous ceramic honeycomb structural body which are to be filled with a sealing material, which is injected at opening end surfaces of the body, and the transmitting film can transmit ultraviolet rays through portions corresponding to through holes of the body which are not to be filled with the sealing material which is injected at the opening end surfaces of the body; arranging the film on an ultraviolet ray-curable resin; irradiating the ultraviolet ray-curable resin by passing ultraviolet rays through the transmitting film to the ultraviolet ray-curable resin; and removing all portions of the ultraviolet ray-curable resin which have not been cured by the ultraviolet rays, thereby producing a mask for selectively filling through holes of the honeycomb body with the sealing material.

4,563,415

THERMOGRAPHIC SYSTEM USING NAPHTHOYLATED LEUCO PHENAZINE DYES

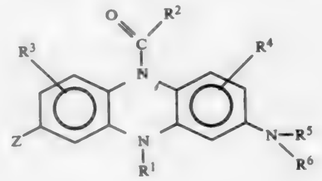
Harvey A. Brown, Lake Elmo; Louis M. Leichter, Woodbury, and Alan G. Miller, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 482,320, Apr. 5, 1983, abandoned. This application Oct. 18, 1984, Ser. No. 662,531

Int. Cl.[4] G03C *1/52*

U.S. Cl. 430—340 **9 Claims**

1. A thermally imageable layer consisting essentially of a polymeric binder, and at least one leuco dye in reactive association with a nitrate salt, wherein the action of heat can oxidize said at least one leuco dye to give a change in color, said at least one leuco dye having the structural formula



wherein

R^1 is selected from the group consisting of alkyl radicals, aryl radicals, alkoxy radicals, and aroyl radicals,

R^2 is selected from the group consisting of 1-naphthyl radical and 2-naphthyl radical,

R^3 and R^4 are independently selected from the group consisting of hydrogen, halogens, substituted or unsubstituted alkyl radicals, and aromatic rings condensed on the 1, 2 and 8, 9 positions,

Z is selected from the group consisting of hydrogen, -OH, -SH, substituted or unsubstituted alkyl radicals, alkoxy radicals, $—NR^5R^6$, and $—NR^7R^8$,

R^5 and R^6 are independently selected from the group consisting of hydrogen, alkyl radicals, aryl radicals, aralkyl radicals, 1-naphthoyl radical, and 2-naphthoyl radical, provided that if either R^5 or R^6 is hydrogen, the other is not hydrogen,

R^7 and R^8 are independently selected form the group consisting of hydrogen, alkyl radicals, aryl radicals, and aralkyl radicals, 1-naphthoyl radical, and 2-naphthoyl radical, provided that if either R^7 or R^8 is hydrogen, the other is not hydrogen.

4,563,416

SOLID STATE TRACK DETECTOR COMPOSED OF COPOLYMER OF ALKYLENE GLYCOL BISALLYL CARBONATE AND MINOR AMOUNT OF HIGHER ALKYL ACRYLATE OR METHACRYLATE

Kazuo Shikata, Tokuyama, and Yoshinori Mizumoto, Kudamatsu, both of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Filed Sep. 28, 1984, Ser. No. 655,532

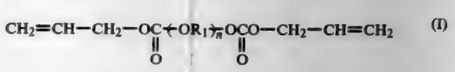
Claims priority, application Japan, Sep. 30, 1983, 58-180609

Int. Cl.[4] G03C *1/76*

U.S. Cl. 430—533 **8 Claims**

1. A solid state track detector composed of a crosslinked copolymer, said copolymer consisting essentially of

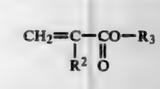
(A) units derived from an alkylene glycol bisallyl carbonate represented by the general formula



(I)

wherein R_1 represents an alkylene group having 2 to 6 carbon atoms, and n is an integer of from 1 to 6, and

(B) units derived from an alkyl acrylate or methacrylate represented by the general formula



(II)

wherein R_2 represents a hydrogen atom or a methyl group and R_3 represents an unsubstituted or substituted alkyl group having 6 to 20 carbon atoms,

the proportion of said units derived from the alkyl acrylate or methacrylate of formula (II) being 0.5 to 3 mole% based on the crosslinked copolymer.

4,563,417

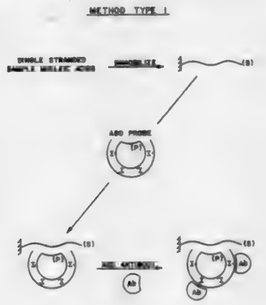
NUCLEIC ACID HYBRIDIZATION ASSAY EMPLOYING ANTIBODIES TO INTERCALATION COMPLEXES

James P. Albarella, Elkhart, Ind., and Leslie H. D. Anderson, Encinitas, Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 645,850, Aug. 31, 1984, abandoned, which is a continuation-in-part of Ser. No. 560,429, Dec. 12, 1983, abandoned. This application Dec. 24, 1984, Ser. No. 685,903

Int. Cl.[4] C12Q *1/68;* **G01N** *53/00, 33/567*

U.S. Cl. 435—6 **43 Claims**



1. A method for detecting a particular polynucleotide sequence in a test medium containing single stranded nucleic acids, comprising the steps of:

(a) combining the test medium with (i) a nucleic acid probe comprising at least one single stranded base sequence which is substantially complementary to hybridization between the sequence to be detected and the complementary sequence in the probe, and (ii) a nucleic acid intercalator capable of binding to double stranded nucleic acid in the form of intercalation complexes, and

(b) detecting hydridized probe by adding an antibody, or a fragment thereof, capable of binding with intercalation complexes in the hybridization product resulting from step (a), and determining the antibody or fragment thereof which becomes bound to such complexes.

4,563,418

PROCESS FOR DETECTION OF SELECTED MOTILE ORGANISMS

N. Robert Ward, Jr., Santa Ana, Calif., assignor to Bio-Controls Systems, Inc., Kent, Wash.

Continuation of Ser. No. 366,978, Apr. 9, 1982, abandoned. This application Jun. 15, 1984, Ser. No. 621,182

Int. Cl.[4] G01N *33/54;* **C12Q** *1/29, 1/24, 1/04*

U.S. Cl. 435—7 **21 Claims**

1. A method of detecting a particular motile organism in a sample, comprising the steps of:

enriching a sample containing a particular motile organism in a first enrichment medium selective for the particular motile organism;

filling a motility vessel having two spaced end openings and a central motility portion therebetween with a motility medium that is non-selective for the growth of competitive motile organisms relative to the growth of the particular motile organism and contains a chemotactic attractant of the particular motile organisms and their motile competitors;

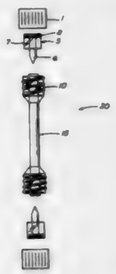
inoculating the motility medium through one opening of the motility vessel by adding to the exposed surface of said medium at said one opening the selectively enriched sample and a quantity of a second enrichment medium selective for the growth of the particular motile organism

relative to the growth of its motile competitors, said second enrichment medium having added to it a sufficient concentration of a chemotactic attractant of the particular motile organisms and their motile competitors to cause motile inhibition of the particular motile organisms and their motile competitors for a time interval sufficient for the particular motile organisms to have a growth advantage over their motile competitors;

adding to the exposed surface of the motility medium, at the other opening of the motility vessel, diffusible antibodies specific to the flagella of the particular motile organisms;

incubating the motility vessel under sufficient temperature and time conditions to permit the motile organisms to metabolize the chemotactic attractant added to said second enrichment medium, thereby reducing its concentration sufficiently to relieve the motile inhibition of the particular motile organisms and their motile competitors, whereby the motile organisms move through the central motility portion of the vessel toward the diffusing antibodies by chemotaxis and the particular motile organisms are immobilized by said antibodies, the quantity of antibodies being sufficient to produce a permanent immobilization band and the concentration of the chemotactic attractant in the central motility portion being sufficient to exceed the concentration thereof remaining in the second enrichment medium after said time interval but insufficient to prevent the movement thereafter through the central motility portion to said antibodies of a quantity of the particular motile organisms sufficient to produce a visually observable immobilization band; and

observing said immobilization band.



4,563,419

DETECTION OF MICROBIAL NUCLEIC ACIDS BY A ONE-STEP SANDWICH HYBRIDIZATION TEST

Tuula M. Ranki, and Hans E. Soderlund, both of Espoo, Finland, assignors to Orion Corporation Ltd., Espo, Finland

Continuation-in-part of Ser. No. 434,182, Oct. 14, 1982, Pat. No. 4,486,539. This application Dec. 29, 1983, Ser. No. 566,532

Claims priority, application Finland, Oct. 16, 1981, 813251

The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.

Int. Cl.⁴ C12Q *1/68*; C12N *15/00*

U.S. Cl. 435—6 **8 Claims**

1. A method for identifying microbial nucleic acids by a one-step sandwich hybridization test, said method comprising the steps of:

(a) rendering the microbial nucleic acids in the sample to be identified single-stranded;

(b) allowing said microbial single-stranded nucleic acids of the sample to hybridize simultaneously with two purified nucleic acid reagents, both having been isolated from the genome of a known microbe, wherein the first nucleic acid reagent comprises a single-stranded fragment of nucleic acid, having a nucleotide sequence of at least 10 bases and being affixed to a solid carrier, and wherein the second nucleic acid reagent comprises a single-stranded fragment of nucleic acid, having a nucleotide sequence of at least 10 bases and being labelled with a suitable label such that hybridized microbial nucleic acids can be detected, said first and second nucleic acid reagents being capable of base pairing with complementary sequences of the sample nucleic acid to be identified, provided that the second nucleic acid reagent does not hybridize with the first nucleic acid reagent;

(c) washing said solid carrier to substantially remove said label which is not incorporated into the hybrid formed by the base pairing of the second nucleic acid reagent and the nucleic acids to be identified; and

(d) measuring said label on the washed solid carrier, whereby determining whether the sample contains the nucleic acid to be identified.

4,563,420

PROCESS FOR ASSAYING THE ACTIVITY OF TISSUE PLASMINOGEN ACTIVATOR, AND KIT SUITABLE FOR USE IN SAID PROCESS

Johan H. Verheijen, Rotterdam, and Willem Nieuwenhuizen, Bunnik, both of Netherlands, assignors to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed May 6, 1983, Ser. No. 492,494

Claims priority, application Netherlands, May 13, 1982, 8201987

Int. Cl.⁴ C12Q *1/56*

U.S. Cl. 435—13 **14 Claims**

1. In a process for assaying the activity of tissue plasminogen activator in a sample, comprising the incubation of the sample with:

(a) plasminogen,

(b) a stimulator for the conversion of plasminogen to plasmin by tissue plasminogen activator, and

(c) a substrate for plasmin which gives a detectable reaction product on reaction with plasmin;

followed by a step of measuring the amount of reaction product formed, the improvement comprising using, as the stimulator (b), water-soluble fibrinogen or fibrin fragments comprising at least partially the D-domains of the fibrinogen or fibrin molecule and being smaller than fragment X.

3. A kit for assaying the activity of tissue plasminogen activator in a sample, comprising:

(a) a container with a measured amount of a substrate for plasmin giving a detectable reaction product on reaction with plasmin,

(b) a container with a measured amount of plasminogen, and

(c) a container with a measured amount of water soluble fibrinogen or fibrin fragments comprising at least partially the D-domains of the fibrinogen or fibrin molecule and being smaller than fragment X.

4,563,421

METHOD FOR DETERMINING THE PRESENCE OF ENDOHYDROLASE IN A LIQUID AND COMPOSITION THEREFOR

Klaus Habenstein, Lahntal, and Helmut Kohl, Wetter, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 225,647, Jan. 16, 1981, abandoned. This application Nov. 25, 1983, Ser. No. 555,435

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001878

Int. Cl.⁴ A61K *31/715*; I12Q *1/34*

U.S. Cl. 435—18 **6 Claims**

1. An indicator for determining the presence of an endohydrolase, said indicator comprising a cellulose carrier impregnated with an adherent compound fixed onto said carrier by simple drying, which compound is a water soluble carboxyalkylated or hydroxyalkylated starch wherein the alkyl groups have from 1 to 5 carbon atoms, said starch having a dye bonded thereto, said compound being susceptible to enzymatic cleavage to release said dye therefrom when said indicator is contacted with an endohydrolase.

5. A method for determining the presence of an endohydrolase in a liquid, which method comprises contacting said liquid with an indicator as in claim 1, whereby dye groups are enzymatically cleaved in the presence of an endohydrolase, and detecting the cleaved dye groups.

4,563,422

METHOD AND COMPOSITION FOR THE REMOVAL OF ASCORBIC ACID FROM AQUEOUS LIQUIDS

Ulfert Deneke, Mörlenbach; Hans Lange, Lampertheim, and Walter Rittersdorf, Mannheim-Waldhof, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Continuation of Ser. No. 135,378, Mar. 28, 1980, abandoned. This application May 21, 1982, Ser. No. 380,804

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914487

Int. Cl.⁴ C12Q *1/30, 1/28*

U.S. Cl. 435—27 **19 Claims**



1. Process for removing ascorbic acid from an aqueous solution containing same which process comprises adding to the aqueous solution, ascorbate oxidase, catalase and hydrogen peroxide, the catalase being added simultaneously with, or prior to the addition of hydrogen peroxide.

4,563,423

PRODUCTS DISPLAYING THE ANTIGENICITY OF HEPATITIS B VIRUS E ANTIGENS AND METHODS OF PRODUCING THOSE ANTIGENS

Kenneth Murray, Heidelberg, Fed. Rep. of Germany, and Patricia MacKay, Cornwall, Scotland, assignors to Biogen N.V., Curacao, Netherlands Antilles

Filed Sep. 2, 1982, Ser. No. 414,439

Claims priority, application United Kingdom, Sep. 2, 1981, 8126583

Int. Cl.⁴ C12P *21/00, 21/02, 21/04, 19/34*; C12N *15/00, 1/20, 1/00*; C12Q *1/38, 1/36*; A61K *37/00*; C07G *7/00*

U.S. Cl. 435—68 **6 Claims**

1. A process for producing at least one polypeptide displaying the antigenicity of hepatitis B virus e antigens comprising the steps of:

(a) preparing a bacterial extract of a host characterized by the expression of a polypeptide displaying the antigenicity of hepatitis B virus core antigen; and

(b) digesting said extract with a reducing agent resistant protease in the presence of a reducing agent to convert the polypeptide displaying the antigenicity of hepatitis B virus core antigen into a polypeptide displaying the antigenicity of hepatitis B virus e antigens.

4,563,424

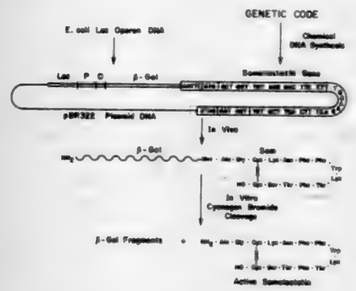
METHOD AND MEANS FOR SOMATOSTATIN PROTEIN CONJUGATE EXPRESSION

Arthur D. Riggs, La Verne, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 90,980, Nov. 5, 1979, Pat. No. 4,366,246, which is a continuation-in-part of Ser. No. 849,591, Nov. 8, 1977, abandoned. This application Jul. 30, 1982, Ser. No. 403,676

Int. Cl.⁴ C12P *21/04*; C12N *15/00, 1/00*

U.S. Cl. 435—71 **11 Claims**



1. A recombinant microbial cloning vehicle comprising a regulon, a structural gene coding for the amino acid sequence of somatostatin and one or more termination codons, wherein a DNA sequence coding for additional protein is interposed between said regulon and termination codon(s) such that expression yields a conjugate protein consisting essentially of the amino acid sequences of somatostatin and additional protein, the conjugate protein being immunogenic with respect to one or more somatostatin determinants.

4,563,425

ENZYME REACTION METHOD FOR ISOMERIZATION OF GLUCOSE TO FRUCTOSE

Toshio Yoshioka; Kazuo Teramoto, and Masaharu Shimamura, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 355,240, Mar. 5, 1982, abandoned. This application Apr. 2, 1984, Ser. No. 596,101

Claims priority, application Japan, Mar. 19, 1981, 56-39930

Int. Cl.⁴ C12P *19/24*; C12N *11/02, 11/08, 9/96*

U.S. Cl. 435—94 **21 Claims**

1. In an enzyme isomerization reaction method in which a glucose-containing substrate solution is contacted with an immobilized glucose isomerase to produce a fructose-containing syrup, the improvement comprising, prior to the isomerization reaction, contacting said substrate solution with a synthetic organic ion exchanger to which ions of iron are bonded.

4,563,426

PROCESS FOR PRODUCING BIOTIN-VITAMERS

Hideaki Yamada; Yoshiki Tani, both of Kyoto, and Yoshikazu Izumi, Hirakata, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 260,885, May 6, 1981, abandoned. This application Jun. 21, 1983, Ser. No. 505,124

Claims priority, application Japan, May 15, 1980, 55-64425

Int. Cl.⁴ C12P *17/18*; C12N *1/38*

U.S. Cl. 435—119 **4 Claims**

1. In a process which comprises cultivating a strain of the genus Bacillus having the ability to produce a biotin-vitamer in a nutrient-containing culture medium in the presence of pimelic acid thereby to produce the biotin-vitamer and accumulate it in the culture medium, the improvement wherein pimelic

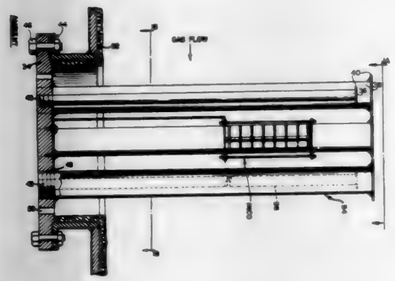
acid is added to the culture medium one to two days after the starting of the cultivation.

4,563,427

CORROSION TEST ASSEMBLY

Mark D. Weiss, 1033 Brice Rd., Rockville, Md. 20852, and Stephen W. Christoffersen, 6825 Kincaid Ave., Falls Church, Va. 22042

Filed Oct. 28, 1983, Ser. No. 546,597
Int. Cl.[4] G01N *31/00, 17/00*
U.S. Cl. 436—6 9 Claims



1. A method of determining corrosive effects on components within a gas scrubber system, said method comprising mounting a plurality of test specimens on a removable mounting means, on the exterior of a component of a scrubber system, with said test specimens extending into the interior of said component, each said corrosion test specimens being constituted of a pipe section having a first end thereof threaded for mounting in a coactive threaded opening in the support means and a second interior end of each pipe section being closed by a test coupon, exposing the threaded end of the pipe sections to the environment exterior to the location in which a scrubber system component is placed, the interior of the pipe sections thereby being open to the exterior environment and the exterior surface of the pipe sections within the component being heated by gas flow passing thereby, wherein the respective internal and external temperatures of the pipe sections create a cold wall effect and a condensing surface on the exterior of the pipe sections and a driving corrosive force through a coating which is on the exterior of at least one of said pipe sections.

2. An in situ corrosion test assembly adapted for operative placement in a flowing hot gaseous medium for subjection of components of said test assembly to corrosive materials in said medium, said assembly comprising a means for containing a flowing hot gaseous medium including an access opening therein, a test specimen support and assembly mounting means removably attachable on an outer surface of said containment means at said access opening, at least one corrosion test specimen mounted on said test specimen support and mounting means, each said test specimen consisting of a hollow pipe, a first end thereof being closed, said at least one test specimen positioned with said closed first end extending through said access opening into said containment means when said support and mounting means is in an operative mounted position on said containment means, so as to extend into the hot flowing gaseous medium therein with the exterior surface of said test specimen subjected to a corrosive action by corrosive materials in the gaseous medium, said hollow pipe having a second open end, said open end being exposed to the environment external to said containment means, the external and internal walls of said pipe thereby being exposed to different heats of contacting media, and thereby creating a cold wall effect on the external pipe wall, tending to condense moisture in said flowing gaseous medium into an corrosive liquid from constituents in the medium which coacts with the material of the pipe thereby causing corrosive external pitting thereof.

4,563,428

METHOD OF DETECTING OBNOXIOUS TAINT SUCH AS BOAR TAINT IN INDIVIDUAL ANIMAL BODIES, PREFERABLY CARCASSES OR PARTS THEREOF

Anna B. Mortensen, Roskilde, Denmark, assignor to Slagteriernes Forskningsinstitut, Roskilde, Denmark

PCT No. PCT/DK82/00080, § 371 Date May 6, 1983, § 102(e) Date May 6, 1983, PCT Pub. No. WO83/00928, PCT Pub. Date Mar. 17, 1983
PCT Filed Sep. 8, 1982, Ser. No. 502,020
Claims priority, application Denmark, Sep. 9, 1981, 3981/81
Int. Cl.[4] G01N *33/12, 21/78*
U.S. Cl. 436—21 16 Claims

1. A rapid and reliable method of detecting obnoxious taint in individual animal bodies, comprising the steps of:

preparing an extract of a meat and/or fat sample from a selected body or part thereof, said extract being obtained by using a polar solvent as an extraction agent to dissolve constituents of said meat and/or fat sample which are associated with obnoxious taint while substantially excluding constituents of said meat and/or fat sample which interfere with said method of detecting obnoxious taint;

reacting said extract with a coloring agent comprising p-dimethylaminobenzaldehyde to detect constituents of said meat and/or fat sample which indicate the presence of said obnoxious taint;

determining the transmittance or absorbance of the reacted extract at a wavelength in the range of 540 to 600 nm; and

detecting obnoxious taint in the selected body or part thereof based on the determined transmittance or absorbance of the reacted extract, said method of detecting obnoxious taint being completable within a time of about 10 to 20 minutes.

4,563,429

BILIRUBIN ASSAY

Basil T. Doumas, 2430 Whipple Tree La., Brookfield, Wis. 53005, and Kwok C. P. Poon, 2224 W. Wisconsin Ave. #211, Milwaukee, Wis. 53233

Filed Dec. 27, 1982, Ser. No. 453,492
Int. Cl.[4] G01N *33/72*
U.S. Cl. 436—97 3 Claims

1. A method of measuring direct bilirubin in a sample which comprises forming a mixture of the sample and a buffer having a pH of about 4 to 5 which contains iodide ions to both decrease the oxidation of hemoglobin to methemoglobin and to prevent conjugated bilirubin from being oxidized to biliverdin, adding to the mixture a diazo reagent which contains about 0.9 mmoles to about 2.8 mmoles per liter of sodium nitrate in sulfanilic acid, incubating the resulting mixture for about 4 minutes, adding sequentially ascorbic acid, alkaline tartrate and a caffeine reagent and then reading the absorbance which indicates the quantity of direct bilirubin present.

4,563,430

METHOD OF JUDGING A PARTICLE AGGLUTINATION PATTERN

Tokio Kano, Kunitachi; Akira Tamagawa, Hino, and Masanori Doi, Akishima, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

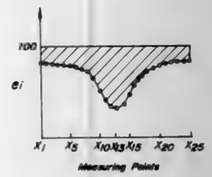
Filed Nov. 28, 1983, Ser. No. 555,483
Claims priority, application Japan, Nov. 29, 1982, 57-209147
Int. Cl.[4] G01N *21/75, 33/54*
U.S. Cl. 436—164 11 Claims

1. A method of photoelectrically judging a particle agglutination pattern formed on an inclined bottom surface of a reaction vessel by particles descending on the bottom, comprising the steps of:

scanning the particle agglutination pattern formed on the

inclined bottom surface of a reaction vessel to generate a plurality of photoelectrically converted output signals;

deriving from said output signals a predetermined number of measurement values representing the thickness at varying locations of a particle layer deposited on the bottom surface of the reaction vessel; and



effecting a first judging step utilizing said measurement values by comparing said measurement values to at least two references values to judge the particle agglutination pattern and, if the result is not indeterminate, effecting at least one additional judging step utilizing said measurement values by comparing said measurement values to at least two reference values to judge the particle agglutination pattern.

4,563,431

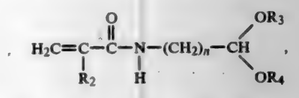
BIOLOGICALLY ACTIVE LATEX CONJUGATE

Hans-Erwin Pauly, Dautphetal; Wolfgang Kapmeyer, Marburg, and Ulrich Seitz, Leonberg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 440,986, Nov. 12, 1982, Pat. No. 4,448,908. This application Mar. 26, 1984, Ser. No. 593,301
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145082
Int. Cl.[4] G01N *33/54*
U.S. Cl. 436—533 7 Claims

1. A method for making a biologically active latex conjugate which method comprises:

(1) acidifying latex particles comprising a core of a polymer of at least one ethylenically unsaturated monomer and a shell, graft polymerized to said core, of a copolymer comprising at least one ethylenically unsaturated monomer and an acetal monomer of the formula



whereby acetal groups present in said shell are converted to aldehyde groups, and wherein, in said formula, n is 1 to 6, R_2 is H or CH_3, and R_3 and R_4 are alkyl having 2 to 6 carbon atoms, aryl, or some other inert group imparting sufficient water insolubility to said monomer to permit graft polymerization thereof to said core polymer in an aqueous latex of core polymer particles,

(2) bonding a biologically active substance having an amino group to the surface of said latex particles by reductive amination of said aldehyde groups.

4,563,432

PRODUCTION OF POROUS SINTERED CERAMIC MATERIAL

Walter Ehlert; Karl-Heinz Reuter, both of Bochum, and Klaus-Jürgen Dietzel, Bonn, all of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Oct. 21, 1983, Ser. No. 544,401
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3239033
Int. Cl.[4] C04B *38/06;* B29C *67/20*
U.S. Cl. 501—81 17 Claims



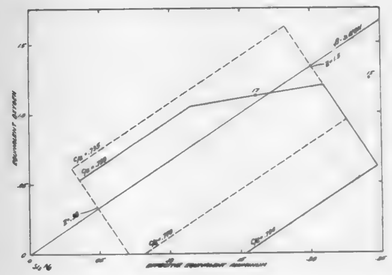
1. A sintered ceramic material comprising a refractory matrix material including closed pores, where the prevailing pore volume comprises platelet shaped and/or flake shaped voids uniformly and randomly distributed in the refractory matrix material, said voids being formed by flake shaped naphthalene.

4,563,433

CERAMIC MATERIAL AND METHOD OF MANUFACTURE

Russell L. Yeckley, and Bernard North, both of Greensburg, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 351,289, Feb. 22, 1982, abandoned. This application Feb. 15, 1983, Ser. No. 466,716
Int. Cl.[4] C04B *35/58*
U.S. Cl. 501—97 9 Claims



1. A method of producing a ceramic product, comprising the steps of forming a powder mixture consisting essentially of a first component consisting of compounds containing the elements of silicon, aluminum, oxygen and nitrogen in proportions such that the ratio of the total number of silicon and aluminum atoms to the total number of oxygen and nitrogen atoms lies in the range 0.735 to 0.77 and such that said compounds react together with the second component during the subsequent sintering process to produce a double phase ceramic material wherein a first phase obeys the general formula: $Si_{6-z}Al_zO_zN_{8-z}$ where z is between 0.38 and 1.5; wherein a second phase obeys the general formula $(Si, Al)_{12}M_x(O, N)_{16}$; and wherein up to 10 percent by weight of a second component is in the form of an oxide of at least one of the further elements, yttrium, scandium, cerium, lanthanum and the metals

of the lanthanide series; and wherein sintering said mixture in a non-reactive environment comprises placing said mixture in a graphite pot and covering with a mixture of boron nitride and silicon nitride powders while surrounding said graphite pot and said silicon nitride and boron nitride powders with a nitrogen gas, with or without the application of pressure, at a temperature between 1600 degrees Centigrade and 2000 degrees Centigrade and for a time, decreasing with increasing temperature, of at least ten minutes to at least five hours so as to produce a ceramic material containing said double phase ceramic material together with a second phase containing said at least one further element, which is a glassy phase.

4,563,434

HYDROCRACKING CATALYST

John W. Ward, Yorba Linda, Calif., and Timothy L. Carlson, Grand Junction, Colo., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 406,498, Aug. 9, 1982, Pat. No. 4,517,073, which is a continuation-in-part of Ser. No. 84,761, Oct. 15, 1979, Pat. No. 4,419,271. This application Jan. 28, 1985, Ser. No. 695,850

Int. Cl.⁴ B01J *29/10*

U.S. Cl. 502—66 **23 Claims**

2. A catalyst comprising a Group VIB and/or a Group VIII active metal component on a support comprising a dispersion of silica-alumina in alumina and a crystalline aluminosilicate zeolite having catalytic cracking activity, a silica-to-alumina mole ratio above about 6.0, an X-ray powder diffraction pattern consistent with a Y zeolite having a unit cell size of about 24.75 Angstroms or less and a water adsorption capacity at 25° C. and 4.6 mm Hg water vapor partial pressure of at least 20 percent by weight of the zeolites in its anhydrous form.

4,563,435

CATALYTIC COMPOSITION FROM REACTION OF HIGH SILICA ZEOLITES WITH BINDER

Pochen Chu, West Deptford, and William E. Garwood, Haddonfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 391,212, Jun. 23, 1982, abandoned. This application Jun. 13, 1984, Ser. No. 620,365

Int. Cl.⁴ B01J *29/28*

U.S. Cl. 502—71 **12 Claims**

1. A method for enhancing the acid activity of a high silica-containing crystalline zeolite containing from about 50 ppm to less than about 1000 ppm alumina and having an Alpha Value of less than about 5, which comprises the steps of:

(1) mulling said zeolite with an acidic inorganic oxide selected from the group consisting of alumina, zirconia, titiania and mixtures thereof in the presence of water,

(2) forming or shaping the composition of step (1) into a desired shape at a preasure of from about 2 to about 50 tons per square inch,

(3) calcining the formed or shaped composition of step (2) in a non-oxidizing atmosphere at from about 900° F. to about 1200° F. for from about 1 hour to about 5 hours,

(4) treating said calcined composition from step (3) by base-exchange in order to reduce the sodium content thereof to less than about 0.02 wt.%, and

(5) calcining said treated composition of step (4) at elevated temperature.

5. The method of claim 1 wherein said crystalline zeolite has the structure of ZSM-5, ZSM-5/ZSM-11 intermediate or ZSM-11.

9. The composition produced in accordance with the method of claim 1.

4,563,436

CATALYST COMPONENT FOR α-OLEFIN POLYMERIZATION AND METHOD OF PRODUCING THE SAME

Masuzo Yokoyama, and Toshihiko Sugano, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1984, Ser. No. 681,209

Claims priority, application Japan, Dec. 19, 1983, 58-239098

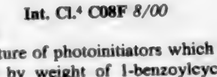
Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—104 **7 Claims**

3. A method of producing a titanium-containing solid catalyst component for polymerization of α-olefins, which comprises causing the components (A), (B) and (C) defined below to contact one another:

(A) a magnesium halide containing solid;

(B) an electron donating compound, wherein the electron donating compound is represented by the formula:



wherein R represents a hydrocarbon residue having 1 to 12 carbon atoms; and each of R^1 and R^2 represents an alkyl, an aryl, an alkyl-substituted aryl or an aryl-substituted alkyl; and

(C) a titanium halide.

4,563,437

PROCESS FOR PREPARATION OF CATALYTIC COMPONENTS FOR POLYMERIZATION OF α-OLEFINS

Yoshirou Shigetomi, Fujisawa; Toshi Suzuki, Chigasaki; Katsnori Fukui, Chigasaki; Masuo Inoue, Chigasaki; Motoaki Nomura, Yokohama, and Katuyoshi Miyoshi, Chigasaki, all of Japan, assignors to Toho Titanium Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1984, Ser. No. 645,624

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—105 **11 Claims**

1. A process for preparation of a component of a catalyst for polymerization of α-olefins comprising the steps of:

milling (a) titanium trichloride or a composition of titanium trichloride and a metal halide with (b) 0.5–10 wt.% of organic polysiloxane, (c) 0.5–15 wt.% of an ester of carboxylic acid, (d) 1–10 wt.% of ether and (e) 0.05–2 wt.% of titanium halide represented by the formula TiX_4 (X: halogen) based on said component (a), thereby to obtain a titanium-containing component; and

subjecting said titanium-containing component to heating treatment at a temperature between 30° C. and 100° C. for 1–100 hours during and/or after said milling operation.

4,563,438

LIQUID MIXTURE OF PHOTOINITIATORS

Godwin Berner, Rheinfelden, and Aloysius H. Manser, Allschwil, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,296

Claims priority, application Switzerland, May 6, 1983, 2492/83

Int. Cl.⁴ C08F *8/00*

U.S. Cl. 502—168 **7 Claims**

1. A liquid mixture of photoinitiators which consists essentially of 40–60% by weight of 1-benzoylcyclohexanol and 60–40% by weight of benzophenone or benzophenone substituted by one or more alkyl, halogen, alkoxy, alkylthio or alkoxycarbonyl groups, the latter substituted compounds melting below 80° C.

4,563,439

PREPARATION OF MIXED VANADIUM PHOSPHORUS OXIDE CATALYSTS

Noel J. Bremer, Kent, and Dennis E. Dria, Cleveland Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 488,902, Apr. 27, 1983, Pat. No. 4,465,846, which is a division of Ser. No. 320,780, Nov. 12, 1981, Pat. No. 4,396,535. This application Aug. 14, 1984, Ser. No. 640,641 The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.⁴ B01J *27/198, 27/188, 27/19, 27/192*

U.S. Cl. 502—209 **8 Claims**

1. A vanadium/phosphorus mixed oxide catalyst precursor composition prepared by contacting and heating in an aqueous medium a pentavalent vanadium compound with phosphoric acid and forming a substantially pentavalent, alpha $VOPO_4$ catalyst precursor in the aqueous medium, wherein the aqueous medium is free from agents which would substantially reduce the pentavalent, alpha $VOPO_4$ catalyst precursor, recovering the pentavalent catalyst precursor from the aqueous medium and introducing the pentavalent catalyst precursor into a substantially organic liquid medium capable of reducing at least a portion of the vanadium to a valence state of about +4.

4,563,440

PROCESS FOR PREPARING AN OXIDATION CATALYST

Pio Forzatti, Monza; Ferruccio Trifiro, Bologna, and Pierluigi Villa, Milan, all of Italy, assignors to Stamicarbon B.V., Licensing Subsidiary of DSM, Geleen, Netherlands

Filed Feb. 7, 1984, Ser. No. 577,756

Claims priority, application European Pat. Off., Feb. 8, 1983, 83200198.6

Int. Cl.⁴ B01J *21/06, 23/84, 23/88*

U.S. Cl. 502—215 **3 Claims**

1. A process for preparing a catalytic composition comprising, as active catalyst component, a solid solution consisting essentially of Fe, Sb, and Ti oxides, said catalyst component having a rutile type crystal structure and the empirical formula

$$Fe_xSb_yTi_2O_w$$

wherein, for x=1, y is between 0.5 and 10, z is between 0.16 and 209, and w represents the number of oxygen atoms corresponding to the oxide of said catalyst component having said empirical formula, said process consisting essentially in the combination of steps of:

dissolving soluble salts of Fe, Sb, and Ti in an aqueous medium;

adjusting the pH of said medium to about 8 by adding, at a temperature between 15° and 50° C., ammonia or a nitrogen-containing organic base thereto, whereby a precipitate forms;

filtering and washing said precipitate and then drying at 110°–130° C.; and thereafter

calcining said precipitate to produce said catalyst component by:

(i) first pretreating said dried precipitate by heating at a temperature between 200° and 600° C. for 2 to 24 hours; and

(ii) heating the product from (i) at a temperature of between 600° and 900° C. for 1 to 48 hours.

4,563,441

COMPOSITION FOR TREATING BEER TO PREVENT CHILL HAZE AND METAL CONTAMINATION

John R. McLaughlin, Media, Pa., and Elliot P. Hertzenberg, Wilmington, Del., assignors to PQ Corporation, Valley Forge, Pa.

Division of Ser. No. 492,314, May 6, 1983, Pat. No. 4,508,742. This application Dec. 3, 1984, Ser. No. 677,401

Int. Cl.⁴ C01B *33/22, 33/24*

U.S. Cl. 502—410 **5 Claims**

1. A composition for treating beer to prevent chill haze while averting metal contamination of the beer, said composition, comprising an inorganic chill-proofing agent and a porous, amorphous magnesium silicate having the following properties:

Properties of Magnesium Silicate	
Mole Ratio $MgO:SiO_2$	1:1.6 to 4.7
Surface Area (M^2/g)	30 to 600
Bulk Density Tamped (g/cc)	0.25 to 0.75
Weight loss 105° C. (wt %)	5 to 20
Ignition loss (wt %)	10 to 35
pH 5% wt in water	8.5 to 10.5

wherein 0.2 to 6 pbw (parts by weight) of magnesium silicate is present for each 100 pbw of chill-proofing agent.

4,563,442

GLYCOPEPTIDE BIOCONVERSION PRODUCTS

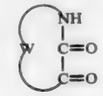
Gladys M. Clem; LaVerne D. Boeck; Marie T. Anderson, and Karl H. Michel, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 544,332, Oct. 21, 1983, abandoned. This application Sep. 24, 1984, Ser. No. 653,259

Int. Cl.⁴ A61K *37/00, 35/00;* **C07C** *103/52*

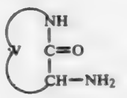
U.S. Cl. 514—9 **14 Claims**

1. A compound of the formula:



wherein

W is the remaining portion of a glycopeptide antibiotic selected from actaplanin factors B_1, B_2, B_3, C_1, C_2, C_3, D_1, D_2, E_1, G, K, L, M, N, O and actaplanin ψaglycone, each of which has the structure:



or a salt thereof.

4,563,443

ACETYLSALICYLIC ACID THIOESTERS, A PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Marino Gobetti, Milan, and Guido Vandoni, Correzzana, both of Italy, assignors to Edmond Pharma S.r.l., Italy

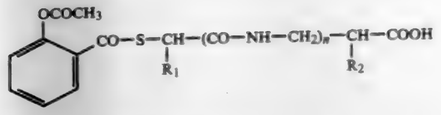
Filed Aug. 9, 1983, Ser. No. 521,715

Claims priority, application Italy, Sep. 7, 1982, 23141 A/82

Int. Cl.⁴ A61K *31/265, 31/71;* **C07C** *153/023;* **C07J** *15/00*

U.S. Cl. 514—29 **18 Claims**

1. A thioester of acetylsalicylic acid of formula



wherein R_1 is hydrogen, methyl or carboxy, R_2 is hydrogen or acetamido and n is zero or 1 or a pharmaceutically acceptable salt thereof.

5. A pharmaceutical composition having antipyretic and mucolytic activity comprising, as active ingredient an antipyretic effective amount of a thioester of acetylsalicylic acid as claimed in claim **1** together with suitable carrier and/or excipient.

4,563,444

ANTHRACYCLINE GLYCOSIDES, USE AND COMPOSITIONS CONTAINING SAME

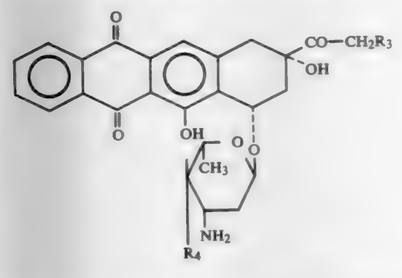
Francesco Angelucci; Sergio Penco, both of Milan, and Federico Arcamone, Nerviano, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Italy

Continuation of Ser. No. 382,144, May 26, 1982, Pat. No. 4,465,671. This application Jun. 18, 1984, Ser. No. 621,681

Int. Cl.⁴ A61K *31/71;* **C07H** *15/24*

U.S. Cl. 514—34 **7 Claims**

1. An anthracycline glycoside of the formula:



wherein each of R_3 and R_4 is independently selected from the group consisting of hydrogen and hydroxy, and the pharmaceutically acceptable acid addition salts thereof.

7. A method of inhibiting the growth of P388 leukemia, said method comprising administering to a mammal afflicted therewith, a therapeutically effective amount of a compound according to claim **1**.

4,563,445

3-FUCOSYL-N-ACETYL LACTOSAMINE DERIVATIVES, AND THEIR BIOLOGICAL APPLICATIONS

Ten Feizi; Hock C. Gooi, both of London, England, and Pierre G. Sinay, Orleans, France, assignors to Choay S.A., Paris, France

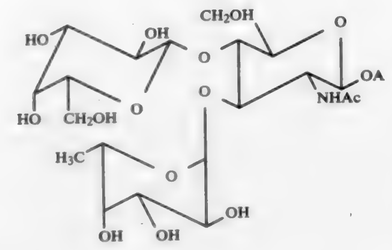
Continuation of Ser. No. 396,193, Jul. 8, 1982, abandoned. This application Jan. 9, 1984, Ser. No. 569,487

Claims priority, application France, Jul. 8, 1981, 81 13447

Int. Cl.⁴ A61K *31/73*

U.S. Cl. 514—25 **20 Claims**

1. Trisaccharides of the formula:



wherein

A is a hydroxy-alkyl group of 2 to 10 carbon atoms, an alkenyl group of 2 to 10 carbon atoms or one of the following substituents:

(1):— $(CH_2)_n$—O—$(CH_2)_{n'}$—O—$(CH_2)_m$—R

(2):— $(CH_2)_{n''}$—O—(CH_2)m'—R

(3):— $(CH_2)_{n'''}$—R

wherein

—n,n' and m, are identical or different each from other and are equal to 1,2,3,4 or 5, with m being further equal to 0, —n'' and m' are identical or different each from other, being equal to 1,2,3,4 or 5 with m' being further equal to 0, n''+m' (where m' is not 0) being an integer from 4 to 10, —n''' is an integer from 1 to 10 and —R is hydrogen, where m=0 in (1), OH, and COOR' wherein R' is alkyl or alkenyl of 2–10 carbon atoms, —COOH, —$CONH_2$ N_3 or —NH_2

and

B is hydrogen.

11. An immunological reagent which comprises a reactively effective and detectable amount of trisaccharide according to claim **1** in admixture with a suitable carrier.

4,563,446

THROMBOXANE SYNTHETASE INHIBITING 3-(1-ALKENYL) PYRIDINES

Shinji Terao, Osaka, and Kohei Nishikawa, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

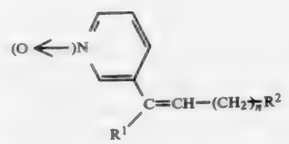
Filed Jul. 19, 1984, Ser. No. 632,332

Claims priority, application Japan, Jul. 27, 1983, 58-138585; Nov. 4, 1983, 58-207759

Int. Cl.⁴ C07D *213/89, 213/59, 213/24;* **A61K** *31/44*

U.S. Cl. 514—63 **11 Claims**

1. A compound of the structural formula

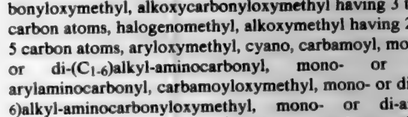


wherein

R^1 is phenyl, methylenedioxyphenyl or thienyl,

R^2 is methyl, hydroxymethyl, nitroxymethyl, formyl, imidazolylmethyl, triazolylmethyl, tetrazolylmethyl, acetal-methyl having 2 to 7 carbon atoms, trialkylsilyloxymethyl having 4 to 10 carbon atoms, $C_{1\text{-}3}$alkyl-sulfonyloxymethyl, phenyl-sulfonyloxymethyl, tolylsulfonyloxymethyl, methanesulfonylaminocarbonyloxymethyl, p-toluenesulfonylaminocarbonyloxymethyl, formyloxymethyl, $C_{1\text{-}6}$alkyl-carbonyloxymethyl, pyridylcarbonyloxymethyl, alkoxycarbonyloxymethyl having 3 to 8 carbon atoms, halogenomethyl, alkoxymethyl having 2 to 5 carbon atoms, aryloxymethyl, cyano, carbamoyl, mono- or di-($C_{1\text{-}6}$)alkyl-aminocarbonyl, mono- or di-arylaminocarbonyl, carbamoyloxymethyl, mono- or di-($_{1\text{-}6}$)alkyl-aminocarbonyloxymethyl, mono- or di-arylaminocarbonyloxymethyl, thiocarbonyloxymethyl, mono- or di-($C_{1\text{-}6}$)alkyl-aminothiocarbonyloxymethyl, mono- or di-arylaminothiocarbonyloxymethyl, alkoxycarbonyl having 2 to 5 carbon atoms, carboxyl,

wherein the aryl moieties represent phenyl, tolyl, or xylyl,



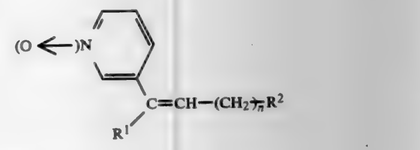
and

n is an integer of 1 to 20, provided that n is 9 to 20 when

and, at the same time R^2 is a carboxy or alkoxycarbonyl group,

or a pharmaceutically acceptable salt thereof.

11. A pharmaceutical composition suitable for inhibiting activity of thromboxane A_2 synthetase in a mammal, which comprises, as an active ingredient, an effective amount of a compound of the formula

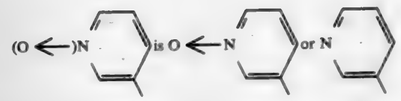


wherein

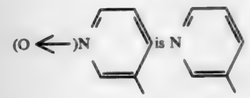
R^1 is phenyl, methylenedioxyph or thienyl,

R^2 is methyl, hydroxymethyl, nitroxymethyl, formyl, imidazolylmethyl, triazolylmethyl, tetrazolylmethyl, acetal-methyl having 2 to 7 carbon atoms, trialkylsilyloxymethyl having 4 to 10 carbon atoms, $C_{1\text{-}3}$alkyl-sulfonyloxymethyl, phenyl-sulfonyloxymethyl, tolylsulfonyloxymethyl, methanesulfonylaminocarbonyloxymethyl, p-toluenesulfonylaminocarbonyloxymethyl, formyloxymethyl, $C_{1\text{-}6}$alkyl-carbonyloxymethyl, pyridylcarbonyloxymethyl alkoxycarbonyloxymethyl having 3 to 8 carbon atoms, halogenomethyl, alkoxymethyl having 2 to 5 carbon atoms, aryloxymethyl, cyano, carbamoyl, mono- or di-($C_{1\text{-}6}$)alkyl-aminocarbonyl, mono- or di-arylaminocarbonyl, carbamoyloxymethyl, mono- or di-($_{1\text{-}6}$)alkyl-aminocarbonyloxymethyl, mono- or di-arylaminocarbonyloxymethyl, thiocarbonyloxymethyl, mono- or di-($C_{1\text{-}6}$)alkyl-aminothiocarbonyloxymethyl, mono- or di-arylaminothiocarbonyloxymethyl, alkoxycarbonyl having 2 to 5 carbon atoms, carboxyl,

wherein the aryl moieties represent phenyl, tolyl, or xylyl,



n is an integer of 1 to 20, provided that n is 9 to 20



and, at the same time R^2 is a carboxy or alkoxycarbonyl group, and

a pharmacologically acceptable carrier or excipient thereof.

4,563,447

COMBATING FUNGI WITH 4-PIPERIDINO METHYL-1,3-DIOXOLANES

Wolfgang Krämer; Joachim Weissmüller; Dieter Berg, all of Wuppertal; Paul Reinecke, Leverkusen; Gerd Hänssler, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 13, 1984, Ser. No. 630,487

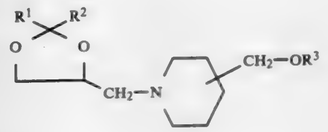
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1983, 3328151

The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.

Int. Cl.⁴ A01N *43/40;* **C07D** *405/06, 405/13*

U.S. Cl. 514—184 **12 Claims**

1. A substituted 4-piperidinomethyl-1,3-dioxolane of the formula



in which

R^1 is tetrahydronaphthyl, decahydronaphthyl, or naphthyl which is optionally mono- to hepta-substituted by substituents independently selected from the group consisting of hydroxyl, halogen, and alkyl, alkoxy, alkenyloxy, alkinyloxy and alkanoyloxy with in each case 1 to 4 carbon atoms in the alkyl part; cycloalkyl or cycloalkenyl with 3 to 7 carbon atoms and optionally substituted by alkyl with up to 4 carbon atoms; optionally substituted phenyl, phenylalkyl, phenoxyalkyl or phenylthioalkyl with in each case up to 6 carbon atoms in the alkyl part when present, optional substituents on the phenyl nucleus when present being independently selected from the group consisting of hydroxyl, halogen, cyano, nitro, alkyl, alkoxy, alkenyloxy, alkinyloxy and alkylthio with in each case up to 4 carbon atoms, halogenoalkyl, halogenoalkoxy and halogenoalkylthio with in each case 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, cycloalkyl with 5 to 7 carbon atoms, alkoxycarbonyl and alkanoyloxy with in each case up to 4 carbon atoms in the alkyl part, phenyl and phenoxy optionally substituted by halogen or by alkyl with up to 4 carbon atoms, and the radical R-O-N=CH—, R being alkyl, alkenyl or alkinyl in each case with up to 4 carbon atoms; or is cyclohexylalkyl, cyclohexyloxyalkyl or cyclohexylthioalkyl with in each case up to 6 carbon atoms in the alkyl part and in

each case optionally substituted in the cyclohexyl part by alkyl radicals with up to 4 carbon atoms,
R^2 is hydrogen or methyl, and
R^3 is hydrogen or a radical of the formula



wherein
R^4 is alkyl, alkoxy or alkylamino or dialkylamino with in each case 1 to 6 carbon atoms in the individual alkyl parts, alkoxyalkyl with in 1 to 6 carbon atoms in each alkyl part, halogenoalkyl with up to 6 carbon atoms and up to 5 halogen atoms, or furyl.

11. A method of combating fungi which comprises administering to such fungi or to a habitat thereof a fungicidally effective amount of a compound or addition product according to claim 1.

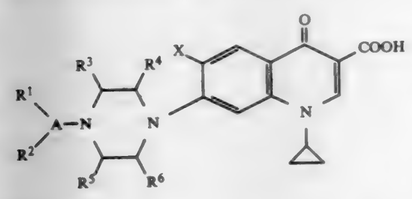
4,563,448

BACTERICIDAL AGENTS

Uwe Petersen, Leverkusen; Klaus Grohe, Odenthal, and Karl-Heinz Kuck, Langenfeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 2, 1984, Ser. No. 585,811
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1983, 3308908
Int. Cl.[4] A61K *31/555, 31/50, 31/495;* **C07F** *1/00*
U.S. Cl. 514—187 **12 Claims**

1. A bactericidal composition comprising a diluent and a bactericidally effective amount of a heavy metal salt of a quinolinecarboxylic acid derivative of the formula



in which
A represents straight-chain or branched alkylene with 1 to 6 carbon atoms or a >C═CH— radical,
R^1 represents alkoxycarbonyl with 1 to 6 carbon atoms in the alkyl part, benzyloxycarbonyl, carboxyl, carbamoyl which is optionally substituted by 1 or 2 methyl or ethyl radicals, cyano or dialkoxyphosphonyl or alkylsulphonyl with 1 to 4 carbon atoms in the alkyl part and
R^2 represents hydrogen, alkoxycarbonyl with 1 to 6 carbon atoms in the alkyl part, benzyloxycarbonyl, carbamoyl, cyano, chlorine, acetyl, alkyl with 1 to 3 carbon atoms or phenyl, or
R^1 and R^2, together with the carbon atom which they substitute, can also form a 2-oxo-tetrahydrofuryl ring,
R^3, R^4, R^5 and R^6 can be identical or different and represent hydrogen, methyl, ethyl or n- or i-propyl and
X represents hydrogen, halogen or nitro.

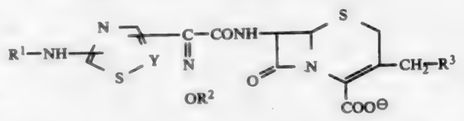
4,563,449

CEPHEM COMPOUNDS

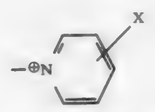
Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 6, 1983, Ser. No. 511,237
Claims priority, application United Kingdom, Jul. 19, 1982, 8220833; Mar. 2, 1983, 8305799
Int. Cl.[4] C07D *501/38;* **A61K** *31/545*
U.S. Cl. 514—203 **8 Claims**

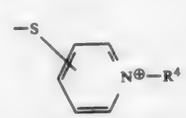
1. A cephem compound of the formula:



wherein R^1 is phosphono, dihalophosphoryl, di(lower)alkoxyphosphoryl, O-lower alkylphosphono, diaminophosphoryl, (amino)(hydroxy)phosphoryl or (lower alkoxy)(morpholino)-phoshoryl,
R^2 is lower alkyl or lower alkenyl,
R^3 is a group of the formula:



wherein X is hydrogen, halogen or lower alkoxy, or a group of the formula:



wherein R^4 is lower alkyl, and
Y is N or CH;
and pharmaceutically acceptable salts thereof.

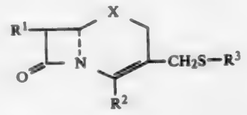
4,563,450

CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Yoshikazu Inoue, Amagasaki; Masayoshi Murata, Mino, and Hisashi Takasugi, Kobamanishi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

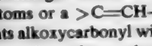
Division of Ser. No. 230,675, Feb. 2, 1981, Pat. No. 4,405,617. This application Jul. 19, 1983, Ser. No. 515,184
Claims priority, application United Kingdom, Feb. 11, 1980, 8004477; Jun. 13, 1980, 8019376
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.
Int. Cl.[4] C07D *501/36;* **A61K** *31/545*
U.S. Cl. 514—204 **19 Claims**

1. A cephem compound of the formula:

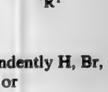


wherein R^1 is amino, phenyl(lower)alkanoylamino which may have hydroxy, protected hydroxy, amino or protected amino, tetrazolyl(lower)alkanoylamino, thiazolyl(lower)alkanoylamino which may have hydroxy and/or oxo and/or amino and/or protected amino, thiazolyl(lower)alkanoylamino having a group of the formula:

wherein R^7 is lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl, cyclo(lower)alkenyl, phenyl(lower)alkyl or carboxy(lower)alkyl,
thiadiazolyl(lower)alkanoylamino having a group of the formula:



wherein R^7 is defined above, and/or amino and/or protected amino, or lower alkenylthio(lower)alkanoylamino;
R^2 is carboxy or a protected carboxy group;
R^3 is 1-(2-propynyl)-1H-tetrazol-5-yl or 2-(2-propynyl)-2H-tetrazol-5-yl; and X is —S— or



with the proviso that R^1 is not the group of the formula:



wherein R^7 is lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl, cyclo(lower)alkenyl, phenyl(lower)alkyl, or carboxy(lower)alkyl, and pharmaceutically acceptable salts thereof.

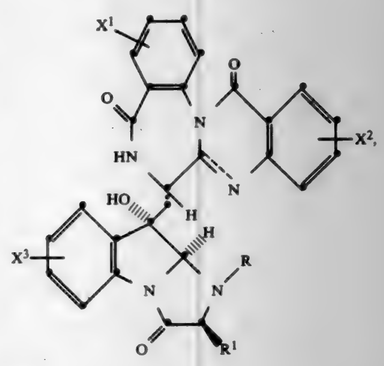
4,563,451

QUINAZOLINO-1,4-BENZODIAZEPIN-5,13-DIONES

Mark G. Bock; Roger M. Freidinger, both of Hatfield; Ben E. Evans, and George D. Hartman, both of Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

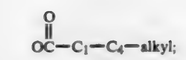
Filed Jan. 25, 1985, Ser. No. 695,108
Int. Cl.[4] A61K *31/55;* **C07D** *403/14*
U.S. Cl. 514—219 **17 Claims**

1. Quinazolino-1,4-benzodiazepin-5,13-dione of the formula:



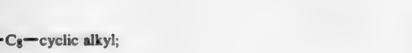
(II)

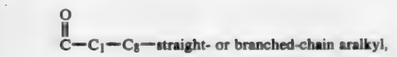
wherein:
X^1, X^2 and X^3 are independently H, Br, Cl, F, OH, C_1-C_4—alkyl, O—C_1-C_4—alkyl or



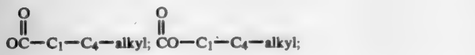
R is H, when the variable bond is a single bond; C_1-C_8—straight- or branched-chain or cyclic alkyl;





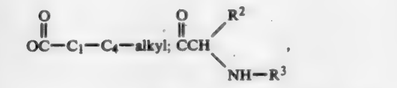


where the aryl is phenyl or naphthyl, which is unsubstituted or is monosubstituted on the aromatic ring by Br, Cl, F, OH, O—C_1-C_4—alkyl or



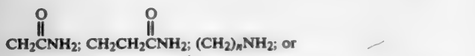


where the substituent is Br, Cl, F, OH, O—C_1-C_4—alkyl or



where R^2 is H; C_1-C_4—straight- or branched-chain alkyl; CH_2—unsubstituted or monosubstituted phenyl, wherein the substituent is Br, Cl, F, OH, O—C_1-C_4—alkyl or

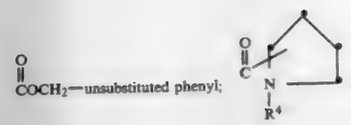
CH_2—phenyl—OCH_2—phenyl; CH_2—3—indole; CH_2—imidazole; $CH_2CH_2SCH_3$; $CH_2SCH_2NHCCH_3$;



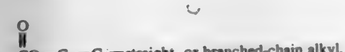
wherein n is 1 to 4; and R^3 is H,



or



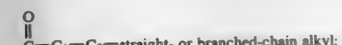
where R^4 is H,



or



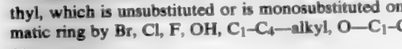
OR^5, where R^5 is C_1–C_8—straight- or branched-chain or cyclic alkyl;





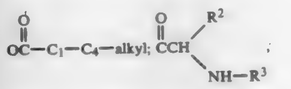


or branched-chain aralkyl, where the aryl is phenyl or naphthyl, which is unsubstituted or is monosubstituted on the aromatic ring by Br, Cl, F, OH, C_1–C_4—alkyl, O—C_1–C_4—alkyl or





where the substituent is Br, Cl, F, OH, O—C_1–C_4—alkyl or



where R^2 and R^3 are as defined above; or



where R^4 is as defined above; or OH, when the variable bond is a single bond;

R^1 is H, C_1–C_4—straight- or branched-chain alkyl; CH_2R^6, where R^6 is hydroxy—C_1–C_4—alkyl or CH_2SCH_3; or unsubstituted or monosubstituted phenyl, where the substituent is OH or OSO_3H; and

is a single or double bond,

or pharmaceutically-acceptable salts of these compounds.

15. A method of preventing or treating a mammal for disorders of the gastrointestinal, central nervous or appetite regulatory systems which comprises administering to said mammal an effective amount of one or more quinazolino-1,4-benzodiazepine-5,13-diones or pharmaceutically-acceptable salts thereof, according to claim 1.

4,563,452

DERIVATIVES OF OXAZINOBENZOTHIAZINE-6,6-DIOXIDE

José Esteve Soler, Barcelona, Spain, assignor to Provesan S.A., Geneva, Switzerland

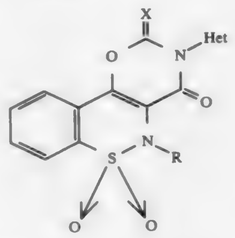
Filed Jun. 8, 1983, Ser. No. 502,216

Claims priority, application France, Jun. 15, 1982, 82 10409

Int. Cl.⁴ C07D *417/14, 513/04;* **A61K** *31/535, 31/54*

U.S. Cl. 514—222 **19 Claims**

1. A compound of the formula



wherein:

R is a linear of branched lower C_1–C_4 alkyl radical,

X is a oxygen atom or a sulphur atom, and

Het is a 5 or 6 membered monocyclic unsaturated, unsubstituted heterocycle or heterocycle substituted with one or two methyl radicals and containing a nitrogen heteroatom in the ortho position relative to the link between the heterocycle and the nitrogen in the oxazine ring and in which other member of the heterocycle are carbon, oxygen, nitrogen or sulphur.

4,563,453

THIAZINE DERIVATIVES, PROCESSES FOR PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Ikuo Ueda, Toyonaka; Masayuki Kato, Osaka, and Yosiharu Kasai, Daito, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

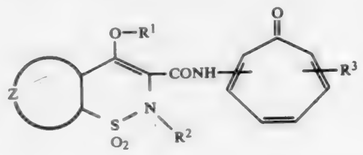
Filed Oct. 9, 1984, Ser. No. 658,683

Claims priority, application United Kingdom, Oct. 17, 1983, 8327735; Sep. 5, 1984, 8422420

Int. Cl.⁴ C07D *513/04, 513/14;* **A61K** *31/54*

U.S. Cl. 514—222 **12 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen, lower alkanyol, aroyl or ar(lower)alkenoyl,

R^2 is hydrogen or lower alkyl,

R^3 is hydrogen, hydroxy, halogen, lower alkyl or lower alkoxy,

Z is taken together with the adjacent carbon atoms to form an unsaturated heterocyclic ring selected from the group consisting of furan, thiophene, pyrrole, imidazole, pyridine, benzofuran, benzothiophene, indole and quinoline, which may be substituted with phenyl, halogen, lower alkanoyl or lower alkyl, and the heavy solid line means single or double bond,

and pharmaceutically acceptable salts thereof.

4,563,454

PROPANONE DERIVATIVES IN ANTIALLERGIC COMPOSITIONS

Akihide Kohda, 8-20, 3-chome, Fukumitsu-Higashi, Gifu-shi, Gifu-ken, and Teikichi Kurosaki, 6-42, Nishi-Imagawa-cho, Higashi-Sumiyoshi-ku, Osaka-shi, Osaka-fu, both of Japan

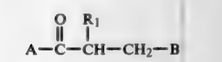
Continuation of Ser. No. 593,184, Mar. 27, 1984, abandoned, which is a continuation of Ser. No. 494,497, May 18, 1983, abandoned, which is a continuation of Ser. No. 206,565, Nov. 13, 1980, abandoned, which is a division of Ser. No. 79,460, Sep. 27, 1979, Pat. No. 4,277,474, which is a continuation of Ser. No. 13,887, Feb. 22, 1979, abandoned. This application Jan. 24, 1985, Ser. No. 693,838

Claims priority, application Japan, Feb. 22, 1978, 53-19303

Int. Cl.⁴ A61K *31/535, 31/445*

U.S. Cl. 514—239 **15 Claims**

1. An anti-allergic composition containing a pharmacologically acceptable carrier and a pharmacologically effective amount of a compound of the general formula:



in which:

R_1 is methyl;

A is β-naphthyl; β-naphthyl substituted by halogen, hydroxy, or alkyl having one to four carbon atoms;

B is dialkylamino having each one to four carbon atoms; pyrrolidino;

morpholino;

piperidino; piperidino substituted by alkyl having one to four carbon atoms or benzyl;

or a pharmacologically acceptable salt thereof.

4,563,455

ANTIULCER FUSED IMIDAZOLE COMPOUNDS

Ikuo Ueda, Uenohagashi; Masayuki Kato, Minoo; Masanobu Nagano, Suita, and Atsushi Akahane, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

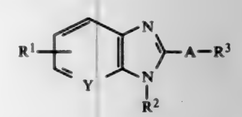
Filed Mar. 9, 1984, Ser. No. 587,981

Claims priority, application United Kingdom, Mar. 22, 1983, 8307865

Int. Cl.⁴ A61K *31/53;* **C07D** *403/06, 401/06, 417/06*

U.S. Cl. 514—241 **7 Claims**

1. A compound of the formula:



wherein

A is a lower alkylene,

R^1 is hydrogen, lower alkyl, lower alkoxy or halogen,

R^2 is cyclo (lower) alkyl, pyridyl, ar(lower)alkyl which may be substituted with halogen, or aryl which may be substituted with lower alkyl, lower alkoxy, hydroxy or halogen,

R^3 is a N-containing unsaturated heterocyclic group selected from imidazolyl, pyridyl, triazolyl, tetrazolyl, 1,3,5-triazinyl and 2-oxo-benzothiazolinyl, which may be substituted with lower alkyl or amino, and

Y is =C—, wherein ar and aryl are selected from phenyl and naphthyl, or a pharmaceutically acceptable salt thereof.

7. A method for treatment of an ulcer which comprises administering an effective amount of compound of claim 1 to human beings or animals.

4,563,456

1,2,4-TRIAZINES FOR TREATING GASTROINTESTINAL MOTILITY DYSFUNCTION

Donald E. Kuhla, Doylestown; William L. Studt, Harleysville; Henry F. Campbell, Lansdale, and John Yelnosky, Warrington, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Jan. 13, 1984, Ser. No. 570,547

Int. Cl.⁴ A61K *31/53, 31/35, 31/55, 31/54*

U.S. Cl. 514—242 **12 Claims**

1. A method for treating a irritable bowel syndrome comprising medicating a patient suffering from a irritable bowel syndrome with a therapeutically effective amount of a 3,5-diamino-6-(substituted phenyl)-1,2,4-triazine.

4,563,457

SYNERGISTIC PESTICIDAL COMPOSITIONS COMPRISING 2,4-DIAMINO-6-CYCLOPROPYLAMINO-S-TRIAZINE AND CYPERMETHRIN

Verena Laanio, Arisdorf; Marcus von Orelli, Münchenstein, and Walter Häusermann, Ollon, all of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

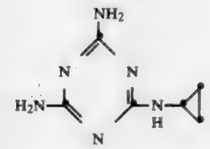
Continuation-in-part of Ser. No. 321,843, Nov. 16, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 501,458

Claims priority, application Switzerland, Nov. 25, 1980, 8707/80; Nov. 25, 1980, 8704/80

Int. Cl.⁴ A01N *43/64, 37/34*

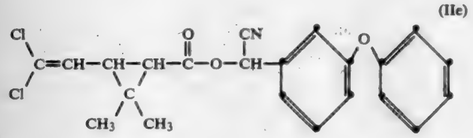
U.S. Cl. 514—245 **2 Claims**

1. A synergistic composition for controlling insects of the order Diptera and mites of the order Acarina, which composition comprises the compound 2,4-Diamino-6-cyclopropylamino-s-triazine of the formula Ia



(Ia)

and the compound (RS)-α-cyano-3-phenoxybenzyl (1RS)-cis,-trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate of the formula IIe



(IIe)

in which the ratio by weight of the compound of formula Ia to the compound of formula IIe in the active ingredient combination is from about 9:1 to about 1:9.

4,563,458

SUBSTITUTED 4-AMINOMETHYLENE-CHROMANS AND -CHROMENES, PROCESSES FOR THEIR PREPARATION AND THEIR USE IN MEDICAMENTS

Arno Widdig, Odenthal; Hans-Joachim Kabbe, Leverkusen; Andreas Knorr, Wuppertal, and Ulrich Benz, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

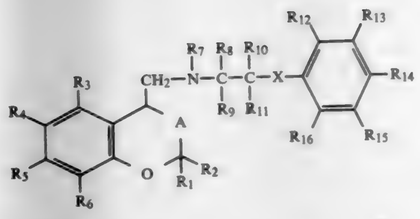
Filed Dec. 13, 1983, Ser. No. 560,786

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1983, 3300004

Int. Cl.⁴ A61K *31/495;* **C07D** *405/12*

U.S. Cl. 514—253 **18 Claims**

1. A compound of the formula (I)



(I)

in which

—A— represents a single bond or a double bond, and

R_1 and R_2 are identical or different and represent hydrogen, C_1–C_6-alkyl, C_5–C_7-cycloalkyl, phenyl which is optionally substituted by C_1–C_4-alkyl, halogen and/or C_1–C_4-alkoxy, or C_7–C_9-aralkyl, whose aryl radical is optionally substituted by C_1–C_4-alkyl, halogen and/or C_1–C_4-alkoxy, or R_1 and R_2 conjointly with the enclosed C atom of the chroman ring form a 4-membered to 7-membered carbocyclic ring;

R_3 to R_6 are identical or different and represent hydrogen, hydroxyl, halogen, C_1–C_6-alkyl, C_5–C_7-cycloalkyl, phenyl which is optionally substituted by C_1–C_4-alkyl, halogen, and/or C_1–C_4-alkoxy, C_7–C_9-aralkyl, whose aryl radical is optionally substituted by C_1–C_4-alkyl, halogen and/or C_1–C_4-alkoxy, or C_1–C_4-alkoxy,

R_7, R_8, R_9, R_{10} and R_{11} are identical or different and represent hydrogen or C_1–C_6-alkyl,

X represents a single bond or methylene which is optionally monosubstituted or disubstituted by C_1–C_4-alkyl, oxygen or —NR_{17},

wherein

R_{17} represents hydrogen or C_1–C_4-alkyl or R_{17} together with R_7 forms a C_2-alkylene ring-closing member and

R_{12}, R_{13}, R_{14}, R_{15} and R_{16} are identical or different and represent hydrogen, hydroxyl, halogen, C_1–C_6-alkyl, C_5- or C_6-cycloalkyl, benzyl, C_1–C_4-alkoxy, trifluoromethyl, or R_{12} and R_{13} or R_{13} and R_{14} together form a C_1–C_3-alkylenedioxy group or a —CH=CH—CH=CH— group, and their pharmaceutically acceptable acid addition salts.

16. A method for combating circulatory illness in warm-blooded animals which comprises administering to said animals an amount effective for combating circulatory illness of an active compound according to claim 1 either alone, or in admixture with a diluent or in the form of a medicament.

4,563,459

MICROBICIDAL AGENTS BASED ON QUINOLONECARBOXYLIC ACID

Klaus Grohe, Odenthal; Uwe Petersen, Leverkusen, and Karl-Heinz Kuck, Langenfeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

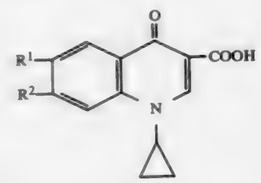
Filed Dec. 14, 1983, Ser. No. 561,441

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1982, 3248507

Int. Cl.⁴ A01N *43/58, 43/60, 55/02, 43/84*

U.S. Cl. 514—254 **6 Claims**

1. A method of combating a plant fungus on plants or parts thereof which comprises applying to the fungus an effective amount for combating said fungus of a 1-cyclopropyl-1,4-dihydro-4-oxo-quinolinecarboxylic acid of the formula



in which

R^1 is hydrogen, fluorine, chlorine, bromine or nitro,

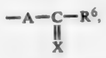
R^2 is hydrogen, chlorine, fluorine or the group



R^3 and R^4 each independently is alkyl or hydroxyalkyl which has 1 to 4 carbon atoms, or

R^3 and R^4, together with the nitrogen atom on which they are positioned, form a 5-membered or 6-membered saturated or partially unsaturated heterocyclic ring which can optionally contain in its ring oxygen, sulphur or an SO, SO_2 or NR^5 group and which is optionally substituted by at least one member selected from the group consisting of alkyl with 1 to 6 carbon atoms, alkenyl with 2 to 6 carbon atoms, phenyl and hydroxyl,

R^5 is hydrogen, alkyl which has 1 to 12 carbon atoms and is optionally substituted by hydroxyl and alkoxy with 1 to 4 carbon atoms, or is phenylalkyl which has 1 to 3 carbon atoms in the alkyl part and is optionally substituted by nitro, amino or the group —O—CH_2—O—, or is phenyl which is optionally substituted by at least one member selected from the group consisting of halogen, halogenoalkyl with 1 or 2 carbon atoms and with up to 5 halogen atoms, hydroxy, alkoxy with 1 to 3 carbon atoms, the group —O—CH_2—O—, pyridyl, pyrimidinyl and the grouping



A is an optionally substituted alkylene chain with 1 to 4 carbon atoms,

R^6 is hydrogen, alkyl with 1 to 6 carbon atoms, or phenyl which is optionally substituted by at least one member selected from the group consisting of hydroxyl, methoxy and halogen,

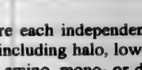
X is oxygen or the groupings =NOR', =N—NH—R'' or $(OR''')_2$,

R' is hydrogen, alkyl with 1 to 6 carbon atoms, cycloalkyl with 5 or 6 carbon atoms, benzyl, chlorobenzyl or tetrahydropyranyl,

R'' is methyl, phenyl, carbamoyl or thiocarbamoyl, and

R''' is methyl or ethyl, or

$(OR''')_2$ represents



or an acid addition, alkali metal, alkaline earth metal or heavy metal salt thereof which is tolerated by plants, or a hydrate thereof.

4,563,460

QUINOLINE AND QUINAZOLINE DERIVATIVES FOR TREATING GASTROINTESTINAL MOTILITY DYSFUNCTIONS

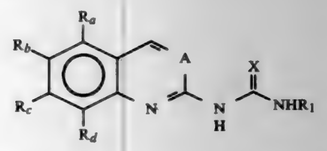
Donald E. Kuhla, Doylestown; William L. Studt, Harleysville; Henry F. Campbell, Lansdale, and John Yelnosky, Warrington, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, D.C.

Filed Jan. 13, 1984, Ser. No. 570,356

Int. Cl.⁴ A61K *31/505, 31/47*

U.S. Cl. 514—260 **17 Claims**

1. A method for treating a patient suffering from a gastrointestinal motility dysfunction comprising medicating said patient with a therapeutically effective amount of a compound of the formula



wherein:

A is N or CH;

X is oxygen, sulfur or NR_2;

R_1 and R_2 are each independently hydrogen, alkyl, aryl, or aralkyl;

R_a, R_b, R_c and R_d are each independently hydrogen or a phenyl substituent including halo, loweralkyl, haloloweralkyl, cyano, nitro, amino, mono- or di-loweralkylamino, lower alkoxy, hydroxy or benzyloxy; or a pharmaceutically acceptable salt thereof.

4,563,461

SELECTIVE METHOD FOR BLOCKING $5HT_2$ RECEPTORS

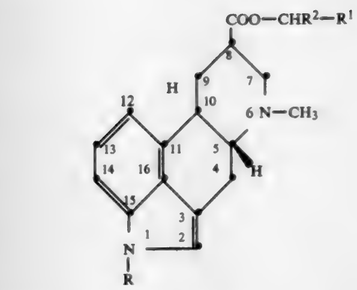
Marlene L. Cohen, and Ray W. Fuller, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 10, 1983, Ser. No. 473,882

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—288 **4 Claims**

1. A method of blocking $5HT_2$ receptors without effect on alpha receptors which comprises administering to a mammal having a peripheral excess of serotonin an $5HT_2$ blocking dose of an ergoline of the formula:



wherein R is C_{1-3} alkyl or allyl, R^1 is C_{1-3} hydroxyalkyl or C_{1-3} dihydroxyalkyl and R^2 is H or CH_3, or a pharmaceutically acceptable salt thereof which dose does not affect alpha$_1$ receptors.

4,563,462

SUBSTANCE AX-2, A PROCESS FOR PRODUCING THE SAME AND AN ANTITUMOR COMPOSITION CONTAINING THE SAME

Shinzo Ishii; Shigeo Katsumata; Yuko Arai; Tadashi Ashizawa; Makoto Morimoto, all of Shizuoka; Kunikatsu Shirahata, Tokyo; Yutaka Saito, Tokyo, and Motomichi Kono, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki, Tokyo, Japan

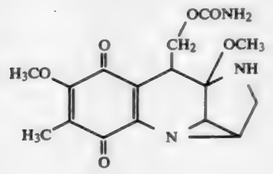
Filed Oct. 27, 1983, Ser. No. 546,142

Claims priority, application Japan, Oct. 28, 1982, 57-189467

Int. Cl.⁴ C12P *17/18;* **C07D** *471/16;* **A61K** *31/47*

U.S. Cl. 514—288 **4 Claims**

1. A substance represented by the formula:



4,563,463

2-OXO-1,3-OXAZOLO[4,5-H] QUINOLINES USEFUL AS ANTI-ALLERGY AGENTS

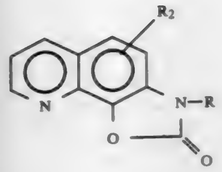
John H. Musser, Malvern, Pa., and Richard E. Brown, East Hanover, N.J., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 476,673, Mar. 18, 1983, Pat. No. 4,522,947, which is a continuation-in-part of Ser. No. 362,712, Mar. 29, 1982, abandoned. This application Nov. 2, 1984, Ser. No. 667,667

Int. Cl.⁴ C07D *498/04;* **A61K** *31/47*

U.S. Cl. 514—293 **3 Claims**

1. A quinoline compound of the formula:



and salts thereof, wherein

R is hydrogen, acetyl, methoxybenzoyl, carboethoxy, (2-phenyl)propionyl, dimethylcarbamoyl or methyl, and

R_2 is hydrogen, lower alkyl, halo, trifluoromethyl, amino, lower alkyl amino cyano, aryl, aryl/lower alkylene, lower alkynyl, lower alkenyl, nitro, lower alkyl sulfinyl, lower alkyl sulfonyl, lower alkoxycarbonyl, carboxyl, lower alkoxy, lower alkanoyl, or lower alkenoyl.

2. A pharmaceutical composition for the treatment of allergic conditions in a mammal which comprises as an active ingredient a therapeutically effective amount of a compound or its salt according to claim 1 in admixture with an inert pharmaceutically acceptable carrier.

4,563,464

2-AZABICYCLO(2.2.2)OCTANE DERIVATIVES AND THEIR USE AS IMMUNOSUPPRESSIVE AGENTS

Elemer Ezer; Laszlo Szporny; Gyorgy Hajos; Csaba Szantay; Tibor Keve; Gyorgy Fekete; Gabor Megyeri; Tibor Acs, and Hedvig Bolcskei, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

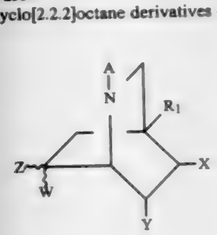
Filed Jun. 27, 1984, Ser. No. 625,069

Claims priority, application Hungary, Jun. 29, 1983, 2343/83

Int. Cl.[4] A61K *31/445;* **C07D** *221/22*

U.S. Cl. 514—299 **4 Claims**

1. 2-Azabicyclo[2.2.2]octane derivatives of the formula



(I)

wherein

A is hydrogen, alkoxycarbonyl having from one to 4 carbon atoms in the alkoxy group, phenylalkoxycarbonyl having from one to 4 carbon atoms in the alkoxy moiety, alkyl having from one to 6 carbon atoms, 3-indolyl-ethyl, 3-indolyl-acetyl or 3-indolyl-acetyl substituted by halogen, lower alkyl or lower alkoxy,

R_1 is hydrogen or alkyl having from one to 4 carbon atoms,

Z is hydrogen or halogen,

X is hydrogen or halogen,

Y is hydrogen, or

X and Y together represent a C—C bond,

W is alkoxycarbonyl having from one to 4 carbon atoms in the alkoxy moiety, cyano, carboxamide or haloformyl, or if X stands for halogen, W and Y together represent a



group.

3. An immunosuppressive method of treatment which comprises the step of administering to an animal subject a pharmaceutically effective amount of the compound of the formula (I) defined in claim 1.

4,563,465

TREATMENT OF MIGRAINE WITH SUBSTITUTED TROPYL BENZOATE DERIVATIVES

John R. Fozard, Strasbourg-Elsau, and Maurice W. Gittos, Plobsheim, both of France, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

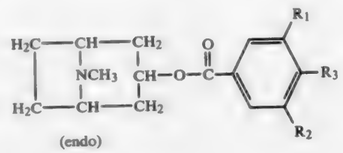
Continuation-in-part of Ser. No. 386,562, Jun. 9, 1982, abandoned. This application Dec. 13, 1984, Ser. No. 681,984

Claims priority, application United Kingdom, Jun. 13, 1981, 8118249

Int. Cl.[4] A61K *31/44*

U.S. Cl. 514—304 **10 Claims**

1. A method of treating migraine which comprises administering to a patient suffering migraine, an effective migraine relieving amount of a substituted tropyl benzoate having the formula:



(endo)

wherein

R_1 represents C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen;

R_2 represents hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen;

R_3 represents hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen; provided that R_3 is hydrogen when R_2 is hydrogen, or a pharmaceutically acceptable salt thereof.

4,563,466

PIPERID-4-YL UREAS AND THIO UREAS USED AS ANTIDEPRESSANT AGENTS

John L. Archibald, "Koinonis", Blackpond La., Farnham Royal, Buckinghamshire, and Terence J. Ward, 11, Iona Crescent, Cippenham, Slough, Berkshire, both of England

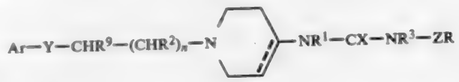
Continuation-in-part of Ser. No. 366,266, Apr. 7, 1982, Pat. No. 4,426,387, which is a continuation of Ser. No. 238,381, Feb. 25, 1981, abandoned. This application Oct. 26, 1983, Ser. No. 545,802

Claims priority, application United Kingdom, Mar. 1, 1980, 8007048; Aug. 22, 1980, 8027435

Int. Cl.[4] A61K *31/445;* **C07D** *405/12*

U.S. Cl. 514—319 **7 Claims**

1. A compound of the formula



wherein

n is 0 or 1;

R^1, R^2, R^3 and R^9 are, independently, hydrogen or a lower alkyl group;

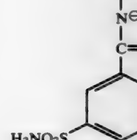
X is =O or =S,

Y is —O— or a direct bond;

Z is —CO— or —CH_2—;

R is thienyl or furyl substituted by one or two of the same substituents selected from loweralkyl, lower alkenyl, lower alkoxy, hydroxy, hydroxyloweralkyl, fluoro, bromo, chloro, chloroloweralkyl, fluoroloweralkyl, amino, aminoloweralkyl, lower-alkylamino, diloweralyl-amino, lower alkylcarbonylamino, ureido, lower alkylsulphonamido, di-lower-alkylsulphonyl amino loweralkoxycarbonyl, nitro, cyano, or amido;

Ar is



in which

R_4, R_5, and R_6, when present, independently, are hydrogen, lower alkyl, lower alkenyl, lower alkoxy, hydroxy, hydroxyloweralkyl, fluoro, bromo, chloro, chloroloweralkyl, fluoroloweralkyl, amino, aminoloweralkyl, lower-alkylamino, diloweralyl-amino, lower alkylcarbonylamino, ureido, lower alkylsulphonamido, di-lower-alkylsulphonyl amino, loweralkoxycarbonyl, nitro, cyano, or amido, or

R_4 and R_5, when adjacent, together with the carbon atoms to which they are attached also are fused five or six member carbocyclic ring with 0–2 double bonds and optionally carrying one or two substituents as defined above for said R_4 and R_5, or

an acid addition or quaternary ammonium salt thereof, in which the dotted line represents an optional double bond.

4,563,467

DERIVATIVES OF N-IMINOPYRIDINIUM BETAINES HAVING ANTI-HYPERTENSIVE AND SALIDIURETIC ACTIVITY AND THEIR PREPARATION

José E. Soler, Barcelone, Spain, assignor to Provesan S.A., Geneva, Switzerland

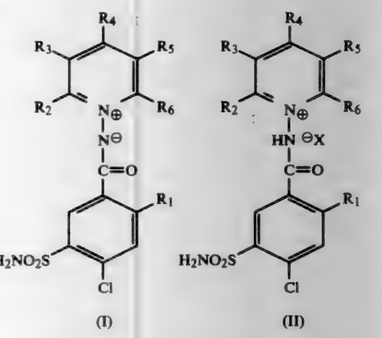
Filed Feb. 6, 1984, Ser. No. 577,273

Claims priority, application France, Feb. 15, 1983, 83 02380

Int. Cl.[4] C07D *213/89, 213/56;* **A61K** *31/44*

U.S. Cl. 514—336 **5 Claims**

1. Derivatives of inner salts of aminopyridinium hydroxide and corresponding salts thereof comprising the general formulae I and II



(I) (II)

in which:

R_1 as selected from the group consisting of a hydrogen and a radical 2-furyl-methyl-amino;

R_2, R_4 and R_6 are all selected from the group consisting of a hydrogen atom, a C_1—C_1 linear or branched lower alkyl radical and a phenyl radical;

R_3 is selected from the group consisting of a hydrogen or a carbamyl radical;

R_5 represents a hydrogen; and

$X^{\ominus}$ represents a monobasic anion of a pharmaceutically acceptable acid.

5. A salidiuretic composition, comprising, in addition to a pharmaceutically acceptable carrier, an effective amount of a derivative selected from the group having the general formula I or II according to claims 1, 2, or 3.

4,563,468

CHEMOTHERAPEUTIC AGENTS

John F. Batchelor; Harold F. Hodson, both of Beckenham, and John W. T. Selway, Cranbrook, all of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

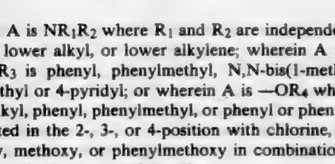
Filed Aug. 11, 1980, Ser. No. 177,126

Claims priority, application United Kingdom, Sep. 13, 1979, 7931840

Int. Cl.[4] A61K *31/44;* **C07D** *405/04*

U.S. Cl. 514—337 **25 Claims**

1. A compound of formula (I), or N-oxide thereof,



or, tautomers thereof, or where appropriate a salt or ester thereof, wherein R^1 and R^2 each represent four substituents selected from hydrogen and halogen atoms, (lower) alkyl, hydroxy (lower) alkyl, carboxy (lower) alkyl, (lower) alkoxyl, amino, (lower) alkylamino, di(lower) alkylamino, (lower)alkanoylamino, nitro, cyano, trifluoromethyl, carboxyl, hydroxyl and methylenedioxy groups and R^3 and R^4 are the same or different and each is selected from hydrogen atoms and (lower) alkyl groups.

4,563,469

DERIVATIVES OF N-[2-(TETRAHYDRO-3,5-DIOXO-1H-PYRROLIZIN-7A(5H)-YL)ETHYL]AMINE AS COGNITION ACTIVATORS

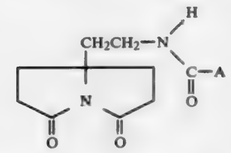
Donald E. Butler, and James D. Leonard, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 20, 1984, Ser. No. 632,917

Int. Cl.[4] A61K *31/40, 31/445;* **C07D** *401/12, 487/08*

U.S. Cl. 514—339 **28 Claims**

27. A pharmaceutical composition for reversing the effects of electroconvulsive shock induced amnesia comprising an amnesia-reversing effective amount of a compound having the structural formula



wherein A is NR_1R_2 where R_1 and R_2 are independently hydrogen, lower alkyl, or lower alkylene; wherein A is NHR_3 where R_3 is phenyl, phenylmethyl, N,N-bis(1-methylethyl-)aminoethyl or 4-pyridyl; or wherein A is —OR_4 where R_4 is lower alkyl, phenyl, phenylmethyl, or phenyl or phenylmethyl substituted in the 2-, 3-, or 4-position with chlorine, fluorine, hydroxy, methoxy, or phenylmethoxy in combination with a pharmaceutically acceptable carrier.

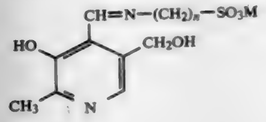
4,563,470

N-SUBSTITUTED α,ωAMINO AND IMINO-SULFONIC ACID SALTS AND THEIR APPLICATION AS CATIONIC VECTORS OF HIGH CELLULAR PENETRATION

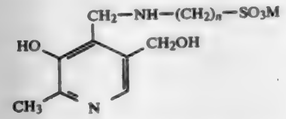
Jean P. Durlach, Paris, France, assignor to Les Laboratories Mersan, Paris, France

Filed Jul. 1, 1983, Ser. No. 510,347
Claims priority, application France, Jul. 5, 1982, 82 11768
Int. Cl.⁴ C07D *213/67;* A61K *31/44*
U.S. Cl. 514—347 **5 Claims**

1. A method of treating deficiencies of metal ions in humans or animals in need of such treatment comprising the oral or parenteral administration of an effective amount of salt of formula (I):



or a salt of formula (II):



wherein n is 2 or 3 and M is an alkali metal or an alkaline earth metal.

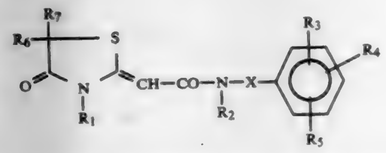
4,563,471

4-OXOTHIAZOLIDIN-2-YLIDENE-ACETAMIDE DERIVATIVES AS CNS AGENTS

Gerhard Satzinger, Denzlingen; Manfred Herrmann; Edgar Fritschi, both of St. Peter; Johannes Hartenstein, Stegen-Wittental, and Gerd Bartoszyk, Waldkirch, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 8, 1984, Ser. No. 608,298
Claims priority, application Fed. Rep. of Germany, May 10, 1983, 3317000
Int. Cl.⁴ C07D *277/34;* A61K *31/425*
U.S. Cl. 514—369 **7 Claims**

1. A compound, of the formula



in which R_1 signifies a hydrogen atom, a saturated or unsaturated alkyl radical with one to three carbon atoms, a phenyl or benzyl radical, R_2 signifies a hydrogen atoms, or a methyl or ethyl group, or a dialkylaminoalkyl radical with up to seven carbon atoms, X signifies a valency bond or a straight-chained or branched alkylene group with one to three carbon atoms and R_3, R_4, and R_5, which can be the same or different, signify a hydrogen atom, a methyl, ethyl, methoxy, ethoxy, methylthio or ethylthio group, whereby two neighboring radicals can together also form a methylenedioxy group, a fluorine, chlorine, bromine, iodine atom, or a hydroxy group or a nitro group or a carboxyl radical or a lower alkoxycarbonyl radical with up to five carbon atoms and R_6 and R_7 which can be the same or different signify a hydrogen atom or a methyl or ethyl group, or a pharmaceutically acceptable acid addition salt thereof.

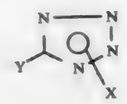
4,563,472

IODOALLYL AND IODOPROPARGYL SUBSTITUTED TETRAZOLES AND ANTI-MICROBIAL COMPOSITIONS THEREOF

Shigeharu Inouye; Taro Niida; Keinosuke Miyauchi, all of Yokohama; Kuniomi Matsumoto, Tokyo; Eiichi Akita; Masao Koyama, both of Yokohama; Fumio Kai, Fujisawa, and Takashi Tsuruoka, Kawasaki, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Oct. 6, 1982, Ser. No. 433,011
Int. Cl.⁴ A61K *31/41;* C07D *257/04*
U.S. Cl. 514—381 **14 Claims**

1. A compound having the formula

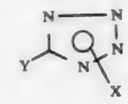


wherein

Y represents a hydrogen atom or $—CH_3$, and

X represents $—CH_2CI═CI_2$ or $—CH_2C≡CI$.

8. An antibacterial and antifungal composition which comprises as an active ingredient a compound of the formula



wherein

Y represents a hydrogen atom or $—CH_3$, and

X represents $—CH_2CI═CI_2$ or $—CH_2C≡CI$.

4,563,473

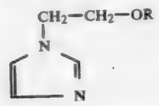
COMPOSITIONS AND METHOD FOR INHIBITION OF SEBUM SYNTHESIS

Petrus S. Hofman, Haarlem; David W. R. Hall, Rotterdam, and Kapil D. Jaitly, Delft, all of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Apr. 26, 1984, Ser. No. 604,083
Claims priority, application Netherlands, May 3, 1983, 8301550
Int. Cl.⁴ A61K *31/415, 31/455*
U.S. Cl. 514—397 **18 Claims**

10. A method of inhibiting sebum synthesis in warm-blooded animals comprising topically administering to warm-blooded animals an amount of at least one compound selected from the group consisting of compound of the formula

I



wherein R is selected from the group consisting of hydrogen and acyl of an organic carboxylic acid free of additional carboxyl sufficient to inhibit sebum sysnthesis.

4,563,474

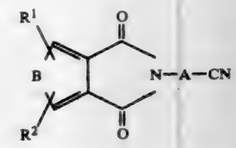
PHTHALIMIDES AND THIENOPYRROLS AS DRUGS

Albrecht Franke, Wachenheim; Gerd Steiner, Kirchheim; Hans-Peter Hofmann, Limburgerhof; Claus-Dieter Müller, Viernheim, and Hans-Jürgen Teschendorf, Dudenhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 16, 1983, Ser. No. 552,443
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1982, 3242477
Int. Cl.⁴ C07D *209/48, 275/02, 275/04;* A61K *31/40*
U.S. Cl. 514—417 **17 Claims**

1. A method of treating a psychological disturbance in a patient suffering therefrom, which comprises administering an effective amount of a heterocyclically substituted nitrile of the formula I

I



where A is an alkylene or an alkenylene radical of not more than 6 carbon atoms, B is —CH═CH— or S, and R^1 and R^2 are each independently at least one member selected from the group consisting of hydrogen, halogen, C_1–C_3-alkyl, C_1–C_3-alkoxy, nitro and trifluoromethyl; said physchological disturbance consisting of any of the following: a psychological disturbance requiring a sedative, a tranquilizer or an antidepressant.

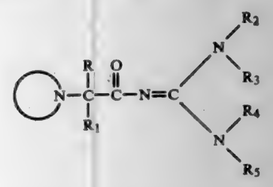
4,563,475

GUANIDINE DERIVATIVES FOR TREATING GASTROINTESTINAL MOTILITY DYSFUNCTION

Donald E. Kuhla, Doylestown; William L. Studt, Harleysville; Henry F. Campbell, Lansdale, and John Yelnosky, Warrington, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Jan. 13, 1984, Ser. No. 570,528
Int. Cl.⁴ A61K *31/40, 31/415, 31/505*
U.S. Cl. 514—427 **14 Claims**

1. A method for treating a patient suffering from a gastrointestinal motility dysfunction by medicating said patient with a therapeutic amount of a compound of the formula



wherein:

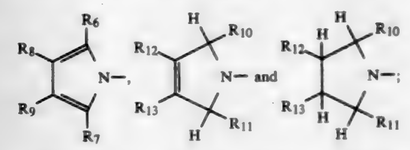
R and R_1 are each independently hydrogen or loweralkyl;

R_2, R_3, R_4 and R_5 are each independently hydrogen, loweralkyl, aroyl or ariylloweralkanoyl; or

R_2 and R_4 are hydrogen and R_3 and R_5 are together alkylene and form a 5- or 6-member ring together with the nitrogen atom to which they are bonded;



represents a 5-member nitrogen-containing heterocycle selected from the group consisting of



and wherein: R_6, R_7, R_8, R_9, R_{12} and R_{13} are each independently hydrogen, loweralkyl, halo or haloloweralkyl; and

R_{10} and R_{11} are each independently hydrogen, loweralkyl or haloloweralkyl; and a pharmaceutically acceptable salt thereof.

4,563,476

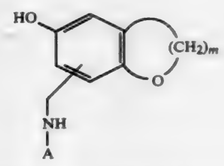
SUBSTITUTED 5-HYDROXY-2,3-DIHYDROBENZOFURANS AND ANALOGS THEREOF USEFUL AS ANTI-INFLAMMATORY AGENTS

Michael N. Chang, Westfield; Milton L. Hammond, Edison; Norman P. Jensen, Princeton, and Robert A. Zambias, Hoboken, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 21, 1983, Ser. No. 553,668
Int. Cl.⁴ A61K *31/34, 31/35;* C07D *311/04, 307/79*
U.S. Cl. 514—459 **12 Claims**

1. A compound of formula (I)

(I)



or a pharmaceutically acceptable salt thereof wherein m is an integer selected from 2 or 3;

A is

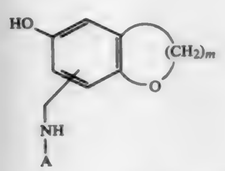
(a) phenyl or phenyl substituted with (R^1) wherein when there are more than one R^1 (q>1)

R^1 can be the same or different from each other and is

(1) halo;
(2) loweralkoxy;
(3) lower alkylthio;
(4) lower alkyl sulfinyl;
(5) lower alkyl sulfonyl;
(6) phenyl or phenyl substituted with a functional group selected from a group consisting of halo, C_{1-6}alkyl, C_{1-6}haloalkyl, C_{1-6}alkoxy, C_{1-6}alkanoyl, C_{1-6}alkylthio, C_{1-6}alkylsulfinyl, C_{1-6}alkylsulfonyl, —COOH or $COOC_{1-6}$alkyl, cyano, hydroxyC_{1-6}alkyl, halo$_{1-6}$alkanoyl and lower alkanoyloxy;
(7) loweralkyl;
(8) loweralkenyl;
(9) lower alkanoyl;
(10) haloloweralkyl;
(11) —COOH or —$COOC_{1-6}$alkyl;
(12) cyano;
(13) hydroxyloweralkyl;

(14) halo loweralkanoyl; or
(15) loweralkanoyloxy;
q is an integer ranging from 1 to 5;
(b) unsubstituted or substituted heteroaryl selected from a group consisting of:
(1) thienyl;
(2) benzothienyl;
(3) furyl;
(4) benzofuryl;
(5) pyrryl;
(6) indolyl;
(7) thiazolyl;
(8) benzothiazolyl;
(9) thiadiazolyl;
(10) benzothiadiazolyl;
(11) quinolyl;
(12) isoquinolyl;
(13) pyrazinyl;
(14) tetrazolyl; or
(15) triazolyl,
the heteroaryl above being substituted with one or more of R^1 with the proviso that when m is 2, the ANH group cannot be at the position ortho to the O of the oxa ring.

9. A method of treating or decreasing topical inflammation comprising the administration to a mammalian species in need of such treatment a therapeutically effective amount of a compound of formula I



(I)

or a pharmaceutically acceptable salt thereof wherein
m is an integer selected from 2 or 3;
A is
(a) phenyl or phenyl substituted with $(R^1)_q$ wherein when there are more than one R^1 (q>1) R^1 can be the same or different from each other and is
(1) halo;
(2) loweralkoxy;
(3) lower alkylthio;
(4) lower alkyl sulfinyl;
(5) lower alkyl sulfonyl;
(6) phenyl or phenyl substituted with a functional group selected from a group consisting of halo, C_{1-6}alkyl, C_{1-6}haloalkyl, C_{1-6}alkoxy, C_{1-6}alkanoyl, C_{1-6}alkylthio, C_{1-6}alkylsulfinyl, C_{1-6}alkylsulfonyl, —COOH or $COOC_{1-6}$alkyl, cyano, hydroxyC_{1-6}alkyl, halo$_{1-6}$alkanoyl and lower alkanoyloxy;
(7) loweralkyl;
(8) loweralkenyl;
(9) lower alkanoyl;
(10) haloloweralkyl;
(11) —COOH or —$COOC_{1-6}$alkyl;
(12) cyano;
(13) hydroxyloweralkyl;
(14) halo loweralkanoyl;
(15) loweralkanoyloxy;
q is an integer ranging from 1 to 5;
(b) unsubstituted or substituted heteroaryl selected from a group consisting of:
(1) thienyl;
(2) benzothienyl;
(3) furyl;
(4) benzofuryl;
(5) pyrryl;
(6) indolyl;
(7) thiazolyl;
(8) benzothiazolyl;
(9) thiadiazolyl;
(10) benzothiadiazolyl;
(11) quinolyl;
(12) isoquinolyl;
(13) pyrazinyl;
(14) tetrazolyl; or
(15) triazolyl,
the heteroaryl above being substituted with one or more of R^1 with the proviso that when m is 2, the ANH group cannot be at the position ortho to the O of the oxa ring.

4,563,477

PROCESS FOR THE PREPARATION OF ALPHA-(N-PYRROLYL)-DERIVATIVE ACIDS, THE SALTS AND ESTERS THEREOF; ALPHA-(N-PYRROLYL)-PHENYLACETIC ACIDS, THE ESTERS THEREOF, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND THERAPEUTICAL APPLICATIONS THEREOF

Francisco S. Maldonado; Luis C. Plá; José L. F. Puentes, all of León, and José M. F. Sousa-Faro, Villanueva de la Canada, all of Spain, assignors to Antibioticos, S.A., Spain

Filed May 13, 1983, Ser. No. 494,382
Claims priority, application Spain, May 17, 1982, 512.268
Int. Cl.⁴ A61K *31/40*; C07D *207/327*
U.S. Cl. 514—427 **13 Claims**

1. Dibenzylammonium DL(±)-alpha-(N-pyrrolyl)-p-hydroxy-phenylacetate.

2. Pharmaceutical composition having analgesic and platelet anti-aggregation activity comprising an analgesic or platelet anti-aggregation therapeutically effective amount of at least one compound selected from the group consisting of
ethyl DL(±)-alpha-(N-pyrrolyl)-phenylacetate,
dibenzylammonium DL(±)-alpha-(N-pyrrolyl)-p-hydroxy-phenylacetate,
DL(±)-alpha-(N-pyrrolyl)-phenylacetic acid,
D(+)-alpha-(N-pyrrolyl)-phenylacetic acid, and
L(−)-alpha-(N-pyrrolyl)-phenylacetic acid,
in association with at least one of (a) an excipient, and (b) a pharmaceutically acceptable dissolution or suspension vehicle.

4,563,478

METHOD OF TRANQUILIZING

Maria Curti, Torre D'Isola, Italy, and Fernando Fussi, Fribourg, Switzerland, assignors to Hepar Chimie S.A., Fribourg, Switzerland

Continuation of Ser. No. 521,641, Aug. 9, 1983, abandoned, which is a continuation-in-part of Ser. No. 380,754, May 21, 1982, abandoned. This application May 24, 1985, Ser. No. 737,902
Claims priority, application Italy, May 26, 1981, 21960 A/81
Int. Cl.⁴ A61K *31/195*
U.S. Cl. 514—561 **2 Claims**

1. A method of inducing a tranquilizing activity in a subject in need of same comprising administering to said subject a tranquilizing amount of a compound of the formula:

$$X_1OC—(CH_2)_2—NH—(CH_2)_3—CO—X_2$$

in which X_1 and X_2 are hydroxyl, a C_1–C_6 alkoxy group or a free amino group.

4,563,479

SYNERGISTIC RADIATION PROTECTIVE PHARMACEUTICAL COMPOSITIONS

László Feuer, and György Benko, both of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyar RT, Budapest, Hungary

Continuation of Ser. No. 133,832, Mar. 25, 1980, abandoned. This application Jan. 18, 1984, Ser. No. 571,856
Claims priority, application Hungary, Apr. 2, 1979, CI 1924
Int. Cl.⁴ A61K *31/195*
U.S. Cl. 514—562 **1 Claim**

1. A synergistic, radioprotective pharmaceutical composition comprising 1400 parts by weight of aminoethyl-isothiuronium chloride hydrochloride or aminoethyl-isothiuronium bromide hydrobromide to 1 part by weight of gamma-glutamyl-taurine, and a pharmaceutically acceptable carrier, diluent or solvent, or a formulating excipient.

4,563,480

CATALYST FOR THE PRODUCTION OF HYDROCARBONS AND PROCESS FOR THEIR PRODUCTION

Michael Baacke, Grunaustrasse 19, 6450 Hanau 9; Klaüs Deller, Friedhofstrasse 47, 6452 Hainburg; Peter Kleinschmit, Wildaustrasse 19, 6450 Hanau 9, and Edgar Koberstein, Wolfskernstrasse 8, 8755 Alzenau, all of Fed. Rep. of Germany

Division of Ser. No. 518,403, Jul. 29, 1983. This application Jun. 18, 1984, Ser. No. 621,460
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228270
Int. Cl.⁴ C07C *1/04*
U.S. Cl. 518—728 **14 Claims**

1. In a process for the production of hydrocarbons from synthesis gas in the presence of a catalyst, the improvement comprising increasing the selectivity for forming ethane by employing as the catalyst a catalyst consisting essentially of (1) crystalline aluminum silicate, (2) at least one zinc or cadmium compound or a mixture of compounds of both zinc and cadmium, and (3) additional silica.

4,563,481

EXPANDABLE SYNTHETIC RESINOUS THERMOPLASTIC PARTICLES, METHOD FOR THE PREPARATION THEREOF AND THE APPLICATION THEREFOR

John W. Brenner, Newark, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 25, 1984, Ser. No. 634,082
Int. Cl.⁴ C08J *9/14*
U.S. Cl. 521—56 **12 Claims**

1. A plurality of heat expandable styrene-acrylonitrile synthetic resinous copolymer particles, the particles having polymerized therein at least 8 to 40 weight percent acrylonitrile with the remainder being primarily styrene to provide a benzene soluble polymer having a weight average molecular weight of from about 100,000 to about 500,000 molecular weight units, the particles having disposed therein a volatile fluid expanding agent selected from the group consisting of 1,1-dichloro-1-fluoro-2-chloro-2,2-difluoroethane; 1-chloro-1,1-difluoro-2-chloro-2,2-difluoroethane; perfluorocyclobutane, neopentane and tetramethylsilane and mixtures thereof; with the further limitations that when the particles are heated to a temperature above the glass transition temperature of the polymer, they expand to at least 40 times their original volume at ambient temperature, with the further limitation that particles expanded to from 30 to 40 times their unexpanded volume retain at least 75 weight percent of the volatile fluid foaming agent when contained in an open container in a recirculating air oven at 60 degrees centigrade for 30 days, with the further limitation that the particles are moldable into a resilient foam body having a density of less than 2 pounds per cubic foot which is resilient and retains desirable resiliency for extended periods of time.

4,563,482

FORMABLE VINYL CHLORIDE-BASED RESIN COMPOSITION

Ryozo Tanizawa, and Takeji Yanagisawa, both of Ibaraki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1984, Ser. No. 672,299
Claims priority, application Japan, Nov. 21, 1983, 58-218948
Int. Cl.⁴ C08J *9/10, 9/14*
U.S. Cl. 521—92 **3 Claims**

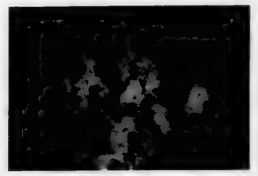
1. A foamable vinyl chloride-based resin composition capable of giving a cellular foamed article having metallic luster on the surface which comprises:
(a) 100 parts by weight of a vinyl chloride-based compound of a transparency formulation;
(b) from 0.1 to 5 parts by weight of a powder of a metal or alloy having an average particle diameter in the range from 10 to 40 μm;
(c) from 0.01 to 2 parts by weight of an organic dye or pigment; and
(d) from 0.1 to 5 parts by weight of a blowing agent.

4,563,483

CONCRETE CLEANING COMPOSITION

James A. Smith, Old Tappan, and Betty J. Murphy, Upper Montclair, both of N.J., assignors to Creative Products Resource Ltd., Clifton, N.J.

Filed Jul. 6, 1983, Ser. No. 511,185
Int. Cl.⁴ C08G *18/14, 18/16*
U.S. Cl. 521—111 **24 Claims**



1. A concrete cleaning composition comprising shreds of a water and oil absorbent hydrophilic, open-celled, polyurethane foam, said foam comprising broken cell walls adhered to a reticulated cell matrix, wherin the cell walls incorporate an aqueous phase and abrasive particles coupled within said walls, and wherein said shreds are obtained from a friable foam bun having a tensile strength of less that about 10 psi.

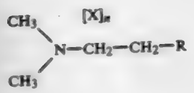
4,563,484

POLYURETHANE CATALYSTS

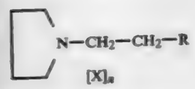
Felek Jachimowicz, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Sep. 10, 1984, Ser. No. 649,180
The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.
Int. Cl.⁴ C08G *18/14*
U.S. Cl. 521—129 **9 Claims**

1. A process for forming a polyurethane comprising reacting an organic polyisocyanate with a polyol selected from an organic polyether polyol or polyester polyol in the presence of a catalytic amount of an amine selected from the group having the structural formula:



or



wherein R is an alkyl group selected from a C_4 or a C_5 hydrocarbon, X is an organic mono or dicarboxylic acid and n is a number from 0 to about 1.

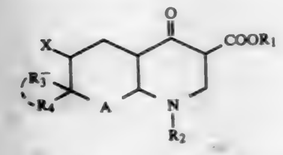
4,563,485

INJECTION-RESISTANT MATERIALS AND METHOD OF MAKING SAME THROUGH USE OF NALIDIXIC ACID DERIVATIVES

Charles L. Fox, Jr., Ft. Lauderdale, Fla.; Shanta Modak, River Edge, N.J., and Keith Reemtsma, New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Apr. 30, 1984, Ser. No. 605,792
Int. Cl.[4] A61K *31/625*
U.S. Cl. 523—113 **31 Claims**

1. Infection-resistant material for use within the interior of a human or animal body comprising a polymeric substrate provided with an effective amount of at least one antimicrobial agent; said antimicrobial agent bearing a nalidixic acid derivative having the general formula:



wherein X is a halogen; A is a carbon or nitrogen atom; R_1 is hydrogen, a lower alkyl group or a metal; R_2 is a lower alkyl group, a lower aralkyl group, a vinyl group, an allyl group, a lower hydroxy alkyl group or a halogenated lower alkyl group; R_3 and R_4 are hydrogen, a lower alkyl group or together, along with the nitrogen atom to which they are attached, form a 5- or 6-membered heterocyclic ring containing the nitrogen atom and additionally a second nitrogen or oxygen heteroatom.

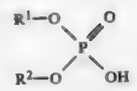
4,563,486

POLYMERIZABLE COMPOSITION COMPRISING (A) PHOSPHORUS OXYACID (B) AMINE AND (C) INORGANIC MATERIAL

Jozef Nemcek, Chester, and Thomas A. Roberts, Cheshire, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jun. 15, 1984, Ser. No. 620,920
Claims priority, application United Kingdom, Jun. 16, 1983, 8316445
Int. Cl.[4] C08K *3/34;* **C08F** *230/02;* **A61K** *5/06*
U.S. Cl. 523—115 **6 Claims**

1. A polymerisable composition comprising
(a) an organic medium which comprises a polymerisable olefinically unsaturated substance which bears one or more polymerisable olefinically unsaturated groups;
(b) a phosphorous oxyacid having the formula:



wherein
R^1 is a hydrocarbyl group or a polyether or polyester chain; and
R^2 is hydrogen or a hydrocarbyl group or a polyether or polyester chain; and
(c) an organic amine having the formula:



wherein
R^3 is a hydrocarbyl group or a polyether or polyester chain, and
R^4 and R^5, which may be the same or different are hydrogen, hydrocarbyl or polyether or polyester chains,
except that
(i) at least one of the groups R^1, R^2, R^3, R^4 and R^5 comprises a polymerisable olefinically unsaturated group
(ii) at least one of the groups R^1 and R^2 and at least one of the groups R^3, R^4 and R^5 is, or is derived from, a long chain alkyl group containing 8 to 22 carbon atoms or a polyether or polyester chain of molecular weight between 300 and 10,000; and
(d) a particulate inorganic material which is dispersed in the mixture of said organic medium, said phosphorus oxyacid and said organic amine; and
wherein the ratio of said phosphorus oxyacid to said organic amine is in the range from 0.5:1 to 100:1.

4,563,487

CURABLE EPOXY RESIN COMPOSITIONS AND USE IN PREPARING FORMED, SHAPED, FILLED BODIES

Wayne D. Woodson, Danville, Ill., assignor to CL Industries, Inc., Danville, Ill.

Division of Ser. No. 436,031, Oct. 22, 1982, Pat. No. 4,518,723, which is a continuation-in-part of Ser. No. 405,420, Aug. 5, 1982, abandoned. This application Mar. 29, 1985, Ser. No. 703,090
Int. Cl.[4] C08K *3/36*
U.S. Cl. 523—139 **15 Claims**

1. A method of forming shaped, filled bodies comprising a mixture of epoxy resin and inorganic solid particulates which comprise the steps of
(a) preparing a mixture comprising a major amount of inorganic solid particulates and a minor amount of
(i) an acid curable epoxy resin, and
(ii) an oxidizing agent capable of reacting with sulfur dioxide to form a catalyst for curing said epoxy resin,
(b) forming said mixture into the desired shape, and
(c) contacting the shaped mixture with sulfur dioxide for a period of time sufficient to effect a resin cure.

4,563,488

INSULATOR WITH HIGH THERMAL CONDUCTIVITY

Akinori Minami, and Katsuyoshi Yamauchi, both of Moriyama, Japan, assignors to Japan Vilene Co. Ltd., Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,415
Int. Cl.[4] C08K *3/38, 3/34*
U.S. Cl. 523—222 **24 Claims**

1. An insulating material of high thermal conductivity comprising:
60 to 95% by volume heat conductive inorganic powder comprising spherical particles and 5 to 50% by volume

bonding agent comprising 0.2 to 30% by volume polytetrafluoroethylene resin, and synthetic rubber, and wherein the volume of rubber is ¼ or more of the volume of polytetrafluoroethylene.

4,563,489

BIODEGRADABLE ORGANIC POLYMER DELIVERY SYSTEM FOR BONE MORPHOGENETIC PROTEIN

Marshall R. Urist, Pacific Palisades, Calif., assignor to University of California, Berkeley, Calif.

Filed Feb. 10, 1984, Ser. No. 579,034
Int. Cl.[4] A61K *37/02, 35/32;* **C07G** *7/00*
U.S. Cl. 524—21 **13 Claims**



ROENTGENOGRAMS OF MOUSE THIGHS SHOWING INDUCED BONE FORMATION IN RESPONSE TO 5mg OF bBMP/20mg (RIGHT); NO BONE FORMATION IS INDUCED BY 20mg OF PL ALONE (LEFT).

1. A composition comprising substantially pure BMP and physiologically acceptable, biodegradable polylactic acid polymer.

4,563,490

COMPOSITE POLYMERIC MATERIAL FOR BIOLOGICAL AND MEDICAL APPLICATION AND THE METHOD FOR ITS PREPARATION

Miroslav Stol; Miroslav Tolar; Milan Adam; Pavel Cefelin, and Jaroslav Kalal, all of Prague, Czechoslovakia, assignors to Czechoslovenska akademie ved of Praha, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 283,424, Jul. 15, 1981, Pat. No. 4,427,808. This application Nov. 18, 1983, Ser. No. 553,859
Claims priority, application Czechoslovakia, Jul. 21, 1980, 5125-80
Int. Cl.[4] C07G *7/00;* **C08L** *89/06;* **C02C** *7/04*
U.S. Cl. 524—24 **6 Claims**

1. Composite polymeric material for biological and medical application comprising a matrix of at least the following components: 1–99 weight percent of a substantially water insoluble hydrophilic polymer or copolymer based on methacrylate or acrylate, 1–99 weight percent of a fibrillar collagen, 0–2.5 weight percent of a crosslinking agent, related to both polymeric components, said material being prepared by dispersing the fibrillar collagen in a solution or in a high swollen dispersion of the synthetic hydrophilic polymer or copolymer in a lyotropic agent which maintains the mutual miscibility of said components and by the subsequent removal of the lyotropic agent forming a matrix of said synthetic polymer or copolymer interpregnated with collagen or a matrix of collagen interpregnated with said synthetic polymer or copolymer.

4,563,491

STUCCO COATING COMPOSITION

Michele Comune, 159 Garside St., Newark, N.J. 07401

Filed Apr. 15, 1983, Ser. No. 485,163
Int. Cl.[4] C08L *3/02*
U.S. Cl. 524—47 **18 Claims**

1. A composition for a protective surface coating which resists water and heat in an outdoor environment, the composition consisting essentially of:
(a) latex sealer in an amount of approximately 1.25 gallons per each 5 gallons of the composition;
(b) flour paste in an amount of approximately 7 ounces per each 5 gallons of the composition;
(c) mineralized aggregate in an amount of approximately at least 40 lbs. per each 5 gallons of the composition;
(d) at least one filler material in an amount of approximately at least 10 lbs. per each 5 gallons of the composition; and
(e) water in an amount of up to 3 ounces.

4,563,492

RESINOUS COMPOSITION WHICH IS USEFUL FOR THE DISPERSION DIFFICULTY DISPERSIBLE COLORING MATTER

Hirotoshi Umemoto, 138-97 Oneo, Hirono-cho, Uji-shi, Kyoto-fu; Hisaki Tanabe, B-40, 1-508 Ishishiro, Otokoyama, Yawata-shi, Kyoto-fu; Akihiro Kanakura, 25-22-405, Shaknsonji-cho, Hirakata-shi, Osaka-fu, and Shinji Nakano, 95-401 Tonda-danchi, 1319, Makita-cho, Osaka-fu, Takatsuki-shi, all of Japan

Filed Jan. 30, 1984, Ser. No. 574,963
Claims priority, application Japan, Jan. 29, 1983, 58-13207
Int. Cl.[4] C08L *67/08;* **C08K** *5/34*
U.S. Cl. 524—90 **5 Claims**

1. A resinous composition for coating use having a greatly improved pigment dispersibility and comprising an amphoteric resin having an acidic resinous component and a basic component of a basic compound, and aminoformaldehyde resin etherified with monohydric alcohol having 1 to 4 carbon atoms, an isocyanate compound or mixture of said amino-formaldehyde resin and isocyanate compound, wherein the basic component of said amphoteric resin consists of basic compound whose titration midpoint potential in non-aqueous potentiometric titration, when incorporated into the resin, is less than 450 mV, and the basicity of the amphoteric resin is within the range of 1.0×10^{-2} m mol/g solid.

4,563,493

OMEGA-PERFLUOROALKYL-1,2-EPOXYALKANE COPOLYMER AND USE THEREOF

Shosin Fukui, Toyonaka; Masayoshi Shinjo, Settsu; Yasuko Okazaki, Yamatokohriyama, and Hirokazu Aoyama, Takatsuki, all of Japan, assignors to Daikin Industries, Ltd., Osaka-fu, Japan

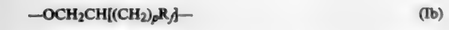
Filed Feb. 4, 1985, Ser. No. 697,865
Claims priority, application Japan, Feb. 8, 1984, 59-22361; Mar. 7, 1984, 59-44390
Int. Cl.[4] C08G *65/22, 65/26*
U.S. Cl. 524—233 **10 Claims**

1. A copolymer comprising
(a) repeating units of the formula:



(Ia)

or



(Ib)

wherein R_f is C_3–C_{21} perfluoroalkyl and p is an integer of 1 and 10 and
(b) repeating units of the formula:



(II)

wherein m is an integer of 1 to 4 and n is an integer of 2 to 10 when m is 1, an integer of 1 to 8 when m is 2 or an integer of 0 to (12–2m) when m is 3 or 4,



(III)

wherein R^1 and R^2 are each hydrogen, CH_3, CH_2Cl, CH_2F, CH_2OCH_3, $CH_2OC_2H_5$, CH_2OCOCH_3, $CH_2OC_6H_5$, CH_2OH or CH_2CN provided that at least one of them is not hydrogen,



(IV)

wherein q is 2 or 3, and/or

$$-[(R^3)_r-COO]- \quad (V)$$

wherein R^3 is CH_2 or CF_2 and r is an integer of 2 to 5.

4,563,494

SYNTHETIC RESIN COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Kozo Ida, Otake, Japan, assignor to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1983, Ser. No. 548,444

Claims priority, application Japan, Nov. 8, 1982, 57-195800; Nov. 8, 1982, 57-195801; Nov. 8, 1982, 57-195802

Int. Cl.⁴ C08F *220/04, 230/04;* **C08K** *3/10, 5/09*

U.S. Cl. 524—398 **20 Claims**

1. A process for producing a synthetic resin composition, which comprises:

dispersing or dissolving at least one lanthanoid-containing compound selected from the group consisting of oxides, hydroxides, inorganic and/or organic acid salts and complexes of lanthanoids in a resin-forming starting material selected from the group consisting of (1) at least one vinyl monomer selected from the group consisting of acrylic acid, methacrylic acid, acrylic acid esters, methacrylic acid esters, styrene and substituted styrene compounds, (2) mixtures of said at least one vinyl monomer with another copolymerizable vinyl monomer and (3) a partially polymerized product thereof; and then

polymerizing the resin-forming starting material by bulk or solution polymerization.

4,563,495

RESINOUS COMPOSITION FOR SLIDING MEMBERS

Akiyoshi Kawaguchi, Tokushima, and Morihiko Nakamura, Naruto, both of Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

Filed Oct. 30, 1984, Ser. No. 666,468

Claims priority, application Japan, Oct. 31, 1983, 58-204266

Int. Cl.⁴ C08K *3/22, 3/10*

U.S. Cl. 524—413 **7 Claims**

1. A resinous composition for sliding members which comprises a polyamide resin, a powdered high density polyethylene in an amount of 5 to 25% by weight of the composition and potassium titanate whiskers in an amount of 10 to 40% by weight of the composition.

4,563,496

SELF-EXTINGUISHING THERMOPLASTIC MOULDING COMPOSITIONS OF POLYCARBONATE AND ABS-POLYMERS

Christian Lindner, Cologne; Friedemann Müller, Neuss; Horst Peters, Leverkusen; Hans-Jürgen Kress, and Josef Buekers, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 661,202

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1983, 3338502

Int. Cl.⁴ C08K *3/22;* **C08L** *69/00*

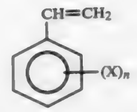
U.S. Cl. 524—430 **1 Claim**

1. Self-extinguishing thermoplastic moulding compositions of:

(a) from 20 to 80%, by weight, based on (a)+(b)+(c), of a copolycarbonate of a dihydric phenol and a dihydric halogenated phenol, the copolycarbonate containing from 3 to 20%, by weight, of co-condensed halogen;

(b) from 10 to 70% by weight, based on (a)+(b)+(c), of a thermoplastic copolymer of:

(1) from 10 to 90%, by weight, based on copolymer, of a nucleus-alkylated styrene corresponding to the following general formula:



(I)

wherein

X represents methyl, ethyl, n-propyl or isopropyl; and

n represents an integer of from 1 to 5;

(2) from 80 to 0%, by weight, of styrene α-methyl styrene or a mixture thereof; and

(3) from 10 to 30%, by weight, of acrylonitrile;

(c) from 10 to 70%, by weight, based on (a)+(b)+(c) of a graft polymer of styrene, α-methyl styrene, nucleus-substituted styrene (I) or mixtures thereof, on the one hand, and acrylonitrile, methyl methacrylate or mixtures thereof, on the other hand, on particulate, at least partially cross-linked rubbers having a glass transition temperature of ≦20° C., an average particle diameter (d_{50}) of from 0.1 to 5 μm and a gel content (in toluene) of >50%, by weight,

(d) from 0 to 12 parts, by weight, per 100 parts, by weight, of (a)+(b)+(c), of a halogen-containing organic flameproofing compound; and

(e) from 0 to 5 parts, by weight, per 100 parts, by weight, of (a)+(b)+(c), of tin dioxide, calcium phosphite, calcium hypophosphite, zinc borate, aluminium oxide, cryolite, bismuth oxide or barium carbonate.

4,563,497

METHOD FOR MAKING WATER SOLUBLE SOLID POLYMERS

Juergen Masanek, Pfungstadt; Horst Pennewiss, Darmstadt-Nev-Kranichstein, and Hermann Plainer, Reinheim, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 213,552, Dec. 5, 1980, abandoned. This application Jan. 25, 1983, Ser. No. 460,924

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951087

Int. Cl.⁴ C08F *220/06*

U.S. Cl. 524—732 **12 Claims**

1. A method for making a hard, brittle composition which can be ground without prior removal of water therefrom, said composition comprising a water soluble synthetic polymer and having a solids content greater than 83 percent, which method comprises free-radically polymerizing a polymerization batch consisting essentially of an aqueous solution of a free-radically polymerizable water soluble monomer selected from the group consisting of non-ionic, anionic, cationic, and ampholytic acrylic and methacrylic monomers which are exclusively or predominantly water soluble, or of a mixture of such monomers, said polymerization proceeding in the presence of 0.5 to 50 percent, by weight of said monomer or monomers, of at least one member selected from the group consisting of water soluble solid monosaccharides and oligosaccharides, the solids content of said aqueous solution being greater than 83 percent.

4,563,498

CURABLE SILICONE COMPOSITIONS AND PROCESSES

Gary M. Lucas, Scotia, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jul. 5, 1984, Ser. No. 627,952

Int. Cl.⁴ C08K *3/26, 3/36;* **C08G** *77/06*

U.S. Cl. 524—788 **19 Claims**

1. A room temperature vulcanizable silicone composition free of plasticizing fluid and curable to a low modulus silicone rubber upon exposure to moisture, comprising:

(A) 100 parts by weight of an organopolysiloxane wherein the silicon atoms at the polymer chain ends are terminated with at least two alkoxy radicals, said organopolysiloxane having a viscosity ranging from about 20,000 centipoise to about 500,000 centipoise at 25° C.;

(B) up to 100 parts by weight filler per 100 parts by weight of organopolysiloxane, there being present not more than 4 parts by weight of reinforcing filler, or at least 20 parts by weight of extending filler, or mixture thereof;

(C) from 0.05 to 5 parts by weight of an adhesion promoter per 100 parts by weight of organopolysiloxane; and

(D) an effective amount of condensation catalyst.

4,563,499

EXTRACTION OF POLYOXYALKYLENE SURFACTANTS FOR PHENOLIC FOAM STABILIZATION

Richard L. Frentzel, and Ernest K. Moss, both of Clearwater, Fla., assignors to The Celotex Corporation, Tampa, Fla.

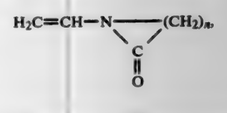
Division of Ser. No. 670,785, Nov. 13, 1984, which is a division of Ser. No. 542,803, Oct. 17, 1983, Pat. No. 4,485,194, which is a division of Ser. No. 278,139, Jun. 29, 1981, Pat. No. 4,412,014, which is a continuation of Ser. No. 113,909, Jan. 21, 1980, abondoned. This application Apr. 12, 1985, Ser. No. 722,538

Int. Cl.⁴ C08F *283/06*

U.S. Cl. 525—404 **9 Claims**

1. A process for preparing a cellular foam stabilizer comprising the steps of:

(1) reacting together a cyclic nitrogenous vinyl monomer having the formula



wherein n is 3, 4, or 5, and an esterified unsaturated dibasic acid having the formula

$$C_uH_{2u-2}(CO_2C_vH_{2v+1})_2,$$

wherein u is 2 or 3 and v is an integer from 3 to 18, by free radical addition polymerization in the presence of a polyoxyalkylene adduct having the formula

H-polyoxyalkylene chain)$_t$R,

wherein R is an organic or inorganic radical and t is the number of polyoxyalkylene chains reacted onto R, whereby a reaction product is obtained which can be used as a surfactant in the formation of phenolic foams, said step (1) reaction product comprising a major component comprising the product formed from the reaction of said cyclic nitrogenous vinyl monomer and unsaturated diester onto said polyoxyalkylene adduct, and a minor component comprising a copolymer of said cyclic nitrogenous vinyl monomer and unsaturated diester, the capacity of said major component for stabilizing phenolic foams being greater than that of said total step (1) reaction product; and

(2) separating from said step (1) reaction product said major and minor components thereof by any conventional method for separating a mixture of polymerization reaction products.

4,563,500

POLYPHENYLENE ETHER COMPOSITIONS WITH HIGH IMPACT STRENGTH AND IMPROVED MOLDABILITY

William R. Haaf, Voorhesville, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 390,352, Jun. 21, 1982, abandoned, which is a continuation of Ser. No. 753,315, Dec. 22, 1976, abandoned. This application Jan. 11, 1984, Ser. No. 570,078

Int. Cl.⁴ C08L *9/06, 71/04*

U.S. Cl. 525—99 **13 Claims**

1. A thermoplastic composition comprising:

(a) a polyphenylene ether resin;

(b) a styrene resin; and

(c) an Izod impact modifier comprising in combination (i) from 99 to 1 parts by weight of an elastomeric block copolymer of the A-B-A^1 type, wherein terminal blocks A and A^1 are the same or different and are polymerized vinyl aromatic hydrocarbons and center block B is a polymerized conjugated diene, the molecular weight of B being higher than the combined molecular weights of A and A^1, and (ii) from 1 to 99 parts by weight of a hydrogenated elastomeric A-B-A^1 block copolymer.

4,563,501

CATHODE-PRECIPITATING ELECTRODEPOSITION COATING COMPOSITION

Yutaka Otsuki, Yokohama; Yoshihiko Araki, Tokyo; Hiroyoshi Omika, Yokohama; Hajime Hara, Fujisawa, and Kazuho Aoyama, Kawasaki, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed May 10, 1983, Ser. No. 493,277

Claims priority, application Japan, May 14, 1982, 57-80077; Jun. 25, 1982, 57-108453

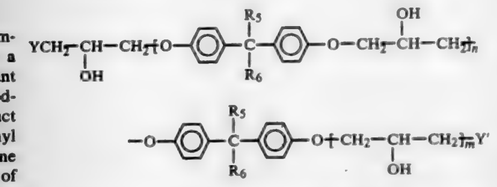
Int. Cl.⁴ C09L *49/00;* **C08L** *63/20*

U.S. Cl. 525—108 **5 Claims**

1. A resin composition suitable for use in a cathode-precipitating electrodeposition coating composition having excellent low-temperature curability consisting essentially of:

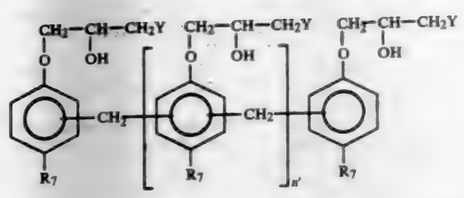
(A) 100 parts by weight of a high-molecular-weight compound containing a carbon-carbon double bond and 30 to 300 millimoles, per 100 g of said compound, of an amino group and having a molecular weight of 500 to 10,000 and an iodine value of 50 to 500;

(B) 3 to 100 parts by weight of a compound of the general formula:



wherein R_5 and R_6 represent a hydrogen atom of an alkyl group having 1 to 10 carbon atoms, n is an integer of 0 to 20, m is 1 to 0, Y represents a residue of an α,β-unsaturated monocarboxylic acid having 3 or 4 carbon atoms, and Y' represents a hydrogen atom when m is 0 and Y when m is 1; or

a compound of the general formula:



wherein n' is an integer of 0 to 10, R_7 represents a hydrogen atom or a hydrocarbon group having 1 to 10 carbon atoms, and Y is as defined; and

(C) 0.2 to 20 parts by weight of a manganese salt of maleinized or sulfonated polymer of conjugated diolefin containing a carbon-carbon double bond and 30 to 300 millimoles, per 100 g of said polymer, of a sulfonic acid group or a succinic acid group and having a molecular weight of 300 to 3,000 and an iodine value of 50 to 500.

4,563,502

COMPOSITION

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 421,789, Sep. 23, 1982, abandoned. This application Jan. 27, 1984, Ser. No. 574,572

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—146 **4 Claims**

1. A thermoplastic composition which comprises:

(a) from about 85 to about 96 weight percent of (a)+(b) of a high molecular weight aromatic polycarbonate resin; and

(b) from about 4 to about 15 weight percent of (a)+(b) of a linear low density polyethylene resin having a density of from about 0.89 to about 0.96 gm./cc., said polyethylene resin comprising polymer chain units derived from ethylene and a minor amount of a comonomer consisting of butene-1.

4,563,503

POLYCARBONATE COMPOSITIONS HAVING IMPROVED IMPACT PERFORMANCE

Mark W. Witman, New Martinsville, W. Va., and Gerard E. Reinert, McMurray, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Oct. 12, 1982, Ser. No. 433,583

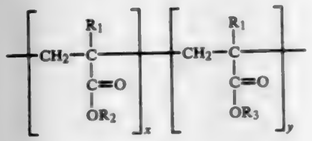
Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—148 **4 Claims**

1. An injection molding composition comprising

(i) polycarbonate resin and

(ii) about 2 to about 5 percent relative to the total weight of said (i) plus said (ii) of a copoly(C_1–C_{18} alkyl-acrylate) conforming structurally to



wherein

R_1 denotes a C_1 to C_{18} alkyl or a hydrogen atom,

R_2 denotes a C_1 to C_{18} alkyl,

R_3 denotes a C_1 to C_{18} alkyl with the proviso that it contains at least one OH group, and

x and y are selected to render the molecular weight of said copoly(C_1–C_{18} alkylacrylate) between 50,000 and 3,000,000 and an OH functionality of between 0.1 and 5.0 percent by weight.

4,563,504

PROPYLENE AND ETHYLENE/α-OLEFIN COPOLYMER COMBINATIONS APPLICABLE TO THE MANUFACTURE OF MONO-ORIENTED YARNS

Marius Hert, Aubingy en Artois, and Philippe Dufossé, Bethune, both of France, assignors to Societe Chimique des Charbonnages, S.A., Paris, France

Filed Jun. 30, 1983, Ser. No. 509,723

Claims priority, application France, Jun. 30, 1982, 82 11450

Int. Cl.⁴ C08J *5/00*; C08L *23/12, 23/20, 23/08*

U.S. Cl. 525—240 **8 Claims**

1. A mono-oriented yarn having improved tenacity produced from combination of at least one propylene polymer and at least one ethylene/α-olefin copolymer wherein said combination comprises: (a) 10 to less than 40 weight percent isotactic polypropylene; and (b) 60 to 90 weight percent ethylene/α-olefin copolymer, wherein said α-olefin has at least 4 carbon atoms, wherein said copolymer has a density between 0.905 and 0.940 g/cm³ and a melt index between 0.2 and 3 dg/min, wherein said copolymer comprises crystalline and amorphous fractions, wherein the average content of said α-olefin units in said copolymer is between 1 and 8 mole percent, wherein the distribution of said α-olefin units in said copolymer is heterogeneous, and wherein the content of α-olefin units in said copolymer varies between at least 0.2 and at most 5 times the average content of α-olefin units, depending on the fractions considered.

4,563,505

PROCESS FOR PRODUCING THERMOPLASTIC GRAFT COPOLYMER RESIN CONTAINING NITRILE

Mitsuo Abe; Seiichi Atomori, both of Yokkaichi; Tadahiko Tsutsumi, Suzuka, and Masahiko Noro, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1983, Ser. No. 532,068

Claims priority, application Japan, Sep. 22, 1982, 57-163958

Int. Cl.⁴ C08F *279/02, 279/04*

U.S. Cl. 525—316 **11 Claims**

1. A process for producing a thermoplastic resin having an unsaturated nitrile monomer content of from 28–38% by weight by polymerizing a monomer component comprising an alkenyl aromatic hydrocarbon monomer in the presence of a latex of a rubbery polymer selective from the group consisting of polybutadiene, acrylonitrile-butadiene copolymer, styrene-butadiene copolymer, isoprene rubber, chloroprene rubber, acrylic rubber, and ethylenepropylene-diene rubber, comprising the steps of:

(a) polymerizing from 30–70 wt.% of said monomer component comprising said alkenylaromatic hydrocarbon monomer and from 0–18% by weight, based on the total monomer content of said component in step (a), of an unsaturated nitrile monomer, in the presence of said rubbery polymer; and

(b) subsequently polymerizing the remaining amount of said monomer component comprising said alkenyl aromatic hydrocarbon monomer and from 35–90% by weight, based on the total monomer content of said component in step (b), of an unsaturated nitrile monomer, in the presence of the polymerization reaction product of step (a).

4,563,506

EXTRUSION PROCESS FOR PREPARING IMPROVED BROMINATED BUTYL RUBBER

Ronald C. Kowalski, New Providence; William M. Davis; Neil F. Newman, both of Edison; Zisis A. Foroulis, Mendham, all of N.J., and Francis P. Baldwin, Coupeville, Wash., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 651,621, Sep. 17, 1984, which is a continuation-in-part of Ser. No. 481,320, Apr. 1, 1983. This application Oct. 1, 1984, Ser. No. 656,664

Int. Cl.⁴ C08F *8/22*

U.S. Cl. 525—354 **109 Claims**

1. A process for the continuous bromination of a butyl rubber polymer wherein the brominated polymer contains at least 1.5 wt. % bromine and at least 20 mole % of the bromine, based on the initial mole % of unsaturation in the unbrominated butyl rubber is in the ENDO allylic (Type III) configuration, which comprises contacting a cohesive mass of butyl rubber, said rubber being substantially free of acid scavengers, with a brominating agent at an elevated temperature in a continuous flow device, under an acid environment, for a time sufficient to brominate the butyl rubber and cause a rearrangement of a substantial fraction of the contained bromine from an EXO allylic (Type II) configuration to the Type III configuration, said continuous flow device comprising means for conveying said polymer through said device wherein by-product formed by the reaction of the brominating agent with the butyl rubber and any unreacted halogenating agent are disengaged from said brominated butyl rubber means in said continuous flow device downstream of the contact between the butyl rubber and the brominating agent by means comprising deforming and disrupting said brominating polymer and injecting an effective amount of an inert gas thereby neutralizing said brominated polymer by disengaging bromination reaction by-products and unreacted brominating agent.

4,563,507

TREATMENT OF LEWIS BASE POLYMER WITH ETHYLENICALLY UNSATURATED COMPOUND TO IMPROVE ANTISTATIC HYGROSCOPIC AND DYE RECEPTIVE PROPERTIES

Michael E. Dyer, Cleveland, Tenn., assignor to Intera Corporation, Cleveland, Tenn.

Continuation-in-part of Ser. No. 364,045, Mar. 31, 1982, abandoned, which is a continuation-in-part of Ser. No. 128,062, Mar. 7, 1980, abandoned. This application Feb. 17, 1984, Ser. No. 579,801

Int. Cl.⁴ C08G *69/48*

U.S. Cl. 525—426 **16 Claims**

1. A method of treating a shaped structure of a solid, high molecular weight polyamide to improve the antistatic, hygroscopic and dye receptive properties of the polymer while retaining its structural shape, comprising heating the polymer structure with an aqueous treating solution containing an ethylenically unsaturated monomer which does not readily polymerize under the treating conditions, and a catalyst which is a source of hydrogen ions or protons, and continuing the treatment for a sufficient time and at a temperature so as to effect essentially single molecule addition of the monomer pendent to the polymer chains to form a branched polymer with substantially no graft polymerization of said monomer to said polymer.

4,563,508

INJECTION MOLDABLE AROMATIC POLYESTERS COMPOSITIONS AND METHOD OF PREPARATION

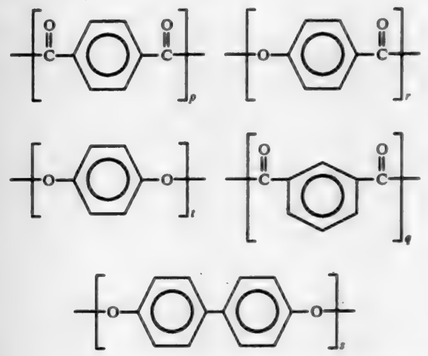
Steve G. Cottis, Fort Wright, Ky.; Richard Layton, New City, N.Y., and Nathan D. Field, Wyckoff, N.J., assignors to Dart Industries, Inc., Northbrook, Ill.

Filed May 18, 1984, Ser. No. 611,806

Int. Cl.⁴ C08L *67/02, 67/04*

U.S. Cl. 525—444 **20 Claims**

1. In the process of molding articles comprising aromatic oxybenzoyl polyesters the improvement which comprises adding to the aromatic oxybenzoyl polyester composition a minor amount of a different polymeric flow modifier comprising combinations of the following units



Where; p=0 to 0.9, q=0.1 to 1.00, r=1 to 7, s=0.3 to 1.00, and t=0 to 0.7.

4,563,509

THERMOSET POLYMER PRODUCTION

Yeon F. Liang, Tulsa, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 1, 1984, Ser. No. 636,775

Int. Cl.⁴ C08F *283/00*

U.S. Cl. 525—537 **8 Claims**

1. A process for converting thermoplastic arylene sulfide resins to thermosetting resins which comprises:

(1) contacting a thermoplastic poly(phenylene sulfide) resin with hot aqueous hydrogen peroxide at an elevated temperature which is below the melting point of the polymer, said thermoplastic resin consisting essentially of polymers formed by reacting at least two different comonomers wherein one of the monomers is a major amount of a dihalobenzene and the other monomer is a minor amount of at least one other polyhalo aromatic compound with an alkali metal sulfide in a polar organic compound, and

(2) heat treating the hydrogen peroxide contacted polymer at a temperature above the melting point but not more than about 50° C. above the melting point of the polymer for a period of time sufficient to cause crosslinking and form a thermoset polymeric product.

4,563,510

PROCESS FOR THE PREPARATION OF POLYMER LATEX

John Ugelstad, Trondheim, Norway, assignor to Sintef, Trondheim, Norway

Continuation-in-part of Ser. No. 91,492, Nov. 5, 1979, abandoned. This application Jan. 25, 1984, Ser. No. 573,605

Claims priority, application Norway, Nov. 6, 1978, 783717

Int. Cl.⁴ C08F *2/24*

U.S. Cl. 526—66 **15 Claims**

1. A process for the preparation of a polymer latex which comprises:

a. homogenizing water, an emulsifier and an initiator or mixture thereof having a water solubility of $<10^{-2}$ g/l in the presence or absence of a solvent, said homogenisation being at a temperature above the melting point of the initiator or mixture thereof in the absence of the solvent,

said solvent having a water solubility of $<10^{-2}$ g/l H_2O and a molecular weight of less than 5,000 and which forms a solu-

tion with said initiator or mixture thereof at the homogenisation temperature,
whereby an emulsion containing fine droplets of initiator is formed;
b. adding water and a polymerizable monomer with or without additional emulsifier to the emulsion of a., whereby a substantial portion of said monomer diffuses into said initiator droplets; and,
c. initiating the polymerization of said monomer by heating.

4,563,511

POLYOLEFIN POLYMERIZATION PROCESS AND CATALYST

Albert P. Masino; Kiplin D. Cowan, both of Bartlesville, and Gil R. Hawley, Dewey, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 524,488, Aug. 19, 1983, Pat. No. 4,503,159.
This application Nov. 9, 1984, Ser. No. 669,909
Int. Cl.⁴ C08F *4/02, 10/06*
U.S. Cl. 526—119 **20 Claims**

1. A process for the polymerization of an alpha olefin comprising contacting said alpha olefin under polymerization conditions with a catalyst prepared by mixing a magnesium dihalide and a small quantity of added water in a hydrocarbon solvent in the presence of a phase transfer agent and reacting the resulting hydrated magnesium dihalide with reactants comprising a benzoic acid ester and an alkoxytitanium compound to form a first catalyst component, and then reacting said first catalyst component with an organoaluminum halide to form a solid product, then reacting said solid product with a halogenating agent comprising a titanium halide, wherein the amount of added water employed is such that the total moles of water including water originally associated with the magnesium dihalide is in the range of 0.5 to 1.5 times the number of moles of magnesium dihalide.

4,563,512

OLEFIN POLYMERIZATION PROCESS UTILIZING A COMBINATION OF SELECTIVITY CONTROL AGENTS

Brian L. Goodall, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 28, 1984, Ser. No. 584,416
Int. Cl.⁴ C08F *4/02*
U.S. Cl. 526—125 **25 Claims**

1. In the polymerization of an alpha-monoolefin feed comprising at least about 80 mole percent propylene or butene-1, in which the catalyst system comprises:
(a) a highly active solid catalyst component comprising titanium tetrachloride, magnesium chloride and an aromatic ester electron donor,
(b) as cocatalyst a compound AlR'_3 where R' represents an alkyl group of 2 to 8 carbon atoms, and
(c) a selectivity control agent which may be partly or totally complexed with the cocatalyst,
the improvement wherein said selectivity control agent comprises a strong selectivity control agent and a weak selectivity control agent, said strong selectivity control agent being an aromatic carboxylic acid ester containing 8 to 40 carbon atoms and said weak selectivity control agent being selected from the group consisting of simple ethers and tertiary amines, wherein said simple ethers have the general formula $R^4—O—R^5$ where R^4 and R^5 are selected from the group consisting of C_1 to C_8 alkyl groups, and said tertiary amine has the general formula



where R^6, R^7 and R^8 are selected from the group consisting of C_1 to C_8 alkyl groups.

4,563,513

METHOD FOR THE PREPARATION OF A LOW-IMPURITY ORGANOPOLYSILOXANE BY THE POLYMERIZATION OF AN ORGANOPOLYSILOXANE OLIGOMER

Hiroshi Inomata, Gunma, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1984, Ser. No. 641,454
Claims priority, application Japan, Aug. 29, 1983, 58-157539
Int. Cl.⁴ C08G *77/06*
U.S. Cl. 528—14 **2 Claims**

1. A method for the preparation of a low-impurity high-polymeric organopolysiloxane which comprises the steps of:
(a) polymerizing an organopolysiloxane oligomer in the presence of an alkali catalyst to form a high-polymeric organopolysiloxane; and
(b) admixing the organopolysiloxane containing the alkali catalyst with a trihydrocarbyl monohalosilane and hexamethyldisilazane in combination to neutralize the alkali catalyst, the amount of the trihydrocarbyl monohalosilane being from 1.0 to 5.0 moles per mole of the alkali remaining in the organopolysiloxane, and the amount of hexamethyldisilazane being from 0.2 to 10 moles per mole of the trihydrocarbyl monohalosilane.

4,563,514

CURABLE POLYSILARYLENE-POLYSILOXANE COPOLYMERS

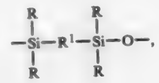
Wan-Li Liu, and Jonathan D. Rich, both of Ballston Lake, N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Mar. 26, 1985, Ser. No. 716,071
Int. Cl.⁴ 522 *99, 13;* B05D *3/06*
U.S. Cl. 427—54.1 **81 Claims**

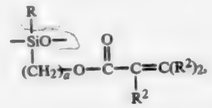
1. A polysilarylene-polysiloxane copolymer, comprising:
(a) at least one unit of the formula



(b) at least one unit of the formula



and
(c) at least one unit of the formula



where each R is an independently selected organic radical, R^1 is a divalent arylene radical, each R^2 is independently selected from hydrogen, and substituted and unsubstituted lower alkyl radicals, and a is an integer from 1 to 12, inclusive.

4,563,515

CATHODICALLY DEPOSITABLE PAINT BINDERS BASED ON THE REACTION PRODUCT OF EPOXY RESINS AND SECONDARY AMINES CARRYING CARBOXYLIC ACID AMIDE GROUPS

Rudolf Schipfer; Wolfgang Daimer, and Gerhard Schmölzer, all of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

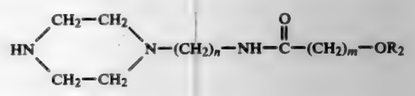
Filed Mar. 4, 1985, Ser. No. 707,677
Claims priority, application Austria, Mar. 2, 1984, 713/84
Int. Cl.⁴ C08G *59/54*
U.S. Cl. 528—111 **23 Claims**

1. Cationic synthetic resin binders free of epoxy groups which are particularly suited for the formulation of electrodepositable-paints comprising the reaction product at about 20° to 150° C. of an epoxy resin carrying at least 2 epoxy groups and having an epoxy equivalent of 190 to 1000, with from 0.1 to 1.0 amino groups per available epoxy group on said epoxy resin of a secondary amine of the general formula



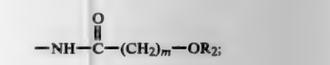
(I)

or

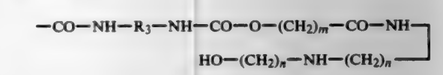


(II)

wherein
n is 2 through 4, m is 1 through 5, and
R_1 is —0H or



R_2 is —H or



and
R_3 is an aromatic, cycloaliphatic or aliphatic hydrocarbon radical.

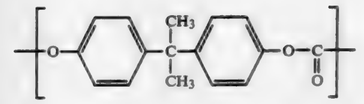
4,563,516

POLYETHER-POLYCARBONATES FOR DIALYSIS MEMBRANES

Manfred Schreckenberg, Krefeld; Rolf Dhein, Krefeld; Ralf Lange, Krefeld, and Werner Waldenrath, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 15, 1984, Ser. No. 640,914
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1983, 3329975; Sep. 30, 1983, 3335590; Mar. 10, 1984, 3408803
Int. Cl.⁴ C08G *63/62;* B01D *39/14*
U.S. Cl. 528—196 **7 Claims**

1. A process for the preparation of segmented aliphatic aromatic polyether-polycarbonates having $\bar{M}w$ (weight-average) of 50,000 to 350,000 and containing about 95% by weight to about 65% by weight of 2,2-bis-(4-hydroxyphenyl)-propane carbonate structural units of the formula I



and about 5% by weight to about 35% by weight of polyether-polycarbonate structural units of the formula II



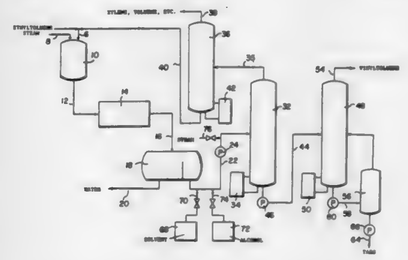
wherein O-polyether-O- is an aliphatic polyether diolate radical having an $\bar{M}_n$ of 600 to 20,000 by the phase boundary process in a mixture of organic solvent, and aqueous alkaline phase at temperatures of 0° C. to 35° C. from corresponding quantities of aliphatic polyether diols having $\bar{M}_n$ of 600 to 20,000, bisphenol A and phosgene, characterized in that
(a) phosgene is used in a molar excess, based on the mols of organic dihydroxy compounds,
(b) the aqueous phase is kept at a pH value of at least 13 and
(c) polycondensation is carried out in a reactor by the addition of an amine catalyst, the polyether-polycarbonate being purified via the organic phase, isolated and dried.

4,563,517

POLYMER MODIFICATION SYSTEM FOR VINYLAROMATIC MONOMER PRODUCTION APPARATUS

James M. Watson; James R. Butler, both of Big Spring, Tex., and Mark Victor, Catonsville, Md., assignors to Cosden Technology, Inc., Dallas, Tex.

Continuation of Ser. No. 248,474, Mar. 27, 1981, Pat. No. 4,452,975. This application Apr. 13, 1983, Ser. No. 488,970
The portion of the term of this patent subsequent to Jun. 5, 2001, has been disclaimed.
Int. Cl.⁴ C08F *6/00*
U.S. Cl. 528—493 **3 Claims**



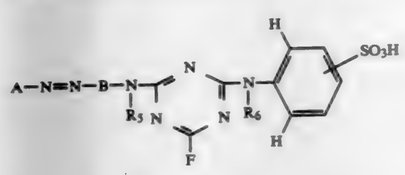
1. A process for modifying insoluble, cross-linked polymer accumulations in an apparatus used for the production of a vinylaromatic monomer, comprising the steps of:
contacting the insoluble polymer accumulation with a light, polar non-solvent for the polymer; and
thereafter expanding the accumulated polymer by subjecting the polymer to steam.

4,563,518
FIBRE-REACTIVE FLUOROTHRIAZINE-GROUP-CONTAINING AZO DYESTUFFS

Hermann Henk, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 198,747
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945058
Int. Cl.[4] C09B *62/085*; D06P *1/382, 3/10, 3/66*
U.S. Cl. 534—638 5 Claims

1. A fibre reactive monoazo dyestuff of the formula



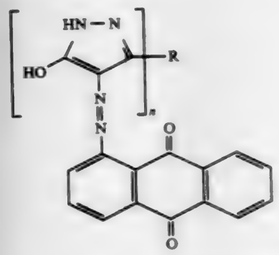
wherein
A is 3- or 4-sulphophenyl or naphthyl substituted by one to three sulphonic acid groups
B is phenylene which is unsubstituted or substituted by low molecular alkyl or alkoxy, and R_5 and R_6 are each hydrogen or low-molecular alkyl.

4,563,519
ANTHRAQUINONE AZOPYRAZALONE COLORANTS

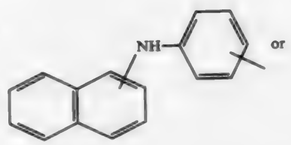
Peter Dimroth, Mannheim, and Heinrich Kowarsch, Oberderdingen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 12, 1983, Ser. No. 522,688
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3229953
Int. Cl.[4] C09B *56/12*; D06P *1/04, 1/44*
U.S. Cl. 534—655 17 Claims

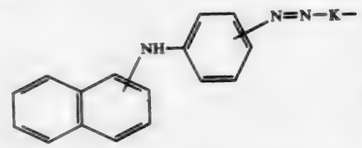
1. A colorant which corresponds to the formula



where n=1 and R in phenyl or phenyl independently substituted by chlorine, bromine, methyl, ethyl, methoxy, ethoxy, acetylamino, benzoylamino or nitro.



or



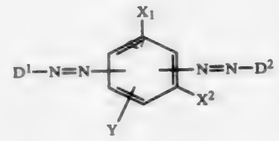
wherein either the phenyl ring or the naphthyl ring is substituted by hydroxysulfonyl, and the phenyl ring and the naphthyl ring are further unsubstituted or substituted by chlorine, methyl, methoxy, hydroxysulfonyl, aminosulfonyl, hydroxyl, acetylamino, propionylamino or benzoylamino, and
K is a radical of a benzene or naphthalene coupling component in the form of a metal complex.

4,563,520
METAL COMPLEXES OF DIS- OR TRISAZO COMPOUNDS CONTAINING A MIDDLE COMPONENT TWICE SUBSTITUTED BY HYDROXY AND/OR AMINO

Udo Bergmann, Darmstadt; Guenter Hansen, Ludwigshafen; Dietrich Lach, Friedelsheim, and Georg Zeidler, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 21, 1982, Ser. No. 435,661
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142608
Int. Cl.[4] C09B *33/04, 33/22, 33/24, 45/32*
U.S. Cl. 534—678 6 Claims

1. A polyazo dye of the formula



I

wherein
D^1 is a radical of a diazo component,
X^1 and X^2 independently of one another are each hydroxyl, amino, dimethylamino, diethylamino, dipropylamino, morpholino, piperidino, or pyrrolidino,
Y is hydrogen, chlorine, methyl, hydroxysulfonyl, or $D^3—N=N—$,
D^2 is a radical of the formula

4,563,521
PROCESS FOR THE PREPARATION OF 6-METHYL-3,4-DIHYDRO-1,2,3-OXATHIAZIN-4-ONE 2,2-DIOXIDE AND ITS NON-TOXIC SALTS

Karl Clauss, Kelkheim; Adolf Linkies, Frankfurt am Main, and Dieter Reuschling, Butzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 20, 1985, Ser. No. 714,175
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410440
Int. Cl.[4] C07D *291/06*
U.S. Cl. 544—2 7 Claims

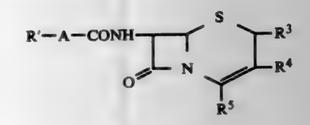
1. A process for the preparation of 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one 2,2-dioxide and its non-toxic salts, starting from an acetoacetyl compound, which comprises reacting acetoacetamide with at least approximately twice the molar amount of SO_3, where appropriate in an inert organic or organic solvent, and then, where appropriate, also neutralizing with a base the 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one 2,2-dioxide which is produced in the form of the acid in this reaction.

4,563,522
CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Hisashi Takasugi; Kiyoshi Tsuji, both of Osaka, and Toshiyuki Chiba, Nara, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 886,340, Mar. 14, 1978, Pat. No. 4,425,341.
This application Nov. 18, 1983, Ser. No. 553,402
Int. Cl.[4] C07D *501/24*; A61K *31/545*
U.S. Cl. 544—016 10 Claims

1. A compound of the formula



wherein R' is monohaloacetyl,
A is methylene or a group of the formula:



$O—R^2$

in which R^2 is hydrogen or lower aliphatic hydrocarbon which may be substituted with halogen, carboxy or pharmaceutically acceptable esterified carboxy,
R^3 is hydrogen or lower alkyl,
R^4 is hydrogen, halogen, lower alkyl or a group of the formula:

$—O—R^7$

in which R^7 is lower alkyl and
R^5 is carboxy or carboxy modified to a pharmaceutically acceptable group from which carboxy may be regenerated, provided that
(i) R^4 is hydrogen, halogen or a group of the formula

$—O—R^7$

in which R^7 is as defined above, when R^3 is hydrogen,
(ii) R^4 is lower alkyl, when R^3 is lower alkyl, and pharmaceutically acceptable salt thereof.

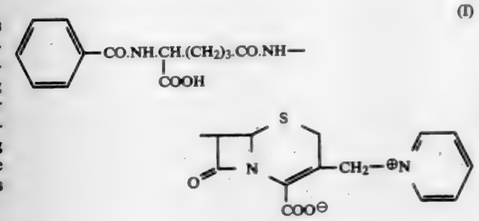
4,563,523
CEPHALOSPORIN COMPOUNDS

Gordon C. D. Smith, Wokingham, England, assignor to Glaxo Group Limited, London, England

Filed Jul. 19, 1982, Ser. No. 399,328
Claims priority, application United Kingdom, Jul. 17, 1981, 8122147
Int. Cl.[4] C07D *501/18*; A61K *31/545*
U.S. Cl. 544—024 7 Claims

1. The compound of formula

(I)



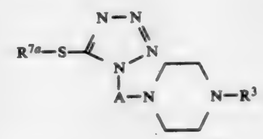
and salts thereof in crystalline and substantially pure form.

4,563,524
CEPHEM COMPOUNDS AND PROCESSES FOR PREPARATION THEREOF

Ikuo Ueda; Masaaki Matsuo, both of Toyonaka; Kiyoshi Tsuji, Osaka, and Masayuki Kato, Mino, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 213,232, Dec. 5, 1980, Pat. No. 4,443,443.
This application Jan. 13, 1984, Ser. No. 570,297
Claims priority, application United Kingdom, Dec. 17, 1979, 7943363
Int. Cl.[4] C07D *403/06*
U.S. Cl. 544—366 2 Claims

1. A 1-substituted-1H-tetrazole-5-thiol compound of the formula:



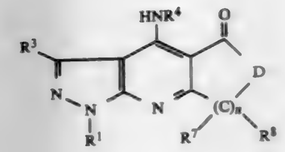
wherein
A is lower alkylene which may have an oxo group;
R3 is carboxy, a protected carboxy group, lower alkyl, lower alkenyl, hydroxy(lower)alkyl, phenyl(lower)alkyl, phenyl, tolyl, xylyl, cumenyl or naphthyl; and
R^{7a} is hydrogen or a mercapto-protective group,
or a salt thereof.

4,563,525
PROCESS FOR PREPARING PYRAZOLOPYRIDINE COMPOUNDS

James B. Campbell, Jr., Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed May 31, 1983, Ser. No. 499,745
Int. Cl.[4] C07D *491/00, 513/00*
U.S. Cl. 546—82 3 Claims

1. A process for preparing a pyrazolopyridine compound of the following formula (I):



wherein

R^1 is alkyl, substituted alkyl, cycloalkyl, cycloalkylalkyl, alkenyl, alkynyl, aryl, substituted aryl, arylalkyl or (substituted aryl)alkyl;

R^3 is hydrogen or alkyl;

R^4 is hydrogen;

D is oxygen or NR^6;

R^6 is hydrogen, alkyl, substituted alkyl, cycloalkyl, cycloalkylalkyl, alkenyl, alkynyl, aryl, substituted aryl, arylalkyl, (substituted aryl)alkyl or aryl(oxo-substituted)alkyl;

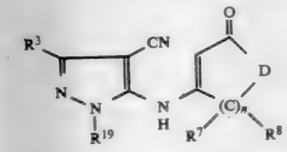
n is 1 or 2;

R^7 is hydrogen, alkyl, aryl, substituted aryl, arylalkyl or (substituted aryl)alkyl; and

R^8 is hydrogen, alkyl, aryl, substituted aryl, arylalkyl or (substituted aryl)alkyl;

or a pharmaceutically-acceptable acid-addition salt thereof, which comprises

internally cyclizing a compound of the formula (XV)



by reaction between the cyano group and the activated carbon which is alpha to the oxo group, wherein R^{19} is a value of R^1 or hydrogen, at a temperature of 150° to 250° C., and if R^{19} is hydrogen, reacting the product of the internal cyclization with R^1—Br and a weak base.

4,563,526

SUBSTITUTED 2-(ARYLMETHOXY) PHENOL COMPOUNDS FOR THE TREATMENT OF INFLAMMATION

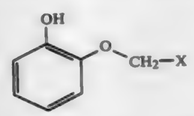
Floyd E. Dewhirst, Cambridge, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

Continuation of Ser. No. 188,895, Sep. 19, 1980, abandoned, which is a division of Ser. No. 97,506, Nov. 26, 1979, Pat. No. 4,244,956. This application Jun. 14, 1983, Ser. No. 490,471

Int. Cl.⁴ C07C *43/23*; C07D *213/30, 235/12*

U.S. Cl. 546—152 **8 Claims**

1. A compound having anti-inflammatory prostaglandin inhibitory properties and having the structural formula:



where X is selected from the group consisting of:

(a) naphthyl, pyridyl, quinolyl and 2-benzimidazolyl; and

(b) a halo C_1–C_6 alkyl substituted phenyl,

4,563,527

AMIDINE COMPOUNDS

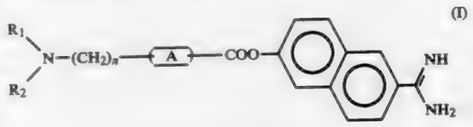
Setsuro Fujii, Toyonaka; Toyoo Nakayama, Funabashi; Shigeki Nunomura, Chiba; Kimio Sudo, Chiba; Shin-ichi Watanabe, Funabashi; Toshiyuki Okutome, Tokyo; Yojiro Sakurai, Kamakura; Masateru Kurumi, Narita, and Takuo Aoyama, Sakura, all of Japan, assignors to Torii & Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1984, Ser. No. 632,350

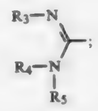
Int. Cl.⁴ C07D *307/54, 307/85, 333/38*

U.S. Cl. 546—169 **6 Claims**

1. An amidino compound of formula (I)



wherein A represents furan, thiophene or benzofuran; R_1 represents a hydrogen atom or a straight or branched chain alkyl group of 1 to 4 carbon atoms; R_2 represents a hydrogen atom, a straight or branched chain alkyl group of 1 to 4 carbon atoms, an acyl group or



R_3, R_4 and R_5 represent a hydrogen atom or a straight or branched chain alkyl group of 1 to 4 carbon atoms; R_1 to R_5 taken together with the nitrogen atoms to which they are attached form a ring, which may optionally contain other hetero atoms; and n is 0, 1 or 2, and a pharmaceutically acceptable acid addition salt thereof.

4,563,528

PROCESS FOR PREPARING 5 PYRIDYL PYRIDINE-2 (1H)-ONES

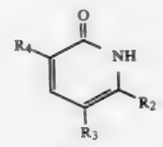
Vicente Gomez Parra; Pedro Gonzalez Hernandez; Félix Sanchez Alonso, and Tomás Torres Cebada, all of Madrid, Spain, assignors to Fabrica De Productos Quimicos Y Farmaceuticos Abello, S.A., Madrid, Spain

Filed Apr. 19, 1984, Ser. No. 601,898

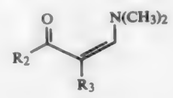
Int. Cl.⁴ C07D *401/04*

U.S. Cl. 546—261 **1 Claim**

1. In a process for the preparation of a compound of formula



wherein R_4 is —CN or —$CONH_2$, R_2 is a hydrogen atom or a lower alkyl group and R_3 is a 4-, 3- or 2-pyridyl group which comprises: treating a compound of formula



with an excess of a compound of formula: R_4—CH_2CONH_2 wherein the improvement comprises using a molar excess of a finely ground alkaline or alkaline earth carbonate, bicarbonate or hydroxide and tetrabutylammonium bromide at 10°–160° C. while stirring at a rate higher than 200 r.p.m.

4,563,529

PROCESS FOR PRODUCING TRIFLUOROMETHYLPYRIDINES

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Moriyama; Isao Yokomichi, Moriyama; Yasuhiro Tsujii, Moriyama, and Shigeyuki Nishimura, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Jun. 4, 1981, Ser. No. 270,567

Claims priority, application Japan, Jun. 19, 1980, 55-83147

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.⁴ C07D *211/72*

U.S. Cl. 546—345 **7 Claims**

1. A process for producing a trifluoromethylpyridine selected from the group consisting of α-trifluoromethylpyridine, γ-trifluoromethylpyridine, bis(trifluoromethyl)pyridines and chloro derivatives thereof which have 1 to 3 chlorine atoms attached to the pyridine nucleus comprising reacting a pyridine derivative selected from the group consisting of α-picoline, γ-picoline and dimethylpyridines with chlorine and anhydrous hydrogen fluoride at a temperature of 300° to 600° C. in a vapor phase reaction in the presence of a diluent and a catalyst comprising a fluoride of a metallic element selected from the group consisting of aluminum, chromium, iron, nickel, manganese, cobalt and copper.

4,563,530

PREPARATION OF FLUOROPYRIDINES

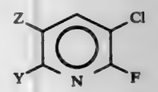
George S. Fujioka, Walnut Creek, and John C. Little, Concord, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 29, 1984, Ser. No. 665,589

Int. Cl.⁴ C07D *213/26, 213/57, 213/61*

U.S. Cl. 546—345 **8 Claims**

1. A process for the simultaneous preparation of 2,3-difluoro- and 2,3-dichloro-pyridines which comprises passing a compound having the formula:



wherein Y is H, CF_3, Cl, F or CH_3 and Z is CF_3, Cl, F, CN, H or CH_3 over a thermostable, activated charcoal catalyst at a temperature of about 350° C. to about 600° C.

4,563,531

PROCESS FOR PRODUCING 2,3,5-TRICHLOROPYRIDINE

Michael J. Marinak, Kelso, and John L. Simonson, Yakima, both of Wash., assignors to Kalama Chemical Inc., Kalama, Wash.

Continuation-in-part of Ser. No. 422,752, Sep. 24, 1982, abandoned. This application Mar. 26, 1984, Ser. No. 593,373

Int. Cl.⁴ C07D *213/61*

U.S. Cl. 546—345 **4 Claims**

1. The process of producing a polychloropyridine mixture rich in 2,3,5-trichloropyridine by non-catalytically chlorinating 3,5-dichloro-2-trichloromethyl pyridine in the liquid phase, said process comprising:

(a) establishing in a reactor means an initial charge which is at least principally 3,5-dichloro-2-trichloromethyl pyridine;

(b) while maintaining the reactor charge in the liquid phase and at a temperature in the range of from about 170° C. to about 220° C., sparging excess chlorine into the reactor charge near the bottom thereof in the absence of a catalyst and in the absence of ultraviolet radiation, said chlorine feed rate being sufficient to ensure that at least 50% excess chlorine is maintained in the outgas from the reactor; and

(c) continuing chlorine addition and heating of the reactor charge under the indicated conditions until at least about 20% by weight of the 3,5-dichloro-2-trichloromethyl pyridine is converted to 2,3,5-trichloropyridine.

4,563,532

PROCESS FOR THE PREPARATION OF Δ^4-1,3,4-OXADIAZOLIN-2-ONE COMPOUNDS

Udo Eckstein, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

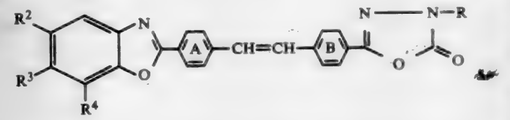
Filed Nov. 30, 1983, Ser. No. 556,715

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245202

Int. Cl.⁴ C07D *271/10*

U.S. Cl. 548—144 **2 Claims**

1. A compound of the formula



in which

the rings A and B can carry further non-chromophoric substituents,

R is C_1–C_4-alkyl, C_2–C_4-chloroalkyl, C_2–C_4-hydroxyalkyl, cyanoethyl or C_1–C_4-methoxy-C_2–C_4-alkyl,

R^2 is hydrogen, C_1–C_4-alkyl, cycloalkyl, C_1–C_4-alkoxy, chlorine, benzyl, phenyl, C_1–C_4-alkoxycarbonyl or C_1–C_4-alkylsulphonyl,

R^3 is hydrogen, C_1–C_4-alkyl, chlorine or C_1–C_4-alkoxy, and

R^4 is hydrogen, C_1–C_4-alkyl or chlorine.

4,563,533

PROCESS FOR THE PREPARATION OF HALOGEN-SUBSTITUTED 2-AMINOBENZOTHIAZOLES

Heinz Rentél, Kronberg, and Theodor Papenfuhs, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

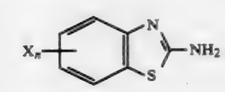
Filed Aug. 25, 1983, Ser. No. 526,523

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1982, 3231885

Int. Cl.⁴ C07D *277/82*

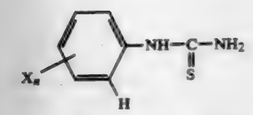
U.S. Cl. 548—164 **9 Claims**

1. A process for the preparation of halogen-substituted 2-aminobenzothiazoles of the formula (1)



(1)

starting from halogen-substituted phenylthioureas of the formula (2)



(2)

by cyclization reaction with sulfuryl chloride in an inert solvent, wherein X is chlorine, bromine or both chlorine and bromine and n is an integer of from 1 to 4, and the cyclization reaction is carried out in the presence of an alkali metal or alkaline earth metal oxide, hydroxide or carbonate.

4,563,534

PROCESS FOR PRODUCING 2-(2-AMINOTHIAZOL-4-YL)GLYOXYLIC ACID DERIVATIVE OR A SALT THEREOF, AND INTERMEDIATES THEREFOR AND PROCESS FOR PRODUCING THE INTERMEDIATES

Hiroshi Sadaki; Hiroyuki Imaizumi; Kenji Takeda, all of Toyama; Takibiro Inabe, Namerikawa; Ryuko Takeno, Toyama; Seishi Morita, Toyama; Tetsuya Kajita, Toyama, and Isamu Saikawa, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

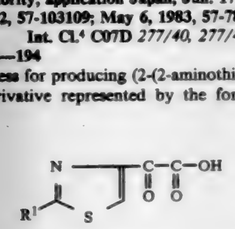
Filed Jun. 14, 1983, Ser. No. 504,317

Claims priority, application Japan, Jun. 17, 1982, 57-103108; Jun. 17, 1982, 57-103109; May 6, 1983, 57-78201

Int. Cl.⁴ C07D *277/40, 277/46*

U.S. Cl. 548—194 **6 Claims**

1. A process for producing (2-(2-aminothiazol-4-yl)-glyoxylic acid derivative represented by the formula I or a salt thereof:



(I)

wherein R^1 is an amino group or protected amino group, which comprises reacting a compound represented by the formula II or a salt thereof:



(II)

wherein X^1 is a halogen atom, with a di-lower alkyl sulfoxide in an amount of 2.0 moles or more, a bromide in an amount of 0.5 mole or more, and a di-lower alkyl disulfide in an amount of 1.0 mole or more, said amounts per mole of compound II, then optionally introducing the amino-protecting group to the resulting compound, and then hydrolyzing the resulting compound represented by the formula III or salt thereof:



(III)

wherein R^1 is as defined above, and R^2 is a lower alkyl group, to yield the compound represented by the formula I.

4,563,535

PROCESS FOR PRODUCING TETRAHYDROPHTHALIMIDES

Ichiki Takemoto, Toyonaka, Japan, assignor to Sumitomo Chemical Co., Ltd., Osaka, Japan

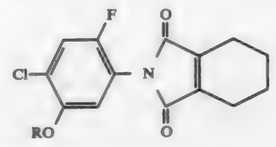
Filed Sep. 12, 1984, Ser. No. 649,698

Claims priority, application Japan, Sep. 19, 1983, 58-173891; Sep. 21, 1983, 58-175486; Sep. 21, 1983, 58-175489; Sep. 21, 1983, 58-175490; Sep. 21, 1983, 58-175491; Sep. 21, 1983, 58-175492

Int. Cl.⁴ C07D *209/48;* A01N *43/38*

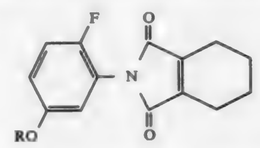
U.S. Cl. 548—513 **13 Claims**

1. A process for producing a tetrahydrophthalimide of the formula:



(I)

wherein R is an isopropyl group or an n-amyloxycarbonylmethyl group, which comprises reacting N-(5-substituted-2-fluorophenyl)-3,4,5,6-tetrahydrophthalimide of the formula:



(II)

wherein R is as defined above with sulfuryl chloride or chlorine in a solvent in the presence of a dehydrohalogenating agent.

4,563,536

METHOD FOR SYNTHESIZING TRIOXANE

Koichi Yoshida; Toshiyuki Iwaisako; Junzo Masamoto; Katsuhiko Hamanaka, all of Fuji, and Hajime Komaki, Kamakura, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 233,414, Feb. 11, 1981, Pat. No. 4,381,397. This application Sep. 27, 1982, Ser. No. 425,040

Claims priority, application Japan, Feb. 22, 1980, 55-21988

Int. Cl.⁴ C07D *323/06*

U.S. Cl. 549—368 **13 Claims**

1. A method of synthesizing trioxane which comprises heating formaldehyde at a temperature from 60° to 200° C. in the presence of an aqueous solution of a heteropolyacid of the formula

$$H_n(M_xM'_yO_z).mH_2O$$

wherein

M is at least one member selected from the group consisting of P and Si,

M′ is at least one member selected from the group consisting of Mo, V and Nb,

x is from 0.1 to 10,

y is from 6 to 30,

z is from 10 to 80,

n is more than 1, and

m is from 0 to 40.

6. A method of synethesizing trioxane which comprises heating formaldehyde at a temperature from 60° to 200° C. in the presence of an aqueous solution of a heteropolyacid of the formula

$$H_n(M_xW_yO_z).mH_2O$$

wherein

M is at least one member selected from the group consisting of B and Ge,

x is from 0.1 to 10,

y is from 6 to 30,

z is from 10 to 80,

n is more than 1, and

m is from 0 to 40.

10. A method of synthesizing trioxane which comprises heating formaldehyde at a temperature from 60° to 200° C. in the presence of an aqueous solution of a heteropolyacid of the formula

$$H_n(M_xMo_yO_z).mH_2O$$

wherein

M is at least one member selected from the group consisting of Sn and Cu,

x is from 0.1 to 10,

y is from 6 to 30,

z is from 10 to 80,

n is more than 1, and

m is from 0 to 40.

4,563,537

SYNTHESIS OF THIOPHENE-CONTAINING PROSTAGLANDIN ENDOPEROXIDE APPARATUS

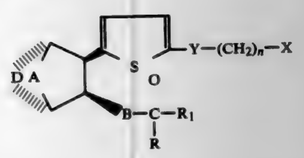
Richard C. Larock, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Division of Ser. No. 423,789, Sep. 27, 1982, Pat. No. 4,520,207. This application Jun. 4, 1984, Ser. No. 617,224

Int. Cl.⁴ C07D *333/24;* A61K *31/38*

U.S. Cl. 549—79 **6 Claims**

1. Thiophene-containing prostaglandin endoperoxide analogs of the formula:



wherein n equals a whole integer of from 0 to 7, X is carboxylic acid, or C_1–C_8 ester, alcohol, ether or amide groups; Y is ethylene or cis or trans vinylene; A is methylene, ethylene, oxy, imino, or lower alkyl, phenyl or aryl substituted imino; D is methylene, ethylene, vinylene, methyleneoxy, alkylidenedioxy, iminooxy, dithio, or azo; B is ethylene, cis and trans vinylene, and ethynylene; R and R_1 are hydrogen, lower alkyl and lower aryl or $(CH_2)_Z$ with Z being 2 to 5, and Q is hydroxy, methoxy, acetoxy or hydrogen, or Q and R_1 are oxa.

4,563,538

PROCESS FOR STABILIZING SILICON-CONTAINING METHACRYLATE

Hiroshi Wakabayashi, and Takahisa Iwahara, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

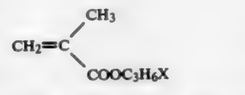
Filed May 6, 1985, Ser. No. 730,893

Claims priority, application Japan, May 15, 1985, 59-98056

Int. Cl.⁴ C07F *7/08, 7/18;* C07C *69/54*

U.S. Cl. 556—401 **5 Claims**

1. A process for stabilizing a silicon-containing methacrylate having the formula (I):



(I)

wherein X is $Si(OCH_3)_3$, $Si(OCH_3)_2CH_3$, $Si(OCH_3)(CH_3)_2$ or $Si(CH_3)_3$ which comprises adding 2,5-di-t-butylbenzoquinone to the silicon-containing methacrylate, whereby polymerization of the silicon-containing methacrylate can be inhibited.

4,563,539

ACRYLOFUNCTIONAL SILICONES

Gerald A. Gornowicz; Thomas J. Tangney, and Maris J. Ziemelis, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 18, 1984, Ser. No. 683,302

Int. Cl.³ C07F *7/08, 7/10, 7/18*

U.S. Cl. 556—421 **20 Claims**

1. An acrylofunctional silicone having the average unit formula

$$R_aQ_bSiO_{4-a-b/2}$$

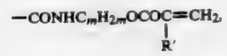
wherein in said average unit formula

R is selected from monovalent hydrocarbon radicals, halogenated hydrocarbon radicals, and alkoxy radicals;

Q is a monovalent radical selected from the group consisting of —DNHG, and —DNGDNHG, radicals,

D being a divalent saturated hydrocarbon radical of from 1 to 6 carbon atoms;

G being an acrylofunctional radical of the general formula



wherein, in the general formula for said acrylofunctional radical,

m has a value of 2, 3 or 4;

R′ is selected from the group consisting of hydrogen, methyl, ethyl, propyl and butyl radicals;

a has a value of 0,1,2 or 3;

b has a value of 0,1,2 or 3;

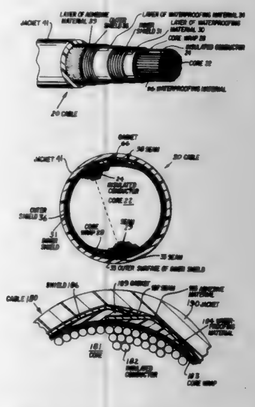
the sum of the values of a and b is from 1 to 4; and there is at least one unit wherein b has a value of 1.

4,563,540

BONDED SHEATH CABLE

William D. Bohannon, Jr., Lawrenceville; Herbert E. Brent, Lilburn; Alfred S. Hamilton, Norcross, and Michael D. Kinard, Lawrenceville, all of Ga., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jun. 29, 1984, Ser. No. 626,079
Int. Cl.[4] H01B *7/18, 7/28*
U.S. Cl. 174—23 R **16 Claims**



1. A bonded sheath, filled cable, which comprises:
a core which comprises at least one conductor and which is filled substantially with a waterproofing material;
a layer of plastic material which encloses said core;
a metallic shield which has a layer of an adhesive material coated on an outer surface thereof and which is wrapped about said layer of plastic material to form a longitudinal overlapped seam having overlying and underlying edge portions with the underlying edge portion being directed generally inwardly and with the overlying edge portion being directed generally inwardly into engagement with the underlying edge portion to form a cavity which extends between said shield and said layer of plastic material in the vicinity of said seam and between the overlying edge portion and the underlying edge portion;
a waterproofing material which is disposed between said layer of plastic material and said metallic shield;
a gasket which is made of a sealant material and which is disposed within and adjacent to said longitudinal overlapped seam of said shield, said gasket extending from said seam in a direction generally along the periphery of said layer of plastic material and between said shield and said layer of plastic material to fill substantially the at least one cavity; and
a jacket which is made of a plastic material and which is bonded to said shield by said layer of adhesive material.

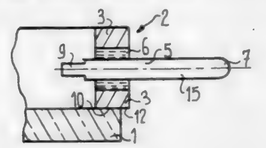
4,563,541

PACKAGE PROVIDING HIGH HEAT DISSIPATION, IN PARTICULAR FOR MICROELECTRONICS

Michel Lebailly, Bollene, and Maurice Jacquemin, La Garde Adhemar, both of France, assignors to L.C.C.-C.I.C.E.-Compagnie Europeenne de Composants Electroniques, Paris, France

Filed Jan. 3, 1984, Ser. No. 567,878
Claims priority, application France, Jan. 7, 1983, 83 00172
Int. Cl.[4] H01L *23/10*
U.S. Cl. 174—52 FP **5 Claims**

1. A package providing high heat dissipation, comprising:
a copper metal base having good heat conductivity on which is mounted by means of a Au-Ni brazing alloy, a stainless steel frame which supports connections by means



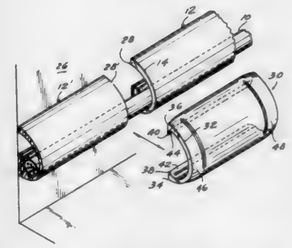
of insulating lead-in bushings of the soda-lime glass bead type, said connections being pins of a Fe-Ni alloy.

4,563,542

ELECTRIC CORD HOLDER ASSEMBLY

Ronald M. Pollack, 73-19 37th Rd., Jackson Heights, N.Y. 11372

Continuation-in-part of Ser. No. 443,037, Nov. 19, 1982, Pat. No. 4,454,374, which is a continuation-in-part of Ser. No. 323,651, Nov. 20, 1981, abandoned. This application Dec. 2, 1983, Ser. No. 557,241
Int. Cl.[4] H02G *3/04*
U.S. Cl. 174—68 C **10 Claims**



1. An electric cord holder assembly, comprising:
at least two electric cord holder sections attachable to a surface and having ends disposable adjacent one another, each section comprising a sheath made of an elongated plastic extrusion having a slotted tubular cross-section so as to define a cord-receiving channel therein, said sheath having an arcuate dome-shaped resilient front wall having two ends and an overhang on one end thereof and a planar rear wall extending from the other end of said front wall towards said one end of said front wall, said rear wall having a free end leaving a slot adapted for insertion of an electrical cord into said cordreceiving channel between said free end of said rear wall and said one end of said front wall, said rear wall having an inner face which partially defines said cord-receiving channel and an outer face, and securing means composed of an adhesive strip of predetermined width having a generally planar outer surface connected to said outer face of said rear wall and adapted to be attached to a surface, and
a plastic connecting element for interconnecting adjacent ends of said sections and covering the space therebetween comprising an elongated segment having an arcuate dome-shaped resilient wall which substantially corresponds with the arcuate dome-shaped front wall of said sheaths so as to fit thereover and having at least two ends each of which is provided with bosses extending towards each other, said bosses defining therebetween a space smaller than the width of said arcuate dome-shaped front walls of said sheaths, said bosses being adapted to engage underneath said ends of said arcuate dome-shaped front walls of said sheaths, said bosses including camming surfaces disposed on their inner sides, and said camming

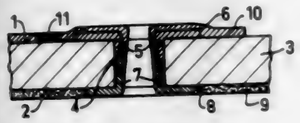
surfaces providing a releasable locking engagement between said connecting element and said sections when said connecting element is pressed thereover so that no discontinuity occurs between the adjacent ends of said electric cord holder sections.

4,563,543

ULTRA HIGH-FREQUENCY CIRCUIT WITH METALLIZED THROUGH HOLE

Georges Kersuzan, Verrieres le Buisson; Michel Picault, Paris, and Roland Sourdillon, Meudon la Foret, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 371,086, Apr. 23, 1982, abandoned.
This application Feb. 2, 1984, Ser. No. 576,173
Claims priority, application France, Apr. 29, 1981, 81 08548
Int. Cl.⁴ H05K *1/09*
U.S. Cl. 174—68.5 **6 Claims**



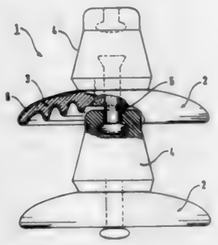
1. An ultra high frequency circuit comprising an insulating plate having first and second surfaces on opposite sides and having a hole formed through the plate and defined by a side wall extending between said surfaces, said circuit including a conductive connection track on the first surface, a conductive layer on the second surface, of a material which would form a metallurgically-unstable interface with the conductive connection track material, and a deposition on said side wall including a connecting layer in contact with the conductive connection track and the conductive layer, said connecting layer consisting essentially of an electrically-conductive alloy which forms metallurgically-stable interfaces with both the material of the conductive connection track and the material of the conductive layer.

4,563,544

ELECTRICAL INSULATOR OFFERING REDUCED SENSITIVITY TO POLLUTION

Ai Bui, Toulouse, and Laurent Pargamin, Vichy, both of France, assignors to Ceraver, S.A., Paris, France

Filed Apr. 23, 1984, Ser. No. 602,676
Claims priority, application France, Apr. 29, 1983, 83 07100
Int. Cl.⁴ H01B *17/42, 17/50*
U.S. Cl. 174—140 C **6 Claims**



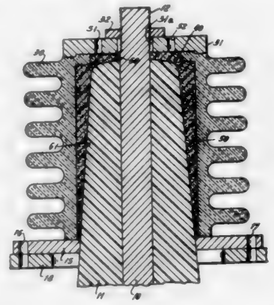
1. Electrical insulator offering reduced sensitivity to pollution comprising a body of a glass or porcelain dielectric material having an external semiconductor coating, wherein said coating consists of a ceramic essentially comprising zinc oxide to which is added at least one metal oxide adapted to create non-linearity in the voltage-current characteristic of said zinc oxide, such that $I=kV^{\alpha}$ where I is current, V is voltage, k and α are coefficients, and the value of α is between 20 and 50, the thickness of said coating being between 0.05 and 0.5 mm.

4,563,545

HIGH VOLTAGE OUTDOOR BUSHING EMPLOYING FOAM BODY SEAL AND PROCESS FOR MANUFACTURE THEREOF

James C. Dzomba, Ewing Township, Mercer County, N.J., assignor to BBC Brown Boveri Inc., New York, N.Y.

Filed Jan. 30, 1984, Ser. No. 574,842
Int. Cl.⁴ H01B *17/26*
U.S. Cl. 174—152 R **11 Claims**



1. The process of manufacturing an insulation bushing of the type in which an elongated conductor has an insulation sheath thereon extending to an axial point on said elongated conductor and in which an insulation shell surrounds said end of said elongated conductor with said insulation sheath thereon and defines an annular volume surrounding said insulation sheath and a portion of said elongated conductor, said insulation sheath being tapered inwardly towards the outer end thereof so as to be removably situated in said insulation shell; said process comprising the steps of coating at least the exterior surface of said insulation sheath with a mold release agent so that said sheath becomes removably engaged to a foam placed in contact with the sheath, substantially sealing said annular volume, and thereafter injecting in situ a foamable fluid into said annular volume which forms a compressible self-supporting foam having good electrical insulation properties when it is gelled and which accommodates any non-concentricities between said insulation sheath and said insulation shell; and thereafter gelling said foamable fluid to cause it to expand into a foam body filling the interior of said annular volume, assuming the shape of said annular volume, and having a free volume which is slightly greater than said annular volume.

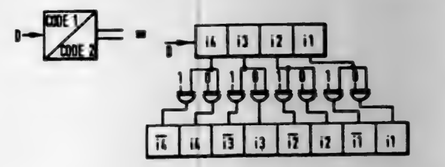
6. An electrical bushing for high power, high voltage electrical apparatus; said bushing comprising an elongated conductor having a free terminal end, an insulation bushing core consisting of a sheath of insulation material which surrounds said elongated conductor and is coextensive therewith to an axial position removed from said free terminal end thereby to leave a given length of said free terminal end of said elongated conductor free of insulation, a mounting flange extending in a plane which is at an angle to the axis of said bushing core and fixed to said core at an axial location removed from the end of said bushing core, an insulation shell surrounding and radially spaced from said bushing core and having a first end engaging said mounting flange and having a second end disposed in a plane which generally includes a portion of said given length of said elongated conductor, and a bushing cap fixed to said second end of said insulation shell and extending thereacross to define a sealed volume defined by the annular space within said insulation shell and between said flange and said bushing cap; the improvement comprising a compressible insulation foam form having a free volume which is slightly greater than said sealed volume; said foam form being in situ-formed so as to accommodate any non-concentricities between said bushing core and said insulation shell and being compressed into and sealing the free space within said sealed volume while releasably engaging said bushing core, and said bushing core with said conductor therein being so shaped as to be removable from said insulation shell.

4,563,546

METHOD FOR PREVENTING "COMPROMISING RADIATION"

Ekkehard Glitz, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,327
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 3127843
Int. Cl.⁴ H04K *1/02*
U.S. Cl. 178—22.01 **8 Claims**



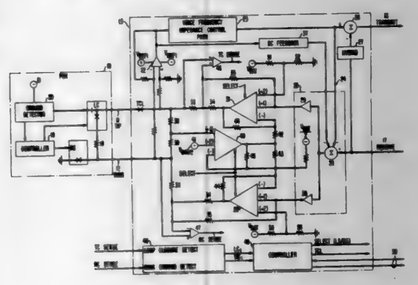
1. A method for preventing "compromising radiation" when processing and transmitting digitally coded secret data information in a data processing and long-distance data transmission system, which is in addition to direct, physical shielding and decoupling of the data signals, said method comprising: by means of a further code converter disposed in the portion of the system in which logic processing of the information takes place, additionally processing each digital data signal supplied to said system portion to cause the sum of the values "0" in the data signal to be equal to the sum of values "1" at any point in time during further processing or transport of said data signal in at least said system portion and over a period of time during further processing or transport of said data signal in at least said system portion, whereby substantially no "compromising radiation" is generated by the data signal since the physical signals reaching the environment no longer contain any analyzable information.

4,563,547

LOOP-START/GROUND-START LINE INTERFACE CIRCUIT

Paul N. Booth, Flanders, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 7, 1983, Ser. No. 472,936
Int. Cl.⁴ H04M *1/74*
U.S. Cl. 179—16 AA **13 Claims**



1. In a telephone line interface circuit having first and second connections for respective tip and ring conductors of a telephone line, and first and second differential input amplifiers through which line feed current is supplied to said first and second connections, respectively, the improvement comprising

a common mode circuit connected to said first and second connections for supplying substantially equal reference signals to said amplifiers,

a third connection for applying a predetermined fixed bias voltage to said common mode circuit, and

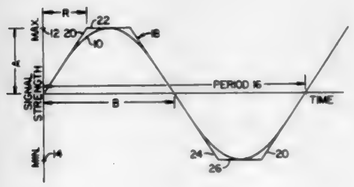
means for switching said common mode circuit to be responsive either to a voltage difference between said first and second connections, in a loop-start mode, or to a voltage on said third connection, in a ground-start mode.

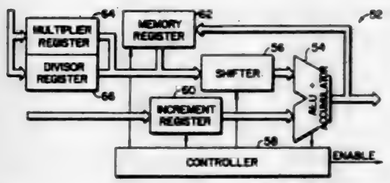
4,563,548

METHOD AND CIRCUIT FOR TELEPHONE DIALING SIGNAL GENERATION

Ayoub H. Misherghi, San Jose; Russell J. Apfel, Los Gatos, and Arthur F. Lange, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 10, 1984, Ser. No. 598,649
Int. Cl.⁴ H04M *1/26*
U.S. Cl. 179—84 VF **29 Claims**





1. A method for generating a time varying signal that approximates a signal having a sinusoidal waveform, said method comprising the steps of:

forming a positively sloped portion of a periodic trapezoidal waveform, wherein the strength of said signal varies with time from a minimum value to a maximum value, and wherein the duration of said positively sloped portion is substantially equal to one third of the period of said sinusoidal waveform;

forming a first constant value portion of said periodic trapezoidal waveform after said positively sloped portion, wherein the strength of said signal equals said maximum value, and wherein the duration of said first constant value portion is substantially equal to one sixth of said period;

forming a negatively sloped portion of said periodic trapezoidal waveform after said first constant value portion, wherein the strength of said signal varies with time from said maximum value to said minimum value, and wherein the duration of said negatively sloped portion is substantially equal to one third of said period; and

forming a second constant value portion of said periodic trapezoidal waveform after said negatively sloped por-

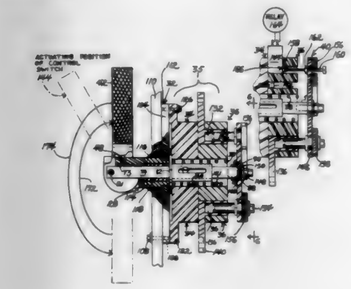
tion, wherein the strength of said signal equals said minimum value, and wherein the duration of said second constant value portion is substantially equal to one sixth of said period.

4,563,549

REVERSING SWITCH

Jeanings Lycan, Huntington, W. Va., assignor to Service Machine Company, Huntington, W. Va.

Filed Oct. 18, 1984, Ser. No. 662,493
Int. Cl.[4] H01H *9/00*
U.S. Cl. 200—1 V **6 Claims**



1. A reversing switch comprising:
an enclosure;
a hub extending through a wall of said enclosure;
a shaft rotatably and axially journaled in said hub;
stationary first contact means within said enclosure including a stationary first electrical insulating member having a first set of four power conducting contacts evenly circumferentially spaced thereon;
movable second contact means including a movable second electrical insulating member having a second set of four power conducting contacts evenly circumferentially spaced thereon, and power bus jumpers interconnecting opposite pairs of said second of power conducting contacts;
said shaft connected to said movable second contact means;
external handle means connected to said shaft and being rotatable through a quarter turn range to align different combinations of said first and second sets of contacts at opposite ends of said range, said handle means also being swingable forwardly and backwardly through a half turn range;
cam means connected between said handle means and shaft for moving said first and second sets of contacts from open to fully seated positions in response to outward movement of the shaft by a half turn forward and backward swinging movement of said handle means in one direction;
spring means biasing said shaft and second electrical insulating member in a direction to disengage said first and second sets of contacts; and
said cam means being effective in response to a half turn forward and backward swinging movement of said handle means in a direction opposite said one direction to enable said spring means to move said shaft and second insulating member in a direction to disengage said first and second sets of contacts.

4,563,550

KEYBOARD HAVING LOW PROFILE MODULAR KEYS

Domenico Bertina, Parella, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Oct. 21, 1982, Ser. No. 435,652
Claims priority, application Italy, Oct. 21, 1981, 68360 A/81
Int. Cl.[4] H01H *13/70*
U.S. Cl. 200—5 A **7 Claims**



1. In a keyboard comprising a base frame, electrical circuit means mounted on said base frame and actuatable for generating electrical signals, and a plurality of modular keys individually mounted on said base frame for selectively actuating said electrical circuit means, the improvement wherein each one of said modular keys comprises:
a body having a central longitudinal axis perpendiculr to said base frame and provided with two cylindrical slides perpendicular to said base frame and disposed at diametrically opposite sides with respect to said central longitudnal axis, and with two grooves perpendicular to said base frame and disposed at diametrically opposite sides with respect to said central longitudinal axis in intermediate positions between said two cylindical slides,
an actuator member having two cylindrical elements lodged inside said cylindrical slides of said body for sliding parallel to said central longitudinal axis towards and away from said electrical circuit means, two stop elements cooperating with said two grooves, and at least a longitudinal slot parallel to said cylindrical elements,
spring means interposed between said base frame and said actuator element for normally urging said actuator element away from said electrical circuit means, and
a cap having means insertable into said longitudinal slot of said actuator member and comprising a hollow portion in which said actuator member and said body are partially lodged.

4,563,551

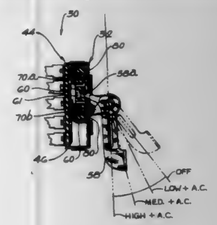
ELECTRICAL SWITCH HAVING ASSURED LOW-RESISTANCE ELECTRICAL CONTACT BETWEEN TERMINAL RIVETS AND CONTACT PLATES

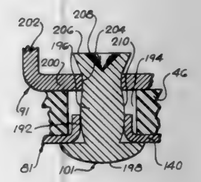
Charles E. Black, III, Mount Prospect, and John W. Habecker, Zion, both of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.

Filed Jan. 9, 1985, Ser. No. 689,830
Int. Cl.[4] H01H *15/00, 1/00*
U.S. Cl. 200—16 C **16 Claims**

5. An electrical switch, comprising
a casing having an open side,
a carriage movable in the casing along a predetermined path,
at least one conductive contactor mounted on the carriage for movement therewith along such path,
an insulating plate mounted on the casing and forming a wall thereof parallel with such path and closing the open side of the casing,
such plate having inner and outer sides,
contact means mounted on the inner side of such insulating plate and selectively engageable by the contactor,
and terminal means connected to the contact means and projecting outwardly from the outer side of the insulating plate,
such contact means including at least one conductive contact plate engaging the inner side of the insulating plate and having a contact rail extending along at least a portion of the path of the contactor,

such contactor being slidably engageable with such contact rail,
such contact plate having a substantially circular mounting hole therein with a substantially circular flange surrounding such mounting hole and formed in one piece with such contact plate,
such insulating plate having an opening therein for receiving such flange,
such terminal means including a terminal bar engaging the outer side of the insulating plate and having a mounting hole aligned with the mounting hole in the contact plate,





and a rivet for connecting the terminal bar to the contact plate with the insulating plate secured therebetween,
such rivet having a shank extending through the circular flange of the contact plate with an interference fit to establish and maintain good electrical contact therewith,
the shank of the rivet also extending through the opening in the insulating plate and the mounting hole in the terminal bar,
the rivet being swaged to establish and maintain good electrical contact with the terminal bar as well as the circular flange of the contact plate.

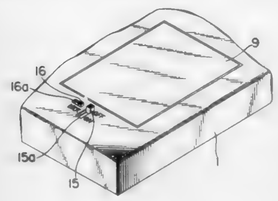
4,563,552

ELECTRONIC APPARATUS FOR CONTROLLING MECHANICAL AND ELECTRICAL CONNECTION TO MEMORY MEANS

Hideo Fushimoto, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1984, Ser. No. 575,679
Claims priority, application Japan, Feb. 8, 1983, 58-18181
Int. Cl.[4] H01H *9/20*
U.S. Cl. 200—17 R **4 Claims**

1. Electronic apparatus controlling mechanical and electrical connection to memory means, comprising:
container means provided in the electronic apparatus for detachably holding the memory means;
first movable means movable to a first position in which the memory means is electrically driven and to a second position in which the memory means is not electrically driven;
second movable means mounted so as to be movable when said first movable means is moved from its first position to its second position; and
third movable means mounted so as to be operable after movement of said second movable means;



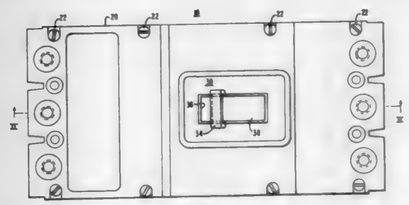
wherein the operation of said third movable means enables the memory means to be detached from said container means.

4,563,553

CIRCUIT BREAKER HAVING INTEGRAL COVER/HANDLE ASSEMBLY

James C. Wilson; William I. Stephenson, both of Beaver, and Walter V. Bratkowski, McKeesport, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 1, 1984, Ser. No. 584,969
Int. Cl.[4] H01H *3/00*
U.S. Cl. 200—17 R **29 Claims**



1. A circuit breaker, comprising:
stationary contact means for conducting current;
movable contact means for conducting current movable between an open position and a closed position with respect to the stationary contact means.
operating means for transferring the movable contact means between the open and the closed positions;
housing means for enclosing and electrically insulating the stationary contact means, the movable contact means and the operating means, the housing means including a removable cover having an opening therethrough; and
handle means for manually controlling the operating means, the handle means including a base segment and a cap segment, the base segment removably engaged with the operating means, the cap segment positioned exterior to the cover and engaged with the base segment preventing the unintentional removal of the handle means from the cover with the handle means being attached to the cover while being movable in the opening thereof during transfer of the movable contact means between the open and closed positions thereby forming an integral handle means-cover assembly.

4,563,554

HIGH-VOLTAGE SWITCH

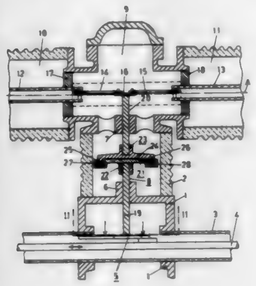
Blaise Perrenoud, La Neuveville, Switzerland, assignor to BBC Brown, Boveri & Company, Switzerland

Filed Mar. 14, 1984, Ser. No. 589,643

Claims priority, application Switzerland, Mar. 28, 1983, 1689/83

Int. Cl.⁴ H01H *31/00*

U.S. Cl. 200—48 R **10 Claims**



1. A high voltage switch comprising:

a pin insulator having a top and a bottom and a switch housing located atop said pin insulator;

two movable switch contact pieces movably supported in said housing, each movable switch contact piece being movable between a respective pair of first and second stable positions;

switch driving means located below said pin insulator;

a rotatable crankshaft extending between said switch housing and said driving means and through said pin insulator for moving said switch contact pieces, generally linearly, back and forth between said respective first and second stable positions, said crankshaft having a first end located at said housing and a second opposite end adjacent said switch driving means;

means for coupling said first end of said crankshaft to said movable contact pieces; and

crank means for interconnecting said second end of said crankshaft to said switch driving means and for rotating said crankshaft, said crank means being actuated by said driving means and further including means for controlling the angular movement of said crankshaft such that a lower change in the position of said switch contact pieces is caused by a predetermined unit change in the position of said driving means when said pieces are moving adjacent to said respective first and second stable positions as compared to when said pieces are further from said respective stable positions.

4,563,555

CONSTRUCTION OF CONTROL SWITCH

Shigeru Ohtani, Kawasaki, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 12, 1984, Ser. No. 570,140

Claims priority, application Japan, Jan. 19, 1983, 58-7855

Int. Cl.⁴ H01H *3/00, 25/00*

U.S. Cl. 200—52 R **5 Claims**

1. A control switch, comprising:

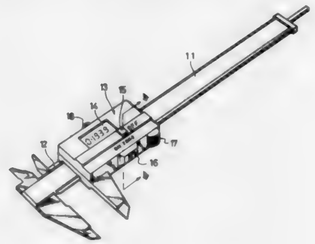
a case body;

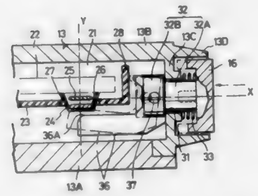
switch means for effecting an electrical connection or disconnection, said switch means beig normally opened and including a pair of contacts, one of said contacts being movable in a working direction;

a control button, the operating direction of which is different from said working direction of said switch means, said control button being movably supported on said case body;

a link member having a proximal end directly engaged by said control button and a distal end press-in portion normally spaced from but adapted to be brought into contact with and separated from said switch means;

pivot means supporting said link member for pivoting movement relative to said case body so that said press-in portion thereof is moved into engagement with said switch means to cause said one of said contacts thereof to move toward the other in response to said proximal end portion being moved by the operation of said control button in





said operating direction thereof and engagement of said control button with said proximal end portion; and

a stationary member fixed to said case body and being static irrespective of the motion of said link member, said proximal end having a pair of spaced portions thereon, said pivot means effecting a pivotal support of said link member on said control button at a first portion of said proximal end, an abutment portion on a second portion of said proximal end and on a side of said pivot means opposite said first portion so that a pivoting of said link member is promoted by abutting of said abutment portion against said stationary member as said control button is moved in said operating direction.

4,563,556

INTERNAL COMBUSTION CIRCUIT BREAKER

Michel Goldstein, 59 Patriots Rd., Morris Plains, N.J. 07950

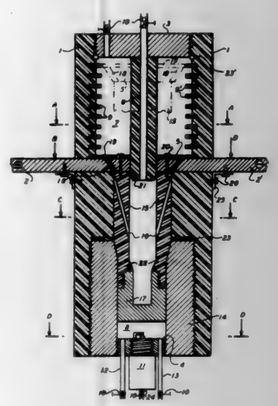
Filed Mar. 28, 1984, Ser. No. 594,170

Int. Cl.⁴ H01H *35/38*

U.S. Cl. 200—82 B **19 Claims**

1. An internal combustion electrical circuit breaker comprising at least one: (a) insulating cylinder; (b) pair of electrical conductors, spaced apart and penetrating said cylinder approximately perpendicular to its longitudinal axis at a distance from said cylinder's plane sides; (c) hollow piston supported by said cylinder at its closed portion and an insulating pipe at its open portion, for movement between a conductor-contacting and -disconnected position, which piston's conducting open and closed portions are separated by an insulating middle portion, and which pipe extends within said axis and is attached to said cylinder's first plane side; (d) arcing chamber extending from said conductors to said first plane side and communicating

with said conductor-disconnected hollow piston via at least one duct therein; (e) pair of arcing blades within said arcing chamber at a distance from each other, said conductors, piston and pipe; (f) valve means within said pipe and first plane side,



communicating with said arcing chamber and hollow piston; (g) combustion chamber extending from said piston's closed portion to said cylinder's second plane side; and (h) ignition, gas injection and valve means within said second plane side and communicating with said combustion chamber.

4,563,557

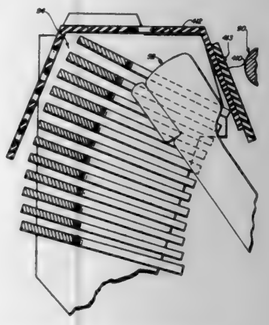
MOLDED CASE CIRCUIT BREAKER WITH A MOVABLE CONTACT ARM SHOCK ABSORBING MEMBER

David A. Leone, Aliquippa, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 28, 1984, Ser. No. 655,955

Int. Cl.⁴ H01H *3/60*

U.S. Cl. 200—288 **6 Claims**



1. An electrical circuit breaker comprising

a movable first electrical contact,

a second electrical contact,

operating means for moving said first and second contacts into engagement and out of engagement,

an electrical arc chute within which said first contact is movable,

a formed electrically insulating barrier disposed at one end of said arc chute,

a molded case for housing the internal components of said circuit breaker,

a mechanical stop fixedly disposed within said case for limiting the movement of said first contact, and

shock absorbing means secured to said barrier and disposed between said first contact and said mechanical stop for absorbing energy from the movement of said first contact.

4,563,558

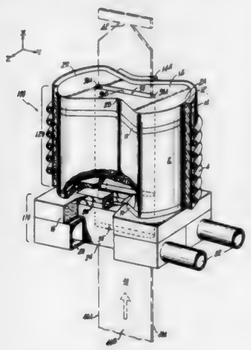
DIRECTIONAL RECRYSTALLIZATION FURNACE PROVIDING CONVEX ISOTHERM TEMPERATURE DISTRIBUTION

Chris C. Rhemer, and James D. Formanack, both of Jupiter, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1983, Ser. No. 565,497

Int. Cl.⁴ H05B *6/40*

U.S. Cl. 219—10.49 R **7 Claims**



1. Heating means for developing a convex isotherm condition in strip material including:

a shaped conductive susceptor containing a centrally located, elongated slot which is shaped to receive a strip to be treated, passing therethrough, said slot having a longitudinal axis extending in the direction of the path of the moving strip, said susceptor having an exterior surface and being shaped so that in cross section, the plane perpendicular to said axis, the shortest distance from each of the slot ends to the susceptor exterior is greater than the shortest distance from the slot center to the susceptor exterior;

an induction coil surrounding the susceptor;

means for energizing the coil at a frequency selected so that substantially complete energy absorption occurs in a thickness of susceptor material less than or equal to said shortest distance from the slot center to the susceptor exterior.

4,563,559

INNER BOX FOR A COOKING APPLIANCE

Toshiaki Enami, Nara, Japan, assignor to Enami Seiki Mfg. Co., Ltd., Yao, Japan

Filed Nov. 10, 1983, Ser. No. 550,932

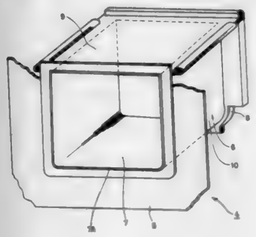
Claims priority, application Japan, Dec. 27, 1982, 57-230763; Dec. 27, 1982, 57-199331[U]; May 7, 1983, 58-68273[U]; May 13, 1983, 58-84853

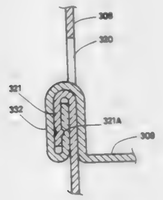
Int. Cl.⁴ H05B *6/64*

U.S. Cl. 219—10.55 E **6 Claims**

1. An inner box of sheet metal, especially for a cooking appliance comprising a front panel, a rear panel, and a barrel section, an opening in said barrel section, said front panel having an inner peripheral sheet metal edge around said opening, said rear panel having an outer peripheral sheet metal edge, said barrel section having a front end sheet metal edge

and a rear end sheet metal edge, first crimped joint means operatively engaging said barrel front end sheet metal edge with said inner peripheral sheet metal edge around said opening of said front panel for joining said barrel section to said front panel, second crimped joint means operatively engaging said barrel rear end sheet metal edge with said outer peripheral sheet metal edge of said rear panel for joining said barrel section to said rear panel, at least one of said first and second crimped joint means comprising first locking means in the sheet metal forming one sheet metal edge of said sheet metal edges participating in the formation of said at least one crimped joint means, and second locking means in the sheet metal forming the other sheet metal edge of said sheet metal edges





also participating in the formation of said one crimped joint means, said first and second locking means being so positioned that said first and second locking means engage each other as a result of a crimping operation for interlocking the respective crimped joint means, said first and second locking means in their locked state opposing forces tending to open the respective crimped joint means, and wherein said first locking means comprises a projecting locking element extending out of said one sheet metal edge, and wherein said second locking means comprise a slit in the respective other sheet metal edge for locking receiving said projecting locking element in the locked state of the first and second locking means as a result of a crimping operation.

4,563,560

MICROWAVE OVEN CONSTRUCTION

Howard E. Bonner, Winnetka, Ill., assignor to Litton Systems, Inc., Beverly Hills, Pa.

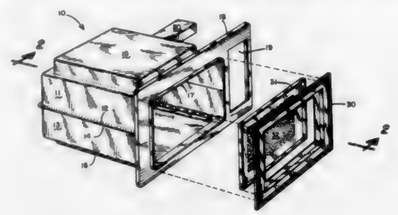
Filed Jun. 11, 1982, Ser. No. 387,723
Int. Cl.⁴ H05B *6/64*
U.S. Cl. 219—10.55 D **6 Claims**

1. In a microwave oven having an oven cavity assembly including a source of microwave energy fed into said microwave oven cavity assembly, said microwave oven cavity assembly being substantially free of structural welds, said assembly comprising only two members:

(a) the first member formed as a unitary pan-like member having a well portion integrally formed therein, said first member comprising a bottom wall and portions of side and rear walls of a microwave oven cavity;

(b) the second member formed as a unitary pan-like member comprising a top wall and portions of side and rear walls of a microwave oven cavity; and

wherein said first and second members are permanently joined together at respective abutting peripheral side and rear wall



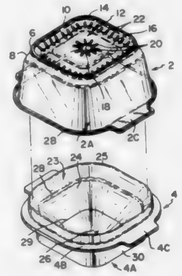
edges by tightly crimping one such edge about the other to form a microwave oven cavity having bottom, top, side, and rear walls and which is substantially enclosed on all but a front wall thereof.

4,563,561

MICROWAVE OVENWARE ASSEMBLY FOR POPPING GRAIN

Howard J. Vaeth, Wooster, and Gregory M. Crook, Columbus, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio

Filed May 10, 1984, Ser. No. 608,809
Int. Cl.⁴ H05B *6/80;* **A23L** *1/18*
U.S. Cl. 219—10.55 E **12 Claims**



1. A microwave-transparent receptacle assembly adapted selectively for popping grain in a microwave oven and serving the popped kernels for consumption, comprising:

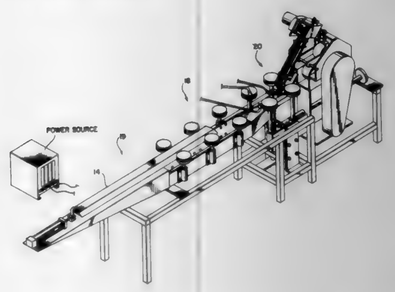
a free standing popper receptacle having a profiled popping chamber defined by convergent internal sidewalls extending downwardly therein from an upper end; and a cover receptacle having a downwardly open internal cavity for receiving popped kernels, said cover receptacle having a lower end adapted for closely receiving said popper receptacle upper end into said cover receptacle cavity, and an upper end portion externally profiled to complement said chamber profile, and adapted to seat within said popper receptacle chamber when assembled in an inverted position; and said upper end of said cover receptacle having aperture means extending therethrough into said cover receptacle cavity for venting vapor released from the popped grain.

4,563,562

HOT WIRE WELDER

Kenneth G. Lenton, Lethbridge, Canada, assignor to Versatile Corporation, Vancouver, Canada

Filed Sep. 27, 1982, Ser. No. 425,054
Int. Cl.⁴ B23K *11/00*
U.S. Cl. 219—76.11 **13 Claims**



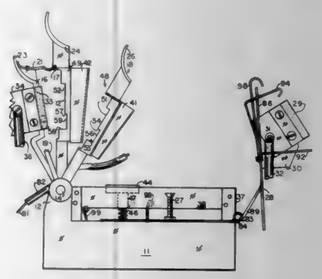
1. A hot wire welder comprising at least two longitudinal tubes, each tube being adapted to carry a respective welding wire, a longitudinal buss bar for each tube operable to carry power and apply it to said welding wires adjacent the welding area, a guide holder adapted to hold said tubes, a backing block spaced from said guide holder towards said welding area in contact with said welding wires and drive means to drive said wire through said tubes, said guide holder and backing block being connected to a cooling block cooled by water circulating within said cooling block.

4,563,563

TAPE SPLICER TO SPLICE CARRIER STRIP

Sigmund Ege, Oslo, Norway, assignor to Kloften & Kloften A/S, Oslo, Norway

Filed Apr. 19, 1984, Ser. No. 601,950
Int. Cl.⁴ B23K *1/12*
U.S. Cl. 219—85 G **9 Claims**



1. An apparatus for splicing carrier strip which has a metallic ribbon with a large plurality of elements projecting therefrom at regular intervals, comprising:

(A) at least one cutting blade for the ribbon of a carrier strip,

(B) two guide plates, each directing a length of strip so as to be cut in said apparatus, said guide plates each comprising a planar upper surface supporting elements that project from a ribbon of a carrier strip,

(C) walls defining a lengthwise groove in each of said guide plates,

(D) guide bars slidably fitting each of said grooves,

(E) means removably holding carrier strips to said bars,

(F) means for applying solder to the ends of two carrier strip ribbons,

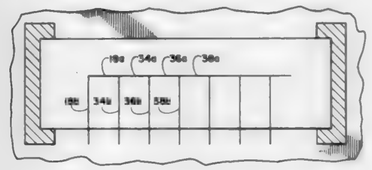
(G) means for fusing said solder thereby bonding together two carrier strips.

4,563,564

FILM RESISTORS

Bret Ericsen, Hillsboro; John C. Hastings, Aloha; Desmond L. Murphy, Portland, and Scott Jansen, Beaverton, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 30, 1984, Ser. No. 575,239
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 LJ **4 Claims**



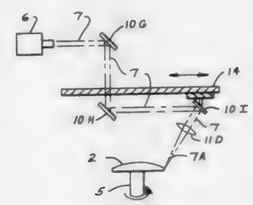
1. A method of trimming a resistor formed by a film of resistive material deposited on a dielectric substrate within a predetermined boundary and having two spaced terminal portions, said boundary having first and second opposite side portions that extend between the two terminal portions of the film, said method comprising removing resistive material from the substrate along a succession of generally L-shaped paths each having a first limb that extends from said first side portion of the boundary towards the second side portion thereof and terminates at a heel point intermediate the first and second side portions, and a second limb that extends from said heel point towards one of the two terminal portions of the film and terminates in a termination point, with the heel point of each succeeding L-shaped path essentially coinciding with the termination point of the preceding L-shaped path, whereby the film is divided into at least two discrete areas, only one of which areas includes both said terminal portions.

4,563,565

METHOD FOR FORMING A PERIPHERAL EDGE ON CONTACT LENSES

Robert D. Kampfer, Lake St. Croix Beach, and Randall S. Blum, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 2, 1983, Ser. No. 471,513
Int. Cl.⁴ B23K *26/08;* **G02C** *7/04*
U.S. Cl. 219—121 LJ **26 Claims**



1. A method of forming a peripheral edge on a contact lens prepared from a laser-machinable, organic polymer, said method comprising the steps of:

providing a focused laser beam having

(a) a wavelength which is absorbed by said polymer and

(b) a beam energy wherein the rate of radiated energy supplied to said polymer is such that the ratio of heat absorbed in vaporization of said polymer to heat absorbed by said polymer bulk is maximized;

contacting said lens with said laser beam at a distance from the centerpoint of said lens; and

rotating said laser beam and said lens relative to one another about the center point of said lens so as to form the desired edge contour.

4,563,566

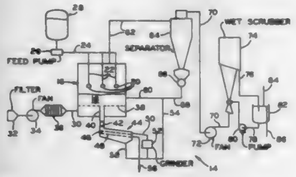
METHOD OF MANUFACTURING PARTICLES HAVING HIGH SURFACE AREAS AND A PARTICLE MADE BY THE METHOD

John A. Reents, Trenton, Mich., assignor to Plasma Fusion, Inc., Wyandotte, Mich.

Filed Mar. 22, 1983, Ser. No. 477,762

Int. Cl.⁴ B23K *9/00*

U.S. Cl. 219—121 PB **18 Claims**





1. A method of manufacturing porous particles having high surface areas, comprising the steps of:

providing a supply of fine grains of a material,

adhering together the fine grains into porous, irregularly-shaped particles having high surface areas, each of the porous, irregularly-shaped particles being made up of at least two of the fine grains,

collecting the porous, irregularly-shaped particles, and

then fusing together the individual grains forming each porous, irregularly shaped particle by injecting the porous, irregularly-shaped particles into the effluent of a plasma gun device having liquid stabilization to strengthen the adherence of the individual grains, while substantially maintaining the porous and high surface area properties thereof.

4,563,567

APPARATUS FOR TRANSMITTING A LASER BEAM

Jean Geffroy, Versailles; Michel Hofman, Epinay sur Orge; Maurice Moulin, Palaiseau, and Jean-Paul Noël, Chatenay Malabry, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 8, 1983, Ser. No. 502,214

Claims priority, application France, Jun. 8, 1982, 82 09973

Int. Cl.⁴ B23K *26/02*

U.S. Cl. 219—121 LU **9 Claims**

1. An apparatus for transmitting a beam of energy said apparatus comprising:

a first arm comprising a hollow tube having a longitudinal axis, said arm being disposed for rotation about said axis;

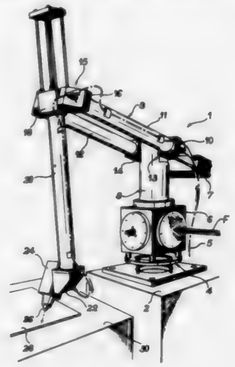
first reflecting means disposed within said tube so as to reflect said beam along said longitudinal axis;

a second arm comprising a first half arm and a second half arm having the same weight, said half arms being symmetrical of each other with respect to a plane containing the longitudinal axis of said first arm and at least said first half arm being hollow;

at least one intermediate part connecting said second arm to said first arm so that said second arm may rotate with respect to said first arm about an axis perpendicular to the longitudinal axis of the first arm and encountering the latter;

second reflecting means for transmitting the beam reflected by said first reflecting means within said first half arm;

a third arm comprising a hollow tube having a longitudinal axis;



at least one intermediate member connecting said third arm to said second arm so that said third arm may rotate with respect to said second arm about an axis perpendicular to the longitudinal axis of said third arm; and

third reflecting means for deviating the beam circulating within said first half arm so that it coincides with the longitudinal axis of said third arm.

4,563,568

DIESEL ENGINE GLOW PLUG

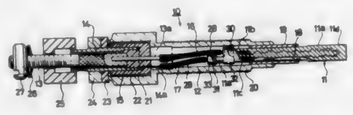
Tozo Takizawa, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1984, Ser. No. 673,371

Claims priority, application Japan, Nov. 28, 1983, 58-222151

Int. Cl.⁴ F23Q *7/22*

U.S. Cl. 219—270 **6 Claims**



1. A diesel engine glow plug comprising:

a heater rod which has a resistor embedded therein and which is made of a ceramic;

a metal holder for holding said heater rod at a front end thereof; and

a terminal assembly having first and second external connecting terminals which are held at a rear end portion of said holder and which are electrically insulated from each other,

said rear end portion of said heater rod being provided with a pair of lead portions which are spaced apart by a predetermined distance from each other along a longitudinal direction of said heater rod and which are connected to two ends of said resistor, said lead portions being covered with terminal caps, respectively;

each of said terminal caps being connected to one end of a flexible insulator-covered wire the other end of which is connected to a corresponding one of said first and second external connecting terminals;

said second external connecting terminal being hollow;

said first external connecting terminal being housed in said second external connecting terminal through an insulating material;

said second external connecting terminal being housed in the rear end portion of said holder through an insulating bush; and

said insulating bush being constituted by a metal pipe connected to said rear end portion of said holder and an insulating material inserted between said metal pipe and said second external connecting terminal;

whereby said metal pipe is subjected to an external force acting on said rear end portion of said holder so as to press said insulating materials on said first and second terminal connecting terminals in an air-tight manner.

4,563,569

GAS SHIELDED ARC WELDING TORCH WITH CONSUMABLE ELECTRODE WIRE

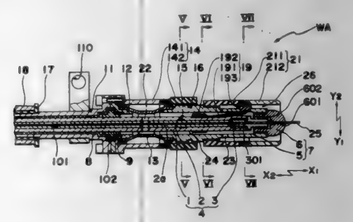
Kousuke Shiramizu, Toyota; Yoshirou Awano, Nagoya; Hiroji Okada, Takatsuki; Hiromu Yamagami, Osaka, and Hiroshi Takai, Takatsuki, all of Japan, assignors to Osaka Transformer Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed May 27, 1983, Ser. No. 498,853

Claims priority, application Japan, Nov. 17, 1982, 57-174686[U]

Int. Cl.⁴ B23K *9/16*

U.S. Cl. 219—137.43 **15 Claims**



1. A welding torch which comprises a contact member which includes a power feeding member formed therein with a through-opening for passing a consumable electrode wire therethrough and a cylindrical support member for supporting said power feeding member; a fixed guide member for guiding the electrode wire, said guide member being inserted, at its free end portion, into said contact member; a power feeding connecting member provided at a base portion of a torch body for the welding torch, and connected to the support member of said contact member through a flexible connecting member; a cylindrical member which covers a portion from the base portion of said torch body to said flexible connecting member and a base portion of said contact member, a resilient sealing member positioned between the cylindrical member and the cylindrical support member; support pins provided on said cylindrical member to confront each other for supporting said contact member so as to be tiltable in a plane including an axis of the electrode wire against the resilient sealing member and also, to be restricted in a direction generally intersecting at right angles with said plane; a gas nozzle detachably mounted on a free end portion of the support member of said contact member; a shielding gas passage formed to extend from the base portion of said torch body to the inner portion of said gas nozzle; and a pressure means for urging said contact member and said gas nozzle towards the electrode wire as one unit.

4,563,570

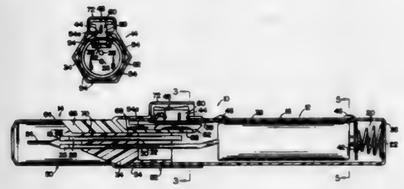
BATTERY POWERED CAUTERY WITH IMPROVED PROTECTIVE COVER ARRANGEMENT

David L. Johns, Clearwater, Fla., assignor to Suncoast Medical Manufacturing, Inc., Clearwater, Fla.

Filed Sep. 4, 1984, Ser. No. 647,057

Int. Cl.⁴ H05B *1/02;* **H01C** *10/26;* **A61B** *17/38*

U.S. Cl. 219—240 **8 Claims**



1. A battery operated cautery comprising a hollow enclosure including a switch actuator aperture formed therein and configured to retain a battery voltage source including a first and second terminal, a cautery heating element mounted on one end of said hollow enclosure, a conductor member including a first contact element on one end thereof movable between a first and second position and a second contact element formed on the opposite end of said conductor member, said conductor member being operatively housed within said hollow enclosure, a switch actuator movable between a first and second position and at least partially disposed within said switch actuator aperture, affixed to said conductor member immediately adjacent said first contact element, said cautery heating element comprising a first and a second electrode at least partially disposed with said hollow enclosure and cooperatively supporting a heating tip extending outwardly from said hollow enclosure, said first contact element being normally biased in said first position in spaced relation relative to said second electrode, said first electrode being electrically connected to said first terminal of said battery voltage source, and said second contact being electrically connected to said second terminal of said battery voltage source, such that said first contact element is moved from said first and said second position by depression of said switch actuator to engage said second electrode to complete the electrical circuit thereto, and a removable safety cover to selectively cover said heating tip, said removable safety cover including an insulating member insertable between said first contact element and said second electrode of said cautery heating element when said removable safety cover is mounted on said hollow enclosure to lock said switch actuator in said first position to prevent actuation of said cautery heating element and to positively electrically insulate said first contact element from said second electrode.

4,563,571

ELECTRIC WATER HEATING DEVICE WITH DECREASED MINERAL SCALE DEPOSITION

Ryoichi Koga, and Yutaka Takahashi, both of Nara, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Dec. 10, 1982, Ser. No. 455,244

Claims priority, application Japan, Dec. 16, 1981, 56-204331; Dec. 16, 1981, 56-204332; Dec. 16, 1981, 56-204333; Apr. 13, 1982, 57-61588; Apr. 15, 1982, 57-63725

Int. Cl.⁴ H05B *3/82;* **F24H** *1/20*

U.S. Cl. 219—299 **12 Claims**

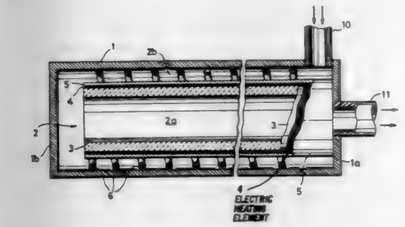
1. A water heating device comprising:

an outer tubular cylindrical structure having first and second openings;

an inner tubular cylindrical structure having an inner water-flow passage therethrough, said inner structure being coaxially disposed in said outer cylindrical structure to

define an outer water-flow passage between an inner wall of said outer structure and an outer wall of said inner structure, said inner and outer water-flow passages being interconnected at one end of said outer structure and further communicated respectively with said first and second openings, the inner tubular cylindrical structure comprising a tubular cylindrical support formed of ceramic and secured at one end with the other end of said outer cylindrical structure, a heating element on the outer surface of the ceramic cylindrical support, and a sheet of ceramic wound on said heating element so that the heating element is embedded in said sheet, said sheet of ceramic having a thickness smaller than the thickness of said cylindrical support; and

means for generating turbulence in said outer water-flow passage so that (1) thermal energy is transferred from said



heating element to the outer surface of said inner cylindrical structure at a rate greater than a rate at which thermal energy is transferred from said heating element to the inner surface of said inner cylindrical structure, and (2) when water is supplied through one of said first and second openings at a predetermined flow rate the temperatures at the outer and inner surfaces of said inner cylindrical structure are substantially equal to each other and lower than a level at which scales are likely to develop in said passages, wherein said turbulence generating means includes a helical structure having a ratio of E/C=0.6 to 0.8, where E is the radial dimension of said helical structure and C is one-half the difference between the inner diameter of said outer cylindrical structure and the outer diameter of said inner cylindrical structure, and meets a relation (P/E) (E/C)=2 to 6, where P is the pitch of said helical structure.

4,563,572

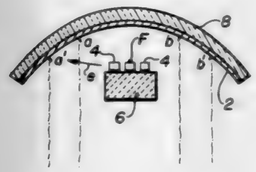
HIGH-EFFICIENCY TASK HEATER

Nathaniel E. Hager, Jr., Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 1, 1984, Ser. No. 636,750

Int. Cl.⁴ F24H *9/02*; H05B *1/00*

U.S. Cl. 219—347 **6 Claims**



1. A radiant electric heater comprising:

(a) an elongated thermal insulating material having a thermal conductivity at 1500° F. in the range of about 0.07–0.15 BTU's per hour-foot-degree Fahrenheit;

(b) mounted on one surface of said insulating material there is a corrugated ribbon radiant heating element;

(c) an elongated reflector having a parabolic cross section and being positioned relative to the ribbon heating element without any structural element being positioned therebetween, the heating element being positioned at the focus of the parabolic shape of the reflector and the thermal insulation being positioned on the side of the focus opposite from the side of the focus where the reflector is positioned;

(d) said elongated reflector having an open side from which radiant energy is directed in a fixed pattern;

(e) said thermal insulating material being positioned on the side of the radiant heating element which faces the open side of the elongated reflector whereby the thermal insulating material functions to limit heat flow directly downward from the side of the radiant heating element facing the open side of the elongated reflector to less than 5% of the total heat flow generated by the radiant heating element; and

(f) said radiant heating element being deeply corrugated with the height of each corrugation being a multiple of 2 to 3 times the width of each corrugation whereby the deep corrugations not only provide mechanical strength, but also increase effective emissivity per unit area of the radiant heating element.

4,563,573

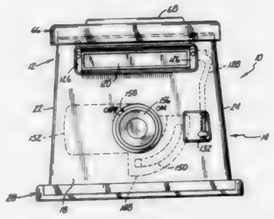
TOY ELECTRIC OVEN

Mark E. Hartelius, Rochester, and Randall J. Jacobs, New Baltimore, both of Mich., assignors to CPG Products Corp., Minneapolis, Minn.

Filed Dec. 23, 1983, Ser. No. 564,948

Int. Cl.⁴ H05B *1/02*; F24C *7/04*

U.S. Cl. 219—405 **27 Claims**



1. A toy electric oven comprising a housing having a baking chamber provided with an entrance thereto, means for electrically heating said chamber, gate means, and means responsive to temperature within said chamber for causing said gate means to move and at least partially block said entrance when said chamber is above a certain temperature.

4,563,574

HUB ODOMETER

Hans Dreyer, Egelsbach-Bayerseich, and Manfred Rieger, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Jost-Werke GmbH, Neu Isenburg, Fed. Rep. of Germany

Filed Sep. 28, 1984, Ser. No. 655,644

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1983, 3335722

Int. Cl.⁴ G01C *22/00*

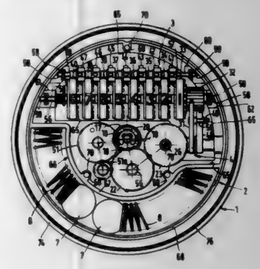
U.S. Cl. 235—95 B **9 Claims**

1. A hub odometer comprising a cylindrical case with a rear wall adapted to be mounted axially on the axis of rotation of a wheel of a vehicle,

a carrier plate mounted for rotation in said case coaxially with the axis of the wheel, said plate supporting a counting mechanism, said counting mechanism mounted on said plate to one side of the axis of rotation of said plate,

spur gear means spaced from said plate coupling the case to the counting mechanism,

at least one ball being movably positioned in substantially diametrical opposition with respect to said case axis to said counting mechanism,



an arcuate guiding path on said plate of less than 180° diametrically opposite said counting mechanism,

said ball being positioned between a pair of pressure springs positioned within said guiding path, and said spur gear means is positioned within the space between the guiding path and the counting mechanism.

4,563,575

IDENTIFICATION CARD HAVING AN EMBEDDED IC MODULE

Joachim Hoppe, and Yahya Haghiri-Tehrani, both of Munich, Fed. Rep. of Germany, assignors to GAO Gesellschaft für Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Apr. 8, 1982, Ser. No. 366,597

Claims priority, application Fed. Rep. of Germany, May 8, 1981, 3118298

Int. Cl.⁴ G06K *19/06*

U.S. Cl. 235—492 **19 Claims**



1. An identification card having an embedded IC module for the processing of electrical signals, characterized in that the IC module including the coupling means necessary for the operation of the module is completely encased by an electrically conductive layer.

4,563,576

FOCUS DETECTING SYSTEM DETECTING POSITION OF IMAGES FORMED FROM THE CENTER AND PERIPHERY OF THE OPTICAL AXIS

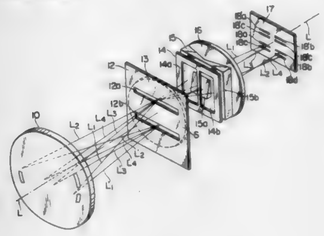
Susumu Matsumura; Takashi Suzuki, both of Yokohama, and Kenji Suzuki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1983, Ser. No. 537,676

Claims priority, application Japan, Oct. 7, 1982, 57-177043

Int. Cl.⁴ G03B *3/00*; G01J *1/36*

U.S. Cl. 250—204 **4 Claims**



1. A focus detecting system comprising:

(a) first optical means;

(b) light shielding means having a plurality of apertures, said light shielding means being disposed near an imaging plane of said first optical means;

(c) second optical means for forming a plurality of first object images based on light fluxes transmitted through a center area around an optical axis of said first optical means and forming a plurality of second object images based on light fluxes transmitted through a peripheral area of said first optical means, said second optical means being disposed behind the imaging plane of said first optical means;

(d) first photo-sensing means arranged to receive both said first object images and said second object images formed through one of the apertures of said light shielding means;

(e) second photo-sensing means arranged to receive only said first object images formed through another aperture of said light shielding means; and

(f) discrimination means for discriminating a focusing state of said first optical means by a signal outputted from one of said first photo-sensing means and said second photo-sensing means.

4,563,577

OPTICAL SENSOR AND REFLECTOR TO REFLECT A DIFFERENT WAVELENGTH

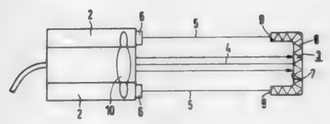
Werner Schaller, Lampertheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 29, 1983, Ser. No. 479,997

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1982, 3213625

Int. Cl.⁴ G01V *9/04*; G08B *13/18*

U.S. Cl. 250—221 **10 Claims**



1. An optical sensor system comprising:

a transmitter for transmitting light of a first wavelength;

reflector means disposed for receiving light transmitted by the transmitter, for converting light impinging on the

reflector means from said first wavelength to a different second wavelength and for emitting light or said second wavelength upon reception of light of said first wavelength from said transmitter; and

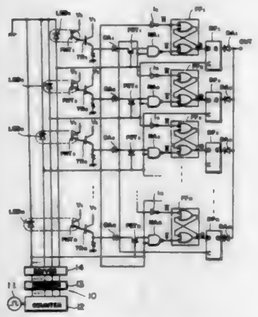
a receiver disposed to receive light emitted by the reflector means operative to detect light of said second wavelength, wherein the reflector means is of U-shaped cross section having a central web portion and a pair of parallel leg portions extending from the central web portion at opposite ends thereof, the central web portion having an incidence surface facing the transmitter, said incidence surface being at least partially transparent to light from the transmitter, the leg portions having respective end faces acting as the exit surfaces, said exit surfaces being at least partially transparent to light of said second wavelength.

4,563,578

BEAM TYPE SAFETY DEVICE

Shunichi Nagai, and Kazuo Hiramura, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,381
Claims priority, application Japan, Jan. 31, 1983, 58-14281
Int. Cl.⁴ G01V *9/04*
U.S. Cl. 250—221 **5 Claims**



1. A beam type safety device comprising:

driving means for sequentially providing a driving signal to a plurality of light emitting elements;

a plurality of light receiving elements respectively disposed to be confronted by said plurality of light emitting elements, for receiving light from the corresponding light emitting elements;

a plurality of first memory means respectively provided to be associated with said plurality of light receiving elements, for storing the output of each of said light receiving elements with a timing of the driving signal for the light emitting element corresponding to said each light receiving element, the stored output of said each light receiving element being cleared with a timing of the driving signal for the light emitting element corresponding to the light receiving element preceeding to said each light receiving element;

a plurality of second memory means respectively provided to be associated with said plurality of first memory means, for storing the output of each of said plurality of first memory means with a timing of the driving signal for the light emitting element corresponding to the light receiving element next to said each light receiving element; and

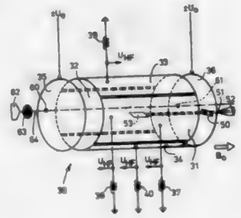
output means for outputting a light interception detection signal when at least one of said second memory means stores data representing that light beam from the corresponding light emitting element was intercepted.

4,563,579

PROCEDURE FOR RECORDING ION-CYCLOTRON-RESONANCE SPECTRA AND APPARATUS FOR CARRYING OUT THE PROCEDURE

Hanspeter Kellerhals, Uster, and Martin Allemann, Hinwil, both of Switzerland, assignors to Spectrospin AG, Zurich, Switzerland

Filed Aug. 28, 1984, Ser. No. 645,051
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1983, 3331136
Int. Cl.⁴ G01N *24/14*
U.S. Cl. 250—291 **14 Claims**



1. A procedure of recording ion-cyclotron resonance spectra in which gaseous ions of a sample substance are produced and, in an ultrahigh vacuum, are exposed to a homogeneous constant magnetic field and to an alternating electric field of a given frequency which is perpendicular to the magnetic field, with ions brought to resonance by the alternating field producing a test signal and, moreover, the gaseous ions (secondary ions) of the sample substance being produced by bombardment of the sample substance with additional gaseous high-energy ions (primary ions), characterized by the fact that the primary ions are also excited by ion-cyclotron resonance.

4,563,580

RADIATION IMAGE STORAGE PANEL

Akio Ishizuka, Fujinomiya; Hisashi Yamazaki, and Kikuo Yamazaki, both of Kaisei, all of Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

Filed Jun. 13, 1984, Ser. No. 620,174
Claims priority, application Japan, Jun. 14, 1983, 58-106927
Int. Cl.⁴ G03C *5/16*
U.S. Cl. 250—327.2 **10 Claims**

1. A radiation image storage panel comprising a support, a subbing layer and a phosphor layer which comprises a binder and a stimulable phosphor dispersed therein, superposed in this order, characterized in that said subbing layer comprises a synthetic resin crosslinked with a crosslinking agent.

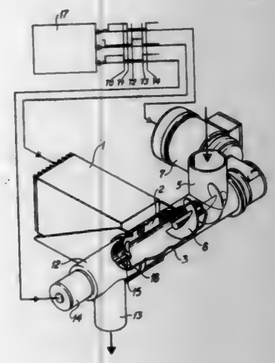
4,563,581

ARRANGEMENT IN INFRARED ANALYZERS

Peter Perten, An der Barsbek 33 B, D-2000 Barsbüttel, Fed. Rep. of Germany

Filed Jun. 29, 1984, Ser. No. 626,108
Claims priority, application Sweden, Jul. 4, 1983, 8303817
Int. Cl.⁴ G01N *21/35, 21/55*
U.S. Cl. 250—338 **9 Claims**

1. An arrangement in an infrared analyzer for determining the proportion of a given substance or substances in a powderous material, in which during an analysis the infrared analyzer irradiates the material with infrared light and detects light reflected from the material through a window in the wall of a conduit in the form of a tube through which the material is passed in a direction which is substantially parallel with the window, and is compacted in said conduit, the conduit is provided with a feed screw having a controllable drive means arranged in a material-infeed end thereof and extends horizontally or slopes upwardly from said infeed end; and a control means is arranged to cyclically control the feed-screw drive means and the infrared analyzer, such that during a first time period the drive means is activated and the infrared analyzer is inactivated, and during a second time period the infrared analyzer is activated and the drive means inactivated.

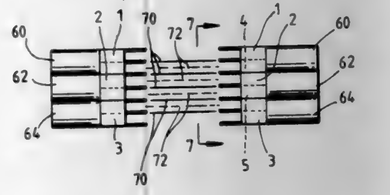


4,563,582

POSITRON EMISSION TOMOGRAPHY CAMERA

Nizar A. Mullani, Houston, Tex., assignor to Clayton Foundation for Research, Houston, Tex.

Filed May 24, 1984, Ser. No. 613,699
Int. Cl.⁴ G01T *1/164*
U.S. Cl. 250—363 S **7 Claims**



1. In a positron emission tomography camera having a plurality of detector rings positioned side-by-side around a patient area to detect radiation therefrom, each ring having an inner circumference and each ring containing a plurality of scintillation detectors which are positioned around the circumference and are pointed inwardly for detecting radiation and a septa ring extending inwardly from the inner circumference of each outer edge of each ring for directing the area of detection of said detectors, the improvement in means for reducing the inward extent of said septa rings thereby reducing the diameter of said inner circumference of detectors and reducing the number of detectors required in each ring comprising,

an extra septa ring positioned in the middle of each ring of detectors and parallel to the other septa rings and extending inwardly and the inward extent of all of the septa rings are equal whereby the inner circumference of the detector rings is reduced by the reduction in the inward extent of said septa rings.

3. In a positron emission tomography camera having a plurality of adjacent detector rings positioned side-by-side around a patient area to detect radiation from the patient, each ring containing a plurality of scintillation detectors pointed to the patient area, each detector ring defining a plane slice through the patient area by the detectors in each ring, and each two adjacent detector rings defining an interplane slice through the patient area, the improvement in the rings of detectors comprising,

each detector ring including a plurality of photomultiplier tubes around the circumference,

a plurality of scintillation crystals positioned around each ring adjacent the photomultiplier tubes for detecting radiation from the patient area which the tubes convert into electrical pulses,

said crystals positioned relative to the photomultiplier tubes whereby each photomultiplier tube is responsive to more than one crystal,

each multiplier tube has one-half of the tube responsive to a single crystal, and the second half of the tube is responsive to two different crystals, and

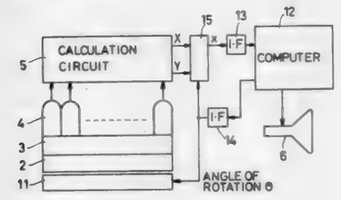
the crystals on the one-half of each tube are offset from the crystals on the second half of the same tube such that the detectors detect more interplane slices.

4,563,583

SCINTILLATION CAMERA

Hiroyuki Hattori, Kyoto, Japan, assignor to Shimadzu Corporation, Japan

Filed Mar. 23, 1983, Ser. No. 478,011
Claims priority, application Japan, Mar. 31, 1982, 57-52870
Int. Cl.⁴ G01T *1/208;* G21K *1/02*
U.S. Cl. 250—363 S **8 Claims**



1. A scintillation camera comprising:

a radiation detector provided with scintillators for producing scintillations of light in response to detected radiation;

a parallel plate collimator rotatably disposed on the front side of said radiation detector and comprising a first set of shielding plates equally spaced in parallel with each other;

means, including a position calculation circuit, responsive to scintillations of light for calculating position signals representing data on two-dimensional distribution of said scintillations;

a coordinate transformation circuit responsive to said position signals for producing, each time said collimator is rotated by a predetermined angle, signals representing data on one-dimensional distribution; and,

means responsive to said signals representing data on one-dimensional distribution for reconstructing an image.

4,563,584

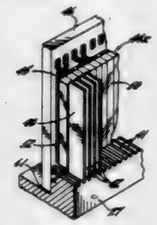
SOLID STATE DETECTOR

David M. Hoffman, West Berlin, Wis.; Jack D. Kingsley, Schenectady, and Roger S. Ehle, Scotia, both of N.Y., assignors to General Electric Company, Milsaukee, Wis.

Filed Dec. 29, 1982, Ser. No. 454,469
Int. Cl.⁴ G01T *1/202*
U.S. Cl. 250—368 **5 Claims**

1. In a solid state CT detector cell, the improvement comprising, a scintillator bar comprising a crystal having an index of refraction which differs as a function of direction through the crystal lattice, the lowest index direction being parallel to the cleavage plane, said scintillator bar oriented with its front to receive x-rays, its rear to transmit light for detection, and having parallel sides, the cleavage plane of said scintillator bar conforming to the sides, means for causing said scintillator to

function as a light pipe from front to rear, the means for causing including coated polished sides on the scintillator, and a



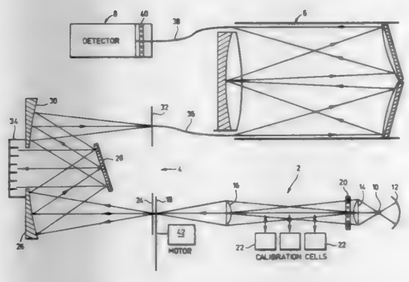
diode joined to the rear face by optical coupling means for enhancing light piping of photons generated near the front face of the scintillator to the diode at the rear thereof.

4,563,585

MONITORING GAS AND VAPOR CONCENTRATIONS

T. Victor Ward, Thornhill, Canada, assignor to Moniteg Ltd., Concord, Canada

Filed Sep. 23, 1982, Ser. No. 422,478
Int. Cl.⁴ G01J *1/42*
U.S. Cl. 250—373 **15 Claims**



4. Apparatus for monitoring a low concentration of a gas or vapour in a gas sample comprising:

a source of light containing certain predetermined wavelengths in a desired spectral region,

a collimator receiving said light and concentrating it upon a slitted area in an entrance mask,

a slitted shutter movable adjacent said entrance mask into a first position such that slits in the shutter permit light to pass through a first set of parallel slits in the entrance mask and a second position such that first slits in the shutter permit light to pass through second slightly displaced set of parallel slits in the entrance mask,

means to move the shutter cyclically into said positions,

a dispersion grating disposed to receive and diffract light from said parallel slits in said entrance mask,

an exit mask defining at least one exit slit disposed to receive light diffracted by said grating at specific wavelengths determined by the relative dispositions of said entrance mask slits, said grating and said exit slit, said wavelengths comprising a first set of wavelengths characteristic of the absorption maxima of the gas being monitored and determined by said first set of slits and a second set of wavelengths determined by said second set of slits which set is displaced from said first set of wavelengths and characterized by minimum absorption by the gas being monitored,

means establishing an optical path through a gas sample being monitored,

an optical relay system extending from said exit slit to the beginning of said optical path,

a photo-electric sensor device,

an optical relay system extending from the end of said optical path to said sensor device,

means to generate signals in response to the entry of said shutter into said positions,

a frequency stable electronic clock pulse generator generating pulses at a frequency which is very high compared to the cycling rate of the means moving said modulator,

gate control means receiving said clock pulse signals from said clock pulse generator and operative to count said pulses and generate gating signals commencing a predetermined time after receipt of a response signal from said signal generating means and lasting a period corresponding to a predetermined count of said gate pulses related to the rotation rate of the shutter such that the gating signals commence after the shutter has entered its said positions and end before it leaves them,

a transmission gate controlled by said gating signal and passing the signals from said sensor device in response thereto,

comparator means receiving the signals from said gate and comparing the magnitude of the signals passed when the shutter is in said first and second positions, and

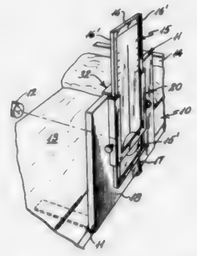
wherein said shutter has a third position such that light can pass neither set of slits in the entrance mask, and further comparator means receives signals from said gate when the shutter is in said third position for comparison with the signals passed in one of said first and second positions.

4,563,586

PORTABLE IONIZATION CHAMBER AND ALIGNMENT APPARATUS

John A. Jordan, 2512 McArthur St., Tallahassee, Fla. 32304

Filed Mar. 9, 1984, Ser. No. 587,760
Int. Cl.⁴ G01T *1/185*
U.S. Cl. 250—374 **3 Claims**



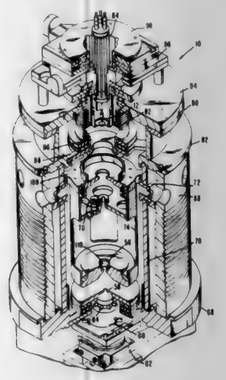
1. A combination ionization chamber and support bracket for mounting directly to an X-ray cassette comprising an ionization chamber means having generally parallel spaced side walls, a bracket assembly having a pair of spaced and opposing vertically oriented guide channel means, each of said guide channel means having upper and lower open ends, hanger means attached to said guide channel means adjacent the upper ends thereof for selectively engaging the X-ray cassette, said ionization chamber means being vertically adjustably carried between said guide channel means and being extendable above and below said guide channel means with said side walls of said ionization chamber means being in sliding engagement with said guide channel means, locking means carried by said opposed guide channel means, said locking means being selectively engageable with said ionization chamber means as to retain said ionization chamber means in a fixed adjustable position relative to said guide channel means.

4,563,587

FOCUSED ION BEAM MICROFABRICATION COLUMN

J. William Ward, Canoga Park; Victor Wang, Agoura; Richard P. Vahrenkamp, Newberry Park, and Robert L. Seliger, Agoura, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 267,237, May 26, 1981, abandoned. This application Apr. 7, 1983, Ser. No. 482,745
Int. Cl.⁴ H01J *37/30, 37/317*
U.S. Cl. 250—396 R **5 Claims**



1. A mass separated, focused ion beam microfabrication system for forming a high resolution, direct-write ion beam having a small spot size and high current density at a target, comprising:

a high intensity, substantially point source of a desired species of ions,

means for extracting an angularly expanding ion beam from the source at an initial energy leval which is low compared to the final beam energy,

a low aberration focusing means positioned to focus the beam to a crossover without substantially increasing the beam energy,

a mass separator positioned in the beam path between the focusing means and the beam crossover to deflect undesired ion species out of the beam path, the mass separator operating with relatively weak fields corresponding to the relatively low initial beam energy, and thereby imparting little aberration to the beam,

an energy control means comprising a pair of spaced electrodes positioned in the vicinity of the beam crossover for accelerating the beam ions to an intermediate energy level without substantially changing the beam focus, the energy control means thereby avoiding any substantial increase in beam aberration.

an electrostatic focus/accelerating means comprising a pair of spaced electrodes positioned in the beam path beyond the crossover,

a variable power supply means connected to apply respective voltage differentials across the energy control and focus/accelerating electrodes sufficient to focus the beam to a small spot with a high current density and to establish the energy of the beam emerging from the energy control meas, relative to the ion source, at a substantially constant fraction of the beam energy emerging from the focus/accelerating means, and at a changing fraction of the beam energy emerging from the extraction means as the power supply is varied, and

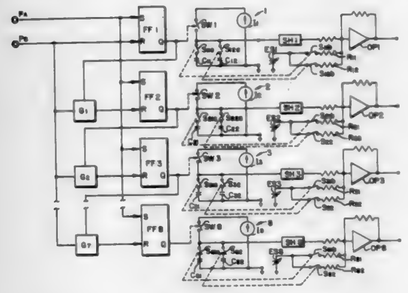
means for deflecting the spot over a target in a desired manner to implant a desired ion pattern on the target.

4,563,588

APPARATUS FOR MEASURING THE LUMINOUS LIFETIME OF SAMPLES

Masaru Tanaka, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Dec. 16, 1983, Ser. No. 562,119
Claims priority, application Japan, Jan. 8, 1983, 58-2143[U]
Int. Cl.⁴ G01T *1/10;* **H03K** *5/159, 17/00*
U.S. Cl. 250—458.1 **3 Claims**



1. In an apparatus for measuring the luminous lifetime of samples comprising a multichannel time-to-amplitude converter having N channels numbered 1 through N wherein N is a positive integer, said converter comprising a start pulse input means for receiving a start pulse and a stop pulse input means for receiving a plurality of stop pulses, wherein each of said channels includes a flip-flop having its set input connected to said start pulse input means and having an output connected to a time-to-amplitude converter connected to a sample and hold means; and wherein said flip-flop of channel 1 has a reset input connected to said stop pulse input means and said channels 2 through N are arranged such that reset inputs of their respective flip-flops are connected to said stop pulse input means through corresponding gate means, each corresponding gate means of channel N having an enabling input connected to and controlled by a corresponding flip-flop of said channel N−1 such that said start pulse sets all of said flip-flops and a first stop pulse resets said first flip-flop and a second stop pulse resets said second flip-flop . . . and N stop pulse resets said N flip-flop, the improvement comprising:

a plurality of voltage adders each connected to a corresponding sample and hold means;

a plurality of variable offset voltage means each connected to a corresponding one of said plurality of adder means wherein each offset voltage may be manually adjusted so as to compensate for errors in a time axis of its corresponding channel.

4,563,589

ULTRAVIOLET CURING LAMP DEVICE

Herbert D. Scheffer, R.D. 2, Box 180A, Glen Gardner, N.J. 08826

Filed Jan. 9, 1984, Ser. No. 569,320
Int. Cl.⁴ G01J *1/00;* **F21V** *29/00*
U.S. Cl. 250—504 R **5 Claims**

1. A device for curing ultraviolet light curable organic compound products which comprises:

(a) an ultraviolet light housing which includes an ultraviolet light permeable window;

(b) an ultraviolet light source of a longitudinal cylindrical nature contained within said housing;

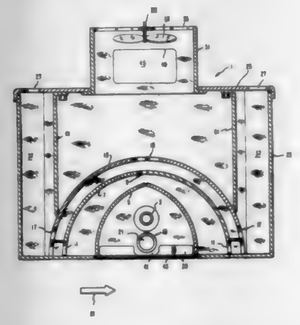
(c) a cold mirror of the converging type having at least one focal point and being comprised of quartz with a multilayer dichroic filter thereon to selectively reflect a broad band of ultraviolet light, and to transmit a high percentage

of visible and infrared light, said cold mirror being contained within said housing in a longitudinally parallel relationship to said ultraviolet light source so as to selectively reflect ultraviolet light out of said housing through said window and to transmit visible and infrared light through said cold mirror, said cold mirror having its front surface facing said ultraviolet light source;

(d) an arcuated heat absorber located within said housing and behind said cold mirror so as to place said cold mirror between said heat absorber and said ultraviolet light source and so as to create an air space between the back of said cold mirror and the front of said heat absorber, said heat absorber having arcuated configuration running longitudinally parallel to said ultraviolet light source;

(e) an arcuated back deflector located within said housing and behind said heat absorber so as to place said heat absorber between said cold mirror and said back deflector and so as to create a space between said heat absorber and said back deflector, said back deflector having an arcuated configuration running longitudinally parallel to said ultraviolet light source;

(f) a blocker tube which is located within said housing and between said ultraviolet light source and said window, so as to reflect ultraviolet, visible and infrared light and so as to reduce non-ultraviolet light and heat from passing directly through said window;



(g) a first longitudinal current air channel contained within said housing so as to permit cooling air to flow longitudinally through the inside of said blocker tube;

(h) a second longitudinal current air channel contained within said housing so as to permit cooling air to flow longitudinally over the outside of said blocker tube, over said window and to some extent longitudinally over said ultraviolet light source and said front surface of said cold mirror;

(i) a first cross current air channel contained within said housing so as to permit cooling air to flow between said cold mirror and said heat absorber as a cross current at a right angle to the longitudinal dimension of said ultraviolet light source;

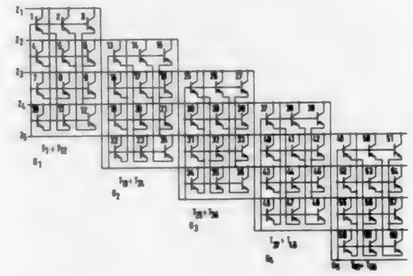
(j) a second cross current air channel contained within said housing so as to permit cooling air to flow between said heat absorber and said back deflector as a cross current at a right angle to the longitudinal dimension of said ultraviolet light source; and,

(k) one or more air movement means capable of moving both of said longitudinal currents and both of said cross currents at a cooling rate so as to enable the operation of said ultraviolet light source at greatly reduced temperatures when measured at the focal point(s) of said cold mirror.

4,563,590
ARRANGEMENT WITH SEVERAL PHOTOTRANSISTORS

Klaus Gillessen, Untergruppenbach, Fed. Rep. of Germany, and Christopher Malinowski, Bridgewater, N.Y., assignors to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed May 10, 1983, Ser. No. 493,295
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1982, 3221520
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—578 **4 Claims**

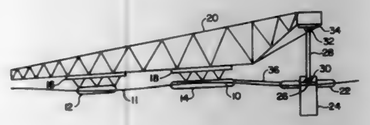


1. A circuit arrangement comprising: a plurality of phototransistors each having a base electrode, a collector electrode and an emitter electrode, the number of said transistors being equal to $n(n-1)(n-2)$, where n is an integer having a value of at least 3; a plurality of leads equal in number to n, with each said electrode of each of said phototransistors being connected to a respective one of said leads in a manner such that said base electrode, said collector electrode and said emitter electrode of each of said phototransistors are connected to a selected group of three of said leads in a pattern such that said selected group of three leads is connected in a unique sequence to said base, collector and emitter electrodes of only one said phototransistor, a plurality of current detecting devices each having a first terminal connected to ground and a second terminal, each detecting device being responsive to a current flowing between its first and second terminals such that Current exceeds a selected minimum value; a voltage source providing a voltage having a selected value such that application of a voltage having the selected value between said base electrode and emitter electrode of any one of said phototransistors produces a current at said emitter electrode which does not exceed the selected minimum value and application of a voltage having the selected value between said collector electrode and emitter electrode of any one of said phototransistors when that said phototransistor is illuminated produces a current at said emitter electrode which exceeds the selected minimum value; and a plurality of switching members each connected to a respective one of said leads, to said voltage source and to said second terminal of a respective one of said current detecting devices, each of said switching members being switchable to a selected one of: a first switching state for conductively connecting said respective one of said leads to said second terminal of said respective one of said current detecting devices; a second switching state in which said respective one of said leads is open-circuited; and a third switching state in which said respective one of said leads is conductively connected to said voltage source, said switching members being operative such that, at any moment, only one of said switching members is in said second switching state and only one of said switching members is in said third switching state.

4,563,591
WAVE DRIVEN ENGINE

Dedger Jones, 885 Freeway Dr. N., Columbus, Ohio 43229

Filed Aug. 26, 1983, Ser. No. 526,597
Int. Cl.⁴ F03B *13/12*
U.S. Cl. 290—53 **10 Claims**



1. A process for converting water wave energy to a useful power form wherein said waves are of the type having a substantially periodic waveform including substantially constant wave length, wave height and direction,

comprising the steps of:

disposing on the surface of the water a substantially rigid horizontally oriented support structure having a length and two ends, three float bodies being disposed along the length of said support structure, a first float body residing substantially adjacent the first end of said support structure, a second float body spaced apart from said first float body and residing substantially adjacent the second end of said support structure, a third float body spaced apart from both the first and second float bodies and residing between said first and second float bodies along the length of said support structure;

retaining a first portion of an energy converting means in said first float body, a second portion of said energy converting means being pivotably connected to said support structure substantially at the first end of said support structure and being in contact with the first portion of said energy converting means;

rigidly connecting said second float body to the second end of said support structure, and rigidly connecting said third float body to the center of the length of said support structure intermediate said second float body and the second portion of said energy converting means, said second and third float bodies being support floats and said first float body with energy converting means not being a support float;

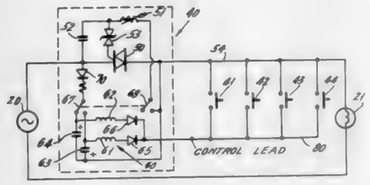
spacing said first, second and third float bodies along the length of said support structure such that when said first and second float bodies are located respectively at the crests of different sequential waves, said third float body is located in a wave trough intermediate said wave crests, the first end of said support structure is oscillated vertically by the movement of the support structure as it follows the movement of said second and third float bodies which are spaced apart one-half wave length from each other, said second portion of said energy converting means moving against said first portion of said energy converting means because of the combination of the oscillation of the first end of said support structure with second portion of said energy converting means and the wave following movement vertically of said first float body, which combination multiplies the effect of said wave height;

converting energy by the movement of said first and second portions of said energy converting means against each other.

4,563,592
WALL BOX DIMMER SWITCH WITH PLURAL REMOTE CONTROL SWITCHES

Stephen J. Yuhasz, Zionsville, and David G. Luchaco, Macungie, both of Pa., assignors to Lutron Electronics Co. Inc., Coopersburg, Pa.

Filed Oct. 13, 1983, Ser. No. 541,368
Int. Cl.⁴ H01H *47/00*
U.S. Cl. 307—115 **27 Claims**



21. A switching device comprising:

first and second power leads connectable in series with a source of power and a load;

a controllably conductive device having first and second main electrodes connected to said first and second power leads respectively, and further having a control electrode;

control circuit means connected between at least one of said first and second main electrodes and said control electrode for applying a control signal having a maximum voltage substantially lower than the voltage of said source to said control electrode to cause said controllably conductive device to become conductive, and variable control means connected to said control circuit means to variably apply said control signal to said control electrode; said variable control means including a movable adjustment member which is incrementally movable between a minimum and maximum setting to determine the magnitude of said control signal and

switch means operable between a conductive and a non-conductive condition and an operating means therefor, said switch means connected in said control circuit means and being connected between said at least one of said first and second main electrodes and said control electrode, said variable control means being independent of said switch means whereby operation of said switch means to one of its said conditions prevents application of said control signal to said control electrode and renders said controllably conductive device non-conductive without altering a dimming setting associated with said device.

4,563,593
TRANSITION DETECTOR CIRCUIT

Mitsuo Isobe, Yokohama, and Takayuki Ohtani, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 3, 1983, Ser. No. 538,277
Claims priority, application Japan, Oct. 4, 1982, 57-174150
Int. Cl.⁴ H03K *5/153*
U.S. Cl. 307—231 **3 Claims**

1. A transition detector circuit comprising:

(a) a first invertor train comprising 2n stages of invertors (n: positive integer including zero), the input thereof being connected to a signal input terminal while the output thereof is connected to an in-phase output terminal;

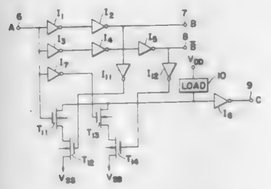
(b) a second invertor train comprising $2n+1$ stages of invertors, the input thereof being connected to said signal input terminal, while the output thereof is connected to an antiphase output terminal;

(c) a third invertor train, comprising at least one stage of an invertor, connected to the output of said first invertor train;

(d) a fourth invertor train, comprising at least one stage of an invertor, connected to the output of said second invertor train;

(e) a fifth invertor train, comprising at least one stage of an invertor, connected to said signal input terminal;

(f) a first switching circuit which turns on or off in response to a signal fed from said signal input terminal and turns off or on in response to a signal fed from said third invertor



train to produce a pulse signal having a first delay time determined by said first and third invertor trains; and

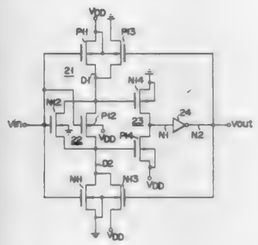
(g) a second switching circuit which turns on or off in response to a signal fed from said fourth invertor train and turns off or on in response to a signal fed from said fifth invertor train to produce a pulse signal having a second delay time determined by said second, fourth and fifth invertor trains.

4,563,594

SCHMITT TRIGGER CIRCUIT USING MOS TRANSISTORS AND HAVING CONSTANT THRESHOLD VOLTAGES

Mikio Koyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 25, 1983, Ser. No. 516,762
Claims priority, application Japan, Jul. 30, 1982, 57-133551
Int. Cl.⁴ H03K *3/295*
U.S. Cl. 307—290 **17 Claims**



1. A Schmitt trigger circuit having lower and higher threshold voltages, comprising:

first and second power supply terminals between which an operating voltage is applied;

first MOS inverter means including a complementary channel conductivity pair of first and second MOS transistors each having a drain, a source and a gate, said first and second MOS transistors having their gates connected together to receive an input voltage signal, and their sources connected to said first and second power supply terminals, respectively, and circuit means connected between the drains of said first and second MOS transistors for transmitting a potential variation at the drain of one of said first and second MOS transistors, which potential variation is caused by a voltage variation of said input voltage signal, to the drain of the other transistor after a delay;

second MOS inverter means responsive to said first MOS inverter means; and

feedback circuit means responsive to said second MOS inverter for suppressing the potential variation at the drain of at least one of said first and second MOS transistors of said first MOS inverter means until said input voltage signal becomes lower than said lower threshold voltage or higher than said higher threshold voltage of said Schmitt trigger circuit; and

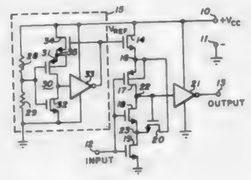
output means coupled to said feedback circuit means for providing an output voltage signal of said Schmitt trigger circuit.

4,563,595

CMOS SCHMITT TRIGGER CIRCUIT FOR TTL LOGIC LEVELS

Bidyut K. Bose, Berkeley, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 27, 1983, Ser. No. 546,140
Int. Cl.⁴ H03K *3/295*
U.S. Cl. 307—290 **7 Claims**



1. In a CMOS inverter gate connectable to a source of operating power and configured to produce a hysteresis response to an input signal about a predetermined TTL reference voltage input level of about 1.4 volts, said hysteresis response having a low to high logic voltage transition that is below a prescribed logic high state of about 2 volts and a high to low logic voltage transition that is above a prescribed logic low state of about 0.8 volt thereby to create a Schmitt trigger circuit function, the improvement comprising:

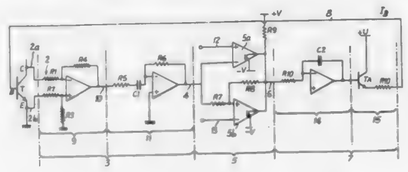
a power source regulator connected between said inverter gate and said source of operating power and responsive to a reference potential obtained from a CMOS inverter gate that is biased at an input potential substantially equal to said predetermined reference voltage input level.

4,563,596

PROCESS AND CIRCUIT FOR CONTROLLING THE BASE DRIVE OF A POWER TRANSISTOR

Olivier L. Gosselin, Ave. de la Porte de Sèvres, 75 015 Paris, and Maxime Dessoude, 15 Ave. Francois Begué , 93 240 Stains, both of France

Filed Dec. 20, 1983, Ser. No. 563,452
Claims priority, application France, Dec. 22, 1982, 82 21528
Int. Cl.⁴ H03K *17/06, 17/60*
U.S. Cl. 307—297 **13 Claims**



9. A circuit for controlling the base drive of a power transistor having a base, a collector and an emitter, said circuit comprising means for detecting the collector-emitter potential,

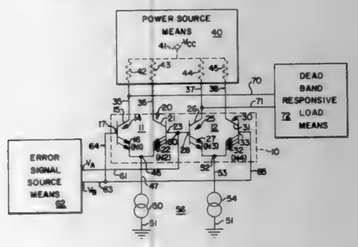
differentiating means connected to said detecting means for deriving the derivative of said potential, a comparator circuit having means for inserting in said comparator circuit upper and lower current limits and connected to said differentiating means for comparing said derivative with said upper and lower limits, integrating means connected to said comparator circuit for integrating the output signal of said comparator circuit and connected to said base of said power transistor for controlling said base with the integrated signal.

4,563,597

ACCURATE DEAD BAND CONTROL CIRCUIT

Robert A. Betzold, Hennepin, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 22, 1982, Ser. No. 443,792
Int. Cl.⁴ H03K *5/153, 17/62;* **H03F** *3/45*
U.S. Cl. 307—360 **7 Claims**



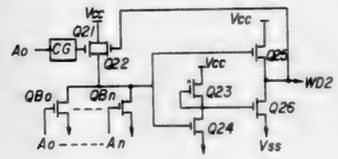
1. A circuit means having a controlled dead band voltage characteristic, including: a first pair of solid state current path means having selectable internal dissimilar current conducting characteristics to conduct separate currents of different magnitudes with each of said path means including input control means; said pair of current path means adapted to be connected between voltage source means and current source means to conduct separate currents of different magnitudes through each of said current path means; said input control means adapted to be connected to error signal source means to control current flows in said pair of solid state current path means; a second pair of solid state current path means having selectable internal dissimilar current conducting characteristics to conduct separate currents of different magnitudes with each of said second pair of current path means including input control means; said second pair of current path means adapted to be connected between said voltage source means, and said current source means to conduct separate currents of different magnitudes through each of said second current path means; said second input control means adapted to be connected to said error signal source means to control further current flows in said second pair of solid state current path means; a first of said input control means of said first pair of current path means connected to a first of said input means of said second pair of current path means; a second of said input control means of said first pair of current path means connected to a second of said input control means of said second pair of current path means; and output means connected between said first and said second pairs of said solid state current path means wherein said output means provides the controlled dead band voltage characteristic.

4,563,598

LOW POWER CONSUMING DECODER CIRCUIT FOR A SEMICONDUCTOR MEMORY DEVICE

Atushi Oritani, Yokohama, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 28, 1982, Ser. No. 453,915
Claims priority, application Japan, Dec. 28, 1981, 56-209754
Int. Cl.⁴ H03K *19/096, 17/06*
U.S. Cl. 307—449 **5 Claims**



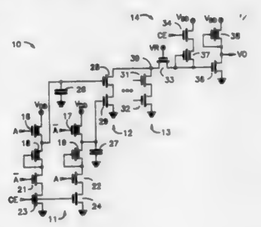
1. A decoder circuit for a semiconductor memory device having addresses corresponding to the location of data therein, said decoder circuit comprising: power supply means; a logic circuit means comprising a NOR gate for receiving an address signal as the input thereto, an inverter means for receiving the output of said NOR gate, and an output circuit for receiving the output of said NOR gate and the output of said inverter means and for providing an output in response thereto, said output circuit being connected to said power supply means; a load means in said logic circuit means, said load means comprising a first pair of first and second transistors connected in parallel said first and second transistors being connected to said power supply means; and a clock signal generating means for generating a clock signal in response to a variation in the address signal, the clock signal having a specified time duration, said clock signal generating means being connected to said first transistor and said second transistor being connected to the output of said output circuit; wherein said first transistor turns ON for the specified time duration in synchronization with said address signal, and said second transistor turns ON when said logic circuit means is in a selected condition and turns OFF when said logic circuit means is in a non-selected condition.

4,563,599

CIRCUIT FOR ADDRESS TRANSITION DETECTION

William J. Donoghue, Round Rock, Tex., and Glenn E. Noufer, Colorado Springs, Colo., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 28, 1983, Ser. No. 479,788
Int. Cl.⁴ H03K *19/22, 19/08*
U.S. Cl. 307—448 **13 Claims**



1. A circuit for detecting a transition of an address signal comprising:

a pair of transistors whose conduction paths are coupled in series between a detection node and a first power supply terminal, wherein each of the first and second transistors of the pair has a control electrode, and wherein each

transistor is characterized as being conductive when a first logic state is present on its control electrode;

a first capacitance coupled to the control electrode of the first transistor;

a second capacitance coupled to the control electrode of the second transistor;

first providing means for providing the first logic state to the control electrode of the first transistor when the address signal switches to a first condition;

second providing means for providing the first logic state to the control electrode of the second transistor when the address signal switches to a second condition;

first removing means for removing the first logic state from the control electrode of the first transistor when the address signal switches to the first condition, said removing occurring a predetermined time after the second providing means provides the first logic state to the control electrode of the second transistor; and

second removing means for removing the first logic state from the control electrode of the second transistor when the address signal switches to the second condition, said removing occurring a predetermined time after the first providing means provides the first logic state to the control electrode of the first transistor.

4,563,600

ECL CIRCUIT HAVING A NEGATIVE FEEDBACK DIFFERENTIAL TRANSISTOR CIRCUIT TO INCREASE THE OPERATING SPEED OF THE OUTPUT CIRCUIT

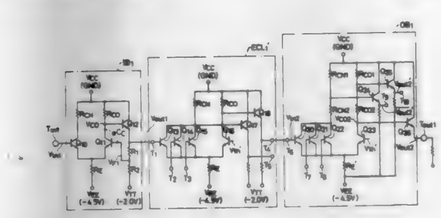
Tohru Kobayashi, Tachikawa, and Kazuo Nakamura, Koganei, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 441,180

Claims priority, application Japan, Nov. 13, 1981, 56-181141

Int. Cl.⁴ H03K *19/086, 19/092, 19/013*

U.S. Cl. 307—455 **18 Claims**



1. A semiconductor integrated circuit device comprising:

an input terminal for receiving an input signal having a high voltage level and a low voltage level;

an input circuit including a first transistor having its base coupled to said input terminal to receive said input signal through said input terminal and its collector coupled to a first power source terminal, a second transistor having an emitter coupled to an emitter of said first transistor to perform current switching operations with said first transistor, a load element connected between the collector of sid second transistor and the first power source terminal, a current source element connected between the emitters of said first and second transistors and a second power source terminal, a bias circuit coupled to receive a collector output of said second transistor including means for generating a bias voltage to be fed to the base of said second transistor, and an output terminal coupled to the collector of said second transistor, wherein said load element and said bias circuit have circuit parameters which are set so that said input circuit generates an output signal at said output terminal which has a high voltage level substantially equal to the high voltage level of said input signal and a low voltage level higher than the low voltage level of said input signal; and

an ECL circuit coupled between the first power source terminal and the second power source terminal for receiving said output signal from said output terminal of said input circuit.

4,563,601

LEVEL CONVERSION INPUT CIRCUIT

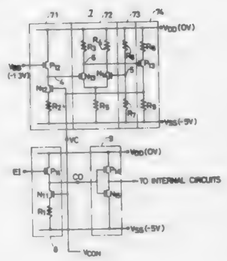
Michio Asano, Kokubunji, and Akira Masaki, Meguro, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 6, 1983, Ser. No. 529,763

Claims priority, application Japan, Sep., 1982, 57-153901

Int. Cl.⁴ H03K *19/094, 19/017, 19/092*

U.S. Cl. 307—475 **15 Claims**



1. A level conversion circuit including:

a first input circuit comprising at least a first MOS transistor having a first terminal, a second terminal and a gate terminal, and a second MOS transistor which has a channel of opposite conductivity type to said first MOS transistor and which has a first terminal, a second terminal and a gate terminal, wherein said gate terminal of said first MOS transistor is coupled to the input of said first input circuit for receiving an input signal, said first terminal of said first MOS transistor is coupled to a first voltage source, said second terminal of said first MOS transistor is coupled to said second terminal of said second MOS transistor, said first terminal of said second MOS transistor is coupled to a second voltage source, and an output of said first input circuit is taken out from said second terminal of said first MOS transistor; and

a voltage generation circuit applying a voltage to the gate terminal of said second MOS transistor of said first input circuit,

wherein the voltage from said voltage generation circuit controls the logic threshold voltage of said first input circuit.

4,563,602

PERMANENT MAGNET TYPE STEPPING MOTOR

Nagahiko Nagasaka, Iruma, Japan, assignor to Kabushiki Kaisha Yasawa Denki Seisakusho, Kitakyushu, Japan

Filed Feb. 25, 1985, Ser. No. 704,710

Claims priority, application Japan, Jan. 9, 1985, 60-1769

Int. Cl.⁴ H02K *41/02*

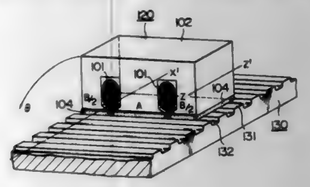
U.S. Cl. 310—12 **4 Claims**

1. A permanent magnet type stepping motor comprising a rotor and a stator:

said rotor being made of a cylindrical laminated iron core whose outer periphery is toothed at an equal pitch and the number of teeth of which is Nr; and

said stator being made of a laminated iron core whose inner periphery is formed so as to face said rotor at an air gap between said rotor and said stator, wherein thin plate permanent magnets are attached on the surface of the stator teeth facing said air gap, said permanent magnets are disposed at an equal pitch and polarized such that the polarities of adjacent pole pieces differ from each other,

the number of pole pieces is Ns, and has a relation Ns=2(Nr±Np), where Np is an integer, and the stator



grooves are half opened or closed and have multi-phase 2 Np pole distributed windings.

4,563,603

HOLDER ARRANGEMENT FOR THE RECIPROCATING ROD OF ELECTROMAGNETIC RECIPROCATOR DEVICE

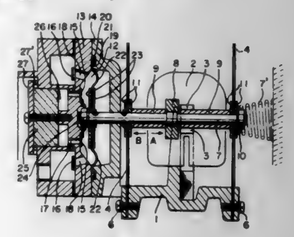
Toshio Mikiya, 9-17, Todoroki 1-chome, Setagaya-ku, Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,342

Claims priority, application Japan, May 12, 1983, 58-69831[U]

Int. Cl.⁴ H02K *33/00*

U.S. Cl. 310—30 **2 Claims**



1. An electromagnetic reciprocator device comprising:

an electromagnet;

a rod holder operatively positioned relative to said electromagnet and spaced a prescribed distance apart from the same for swingably mounting said rod holder to move toward and away from said electromagnet;

a reciprocating rod having a first end and a second end, said first end being fixed to said rod holder and extending to pass through the vicinity of said electromagnet and said second end of said rod being fixed to a diaphragm member which is movable in a reciprocating manner; and

an armature fixed to said reciprocating rod in the vicinity of said electromagnet so as to be moved toward and away from said electromagnet;

said electromagnet comprises a C-shaped field core provided with a pair of magnetic poles opposite to and spaced a prescribed distance apart from each other;

said rod holder being supported in a cantilever-like manner and constructed of a thin plate including a rectangular frame shape having a large width wherein said rod holder acts as an effective cooling fan during its swinging movement and further includes a cantilever type tongue portion extending into an aperture provided in a middle portion inside said rod holder;

said reciprocating rod has a sufficient rigidity and one end thereof is perpendicularly fixed to said tongue portion of said rod holder;

said armature being disposed outside a magnetic circuit formed of said field core of said electromagnet, a width of said armature being narrower than said prescribed distance between said pair of magnetic poles of said electromagnet to enable said armature to enter a space between said pair of magnetic poles of said electromagnet; and

a compression spring being mounted on said first end of said reciprocating rod which is fixed to said rod holder wherein said compression spring imparts a resilient biasing force to said reciprocating rod.

4,563,604

ELECTROMAGNETIC STEPPING MOTOR WITH TWO COUPLED ROTORS

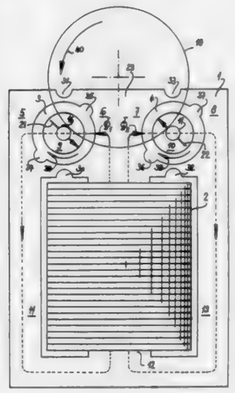
Mai T. Xuan, Chavannes, Switzerland, assignor to Omega SA, Bienne, Switzerland

Filed Sep. 11, 1984, Ser. No. 649,347

Claims priority, application Switzerland, Sep. 16, 1983, 5049/83

Int. Cl.⁴ H02K *37/00*

U.S. Cl. 310—49 R **4 Claims**



1. A single phase electromagnetic stepping motor for timepiece applications comprising a stator, at least one energizing winding mounted on core means associated with said stator, a pair of openings cut into the stator each exhibiting two polar expansions and a rotor placed in each of said openings so as to be subjected to flux generated by said winding, said rotors each being formed by a diametrally magnetized permanent magent and each bearing a pinion meshing with a transmission wheel common to both, said stator being arranged and adapted to subject a first of said rotors to a flux ϕ_1 essentially opposite to the flux ϕ_2 applied to the second rotor when said winding is energized, the magnetization sense of said first rotor being opposite to the magnetization sense of said second rotor in such a manner that said rotors rotate in the same sense when subjected to fluxes of opposed senses.

4,563,605

DAMPING DEVICE FOR ROTARY STEPPING MOTOR

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Scientific Inc., South Windsor, Conn.

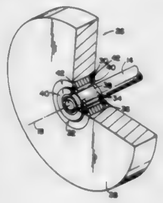
Filed Jul. 10, 1984, Ser. No. 629,280

Int. Cl.⁴ H02K *37/00, 7/02*

U.S. Cl. 310—74 **13 Claims**

1. A damping device for use with a rotary stepping motor, said device comprising an inertial mass having a central axis and a central opening concentric with said axis, an inner member with an opening concentric with said central axis of said inertial mass and adapted for attachment to the output shaft of a stepping motor, said inner member being located within said central opening of said inertial mass and being of smaller external diameter than the internal diameter of said central opening so as to define an annular space between said inertial mass and

said inner member, a pair of seals located respectively at opposite ends of said annular space, said pair of seals permitting rotary motion of said inertial mass relative to said inner member about said central axis and closing said opposite ends of said annular space to define a closed annular chamber, and a plurality of rolling elements positioned in said closed annular



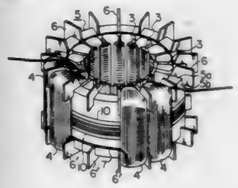
chamber and providing a rolling bearing support for said inertial mass from said inner member permitting said inertial mass to rotate relative to said inner member about said central axis, and a quantity of viscous material received in said annular chamber and filling the space thereof not occupied by said rolling elements.

4,563,606

ELECTRIC ROTARY MACHINE WITH TOROIDAL WINDINGS ON AN ANNULAR STATOR CORE

Iko Fukasawa, Hitachi, and Yuji Kumagai, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 13, 1983, Ser. No. 513,423
Claims priority, application Japan, Jul. 14, 1982, 57-121179
Int. Cl.⁴ H02K *3/28, 23/26*
U.S. Cl. 310—208 **9 Claims**



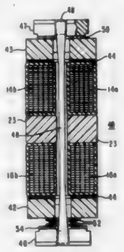
1. An electric rotary machine with a toroidal winding comprising a seamless annular stator core formed by a plurality of annular laminations, said stator core having a number of magnetic poles with slots being formed in said stator core between adjacent ones of said magnetic poles, a plurality of stator unit coils wound along respective ones of said slots in the outer periphery of said stator core, crossover conductor portions interconnecting said unit coils so that said unit coils can be successively wound by a single electrical conductor, and wherein insulation members are mounted on said stator core so that outer peripheral portions of said insulation members are wound with respective ones of said unit coils, said insulation members including means for retaining said crossover conductor portions leading from said unit coils.

4,563,607

RADIAL CLAMP ASSEMBLY FOR DYNAMOELECTRIC MACHINE STATOR COIL END TURNS

Glenn D. Cooper; Charles M. Rowe, both of Orlando, and Henry M. Holly, III, Casselberry, all of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 11, 1984, Ser. No. 609,254
Int. Cl.⁴ H02K *3/46*
U.S. Cl. 310—260 **3 Claims**



1. A dynamoelectric machine comprising:
a stator core with slots therein and top and bottom coils contained in each of said slots and extending from the end of said core;
a radial clamp securing a pair of adjacent top coils together with a pair of bottom coils and comprising a top support block radially inside said pair of top coils and a bottom support block radially outside said pair of bottom coils, each of said support blocks having a central aperture, said apertures being on a substantially radial line in relation to the axis of the machine;
a radially extending, cured and pretensioned loop of resin impregnated banding material running through said central apertures of said blocks;
a transverse pin respectively on each of said support blocks, an end of said loop being disposed over each of said pins and holding said pins in tight engagement with said blocks and said coils;
said loop being twisted in a portion thereof between said pins;
a shim located between one of said pins and its adjacent block; and springs located between the other of said pins and its adjacent block.

4,563,608

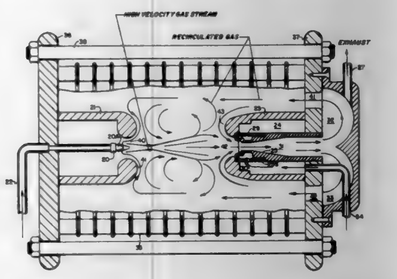
GAS FLOW STABILIZED MEGAVOLT SPARK GAP FOR REPETITIVE PULSES

Robert N. Lawson; Martin W. O'Malley, and Gerald J. Rohwein, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 8, 1982, Ser. No. 440,202
Int. Cl.⁴ H01J *17/26, 61/28*
U.S. Cl. 313;231.71 **6 Claims**

1. A high voltage spark gap switch comprising:
a housing including first an second end walls spaced apart by a predetermined distance;
a hollow first electrode positioned on said first end wall, said electrode having a first outer surface and a first annular opening;
means for supplying gas to said housing through said first annular opening, said means including a gas inlet conduit and a nozzle, said nozzle having a tip located a predetermined distance inwardly from said first outer surface; a second electrode positioned on said second end wall and spaced from said first electrode by a predetermined gap, said second electrode having a second surface defining a second annular opening operatively aligned with said first annular opening for receiving gas from said first annular opening;

means for pumping the gas flowing within said housing;
means for recirculating a portion of the pumped gas flow through said housing, said flow being entrained by the gas from said first annular opening in cylindrical flow patterns, the flow patterns passing over each of said first and second surfaces; and
means for exhausting the remaining portion of said pumped gas flow.

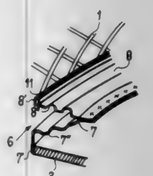


4,563,609

DIRECTLY-HEATED CATHODES

Guy Clerc, Thonon; Pierre Gerlach, and Roger Hoët, both of Thonon-les-Bains, all of France, assignors to Thomson-CSF, Paris, France

Filed Aug. 18, 1983, Ser. No. 524,234
Claims priority, application France, Aug. 31, 1982, 82 14894
Int. Cl.⁴ A47B *88/00*
U.S. Cl. 313—343 **12 Claims**



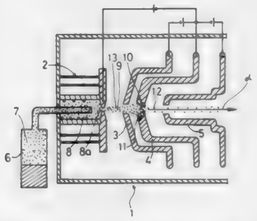
1. A directly heated cathode for electron tubes comprising:
a rod for connection to a voltage source;
a tube for connection to the voltage source;
a first electrically conductive plate connected to said rod;
a second electrically conductive plate connected to said tube whereby the voltage source establishes a potential difference between said plates;
a sleeve means for forming an emissive portion of the cathode, said sleeve means including a plurality of crossed wires which have thermal expansion coefficients different from the thermal expansion coefficients of said first and second plates;
first means electrically connecting the crossed wires of said sleeve means to said first plate; and
bellows means electrically and movably connecting the crossed wires of said sleeve to said second plate, said bellows means including flexing means which permits the crossed wires to move with respect to said second plate to compensate for a difference in thermally induced deformation between the sleeve wires and said second plate, said flexing means including a pair of annular elements fixed together at an inner edge of each element, each element being shaped to diverge away from the other element to define a V-shape so the outer ends of said annular elements are spaced apart axially of said sleeve means, one of said element outer ends being fixed to said second plate and the other element outer end being fixed to the wires of said sleeve means, said diverging elements being flexible toward and away from each other axially of said sleeve means.

4,563,610

DEVICE FOR GENERATING NEGATIVE-ION BEAMS BY ALKALINE METAL ION SPUTTERING

Toshinori Takagi, Nagaokakyo; Junzo Ishikawa, Mukou, and Koji Matsuda, Kusatsu, all of Japan, assignors to Nissin-High Voltage Co., Ltd., Kyoto, Japan

Filed Mar. 23, 1983, Ser. No. 477,971
Claims priority, application Japan, Dec. 20, 1982, 57-223221
Int. Cl.⁴ H01J *27/22, 49/14;* **H05H** *1/24*
U.S. Cl. 313—362.1 **6 Claims**



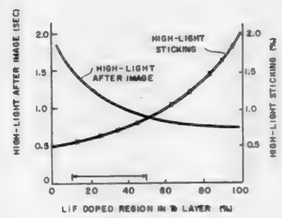
1. A negative ion source comprising means for discharging neutral alkaline metal particles together with alkaline metal ion particles; an electrode for generating negative ions which serves as an extraction electrode for extracting said alkaline metal ion particles and as a target for being bombarded with said alkaline metal ion particles and which is provided with means for holding negation-ion seed material in the portion bombarded with said alkaline metal ion particles and with an aperture for permitting negative-ion particles to exit; and a negative-ion extraction electrode for said negative ions.

4,563,611

IMAGE PICK-UP TUBE TARGET

Yasuhiko Nonaka; Eisuke Inoue, both of Mobara; Keiichi Shidara, Tama, and Kenkichi Tanioka, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 319,795, Nov. 9, 1981, abandoned. This application Nov. 2, 1983, Ser. No. 548,022
Claims priority, application Japan, Nov. 10, 1980, 55-157084
Int. Cl.⁴ H01J *31/26*
U.S. Cl. 313—366 **4 Claims**



1. In a photoconductive image pick-up tube target comprising an N-type conductive film formed on a transparent substrate, and a P-type photoconductive film in rectifying contact with said N-type conductive film and having a plurality of layers, each containing Se and As and one containing Te as sensitizers, said P-type photoconductive film being doped with fluoride as an impurity, the improvement wherein the doping

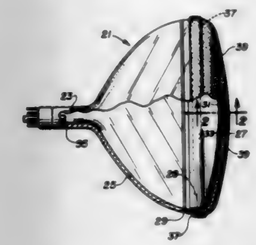
of said p-type photoconductive film with fluoride is effected from the light incident end surface of said film in the direction of the thickness of said film continuously and at a substantially uniform concentration lying within a range of from 0.1 to 3.0% by weight to a depth which is 10 to 50% of the thickness of the Te-containing layer.

4,563,612

CATHODE-RAY TUBE HAVING ANTISTATIC SILICATE GLARE-REDUCING COATING

Samuel B. Deal, Manheim Township, Lancaster County; Donald W. Bartch, Hellam Township, York County, and Steven C. Forberger, Manheim Township, Lancaster County, all of Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 25, 1984, Ser. No. 624,371
Int. Cl.⁴ H01J *31/00*
U.S. Cl. 313—478 **11 Claims**



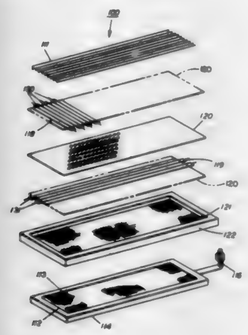
1. A cathode-ray tube comprising a glass viewing window having, on its external viewing surface, an antistatic, glare-reducing image-transmitting coating, said coating having a rough surface for imparting said glare-reducing characteristics and consisting essentially of a silicate material which accumulates static charge during the operation of said tube, and an inorganic metallic compound present in operative concentrations for imparting said antistatic characteristic to said coating.

4,563,613

GATED GRID STRUCTURE FOR A VACUUM FLUORESCENT PRINTING DEVICE

Frank C. Genovese, Fairport; James W. Lannom, Webster, and Joel M. Pollack, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 1, 1984, Ser. No. 605,729
Int. Cl.⁴ H01J *1/62, 63/04*
U.S. Cl. 313—497 **16 Claims**



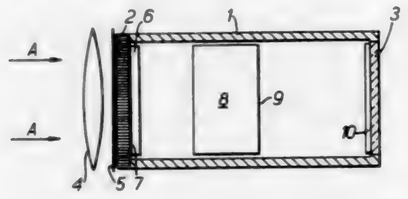
1. A control grid structure for controlling the flow of electrons along a trajectory, comprising:
an insulated substrate having a matrix of apertures therein;
a first series of conductive traces on an upper surface of said substrate aligned in columns;
a second series of conductive traces on a botton surface of said substrate aligned in rows, said first and second conductive traces being printed on said substrate to control surface potentials along the electron trajectory, and
a resistive coating painted over the inside surface of said apertures, the area surrounding each aperture and in between said traces on said substrate to act as a voltage divider so that every point on the surfaces of said substrate is defined in voltages regardless of impinging electron current.

4,563,614

PHOTOCATHODE HAVING FIBER OPTIC FACEPLATE CONTAINING GLASS HAVING A LOW ANNEALING TEMPERATURE

Jonathan R. Howorth, Maldon, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Continuation of Ser. No. 353,955, Mar. 2, 1982, abandoned. This application Jan. 24, 1985, Ser. No. 694,251
Claims priority, application United Kingdom, Mar. 3, 1981, 8106665
Int. Cl.⁴ H01J *1/78, 1/34, 40/06*
U.S. Cl. 313—524 **8 Claims**



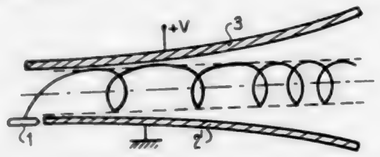
1. A photocathode arrangement including a photosensitive electron emitter comprising a 3–5 compound semiconductor bonded to a fiber optic face plate consisting of core glass and clad glass in which the annealing temperatures of both glasses are not greater than about 575° C., to thereby minimize the formation of crystal dislocations in said emitter, and in which the softening temperatures of the core glass and the clad glass are both not less than about 680° C., and the expansion coefficient of the core glass lies between 5 and 8×10^{-7} per degree C.

4,563,615

ULTRA HIGH FREQUENCY RADIO ELECTRIC WAVE GENERATORS

Georges Mourier, Le Port Marly, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 2, 1984, Ser. No. 595,993
Claims priority, application France, Apr. 6, 1983, 83 05603
Int. Cl.⁴ H01J *25/34*
U.S. Cl. 315—39.3 **6 Claims**



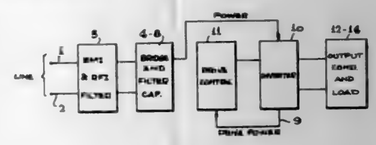
1. An ultra-high frequency wave generator which includes an electron gun and a collector between which is to be propagated an electron beam along cycloidal paths in a transverse magnetic field and a resonant structure intermediate between the gun and the collector to be traversed by the electron beam characterized in that the electron gun comprises a cathode, and first and second electrodes positioned opposite one another for defining a space therebetween for flow of the electron beam, said electrodes being shaped to provide a steady increase in said space, said cathode being positioned essentially as an extension of the first electrode at its end of minimum spacing from the second electrode.

4,563,616

NON-SATURATING, SELF-DRIVEN SWITCHING INVERTER FOR GAS DISCHARGE DEVICES

Carlile R. Stevens, 468 El Rio Rd., Danville, Calif. 94526

Filed Jun. 13, 1983, Ser. No. 503,766
Int. Cl.⁴ H05B *37/02*
U.S. Cl. 315—220 **6 Claims**



1. In a DC to AC switching inverter, the combination comprising:
an inverter transformer having a primary and a secondary winding;
a pair of switching transistors connected to said secondary winding for alternately applying power to said transformer primary;
said secondary winding of said transformer to provide drive alternately to said switching transistors;
resistor means for conducting the power from said secondary winding of said transformer to the bases of said switching transistors such that they are alternatley polarized in an ON condition;
diode means connected in parallel with each of said resistor means to reduce impedance for the connection of negatively polarized energy from said secondary winding of said transformer to as low as possible;
means connected between the bases of said switching transistors operably coupled to connect said bases together and capable of conducting current in either direction;
said means connected between the bases of said said switching transistors consist of a saturable inductor selected to saturate resulting in operably coupling the two bases of said transistors together with a low impedance after a specified operating time from the first application of drive power to said transistors, said time to be less than the saturation of said inverter transformer.

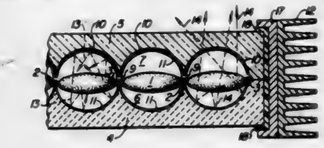
4,563,617

FLAT PANEL TELEVISION/DISPLAY

Allen S. Davidson, 3610 147th Pl. NE., Bellevue, Wash. 98007

Filed Jan. 10, 1983, Ser. No. 456,817
Int. Cl.⁴ H05B *37/00*
U.S. Cl. 315—312 **42 Claims**

1. A flat panel electronic display screen comprising:
an electrically insulating substrate member;
an array of incandescent light-emitting microbeads disposed over an inner surface of said substrate member;
a plurality of row and column electrodes for selectively energizing said microbeads, each microbead being operatively associated with a pair of said row and column electrodes; and



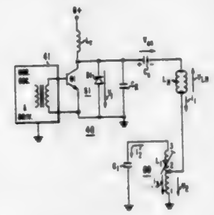
a transparent faceplate member overlying said microbeads and said substrate member to form a thin assembled display screen.

4,563,618

S-CORRECTED DEFLECTION CIRCUIT

Peter E. Haferl, Adliswil, Switzerland, assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 27, 1985, Ser. No. 716,685
Claims priority, application United Kingdom, Apr. 4, 1984, 8408694
Int. Cl.⁴ H01J *29/56*
U.S. Cl. 315—370 **15 Claims**



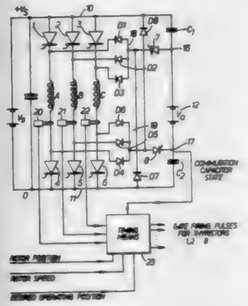
1. An S-corrected line deflection circuit, comprising:
a line deflection winding;
an S-shaping capacitance coupled to said line deflection winding;
a trace switch coupled to said line deflection winding and operated at a line deflection rate for generating a trace current in said line deflection winding during a trace interval of a line deflection cycle and a retrace current during a retrace interval, said trace current being a generally sawtooth current modified in accordance with the waveshaping provided by said S-shaping capacitance; and
a resonant circuit tuned to generate a generally sinusoidal correction current during the line trace interval that has a period of oscillation half that of the trace interval, said resonant circuit being coupled to said line deflection winding for providing additional modification of the sawtooth trace current in accordance with said correction current.

4,563,619

ELECTRIC POWER CONVERTER CIRCUIT

Rex M. Davis, Leicestershire, and William F. Ray, Nottinghamshire, both of England, assignors to Chloride Group Public Limited Company, London, England

PCT No. PCT/GB82/00262, § 371 Date Apr. 6, 1983, § 102(e) Date Apr. 6, 1983, PCT Pub. No. WO83/00962, PCT Pub. Date Mar. 17, 1983
PCT Filed Aug. 31, 1982, Ser. No. 486,954
Claims priority, application United Kingdom, Sep. 8, 1981, 8127137
Int. Cl.⁴ H02K 29/02
U.S. Cl. 318—138 10 Claims



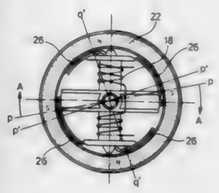
1. A multi-phase switched variable reluctance motor having a number of phase windings each connected in series with at least one main thyristor across a D.C. supply, and arranged to be energised in sequence by pulses of energy from the supply, commutating means arranged to commutate the various thyristors, and timing means responsive to the current in the different windings, and/or in response to the angular position of the rotor, for providing signals to commutate and to refire the main thyristor of one phase winding at least once in each pulse of energy, and for providing signals to commutate and to re-fire the main thyristor of the next phase winding in the sequence before the final refiring and commutation of the main thyristor of the said one phase winding.

4,563,620

START-UP METHOD FOR SYNCHRONOUS MOTORS

Fumito Komatsu, 1632-12 Nomura, Ooazo Hiroaka,, Shiojini; Nagand-ken, Japan

Filed Mar. 28, 1984, Ser. No. 594,081
Claims priority, application Japan, Apr. 6, 1983, 58-60586
Int. Cl.⁴ H02K 29/00
U.S. Cl. 318—138 3 Claims



1. In a start-up method for synchronous motors having a stator armature which produces magnetic poles with alternate polarity upon supply of single-phase AC, and a permanent-magnet rotor which has been magnetized in harmony with the magnetic poles of the stator armature, the stator armature being designed to allow the rotor to make a spontaneous stop without the pole centers of the stator armature and rotor falling on the same axial line of rotation, the method including gradually increasing the frequency of the AC supplied after start-up with resulting follow-up of the rotor rotation in frequency;

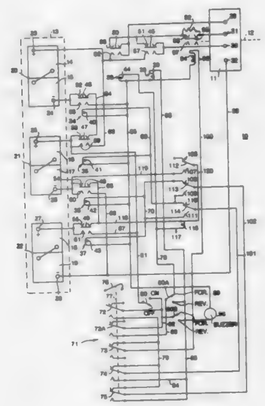
the improvement comprising interrupting the start-up AC supplied for a certain period after the initial half-wave has been fed, until the angular amplitude of the rotor oscillation which is repeated back and forth with the spontaneous stop position as the center of oscillation is reduced to a rotational angle in the range which is closer to the spontaneous stop position of rotor than to the central position of the magnetic pole of the stator armature, and following the interruption with resumption of continuous AC supply in the opposite direction to that of the first half-wave already supplied.

4,563,621

SPEED CONTROL CIRCUIT FOR GOLF CARTS AND THE LIKE

Armistead M. Moore, Houston, Tex., assignor to Travis Electronics, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 559,107, Dec. 7, 1983, abandoned. This application Oct. 29, 1984, Ser. No. 665,913
Int. Cl.⁴ H02P 1/10
U.S. Cl. 318—139 7 Claims



1. A Speed control circuit for an electric motor driven vehicle such as a golf cart, comprising:

(a) first, second and third battery sources of like potential to provide DC power at their output terminals;

(b) speed control contactors with DPDT contacts connected circuitwise with the terminals, of said first, second and third batteries; each said speed control contactor operated by a solenoid coil at the individual potential of one said battery; a DC motor for propelling said vehicle and having armature and field windings of a maximum operating potential equal to the series connected potential of said batteries;

(c) circuit means interconnecting said motor, batteries and speed control contactors for connecting (1) in series said batteries with said motor when said solenoid coils are de-energized, (2) in parallel said batteries with said motor when all said solenoid coils are energized, and (3) in series/parallel said batteries with said motor when only some of said solenoid coils are energized;

(d) a speed control pedal actuating a switch means for selectively (1) energizing all said solenoid coils for low speed motor operation, (2) energizing only some of said solenoid coils for intermediate speed motor operation, and (3) de-energizing solenoid coils for high speed motor operation; and

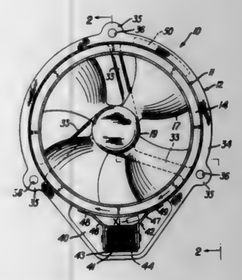
(e) relay control means for activating said solenoid coils of said speed control contactors responsive to selected positions of said speed control pedal and said relay control means providing for different battery combinations in series/parallel in the intermediate speed motor operation whereby the charge level in said batteries remains substantially uniform.

4,563,622

SIMPLE BRUSHLESS DC FAN MOTOR

Clyde J. Deavers, Woodstock, and James Reffelt, Shokan, both of N.Y., assignors to Rotron Incorporated, Woodstock, N.Y.

Continuation of Ser. No. 629,753, Jul. 12, 1984, abandoned, which is a continuation of Ser. No. 416,504, Sep. 10, 1982, abandoned. This application Jan. 10, 1985, Ser. No. 690,401
Int. Cl.⁴ H02P 7/36; H02K 29/02
U.S. Cl. 318—254 22 Claims



1. A DC motor comprising:

a rotor with an annular permanent magnet, the magnet defining magnetic segments, wherein segments of like polarization in the radial outward direction are spaced apart circumferentially about the rotor;

a stator having an electromagnetic structure outside said annular magnet, proximate the periphery thereof, the electromagnet structure including, in a location to one side of the annular magnet and extending less than 180° around the magnet, coil means and electromagnetic flux conducting means in flux conducting relation to the coil and located to establish a magnetic field applying rotational torque to the annular magnet;

position detecting means for commutating electrical current to the coil means to repeatedly produce said field and apply torque to succeeding segments as the rotor rotates.

4,563,623

MOTOR SPEED CONTROL APPARATUS

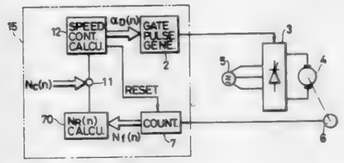
Shigemichi Matsuka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 523,951
Claims priority, application Japan, Aug. 23, 1982, 57-144726; Sep. 20, 1982, 57-162356
Int. Cl.⁴ G05B 5/00
U.S. Cl. 318—311 4 Claims

1. A motor speed control apparatus for use in controlling the speed of a motor by means of pulse signals applied to the gates of thyristors in a thyristor switching circuit for selectively applying AC current to said motor, comprising:

speed detector means for producing a signal having a detection value $N_f(n)$ representing the measure of the speed of said motor in each of a succession of predetermined sampling periods;

first calculating means for producing a signal representing the instantaneous speed $N_R(n)$ which is predicted to occur at a predetermined time following each time a detection value $N_f(n)$ has been obtained from said speed detector means, the instantaneous speed $N_R(n)$ being a predicted value based on the most current detection value $N_f(n)$ and at least one of the detection values $N_f(i)$ obtained at a prior point of time; and



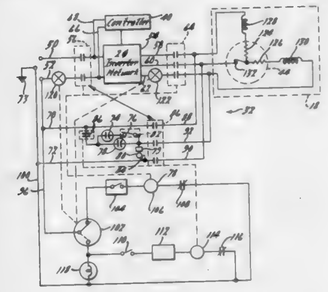
second calculating means for producing a speed control signal to be applied to a gate pulse generating circuit for generating a pulse signal for control of said gates of said thyristors on the basis of the deviation between the output signal of said first calculating means and an output signal of a speed directive apparatus.

4,563,624

VARIABLE SPEED REFRIGERATION COMPRESSOR

Johnny D. Yu, Dayton, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Continuation-in-part of Ser. No. 347,459, Feb. 11, 1982, abandoned. This application Jun. 13, 1984, Ser. No. 620,117
Int. Cl.⁴ G05D 23/08; H02J 9/00
U.S. Cl. 318—472 23 Claims



1. A refrigerant compression system comprising:

compressor means;

two phase motor means drivingly connected to said compressor means, said motor means including first and second phase stator windings;

supply means for supplying non-two phase alternating current;

conversion means for converting said non-two phase alternating current to two phase alternating current; and

alternate power supply means operative to connect said two phase motor means directly to said supply means and to interconnect the stator windings of said two phase motor so as to enable said motor to operate directly from said supply means in response to a failure of said conversion means whereby said motor means may continue to drive said compressor means.

6. An improved two phase motor providing reduced harmonic distortion and having a stator assembly and a rotor rotatably supported within said stator assembly, said stator assembly being operative to generate a rotating magnetic field for rotatably driving said rotor, said stator assembly comprising a plurality of laminations and first and second phase windings disposed within slots provided in said laminations, each of

said first and second phase windings including at least two poles with each pole being defined by a plurality of coils each consisting of a predetermined number of turns of an electrical conductor and spanning a predetermined number of said slots, the improvement wherein the number of coils per pole, the number of slots spanned by each pole and by respective coils defining each of said poles and the number of said turns are selected such that

$$\Sigma \frac{A_x \mathrm{SIN}\left(N90 \frac{B_x}{C}\right)}{D} = 0$$

wherein

A_x = the number of conductor turns for each coil x

B_x = the number of slots spannd by each coil x

C = the number of slots for each pole

D = the total number of turns per pole

and N is equal to the harmonic level to be eliminated.

4,563,625

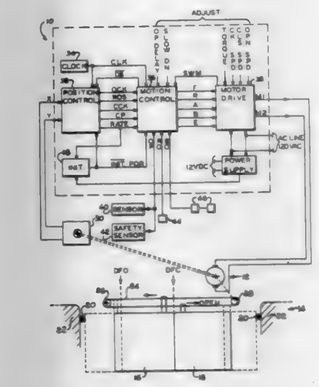
AUTOMATIC DOOR CONTROL SYSTEM

Henning N. Kornbrekke, Burlington, and Leon Boucaner, Farmington, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed May 17, 1984, Ser. No. 611,479

Int. Cl.⁴ G05B *19/28*

U.S. Cl. 318—603 **22 Claims**



1. An automatic sliding door system of a type wherein at least one door is moved along a linear path between closed and opened positions by means of the rotary drive of an electric motor, said system comprising:

sliding door means movable between closed and opened positions;

motor means to produce bidirectional multispeed rotary drive for drivably moving said sliding door means;

motor control means to control the direction and speed of said motor means and produce dynamic braking therein comprising circuitry including a pulse width modulator to control the speed of the motor means and a braking resistor for effecting dynamic braking of the motor means

position means responsive to the rotary drive of the motor means to translate the rotary drive into a linear position scale and determine the direction of movement of the rotary drive and to produce position signals indicative thereof;

sensor means to detect an activating event and produce an operate signal indicative thereof; and

motion control means responsive to said position signals and operate signal to sequentially control and pace the operation of the motor means, said motion control means transmitting direction and speed signals to said motor control means.

4,563,626

RECHARGEABLE WIRELESS-CONTROL TOY

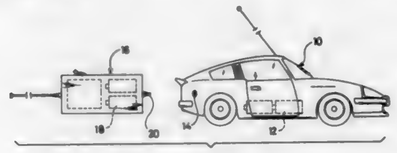
Tsuneo Ohtake, Tokyo, Japan, assignor to Nikko Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1984, Ser. No. 650,003

Claims priority, application Japan, Nov. 2, 1983, 58-169229[U]

Int. Cl.⁴ H02J *7/00*; A63H *29/22*

U.S. Cl. 320—2 **3 Claims**



1. A rechargeable wireless control toy racer including a wireless transmitter, a control signal from which is received by a wireless receiver for controlling the toy racer, characterized in that the toy racer contains a battery as a power source and is provided with a recharging connector terminal therefor, and that the wireless transmitter is provided with another recharging connector terminal to be connected to another power source and connectable to the first-said recharging connector terminal of the toy racer.

4,563,627

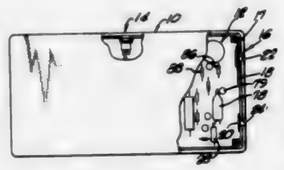
SWITCHING SYSTEM FOR HIGH VOLTAGE BATTERY PACK

John M. Orban, Santa Monica, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Jun. 13, 1984, Ser. No. 620,027

Int. Cl.⁴ H02J *7/00*

U.S. Cl. 320—19 **5 Claims**



5. A high voltage rechargeable battery pack for providing a relatively high voltage output for electronic devices such as electronic flash units and wherein the battery pack is engaged with the power unit when in use comprising

battery converter circuit means for stepping up a relatively low battery voltage and providing a high voltage across first and second electrical conductors,

first terminal means connected to one of said conductors for providing an electrical output terminal for said pack,

second terminal means connected to the second of said conductors for providing a second output terminal of said pack, said first and second terminal means serving to provide a high voltage to electrical terminals of a power unit when the battery pack is engaged with the power unit, said second terminal means comprising switch means for connecting said second terminal means to said first terminal means through circuit means when said second terminal means is disengaged from said power unit to turn off said battery converter circuit means and to connect said first and second terminal means through resistance circuit means, and

said battery converter circuit means comprises a plurality of rechargeable batteries, a DC to DC converter connected to said batteries for stepping up the battery voltage of said batteries to said high voltage, and monitor circuit means responsive to the voltage across said first and second terminal means for turning on and off said converter to cause said converter to maintain said high voltage within predetermined limits, and said monitor circuit means being responsive to closure of said switch means to cause said converter to turn off.

4,563,628

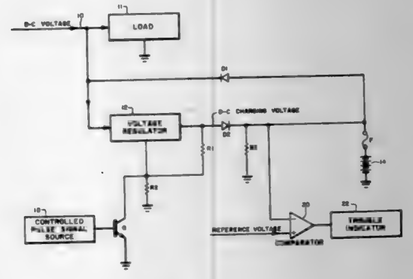
SUPERVISION SYSTEM FOR MONITORING THE CONDITION OF A BATTERY AND A SERIES-CONNECTED FUSE

Joseph G. Tietz, Teaneck, and John M. Wynne, Oak Ridge, both of N.J., assignors to Baker Industries, Inc., Parsippany, N.J.

Continuation of Ser. No. 433,604, Oct. 12, 1982, abandoned. This application Aug. 24, 1984, Ser. No. 643,950

Int. Cl.⁴ H02J *7/00*

U.S. Cl. 320—20 **1 Claim**



1. A battery and fuse supervision system for monitoring the condition of a rechargeable battery and a series-connected protective fuse to detect whether the battery is present and connected, whether the battery voltage is abnormally low, and whether the fuse is present and is effective, wherein the battery and fuse are connected, via a series-connected isolating diode, to a load to provide backup d-c power for the load in the event of a failure of a primary d-c power supply which normally applies to the load a d-c operating voltage greater than the battery voltage, thereby reverse biasing the isolating diode so that normally no load current flows from the battery, said supervision system comprising:

a voltage regulator having its input connected to the primary d-c power supply and having first and second series-connected output resistors across which resistors is provided a d-c charging voltage having an amplitude exceeding a predetermined reference level;

a sensing resistor shunt-connected across the series combination of the fuse and the battery;

a coupling circuit, including a series-connected isolating diode, for applying the d-c charging voltage from said voltage regulator to said sensing resistor and, through the fuse, to the battery to charge the battery normally to the charging voltage;

a solid state switch shunt-connected across said second output resistor of said voltage regulator;

means for periodically momentarily turning said solid state switch on to essentially short out said second output resistor in order to periodically momentarily reduce the charging voltage to a level below the reference level so that the voltage across said sensing resistor, during each momentary reduction, will normally be isolated from and not affected by the charging voltage and will be equal to and reflect the battery voltage, the time duration of each momentary reduction of the charging voltage being extremely small compared to the time interval between successive reductions,

wherein the voltage across said sensing resistor is relatively high when the charging voltage is at its normal magnitude and the battery is being charged and is also relatively high when the battery voltage is above the reference level, and the fuse is present and continuous, but the charging voltage is at its reduced magnitude;

and wherein the voltage across said sensing resistor is relatively low when the battery voltage is below the reference level, or the fuse is open or disconnected, at the same time that the charging voltage is at its reduced level;

a voltage comparator for comparing the voltage across said sensing resistor with a reference voltage, representing the reference level, to determine, during each momentary reduction of the charging voltage, whether the sensing resistor voltage is relatively high, thereby indicating that the battery voltage is above the reference level and that the fuse is connected and is continuous, or is relatively low, thereby signifying that the battery voltage is below the reference level or that the fuse is discontinuous or is disconnected;

and indicator means, controlled by said voltage comparator, for providing a trouble indication when the sensing resistor voltage is relatively low.

4,563,629

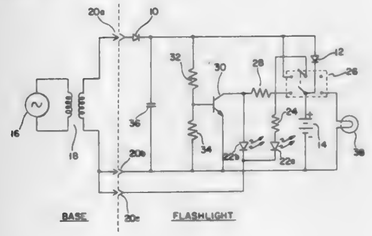
BATTERY RECHARGING CIRCUIT WITH INDICATOR MEANS

R. Steven Keiper, Raleigh, N.C., assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 13, 1983, Ser. No. 531,632

Int. Cl.⁴ H02J *7/04*

U.S. Cl. 320—48 **14 Claims**



1. A recharging circuit including a diode and a battery serially connected and coupled in parallel to a power source, comprising:

first means connected across said power source for indicating the presence of a charging current delivered by the power source;

second means connected between said power source and the junction of said diode with said battery for indicating the presence of a discharge current delivered by said battery; and

a transistor coupled across said power source and to said second indicating means, said transistor being biased on by said charging current to prevent energization of said second indicating means and being off in the absence of said current to permit energization of said second indicating means by said discharge current.

4,563,630

METHOD OF GOVERNING A GENERATOR AND/OR APPARATUS FOR GOVERNING A GENERATOR

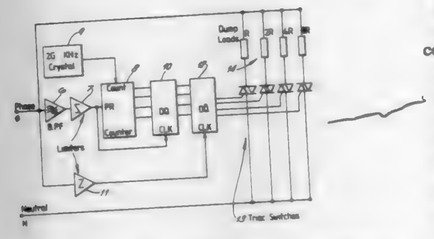
Jack L. Woodward, and John T. Boys, both of Auckland, New Zealand, assignors to University of Auckland, Auckland, New Zealand

Filed Dec. 22, 1983, Ser. No. 564,512

Claims priority, application New Zealand, Dec. 22, 1982, 202894

Int. Cl.⁴ H02P 9/00

U.S. Cl. 322—8 **6 Claims**



1. Apparatus for governing a generator having an alternating output voltage comprising a plurality of dump loads electrically associated or associable with the electrical output of said generator measurement means to measure the alternating output voltage frequency, detection means to detect a change in the measured output voltage frequency of said generator, switching means to, in use, switch one or more said dump loads into or out of association with said generator in response to said detected frequency change so as to vary said alternating output voltage frequency so as to substantially compensate for said detected frequency change, and damping means to damp the rate at which said alternating output voltage frequency occurs and

wherein said measurement means comprises a band-pass filter to receive incoming signals, a pulse generator to generate count pulses and a counter to count said count pulses for a period determined by the frequency of said incoming signals passed by said band-pass filter.

4,563,631

VOLTAGE REGULATOR FOR CHARGING GENERATOR

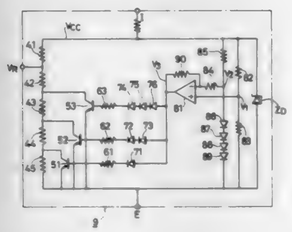
Keiichi Mashino; Keigo Naoi, both of Katsuta, and Kunio Kobayashi, Takasaki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Automotive Eng. Co., Ltd., both of Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 578,975

Claims priority, application Japan, Feb. 10, 1983, 58-19808

Int. Cl.⁴ H02J 7/14

U.S. Cl. 322—33 **9 Claims**



1. A voltage regulator for a charging generator comprising:
an a.c. generator having an armature coil and a field coil;
a rectifier for converting the a.c. output of said a.c. generator to a d.c.;
a battery connected to the output of said rectifier and receiving, and charged by, the power supplied from said a.c. generator;
comparison means for comparing the battery voltage with a reference voltage;
a power transistor controlled by the output of said comparison means and controlling a current flowing through said field coil;
a voltage divider connected to a constant voltage source and constructed in such a manner that the divided voltage thereof becomes said reference voltage;
a plurality of switching means connected in parallel with a part of said voltage divider and forming a bypass circuit to bypass predetermined portions of said voltage divider when they are conductive; and
conduction control means for controlling the conduction of said switching means in accordance with an ambient temperature by controlling said switching means to form predetermined bypass paths to bypass predetermined portions of ssid voltage divider in accordance with said ambient temperature to provide a predetermined change in said reference voltage between a maximum value which occurs when all of said switching means are non-conductive and a minimum value which occurs when all of said switching means are conductive.

4,563,632

MONOLITHICALLY INTEGRATABLE CONSTANT-CURRENT GENERATING CIRCUIT WITH LOW SUPPLY VOLTAGE

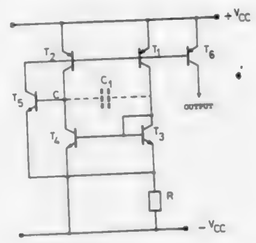
Sergio Palara, Bareggio, and Bruno Murari, Monza, both of Italy, assignors to SGS-ATES Componenti Elettronici SpA, Milan, Italy

Filed Sep. 21, 1983, Ser. No. 534,146

Claims priority, application Italy, Sep. 30, 1982, 23522 A/82

Int. Cl.⁴ G05F 3/20

U.S. Cl. 323—316 **12 Claims**



1. A monolithically integratable constant-current generating circuit for use with a low supply voltage and having a first and a second terminal which are connected to first and second poles of a supply voltage generator and having a least one output terminal to which a user circuit can be connected, said constant current circuit comprising:
a current-generating circuit means having a control terminal and a first terminal and a second terminal, the magnitudes of output currents from said first and said second terminals being bound by a constant proportionality ratio;
a current-mirror circuit means having an input branch connected to said first terminal of said current-generating circuit means, and having an output branch, said current-mirror circuit means having a current gain which is variable with respect to its current level, an output terminal of said current-mirror being coupled to at least one of said terminals of said current-generating circuit means;
wherein said constant-current generating circuit comprises a current-comparator and amplifier circuit means, having a first input terminal and a second input terminal of said current-generating circuit means and to said output branch of said current-mirror circuit means, and having an output terminal which is connected to said control terminal of said current-generating circuit means;
wherein said current-generating circuit means comprises a first transistor and a second transistor, each having a first type of conductivity and each having a first terminal and a second terminal and a control terminal, said first terminals of said first and second transistors being connected to said first pole of said supply voltage generator, said second terminal of said first transistor and said second terminal of said second transistor respectively comprising said first and second output terminals of said current-generating circuit means, said control terminal of said first transistor being connected to said control terminal of said second transistor said connection of said control terminals forming said control terminal of said current-generating circuit means; wherein said current-mirror circuit means comprises a third transistor and a fourth transistor, each having a second type of conductivity which is opposite to said first type of conductivity and each having a first terminal and a second terminal and a control terminal, said first terminal of said third transistor being connected by means of a resistance to said second pole of said supply voltage generator to which said first terminal of said fourth transistor is also connected, said control terminal of said fourth transistor being connected to said control terminal of said third transistor which is connected to said second terminal of said same third transistor, said connection between said control terminal and said second terminal of said third transistor forming said input branch of said current-mirror circuit means, and said output branch of said current-mirror means is formed by said second terminal of said fourth transistor; and wherein said current-comparator and amplifier circuit means comprises a comparator node connected to said second input terminal of said current-generating circuit means and to said output branch of said current-mirror circuits means, and a fifth transistor having a first terminal coupled to said second pole of said supply voltage generator, and having a second terminal connected to said control terminal of said current-generating circuit means and a control terminal connected to said comparator node.

4,563,633

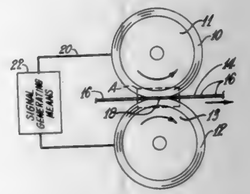
APPARATUS FOR SENSING OPENINGS IN SHEET

Ken R. Johnson, Granville, and Paul S. Sanik, Westerville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 11, 1983, Ser. No. 493,540

Int. Cl.⁴ G01R 31/12

U.S. Cl. 324—54 **12 Claims**



1. An apparatus for sensing openings in a sheet comprising:
(a) two continuous, electrically conducting surfaces located in an electrical circuit and disposed on opposite sides of and in contact with said sheet, means for urging at least one of said surfaces toward the other said surface, at least one of said surfaces being sufficiently elastic to extend through said openings in said sheet to make electrical contact with the other said surface thereby completing said electrical circuit and generating an electrical first signal, the instantaneous strength of each said first signal being proportional to the size and number of said openings sensed at a particular instant, and
(b) means for generating a second signal in the event that said first signal deviates from a predetermined signal pattern or value.

4,563,634

MEASURING AND LINEARIZING CIRCUIT DEVICE FOR A CAPACITIVE PRIMARY ELEMENT

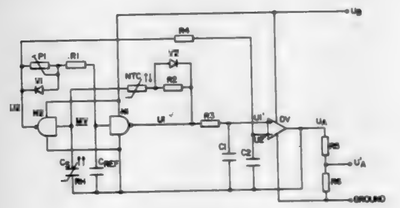
Erhard Lehle, Muehlheim, Fed. Rep. of Germany, assignor to Honeywell GmbH, Fed. Rep. of Germany

Filed Sep. 14, 1983, Ser. No. 531,972

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1982, 3238507

Int. Cl.⁴ G01R 27/26

U.S. Cl. 324—61 R **4 Claims**



1. A circuit arrangement for linearizing a capacitive measuring sensor comprising:
a capacitive measuring sensor;
a reference capacitor;
multivibrator means having first and second switching means, first cross coupling means including said reference capacitor for connecting an output of said second switching means to an input of said first switching means, and second cross coupling means including said capacitive measuring sensor for connecting an output of said first switching means to an input of said second switching means; and,
difference sensing means having a first input connected to the output of said first switching means and a second input connected to an output of said second switching means, said difference means providing an output which is an average of output signals from said first and second switching means of said multivibrator means.

4,563,635

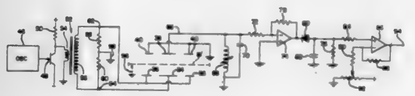
MOISTURE MEASURING METHOD AND APPARATUS

Delmer W. Wagner, and Edward D. Wagner, both of 392 Pine Grove Rd., R.R., Rogue River, Oreg. 97537

Filed May 16, 1983, Ser. No. 494,953

Int. Cl.⁴ G01R 27/26

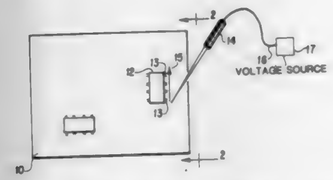
U.S. Cl. 324—61 R **25 Claims**



1. The method of measuring the moisture content of material comprising:
passing a radio frequency signal across a region wherein said material is to be received and ascertaining the magnitude of the signal thus coupled,
passing said material through said region,

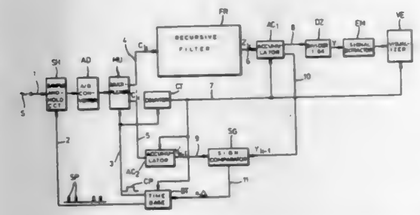
shunting away a portion of said signal in a direction along said material in accordance with the moisture contained therein,
and ascertaining the change in the signal coupled across said region to determine the extent of said moisture.

4,563,636
CONNECTION VERIFICATION BETWEEN CIRCUIT BOARD AND CIRCUIT TESTER
Matthew L. Snook; John E. McDermid, and William J. Nicolay, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 12, 1983, Ser. No. 560,474
Int. Cl.⁴ G01R *19/00*
U.S. Cl. 324—66 **6 Claims**



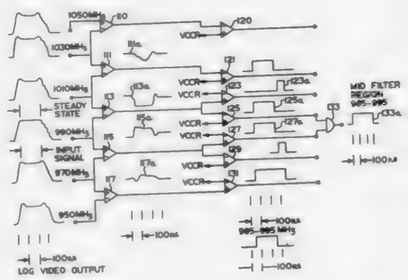
1. A method of verifying electrical coupling between a first contact point on a circuit board, and a connection pin on another device, the method comprising:
temporarily coupling a first electrical voltage to a plurality of contact points the plurality of contact points including the first contact point;
detecting a second electrical voltage on the connection pin; and,
storing a third electrical voltage, wherein the value of the third electrical voltage varies depending on whether the second electrical voltage equals the first electrical voltage.

4,563,637
SYSTEM FOR MEASURING AMPLITUDE OF NOISE-CONTAMINATED PERIODIC SIGNAL
Marco De Bortoli, Turin; Adler Tofanelli, Collegno, and Luigi Varetto, San Mauro Torinese, all of Italy, assignors to Cselt Centro Studi e Laborstori Telecomunicazioni S.p.A., Turin, Italy
Filed Jul. 19, 1983, Ser. No. 515,352
Claims priority, application Italy, Jul. 19, 1982, 67919 A/82
Int. Cl.⁴ G01R *23/16*
U.S. Cl. 324—77 A **13 Claims**



7. A system for measuring the amplitude of a periodic signal of generally known frequency and unknown phase arriving from a remote source in the presence of a substantial noise level, comprising:
input means arranged to receive the arriving signal;
sampling means connected to said input means;
timing means controlling said sampling means for periodically extracting pairs of consecutive samples from respective cycles of the arriving signal, each pair consisting of a first and a second sample offset from each other by a quarter-cycle;
first accumulating means connected to said sampling means and controlled by said timing means for integrating N consecutive occurrences of said first sample into a first algebraic sum, N being an integer greater than 1;
second accumulating means connected to said sampling means and controlled by said timing means for integrating N consecutive occurrences of said second sample into a second algebraic sum;
comparison means connected to said first and second accumulating means for modifying the operation of said timing means after every N occurrences of said pairs to shift the instants of extraction of said samples within a cycle, by a corrective phase increment, in one sense upon said algebraic sums being of the same sign and in the opposite sense upon said algebraic sums being of different signs to make the occurrences of said first and second samples more nearly coincident with a peak and a zero crossing of the arriving signal, respectively; and
indicator means connected to said first accumulating means for deriving a measure of the amplitude of the arriving signal from said first algebraic sum upon substantial disappearance of said second algebraic sum.

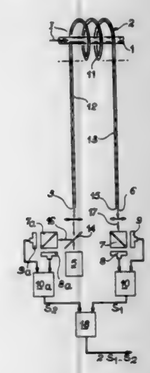
4,563,638
TIME SELECTIVE FREQUENCY DETECTION BY TIME SELECTIVE CHANNEL TO CHANNEL ENERGY COMPARISON
Robert H. Dunn, Thousand Oaks, Calif., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jun. 27, 1983, Ser. No. 508,320
Int. Cl.⁴ G01R *23/16*
U.S. Cl. 324—77 R **13 Claims**



1. A method of determining the frequency of a narrow band signal received at the input of a wideband receiver comprising the steps of:
(a) detecting the energy levels within the narrow band channels connected to receive said narrow band signals;
(b) comparing the energy levels between said narrow band channels to produce a plurality of signals, each of said plurality of signals having a distinct amplitude verses frequency characteristic and being indicative of the energy difference between said channels at the received signal frequency;
(c) comparing the amplitudes of said plurality of signals to produce second logic signals indicative of the said received signal frequency,
(d) comparing the said energy levels in said narrow band channels with adjacent channels adjacent said respective ones of said narrow band channels and producing first input signals indicative of narrow band channel to respective adjacent channel energy differences,
(e) establishing channel to channel logic ratios (CCR's) in a logic tree indicative of expected energy level differences

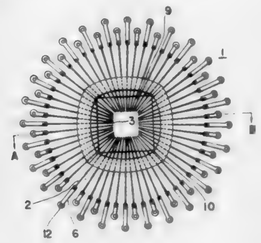
between said narrow band channels and respective adjacent channels when said narrow band signal is in its steady state condition;
(f) comparing said first input signals with said CCR's to produce logic signals identifying said first input signals which exceed said CRR's;
(g) responsive to said logic signals producing a first logic signal indicative of the channel location and frequency of said received narrow band signal; and
(h) combining said first logic signal with said second logic signal to produce a third logic signal indicative of the narrow band frequency location of the signal received at the input of the said wideband receiver when the narrow band received signal is at its steady state condition.

4,563,639
TEMPERATURE AND/OR ELECTRICAL INTENSITY MEASURING APPARATUS BASED ON THE FARADAY EFFECT
Daniel Langeac, Grenoble, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Oct. 18, 1983, Ser. No. 542,971
Claims priority, application France, Oct. 28, 1982, 82 18102
Int. Cl.⁴ G01R *15/07;* **G01K** *1/00, 13/00*
U.S. Cl. 324—96 **1 Claim**



1. An apparatus for measuring the temperature in the vicinity of an electrical conductor, and/or the amount of electrical current through such conductor, said measuring being based on the Faraday effect using magneto-optical means, said apparatus comprising a probe constituted by an optical fibre wound in the general form of a solenoid, said conductor lying along the longitudinal axis of the solenoid, and two optical fibre strands connecting respective ends of the probe to an inlet coupled to a polarized light source and an outlet coupled to first computer means for measuring the rotation angle of the polarizaton plane of the light between its entrance into the inlet optical fibre strand and its exit from the outlet optical fibre strand, the optical fibre portion constituting the probe being twisted about its longitudinal axis in a single random direction, the said two optical fibre strands connected to the probe being twisted in opposite directions relative to each other, the number of twisting turns to the right of one of the said two strands being equal to the number of twisting turns to the left of the other of said two strands, said apparatus further comprising, at the outlet end of said outlet optical fibre strand, a semi-transparent plate on the outlet face of the said outlet fibre strand able to reflect along a return path back into the outlet strand at least part of the light beam towrds the inlet face of the inlet strand, said apparatus further including at said inlet face another semi-transparent plate, inclined by 45° to the incident light beam, and able to direct part of the return path light beam towards second computer means for measuring the rotation angle of the polarization plane of the light from its entrance into the system, and third computer means connected to said first and second computer means for generating at its output an expression indicative of the current flow through said conductor and/or the temperature in the vicinity thereof.

4,563,640
FIXED PROBE BOARD
Yoshiei Hasegawa, 7-9, Wakamatsu 6-chome, Sagamihara-shi, Kanagawa-ken, Japan
Filed May 3, 1982, Ser. No. 374,521
Claims priority, application Japan, Jun. 3, 1981, 56-86167
Int. Cl.⁴ G01R *1/06, 31/02*
U.S. Cl. 324—158 P **8 Claims**

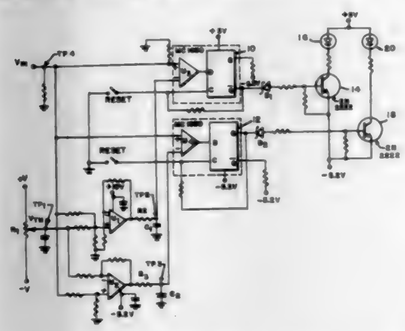


1. A fixed probe board for testing semi-conductor wafer chips which comprises:
a probe support base having four mutually tapered probe support surfaces arranged around a center point; and
a multiplicity of probes having forward contact tips, all of said probes being radially supported around said center point on said probe support surfaces with said forward contact tips lying in a common plane and forming a quadrilateral shape, said four probe support surfaces being joined to one another along lines corresponding to extensions of two diagonal lines of said quadrilateral shape, the inner circumference of each probe support surface being arcuate so as to be substantially equally distanced from a corresponding side of said quadrilateral shape wherein the length of the inner ends of all of said probes from said inner circumference to said contact tips are substantially equal, said probe support surfaces having the same acute angle relative to said common plane.

4,563,641
RADIATION UPSET THRESHOLD DETECTOR APPARATUS
Edmund J. Vltek, Glen Burnie; Robert O. Cherney, Ellicott City, both of Md., and Robert F. Snyder, Jr., Shrewsbury, Pa., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Nov. 9, 1983, Ser. No. 550,286
Int. Cl.⁴ G01R *31/02, 19/16*
U.S. Cl. 324—158 R **7 Claims**

1. A radiation upset threshold detector apparatus comprising in combination:
an input terminal to receive a voltage signal, said voltage signal containing radiation induced photo currents,
means for setting a threshold level, said threshold level setting means being variable, said threshold level setting means providing an upset threshold voltage,
means for adding and subtracting said voltage signal and said upset threshold voltage, said adding and subtracting means providing a sum and difference signal,
means for comparing said voltage signal with said sum and difference signal, said comparing means compares said voltage signal with said sum and difference signal to provide a first and second compare signal, and

latching flip-flop means connected to said comparing means to receive said first and second compare signal, said latching flip-flop means providing a first and second control signal, said latching flip-flop means providing either said



first or said second control signal in response to the state of said first and second compare signal, said first control signal indicating a low to high radiation upset level, said second control signal indicating a high to low radiation upset level.

4,563,642

APPARATUS FOR NONDESTRUCTIVELY MEASURING CHARACTERISTICS OF A SEMICONDUCTOR WAFER WITH A JUNCTION

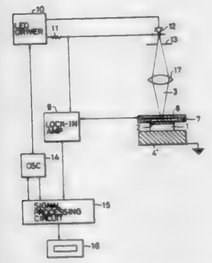
Chusuke Munakata, Nishitama, and Noriaki Honma, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1982, Ser. No. 432,805

Claims priority, application Japan, Oct. 9, 1981, 56-149490[U]; May 26, 1982, 57-87944

Int. Cl.⁴ G01R *31/26*

U.S. Cl. 324—158 D **6 Claims**



1. An apparatus for nondestructively measuring at least one predetermined characteristic of a semiconductor wafer having a junction, comprising:

means for generating a photo beam modulated by a modulation signal;

electrodes disposed so as to oppose each other with a gap into which a semiconductor wafer having a junction can be inserted;

at least one of said electrodes being transparent to said photo beam and being disposed so as to form capacitance coupling with said semiconductor wafer;

means for radiating said photo beam to said semiconductor wafer through said transparent electrode;

means for taking out a photovoltage generated on said semiconductor wafer through both of said electrodes as an electric signal; and

means for determining a particular angular frequency of said modulation signal providing specific decay of the amplitude of said electric signal and calculating a value for said predetermined characteristic of said semiconductor wafer from said particular angular frequency,

wherein said predetermined characteristic includes at least one of a cut-off frequency and a carrier lifetime of said semiconductor wafer

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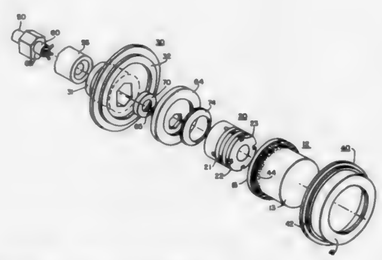
EDDY CURRENT PROXIMITY SENSOR FOR USE IN A HOSTILE TURBINE ENVIRONMENT

Walter C. Leschek, Monroeville, and Robert C. Miller, Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 30, 1982, Ser. No. 403,431

Int. Cl.⁴ G01B *7/14;* **H01F** *27/02*

U.S. Cl. 324—207 **11 Claims**



1. A proximity sensor comprising:

(a) a hollow non-metallic housing having a central axis and having a front face and a cylindrical side wall integral with said front face and terminating in a flanged base;

(b) a non-metallic coil support positioned within said housing;

(c) coil means wound on said coil support;

(d) a base support member having a circumferential flange portion and a hollow stem portion;

(e) a retaining ring having a shoulder portion sealed to said flanged base of said housing and having a flange portion sealed to said flange portion of said base support member; and

(f) a multiwire electrical cable extending through said stem portion of said base support member and electrically connected with said coil means;

(g) a protective tube lying along an axis and having one end positioned within said hollow stem portion of said base support member;

(h) said electric cable being positioned within said tube;

(i) said tube axis being offset from said housing central axis.

4,563,644

DEVICE FOR DETECTING METALLIC OBJECTS IN A FLOW OF NON-METALLIC MATERIAL

Bo Lenander, and Lennart Thegel, both of Västerås, Sweden, assignors to Asea Aktiebolag, Västerås, Sweden

Filed Mar. 30, 1983, Ser. No. 480,281

Claims priority, application Sweden, Apr. 1, 1982, 8202094

Int. Cl.⁴ G01N *27/74;* **G01R** *33/12*

U.S. Cl. 324—232 **12 Claims**

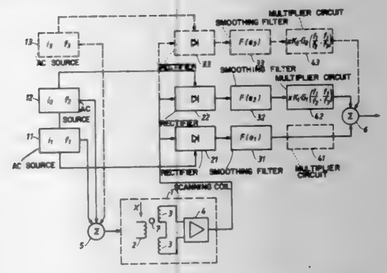
1. A device for detecting the presence of metallic objects in a flow of non-metallic material, comprising:

a scanning coil located in said flow and including a primary coil and a secondary coil;

at least first and second current sources for providing at least first and second alternating currents at different frequencies to said primary coil;

an output circuit responsive to the output signals of said secondary coil and providing an output when a metal object is sensed by said scanning coil;

said output circuit including at least first and second means for respectively rectifying said output signals of said secondary coil corresponding to each of said first and second alternating currents and being respectively controlled by said first and second alternating current sources with a given phase angle relative to the respective alternating current thereof;



at least first and second means for multiplying the respective outputs of said first and second rectifier means by respective first and second factors, with at least one of said first and second factors including a term representative of the relationship between the respective frequencies of said first and second alternating currents; and

means for deriving an output signal from the difference between the respective outputs of said first and second means for multiplying, said output signal being representative of the presence of metallic objects in said flow of non-metallic material.

4,563,645

INDUCTIVELY BALANCED OSCILLATORY COIL CURRENT FOR METAL DETECTION

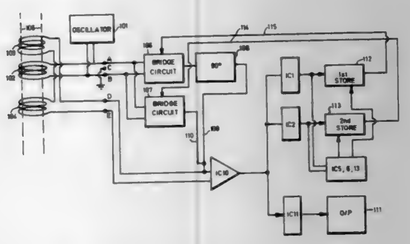
Bruce G. Kerr, Amersham, United Kingdom, assignor to Goring Kerr Limited, Buckinghamshire, England

Filed Feb. 9, 1982, Ser. No. 347,228

Claims priority, application United Kingdom, Feb. 9, 1981, 8103943

Int. Cl.⁴ G01N *27/72;* **G01R** *33/12*

U.S. Cl. 324—233 **10 Claims**



1. A metal detection apparatus including:

an oscillator coil;

oscillator means connected to feed oscillatory electrical signals through the oscillator coil;

detector coil means inductively coupled to the oscillator coil for providing output signals indicating a change in coupling between said detector coil means and said oscillator coil induced by a metallic substance; and

balancing circuit means for receiving said output signals and applying balancing signals to the output signals received from the detector coil means to cancel residual currents produced by said detector coil means, the balancing circuit means including:

first and second means for producing amplitude controlled first and second balancing signals having orthogonal phase components at the frequency of oscillation of the oscillator means;

signal combining means for combining said balancing signals with the output signals provided by the detector coil means;

control means connected to receive the combined signal produced by the signal combining means, having means for producing first and second control signals which are a function of the magnitude of orthogonal phase components in the combined signal and further having means for storing said first and second control signals, said means for storing having a time constant which is reduced in response to an activating signal;

feedback means connected to receive the first and second control signals stored by the storing means, and being connected to said first and second means to control the amplitude of the first and second balancing signals produced by the said first and second means;

time constant control means including threshold means coupled to receive the first and second control signals for providing an output signal when the magnitude of at least one of the first and second control signals passes a threshold value, coupled to said storing means to provide an activating signal for reducing the time constant of the storing means from a relatively long time constant to a relatively short time constant; and

means responsive to said detector coil means output signals and connected to said means for storing for inhibiting operation of said time constant control means for a predetermined period after metal is detected and said threshold value is exceeded, whereby said storing means retains said first and second signals for an expected time that metal is to be in proximity to said detector coil means, whereby said time constant is not reduced when metal is detected.

4,563,646

OPTICAL MAGNETOMETER USING A LASER COUPLED TO A MAGNETO-OPTICAL MEDIUM

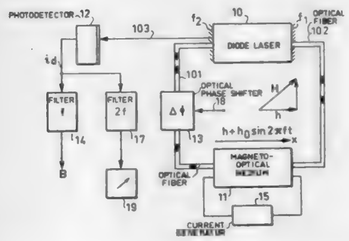
Bernard Désormière, Paris, France, assignor to Thomson CSF, Paris, France

Filed Apr. 5, 1983, Ser. No. 482,285

Claims priority, application France, Apr. 6, 1982, 82 05967

Int. Cl.⁴ G01R *33/02;* **G02F** *1/09*

U.S. Cl. 324—244 **10 Claims**



1. An optical magnetometer for measuring the component h of a magnetic field in a direction x, comprising:

laser means having first and second opposite faces, for supplying linear polarized light through said faces;

first polarization-retaining optical transmission means, coupled to said first face, for carrying said light;

magneto-optical means, having a first coupling end and a second coupling end coupled to said first transmission means and arranged so that light entering said magneto-

optical means travels in a direction parallel to x, for producing a Faraday effect on said light;

means for inducing in said magneto-optical means an alternating magnetic field superimposed on said component h parallel to said direction x and having a frequency f;

second polarization-retaining optical transmission means, coupled to said second face and said first coupling end, for carrying said light to cause said light from said first and second faces to travel in opposite directions and return to said laser means at a face opposite the face said light was transmitted through, to cause said light traveling in opposite directions to be recoupled at said laser means;

optical transmission means, coupled to said second face, for receiving a portion of said recoupled light;

photodetector means, coupled to said optical transmission means, for producing a signal i_d corresponding to said recoupled light; and

first filter means, coupled to said photodetector means, for filtering said signal i_d at said frequency f and providing an output signal proportional to said component h.

4,563,647

NUCLEAR MAGNETIC RESONANCE METHODS AND APPARATUS

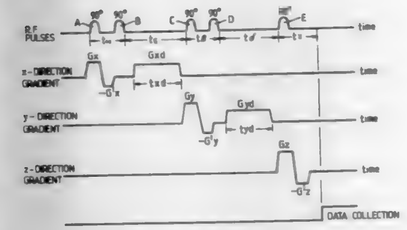
Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Limited, Wembley, England

Filed Jun. 2, 1983, Ser. No. 500,328

Claims priority, application United Kingdom, Jun. 9, 1982, 8216715

Int. Cl.⁴ G01R *33/08*

U.S. Cl. 324—309 **9 Claims**



6. A system for exciting nuclear magnetic resonance at a particular location in a body, said system comprising:

(a) apparatus and circuitry configured and positioned to excite first nuclear spins in the body so that spins occurring in a first selected region of the body have their spin vectors lying in a first direction and any spins occurring elsewhere in the body have their spin vectors lying in a plane normal to the first direction;

(b) second apparatus and circuitry for dephasing the spins in the body whose vectors lie in said plane without dephasing the spins in the body whose vectors lie in said first direction, and

(c) third apparatus and circuitry for exciting nuclear spins in a second selected region of the body which intersects said first region at said particular location so that the vectors of the resultant spins in said particular location only are aligned in said plane.

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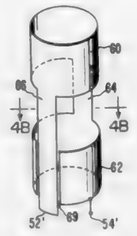
GEOMETRIC COMPENSATION OF MAGNETIC SUSCEPTIBILITY PERTURBATIONS IN AN RF SPECTROMETER

Howard D. Hill, Cupertino, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 22, 1983, Ser. No. 534,899

Int. Cl.⁴ G01R *33/08*

U.S. Cl. 324—318 **6 Claims**



1. An improved probe coil for an NMR spectrometer comprising,

conductive material having a finite magnetic susceptibility displaced at substantially constant radial displacement from an axis and forming a saddle coil about said axis, and

the distribution of said material per unit axial length comprises a constant distribution with respect to displacement along said axis.

4,563,649

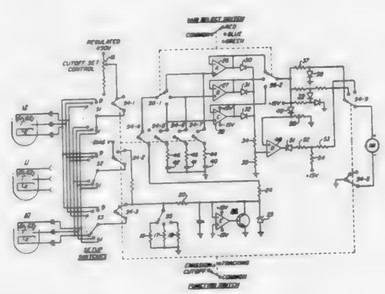
CATHODE RAY TUBE TRACKING TESTER AND METHOD OF TESTING

Barry A. Arenson, Sioux Falls, S. Dak., assignor to Sencore, Inc., Sioux Falls, S. Dak.

Filed Jul. 11, 1983, Ser. No. 512,177

Int. Cl.⁴ G01R *31/24*; H04N *9/20*

U.S. Cl. 324—404 **7 Claims**



1. A method of determining the tracking characteristics of a multiple cathode ray gun system and of identifying which, if any, of the cathode ray guns has less than an acceptable cathode emission current, comprising the steps of

selectively measuring the cathode emission currents of each of said guns under the same operating conditions,

storing voltages proportional to the cathode emission currents of each of said guns, then

selecting the maximum one of said voltages,

selectively comparing the maximum one of said voltages to each of said voltages, and

providing for each of said voltages an indication of whether that voltage differs from the maximum one of said voltages by more or less than a predetermined percentage.

4,563,650

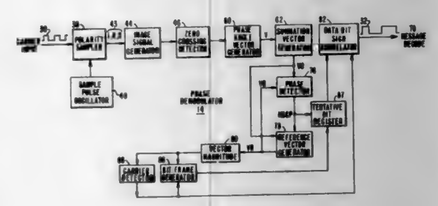
POWER LINE COMMUNICATION RECEIVER WITH DUAL THRESHOLD SIGNAL INTERROGATION CAPABILITY

Theodore H. York, and James V. Faulkner, Jr., both of Raleigh, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 13, 1984, Ser. No. 570,488

Int. Cl.⁴ H03D *03/18*; H03K *09/04*

U.S. Cl. 329—50 **9 Claims**



1. A demodulator apparatus for demodulating incoming phase shift key carrier signals having digital data symbols modulated thereon, said apparatus comprising:

means for generating a plurality of phase signals, each of said phase signals being representative of the phase of a preselected one of a plurality of overlapping portions of said incoming carrier signals;

means for comparing each of said phase signals with a preselected threshold magnitude;

means for selecting said preselected threshold magnitude from a plurality of alternative threshold magnitudes; and

means for generating a Carrier Detect signal when one of said phase signals exceeds said preselected threshold magnitude.

4,563,651

FM DEMODULATOR WITH VARIABLE BANDPASS FILTER

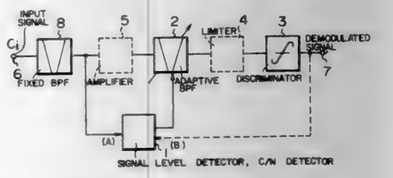
Tomozo Ohta; Yoshio Tsutsumi, and Yoshihiro Konishi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1982, Ser. No. 370,795

Claims priority, application Japan, Apr. 28, 1981, 56-63384; Apr. 28, 1981, 56-63385

Int. Cl.⁴ H03D *3/00*

U.S. Cl. 329—110 **9 Claims**



1. An FM signal demodulation system comprising:

(a) an input terminal for obtaining an FM signal,

(b) a reference bandpass filter having a fixed bandwidth, and having an input coupled to said input terminal,

(c) detection means for detecting information relating to the signal level of the signal output from said reference bandpass filter,

(d) an adaptive bandpass filter having an input coupled with the output of said reference bandpass filter for controlling the bandwidth of said FM signal,

(e) a frequency discriminator coupled with the output of said adaptive bandpass filter for demodulating the FM signal,

(f) an output terminal coupled with the output of the discriminator to provide a demodulated signal, the bandwidth of said adaptive bandpass filter being continuously controllable according to the output of said detection means so that said bandwidth becomes narrower as the signal level becomes lower, and said bandwidth becomes wider as the signal level becomes higher, the bandwidth of said adaptive bandpass filter being wider than that of said reference bandpass filter when the signal level is higher than a threshold level for demodulating an FM signal defined by the bandwidth of said reference bandpass filter, and the bandwidth of said adaptive bandpass filter being narrower than that of the reference bandpass filter when the signal level is lower than the threshold level.

4,563,652

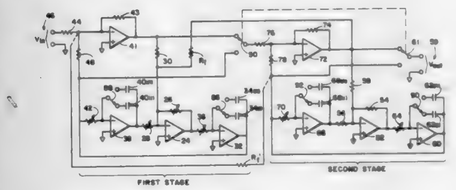
DUAL-STAGE FILTER WITH FEEDBACK

Bruce E. Hofer, Beaverton, Oreg., assignor to Audio Precision, Inc., Beaverton, Oreg.

Filed Apr. 12, 1985, Ser. No. 722,774

Int. Cl.⁴ H03F *1/34, 3/68*

U.S. Cl. 330—107 **7 Claims**



1. A dual-stage filter, comprising:

(a) a first stage comprising a first inverting adder having an input and an output, a first inverting integrator having an input and an output, the output of said first inverting adder being connected to the input of said first inverting integrator, a second inverting integrator having an input and an output, the output of said first inverting integrator being connected to the input of said second inverting integrator and providing a first stage band pass output, and the output of said second inverting integrator being connected to the input of said first inverting adder, and a second inverting adder having an input and an output, the input of said second inverting adder being connected to the output of said first inverting integrator and being adapted for receiving a filter input signal, and the output of said second inverting adder being connected to the input of said first inverting adder and providing a first stage band reject output;

(b) a second stage comprising a third inverting adder having an input and an output, a third inverting integrator having an input and an output, the output of said third inverting adder being connected to the input of said third inverting integrator, a fourth inverting integrator having an input and an output, the output of said third inverting integrator being connected to the input of said fourth inverting integrator and providing a band pass filter signal output, and the output of said fourth inverting integrator being connected to the input of said third inverting adder, and a fourth inverting adder having an input and an output, the input of said fourth inverting adder being connected to the output of said third inverting integrator and to a selected output of said first stage, and the output of said fourth inverting adder being connected to the input of said third inverting adder and providing a band reject filter signal output; and

(c) feedback means connected between a selected one of said band pass and band reject filter signal outputs and its corresponding node in said first stage for providing a predetermined portion of the signal at said selected output to said corresponding node.

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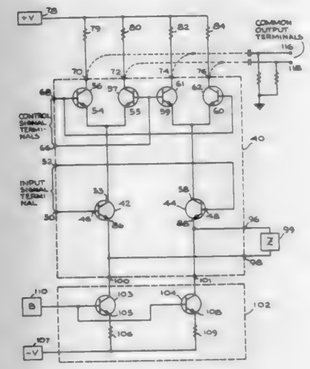
SERVO PREAMPLIFIER AND DEMODULATOR CHAIN USING TRANSCONDUCTANCE BALANCED MODULATORS

Avraham Perahia, San Jose, Calif., assignor to Pertec Computer Corporation, Los Angeles, Calif.

Division of Ser. No. 248,992, Mar. 30, 1981, Pat. No. 4,384,309. This application Sep. 23, 1982, Ser. No. 421,845

Int. Cl.⁴ H03G *3/10;* **H03P** *3/45*

U.S. Cl. 330—254 **2 Claims**



1. A method for amplifying and separating an input signal into first and second segments and providing a first output signal comprising said first segments and a second output signal comprising said second segments, the steps comprising:

amplifying an input signal by a differential amplifier having first and second amplifying means;

providing a clock signal synchronized to said input signal and having a first state in time-correspondence with said first segment to be separated and a second state in time-correspondence with said second segment to be separated; and

directing an amplified output of said differential amplifier to a first output terminal pair if said clock signal is in said first state or to a second output terminal pair if said clock signal is in said second state.

4,563,654

MOS-TRANSISTOR AMPLIFIER

Ikuya Arai; Toshinori Murata, both of Yokohama, and Masafumi Kazumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

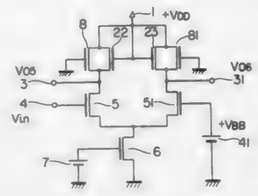
Filed Feb. 17, 1984, Ser. No. 581,271

Claims priority, application Japan, Feb. 18, 1983, 58-24558

Int. Cl.⁴ H03F *3/16, 3/45*

U.S. Cl. 330—277 **17 Claims**

1. An amplifying circuit having a first MOS transistor used as an amplifying element and a second MOS transistor used as a load of said first MOS transistor, a gate electrode of said second MOS transistor being connected to a first predetermined potential for biasing said second MOS transistor, wherein a third MOS transistor is connected in parallel with said second MOS transistor, said third and second MOS transistors being complementary transistors, and a gate electrode



of said third MOS transistor is connected to a second predetermined potential for biasing said third MOS transistor.

4,563,655

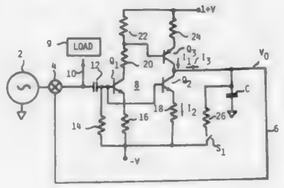
AGC CIRCUIT

Edwin B. Merrick, Stow, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 595,756, Apr. 2, 1984. This application Jun. 18, 1984, Ser. No. 621,402

Int. Cl.⁴ H03G *3/10*

U.S. Cl. 330—285 **11 Claims**



1. A circuit for deriving a gain control voltage that varies in value with changes in the amplitude of a periodic alternating voltage wave, comprising

an input to which alternating wave may be applied,

a capacitor across which the gain control voltage is to appear,

a current source responsive to an alternating voltage wave, when present at said input, for passing current to said capacitor only during first portions of each cycle of the alternating voltage wave,

a current source responsive to an alternating wave, when present at said input, for passing current from said capacitor only during second portions of each cycle of the alternating voltage wave, said second portions having different duration than said first portions, the ratio of the durations of said first and second portions being related to the amplitude of the alternating voltage wave,

said current sources being such that one passes the same amount of integrated current as the other during a cycle of the alternating voltage wave when the wave has a given amplitude, more integrated current than the other during a cycle of the alternating voltage wave when its amplitude is greater than the given amplitude, and less integrated current than the other during a cycle of the alternating voltage wave when its amplitude is less than the given amplitude.

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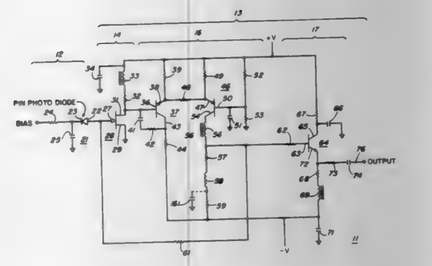
WIDEBAND TRANSIMPEDANCE OPTICAL RECEIVER

Peter N. Baum, Bedford, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 5, 1984, Ser. No. 668,585

Int. Cl.⁴ H03F *3/08*

U.S. Cl. 330—308 **3 Claims**



1. A wideband transimpedance optical receiver comprising

optical detection means for providing an electrical signal in response to an optical signal;

a field effect transistor having a gate electrode coupled to receive said electrical signal, a source electrode adapted to be coupled to a point of reference potential, and a drain electrode;

first impedance means for coupling said drain electrode to a source of voltage of a first polarity;

unilateral amplifying means having a constant input impedance, an input coupled to said drain electrode, and an output;

feedback resistive means coupling said output to said gate electrode; and

an emitter follower coupled to receive said output from said unilateral amplifying means, and to provide an isolated output therefrom, wherein said unilateral amplifying means comprises

a first transistor having an emitter, a collector, and a base electrode;

a first resistance for coupling said source of said voltage of said first polarity to said first transistor emitter;

a serial capacitive-resistive circuit coupling said base of said first transistor to said collector of said first transistor;

a first collector resistor for coupling said first transistor collector to a source of voltage of a second polarity;

a second transistor having an emitter, a collector, and a base electrode;

a second resistance for coupling said source of said voltage of said first polarity to said second transistor emitter;

a common emitter resistor for coupling said emitters of said first transistor and said second transistor together;

a voltage divider circuit for coupling across said source of voltage of said first polarity and said point of reference potential, and for applying a direct current bias to said base of said second transistor;

a capacitor for coupling said second transistor base to said point of reference potential; and

an impedance circuit for coupling said second transistor collector to said source of voltage of said second polarity.

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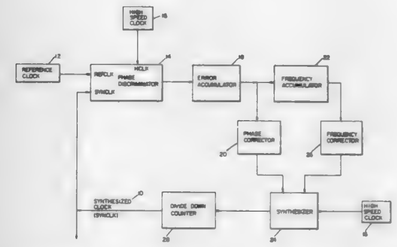
FREQUENCY SYNTHESIZER AND DIGITAL PHASE LOCK LOOP

Shahid U. H. Qureshi, Natick, and Yosef Linde, Needham, both of Mass., assignors to Codex Corporation, Mansfield, Mass.

Filed Mar. 15, 1982, Ser. No. 358,450

Int. Cl.⁴ H03L *7/00*

U.S. Cl. 331—25 **8 Claims**



1. Apparatus for synthesizing a train of pulses at a desired frequency comprising

first circuitry for providing signals that represent a first pulse train having a first frequency higher than said desired frequency,

divide down circuitry responsive to said first circuitry for providing a synthesized pulse train at a lower frequency than said first frequency, and

second circuitry for changing the frequency of said synthesized pulse train to said desired frequency by modifying said representative signals so that the first pulse train which they represent undergoes a plurality of phase shifts during the time that elapses between successive pulses of said synthesized pulse train.

4,563,658

NOISE FILTER

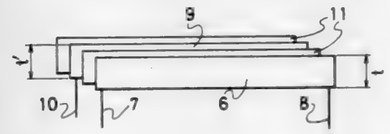
Takeshi Ikeda, 5-6-213 Sanno-2, Ohta-ku, Tokyo 143, Japan

Filed May 17, 1984, Ser. No. 611,498

Claims priority, application Japan, May 18, 1983, 58-85925; Jul. 25, 1983, 58-134377

Int. Cl.⁴ H03H *7/01, 7/09*

U.S. Cl. 333—181 **9 Claims**



1. A noise filter comprising:

a first foil layer of an electrically conductive material of a selected length;

a second foil layer of an electromagnetically conductive material of substantially the same selected length as the first foil layer;

first terminal means for conductively connecting to substantially each end of the first foil layer, said first terminal means disposed to be the input and output terminals of the filter;

second terminal means for conductively connecting to the second foil layer, said second terminal means disposed to be connected to ground;

a first insulative layer, substantially the same selected length of said first foil layer, disposed intermediate the first and second foil layers; and

a second insulative layer, substantially the same selected length as said first foil layer, disposed on the other side of one of the first and second foil layers from the first insulative layer;

said first and second foil layers and said first and second insulative layers being wound in a spiral with the ends of the four layers substantially in alignment.

4,563,659

NOISE FILTER

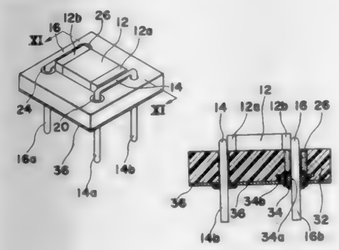
Yukio Sakamoto, Fukui, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jul. 25, 1983, Ser. No. 516,743

Claims priority, application Japan, Jul. 28, 1982, 57-115471[U]; Jul. 28, 1982, 57-115472[U]

Int. Cl.⁴ H03H *7/01*

U.S. Cl. 333—181 **23 Claims**



1. A noise filter, comprising:

a capacitor having first and second electrodes;

first and second terminal legs extending from said first electrode, said first and second terminal legs being electrically coupled to one another;

third and fourth terminal legs extending from said second electrode, said third and fourth terminal legs being electrically coupled to one another;

a tube made of magnetic material being mounted on one of said terminal legs whereby when an electric signal is applied to said first terminal leg and said third terminal leg is connected to ground, high frequency noise signals contained in said electric signal are filtered; and

a feed through capacitor having first and second electrodes, said feed through capacitor being mounted on said second terminal leg, said first electrode of said feed through capacitor being electrically connected to said second terminal leg and said second electrode of said feed through capacitor being electrically connected to one of said third and fourth terminal legs.

4,563,660

NOISE ISOLATION SYSTEM FOR HIGH-SPEED CIRCUITS

David R. McNeilly, Maryville, Tenn., assignor to The Government of the United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 29, 1983, Ser. No. 566,760

Int. Cl.⁴ H03H *7/01*

U.S. Cl. 333—181 **6 Claims**

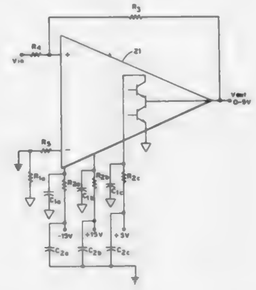
1. A bypass filter network for essentially isolating high-frequency noise in a high-speed circuit connected in an electronic system having a biasing arrangement including at least one power supply bus and a system ground bus; comprising:

a high-speed circuit having a bias voltage input terminal and a ground terminal;

a local ground bus connected to said ground terminal of said high-speed circuit;

a first impedance element connected between said local ground bus and said system ground bus, said first impedance element having sufficient impedance to substantially block high-frequency noise transient signals generated at said ground terminal of said high-speed circuit from said system ground and substantially dissipate the energy of said high-frequency noise transient signals generated by said high-speed circuit;

a second impedance element connected between said at least one power supply bus and said bias voltage input of said high-speed circuit, said second impedance element having sufficient impedance to substantially block high frequency noise transient signals generated at said bias voltage input of said high-speed circuit from said at least one power supply bus;



a first bypass capacitor connected between said bias voltage input of said high-speed circuit and said local ground bus so that said high-frequency noise transient signals generated at said bias voltage input of said high-speed circuit are coupled directly to said local ground bus; and

a second bypass capacitor connected between said at least one power supply bus and said system ground bus to directly couple high-frequency noise signals on said at least one power supply bus to said system ground bus thereby essentially isolating said high-speed circuit from high-frequency noise signals appearing on said at least one power supply bus.

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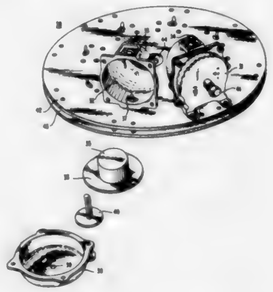
DIELECTRIC FOR MICROWAVE APPLICATIONS

Henry M. O'Bryan, Jr., Plainfield, N.J.; James K. Plourde, Allentown, Pa., and John Thomson, Jr., Wall Township, Monmouth County, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 26, 1984, Ser. No. 686,240

Int. Cl.⁴ H01P *1/30, 7/10*

U.S. Cl. 333—202 **8 Claims**



1. An apparatus for processing microwave electrical energy with frequency between 0.4 and 200 GHz comprising dielectric material for interaction with the microwave electrical energy, means for introducing microwave electrical energy into the dielectric material, conducting member to contain the microwave electrical energy in the apparatus in which the dielectric material comprises at least 90 weight percent barium-titanium compound with nominal formula $Ba_6Ti_9O_{20}$ Characterized in That

the barium-titanium compound has composition

$$Ba_2Ti_{9(1-x-y)}Sn_{9y}O_{20}$$

where y varies from 1–10 percent and x varies from 0–5 percent.

4,563,662

MOUNTING DIELECTRIC RESONATORS

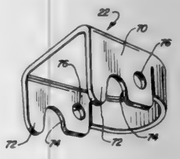
William Thorpe, Felixstowe, England, assignor to British Telecommunications, London, England

Filed Aug. 15, 1983, Ser. No. 523,059

Claims priority, application United Kingdom, May 25, 1983, 8314460

Int. Cl.⁴ H01P *7/00, 1/207, 1/203*

U.S. Cl. 333—219 **16 Claims**



1. An assembly comprising a microwave dielectric resonator fixed between two polymeric layers of low dielectric constant, wherein the layers are heat bonded together.

4,563,663

CORE MEMBER FOR AN ELECTROMAGNETIC RELAY

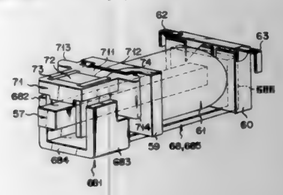
Yukihisa Niekawa, and Shigeyuki Tsuchiya, both of Yokohama, Japan, assignors to Fujitsoku Electric Co. Ltd., Japan

Filed May 19, 1983, Ser. No. 496,024

Claims priority, application Japan, Jul. 16, 1982, 57-124137; Jul. 16, 1982, 57-107730[U]; Feb. 28, 1983, 58-28308[U]

Int. Cl.⁴ H01H *51/22*

U.S. Cl. 335—78 **9 Claims**



1. An electromagnetic relay for driving a movable member utilizing a sum of magnetic fields acting in different directions and produced by an electromagnet and a magnetic field produced by a permanent magnet, and for switching a contact mechanism in synchronism with an operation of said movable member, comprising:

an electromagnet having first and second ends and including an iron core, a coil wound around said iron core, said electromagnet being capable of changing its energizing direction;

a yoke of magnetic material having a central portion and first and second ends, said first and second ends of said yoke and said iron core being disposed adjacent each other, said first end of said yoke having a pair of side walls each of which is disposed at a predetermined distance from opposite sides of said first end of said iron core, and the second ends of said yoke and core being coupled together whereby the magnetic pole of the second end of said iron core is produced near two side surfaces at said first end of said iron core;

a movable member including a permanent magnet which has at the center thereof, an iron piece coupled to each pole of said permanent magnet, one of said iron pieces extending into the space between each sidewall and said iron core, and said movable member being movable in a direction perpendicular to an axis iron core when said coil is energized;

said contact mechanism arranged near said electromagnet; and

a drive member, disposed on said movable member, for driving said contact mechanism in accordacne with movement of said movable member.

4,563,664

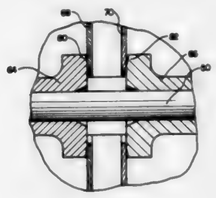
FORCE MOTOR WITH CONTOURED SPRING COUPLING

Philip C. Chin, Huntington Beach, and Charles T. Lindsey, Irvine, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Apr. 4, 1984, Ser. No. 596,491

Int. Cl.⁴ H01F *7/08*

U.S. Cl. 335—274 **3 Claims**



1. A force motor comprising:

a casing;

first and second pole pieces arranged on opposite ends of said casing;

a magnetic assembly located within said casing and between said pole pieces, said magnetic assembly including a permanent magnet and one or more electrical coils;

an armature that includes a mechanical extension and that is movable between said pole pieces in response to an input signal to said magnetic assembly; and

a spring assembly having two, complementary arranged, cantilevered springs that are mechanically coupled to said armature by the mechanical extension, each of said springs having an inner edge and the mechanical extension of said armature having a contoured surface to provide substantial line contact between said mechanical extension and one face of said cantilevered springs at a radius adjacent the inner edge of said cantilevered springs, said spring assembly opposing movement of said armature from a reference position, the opposing force of said spring assembly when said armature is out of said reference position being greater than the force of the permanent magnet of the magnetic assembly with no input current to the coils.

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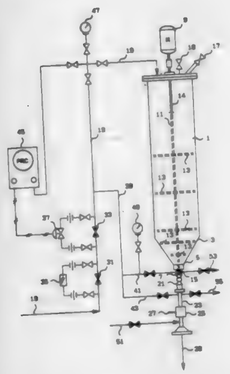
METHOD FOR MIXING AND TRANSFERRING POLYMER-COATED CATALYST COMPOSITIONS

Raymond G. Rohlfing, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 282,312, Jul. 10, 1981, abandoned. This application Jul. 15, 1983, Ser. No. 514,387

Int. Cl.⁴ B01F *15/02;* **G05D** *7/00*

U.S. Cl. 366—184 **9 Claims**



1. A method for mixing and transferring polymer-coated catalyst compositions from a vessel having a cylindrical outlet conduit at the vessel bottom comprising:

(a) agitating polymer-coated catalyst compositions employing agitator means comprising an axially aligned agitator shaft in a vertically aligned, elongated vessel having an axially aligned cylindrical outlet conduit at the vessel bottom;

(b) further agitating polymer-coated catalyst compositions collected in said cylindrical outlet conduit of said elongated vessel using a spirally configured extension of said agitator shaft, said spirally configured extension sized to move freely within said outlet conduit, and

(c) passing polymer-coated catalyst compositions from said outlet conduit of said elongated vessel.

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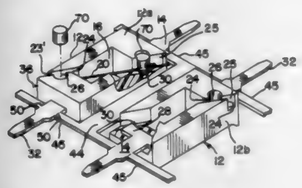
MINIATURE FUSE

John Borzoni, Des Plaines, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Jun. 4, 1984, Ser. No. 616,901

Int. Cl.⁴ H01H *85/02*

U.S. Cl. 337—252 **51 Claims**



1. A fuse comprising:

an elongated substantially rectangular body of insulating material having an elongated cavity therein with its long dimension parallel to the length of the body and opening onto at least one longitudinal side surface of said body;

a pair of terminals secured within opposite end portions of said insulating body and conductive fuse element attachment surfaces forming conductive extensions at the inner ends of said terminals beyond the margins of said cavity, said attachment surfaces being at diagonally opposite end portions of said body where they are on opposite sides of the longitudinal axis thereof, said terminals projecting from said body for making direct electrical connection to an external circuit;

said body having a pair of aligned narrow grooves extending outwardly from diagonally opposite margins of said cavity toward and in the vicinity of said attachment surfaces and opening onto opposite longitudinal sides of said body other than said one side so a fuse element can be dropped into the aligned grooves;

a fuse element disposed in said grooves and conductively secured between said exposed surfaces of said terminals and passing over or within an open side of said cavity, the defining walls of said grooves forming arc barriers to prevent expansion of an arc onto said attachment surfaces when the fuse element blows; and

enclosure means for sealing all openings in the longitudinal sides of said insulating body.

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TEMPERATURE AND/OR CURRENT SENSITIVE ELECTRICAL SWITCH

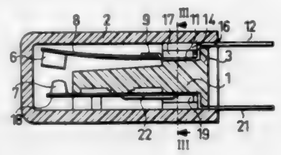
Peter Hofsäss, Strietweg 45, 7530 Pforzheim, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,700

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234373

Int. Cl.⁴ H01H *37/12, 37/52*

U.S. Cl. 337—349 **13 Claims**



1. A device based on thermal expansion for electrical switching purposes, comprising an insulating supporting part, a bimetallic element, means supporting said bimetallic element on said support part adjacent one end of said bimetallic element with the opposite end of said bimetallic element being completely free for movement with temperature changes, a moving contact mounted on the free end of said bimetallic element for movement relative to a counter-contact, said moving contact and said counter-contact being designed to be switched by said bimetallic element on the temperature changing past a certain limit, spaced first and second terminal elements for connection of leads to said contacts, said first and second spaced terminal elements being common to said moving contact and said counter-contact, respectively, and wherein means are provided in the form of a passive spring member for elastically and givingly supporting said counter-contact on said supporting part for movement in a direction away from said moving contact in response to a force against the counter-contact by the bimetallic element and moving contact with further temperature change after the the temperature has changed past said certain limit whereby damage to the bimetallic element and substantial change in said certain temperature limit caused thereby can be avoided.

4,563,668

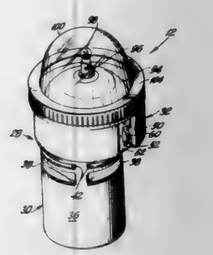
OBSTRUCTION MARKER LIGHT

Peter V. Martino, 9960 65th Rd., Rego Park, N.Y. 11205

Filed Dec. 12, 1983, Ser. No. 560,436

Int. Cl.⁴ E01F *9/00*

U.S. Cl. 340—114 R **11 Claims**



1. A marker light assembly for use with a battery and light bulb, comprising:

a blow molded unitary plastic canister having generally uniform thickness and having generally cylindrical upper and lower portions with the lower portions being dimensioned to receive the battery and with the diameter of the upper portion being larger than the diameter of the lower portion, said upper and lower portions being non-concentrically aligned with respect to one another and with their respective longitudinal axes being parallel, said lower portion including at least one array of four inwardly directed indentations, each said indentation in said array comprising a flat bottom the plane of which is generally parallel to the longitudinal axis of said lower portion, each said array of indentations comprising first and second pairs of indentations with the bottoms of the indentations in each said pair being parallel to one another and with the bottoms of the indentations in said first pair being perpendicular to the bottoms of the indentations in the second pair, the flat bottoms of the four indentations in said array defining four sides of a generally rectangular channel extending at least partly along the inside of said lower portion, said rectangular channel extending generally parallel to the longitudinal axis of said lower portion, said flat-bottom indentations further defining a plurality of hand grips on the outside of the lower portion;

said lower portion including a plurality of said arrays of the inwardly directed flat-bottom identations, with said arrays being spaced apart, such that a generally circular array of outwardly extending grooves are disposed on the inside of said canister intermediate adjacent arrays;

a circuit board assembly mounted in said canister, said circuit board assembly being electrically connected to the battery and the bulb; and

a switch rigidly mounted in the upper portion of said canister and being electrically connected to said bulb and said circuit board assembly, whereby the generally rectangular channel defined on the inside of said lower portion by the array of indentions securely guides and retains the battery therein and whereby the indentations fascilitate secure gripping of the outside of the canister by a user thereof.

4,563,669

INTEGRATED DIGITAL/ANALOG CONVERTER

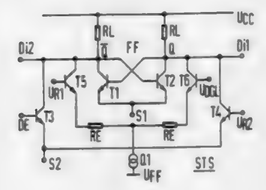
Reinhard Petschacher, Villach, and Werner Luschnig, S. Magdalen, both of Austria, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 9, 1984, Ser. No. 569,131

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1983, 3303117

Int. Cl.⁴ H03K *13/02*

U.S. Cl. 340—347 DA **18 Claims**



1. In an integratable digital/analog converter with a digital input signal to be converted and a signal output that provides an analog signal that is the product of the conversion, in which every bit of the digital input signal controls a specific electronic switch for a specific constant current, in which the constant current is delivered by a specific constant current source which is binarily weighted in such a manner that the significance of the specific constant current conducted through individual switches corresponds in each case to the value of the bit in the digital input signal, in which, in addition, each of these switches which are identical to one another comprises a differential amplifier which further comprises identical transistors which have their current input electrodes, driven by the respective specific constant current source and which are controlled at their control electrodes by the respective bit to be evaluated in such a manner that for a control bit corresponding to the logic "1" state, the specific constant current generated by the respective constant current source is switched for all these switches to a common signal output that is responsible for the analog signal that is to be generated, while for a control bit corresponding to the logic "0" state, the constant current is applied instead to another common signal output, the improvement wherein:

each of said switches conducting said specific constant currents comprises a combination of six identical transistors, a first and a second transistor of said six identical transistors being cross-coupled to form an RS flip-flop, the current output electrode of said first and second transistors being connected in each case through a load resistance (RL) to a supply terminal that delivers a first supply potential (U_{CC}) and, in addition, to a respective current output electrode of two more of said six transistors the current input electrodes of said first and second transistors being jointly driven by a first strobe signal (S1), the current input electrodes of each one of said two more transistors being connected through their current output electrodes with one of two signal terminals (Q, $\overline{Q}$) of said flip-flop (FF) and being driven by another common strobe signal (S2), the control electrode of one of said two more transistors being controlled by the respective bit of said digital input signals that is assigned to said switch (U_i), and the control electrode of the other of said two more transistors being driven by a reference voltage (U_{R2}) which is derived from a reference potential (U_{EE}) supplied by another supply terminal, control electrodes of two last transistors of said six identical transistors being connected to one of said two signal terminals (Q, $\overline{Q}$) of said flip-flop (FF), said two last transistors being connected through a resistance (RE) in each case to the output of a common current source (Q1) whose base comprises a supply terminal for a reference potential (U_{FF}), said two signal termi-

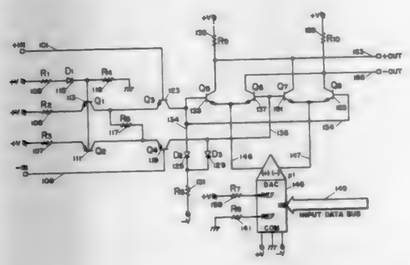
nals (Q, $\overline{Q}$) of said flip-flop being connected to one of the two control inputs of the respective switch (U_i) in such a manner that said constant current conducted through said switch (U_i) only arrives at a common analog signal output to be generated if the bit that controls said switch (U_i) through said flip-flop (FF) has a value of "1".

4,563,670

HIGH SPEED MULTIPLYING DIGITAL TO ANALOG CONVERTER

Richard W. Stallkamp, Dayton, Ohio, and Marc L. Ranger, Clackamas, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 14, 1983, Ser. No. 561,400
Int. Cl.[4] G08C *9/00*
U.S. Cl. 340—347 DA **3 Claims**



1. A high speed multiplier circuit for adjustment of its differential output voltage independent of the selection of the D.C. voltage offset of the output signals, said circuit comprising:

a first pair of control devices each having an output terminal, a control terminal, and a common terminal, said common terminals being connected together;

a second pair of control devices each having an output terminal, a control terminal, and a common terminal, said common terminals being connected together;

output means cross-coupling the output terminals of the first and second pairs of control devices for providing differential output signals;

means for cross-coupling the control terminals of the first and second pairs of control devices;

means for differentially applying currents to the connected common terminals of the first and second pairs of control devices to independently produce a selected D.C. offset voltage in the differential output signal;

a pair of input devices each having an output terminal, an input terminal, and a current receiving terminal, said input terminals being disposed to receive an input signal differentially therebetween, and said current receiving terminals being disposed to receive substantially equivalent currents;

a current coupling device interconnected between the current receiving terminal of each of the input devices;

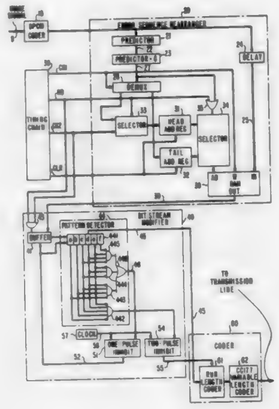
a pair of diode means each being coupled to a different one of the cross-coupled control terminals of the first and second pairs of control devices and to a different one of the output terminals of the pair of input devices for differentially applying signal representative of the differential input signal to the cross-coupled control terminals of the first and second pairs of control devices.

4,563,671

CODING TECHNIQUE

Tong L. Lim, Middletown, and Arun N. Netravali, Westfield, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 18, 1983, Ser. No. 495,707
Int. Cl.[4] H04N *7/12*
U.S. Cl. 340—347 DD **36 Claims**



10. Apparatus for use in conjunction with a variable length coder of the type which, for at least one value of n, assigns n code words of a variable length code to respective ones of n words that are expected to occur more frequently than at least one other word in image signals of a first predetermined type, said apparatus comprising,

means for receiving an image signal of a second predetermined type, said received image signal including a plurality of words in which said one other of said words is expected to occur at least as frequently as at least one of said n expected words,

means for changing said other of said words in said received plurality to be said at least one of said n expected words, and

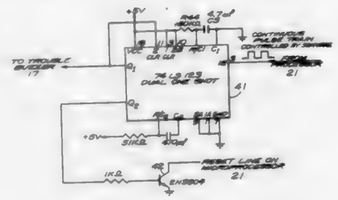
means for applying the resulting plurality of words to said coder.

4,563,672

MICROPROCESSOR AUTOMATIC PROGRAM FAIL RESET CIRCUIT

Stephen F. Anderson, Flower Mound, Tex., assignor to Wormald U.S., Inc., Marinette, Wis.

Filed Feb. 7, 1984, Ser. No. 577,830
Int. Cl.[4] G08B *29/00*
U.S. Cl. 340—512 **3 Claims**



1. An alarm system of the type having processing means

located in a central station for controlling a plurality of remote input and output devices, wherein the improvement comprises:

first one shot means for monitoring a chain of continuous pulses generated at predetermined time intervals by said processing means;

second one shot means for generating a resetting pulse, responsive to said first one shot means such that when there is an interruption in the chain of continuous pulses, the resetting pulse resets said processing means; and

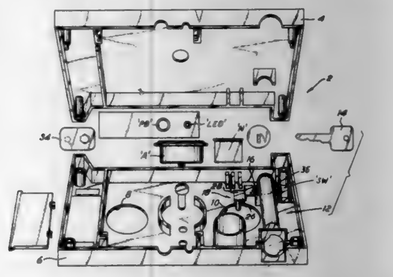
indicating means responsive to said first one shot means for providing an indication that a resetting signal has not reset said processing means.

4,563,673

ANTI-THEFT ALARM DEVICE FOR VIDEO CASSETTE RECORDER

Heinz J. B. Fechner, Sunderland, England, assignor to Vainaga Limited, Sunderland, England

Filed Apr. 3, 1984, Ser. No. 596,300
Claims priority, application European Pat. Off., Feb. 1, 1984, 84.300628.9
Int. Cl.[4] G08B *13/14*
U.S. Cl. 340—568 **7 Claims**



1. An anti-theft alarm device for a video cassette recorder comprising a housing for location in the cassette-receiving mechanism of the recorder, an abutment member mounted in said housing, a control mechanism operable from externally of the housing for moving the abutment member between an inoperative position within the housing and an operative position projecting from the housing, and a battery-operated, movement-sensitive electrical switching mechanism contained within said housing and including a switch movable between an inoperative position and an operative position, and a warning mechanism the circuit of which is completed on movement of said switch to its operative position, the arrangement being such that, on location of the housing in the cassette-receiving mechanism of the recorder and with the abutment member in its operative position, said member co-operates with the recorder to prevent removal of the housing from the cassette-receiving mechanism other than by actuation of said control mechanism to move the abutment member to its inoperative position and subsequent withdrawal of the device from said cassette-receiving mechanism.

4,563,674

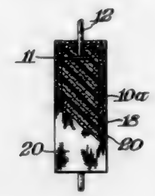
OIL LEAK DETECTOR

Satoru Kobayashi, Hitaka, Japan, assignor to Junkosha Company Ltd., Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,749
Claims priority, application Japan, Sep. 16, 1982, 57-140132
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—620 **4 Claims**

1. Apparatus for detecting oil floating on the surface of water, the apparatus comprising:

a detecting device floating on the surface of said water and capable of absorbing oil floating on the surface of said water, the detecting device having warning means which is operated according to a change in the electrical conductivity of the detecting device that is caused by absorption of oil, and



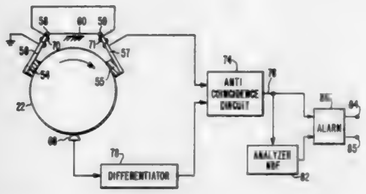
a layer of cloth affixed outside said detecting device such that it forms a boundary of water at a height above the general surface of the water adjacent the outer periphery of said apparatus.

4,563,675

SYSTEM FOR MONITORING METAL-TO-METAL CONTACT IN ROTATING MACHINERY

Robert C. Miller, Penn Hills, and James W. Wonn, Hempfield, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 20, 1982, Ser. No. 451,565
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—679 **18 Claims**



1. Apparatus for detecting rubs in rotating machinery comprising:

(A) a stationary machine assembly;

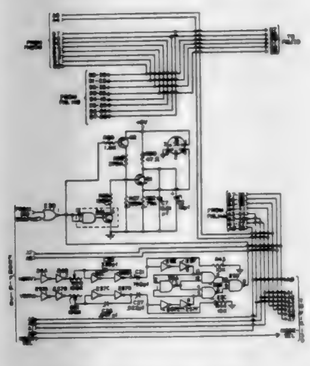
(B) a rotating assembly, rotatable relative to said stationary assembly and subject to an electrical charge build-up during rotation;

(C) grounding means connecting said rotating assembly to ground potential for conducting discharge current when said electrical charge is discharged;

(D) voltage monitoring means for sensing the electrical potential of said rotating assembly for providing an indication of said discharge; and

(E) means for determining coincidence between said indication of discharge provided by said voltage monitoring means and said discharge current through said grounding means, the absence of said coincidence being indicative of an alternate path to ground of said electrical charge, other than through said grounding means.

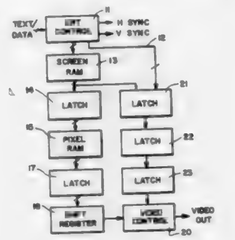
4,563,676
COMPUTER
Steven Leininger, Arlington, Tex., assignor to Tandy Corporation, Fort Worth, Tex.
Division of Ser. No. 342,069, Jan. 25, 1983, Pat. No. 4,500,956, which is a division of Ser. No. 261,976, May 8, 1981, Pat. No. 4,430,649, which is a continuation of Ser. No. 926,957, Jul. 21, 1978, abandoned. This application Aug. 22, 1983, Ser. No. 525,167
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—749 **8 Claims**



1. A video mixing circuit comprising;
means for establishing a sync signal,
means for establishing a video binary signal,
and mixing circuit means comprising first and second switching transistors each having an input terminal and a pair of output terminals with the transistor input terminal for respectively receiving the sync and video binary signals, and means coupling output terminals of the transistors in series to thus connect the transistors in series, said coupling means including resistor means having an output terminal at which the composite video appears,
said resistor means comprising a first resistor coupling from the first transistor output terminal to the circuit output terminal, a second resistor coupling from the second transistor output terminal to the circuit output terminal, and a third resistor coupled in parallel with said second resistor and second transistor.

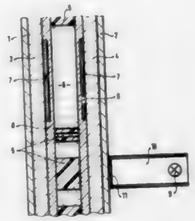
4,563,677
DIGITAL CHARACTER DISPLAY
William J. Seller, Scotts Valley, Calif., assignor to Victor Technologies, Inc., Scotts Valley, Calif.
Filed Oct. 19, 1982, Ser. No. 435,199
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—750 **16 Claims**

1. A digital character display system for a raster scan display unit, said system comprising:
a control unit for receiving control information characters from an associated source, said control unit including means for generating vertical and horizontal sync timing signals to be coupled to said display;
first memory means having an input coupled to said control unit for storing multi-bit controller characters, each character having a first multi-bit portion specifying font character addresses and a second multi-bit portion specifying character attributes, said first memory means having an output;
second memory means coupled to a first multi-bit portion output of said first memory means and containing a plurality of multi-bit font characters each addressable by a corresponding one of said first multi-bit portions of said multi-bit controller characters;
shift register means having an input coupled to said second memory means for successively storing font characters individually output from said second memory means and for converting said characters from parallel to serial form, said shift register means having an output; and



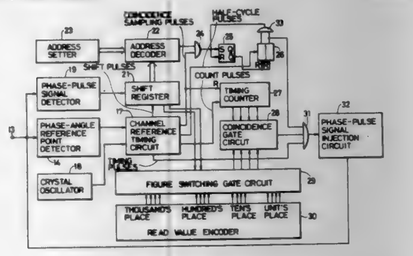
video control means having a first input coupled to the output of said shift register for converting said characters output from said shift register means to video information signals, said video control means having a second input for receiving the character attribute multi-bit portion of each controller character output from said first memory means for modifying said video information signals.

4,563,678
LCD INDICATOR WITH BUILT-IN FIXED INFORMATION DISPLAY
Wolfgang Ziegler, Furth, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Apr. 20, 1983, Ser. No. 486,684
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3214988
Int. Cl.⁴ G09G *3/36*
U.S. Cl. 340—765 **5 Claims**



1. Method of making an LCD indicator device in which front and back plates thereof are provided with conductive electrode layers, orienting layers and polarizer layers, followed by the application of an annular adhesive appliqué near enough to the perimeter of one of said plates for defining a perimetral bonding area for said plate, and sealing the plates together by said perimeter appliqué, as well as filling the space between said plates surrounded by said appliqué with liquid crystal indicator material, wherein prior to filling of the space surrounded by said perimeter appliqué with said liquid crystal indicator material and before the sealing of said plates together by said adhesive perimeter appliqué, there is performed the step of adhesively bonding to one of said plates at least one appliqué patch which is thinner than said perimeter appliqué and which bears fixed information for display of said information in said device, and wherein the sealing of the plates together produces enough spreading of said perimeter appliqué to assure a tight seal but by virtue of the lesser thickness of said appliqué patch does not smudge the information which said appliqué patch bears.

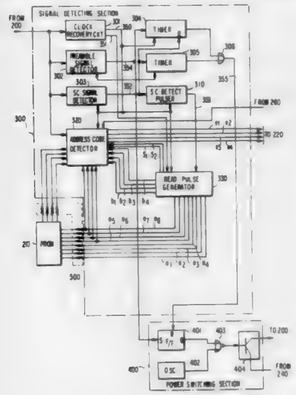
4,563,679
CARRIER CONTROL METHOD BY USING PHASE-PULSE SIGNALS
Yukio Arai, Saitama, and Masayasu Endo, Tokyo, both of Japan, assignors to Oseki Electric Co., Ltd., Tokyo, Japan
Filed Mar. 23, 1983, Ser. No. 478,057
Claims priority, application Japan, Mar. 26, 1982, 57-47241
Int. Cl.⁴ H04Q *9/00*; G08C *19/24*
U.S. Cl. 340—825.7 **3 Claims**



1. A carrier control method using phase-pulse signals, comprising the steps of:
forming an address discriminating channel and a plurality of terminal selection channels having a respective predetermined phase width in a low-noise region of a first one of every two succeeding cycles of an alternating current carrier wave, and a plurality of return channels having said respective predetermined phase width in the low-noise region of the second cycle of said every two succeeding cycles, said low-noise region being in the vicinity of the zero phase of a predetermined phase in a cycle of the alternating current carrier wave;
inserting an address discrimination phase-pulse signal in said alternating current carrier wave in said address discrimination channel of said first cycle and a terminal selection phase-pulse signal in said alternating current carrier wave in said terminal selection channels of said first cycle at a receiver; and
inserting a return phase-pulse signal in said alternating current carrier wave in said returning channels of said second cycle at a terminal equipment, when said address discrimination phase-pulse signal is detected on said address discrimination channel, and when said terminal selection phase-pulse signal having an address code coinciding with the address code of said terminal equipment is detected on said terminal selection channels.

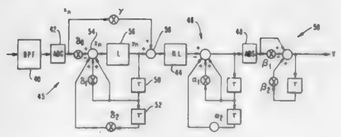
4,563,680
DIGITAL RADIO PAGING RECEIVER
Takeshi Nakajima, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Jan. 25, 1983, Ser. No. 460,962
Claims priority, application Japan, Jan. 27, 1982, 57-12400
Int. Cl.⁴ H04M *11/02*
U.S. Cl. 340—825.44 **6 Claims**

1. A multi-address digital radio paging receiver of the type adapted to detect the presence of multi-address codewords in a selective calling signal, said receiver comprising:
means for receiving said selective calling signal;
first memory circuit means for storing a first address codeword assigned to said receiver and comprised of a BCH code and providing the content thereof in response to the received selective calling signal, said BCH code constituting one of said multi-address codewords detectable by said receiver;
second memory circuit means for storing a plurality of codewords and providing the content thereof in response to the received selective calling signal, each of said plurality of codewords comprising a BCH code whose information contents differ from said first address codeword by such content that exclusive OR operation on said first address codeword and each of said plurality of stored codewords results in the other of said multi-address codewords;



code generating means responsive to said received selective calling signal for performing said exclusive OR operation to provide the other of said multi-address codewords; and
means for comparing said received selective calling signal with said first codeword and the other of said multi-address codewords, respectively, to provide, if they are identical with each other, an identity signal and to thereby detect the presence of said multi-address codewords in said received selective calling signal.

4,563,681
TONE RECEIVER FOR DIGITAL DATA COMMUNICATION SYSTEMS
Dominique Godard, Le Rouret, France, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 13, 1983, Ser. No. 504,008
Claims priority, application European Pat. Off., Jun. 25, 1982, 82430016.4
Int. Cl.⁴ H04Q *5/00*; G06F *7/38*
U.S. Cl. 340—825.71 **6 Claims**



1. A tone receiver for use in a digital data communication system for detecting a presence, within a received signal, of a tone whose frequency lies outside the spectrum of a data signal, said receiver including:
an analog-to-digital converter (ADC) for sampling the received signal and converting samples Xn thereof to digital form and outputting said converted samples;
a first recursive digital bandpass filter having an input and an output and centered at the frequency of the tone signal, the input of which is connected to said ADC output;
a limiter having an input and an output and serially inserted within the feedback loop of said first bandpass filter;

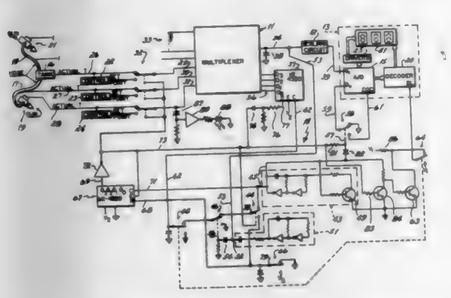
an input feedforward loop having an input and an output and connected to said ADC output and providing a predetermined gain γ;
an adder having at least two inputs and an output said inputs being connected to the outputs of said first filter and of said feedforward loop;
a hard limiter having an input and an output and connected to the output of said adder;
a second digital filter connected to the output of said hard limiter and providing an input signal; and,
means responsive to the signal provided by said second digital filter for measuring the energy V of the signal provided thereby and for indicating receipt of said tone when the energy V exceeds a predetermined threshold value.

4,563,682

SCANNING TEMPERATURE DISPLAY SYSTEM

Stephen L. Merkel, Bay Village, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Mar. 11, 1983, Ser. No. 472,321
Int. Cl.[4] G08C *15/12, 19/12*
U.S. Cl. 340—870.13 **7 Claims**



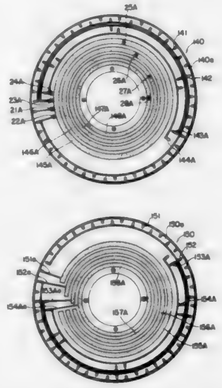
1. A scanning display system for a plurality of temperature signals comprising:
a plurality of temperature signal inputs which may include one or more unused inputs;
a plurality of temperature set point signal inputs, each associated with a different input of the plurality of temperature signal inputs;
multiplexing means, coupled to the temperature signal inputs and having an output, for sequentially coupling the inputs, one at a time, to the output in response to clocking signals at a clocking signal input, the multiplexing means being alternatively coupled, in a set point mode, to the temperature set point signal inputs and sequentially coupling the inputs, one at a time, to the multiplexing means output in response to clocking signals at the clocking signal input;
means for producing a first clocking signal having a first frequency;
means for producing a second clocking signal having a second frequency higher than said first frequency;
means for coupling the first clocking signal to the clocking signal input of the multiplexing means;
means, coupled to the output of the multiplexing means, for coupling the second clocking signal to the clocking signal input of the multiplexing means when an unused temperature signal input is coupled to the output of the multiplexing means;
a display coupled to the output of the multiplexing means operable to provide a visual indication of the temperature represented by the signal at the multiplexer output;
means for producing discrete clocking signals; and
manually activated means for decoupling the first clocking signal from the clocking signal input of the multiplexing means, for placing the multiplexing means in a set point mode by coupling the multiplexing means to the temperature set point signal inputs, and for coupling said discrete clocking signals to the clocking signal input of the multiplexing means.

4,563,683

CAPACITIVE-TYPE POSITION AND REFERENCE ANGULAR ROTATION DETECTING APPARATUS

Hiroaki Tanaka, and Shigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Division of Ser. No. 358,903, Mar. 17, 1982, Pat. No. 4,499,465. This application Oct. 31, 1984, Ser. No. 666,630
Claims priority, application Japan, Mar. 18, 1981, 56-40051; May 25, 1981, 56-78872; May 27, 1981, 56-80585; Jun. 5, 1981, 56-86507
Int. Cl.[4] G08C *19/10*
U.S. Cl. 340—870.37 **6 Claims**



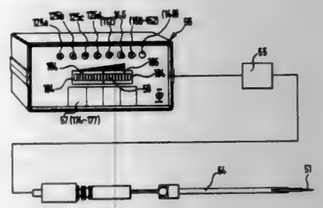
1. A capacity type rotation detecting apparatus comprising:
a first plate mounted on a stationary part and having a first input electrode and a second input electrode each thereof including a plurality of electrode pieces, said electrode pieces of said first and second input electrodes being arranged along a first circumference at respective equal intervals and contiguously intermeshed, a third input electrode including a plurality of electrode pieces arranged along a second circumference at respective different intervals, and a fourth input electrode including a plurality of electrode pieces arranged at respective predetermined equal intervals with respect to the electrode pieces of said third input electrode;
a second plate mounted on a rotational part to face said first plate and having first detection electrode means arranged to face said first plate-first and second input electrodes and second detection electrode means arranged to face said first plate-third and fourth input electrodes wholly only once for every rotation of said second plate;
a periodic signal supply circuit for supplying two periodic signals of opposite phase respectively to said first plate-first and second input electrodes and to said first plate-third and fourth input electrodes;
a rotational position signal generating circuit for detecting the phases of periodic signals appearing at said second plate-first detection electrode means in response to the rotation of said second plate and the periodic signals from said periodic signal supply circuit to generate a rotational position signal;
a reference angular position signal generating circuit for detecting the phases of a periodic signal appearing at said second plate-second detection electrode means in response to the rotation of said second plate and the periodic signals from said periodic signal supply circuit to generate a reference angular position signal; and
signal transmission means for effecting the transmission of signals between said first and second plates.

4,563,684

METHOD OF PREDICTING THE APPROACHING STALL OF AN AIRCRAFT WING

John M. Maris, Port Orange, Fla., assignor to Marinvent Corporation, Toronto, Canada

Continuation-in-part of Ser. No. 219,188, Dec. 22, 1980, Pat. No. 4,435,695. This application Oct. 3, 1983, Ser. No. 538,255
Claims priority, application United Kingdom, Dec. 24, 1979, 7944397
The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.
Int. Cl.[4] G08B *23/00*
U.S. Cl. 340—966 **6 Claims**



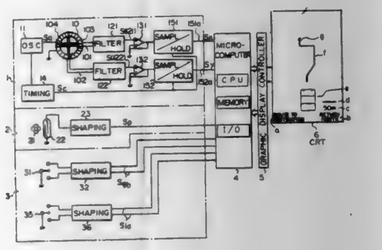
1. Apparatus for predicting the approaching stall of an aircraft wing, comprising:
means for sensing airspeed over the wing at a predetermined location spaced above the top surface of the wing and for thereby producing input signals representative of airspeed fluctuations at said location, said fluctuations being caused by air turbulence over the wing;
means for using said input signals to produce a signal representative of the ratio of the airspeed fluctuations at said location to the average airspeed at said location; and
means for using said ratio signal to produce a signal indicative of imminent stalling.

4,563,685

RETURN ROUTE INDICATION DEVICE FOR AUTOMOTIVE VEHICLES

Muneaki Matsumoto, Okazaki; Akira Kuno, Obu, and Koji Numata, Toyokawa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 6, 1982, Ser. No. 446,873
Claims priority, application Japan, Dec. 7, 1981, 56-195563
Int. Cl.[4] G08G *1/12*
U.S. Cl. 340—995 **6 Claims**



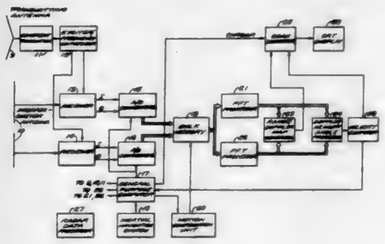
1. A device for indicating return route information for an automative vehicle, comprising:
direction detection means, mounted on the vehicle, for generating a direction signal corresponding to the direction of travel of the vehicle;
distance detection means for generating a distance signal corresponding to the distance of travel of the vehicle;
route-to-destination/return-route indication generation means for generating an indication of either the vehicle is enroute to its destination or returning from the destination;
storing means, responsive to an enroute destination indication by said indication generation means, for successively storing direction signals for each predetermined distance of travel of the vehicle based on the distance signal;
return route indication signal generation means, responsive to a returning from destination indication by said indication generation means, for generating, per predetermined distance of travel indicated by the distance signal, a signal indicating the return route to be traveled at least to the extent of a predetermined distance in the forward direction on the return-route on the basis of the previously stored direction signals and distance signals; and
return-route data display means, responsive to the signal from said return-route indication means, for displaying the return-route data at least to the extent of the predetermined distance in the forward direction along the return-route.

4,563,686

RANGE/DOPPLER SHIP IMAGING FOR ORDNANCE CONTROL

Sol Boles, Syosset, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jun. 17, 1982, Ser. No. 389,368
Int. Cl.[4] G01S *13/90*
U.S. Cl. 343—17 **15 Claims**



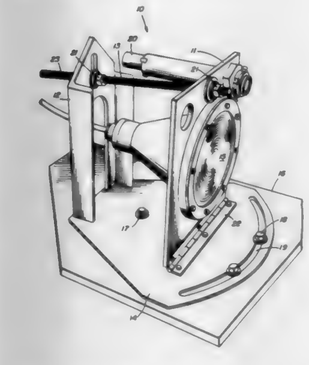
1. In conjunction with an airborne synthetic aperture radar system having an interferometer antenna and a range versus azimuth display, a method for forming a range/doppler image having improved azimuth resolution of a ship target under the influence of sea state conditions comprising the steps of:
(a) processing the received signals from the scatterers comprising the ship target to obtain an estimate of the net doppler producing cross line-of-sight velocity of the radar bearing aircraft relative to the ship;
(b) determining from the estimated cross line-of-sight relative velocity the values of predetermined system parameters to be used predictively in the succeeding integration interval in forming the range/doppler image;
(c) displaying in a range versus azimuth coordinate frame the formed range/doppler image of the ship target; and
(d) removing the isodop distortion in the formed range/doppler image and centering the displayed range/doppler image of the ship target.

4,563,687

ADJUSTABLE ANTENNA MOUNT

Eric V. Berger, Brookline, Mass., assignor to GTE Communications Products Corporation, Waltham, Mass.

Filed Feb. 6, 1984, Ser. No. 577,443
Int. Cl.⁴ H01Q *1/12, 3/02*
U.S. Cl. 343—882 **1 Claim**



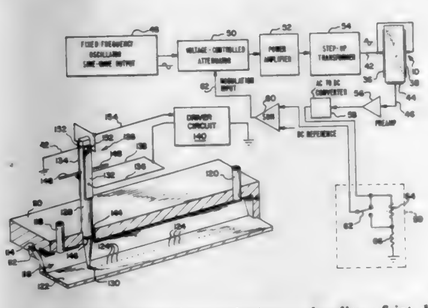
1. An antenna mount allowing independent adjustment of azimuth and elevation, comprising;
(a) a mechanical ground plate having a threaded hole;
(b) a baseplate adapted to rotate on said mechanical ground plate,
said baseplate having an arc-shaped slot;
(c) an antenna mounting plate adapted to hold an antenna;
(d) a hinge coupling an edge of said antenna mounting plate to said baseplate;
(e) a bracket affixed to said baseplate;
(f) an adjustable brace extending between said bracket and said antenna mounting plate for holding said antenna mounting plate in relation to said baseplate; and
(g) a bolt extending through said arc-shaped slot into said threaded hole for locking said baseplate to said mechanical ground plate.

4,563,688

FLUID JET PRINTER AND METHOD OF ULTRASONIC CLEANING

Hilarion Braun, Xenia, Ohio, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 16, 1983, Ser. No. 495,183
Int. Cl.⁴ G01D *15/18;* **H01L** *41/04*
U.S. Cl. 346—1.1 **17 Claims**



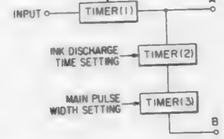
1. A fluid jet system for producing a plurality of jet drop streams, comprising:
print head means defining a fluid receiving reservoir and including an orifice plate defining a plurality of orifices which communicate with said reservoir such that fluid supplied to said reservoir under pressure emerges from said orifices as a plurality of fluid filaments,
transducer means, responsive to a drive signal, for applying vibrational energy to said orifice plate to stimulate breakup of said filaments into streams of drops of substantially uniform size and spacing,
sinusoidal drive means for applying a substantially sinusoidal drive signal to said transducer means so that said filaments are stimulated to break up into drops, and
cleaning drive means for causing replacement of said sinusoidal drive signal by a pulse train at substantially the same frequency as said substantially sinusoidal drive signal and at an amplitude such that cleaning of said print head is produced by harmonic frequencies of said pulse train.

4,563,689

METHOD FOR INK-JET RECORDING AND APPARATUS THEREFOR

Kiyotaka Murakami, Hino, and Yoshiaki Kimura, Hachioji, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1984, Ser. No. 577,142
Claims priority, application Japan, Feb. 5, 1983, 58-18458; Feb. 5, 1983, 58-18459
Int. Cl.⁴ G01D *15/18*
U.S. Cl. 346—1.1 **14 Claims**



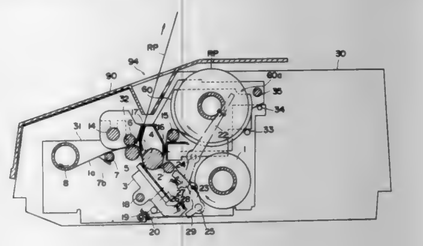
9. A process for controlling the size of an ink droplet in an on-demand type ink-jet recording apparatus comprising:
an ink-jet printer head including an ink chamber, an electro-mechanical transducer coupled to said ink chamber, a nozzle in communication with said ink chamber and from which said ink droplet is to be ejected and an ink supplying passage through which said ink is supplied to the ink chamber; and comprising applying a main electrical pulse to said electro-mechanical transducer to eject an ink droplet,
said process further comprising:
variably controlling the position of the meniscus of the ink in the nozzle by applying to said electro-mechanical transducer at least one preceding electrical pulse prior to application of said main pulse, and controlling the energy of said at least one preceding pulse as a function of the desired ink droplet size to be ejected responsive to said main pulse, said at least one preceding pulse having insufficient energy to cause ink to be ejected from the nozzle prior to applying thereto the main pulse.

4,563,690

THERMAL PRINTER

Hiroshi Tomita; Junji Maeda, both of Kyoto, and Michio Kunimitsu, Yawata, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 26, 1985, Ser. No. 716,379
Claims priority, application Japan, Mar. 30, 1984, 59-64642; Mar. 30, 1984, 59-47084[U]; Mar. 30, 1984, 59-47085[U]; Mar. 30, 1984, 59-47086[U]
Int. Cl.⁴ B41J *13/10*
U.S. Cl. 346—76 PH **16 Claims**



1. A thermal printer characterized by providing:
a casing;
an opening formed in said casing for feeding therethrough fan-fold form printing paper into said casing;
a pair of left- and right-hand reel plates disposed in said casing and for supporting therebetween a roll around which roll form printing paper is wound;
a guide shaft for the fan-fold form printing paper, which is detachably mounted to said pair of left- and right-hand reel plates;
a platen;
a thermal head which is disposed opposite to said platen and capable of contacting with or moving away from said platen;
means for supporting a roll around which an ink sheet is wound; and
an ink sheet transportation mechanism which transports said ink sheet passing between said platen and said thermal head opposite to each other;
whereby when said roll having printing paper wound thereon is mounted between said pair of left- and right-hand reel plates, roll form printing paper is drawn out from said roll, and
when said guide shaft for fan-fold form printing paper is mounted between said pair of left- and right-hand reel plates, fan-fold form printing paper can be inserted into said casing from the exterior thereof through said opening and brought into slidable contact with the periphery of said guide shaft,
and thereafter the particular form of printing paper being supplied is transported and passed between said platen and said thermal head to be printed with the ink of said ink sheet.

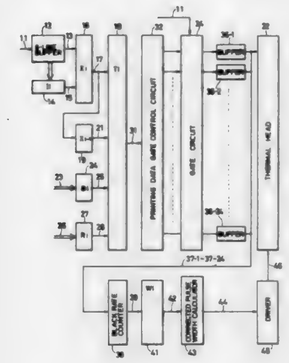
4,563,691

THERMO-SENSITIVE RECORDING APPARATUS

Akio Noguchi; Haruhiko Moriguchi; Norihiko Koizumi; Takashi Ohmori, and Toshiharu Inui, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1984, Ser. No. 685,382
Int. Cl.⁴ G01D *15/10*
U.S. Cl. 346—76 **10 Claims**

8. A thermo-sensitive recording apparatus for thermally recording selected images on successive lines of a medium by the selective energization of a plurality of heater elements formed in a substrate and constituting a thermal head, the apparatus comprising:
means for generating data concerning the temperature of the substrate, the latent heat energy of each of the heater elements, the history of energization of the individual heater elements and selected heater elements proximate thereto, and the resistance of each heater element;
means for combining said data to generate a pulse duration signal singly corresponding to each of the heater elements; and



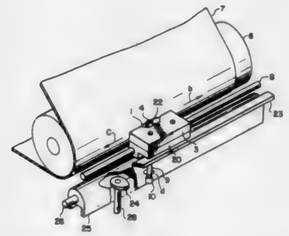
means for gating said pulse duration signals to said corresponding heater elements in accordance with printing signals selectively indicating which of the heater elements are to be energized during the printing of a line of images on the medium.

4,563,692

HEAD AND RIBBON DRIVING MECHANISM FOR THERMAL PRINTER

Moriyasu Negita; Masao Fukai, and Masatoshi Tokoro, all of Suzaka, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 14, 1985, Ser. No. 711,636
Claims priority, application Japan, Mar. 19, 1984, 59-53224
Int. Cl.⁴ G01D *15/10*
U.S. Cl. 346—76 PH **7 Claims**



1. A head-driving and ink ribbon feeding mechanism for an ink-transfer thermal printer having an elongated platen over which recording paper is advanced for receiving plural, thermal ink-transfer print images thereon in each of desired, successive line positions, comprising:
a print carriage;
means for mounting said print carriage to permit selective, translational movement thereof in a parallel axial direction relative to said platen and to prevent rotation thereof about said axial direction,
said print carriage comprising a frame, support means pivotally mounted on said carriage frame and supporting adjacent a free end thereof a thermal print head disposed toward said platen, means for resiliently biasing said piv-

otal support means normally to urge said thermal head toward said platen in a head-down position, said frame being adapted for receiving a thermo-ink ribbon cartridge having therein a thermo-ink ribbon and supply and take-up spools therefore, so as to dispose a length of said thermo-ink ribbon extending between said spools intermediate said print head and said elongated platen, and a shaft rotatably mounted on said frame for drivingly engaging the take-up reel of the thermo-ink ribbon cartridge received on said frame, and

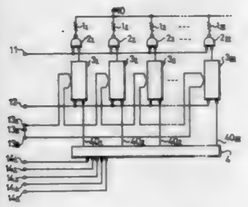
mechanical actuating means selectively switchable between a first position engaging said shaft for rotating same during said translational movement of said print carriage, and thereby driving said take-up spool to advance said thermo-ink ribbon past said thermal print head when in the head-down position and a second position displaced from said shaft and engaging said pivotal support means for said thermal head for switching same, against said urging said resilient biasing means, to a head-up position in which said thermal head is displaced from said thermo-ink ribbon.

4,563,693

GRADATION RECORDER

Yosuke Masaki, Soma, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jun. 18, 1984, Ser. No. 621,437
Claims priority, application Japan, Jun. 17, 1983, 58-107943
Int. Cl.[4] B41S 3/02
U.S. Cl. 346—76 PH 2 Claims



1. A gradation recorder comprising:

a plurality of shift registers corresponding to a plurality of heat-producing resistors in a thermal head, each shift register having an enabling terminal for receipt of an enabling bit signal to enable said shift register to store a plural-bit binary gradation signal therein,

a decoder for decoding a plural-bit binary address signal into a second address signal having a number of bits corresponding to said plurality of shift registers, said decoder including a corresponding plurality of connections to said enabling terminals of said shift registers,

means for supplying a series of plural-bit binary gradation data to all shift registers simultaneously in parallel which indicate the shades of the dots forming a character, or the like, to be printed by said resistors of said thermal head through succesive bit signals supplied by said shift registers, and

means for supplying a series of binary address signals to said decoder to be decoded into second address signals providing bit signals for enabling each shift register in series to store a binary gradation data supplied by said supplying means,

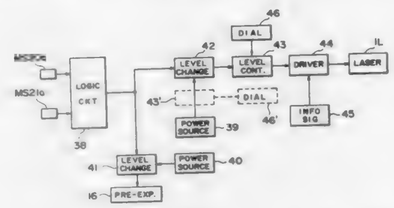
the data stored in the shift registers being successively retrieved by applying clock pulses to the shift registers such that the resistors are successively energized or de-energized selectively corresponding to the delivery of each one bit of the data from the shift registers, thereby performing printing using a plurality of shades.

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IMAGE INFORMATION RECORDING APPARATUS

Masaharu Ohkubo, Yokohama; Yoshihiro Murasawa, Kawasaki; Yasumasa Ohtsuka, and Jun Asai, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1984, Ser. No. 577,239
Claims priority, application Japan, Feb. 10, 1983, 58-20733
Int. Cl.[4] G01D 15/14
U.S. Cl. 346—160 24 Claims



1. An image information recording apparatus comprising:

a movable photosensitive member movable by a pre-exposure station, charging station, laser beam exposure station, developing station and transfer station in the order named;

information beam producing means for producing a laser beam corresponding to an information signal of an image to be recorded;

pre-exposure means, located at said pre-exposure station, for substantially uniformly exposing said photosensitive member to illumination light;

charging means, located at said charging station, for charging said photosensitive member;

optical means for scanningly deflecting said laser beam to expose said photosensitive member to the laser beam at said laser beam exposure station;

laser beam power control means for controlling power of the laser beam incident on said photosensitive member in accordance with the wavelength of said laser beam and sensitivity of said photosensitive member; and

pre-exposure control means for controlling the power of the illumination light from said pre-exposure means in accordance with the sensitivity of said photosensitive member;

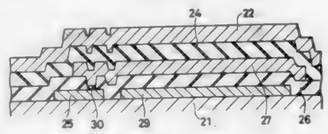
wherein said laser beam power control means and said pre-exposure control means includes a common detection means for detecting the sensitivity information of a photosensitive member mounted in said apparatus, and wherein, in response to the signal from said detection means, said laser beam power control means controls the power of the laser beam, and said pre-exposure control means controls the power of the illumination light.

4,563,695

SUPERCONDUCTING SWITCHING DEVICE

Yoshinobu Tarutani, Kitatsuru, and Toshikazu Nishino, Kawasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 575,273
Claims priority, application Japan, Jan. 28, 1983, 58-11541
Int. Cl.[4] H01L 39/22
U.S. Cl. 357—5 7 Claims



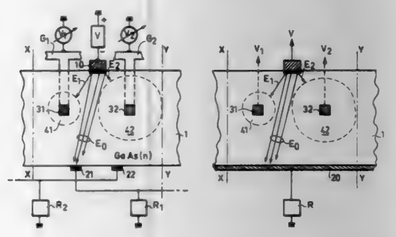
1. A superconducting switching device characterized in that a control line film is disposed at the same level as that of a base electrode layer of a sandwich type superconducting tunnel junction.

4,563,696

BALLISTIC TRANSPORT-TYPE SEMICONDUCTOR DEVICE FOR DEFLECTING ELECTRONS

Paul R. Jay, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 20, 1982, Ser. No. 340,965
Claims priority, application France, Jan. 27, 1981, 81 01466
Int. Cl.[4] H01L 29/76
U.S. Cl. 357—22 3 Claims



1. An electron deflection device of the ballistic transport type, comprising:

a semiconductor chip;

at least one cathode electrode located on one side of said chip and at least one anode electrode located on the opposite side of said semiconductor chip;

said anode and said cathode electrodes forming ohmic contacts with said chip;

said chip including a first buried electrode forming a first Schottky contact and a second buried electrode forming a second Schottky contact;

means for applying polarization voltages to the first and the second buried electrodes in such a manner that an electron beam propagated between the anode and the cathode electrodes in response to a voltage applied between said anode and said cathode electrodes is deflected as a function of the potential difference between said first and said second buried electrodes; and including at least one supplementary anode electrode arranged in such a way that said electron beam passes through a selected one of the anode electrodes on modifying by a given quantity the ratio of the voltages respectively applied to the first and the second buried electrodes; wherein the cathode electrode, first and second buried electrodes and anode electrodes form rows of parallel electrodes, the first and second buried electrodes forming an interdigitated grid.

4,563,697

SEMICONDUCTOR PRESSURE SENSOR

Shunji Miura, Matsumoto, Japan, assignor to Fuji Electric Company, Ltd., Kawasaki, Japan

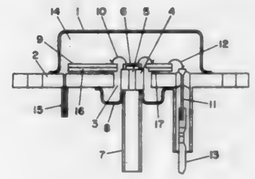
Filed Feb. 14, 1983, Ser. No. 466,125
Claims priority, application Japan, Feb. 25, 1982, 57-29296
Int. Cl.[4] H01L 29/84
U.S. Cl. 357—26 4 Claims

1. A semiconductor pressure sensor comprising:

a sealing reference pressure container formed by a cap and a metal bottom plate having a pedestal disposed substantially at the center of said metal bottom plate, wherein said pedestal is mounted on a pressure guiding pipe to communicate air from the environment, and wherein said metal bottom plate has a bottom metal cap connected thereto and to said pedestal, and wherein said guiding pipe is connected to said bottom metal cap and extends through an opening in said bottom metal cap;

a pressure sensitive diaphragm of semiconductor material accommodated within said sealed reference pressure container and attached to said pedestal of said metal bottom plate but having communication with the environment outside said reference pressure chamber by receiving air traveling through said pressure guiding pipe;

a supportng metal plate accommodated within said sealed reference pressure container and attached to the metal bottom plate only over a relatively small area of the interface between the supporting metal plate and the metal bottom plate, said small area of attachment effectively mounting the metal supporting plate to the metal bottom plate;



a ceramic circuit substrate accommodated within said sealed reference pressure chamber and attached to the upper surface of said supporting metal plate over substantially the entire interfacing area between said ceramic circuit substrate and its supporting metal plate;

a strain gauge circuit connected to the pressure sensitive diaphragm, and connected to an output lead which provides an output signal indicative of the pressure in the environment; and

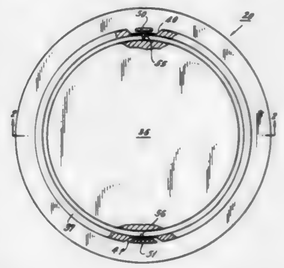
wherein the thermal expansion factors of the supporting metal plate and said ceramic circuit substrate are approximately equal, to reduce thermal stress to the circuit substrate.

4,563,698

SCR HAVING MULTIPLE GATES AND PHOSPHORUS GETTERING EXTERIORLY OF A RING GATE

Anders Nilarp, Rancho Palos Verdes, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed Aug. 12, 1982, Ser. No. 407,425
Int. Cl.[4] H01L 27/24, 29/08, 29/06, 29/44
U.S. Cl. 357—38 12 Claims



1. A controlled rectifier having a ring gate; said controlled rectifier comprising a wafer of monocrystalline semiconductor material having generally flat parallel first and second surfaces; said first surface containing a central emitter diffusion region having a generally flat cathode contact secured thereto; said emitter region being of one of the conductivity types; said emitter region being formed in and surrounded at said first surface by a second region which is of the other of the conductivity types; and a ring-shaped gate contact surrounding and

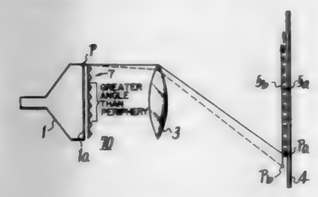
radially spaced from the exterior of said central emitter diffusion region and from the exterior of said flat cathode contact; first and second auxiliary emitter regions of said one of said conductivity types formed in said first surface and circumferentially spaced from one another and at least partly underlying the outer periphery of said ring gate and in electrical contact with said ring gate and first and second auxiliary gate contacts connected to said first surface and on said second region; said first and second auxiliary gate contacts being disposed adjacent said first and second auxiliary regions respectively and having portions thereof spaced from said ring gate by different respective distances, whereby said first and second auxiliary gate contacts have different firing sensitivities only one of said first and second gate electrodes being selected for the operation of said controlled rectifier.

4,563,699

TELEVISION RECEIVER OR PROJECTION TYPE

Toshiro Watanabe, Kanagawa; Takashi Tohyama, and Akio Ohkoshi, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,856
Claims priority, application Japan, Feb. 26, 1982, 57-31354
Int. Cl.⁴ H04N *9/31*
U.S. Cl. 358—60 **10 Claims**



1. A television receiver of the projection type comprising:
a color cathode ray tube having a phosphor face with a color phosphor pattern and on which an image may be formed;
a projection screen;
projection lens means for projecting an image on said face of the cathode ray tube as a projected color pattern onto said projection screen; and
prism plate means comprising a plurality of prisms disposed in front of said color cathode ray tube for splitting light from said color cathode ray tube into a plurality of images which are shifted relative to each other by a predetermined distance on said projection screen;
characterized in that an inclination angle of each prism in a central portion of said prism plate means is different from an inclination angle of each prism in a peripheral portion of said prism plate means, whereby light forming the images is split by said prism plate means by different amounts, such that the split images are uniformly separated by a predetermined amount across the entire screen to reduce distortion.

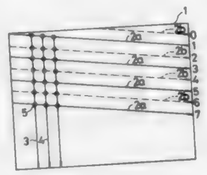
4,563,700

PICTURE SIGNAL PROCESSING METHOD AND APPARATUS THEREFOR

Yuichi Sato, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,415
Claims priority, application Japan, May 8, 1982, 57-76918
Int. Cl.⁴ H04N *1/46*
U.S. Cl. 358—75 **23 Claims**

1. A picture signal processing method for obtaining a picture signal having plural vertical scanning lines from an input picture signal having a plurality of horizontal scanning lines, comprising the steps of:
sampling the input picture signal at each horizontal scanning line thereof by means of first sampling signals generated at an interval substantially corresponding to the horizontal scanning period of the input picture signal;
filtering the signal obtained by sampling with said first sampling signals to obtain vertical scanning signals; and



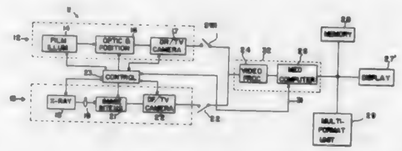
sampling the vertical scanning signals a number of times, which number is different from the number comprising the plurality of horizontal scanning lines in the input picture signal.

4,563,701

DIGITAL DIAGNOSTIC IMAGING SYSTEM

Chaim Gilath, Rechovot, and Haim Melman, Herzlia, both of Israel, assignors to Elscint Ltd., Haifa, Israel

Filed Nov. 14, 1983, Ser. No. 551,699
Int. Cl.⁴ H04N *5/32*
U.S. Cl. 358—111 **11 Claims**



1. A medical diagnostic video imaging system for providing display images of objects, said system comprising:
(a) video processing means for processing data receiving from video camera means to convert said data to digital data;
(b) computer means for operating on the digital data to enhance the images of the objects;
(c) display means for displaying the enhanced images;
(d) means for selectively providing video data to said processor from either a radiographic or fluorographic source, and
(e) said radiographic source including film illuminator means whereby an x-ray film recorded in the past can be readily compared with a fluorographic display.

4,563,702

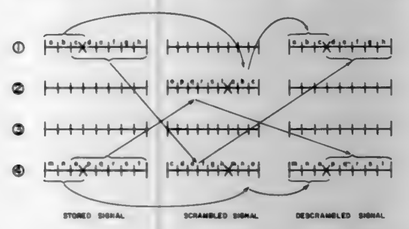
VIDEO SIGNAL SCRAMBLING AND DESCRAMBLING SYSTEMS

Jerrold A. Heller, and Woo H. Paik, both of San Diego, Calif., assignors to M/A-COM Linkabit, Inc., San Diego, Calif.

Filed May 27, 1983, Ser. No. 498,875
Int. Cl.⁴ H04N *7/16*; H04L *9/00*
U.S. Cl. 358—119 **25 Claims**

1. A system for scrambling video information lines, comprising
a memory;
storage means for sequentially storing groups of a plural predetermined number of said video information lines in the memory; and
retrieval means for forming groups of a corresponding number of scrambled video information lines by retrieving the stored video information from the memory in a sequence different from the sequence within the stored group in which said information was stored;

characterized by the retrieval means comprising mens for retrieving a portion of a first stored video information line from a first position therein to form a portion of a first scrambled video information line occupyiny a second position therein; retrieving a portion of the first stored video information line from the corresponding second position therein to form a portion of a second scrambled



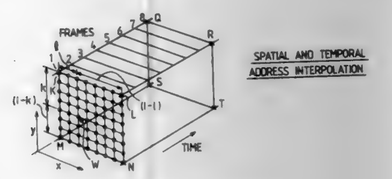
video information line occupying a position therein other than the corresponding second position; and forming the portion of the first scrambled video information line occupying the corresponding first position therein by retrieving a portion of a stored video information line other than the first stored video information line from a position therein other than the corresponding first position.

4,563,703

VIDEO PROCESSING SYSTEMS

Richard J. Taylor, London; Paul R. N. Kellar, and Neil R. Hinson, both of Newbury, all of England, assignors to Quantel Limited, Kenley, England

Filed Mar. 16, 1983, Ser. No. 475,789
Claims priority, application United Kingdom, Mar. 19, 1982, 8208054
Int. Cl.⁴ H04N *5/14, 9/535*
U.S. Cl. 358—160 **12 Claims**



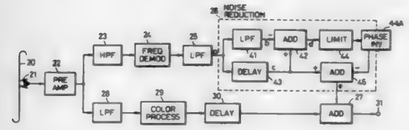
3. A video processing system comprising:
a frame store;
input means for receiving sequences of picture point signals defining successive pictures;
address means for determining selected addresses in said frame store for picture point signals separated by more than one picture point;
said address means being operative to provide said selected addresses for pictures separated by more than one picture;
address interpolation means for interpolating picture point addresses not determined by said address means in successive pictures including said separated pictures and including intermediate pictures, and means for writing picture point signals in a predetermined order into said frame store means.

4,563,704

NOISE REDUCTION CIRCUIT FOR A VIDEO SIGNAL

Akira Hirota, Chigasaki, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 16, 1982, Ser. No. 389,041
Claims priority, application Japan, Jun. 19, 1981, 56-94670; Jun. 19, 1981, 56-94671
Int. Cl.⁴ H04N *5/21, 9/535*
U.S. Cl. 358—167 **9 Claims**



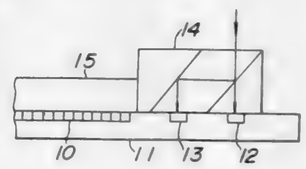
1. A noise reduction circuit comprising:
lowpass filter means supplied with an input luminace signal having a noise component of an input video signal, said lowpass filter means having a characteristic which eliminates a high-frequency component including said noise component;
delay means for delaying said input luminance signal by a predetermined time period τ so that an output signal of said delay means has a leading edge which occurs after said predetermined time period τ, said time period beginning at the start of a rise in an output signal of said lowpass filter means, said predetermined time period τ being equal to a rise time of the output signal of said lowpass filter means;
first subtraction means comprising a first adder means which is directly supplied with the output signals of said delay means and is supplied with the output signal of said lowpass filter means via a first phase inverting means for subtracting the output signal of said lowpass filter means from the output signal of said delay means;
limiter means for amplitude-limiting an output signal of said first subtraction means; and
second subtraction means comprising a second adder means which is directly supplied with the output signal of said delay means and is supplied with the output signal of said limiter via a second phase inverting means for subtracting an output signal of said limiter means from the output signal of said delay means to produce a luminance signal from which said noise component has been substantially eliminated.

4,563,705

AUTOMATIC FOCUS CONTROLLING APPARATUS AND METHOD

Kenichi Oinoue, Tokyo; Masahiro Aoki, Fussa; Masatoshi Ida, Hachioji; Junichi Nakamura, Hachioji, and Asao Hayashi, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1982, Ser. No. 444,155
Claims priority, application Japan, Nov. 27, 1981, 56-189242
Int. Cl.⁴ H04N *3/26*
U.S. Cl. 358—227 **7 Claims**



1. An automatic focus controlling apparatus comprising:

a two-dimensional solid state image sensing device formed on a substrate;

an optical lens coupled in a fixed position with respect to said substrate and positioned to project an image of an object upon said image sensing device;

means for detecting a focusing condition of the image projected on said image sensing device, including at least one light receiving element array formed on the same substrate with said two-dimensional solid state image sensing device such that a portion of the image of an object received from said lens is projected upon said light receiving element array to produce a focusing error signal, said at least one light receiving element array being discrete from and operating independently of said image sensing device; and

means responsive to said focusing error signal for moving said substrate with respect to the said fixed optical lens along an optical axis of said lens in a direction to produce high speed automatic focus of an image on said image sensing device.

4,563,706

IMAGE FORMING SYSTEM

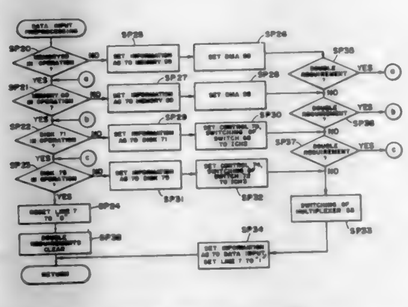
Nao Nagashima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 307,152, Sep. 30, 1981, abandoned. This application Jun. 6, 1984, Ser. No. 617,723

Claims priority, application Japan, Oct. 3, 1980, 55-137670

Int. Cl.⁴ H04N *1/40*

U.S. Cl. 358—280 **10 Claims**



1. An image forming apparatus comprising:

plural input means for generating plural input image data signals, comprising means for generating original image data signals by scanning an original;

plural memories;

plural output means comprising means for reproducing the image of said original on a copying material; and

process means for storing the image data from one or more of said purality of said input means in either one of said plurality of said memories and for releasing the image data from one or more of said plurality of said memories to one or more of said plurality of said output means, said process means being operable, even upon occupation of one of said memories, to store the image data from one of said input means in another one of said memories.

4,563,707

METHOD AND SYSTEM FOR REGULATING THE MAXIMUM OUTPUT CURRENT OF A PHOTOMULTIPLIER

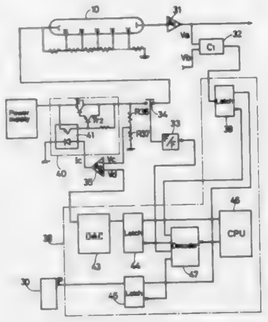
Yoshihiro Kishida, Uji, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed May 15, 1984, Ser. No. 610,527

Claims priority, application Japan, Sep. 8, 1983, 58-166172

Int. Cl.⁴ H04N *1/02*

U.S. Cl. 358—294 **11 Claims**



1. A method for regulating the maximum output current of a photomultiplier being employed in an input scanning head of an image reproducing system by using a control signal obtained by comparing the output voltage corresponding to the output current of the photomultiplier being exposed to a beam of certain intensity to a reference voltage input from a color computation device included in the image reproducing system, comprising the steps of:

(a) producing the initial control voltage for controlling the cathode voltage of the photomultiplier according to the type of the aperture to be used;

(b) controlling the cathode current of the photomultiplier according to the initial control voltage or the subsequent control voltage; and

(c) continuing to renew the control voltage to the extent the difference between the output voltage and the reference voltage becomes zero.

4,563,708

METHOD AND APPARATUS FOR CONTROLLING STORAGE TIME IN CHARGE STORING PHOTOELECTRIC CONVERTER

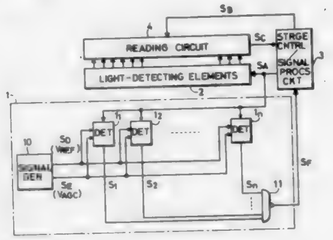
Kenzo Ishibashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1984, Ser. No. 602,983

Claims priority, application Japan, Apr. 22, 1983, 58-69997

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213 **4 Claims**



1. In a method for controlling the storage time in a charge storing photoelectric converter, wherein a plurality of monitor light-detecting elements are positioned adjacent to a group of light-detecting elements for receiving reflected light in the photoelectric converter such that the monitor light-detecting elements and their respective adjacent light-detecting elements receive substantially the same reflected light in a substantially identical optic path, the improvement comprising: terminating storage of charge in the group of light-detecting elements when any one of said monitor light-detecting elements has received a predetermined amount of light.

4,563,709

ROTARY RECORD HAVING A SPIRAL TRACK WITH A VIDEO SIGNAL AND TWO AUDIO SIGNALS RECORDED THEREON

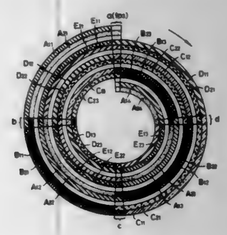
Atsumi Hirata, Fujisawa, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 523,668, Aug. 15, 1983, abandoned. This application May 2, 1985, Ser. No. 729,088

Claims priority, application Japan, May 31, 1983, 58-96767

Int. Cl.⁴ H04N *5/76, 5/91, 5/78*

U.S. Cl. 358;342 **2 Claims**



1. A rotary recording medium comprising a spiral track made up of a plurality of consecutive track turns on which a television signal made up of a video signal and two channels of audio signals are recorded, there being television signals related to different programs, the television signals being segmented and recorded at a rate of X fields in each track turn, where X is an even integer equal to or greater than two, said medium to be played on a reproducing apparatus which has a reproducing element for reproducing the recorded television signal from said rotary recording medium, said rotary recording medium having:

Z programs successively switched over and recorded on said spiral track in a time-sequence, said recording being in terms of l fields, where: Z is a positive integer described by an equation $Z=(X/m)+1$, m is an arbitrary number greater than zero, (X/m) is a positive integer, and $l=m$ when $m \geqq 1$ and $l=1$ when $m<1$;

a plurality of program connecting positions occurring in said spiral track at the locations where the programs switch over and connect to each other, said two channels of audio signals in the television signal being related to one program and being substantially the same in the two channels; and

a plurality of audio switchover positions where the audio signals in the television signal are related to different programs, said audio switchover positions being the locations where the audio signals switch over and connect to each other in each of said two channels, each of said audio switchover positions being located within a track part corresponding to a vertical blanking period of the video signal, each of said audio switchover positions of the audio signal of one channel being mutually in nonalignment along in a track scanning direction with respect to a corresponding one of said audio switchover positions of the audio signal of the other channel, so that the television signal related to one program is arbitrarily and selectively reproduced at one time from among said Z programs which are recorded over Z mutually adjacent track turns within the same angular range of said rotary recording medium.

4,563,710

DIGITAL TELEVISION TAPE RECORDING

John L. E. Baldwin, Eastleigh, United Kingdom, assignor to Independent Broadcasting Authority, London, United Kingdom

PCT No. PCT/GB82/00030, § 371 Date Oct. 5, 1982, § 102(e) Date Oct. 5, 1982, PCT Pub. No. WO82/02810, PCT Pub. Date Aug. 19, 1982

Continuation of Ser. No. 438,878, Oct. 5, 1982. This PCT application Feb. 5, 1982, Ser. No. 617,850

Claims priority, application United Kingdom, Feb. 5, 1981, 8103502

Int. Cl.⁴ H04N *5/008, 5/76*

U.S. Cl. 360—9.1 **14 Claims**



1. Apparatus for recording or playing back a digital television signal comprising a helical scanning device including a drum which may be rotatable, a rotatable headwheel provided with a plurality of recording/playback heads, guide means for wrapping a magnetic recording tape around a portion of the circumference of the drum, means for rotating the headwheel, and means for moving the tape around the surface of the drum whereby one field of a television video picture is recorded or played back by a plurality of rotations of the headwheel, characterised in that the recording/playback heads are disposed on the headwheel and the degree of wrap of the tape around the drum is such that for one complete revolution of the headwheel there is a period of time during which there is no head in operative contact with the tape, and storage means are provided for receiving information in the form of digital words to be recorded or played back for altering the timing of the information whereby on recording all the information received is recorded and on playback the information on the tape is recovered and returned to the timing relationship existing for the original information.

4,563,711

TAPE PLAYER

Kazuki Takai, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,403

Claims priority, application Japan, Dec. 9, 1982, 57-214684; Dec. 14, 1982, 57-217779

Int. Cl.⁴ G11B *15/44*

U.S. Cl. 360—74.1 **5 Claims**

1. A tape player which comprises:

a fast-forwarding operation lever;

a rewinding operation lever;

a pair of reel bases;

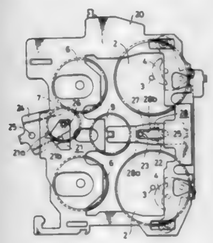
a pair of flywheels for driving capstans;

a control plate movable responsively to actuation of any one of said operation levers;

a play mode idler gear;

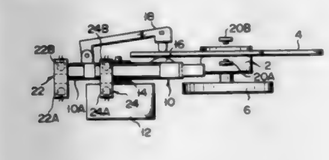
an idler gear plate carrying thereon said play mode idler gear and rotatable from a position where said play mode idler gear engages one of said reel bases to another position where said idler gear engages the other of said reel bases;

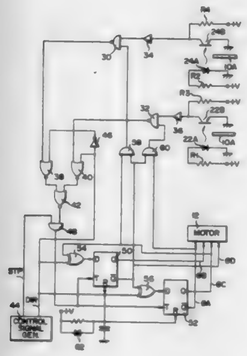
a fast-forwarding and rewinding mode idler gear;
a changeover lever carrying thereon said fast-forwarding and rewinding mode idler gear and rotatable from a position where said idler gear engages one of said reel bases to another position where said idler gear engages the other of said reel bases; and



an interlock means interlocking said changeover lever with said idler gear plate and responsive to a position of said control plate to keep said idler gear plate or said changeover lever at a neutral position where said idler gear thereon is disposed away from said reel bases.

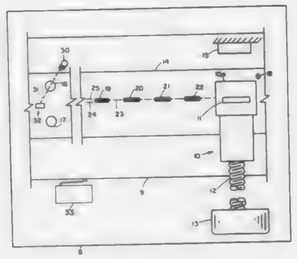
4,563,712
FLOPPY DISK DRIVE APPARATUS
Yasuharu Nishio, and Shunji Saito, both of Numazu, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Dec. 29, 1983, Ser. No. 566,500
Claims priority, application Japan, Jan. 14, 1983, 58-4429
Int. Cl.[4] G11B *21/02*
U.S. Cl. 360—75 **12 Claims**

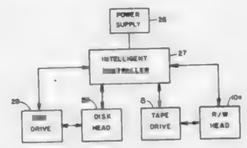




1. A floppy disk drive apparatus, comprising:
a control signal generating circuit for generating a step signal and a direction instruction signal indicative of one of an inner and an outer peripheral direction;
first drive means for rotating a floppy disk;
second drive means for driving a carrier to which a magnetic head is attached, in the radial direction of said floppy disk, as determined by said direction instruction signal and in response to said step signal;
detecting means for generating an output signal when it detects that said magnetic head is located in the outer peripheral limit location of said floppy disk; and
control means for generating an inhibition signal to said second drive means in response to both an output signal from said detecting means and said direction instruction signal, indicative of the outer peripheral direction, to inhibit said second drive means from driving said magnetic head over said outer peripheral limit location of said floppy disk, said second drive means being inhibited from driving said magnetic head until said direction instruction signal is changed to indicate an inner peripheral direction.

4,563,713
METHOD AND APPARATUS FOR POSITIONING AND INDEXING READ/WRITE ON A MULTIPLE TRACK RECORDING MEDIUM
Dale L. Cahoon, and Larry D. Zoinosky, both of Sunnyvale, Calif., assignors to Xebec, San Jose, Calif.
Filed Jul. 9, 1982, Ser. No. 396,696
Int. Cl.[4] G11B *21/02*
U.S. Cl. 360—75 **18 Claims**





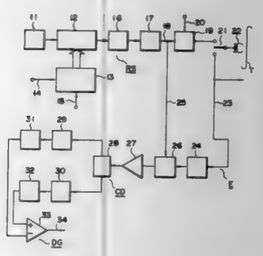
1. A method of positioning a read/write head with any one of a plurality of information containing tracks on a recording medium, comprising the steps of:
locating a first edge of a reference signal on the recording medium;
locating a second opposed edge of the reference on the recording medium;
using the locations of the first and second edges to calculate the position of the centerline of the reference signal; and
using the centerline position as a reference point for positioning the head with respect to a selected one of a plurality of information tracks on the recording medium for facilitating transfer of information between the head and the selected track.

4,563,714
METHOD AND DEVICE FOR CONTROLLING THE TRACKING
Motohiko Takeuchi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Mar. 19, 1984, Ser. No. 591,324
Int. Cl.[4] G11B *5/56*
U.S. Cl. 360—77 **12 Claims**

1. A method for controlling the tracking in a playback mode

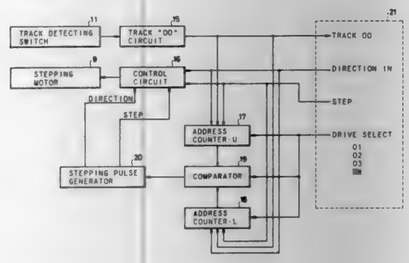
in accordance with at least four pilot signals of different frequencies f1, f2, f3 and f4 which are recorded together with information signals on sequential tracks of a recording medium in a predetermined cyclic sequence and which satisfy a relationship $|f1-f2|:|f2-f3|:|f3-f4|=A:B:A$, comprising the steps of: detecting, as two difference frequency signal components which respectively have predetermined constant frequencies in every track, differences between two pilot signal components extracted from two tracks adjacent to both side of





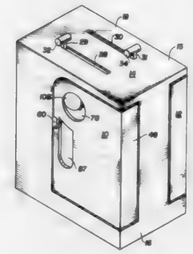
a reproduced track of the recording medium and corresponding one of four reference signals which respectively have the same relationship those of the four pilot signal frequencies f1, f2, f3 and f4 and which are supplied in corresponds to sequential reproduced tracks in a different cyclic sequence from that of the four pilot signals; and detecting a difference between levels of the two difference frequency signal components so as to obtain a tracking control signal of a polarity and level corresponding to a tracking error.

4,563,715
HEAD POSITION CONTROL DEVICE
Noriyuki Kawamura; Nobuhiro Aizawa, both of Chichibu; Shigeki Koizumi, Yokoze; Masaru Koyahara, and Tetsuo Tomita, both of Chichibu, all of Japan, assignors to Canon Denshi Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 12, 1983, Ser. No. 457,487
Claims priority, application Japan, Jan. 22, 1982, 57-8617
Int. Cl.[4] G11B *5/55*
U.S. Cl. 360—78 **10 Claims**



1. A head position control device operative in cooperation with a magnetic disc, said device comprising:
mutually linked plural magnetic heads for information write-in and read-out to and from tracks on a magnetic disk;
memory means for memorizing track addresses of said plural heads;
a means for generating a select signal for switching over information write-in or read-out from one of said heads to another thereof;
comparator means for comparing the track address of one of said heads with that of another of said heads when the information write-in and read-out are switched over from said one of said heads to said other of said heads in response to a select signal and for producing a comparison signal representing said comparison; and
means, in response to a comparison signal from said comparator means, for moving said other of said heads to the track address of said another head memorized in said memory means.

4,563,716
RANDOM ACCESS DATA STORAGE SYSTEM
Frederick P. Shultz, Columbia, Md., assignor to Debtec Corporation, Annandale, Va.
Filed Mar. 21, 1983, Ser. No. 477,504
Int. Cl.[4] G11B *15/68*
U.S. Cl. 360—92 **41 Claims**



1. Recording medium container and transport apparatus for a random access data storage system, comprising in combination:
at least one cartridge including a continuous length of elongated data storage medium contained therein, said length of storage medium having a row of sprocket holes along each side thereof, as well as one or more reference holes selectively located in relation to said sprocket holes, said cartridge further having a pair of relatively large opposing side walls and a plurality of relatively smaller intermediate end walls, at least one of said side walls having a first port for receiving drive means therein for transporting said storage medium within said cartridge, a second port in said one side wall for receiving at least signalling means therein for counting sprocket holes and said reference holes in said storage medium, both said cartridge side walls having raised inner side surface portions being structured to define a guide path for said storage medium along the inner surface of one of said end walls as well as an enclosed storage area for said storage medium, said one end wall having a third port for accessing a portion of said storage medium in said guide path by an external selectively positioned read/write head, and at least one fourth port located in said end wall for providing a signal path for said signalling means; and
a drive unit engageable with said at least one cartridge for selectively driving and transporting said continuous length of storage medium linearly past a read/write head when in engagement with said cartridge, said drive unit comprising a housing containing at least one transport mechanism including actuator means, motor driven drive sprocket means comprising a single drive sprocket locatable in the first recited port of said at least one side wall of said cartridge, said drive sprocket being additionally mov-

able by said actuator means and including means to engage said storage medium with a forward rotational movement for preventing damage to said storage medium when contact is initially made therewith, signalling means locatable at said at least one fourth port for counting said sprocket holes and said one or more reference holes in said storage medium for determining a predetermined data sector of a plurality of data sectors along the length of said storage medium, a read/write head and a drive motor thereafter located in said housing adjacent said third port and including means for selectively moving said read/-write head on command transversely back and forth across said medium, and motor means for driving said drive sprocket when said read/write head is located adjacent said third port of said cartridge.

4,563,717

HELICAL SCAN CASSETTE RECORDER WITH IMPROVED TAPE THREADING

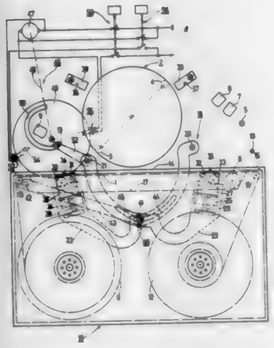
Harald Fleck, Vienna, Austria; Johannes C. A. Muller, Eindhoven, Netherlands, and Heinrich Hütter, Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 30, 1982, Ser. No. 403,374

Claims priority, application Austria, Sep. 8, 1981, 3884/81; Mar. 15, 1982, 1032/82

Int. Cl.⁴ G11B *15/66, 5/008*

U.S. Cl. 360—95 **17 Claims**



1. A helical scan cassette recorder for use with a cassette containing a record carrier tape and having at least one aperture for withdrawing the tape from the cassette after the cassette has been inserted into the recorder, comprising

a tape guide drum having a circumferential surface, and a tape guide device comprising two levers each supporting a respective tape guide which levers are pivotable about two parallel pivotal axes, and are arranged to overlap each other at an area of overlap which varies as the levers are pivoted, a driving device for pivoting said levers between a rest position and an operating position, and a coupling device which acts directly on said levers for coordinating their pivotal movements; in the rest position said guides being located behind the tape within the cassette at the location of the aperture in said cassette; during movement from the rest position to the operating position, said guides pulling a length of the tape from within the cassette and wrapping said length of tape around the tape guide drum; and in the operating position said tape guides keeping the record carrier wrapped around said drum;

characterized in that the coupling device includes a link-motion mechanism comprising a sliding block which extends in the same direction as the pivotal axes of the two levers, a carrier device arranged to be movable transversely of the pivotal axes, a link-motion surface on a least one of said levers, means for urging the sliding block against the link-motion surface, and means for maintaining said sliding block in force-sustained cooperation with said carrier device,

said carrier device moving said sliding block along a path of movement defined by the carrier device and extending through an area of instantaneous overlap of said two levers,

said sliding block being in force-sustained engagement with said two levers at the location of the area of instantaneous overlap, engagement of the block with said one lever being provided by said means for urging said carrier device moving said sliding block along a path of movement which is defined by the carrier device and which extends through the area of instantaneous overlap of the two levers.

4,563,718

TAPE CASSETTE LINER

Hideo Shirako, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

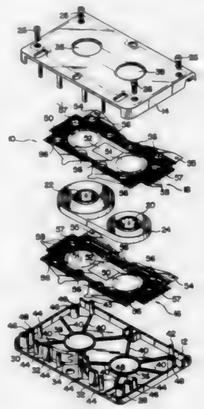
Filed Jan. 26, 1983, Ser. No. 461,208

Claims priority, application Japan, Feb. 4, 1982, 57-14300[U]

The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.

Int. Cl.⁴ G11B *23/02, 15/32;* **G03B** *1/04*

U.S. Cl. 360—132 **17 Claims**



1. A tape cassette comprising:

a pair of cassette halves coupled with each other to form a housing, each cassette half having an inner surface facing the inner surface of the other cassette half, a plurality of projections formed on the inner surface, and a pair of reel shaft insertion holes;

a pair of reel hubs rotatably housed in the housing;

a magnetic tape housed in the housing and wound around the reel hubs; and

a pair of liner sheets arranged individually between the cassette halves and the magnetic tape to hold the magnetic tape elastically on both sides, thereby preventing irregular winding of the magnetic tape, each liner sheet having a plurality of first protrusions protruding toward each opposite cassette half from those portions of the liner sheet which correspond to the projections of the opposite cassette half and elastically abutting against their corresponding projections, and a plurality of second protrusions protruding toward the magnetic tape and elastically abutting against the magnetic tape.

4,563,719

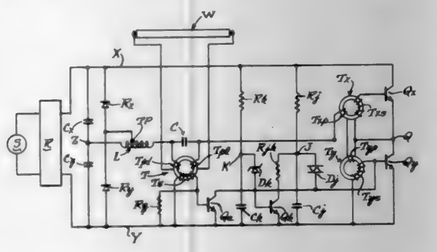
BALLASTS WITH BUILT-IN GROUND-FAULT PROTECTION

Ole K. Nilssen, Caesar Dr. Rte. 5, Barrington, Ill. 60010

Continuation of Ser. No. 412,771, Aug. 30, 1982, abandoned. This application Aug. 13, 1984, Ser. No. 640,240

Int. Cl.⁴ H02H *3/33*

U.S. Cl. 361—45 **29 Claims**



28. A ballasting means for a gas discharge lamp, comprising:

power supply operable to connect with an ordinary electric power line and to provide a current-limited voltage operative to properly power said lamp from a first terminal and a second terminal;

sensing means operative to provide a disable signal in response to substantive difference in magnitude, waveshape and/or phase-angle of current flowing out of said first terminal as compared with current flowing into said second terminal; and

disable means operative to cause a substantive reduction in the magnitude of said current-limited voltage in response to said disable signal.

4,563,720

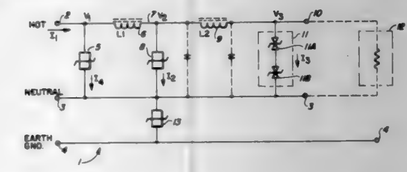
HYBRID AC LINE TRANSIENT SUPPRESSOR

O. Melville Clark, Tempe, Ariz., assignor to General Semiconductor Industries, Inc., Tempe, Ariz.

Filed Apr. 17, 1984, Ser. No. 601,229

Int. Cl.⁴ H02H *9/04*

U.S. Cl. 361—56 **14 Claims**



14. A pulse suppressor circuit for suppressing a transient overvoltage and accompanying current surge on an AC power line, said pulse suppressor circuit comprising in combination:

(a) first and second metal oxide varistors, each havng first and second terminals, each having a breakdown voltage greater than any normal AC voltage appearing on said AC power line;

(b) first and second inductors each having first and second terminals, said second inductor having a substantially higher inductance than said first inductor;

(c) surge suppressor means having first and second terminals;

(d) a hot line terminal for connection to a hot line conductor of said AC power line, and a neutral line terminal for connection to a neutral line conductor of said AC power line;

(e) a hot supply terminal for connection to a circuit to be protected;

(f) first means for coupling said first terminal of said first metal oxide varistor and said first terminal of said first inductor to said hot line terminal;

(g) second means for coupling said second terminal of said first inductor, said first terminal of said second metal oxide varistor, and said first terminal of said second inductor together to an intermediate conductive node;

(h) third means for coupling said first terminal of said surge suppressor means and said second terminal of said second inductor to said hot supply terminal; and

(i) fourth means for coupling said second terminals of said first and second metal oxide varistors and said second terminal of said surge suppressor means to said neutral line terminal,

wherein said inductance of said second inductor is approximately twice the inductance of said first inductor.

4,563,721

CIRCUIT ARRANGEMENT FOR ACTUATING ELECTROMAGNETIC SWITCHGEAR

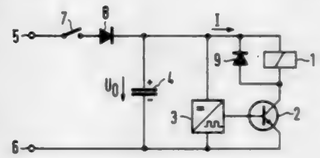
Gerhard Schroether, Amberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Oct. 7, 1983, Ser. No. 540,086

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239840

Int. Cl.⁴ H01H *47/18*

U.S. Cl. 361—196 **21 Claims**



1. In a circuit arrangement for energizing and delayed de-energizing of exciting coils of an electromagnetic switchgear using a capacitor parallel to an excitation voltage source and an on-off switch for the arrangement, the improvement comprising a clock generator, connected in parallel with the capacitor, and an electronic switch, controlled by the clock generator, connected ahead of the exciting coil.

4,563,722

ANTISTATIC SHELF FOR ELECTRONIC CIRCUIT BOARDS

Ralf P. Maroney, and Gregory A. Fishkind, both of Milford, Conn., assignors to Plug-In Storage Systems, Inc., Milford, Conn.

Filed Aug. 28, 1984, Ser. No. 645,053

Int. Cl.⁴ H05K *7/18, 9/00*

U.S. Cl. 361—212 **10 Claims**

1. An antistatic shelf for adjustably supporting electronic circuit boards in a storage cabinet or the like comprising:

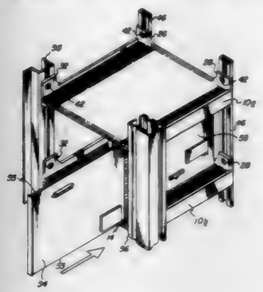
a base having parallel planar top and bottom surfaces;

a plurality of parallel grooves disposed in said top surface, a first set of said grooves having a relatively narrow width and a second set of said grooves having a relatively wide width;

a complementary plurality of parallel grooves disposed in said bottom surface extending in the same direction and in alignment with the grooves in said top surface, individual grooves in the bottom surface having a width correspnd-

ing to that of the groove aligned therewith on the top surface; and

means for adjustably mounting said base in a storage cabinet;



said base and grooves molded as a unit from a conductive plastic.

4,563,723

CHARGEABLE ELECTRICAL POWER SOURCE

Joseph Meyers, Cloverdale, Calif., assignor to Gordon G. Waltenspiel, Santa Rosa, Calif.

Filed Jul. 30, 1984, Ser. No. 635,789

Int. Cl.⁴ H01G *1/01, 9/00*

U.S. Cl. 361—305 **3 Claims**



1. A rechargeable electrical power source comprising:

first and second elements of electron absorptive substance, each element being adapted for collecting electrons during a charging mode and for emitting electrons during a discharging mode, the first element further having a capacity for prolonged electron emissivity when negatively charged relative to the second element and operably coupled therewith, said first element being formed from a mixture of silica, carbon, selenium, tantalum, copper and cadmium; and

a layer of insulation material between the first and second elements.

4,563,724

ELECTRICAL CAPACITOR CONSISTING OF A CONSOLIDATED STACK OF MUTUALLY LAYERED, METALLIZED DIELECTRIC PLIES AND A METHOD FOR THE MANUFACTURE THEREOF

Reinhard Behn, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 3, 1984, Ser. No. 657,188

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1983, 3342329

Int. Cl.⁴ H02B *1/04;* **H01G** *13/06, 4/08*

U.S. Cl. 361—306 **16 Claims**

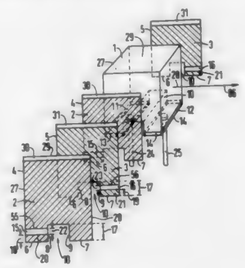
1. An electrical capacitor, comprising:

a consolidated stack of layered dielectric plies each of which is provided with a metal coating thereon, said coatings extending alternately from ply to ply up to the ends of one of two projections;

said two projections being formed by an incision extending through all plies in a direction of a thickness of the stack and approximately in a center of one side thereof;

surfaces formed in the consolidated stack by said ends of said projections being provided with metal layers serving for contacting, said metal layers connecting the respective coatings to one another at each projection;

said dielectric plies comprising plastic films and said coatings comprising regenerably thin layers of valve metal and covering a respective surface of said dielectric plies substantially up to edges at lateral sides of the plies substantially up.to the



ends of said projections, and substantially to a region near an edge of an upper side of said stack which lies opposite a lower side at which a portion of said incision is located;

from dielectric ply to dielectric ply 5 said projections being alternately provided with metal-free insulating strips such that a depth of said incision toward said upper side is greater than a width of a remaining metal strip formed between the metal-free strip and projection end; and

said metal layers of the projection ends being metal sprayed layers.

4,563,725

ELECTRICAL ASSEMBLY

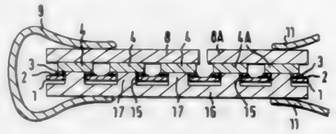
Peter L. Kirby, Newcastle Upon Tyne, England, assignor to Welwyn Electronics Limited, Northumberland, England

Filed Dec. 28, 1983, Ser. No. 566,459

Claims priority, application United Kingdom, Jan. 6, 1983, 8300247; Apr. 25, 1983, 8311200

Int. Cl.⁴ H05K *1/18*

U.S. Cl. 361—388 **26 Claims**



1. An electrical assembly comprising:

a multiplicity of chip carriers each containing a chip embodying a semiconductor integrated circuit, said chip being supported in a body of rigid material having a generally planar face with the chip being connected to an array of terminals on said planar face;

a circuit board of flexible material capable of undergoing movement in and out of and within the plane thereof and provided with electrical conductors on a face thereof;

soldered joints between the terminals and the electrical conductors mounting said chip carriers against one face of the circuit board without insertion of the terminals into the board and with the flexibility of said circuit board minimizing strain in said interconnections and consequential risk of said chip carriers becoming detached;

regions of said circuit board underlying said chip carriers defining holes through said circuit board;

a plate of thermally conductive material against the other face of the circuit board, said plate having heat sink pillars that project through said holes into direct contact with the undersides of said chip carriers while remaining detached from said chip carriers; and

means urging said chip carriers into thermally effective contact with said heat sink pillars, flexure and planar extension or compression of the circuit board permitting said direct contact to take place and the detachment of said chip carriers from said heat sink pillars permitting strain-releasing lateral movement of said chip carriers relative to said pillars.

4,563,726

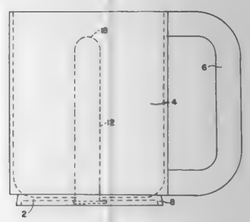
ILLUMINATED CHEMILUMINESCENT DRINKING MUG

Nelson F. Newcomb, and Nelson F. Newcomb, Jr., both of Mirror Lake, N.H. 03853

Filed Aug. 20, 1984, Ser. No. 642,399

Int. Cl.⁴ F21K *2/00*

U.S. Cl. 362—34 **1 Claim**



1. A molded plastic drinking mug comprising

a substantially flat circular bottom,

a light transmitting circular wall extending upward from the periphery of said bottom and integral therewith,

said bottom and wall defining a liquid container,

a hole through said bottom,

an elongated vertically disposed light transmitting hollow post closed at its upper end and extending upwardly from said bottom and attached at its lower open end to the boundary of said hole,

said post being wholely within the confines of said wall and having a vertical dimension of at least three inches which said dimension is also greater than one half the height of said wall,

a vertically disposed chemiluminescent light stick removably positioned within said post,

removable means at the lower end of said post for maintaining said chemiluminescent light stick within said post,

said chemiluminescent light stick being of a length that is greater than one half the height of said wall but less than the said vertical dimension of said post and having a lighting life of at least three hours and

a circular concentric supporting rim extending downward from said bottom, the exterior diameter of said rim being slightly less than the interior diameter of the top of said wall, whereby said mug may be securely stacked on another identical mug therebelow.

4,563,727

SELF-CHARGING SOLAR BATTERY

Raymond F. Curiel, P.O. Box 30355, Phoenix, Ariz. 85046

Filed Jan. 14, 1985, Ser. No. 690,966

Int. Cl.⁴ F21L *13/00;* **H01M** *12/00*

U.S. Cl. 362—183 **15 Claims**

15. A flashlight employing a self-charging solar battery assembly comprising:

a flashlight housing formed at least partially of a transparent material,

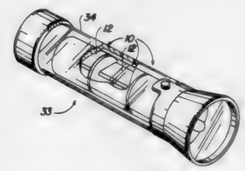
an open-ended cylindrical battery housing formed at least partially of a transparent material,

a rechargeable battery cell means mounted in said battery housing with its transparent material positioned adjacent the transparent material of said flashlight housing and comprising positive and negative terminals, one at each end thereof,

a solar electric panel comprising photo-voltaic cell means having positive and negative terminals,

said panel being mounted within said battery housing with said photo-voltaic cell means juxtapositioned to said transparent material of said battery housing such that solar rays may pass through said transparent material of said flashlight housing and said battery housing and excite said photo-voltaic cell means,

a diode means mounted in said battery housing and comprising an anode and a cathode,



a first means for connecting said positive terminal of said photo-voltaic cell means to said anode and for connecting said cathode to said positive terminal of said battery cell means,

a second means for connecting said negative terminal of said battery cell means to said negative terminal of said photo-voltaic cell means, and

cap means for closing each end of said battery housing,

a first one of said cap means comprising a positive battery terminal for the battery assembly, and a second one of said cap means forming a negative terminal for the battery assembly,

said first cap means connecting said positive terminal of said battery cell means to said positive terminal of the battery assembly,

said second cap means connecting said negative terminal of said battery cell means to the negative terminal of the battery assembly.

4,563,728

PEN LIGHT WITH ABUTTING CONTACT CLIP

Paul Bruggeman, and Nova C. Hastings, both of Norwalk, Conn., assignors to Wonder Corporation of America, Norwalk, Conn.

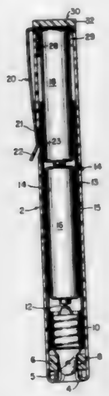
Filed Aug. 27, 1984, Ser. No. 644,773

Int. Cl.⁴ F21L *9/00*

U.S. Cl. 362—206 **4 Claims**

1. A pen light comprising an outer casing, a lamp within the lower end of the casing, battery means within the casing in electrical contact with a first terminal of the lamp, a conductive clip for engaging the battery means toward the upper end of the casing, and a conductive member within the casing engaging a second terminal of the lamp and extending into proximity with a free end of the clip so that the free end of the clip can be pushed through a contact opening in the casing into electrical contact with said conductive member to turn on the lamp, wherein said clip is shaped so that it abuts against the

upper edge of said contact opening at a point above said free end such that the electrical circuit to the lamp can be closed



when pressure is applied to the clip at the free end but cannot be closed when pressure is applied to the clip above said point.

4,563,729

DOUBLE-INSULATED, COMPACT, FOLDED FLUORESCENT TUBE FIXTURE

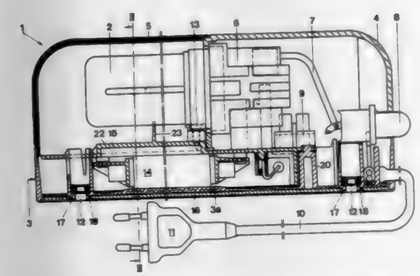
Alfons Jendrewski, Munich, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany

Filed Jun. 26, 1984, Ser. No. 624,596

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1983, 3325840; Jul. 18, 1983, 8320650[U]

Int. Cl.⁴ F21S *2/00*

U.S. Cl. 362—218 **17 Claims**



1. Double-insulated, compact folded fluorescent tube fixture having

a folded fluorescent tube (2);

fluorescent tube operating accessory apparatus (14);

and electrical terminal devices (9, 11),

comprising

an assembly of

a support base (3) of plastic material, an insulated cover cap (4) of plastic material and a closure cap (5) of transparent plastic material,

the cover cap (4) and the closure cap (5) being fitted over the support base (3) and defining therewith an enclosed chamber;

the fluorescent tube being located in the chamber beneath the transparent closure cap (5), and the fluorescent tube operating accessory apparatus (14) being located in said chamber, and secured to the support base of plastic material; and

a metal plate (16) secured to the support base and located at a region thereof outside of said chamber to dissipate heat generated in operation of the lamp within the accessory apparatus (14),

wherein the region of the support base (3) opposite the fluorescent tube accessory apparatus (14) is thickened with respect to the remaining portion of the support base to provide for increased electrical insulation between the accessory apparatus (14) and the metal plate (16) fitted against the outside of the support base.

4,563,730

VEHICLE HEAD LAMP WITH SYNTHETIC RESIN REFLECTOR AND RING-SHAPED HEAT SHIELDING MEMBER

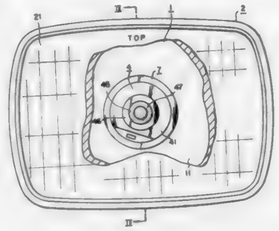
Hidenori Saito, Ishehara, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,761

Claims priority, application Japan, Dec. 24, 1981, 56-191723[U]

Int. Cl.⁴ F21V *29/00*

U.S. Cl. 362—264 **5 Claims**



1. A vehicle head lamp, comprising:

a synthetic resin reflector provided with an attachment hole at the back end thereof and a reflecting material on the inner surface thereof;

a synthetic resin lamp holder having a through-hole and being fixed in said attachment hole;

a lamp having at least a filament housed in a glass envelope and being attached to said lamp holder in such a way that said filament is positioned inside said reflector; and

a ring-shaped heat shielding member which covers the circumferential face of said lamp holder, which has a plurality of projections which attach the heat shielding member to said lamp holder, and which is made of a metal which is reflective to reflect light directly projected from said filament;

wherein said heat shielding member has a side wall which extends backward from the inner circumference thereof to cover the inner side wall of the circumferential face of said lamp holder.

4,563,731

RESONANT TYPE CONSTANT VOLTAGE SUPPLY APPARATUS

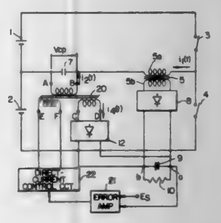
Toshiaki Sato, Hirakata; Mikio Maeda, Katano, and Masahiro Kosaka, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 4, 1983, Ser. No. 455,533

Claims priority, application Japan, Jan. 7, 1982, 57-1456; Jan. 18, 1982, 57-6312; Jan. 21, 1982, 57-8364; Jan. 22, 1982, 57-9291; Jan. 25, 1982, 57-10752

Int. Cl.⁴ H02P *13/22*

U.S. Cl. 363—17 **2 Claims**



1. A constant voltage supply apparatus comprising:

at least an input terminal for feeding an input direct current from an external direct current source;

at least a switching element connected in series with same input terminal for switching said input direct current;

a converter-transformer, a primary winding of said converter-transformer being connected in series with said switching element;

a resonance capacitor connected in series with said primary winding of said converter-transformer;

a common input terminal connected in series with said resonance capacitor;

a first rectifier circuit coupled to a secondary winding of said converter-transformer for producing a rectified signal from a signal appearing across terminals of said secondary winding of said converter-transformer;

a smooth circuit for smoothing said rectified signal so as to thereby obtain a dc output voltage;

a dc output terminal for feeding said dc output voltage to an external load;

a control transformer, a primary winding thereof being connected in parallel with said resonance capacitor, said control transformer further having a third winding for controlling an inductance of said control transformer by means of an electric signal fed thereto as a function of said dc output voltage; and

a second rectifier circuit coupled to a secondary winding of said control transformer for rectifying a voltage signal produced across said secondary winding of said control transformer and for directly feeding a rectified voltage to said dc output terminal of said apparatus.

4,563,732

STATIC CONVERTER FOR HVDC POWER TRANSMISSION

Rolf Ljungqvist, and Sven B. Lübeck, both of Ladvika, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Oct. 9, 1984, Ser. No. 658,837

Claims priority, application Sweden, Aug. 24, 1984, 8404218

Int. Cl.⁴ H02J *3/36*

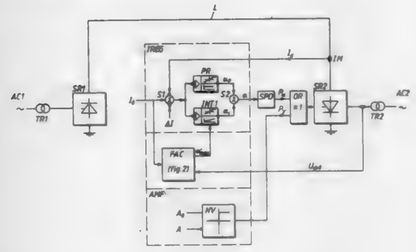
U.S. Cl. 363—35 **9 Claims**

1. A method for controlling a convertor in an HVDC power transmission system, said convertor being supplied with a current order for control of the direct current of the convertor, which method involves

measuring the direct current of the convertor,

determining the difference between on the one hand the measured current and, on the other hand, the current order decreased by a current margin value,

controlling the convertor with a control angle which is dependent on the one hand, on a proportional component being a linear function of said difference and, on the other hand, on an integral component corresponding to the time integral of the said difference,



characterized in that

the integral control angle component is limited to a value corresponding to a first value of the control angle of the convertor in such a way that, when the component thus limited is added to the proportional component, the converter receives a positive current-voltage characteristic at a direct current which is lower than the current order.

4,563,733

STARTUP CIRCUIT FOR A SWITCHED POWER SUPPLY

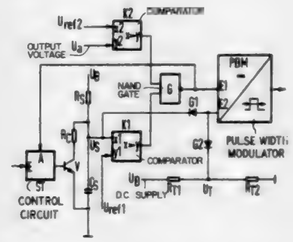
Manfred Schlenk, Bobingen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 6, 1984, Ser. No. 586,745

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1983, 3310380

Int. Cl.⁴ H02P *1/00*

U.S. Cl. 323—284 **4 Claims**



1. A startup system for a switched power supply having an undervoltage monitoring unit and a pulse width modulator as a regulating portion with at least one soft start input and one enable input, comprising:

first and second comparators whose outputs are connected by a NAND gate to the enable input of the pulse width modulator, said comparators each having two respective inputs;

a capacitor chargeable via a resistor, the capacitor being connected to the first input of the first comparator;

a controllable electronic switch connected parallel to said chargeable capacitor;

a first reference voltage connected to the second input of said first comparator;

a second reference voltage equal to or smaller than said first

reference voltage connected to the first input of the second comparator;

an output voltage of the switched power supply connected to the second input of said second comparator;

a voltage generated at said capacitor being connected to the soft start input of the pulse width modulator by a biased rectifier having a bias voltage applied thereto equal to or smaller than said first reference voltage;

a control circuit comprising an input for startup instructions, a input for switching off instructions, and an output connected to a control input of said electronic switch; and

the enable input of said pulse width modulator being connected to said input for the switchoff instructions.

4,563,734

MULTIVARIABLE PROPORTIONAL-INTEGRAL-DERIVATIVE PROCESS CONTROL APPARATUS

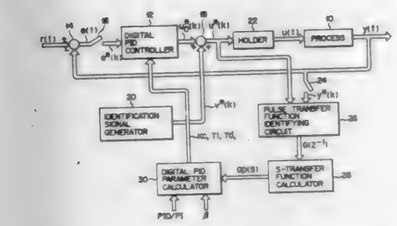
Yasuchika Mori, Kawasaki, and Takashi Shigemasa, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 13, 1983, Ser. No. 531,649

Claims priority, application Japan, Sep. 25, 1982, 57-166040

Int. Cl.⁴ G05B *13/04, 17/02*; G06F *15/31*

U.S. Cl. 364—157 **5 Claims**



1. A process control apparatus for an N- (where N is any positive-integer not less than 2) input/output process comprising:

Proportional-Integral-Derivative (PID) controller means for controlling said process in accordance with PID parameters and control errors as differences between N outputs from said process and set-point signals for the N outputs;

signal generating means for superposing N persistently exciting identification signals on the N inputs to said process;

identifying means for identifying Z-transfer functions corresponding to all input-to-output combinations, in accordance with the N inputs to said process and the N outputs from said process, while the N persistently exciting identification signals are superposed on the N inputs;

calculating means for calculating an S-transfer function of said process in accordance with identified Z-transfer functions; and

tuning means for matching an S-transfer function between a set-point signal for a process control system and a process output which is obtained from a calculated S-transfer function with an S-transfer function of an N-input/output decoupled reference model with no interference between process variables, and for tuning the PID parameters of said PID controller means in accordance with matched results.

4,563,735

PROCESS CONTROLLING METHOD AND SYSTEM INVOLVING SEPARATE DETERMINATION OF STATIC AND DYNAMIC COMPENSATION COMPONENTS

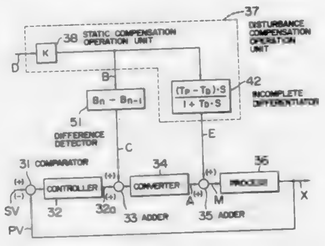
Kazuo Hirol, Hachioji, and Kojiro Ito, Machida, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 21, 1983, Ser. No. 477,384

Claims priority, application Japan, Mar. 26, 1982, 57-47349; Mar. 26, 1982, 57-47350; Aug. 25, 1982, 57-147155

Int. Cl.⁴ G06F *15/46*

U.S. Cl. 364—165 **6 Claims**



1. A method of process control comprising in combination a (1) feed-back control in which a deviation of a controlled variable with reference to a target value is applied to a velocity type controller and a manipulated variable is determined in accordance with the output of the controller and a (2) a feed-forward control in which a disturbance is detected and a disturbance compensation is determined and used with the output of the controller in determining the manipulated variable to counteract the effect of the disturbance, said method comprising the steps of:

(a) determining, in accordance with the detected disturbance, a static compensation component and a dynamic compensation component of the disturbance compensation,

(b) converting the static compensation component to a velocity type signal,

(c) adding the converted static compensation component to the output of the controller to obtain a first sum,

(d) converting the first sum to a position type signal,

(e) adding the dynamic compensation component to the converted first sum to obtain a second sum, and

(f) determining, in accordance with the second sum, the manipulated variable.

4,563,736

MEMORY ARCHITECTURE FOR FACILITATING OPTIMUM REPLACEABLE UNIT (ORU) DETECTION AND DIAGNOSIS

Daniel A. Boudreau; Edward R. Salas, and Richard C. Zelley, all of Billerica, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jun. 29, 1983, Ser. No. 509,265

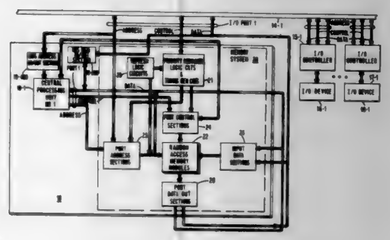
Int. Cl.⁴ G06F *13/00*

U.S. Cl. 364—200 **43 Claims**

1. A data processing system including a processing unit for generating memory read and write requests, each request coded to specify the type of memory operation, an address specifying where in memory data is being accessed from or written into, in addition to any data to be written therein and a main memory system having a number of memory modules, said data processing system being subdivided into a number of optimum replaceable units (ORUs) wherein each of said memory modules is a separate ORU, another one of said ORU's including a number of memory ports included in said main memory system for receiving said memory requests, each memory port including a plurality of sections, said sections

including an address section, an input data section and output data section for storing said request address and data for transfer to said memory module ORUs and for storing receiving data read out from said memory module ORUs when said port is granted access to said memory system, the outputs of each of said address sections being connected in common to one end of a memory address bus whose other end connects in common to each memory module ORU and the output of each of said input data sections and the input of each of said output data sections being connected in common to one end of a memory input/output data bus whose other end connects in common to said each memory module ORU, said another ORU further including apparatus for enabling errors to be isolated to a faulty one of said ORUs during testing, said apparatus comprising:

address register means coupled to said address bus and to



said processing unit, said address register means being connected to receive and store address signals representative of each section port address transferred to said address bus during memory read and write operations; and,

control means coupled to said processing unit, to said address register means, to said input data sections and to said output data sections of said memory ports, said control means being operative during said testing to selectively condition said address register means to transfer address signals to said processing unit and for selectively conditioning said output data sections for storing and transferring to said processing unit data signals representative of said input memory data being transferred to said memory data bus by corresponding ones of said input data sections for enabling said processing unit to isolate faults within said memory system to a faulty ORU memory module or memory port.

4,563,737

VIRTUAL STORAGE MANAGEMENT

Tomoaki Nakamura, Hitachi; Kelichi Nakane, Kokubunji; Hiroaki Nakanishi, Hitachi, and Koji Hirai, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

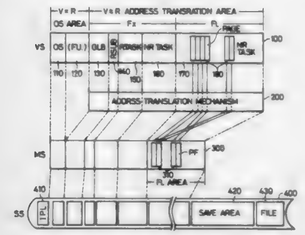
Filed Dec. 9, 1982, Ser. No. 448,274

Claims priority, application Japan, Dec. 11, 1981, 56-200645

Int. Cl.⁴ G06F *13/00, 9/00*

U.S. Cl. 364—200 **5 Claims**

1. A method of virtual storage administration in which the storage addresses of a main storage device storing a program and data are managed by a logical virtual address, comprising: dividing the virtual storage area which can be appointed by the virtual address into two parts including an address non-translating area in which address translation from the virtual address into the real address of the main sotrage device is not necessary and an address translation area in which the address translation is necessary; dividing said address translation area into an address fixed area and an address variable area; in said address fixed area, causing the virtual address and the read address in said main storage device to correspoond to each other in a 1:1 fashion at the time of the system generation; in the address variable area, causing correspondence between the virtual address and the read address in said main storage device at the time of commencement of execution of said program;



and dismissing the address correspondence in aaid address variable area when the execution of the program is completed.

4,563,738

DATA PROCESSING SYSTEM HAVING A CENTRAL MAIN MEMORY AND A PLURALITY OF PROCESSOR UNITS CONNECTED IN SERIES

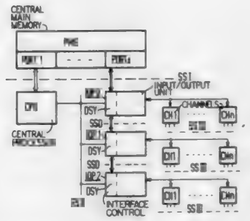
Friedrich Klan, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 442,903

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151120

Int. Cl.⁴ G06F *3/00, 13/00*

U.S. Cl. 364—200 **9 Claims**



1. A data processing system comprising:

a main memory including a port interface having a plurality of ports for connection to respective independent processing units;

a plurality of processor units each including a processor unit interface, said processor unit interfaces connected in a chain with the processor unit interface of the first processor unit of the chain connected to one of said ports of said port interface, said processor units including identical interface controls operable to monitor and control said processor unit interfaces in both directions to and from said main memory;

said interface controls each including means operable in mutual dependency on one another in response to access requests for said main memory from the processor units of the chain to connect a requesting processor unit to said one port and reciprocally inhibit the other processor units of the chain without addressing said one port as though only a single processor were connected to said one port; and

said processor unit interfaces each including means operable to generate interface signals and variable connector controls for controlling memory traffic, including controlling access to said one port and controlling execution of a requested memory operation selectively in response to status signals and internally generated interface signals to

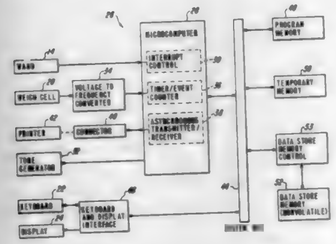
forward signals through the chain to transmit signals of its own processor unit and to inhibit the other processor units.

4,563,739

INVENTORY AND BUSINESS MANAGEMENT SYSTEM WHICH ACCOUNTS FOR THE CONTENTS OF FULL AND PARTIALLY FILLED PRODUCT CONTAINERS

George E. Gerpheide, Salt Lake City, Utah; B. Craig Anderson, and Linda Hill, both of Whitefish, Mont., assignors to Impulse Computer Systems, Inc., Billings, Mont.

Filed Jul. 18, 1983, Ser. No. 515,079
Int. Cl.[4] G06F *15/24*
U.S. Cl. 364—403 19 Claims



1. A system for taking inventory of and obtaining inventory reports on a plurality of different products which are dispensed in full containers and in predetermined quantities less than the full amount from the containers, each container including a code associated therewith which uniquely identifies the product contained within the coded container, said system comprising:

identifying means for identifying each particular product dispensed, including means for sensing the code of the coded container and for deriving a product identification signal related to the code sensed and the product identified thereby and the container from which the product is dispensed;

weighing means for separately weighing each container of each of the plurality of particular products and any product contained therein and for supplying a weight signal related to the weight of each container and any product contained therein;

information entering means for entering information including the number of full containers of each particular identified product and for supplying a number signal related to the number of full containers of the particular identified products entered;

computer means operatively connected to receive the product identification signal from said identifying means and the weight signal from said weighing means and the number signal from said information entering means, said computer means operatively responding upon receipt of a product identification signal to thereafter accept at least one of the weight signal or the number signal and to correlate the product identification signal with the weight and number signal for each particular container identified, said computer means including (a) data store memory means for containing product record information on each particular product identified and for containing previous and current inventory data on the quantity of each particular product previously on-hand and currently on-hand respectively, said product record information including the specific gravity of each particular product and the weight of each empty container for each particular product and the quantity of product contained within each full container; and (b) program memory means containing data for controlling said computer means to create at least one inventory report by utilizing the product identification, weight and number signals and the product record information and inventory data contained in said data store memory means; said computer means for operatively correlating the product identification signal with the corresponding product record information for each container identified and automatically calculating the quantity of each particular product in each full container identified by multiplying the quantity of product contained in each full container by the number of full containers represented by the number signal and automatically calculating the quantity of particular product contained within any less-than-full container which has been identified and weighed by subtracting the weight of the empty container from the weight represented by each weight signal and performing at least one mathematical operation on the result of such subtraction using a number related to the specific gravity of the particular product identified, said computer means further adding the quantities of particular product in all full and less-than-full containers to obtain a total quantity amount in creating a current inventory report, the inventory reports including information describing the quantity of each particular product at the time when the previous and current inventory data was obtained; and

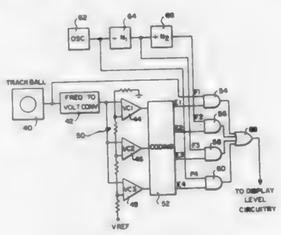
said computer means adapted to be connected to copy producing means, said copy producing means operatively producing perceptible copies of inventory reports created by said computer means.

4,563,740

METHOD AND MEANS FOR AUTOMATICALLY VARIABLY CONTROLLING DISPLAY PARAMETERS

James E. Blake, New Berlin, and James D. Hajicek, Burlington, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 17, 1983, Ser. No. 552,664
Int. Cl.[4] H03K *29/00*
U.S. Cl. 364—414 4 Claims



1. For use in controlling the Gray scale level of a video display and the display window of CT numbers in a computed tomography system, apparatus for automatically and variably generating a pulse train comprising

manually operated pulse generation means for generating a first pulse train,

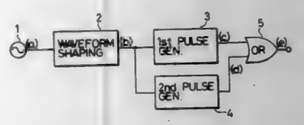
means for receiving said pulse train and responsive to the frequency thereof for generating a second pulse train, the frequency of said second pulse train being nonlinearly proportional to the frequency of said first pulse train, said means for receiving including an oscillator and a plurality of frequency dividers connected with said oscillator for producing pulses at a plurality of pulse rates, and logic means for selecting a pulse rate depending on said frequency of said first pulse train, said logic means including a frequency to voltage converter connected to receive said first pulse train and generate a voltage in response thereto, a plurality of voltage comparators for receiving and comparing said voltage and a plurality of reference voltages and generating logic signals in response thereto, and logic gate means operably connected to receive said logic signals and in response thereto selecting a pulse rate.

4,563,741

ROTATIONAL ANGLE SIGNAL GENERATING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Masami Matsumura, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,598
Claims priority, application Japan, May 25, 1981, 56-76278[U]
Int. Cl.[4] G06F *15/46;* G01P *3/489;* H03K *5/00*
U.S. Cl. 364—431.12 2 Claims



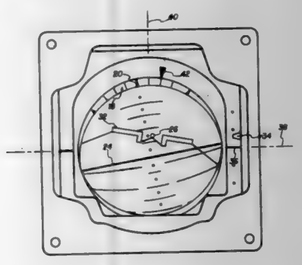
1. A rotational angle signal generating system for an internal combustion engine, comprising; a magneto-generator mounted in an ignition distributor, said magneto-generator comprising an a.c. generator for generating an a.c. signal having a period corresponding to two degrees of the rotational angle of said ignition distributor; a waveform shaper for converting the output signal of said magneto-generator into square waves; a first pulse generator generating first pulses in synchronism with the leading edges of said square-wave output signal of said waveform shaper; a second pulse generator for generating second pulses in synchronism with the trailing edges of said square-wave output signal of said waveform shaper; and logical circuit means for logically summing said first and second pulses, each of said first and second pulse generators comprising fixed-angle pulse generators for generating pulses having a pulse width corresponding to 0.5 degrees of the rotational angle of said ignition distributor.

4,563,742

COMBINED MOTION CUEING ATTITUDE INDICATOR

Kenneth W. McElreath, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 26, 1983, Ser. No. 535,520
Int. Cl.[4] G08G *5/00*
U.S. Cl. 364—433 7 Claims



1. In an attitude indicator instrument for an aircraft,

an aircraft symbol positionable in accordance with pitch and bank attitudes of said aircraft,

a horizon indicator positionable in accordance with pitch and bank attitudes of said aircraft;

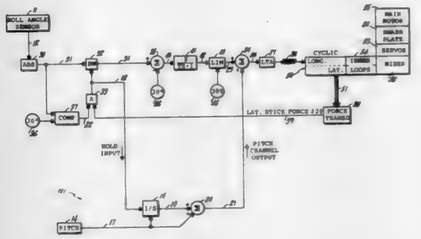
cueing control circuitry receiving inputs proportional to the experienced pitch and bank attitudes of said ai craft, said cueing control circuitry selectively effecting the positioning of both said aircraft symbol and said horizon indicator as a function of at least one of the magnitude and rate of change characteristics of at least one of the pitch and bank attitude signals applied to said cueing control circuitry.

4,563,743

MANEUVER-FORCE GRADIENT SYSTEM

Richard D. Murphy, and Douglas H. Cleiford, both of Trumbull, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 22, 1983, Ser. No. 468,750
Int. Cl.[4] G05D *1/08*
U.S. Cl. 364—434 8 Claims



1. A maneuver-force gradient system for causing the nose of an aircraft to pitch nose down in a turn involving roll, comprising:

actuator means for positioning the pitch axis aerodynamic surfaces of the aricraft in response to a command signal;

roll angle sensor means for providing a roll angle signal indicative of the aircraft roll angle as measured from wings-level flight; and

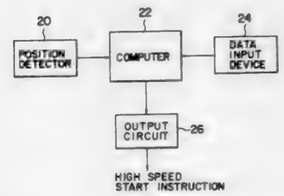
control means for causing the aircraft to pitch nose down in the turn as a function of the aircraft roll angle by providing the command signal to the actuator in response to the roll angle signal.

4,563,744

APPARATUS FOR ADJUSTING STARTING POSITIONS OF HIGH SPEED INJECTION

Hiroyuki Tsuboi, Zama, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,948
Claims priority, application Japan, Feb. 23, 1982, 57-26875
Int. Cl.[4] G06F *15/46;* G05B *19/18*
U.S. Cl. 364—476 2 Claims



1. Apparatus for adjusting a starting position of high speed injection in a die cast machine, comprising:

a position detector for detecting a stroke position of an injection plunger;

a computer including means for calculating a first position of said injection plunger at which an instruction signal for starting a high speed injection is generated, and a second position of said injection plunger at which said injection plunger actually reaches a desired speed;

data input means for presetting into said computer a predicted time interval (t_D) between an instant at which said instruction signal for starting a high speed injection is generated and an instant at which the plunger speed act ally changes to said high speed, a predicted low injection

speed (V_L) and a desired position (l_{START}) of the plunger at which the plunger speed actually changes to said high speed, said calculating means, based upon said preset data, determining said first position (l_{OUT}) corresponding to an initial state of the injection plunger stroke operation in accordance with the following first equation:

$$l_{OUT}=l_{START}-(V_L \cdot t_D)$$

and, then determining said first position (l'_{OUT}) corresponding to at least one successive stroke operation of the injection plunger in accordance with the following second equation:

$$l'_{OUT}=l_{START}-(l_H-l_{OUT})$$

where l_H represents said second position calculated at at least one successive stroke operation of the injection plunger; and

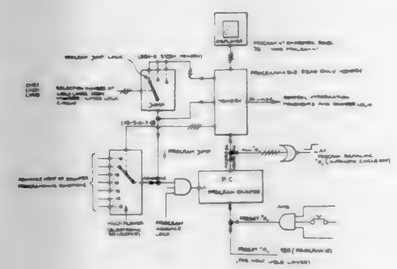
an output circuit means responsive to an output of said computer for issuing said instruction signal for starting high speed injection of said injection plunger when said detected position of the injection plunger coincides with said first position during at least one stroke operation of the injection plunger.

4,563,745

PROCESS AND APPARATUS FOR THE AUTOMATIC WELDING OF JOINTS ON LARGE GAUGE SHEETS

Cesare Panzeri, Macherio, Italy, assignor to Ansaldo S.p.A., Genoa, Italy

Filed Dec. 18, 1979, Ser. No. 104,685
Claims priority, application Italy, Dec. 22, 1978, 31246 A/78
Int. Cl.⁴ G06F *15/46*; B23K *9/12*
U.S. Cl. 364—477 **9 Claims**



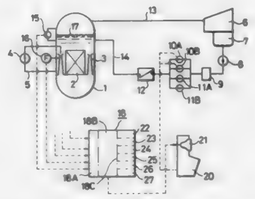
1. An apparatus for continuously welding large sheets of high gauge, the sheets defining an open chamfer where the weld is to be made and having a longitudinal axis, said apparatus comprising: a welding torch, feeler means for sensing the chamfer shape and displacement along a vertical axis Y and along a transverse axis Z relative to the chamfer axis, means for causing the torch to follow the same path as the feeler, motor means for moving said feeler transversely relative to the chamfer axis for measuring the chamfer width and for moving said feeler along the chamfer axis, and an electronic programming means for comparing said width with stored data relating to a desired width of a weld line which is to be formed in the chamfer.

4,563,746

METHOD OF OPERATING POWER PLANTS

Kenichi Yoshida; Takao Watanabe, both of Hitachi, and Takashi Kiguchi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1982, Ser. No. 433,908
Claims priority, application Japan, Oct. 14, 1981, 56-164632
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—492 **7 Claims**



1. A plant operating method comprising the steps of:
detecting plant data from a plant;
identifying the actual status of all members of the plant indicating an abnormality of the plant from the detected plant data;
estimating a cause of an occurrence of the abnormality in accordance with the actual status of the plant members;
predicting the status of all plant members after a given period of time has passed in accordance with the estimated cause:
determining whether or not the actual status of the plant members are present in the predicted status of the plant members;
repeatedly carrying out the step of estimating a cause of occurrence of the abnormality and predicting the status of all plant members in accordance therewith when it is determined that the actual status of all the plant members are not present in the predicted status of the plant members detected until the actual status of all the plant members come to exist in the predicted status of the plant members;
selecting a plant operation plan for overcoming the estimated cause of occurrence of the abnormality when the actual status of all of the plant members are present in the status of the predicted plant members; and
operating the plant according to the selected operation plan.

4,563,747

PHOTOCOMPOSING APPARATUS AND METHOD

James A. Tidd, Laconia, N.H., assignor to Bedford Computer Corporation, Bedford, N.H.

Filed Dec. 1, 1982, Ser. No. 446,040
Int. Cl.⁴ B41B *13/00*; G05B *15/02*
U.S. Cl. 364—523 **10 Claims**



1. Apparatus for photocomposing comprising
a rotatable cylinder having means to hold a photorecord member on the surface of said cylinder,
drive means adapted to rotate said cylinder,
sensing means to sense rotation of said cylinder and to generate signals corresponding to such rotation,
computer means,

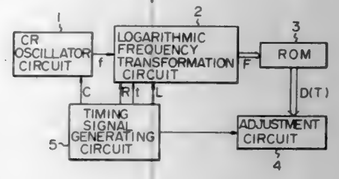
means to convey to said computer means said signals corresponding to cylinder rotation,
a slidable optical carriage mounted to move along the length of said cylinder, an array having a multiplicity of individually excitable solid-state light emitting devices, each having a control electrode exciting said light emitting devices in response to an input signal, said array arranged in rows across the direction of cylinder rotation and in columns displaced from one another with respect to said direction of cylinder rotation, the displacement being of an order of distance such that a plurality of light emitting devices are brought to bear and overlap on each individual pixel on said photorecord member as said cylinder moves through a single revolution,
optical means mounted on said carriage to focus on said cylinder surface a projected image of light as emitted by said light emitting devices,
means to drive said carriage along said cylinder whereby said image of light is moved along said cylinder surface and,
means connecting said electrodes individually to said computer means,
said computer means being adapted to determine the rotational position of said cylinder and the position of said carriage along said cylinder and to direct to each of said light emitting devices signals coordinated with said rotational position and corresponding to a desired pattern to be recorded on a photorecord member positioned on said cylinder.

4,563,748

TEMPERATURE MEASURING SYSTEM

Tadashi Hanaoka, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,574
Claims priority, application Japan, Oct. 20, 1981, 56-167533; Oct. 20, 1981, 56-167534
Int. Cl.⁴ G01K *7/00*; F23N *5/20*
U.S. Cl. 364—557 **9 Claims**



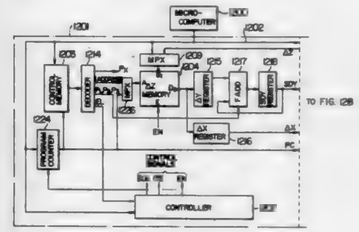
1. A temperature measurement system comprising:
a capacitance-resistance oscillator circuit having a time constant circuit including at least one thermistor functioning as a resistive element, for producing an output signal at a frequency which varies with ambient temperature in a manner determined by a temperature coefficient of said thermistor;
control circuit means coupled to receive said oscillator circuit output signal, and responsive thereto for periodically producing groups of pulses, with the number of pulses in each of said groups varying in a manner determined by the value of said oscillator circuit output signal frequency during generation of said group; and
a logarithmic transformation circuit coupled to receive said groups of pulses from said control circuit means, and responsive to each of successive ones of said groups for producing digital data representing a numeral which is the logarithm of the number of pulses in said group, whereby said digital data varies in accordance with ambient temperature in a substantially linear manner within a limited range of temperatures.

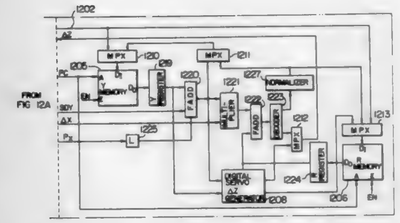
4,563,749

FLOATING POINT DIGITAL DIFFERENTIAL ANALYZER

Shigeru Yabuuchi, Tokyo; Takeyuki Endo, Kodaira; Kazuyuki Kodama, Hachioji, and Jushi Ide, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 14, 1982, Ser. No. 449,662
Claims priority, application Japan, Dec. 18, 1981, 56-203719
Int. Cl.⁴ G06J *1/02*
U.S. Cl. 364—702 **3 Claims**





1. A digital differential analyzer comprising:
first memory means for storing the value Y of an integrand in a floating point form including a mantissa and an exponent;
second memory means for storing as a third increment ΔZ an increment of a quantized output of the integrated value of said integrand in a floating point form including a mantissa and an exponent;
third memory means for storing a value R which is obtained by subtracting the value of the quantized output from said integrated value, said value R being stored in a floating point form including a mantissa and an exponent;
first arithmetic operation means connected to receive predetermined values from said second memory means as second increments (ΔY_i, $1 \sim \Delta Y_{i,l}$) for producing a total increment thereof

$$\left(SDY_i = \sum_{j=1}^{l} \Delta Y_{ij}\right)$$

and for adding the total increment and said value of said integrand (Y_{i-1}) to produce a new value of said integrand (Y_i), said new value of said integrand being outputted to said first memory means;
second arithmetic operation means connected to receive a predetermined value from said second memory means as a first increment (ΔX_i) for multiplying said new value of said integrand (Y_i) from said first arithmetic operation means by said predetermined value and for adding the result of said multiplication ($Y_i \Delta X_i$) and the value (R_{i-1}) of a residue of the integrated value stored in said third memory means, the result of addition ($R_{i-1}+Y_i \Delta X_i$)

being quantized and outputted to said second memory means as the third increment;

third arithmetic operation means for subtracting the third increment (ΔZ_i), outputted from said second arithmetic operation means to said second memory means, from the result of addition obtained by said second arithmetic operation means, the result of subtraction ($R_{i-1}+Y_i\cdot\Delta X_i-\Delta Z_i$) being outputted to said third memory means; and

fourth arithmetic operation means for outputting to said second memory means the third increment (ΔZ_i) obtained by said second arithmetic operation means while setting the mantissa (ΔZ_{Mi}) of said third increment (ΔZ_i) to zero, +1 and −1 when said new value of integrand (Y_i) obtained by said first arithmetic operation means is zero, larger than zero and smaller than zero, respectively, and setting the exponent (ΔZ_{Ei}) of said third increment (ΔZ_i) to ΔZ_{Ei-1} (ΔZ_{Ei-1} being the value of the exponent of the third increment read from said second memory means), $\Delta Z_{Ei-1}-1$, $\Delta Z_{Ei-1}+1$, and $\Delta Z_{Ei-1}-1$ when said new value of said integrand (Y_i) obtained by said first arithmetic operation means is zero, when said new value of said integrand (Y_i) and the value of said integrand (Y_{i-1}) before the addition by said first arithmetic operation means are of opposite sign, when both said values of said integrand (Y_i) and (Y_{i-1}) are of the same sign and

$$\left|\frac{Y_{i-1}}{2}\right|_{\bullet}<|Y_i|$$

is satisfied, and when both said values of said integrand (Y_i) and (Y_{i-1}) are of the same sign and

$$\left|\frac{Y_{i-1}}{2}\right|\cong|Y_i|$$

is satisfied, respectively,

said second, third and fourth arithmetic operation means being made operative even when the value of the first increment read from said second memory means is zero.

4,563,750

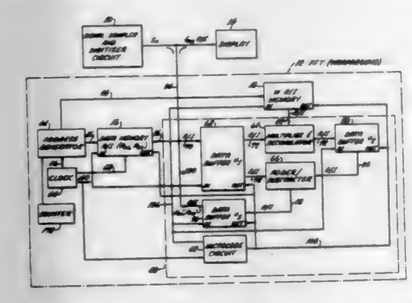
FAST FOURIER TRANSFORM APPARATUS WITH DATA TIMING SCHEDULE DECOUPLING

William L. Clarke, 2221 Aralia St., Newport Beach, Calif. 92660

Filed Mar. 4, 1983, Ser. No. 472,067

Int. Cl.⁴ G06F *15/31*

U.S. Cl. 364—726 **13 Claims**



1. Fast Fourier transform (FFT) apparatus for obtaining the Fourier spectrum, f_m, from a sequence of N time-variable function samples, S_n, in accordance with the general matrix equation:

$$f_m=\sum_{n=0}^{N-1}S_n\,[W_{mn}],$$

and the equivalent, expanded matrix equation

$$f_m=\sum_{n=0}^{N-1}[M^{\alpha-1}]\cdot[M^{\alpha-2}]\ldots[M^{0}]\,S_n,$$

obtained by factoring the matrix $[W_{mn}]$ into a series of α sparse matrices $[M^{\alpha-1}][M^{\alpha-2}]\ldots[M^{0}]$, the number α being determined in accordance with $N=2^{\alpha}$, each of the sparse matrices $[M^{\alpha-1}]$, $[M^{\alpha-2}]$, $\ldots[M^{0}]$ being equivalent to the operation of N/2 pairs of butterfly operations of the general form:

$$A(x)'=A(x)+W(z)\cdot A(y),\text{ and}$$

$$A(y)'=A(x)-W(z)\cdot A(y),$$

wherein A(x) and A(y) are data terms which include the signal data S_n, and W(z) is the appropriate matrix term of the associated sparse matrix, the sequence of A(x), A(y) and W(z) terms for each of the α sets of N/2 pairs of operation being predetermined and based on the numbers α and N, said fast Fourier transform apparatus comprising:

(a) FFT data processing means for computing a first set of said N/2 pairs of butterfly operations, said processing means being connected for receiving said S_n data and including:

(1) first memory means for storing said A(x) and A(y) data, including said S_n data;

(2) second memory means for storing said predetermined W(z) data;

(3) timing means for providing a timing schedule clock of frequency, f;

(4) address generating means for locating A(x), A(y) and W(z) data in said memories;

(5) butterfly computing means responsive to said timing means for receiving said A(x), A(y) and W(z) data in accordance with a first, data input timing schedule and for using the data to sequentially perform said N/2 pairs of said butterfly operations in accordance with a second, data retrieving timing schedule, said butterfly computing means including:

(i) multiplying/accumulating means for receiving A(y) and W(z) data, for performing complex W(z)·A(y) multiplication and for accumulating the results thereof;

(ii) adding/subtracting means for receiving A(x) and W(z)·A(y) data and for performing complex A(x)+W(z)·A(y) addition and complex A(x)−W(z)·A(y) subtraction thereof;

(iii) microcoding means for establishing and enabling said first and second timing schedules, and

(iv) data decoupling means connected between said first memory means and said multiplying/accumulating means and between said first memory means and said adding/subtracting means for buffering the flow of A(x) and A(y) data therebetween so as to operationally decouple said first timing schedule from said second timing schedule, thereby enabling the butterfly computing means to be computing at least two different pairs of said butterfly operations at the same time; and

(b) means enabling iterative computing of $\alpha-1$ subsequent sets of N/2 pairs of butterfly computations, by using the N/2 pairs of A(x)′ and A(y)′ output complex numbers from any butterfly computations as the input set of A(x) and A(y) complex numbers for the next-in-sequence set of N/2 pairs of butterfly computations, and for outputting the last-in-sequence set of N/2 pairs of A(x)′ and A(y)′ complex numbers as the Fourier spectrum, f_m.

4,563,751

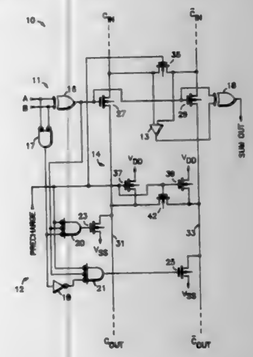
CARRY PROPAGATE ADDER CIRCUIT WHICH DIFFERENTIALLY SENSES A CARRY INPUT

Charles E. Barker, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 26, 1984, Ser. No. 604,252

Int. Cl.⁴ G06F *7/50*

U.S. Cl. 364—786 **11 Claims**



1. A carry propagate adder circuit for adding first and second input bits in conjunction with an input carry bit, having sum bit generation means for receiving the first and second input bits and providing an output sum bit and having carry output bit generation means for providing a carry output bit in response to the first and second input bits and the input carry bit, comprising:

first and second carry bit conductors having first and second input terminals for receiving the input carry bit and the complement thereof, respectively, and first and second output terminals for providing the carry output bit and the complement thereof, respectively;

precharge means coupled to the output terminals of the carry bit conductors, for selectively charging the first and second carry bit conductors to a predetermined voltage level; and

sense amplifier means having first and second inputs coupled to the first and second input terminals of the carry bit conductors, respectively, and an output coupled to the sum bit generation means, for sensing a difference in the voltage levels of the first and second carry bit conductors.

4,563,752

SERIES/PARALLEL/SERIES SHIFT REGISTER MEMORY COMPRISING REDUNDANT PARALLEL-CONNECTED STORAGE REGISTERS, AND DISPLAY APPARATUS COMPRISING A PICTURE MEMORY THUS ORGANIZED

Marcellinus J. M. Pelgrom; Arie Slob; Hendrik A. Harwig, and Jan W. Slotboom, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,464

Claims priority, application Netherlands, Jun. 11, 1982, 8202365

Int. Cl.⁴ G11C *19/08;* **G06F** *11/20*

U.S. Cl. 364—900 **9 Claims**

1. A series-parallel-series shift register memory comprising:

a serial data input (**200**) for first electrical signals having a value range of at least two values;

a redundancy generator (**202, 204**) fed by said serial data input for generating, on the basis of a plurality of p successive first electrical signals, (n-p) greater than or equal to one redundant electrical signal;

a converter (**22**) fed by said redundancy generator for receiving said p first electrical signals and thereafter said (n-p) redundant electrical signals and converting each of these electrical signals into a series of p data representations; and

a substrate comprising storage positions for the storage of a data representation as represented by a single physical quantity in that storage position;

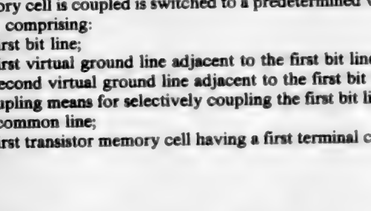
said substrate having a serial input register (**206**) fed by said converter;

a plurality of parallel storage registers (**208**) fed in parallel by parallel outputs of said serial input register; and

a serial output register (**210**) fed in parallel by the output of each of said storage registers; and comprising:

a serial data output (**32**), wherein said storage registers comprise first storage registers for transiently storing data representations of said first electrical signals in series of equal lengths of $m>2$ storage positions each; and

second storage registers for transiently storing data representations of said redundant electrical signals in a second series of equal lengths of $1<t\leqq(m-1)$ storage positions each;



said shift register memory having a transfer control device for transferring these representations in parallel to the storage registers after introduction of n data representations in the input register and at the same time transferring n data representations from the storage registers to the output register;

said transfer control otherwise activating only the input/and output registers, whereby the storage length of said first storage registers is longer than the storage length of said second storage registers;

said shift register memory furthermore comprising a second converter (**34**) fed by said serial data output for reconstituting electrical signals from data representations received; and

a redundancy reducer (**212, 214**) fed by said second converter for receiving first said (n-p) redundant signals and thereafter said p first electrical signals and thereby correcting at least one deficient electrical signal within said p first electrical signals for outputting said p first electrical signals on a serial data output (**230**) element.

4,563,753

CIRCUIT FOR REDUCING DEGRADATION OF VOLTAGE DIFFERENTIAL IN A MEMORY

William J. Donoghue, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 4, 1984, Ser. No. 646,725

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—104 **6 Claims**

1. A virtual ground memory in which a transistor memory cell is selected when a virtual ground line to which the selected memory cell is coupled is switched to a predetermined voltage level, comprising:

a first bit line;

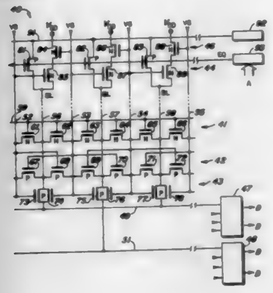
a first virtual ground line adjacent to the first bit line;

a second virtual ground line adjacent to the first bit line;

coupling means for selectively coupling the first bit line to a common line;

a first transistor memory cell having a first terminal coupled

to the first bit line, a second terminal coupled to the first virtual ground line, and a control terminal coupled to a word line; and



load means connected between the first bit line and the second virtual ground line for coupling current therebetween when the first virtual ground line switches to the predetermined voltage level.

4,563,755

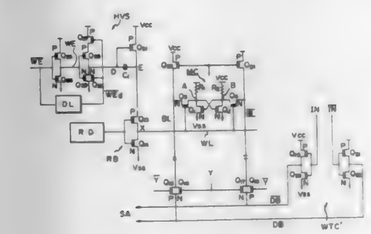
Patent Not Issued For This Number

4,563,754

STATIC-TYPE RANDOM-ACCESS MEMORY DEVICE

Keizo Aoyama, Yamato; Takahiko Yamauchi, and Teruo Seki, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 30, 1983, Ser. No. 480,582
Claims priority, application Japan, Mar. 31, 1982, 57-51152
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—190 **15 Claims**



1. A static-type RAM device having static-type memory cells disposed at the intersecting portions of bit line pairs and word lines, operatively connected to a power supply source which supplies a power supply voltage, writing data into a memory cell, a potential level of a memory cell being approximately equal to the potential of the power supply source, said static-type RAM device comprising:

bit-line pulling-up means, operatively connected to the bit line pairs, for pulling up the potential of one of the bit lines of a selected bit line pair to a voltage which is approximately greater than or equal to the power supply voltage; and

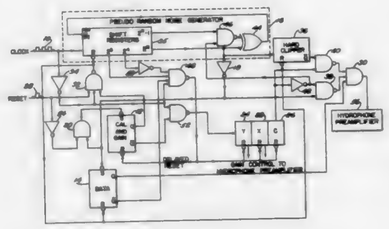
word-line pulling-up means, operatively connected to the word lines, for pulling up the potential of a selected word line to a voltage which is greater than the power supply voltage after the data is written into the memory cell.

4,563,756

PSEUDO-RANDOM NOISE GENERATOR CALIBRATION FOR ACOUSTIC HYDROPHONES

Gerald L. Assard, Waterford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 1, 1983, Ser. No. 481,532
Int. Cl.⁴ H04R *29/00*
U.S. Cl. 367—13 **2 Claims**



1. An acoustic signal simulator for calibrating at the hydrophone level within an acoustic array comprising:

a hydrophone preamplifier;

pseudo-random noise generator means having a plurality of shift registers for developing a time function comprised of a set of bi-level signals generated at the clock frequency, said pseudo-random noise generator means adapted for providing said signals to said hydrophone preamplifier; and

hard clipper means for providing a bi-level signal of predetermined period to said hydrophone preamplifier; and

selector means for selecting either of said pseudo-random noise generator means or said hard clipper means.

4,563,757

METHOD AND APPARATUS FOR ACQUIRING SEISMIC SIGNALS IN A BOREHOLE

Jean-Luc Decorps, Paris, and Guy Blanpain, Montrouge, both of France, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Jul. 8, 1983, Ser. No. 511,809
Claims priority, application France, Jul. 13, 1982, 82 12253
Int. Cl.⁴ G01V *1/40, 3/18*
U.S. Cl. 367—33 **16 Claims**



1. Method for seismic signal acquisition at successive levels in a borehole, comprising the steps of:

(i) lowering to a first level a sonde comprising: an elongated body member, a seismic wave detection means in said body member and an anchoring pad placed at the end of a support articulated on the body member, said support being maintained in the retracted position, substantially along the body member, during the lowering;

(ii) deploying the support to place the pad in contact with the borehole wall and bring the body member into engagement with the borehole wall in an area opposed to the area engaged by the pad;

(iii) displacing the support in a direction away from the body member by means of a reversible drive device located in the body member, to anchor the pad to the wall and couple the body member and the seismic wave detection means to the borehole wall;

(iv) actuating the seismic wave detection means;

(v) displacing the support, in a direction towards the body member by means of said reversible drive device to release the pad from its anchored position on the wall to a position still in contact with the borehole wall;

(vi) raising the sonde to a second level while maintaining the pad in contact with the borehole wall by the action of an elastic device, the drive device being uncoupled from the support during this step; and

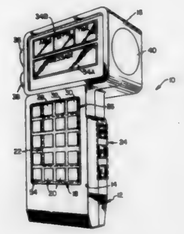
(vii) repeating the sequence of operations (iii) to (vi) for each of the next succeeding levels.

4,563,758

UNDERWATER COMMUNICATOR

Charles J. Paternostro, 9732 Dartridge St., Dallas, Tex. 75238

Filed Sep. 29, 1982, Ser. No. 427,450
Int. Cl.⁴ H04B *11/00*
U.S. Cl. 367—132 **20 Claims**



1. An apparatus for underwater communication between divers, comprising:

a waterproof case for carrying by a diver;

a keyboard mounted on said case for entry of a message to be communicated by the diver;

a speech synthesizer within said case for acoustically transmitting the message to be communicated to another diver, the transmitted message being aurally comprehensible to the other diver; and

a visual display mounted in said case for visual display of the message to be communicated.

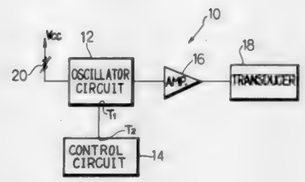
3. The apparatus of claim 1 further comprising pressure sensor means for sensing the air pressure in the air tank of the diver and warning means for acoustically warning the diver when the air pressure in the tank decreases below a predetermined level.

4,563,759

METHOD OF AND SYSTEM FOR THREATENING PESTS

Hideo Hayakawa, Ibaragi, Japan, assignor to Tokyo Elite Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1984, Ser. No. 601,405
Claims priority, application Japan, Jun. 17, 1983, 58-107623
Int. Cl.⁴ H04B *1/02*
U.S. Cl. 367—139 **1 Claim**



1. A system for threatening pests by sonifying an area with ultrasonic energy emission, comprising:

an oscillator circuit,

a control for generating a control signal which is fed to said oscillator circuit to change an oscillation frequency from said oscillator circuit,

an amplifier circuit to amplify an output of said oscillator circuit; and

a transducer connected to said amplifier circuit for converting an electrical output from said amplifier circuit to a

mechanical oscillation to emit same as the ultrasonic energy to the area,

said control circuit having therein a random signal generator to form and feed to said oscillator circuit the control signal which randomly fluctuates in its voltage level and contains a sharply fluctuating part in the voltage level, based on random signals issued from said random signal generator, whereby said oscillator circuit causes a random and continuous change in its oscillation frequency, in response to to the voltage fluctuation in such control signal from said control circuit and generates an impacting portion in its output electrical signal at the sharp fluctuating part in the control signal, the oscillation frequency sharply changing from a rapid drop to a rapid rise at the impacting portion,

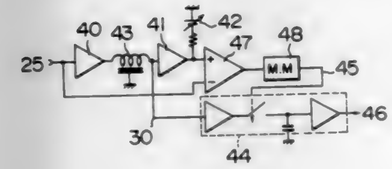
wherein said random signal generator is formed by a shift register having plurality of stages to store information patterns, a pulse generator for controlling a shift operation of said shift register and an exclusive OR gate as a coincidence detection circuit, which gate inputs a result of the detection to a lowermost stage of said shift register shifting information to upper stages one by one under control of a pulse signal issued from said pulse generator to prepare a signal which is random in voltage value depending on the information in the selected stages of said shift register and which controls a pulse repeating cycle of said pulse generator and is fed to said oscillator circuit to control same.

4,563,760

METHOD OF DETECTING LIGHT SPOT CONTROL SIGNAL

Takeshi Maeda, Kokubunji; Kazuo Shigematsu, Saitama; Masahiro Takasago; Yasunitsu Mizoguchi, both of Odawara; Zenji Tsutsumi, Kokubunji; Yoshito Tsunoda, Mitaka, and Motoo Uno, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 401,020
Claims priority, application Japan, Sep. 4, 1981, 56-138583
Int. Cl.⁴ G11B *7/00*
U.S. Cl. 369—44 **7 Claims**



1. A method of detecting a light spot control signal, comprising the steps of:

irradiating an information recording medium with a light beam so as to direct a light spot onto a track provided on the recording medium, the track having pits formed therein by irradiation of the recording medium with a light beam modulated by an information signal;

converting light reflected from the recording medium into a first electric signal corresponding to the reflected light;

producing a second electric signal from the first electric signal wherein the second electric signal is representative of the level of the portions of the first electric signal which correspond to light reflected from the recording medium where no pit is formed; and

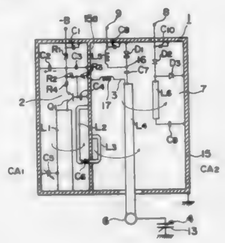
utilizing the second electric signal to generate the light spot control signal.

4,563,761

RESONATOR ASSEMBLY HAVING DIRECT CURRENT COMPONENT BYPASS MEANS FOR USE IN A VIDEO DISK PLAYER

Shuhei Kamada, Mino, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 19, 1982, Ser. No. 409,531
Claims priority, application Japan, Aug. 19, 1981, 56-129822
Int. Cl.⁴ G11B *9/06*
U.S. Cl. 369—126 **9 Claims**



1. In a resonator assembly employed in a capacitive pick-up assembly for use in a video disc system, said resonator assembly including an oscillator and a resonator, the improvement wherein said resonator comprises:

an electrode provided on a stylus for reading information carried on a disc as a track of the disc moves relatively past said stylus;

a tuned line having a first end accommodated in a resonator cavity and a second end connected to said stylus electrode;

a capacitive element connected between said first end of the tuned line and an inner face of said resonator cavity; and

a bypass circuit connected between said tuned line and said inner face of said resonator cavity, said bypass circuit having a high impedance with respect to a high frequency signal produced from said oscillator, whereby said bypass circuit impedes current flow of high frequency alternating current component corresponding to an output signal of said oscillator modulated in accordance with said information carried on said disc read by said electrode while permitting current flow of only direct current component, whereby electrostatic discharge between said stylus and said disc is prevented.

4,563,762

VITAL COMMUNICATION SYSTEM FOR TRANSMITTING MULTIPLE MESSAGES

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corp., Stamford, Conn.

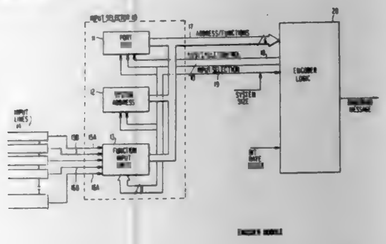
Continuation of Ser. No. 273,299, Jun. 15, 1981, Pat. No. 4,471,486. This application Apr. 23, 1984, Ser. No. 581,745
The portion of the term of this patent subsequent to Sep. 11, 2001, has been disclaimed.
Int. Cl.⁴ G06F *11/00*
U.S. Cl. 371—16 **12 Claims**

1. A processor for performing a function and for testing its own operation wherein correct execution of said function depends on said testing, comprising:

programmable means responsive to a stored program and input information for sensing said input information, storing said sensed input information, and if said stored program is complete and correct for performing said function,

test means for performing a test on said programmable means and for storing one or more indications in response to said test,

said test means including means to store said one or more indications to complete said stored program so that if correct indications are stored said stored program will be complete and correct,



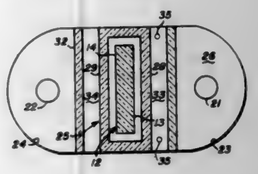
whereby an indication or indications indicating a failure of said test results in incorrect performance of said function.

4,563,763

METHOD AND APPARATUS FOR COOLING A SLAB LASER

Kelin J. Kuhn, Mountain View, Calif., assignor to Board of Trustees, Leland Stanford University, Stanford, Calif.

Filed Aug. 22, 1983, Ser. No. 524,876
Int. Cl.⁴ H01S *3/04*
U.S. Cl. 372—35 **12 Claims**



1. In a method for operating a slab laser of the type wherein a slab of lasant material having a pair of broad faces separated by at least one narrow face, is optically pumped by optical radiation directed into the lasant slab through at least one of said broad faces to produce stimulated emission of coherent radiation within the lasant slab, such stimulated emission of radiation being internally reflected of the slab along a zig-zag path back-and-forth between said pair of broad faces, THE IMPROVEMENT COMPRISING:

cooling said optically pumped broad face of said lasant material predominantly by heat transfer to a gas coolant disposed in heat exchanging relation with said optically pumped broad face of said lasant slab;

cooling said gas coolant predominantly by heat transfer to a flow of optically transparent liquid coolant partitioned from said gas coolant via an optically transparent thermally conductive liquid-gas partition; and

passing said pumping radiation through said liquid coolant, said liquid-gas partition, and said gas coolant to said slab.

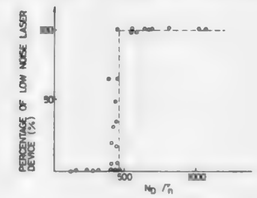
4,563,764

SEMICONDUCTOR LASER DEVICE

Takao Kuroda, Kokubunji; Takashi Kajimura; Yasutoshi Kashiwada, both of Hinodemachi; Naoki Chinone, Hachioji; Hirobumi Ouchi, Hino, and Tsukuru Ohtoshi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,710
Claims priority, application Japan, Sep. 13, 1982, 57-158136
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—45 **6 Claims**

1. In a semiconductor laser device having at least an optical confinement region which is formed on a predetermined substrate and which optical confinement region includes a semiconductor assembly comprising a first semiconductor layer, and second and third semiconductor layers holding said first semiconductor layer therebetween, said second and third semiconductor layers having a greater band gap and a lower refractive index than those of said first semiconductor layer and having conductivity types opposite to each other with one of said second and third layers being doped with a donor impurity to be of n-conductivity type; a first electrode which is formed



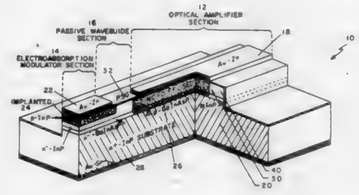
on the substrate side of said laser device; and a second electrode which is formed on the semiconductor assembly side of said laser device, wherein a relationship between a donor density ($N_D \times 10^{17}$ cm^{-3}) of the n-conductivity type semiconductor layer in said second or third semiconductor layers and a proportion (Γ_n %) of an optical output existing in said n-conductivity type semiconductor layer relative to a total optical output of said laser is set at $N_D \times \Gamma_n \geqq 500$.

4,563,765

INTRA-CAVITY LOSS-MODULATED DIODE LASER

Dean Z. Tsang, Waltham, and James N. Walpole, Concord, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 344,144, Jan. 29, 1982, abandoned. This application Jul. 11, 1984, Ser. No. 629,639
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—50 **6 Claims**



1. In an amplitude modulated diode laser comprising a double heterostructure having a substrate, an active layer and a cap layer, an improved heterostructure comprising:

(a) an amplifier section comprising a doped portion of the active layer and a diode junction between the active layer and the substrate;

(b) bias means for exciting the amplifier section;

(c) a loss modulating section comprising a shallow ion-implanted portion of the cap layer and a second diode junction formed in the cap layer electrically isolated and physically remote from the active layer but capable of influencing the active layer when the second junction is reverse biased;

(d) means for modulating the losses in the modulator section, the modulating means comprising

(i) means for applying a reverse bias voltage to the second junction; and

(ii) means for superimposing a modulating electric waveform upon the reverse bias voltage; and

(e) a passive waveguide section located in the active layer between the amplifying and modulating sections and having low dopant concentration and sufficient length to

electrically isolate the amplifying and modulating sections from each other, the heterostructure having cleaved ends with mirror facets defining a laser resonating cavity therebetween.

4,563,766

ELECTRIC ARC FURNACE FOR MELTING METAL, ESPECIALLY STEEL

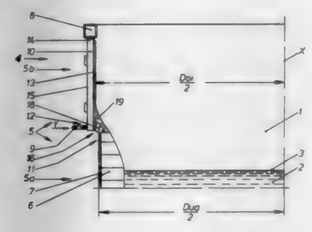
Klaus Bick, Paderborn; Lothar Harmsen, Lingen; Wilhelm Lechenmayer, Detmold, and Jürgen Zieschang, Lingen, all of Fed. Rep. of Germany, assignors to Benteler-Werke AG, Paderborn, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,753

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1978, 2843881

Int. Cl.⁴ F27D *1/00*; **F27B** *3/00*

U.S. Cl. 373—72 **9 Claims**



1. In an electric arc furance for melting metal, especially steel, a container having an upper open ended substantially cylindrical wall portion into which the metal to be melted is fed and a lower substantially cylindrical wall portion extending downwardly from said upper wall portion and being closed at the bottom to receive during operation of the furnace a bath of molten metal having an upper level at a predetermined maximum elevation above the closed bottom of the container, said container including an outer cylindrical metal shell and refractory material covering the inner surface of said upper wall portion, said lower wall portion and the closed bottom thereof, said upper wall portion having at a distance of at least 300 mm above said predetermined maximum elevation of the upper level of the molten metal bath an inner diameter which is at least 100 mm greater than the outer diameter of the shell at said lower wall portion.

4,563,767

METHOD OF PHASE-SYNCHRONIZING A TRANSIT EXCHANGE IN A DIGITAL TELECOMMUNICATION NETWORK

Harald E. Brandt, Döbelnsgatan, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE83/00068, § 371 Date Nov. 8, 1983, § 102(e) Date Nov. 8, 1983, PCT Pub. No. WO83/03175, PCT Pub. Date Sep. 15, 1983

PCT Filed Mar. 1, 1983, Ser. No. 556,242

Claims priority, application Sweden, Mar. 10, 1982, 8201494

Int. Cl.⁴ H04J *3/06*

U.S. Cl. 375—107 **4 Claims**

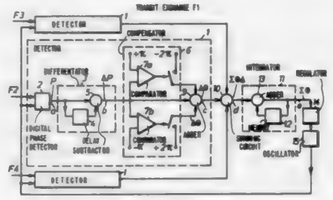
3. Method of synchronizing the phase of clocks from a link from a different station in a transit exchange in a digital telecommunication network, including a signal-controlled oscillator, the output of which is dependent on phase differences between a local exchange clock and the clock of the other station, characterized in that for avoiding a phase jump the following steps are carried out:

a signal corresponding to the phase difference is sampled for the incoming link, producing sampled values;

the sampled values are differentiated, producing differentiated values;

the differentiated values are compared with a limiting value for indicating a phase jump when said limiting value is exceeded;

when this limiting value is exceeded, a compensation signal having a control signal's highest value but with opposite



sign is added to the differentiated value to form a compensated differentiated value;

the compensated differentiated value is processed for obtaining the control signal.

4,563,768

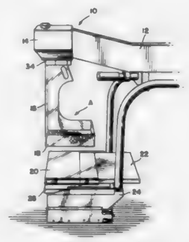
MAMOGRAPHIC DEVICE USING LOCALIZED COMPRESSION CONE

Mark E. Read, Woodstock, and Ronald L. Boswell, Charlottesville, both of Va., assignors to University of Virginia Alumni Patents Foundations, Charlottesville, Va.

Filed Jul. 11, 1983, Ser. No. 512,870

Int. Cl.⁴ A61B *6/04, 10/00*; **G03B** *42/02*; **H05G** *1/28*

U.S. Cl. 378—037 **19 Claims**



1. A Mammographic device comprising:

X-ray source means for emitting X-rays along a predetermined path;

film holder means disposed in the predetermined path of the X-rays for holding film to be exposed to the X-rays;

compression plate means disposed in the predetermined path of the X-rays, and positionable for compressing, and holding in position, against the film holder means a woman's breast to be X-rayed; and

suspension means suspended between the X-ray source means and the compression plate means for holding the X-ray source means and the compression plate means in a fixed relative mutual position so that the distance between the X-ray source means and the compression plate means remains constant;

said compression plate means and said suspension means together forming a suspended structure having a laterally arctuated recess permitting operator manipulation therein.

4,563,769

X-RAY GENERATOR DEVICE

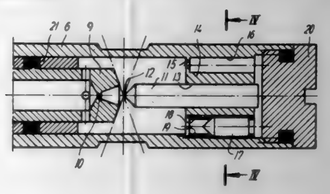
Jens U. Madsen, Farum, Denmark, assignor to Andrex Radiation Products A/S, Denmark

Filed Dec. 21, 1982, Ser. No. 452,013

Claims priority, application Denmark, Dec. 29, 1981, 5816/81

Int. Cl.⁴ H01J *35/04*

U.S. Cl. 378—121 **4 Claims**



1. An X-ray generator device comprising:

an electron gun having an apertured anode member;

a focusing and deflecting system for controlling an electron beam emitted from the electron gun;

a slender, elongate, tubular probe connected at one end with said focusing and deflecting system to receive said electron beam;

an electron beam diaphragm disposed in the interior of said probe in proximity to the other, free end thereof and having a comparatively narrow aperture;

a target member disposed in the interior of the free end of said probe with a conically tapering front part facing said diaphragm;

a target carrier positioned substantially coaxially in the probe and electrically insulated with respect to said diaphragm, and adapted to support said target member; and

mechanical adjusting means provided in said probe and accessible from the exterior of the probe for fine alignment of the conically tapering front part of the target member and the opposed aperture of the diaphragm with respect to each other by displacement of either in any direction in a radial plane with respect to the axis of the probe.

4,563,770

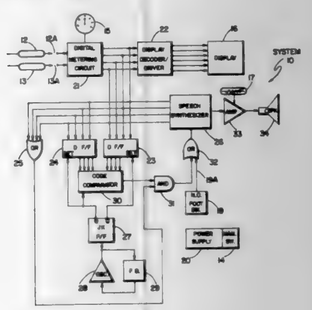
MEASURING DEVICE AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840, and Christian Grund, 2035 Burr Ave., The Bronx, N.Y. 10461

Filed Oct. 3, 1979, Ser. No. 81,365

Int. Cl.⁴ G10L *1/00*

U.S. Cl. 381—51 **11 Claims**



1. A measuring device comprising:

a housing,

a speaker supported by said housing,

electrical circuit means supported within said housing,

sensing means connected to said electrical circuit means for sensing a variable to be measured and operable for outputting electrical signals which vary in accordance with variations in the variable sensed,

said electrical circuit means including a signal processing means for receiving and processing said electrical signals generated by said sensing means,

said electrical circuit means also including a microminiature solid state electronic synthetic speech signal generating means for generating speech signals of words of numbers,

said electrical circuit means having means for controlling said synthetic speech generating means including;

comparator means for receiving electrical signals generated by said signal processing means,

control means connected to said comparator means for causing synthetic speech signals of words of speech defined by the output of said synthetic speech generating means to be passed to said speaker,

means for operating said control means to cause selected speech signals defining numbers indicative of a variable sensed to be passed to said speaker when said sensing means senses a true measurement of the variable sensed,

said control means including a clock pulse generating means operable to control said control means when said sensing means fails to detect and generate signals defining further variations in the variable sense so as to permit said speaker to generate sounds of a train of words defining numbers which are indicative of a measurement made.

4,563,771

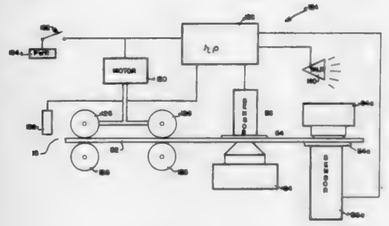
AUDIBLE SECURITY VALIDATOR

Robert L. Gorgone, Mentor, and Anthony H. Dolejs, Bedford Heights, both of Ohio, assignors to Ardac, Inc., Eastlake, Ohio

Filed Oct. 5, 1983, Ser. No. 539,082

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—7 **3 Claims**



1. A table top security validator for determining the validity and denomination of paper currency, regardless of which of the four common orientations in which the bill is presented, said validator comprising:

(a) a casing having a tray for receiving and defining a path for a piece of currency;

(b) conveyor means for transporting the currency along said path;

(c) means for activating said conveyor means when a piece of currency is present;

(d) sensor means of the reflectance type positioned along the path for obtaining data from the currency, said sensor means including a pair of sensors, one each above and below said path;

(e) means in juxtaposition to each said sensor for urging the currency toward each said sensor such that a high resolution data reading may be obtained;

(f) processing means connected to and receiving said data from said sensor means;

(g) said processing means determining, from data received

from said sensor means, where a margin on said currency terminates and a data-bearing portion begins, said processing means receiving and processing data only beyond said margin;

(h) said processing means containing data for determining the authenticity and denomination of a plurality of denominations of currency, irrespective of the four possible attitudes in which the currency is presented into said tray; and

(i) means for audibly identifying such piece of currency as to its validity and denomination.

4,563,772

HIGH FREQUENCY MIXER STAGE

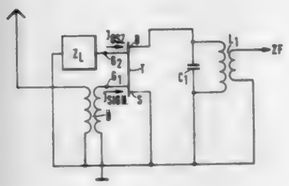
Heinz Beneking, Aachen; Rainer Stahlmann, Aachen-Richterich, both of Fed. Rep. of Germany, and Christos Tsironis, Montgeron, France, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,940

Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216776

Int. Cl.⁴ H04B *1/26*

U.S. Cl. 455—321 **3 Claims**



1. High frequency mixer stage comprising a field-effect transistor tetrode with two gate electrodes, means supplying a high frequency input signal to one of the gate electrodes, and two terminal means connected between the second gate electrode (G_2) and a ground terminal for setting operating point of the tetrode such that self-oscillation and, consequently, frequency conversion occurs substantially due to cooperation of said tetrode and said two-terminal means, wherein said two terminal means is an inductive load.

4,563,773

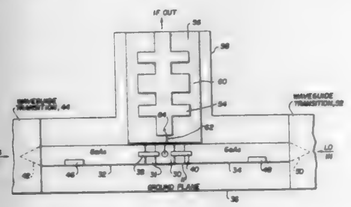
MONOLITHIC PLANAR DOPED BARRIER SUBHARMONIC MIXER

Samuel Dixon, Jr., Neptune, and Roger J. Malik, Summit, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 12, 1984, Ser. No. 588,612

Int. Cl.⁴ H04B *1/26*

U.S. Cl. 455—327 **13 Claims**



1. A monolithic signal mixer for millimeter wave frequency applications, comprising:

a dielectric transmission line medium including a semi-insulating substrate of a given material located on a conductive ground plane, said dielectric transmission line including first and second transmission line portions extending in opposite directions along said ground plane and an intermediate area of reduced thickness separating said portions;

a monolithic semiconductor signal mixing device including a substrate of said given material integral with and grown on said intermediate area and spaced from the intermediate area ends of said transmission line, said mixing device including conductive means coupling across said area of reduced thickness to respective said intermediate ends of each of said first and second transmission line portions;

an input signal source and a local oscillator signal source being respectively coupled to opposite ends of said transmission line; and

intermediate frequency transmission line means located on said ground plane and being coupled to said mixing device for translating an intermediate frequency signal resulting from the heterodyne action between said input signal and said local oscillator signal.

4,563,774

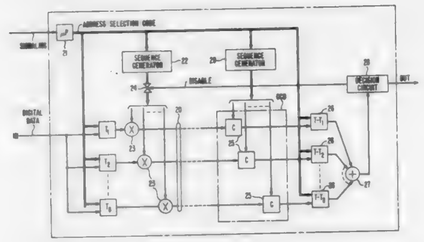
ADDRESS CODED COMMUNICATION SYSTEM

Detlef C. Gloge, Colts Neck, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 25, 1982, Ser. No. 436,576

Int. Cl.⁴ H04J *1/16;* **H04B** *9/00*

U.S. Cl. 455—607 **7 Claims**



1. A digital communication system comprising a plurality of terminals, each terminal having a transmitter (**11**) and a receiver (**12**), guided transmission means (**13, 14**) for transmitting a digital message from each and every transmitter to each and every receiver, means at each receiver for generating for and thereby identifying each receiver by a different and unique digital word address, means (**22, 23**) at each transmitter for individually encoding each of the digital message bits to be transmitted to a particular receiver in the digital word address of that receiver, each address encoded message bit sequence being transmitted to said receiver a predetermined number of times, a plurality of correlator means (**25**) at each receiver each of which serves to correlate the incoming message information directed thereto with the receiver's digital address, each correlator means producing an autocorrelation peak when a received address encoded message bit matches the receiver's digital address, means (**27**) for summing the autocorrelation peaks from each of the correlator means, a means (**26, 29**) for reconfiguring a local receiver to match a given remote receiver prior to transmission to the latter from the local transmitter, the reconfigured local receiver serving to detect if the remote receiver is busy, and means (**24**) for inhibiting the transmission from the local transmitter if a busy condition is detected.

4,563,775

APPARATUS FOR CONTROLLING TRANSMISSION OUTPUT POWER

Shigeru Yokosuka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 14, 1984, Ser. No. 640,656

Claims priority, application Japan, Aug. 18, 1983, 58-150800

Int. Cl.⁴ H04B *1/04;* **H03G** *3/00*

U.S. Cl. 455—126 **1 Claim**

1. Transmission output power control apparatus comprising:

power amplifier means for amplifying a transmission signal;

circuit means for deriving out a portion of an output of said power amplifier means;

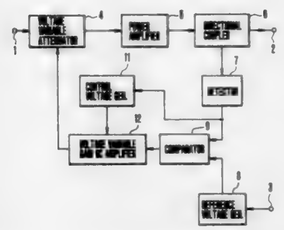
detector means for detecting an output of said circuit means;

reference voltage generating circuit means for generating a reference voltage corresponding to a predetermined output;

comparator means for comparing an output voltage of said detector means with said reference voltage and producing an error signal;

control voltage generator means coupled to the detector means for producing a control voltage in accordance with the output of said detector means;

voltage gain DC amplifier means for amplifying said error signal, a gain thereof being controlled by said control voltage; and



means coupled to the power amplifier means for controlling either one or both of an input level and an output gain of said power amplifier means in response to said amplified error signal.

DESIGN PATENTS

GRANTED JAN. 7, 1986

ERRATA

For CLASS	See PATENT NO.
D17–020	282,064

282,020
COMBINED HEADBAND AND RADIO
Pu G. Gwon, 5857 Arden, Highland, Calif. 92346
Filed Sep. 6, 1983, Ser. No. 529,226
Term of patent 14 years
U.S. Cl. D2—230





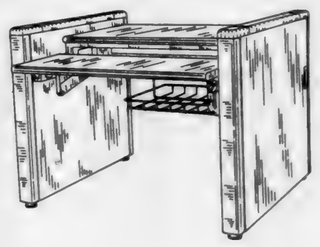
282,021
POCKETED ATHLETIC SHOE UPPER
Danny Linn, 132 Duane St., New York, N.Y. 10013
Filed Jun. 1, 1983, Ser. No. 500,115
Term of patent 14 years
U.S. Cl. D2—314



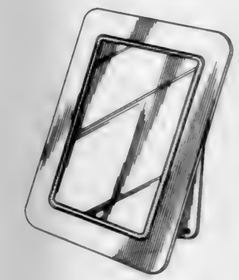
282,022
TOE CAP FOR BALLET SHOES
Paul E. Wright, 7 Hasp St., Seventeen Mile Rocks, Brisbane, Queensland, Australia (4073)
Filed Jul. 21, 1983, Ser. No. 515,692
Term of patent 14 years
U.S. Cl. D2—314



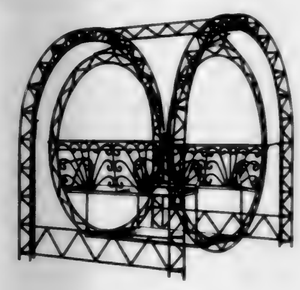
282,023
DESK
Ettore Sottsass, and Michele De Lucchi, both of Milan, Italy, assignors to Olivetti Synthesis, S.p.A., Ivrea, Italy
Division of Ser. No. 456,772, Jan. 10, 1983. This application Mar. 7, 1985, Ser. No. 709,188
Claims priority, application Italy, Jul. 8, 1982, 53489-B/82[U]
Term of patent 14 years
U.S. Cl. D6—422



282,024
PICTURE FRAME
Martti Muranen, Kangasala, Finland, assignor to Aaltosen Tehtaat Oy, Tampere, Finland
Filed Nov. 17, 1983, Ser. No. 552,946
Term of patent 14 years
U.S. Cl. D6—300



282,025
SWING
Eliseo M. Roquiz, 5271 Robinhood La., Erie, Pa. 16509
Filed Aug. 3, 1983, Ser. No. 520,294
Term of patent 14 years
U.S. Cl. D6—346



282,026
ACCESSORY WORK SEAT FOR A BEAUTICIAN'S CHAIR OR THE LIKE
Christopher Georgevich, 1001 Oakhill Rd., Lafayette, Calif. 94549
Filed Jul. 6, 1983, Ser. No. 511,144
Term of patent 14 years
U.S. Cl. D6—353



282,027
CHAIR
Moses R. Schultz, Barto, Pa., assignor to Knoll International, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 372,325, Apr. 27, 1982. This application Sep. 15, 1982, Ser. No. 418,478
Term of patent 14 years
U.S. Cl. D6—373



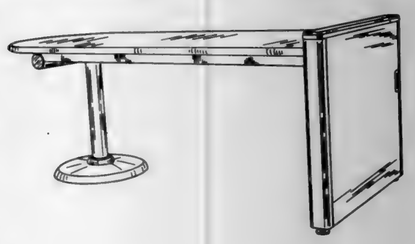
282,028
BOAT CHAIR
Bernard J. Kennedy, Maplewood, Minn., assignor to Kennedy Houseboats, Inc., Miller, S. Dak.
Filed Jun. 30, 1983, Ser. No. 509,349
Term of patent 14 years
U.S. Cl. D6—380



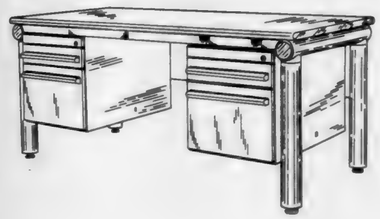
282,029
BUNK BED FRAME
Daniel E. Ells, 217 Circle Rd., Pasadena, Md. 21122
Filed Oct. 28, 1983, Ser. No. 546,723
Term of patent 14 years
U.S. Cl. D6—390



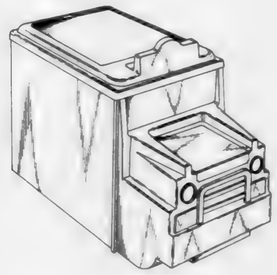
282,030
DESK
Ettore Sottsass, and Michele De Lucchi, both of Milan, Italy, assignors to Olivetti Synthesis, S.p.A., Ivrea, Italy
Division of Ser. No. 456,772, Jan. 10, 1983. This application Mar. 7, 1985, Ser. No. 709,189
Claims priority, application Italy, Jul. 8, 1982, 53489/82[U]
Term of patent 14 years
U.S. Cl. D6—422



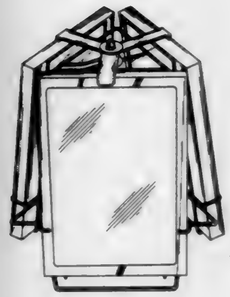
282,031
DESK
Ettore Sottsass, and Michele De Lucchi, both of Milan, Italy, assignors to Olivetti Synthesis, S.p.A., Ivrea, Italy
Division of Ser. No. 456,772, Jan. 10, 1983. This application Mar. 7, 1985, Ser. No. 709,187
Claims priority, application Italy, Jul. 8, 1982, 53489-B/82[U]
Term of patent 14 years
U.S. Cl. D6—428



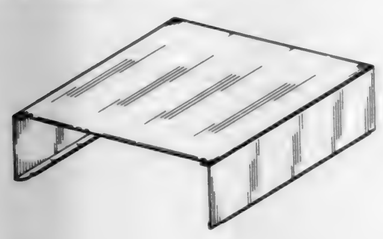
282,032
TOY BOX
Gary R. Lemmeyer, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 2, 1984, Ser. No. 576,267
Term of patent 14 years
U.S. Cl. D6—440



282,033
DESIGN FOR A DISPLAY STAND
Keith W. Gray, 450 N. Mathilda Ave., Sunnyvale, Calif. 94086
Filed Sep. 30, 1982, Ser. No. 429,770
Term of patent 14 years
U.S. Cl. D6—455



282,034
PRINTER BENCH
Scott P. Janke, 121 Peavy La., Wayzata, Minn. 55391
Filed Dec. 6, 1982, Ser. No. 447,278
Term of patent 14 years
U.S. Cl. D6—480



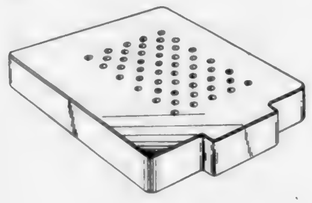
282,035
BACK FOR A SAFETY SEAT
Thomas W. Roney, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Filed Aug. 4, 1983, Ser. No. 520,159
Term of patent 14 years
U.S. Cl. D6—502



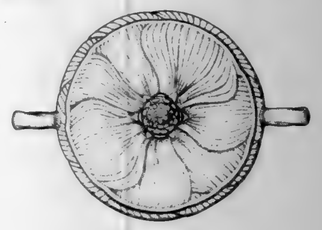
282,036
TWIN PILLOWS
William B. Ritchie, Jr., and Marguerite M. Ritchie, both of Richmond, Va., assignors to The Ritchie Family Company, Richmond, Va.
Filed Jan. 26, 1983, Ser. No. 461,225
Term of patent 14 years
U.S. Cl. D6—601



282,037
MATTRESS INSERT
Douglas R. Lawson, and Michael W. Fountain, both of Kent, England, assignors to Thomas Jourdan plc, Windsor, England
Filed Mar. 23, 1983, Ser. No. 478,206
Claims priority, application United Kingdom, Sep. 23, 1982, 1008864
Term of patent 14 years
U.S. Cl. D6—606

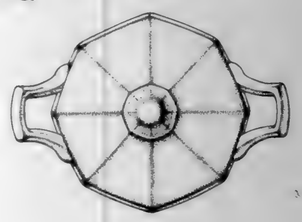


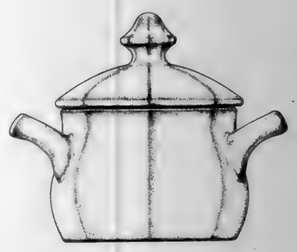
282,038
SUGAR BOWL
Larry R. Laslo, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Jul. 27, 1983, Ser. No. 517,857
Term of patent 14 years
U.S. Cl. D7—17



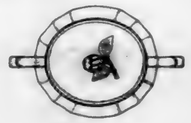


282,039
SUGAR BOWL
Walter Everhan, Klettenberg, Fed. Rep. of Germany, assignor to American Commercial Incorporated, Secaucus, N.J.
Filed May 26, 1983, Ser. No. 497,866
Term of patent 14 years
U.S. Cl. D7—18





282,040
SUGAR BOWL
Toschio Mural, Tajimi, Japan, assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Jul. 28, 1983, Ser. No. 518,084
Term of patent 14 years
U.S. Cl. D7—18



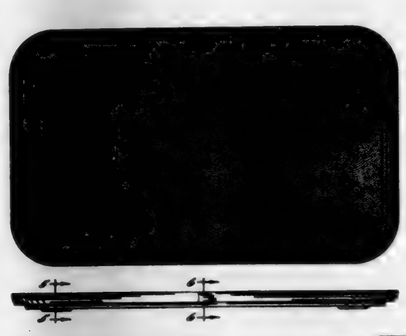




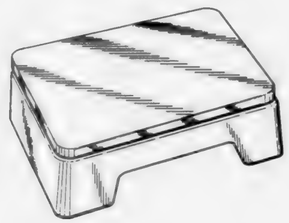
282,041
PLATE OR THE LIKE
Ming-Ter Chen, 1232–1236 E. Factory Pl., Los Angeles, Calif. 90013
Filed May 9, 1983, Ser. No. 492,883
Term of patent 14 years
U.S. Cl. D7—35

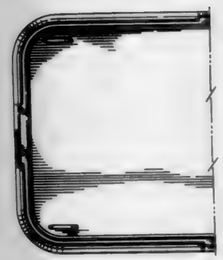


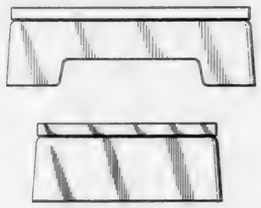
282,042
SERVING TRAY
Abigail H. Gallagher, Chicago, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed May 31, 1983, Ser. No. 499,255
Term of patent 14 years
U.S. Cl. D7—37



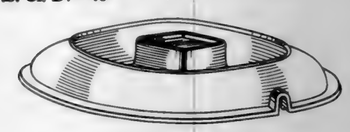
282,043
RAISED SERVING BOARD
Andre R. Morin, Dollard des Ormeaux, Canada, assignor to Namaar Enterprises Inc., Bolton, Canada
Filed Jun. 13, 1983, Ser. No. 490,238
Term of patent 14 years
U.S. Cl. D7—37

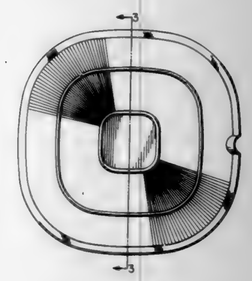






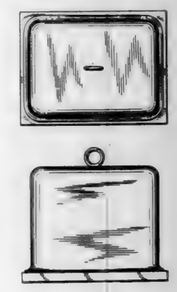
282,044
COVER FOR A CASSEROLE
Donald R. McClelland, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 6, 1982, Ser. No. 395,653
Term of patent 14 years
U.S. Cl. D7—40



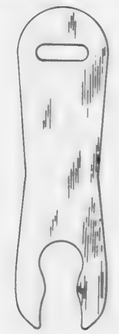




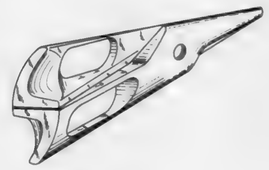
282,045
COMBINED TOASTER COVER AND BASE
Lillian Pratt, 525 East 86th St., New York, N.Y. 10028
Filed Jul. 19, 1982, Ser. No. 399,355
Term of patent 14 years
U.S. Cl. D7—390



282,046
GAS METER SHUT-OFF WRENCH
Joseph E. Dumond, 9217 Penmar, Santee, Calif. 92071, and Dee W. Trepanier, 5362 Via Acquario, San Diego, Calif. 92111
Filed Feb. 14, 1983, Ser. No. 466,194
Term of patent 14 years
U.S. Cl. D8—21



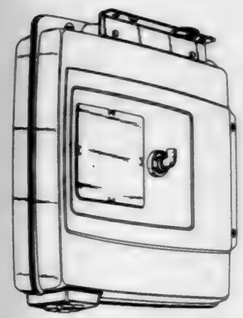
282,047
SCISSOR
Roberto Cerutti, Milan, Italy, assignor to Vicom Italiana Di Nave Libero, Milan, Italy
Filed Sep. 12, 1983, Ser. No. 531,913
Claims priority, application Italy, Mar. 11, 1983, 21091 B/83[U]
Term of patent 14 years
U.S. Cl. D8—57



282,048
DEVICE FOR MAINTAINING A GASOLINE PUMP NOZZLE IN THE OPEN POSITION
Milton Scanlon, 5058 Lexington Blvd., Fort Meyers, Fla. 33907
Filed Dec. 7, 1983, Ser. No. 559,021
Term of patent 14 years
U.S. Cl. D8—349



282,049
HOSE REEL
Bill P. P. Nederman, F.M. Franzens Gate 2, S-252 33 Helsingborg, Sweden
Filed Mar. 3, 1983, Ser. No. 471,705
Claims priority, application Sweden, Sep. 8, 1982, 82-2138
Term of patent 14 years
U.S. Cl. D8—358



282,050
CONTAINER BODY FOR LIQUIDS AND THE LIKE
Ted L. Beaver, Roselle, and George R. Conrad, Elk Grove, both of Ill., assignors to Quaker State Oil Refining Corporation, Oil City, Pa.
Filed Dec. 12, 1983, Ser. No. 560,485
Term of patent 14 years
U.S. Cl. D9—332



282,051
BOTTLE
Alexander M. Cree, Dorchester, England, assignor to Eldridge, Pope & Co. plc, Dorset, England
Filed Jul. 8, 1983, Ser. No. 512,006
Claims priority, application United Kingdom, Mar. 18, 1983, 10\2050
Term of patent 14 years
U.S. Cl. D9—395



282,052
CONTAINER BODY FOR LIQUIDS AND THE LIKE
Ted L. Beaver, Roselle, and George R. Conrad, Elk Grove, both of Ill., assignors to Quaker State Oil Refining Corporation, Oil City, Pa.
Filed Dec. 12, 1983, Ser. No. 560,484
Term of patent 14 years
U.S. Cl. D9—404

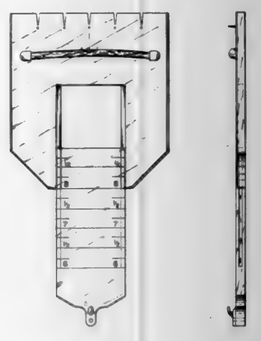


282,053
COMBINED CLOSURE AND HOOK THEREFOR
Edward L. Pass, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Oct. 12, 1982, Ser. No. 433,739
Term of patent 14 years
U.S. Cl. D9—436





282,054
PICTURE HANGING AIDE
Saul Hoffman, 301 Hudson Ave., Tenafly, N.J. 07670
Filed Jul. 22, 1983, Ser. No. 516,471
Term of patent 14 years
U.S. Cl. D10—62



282,055
LOCKET FOR THE PRESERVATION OF PERSONAL DATA
Edith Brinkers, 2, Leidsegracht, 1016 CK Amsterdam, Netherlands
Filed Sep. 7, 1983, Ser. No. 530,068
Claims priority, application Netherlands, Mar. 28, 1983, DM/002367
Term of patent 14 years
U.S. Cl. D11—80



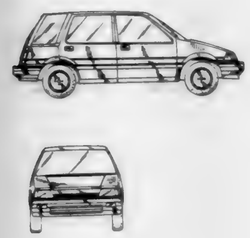
282,056
NOVELTY SCULPTURE
Daniel E. Levine, 4207 Argosy Ct., Madison, Wis. 53714
Filed May 4, 1983, Ser. No. 492,481
Term of patent 14 years
U.S. Cl. D11—157



282,057
SNOW SLED
Peter G. Krovina, 11258 Occidental Ave. South, Seattle, Wash. 98168
Filed Mar. 11, 1983, Ser. No. 474,345
Term of patent 14 years
U.S. Cl. D12—9



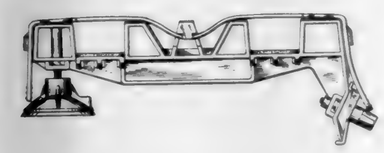
282,058
MOTORCAR
Tetsu Tanaka, Higashikurume, and Kazuyuki Tairabune, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 4, 1983, Ser. No. 472,008
Claims priority, application Japan, Sep. 8, 1982, 57-40706
Term of patent 14 years
U.S. Cl. D12—91



282,059
VEHICLE TIRE
Hiroshi Kojima; Junichi Kawajiri, and Toshio Hayakawa, all of Tokyo, Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan
Filed Jan. 24, 1983, Ser. No. 460,714
Claims priority, application Japan, Jul. 23, 1982, 57-33124
Term of patent 14 years
U.S. Cl. D12—140



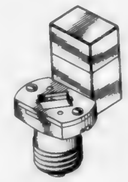
282,060
CARRIER FOR SKI EQUIPMENT
Sante DiAntoni, 12619 N. Yvonne Dr., Mequon, Wis. 53092
Filed Oct. 3, 1983, Ser. No. 538,751
Term of patent 14 years
U.S. Cl. D12—157



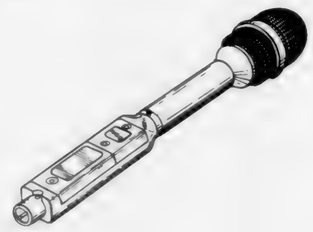
282,061
LUGGAGE CASE FOR MOTORCYCLE
Karl H. Abe, Steinebach/Wörthsee, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 26, 1983, Ser. No. 488,723
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 13 131
Term of patent 14 years
U.S. Cl. D12—158



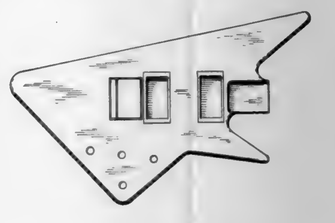
282,062
FLUORESCENT LAMP ADAPTER
John H. Cummings, Santa Ana, Calif., assignor to Luma Lighting Industries, Inc., Santa Ana, Calif.
Filed Aug. 1, 1983, Ser. No. 519,408
Term of patent 14 years
U.S. Cl. D13—25



282,063
MICROPHONE
Alan R. Watson, Niles, Mich., assignor to Electro-Voice, Incorporated, Buchanan, Mich.
Filed Aug. 12, 1983, Ser. No. 522,785
Term of patent 14 years
U.S. Cl. D14—12



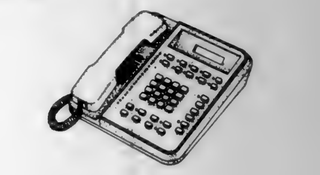
282,064
GUITAR BODY OR SIMILAR ARTICLE
Hartley D. Peavey, 4383 - 18th Ave., Meridian, Miss. 39301
Filed Oct. 7, 1983, Ser. No. 539,985
Term of patent 14 years
U.S. Cl. D17—20



282,065
LOUDSPEAKER BASKET
William D. Piercy, Franklin Park, Ill., assignor to TRU-DIE, Inc., Franklin Park, Ill.
Filed Oct. 17, 1983, Ser. No. 542,586
Term of patent 14 years
U.S. Cl. D14—37

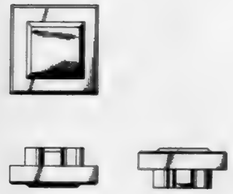


282,066
TELEPHONIC RECEIVER
Laurent Menei, Avrille; Bernard Bachelet, Margency, and Raymond Blaszykowski, Argenteuil, all of France, assignors to Thomson-CSF Telephone, Colombes, France
Filed Apr. 26, 1983, Ser. No. 488,871
Claims priority, application France, Oct. 29, 1982, 823,775
Term of patent 14 years
U.S. Cl. D14—58

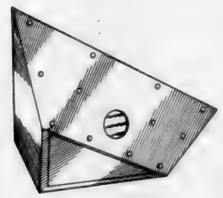




282,067
PUSH BUTTON
Hiroshi Inaba, Yokohama, Japan, assignor to Nippon Tsushin Kogyo Kabushiki Kaisha, Kanagawa, Japan
Filed Apr. 29, 1983, Ser. No. 490,145
Claims priority, application Japan, Dec. 24, 1982, 57-57464
Term of patent 14 years
U.S. Cl. D14—59



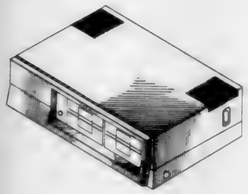
282,068
CLOSED-CIRCUIT TELEVISION SYSTEM ENCLOSURE
Joseph H. Claggett, 1017 E. 4th Ave., Mitchell, S. Dak. 57301
Filed Aug. 30, 1983, Ser. No. 527,815
Term of patent 14 years
U.S. Cl. D14—77



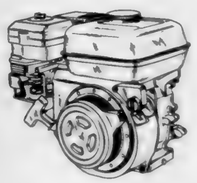
282,069
KEYBOARD
Per O. R. Lindhé, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Mar. 2, 1983, Ser. No. 471,463
Claims priority, application Sweden, Sep. 14, 1982, 82-2208
Term of patent 14 years
U.S. Cl. D14—100



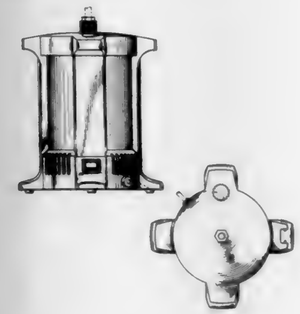
282,070
COMPUTER
Tadashi Nakamura, Tokyo, and Yutaka Nakano, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 25, 1983, Ser. No. 478,723
Claims priority, application Japan, Oct. 14, 1982, 57-46688
Term of patent 14 years
U.S. Cl. D14—100



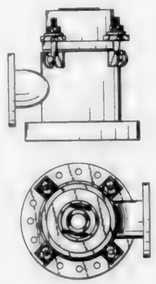
282,071
INTERNAL COMBUSTION ENGINE
Tetsuo Nakamura, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 25, 1983, Ser. No. 478,941
Claims priority, application Japan, Oct. 20, 1982, 57-47691
Term of patent 14 years
U.S. Cl. D15—1



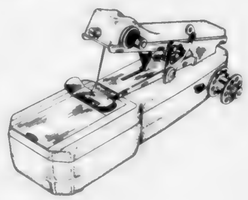
282,072
POWER UNIT FOR PAINT ROLLER
David C. Miller; Robert E. Dawson, both of Ridgefield; Thomas J. Pendleton, North Wilton, and Jacob A. Krapowicz, Ridgefield, all of Conn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Aug. 15, 1983, Ser. No. 522,967
Term of patent 14 years
U.S. Cl. D15—7



282,073
ROTATING HEAD FOR DRILLING
Robert M. Bearden, Fort Smith, and W. A. Haynes, Greenwood, both of Ark., assignors to Arkoma Machine Shop, Inc., Fort Smith, Ark.
Filed Feb. 23, 1983, Ser. No. 468,933
Term of patent 14 years
U.S. Cl. D15—21



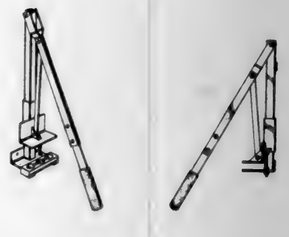
282,074
PORTABLE SEWING MACHINE
Tsuneo Seyama, Yono, Japan, assignor to Kabushiki Kaisha Niida Seisakusho, Sanjo, Japan
Filed Mar. 3, 1983, Ser. No. 471,827
Claims priority, application Japan, Sep. 3, 1982, 57-39974
Term of patent 14 years
U.S. Cl. D15—69



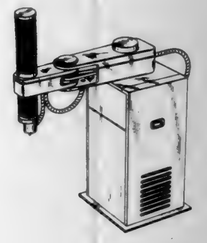
282,075
ADJUSTABLE LATHE WORK STOP
Charles T. Schell, Box 737, Marina, Calif. 92933
Filed Jun. 17, 1983, Ser. No. 505,302
Term of patent 14 years
U.S. Cl. D15—138



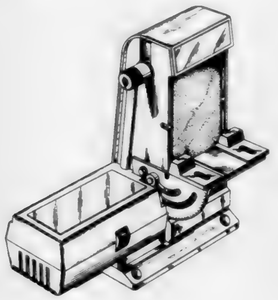
282,076
CRUSHER UNIT FOR NUTS, CANS, OYSTERS SHELLS OR THE LIKE
George F. Taylor, P.O. Box 625, Moultrie, Ga. 31768
Filed Jul. 6, 1982, Ser. No. 395,274
Term of patent 14 years
U.S. Cl. D15—123



282,077
INDUSTRIAL ROBOT
Takeshi Abe, Tokyo; Masato Sibayama, Sayama; Yuhiko Yabe, Tochigi; Ryouichi Hisatomi, Tochigi; Yoshiaki Yoshikawa, Tochigi; Yuuichi Namura, Tochigi, and Takeshi Sasaki, Tochigi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 18, 1983, Ser. No. 495,676
Claims priority, application Japan, Nov. 26, 1982, 57-53042; Mar. 14, 1983, 58-10169
Term of patent 14 years
U.S. Cl. D15—199



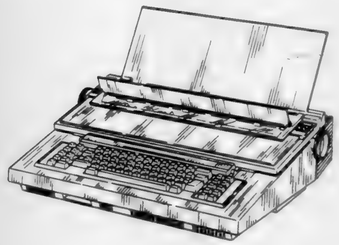
282,078
BENCH-TYPE BELT SANDER
Lawrence E. House, II, Raleigh, N.C., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Aug. 10, 1982, Ser. No. 406,970
Term of patent 14 years
U.S. Cl. D15—125



282,079
SPECTACLE FRAME
Cari Zalloni, Stuebing, Austria, assignor to Omatic AG, Switzerlnnd
Filed Aug. 9, 1984, Ser. No. 639,191
Term of patent 14 years
U.S. Cl. D16—102



282,080
ELECTRONIC TYPEWRITER
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Sep. 7, 1983, Ser. No. 530,040
Claims priority, application Italy, Mar. 7, 1983, 53014/83[U]
Term of patent 14 years
U.S. Cl. D18—1



282,081
WORD PROCESSOR
Junji Hirooka, Higashimurayama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 22, 1983, Ser. No. 516,461
Claims priority, application Japan, Apr. 6, 1983, 58-14744
Term of patent 14 years
U.S. Cl. D18—2

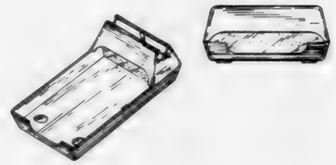


282,082
PRINTER
Masayuki Morishita, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Mar. 5, 1984, Ser. No. 585,939
Claims priority, application Japan, Oct. 18, 1983, 58/45103
Term of patent 14 years
U.S. Cl. D18—13





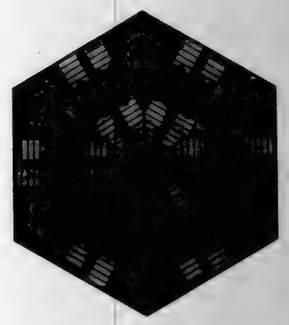
282,083
ILLUMINABLE NOTE PAPER TRAY
Mike Kier, 9134 Dillon, La Mesa, Calif. 92041
Filed Jul. 13, 1983, Ser. No. 513,462
Term of patent 14 years
U.S. Cl. D19—92



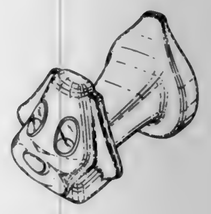
282,084
PROCESSED WATER VENDING MACHINE
Walter L. Koch, Caldwell, N.J., assignor to Water Marketers, Inc., Boston, Mass.
Filed Feb. 14, 1983, Ser. No. 466,093
Term of patent 14 years
U.S. Cl. D20—1



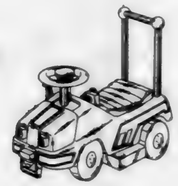
282,085
HEXAGONAL BOARD FOR A GAME
Heinz H. Hensley, Dreieich, Fed. Rep. of Germany, assignor to Lillian Hensley Unternehmensberatunge GmbH, Dreieich, Fed. Rep. of Germany
Filed Sep. 9, 1982, Ser. No. 416,252
Claims priority, application Fed. Rep. of Germany, May 14, 1982, 8 MR 562
Term of patent 14 years
U.S. Cl. D21—25



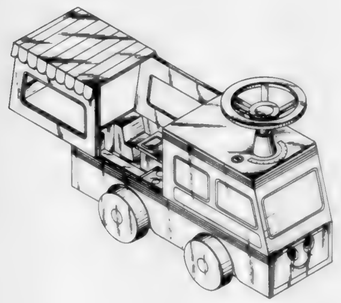
282,086
SIMULATIVE RATTLE
Norman R. Emms, Welwyn Garden City, England, assignor to Hestair Kiddicraft, Surrey, England
Filed May 2, 1983, Ser. No. 490,870
Claims priority, application United Kingdom, Oct. 22, 1982, 1009372
Term of patent 14 years
U.S. Cl. D21—65



282,087
RIDING TOY
Kenzou Kasai, Osaka, Japan, assignor to Kasai Kabushiki Kaisha, Osaka, Japan
Filed Oct. 21, 1983, Ser. No. 544,376
Claims priority, application Japan, Apr. 28, 1983, 58-18131
Term of patent 14 years
U.S. Cl. D21—78



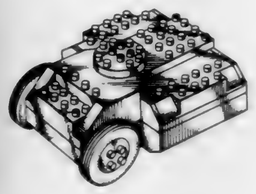
282,088
TOY VAN
Frederick H. Kroll, 72 Wood Hollow La., New Rochelle, N.Y. 10804, and Rosalind M. Fox, Indialantic, Fla., assignors to Frederick H. Kroll, New Rochell, N.Y.
Filed May 5, 1983, Ser. No. 491,729
Term of patent 14 years
U.S. Cl. D21—78



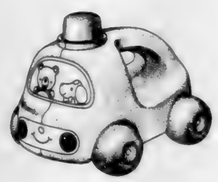
282,089
AERIAL TOY
Foster N. Andersen, 190 Norman Rd., Rochester, N.Y. 14623
Filed Jul. 27, 1983, Ser. No. 517,761
Term of patent 14 years
U.S. Cl. D21—86



282,090
TOY CONSTRUCTION PIECE
Tokuo Takahashi, Tokyo, Japan, assignor to Kawada Co., Ltd., Tokyo, Japan
Filed Sep. 16, 1983, Ser. No. 532,850
Claims priority, application Japan, Jun. 15, 1983, 58-25478
Term of patent 14 years
U.S. Cl. D21—108



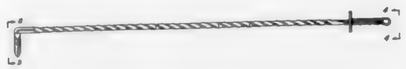
282,091
TOY VEHICLE
Shimroku Nakao, Kanagawa; Yoshiyasu Ishii, and Kazuo Nagata, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Oct. 31, 1983, Ser. No. 547,281
Claims priority, application Japan, May 18, 1983, 58-20777
Term of patent 14 years
U.S. Cl. D21—128



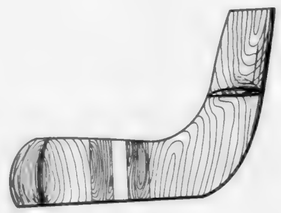
282,092
CHILD'S ELEPHANT FIGURE TOY
Peter G. Adams, East Grinstead, England, assignor to Hestair Kiddicraft, Surrey, England
Filed May 2, 1983, Ser. No. 490,871
Term of patent 14 years
U.S. Cl. D21—162



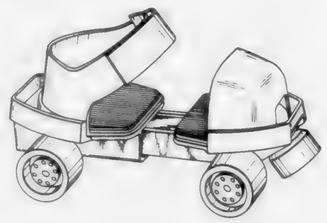
282,093
PUSH STICK FOR A HOOP
Thayard A. McGuire, 8617 Parkway Cir., Riverview, Fla. 33569
Filed May 19, 1983, Ser. No. 496,131
Term of patent 14 years
U.S. Cl. D21—210



282,094
PUTTER
John D. McFarland, 7401 Dempsey St., Van Nuys, Calif. 91406
Filed May 18, 1983, Ser. No. 495,635
Term of patent 14 years
U.S. Cl. D21—217



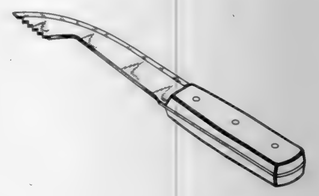
282,095
ROLLER SKATE
Frederick B. Robjent, Orchard Park, N.Y., and Reuben B. Klamer, La Jolla, Calif., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 9, 1984, Ser. No. 578,488
Term of patent 14 years
U.S. Cl. D21—226



282,096
KIDNEY SHAPED POOL TABLE
Morton J. Levand, 4379 E. Dartmouth, Denver, Colo. 80222
Filed Jul. 18, 1983, Ser. No. 514,953
Term of patent 14 years
U.S. Cl. D21—232



282,097
FISHING KNIFE
George Nativo, 15011 Florwood, Hawthorne, Calif. 90250
Filed May 31, 1983, Ser. No. 499,509
Term of patent 14 years
U.S. Cl. D22—1



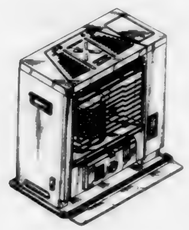
282,098
SPRINKLER
Stpehen A. Gural, W. 6595 Harbor Dr., Coeur d'Alene, Id. 83814; Robert L. Kay, Box 1701, Sandpoint, Id. 83864, and Arthur W. Gural, 3375 E. Driftwood Dr., Coeur d'Alene, Id. 83814
Filed Jan. 24, 1983, Ser. No. 460,535
Term of patent 14 years
U.S. Cl. D23—7



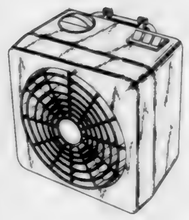
282,099
FROSTPROOF HYDRANT
Philip L. Tropeano, Salem, Mass., assignor to Larchmont Engineering and Irrigation, Inc., Lexington, Mass.
Filed Sep. 20, 1982, Ser. No. 419,785
Term of patent 14 years
U.S. Cl. D23—12



282,100
OILSTOVE
Kazuhiro Tanaka; Youichi Sekigawa Kamo, and Shigeki Yamaguchi, Niigata, all of Japan, assignors to Toshiba Heating Appliances Co., Ltd, Kamo, Japan
Filed Nov. 2, 1983, Ser. No. 547,948
Claims priority, application Japan, Jul. 20, 1983, 58-31411
Term of patent 14 years
U.S. Cl. D23—122



282,101
COMBINED ELECTRIC FAN AND FAN HEATER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Dec. 9, 1982, Ser. No. 448,288
Claims priority, application United Kingdom, Jun. 11, 1982, 1007220
Term of patent 14 years
U.S. Cl. D23—122



282,102
COMBINED ELECTRIC FAN AND FAN HEATER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Dec. 9, 1982, Ser. No. 448,289
Claims priority, application United Kingdom, Jun. 11, 1982, 1007219
Term of patent 14 years
U.S. Cl. D23—122



282,103
SPIRAL STAIRCASE
Raymond Gregoire, 97 High St., Stoneham, Mass. 02180
Filed Apr. 4, 1983, Ser. No. 481,785
Term of patent 14 years
U.S. Cl. D25—63



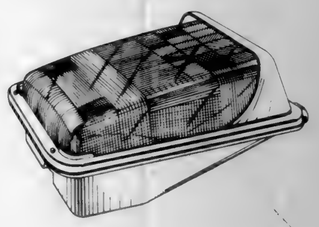
282,104
STAKE FOR SUPPORTING AN OUTDOOR CHRISTMAS LIGHT
Beverly W. Taylor, Hermann, Mo., assignor to Blanke Plastic Company, Inc., Hermann, Mo.
Filed Dec. 13, 1982, Ser. No. 449,458
Term of patent 14 years
U.S. Cl. D25—77



282,105
FLOORING UNIT
Pierre A. Moreau, Calgary, Canada, assignor to BCM Manufacturing Ltd., Calgary, Canada
Filed May 7, 1982, Ser. No. 375,944
Claims priority, application Canada, Mar. 25, 1982, 25-03-82-11
Term of patent 14 years
U.S. Cl. D25—91



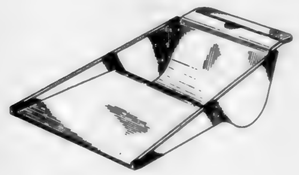
282,106
LUMINAIRE
William D. Freytag, Newark, Ohio, assignor to Manville Service Corporation, Denver, Colo.
Filed May 9, 1983, Ser. No. 493,128
Term of patent 14 years
U.S. Cl. D26—24



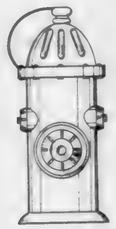
282,107
ADJUSTABLE COSMETIC APPLICATOR
Henry J. Cassai, 163-47 85th St., Howard Beach, N.Y. 11414, and Gino H. Cassai, 924 E. 96th St., Brooklyn, N.Y. 11236
Filed May 16, 1983, Ser. No. 494,656
Term of patent 14 years
U.S. Cl. D28—7



282,108
HAIR TREATMENT SOLUTION COLLECTOR AND RECEPTACLE
Luigi G. Losenno, 2741 Thomas Ave. South, Minneapolis, Minn. 55416
Filed May 26, 1983, Ser. No. 498,357
Term of patent 14 years
U.S. Cl. D28—20



282,109
FIRE EXTINGUISHER
William H. Golden, and Olive H. Golden, both of 127 Valencia Dr., Ft. Walton Beach, Fla. 32548
Filed Jan. 3, 1984, Ser. No. 567,642
Term of patent 14 years
U.S. Cl. D29—2



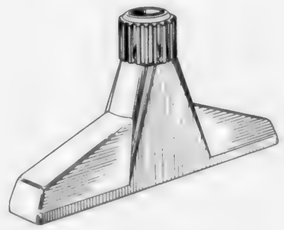
282,110
MACHINE FOR FLOOR MAINTENANCE
Hartwell F. Tucker, 1300 Holly Ave., Los Altos, Calif. 94022; Jeffrey R. Tucker, 2544 Katrina Way, Mountain View, Calif. 94040, and Dennis W. Ross, 1746 Carpentier St., San Leandro, Calif. 94577
Filed Aug. 17, 1983, Ser. No. 523,759
Term of patent 14 years
U.S. Cl. D32—15



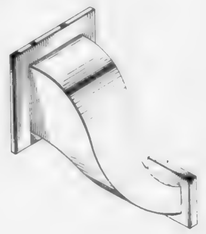
282,111
CHIMNEY CLEANER
Jerry W. Obenchain, Rte. 3, Box 349, Salem, Va. 24153
Filed Jan. 10, 1983, Ser. No. 439,746
Term of patent 14 years
U.S. Cl. D32—35



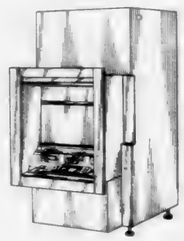
282,112
BROOM SHROUD
Daniel A. Maust, Winfield, and Charles E. Nichols, Woodridge, both of Ill., assignors to The Drackett Company, Cincinnati, Ohio
Filed Jun. 3, 1983, Ser. No. 500,663
Term of patent 14 years
U.S. Cl. D32—50



282,113
MATERIAL DIVERTER CHUTE
Robert W. White, Rte. 2, Box 17, Maquoketa, Iowa 52060
Filed Mar. 17, 1982, Ser. No. 358,844
Term of patent 14 years
U.S. Cl. D34—28



282,114
AUTOMATIC TELLER MACHINE
Yoshiaki Nishida, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Aug. 19, 1983, Ser. No. 524,554
Claims priority, application Japan, Mar. 30, 1983, 58-12760
Term of patent 14 years
U.S. Cl. D99—28



282,115
ANIMATED COIN SORTING BANK OR SIMILAR ARTICLE
John R. Nottingham, 4875 Stacy Ct., Richmond Heights, Ohio 44143, and John W. Spirk, Jr., 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106
Filed Jun. 30, 1983, Ser. No. 509,412
Term of patent 14 years
U.S. Cl. D99—36



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF JANUARY, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abe, Hitoshi; and Kojima, Sadao, to Kyoritsu Seiki Corporation. Cutting machine having stock suction means. 4,563,115, Cl. 409-134.000.

Abe, Mitsuo; Atomori, Seiichi; Tsutsumi, Tadahiko; and Noro, Masahiko, to Japan Synthetic Rubber Co., Ltd. Process for producing thermoplastic graft copolymer resin containing nitrile. 4,563,505, Cl. 525-316.000.

Abernethy, William J. Sea anchor or changeable drag. 4,562,788, Cl. 114-311.000.

Abo, Toshimi; and Ueno, Takashi, to Nissan Motor Company, Limited. System and method for controlling fuel supply to an internal combustion engine. 4,562,814, Cl. 123-488.000.

ACF Industries, Incorporated: *See—*
Krug, John A.; and Buffone, Angelo J., 4,563,117, Cl. 410-56.000.

Acs, Tibor: *See—*
Ezer, Elemer; Szporny, Laszlo; Hajos, Gyorgy; Szantay, Csaba; Keve, Tibor; Fekete, Gyorgy; Megyeri, Gabor; Acs, Tibor; and Bolcskei, Hedvig, 4,563,464, Cl. 514-299.000.

Adam, Milan: *See—*
Stol, Miroslav; Tolar, Miroslav; Adam, Milan; Cefelin, Pavel; and Kalal, Jaroslav, 4,563,490, Cl. 524-24.000.

Adamek, Joachim; and Gaide, Albert, to Mistral Windsurfing AG. Forked boom or spreader gaff for sailboards. 4,562,787, Cl. 114-97.000.

Adams, Norman S.; Fehrenbach, Eugene T.; and Ritter, John A., to Ortner Freight Car Company. Railway box car conversion to highway trailer-carrying flatcar and method of accomplishing it. 4,562,633, Cl. 29-401.100.

Adams Plastics, Inc.: *See—*
Simpson, Roy G., 4,562,793, Cl. 119-153.000.

Adcon AB: *See—*
Damm, Sture, 4,562,604, Cl. 8-158.000.

Adelaide & Wallaroo Fertilizers Ltd.: *See—*
Walter, Karl H.; and Hill, Robert L., 4,563,315, Cl. 264-8.000.

Adinolfi, Robert G.; Barlow, Melvin C.; and Hammond, Raymond M., to United Technologies Corporation. Chemical milling using an inert particulate and moving vessel. 4,563,239, Cl. 156-639.000.

Advanced Micro Devices, Inc.: *See—*
Misherghi, Ayoub H.; Apfel, Russell J.; and Lange, Arthur F., 4,563,548, Cl. 179-84.0VF.

Aeritalia: *See—*
Taylor, Thomas C., 4,562,979, Cl. 244-158.00R.

Aflitto, Charles. Toilet aid. 4,562,601, Cl. 4-249.000.

Agfa-Gevaert N.V.: *See—*
De Jaeger, Antoine A.; Bertels, Alfons J.; Poot, Albert L.; De Keyzer, Rene M.; and Sels, Francis J., 4,563,410, Cl. 430-204.000.

Agnew, Ralph E., to McCulloch Corporation. Carburetor valve. 4,563,311, Cl. 261-35.000.

AGVS Installations, Inc.: *See—*
Carter, Ronald P., 4,562,635, Cl. 29-432.000.

Ahmad, Edward S.: *See—*
Bayliss, George T.; Ahmad, Edward S.; and Hutchcocks, John A., 4,563,007, Cl. 273-77.00A.

Aida Engineering, Ltd.: *See—*
Maeda, Nobuyoshi, 4,562,907, Cl. 192-18.00A.

Aigner, Karl. Device for in vivo purification of blood. 4,563,170, Cl. 604-5.000.

Aimone, Michael G.: *See—*
Rao, Vemulapalli Durga N.; Wade, Wallace R.; and Aimone, Michael G., 4,562,695, Cl. 60-286.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Furuta, Yohichi, 4,562,696, Cl. 60-554.000.
Ogawa, Osamu; and Wakamatsu, Fumio, 4,563,028, Cl. 293-122.000.

Aizawa, Nobuhiro: *See—*
Kawamura, Noriyuki; Aizawa, Nobuhiro; Koizumi, Shigeki; Koyahara, Masaru; and Tomita, Tetsuo, 4,563,715, Cl. 360-78.000.

Ajinomoto Company, Limited: *See—*
Shimizu, Tetsuzi; Mizutani, Tadashi; and Furukawa, Hideko, 4,563,359, Cl. 426-96.000.

Akagi, Toshimichi: *See—*
Tadokoro, Tomoo; Okimoto, Haruo; Shiraishi, Hideo; and Akagi, Toshimichi, 4,562,803, Cl. 123-216.000.

Akahane, Atsushi: *See—*
Ueda, Ikuo; Kato, Masayuki; Nagano, Masanobu; and Akahane, Atsushi, 4,563,455, Cl. 514-241.000.

Akita, Eiichi: *See—*
Inouye, Shigeharu; Niida, Taro; Miyauchi, Keinosuke; Matsumoto, Kuniomi; Akita, Eiichi; Koyama, Masao; Kai, Fumio; and Tsuruoka, Takashi, 4,563,472, Cl. 514-381.000.

Akita, Shigeyuki: *See—*
Kitagawa, Junji; Mizuno, Junji; Akita, Shigeyuki; and Fukami, Akira, 4,562,732, Cl. 73-291.000.
Tanaka, Hiroaki; and Akita, Shigeyuki, 4,563,683, Cl. 340-870.370.

Akiyama, Hideo; Todokoro, Akio; and Takanobu, Osamu, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Apparatus for continuously concentrating and denitrating nitrate solution by microwave. 4,563,335, Cl. 422-159.000.

Albarella, James P.; and Anderson, Leslie H. D., to Miles Laboratories, Inc. Nucleic acid hybridization assay employing antibodies to intercalation complexes. 4,563,417, Cl. 435-6.000.

Aldag, John H.: *See—*
Carroll, Michael W.; Harwood, Michael E.; and Aldag, John H., 4,562,678, Cl. 52-303.000.

Aleem, Mohd A.: *See—*
Mosher, Philip C.; and Aleem, Mohd A., 4,562,641, Cl. 29-598.000.

Alexander, Carl J. Articulated saw. 4,562,761, Cl. 83-830.000.

Alleluia, Vincent V. Method of making a dental prosthesis. 4,562,882, Cl. 164-529.000.

Allemann, Martin: *See—*
Kellerhals, Hanspeter; and Allemann, Martin, 4,563,579, Cl. 250-291.000.

Allen, William W.: *See—*
Bosshart, John; Allen, William W.; and Safarik, C. Robert, 4,562,655, Cl. 38-52.000.

Allied Corporation: *See—*
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,563,392, Cl. 428-394.000.
Hemmer, Valentine J., 4,563,055, Cl. 339-262.00R.
Meyer, Helmut P., 4,563,158, Cl. 445-7.000.

Alps Electric Co., Ltd.: *See—*
Masaki, Yosuke, 4,563,693, Cl. 346-76.0PH.

Alster, Ralph. Furniture assembly. 4,563,040, Cl. 297-440.000.

Aluminium Pechiney: *See—*
Seon, Francoise; Picard, Gerard; Tremillon, Bernard; and Bertaud, Yves, 4,563,338, Cl. 423-76.000.

Amano, Itaru: *See—*
Yokoyama, Kageki; and Amano, Itaru, 4,563,139, Cl. 425-47.000.

Amchem Products, Inc.: *See—*
Knaster, Mark B.; and Carandang, Carmen M., 4,563,216, Cl. 106-1.230.

American Cyanamid Co.: *See—*
Peake, Steven L., 4,563,232, Cl. 156-182.000.

American Hospital Supply Corporation: *See—*
Iyengar, Mike, 4,562,937, Cl. 220-307.000.

American Motors Corporation: *See—*
Renneker, Dennis N., 4,562,897, Cl. 180-233.000.

American Safety Equipment Corp.: *See—*
Hollowell, William, 4,562,977, Cl. 242-107.40D.

AMF Incorporated: *See—*
Perron, Roger, 4,562,836, Cl. 128-201.110.

Amjad, Zahid, to B. F. Goodrich Company, The. Inhibition of salt precipitation in aqueous systems. 4,563,284, Cl. 210-699.000.

Ampex Corporation: *See—*
Ryan, Dennis M., 4,562,946, Cl. 226-95.000.

Andco Actuator Products, Inc.: *See—*
Zouzoulas, John, 4,562,908, Cl. 192-48.500.

Anderson, B. Craig: *See—*
Gerpheide, George E.; Anderson, B. Craig; and Hill, Linda, 4,563,739, Cl. 364-403.000.

Anderson, Gregory K., to Ortho Pharmaceutical (Canada) Ltd. Streamlined T-shaped intrauterine device. 4,562,835, Cl. 128-130.000.

Anderson, James E.; and Holmes, Terry L., to Oscar Mayer Foods Corporation. Apparatus and method for dispensing uniform quantities of ham products. 4,562,615, Cl. 17-32.000.

Anderson, Leslie H. D.: *See—*
Albarella, James P.; and Anderson, Leslie H. D., 4,563,417, Cl. 435-6.000.

Anderson, Marie T.: *See—*
Clem, Gladys M.; Boeck, LaVerne D.; Anderson, Marie T.; and Michel, Karl H., 4,563,442, Cl. 514-9.000.

Anderson, Max F. Solar distillation method and apparatus. 4,563,248, Cl. 203-10.000.

Anderson, Stephen F., to Wormald U.S., Inc. Microprocessor automatic program fail reset circuit. 4,563,672, Cl. 340-512.000.

Anderson, Weston A.; and Turnbull, William G., to Varian Associates, Inc. Lens system for acoustic transducer array. 4,562,900, Cl. 181-176.000.

Andersons, The: *See—*
Kotz, Michael E.; and Van der Zwan, Jacobus J., 4,563,344, Cl. 424-17.000.

Ando, Kunio: *See—*
Murakoshi, Makoto; and Ando, Kunio, 4,562,831, Cl. 128-6.000.

Andreasson, Bo C., to EMAB Electrolux Motor Aktiebolag. Ignition circuit. 4,562,811, Cl. 123-416.000.

Andrex Radiation Products A/S: *See—*
Madsen, Jens U., 4,563,769, Cl. 378-121.000.

Andrillon, Patrick: *See—*
Bugaut, Andree ; and Andrillon, Patrick, 4,563,188, Cl. 8-410.000.

Angelucci, Francesco; Penco, Sergio; and Arcamone, Federico, to Farmitalia Carlo Erba S.p.A. Anthracycline glycosides, use and compositions containing same. 4,563,444, Cl. 514-34.000.

Animal Toy Imports, Inc.: *See—*
Hills, Kenneth B.; and Cihlar, Vlasta, 4,563,159, Cl. 446-74.000.

Ansaldo S.p.A.: *See—*
Panzeri, Cesare, 4,563,745, Cl. 364-477.000.

Antibioticos, S.A.: *See—*
Maldonado, Francisco S.; Pla, Luis C.; Puentes, Jose L. F.; and Sousa-Faro, Jose M. F., 4,563,477, Cl. 514-427.000.

Aoki, Masahiro: *See—*
Oinoue, Kenichi; Aoki, Masahiro; Ida, Masatoshi; Nakamura, Junichi; and Hayashi, Asao, 4,563,705, Cl. 358-227.000.

Aomi, Hideki: *See—*
Enjo, Naonori; Aomi, Hideki; Noguchi, Masahiro; and Ide, Satoshi, 4,562,995, Cl. 252-67.000.

Aoyama, Hirokazu: *See—*
Fukui, Shosin; Shinjo, Masayoshi; Okazaki, Yasuko; and Aoyama, Hirokazu, 4,563,493, Cl. 524-233.000.

Aoyama, Kazuho: *See—*
Otsuki, Yutaka; Araki, Yoshihiko; Omika, Hiroyoshi; Hara, Hajime; and Aoyama, Kazuho, 4,563,501, Cl. 525-108.000.

Aoyama, Keizo; Yamauchi, Takahiko; and Seki, Teruo, to Fujitsu Limited. Static-type random-access memory device. 4,563,754, Cl. 365-190.000.

Aoyama, Takuo: *See—*
Fujii, Setsuro; Nakayama, Toyoo; Nunomura, Shigeki; Sudo, Kimio; Watanabe, Shin-ichi; Okutome, Toshiyuki; Sakurai, Yojiro; Kurumi, Masateru; and Aoyama, Takuo, 4,563,527, Cl. 546-169.000.

Apfel, Russell J.: *See—*
Misherghi, Ayoub H.; Apfel, Russell J.; and Lange, Arthur F., 4,563,548, Cl. 179-84.0VF.

Applied Materials, Inc.: *See—*
Sherman, Arthur, 4,563,367, Cl. 427-39.000.

Arai, Ikuya; Murata, Toshinori; and Kazumi, Masafumi, to Hitachi, Ltd. MOS-Transistor amplifier. 4,563,654, Cl. 330-277.000.

Arai, Kureo, to Yokowo Manufacturing Co., Ltd.; and Sony Corporation. Carrier-driving device. 4,562,750, Cl. 74-89.210.

Arai, Yukio; and Endo, Masayasu, to Osaki Electric Co., Ltd. Carrier control method by using phase-pulse signals. 4,563,679, Cl. 340-825.700.

Arai, Yuko: *See—*
Ishii, Shinzo; Katsumata, Shigeo; Arai, Yuko; Ashizawa, Tadashi; Morimoto, Makoto; Shirahata, Kunikatsu; Saito, Yutaka; and Kono, Motomichi, 4,563,462, Cl. 514-288.000.

Araki, Yoshihiko: *See—*
Otsuki, Yutaka; Araki, Yoshihiko; Omika, Hiroyoshi; Hara, Hajime; and Aoyama, Kazuho, 4,563,501, Cl. 525-108.000.

Arcamone, Federico: *See—*
Angelucci, Francesco; Penco, Sergio; and Arcamone, Federico, 4,563,444, Cl. 514-34.000.

Archer, John R.; and Ross, Peter F., to USM Corporation. Methods for constructing cutting tools. 4,562,754, Cl. 76-107.00C.

Archibald, John L.; and Ward, Terence J. Piperid-4-yl ureas and thio ureas used as antidepressant agents. 4,563,466, Cl. 514-319.000.

Ardac, Inc.: *See—*
Gorgone, Robert L.; and Dolejs, Anthony H., 4,563,771, Cl. 382-7.000.

Arditty, Herve : *See—*
Bourbin, Yannic; and Arditty, Herve , 4,563,087, Cl. 356-73.100.

Arenson, Barry A., to Sencore, Inc. Cathode ray tube tracking tester and method of testing. 4,563,649, Cl. 324-404.000.

Arieh, Simon; and Courvoisier, Guy, to Skis Dynastar SA. Ski vibration damper. 4,563,020, Cl. 280-602.000.

Armstrong Rubber Company: *See—*
Turecek, Donald J., 4,563,140, Cl. 425-114.000.

Armstrong World Industries, Inc.: *See—*
Hager, Nathaniel E., Jr., 4,563,572, Cl. 219-347.000.

Arnold, Gunter: *See—*
Maier, Peter; and Arnold, Gunter, 4,562,670, Cl. 51-166.00R.

Arrick, Robert A. Chewing gum. 4,563,345, Cl. 424-48.000.

Arvedi, Giovanni; Gosio, Giovanni; and Piano, Renzo, to Ingegneria Siderurgica S.r.l. Three-dimensional reticulated structure with rods having tapered ends. 4,562,682, Cl. 52-648.000.

Asabuki, Hiroshi: *See—*
Kobayashi, Kazuo; Asano, Seijiro; Nakamura, Mituo; Ida, Daijiro; Asabuki, Hiroshi; and Ashiwara, Hiromoto, 4,563,126, Cl. 415-119.000.

Asahara, Yoshiyuki; Sakai, Hiroshi; Shingaki, Seiichi; and Ohmi, Shigeaki, to Hoya Corporation. Process for the production of slab-shaped lens having gradient of refractive index in thickness direction only. 4,563,205, Cl. 65-30.130.

Asahi Corporation: *See—*
Tao, Masahiro, 4,563,164, Cl. 446-440.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Yoshida, Koichi; Iwaisako, Toshiyuki; Masamoto, Junzo; Hamanaka, Katsuhiko; and Komaki, Hajime, 4,563,536, Cl. 549-368.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Ishibashi, Kenzo, 4,563,708, Cl. 358-213.000.

Asai, Jun: *See—*
Ohkubo, Masaharu; Murasawa, Yoshihiro; Ohtsuka, Yasumasa; and Asai, Jun, 4,563,694, Cl. 346-160.000.

Asai, Shoji: *See—*
Ogawa, Yutaka; Asai, Shoji; and Otaka, Masashi, 4,563,414, Cl. 430-325.000.

Asano, Michio; and Masaki, Akira, to Hitachi, Ltd. Level conversion input circuit. 4,563,601, Cl. 307-475.000.

Asano, Seijiro: *See—*
Kobayashi, Kazuo; Asano, Seijiro; Nakamura, Mituo; Ida, Daijiro; Asabuki, Hiroshi; and Ashiwara, Hiromoto, 4,563,126, Cl. 415-119.000.

ASEA Aktiebolag: *See—*
Kollberg, Sten, 4,562,881, Cl. 164-468.000.
Lenander, Bo; and Thegel, Lennart, 4,563,644, Cl. 324-232.000.
Ljungqvist, Rolf; and Lubeck, Sven B., 4,563,732, Cl. 363-35.000.

Ashiwara, Hiromoto: *See—*
Kobayashi, Kazuo; Asano, Seijiro; Nakamura, Mituo; Ida, Daijiro; Asabuki, Hiroshi; and Ashiwara, Hiromoto, 4,563,126, Cl. 415-119.000.

Ashizawa, Tadashi: *See—*
Ishii, Shinzo; Katsumata, Shigeo; Arai, Yuko; Ashizawa, Tadashi; Morimoto, Makoto; Shirahata, Kunikatsu; Saito, Yutaka; and Kono, Motomichi, 4,563,462, Cl. 514-288.000.

Asphar, Frank X. Dispenser mechanism for flowable particulate materials. 4,562,940, Cl. 222-88.000.

Assard, Gerald L., to United States of America, Navy. Pseudo-random noise generator calibration for acoustic hydrophones. 4,563,756, Cl. 367-13.000.

Astle, Thomas W. Rehydrator. 4,562,871, Cl. 141-129.000.

Astronics Corporation: *See—*
Braunschweig, Peter M.; and Ruffles, Thomas J., Jr., 4,563,047, Cl. 312-350.000.

AT&T Bell Laboratories: *See—*
Booth, Paul N., 4,563,547, Cl. 179-16.0AA.
Clark, Linda A.; and Soto, Luis, 4,563,276, Cl. 210-198.200.
Gloge, Detlef C., 4,563,774, Cl. 455-607.000.
Lim, Tong L.; and Netravali, Arun N., 4,563,671, Cl. 340-347.0DD.
O'Bryan, Henry M., Jr.; Plourde, James K.; and Thomson, John, Jr., 4,563,661, Cl. 333-202.000.
O'Connor, Kevin J., 4,563,755, Cl. 365-230.000.

AT&T Technologies, Inc.: *See—*
Bohannon, William D., Jr.; Brent, Herbert E.; Hamilton, Alfred S.; and Kinard, Michael D., 4,563,540, Cl. 174-23.00R.

Atomori, Seiichi: *See—*
Abe, Mitsuo; Atomori, Seiichi; Tsutsumi, Tadahiko; and Noro, Masahiko, 4,563,505, Cl. 525-316.000.

Atsumi, Akira; Senshu, Takao; Oguni, Kensaku; Terada, Hirokiyo; and Yoshioka, Kazuo, to Hitachi, Ltd. Refrigeration system. 4,562,700, Cl. 62-174.000.

Audio Precision, Inc.: *See—*
Hofer, Bruce E., 4,563,652, Cl. 330-107.000.

Augustin, Chanassery O.: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.

Ausnit, Steven; and Van Erden, Donald L., to Minigrip, Inc. Method of making quadruple profile tubing. 4,563,319, Cl. 264-146.000.

Automotive Products plc: *See—*
Cucinotta, Luigi; and Bambini, Luigi, 4,562,913, Cl. 192-106.200.
Maycock, Ian C., 4,562,910, Cl. 192-70.270.

AVL Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik: *See—*
Kirchweger, Karl, 4,562,895, Cl. 180-68.100.

Awa Engineering Co., Ltd.: *See—*
Kubo, Yoshiharu, 4,563,234, Cl. 156-505.000.

Awano, Yoshirou: *See—*
Shiramizu, Kousuke; Awano, Yoshirou; Okada, Hiroji; Yamagami, Hiromu; and Takai, Hiroshi, 4,563,569, Cl. 219-137.430.

Axen, Rolf E. A. V.: *See—*
Carlsson, Jan P. E.; Axen, Rolf E. A. V.; Drevin, Hakan N. Y.; and Lindgren, Goran E. S., 4,563,304, Cl. 260-112.00R.

Ayers, Ray R., to Shell Oil Company. Pressure actuated release mechanism. 4,563,108, Cl. 405-171.000.

B. F. Goodrich Company, The: *See—*
Amjad, Zahid, 4,563,284, Cl. 210-699.000.

Baacke, Michael; Deller, Klaus; Kleinschmit, Peter; and Koberstein, Edgar. Catalyst for the production of hydrocarbons and process for their production. 4,563,480, Cl. 518-728.000.

Backlund, Peter S., to Union Oil Company of California. Fertilizers containing nitrogen and micronutrients. 4,563,208, Cl. 71-28.000.

Badger Company, Inc., The: *See—*
Graham, James J.; Kinzler, Darrell D.; and Hunt, Edward P., 4,563,267, Cl. 208-159.000.

Bahary, William S., to Duracell Inc. Cell gelling agent. 4,563,404, Cl. 429-206.000.

Baigas, Joseph F., Jr.; and Hobbs, C. Carey, to Clark Bros. Felt Co. Window assembly with light transmissive insulator and method. 4,562,675, Cl. 52-202.000.

Bailleul, Jean F.: *See—*
Brun, Charles G. H.; Bailleul, Jean F.; Lecendre, Freddy; and Coolen, Francoise, 4,562,715, Cl. 72-167.000.

Baird, John K.; and Shim, Jaewon L., to Merck & Co., Inc. Non-heated gellan gum gels. 4,563,366, Cl. 426-573.000.

Baker Industries, Inc.: *See—*
Tietz, Joseph G.; and Wynne, John M., 4,563,628, Cl. 320-20.000.

Baldus, Heinz-Dieter: *See—*
Schroder, Norbert; Milewski, Gunter; Neusser, Manfred; Dorr, Hermann; Supp, Armin; Rasch, Heinz; Heinemann, Otto; Baldus, Heinz-Dieter; and Manthey, Harald, 4,563,271, Cl. 209-427.000.

Baldwin, Francis P.: *See—*
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Zisis A.; and Baldwin, Francis P., 4,563,506, Cl. 525-354.000.

Baldwin, John L. E., to Independent Broadcasting Authority. Digital television tape recording. 4,563,710, Cl. 360-9.100.

Ball, Randell D. Thermal insulation article. 4,562,857, Cl. 137-375.000.

Balzer, Erich; and Caspers, Willi, to Wolters, Peter. Machine for grinding cylindrical workpieces. 4,562,669, Cl. 51-103.0WH.

Bambini, Luigi: *See—*
Cucinotta, Luigi; and Bambini, Luigi, 4,562,913, Cl. 192-106.200.

Ban, Masuo, to Shimano Industrial Company Limited. Arm roller supporting device for a spinning reel. 4,562,976, Cl. 242-84.20G.

Barari, Fred S. Earthquake safety support for transportable buildings. 4,562,673, Cl. 52-167.000.

Barbagli, Rino O.; and Marras, Gaetano, to Fiatallis Europe S.p.A. Control device for a hydrostatic transmission in an earth moving machine. 4,562,906, Cl. 192-4.00A.

Barker, Charles E., to Motorola, Inc. Carry propagate adder circuit which differentially senses a carry input. 4,563,751, Cl. 364-786.000.

Barlow, Melvin C.: *See—*
Adinolfi, Robert G.; Barlow, Melvin C.; and Hammond, Raymond M., 4,563,239, Cl. 156-639.000.

Barnaby, Harold T., to Core Laboratories, Inc. Method and apparatus for testing the compressibility of subterranean samples. 4,562,726, Cl. 73-38.000.

Barnes, Ben D.: *See—*
Cantor, Clifford A.; and Barnes, Ben D., 4,562,660, Cl. 43-4.000.

Barnett, Burton. Animated hanger for clothes and other articles. 4,563,373, Cl. 428-16.000.

Barrodale, Patricia M.; Young, Mary A.; Humphreys, Joan H.; and Lowrey, James M., Jr. Female external catheter. 4,563,183, Cl. 604-329.000.

Bartch, Donald W.: *See—*
Deal, Samuel B.; Bartch, Donald W.; and Forberger, Steven C., 4,563,612, Cl. 313-478.000.

Bartoszyk, Gerd: *See—*
Satzinger, Gerhard; Herrmann, Manfred; Fritschi, Edgar; Hartenstein, Johannes; and Bartoszyk, Gerd, 4,563,471, Cl. 514-369.000.

Bartran, David S. Gradient compensated temperature probe and gradient compensation method. 4,563,098, Cl. 374-172.000.

BASF Aktiengesellschaft: *See—*
Bergmann, Udo; Hansen, Guenter; Lach, Dietrich; and Zeidler, Georg, 4,563,520, Cl. 534-678.000.
Dimroth, Peter; and Kowarsch, Heinrich, 4,563,519, Cl. 534-655.000.
Franke, Albrecht; Steiner, Gerd; Hofmann, Hans-Peter; Muller, Claus-Dieter; and Teschendorf, Hans-Jurgen, 4,563,474, Cl. 514-417.000.

Bat Taraflex & Notex S.A.: *See—*
Viel, Maurice, 4,563,382, Cl. 428-198.000.

Bata Industries Limited: *See—*
Folschweiler, Serge, 4,562,606, Cl. 12-142.0RS.

Batchelor, John F.; Hodson, Harold F.; and Selway, John W. T., to Burroughs Wellcome Co. Chemotherapeutic agents. 4,563,468, Cl. 514-337.000.

Bates, Norman; and Naumoff, Carl M. Waterproof limb covering. 4,562,834, Cl. 128-82.000.

Batina, William P.; and Gipson, Lamar H., to Cordis Corporation. Telemetry system. 4,562,840, Cl. 128-419.0PT.

Battenfeld Extrusionstechnik GmbH: *See—*
Klingenberg, Karl, 4,563,142, Cl. 425-145.000.

Battenfeld Maschinenfabrik GmbH: *See—*
Langecker, Gunter R., 4,563,147, Cl. 425-376.00A.

Battery Engineering, Inc.: *See—*
Kane, Philip F.; and Marincic, Nikola, 4,563,401, Cl. 429-91.000.

Battistini, Isocrate N., to Talleres Metalurgicos "Condor" Battistini & Cia, S.A. Tomato peeling device operating through vacuum and temperature. 4,562,772, Cl. 99-472.000.

Bauer, Kurt, to Karosseriewerke Weinsberg GmbH. Vehicle roof with a cover which closes a roof opening and is at least capable of being swung out. 4,563,036, Cl. 296-218.000.

Bauer, Robert S.: *See—*
Tihanyi, Peter; and Bauer, Robert S., 4,563,368, Cl. 427-82.000.

Baum, Peter N., to GTE Laboratories Incorporated. Wideband transimpedance optical receiver. 4,563,656, Cl. 330-308.000.

Bauman, Robert A., to Colgate-Palmolive Company. N-Alkyl isostearamide antistatic agents, detergent compositions containing such agents, and processes for washing laundry in the presence of such agents, and with such compositions. 4,563,288, Cl. 252-8.800.

Bayer Aktiengesellschaft: *See—*
Eckstein, Udo, 4,563,532, Cl. 548-144.000.
Grohe, Klaus; Petersen, Uwe; and Kuck, Karl-Heinz, 4,563,459, Cl. 514-254.000.
Henk, Hermann, 4,563,518, Cl. 534-638.000.
Kohler, Peter; and Heine, Heinrich, 4,563,220, Cl. 106-288.00B.
Kramer, Wolfgang; Weissmuller, Joachim; Berg, Dieter; Reinecke, Paul; Hanssler, Gerd; and Brandes, Wilhelm, 4,563,447, Cl. 514-184.000.
Lindner, Christian; Muller, Friedemann; Peters, Horst; Kress, Hans-Jurgen; and Buekers, Josef, 4,563,496, Cl. 524-430.000.
Petersen, Uwe; Grohe, Klaus; and Kuck, Karl-Heinz, 4,563,448, Cl. 514-187.000.
Schreckenberg, Manfred; Dhein, Rolf; Lange, Ralf; and Waldenrath, Werner, 4,563,516, Cl. 528-196.000.
Sirinyan, Kirkor; Lange, Peter M.; Merten, Rudolf; and Mitschker, Alfred, 4,563,371, Cl. 427-305.000.
Widdig, Arno; Kabbe, Hans-Joachim; Knorr, Andreas; and Benz, Ulrich, 4,563,458, Cl. 514-253.000.
Wiehe, Hans R.; and Hueber, Herbert, 4,563,384, Cl. 428-231.000.

Bayliss, George T.; Ahmad, Edward S.; and Hutchcocks, John A., to Ti Accles & Pollock Limited. Golf club shafts. 4,563,007, Cl. 273-77.00A.

BBC Brown, Boveri & Company: *See—*
Perrenoud, Blaise, 4,563,554, Cl. 200-48.00R.

BBC Brown, Boveri & Company, Limited: *See—*
Muri, Werner, 4,562,887, Cl. 165-158.000.
Sova, Vladimir, 4,563,257, Cl. 204-129.850.

BBC Brown Boveri Inc.: *See—*
Dzomba, James C., 4,563,545, Cl. 174-152.00R.

Becher, David Z.; and Magin, Ralph W., to Monsanto Company. High concentration encapsulation by interfacial polycondensation. 4,563,212, Cl. 71-118.000.

Beck, James R.; and Lynch, Michael P., to Eli Lilly and Company. Herbicidal 5-halo-1-halophenyl-1H-pyrazole-4-carbonitriles. 4,563,210, Cl. 71-92.000.

Beck, Jeffrey L., to Conoco Inc. Direct coupling of a vortex injector to a centrifugal pump. 4,563,123, Cl. 415-52.000.

Becker, Erwin; and Ehrfeld, Wolfgang, to Kernforschungszentrum Karlsruhe GmbH. Method for producing multichannel plates. 4,563,250, Cl. 204-6.000.

Becker, Erwin; Ehrfeld, Wolfgang; and Becker, Frank, to Kernforschungszentrum Karlsruhe GmbH. Layered multichannel metal plates for image amplifiers. 4,563,251, Cl. 204-6.000.

Becker, Frank: *See—*
Becker, Erwin; Ehrfeld, Wolfgang; and Becker, Frank, 4,563,251, Cl. 204-6.000.

Becker, Uwe: *See—*
Krocher, Harro; Krautzenberger, Dieter; Sybertz, Hans; and Becker, Uwe, 4,562,873, Cl. 144-356.000.

Beckwith, Bruce R.: *See—*
Kingsbury, Charles M.; and Beckwith, Bruce R., 4,562,753, Cl. 74-838.000.

Bedell, Richard L.; and Bushee, Joseph J., to Bedell, Richard Lund. Fabricated toy animal whisker construction and methods and apparatus for producing and applying same. 4,563,390, Cl. 428-357.000.

Bedell, Richard Lund: *See—*
Bedell, Richard L.; and Bushee, Joseph J., 4,563,390, Cl. 428-357.000.

Bedford Computer Corporation: *See—*
Tidd, James A., 4,563,747, Cl. 364-523.000.

Beffa, Fabio, to Ciba Geigy Corporation. Asymmetric 1:2 chrome complex dyes containing an azo and an azomethine compound. 4,563,193, Cl. 8-685.000.

Behn, Reinhard, to Siemens Aktiengesellschaft. Electrical capacitor consisting of a consolidated stack of mutually layered, metallized dielectric plies and a method for the manufacture thereof. 4,563,724, Cl. 361-306.000.

Bell Microcomponents, Inc.: *See—*
Bell, Robert L., 4,562,742, Cl. 73-718.000.

Bell, Robert L., to Bell Microcomponents, Inc. Capacitive pressure transducer. 4,562,742, Cl. 73-718.000.

Benard, Claude, to Saint-Gobain Vitrage. Apparatus for tempering glass sheets suspended in a vertical orientation. 4,563,206, Cl. 65-348.000.

Bend Research, Inc.: *See—*
Speckman, Calvin A., 4,562,794, Cl. 119-156.000.

Bender, Richard E.: *See—*
Tanner, Curtis J.; Bender, Richard E.; Simson, Anton K.; and McCutchen, Hugh, Jr., 4,563,391, Cl. 428-365.000.

Benedek, Herman; and Fischbein, Mike, to Elegant Merchandising Inc. Jewelry clasp. 4,562,704, Cl. 63-2.000.

Beneking, Heinz; Stahlmann, Rainer; and Tsironis, Christos, to Licentia Patent-Verwaltungs-GmbH. High frequency mixer stage. 4,563,772, Cl. 455-321.000.

Bengtson, Bjorn. Alignment jig for attaching nocks on archery arrows. 4,562,647, Cl. 33-286.000.

Benko, Gyorgy: *See—*
Feuer, Laszlo ; and Benko, Gyorgy, 4,563,479, Cl. 514-562.000.

Bennetto, John: *See—*
Bezette, Ian G.; and Sugden, David B., 4,562,974, Cl. 241-283.000.

Benteler-Werke AG: *See—*
Bick, Klaus; Harmsen, Lothar; Lachenmayer, Wilhelm; and Zieschang, Jurgen, 4,563,766, Cl. 373-72.000.

Bentz, Hanne: *See—*
Nathan, Ranga; Seyedin, Saied; Piez, Karl; and Bentz, Hanne, 4,563,350, Cl. 424-95.000.

Benz, Ulrich: *See—*
Widdig, Arno; Kabbe, Hans-Joachim; Knorr, Andreas; and Benz, Ulrich, 4,563,458, Cl. 514-253.000.

Berentzen, Hardo, to Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft. Composite punched knitting element, for example knitting machine knitting needle. 4,562,705, Cl. 66-121.000.

Berg, Dieter: *See—*
Kramer, Wolfgang; Weissmuller, Joachim; Berg, Dieter; Reinecke, Paul; Hanssler, Gerd; and Brandes, Wilhelm, 4,563,447, Cl. 514-184.000.

Berger, Eric V., to GTE Communications Products Corporation. Adjustable antenna mount. 4,563,687, Cl. 343-882.000.

Bergmann, Udo; Hansen, Guenter; Lach, Dietrich; and Zeidler, Georg, to BASF Aktiengesellschaft. Metal complexes of dis- or trisazo compounds containing a middle component twice substituted by hydroxy and/or amino. 4,563,520, Cl. 534-678.000.

Bergner, Brian C., to E. R. Squibb & Sons, Inc. Strontium-rubidium infusion system. 4,562,829, Cl. 128-1.100.

Bernard, Philippe; and Prudhon, Francois, to Rhone-Poulenc Chimie de Base. High temperature reaction apparatus. 4,562,778, Cl. 110-260.000.

Berner, Godwin; and Manser, Aloysius H., to Ciba Geigy Corporation. Liquid mixture of photoinitiators. 4,563,438, Cl. 502-168.000.

Bertaud, Yves: *See—*
Seon, Francoise; Picard, Gerard; Tremillon, Bernard; and Bertaud, Yves, 4,563,338, Cl. 423-76.000.

Bertels, Alfons J.: *See—*
De Jaeger, Antoine A.; Bertels, Alfons J.; Poot, Albert L.; De Keyzer, Rene M.; and Sels, Francis J., 4,563,410, Cl. 430-204.000.

Bertho, Dominique: *See—*
Parchet, Pierre; and Bertho, Dominique, 4,562,632, Cl. 29-281.100.

Bertina, Domenico, to Ing. C. Olivetti & C., S.p.A. Keyboard having low profile modular keys. 4,563,550, Cl. 200-5.00A.

Betzold, Robert A., to Honeywell Inc. Accurate dead band control circuit. 4,563,597, Cl. 307-360.000.

Bezette, Ian G.; and Sugden, David B., to Bezette, Ian G.; and Bennetto, John. Rock breaking apparatus. 4,562,974, Cl. 241-283.000.

Bhatt, Anilkumar C.; Doran, Donald E.; and Knight, James W., to International Business Machines Corporation. Hybrid glass cloth for printed circuit boards. 4,563,385, Cl. 428-251.000.

Bick, Klaus; Harmsen, Lothar; Lachenmayer, Wilhelm; and Zieschang, Jurgen, to Benteler-Werke AG. Electric arc furnace for melting metal, especially steel. 4,563,766, Cl. 373-72.000.

Bio-Controls Systems, Inc.: *See—*
Ward, N. Robert, Jr., 4,563,418, Cl. 435-7.000.

Bio-Rad Laboratories, Inc.: *See—*
McEachern, Dan L., 4,563,275, Cl. 210-198.200.

Biogen N.V.: *See—*
Murray, Kenneth; and MacKay, Patricia, 4,563,423, Cl. 435-68.000.

Biondi, Carlo: *See—*
Frascaroli, Francesco; and Biondi, Carlo, 4,562,986, Cl. 248-188.100.

Birat, Jean-Pierre; Neu, Patrick; and Senaneuch, Denis, to Institut de Recherches de la Siderurgie Francaise. Electromagnetically stirring the melt in a continuous-casting mold. 4,562,879, Cl. 164-468.000.

Birat, Jean-Pierre: *See—*
Larrecq, Michel; Tromp, Denis; and Birat, Jean-Pierre, 4,562,880, Cl. 164-455.000.

Bishop, David J. G.: *See—*
Bishop, Thomas D.; and Bishop, David J. G., 4,562,947, Cl. 226-121.000.

Bishop, Thomas D.; and Bishop, David J. G., to Deritend Engineering Company Ltd., The. Apparatus for treatment of continuous web material. 4,562,947, Cl. 226-121.000.

Bissig, Josef E. Rescue apparatus. 4,563,156, Cl. 441-99.000.

Bixby International Corporation: *See—*
Trask, Blair D., 4,562,607, Cl. 12-146.00D.

Black, Charles E., III; and Habecker, John W., to Indak Manufacturing Corp. Electrical switch having assured low-resistance electrical contact between terminal rivets and contact plates. 4,563,551, Cl. 200-16.00C.

Black & Decker Inc.: *See—*
Keiper, R. Steven, 4,563,629, Cl. 320-48.000.

Black, Philip D.; and Rhoe, Dale G., to Minnesota Mining and Manufacturing Company. Fastener assembly with improved temporary attachment layer. 4,563,380, Cl. 428-100.000.

Blackston, Michael D., to Heise Mfg., Inc. Breakaway for revolving doors. 4,562,665, Cl. 49-44.000.

Blake, James E.; and Hajicek, James D., to General Electric Company. Method and means for automatically variably controlling display parameters. 4,563,740, Cl. 364-414.000.

Blake, Joseph W., III; and DiCesare, Paul C. Surgical instrument. 4,562,839, Cl. 128-326.000.

Blanchard, Clarence E., to Outboard Marine Corporation. Steering post mounted propulsion assembly. 4,563,155, Cl. 440-51.000.

Blanpain, Guy: *See—*
Decorps, Jean-Luc; and Blanpain, Guy, 4,563,757, Cl. 367-33.000.

Bleyer, Franz, to Peter Wukovich OHG. Machine for folding sheet metal blanks. 4,562,721, Cl. 72-384.000.

Block, Detlef: *See—*
Weisner, Eike; Szczepaniak, Werner; Thiele, Paul; Block, Detlef; and Reimann, Karl-Heinz, 4,563,252, Cl. 204-9.000.

Blum, Otto, to Chemie Linz Aktiengesellschaft. Heat-sterilizable blanket, and a process for its manufacture. 4,562,869, Cl. 139-413.000.

Blum, Randall S.: *See—*
Kampfer, Robert D.; and Blum, Randall S., 4,563,565, Cl. 219-121.0LJ.

Blyth, Jeffrey. Hologram identification device. 4,563,024, Cl. 283-91.000.

Board of Regents, The University of Texas System: *See—*
Houtchens, Bruce A., 4,563,198, Cl. 55-41.000.

Board of Trustees, Leland Stanford University: *See—*
Kuhn, Kelin J., 4,563,763, Cl. 372-35.000.

Bock, Mark G.; Freidinger, Roger M.; Evans, Ben E.; and Hartman, George D., to Merck & Co., Inc. Quinazolino-1,4-benzodiazepin-5,13-diones. 4,563,451, Cl. 514-219.000.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Witte, Wolfgang, 4,563,090, Cl. 356-328.000.

Bodicky, Raymond O., to Sherwood Medical Company. Method for displacing fluid in tubing. 4,563,171, Cl. 604-51.000.

Boeck, LaVerne D.: *See—*
Clem, Gladys M.; Boeck, LaVerne D.; Anderson, Marie T.; and Michel, Karl H., 4,563,442, Cl. 514-9.000.

Boehringer Mannheim GmbH: *See—*
Deneke, Ulfert; Lange, Hans; and Rittersdorf, Walter, 4,563,422, Cl. 435-27.000.

Bohannon, William D., Jr.; Brent, Herbert E.; Hamilton, Alfred S.; and Kinard, Michael D., to AT&T Technologies, Inc. Bonded sheath cable. 4,563,540, Cl. 174-23.00R.

Bohm, Leslie E.: *See—*
Jackson, W. Shaun; and Bohm, Leslie E., 4,562,944, Cl. 224-39.000.

Boiucaner, Leon: *See—*
Kornbrekke, Henning N.; and Boiucaner, Leon, 4,563,625, Cl. 318-603.000.

Bolcakei, Hedvig: *See—*
Ezer, Elemer; Szporny, Laszlo; Hajos, Gyorgy; Szantay, Csaba; Keve, Tibor; Fekete, Gyorgy; Megyeri, Gabor; Acs, Tibor; and Bolcskei, Hedvig, 4,563,464, Cl. 514-299.000.

Boles, Sol, to Grumman Aerospace Corporation. Range/doppler ship imaging for ordnance control. 4,563,686, Cl. 343-17.000.

Boliden Aktibolag: *See—*
Gunnarsson, Lennart K.; and Nilsson, Rolf O., 4,563,342, Cl. 423-556.000.

Bolte, Steven B.: *See—*
Knapp, John F.; Gruber, Robert J.; and Bolte, Steven B., 4,563,086, Cl. 355-14.00D.

Boltrek, Henry, to Westinghouse Electric Corp. Handrail apparatus. 4,562,914, Cl. 198-336.000.

Bomadier-Rotax-Wien Produktions- und Vertriebsgesellschaft mbH: *See—*
Ranner, Dietrich, 4,562,891, Cl. 172-821.000.

Bonine, Richard L., to Gearhart Industries, Inc. Cable elongation measurement apparatus. 4,562,743, Cl. 73-828.000.

Bonk, Thomas J.; and Simpson, J. Thomas, to Minnesota Mining and Manufacturing Company. Polyolefin substrate coated with acrylic-type normally tacky and pressure-sensitive adhesive and a method of making same. 4,563,388, Cl. 428-304.400.

Bonner, Howard E., to Litton Systems, Inc. Microwave oven construction. 4,563,560, Cl. 219-10.55D.

Bononi, Walter. End piece of a spectacle frame earpiece. 4,563,066, Cl. 351-122.000.

Bookout, Charles C.; Stotts, Robert E.; Waring, Douglass R.; and Folsom, Lawrence R., to Mechanical Technology Incorporated. Variable displacement blower. 4,563,131, Cl. 417-221.000.

Booth, Paul N., to AT&T Bell Laboratories. Loop-start/ground-start line interface circuit. 4,563,547, Cl. 179-16.0AA.

Bopp, Erich: *See—*
Moller, Rolf; Hirscher, Gerhard; and Bopp, Erich, 4,562,884, Cl. 165-76.000.

Borchardt, John K., to Halliburton Company. Methods for stabilizing fines contained in subterranean formations. 4,563,292, Cl. 252-8.55R.

Bornhofft, Wolfgang; and Irenkier, Gerhard, to Thomson-CSF. Arrangement for remote sweeping of mines sensitive to magnetic fields. 4,562,789, Cl. 114-312.000.

Borzoni, John, to Littelfuse, Inc. Miniature fuse. 4,563,666, Cl. 337-252.000.

Bose, Bidyut K., to National Semiconductor Corporation. CMOS Schmitt trigger circuit for TTL logic levels. 4,563,595, Cl. 307-290.000.

Boshart, John; Allen, William W.; and Safarik, C. Robert, to Jensen Corporation. High momentum heating system for an ironer. 4,562,655, Cl. 38-52.000.

Boswell, Ronald L.: *See—*
Read, Mark E.; and Boswell, Ronald L., 4,563,768, Cl. 378-037.000.

Boudigues, Serge; Frattaoci, Georges; and Ponthieux, Alain, to Office National D'Etudes et de Recherches Aerospatiales. Ceramic blades for turbomachines. 4,563,125, Cl. 415-115.000.

Boudreau, Daniel A.; Salas, Edward R.; and Zelley, Richard C., to Honeywell Information Systems Inc. Memory architecture for facilitating optimum replaceable unit (ORU) detection and diagnosis. 4,563,736, Cl. 364-200.000.

Bouillon, Serge; Cailloux, Jean-Francois; and Chevalier, Christian, to Essilor International (Compagnie Generale d'Optique). Lens holding spindle for a lens grinding machine. 4,562,671, Cl. 51-216.0LP.

Bourbin, Yannic; and Arditty, Herve , to Thomson-CSF. Process and device for simultaneously measuring the geometrical characteristics of an optical fibre. 4,563,087, Cl. 356-73.100.

Bowles Fluidics Corporation: *See—*
Stouffer, Ronald D., 4,562,867, Cl. 137-811.000.

Boyington, William B.: *See—*
McDorman, Kim C.; Boyington, William B.; and Wynn, Ronald K., 4,563,010, Cl. 273-187.00R.

Boys, John T.: *See—*
Woodward, Jack L.; and Boys, John T., 4,563,630, Cl. 322-8.000.

Brach, Ulrich; and Persch, Alois, to Zeller Plastik, Koehn, Grabner & Co. Pilfer-proof closure with tear-away holding claws. 4,562,931, Cl. 215-220.000.

Braddick, Britt O. Method and apparatus for rotating and reciprocating well bore liner. 4,562,889, Cl. 166-381.000.

Brandenstein, Manfred; Haas, Roland; and Hans, Rudiger, to SKF Kugellagerfabriken GmbH. Rolling bearing unit. 4,563,099, Cl. 384-458.000.

Brander, Rita W.: *See—*
Thomas, Michael E.; Brander, Rita W.; Raap, Teresa A.; and Rankowitz, Marshall M., 4,563,362, Cl. 426-104.000.

Brandes, Wilhelm: *See—*
Kramer, Wolfgang; Weissmuller, Joachim; Berg, Dieter; Reinecke, Paul; Hanssler, Gerd; and Brandes, Wilhelm, 4,563,447, Cl. 514-184.000.

Brandt, Harald E., to Telefonaktiebolaget LM Ericsson. Method of phase-synchronizing a transit exchange in a digital telecommunication network. 4,563,767, Cl. 375-107.000.

Branham, Barry: *See—*
Cox, James L.; Ferguson, T. Bruce, Jr.; Lofland, Gary K.; and Branham, Barry, 4,562,846, Cl. 128-696.000.

Brass Craft Manufacturing Company: *See—*
MacDonald, Robert D., 4,562,994, Cl. 251-175.000.

Bratkowski, Walter V.: *See—*
Wilson, James C.; Stephenson, William I.; and Bratkowski, Walter V., 4,563,553, Cl. 200-17.00R.

Braun, Hilarion, to Eastman Kodak Company. Fluid jet printer and method of ultrasonic cleaning. 4,563,688, Cl. 346-1.100.

Braun, Werner: *See—*
Heinzmann, Ulrich; and Braun, Werner, 4,563,255, Cl. 204-67.000.

Braunschweig, Peter M.; and Ruffles, Thomas J., Jr., to Astronics Corporation. Check filing cabinet. 4,563,047, Cl. 312-350.000.

Brausen, Benjamin: *See—*
Sherlock, Paul; Brausen, Benjamin; and Klein, Phillip P., 4,562,984, Cl. 248-95.000.

Breco Kunststoffverarbeitungs-GmbH & Co. KG: *See—*
Breher, Rudolf, 4,563,323, Cl. 264-279.100.

Breher, Rudolf, to Breco Kunststoffverarbeitungs-GmbH & Co. KG. Method and apparatus for the manufacture of a continuous serrated belt. 4,563,323, Cl. 264-279.100.

Bremer, Noel J.; and Dria, Dennis E., to Standard Oil Company, The. Preparation of mixed vanadium phosphorus oxide catalysts. 4,563,439, Cl. 502-209.000.

Brenner, John W., to Dow Chemical Company, The. Expandable synthetic resinous thermoplastic particles, method for the preparation thereof and the application therefor. 4,563,481, Cl. 521-56.000.

Brent, Herbert E.: *See—*
Bohannon, William D., Jr.; Brent, Herbert E.; Hamilton, Alfred S.; and Kinard, Michael D., 4,563,540, Cl. 174-23.00R.

Breuer, Heinz G.: *See—*
Janssen, Karl-Egon; and Breuer, Heinz G., 4,562,767, Cl. 89-14.300.

Briden, Frank C., to Diamond Shamrock Chemicals Company. Polyfunctional aziridines for use in crosslinking applications. 4,563,307, Cl. 260-239.00E.

Bridges, William B., to Hughes Aircraft Company. Method and apparatus for separating isotopes using electrophoresis in a discharge. 4,563,258, Cl. 204-157.150.

Briggs Manufacturing, Inc.: *See—*
Briggs, Stanley E., 4,562,779, Cl. 111-1.000.

Briggs, Stanley E., to Briggs Manufacturing, Inc. Foldable drill implement. 4,562,779, Cl. 111-1.000.

British Steel Corporation: *See—*
Davies, David H., 4,562,737, Cl. 73-622.000.

British Telecommunications: *See—*
Thorpe, William, 4,563,662, Cl. 333-219.000.

Britt, Franklin J. Safety valve. 4,562,852, Cl. 137-68.100.

Brockway, Brian P.; Dreher, Robert D.; Huntwork, Daniel E.; Lindstedt, Brock S.; Morrison, Douglas C.; and Mills, Perry A., to Cardiac Pacemakers, Inc. Programmable multi-mode cardiac pacemaker. 4,562,841, Cl. 128-419.0PG.

Bronstein-Bonte, Irena Y., to Polaroid Corporation. Copolymeric mordants and photographic products and processes containing same. 4,563,411, Cl. 430-213.000.

Brooklyn Union Gas Company, The: *See—*
Weiss, Irving; and Schorr, Hans P. (said Hans P. Schorr assors. to), 4,563,203, Cl. 62-20.000.

Brough, Steve A.: *See—*
Scott, Mark P.; and Brough, Steve A., 4,562,929, Cl. 213-20.000.

Brown, Harvey A.; Leichter, Louis M.; and Miller, Alan G., to Minnesota Mining and Manufacturing Company. Thermographic system using naphthoylated leuco phenazine dyes. 4,563,415, Cl. 430-340.000.

Brown, Richard E.: *See—*
Musser, John H.; and Brown, Richard E., 4,563,463, Cl. 514-293.000.

Bruggeman, Paul; and Hastings, Nova C., to Wonder Corporation of America. Pen light with abutting contact clip. 4,563,728, Cl. 362-206.000.

Brun, Charles G. H.; Bailleul, Jean F.; Lecendre, Freddy; and Coolen, Francoise, to Union Siderurgique du Nord et de l'Est de la France. Process and apparatus for determining the quality of a thin coated or uncoated steel sheet. 4,562,715, Cl. 72-167.000.

Brundige, Virgil L., Jr., to Mobil Oil Corporation. Method and apparatus for the production of liquid gas products. 4,563,201, Cl. 62-11.000.

Bruning, Jurgen: *See—*
Emberger, Roland; Kopael, Manfred; Bruning, Jurgen; Hopp, Rudolf; and Sand, Theodor, 4,563,365, Cl. 426-534.000.

Budrean, John D.; and Kirkpatrick, John A., to Verson Allsteel Press Company. Method for drawing heavy wall shells with a multi-step inside edge. 4,562,719, Cl. 72-349.000.

Buekers, Josef: *See—*
Lindner, Christian; Muller, Friedemann; Peters, Horst; Kreas, Hans-Jurgen; and Buekers, Josef, 4,563,496, Cl. 524-430.000.

Buffone, Angelo J.: *See—*
Krug, John A.; and Buffone, Angelo J., 4,563,117, Cl. 410-56.000.

Bugallo, Fernando; and Giamba, Rafael. Weight lifting apparatus having increased force on the return stroke. 4,563,003, Cl. 272-118.000.

Bugaut, Andree ; and Andrillon, Patrick, to L'Oreal. Paraphenylenediamines which can be used in oxidative hair dyeing. 4,563,188, Cl. 8-410.000.

Bui, Ai; and Pargamin, Laurent, to Ceraver, S.A. Electrical insulator offering reduced sensitivity to pollution. 4,563,544, Cl. 174-140.00C.

Bumgardner, Donald L., to Northern Telecom Limited. Video display mounting mechanism providing pivoting and tilting of the display. 4,562,988, Cl. 248-349.000.

Burroughs Wellcome Co.: *See—*
Batchelor, John F.; Hodson, Harold F.; and Selway, John W. T., 4,563,468, Cl. 514-337.000.

Busch, Georg W., to Mantis ULV-Spruehgeraete GmbH. Method and device for spraying a liquid or a suspension. 4,562,958, Cl. 239-7.000.

Bushee, Joseph J.: *See—*
Bedell, Richard L.; and Bushee, Joseph J., 4,563,390, Cl. 428-357.000.

Butler, Donald E.; and Leonard, James D., to Warner-Lambert Company. Derivatives of N-[2-(tetrahydro-3,5-dioxo-1H-pyrrolizin-7a(5H)-yl)ethyl]amine as cognition activators. 4,563,469, Cl. 514-339.000.

Butler, James R.: *See—*
Watson, James M.; Butler, James R.; and Victor, Mark, 4,563,517, Cl. 528-493.000.

Butler, Maynard H. Garden sprinkler. 4,562,963, Cl. 239-273.000.

C. A. Weidmuller GmbH & Co: *See—*
Wilmes, Manfred, 4,563,054, Cl. 339-254.00R.

C.G.A. Compagnia Generale Alluminio S.p.A.: *See—*
Nocivelli, Luigi, 4,563,230, Cl. 156-80.000.

C.O.M. Cooperativa Operai Metallurgici S.C.R.L.: *See—*
Frascaroli, Francesco; and Biondi, Carlo, 4,562,986, Cl. 248-188.100.

Cadbury Schweppes Limited: *See—*
Mercer, Frank B.; Jeffery, Maurice S.; and Martin, Keith F., 4,563,358, Cl. 426-89.000.

Cahoon, Dale L.; and Zolnosky, Larry D., to Xebec. Method and apparatus for positioning and indexing read/write on a multiple track recording medium. 4,563,713, Cl. 360-75.000.

Cailloux, Jean-Francois: *See—*
Bouillon, Serge; Cailloux, Jean-Francois; and Chevalier, Christian, 4,562,671, Cl. 51-216.0LP.

Calvin, Larry. Dubbing twister device. 4,562,870, Cl. 140-149.000.

Camco, Incorporated: *See—*
Pringle, Ronald E.; Morris, Arthur J.; and Johnson, John J., 4,562,854, Cl. 137-155.000.

Campbell, Henry F.: *See—*
Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,456, Cl. 514-242.000.
Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,460, Cl. 514-260.000.
Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,475, Cl. 514-427.000.

Campbell, James B., Jr., to ICI Americas Inc. Process for preparing pyrazolopyridine compounds. 4,563,525, Cl. 546-82.000.

Canadas, Jean C.; and Steiner, Michel, to Compagnie Industrielle de Mecanismes en abrege C.I.M. Cap for a container and in particular for a fuel tank for an automobile vehicle. 4,562,709, Cl. 70-169.000.

Canadian Patents and Development Limited/Societe Canadienne des Brevets et d'Exploitation Limitee: *See—*
Smith, Donald A.; and LaFlesh, Richard C., 4,562,966, Cl. 239-433.000.

Canon Denshi Kabushiki Kaisha: *See—*
Kawamura, Noriyuki; Aizawa, Nobuhiro; Koizumi, Shigeki; Koyahara, Masaru; and Tomita, Tetsuo, 4,563,715, Cl. 360-78.000.

Canon Kabushiki Kaisha: *See—*
Fushimoto, Hideo, 4,563,552, Cl. 200-17.00R.
Inuzuka, Tsuneki; Kawatsura, Yoshihiro; and Ishida, Masato, 4,563,079, Cl. 355-8.000.
Kataoka, Hiroyuki, 4,563,071, Cl. 354-473.000.
Matsumura, Susumu; Suzuki, Takashi; and Suzuki, Kenji, 4,563,576, Cl. 250-204.000.
Nagashima, Nao, 4,563,706, Cl. 358-280.000.
Ohkubo, Masaharu; Murasawa, Yoshihiro; Ohtsuka, Yasumasa; and Asai, Jun, 4,563,694, Cl. 346-160.000.
Saito, Syuichiro; and Okino, Tadashi, 4,563,070, Cl. 354-416.000.
Sakai, Shinji; and Kawabata, Takashi, 4,563,069, Cl. 354-402.000.
Sato, Yasushi, 4,563,081, Cl. 355-14.0CH.
Sato, Yuichi, 4,563,700, Cl. 358-75.000.
Sato, Yukio, 4,563,082, Cl. 355-14.0SH.

Yamada, Yasuyoshi, 4,563,094, Cl. 356-401.000.

Cantor, Clifford A.; and Barnes, Ben D. Fishing net hanging jig. 4,562,660, Cl. 43-4.000.

Caponigro, Dennis A.: *See—*
Jervis, James E.; and Caponigro, Dennis A., 4,563,180, Cl. 604-280.000.

Carandang, Carmen M.: *See—*
Knasster, Mark B.; and Carandang, Carmen M., 4,563,216, Cl. 106-1.230.

Cardiac Pacemakers, Inc.: *See—*
Brockway, Brian P.; Dreher, Robert D.; Huntwork, Daniel E.; Lindstedt, Brock S.; Morrison, Douglas C.; and Mills, Perry A., 4,562,841, Cl. 128-419.0PG.

Carlson, Timothy L.: *See—*
Ward, John W.; and Carlson, Timothy L., 4,563,434, Cl. 502-66.000.

Carlsson, Jan P. E.; Axen, Rolf E. A. V.; Drevin, Hakan N. Y.; and Lindgren, Goran E. S., to Pharmacia Fine Chemicals AB. Pyridine compounds modifying proteins, polypeptides or polysaccharides. 4,563,304, Cl. 260-112.00R.

Carmichael, D. Murphy; and Haimberger, Hans G., to Key Technology, Inc. Method for steam blanching foodstuffs in a pressure vessel. 4,563,364, Cl. 426-510.000.

Carmillet, Roger F. L., to Valeo. Clutch cover assembly manufacturing method. 4,562,636, Cl. 29-513.000.

Carpenter, Tristram; and Gorker, Michael, to Jett Labs, Inc. Multipurpose syringe. 4,562,844, Cl. 128-675.000.

Carroll, Michael W.; Harwood, Michael E.; and Aldag, John H., to North American Agricultural, Inc. Grain bin flooring. 4,562,678, Cl. 52-303.000.

Carter, Ronald P., to AGVS Installations, Inc. Method for installing an automatic vehicle guide path in wood block floors. 4,562,635, Cl. 29-432.000.

Casio Computer Co., Ltd.: *See—*
Kaneko, Youzi, 4,562,763, Cl. 84-1.010.

Caslavsky, Vera B.; and Gron, Poul, to Forsyth Dental Infirmary for Children. Self-gelling therapeutic compositions for topical application. 4,563,351, Cl. 424-151.000.

Caspers, Willi: *See—*
Balzer, Erich; and Caspers, Willi, 4,562,669, Cl. 51-103.0WH.

Casstevens, John M., to United States of America, Energy. Method for machining steel with diamond tools. 4,563,114, Cl. 409-131.000.

Cataudella, John. All in one shaver. 4,562,643, Cl. 30-41.000.

Cattani, Alberto, to Comau S.p.A. Device for positioning a mobile member relative to a fixed member. 4,562,919, Cl. 198-750.000.

Caulfield, Henry J.: *See—*
Ludman, Jacques E.; Horner, Joseph L.; and Caulfield, Henry J., 4,563,057, Cl. 350-96.180.

CDP, Ltd.: *See—*
Ecer, Gunes M., 4,562,892, Cl. 175-371.000.

Cefelin, Pavel: *See—*
Stol, Miroslav; Tolar, Miroslav; Adam, Milan; Cefelin, Pavel; and Kalal, Jaroslav, 4,563,490, Cl. 524-24.000.

Celotex Corporation, The: *See—*
Frentzel, Richard L.; and Moss, Ernest K., 4,563,499, Cl. 525-404.000.

Ceraver, S.A.: *See—*
Bui, Ai; and Pargamin, Laurent, 4,563,544, Cl. 174-140.00C.

Cercasbest Corp.: *See—*
Schwartz, Hugo D., 4,563,386, Cl. 428-283.000.

Cerio, Glenn R. Valve supporting tool and method. 4,562,629, Cl. 29-156.70R.

Cerola, Joseph J., to Roper Corporation. Downdraft countertop cooking range. 4,562,827, Cl. 126-299.00R.

Champion International Corporation: *See—*
Midura, Kenneth J., 4,562,922, Cl. 206-45.190.
Mode, Duane R., 4,562,926, Cl. 206-563.000.

Chandler, Edward W.: *See—*
Mrochek, John E.; Dinsmore, Stanley R.; and Chandler, Edward W., 4,562,748, Cl. 73-863.730.

Chang, Michael N.; Hammond, Milton L.; Jensen, Norman P.; and Zambias, Robert A., to Merck & Co., Inc. Substituted 5-hydroxy-2,3-dihydrobenzofurans and analogs thereof useful as anti-inflammatory agents. 4,563,476, Cl. 514-459.000.

Chang, Stephen S.; and Lindmark, Lars, to Kabivitrum AB. Oil-in-water emulsion for parenteral administration. 4,563,354, Cl. 424-195.100.

Charles of the Ritz Group Ltd.: *See—*
Deckner, George E., 4,563,346, Cl. 424-59.000.

Charmasson, Henri J. A.: *See—*
Morfeld, Diane E.; and Charmasson, Henri J. A., 4,562,842, Cl. 128-638.000.

Chauvel, Gerard, to Texas Instruments Incorporated. Electronic ignition control for internal combustion engine. 4,562,812, Cl. 123-417.000.

Chechovsky, Dardis W.; and Jenkins, Joe H. Door security brace. 4,563,027, Cl. 292-339.000.

Check, Robert F. Domestic hot water zone valve controlled external coil. 4,562,956, Cl. 237-8.00R.

Chemie Linz Aktiengesellschaft: *See—*
Blum, Otto, 4,562,869, Cl. 139-413.000.

Chen, Jong J.: *See—*
Yao, Jame; Chen, Jong J.; and Elliot, Douglas G., 4,563,202, Cl. 62-17.000.

Chen, Wen-Sherng: *See—*
Soucie, William G.; and Chen, Wen-Sherng, 4,563,360, Cl. 426-104.000.

Cheng, Chi: *See—*
Woods, Melvin E.; Cheng, Chi; and Kamo, Roy, 4,562,799, Cl. 123-193.00C.

Cherney, Robert O.: *See—*
Vitek, Edmund J.; Cherney, Robert O.; and Snyder, Robert F., Jr., 4,563,641, Cl. 324-158.00R.

Chevalier, Christian: *See—*
Bouillon, Serge; Cailloux, Jean-Francois; and Chevalier, Christian, 4,562,671, Cl. 51-216.0LP.

Chevron Research Company: *See—*
Hubred, Gale L., 4,563,213, Cl. 75-119.000.
Small, Vernon R., Jr., 4,563,293, Cl. 252-32.70E.

Chiba, Toshiyuki: *See—*
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,563,522, Cl. 544-016.000.

Chidlow, John W.; Van Duijn, Jan; and Siebesma, Jan, to Internationale Octrooi Maatschappij "Octropa" B.V. Apparatus for assisting the visual assessment of test objects having multivariate visible characteristics, and its use. 4,563,096, Cl. 356-440.000.

Chin, Philip C.; and Lindsey, Charles T., to Parker-Hannifin Corporation. Force motor with contoured spring coupling. 4,563,664, Cl. 335-274.000.

Chinman, Carole. Wrapper for clothing. 4,562,952, Cl. 229-87.00A.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyar RT: *See—*
Feuer, Laszlo ; and Benko, Gyorgy, 4,563,479, Cl. 514-562.000.

Chinone, Naoki: *See—*
Kuroda, Takao; Kajimura, Takashi; Kashiwada, Yasutoshi; Chinone, Naoki; Ouchi, Hirobumi; and Ohtoshi, Tsukuru, 4,563,764, Cl. 372-45.000.

Chloride Group Public Limited Company: *See—*
Davis, Rex M.; and Ray, William F., 4,563,619, Cl. 318-138.000.

Choay S.A.: *See—*
Feizi, Ten; Gooi, Hock C.; and Sinay, Pierre G., 4,563,445, Cl. 514-25.000.

Christoffersen, Stephen W.: *See—*
Weiss, Mark D.; and Christoffersen, Stephen W., 4,563,427, Cl. 436-6.000.

Chu, Pochen; and Garwood, William E., to Mobil Oil Corporation. Catalytic composition from reaction of high silica zeolites with binder. 4,563,435, Cl. 502-71.000.

Chung, Alfred: *See—*
Ryan, James W.; and Chung, Alfred, 4,563,305, Cl. 260-112.50R.

Churchland, Mark T.; and Schilling, Walter W., to MacMillan Bloedel Limited. Oriented strand lay-up. 4,563,237, Cl. 156-62.200.

Ciavarella, Frank. Adjustable carpenter square. 4,562,649, Cl. 33-419.000.

Ciba Geigy Corporation: *See—*
Beffa, Fabio, 4,563,193, Cl. 8-685.000.
Berner, Godwin; and Manser, Aloysius H., 4,563,438, Cl. 502-168.000.
Laanio, Verena; von Orelli, Marcus; and Hausermann, Walter, 4,563,457, Cl. 514-245.000.
Salathe, Heinz; Flensberg, Hermann; and Schaetzer, Harry, 4,563,192, Cl. 8-554.000.
Topfl, Rosemarie, 4,563,190, Cl. 8-524.000.

Cihlar, Vlasta: *See—*
Hills, Kenneth B.; and Cihlar, Vlasta, 4,563,159, Cl. 446-74.000.

Cismoski, Frank J.: *See—*
Leffke, Robert C.; and Sauder, Sylvester, 4,562,790, Cl. 118-24.000.

Citizen Watch Company Limited: *See—*
Hanaoka, Tadashi, 4,563,748, Cl. 364-557.000.

CL Industries, Inc.: *See—*
Woodson, Wayne D., 4,563,487, Cl. 523-139.000.

Clarion Co., Ltd.: *See—*
Takai, Kazuki, 4,563,711, Cl. 360-74.100.

Clark Bros. Felt Co.: *See—*
Baigas, Joseph F., Jr.; and Hobbs, C. Carey, 4,562,675, Cl. 52-202.000.

Clark Equipment Company: *See—*
Scibbe, Harold R., 4,562,902, Cl. 188-72.400.

Clark, Linda A.; and Soto, Luis, to AT&T Bell Laboratories. Chromatographic apparatus and process. 4,563,276, Cl. 210-198.200.

Clark, Noel A.; and Lagerwall, Sven T. Surface stabilized ferroelectric liquid crystal devices. 4,563,059, Cl. 350-330.000.

Clark, O. Melville, to General Semiconductor Industries, Inc. Hybrid AC line transient suppressor. 4,563,720, Cl. 361-56.000.

Clark, Rex K., to Exxon Research and Engineering Co. Sampler. 4,562,749, Cl. 73-863.840.

Clarke, William L. Fast Fourier transform apparatus with data timing schedule decoupling. 4,563,750, Cl. 364-726.000.

Clarkson, Larry E. Ambulance safety stabilizer harness for para-medics. 4,563,023, Cl. 280-748.000.

Clauss, Karl; Linkies, Adolf; and Reuschling, Dieter, to Hoechst Aktiengesellschaft. Process for the preparation of 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one 2,2-dioxide and its non-toxic salts. 4,563,521, Cl. 544-2.000.

Claussen, Robert L.; and Claussen, Steven W. Liquid flow indicator for farm implements. 4,562,863, Cl. 137-559.000.

Claussen, Steven W.: *See—*
Claussen, Robert L.; and Claussen, Steven W., 4,562,863, Cl. 137-559.000.

Clayton Foundation for Research: *See—*
Mullani, Nizar A., 4,563,582, Cl. 250-363.00S.

Clelford, Douglas H.: *See—*
Murphy, Richard D.; and Clelford, Douglas H., 4,563,743, Cl. 364-434.000.

Clem, Gladys M.; Boeck, LaVerne D.; Anderson, Marie T.; and Michel, Karl H., to Eli Lilly and Company. Glycopeptide bioconversion products. 4,563,442, Cl. 514-9.000.

Clerc, Guy; Gerlach, Pierre; and Hoet, Roger, to Thomson-CSF. Directly-heated cathodes. 4,563,609, Cl. 313-343.000.

Codex Corporation: *See—*
Qureshi, Shahid U. H.; and Linde, Yosef, 4,563,657, Cl. 331-25.000.

Coffman, Paul M., to Shell Oil Company. Forming plastic articles in solid state. 4,563,325, Cl. 264-550.000.

Cohen, Marlene L.; and Fuller, Ray W., to Eli Lilly and Company. Selective method for blocking $5HT_2$ receptors. 4,563,461, Cl. 514-288.000.

Colgate-Palmolive Company: *See—*
Bauman, Robert A., 4,563,288, Cl. 252-8.800.

Collagen Corporation: *See—*
Nathan, Ranga; Seyedin, Saied; Piez, Karl; and Bentz, Hanne, 4,563,350, Cl. 424-95.000.

Collet, James R. Tubing head adapter and valve. 4,562,888, Cl. 166-97.000.

Collis, Ronald: *See—*
Rothon, Stephen; and Collis, Ronald, 4,563,274, Cl. 210-101.000.

Columbia University in the City of New York, The Trustees of: *See—*
Fox, Charles L., Jr.; Modak, Shanta; and Reemtsma, Keith, 4,563,485, Cl. 523-113.000.
Nair, Krishnapillai V.; and Somasundaran, Ponisseril, 4,563,285, Cl. 210-714.000.

Comau S.p.A.: *See—*
Cattani, Alberto, 4,562,919, Cl. 198-750.000.

Commissariat a l'Energie Atomique: *See—*
Geffroy, Jean; Hofman, Michel; Moulin, Maurice; and Noel, Jean-Paul, 4,563,567, Cl. 219-121.0LU.
Langeac, Daniel, 4,563,639, Cl. 324-96.000.

Commonwealth of Australia, The: *See—*
Deans, Arnold L.; Smith, Alan J.; and Crozier, Malcolm J., 4,562,980, Cl. 244-3.220.

Compagnie Industrielle de Mecanismes en abrege C.I.M.: *See—*
Canadas, Jean C.; and Steiner, Michel, 4,562,709, Cl. 70-169.000.

Comune, Michele. Stucco coating composition. 4,563,491, Cl. 524-47.000.

Conoco Inc.: *See—*
Beck, Jeffrey L., 4,563,123, Cl. 415-52.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,563,042, Cl. 301-37.0ST.

Continental White Cap, Inc.: *See—*
Lecinski, Frank H., Jr.; and Grzemski, Chester F., 4,562,930, Cl. 215-31.000.

Cook, Ronald L.: *See—*
Morduchowitz, Abraham; Sammells, Anthony F.; and Cook, Ronald L., 4,563,254, Cl. 204-59.00R.

Cool Water Coal Gasification Program: *See—*
Simon, James J., 4,563,194, Cl. 48-77.000.

Coolen, Francoise: *See—*
Brun, Charles G. H.; Bailleul, Jean F.; Lecendre, Freddy; and Coolen, Francoise, 4,562,715, Cl. 72-167.000.

Cooper, Glenn D.; Rowe, Charles M.; and Holly, Henry M., III, to Westinghouse Electric Corp. Radial clamp assembly for dynamoelectric machine stator coil end turns. 4,563,607, Cl. 310-260.000.

Cooper Industries, Inc.: *See—*
Thibeault, Ronald, 4,563,049, Cl. 339-83.000.

Coopers Filters Limited: *See—*
Gladstone, Robert S., 4,563,200, Cl. 55-294.000.

Copeland Corporation: *See—*
Yu, Johnny D., 4,563,624, Cl. 318-472.000.

Coppens, Guillaume: *See—*
Gago, Ignace; and Coppens, Guillaume, 4,563,355, Cl. 426-2.000.

Coquin, Jean C. Sun shade and holding device. 4,563,063, Cl. 350-580.000.

Coratte, Jacques; and Petkovic, Dominique, to Office Technique des Trefiles. Wire cooling system for use in a wire drawing machine. 4,562,716, Cl. 72-286.000.

Corbin, Dennis O.: *See—*
Knoth, Wayne M.; and Corbin, Dennis O., 4,562,949, Cl. 227-7.000.

Cordis Corporation: *See—*
Batina, William P.; and Gipson, Lamar H., 4,562,840, Cl. 128-419.0PT.

Core Laboratories, Inc.: *See—*
Barnaby, Harold T., 4,562,726, Cl. 73-38.000.

Cornelius Cannon Inc.: *See—*
Fredrickson, Howard J., 4,562,927, Cl. 211-59.200.

Corticelli, Sandro: *See—*
Manservisi, Renato; and Corticelli, Sandro, 4,562,911, Cl. 192-86.000.

Cosden Technology, Inc.: *See—*
Watson, James M.; Butler, James R.; and Victor, Mark, 4,563,517, Cl. 528-493.000.

Cosenza, Frank J., to Rexnord Inc. Hook cutout for tangless helically coiled insert. 4,563,119, Cl. 411-438.000.

Costa, Bruce M.: *See—*
Walter, John F.; Costa, Bruce M.; and Eminger, Harry E., 4,562,860, Cl. 137-454.600.

Cosworth Research & Development Limited: *See—*
Vogel, Alfredo, 4,563,151, Cl. 432-15.000.

Cottis, Steve G.; Layton, Richard; and Field, Nathan D., to Dart Industries, Inc. Injection moldable aromatic polyesters compositions and method of preparation. 4,563,508, Cl. 525-444.000.

Council of Scientific and Industrial Research: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.

Courvoisier, Guy: *See—*
Arieh, Simon; and Courvoisier, Guy, 4,563,020, Cl. 280-602.000.

Cowan, Kiplin D.: *See—*
Masino, Albert P.; Cowan, Kiplin D.; and Hawley, Gil R., 4,563,511, Cl. 526-119.000.

Cox, James L.; Ferguson, T. Bruce, Jr.; Lofland, Gary K.; and Branham, Barry, to Duke University. System and process for monitoring myocardial integrity. 4,562,846, Cl. 128-696.000.

CPG Products Corp.: *See—*
Hartelius, Mark E.; and Jacobs, Randall J., 4,563,573, Cl. 219-405.000.

Crawford, Dennis W.: *See—*
Marty, Garry R.; Crawford, Dennis W.; and Wingfield, Trevor M., 4,562,960, Cl. 239-72.000.

Crawford, LeRoy A.; Jackson, Robert E.; and Hudson, Earl A., to Sperry Corporation. Replaceable cam member for knotters. 4,563,026, Cl. 287-2.000.

Creative Products Resource Ltd.: *See—*
Smith, James A.; and Murphy, Betty J., 4,563,483, Cl. 521-111.000.

Criss, Russell C.; and Gillery, F. Howard, to PPG Industries, Inc. Primer for metal films on nonmetallic substrates. 4,563,400, Cl. 428-630.000.

Crook, Gregory M.: *See—*
Vaeth, Howard J.; and Crook, Gregory M., 4,563,561, Cl. 219-10.55E.

Crown Confectionery Co.: *See—*
Yoon, Young-No, 4,563,363, Cl. 426-303.000.

Crozier, Malcolm J.: *See—*
Deans, Arnold L.; Smith, Alan J.; and Crozier, Malcolm J., 4,562,980, Cl. 244-3.220.

Crucible Materials Corporation: *See—*
Narasimhan, Kalatur S. V. L.; and Snyder, Francis S., 4,563,330, Cl. 420-435.000.

Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
De Bortoli, Marco; Tofanelli, Adler; and Varetto, Luigi, 4,563,637, Cl. 324-77.00A.

Cucinotta, Luigi; and Bambini, Luigi, to Automotive Products plc. Friction clutch driven plate. 4,562,913, Cl. 192-106.200.

Cuisinarts, Inc.: *See—*
Williams, James E., 4,562,771, Cl. 99-397.000.

Culbro Corporation: *See—*
Dreher, Hans C., 4,562,684, Cl. 53-64.000.

Culp, Gordon W.: *See—*
Nason, Clyde K.; and Culp, Gordon W., 4,562,751, Cl. 74-111.000.

Cummings, Ernie W.; and Valk, Nick. Automatic drain valve. 4,562,855, Cl. 137-195.000.

Cummins Engine Company, Inc.: *See—*
Woods, Melvin E.; Cheng, Chi; and Kamo, Roy, 4,562,799, Cl. 123-193.00C.

Cunard, Joel C., to Hedstrom Corporation. Toy vehicle. 4,562,893, Cl. 180-6.500.

Curelaru, Johan: *See—*
Gustavsson, Bengt; Curelaru, Johan; and Linder, Lars E., 4,563,176, Cl. 604-163.000.

Curiel, Raymond F. Self-charging solar battery. 4,563,727, Cl. 362-183.000.

Curti, Maria; and Fussi, Fernando, to Hepar Chimie S.A. Method of tranquilizing. 4,563,478, Cl. 514-561.000.

Cuschera, Casper. Floor drain with waste pipe reduction. 4,562,602, Cl. 4-288.000.

Cydzik, Edward A.: *See—*
Gen, Tamar G.; and Cydzik, Edward A., 4,563,224, Cl. 148-23.000.

Cytron, Sheldon J., to United States of America, Army. Method of making metallic glass-metal matrix composites. 4,562,951, Cl. 228-234.000.

Czechoslovenska akademie ved of Praha: *See—*
Stol, Miroslav; Tolar, Miroslav; Adam, Milan; Cefelin, Pavel; and Kalal, Jaroslav, 4,563,490, Cl. 524-24.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Sato, Yoshihiro, 4,562,690, Cl. 53-456.000.

Daikin Industries, Ltd.: *See—*
Fukui, Shosin; Shinjo, Masayoshi; Okazaki, Yasuko; and Aoyama, Hirokazu, 4,563,493, Cl. 524-233.000.
Ishikawa, Nobuo, 4,563,394, Cl. 428-422.000.

Daikin Kogyo Co., Ltd.: *See—*
Enjo, Naonori; Aomi, Hideki; Noguchi, Masahiro; and Ide, Satoshi, 4,562,995, Cl. 252-67.000.
Hisamoto, Iwao; Maeda, Chiaki; Esaka, Takasige; and Hirai, Masaru, 4,563,287, Cl. 252-2.000.

Daimer, Wolfgang: *See—*
Schipfer, Rudolf; Daimer, Wolfgang; and Schmolzer, Gerhard, 4,563,515, Cl. 528-111.000.

Daimler-Benz AG: *See—*
Scheller, Franz X., 4,562,874, Cl. 152-427.000.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Kishida, Yoshihiro, 4,563,707, Cl. 358-294.000.

Dall'Aglio, Cario, to Finike Italiana Marposs S.p.A. Head for checking linear dimensions. 4,562,646, Cl. 33-169.00R.

Daly, Peter; and Jeanmairet, Maurice, to Microbo S.A. Industrial robot. 4,563,122, Cl. 414-732.000.

Damm, Sture, to Adcon AB. Method for dyeing cellulose fiber material by controlled addition of alkaline material. 4,562,604, Cl. 8-158.000.

Dandliker, Rene , to Gretag AG. Method for identifying an object and measuring its position and orientation, and device for carrying out the method. 4,563,091, Cl. 356-349.000.

Danielli, Franco, to Finike Italiana Marposs S.p.A. Apparatus for measuring diametral and axial dimensions. 4,562,648, Cl. 33-504.000.

Dart Industries, Inc.: *See—*
Cottis, Steve G.; Layton, Richard; and Field, Nathan D., 4,563,508, Cl. 525-444.000.

Dato, Anthony L.; and Hultman, Carl A., to Warner-Lambert Company. Razor cartridge and method of manufacture. 4,562,645, Cl. 30-346.580.

Davidson, Allen S. Flat panel television/display. 4,563,617, Cl. 315-312.000.

Davie, Richard L.: *See—*
Wittmann, John W.; Winkelman, Robert C.; Mooers, Douglas F.; and Davie, Richard L., 4,563,282, Cl. 210-619.000.

Davies, David H., to British Steel Corporation. Ultrasonic testing. 4,562,737, Cl. 73-622.000.

Davis, John M.; and Jennings, David G., to Kegel Company, Inc., The. Cleaning apparatus for bowling lanes. 4,562,610, Cl. 15-228.000.

Davis, Rex M.; and Ray, William F., to Chloride Group Public Limited Company. Electric power converter circuit. 4,563,619, Cl. 318-138.000.

Davis, William M.: *See—*
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Zisis A.; and Baldwin, Francis P., 4,563,506, Cl. 525-354.000.

Dawes, Cyril; Smith, John D.; and Smith, Colin G., to Lucas Industries. Corrosion resistant steel components and method of manufacture thereof. 4,563,223, Cl. 148-16.500.

Dayco Corporation: *See—*
Foster, Randy C., 4,563,167, Cl. 474-135.000.

Deal, Samuel B.; Bartch, Donald W.; and Forberger, Steven C. Cathode-ray tube having antistatic silicate glare-reducing coating. 4,563,612, Cl. 313-478.000.

Deans, Arnold L.; Smith, Alan J.; and Crozier, Malcolm J., to Commonwealth of Australia, The. Rocket vehicle. 4,562,980, Cl. 244-3.220.

Deavers, Clyde J.; and Reffelt, James, to Rotron Incorporated. Simple brushless DC fan motor. 4,563,622, Cl. 318-254.000.

De Bortoli, Marco; Tofanelli, Adler; and Varetto, Luigi, to Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A. System for measuring amplitude of noise-contaminated periodic signal. 4,563,637, Cl. 324-77.00A.

Debtec Corporation: *See—*
Shultz, Frederick P., 4,563,716, Cl. 360-92.000.

Deckner, George E., to Charles of the Ritz Group Ltd. Topical delivery system and skin treatment compositions employing such system. 4,563,346, Cl. 424-59.000.

Decorps, Jean-Luc; and Blanpain, Guy, to Schlumberger Technology Corporation. Method and apparatus for acquiring seismic signals in a borehole. 4,563,757, Cl. 367-33.000.

Deere & Company: *See—*
Kuhn, John B.; Wykhuis, Lloyd A.; and Stricker, David K., 4,563,019, Cl. 280-481.000.

de Ferran, Max P.: *See—*
Hayat, Eric S.; and de Ferran, Max P., 4,563,084, Cl. 355-40.000.

Deflander, Joseph F., to Procter & Gamble Company, The. Easy-open laminated container with optional reclosing means and method of making. 4,562,936, Cl. 220-268.000.

Dehring, Alexander, to K. G. Coles & Co. Pty Limited. Motor vehicle turntable. 4,562,774, Cl. 104-42.000.

De Jaeger, Antoine A.; Bertels, Alfons J.; Poot, Albert L.; De Keyzer, Rene M.; and Sels, Francis J., to Agfa-Gevaert N.V. Method for the preparation of a planographic printing plate using NiS containing nuclei. 4,563,410, Cl. 430-204.000.

De Keyzer, Rene M.: *See—*
De Jaeger, Antoine A.; Bertels, Alfons J.; Poot, Albert L.; De Keyzer, Rene M.; and Sels, Francis J., 4,563,410, Cl. 430-204.000.

Deller, Klaus: *See—*
Baacke, Michael; Deller, Klaus; Kleinschmit, Peter; and Koberstein, Edgar, 4,563,480, Cl. 518-728.000.

Deman, Samuel J.: *See—*
Leemkuil, Hendrik; Deman, Samuel J.; and Perdok, Peter M., 4,562,921, Cl. 198-841.000.

de Meij, Johannes P., to U.S. Philips Corporation. Alternately heatable and coolable moulding block. 4,563,145, Cl. 425-174.80R.

Deneke, Ulfert; Lange, Hans; and Rittersdorf, Walter, to Boehringer Mannheim GmbH. Method and composition for the removal of ascorbic acid from aqueous liquids. 4,563,422, Cl. 435-27.000.

Dennis, Christopher J. Bottle having cap with safety feature and counter. 4,562,933, Cl. 215-219.000.

Deritend Engineering Company Ltd., The: *See—*
Bishop, Thomas D.; and Bishop, David J. G., 4,562,947, Cl. 226-121.000.

de Ruyter, Jackie A. Broom body with artificial boughs. 4,562,609, Cl. 15-171.000.

Desormiere, Bernard, to Thomson CSF. Optical magnetometer using a laser coupled to a magneto-optical medium. 4,563,646, Cl. 324-244.000.

Dessoude, Maxime: *See—*
Gosselin, Olivier L.; and Desaoude, Maxime, 4,563,596, Cl. 307-297.000.

Deuscher, Albert: *See—*
Mutzenberg, Willi; and Deuscher, Albert, 4,563,278, Cl. 210-401.000.

Devasahayam, Thangaraj S.: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.

Dewhirst, Floyd E., to Forsyth Dental Infirmary for Children. Substituted 2-(arylmethoxy) phenol compounds for the treatment of inflammation. 4,563,526, Cl. 546-152.000.

Dhandapani, Koyalmannam S.: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.

Dhein, Rolf: *See—*
Schreckenberg, Manfred; Dhein, Rolf; Lange, Ralf; and Waldenrath, Werner, 4,563,516, Cl. 528-196.000.

Diamond, George B. Rolling diaphragm barrier for pressurized container. 4,562,942, Cl. 222-386.500.

Diamond, Harvey E. Cover plate for fluid nozzles and the like. 4,562,964, Cl. 239-288.500.

Diamond Shamrock Chemicals Company: *See—*
Briden, Frank C., 4,563,307, Cl. 260-239.00E.

DiAntonio, Daniel J., to Litton Systems, Inc. Lubrication tube interconnections for idler rolls. 4,562,915, Cl. 198-501.000.

DiCesare, Paul C.: *See—*
Blake, Joseph W., III; and DiCesare, Paul C., 4,562,839, Cl. 128-326.000.

Dickson, Joseph F.: *See—*
Kuneman, James E.; and Dickson, Joseph F., 4,563,383, Cl. 428-216.000.

Dietrich, Bernhard, to SDS Relais AG. High-frequency-proof round plug connector. 4,563,052, Cl. 339-143.00R.

Dietzel, Klaus-Jurgen: *See—*
Ehlert, Walter; Reuter, Karl-Heinz; and Dietzel, Klaus-Jurgen, 4,563,432, Cl. 501-81.000.

Diggle, Steven J., to Markem Systems Limited. Printing machine with label stock indexing mechanism. 4,562,773, Cl. 101-27.000.

Dilgren, Richard E.; and Owens, Kenneth B., to Shell Oil Company. Olefin sulfonate-improved steam foam drive. 4,562,727, Cl. 73-60.100.

Dimroth, Peter; and Kowarsch, Heinrich, to BASF Aktiengesellschaft. Anthraquinone azopyrazalone colorants. 4,563,519, Cl. 534-655.000.

Dinsmore, Stanley R.: *See—*
Mrochek, John E.; Dinsmore, Stanley R.; and Chandler, Edward W., 4,562,748, Cl. 73-863.730.

Director-General of National Aerospace Lab.: *See—*
Shimamoto, Yoshiharu, 4,563,046, Cl. 308-10.000.

Dixon, Samuel, Jr.; and Malik, Roger J., to United States of America, Army. Monolithic planar doped barrier subharmonic mixer. 4,563,773, Cl. 455-327.000.

Djordjevich, Ljubomir; and Sadove, Max S. System for determining characteristics of blood flow. 4,562,843, Cl. 128-672.000.

DM International Inc.: *See—*
Yao, Jame; Chen, Jong J.; and Elliot, Douglas G., 4,563,202, Cl. 62-17.000.

Dobson Park Industries Plc.: *See—*
Seddon, James, 4,563,111, Cl. 405-295.000.

Dr. C. Otto & Comp. G.m.b.H.: *See—*
Ehlert, Walter; Reuter, Karl-Heinz; and Dietzel, Klaus-Jurgen, 4,563,432, Cl. 501-81.000.

Dr. Ing. h.c.F. Porsche AG: *See—*
Dorr, Konrad, 4,562,816, Cl. 123-456.000.

Doguchi, Nobushige: *See—*
Nagai, Yoshitaka; and Doguchi, Nobushige, 4,563,322, Cl. 264-267.000.

Doi, Masanori: *See—*
Kano, Tokio; Tamagawa, Akira; and Doi, Masanori, 4,563,430, Cl. 436-164.000.

Dolejs, Anthony H.: *See—*
Gorgone, Robert L.; and Dolejs, Anthony H., 4,563,771, Cl. 382-7.000.

Donner, Hans-Christian: *See—*
Hunger, Josef; Donner, Hans-Christian; and Neumaier, Anton, 4,563,013, Cl. 279-64.000.

Donoghue, William J.; and Noufer, Glenn E., to Motorola, Inc. Circuit for address transition detection. 4,563,599, Cl. 307-448.000.

Donoghue, William J., to Motorola, Inc. Circuit for reducing degradation of voltage differential in a memory. 4,563,753, Cl. 365-104.000.

Doran, Donald E.: *See—*
Bhatt, Anilkumar C.; Doran, Donald E.; and Knight, James W., 4,563,385, Cl. 428-251.000.

Dorr, Hermann: *See—*
Schroder, Norbert; Milewski, Gunter; Neusser, Manfred; Dorr, Hermann; Supp, Armin; Rasch, Heinz; Heinemann, Otto; Baldus, Heinz-Dieter; and Manthey, Harald, 4,563,271, Cl. 209-427.000.

Dorr, Konrad, to Dr. Ing. h.c.F. Porsche AG. Fuel feed system for an internal combustion engine. 4,562,816, Cl. 123-456.000.

Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Akiyama, Hideo; Todokoro, Akio; and Takanobu, Osamu, 4,563,335, Cl. 422-159.000.

Doty, Gerald A.; and Hunter, William E., Jr., to Gateway Industries, Inc. Seat belt buckle. 4,562,625, Cl. 24-640.000.

Doucette, Eugene F.; Richardson, Donald; and Hoekstra, Joop F., to Reece Corporation. Machine for forming fly construction. 4,562,782, Cl. 112-104.000.

Doumas, Basil T.; and Poon, Kwok C. P. Bilirubin assay. 4,563,429, Cl. 436-97.000.

Dow Chemical Company, The: *See—*
Brenner, John W., 4,563,481, Cl. 521-56.000.
Fujioka, George S.; and Little, John C., 4,563,530, Cl. 546-345.000.

Dow Corning Corporation: *See—*
Gornowicz, Gerald A.; Tangney, Thomas J.; and Ziemelis, Maris J., 4,563,539, Cl. 556-421.000.
Starch, Michael S., 4,563,347, Cl. 424-70.000.

Draftex Industries, Ltd.: *See—*
Kruschwitz, Werner, 4,562,676, Cl. 52-208.000.

Dragerwerk Aktiengesellschaft: *See—*
Schlobohm, Joachim, 4,562,837, Cl. 128-206.170.

Dravo Corporation: *See—*
Frauen, Leonard L.; and Kasper, Stanley, 4,563,195, Cl. 48-197.00R.
Gessler, Donald A., 4,563,273, Cl. 210-94.000.

Dreher, Hans C., to Culbro Corporation. Apparatus for applying a tubular member over a container. 4,562,684, Cl. 53-64.000.

Dreher, Ingo: *See—*
Weiss, Hans J.; Rammler, Roland; Hahn, Helmut; and Dreher, Ingo, 4,563,264, Cl. 208-11.00R.

Dreher, Robert D.: *See—*
Brockway, Brian P.; Dreher, Robert D.; Huntwork, Daniel E.; Lindstedt, Brock S.; Morrison, Douglas C.; and Mills, Perry A., 4,562,841, Cl. 128-419.0PG.

Drevin, Hakan N. Y.: *See—*
Carlsson, Jan P. E.; Axen, Rolf E. A. V.; Drevin, Hakan N. Y.; and Lindgren, Goran E. S., 4,563,304, Cl. 260-112.00R.

Drews, Robert E., to Leyman Manufacturing Corp. Cargo elevator system. 4,563,121, Cl. 414-545.000.

Dreyer, Hans; and Rieger, Manfred, to Jost-Werke GmbH. Hub odometer. 4,563,574, Cl. 235-95.00B.

Dria, Dennis E.: *See—*
Bremer, Noel J.; and Dria, Dennis E., 4,563,439, Cl. 502-209.000.

Dubler, Richard D., to Textron Inc. Low kick saw chain. 4,562,762, Cl. 83-834.000.

Dudek, Lesley P.: *See—*
Lin, John W. P.; Dudek, Lesley P.; Limburg, William W.; and Schneider, Eric J., 4,563,408, Cl. 430-59.000.

Dufosse, Philippe: *See—*
Hert, Marius; and Dufosse, Philippe, 4,563,504, Cl. 525-240.000.

Duke University: *See—*
Cox, James L.; Ferguson, T. Bruce, Jr.; Lofland, Gary K.; and Branham, Barry, 4,562,846, Cl. 128-696.000.

Dunk, Robert J., to Precision Tool & Gauge Pty. Ltd. Pallet and method of production. 4,562,718, Cl. 72-349.000.

Dunn, Robert H., to Eaton Corporation. Time selective frequency detection by time selective channel to channel energy comparison. 4,563,638, Cl. 324-77.00R.

Du Pont de Nemours, E. I., and Company: *See—*
Wexler, Berry A.; and Zimmerman, William T., 4,563,211, Cl. 71-92.000.

Dupont, Philippe; and Lontrade, Jean. Device for mixing several components. 4,563,174, Cl. 604-89.000.

Duprez, Wayne R.; and McKenzie, Bradley J., to Standard-Thomson Corporation. Valve seat structure for automotive thermostatic fluid control valve device. 4,562,953, Cl. 236-34.500.

Duracell Inc.: *See—*
Bahary, William S., 4,563,404, Cl. 429-206.000.

Durbin, Larry L.; Zaborowski, Roy A.; and Wolf, Thomas R., to Sperry Corporation. Adjustable mounting tray for aircraft inertial reference units and the like. 4,562,978, Cl. 244-1.00R.

Durlach, Jean P., to Les Laboratories Meram. N-Substituted α,ωamino and imino-sulfonic acid salts and their application as cationic vectors of high cellular penetration. 4,563,470, Cl. 514-347.000.

Dyer, Michael E., to Intera Corporation. Treatment of Lewis base polymer with ethylenically unsaturated compound to improve antistatic hygroscopic and dye receptive properties. 4,563,507, Cl. 525-426.000.

Dyson, Lewis R.: *See—*
Herbatler, Horst-Dieter; Terzian, Rouben T.; and Dyson, Lewis R., 4,563,163, Cl. 446-354.000.

Dzomba, James C., to BBC Brown Boveri Inc. High voltage outdoor bushing employing foam body seal and process for manufacture thereof. 4,563,545, Cl. 174-152.00R.

E. R. Squibb & Sons, Inc.: *See—*
Bergner, Brian C., 4,562,829, Cl. 128-1.100.

Earley, Ronald; and Higginson, Marvin. Combination walking cane, path light and uprisal device. 4,562,850, Cl. 135-66.000.

Eastman Kodak Company: *See—*
Braun, Hilarion, 4,563,688, Cl. 346-1.100.

Eaton Corporation: *See—*
Dunn, Robert H., 4,563,638, Cl. 324-77.00R.

Ebenhoch, Sebastian, to Waukesha Cutting Tools, Inc. Indexable insert drill. 4,563,113, Cl. 408-223.000.

Ecer, Gunes M., to CDP, Ltd. Rolling cutters for drill bits. 4,562,892, Cl. 175-371.000.

Eckstein, Udo, to Bayer Aktiengesellschaft. Process for the preparation of Δ^4-1,3,4-oxadiazolin-2-one compounds. 4,563,532, Cl. 548-144.000.

Eclipse, Inc.: *See—*
Jackson, W. Shaun; and Bohm, Leslie E., 4,562,944, Cl. 224-39.000.

Edens, Rudolph R. Tool holder with coolant inducer. 4,563,116, Cl. 409-136.000.

Edmond Pharma S.r.l.: *See—*
Gobetti, Marinò; and Vandoni, Guido, 4,563,443, Cl. 514-29.000.

Edwin Cooper, Inc.: *See—*
Griffin, Paul G.; and Lam, William Y., 4,563,302, Cl. 252-45.000.

Ege, Sigmund, to Kloften & Kloften A/S. Tape splicer to splice carrier strip. 4,563,563, Cl. 219-85.00G.

Ehle, Roger S.: *See—*
Hoffman, David M.; Kingsley, Jack D.; and Ehle, Roger S., 4,563,584, Cl. 250-368.000.

Ehlert, Walter; Reuter, Karl-Heinz; and Dietzel, Klaus-Jurgen, to Dr. C. Otto & Comp. G.m.b.H. Production of porous sintered ceramic material. 4,563,432, Cl. 501-81.000.

Ehrfeld, Wolfgang: *See—*
Becker, Erwin; and Ehrfeld, Wolfgang, 4,563,250, Cl. 204-6.000.
Becker, Erwin; Ehrfeld, Wolfgang; and Becker, Frank, 4,563,251, Cl. 204-6.000.

Eickmann, Karl. Radial piston motor or pump. 4,562,770, Cl. 91-491.000.

Eickmann, Karl. Reciprocating piston engine. 4,562,796, Cl. 123-65.0BA.

Eirich, Hubert: *See—*
Eirich, Walter; Eirich, Paul; and Eirich, Hubert, 4,562,970, Cl. 241-65.000.

Eirich, Paul: *See—*
Eirich, Walter; Eirich, Paul; and Eirich, Hubert, 4,562,970, Cl. 241-65.000.

Eirich, Walter; Eirich, Paul; and Eirich, Hubert. Apparatus for opening and closing the outlet aperture of a processing machine. 4,562,970, Cl. 241-65.000.

Elegant Merchandising Inc.: *See—*
Benedek, Herman; and Fischbein, Mike, 4,562,704, Cl. 63-2.000.

Eli Lilly and Company: *See—*
Beck, James R.; and Lynch, Michael P., 4,563,210, Cl. 71-92.000.
Clem, Gladys M.; Boeck, LaVerne D.; Anderson, Marie T.; and Michel, Karl H., 4,563,442, Cl. 514-9.000.
Cohen, Marlene L.; and Fuller, Ray W., 4,563,461, Cl. 514-288.000.

Elliot, Douglas G.: *See—*
Yao, Jame; Chen, Jong J.; and Elliot, Douglas G., 4,563,202, Cl. 62-17.000.

Ellis, Stafford M., to Marconi Avionics Limited. Night vision viewing systems. 4,563,061, Cl. 350-503.000.

Elscint Ltd.: *See—*
Gilath, Chaim; and Melman, Haim, 4,563,701, Cl. 358-111.000.

ELTECH Systems Corporation: *See—*
Hruska, Louis W.; and Tsai, Shan-Pu, 4,563,260, Cl. 204-283.000.

EMAB Electrolux Motor Aktiebolag: *See—*
Andreasson, Bo C., 4,562,811, Cl. 123-416.000.

Emberger, Roland; Kopsel, Manfred; Bruning, Jurgen; Hopp, Rudolf; and Sand, Theodor, to Haarmann & Reimer GmbH. Flavoring with 5-methyl-hept-2-en-4-one. 4,563,365, Cl. 426-534.000.

Emhart Industries, Inc.: *See—*
Kingsbury, Charles M.; and Beckwith, Bruce R., 4,562,753, Cl. 74-838.000.

Eminger, Harry E.: *See—*
Walter, John F.; Costa, Bruce M.; and Eminger, Harry E., 4,562,860, Cl. 137-454.600.

Enami Seiki Mfg. Co., Ltd.: *See—*
Enami, Toshiaki, 4,563,559, Cl. 219-10.55E.

Enami, Toshiaki, to Enami Seiki Mfg. Co., Ltd. Inner box for a cooking appliance. 4,563,559, Cl. 219-10.55E.

Endo, Hiroshi: *See—*
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Kawai, Akio, 4,562,822, Cl. 123-620.000.

Endo, Masayasu: *See—*
Arai, Yukio; and Endo, Masayasu, 4,563,679, Cl. 340-825.700.

Endo, Michitada; and Kimura, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Evaporation cooled gas insulated electrical apparatus. 4,562,702, Cl. 62-376.000.

Endo, Takeyuki: *See—*
Yabuuchi, Shigeru; Endo, Takeyuki; Kodama, Kazuyuki; and Ide, Jushi, 4,563,749, Cl. 364-702.000.

English Electric Valve Company Limited: *See—*
Howorth, Jonathan R., 4,563,614, Cl. 313-524.000.

Enjo, Naonori; Aomi, Hideki; Noguchi, Masahiro; and Ide, Satoshi, to Daikin Kogyo Co., Ltd. Working fluids for Rankine cycle. 4,562,995, Cl. 252-67.000.

Enning, Jospeh: *See—*
Messing, Horst; and Enning, Jospeh, 4,562,848, Cl. 134-123.000.

Envirex Inc.: *See—*
Wittmann, John W.; Winkelman, Robert C.; Mooers, Douglas F.; and Davie, Richard L., 4,563,282, Cl. 210-619.000.

Environmental Dynamics, Inc.: *See—*
Tharp, Charles E., 4,563,277, Cl. 210-220.000.

Erickson, Donald C. High temperature absorbent for water vapor. 4,563,295, Cl. 252-69.000.
Erickson, Elton D. Display rack for frozen food packages. 4,562,928, Cl. 211-184.000.
Ericsen, Bret; Hastings, John C.; Murphy, Desmond L.; and Jansen, Scott, to Tektronix, Inc. Film resistors. 4,563,564, Cl. 219-121.0LJ.
Erlandson, Dale L. Gun sling. 4,562,945, Cl. 224-150.000.
Ernst, Gunter; and Wurz, Dieter, to Ernst, Gunter. Apparatus for cooling cooling water. 4,563,314, Cl. 261-153.000.
Esaka, Takasige: *See—*
Hisamoto, Iwao; Maeda, Chiaki; Esaka, Takasige; and Hirai, Masaru, 4,563,287, Cl. 252-2.000.
Eskew, William F., to Figgie International Inc. Double suction, single stage volute pump. 4,563,124, Cl. 415-98.000.
Essex Group, Inc.: *See—*
Lavallee, Francois A., 4,563,369, Cl. 427-118.000.
Puffer, LeRoy G., 4,563,095, Cl. 356-430.000.
Essilor International (Compagnie Generale d'Optique): *See—*
Bouillon, Serge; Caillaux, Jean-Francois; and Chevalier, Christian, 4,562,671, Cl. 51-216.0LP.
Esteve Soler, Jose , to Provesan S.A. Derivatives of oxazinobenzothiazine-6,6-dioxide. 4,563,452, Cl. 514-222.000.
Ethyl Corporation: *See—*
Nelson, Gunner E., 4,563,343, Cl. 423-644.000.
Etoh, Shunji: *See—*
Ichikawa, Kentaro; and Etoh, Shunji, 4,563,130, Cl. 416-213.00R.
Evans, Ben E.: *See—*
Bock, Mark G.; Freidinger, Roger M.; Evans, Ben E.; and Hartman, George D., 4,563,451, Cl. 514-219.000.
Evans, George D.: *See—*
Flynn, Brian P.; Winetzky, Deborah S.; and Evans, George D., 4,563,186, Cl. 8-137.000.
Ex-Cell-O Corporation: *See—*
Halvorsen, Robert M.; and Helmrich, William F., 4,562,698, Cl. 60-740.000.
Extrude Hone Corporation: *See—*
Rhoades, Lawrence J., 4,563,238, Cl. 156-637.000.
Exxon Research and Engineering Co.: *See—*
Clark, Rex K., 4,562,749, Cl. 73-863.840.
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Zisis A.; and Baldwin, Francis P., 4,563,506, Cl. 525-354.000.
Ezer, Elemer; Szporny, Laszlo; Hajos, Gyorgy; Szantay, Csaba; Keve, Tibor; Fekete, Gyorgy; Megyeri, Gabor; Acs, Tibor; and Bolcskei, Hedvig, to Richter Gedeon Vegyeszeti Gyar Rt. 2-Azabicyclo(2.2.-2)octane derivatives and their use as immunosuppressive agents. 4,563,464, Cl. 514-299.000.
F. B. Mercer Limited: *See—*
Mercer, Frank B.; Jeffery, Maurice S.; and Martin, Keith F., 4,563,358, Cl. 426-89.000.
Fabrica De Productos Quimicos Y Farmaceuticos Abello, S.A.: *See—*
Gomez Parra, Vicente; Gonzalez Hernandez, Pedro; Sanchez Alonso, Felix; and Torres Cebada, Tomas, 4,563,528, Cl. 546-261.000.
Facom: *See—*
Petit, Jean-Pierre, 4,562,746, Cl. 73-862.230.
FAG Kugelfisher Georg Schafer Kommanditelgesellschaft Auf Aktien: *See—*
Scheuering, Hans, 4,563,043, Cl. 303-52.000.
Fallon, Peter: *See—*
Steinberg, Meyer; and Fallon, Peter, 4,563,197, Cl. 48-210.000.
Falz, Ulrich: *See—*
Walter, Jurgen; Falz, Ulrich; and Lunke, Manfred, 4,563,166, Cl. 464-96.000.
Fantuzzo, Joseph; Monkelbaan, Edwin R.; and Till, Henry R., to Xerox Corporation. Electrostatographic apparatus frame with plural alternative mounting elements. 4,563,078, Cl. 355-3.00R.
Faries, Durward I., Jr.: *See—*
Ginsberg, Stephen P.; and Faries, Durward I., Jr., 4,562,600, Cl. 623-6.000.
Farmitalia Carlo Erba S.p.A.: *See—*
Angelucci, Francesco; Penco, Sergio; and Arcamone, Federico, 4,563,444, Cl. 514-34.000.
Faulkner, James V., Jr.: *See—*
York, Theodore H.; and Faulkner, James V., Jr., 4,563,650, Cl. 329-50.000.
Fechner, Heinz J. B., to Vainaga Limited. Anti-theft alarm device for video cassette recorder. 4,563,673, Cl. 340-568.000.
Fehrenbach, Eugene T.: *See—*
Adams, Norman S.; Fehrenbach, Eugene T.; and Ritter, John A., 4,562,633, Cl. 29-401.100.
Feizi, Ten; Gooi, Hock C.; and Sinay, Pierre G., to Choay S.A. 3-Fucosyl-N-acetyl lactosamine derivatives, and their biological applications. 4,563,445, Cl. 514-25.000.
Fekete, Gyorgy: *See—*
Ezer, Elemer; Szporny, Laszlo; Hajos, Gyorgy; Szantay, Csaba; Keve, Tibor; Fekete, Gyorgy; Megyeri, Gabor; Acs, Tibor; and Bolcskei, Hedvig, 4,563,464, Cl. 514-299.000.
Felix, Gloria E. Reaping, binding and shocking machine for sesame plants. 4,562,693, Cl. 56-131.000.
Ferdinand Lentjes Dampfkessel- und Maschinenbau, Firma: *See—*
Kraus, Willibald, deceased, 4,562,795, Cl. 122-1.00R.
Ferguson, Bruce S., to ImmunoSystems, Incorporated. Embryo collector and collection method. 4,563,172, Cl. 604-55.000.
Ferguson, T. Bruce, Jr.: *See—*
Cox, James L.; Ferguson, T. Bruce, Jr.; Lofland, Gary K.; and Branham, Barry, 4,562,846, Cl. 128-696.000.
Ferris, Michael J.; and Kuna, Wayne A., to Marvin Glass & Associates. Board game. 4,563,011, Cl. 273-243.000.
Feuer, Laszlo ; and Benko, Gyorgy, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyar RT. Synergistic radiation protective pharmaceutical compositions. 4,563,479, Cl. 514-562.000.
Fiatallis Europe S.p.A.: *See—*
Barbagli, Rino O.; and Marras, Gaetano, 4,562,906, Cl. 192-4.00A.
Fichtner, Karl-Heinz. Apparatus for winding and inserting of coils into stators or rotors of electrical machines. 4,562,642, Cl. 29-734.000.
Field, Nathan D.: *See—*
Cottis, Steve G.; Layton, Richard; and Field, Nathan D., 4,563,508, Cl. 525-444.000.
Fielden, Byron G. Device for playing a plurality of games. 4,563,008, Cl. 273-126.00R.
Figgie International Inc.: *See—*
Eskew, William F., 4,563,124, Cl. 415-98.000.
Filter, Willi, to Hauni-Werke Korber & Co. KG. Method and apparatus for transferring cigarettes from two makers into a filter tipping machine. 4,562,916, Cl. 198-432.000.
Finike Italiana Marposs S.p.A.: *See—*
Dall'Aglio, Carlo, 4,562,646, Cl. 33-169.00R.
Danielli, Franco, 4,562,648, Cl. 33-504.000.
Finnern, Hartmut, to Franz Pohl Metall- und Kunststoffwarenfabrik GmbH. Cap closure for a container with pharmaceutical contents. 4,562,932, Cl. 215-249.000.
Finsen S.p.A.: *See—*
Melli, Ilario, 4,563,377, Cl. 428-36.000.
Firestone Tire & Rubber Company, The: *See—*
Gowman, Jerry A., 4,562,730, Cl. 73-150.00R.
Fischbein, Mike: *See—*
Benedek, Herman; and Fischbein, Mike, 4,562,704, Cl. 63-2.000.
Fischer, Helmut: *See—*
Weinfurth, Udo; Fischer, Helmut; and Sauerwald, Walter, 4,562,768, Cl. 89-33.040.
Fishkind, Gregory A.: *See—*
Maroney, Ralf P.; and Fishkind, Gregory A., 4,563,722, Cl. 361-212.000.
Flandin-Blety, Georges. Hydraulic turbine. 4,563,127, Cl. 415-184.000.
Flatau, Karsten, to Huels Aktiengesellschaft. Polyvinyl chloride molding composition, a process for its production, and its use. 4,563,318, Cl. 264-119.000.
Fleck, Harald; Muller, Johannes C. A.; and Hutter, Heinrich, to U.S. Philips Corporation. Helical scan cassette recorder with improved tape threading. 4,563,717, Cl. 360-95.000.
Flensberg, Hermann: *See—*
Salathe, Heinz; Flensberg, Hermann; and Schaetzer, Harry, 4,563,192, Cl. 8-554.000.
Fliege, Hans, to SACHS-Systemtechnik GmbH. Magnetically coded locking system. 4,562,711, Cl. 70-276.000.
Floyd, Robert M. Nail driving tool. 4,562,948, Cl. 227-147.000.
Flynn, Brian P.; Winetzky, Deborah S.; and Evans, George D., to Purex Corporation. Multi-functional laundry product and employment of same during fabric laundering. 4,563,186, Cl. 8-137.000.
Flynn, Hugh G. Method and means for converting graphite to diamond. 4,563,341, Cl. 423-278.000.
Focke & Co.: *See—*
Focke, Heinz, 4,562,686, Cl. 53-374.000.
Focke, Heinz, to Focke & Co. Apparatus for closing folded cardboard boxes. 4,562,686, Cl. 53-374.000.
Folschweiler, Serge, to Bata Industries Limited. Method of producing footwear welt. 4,562,606, Cl. 12-142.0RS.
Folsom, Lawrence R.: *See—*
Bookout, Charles C.; Stotts, Robert E.; Waring, Douglass R.; and Folsom, Lawrence R., 4,563,131, Cl. 417-221.000.
Forberger, Steven C.: *See—*
Deal, Samuel B.; Bartch, Donald W.; and Forberger, Steven C., 4,563,612, Cl. 313-478.000.
Ford Motor Company: *See—*
Huang, Bernard, 4,562,898, Cl. 180-292.000.
Rao, Vemulapalli Durga N.; Wade, Wallace R.; and Aimone, Michael G., 4,562,695, Cl. 60-286.000.
Formanack, James D.: *See—*
Rhemer, Chris C.; and Formanack, James D., 4,563,558, Cl. 219-10.49R.
Foroulis, Zisis A.: *See—*
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Zisis A.; and Baldwin, Francis P., 4,563,506, Cl. 525-354.000.
Forsyth Dental Infirmary for Children: *See—*
Caslavsky, Vera B.; and Gron, Poul, 4,563,351, Cl. 424-151.000.
Dewhirst, Floyd E., 4,563,526, Cl. 546-152.000.
Fortune 100, Inc.: *See—*
Hand, Richard A.; and Watkins, John L., 4,563,005, Cl. 273-26.00R.
Forzatti, Pio; Trifiro, Ferruccio; and Villa, Pierluigi, to Stamicarbon B.V., Licensing Subsidiary of DSM. Process for preparing an oxidation catalyst. 4,563,440, Cl. 502-215.000.
Foster, Randy C., to Dayco Corporation. Belt tensioner and method of making the same. 4,563,167, Cl. 474-135.000.
Fournier, Pascal; and Peraud, Jean-Claude, to Pont-a-Mousson S.A. Method of rapidly solidifying thin metallic strips. 4,562,877, Cl. 164-463.000.
Fox, Charles L., Jr.; Modak, Shanta; and Reemtsma, Keith, to Columbia University in the City of New York, The Trustees of. Injection-resistant materials and method of making same through use of nalidixic acid derivatives. 4,563,485, Cl. 523-113.000.

Fozard, John R.; and Gittos, Maurice W., to Merrell Dow Pharmaceuticals Inc. Treatment of migraine with substituted tropyl benzoate derivatives. 4,563,465, Cl. 514-304.000.
Frangatos, Gerassimos, to Mobil Oil Corporation. Phosphorus-containing reaction products as antiwear and load carrying additives for lubricants. 4,563,299, Cl. 252-49.900.
Frank, Xaver, to S & F Orthopadietechnik GmbH. Holding fixture for exchangeable sole pieces for walking aids. 4,562,851, Cl. 135-78.000.
Franke, Albrecht; Steiner, Gerd; Hofmann, Hans-Peter; Muller, Claus-Dieter; and Teschendorf, Hans-Jurgen, to BASF Aktiengesellschaft. Phthalimides and thienopyrrols as drugs. 4,563,474, Cl. 514-417.000.
Franz Pohl Metall- und Kunststoffwarenfabrik GmbH: *See—*
Finnern, Hartmut, 4,562,932, Cl. 215-249.000.
Frascaroli, Francesco; and Biondi, Carlo, to C.O.M. Cooperativa Operai Metallurgici S.C.R.L. Support foot for furniture, in particular office furniture. 4,562,986, Cl. 248-188.100.
Frattacci, Georges: *See—*
Boudigues, Serge; Frattacci, Georges; and Ponthieux, Alain, 4,563,125, Cl. 415-115.000.
Frauen, Leonard L.; and Kasper, Stanley, to Dravo Corporation. Method for treatment of tar-bearing fuel gas. 4,563,195, Cl. 48-197.00R.
Frederick, Edward C.; and Robinson, John R., to Nike, Inc. Sole with V-oriented flex grooves. 4,562,651, Cl. 36-102.000.
Fredrickson, Howard J., to Cornelius Cannon Inc. Display rack. 4,562,927, Cl. 211-59.200.
Freidinger, Roger M.: *See—*
Bock, Mark G.; Freidinger, Roger M.; Evans, Ben E.; and Hartman, George D., 4,563,451, Cl. 514-219.000.
Frentzel, Richard L.; and Moss, Ernest K., to Celotex Corporation, The. Extraction of polyoxyalkylene surfactants for phenolic foam stabilization. 4,563,499, Cl. 525-404.000.
Frerichs, Udo: *See—*
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,563,042, Cl. 301-37.0ST.
Freytag, Friedrich-Carl; Gediga, Josef; Ruthardt, Rolf; and Wagner, Wolfgang, to Leybold-Heraeus GmbH. Method of and device for controlling the pouring of a melt. 4,562,943, Cl. 222-590.000.
Fribosa AG.: *See—*
Ryser, Urs D., 4,562,999, Cl. 269-137.000.
Friedman, Alexander A.; and Podolak, Peter L., to Syracuse University. Anaerobic contactor. 4,563,281, Cl. 210-614.000.
Frigon, Walter J. Deodorizing fitting for air filters. 4,563,333, Cl. 422-122.000.
Fritsch, Gunter: *See—*
Treber, Willi; Schlenz, Rolf; Fritsch, Gunter; and Hansmann, Joseph, 4,563,374, Cl. 428-31.000.
Fritschi, Edgar: *See—*
Satzinger, Gerhard; Herrmann, Manfred; Fritschi, Edgar; Hartenstein, Johannes; and Bartoszyk, Gerd, 4,563,471, Cl. 514-369.000.
Frobose, James W., to Jasper Corporation, The. Upholstered seat for clean room use. 4,563,041, Cl. 297-452.000.
Fuji Electric Company, Ltd.: *See—*
Miura, Shunji, 4,563,697, Cl. 357-26.000.
Fuji Photo Film Company, Ltd.: *See—*
Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, 4,563,580, Cl. 250-327.200.
Murakoshi, Makoto; and Ando, Kunio, 4,562,831, Cl. 128-6.000.
Shiota, Kazuo, 4,563,083, Cl. 355-38.000.
Fuji Photo Optical Co. Ltd.: *See—*
Murakoshi, Makoto; and Ando, Kunio, 4,562,831, Cl. 128-6.000.
Fuji Seiko Kabushiki Kaisha: *See—*
Sugisaki, Kenzaburo; Onoda, Mutsuro; and Ishimaru, Hajime, 4,562,992, Cl. 251-159.000.
Fuji Xerox Co., Ltd.: *See—*
Noguchi, Akio; Moriguchi, Haruhiko; Koizumi, Norihiko; Ohmori, Takashi; and Inui, Toshiharu, 4,563,691, Cl. 346-76.000.
Fujii, Setsuro; Nakayama, Toyoo; Nunomura, Shigeki; Sudo, Kimio; Watanabe, Shin-ichi; Okutome, Toshiyuki; Sakurai, Yojiro; Kurumi, Masateru; and Aoyama, Takuo, to Torii & Co., Ltd. Amidine compounds. 4,563,527, Cl. 546-169.000.
Fujikawa, Kanichi: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,563,529, Cl. 546-345.000.
Fujikawa, Shoji: *See—*
Nagasaki, Haruki; Fujikawa, Shoji; and Iwanaga, Koichi, 4,563,009, Cl. 273-179.00B.
Fujioka, George S.; and Little, John C., to Dow Chemical Company, The. Preparation of fluoropyridines. 4,563,530, Cl. 546-345.000.
Fujisawa, Koichi; Yokoyama, Akiko; and Suzukamo, Gohfu, to Sumitomo Chemical Company Limited. Lactic acid fermentation products of sunflower seed milk. 4,563,356, Cl. 426-44.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,563,450, Cl. 514-204.000.
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,563,522, Cl. 544-016.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,563,449, Cl. 514-203.000.
Ueda, Ikuo; Kato, Masayuki; and Kasai, Yosiharu, 4,563,453, Cl. 514-222.000.
Ueda, Ikuo; Kato, Masayuki; Nagano, Masanobu; and Akahane, Atsushi, 4,563,455, Cl. 514-241.000.
Ueda, Ikuo; Matsuo, Masaaki; Tsuji, Kiyoshi; and Kato, Masayuki, 4,563,524, Cl. 544-366.000.
Fujisoku Electric Co. Ltd.: *See—*
Niekawa, Yukihisa; and Tsuchiya, Shigeyuki, 4,563,663, Cl. 335-78.000.
Fujita, Tsutomu: *See—*
Sakai, Hiroyuki; Kawakita, Kenji; Fujita, Tsutomu; and Takemoto, Toyoki, 4,563,227, Cl. 148-187.000.
Fujitsu Limited: *See—*
Aoyama, Keizo; Yamauchi, Takahiko; and Seki, Teruo, 4,563,754, Cl. 365-190.000.
Negita, Moriyasu; Fukai, Masao; and Tokoro, Masatoshi, 4,563,692, Cl. 346-76.0PH.
Oritani, Atushi, 4,563,598, Cl. 307-449.000.
Fujiwara, Hiroshi: *See—*
Okado, Terumi; Suda, Seiji; Sugiura, Noboru; Yoshinari, Takashi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; and Fujiwara, Hiroshi, 4,562,813, Cl. 123-425.000.
Fukai, Masao: *See—*
Negita, Moriyasu; Fukai, Masao; and Tokoro, Masatoshi, 4,563,692, Cl. 346-76.0PH.
Fukami, Akira: *See—*
Kitagawa, Junji; Mizuno, Junji; Akita, Shigeyuki; and Fukami, Akira, 4,562,732, Cl. 73-291.000.
Fukasawa, Iko; and Kumagai, Yuji, to Hitachi, Ltd. Electric rotary machine with toroidal windings on an annular stator core. 4,563,606, Cl. 310-208.000.
Fukuda, Kazumasa; and Saito, Seitoku, to TDK Electronics Company Ltd. Magnetic recording medium. 4,563,396, Cl. 428-457.000.
Fukuda, Masaki: *See—*
Takagi, Sadaaki; Yura, Shigetsugu; Fukuda, Masaki; and Oikawa, Yukio, 4,563,387, Cl. 428-300.000.
Fukuhara, Hidetomo: *See—*
Shibata, Fumio; Nagatomo, Katsuaki; Fukuhara, Hidetomo; Marumoto, Gen; and Okudaira, Sadayuki, 4,563,240, Cl. 156-643.000.
Fukui, Katsnori: *See—*
Shigetomi, Yoshirou; Suzuki, Toshi; Fukui, Katsnori; Inoue, Masuo; Nomura, Motoaki; and Miyoshi, Katuyoshi, 4,563,437, Cl. 502-105.000.
Fukui, Shosin; Shinjo, Masayoshi; Okazaki, Yasuko; and Aoyama, Hirokazu, to Daikin Industries, Ltd. Omega-perfluoroalkyl-1,2-epoxyalkane copolymer and use thereof. 4,563,493, Cl. 524-233.000.
Fukushima, Naoto: *See—*
Iwata, Kazuro; Fukushima, Naoto; and Takemura, Toji, 4,562,997, Cl. 267-8.00R.
Fuller, Oliver C., to Fuller, Oliver C. Method of forming tapered tubes. 4,562,950, Cl. 228-170.000.
Fuller, Ray W.: *See—*
Cohen, Marlene L.; and Fuller, Ray W., 4,563,461, Cl. 514-288.000.
Furey, James. High torque expandable socket ratchet wrench. 4,562,757, Cl. 81-63.000.
Furst, Emanuel F.; Lampe, Louis F.; and Woods, William L., to University of Arizona Foundation, The. Methods and apparatus for testing a blood pressure monitoring system of the hydraulic type. 4,562,845, Cl. 128-675.000.
Furukawa, Hideko: *See—*
Shimizu, Tetsuzi; Mizutani, Tadashi; and Furukawa, Hideko, 4,563,359, Cl. 426-96.000.
Furukawa, Toshio, to Kikkoman Corporation. Classifier. 4,563,269, Cl. 209-305.000.
Furuta, Yohichi, to Aisin Seiki Kabushiki Kaisha. Fluid pressure servomotor. 4,562,696, Cl. 60-554.000.
Fushimoto, Hideo, to Canon Kabushiki Kaisha. Electronic apparatus for controlling mechanical and electrical connection to memory means. 4,563,552, Cl. 200-17.00R.
Fushiya, Fusao; and Kaneko, Tetsuhisa, to Makita Electric Works, Ltd. Locking system in a portable electric router. 4,562,872, Cl. 144-134.00D.
Fussi, Fernando: *See—*
Curti, Maria; and Fussi, Fernando, 4,563,478, Cl. 514-561.000.
Futaba Denshi Kogyo K.K.: *See—*
Kukimoto, Hiroshi; Morimoto, Kiyoshi; and Toki, Hitoshi, 4,563,297, Cl. 252-301.40R.
GA Industries Inc.: *See—*
Salina, Louis E.; and Lescovich, Joseph E., 4,562,858, Cl. 137-392.000.
Gago, Ignace; and Coppens, Guillaume, to INTEROX (Societe Anonyme). Food compositions for pigs and processes for the feeding of pigs. 4,563,355, Cl. 426-2.000.
Gaide, Albert: *See—*
Adamek, Joachim; and Gaide, Albert, 4,562,787, Cl. 114-97.000.
Gall, John C., to Sears, Roebuck and Co. Rowing apparatus. 4,563,000, Cl. 272-72.000.
Gang-Nail Systems, Inc.: *See—*
Gottlieb, Robert, 4,562,683, Cl. 52-693.000.
GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,563,575, Cl. 235-492.000.
Garss, Anthony G., to Motorola, Inc. Conical field-of-view radar transmitter system. 4,563,064, Cl. 350-620.000.
Garvey, Paul W.; and Kert, John K., to Union Carbide Canada Limited. Connector assembly for a gas. 4,562,856, Cl. 137-329.300.
Garwood, William E.: *See—*
Chu, Pochen; and Garwood, William E., 4,563,435, Cl. 502-71.000.
Gateway Industries, Inc.: *See—*
Doty, Gerald A.; and Hunter, William E., Jr., 4,562,625, Cl. 24-640.000.

Gearhart Industries, Inc.: *See—*
Bonine, Richard L., 4,562,743, Cl. 73-828.000.

Gebr, Happich GmbH: *See—*
Treber, Willi; Schlenz, Rolf; Fritsch, Gunter; and Hansmann, Joseph, 4,563,374, Cl. 428-31.000.

Gebruder Uhl, GmbH & Co. KG: *See—*
Moller, Rolf; Hirscher, Gerhard; and Bopp, Erich, 4,562,884, Cl. 165-76.000.

Gediga, Josef: *See—*
Freytag, Friedrich-Carl; Gediga, Josef; Ruthardt, Rolf; and Wagner, Wolfgang, 4,562,943, Cl. 222-590.000.

Geffroy, Jean; Hofman, Michel; Moulin, Maurice; and Noel, Jean-Paul, to Commissariat a l'Energie Atomique. Apparatus for transmitting a laser beam. 4,563,567, Cl. 219-121.0LU.

Gen, Tamar G.; and Cydzik, Edward A., to Raychem Corporation. Soldering flux containing a temperature sensitive chemically reactive colorant. 4,563,224, Cl. 148-23.000.

Genentech, Inc.: *See—*
Riggs, Arthur D., 4,563,424, Cl. 435-71.000.

General Electric Company: *See—*
Blake, James E.; and Hajicek, James D., 4,563,740, Cl. 364-414.000.
Haaf, William R.; and Lee, Gim F., Jr., 4,563,500, Cl. 525-99.000.
Hoffman, David M.; Kingsley, Jack D.; and Ehle, Roger S., 4,563,584, Cl. 250-368.000.
Kim, Bang M., 4,563,337, Cl. 423-24.000.
Kuneman, James E.; and Dickson, Joseph F., 4,563,383, Cl. 428-216.000.
Liu, Ping Y., 4,563,502, Cl. 525-146.000.
Liu, Wan-Li; and Rich, Jonathan D., 4,563,514, Cl. 427-54.100.
Lucas, Gary M., 4,563,498, Cl. 524-788.000.
Miller, Russell S.; and Price, Thomas E., 4,562,703, Cl. 62-514.00R.

General Foods Corporation: *See—*
Thomas, Michael E.; Brander, Rita W.; Raap, Teresa A.; and Rankowitz, Marshall M., 4,563,362, Cl. 426-104.000.

General Indicator Corporation: *See—*
Murray, Ledell L., 4,562,657, Cl. 40-518.000.

General Motors Corporation: *See—*
Hitzelberger, Alan L., 4,563,134, Cl. 417-295.000.
Rees, Richard W. A., 4,563,044, Cl. 308-3.800.

General Resource Corporation: *See—*
Pausch, Josef, 4,562,885, Cl. 165-84.000.

General Semiconductor Industries, Inc.: *See—*
Clark, O. Melville, 4,563,720, Cl. 361-56.000.

General Signal Corp.: *See—*
Sibley, Henry C., 4,563,762, Cl. 371-16.000.

Geng, Hans, to Plastik-Maschinenbau GmbH & Co. KG. Extruder for replastifying thermoplastic strips, foils or webs. 4,562,973, Cl. 241-260.100.

Genovese, Frank C.; Lannom, James W.; and Pollack, Joel M., to Xerox Corporation. Gated grid structure for a vacuum fluorescent printing device. 4,563,613, Cl. 313-497.000.

George, Stephen; and George, Thomas H., to Subtex, Inc. Inorganic binder composition and refractory-binder coated fabric compositions prepared therefrom. 4,563,219, Cl. 106-287.190.

George, Thomas H.: *See—*
George, Stephen; and George, Thomas H., 4,563,219, Cl. 106-287.190.

Gerber, Heinz J., to Gerber Scientific Inc. Damping device for rotary stepping motor. 4,563,605, Cl. 310-74.000.

Gerber Scientific Inc.: *See—*
Gerber, Heinz J., 4,563,605, Cl. 310-74.000.

Gerding, William, to Teys Bros. Pty. Ltd. Circular saw for splitting animal carcass. 4,562,614, Cl. 17-23.000.

Gerlach, Pierre: *See—*
Clerc, Guy; Gerlach, Pierre; and Hoet, Roger, 4,563,609, Cl. 313-343.000.

Gerpheide, George E.; Anderson, B. Craig; and Hill, Linda, to Impulse Computer Systems, Inc. Inventory and business management system which accounts for the contents of full and partially filled product containers. 4,563,739, Cl. 364-403.000.

Gervais, Edward H.; Middlekauff, Carle A.; and Wescott, Donald C., to Parker-Hannifin Corporation. High torque low speed hydraulic motor with rotary valving. 4,563,136, Cl. 418-1.000.

Gessford, James D. Method of producing a plastic unitary curved structure with two surfaces and a honeycomb shaped core. 4,563,321, Cl. 264-255.000.

Gessler, Donald A., to Dravo Corporation. Process and apparatus for separating fines from micella streams. 4,563,273, Cl. 210-94.000.

Geymayer, Peter; and Leidl, Erich, to Hoechst Aktiengesellschaft. Aqueous lubricant for saw chains. 4,563,294, Cl. 252-49.300.

Giamba, Rafael: *See—*
Bugallo, Fernando; and Giamba, Rafael, 4,563,003, Cl. 272-118.000.

Gilath, Chaim; and Melman, Haim, to Elscint Ltd. Digital diagnostic imaging system. 4,563,701, Cl. 358-111.000.

Gillery, F. Howard: *See—*
Criss, Russell C.; and Gillery, F. Howard, 4,563,400, Cl. 428-630.000.

Gillessen, Klaus; and Malinowski, Christopher, to Telefunken Electronic GmbH. Arrangement with several phototransistors. 4,563,590, Cl. 250-578.000.

Gillner, Manfred; and Sieckmann, Juergen, to Saint-Gobain Vitrage. Process and device for producing transparent plastic films, sheets or strips of at least two layers, by casting. 4,563,395, Cl. 428-423.300.

Ginnaga, Akihiro; Sakuma, Shin; Niahihara, Tsukasa; Tashiro, Tomitaka; Susumi, Sadao; Kawahara, Tetsuo; and Mizokami, Hiroshi, to Judicial Foundation The Chemosero-Therapeutic Research Institute. Method for purification of filamentous hemagglutinin. 4,563,303, Cl. 260-112.00R.

Ginsberg, Stephen P.; and Faries, Durward I., Jr., to Ginsberg, Stephen P. Intraocular lens. 4,562,600, Cl. 623-6.000.

Gipson, Lamar H.: *See—*
Batina, William P.; and Gipson, Lamar H., 4,562,840, Cl. 128-419.0PT.

Gist-Brocades N.V.: *See—*
Hofman, Petrus S.; Hall, David W. R.; and Jaitly, Kapil D., 4,563,473, Cl. 514-397.000.

Gittos, Maurice W.: *See—*
Fozard, John R.; and Gittos, Maurice W., 4,563,465, Cl. 514-304.000.

Gladstone, Robert S., to Coopers Filters Limited. Air filtration. 4,563,200, Cl. 55-294.000.

Glaxo Group Limited: *See—*
Smith, Gordon C. D., 4,563,523, Cl. 544-024.000.

Glitz, Ekkehard, to Licentia Patent-Verwaltungs-GmbH. Method for preventing "compromising radiation" . 4,563,546, Cl. 178-22.010.

Global Equipment Company: *See—*
Leeds, Richard; Leeds, Bruce; and Leeds, Robert, 4,562,987, Cl. 248-278.000.

Gloge, Detlef C., to AT&T Bell Laboratories. Address coded communication system. 4,563,774, Cl. 455-607.000.

Gobetti, Marino; and Vandoni, Guido, to Edmond Pharma S.r.l. Acetylsalicylic acid thioesters, a process for their preparation and pharmaceutical compositions containing them. 4,563,443, Cl. 514-29.000.

Godard, Dominique, to International Business Machines Corporation. Tone receiver for digital data communication systems. 4,563,681, Cl. 340-825.710.

Goldstein, Michel. Internal combustion circuit breaker. 4,563,556, Cl. 200-82.00B.

Gomez, I. Luis, to Monsanto Company. Plasticizer blend for polyvinyl butyral. 4,563,296, Cl. 252-182.000.

Gomez Parra, Vicente; Gonzalez Hernandez, Pedro; Sanchez Alonso, Felix; and Torres Cebada, Tomas, to Fabrica De Productos Quimicos Y Farmaceuticos Abello, S.A. Process for preparing 5 pyridyl pyridine-2 (1H)-ones. 4,563,528, Cl. 546-261.000.

Gonnord, Jacques; and Guillot, Bernard, to Regie Natonale des Usines Renault. Cylinder head for internal combustion engines with compression ignition. 4,562,806, Cl. 123-270.000.

Gonzalez Hernandez, Pedro: *See—*
Gomez Parra, Vicente; Gonzalez Hernandez, Pedro; Sanchez Alonso, Felix; and Torres Cebada, Tomas, 4,563,528, Cl. 546-261.000.

Goodall, Brian L., to Shell Oil Company. Olefin polymerization process utilizing a combination of selectivity control agents. 4,563,512, Cl. 526-125.000.

Gooi, Hock C.: *See—*
Feizi, Ten; Gooi, Hock C.; and Sinay, Pierre G., 4,563,445, Cl. 514-25.000.

Gorgone, Robert L.; and Dolejs, Anthony H., to Ardac, Inc. Audible security validator. 4,563,771, Cl. 382-7.000.

Goring Kerr Limited: *See—*
Kerr, Bruce G., 4,563,645, Cl. 324-233.000.

Gorker, Michael: *See—*
Carpenter, Tristram; and Gorker, Michael, 4,562,844, Cl. 128-675.000.

Gornowicz, Gerald A.; Tangney, Thomas J.; and Ziemelis, Maris J., to Dow Corning Corporation. Acrylofunctional silicones. 4,563,539, Cl. 556-421.000.

Gosio, Giovanni: *See—*
Arvedi, Giovanni; Gosio, Giovanni; and Piano, Renzo, 4,562,682, Cl. 52-648.000.

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Goto, Hideo: *See—*
Yoshida, Naoki; Goto, Hideo; and Hayashi, Tomoaki, 4,563,272, Cl. 210-93.000.

Goto, Jiro: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,563,449, Cl. 514-203.000.

Gottlieb, Robert, to Gang-Nail Systems, Inc. Hinged metal webs for truss structures. 4,562,683, Cl. 52-693.000.

Govett, Peter J., to Tetra Pharmaceuticals Pty. Limited. Adjustable mount. 4,562,658, Cl. 42-1.0ST.

Gowman, Jerry A., to Firestone Tire & Rubber Company, The. Method and apparatus for dynamic balance detection of a calender strip. 4,562,730, Cl. 73-150.00R.

Graham, Charles H., III. Outboard motor assembly locking system. 4,562,707, Cl. 70-58.000.

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Grain Processing Corporation: *See—*
Witt, Paul R., Jr.; and Krone, Pamela A., 4,563,357, Cl. 426-46.000.

Gray, Larry J.: *See—*
Widmer, Gerald L.; and Gray, Larry J., 4,562,968, Cl. 239-655.000.

Green, James B. P., Jr., to Southern Tool Company. Tray carton end panel folding and sealing assembly. 4,562,687, Cl. 53-383.000.

Green, Jerry T., to Tufco Corporation. Hook bar clamp assembly for tufting machine. 4,562,781, Cl. 112-79.00R.

Greenwood, Mark E., to Owens-Corning Fiberglas Corporation. Inside protector for bottom wall portion of underground tank beneath fill tube. 4,562,935, Cl. 220-85.00R.

Greenwood, William S.; and Weinmann, Karl, to Thomas & Betts Corporation. Device for flat multiconductor cable connection. 4,563,050, Cl. 339-99.00R.

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Dandliker, Rene , 4,563,091, Cl. 356-349.000.

Gretsch-Unitas GmbH: *See—*
von Resch, Julius M., 4,562,667, Cl. 49-176.000.

Griffin, Paul G.; and Lam, William Y., to Edwin Cooper, Inc. Sulfurized olefin process. 4,563,302, Cl. 252-45.000.

Grimmer, John E. Compound turbocharger system for an internal combustion engine. 4,563,132, Cl. 417-247.000.

Grinder, William H., to Minnesota Mining and Manufacturing Company. Intraocular lens. 4,562,599, Cl. 623-6.000.

Groeger, Theodore O. Flexible cylinder engine. 4,562,802, Cl. 123-200.000.

Grohe, Klaus; Petersen, Uwe; and Kuck, Karl-Heinz, to Bayer Aktiengesellschaft. Microbicidal agents based on quinolonecarboxylic acid. 4,563,459, Cl. 514-254.000.

Grohe, Klaus: *See—*
Petersen, Uwe; Grohe, Klaus; and Kuck, Karl-Heinz, 4,563,448, Cl. 514-187.000.

Gron, Poul: *See—*
Caslavsky, Vera B.; and Gron, Poul, 4,563,351, Cl. 424-151.000.

Gros, Lawrence J. Video game security guard apparatus. 4,562,708, Cl. 70-94.000.

Grosjean, Jean-Claude: *See—*
Guenard, Claude; Zanetta, Hugues; and Grosjean, Jean-Claude, 4,562,961, Cl. 239-79.000.

Grothe, Wolfgang; and Weible, Robert, to Lechler GmbH & Co. KG. Multi-nozzle head. 4,562,967, Cl. 239-436.000.

Gruber, Robert J.: *See—*
Knapp, John F.; Gruber, Robert J.; and Bolte, Steven B., 4,563,086, Cl. 355-14.00D.

Grumman Aerospace Corporation: *See—*
Boles, Sol, 4,563,686, Cl. 343-17.000.

Grund, Christian: *See—*
Lemelson, Jerome H.; and Grund, Christian, 4,563,770, Cl. 381-51.000.

Grunewald, Peter; and Schlomer, Heinz-Jurgen, to Wegmann & Co. GmbH. Ammunition bunker in which the shells are inserted in individual storage tubes. 4,562,765, Cl. 89-34.000.

Grzemski, Chester F.: *See—*
Lecinski, Frank H., Jr.; and Grzemski, Chester F., 4,562,930, Cl. 215-31.000.

GTE Communications Products Corporation: *See—*
Berger, Eric V., 4,563,687, Cl. 343-882.000.

GTE Laboratories Incorporated: *See—*
Baum, Peter N., 4,563,656, Cl. 330-308.000.

GTE Products Corporation: *See—*
Smith, Todd R., 4,562,681, Cl. 52-648.000.

Guenard, Claude; Zanetta, Hugues; and Grosjean, Jean-Claude, to Institut de Recherches de la Siderurugie Francaise. Nozzle end-piece for hot guniting. 4,562,961, Cl. 239-79.000.

Guest, Leonard E.: *See—*
Kelly, John H.; and Guest, Leonard E., 4,563,146, Cl. 425-256.000.

Guillot, Bernard: *See—*
Gonnord, Jacques; and Guillot, Bernard, 4,562,806, Cl. 123-270.000.

Gullman, Larry S., to RCA Corporation. Device for maintaining a moving curved surface a constant distance from a stationary point. 4,563,088, Cl. 356-244.000.

Gunnarsson, Lennart K.; and Nilsson, Rolf O., to Boliden Aktibolag. Method for producing basic aluminum sulphate (III). 4,563,342, Cl. 423-556.000.

Gustavsson, Bengt; Curelaru, Johan; and Linder, Lars E. Device for sterile storage of a catheter. 4,563,176, Cl. 604-163.000.

Haaf, William R.; and Lee, Gim F., Jr., to General Electric Company. Polyphenylene ether compositions with high impact strength and improved moldability. 4,563,500, Cl. 525-99.000.

Haarmann & Reimer GmbH: *See—*
Emberger, Roland; Kopsel, Manfred; Bruning, Jurgen; Hopp, Rudolf; and Sand, Theodor, 4,563,365, Cl. 426-534.000.

Haas, Roland: *See—*
Brandenstein, Manfred; Haas, Roland; and Hans, Rudiger, 4,563,099, Cl. 384-458.000.

Haasen, Nicolaas F.: *See—*
Plantema, Otto G.; Jetten, Arnold G. M.; and Haasen, Nicolaas F., 4,563,308, Cl. 260-239.30A.

Habecker, John W.: *See—*
Black, Charles E., III; and Habecker, John W., 4,563,551, Cl. 200-16.00C.

Habenstein, Klaus; and Kohl, Helmut, to Hoechst Aktiengesellschaft. Method for determining the presence of endohydrolase in a liquid and composition therefor. 4,563,421, Cl. 435-18.000.

Hackforth GmbH & Co. KG: *See—*
Walter, Jurgen; Falz, Ulrich; and Lunke, Manfred, 4,563,166, Cl. 464-96.000.

Haddon, William F.: *See—*
Soderstrom, Edwin L.; Haddon, William F.; and Myerson, Joel, 4,563,348, Cl. 424-84.000.

Haden Drysys International Limited: *See—*
Rothon, Stephen; and Collis, Ronald, 4,563,274, Cl. 210-101.000.

Haferl, Peter E., to RCA Corporation. S-Corrected deflection circuit. 4,563,618, Cl. 315-370.000.

Haga, Masakatsu: *See—*
Tateishi, Hiroshi; and Haga, Masakatsu, 4,563,225, Cl. 148-31.550.

Hager, Nathaniel E., Jr.; to Armstrong World Industries, Inc. High-efficiency task heater. 4,563,572, Cl. 219-347.000.

Haghiri-Tehrani, Yahya: *See—*
Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,563,575, Cl. 235-492.000.

Hagiwara, Tatsuo; and Nagano, Shozi, to Kawasaki Jukogyo Kabushiki Kaisha. Micropulverizer. 4,562,972, Cl. 241-260.000.

Hahn, Helmut: *See—*
Weiss, Hans J.; Rammler, Roland; Hahn, Helmut; and Dreher, Ingo, 4,563,264, Cl. 208-11.00R.

Hahnke, Manfred; Mohr, Reinhard; and Hohmann, Kurt, to Hoechst Aktiengesellschaft. Process for dyeing, in the gel state, fiber material composed of wet spun acrylonitrile polymers using dyes with two basic groups. 4,563,191, Cl. 8-538.000.

Haimberger, Hans G.: *See—*
Carmichael, D. Murphy; and Haimberger, Hans G., 4,563,364, Cl. 426-510.000.

Hajicek, James D.: *See—*
Blake, James E.; and Hajicek, James D., 4,563,740, Cl. 364-414.000.

Hajos, Gyorgy: *See—*
Ezer, Elemer; Szporny, Laszlo; Hajos, Gyorgy; Szantay, Csaba; Keve, Tibor; Fekete, Gyorgy; Megyeri, Gabor; Acs, Tibor; and Bolcskei, Hedvig, 4,563,464, Cl. 514-299.000.

Hale, John M., to Orbisphere Corporation Wilmington, Succursale de Collonge-Bellerive. Electroanalytical method and sensor for hydrogen determination. 4,563,249, Cl. 204-1.00T.

Hall, David W. R.: *See—*
Hofman, Petrus S.; Hall, David W. R.; and Jaitly, Kapil D., 4,563,473, Cl. 514-397.000.

Hall, Kenneth R.; and Holste, James C., to Precision Measurement, Inc. Method and apparatus for measuring the flowrate of compressible fluids. 4,562,744, Cl. 73-861.020.

Halliburton Company: *See—*
Borchardt, John K., 4,563,292, Cl. 252-8.55R.
Penny, Glenn S., 4,563,291, Cl. 252-8.55R.

Halvorsen, Robert M.; and Helmrich, William F., to Ex-Cell-O Corporation. Variable area means for air systems of air blast type fuel nozzle assemblies. 4,562,698, Cl. 60-740.000.

Hamamichi, Yoshihiro, to Tokyo Electric Co., Ltd. Ribbon-position switching device for printer. 4,563,100, Cl. 400-208.000.

Hamanaka, Katsuhiko: *See—*
Yoshida, Koichi; Iwaisako, Toshiyuki; Maiamoto, Junzo; Hamanaka, Katsuhiko; and Komaki, Hajime, 4,563,536, Cl. 549-368.000.

Hamilton, Alfred S.: *See—*
Bohannon, William D., Jr.; Brent, Herbert E.; Hamilton, Alfred S.; and Kinard, Michael D., 4,563,540, Cl. 174-23.00R.

Hammer, Klaus-Dieter; Kindl, Erwin; Luchterhand, Heinz; and Winter, Hermann, to Hoechst Aktiengesellschaft. Tubular food casing having a coating on its inside surface, a process for its manufacture and use as a sausage skin. 4,563,376, Cl. 428-36.000.

Hammond, George K., to Owens-Corning Fiberglas Corporation. Glass fiber reinforced resin tank with particular joint structure. 4,562,934, Cl. 220-75.000.

Hammond, Milton L.: *See—*
Chang, Michael N.; Hammond, Milton L.; Jensen, Norman P.; and Zambias, Robert A., 4,563,476, Cl. 514-459.000.

Hammond, Raymond M.: *See—*
Adinolfi, Robert G.; Barlow, Melvin C.; and Hammond, Raymond M., 4,563,239, Cl. 156-639.000.

Hanaoka, Tadashi, to Citizen Watch Company Limited. Temperature measuring system. 4,563,748, Cl. 364-557.000.

Hand, Richard A.; and Watkins, John L., to Fortune 100, Inc. Apparatus for evaluating baseball pitching performance. 4,563,005, Cl. 273-26.00R.

Hannen, Reiner W., to MSK -Verpackungs-Systeme Gesellschaft Mit Beschrankter Haftung. Method of and apparatus for shrinking an envelope around a stack of goods. 4,562,689, Cl. 53-434.000.

Hans, Rudiger: *See—*
Brandenstein, Manfred; Haas, Roland; and Hans, Rudiger, 4,563,099, Cl. 384-458.000.

Hansen, Guenter: *See—*
Bergmann, Udo; Hansen, Guenter; Lach, Dietrich; and Zeidler, Georg, 4,563,520, Cl. 534-678.000.

Hansmann, Joseph: *See—*
Treber, Willi; Schlenz, Rolf; Fritsch, Gunter; and Hansmann, Joseph, 4,563,374, Cl. 428-31.000.

Hanssler, Gerd: *See—*
Kramer, Wolfgang; Weissmuller, Joachim; Berg, Dieter; Reinecke, Paul; Hanssler, Gerd; and Brandes, Wilhelm, 4,563,447, Cl. 514-184.000.

Hara, Hajime: *See—*
Otsuki, Yutaka; Araki, Yoshihiko; Omika, Hiroyoshi; Hara, Hajime; and Aoyama, Kazuho, 4,563,501, Cl. 525-108.000.

Hara, Kenji; and Iijima, Eiji, to KAO Corporation. Hair grower for animals. 4,563,353, Cl. 424-195.100.

Hargassner, Reinhard; and Scheinecker, Alois, to Voest-Alpine Aktiengesellschaft. Apparatus for continuous casting of bars of different sizes. 4,562,876, Cl. 164-459.000.

Harmsen, Lothar: *See—*
Bick, Klaus; Harmsen, Lothar; Lachenmayer, Wilhelm; and Zieschang, Jurgen, 4,563,766, Cl. 373-72.000.

Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., to Allied Corporation. Coated extended chain polyolefin fiber. 4,563,392, Cl. 428-394.000.

Harrison, Anthony W., to Lucas Industries Public Limited Company. Vehicle suspension systems. 4,563,022, Cl. 280-708.000.

Hartelius, Mark E.; and Jacobs, Randall J., to CPG Products Corp. Toy electric oven. 4,563,573, Cl. 219-405.000.

Hartenstein, Johannes: *See*—
Satzinger, Gerhard; Herrmann, Manfred; Fritschi, Edgar; Hartenstein, Johannes; and Bartoszyk, Gerd, 4,563,471, Cl. 514-369.000.

Hartevelt, Wim: *See*—
Vandervort, James W.; and Hartevelt, Wim, 4,563,154, Cl. 434-87.000.

Hartman, George D.: *See*—
Bock, Mark G.; Freidinger, Roger M.; Evans, Ben E.; and Hartman, George D., 4,563,451, Cl. 514-219.000.

Hartman, Woody W. Sprinkling system and valve therefor. 4,562,962, Cl. 239-200.000.

Harwig, Hendrik A.: *See*—
Pelgrom, Marcellinus J. M.; Slob, Arie; Harwig, Hendrik A.; and Slotboom, Jan W., 4,563,752, Cl. 364-900.000.

Harwood, Michael E.: *See*—
Carroll, Michael W.; Harwood, Michael E.; and Aldag, John H., 4,562,678, Cl. 52-303.000.

Hasegawa, Norio: *See*—
Tanaka, Toshihiko; Hasegawa, Norio; and Hayashida, Tetsuya, 4,563,241, Cl. 156-643.000.

Hasegawa, Yoshiei. Fixed probe board. 4,563,640, Cl. 324-158.00P.

Hashikawa, Atsushi: *See*—
Nakagawa, Mitsuru; Kondo, Yasuo; and Hashikawa, Atsushi, 4,562,957, Cl. 237-12.30R.

Hashimoto Denki Co., Ltd.: *See*—
Nagasawa, Kiyoshi; Itoh, Eiichi; and Kato, Sadao, 4,562,650, Cl. 34-149.000.

Hasl, Siegfried C.; and Jahnel, Werner F. F. Blow molding label transferring apparatus. 4,563,148, Cl. 425-503.000.

Hasler AG: *See*—
Ulrich, Bohdan, 4,563,375, Cl. 428-35.000.

Hastings, John C.: *See*—
Ericsen, Bret; Hastings, John C.; Murphy, Desmond L.; and Jansen, Scott, 4,563,564, Cl. 219-121.0LJ.

Hastings, Nova C.: *See*—
Bruggeman, Paul; and Hastings, Nova C., 4,563,728, Cl. 362-206.000.

Hattori, Hiroyuki, to Shimadzu Corporation. Scintillation camera. 4,563,583, Cl. 250-363.00S.

Hauni-Werke Korber & Co. KG: *See*—
Filter, Willi, 4,562,916, Cl. 198-432.000.
Luders, Elke; and Petersen, Kurt-Eckhard, 4,563,228, Cl. 156-64.000.

Hauser, Ludwig: *See*—
Wanke, Wilhelm; Hauser, Ludwig; and Steiner, Karl, 4,563,245, Cl. 162-358.000.

Hausermann, Walter: *See*—
Laanio, Verena; von Orelli, Marcus; and Hausermann, Walter, 4,563,457, Cl. 514-245.000.

Hawley, Gil R.: *See*—
Masino, Albert P.; Cowan, Kiplin D.; and Hawley, Gil R., 4,563,511, Cl. 526-119.000.

Hayakawa, Hideo, to Tokyo Elite Co., Ltd. Method of and system for threatening pests. 4,563,759, Cl. 367-139.000.

Hayashi, Asao: *See*—
Oinoue, Kenichi; Aoki, Masahiro; Ida, Masatoshi; Nakamura, Junichi; and Hayashi, Asao, 4,563,705, Cl. 358-227.000.

Hayashi, Tomoaki: *See*—
Yoshida, Naoki; Goto, Hideo; and Hayashi, Tomoaki, 4,563,272, Cl. 210-93.000.

Hayashida, Tetsuya: *See*—
Tanaka, Toshihiko; Hasegawa, Norio; and Hayashida, Tetsuya, 4,563,241, Cl. 156-643.000.

Hayat, Eric S.; and de Ferran, Max P. Method and apparatus for forming complex photographic images from a set of object-figures. 4,563,084, Cl. 355-40.000.

Haya, George E.; Young, Richard K.; and Nielsen, Richard H., to Phillips Petroleum Company. Catalytic cracking unit. 4,563,334, Cl. 422-140.000.

Health Products Research, Inc.: *See*—
Stoy, Vladimir A.; and Stoy, George P., 4,563,182, Cl. 604-285.000.

Hedstrom Corporation: *See*—
Cunard, Joel C., 4,562,893, Cl. 180-6.500.

Heine, Heinrich: *See*—
Kohler, Peter; and Heine, Heinrich, 4,563,220, Cl. 106-288.00B.

Heinemann, Otto: *See*—
Schroder, Norbert; Milewski, Gunter; Neusser, Manfred; Dorr, Hermann; Supp, Armin; Rasch, Heinz; Heinemann, Otto; Baldus, Heinz-Dieter; and Manthey, Harald, 4,563,271, Cl. 209-427.000.

Heinzmann, Ulrich; and Braun, Werner, to Swiss Aluminum Ltd. Process and device for controlling a crust breaking facility. 4,563,255, Cl. 204-67.000.

Heise Mfg., Inc.: *See*—
Blackston, Michael D., 4,562,665, Cl. 49-44.000.

Heller, Jerrold A.; and Paik, Woo H., to M/A-COM Linkabit, Inc. Video signal scrambling and descrambling systems. 4,563,702, Cl. 358-119.000.

Helmrich, William F.: *See*—
Halvorsen, Robert M.; and Helmrich, William F., 4,562,698, Cl. 60-740.000.

Hemmer, Valentine J., to Allied Corporation. Contact assembly for an electrical connector. 4,563,055, Cl. 339-262.00R.

Henderson, Pieter M., to Schmitt, Karl-Heinz, a part interest. Application of surfacing sheet to panels, columns and the like. 4,563,233, Cl. 156-479.000.

Henk, Hermann, to Bayer Aktiengesellschaft. Fibre-reactive fluorothriazine-group-containing azo dyestuffs. 4,563,518, Cl. 534-638.000.

Henkel Corporation: *See*—
Sudderth, R. Brantley; Sierakoski, Joseph M.; and Lewis, Roy G., 4,563,256, Cl. 204-108.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Sustmann, Scarlet, 4,563,398, Cl. 428-542.800.

Henlan, Inc.: *See*—
Tanner, Curtis J.; Bender, Richard E.; Simson, Anton K.; and McCutchen, Hugh, Jr., 4,563,391, Cl. 428-365.000.

Henrick, Clive A.: *See*—
Lee, Shy-Fuh; and Henrick, Clive A., 4,563,310, Cl. 260-941.000.

Hensler, Adolf, to Koflach Sportgerate Gesellschaft m.b.H. Shoe or boot. 4,562,652, Cl. 36-102.000.

Hepar Chimie S.A.: *See*—
Curti, Maria; and Fussi, Fernando, 4,563,478, Cl. 514-561.000.

Herbstler, Horst-Dieter; Terzian, Rouben T.; and Dyson, Lewis R., to Marvin Glass & Associates. Stand up doll. 4,563,163, Cl. 446-354.000.

Hercules Incorporated: *See*—
Messer, Wayne R., 4,563,413, Cl. 430-281.000.

Hermann Berstorff Maschinenbau GmbH: *See*—
Koch, Klaus; and Syrbius, Gerhard, 4,563,243, Cl. 162-18.000.

Herrmann, Manfred: *See*—
Satzinger, Gerhard; Herrmann, Manfred; Fritschi, Edgar; Hartenstein, Johannes; and Bartoszyk, Gerd, 4,563,471, Cl. 514-369.000.

Hert, Marius; and Dufosse, Philippe, to Societe Chimique des Charbonnages, S.A. Propylene and ethylene/α-olefin copolymer combinations applicable to the manufacture of mono-oriented yarns. 4,563,504, Cl. 525-240.000.

Hertzenberg, Elliot P.: *See*—
McLaughlin, John R.; and Hertzenberg, Elliot P., 4,563,441, Cl. 502-410.000.

Hewlett-Packard Company: *See*—
Merrick, Edwin B., 4,563,655, Cl. 330-285.000.
Snook, Matthew L.; McDermid, John E.; and Nicolay, William J., 4,563,636, Cl. 324-66.000.

Heynau, Hans A.; and Hoover, Charles F., to United Technologies Corporation. Spatially modulated, laser aimed sighting system for a ballistic weapon. 4,562,769, Cl. 89-41.060.

Higginson, Marvin: *See*—
Earley, Ronald; and Higginson, Marvin, 4,562,850, Cl. 135-66.000.

Higuchi, Yasuo: *See*—
Kitagawa, Yozo; Nishioka, Akinori; Higuchi, Yasuo; Tsutsumi, Tadahiko; Yamaguchi, Takashi; and Kato, Tadashi, 4,563,393, Cl. 428-412.000.

Hill, Howard D., to Varian Associates, Inc. Geometric compensation of magnetic susceptibility perturbations in an RF spectrometer. 4,563,648, Cl. 324-318.000.

Hill, Linda: *See*—
Gerpheide, George E.; Anderson, B. Craig; and Hill, Linda, 4,563,739, Cl. 364-403.000.

Hill, Robert L.: *See*—
Walter, Karl H.; and Hill, Robert L., 4,563,315, Cl. 264-8.000.

Hills, Kenneth B.; and Cihlar, Vlasta, to Animal Toy Imports, Inc. Toy convertible among multiple configurations. 4,563,159, Cl. 446-74.000.

Hilti Aktiengesellschaft: *See*—
Hunger, Josef; Donner, Hans-Christian; and Neumaier, Anton, 4,563,013, Cl. 279-64.000.

Hing, Peter: *See*—
Seddon, Richard J.; Parker, Keith E.; and Hing, Peter, 4,563,214, Cl. 75-234.000.

Hinson, Neil R.: *See*—
Taylor, Richard J.; Kellar, Paul R. N.; and Hinson, Neil R., 4,563,703, Cl. 358-160.000.

Hirai, Koji: *See*—
Nakamura, Tomoaki; Nakane, Keiichi; Nakanishi, Hiroaki; and Hirai, Koji, 4,563,737, Cl. 364-200.000.

Hirai, Masaru: *See*—
Hisamoto, Iwao; Maeda, Chiaki; Esaka, Takasige; and Hirai, Masaru, 4,563,287, Cl. 252-2.000.

Hirakami, Kiyomi; and Murakami, Kosuke, to Mazda Motor Corporation. Automobile rear body structure. 4,563,035, Cl. 296-195.000.

Hiramura, Kazuo: *See*—
Nagai, Shunichi; and Hiramura, Kazuo, 4,563,578, Cl. 250-221.000.

Hirata, Atsumi, to Victor Company of Japan, Ltd. Rotary record having a spiral track with a video signal and two audio signals recorded thereon. 4,563,709, Cl. 358-342.000.

Hirol, Kazuo; and Ito, Kojiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Process controlling method and system involving separate determination of static and dynamic compensation components. 4,563,735, Cl. 364-165.000.

Hirose, Mutsuo, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle seat assembly. 4,563,038, Cl. 297-243.000.

Hirota, Akira, to Victor Company of Japan, Ltd. Noise reduction circuit for a video signal. 4,563,704, Cl. 358-167.000.

Hirscher, Gerhard: *See*—
Moller, Rolf; Hirscher, Gerhard; and Bopp, Erich, 4,562,884, Cl. 165-76.000.

Hisamoto, Iwao; Maeda, Chiaki; Esaka, Takasige; and Hirai, Masaru, to Daikin Kogyo Co., Ltd. Aqueous fire-extinguishing composition. 4,563,287, Cl. 252-2.000.

Hitachi Automotive Eng. Co., Ltd.: *See*—
Mashino, Keiichi; Naoi, Keigo; and Kobayashi, Kunio, 4,563,631, Cl. 322-33.000.

Hitachi, Ltd.: *See*—
Arai, Ikuya; Murata, Toshinori; and Kazumi, Masafumi, 4,563,654, Cl. 330-277.000.
Asano, Michio; and Masaki, Akira, 4,563,601, Cl. 307-475.000.
Atsumi, Akira; Senshu, Takao; Oguni, Kensaku; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,562,700, Cl. 62-174.000.
Fukasawa, Iko; and Kumagai, Yuji, 4,563,606, Cl. 310-208.000.
Kikuchi, Hiroshi; Tomizawa, Akira; and Oka, Hitoshi, 4,563,217, Cl. 106-1.230.
Kobayashi, Kazuo; Asano, Seijiro; Nakamura, Mituo; Ida, Daijiro; Asabuki, Hiroshi; and Ashiwara, Hiromoto, 4,563,126, Cl. 415-119.000.
Kobayashi, Tohru; and Nakamura, Kazuo, 4,563,600, Cl. 307-455.000.
Kuroda, Takao; Kajimura, Takashi; Kashiwada, Yasutoshi; Chinone, Naoki; Ouchi, Hirobumi; and Ohtoshi, Tsukuru, 4,563,764, Cl. 372-45.000.
Kushima, Tadao; Soga, Tasao; and Suzuki, Takaya, 4,562,637, Cl. 29-572.000.
Maeda, Takeshi; Shigematsu, Kazuo; Takasago, Masahiro; Mizoguchi, Yasumitsu; Tsutsumi, Zenji; Tsunoda, Yoshito; and Uno, Motoo, 4,563,760, Cl. 369-44.000.
Makino, Kazuhiro, 4,563,030, Cl. 294-81.400.
Mashino, Keiichi; Naoi, Keigo; and Kobayashi, Kunio, 4,563,631, Cl. 322-33.000.
Matsuka, Shigemichi, 4,563,623, Cl. 318-311.000.
Mokuya, Kinji; Tsushima, Isao; and Sakamoto, Masakatsu, 4,563,112, Cl. 406-11.000.
Munakata, Chusuke; and Honma, Noriaki, 4,563,642, Cl. 324-158.00D.
Nakamura, Tomoaki; Nakane, Keiichi; Nakanishi, Hiroaki; and Hirai, Koji, 4,563,737, Cl. 364-200.000.
Nishimura, Yutaka; Kuroiwa, Hiroshi; Kirisawa, Tadashi; and Oyama, Yoshishige, 4,562,731, Cl. 73-202.000.
Nonaka, Yasuhiko; Inoue, Eisuke; Shidara, Keiichi; and Tanioka, Kenkichi, 4,563,611, Cl. 313-366.000.
Okado, Terumi; Suda, Seiji; Sugiura, Noboru; Yoshinari, Takashi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; and Fujiwara, Hiroshi, 4,562,813, Cl. 123-425.000.
Shibata, Fumio; Nagatomo, Katsuaki; Fukuhara, Hidetomo; Marumoto, Gen; and Okudaira, Sadayuki, 4,563,240, Cl. 156-643.000.
Takano, Yoshiya; and Hoshi, Yoshikazu, 4,562,815, Cl. 123-450.000.
Tanaka, Toshihiko; Hasegawa, Norio; and Hayashida, Tetsuya, 4,563,241, Cl. 156-643.000.
Tarutani, Yoshinobu; and Nishino, Toshikazu, 4,563,695, Cl. 357-5.000.
Yabuuchi, Shigeru; Endo, Takeyuki; Kodama, Kazuyuki; and Ide, Jushi, 4,563,749, Cl. 364-702.000.
Yoshida, Kenichi; Watanabe, Takao; and Kiguchi, Takashi, 4,563,746, Cl. 364-492.000.

Hitchens, Peter B. Lubricant-applying safety razor. 4,562,644, Cl. 30-41.000.

Hitzelberger, Alan L., to General Motors Corporation. Cylinder head with pressure regulator valve. 4,563,134, Cl. 417-295.000.

Hobbs, C. Carey: *See*—
Baigas, Joseph F., Jr.; and Hobbs, C. Carey, 4,562,675, Cl. 52-202.000.

Hodson, Harold F.: *See*—
Batchelor, John F.; Hodson, Harold F.; and Selway, John W. T., 4,563,468, Cl. 514-337.000.

Hoechst Aktiengesellschaft: *See*—
Clauss, Karl; Linkies, Adolf; and Reuschling, Dieter, 4,563,521, Cl. 544-2.000.
Geymayer, Peter; and Leidl, Erich, 4,563,294, Cl. 252-49.300.
Habenstein, Klaus; and Kohl, Helmut, 4,563,421, Cl. 435-18.000.
Hahnke, Manfred; Mohr, Reinhard; and Hohmann, Kurt, 4,563,191, Cl. 8-538.000.
Hammer, Klaus-Dieter; Kindl, Erwin; Luchterhand, Heinz; and Winter, Hermann, 4,563,376, Cl. 428-36.000.
Pauly, Hans-Erwin; Kapmeyer, Wolfgang; and Seitz, Ulrich, 4,563,431, Cl. 436-533.000.
Porrmann, Herbert; Seifried, Walter; Klenk, Ludwig; and Stenger, Karl, 4,563,231, Cl. 156-90.000.
Rentel, Heinz; and Papenfuhs, Theodor, 4,563,533, Cl. 548-164.000.
Staab, Rudolf; and Russow, Jurgen, 4,563,261, Cl. 204-290.00R.
Staab, Rudolf; and Russow, Jurgen, 4,563,261, Cl. 204-290.00R.

Hoekstra, Joop F.: *See*—
Doucette, Eugene F.; Richardson, Donald; and Hoekstra, Joop F., 4,562,782, Cl. 112-104.000.

Hoelzel, Omar F. Method and apparatus for extracting meat from crab cores. 4,562,616, Cl. 17-46.000.

Hoet, Roger: *See*—
Clerc, Guy; Gerlach, Pierre; and Hoet, Roger, 4,563,609, Cl. 313-343.000.

Hofer, Bruce E., to Audio Precision, Inc. Dual-stage filter with feedback. 4,563,652, Cl. 330-107.000.

Hoffman, David M.; Kingsley, Jack D.; and Ehle, Roger S., to General Electric Company. Solid state detector. 4,563,584, Cl. 250-368.000.

Hofman, Michel: *See*—
Geffroy, Jean; Hofman, Michel; Moulin, Maurice; and Noel, Jean-Paul, 4,563,567, Cl. 219-121.0LU.

Hofman, Petrus S.; Hall, David W. R.; and Jaitly, Kapil D., to Gist-Brocades N.V. Compositions and method for inhibition of sebum synthesis. 4,563,473, Cl. 514-397.000.

Hofmann, Hans-Peter: *See*—
Franke, Albrecht; Steiner, Gerd; Hofmann, Hans-Peter; Muller, Claus-Dieter; and Teschendorf, Hans-Jurgen, 4,563,474, Cl. 514-417.000.

Hofmann, Rudolf; and Magdhuber, Kurt, to Isartaler Schraubenkompressoren GmbH. Compressor system with oil separation. 4,563,138, Cl. 418-97.000.

Hofsass, Peter. Temperature and/or current sensitive electrical switch. 4,563,667, Cl. 337-349.000.

Hogohaya Chemical Co., Ltd.: *See*—
Suzuki, Nobuo; Kurahashi, Takeo; Motohashi, Katsuichi; Sugiyama, Genpei; and Sakai, Takayuki, 4,563,409, Cl. 430-106.000.

Hohmann, Kurt: *See*—
Hahnke, Manfred; Mohr, Reinhard; and Hohmann, Kurt, 4,563,191, Cl. 8-538.000.

Holleron, William K., Jr. Removable and foldable stand for bicycles. 4,563,016, Cl. 280-293.000.

Hollner, Karl O. S. Ice-hockey stick having bevelled lower surface. 4,563,006, Cl. 273-67.00A.

Hollowell, William, to American Safety Equipment Corp. Easily assembled seat belt retractor and method. 4,562,977, Cl. 242-107.40D.

Holly, Henry M., III: *See*—
Cooper, Glenn D.; Rowe, Charles M.; and Holly, Henry M., III, 4,563,607, Cl. 310-260.000.

Holm, Per T. Tube cleaner. 4,562,886, Cl. 165-94.000.

Holmes, Terry L.: *See*—
Anderson, James E.; and Holmes, Terry L., 4,562,615, Cl. 17-32.000.

Holste, James C.: *See*—
Hall, Kenneth R.; and Holste, James C., 4,562,744, Cl. 73-861.020.

Hombak Maschinenfabrik GmbH & Co. KG.: *See*—
Krocher, Harro; Krautzenberger, Dieter; Sybertz, Hans; and Becker, Uwe, 4,562,873, Cl. 144-356.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hirose, Mutsuo, 4,563,038, Cl. 297-243.000.
Nishimura, Sadanori; Maezono, Masakazu; and Ishikawa, Keiichi, 4,562,905, Cl. 192-0.032.

Honeywell GmbH: *See*—
Lehle, Erhard, 4,563,634, Cl. 324-61.00R.

Honeywell Inc.: *See*—
Betzold, Robert A., 4,563,597, Cl. 307-360.000.

Honeywell Information Systems Inc.: *See*—
Boudreau, Daniel A.; Salas, Edward R.; and Zelley, Richard C., 4,563,736, Cl. 364-200.000.

Honma, Noriaki: *See*—
Munakata, Chusuke; and Honma, Noriaki, 4,563,642, Cl. 324-158.00D.

Hoover, Charles F.: *See*—
Heynau, Hans A.; and Hoover, Charles F., 4,562,769, Cl. 89-41.060.

Hopkins, P. Donald; Nevitt, Thomas D.; and Unmuth, Eugene E., to Standard Oil Company (Indiana). Catalytic dewaxing process. 4,563,266, Cl. 208-110.000.

Hopkins, Ronald M.: *See*—
Wijayarathna, Bandula; and Hopkins, Ronald M., 4,563,181, Cl. 604-280.000.

Hopp, Rudolf: *See*—
Emberger, Roland; Kopsel, Manfred; Bruning, Jurgen; Hopp, Rudolf; and Sand, Theodor, 4,563,365, Cl. 426-534.000.

Hoppe, Joachim; and Haghiri-Tehrani, Yahya, to GAO Gesellschaft fur Automation und Organisation mbH. Identification card having an embedded IC module. 4,563,575, Cl. 235-492.000.

Horiba, Ltd.: *See*—
Tanaka, Masaru, 4,563,588, Cl. 250-458.100.

Horig, Jurgen, to Veb Kombinat Nagema. Method of dosing emulsifiers in chocolate mass. 4,563,361, Cl. 426-231.000.

Horner, Joseph L.: *See*—
Ludman, Jacques E.; Horner, Joseph L.; and Caulfield, Henry J., 4,563,057, Cl. 350-96.180.

Horster, Horst; and Klinkenberg, Klaus, to U.S. Philips Corporation. Air-conditioner. 4,562,955, Cl. 237-2.00B.

Hoshi, Yoshikazu: *See*—
Takano, Yoshiya; and Hoshi, Yoshikazu, 4,562,815, Cl. 123-450.000.

Hoshino, Takahiro, to Toyo Bussan Kabushiki Kaisha. Cold-proof water-proof garment. 4,563,157, Cl. 441-104.000.

Hosterman, Craig. Pressure relief valve with pressure indicating means. 4,562,741, Cl. 73-714.000.

Houtchens, Bruce A., to Board of Regents, The University of Texas System. Method and apparatus for fluid separation. 4,563,198, Cl. 55-41.000.

Howorth, Jonathan R., to English Electric Valve Company Limited. Photocathode having fiber optic faceplate containing glass having a low annealing temperature. 4,563,614, Cl. 313-524.000.

Hoya Corporation: *See*—
Asahara, Yoshiyuki; Sakai, Hiroshi; Shingaki, Seiichi; and Ohmi, Shigeaki, 4,563,205, Cl. 65-30.130.
Matsui, Shigekazu; Kagaya, Kenichi; Ushida, Masao; and Maruyama, Kouichi, 4,563,407, Cl. 430-5.000.

Hrabak, Frantisek, to Stavebni Strojirenstvi a Lehka Prefabrikace Generalni Reditelstvi. Metal door frame constructed of a channel section and method of making same. 4,562,677, Cl. 52-211.000.

Hruska, Louis W.; and Tsai, Shan-Pu, to ELTECH Systems Corporation. Modified liquid permeable asbestos diaphragms with improved dimensional stability. 4,563,260, Cl. 204-283.000.

Huang, Bernard, to Ford Motor Company. Tunable powertrain mount. 4,562,898, Cl. 180-292.000.

Hubner, Hans J. Method of and apparatus for the measurement of subterranean atmospheric parameters. 4,562,723, Cl. 73-23.000.

Hubred, Gale L., to Chevron Research Company. Extraction and stripping cobalt values. 4,563,213, Cl. 75-119.000.

Hudson, Earl A.: *See—*
Crawford, LeRoy A.; Jackson, Robert E.; and Hudson, Earl A., 4,563,026, Cl. 287-2.000.

Hue, Jean, to Salomon S.A. Ski shoe for cross-country skiing. 4,562,654, Cl. 36-117.000.

Hueber, Herbert: *See—*
Wiehe, Hans R.; and Hueber, Herbert, 4,563,384, Cl. 428-231.000.

Huels Aktiengesellschaft: *See—*
Flatau, Karsten, 4,563,318, Cl. 264-119.000.

Hughes Aircraft Company: *See—*
Bridges, William B., 4,563,258, Cl. 204-157.150.
Ward, J. William; Wang, Victor; Vahrenkamp, Richard P.; and Seliger, Robert L., 4,563,587, Cl. 250-396.00R.

Hultman, Carl A.: *See—*
Daso, Anthony L.; and Hultman, Carl A., 4,562,645, Cl. 30-346.580.

Hummor, Inc.: *See—*
Morgan, Allan C., 4,563,320, Cl. 264-151.000.

Humphreys, Joan H.: *See—*
Barrodale, Patricia M.; Young, Mary A.; Humphreys, Joan H.; and Lowrey, James M., Jr., 4,563,183, Cl. 604-329.000.

Humphreys, John P., to Tioxide Group PLC. Pigments and their manufacture. 4,563,221, Cl. 106-300.000.

Hunger, Josef; Donner, Hans-Christian; and Neumaier, Anton, to Hilti Aktiengesellschaft. Drill chuck for a hand-held drilling device. 4,563,013, Cl. 279-64.000.

Hunt, Edward P.: *See—*
Graham, James J.; Kinzler, Darrell D.; and Hunt, Edward P., 4,563,267, Cl. 208-159.000.

Hunter, William E., Jr.: *See—*
Doty, Gerald A.; and Hunter, William E., Jr., 4,562,625, Cl. 24-640.000.

Huntwork, Daniel E.: *See—*
Brockway, Brian P.; Dreher, Robert D.; Huntwork, Daniel E.; Lindstedt, Brock S.; Morrison, Douglas C.; and Mills, Perry A., 4,562,841, Cl. 128-419.0PG.

Hurley, Kenneth D. Motorbike apparatus. 4,562,752, Cl. 74-608.000.

Hutchcocks, John A.: *See—*
Baylis, George T.; Ahmad, Edward S.; and Hutchcocks, John A., 4,563,007, Cl. 273-77.00A.

Hutter, Heinrich: *See—*
Fleck, Harald; Muller, Johannes C. A.; and Hutter, Heinrich, 4,563,717, Cl. 360-95.000.

Ichikawa, Kentaro; and Etoh, Shunji, to Tokyo Shibaura Denki Kabushiki Kaisha. Multistage pump-turbines. 4,563,130, Cl. 416-213.00R.

Ichikoh Industries, Ltd.: *See—*
Saito, Hidenori, 4,563,730, Cl. 362-264.000.

ICI Americas Inc.: *See—*
Campbell, James B., Jr., 4,563,525, Cl. 546-82.000.

ICL Scientific, Inc.: *See—*
Mitchell, Vance C.; and Safstron, Thomas A., 4,563,332, Cl. 422-100.000.

Ida, Daijiro: *See—*
Kobayashi, Kazuo; Asano, Seijiro; Nakamura, Mituo; Ida, Daijiro; Asabuki, Hiroshi; and Ashiwara, Hiromoto, 4,563,126, Cl. 415-119.000.

Ida, Kozo, to Mitsubishi Rayon Co., Ltd. Synthetic resin composition and process for producing the same. 4,563,494, Cl. 524-398.000.

Ida, Masatoshi: *See—*
Oinoue, Kenichi; Aoki, Masahiro; Ida, Masatoshi; Nakamura, Junichi; and Hayashi, Asao, 4,563,705, Cl. 358-227.000.

Ide, Jushi: *See—*
Yabuuchi, Shigeru; Endo, Takeyuki; Kodama, Kazuyuki; and Ide, Jushi, 4,563,749, Cl. 364-702.000.

Ide, Satoshi: *See—*
Enjo, Naonori; Aomi, Hideki; Noguchi, Masahiro; and Ide, Satoshi, 4,562,995, Cl. 252-67.000.

Idemitsu Kosan Company Limited: *See—*
Katafuchi, Tadashi, 4,563,097, Cl. 374-43.000.

Ihara Chemical Industry Co., Ltd.: *See—*
Mori, Kogoro; Ohi, Hideo; and Yazawa, Chihiro, 4,563,209, Cl. 71-66.000.

Ihmels, Hartmut: *See—*
Ihmels, Manfred; and Ihmels, Hartmut, 4,562,965, Cl. 239-346.000.

Ihmels, Manfred; and Ihmels, Hartmut. Compressed fluid spraying pistol. 4,562,965, Cl. 239-346.000.

Iijima, Eiji: *See—*
Hara, Kenji; and Iijima, Eiji, 4,563,353, Cl. 424-195.100.

Ikarashi, Koji: *See—*
Katada, Hirofumi; Taniguchi, Tetsuya; and Ikarashi, Koji, 4,562,923, Cl. 206-235.000.

Ikeda, Shinji, to Toyota Jidosha Kabushiki Kaisha. System for controlling the amount of recirculated exhaust gas for a diesel engine. 4,562,821, Cl. 123-569.000.

Ikeda, Takeshi. Noise filter. 4,563,658, Cl. 333-181.000.

Im, Kwon S. Locking device for an electrical plug. 4,563,048, Cl. 339-37.000.

Imaizumi, Hiroyuki: *See—*
Sadaki, Hiroshi; Imaizumi, Hiroyuki; Takeda, Kenji; Inaba, Takihiro; Takeno, Ryuko; Morita, Seishi; Kajita, Tetsuya; and Saikawa, Isamu, 4,563,534, Cl. 548-194.000.

Imanishi Kinzoku Kogyo Kabushiki Kaisha: *See—*
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Hiroichi; and Kitada, Fumihiko, 4,562,825, Cl. 126-96.000.

ImmunoSystems, Incorporated: *See—*
Ferguson, Bruce S., 4,563,172, Cl. 604-55.000.

Imperial Chemical Industries PLC: *See—*
Nemcek, Jozef; and Roberts, Thomas A., 4,563,486, Cl. 523-115.000.
Rayner, Martin G., 4,563,259, Cl. 524-99.000.

Impulse Computer Systems, Inc.: *See—*
Gerpheide, George E.; Anderson, B. Craig; and Hill, Linda, 4,563,739, Cl. 364-403.000.

Ina, Toshikazu: *See—*
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, 4,562,818, Cl. 123-478.000.

Inaba, Takihiro: *See—*
Sadaki, Hiroshi; Imaizumi, Hiroyuki; Takeda, Kenji; Inaba, Takihiro; Takeno, Ryuko; Morita, Seishi; Kajita, Tetsuya; and Saikawa, Isamu, 4,563,534, Cl. 548-194.000.

Inabe, Tamotsu: *See—*
Marks, Tobin J.; and Inabe, Tamotsu, 4,563,301, Cl. 252-519.000.
Wynne, Kenneth J.; Marks, Tobin J.; and Inabe, Tamotsu, 4,563,300, Cl. 252-518.000.

Indak Manufacturing Corp.: *See—*
Black, Charles E., III; and Habecker, John W., 4,563,551, Cl. 200-16.00C.

Independent Broadcasting Authority: *See—*
Baldwin, John L. E., 4,563,710, Cl. 360-9.100.

Industria del Alcali, S.A.: *See—*
Polendo-Loredo, Jose , 4,563,340, Cl. 423-186.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Bertina, Domenico, 4,563,550, Cl. 200-5.00A.

Ingegneria Siderurgica S.r.l.: *See—*
Arvedi, Giovanni; Gosio, Giovanni; and Piano, Renzo, 4,562,682, Cl. 52-648.000.

Inomata, Hiroshi, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of a low-impurity organopolysiloxane by the polymerization of an organopolysiloxane oligomer. 4,563,513, Cl. 528-14.000.

Inoue, Eisuke: *See—*
Nonaka, Yasuhiko; Inoue, Eisuke; Shidara, Keiichi; and Tanioka, Kenkichi, 4,563,611, Cl. 313-366.000.

Inoue, Masuo: *See—*
Shigetomi, Yoshirou; Suzuki, Toshi; Fukui, Katsnori; Inoue, Masuo; Nomura, Motoaki; and Miyoshi, Katuyoshi, 4,563,437, Cl. 502-105.000.

Inoue, Yoshikazu: *See—*
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,563,450, Cl. 514-204.000.

Inouye, Shigeharu; Niida, Taro; Miyauchi, Keinosuke; Matsumoto, Kuniomi; Akita, Eiichi; Koyama, Masao; Kai, Fumio; and Tsuruoka, Takashi, to Meiji Seika Kaisha, Ltd. Iodoallyl and iodopropargyl substituted tetrazoles and anti-microbial compositions thereof. 4,563,472, Cl. 514-381.000.

Institut de Recherches de la Siderurgie Francaise: *See—*
Birat, Jean-Pierre; Neu, Patrick; and Senaneuch, Denis, 4,562,879, Cl. 164-468.000.
Larrecq, Michel; Tromp, Denis; and Birat, Jean-Pierre, 4,562,880, Cl. 164-455.000.

Institut de Recherches de la Siderurgie Francaise: *See—*
Guenard, Claude; Zanetta, Hugues; and Grosjean, Jean-Claude, 4,562,961, Cl. 239-79.000.

Intera Corporation: *See—*
Dyer, Michael E., 4,563,507, Cl. 525-426.000.

Interatom Internationale Atomreaktorbau GmbH: *See—*
Ullrich, Manfred; and Sahler, Rainer, 4,563,326, Cl. 376-292.000.

International Business Machines Corporation: *See—*
Bhatt, Anilkumar C.; Doran, Donald E.; and Knight, James W., 4,563,385, Cl. 428-251.000.
Godard, Dominique, 4,563,681, Cl. 340-825.710.
Yardy, Raymond, 4,563,058, Cl. 350-166.000.

International Rectifier Corporation: *See—*
Nilarp, Anders, 4,563,698, Cl. 357-38.000.

Internationale Octrooi Maatschappij "Octropa" B.V.: *See—*
Chidlow, John W.; Van Duijn, Jan; and Siebesma, Jan, 4,563,096, Cl. 356-440.000.

INTEROX (Societe Anonyme): *See—*
Gago, Ignace; and Coppens, Guillaume, 4,563,355, Cl. 426-2.000.

Inui, Toshiharu: *See—*
Noguchi, Akio; Moriguchi, Haruhiko; Koizumi, Norihiko; Ohmori, Takashi; and Inui, Toshiharu, 4,563,691, Cl. 346-76.000.

Inuzuka, Tsuneki; Kawatsura, Yoshihiro; and Ishida, Masato, to Canon Kabushiki Kaisha. Image formation apparatus with variable scanning stroke. 4,563,079, Cl. 355-8.000.

Iowa State University Research Foundation, Inc.: *See—*
Larock, Richard C., 4,563,537, Cl. 549-79.000.

Irenkler, Gerhard: *See—*
Bornhofft, Wolfgang; and Irenkler, Gerhard, 4,562,789, Cl. 114-312.000.

Isaka, Tsutomu; and Nagano, Hiroshi, to Toyo Boseki Kabushiki Kaisha. Production of polyolefin shaped product. 4,563,316, Cl. 264-22.000.

Isartaler Schraubenkompressoren GmbH: *See—*
Hofmann, Rudolf; and Magdhuber, Kurt, 4,563,138, Cl. 418-97.000.

Ishibashi, Kenzo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Method and apparatus for controlling storage time in charge storing photoelectric converter. 4,563,708, Cl. 358-213.000.

Ishida, Masato: *See—*
Inuzuka, Tsuneki; Kawatsura, Yoshihiro; and Ishida, Masato, 4,563,079, Cl. 355-8.000.

Ishida, Ryuichi: *See—*
Sugano, Hiroshi; Ishida, Ryuichi; and Yamamura, Michio, 4,563,306, Cl. 260-112.5TR.

Ishiguro, Ikuo; and Nagao, Hiroyuki, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Process for producing a magnetic recording material and article produced. 4,563,397, Cl. 428-469.000.

Ishihara Sangyo Kaisha Ltd.: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,563,529, Cl. 546-345.000.

Ishii, Keizou: *See—*
Kurauchi, Takeo; Ishii, Keizou; Yamada, Atsushi; and Nozue, Jun, 4,563,372, Cl. 427-409.000.

Ishii, Shinzo; Katsumata, Shigeo; Arai, Yuko; Ashizawa, Tadashi; Morimoto, Makoto; Shirahata, Kunikatsu; Saito, Yutaka; and Kono, Motomichi, to Kyowa Hakko Kogyo Kabushiki. Substance AX-2, a process for producing the same and an antitumor composition containing the same. 4,563,462, Cl. 514-288.000.

Ishikawa, Junzo: *See—*
Takagi, Toshinori; Ishikawa, Junzo; and Matsuda, Koji, 4,563,610, Cl. 313-362.100.

Ishikawa, Keiichi: *See—*
Nishimura, Sadanori; Maezono, Masakazu; and Ishikawa, Keiichi, 4,562,905, Cl. 192-0.032.

Ishikawa, Masao; Kobayashi, Kazuhiro; and Koboshi, Shigeharu, to Konishiroku Photo Industry Co., Ltd. Processing solution having bleaching ability for light-sensitive silver halide color photographic material. 4,563,405, Cl. 430-460.000.

Ishikawa, Nobuo, to Kuraray Co., Ltd.; and Daikin Industries Ltd. Shaped article of synthetic resin having improved surface. 4,563,394, Cl. 428-422.000.

Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Kawai, Akio, to Nissan Motor Company, Limited. Ignition system for an internal combustion engine. 4,562,822, Cl. 123-620.000.

Ishimaru, Hajime: *See—*
Sugisaki, Kenzaburo; Onoda, Mutsuro; and Ishimaru, Hajime, 4,562,992, Cl. 251-159.000.

Ishimoto, Zenichi, to Nikko Co., Ltd. Toy car remotely controllable by fiber optic means. 4,563,162, Cl. 446-175.000.

Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, to Fuji Photo Film Company, Ltd. Radiation image storage panel. 4,563,580, Cl. 250-327.200.

Isobe, Mitsuo; and Ohtani, Takayuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Transition detector circuit. 4,563,593, Cl. 307-231.000.

Isobe, Toshiaki: *See—*
Kobayashi, Nobuyuki; and Isobe, Toshiaki, 4,562,819, Cl. 123-491.000.

Ito, Kojiro: *See—*
Hiroi, Kazuo; and Ito, Kojiro, 4,563,735, Cl. 364-165.000.

Ito, Teruyuki, to Nissan Motor Company, Limited. Fuel injection timing control system for internal combustion engine and control method therefor. 4,562,817, Cl. 123-478.000.

Itoh, Eiichi: *See—*
Nagasawa, Kiyoshi; Itoh, Eiichi; and Kato, Sadao, 4,562,650, Cl. 34-149.000.

Iwahara, Takahisa: *See—*
Wakabayashi, Hiroshi; and Iwahara, Takahisa, 4,563,538, Cl. 556-401.000.

Iwaisako, Toshiyuki: *See—*
Yoshida, Koichi; Iwaisako, Toshiyuki; Masamoto, Junzo; Hamanaka, Katsuhiko; and Komaki, Hajime, 4,563,536, Cl. 549-368.000.

Iwanaga, Koichi: *See—*
Nagasaki, Haruki; Fujikawa, Shoji; and Iwanaga, Koichi, 4,563,009, Cl. 273-179.00B.

Iwasaki, Hideo; and Izumi, Mamoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of defect evaluation for ceramic products. 4,562,736, Cl. 73-587.000.

Iwata, Kazuro; Fukushima, Naoto; and Takemura, Toji, to Nissan Motor Company, Limited. Shock absorber assembly for automotive vehicle suspension. 4,562,997, Cl. 267-8.00R.

Iyengar, Mike, to American Hospital Supply Corporation. Internally-seating container closure. 4,562,937, Cl. 220-307.000.

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Iwasaki, Hideo; and Izumi, Mamoru, 4,562,736, Cl. 73-587.000.

Izumi, Yoshikazu: *See—*
Yamada, Hideaki; Tani, Yoshiki; and Izumi, Yoshikazu, 4,563,426, Cl. 435-119.000.

J. M. Voith GmbH: *See—*
Wanke, Wilhelm; Hauser, Ludwig; and Steiner, Karl, 4,563,245, Cl. 162-358.000.

Jachimowicz, Felek, to W. R. Grace & Co. Polyurethane catalysts. 4,563,484, Cl. 521-129.000.

Jackson, Keith L.; Jones, W. Clifford; and Schauster, John L., to Lukens General Industries, Inc. Railway vehicle with end and intermediate trucks. 4,562,775, Cl. 105-186.000.

Jackson, Robert E.: *See—*
Crawford, LeRoy A.; Jackson, Robert E.; and Hudson, Earl A., 4,563,026, Cl. 287-2.000.

Jackson, W. Shaun; and Bohm, Leslie E., to Eclipse, Inc. Adjustable connections on cycle rear carrier. 4,562,944, Cl. 224-39.000.

Jacobs, Randall J.: *See—*
Hartelius, Mark E.; and Jacobs, Randall J., 4,563,573, Cl. 219-405.000.

Jacquemin, Maurice: *See—*
Lebailly, Michel; and Jacquemin, Maurice, 4,563,541, Cl. 174-52.0FP.

Jaeger, Ben E. Sampler for dry materials. 4,562,747, Cl. 73-863.540.

Jaffre, Felicien. Device for the pressureless accumulation of loads on roller conveyors. 4,562,920, Cl. 198-781.000.

Jahnel, Werner F. F.: *See—*
Hasl, Siegfried C.; and Jahnel, Werner F. F., 4,563,148, Cl. 425-503.000.

Jaitly, Kapil D.: *See—*
Hofman, Petrus S.; Hall, David W. R.; and Jaitly, Kapil D., 4,563,473, Cl. 514-397.000.

Jammes, Michel. Method for making a woven band. 4,562,868, Cl. 139-118.000.

Janeke, Charl E. Air conditioning method and installation. 4,562,883, Cl. 165-1.000.

Jansen, Scott: *See—*
Ericsen, Bret; Hastings, John C.; Murphy, Desmond L.; and Jansen, Scott, 4,563,564, Cl. 219-121.0LJ.

Janssen, Karl-Egon; and Breuer, Heinz G., to Rheinmetall GmbH. Muzzle recoil dampener. 4,562,767, Cl. 89-14.300.

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Abe, Mitsuo; Atomori, Seiichi; Tsutsumi, Tadahiko; and Noro, Masahiko, 4,563,505, Cl. 525-316.000.
Kitagawa, Yozo; Nishioka, Akinori; Higuchi, Yasuo; Tsutsumi, Tadahiko; Yamaguchi, Takashi; and Kato, Tadashi, 4,563,393, Cl. 428-412.000.

Japan Vilene Co. Ltd.: *See—*
Minami, Akinori; and Yamauchi, Katsuyoshi, 4,563,488, Cl. 523-222.000.

Jardine, George W. Jump rope. 4,563,002, Cl. 272-75.000.

Jasper Corporation, The: *See—*
Frobose, James W., 4,563,041, Cl. 297-452.000.

Jay, Paul R., to Thomson-CSF. Ballistic transport-type semiconductor device for deflecting electrons. 4,563,696, Cl. 357-22.000.

Jeanmairet, Maurice: *See—*
Daly, Peter; and Jeanmairet, Maurice, 4,563,122, Cl. 414-732.000.

Jeffery, Maurice S.: *See—*
Mercer, Frank B.; Jeffery, Maurice S.; and Martin, Keith F., 4,563,358, Cl. 426-89.000.

Jendrewski, Alfons, to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH. Double-insulated, compact, folded fluorescent tube fixture. 4,563,729, Cl. 362-218.000.

Jenkins, Joe H.: *See—*
Chechovsky, Dardis W.; and Jenkins, Joe H., 4,563,027, Cl. 292-339.000.

Jennings, David G.: *See—*
Davis, John M.; and Jennings, David G., 4,562,610, Cl. 15-228.000.

Jennings, Thomas P., to Kidde Recreation Products, Inc. Compound bow. 4,562,824, Cl. 124-23.00R.

Jensen Corporation: *See—*
Bosshart, John; Allen, William W.; and Safarik, C. Robert, 4,562,655, Cl. 38-52.000.

Jensen, Norman P.: *See—*
Chang, Michael N.; Hammond, Milton L.; Jensen, Norman P.; and Zambias, Robert A., 4,563,476, Cl. 514-459.000.

Jervis, James E.; and Caponigro, Dennis A., to Raychem Corporation. High flow catheter for injecting fluids. 4,563,180, Cl. 604-280.000.

Jeswine, William W. Release mechanism. 4,562,623, Cl. 24-573.000.

Jett Labs, Inc.: *See—*
Carpenter, Tristram; and Gorker, Michael, 4,562,844, Cl. 128-675.000.

Jetten, Arnold G. M.: *See—*
Plantema, Otto G.; Jetten, Arnold G. M.; and Haasen, Nicolaas F., 4,563,308, Cl. 260-239.30A.

Jidosha Kiki Co., Ltd.: *See—*
Takizawa, Tozo, 4,563,568, Cl. 219-270.000.

Jiminez, Miguel A. Cavitation-producing carburation apparatus and method. 4,562,820, Cl. 123-557.000.

Johns, David L., to Suncoast Medical Manufacturing, Inc. Battery powered cautery with improved protective cover arrangement. 4,563,570, Cl. 219-240.000.

Johnson, Dennis E. J.; and Johnson, Scott J. System of ionized oxygen allotrope gas water purification and method and apparatus therefor. 4,563,286, Cl. 210-721.000.

Johnson, John J.: *See—*
Pringle, Ronald E.; Morris, Arthur J.; and Johnson, John J., 4,562,854, Cl. 137-155.000.

Johnson, Ken R.; and Sanik, Paul S., to Owens-Corning Fiberglas Corporation. Apparatus for sensing openings in sheet. 4,563,633, Cl. 324-54.000.

Johnson, Scott J.: *See—*
Johnson, Dennis E. J.; and Johnson, Scott J., 4,563,286, Cl. 210-721.000.

Jones, Dedger. Wave driven engine. 4,563,591, Cl. 290-53.000.

Jones, W. Clifford: *See—*
Jackson, Keith L.; Jones, W. Clifford; and Schauster, John L., 4,562,775, Cl. 105-186.000.

Jordan, John A. Portable ionization chamber and alignment apparatus. 4,563,586, Cl. 250-374.000.

Jorg, Horst, to Keiper Recaro GmbH & Co. Hinge joint for use in the seats of motor vehicles and the like. 4,563,039, Cl. 297-362.000.

Josserand, Marie R., to Maatel. Device for storing and/or retrieving objects. 4,563,120, Cl. 414-273.000.

Jost-Werke GmbH: *See—*
Dreyer, Hans; and Rieger, Manfred, 4,563,574, Cl. 235-95.00B.

Judicial Foundation The Chemosero-Therapeutic Research Institute: *See—*
Ginnaga, Akihiro; Sakuma, Shin; Nishihara, Tsukasa; Tashiro, Tomitaka; Susumi, Sadao; Kawahara, Tetsuo; and Mizokami, Hiroshi, 4,563,303, Cl. 260-112.00R.

Julian, John D. Electrolyte for electro-chemical cells. 4,563,403, Cl. 429-198.000.

Junger, Miguel C.; and Kleinschmidt, Klaus, to Junger, Miguel C. Sound absorptive structural block with sequenced cavities. 4,562,901, Cl. 181-285.000.

Junkosha Company Ltd.: *See—*
Kobayashi, Satoru, 4,563,674, Cl. 340-620.000.

K. G. Coles & Co. Pty Limited: *See—*
Dehring, Alexander, 4,562,774, Cl. 104-42.000.

Kabayama, Yoshiaki, to Kabushiki Kaisha Daikin Seisakusho. Clutch disc. 4,562,912, Cl. 192-106.200.

Kabbe, Hans-Joachim: *See—*
Widdig, Arno; Kabbe, Hans-Joachim; Knorr, Andreas; and Benz, Ulrich, 4,563,458, Cl. 514-253.000.

Kabelmetal Electro GmbH: *See—*
Weisner, Eike; Sczepaniak, Werner; Thiele, Paul; Block, Detlef; and Reimann, Karl-Heinz, 4,563,252, Cl. 204-9.000.

Kabivitrum AB: *See—*
Chang, Stephen S.; and Lindmark, Lars, 4,563,354, Cl. 424-195.100.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Kabayama, Yoshiaki, 4,562,912, Cl. 192-106.200.
Takeuchi, Hiroshi, 4,563,165, Cl. 464-64.000.

Kabushiki Kaisha Daisei Kikai: *See—*
Suzuki, Tomosaburo; and Kawakami, Sanji, 4,562,917, Cl. 198-505.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Yokoyama, Kageki; and Amano, Itaru, 4,563,139, Cl. 425-47.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Nagai, Shunichi; and Hiramura, Kazuo, 4,563,578, Cl. 250-221.000.

Kabushiki Kaisha Toshiba: *See—*
Okamoto, Arata, 4,562,924, Cl. 206-330.000.
Shimamoto, Yoshiharu, 4,563,046, Cl. 308-10.000.

Kabushiki Kaisha Yasawa Denki Seisakusho: *See—*
Nagasaka, Nagahiko, 4,563,602, Cl. 310-12.000.

Kagaya, Kenichi: *See—*
Matsui, Shigekazu; Kagaya, Kenichi; Ushida, Masao; and Maruyama, Kouichi, 4,563,407, Cl. 430-5.000.

Kai, Fumio: *See—*
Inouye, Shigeharu; Niida, Taro; Miyauchi, Keinosuke; Matsumoto, Kuniomi; Akita, Eiichi; Koyama, Masao; Kai, Fumio; and Tsuruoka, Takashi, 4,563,472, Cl. 514-381.000.

Kaiser, Joachim, to Teldix GmbH. Laser rotation rate sensor. 4,563,092, Cl. 356-350.000.

Kajimura, Takashi: *See—*
Kuroda, Takao; Kajimura, Takashi; Kashiwada, Yasutoshi; Chinone, Naoki; Ouchi, Hirobumi; and Ohtoshi, Tsukuru, 4,563,764, Cl. 372-45.000.

Kajita, Shunsuke, to Nissan Shatai Company, Limited. Method and apparatus for air conditioner control. 4,562,954, Cl. 237-2.00A.

Kajita, Tetsuya: *See—*
Sadaki, Hiroshi; Imaizumi, Hiroyuki; Takeda, Kenji; Inaba, Takihiro; Takeno, Ryuko; Morita, Seishi; Kajita, Tetsuya; and Saikawa, Isamu, 4,563,534, Cl. 548-194.000.

Kalal, Jaroslav: *See—*
Stol, Miroslav; Tolar, Miroslav; Adam, Milan; Cefelin, Pavel; and Kalal, Jaroslav, 4,563,490, Cl. 524-24.000.

Kalama Chemical Inc.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,563,531, Cl. 546-345.000.

Kamada, Shuhei, to Sanyo Electric Co., Ltd. Resonator assembly having direct current component bypass means for use in a video disk player. 4,563,761, Cl. 369-126.000.

Kambic, Raymond V., to R. R. Brink Locking Systems, Inc. Door position monitor with automatic adjustment. 4,562,664, Cl. 49-14.000.

Kamei, Eiichi; and Shimomura, Yasushi, to UBE Industries, Ltd. Process of producing porous thermoplastic resin article. 4,563,317, Cl. 264-28.000.

Kamen, Dean L. Catheter stabilization pad. 4,563,177, Cl. 604-177.000.

Kamo, Roy: *See—*
Woods, Melvin E.; Cheng, Chi; and Kamo, Roy, 4,562,799, Cl. 123-193.00C.

Kampfer, Robert D.; and Blum, Randall S., to Minnesota Mining and Manufacturing Company. Method for forming a peripheral edge on contact lenses. 4,563,565, Cl. 219-121.0LJ.

Kanakura, Akihiro: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; Kanakura, Akihiro; and Nakano, Shinji, 4,563,492, Cl. 524-90.000.

Kanatani, Fujio, to Nippon Kogaku K.K. Microscope optical system and method for microscopic examination. 4,563,062, Cl. 350-520.000.

Kane, Philip F.; and Marincic, Nikola, to Battery Engineering, Inc. Electrochemical cell with adjustable step-like output voltage. 4,563,401, Cl. 429-91.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Wakabayashi, Hiroshi; and Iwahara, Takahisa, 4,563,538, Cl. 556-401.000.

Kaneko, Tetsuhisa: *See—*
Fushiya, Fusao; and Kaneko, Tetsuhisa, 4,562,872, Cl. 144-134.00D.

Kaneko, Youzi, to Casio Computer Co., Ltd. Waveform information generating system. 4,562,763, Cl. 84-1.010.

Kannan, Gajavalli N. R.: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.

Kano, Tokio; Tamagawa, Akira; and Doi, Masanori, to Olympus Optical Company Limited. Method of judging a particle agglutination pattern. 4,563,430, Cl. 436-164.000.

Kant, Bernhard, to VDO Adolf Schindling AG. Device for the electric measurement of a liquid level. 4,562,733, Cl. 73-295.000.

Kanzaka, Yoshihiro, to Nippon Notion Kogyo Co., Ltd. Snap fastener for use on garments. 4,562,624, Cl. 24-621.000.

KAO Corporation: *See—*
Hara, Kenji; and Iijima, Eiji, 4,563,353, Cl. 424-195.100.

Kapmeyer, Wolfgang: *See—*
Pauly, Hans-Erwin; Kapmeyer, Wolfgang; and Seitz, Ulrich, 4,563,431, Cl. 436-533.000.

Kathu, Niilo; and Pesola, Jussi, to Lemminkainen Oy. Window structure, a hinge and a latch suitable for it and a cover profile for said structure. 4,562,668, Cl. 49-381.000.

Karn, Donald L., to Monarch Marking Systems, Inc. Hand-held labeler. 4,563,235, Cl. 156-577.000.

Karosseriewerke Weinsberg GmbH: *See—*
Bauer, Kurt, 4,563,036, Cl. 296-218.000.

Kasai, Yosiharu: *See—*
Ueda, Ikuo; Kato, Masayuki; and Kasai, Yosiharu, 4,563,453, Cl. 514-222.000.

Kashiwada, Yasutoshi: *See—*
Kuroda, Takao; Kajimura, Takashi; Kashiwada, Yasutoshi; Chinone, Naoki; Ouchi, Hirobumi; and Ohtoshi, Tsukuru, 4,563,764, Cl. 372-45.000.

Kasper, Stanley: *See—*
Frauen, Leonard L.; and Kasper, Stanley, 4,563,195, Cl. 48-197.00R.

Katada, Hirofumi; Taniguchi, Tetsuya; and Ikarashi, Koji, to Pola Chemical Industries Inc. Cosmetics case. 4,562,923, Cl. 206-235.000.

Katafuchi, Tadashi, to Idemitsu Kosan Company Limited. Method of evaluating cooling performance of heat treatment agent and apparatus therefor. 4,563,097, Cl. 374-43.000.

Kataoka, Hiroyuki, to Canon Kabushiki Kaisha. Correct exposure annunciator circuit. 4,563,071, Cl. 354-473.000.

Katayama, Ichiro. Bearing unit for sliding device. 4,563,045, Cl. 308-6.00C.

Kato, Masayuki: *See—*
Ueda, Ikuo; Kato, Masayuki; and Kasai, Yosiharu, 4,563,453, Cl. 514-222.000.
Ueda, Ikuo; Kato, Masayuki; Nagano, Masanobu; and Akahane, Atsushi, 4,563,455, Cl. 514-241.000.
Ueda, Ikuo; Matsuo, Masaaki; Tsuji, Kiyoshi; and Kato, Masayuki, 4,563,524, Cl. 544-366.000.

Kato, Sadao: *See—*
Nagasawa, Kiyoshi; Itoh, Eiichi; and Kato, Sadao, 4,562,650, Cl. 34-149.000.

Kato, Tadashi: *See—*
Kitagawa, Yozo; Nishioka, Akinori; Higuchi, Yasuo; Tsutsumi, Tadahiko; Yamaguchi, Takashi; and Kato, Tadashi, 4,563,393, Cl. 428-412.000.

Kato, Takehiko: *See—*
Sugita, Heiji; and Kato, Takehiko, 4,563,222, Cl. 148-12.00F.

Katsumata, Shigeo: *See—*
Ishii, Shinzo; Katsumata, Shigeo; Arai, Yuko; Ashizawa, Tadashi; Morimoto, Makoto; Shirahata, Kunikatsu; Saito, Yutaka; and Kono, Motomichi, 4,563,462, Cl. 514-288.000.

Kavesh, Sheldon: *See—*
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,563,392, Cl. 428-394.000.

Kawabata, Takashi: *See—*
Sakai, Shinji; and Kawabata, Takashi, 4,563,069, Cl. 354-402.000.

Kawado, Yashuhumi: *See—*
Morishita, Tuyoshi; Ohsaki, Sigemi; and Kawado, Yashuhumi, 4,563,329, Cl. 419-9.000.

Kawaguchi, Akiyoshi; and Nakamura, Morihiko, to Otsuka Chemical Co., Ltd. Resinous composition for sliding members. 4,563,495, Cl. 524-413.000.

Kawahara, Tetsuo: *See—*
Ginnaga, Akihiro; Sakuma, Shin; Nishihara, Tsukasa; Tashiro, Tomitaka; Susumi, Sadao; Kawahara, Tetsuo; and Mizokami, Hiroshi, 4,563,303, Cl. 260-112.00R.

Kawai, Akio: *See—*
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Kawai, Akio, 4,562,822, Cl. 123-620.000.

Kawai, Hisasi: *See—*
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, 4,562,818, Cl. 123-478.000.
Moritugu, Mitiyasu; Kawai, Hisasi; and Tokura, Norihito, 4,562,823, Cl. 123-620.000.

Kawakami, Akihiko: *See—*
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Kawakami, Akihiko, 4,563,093, Cl. 356-368.000.

Kawakami, Sanji: *See—*
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Kawakita, Kenji: *See—*
Sakai, Hiroyuki; Kawakita, Kenji; Fujita, Tsutomu; and Takemoto, Toyoki, 4,563,227, Cl. 148-187.000.

Kawamura, Noriyuki; Aizawa, Nobuhiro; Koizumi, Shigeki; Koyahara, Masaru; and Tomita, Tetsuo, to Canon Denshi Kabushiki Kaisha. Head position control device. 4,563,715, Cl. 360-78.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Hagiwara, Tatsuo; and Nagano, Shozi, 4,562,972, Cl. 241-260.000.
Kishimoto, Takashi; Shimizu, Kensaku; and Nagai, Yukito, 4,563,031, Cl. 294-81.210.

Kawatsura, Yoshihiro: *See—*
Inuzuka, Tsuneki; Kawatsura, Yoshihiro; and Ishida, Masato, 4,563,079, Cl. 355-8.000.

Kazumi, Masafumi: *See—*
Arai, Ikuya; Murata, Toshinori; and Kazumi, Masafumi, 4,563,654, Cl. 330-277.000.

KB Cold Isostatic Press Systems CIPS: *See—*
Pettersson, Ola, 4,563,143, Cl. 425-151.000.

Kegel Company, Inc., The: *See—*
Davis, John M.; and Jennings, David G., 4,562,610, Cl. 15-228.000.

Keiper, R. Steven, to Black & Decker Inc. Battery recharging circuit with indicator means. 4,563,629, Cl. 320-48.000.

Keiper Recaro GmbH & Co.: *See—*
Jorg, Horst, 4,563,039, Cl. 297-362.000.

Keiser, Bruce A., to Nalco Chemical Company. Metal oxide/silica sols. 4,563,298, Cl. 252-313.200.

Kellar, Paul R. N.: *See—*
Taylor, Richard J.; Kellar, Paul R. N.; and Hinson, Neil R., 4,563,703, Cl. 358-160.000.

Kellerhals, Hanspeter; and Allemann, Martin, to Spectrospin AG. Procedure for recording ion-cyclotron-resonance spectra and apparatus for carrying out the procedure. 4,563,579, Cl. 250-291.000.

Kelley, Donald C. Stop system for a center pivot irrigation system. 4,562,904, Cl. 188-32.000.

Kelly, John H.; and Guest, Leonard E., to Stelco Inc. Apparatus for automatically flaving and casting samples. 4,563,146, Cl. 425-256.000.

Kendall Company, The: *See—*
Van Overloop, Ronald R.; and Miller, Frank N., 4,563,103, Cl. 401-134.000.

Kennametal Inc.: *See—*
Yeckley, Russell L.; and North, Bernard, 4,563,433, Cl. 501-97.000.

Kernforschungszentrum Karlsruhe GmbH: *See—*
Becker, Erwin; and Ehrfeld, Wolfgang, 4,563,250, Cl. 204-6.000.
Becker, Erwin; Ehrfeld, Wolfgang; and Becker, Frank, 4,563,251, Cl. 204-6.000.

Kerr, Bruce G., to Goring Kerr Limited. Inductively balanced oscillatory coil current for metal detection. 4,563,645, Cl. 324-233.000.

Kerr-McGee Corporation: *See—*
Lehman, F. Allen; Sieffel, William M.; and Ray, Malcolm G., 4,562,739, Cl. 73-632.000.

Kersuzan, Georges; Picault, Michel; and Sourdillon, Roland, to U.S. Philips Corporation. Ultra high-frequency circuit with metallized through hole. 4,563,543, Cl. 174-68.500.

Kert, John K.: *See—*
Garvey, Paul W.; and Kert, John K., 4,562,856, Cl. 137-329.300.

Keve, Tibor: *See—*
Ezer, Elemer; Szporny, Laszlo; Hajos, Gyorgy; Szantay, Csaba; Keve, Tibor; Fekete, Gyorgy; Megyeri, Gabor; Acs, Tibor; and Bolcskei, Hedvig, 4,563,464, Cl. 514-299.000.

Key Technology, Inc.: *See—*
Carmichael, D. Murphy; and Haimberger, Hans G., 4,563,364, Cl. 426-510.000.

Keystone Industries, Inc.: *See—*
Scott, Mark P.; and Brough, Steve A., 4,562,929, Cl. 213-20.000.

Kidde Recreation Products, Inc.: *See—*
Jennings, Thomas P., 4,562,824, Cl. 124-23.00R.

Kiguchi, Takashi: *See—*
Yoshida, Kenichi; Watanabe, Takao; and Kiguchi, Takashi, 4,563,746, Cl. 364-492.000.

Kikkoman Corporation: *See—*
Furukawa, Toshio, 4,563,269, Cl. 209-305.000.

Kikuchi, Hiroshi; Tomizawa, Akira; and Oka, Hitoshi, to Hitachi, Ltd. Electroless copper plating solution. 4,563,217, Cl. 106-1.230.

Kim, Bang M., to General Electric Company. Method and apparatus for continuous ion exchange. 4,563,337, Cl. 423-24.000.

Kim, Soon; H.: *See—*
Pak, In B.; and Kim, Soon; H., 4,562,792, Cl. 119-109.000.

Kimball, James F. Support for a bicycle and rider. 4,563,017, Cl. 280-294.000.

Kimura, Kazuo; Yamazaki, Yasuo; and Mukai, Hiromu, to Minolta Camera Kabushiki Kaisha. Light measuring device for a single lens reflex camera. 4,563,068, Cl. 354-402.000.

Kimura, Minoru: *See—*
Endo, Michitada; and Kimura, Minoru, 4,562,702, Cl. 62-376.000.

Kimura, Yoshiaki: *See—*
Murakami, Kiyotaka; and Kimura, Yoshiaki, 4,563,689, Cl. 346-1.100.

Kinard, Michael D.: *See—*
Bohannon, William D., Jr.; Brent, Herbert E.; Hamilton, Alfred S.; and Kinard, Michael D., 4,563,540, Cl. 174-23.00R.

Kindl, Erwin: *See—*
Hammer, Klaus-Dieter; Kindl, Erwin; Luchterhand, Heinz; and Winter, Hermann, 4,563,376, Cl. 428-36.000.

King, Patrick F.; and Stroud, Stephen G., to Polaroid Corporation. Black image dye-providing materials and photographic products and processes utilizing same. 4,563,412, Cl. 430-223.000.

Kingsbury, Charles M.; and Beckwith, Bruce R., to Emhart Industries, Inc. Apparatus for adjusting individual cams of a pusher conveyor. 4,562,753, Cl. 74-838.000.

Kingsley, Jack D.: *See—*
Hoffman, David M.; Kingsley, Jack D.; and Ehle, Roger S., 4,563,584, Cl. 250-368.000.

Kinsley, Robert J., to Vogel Tool & Die Corp. Tube notching apparatus. 4,562,760, Cl. 83-693.000.

Kinzler, Darrell D.: *See—*
Graham, James J.; Kinzler, Darrell D.; and Hunt, Edward P., 4,563,267, Cl. 208-159.000.

Kirby, Peter L., to Welwyn Electronics Limited. Electrical assembly. 4,563,725, Cl. 361-388.000.

Kirchweger, Karl, to AVL Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik. Motor vehicle engine cooling arrangement. 4,562,895, Cl. 180-68.100.

Kirisawa, Tadashi: *See—*
Nishimura, Yutaka; Kuroiwa, Hiroshi; Kirisawa, Tadashi; and Oyama, Yoshishige, 4,562,731, Cl. 73-202.000.

Kirkpatrick, John A.: *See—*
Budrean, John D.; and Kirkpatrick, John A., 4,562,719, Cl. 72-349.000.

Kishida, Yoshihiro, to Dainippon Screen Mfg. Co., Ltd. Method and system for regulating the maximum output current of a photomultiplier. 4,563,707, Cl. 358-294.000.

Kishimoto, Takashi; Shimizu, Kensaku; and Nagai, Yukito, to Kawasaki Jukogyo Kabushiki Kaisha. Tube handling device. 4,563,031, Cl. 294-81.210.

Kitada, Fumihiko: *See—*
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Hiroichi; and Kitada, Fumihiko, 4,562,825, Cl. 126-96.000.

Kitagawa, Junji; Mizuno, Junji; Akita, Shigeyuki; and Fukami, Akira, to Nippon Soken, Inc. Device for detecting liquid amount in a vessel. 4,562,732, Cl. 73-291.000.

Kitagawa, Yozo; Nishioka, Akinori; Higuchi, Yasuo; Tsutsumi, Tadahiko; Yamaguchi, Takashi; and Kato, Tadashi, to Japan Synthetic Rubber Co., Ltd. Laminate of polyvinylidene fluoride bonded to thermoplastic resin. 4,563,393, Cl. 428-412.000.

Klan, Friedrich, to Siemens Aktiengesellschaft. Data processing system having a central main memory and a plurality of processor units connected in series. 4,563,738, Cl. 364-200.000.

Klefbeck, Robert J. Bag holders. 4,562,983, Cl. 248-97.000.

Klein, Phillip P.: *See—*
Sherlock, Paul; Brausen, Benjamin; and Klein, Phillip P., 4,562,984, Cl. 248-95.000.

Kleinschmidt, Klaus: *See—*
Junger, Miguel C.; and Kleinschmidt, Klaus, 4,562,901, Cl. 181-285.000.

Kleinschmit, Peter: *See—*
Baacke, Michael; Deller, Klaus; Kleinschmit, Peter; and Koberstein, Edgar, 4,563,480, Cl. 518-728.000.

Klenk, Ludwig: *See—*
Porrmann, Herbert; Seifried, Walter; Klenk, Ludwig; and Stenger, Karl, 4,563,231, Cl. 156-90.000.

Kletzmaier, Karl: *See—*
Krippner, Gunther; and Kletzmaier, Karl, 4,562,735, Cl. 73-432.00R.

Klingenberg, Karl, to Battenfeld Extrusionstechnik GmbH. Apparatus for controlling the flow resistance in a screw or worm extruder. 4,563,142, Cl. 425-145.000.

Klinkenberg, Klaus: *See—*
Horster, Horst; and Klinkenberg, Klaus, 4,562,955, Cl. 237-2.00B.

Kloften & Kloften A/S: *See—*
Ege, Sigmund, 4,563,563, Cl. 219-85.00G.

Klubitschko, Gerd, to Marker International Company. Release mechanism for safety ski bindings. 4,563,021, Cl. 280-612.000.

Knapp, John F.; Gruber, Robert J.; and Bolte, Steven B., to Xerox Corporation. Copy quality monitoring for magnetic images. 4,563,086, Cl. 355-14.00D.

Knaster, Mark B.; and Carandang, Carmen M., to Amchem Products, Inc. Compositions and processes for coating ferrous surfaces with copper. 4,563,216, Cl. 106-1.230.

Knight, James W.: *See—*
Bhatt, Anilkumar C.; Doran, Donald E.; and Knight, James W., 4,563,385, Cl. 428-251.000.

Knorr, Andreas: *See—*
Widdig, Arno; Kabbe, Hans-Joachim; Knorr, Andreas; and Benz, Ulrich, 4,563,458, Cl. 514-253.000.

Knoth, Wayne M.; and Corbin, Dennis O., to Universal Forest Products, Inc. Automatic lattice fabrication apparatus. 4,562,949, Cl. 227-7.000.

Knowles, John P., to Texaco Limited. Pulling head for removably engaging a conduit end. 4,563,032, Cl. 294-90.000.

Knudsen, Odd: *See—*
Nydahl, Claes; and Knudsen, Odd, 4,562,847, Cl. 128-757.000.

Kobayashi, Hiroshi, to Nissan Motor Co., Ltd. System for measuring quantity of liquid contained in tank. 4,562,734, Cl. 73-311.000.

Kobayashi, Junya: *See—*
Oka, Shotaro; Tahara, Shu; and Kobayashi, Junya, 4,562,725, Cl. 73-29.000.

Kobayashi, Kazuhiro: *See—*
Ishikawa, Masao; Kobayashi, Kazuhiro; and Koboshi, Shigeharu, 4,563,405, Cl. 430-460.000.

Kobayashi, Kazuo; Asano, Seijiro; Nakamura, Mituo; Ida, Daijiro; Asabuki, Hiroshi; and Ashiwara, Hiromoto, to Hitachi, Ltd. Casing of blower and ventilating fan utilizing the casing. 4,563,126, Cl. 415-119.000.

Kobayashi, Kazutoshi: *See—*
Okado, Terumi; Suda, Seiji; Sugiura, Noboru; Yoshinari, Takashi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; and Fujiwara, Hiroshi, 4,562,813, Cl. 123-425.000.

Kobayashi, Kenji; Uchida, Yasuhiko; and Utsunomiya, Tsuyoshi, to Matsushita Electric Industrial Co., Ltd. Lead storage battery with improved bond between the terminal pole and the cover. 4,563,402, Cl. 429-178.000.

Kobayashi, Kunio: *See—*
Mashino, Keiichi; Naoi, Keigo; and Kobayashi, Kunio, 4,563,631, Cl. 322-33.000.

Kobayashi, Nobuyuki; and Isobe, Toshiaki, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for controlling fuel supply of an internal combustion engine. 4,562,819, Cl. 123-491.000.

Kobayashi, Satoru, to Junkosha Company Ltd. Oil leak detector. 4,563,674, Cl. 340-620.000.

Kobayashi, Tohru; and Nakamura, Kazuo, to Hitachi, Ltd. ECL Circuit having a negative feedback differential transistor circuit to increase the operating speed of the output circuit. 4,563,600, Cl. 307-455.000.

Koberstein, Edgar: *See—*
Baacke, Michael; Deller, Klaus; Kleinschmit, Peter; and Koberstein, Edgar, 4,563,480, Cl. 518-728.000.

Koboshi, Shigeharu: *See—*
Ishikawa, Masao; Kobayashi, Kazuhiro; and Koboshi, Shigeharu, 4,563,405, Cl. 430-460.000.

Koch, Klaus; and Syrbius, Gerhard, to Hermann Berstorff Maschinenbau GmbH. Apparatus and a method for producing wood pulp in a hollow cylinder containing a rotatable screw. 4,563,243, Cl. 162-18.000.

Kodama, Kazuyuki: *See—*
Yabuuchi, Shigeru; Endo, Takeyuki; Kodama, Kazuyuki; and Ide, Jushi, 4,563,749, Cl. 364-702.000.

Koflach Sportgerate Gesellschaft m.b.H.: *See—*
Hensler, Adolf, 4,562,652, Cl. 36-102.000.

Koga, Ryoichi; and Takahashi, Yutaka, to Matsushita Electric Industrial Company, Limited. Electric water heating device with decreased mineral scale deposition. 4,563,571, Cl. 219-299.000.

Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, to Nippon Soken, Inc. Method and apparatus for controlling the air-fuel ratio in an internal combustion engine. 4,562,818, Cl. 123-478.000.

Kohda, Akihide; and Kurosaki, Teikichi. Propanone derivatives in antiallergic compositions. 4,563,454, Cl. 514-239.000.

Kohl, Helmut: *See—*
Habenstein, Klaus; and Kohl, Helmut, 4,563,421, Cl. 435-18.000.

Kohler, Peter; and Heine, Heinrich, to Bayer Aktiengesellschaft. Production of bismuth oxide/chromium oxide mixed phase pigments. 4,563,220, Cl. 106-288.00B.

Koike, Takashi, to Sanshin Kogyo Kabushiki Kaisha. Engine control system for marine propulsion device. 4,562,801, Cl. 123-196.00S.

Koizumi, Norihiko: *See—*
Noguchi, Akio; Moriguchi, Haruhiko; Koizumi, Norihiko; Ohmori, Takashi; and Inui, Toshiharu, 4,563,691, Cl. 346-76.000.

Koizumi, Shigeki: *See—*
Kawamura, Noriyuki; Aizawa, Nobuhiro; Koizumi, Shigeki; Koyahara, Masaru; and Tomita, Tetsuo, 4,563,715, Cl. 360-78.000.

Kojima, Sadao: *See—*
Abe, Hitoshi; and Kojima, Sadao, 4,563,115, Cl. 409-134.000.

Kollberg, Sten, to ASEA Aktiebolag. Method for stirring in continuous casting. 4,562,881, Cl. 164-468.000.

Kollross, Gunter. Method and apparatus for making sausage as a sliced product. 4,562,617, Cl. 17-49.000.

Komada, Kenya, to Ricoh Company, Ltd. Removable belt mechanism for image recording apparatus. 4,563,077, Cl. 355-3.0BE.

Komaki, Hajime: *See—*
Yoshida, Koichi; Iwaisako, Toshiyuki; Masamoto, Junzo; Hamanaka, Katsuhiko; and Komaki, Hajime, 4,563,536, Cl. 549-368.000.

Komatsu, Fumito. Start-up method for synchronous motors. 4,563,620, Cl. 318-138.000.

Kondo, Yasuo: *See—*
Nakagawa, Mitsuru; Kondo, Yasuo; and Hashikawa, Atsushi, 4,562,957, Cl. 237-12.30R.

Kondo, Yoshikazu: *See—*
Shimizu, Keiichi; Tanabe, Junichi; and Kondo, Yoshikazu, 4,562,717, Cl. 72-347.000.

Kondoh, Yukio, to Sumitomo Metal Industries, Ltd. Cold pilger mill. 4,562,713, Cl. 72-24.000.

Konishi, Yoshihiro: *See—*
Ohta, Tomozo; Tsutsumi, Yoshio; and Konishi, Yoshihiro, 4,563,651, Cl. 329-110.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Ishikawa, Masao; Kobayashi, Kazuhiro; and Koboshi, Shigeharu, 4,563,405, Cl. 430-460.000.
Murakami, Kiyotaka; and Kimura, Yoshiaki, 4,563,689, Cl. 346-1.100.
Ohbayashi, Keiji; and Onodera, Kaoru, 4,563,406, Cl. 430-513.000.

Konno, Hidetaka: *See—*
Leidheiser, Henry, Jr.; and Konno, Hidetaka, 4,563,253, Cl. 204-37.600.

Kono, Motomichi: *See—*
Ishii, Shinzo; Katsumata, Shigeo; Arai, Yuko; Ashizawa, Tadashi; Morimoto, Makoto; Shirahata, Kunikatsu; Saito, Yutaka; and Kono, Motomichi, 4,563,462, Cl. 514-288.000.

Kopsel, Manfred: *See—*
Emberger, Roland; Kopsel, Manfred; Bruning, Jurgen; Hopp, Rudolf; and Sand, Theodor, 4,563,365, Cl. 426-534.000.

Kornberg, Elliot. Aortic graft, device and method for performing an intraluminal abdominal aortic aneurysm repair. 4,562,596, Cl. 623-1.000.

Kornbrekke, Henning N.; and Boiucaner, Leon, to Stanley Works, The. Automatic door control system. 4,563,625, Cl. 318-603.000.

Korol, Bernard. Synthetic resin wound dressing and method of treatment using same. 4,563,184, Cl. 604-368.000.

Kosaka, Masahiro: *See—*
Sato, Toshiaki; Maeda, Mikio; and Kosaka, Masahiro, 4,563,731, Cl. 363-17.000.

Koskela, Marvin O. Solar water heating system and heat exchanger for use with existing hot water systems. 4,562,828, Cl. 126-435.000.

Kotz, Michael E.; and Van der Zwan, Jacobus J., to Andersons, The. Controlled release agglomerated carrier. 4,563,344, Cl. 424-17.000.

Kouge, Shinichi: *See—*
Morishita, Mitsuharu; and Kouge, Shinichi, 4,562,896, Cl. 180-142.000.

Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Zisis A.; and Baldwin, Francis P., to Exxon Research & Engineering Co. Extrusion process for preparing improved brominated butyl rubber. 4,563,506, Cl. 525-354.000.

Kowarsch, Heinrich: *See—*
Dimroth, Peter; and Kowarsch, Heinrich, 4,563,519, Cl. 534-655.000.

Koyahara, Masaru: *See—*
Kawamura, Noriyuki; Aizawa, Nobuhiro; Koizumi, Shigeki; Koyahara, Masaru; and Tomita, Tetsuo, 4,563,715, Cl. 360-78.000.

Koyama, Masao: *See—*
Inouye, Shigeharu; Niida, Taro; Miyauchi, Keinosuke; Matsumoto, Kuniomi; Akita, Eiichi; Koyama, Masao; Kai, Fumio; and Tsuruoka, Takashi, 4,563,472, Cl. 514-381.000.

Koyama, Mikio, to Tokyo Shibaura Denki Kabushiki Kaisha. Schmitt trigger circuit using MOS transistors and having constant threshold voltages. 4,563,594, Cl. 307-290.000.

Kraft, Inc.: *See—*
Soucie, William G.; and Chen, Wen-Sherng, 4,563,360, Cl. 426-104.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Steinke, Alexander, 4,563,328, Cl. 376-446.000.

Kramer, Donald L.; and White, James A., to Miles Laboratories, Inc. Method and apparatus for converting spectral and light intensity values directly to digital data. 4,563,089, Cl. 356-319.000.

Kramer, Wolfgang; Weissmuller, Joachim; Berg, Dieter; Reinecke, Paul; Hanssler, Gerd; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with 4-piperidino methyl-1,3-dioxolanes. 4,563,447, Cl. 514-184.000.

Kranz, Curt, to Mecron Medizinische Produkte GmbH. Joint prosthesis. 4,562,598, Cl. 623-18.000.

Kraus, Edith, Reinhild Kraus, Martin Kraus, heirs: *See—*
Kraus, Willibald, deceased, 4,562,795, Cl. 122-1.00R.

Kraus, Willibald, deceased (by Kraus, Edith, Reinhild Kraus, Martin Kraus, heirs), to Ferdinand Lentjes Dampfkessel- und Maschinenbau, Firma. Process and equipment for reducing the emission of pollutants in flue gases from furnace installations. 4,562,795, Cl. 122-1.00R.

Krautzenberger, Dieter: *See—*
Krocher, Harro; Krautzenberger, Dieter; Sybertz, Hans; and Becker, Uwe, 4,562,873, Cl. 144-356.000.

Kreissl, Franz, to Optyl Eyewear Fashion International Corporation. Protective glasses with tear-off lenses. 4,563,065, Cl. 351-86.000.

Kress, Hans-Jurgen: *See—*
Lindner, Christian; Muller, Friedemann; Peters, Horst; Kress, Hans-Jurgen; and Buekers, Josef, 4,563,496, Cl. 524-430.000.

Krippner, Gunther; and Kletzmaier, Karl. Installation for monitoring parameters of an object. 4,562,735, Cl. 73-432.00R.

Kristofich, John F. Mounting frames. 4,562,656, Cl. 40-152.000.

Krocher, Harro; Krautzenberger, Dieter; Sybertz, Hans; and Becker, Uwe, to Hombak Maschinenfabrik GmbH & Co. KG. Method of and arrangement for milling root butts of round timber. 4,562,873, Cl. 144-356.000.

Krone, Pamela A.: *See—*
Witt, Paul R., Jr.; and Krone, Pamela A., 4,563,357, Cl. 426-46.000.

Krug, John A.; and Buffone, Angelo J., to ACF Industries, Incorporated. Trailer hitch retainer pin retention apparatus. 4,563,117, Cl. 410-56.000.

Kruger, Gerhard, to Metzeler Kautschuk GmbH. Sealing web. 4,563,379, Cl. 428-61.000.

Krupp Polysius AG: *See—*
Schroder, Norbert; Milewski, Gunter; Neusser, Manfred; Dorr, Hermann; Supp, Armin; Rasch, Heinz; Heinemann, Otto; Baldus, Heinz-Dieter; and Manthey, Harald, 4,563,271, Cl. 209-427.000.

Kruschwitz, Werner, to Draftex Industries, Ltd. Window glass mounting arrangements. 4,562,676, Cl. 52-208.000.

Kryos Energy Inc.: *See—*
Weiss, Irving; and Schorr, Hans P. (said Irving Weiss assors. to), 4,563,203, Cl. 62-20.000.

Kubat, Josef; and Manson, Jan-Anders E. Method of injection moulding. 4,563,324, Cl. 264-328.130.

Kubo, Yoshiharu, to Awa Engineering Co., Ltd. Apparatus for winding video tape on reels of a cassette. 4,563,234, Cl. 156-505.000.

Kuck, Karl-Heinz: *See—*
Grohe, Klaus; Petersen, Uwe; and Kuck, Karl-Heinz, 4,563,459, Cl. 514-254.000.
Petersen, Uwe; Grohe, Klaus; and Kuck, Karl-Heinz, 4,563,448, Cl. 514-187.000.

Kuerston, Richard D., to Phillips Petroleum Company. Retort with anti-bridging mechanical agitator. 4,563,247, Cl. 202-265.000.

Kuhara, Yoshiki: *See—*
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Kawakami, Akihiko, 4,563,093, Cl. 356-368.000.

Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, to William H. Rorer, Inc. 1,2,4-Triazines for treating gastrointestinal motility dysfunction. 4,563,456, Cl. 514-242.000.

Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, to William H. Rorer, Inc. Quinoline and quinazoline derivatives for treating gastrointestinal motility dysfunctions. 4,563,460, Cl. 514-260.000.

Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, to William H. Rorer, Inc. Guanidine derivatives for treating gastrointestinal motility dysfunction. 4,563,475, Cl. 514-427.000.

Kuhn, John B.; Wykhuis, Lloyd A.; and Stricker, David K., to Deere & Company. Latch assembly for holding a front mounted implement in raised position. 4,563,019, Cl. 280-481.000.

Kuhn, Kelin J., to Board of Trustees, Leland Stanford University. Method and apparatus for cooling a slab laser. 4,563,763, Cl. 372-35.000.

Kukimoto, Hiroshi; Morimoto, Kiyoshi; and Toki, Hitoshi, to Futaba Denshi Kogyo K.K. Fluorescent composition. 4,563,297, Cl. 252-301.40R.

Kulzer & Co. GmbH: *See—*
Schaefer, Roland, 4,563,153, Cl. 433-223.000.

Kumagai, Yuji: *See—*
Fukasawa, Iko; and Kumagai, Yuji, 4,563,606, Cl. 310-208.000.

Kuna, Wayne A.: *See—*
Ferris, Michael J.; and Kuna, Wayne A., 4,563,011, Cl. 273-243.000.

Kuneman, James E.; and Dickson, Joseph F., to General Electric Company. Direct bond copper ceramic substrate for electronic applications. 4,563,383, Cl. 428-216.000.

Kunimitsu, Michio: *See—*
Tomita, Hiroshi; Maeda, Junji; and Kunimitsu, Michio, 4,563,690, Cl. 346-76.0PH.

Kuno, Akira: *See—*
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,563,685, Cl. 340-995.000.

Kurahashi, Takeo: *See—*
Suzuki, Nobuo; Kurahashi, Takeo; Motohashi, Katsuichi; Sugiyama, Genpei; and Sakai, Takayuki, 4,563,409, Cl. 430-106.000.

Kuraray Co., Ltd.: *See—*
Ishikawa, Nobuo, 4,563,394, Cl. 428-422.000.

Kurauchi, Takeo; Ishii, Keizou; Yamada, Atsushi; and Nozue, Jun, to Nippon Paint Co., Ltd. Top coat composition containing microgel particles. 4,563,372, Cl. 427-409.000.

Kuroda, Takao; Kajimura, Takashi; Kashiwada, Yasutoshi; Chinone, Naoki; Ouchi, Hirobumi; and Ohtoshi, Tsukuru, to Hitachi, Ltd. Semiconductor laser device. 4,563,764, Cl. 372-45.000.

Kuroiwa, Hiroshi: *See—*
Nishimura, Yutaka; Kuroiwa, Hiroshi; Kirisawa, Tadashi; and Oyama, Yoshishige, 4,562,731, Cl. 73-202.000.

Kurosaki, Teikichi: *See—*
Kohda, Akihide; and Kurosaki, Teikichi, 4,563,454, Cl. 514-239.000.

Kurumi, Masateru: *See—*
Fujii, Setsuro; Nakayama, Toyoo; Nunomura, Shigeki; Sudo, Kimio; Watanabe, Shin-ichi; Okutome, Toshiyuki; Sakurai, Yojiro; Kurumi, Masateru; and Aoyama, Takuo, 4,563,527, Cl. 546-169.000.

Kurz, Peter: *See—*
Tschernatsch, Gunther; and Kurz, Peter, 4,562,918, Cl. 198-509.000.

Kurzweil Music Systems, Inc.: *See—*
Marshall, Neal, 4,562,764, Cl. 84-1.100.

Kushima, Tadao; Soga, Tasao; and Suzuki, Takaya, to Hitachi, Ltd. Method of manufacturing solar battery. 4,562,637, Cl. 29-572.000.

Kyoritsu Seiki Corporation: *See—*
Abe, Hitoshi; and Kojima, Sadao, 4,563,115, Cl. 409-134.000.

Kyowa Hakko Kogyo Kabushiki: *See—*
Ishii, Shinzo; Katsumata, Shigeo; Arai, Yuko; Ashizawa, Tadashi; Morimoto, Makoto; Shirahata, Kunikatsu; Saito, Yutaka; and Kono, Motomichi, 4,563,462, Cl. 514-288.000.

L.C.C.-C.I.C.E.-Compagnie Europeenne de Composants Electroniques: *See—*
Lebailly, Michel; and Jacquemin, Maurice, 4,563,541, Cl. 174-52.0FP.

La Telemecanique Electrique: *See—*
Nicolas, Michel; and Lepine, Michel, 4,562,866, Cl. 137-625.650.

Laanio, Verena; von Orelli, Marcus; and Hausermann, Walter, to Ciba Geigy Corporation. Synergistic pesticidal compositions comprising 2,4-diamino-6-cyclopropylamino-s-triazine and cypermethrin. 4,563,457, Cl. 514-245.000.

Lach, Dietrich: *See—*
Bergmann, Udo; Hansen, Guenter; Lach, Dietrich; and Zeidler, Georg, 4,563,520, Cl. 534-678.000.

Lachenmayer, Wilhelm: *See—*
Bick, Klaus; Harmsen, Lothar; Lachenmayer, Wilhelm; and Zieschang, Jurgen, 4,563,766, Cl. 373-72.000.

Ladney, Michael: *See—*
Wright, Leslie S., Jr., 4,563,399, Cl. 428-626.000.

LaFlesh, Richard C.: *See—*
Smith, Donald A.; and LaFlesh, Richard C., 4,562,966, Cl. 239-433.000.

LaFond, Margaret. Multiple syringe pump. 4,563,175, Cl. 604-155.000.

Lagerwall, Sven T.: *See—*
Clark, Noel A.; and Lagerwall, Sven T., 4,563,059, Cl. 350-330.000.

Lam, William Y.: *See—*
Griffin, Paul G.; and Lam, William Y., 4,563,302, Cl. 252-45.000.

Lamb, Joe H. Retractable truck bed cover for pick-ups. 4,563,034, Cl. 296-98.000.

Lampe, Louis F.: *See—*
Furst, Emanuel F.; Lampe, Louis F.; and Woods, William L., 4,562,845, Cl. 128-675.000.

Lance, Mark A., to W. A. Deutsher Proprietary Limited. Snap fastener and method of attaching same. 4,562,626, Cl. 24-689.000.

Landis, H. Richard, to Landis Plastics Inc. Injection molding apparatus. 4,563,149, Cl. 425-547.000.

Landis Plastics Inc.: *See—*
Landis, H. Richard, 4,563,149, Cl. 425-547.000.

Landsiedel, David: *See—*
Scarpa, Eric W.; and Landsiedel, David, 4,562,692, Cl. 53-566.000.

Lane, John R.: *See—*
Virta, Arthur W.; and Lane, John R., 4,563,169, Cl. 493-96.000.

Lange, Arthur F.: *See—*
Misherghi, Ayoub H.; Apfel, Russell J.; and Lange, Arthur F., 4,563,548, Cl. 179-84.0VF.

Lange, Hans: *See—*
Deneke, Ulfert; Lange, Hans; and Rittersdorf, Walter, 4,563,422, Cl. 435-27.000.

Lange, Peter M.: *See—*
Sirinyan, Kirkor; Lange, Peter M.; Merten, Rudolf; and Mitschker, Alfred, 4,563,371, Cl. 427-305.000.

Lange, Ralf: *See—*
Schreckenberg, Manfred; Dhein, Rolf; Lange, Ralf; and Waldenrath, Werner, 4,563,516, Cl. 528-196.000.

Langeac, Daniel, to Commissariat a l'Energie Atomique. Temperature and/or electrical intensity measuring apparatus based on the Faraday effect. 4,563,639, Cl. 324-96.000.

Langecker, Gunter R., to Battenfeld Maschinenfabrik GmbH. Apparatus for extruding a tube. 4,563,147, Cl. 425-376.00A.

Langenbach, George F., Jr.; and Langenbach, John F., to New Tings Inc. Shoring apparatus and method. 4,563,110, Cl. 405-230.000.

Langenbach, John F.: *See—*
Langenbach, George F., Jr.; and Langenbach, John F., 4,563,110, Cl. 405-230.000.

Lannom, James W.: *See—*
Genovese, Frank C.; Lannom, James W.; and Pollack, Joel M., 4,563,613, Cl. 313-497.000.

Lapota, David: *See—*
Losee, Jon R.; and Lapota, David, 4,563,331, Cl. 422-52.000.

Larock, Richard C., to Iowa State University Research Foundation, Inc. Synthesis of thiophene-containing prostaglandin endoperoxide apparatus. 4,563,537, Cl. 549-79.000.

Larrecq, Michel; Tromp, Denis; and Birat, Jean-Pierre, to Institut de Recherches de la Siderurgie Francaise. Process for adjusting the secondary-cooling rate of a continuous-casting machine. 4,562,880, Cl. 164-455.000.

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Grothe, Wolfgang; and Weible, Robert, 4,562,967, Cl. 239-436.000.

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Haaf, William R.; and Lee, Gim F., Jr., 4,563,500, Cl. 525-99.000.

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Geymayer, Peter; and Leidl, Erich, 4,563,294, Cl. 252-49.300.

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Lenton, Kenneth G., to Versatile Corporation. Hot wire welder. 4,563,562, Cl. 219-76.110.

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Butler, Donald E.; and Leonard, James D., 4,563,469, Cl. 514-339.000.

Leone, David A., to Westinghouse Electric Corp. Molded case circuit breaker with a movable contact arm shock absorbing member. 4,563,557, Cl. 200-288.000.

Lepine, Michel: *See—*
Nicolas, Michel; and Lepine, Michel, 4,562,866, Cl. 137-625.650.

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Salina, Louis E.; and Leacovich, Joseph E., 4,562,858, Cl. 137-392.000.

Lew, Hyok S. Dual action handle for floating disc valve and ball-plug valve. 4,562,993, Cl. 251-161.000.

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Sudderth, R. Brantley; Sierakoski, Joseph M.; and Lewis, Roy G., 4,563,256, Cl. 204-108.000.

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Freytag, Friedrich-Carl; Gediga, Josef; Ruthardt, Rolf; and Wagner, Wolfgang, 4,562,943, Cl. 222-590.000.

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Drews, Robert E., 4,563,121, Cl. 414-545.000.

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Limburg, William W.: *See—*
Lin, John W. P.; Dudek, Lesley P.; Limburg, William W.; and Schneider, Eric J., 4,563,408, Cl. 430-59.000.

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Gustavsson, Bengt; Curelaru, Johan; and Linder, Lars E., 4,563,176, Cl. 604-163.000.

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Carlsson, Jan P. E.; Axen, Rolf E. A. V.; Drevin, Hakan N. Y.; and Lindgren, Goran E. S., 4,563,304, Cl. 260-112.00R.

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Chang, Stephen S.; and Lindmark, Lars, 4,563,354, Cl. 424-195.100.

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Chin, Philip C.; and Lindsey, Charles T., 4,563,664, Cl. 335-274.000.

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Brockway, Brian P.; Dreher, Robert D.; Huntwork, Daniel E.; Lindstedt, Brock S.; Morrison, Douglas C.; and Mills, Perry A., 4,562,841, Cl. 128-419.0PG.

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Borzoni, John, 4,563,666, Cl. 337-252.000.

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Fujioka, George S.; and Little, John C., 4,563,530, Cl. 546-345.000.

Litton Systems, Inc.: *See—*
Bonner, Howard E., 4,563,560, Cl. 219-10.55D.
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Loder, Harry A., to Minnesota Mining and Manufacturing Company. Sheet dispenser. 4,562,938, Cl. 221-46.000.

Lofland, Gary K.: *See—*
Cox, James L.; Ferguson, T. Bruce, Jr.; Lofland, Gary K.; and Branham, Barry, 4,562,846, Cl. 128-696.000.

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Dupont, Philippe; and Lontrade, Jean, 4,563,174, Cl. 604-89.000.

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Bugaut, Andree ; and Andrillon, Patrick, 4,563,188, Cl. 8-410.000.

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Zimmermann, Horst; and Lorenz, Joachim, 4,563,012, Cl. 277-13.000.

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Pattiselanno, Job, 4,562,679, Cl. 52-378.000.

Lowrey, James M., Jr.: *See—*
Barrodale, Patricia M.; Young, Mary A.; Humphreys, Joan H.; and Lowrey, James M., Jr., 4,563,183, Cl. 604-329.000.

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Ljungqvist, Rolf; and Lubeck, Sven B., 4,563,732, Cl. 363-35.000.

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Luberacki, Louis L., 4,563,029, Cl. 294-19.100.

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Dawes, Cyril; Smith, John D.; and Smith, Colin G., 4,563,223, Cl. 148-16.500.

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Harrison, Anthony W., 4,563,022, Cl. 280-708.000.

Luchaco, David G.: *See—*
Yuhasz, Stephen J.; and Luchaco, David G., 4,563,592, Cl. 307-115.000.

Luchterhand, Heinz: *See—*
Hammer, Klaus-Dieter; Kindl, Erwin; Luchterhand, Heinz; and Winter, Hermann, 4,563,376, Cl. 428-36.000.

Luders, Elke; and Petersen, Kurt-Eckhard, to Hauni-Werke Korber & Co. KG. Method and apparatus for regulating the permeability of wrapping material for rod-shaped smokers products. 4,563,228, Cl. 156-64.000.

Ludman, Jacques E.; Horner, Joseph L.; and Caulfield, Henry J., to United States of America, Air Force. Fiber optic cable connector. 4,563,057, Cl. 350-96.180.

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Jackson, Keith L.; Jones, W. Clifford; and Schauster, John L., 4,562,775, Cl. 105-186.000.

Lunke, Manfred: *See—*
Walter, Jurgen; Falz, Ulrich; and Lunke, Manfred, 4,563,166, Cl. 464-96.000.

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Petschacher, Reinhard; and Luschnig, Werner, 4,563,669, Cl. 340-347.0DA.

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Yuhasz, Stephen J.; and Luchaco, David G., 4,563,592, Cl. 307-115.000.

Lycan, Jennings, to Service Machine Company. Reversing switch. 4,563,549, Cl. 200-1.00V.

Lynch, Michael P.: *See—*
Beck, James R.; and Lynch, Michael P., 4,563,210, Cl. 71-92.000.

M/A-COM Linkabit, Inc.: *See—*
Heller, Jerrold A.; and Paik, Woo H., 4,563,702, Cl. 358-119.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg: *See—*
Tschernatach, Gunther; and Kurz, Peter, 4,562,918, Cl. 198-509.000.

MAAG Gear-Wheel & Machine Company Limited: *See—*
Sigg, Hans; and Staedeli, Otto, 4,562,909, Cl. 192-48.910.

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Josserand, Marie R., 4,563,120, Cl. 414-273.000.

MacDonald, Robert D., to Brass Craft Manufacturing Company. Valve. 4,562,994, Cl. 251-175.000.

MacKay, Patricia: *See—*
Murray, Kenneth; and MacKay, Patricia, 4,563,423, Cl. 435-68.000.

MacMillan Bloedel Limited: *See—*
Churchland, Mark T.; and Schilling, Walter W., 4,563,237, Cl. 156-62.200.

Madsen, Jens U., to Andrex Radiation Products A/S. X-Ray generator device. 4,563,769, Cl. 378-121.000.

Maeda, Chiaki: *See—*
Hisamoto, Iwao; Maeda, Chiaki; Esaka, Takasige; and Hirai, Masaru, 4,563,287, Cl. 252-2.000.

Maeda, Junji: *See—*
Tomita, Hiroshi; Maeda, Junji; and Kunimitsu, Michio, 4,563,690, Cl. 346-76.0PH.

Maeda, Mikio: *See—*
Sato, Toshiaki; Maeda, Mikio; and Kosaka, Masahiro, 4,563,731, Cl. 363-17.000.

Maeda, Nobuyoshi, to Aida Engineering, Ltd. Wet type clutch/brake device mounted in a flywheel. 4,562,907, Cl. 192-18.00A.

Maeda, Takeshi; Shigematsu, Kazuo; Takasago, Masahiro; Mizoguchi, Yasumitsu; Tsutsumi, Zenji; Tsunoda, Yoshito; and Uno, Motoo, to Hitachi, Ltd. Method of detecting light spot control signal. 4,563,760, Cl. 369-44.000.

Maejima, Kazutaka: *See—*
Miyata, Kouichi; Maejima, Kazutaka; and Tomoda, Katsumi, 4,563,349, Cl. 424-94.000.

Maezono, Masakazu: *See—*
Nishimura, Sadanori; Maezono, Masakazu; and Ishikawa, Keiichi, 4,562,905, Cl. 192-0.032.

Magdhuber, Kurt: *See—*
Hofmann, Rudolf; and Magdhuber, Kurt, 4,563,138, Cl. 418-97.000.

Magin, Ralph W.: *See—*
Becher, David Z.; and Magin, Ralph W., 4,563,212, Cl. 71-118.000.

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Mortenson, Carl N., 4,563,014, Cl. 280-47.180.

Maier, Peter; and Arnold, Gunter. Bench. 4,562,670, Cl. 51-166.00R.

Makino, Kazuhiro, to Hitachi, Ltd. Orientation-controlling apparatus for a suspender of a crane. 4,563,030, Cl. 294-81.400.

Makita Electric Works, Ltd.: *See—*
Fushiya, Fusao; and Kaneko, Tetsuhisa, 4,562,872, Cl. 144-134.00D.

Maldonado, Francisco S.; Pla, Luis C.; Puentes, Jose L. F.; and Sousa-Faro, Jose M. F., to Antibioticos, S.A. Process for the preparation of alpha-(N-pyrrolyl)-derivative acids, the salts and esters thereof; alpha-(N-pyrrolyl)-phenylacetic acids, the esters thereof, pharmaceutical compositions containing them and therapeutical applications thereof. 4,563,477, Cl. 514-427.000.

Malik, Roger J.: *See—*
Dixon, Samuel, Jr.; and Malik, Roger J., 4,563,773, Cl. 455-327.000.

Malinowski, Christopher: *See—*
Gillessen, Klaus; and Malinowski, Christopher, 4,563,590, Cl. 250-578.000.

Mallinckrodt, Inc.: *See—*
Wijayarathna, Bandula; and Hopkins, Ronald M., 4,563,181, Cl. 604-280.000.

Maloney, John G. Electric control signal monitoring and simulating apparatus for troubleshooting automatic transmissions. 4,562,729, Cl. 73-118.000.

Mannesmann Rexroth GmbH: *See—*
Mucheyer, Norbert; and Schulte, Heinz, 4,562,862, Cl. 137-522.000.

Manser, Aloysius H.: *See—*
Berner, Godwin; and Manser, Aloysius H., 4,563,438, Cl. 502-168.000.

Manservisi, Renato; and Corticelli, Sandro, to SASIB S.p.A. Quick-coupling device. 4,562,911, Cl. 192-86.000.

Manson, Jan-Anders E.: *See—*
Kubat, Josef; and Manson, Jan-Anders E., 4,563,324, Cl. 264-328.130.

Manthey, Harald: *See—*
Schroder, Norbert; Milewski, Gunter; Neusser, Manfred; Dorr, Hermann; Supp, Armin; Rasch, Heinz; Heinemann, Otto; Baldus, Heinz-Dieter; and Manthey, Harald, 4,563,271, Cl. 209-427.000.

Mantis ULV-Spruehgeraete GmbH: *See—*
Busch, Georg W., 4,562,958, Cl. 239-7.000.

Marconi Avionics Limited: *See—*
Ellis, Stafford M., 4,563,061, Cl. 350-503.000.

Marinak, Michael J.; and Simonson, John L., to Kalama Chemical Inc. Process for producing 2,3,5-trichloropyridine. 4,563,531, Cl. 546-345.000.

Marincic, Nikola: *See—*
Kane, Philip F.; and Marincic, Nikola, 4,563,401, Cl. 429-91.000.

Marinvent Corporation: *See—*
Maris, John M., 4,563,684, Cl. 340-966.000.

Maris, John M., to Marinvent Corporation. Method of predicting the approaching stall of an aircraft wing. 4,563,684, Cl. 340-966.000.

Markem Systems Limited: *See—*
Diggle, Steven J., 4,562,773, Cl. 101-27.000.

Marker International Company: *See—*
Klubitschko, Gerd, 4,563,021, Cl. 280-612.000.

Marks, Tobin J.; and Inabe, Tamotsu, to Northwestern University. Electrically conductive low dimensional organomacrocycle compositions, articles and fabrication methods. 4,563,301, Cl. 252-519.000.

Marks, Tobin J.: *See—*
Wynne, Kenneth J.; Marks, Tobin J.; and Inabe, Tamotsu, 4,563,300, Cl. 252-518.000.

Marneffe, Antonius C.; Persoon, Frederik G. A.; and Scholten, Gerard J., to U.S. Philips Corporation. Method for manufacturing multilayer ceramic capacitors. 4,562,628, Cl. 29-25.420.

Maroney, Ralf P.; and Fishkind, Gregory A., to Plug-In Storage Systems, Inc. Antistatic shelf for electronic circuit boards. 4,563,722, Cl. 361-212.000.

Marras, Gaetano: *See—*
Barbagli, Rino O.; and Marras, Gaetano, 4,562,906, Cl. 192-4.00A.

Marshall, Neal, to Kurzweil Music Systems, Inc. Electronic musical performance. 4,562,764, Cl. 84-1.100.

Martin, Keith F.: *See—*
Mercer, Frank B.; Jeffery, Maurice S.; and Martin, Keith F., 4,563,358, Cl. 426-89.000.

Martino, Peter V. Obstruction marker light. 4,563,668, Cl. 340-114.00R.

Marttinen, Alpo L. Automatic dumping dust pan. 4,562,611, Cl. 15-257.700.

Marty, Garry R.; Crawford, Dennis W.; and Wingfield, Trevor M., to Masco Corporation of Indiana. Pressure responsive aerator. 4,562,960, Cl. 239-72.000.

Marumoto, Gen: *See—*
Shibata, Fumio; Nagatomo, Katsuaki; Fukuhara, Hidetomo; Marumoto, Gen; and Okudaira, Sadayuki, 4,563,240, Cl. 156-643.000.

Maruyama, Kouichi: *See—*
Matsui, Shigekazu; Kagaya, Kenichi; Ushida, Masao; and Maruyama, Kouichi, 4,563,407, Cl. 430-5.000.

Maruyama, Teruo: *See—*
Otsuki, Toshinori; and Maruyama, Teruo, 4,562,756, Cl. 81-57.400.

Marvin Glass & Associates: *See—*
Ferris, Michael J.; and Kuna, Wayne A., 4,563,011, Cl. 273-243.000.
Herbstler, Horst-Dieter; Terzian, Rouben T.; and Dyson, Lewis R., 4,563,163, Cl. 446-354.000.

Masaki, Akira: *See—*
Asano, Michio; and Masaki, Akira, 4,563,601, Cl. 307-475.000.

Masaki, Yosuke, to Alps Electric Co., Ltd. Gradation recorder. 4,563,693, Cl. 346-76.0PH.

Masamoto, Junzo: *See—*
Yoshida, Koichi; Iwaisako, Toshiyuki; Masamoto, Junzo; Hamanaka, Katsuhiko; and Komaki, Hajime, 4,563,536, Cl. 549-368.000.

Masanek, Juergen; Pennewiss, Horst; and Plainer, Hermann, to Rohm GmbH. Method for making water soluble solid polymers. 4,563,497, Cl. 524-732.000.

Masco Corporation of Indiana: *See—*
Marty, Garry R.; Crawford, Dennis W.; and Wingfield, Trevor M., 4,562,960, Cl. 239-72.000.

Mashino, Keiichi; Naoi, Keigo; and Kobayashi, Kunio, to Hitachi, Ltd.; and Hitachi Automotive Eng. Co., Ltd. Voltage regulator for charging generator. 4,563,631, Cl. 322-33.000.

Masino, Albert P.; Cowan, Kiplin D.; and Hawley, Gil R., to Phillips Petroleum Company. Polyolefin polymerization process and catalyst. 4,563,511, Cl. 526-119.000.

Massachusetts Institute of Technology: *See—*
Tsang, Dean Z.; and Walpole, James N., 4,563,765, Cl. 372-50.000.

Masuda, Michio, to N. K. Manufacturing Company Limited. Paper clamp. 4,562,618, Cl. 24-67.700.

Matex Co., Ltd.: *See—*
Matoba, Nobushige, 4,562,890, Cl. 165-41.000.

Matoba, Nobushige, to Matex Co., Ltd. Apparatus for warming window washer liquid for a motor vehicle. 4,562,890, Cl. 165-41.000.

Matsuda, Hiroaki: *See—*
Oyama, Noboru; Matsuda, Hiroaki; Tsuchida, Eishun; Ohnuki, Yukio; Shimomura, Takeshi; and Ushizawa, Norihiko, 4,563,263, Cl. 204-418.000.

Matsuda, Ikuo: *See—*
Tadokoro, Tomoo; Okimoto, Haruo; and Matsuda, Ikuo, 4,562,804, Cl. 123-216.000.

Matsuda, Koji: *See—*
Takagi, Toshinori; Ishikawa, Junzo; and Matsuda, Koji, 4,563,610, Cl. 313-362.100.

Matsui, Shigekazu; Kagaya, Kenichi; Ushida, Masao; and Maruyama, Kouichi, to Hoya Corporation. Photo-mask blank comprising a shading layer having a variable etch rate. 4,563,407, Cl. 430-5.000.

Matsui, Yukio, to Nissan Motor Co., Ltd. Direct injection type internal combustion engine. 4,562,807, Cl. 123-276.000.

Matsuka, Shigemichi, to Hitachi, Ltd. Motor speed control apparatus. 4,563,623, Cl. 318-311.000.

Matsumoto, Fumio: *See—*
Matsuo, Munetsugu; Matsumoto, Fumio; and Nakayama, Tadashi, 4,563,226, Cl. 148-111.000.

Matsumoto, Kuniomi: *See—*
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Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, to Nippon Soken, Inc. Return route indication device for automotive vehicles. 4,563,685, Cl. 340-995.000.

Matsumura, Masami, to Mitsubishi Denki Kabushiki Kaisha. Rotational angle signal generating system for internal combustion engines. 4,563,741, Cl. 364-431.120.

Matsumura, Susumu; Suzuki, Takashi; and Suzuki, Kenji, to Canon Kabushiki Kaisha. Focus detecting system detecting position of images formed from the center and periphery of the optical axis. 4,563,576, Cl. 250-204.000.

Matsuo, Masaaki: *See—*
Ueda, Ikuo; Matsuo, Masaaki; Tsuji, Kiyoshi; and Kato, Masayuki, 4,563,524, Cl. 544-366.000.

Matsuo, Munetsugu; Matsumoto, Fumio; and Nakayama, Tadashi, to Nippon Steel Corporation. Process for producing a grain-oriented electrical steel sheet. 4,563,226, Cl. 148-111.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kobayashi, Kenji; Uchida, Yasuhiko; and Utsunomiya, Tsuyoshi, 4,563,402, Cl. 429-178.000.
Koga, Ryoichi; and Takahashi, Yutaka, 4,563,571, Cl. 219-299.000.
Okamura, Yasushi; and Tanaka, Kiichiro, 4,563,101, Cl. 400-603.000.
Otsuki, Toshinori; and Maruyama, Teruo, 4,562,756, Cl. 81-57.400.
Sakai, Hiroyuki; Kawakita, Kenji; Fujita, Tsutomu; and Takemoto, Toyoki, 4,563,227, Cl. 148-187.000.
Sato, Toshiaki; Maeda, Mikio; and Kosaka, Masahiro, 4,563,731, Cl. 363-17.000.

Matsushita Electric Works, Ltd.: *See—*
Nagasaki, Haruki; Fujikawa, Shoji; and Iwanaga, Koichi, 4,563,009, Cl. 273-179.00B.

Mattox, Ernest M. Friction type isokinetic exercise mechanism. 4,563,004, Cl. 272-131.000.

Maycock, Ian C., to Automotive Products plc. Diaphragm spring clutch cover assemblies. 4,562,910, Cl. 192-70.270.

Mazda Motor Corporation: *See—*
Hirakami, Kiyomi; and Murakami, Kosuke, 4,563,035, Cl. 296-195.000.
Morishita, Tuyoshi; Ohsaki, Sigemi; and Kawado, Yashuhumi, 4,563,329, Cl. 419-9.000.
Tadokoro, Tomoo; Okimoto, Haruo; Shiraishi, Hideo; and Akagi, Toshimichi, 4,562,803, Cl. 123-216.000.
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Tominaga, Kazunori; and Tanikawa, Yoshitaka, 4,562,808, Cl. 123-339.000.

McClellan, Dale. Needle finger guard and cooling device for a sewing machine. 4,562,783, Cl. 112-281.000.

McClure, Scott G. Combination matrix and interproximal sanding device. 4,563,152, Cl. 433-39.000.

McCulloch Corporation: *See—*
Agnew, Ralph E., 4,563,311, Cl. 261-35.000.

McCutchen, Hugh, Jr.: *See—*
Tanner, Curtis J.; Bender, Richard E.; Simson, Anton K.; and McCutchen, Hugh, Jr., 4,563,391, Cl. 428-365.000.

McDermid, John E.: *See—*
Snook, Matthew L.; McDermid, John E.; and Nicolay, William J., 4,563,636, Cl. 324-66.000.

McDorman, Kim C.; Boyington, William B.; and Wynn, Ronald K. Training device for golfers. 4,563,010, Cl. 273-187.00R.

McEachern, Dan L., to Bio-Rad Laboratories, Inc. Chromatography column and end plug assembly. 4,563,275, Cl. 210-198.200.

McElreath, Kenneth W., to Rockwell International Corporation. Combined motion cueing attitude indicator. 4,563,742, Cl. 364-433.000.

McElroy, David J., to Texas Instruments Incorporated. Process for making avalanche fuse element with isolated emitter. 4,562,639, Cl. 29-584.000.

McKenzie, Bradley J.: *See—*
Duprez, Wayne R.; and McKenzie, Bradley J., 4,562,953, Cl. 236-34.500.

McKenzie, David L. Clay-breaking and fertilizing composition and method of breaking and fertilizing heavy and compacted soils. 4,563,207, Cl. 71-21.000.

McKnight, Robert C. Reaction chamber assembly. 4,563,336, Cl. 422-240.000.

McLaughlin, John R.; and Hertzenberg, Elliot P., to PQ Corporation. Composition for treating beer to prevent chill haze and metal contamination. 4,563,441, Cl. 502-410.000.

McNeilly, David R., to United States of America, Energy. Noise isolation system for high-speed circuits. 4,563,660, Cl. 333-181.000.

McSherry, William E.; and Sokol, Robert L., to Panduit Corp. Stackable cable spacer. 4,562,982, Cl. 248-61.000.

Mechanical Technology Incorporated: *See—*
Bookout, Charles C.; Stotts, Robert E.; Waring, Douglass R.; and Folsom, Lawrence R., 4,563,131, Cl. 417-221.000.

Mecron Medizinische Produkte GmbH: *See—*
Kranz, Curt, 4,562,598, Cl. 623-18.000.

Megyeri, Gabor: *See—*
Ezer, Elemer; Szporny, Laszlo; Hajos, Gyorgy; Szantay, Csaba; Keve, Tibor; Fekete, Gyorgy; Megyeri, Gabor; Aca, Tibor; and Bolcskei, Hedvig, 4,563,464, Cl. 514-299.000.

Meiji Seika Kaisha, Ltd.: *See—*
Inouye, Shigeharu; Niida, Taro; Miyauchi, Keinosuke; Matsumoto, Kuniomi; Akita, Eiichi; Koyama, Masao; Kai, Fumio; and Tsuruoka, Takashi, 4,563,472, Cl. 514-381.000.

Melli, Ilario, to Finsen S.p.A. High-strength tubular beam of folded corrugated cardboard. 4,563,377, Cl. 428-36.000.

Melman, Haim: *See—*
Gilath, Chaim; and Melman, Haim, 4,563,701, Cl. 358-111.000.

Menard, Claude J. Pressed battery plate. 4,563,370, Cl. 427-123.000.

Mercer, Frank B.; Jeffery, Maurice S.; and Martin, Keith F., to F. B. Mercer Limited; and Cadbury Schweppes Limited. Composite food product and method for making the same. 4,563,358, Cl. 426-89.000.

Merck & Co., Inc.: *See—*
Baird, John K.; and Shim, Jaewon L., 4,563,366, Cl. 426-573.000.
Bock, Mark G.; Freidinger, Roger M.; Evans, Ben E.; and Hartman, George D., 4,563,451, Cl. 514-219.000.
Chang, Michael N.; Hammond, Milton L.; Jensen, Norman P.; and Zambias, Robert A., 4,563,476, Cl. 514-459.000.

Merkel, Stephen L., to Nordson Corporation. Scanning temperature display system. 4,563,682, Cl. 340-870.130.

Merlin Marine Engine Corp.: *See—*
Lawson, William, 4,562,697, Cl. 60-599.000.

Merrell Dow Pharmaceuticals Inc.: *See—*
Fozard, John R.; and Gittos, Maurice W., 4,563,465, Cl. 514-304.000.

Merrick, Edwin B., to Hewlett-Packard Company. AGC Circuit. 4,563,655, Cl. 330-285.000.

Merten, Rudolf: *See—*
Sirinyan, Kirkor; Lange, Peter M.; Merten, Rudolf; and Mitschker, Alfred, 4,563,371, Cl. 427-305.000.

Mesmer, Otto; Polligkeit, Wolfgang; Troger, Wolfgang; and Wolter, Andreas, to Vorwerk & Co. Interbolding GmbH. Composition for cleaning textile surfaces. 4,563,187, Cl. 8-137.000.

Messer, Wayne R., to Hercules Incorporated. Photopolymer process and composition employing a photooxidizable component capable of forming endoperoxides. 4,563,413, Cl. 430-281.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Wackerle, Peter M.; Sperber, Franz; and Weber, Walter, 4,562,975, Cl. 242-7.210.

Messing, Horst; and Enning, Jospeh, to Mr. Wash Auto-Service AG. Car cleaning system for car washes. 4,562,848, Cl. 134-123.000.

Messinger, Donald J.; and Zugger, William J. Fish lure with concealed hooks. 4,562,661, Cl. 43-35.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Weiss, Hans J.; Rammler, Roland; Hahn, Helmut; and Dreher, Ingo, 4,563,264, Cl. 208-11.00R.

Metzeler Kautschuk GmbH: *See—*
Kruger, Gerhard, 4,563,379, Cl. 428-61.000.

Meyer, Helmut P., to Allied Corporation. Fuel ignition device and method of assembling same. 4,563,158, Cl. 445-7.000.

Meyers, Joseph, to Waltenspiel, Gordon G. Chargeable electrical power source. 4,563,723, Cl. 361-305.000.

Michel, Karl H.: *See—*
Clem, Gladys M.; Boeck, LaVerne D.; Anderson, Marie T.; and Michel, Karl H., 4,563,442, Cl. 514-9.000.

Microbo S.A.: *See—*
Daly, Peter; and Jeanmairet, Maurice, 4,563,122, Cl. 414-732.000.

Middlekauff, Carle A.: *See—*
Gervais, Edward H.; Middlekauff, Carle A.; and Wescott, Donald C., 4,563,136, Cl. 418-1.000.

Midura, Kenneth J., to Champion International Corporation. Seal end display carton. 4,562,922, Cl. 206-45.190.

Mikiya, Toshio. Holder arrangement for the reciprocating rod of electromagnetic reciprocator device. 4,563,603, Cl. 310-30.000.

Miles Laboratories, Inc.: *See—*
Albarella, James P.; and Anderson, Leslie H. D., 4,563,417, Cl. 435-6.000.
Kramer, Donald L.; and White, James A., 4,563,089, Cl. 356-319.000.

Milewski, Gunter: *See—*
Schroder, Norbert; Milewski, Gunter; Neusser, Manfred; Dorr, Hermann; Supp, Armin; Rasch, Heinz; Heinemann, Otto; Baldus, Heinz-Dieter; and Manthey, Harald, 4,563,271, Cl. 209-427.000.

Miller, Alan G.: *See—*
Brown, Harvey A.; Leichter, Louis M.; and Miller, Alan G., 4,563,415, Cl. 430-340.000.

Miller, Frank N.: *See—*
Van Overloop, Ronald R.; and Miller, Frank N., 4,563,103, Cl. 401-134.000.

Miller, Robert C.; and Wonn, James W., to Westinghouse Electric Corp. System for monitoring metal-to-metal contact in rotating machinery. 4,563,675, Cl. 340-679.000.

Miller, Robert C.: *See—*
Leschek, Walter C.; and Miller, Robert C., 4,563,643, Cl. 324-207.000.

Miller, Russell S.; and Price, Thomas E., to General Electric Company. Plug tube for NMR magnet cryostat. 4,562,703, Cl. 62-514.00R.

Milligan, William D., to Samcoe Holding Corporation. Method for finish drying of tubular knitted fabrics. 4,562,627, Cl. 26-18.500.

Mills, Perry A.: *See—*
Brockway, Brian P.; Dreher, Robert D.; Huntwork, Daniel E.; Lindstedt, Brock S.; Morrison, Douglas C.; and Mills, Perry A., 4,562,841, Cl. 128-419.0PG.

Minami, Akinori; and Yamauchi, Katsuyoshi, to Japan Vilene Co. Ltd. Insulator with high thermal conductivity. 4,563,488, Cl. 523-222.000.

Minigrip, Inc.: *See—*
Ausnit, Steven; and Van Erden, Donald L., 4,563,319, Cl. 264-146.000.

Minkov, Vladimir, to United States of America, Energy. Liquid uranium alloy-helium fission reactor. 4,563,327, Cl. 376-359.000.

Minnesota Mining and Manufacturing Company: *See—*
Black, Philip D.; and Rhoe, Dale G., 4,563,380, Cl. 428-100.000.
Bonk, Thomas J.; and Simpson, J. Thomas, 4,563,388, Cl. 428-304.400.
Brown, Harvey A.; Leichter, Louis M.; and Miller, Alan G., 4,563,415, Cl. 430-340.000.
Grinder, William H., 4,562,599, Cl. 623-6.000.
Kampfer, Robert D.; and Blum, Randall S., 4,563,565, Cl. 219-121.0LJ.
Loder, Harry A., 4,562,938, Cl. 221-46.000.

Minolta Camera Kabushiki Kaisha: *See—*
Kimura, Kazuo; Yamazaki, Yasuo; and Mukai, Hiromu, 4,563,068, Cl. 354-402.000.

Minorikawa, Hitoshi: *See—*
Okado, Terumi; Suda, Seiji; Sugiura, Noboru; Yoshinari, Takashi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; and Fujiwara, Hiroshi, 4,562,813, Cl. 123-425.000.

Miranda, Pedro A. Modular expansible interlocking support structure. 4,562,776, Cl. 108-111.000.

Misherghi, Ayoub H.; Apfel, Russell J.; and Lange, Arthur F., to Advanced Micro Devices, Inc. Method and circuit for telephone dialing signal generation. 4,563,548, Cl. 179-84.0VF.

Mr. Wash Auto-Service AG: *See—*
Messing, Horst; and Enning, Jospeh, 4,562,848, Cl. 134-123.000.

Mistral Windsurfing AG: *See—*
Adamek, Joachim; and Gaide, Albert, 4,562,787, Cl. 114-97.000.

Mita Industrial Co., Ltd.: *See—*
Tsutsui, Eiji; Yoshioka, Masahiro; and Murakami, Masahiro, 4,563,074, Cl. 355-3.0DD.

Mitchell, Vance C.; and Safstron, Thomas A., to ICL Scientific, Inc. Liquid sampling apparatus with retention means. 4,563,332, Cl. 422-100.000.

Mitschker, Alfred: *See—*
Sirinyan, Kirkor; Lange, Peter M.; Merten, Rudolf; and Mitschker, Alfred, 4,563,371, Cl. 427-305.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Matsumura, Masami, 4,563,741, Cl. 364-431.120.
Morishita, Mitsuharu; and Kouge, Shinichi, 4,562,896, Cl. 180-142.000.
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Mitsubishi Petrochemical Co., Ltd.: *See—*
Yokoyama, Masuzo; and Sugano, Toshihiko, 4,563,436, Cl. 502-104.000.

Mitsubishi Rayon Co., Ltd.: *See—*
Ida, Kozo, 4,563,494, Cl. 524-398.000.
Shigemitsu, Hideyuki, 4,563,242, Cl. 156-651.000.

Mitutoyo Mfg. Co., Ltd.: *See—*
Ohtani, Shigeru, 4,563,555, Cl. 200-52.00R.

Miura, Shunji, to Fuji Electric Company, Ltd. Semiconductor pressure sensor. 4,563,697, Cl. 357-26.000.

Miyajiri, Tetsuo: *See—*
Takimoto, Hiroaki; Miyajiri, Tetsuo; Yoshida, Kiminobu; and Turita, Tamio, 4,563,312, Cl. 261-59.000.

Miyaki, Masahiko, to Nippondenso Co., Ltd. Fuel injection pump. 4,562,810, Cl. 123-380.000.

Miyata, Kouichi; Maejima, Kazutaka; and Tomoda, Katsumi, to Takeda Chemical Industries, Ltd. Superoxide dismutase, its immobilized form, and their production and use. 4,563,349, Cl. 424-94.000.

Miyauchi, Keinosuke: *See—*
Inouye, Shigeharu; Niida, Taro; Miyauchi, Keinosuke; Matsumoto, Kuniomi; Akita, Eiichi; Koyama, Masao; Kai, Fumio; and Tsuruoka, Takashi, 4,563,472, Cl. 514-381.000.

Miyoshi, Katuyoshi: *See—*
Shigetomi, Yoshirou; Suzuki, Toshi; Fukui, Katsnori; Inoue, Masuo; Nomura, Motoaki; and Miyoshi, Katuyoshi, 4,563,437, Cl. 502-105.000.

Mizoguchi, Yasumitsu: *See—*
Maeda, Takeshi; Shigematsu, Kazuo; Takasago, Masahiro; Mizoguchi, Yasumitsu; Tsutsumi, Zenji; Tsunoda, Yoshito; and Uno, Motoo, 4,563,760, Cl. 369-44.000.

Mizokami, Hiroshi: *See—*
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Mizumoto, Yoshinori: *See—*
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Mizuno, Junji: *See—*
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Mizutani, Tadashi: *See—*
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Mobay Chemical Corporation: *See—*
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Mobil Oil Corporation: *See—*
Brundige, Virgil L., Jr., 4,563,201, Cl. 62-11.000.
Chu, Pochen; and Garwood, William E., 4,563,435, Cl. 502-71.000.
Frangatos, Gerassimos, 4,563,299, Cl. 252-49.900.
Pistner, Timothy W., 4,562,925, Cl. 206-554.000.

Modak, Shanta: *See—*
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Mode, Duane R., to Champion International Corporation. Compartmented food placemat. 4,562,926, Cl. 206-563.000.

Mohr, Reinhard: *See—*
Hahnke, Manfred; Mohr, Reinhard; and Hohmann, Kurt, 4,563,191, Cl. 8-538.000.

Mokuya, Kinji; Tsushima, Isao; and Sakamoto, Masakatsu, to Hitachi, Ltd. Slurry transport system. 4,563,112, Cl. 406-11.000.

Moller, Rolf; Hirscher, Gerhard; and Bopp, Erich, to Gebruder Uhl, GmbH & Co. KG. Heat-exchanger arrangement. 4,562,884, Cl. 165-76.000.

Monarch Marking Systems, Inc.: *See—*
Karn, Donald L., 4,563,235, Cl. 156-577.000.

Moniteg Ltd.: *See—*
Ward, T. Victor, 4,563,585, Cl. 250-373.000.

Monkelbaan, Edwin R.: *See—*
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Monsanto Company: *See—*
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Mooch Domsjo Aktiebolag: *See—*
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Mooers, Douglas F.: *See—*
Wittmann, John W.; Winkelman, Robert C.; Mooers, Douglas F.; and Davie, Richard L., 4,563,282, Cl. 210-619.000.

Moore, Armistead M., to Travis Electronics, Inc. Speed control circuit for golf carts and the like. 4,563,621, Cl. 318-139.000.

Morduchowitz, Abraham; Sammells, Anthony F.; and Cook, Ronald L., to Texaco Inc. Means and method for the electrochemical carbonylation of nitrobenzene or 2-5 dinitrotoluene with carbon dioxide to provide a product. 4,563,254, Cl. 204-59.00R.

Morfeld, Diane E.; and Charmasson, Henri J. A., to Morfeld, Diane E. Blood-loss measurement apparatus. 4,562,842, Cl. 128-638.000.

Morgan, Allan C., to Hummor, Inc. Making thermoplastic items. 4,563,320, Cl. 264-151.000.

Mori, Kogoro; Ohi, Hideo; and Yazawa, Chihiro, to Ihara Chemical Industry Co., Ltd. Aquatic organism inhibiting composition. 4,563,209, Cl. 71-66.000.

Mori, Yasuchika; and Shigemasa, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Multivariable proportional-integral-derivative process control apparatus. 4,563,734, Cl. 364-157.000.

Moriguchi, Haruhiko: *See—*
Noguchi, Akio; Moriguchi, Haruhiko; Koizumi, Norihiko; Ohmori, Takashi; and Inui, Toshiharu, 4,563,691, Cl. 346-76.000.

Morimoto, Kiyoshi: *See—*
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Morimoto, Makoto: *See—*
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Morishita, Mitsuharu; and Kouge, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Power steering control apparatus. 4,562,896, Cl. 180-142.000.

Morishita, Tuyoshi; Ohsaki, Sigemi; and Kawado, Yashuhumi, to Mazda Motor Corporation. Powder alloy sheet for forming a wear resistant layer on a workpiece. 4,563,329, Cl. 419-9.000.

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Sadaki, Hiroshi; Imaizumi, Hiroyuki; Takeda, Kenji; Inaba, Takihiro; Takeno, Ryuko; Morita, Seishi; Kajita, Tetsuya; and Saikawa, Isamu, 4,563,534, Cl. 548-194.000.

Moritugu, Mitiyasu; Kawai, Hisasi; and Tokura, Norihito, to Nippon Soken, Inc. Ignition device for internal combustion engine. 4,562,823, Cl. 123-620.000.

Morris, Arthur J.: *See—*
Pringle, Ronald E.; Morris, Arthur J.; and Johnson, John J., 4,562,854, Cl. 137-155.000.

Morrison, Douglas C.: *See—*
Brockway, Brian P.; Dreher, Robert D.; Huntwork, Daniel E.; Lindstedt, Brock S.; Morrison, Douglas C.; and Mills, Perry A., 4,562,841, Cl. 128-419.0PG.

Mortensen, Anna B., to Slagteriernes Forskningsinstitut. Method of detecting obnoxious taint such as boar taint in individual animal bodies, preferably carcasses or parts thereof. 4,563,428, Cl. 436-21.000.

Mortenson, Carl N., to Magline Inc. Two-wheeled hand trucks. 4,563,014, Cl. 280-47.180.

Mosher, Philip C.; and Aleem, Mohd A., to Sundstrand Corporation. Method of assembling a magnetic rotor. 4,562,641, Cl. 29-598.000.

Mosholder, Michael B., to Tokyo Shibaura Denki Kabushiki Kaisha. Device for pressure fusing images on to paper in electrostatic copiers. 4,563,075, Cl. 355-3.0FU.

Moss, Ernest K.: *See—*
Frentzel, Richard L.; and Moss, Ernest K., 4,563,499, Cl. 525-404.000.

Motohashi, Katsuichi: *See—*
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Motorola, Inc.: *See—*
Barker, Charles E., 4,563,751, Cl. 364-786.000.
Donoghue, William J.; and Noufer, Glenn E., 4,563,599, Cl. 307-448.000.
Donoghue, William J., 4,563,753, Cl. 365-104.000.
Garas, Anthony G., 4,563,064, Cl. 350-620.000.

Moulin, Maurice: *See—*
Geffroy, Jean; Hofman, Michel; Moulin, Maurice; and Noel, Jean-Paul, 4,563,567, Cl. 219-121.0LU.

Mourier, Georges, to Thomson-CSF. Ultra high frequency radio electric wave generators. 4,563,615, Cl. 315-39.300.

Mrochek, John E.; Dinsmore, Stanley R.; and Chandler, Edward W., to United States of America, Energy. Disc valve for sampling erosive process streams. 4,562,748, Cl. 73-863.730.

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Hannen, Reiner W., 4,562,689, Cl. 53-434.000.

MTU Motoren-und Turbinen-Union Muenchen GmbH: *See—*
Rossmann, Axel, 4,563,128, Cl. 416-92.000.

MTU Motoren und Turbinen-Union Munich GmbH: *See—*
Zimmermann, Horst; and Lorenz, Joachim, 4,563,012, Cl. 277-13.000.

Mucheyer, Norbert; and Schulte, Heinz, to Mannesmann Rexroth GmbH. Hydraulically unblockable non-return valve. 4,562,862, Cl. 137-522.000.

Mueller, Martin, to Osgood Industries, Inc. Apparatus and method for applying heat-ahrinkable members to containers. 4,562,688, Cl. 53-399.000.

Mukai, Hiromu: *See—*
Kimura, Kazuo; Yamazaki, Yasuo; and Mukai, Hiromu, 4,563,068, Cl. 354-402.000.

Mullani, Nizar A., to Clayton Foundation for Research. Positron emission tomography camera. 4,563,582, Cl. 250-363.00S.

Muller, Claus-Dieter: *See—*
Franke, Albrecht; Steiner, Gerd; Hofmann, Hans-Peter; Muller, Claus-Dieter; and Teschendorf, Hans-Jurgen, 4,563,474, Cl. 514-417.000.

Muller, Friedemann: *See—*
Lindner, Christian; Muller, Friedemann; Peters, Horst; Kress, Hans-Jurgen; and Buekers, Josef, 4,563,496, Cl. 524-430.000.

Muller, Johannes C. A.: *See—*
Fleck, Harald; Muller, Johannes C. A.; and Hutter, Heinrich, 4,563,717, Cl. 360-95.000.

Munakata, Chusuke; and Honma, Noriaki, to Hitachi, Ltd. Apparatus for nondestructively measuring characteristics of a semiconductor wafer with a junction. 4,563,642, Cl. 324-158.00D.

Munesue, Eiji: *See—*
Nakayama, Kazuo; Naito, Yukio; and Munesue, Eiji, 4,562,738, Cl. 73-622.000.

Murai, Ryukichi: *See—*
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Murakami, Kiyotaka; and Kimura, Yoshiaki, to Konishiroku Photo Industry Co., Ltd. Method for ink-jet recording and apparatus therefor. 4,563,689, Cl. 346-1.100.

Murakami, Kosuke: *See—*
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Murakami, Masahiro: *See—*
Tsutsui, Eiji; Yoshioka, Masahiro; and Murakami, Masahiro, 4,563,074, Cl. 355-3.0DD.

Murakoshi, Makoto; and Ando, Kunio, to Fuji Photo Film Co. Ltd.; and Fuji Photo Optical Co. Ltd. Endoscope system using solid state imaging device. 4,562,831, Cl. 128-6.000.

Murari, Bruno: *See—*
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Murasawa, Yoshihiro: *See—*
Ohkubo, Masaharu; Murasawa, Yoshihiro; Ohtsuka, Yasumasa; and Asai, Jun, 4,563,694, Cl. 346-160.000.

Murata Manufacturing Co., Ltd.: *See—*
Sakamoto, Yukio, 4,563,659, Cl. 333-181.000.

Murata, Masayoshi: *See—*
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,563,450, Cl. 514-204.000.

Murata, Toshinori: *See—*
Arai, Ikuya; Murata, Toshinori; and Kazumi, Masafumi, 4,563,654, Cl. 330-277.000.

Muri, Werner, to BBC Brown, Boveri & Company, Limited. Water-cooled condenser tube-plate attachment. 4,562,887, Cl. 165-158.000.

Murphy, Betty J.: *See—*
Smith, James A.; and Murphy, Betty J., 4,563,483, Cl. 521-111.000.

Murphy, Desmond L.: *See—*
Ericsen, Bret; Hastings, John C.; Murphy, Desmond L.; and Jansen, Scott, 4,563,564, Cl. 219-121.0LJ.

Murphy, Richard D.; and Clelford, Douglas H., to United Technologies Corporation. Maneuver-force gradient system. 4,563,743, Cl. 364-434.000.

Murray, Kenneth; and MacKay, Patricia, to Biogen N.V. Products displaying the antigenicity of hepatitis B virus e antigens and methods of producing those antigens. 4,563,423, Cl. 435-68.000.

Murray, Ledell L., to General Indicator Corporation. Display structure. 4,562,657, Cl. 40-518.000.

Musser, John H.; and Brown, Richard E., to USV Pharmaceutical Corp. 2-Oxo-1,3-oxazolo[4,5-h] quinolines useful as anti-allergy agents. 4,563,463, Cl. 514-293.000.

Mutzenberg, Willi; and Deuscher, Albert, to Von Roll AG. Belt filter press with ribs for filtering a heavy liquid. 4,563,278, Cl. 210-401.000.

Myerson, Joel: *See—*
Soderstrom, Edwin L.; Haddon, William F.; and Myerson, Joel, 4,563,348, Cl. 424-84.000.

N. K. Manufacturing Company Limited: *See—*
Masuda, Michio, 4,562,618, Cl. 24-67.700.

Nagai, Shunichi; and Hiramura, Kazuo, to Kabushiki Kaisha Komatsu Seisakusho. Beam type safety device. 4,563,578, Cl. 250-221.000.

Nagai, Yoshitaka; and Doguchi, Nobushige, to Yoshida Kogyo K.K. Method and apparatus for continuously filling grooves in sash bars with heat insulating material. 4,563,322, Cl. 264-267.000.

Nagai, Yukito: *See—*
Kishimoto, Takashi; Shimizu, Kensaku; and Nagai, Yukito, 4,563,031, Cl. 294-81.210.

Nagano, Hiroshi: *See—*
Isaka, Tsutomu; and Nagano, Hiroshi, 4,563,316, Cl. 264-22.000.

Nagano, Masanobu: *See—*
Ueda, Ikuo; Kato, Masayuki; Nagano, Masanobu; and Akahane, Atsushi, 4,563,455, Cl. 514-241.000.

Nagano, Shozi: *See—*
Hagiwara, Tatsuo; and Nagano, Shozi, 4,562,972, Cl. 241-260.000.

Nagao, Hiroyuki: *See—*
Ishiguro, Ikuo; and Nagao, Hiroyuki, 4,563,397, Cl. 428-469.000.

Nagasaka, Nagahiko, to Kabushiki Kaisha Yasawa Denki Seisakusho. Permanent magnet type stepping motor. 4,563,602, Cl. 310-12.000.

Nagasaki, Haruki; Fujikawa, Shoji; and Iwanaga, Koichi, to Matsushita Electric Works, Ltd. Golf putting practice device. 4,563,009, Cl. 273-179.00B.

Nagasawa, Kiyoshi; Itoh, Eiichi; and Kato, Sadao, to Hashimoto Denki Co., Ltd. Board drying apparatus. 4,562,650, Cl. 34-149.000.

Nagashima, Nao, to Canon Kabushiki Kaisha. Image forming system. 4,563,706, Cl. 358-280.000.

Nagatomo, Katsuaki: *See—*
Shibata, Fumio; Nagatomo, Katsuaki; Fukuhara, Hidetomo; Marumoto, Gen; and Okudaira, Sadayuki, 4,563,240, Cl. 156-643.000.

Nair, Krishnapillai V.; and Somasundaran, Ponisseril, to Columbia University in the City of New York, The Trustees of. Method for dewatering phosphate slimes. 4,563,285, Cl. 210-714.000.

Naito, Yukio: *See—*
Nakayama, Kazuo; Naito, Yukio; and Munesue, Eiji, 4,562,738, Cl. 73-622.000.

Nakada, Yoshinori: *See—*
Takeshima, Kiyoshi; Murai, Ryukichi; and Nakada, Yoshinori, 4,562,621, Cl. 24-408.000.

Nakagawa, Mitsuru; Kondo, Yasuo; and Hashikawa, Atsushi, to Nippon Soken, Inc. Air conditioning/heating apparatus for automobiles. 4,562,957, Cl. 237-12.30R.

Nakajima, Takeshi, to Nippon Electric Co., Ltd. Digital radio paging receiver. 4,563,680, Cl. 340-825.440.

Nakamura, Akira, to Nippon Gakki Seizo Kabushiki Kaisha. Diaphragm of electroacoustic transducer and method of manufacturing the same. 4,562,899, Cl. 181-169.000.

Nakamura, Junichi: *See—*
Oinoue, Kenichi; Aoki, Masahiro; Ida, Masatoshi; Nakamura, Junichi; and Hayashi, Asao, 4,563,705, Cl. 358-227.000.

Nakamura, Kazuo: *See—*
Kobayashi, Tohru; and Nakamura, Kazuo, 4,563,600, Cl. 307-455.000.

Nakamura, Mituo: *See—*
Kobayashi, Kazuo; Asano, Seijiro; Nakamura, Mituo; Ida, Daijiro; Asabuki, Hiroshi; and Ashiwara, Hiromoto, 4,563,126, Cl. 415-119.000.

Nakamura, Morihiko: *See—*
Kawaguchi, Akiyoshi; and Nakamura, Morihiko, 4,563,495, Cl. 524-413.000.

Nakamura, Tomoaki; Nakane, Keiichi; Nakanishi, Hiroaki; and Hirai, Koji, to Hitachi, Ltd. Virtual storage management. 4,563,737, Cl. 364-200.000.

Nakane, Keiichi: *See—*
Nakamura, Tomoaki; Nakane, Keiichi; Nakanishi, Hiroaki; and Hirai, Koji, 4,563,737, Cl. 364-200.000.

Nakanishi, Hiroaki: *See—*
Nakamura, Tomoaki; Nakane, Keiichi; Nakanishi, Hiroaki; and Hirai, Koji, 4,563,737, Cl. 364-200.000.

Nakano, Shinji: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; Kanakura, Akihiro; and Nakano, Shinji, 4,563,492, Cl. 524-90.000.

Nakatani, Koma, to Velbon International Corporation. Pan head. 4,562,985, Cl. 248-183.000.

Nakayama, Kazuo; Naito, Yukio; and Munesue, Eiji, to Mitsubishi Denki Kabushiki Kaisha. Automatic flaw detection device. 4,562,738, Cl. 73-622.000.

Nakayama, Tadashi: *See—*
Matsuo, Munetsugu; Matsumoto, Fumio; and Nakayama, Tadashi, 4,563,226, Cl. 148-111.000.

Nakayama, Toyoo: *See—*
Fujii, Setsuro; Nakayama, Toyoo; Nunomura, Shigeki; Sudo, Kimio; Watanabe, Shin-ichi; Okutome, Toshiyuki; Sakurai, Yojiro; Kurumi, Masateru; and Aoyama, Takuo, 4,563,527, Cl. 546-169.000.

Nalco Chemical Company: *See—*
Keiser, Bruce A., 4,563,298, Cl. 252-313.200.
Lindenberger, William H.; Sieder, Theodore P.; and Zuerner, Edwin C., 4,563,199, Cl. 55-85.000.

Naoi, Keigo: *See—*
Mashino, Keiichi; Naoi, Keigo; and Kobayashi, Kunio, 4,563,631, Cl. 322-33.000.

Narasimhan, Kalatur S. V. L.; and Snyder, Francis S., to Crucible Materials Corporation. Samarium-cobalt magnet alloy containing praseodymium and neodymium. 4,563,330, Cl. 420-435.000.

Nason, Clyde K.; and Culp, Gordon W. Solenoid drive apparatus for an external infusion pump. 4,562,751, Cl. 74-111.000.

Nasu, Kohji: *See—*
Tanaka, Michio; Nasu, Kohji; and Okamura, Masanori, 4,562,714, Cl. 72-46.000.

Nathan, Ranga; Seyedin, Saied; Piez, Karl; and Bentz, Hanne, to Collagen Corporation. Inductive collagen based bone repair preparations. 4,563,350, Cl. 424-95.000.

National Biomedical Research Foundation: *See—*
Ledley, Robert S., 4,563,173, Cl. 604-81.000.

National Semiconduct Corporation: *See—*
Bose, Bidyut K., 4,563,595, Cl. 307-290.000.

Naumoff, Carl M.: *See—*
Bates, Norman; and Naumoff, Carl M., 4,562,834, Cl. 128-82.000.

NEC Corporation: *See—*
Yokosuka, Shigeru, 4,563,775, Cl. 455-126.000.

Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek: *See—*
Verheijen, Johan H.; and Nieuwenhuizen, Willem, 4,563,420, Cl. 435-13.000.

Negita, Moriyasu; Fukai, Masao; and Tokoro, Masatoshi, to Fujitsu Limited. Head and ribbon driving mechanism for thermal printer. 4,563,692, Cl. 346-76.0PH.

Neiman S.A.: *See—*
Lipschutz, Paul, 4,562,710, Cl. 70-252.000.

Nelson, Gunner E., to Ethyl Corporation. Catalyzed alkali metal aluminum hydride production. 4,563,343, Cl. 423-644.000.

Nelson, Richard C. Replaceable foam insulation system. 4,562,674, Cl. 52-171.000.

Nemcek, Jozef; and Roberts, Thomas A., to Imperial Chemical Industries PLC. Polymerizable composition comprising (a) phosphorus oxyacid (b) amine and (c) inorganic material. 4,563,486, Cl. 523-115.000.

Neta, Yoave. Automatic firearm. 4,562,659, Cl. 42-75.00C.

Netravali, Arun N.: *See—*
Lim, Tong L.; and Netravali, Arun N., 4,563,671, Cl. 340-347.0DD.

Neu, Patrick: *See—*
Birat, Jean-Pierre; Neu, Patrick; and Senaneuch, Denis, 4,562,879, Cl. 164-468.000.

Neumaier, Anton: *See—*
Hunger, Josef; Donner, Hans-Christian; and Neumaier, Anton, 4,563,013, Cl. 279-64.000.

Neusser, Manfred: *See—*
Schroder, Norbert; Milewski, Gunter; Neusser, Manfred; Dorr, Hermann; Supp, Armin; Rasch, Heinz; Heinemann, Otto; Baldus, Heinz-Dieter; and Manthey, Harald, 4,563,271, Cl. 209-427.000.

Nevitt, Thomas D.: *See—*
Hopkins, P. Donald; Nevitt, Thomas D.; and Unmuth, Eugene E., 4,563,266, Cl. 208-110.000.

New Things Inc.: *See—*
Langenbach, George F., Jr.; and Langenbach, John F., 4,563,110, Cl. 405-230.000.

Newcomb, Nelson F.; and Newcomb, Nelson F., Jr. Illuminated chemiluminescent drinking mug. 4,563,726, Cl. 362-34.000.

Newcomb, Nelson F., Jr.: *See—*
Newcomb, Nelson F.; and Newcomb, Nelson F., Jr., 4,563,726, Cl. 362-34.000.

Newman, Neil F.: *See—*
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Zisis A.; and Baldwin, Francis P., 4,563,506, Cl. 525-354.000.

Newsome Air Conditioning Limited: *See—*
Newsome, George; and Newton, Eric, 4,562,701, Cl. 62-187.000.

Newsome, George; and Newton, Eric, to Newsome Air Conditioning Limited. Cooling apparatus. 4,562,701, Cl. 62-187.000.

Newton, Eric: *See—*
Newsome, George; and Newton, Eric, 4,562,701, Cl. 62-187.000.

NGK Insulators, Ltd.: *See—*
Ogawa, Yutaka; Asai, Shoji; and Otaka, Masashi, 4,563,414, Cl. 430-325.000.

NGK Spark Plug Co., Ltd.: *See—*
Yamamoto, Yoshihiro; and Suzuki, Junichiro, 4,563,215, Cl. 75-238.000.

Nicksic, Stephen W., to Phoenix Project Partnership. Process for clarifying bicarbonate bearing waters using measurement and control of carbon dioxide content. 4,563,283, Cl. 210-696.000.

Nicolas, Michel; and Lepine, Michel, to La Telemecanique Electrique. Lower power electromagnetically controlled fluid operating valve. 4,562,866, Cl. 137-625.650.

Nicolay, William J.: *See—*
Snook, Matthew L.; McDermid, John E.; and Nicolay, William J., 4,563,636, Cl. 324-66.000.

Nicoloff, Demetre M.: *See—*
Possis, Zinon C.; and Nicoloff, Demetre M., 4,562,597, Cl. 623-1.000.

Niekawa, Yukihisa; and Tsuchiya, Shigeyuki, to Fujisoku Electric Co. Ltd. Core member for an electromagnetic relay. 4,563,663, Cl. 335-78.000.

Nielsen, Richard H.: *See—*
Hays, George E.; Young, Richard K.; and Nielsen, Richard H., 4,563,334, Cl. 422-140.000.

Nieuwenhuizen, Willem: *See—*
Verheijen, Johan H.; and Nieuwenhuizen, Willem, 4,563,420, Cl. 435-13.000.

Niida, Taro: *See—*
Inouye, Shigeharu; Niida, Taro; Miyauchi, Keinosuke; Matsumoto, Kuniomi; Akita, Eiichi; Koyama, Masao; Kai, Fumio; and Tsuruoka, Takashi, 4,563,472, Cl. 514-381.000.

Nike, Inc.: *See—*
Frederick, Edward C.; and Robinson, John R., 4,562,651, Cl. 36-102.000.

Nikko Co., Ltd.: *See—*
Ishimoto, Zenichi, 4,563,162, Cl. 446-175.000.
Ohtake, Tsuneo, 4,563,626, Cl. 320-2.000.

Nilarp, Anders, to International Rectifier Corporation. SCR Having multiple gates and phosphorus gettering exteriorly of a ring gate. 4,563,698, Cl. 357-38.000.

Nilssen, Ole K. Ballasts with built-in ground-fault protection. 4,563,719, Cl. 361-45.000.

Nilsson, Leif. Illuminating device. 4,563,150, Cl. 431-320.000.

Nilsson, Rolf O.: *See—*
Gunnarsson, Lennart K.; and Nilsson, Rolf O., 4,563,342, Cl. 423-556.000.

Nippon Electric Co., Ltd.: *See—*
Nakajima, Takeshi, 4,563,680, Cl. 340-825.440.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Nakamura, Akira, 4,562,899, Cl. 181-169.000.

Nippon Kogaku K.K.: *See—*
Kanatani, Fujio, 4,563,062, Cl. 350-520.000.

Nippon Notion Kogyo Co., Ltd.: *See—*
Kanzaka, Yoshihiro, 4,562,624, Cl. 24-621.000.

Nippon Oil Company, Ltd.: *See—*
Otsuki, Yutaka; Araki, Yoshihiko; Omika, Hiroyoshi; Hara, Hajime; and Aoyama, Kazuho, 4,563,501, Cl. 525-108.000.

Nippon Paint Co., Ltd.: *See—*
Kurauchi, Takeo; Ishii, Keizou; Yamada, Atsushi; and Nozue, Jun, 4,563,372, Cl. 427-409.000.

Nippon Soken, Inc.: *See—*
Kitagawa, Junji; Mizuno, Junji; Akita, Shigeyuki; and Fukami, Akira, 4,562,732, Cl. 73-291.000.
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, 4,562,818, Cl. 123-478.000.
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,563,685, Cl. 340-995.000.
Moritugu, Mitiyasu; Kawai, Hisasi; and Tokura, Norihito, 4,562,823, Cl. 123-620.000.
Nakagawa, Mitsuru; Kondo, Yasuo; and Hashikawa, Atsushi, 4,562,957, Cl. 237-12.30R.
Tanaka, Hiroaki; and Akita, Shigeyuki, 4,563,683, Cl. 340-870.370.

Nippon Steel Corporation: *See—*
Matsuo, Munetsugu; Matsumoto, Fumio; and Nakayama, Tadashi, 4,563,226, Cl. 148-111.000.

Nippon Zeon Co., Ltd.: *See—*
Yamada, Hideaki; Tani, Yoshiki; and Izumi, Yoshikazu, 4,563,426, Cl. 435-119.000.

Nippondenso Co., Ltd.: *See—*
Miyaki, Masahiko, 4,562,810, Cl. 123-380.000.
Ogoshi, Yutaka; Yokoi, Mitsuyoshi; Takehisa, Fumitaka; and Yoshikawa, Sumi, 4,562,875, Cl. 164-72.000.

Nishihara, Tsukasa: *See—*
Ginnaga, Akihiro; Sakuma, Shin; Nishihara, Tsukasa; Tashiro, Tomitaka; Susumi, Sadao; Kawahara, Tetsuo; and Mizokami, Hiroshi, 4,563,303, Cl. 260-112.00R.

Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Hiroichi; and Kitada, Fumihiko, to Imanishi Kinzoku Kogyo Kabushiki Kaisha. Flame-rise stopping means for a kerosene stove. 4,562,825, Cl. 126-96.000.

Nishikawa, Hirotaka, to Toyo Seikan Kaisha, Limited. Ironing apparatus. 4,562,720, Cl. 72-349.000.

Nishikawa, Kohei: *See—*
Terao, Shinji; and Nishikawa, Kohei, 4,563,446, Cl. 514-63.000.

Nishimura, Sadanori; Maezono, Masakazu; and Ishikawa, Keiichi, to Honda Giken Kogyo Kabushiki Kaisha. Clutch operation control system for fluid torque converters. 4,562,905, Cl. 192-0.032.

Nishimura, Shigeyuki: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,563,529, Cl. 346-345.000.

Nishimura, Yutaka; Kuroiwa, Hiroshi; Kirisawa, Tadashi; and Oyama, Yoshishige, to Hitachi, Ltd. Air flow meter. 4,562,731, Cl. 73-202.000.

Nishino, Toshikazu: *See*—
Tarutani, Yoshinobu; and Nishino, Toshikazu, 4,563,695, Cl. 357-5.000.

Nishio, Yasuharu; and Saito, Shunji, to Tokyo Electric Co., Ltd. Floppy disk drive apparatus. 4,563,712, Cl. 360-75.000.

Nishioka, Akinori: *See*—
Kitagawa, Yozo; Nishioka, Akinori; Higuchi, Yasuo; Tsutsumi, Tadahiko; Yamaguchi, Takashi; and Kato, Tadashi, 4,563,393, Cl. 428-412.000.

Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, to Ishihara Sangyo Kaisha Ltd. Process for producing trifluoromethylpyridines. 4,563,529, Cl. 546-345.000.

Nissan Motor Company, Limited: *See*—
Abo, Toshimi; and Ueno, Takashi, 4,562,814, Cl. 123-488.000.
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Kawai, Akio, 4,562,822, Cl. 123-620.000.
Ito, Teruyuki, 4,562,817, Cl. 123-478.000.
Iwata, Kazuro; Fukushima, Naoto; and Takemura, Toji, 4,562,997, Cl. 267-8.00R.
Kobayashi, Hiroshi, 4,562,734, Cl. 73-311.000.
Matsui, Yukio, 4,562,807, Cl. 123-276.000.
Tsujibayashi, Yoshiyuki, 4,562,800, Cl. 123-195.00A.
Yasuhara, Seishi, 4,563,133, Cl. 417-295.000.

Nissan Shatai Company, Limited: *See*—
Kajita, Shunsuke, 4,562,954, Cl. 237-2.00A.

Nissin-High Voltage Co., Ltd.: *See*—
Takagi, Toshinori; Ishikawa, Junzo; and Matsuda, Koji, 4,563,610, Cl. 313-362.100.

Nocivelli, Luigi, to C.G.A. Compagnia Generale Alluminio S.p.A. Method of making double layer sheet metal panels with ducts formed by inflation. 4,563,230, Cl. 156-80.000.

Noda, Kimihiko: *See*—
Okada, Masashi; Noda, Kimihiko; and Shikata, Masami, 4,563,290, Cl. 252-8.55D.

Noel, Jean-Paul: *See*—
Geffroy, Jean; Hofman, Michel; Moulin, Maurice; and Noel, Jean-Paul, 4,563,567, Cl. 219-121.0LU.

Noguchi, Akio; Moriguchi, Haruhiko; Koizumi, Norihiko; Ohmori, Takashi; and Inui, Toshiharu, to Fuji Xerox Co., Ltd. Thermo-sensitive recording apparatus. 4,563,691, Cl. 346-76.000.

Noguchi, Masahiro: *See*—
Enjo, Naonori; Aomi, Hideki; Noguchi, Masahiro; and Ide, Satoshi, 4,562,995, Cl. 252-67.000.

Nomura, Motoaki: *See*—
Shigetomi, Yoshirou; Suzuki, Toshi; Fukui, Katsnori; Inoue, Masuo; Nomura, Motoaki; and Miyoshi, Katuyoshi, 4,563,437, Cl. 502-105.000.

Nonaka, Yasuhiko; Inoue, Eisuke; Shidara, Keiichi; and Tanioka, Kenkichi, to Hitachi, Ltd. Image pick-up tube target. 4,563,611, Cl. 313-366.000.

Noord-Nederlandsche Machinefabriek B.V.: *See*—
van Os, Cornelis J., 4,562,798, Cl. 123-193.0CH.

Norbury, David S.: *See*—
Rowe, Rodney A.; and Norbury, David S., 4,562,699, Cl. 60-759.000.

Nordson Corporation: *See*—
Merkel, Stephen L., 4,563,682, Cl. 340-870.130.

Noro, Masahiko: *See*—
Abe, Mitsuo; Atomori, Seiichi; Tsutsumi, Tadahiko; and Noro, Masahiko, 4,563,505, Cl. 525-316.000.

North American Agricultural, Inc.: *See*—
Carroll, Michael W.; Harwood, Michael E.; and Aldag, John H., 4,562,678, Cl. 52-303.000.

North, Bernard: *See*—
Yeckley, Russell L.; and North, Bernard, 4,563,433, Cl. 501-97.000.

Northern Telecom Limited: *See*—
Bumgardner, Donald L., 4,562,988, Cl. 248-349.000.

Northwestern University: *See*—
Marks, Tobin J.; and Inabe, Tamotsu, 4,563,301, Cl. 252-519.000.
Wynne, Kenneth J.; Marks, Tobin J.; and Inabe, Tamotsu, 4,563,300, Cl. 252-518.000.

Noufer, Glenn E.: *See*—
Donoghue, William J.; and Noufer, Glenn E., 4,563,599, Cl. 307-448.000.

Nova Span International Ltd.: *See*—
Peterson, Carl W., 4,563,107, Cl. 405-124.000.

Nozue, Jun: *See*—
Kurauchi, Takeo; Ishii, Keizou; Yamada, Atsushi; and Nozue, Jun, 4,563,372, Cl. 427-409.000.

Nu-Tech Pools Inc.: *See*—
Paradis, Roger O., 4,562,603, Cl. 4-506.000.

Numata, Koji: *See*—
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,563,685, Cl. 340-995.000.

Nunomura, Shigeki: *See*—
Fujii, Setsuro; Nakayama, Toyoo; Nunomura, Shigeki; Sudo, Kimio; Watanabe, Shin-ichi; Okutome, Toshiyuki; Sakurai, Yojiro; Kurumi, Masateru; and Aoyama, Takuo, 4,563,527, Cl. 546-169.000.

Nydahl, Claes; and Knudsen, Odd, to Nydahl, Claes. Instrument for obtaining samples from uterus of animals. 4,562,847, Cl. 128-757.000.

O. M. Scott & Sons Company: *See*—
Lemkin, Jack L.; Zilber, Eugene A.; and Peterson, Carl A., 4,562,865, Cl. 137-624.120.

Obayashi, Hideki: *See*—
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, 4,562,818, Cl. 123-478.000.

O'Bryan, Henry M., Jr.; Plourde, James K.; and Thomson, John, Jr., to AT&T Bell Laboratories. Dielectric for microwave applications. 4,563,661, Cl. 333-202.000.

O'Connor, Kevin J., to AT&T Bell Laboratories. Row-address-decoder-driver circuit. 4,563,755, Cl. 365-230.000.

Office National D'Etudes et de Recherches Aerospatiales: *See*—
Boudigues, Serge; Frattacci, Georges; and Ponthieux, Alain, 4,563,125, Cl. 415-115.000.

Office Technique des Treffles: *See*—
Coratte, Jacques; and Petkovic, Dominique, 4,562,716, Cl. 72-286.000.

Ogawa, Osamu; and Wakamatsu, Fumio, to Aisin Seiki Kabushiki Kaisha. Reinforcement member for a vehicle bumper. 4,563,028, Cl. 293-122.000.

Ogawa, Yutaka; Asai, Shoji; and Otaka, Masashi, to NGK Insulators, Ltd. Method of producing a mask to be used for the production of a ceramic filter. 4,563,414, Cl. 430-325.000.

Ogoshi, Yutaka; Yokoi, Mitsuyoshi; Takehisa, Fumitaka; and Yoshikawa, Sumi, to Nippondenso Co., Ltd. Die-casting method and apparatus. 4,562,875, Cl. 164-72.000.

Oguni, Kensaku: *See*—
Atsumi, Akira; Senshu, Takao; Oguni, Kensaku; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,562,700, Cl. 62-174.000.

Ohbayashi, Keiji; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material with white layer and colorant containing layer. 4,563,406, Cl. 430-513.000.

Ohi, Hideo: *See*—
Mori, Kogoro; Ohi, Hideo; and Yazawa, Chihiro, 4,563,209, Cl. 71-66.000.

Ohkoshi, Akio: *See*—
Watanabe, Toshiro; Tohyama, Takashi; and Ohkoshi, Akio, 4,563,699, Cl. 358-60.000.

Ohkubo, Masaharu; Murasawa, Yoshihiro; Ohtsuka, Yasumasa; and Asai, Jun, to Canon Kabushiki Kaisha. Image information recording apparatus. 4,563,694, Cl. 346-160.000.

Ohmi, Shigeaki: *See*—
Asahara, Yoshiyuki; Sakai, Hiroshi; Shingaki, Seiichi; and Ohmi, Shigeaki, 4,563,205, Cl. 65-30.130.

Ohmori, Takashi: *See*—
Noguchi, Akio; Moriguchi, Haruhiko; Koizumi, Norihiko; Ohmori, Takashi; and Inui, Toshiharu, 4,563,691, Cl. 346-76.000.

Ohno, Yukihiro: *See*—
Takahashi, Sadao; and Ohno, Yukihiro, 4,563,076, Cl. 355-3.0CH.

Ohnuki, Yukio: *See*—
Oyama, Noboru; Matsuda, Hiroaki; Tsuchida, Eishun; Ohnuki, Yukio; Shimomura, Takeshi; and Ushizawa, Norihiko, 4,563,263, Cl. 204-418.000.

Ohsaki, Sigemi: *See*—
Morishita, Tuyoshi; Ohsaki, Sigemi; and Kawado, Yashuhumi, 4,563,329, Cl. 419-9.000.

Ohta, Tomozo; Tsutsumi, Yoshio; and Konishi, Yoshihiro, to Oki Electric Industry Co., Ltd. FM Demodulator with variable bandpass filter. 4,563,651, Cl. 329-110.000.

Ohtake, Tsuneo, to Nikko Co., Ltd. Rechargeable wireless-control toy. 4,563,626, Cl. 320-2.000.

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Isobe, Mitsuo; and Ohtani, Takayuki, 4,563,593, Cl. 307-231.000.

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Kuroda, Takao; Kajimura, Takashi; Kashiwada, Yasutoshi; Chinone, Naoki; Ouchi, Hirobumi; and Ohtoshi, Tsukuru, 4,563,764, Cl. 372-45.000.

Ohtsuka, Toshio: *See*—
Tomita, Yoshiaki; Ohtsuka, Toshio; and Tanaka, Yasunori, 4,562,685, Cl. 53-201.000.

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Oka, Hitoshi: *See*—
Kikuchi, Hiroshi; Tomizawa, Akira; and Oka, Hitoshi, 4,563,217, Cl. 106-1.230.

Oka, Shotaro; Tahara, Shu; and Kobayashi, Junya, to Shimadzu Corporation. Moisture sensor and a process for the production thereof. 4,562,725, Cl. 73-29.000.

Okada, Hiroji: *See*—
Shiramizu, Kousuke; Awano, Yoshirou; Okada, Hiroji; Yamagami, Hiromu; and Takai, Hiroshi, 4,563,569, Cl. 219-137.430.

Okada, Masashi; Noda, Kimihiko; and Shikata, Masami, to Sanyo Chemical Industries, Ltd. Water-soluble copolymers useful for enhanced oil recovery. 4,563,290, Cl. 252-8.55D.

Okado, Terumi; Suda, Seiji; Sugiura, Noboru; Yoshinari, Takashi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; and Fujiwara, Hiroshi, to Hitachi, Ltd. Knock control system. 4,562,813, Cl. 123-425.000.

Okamoto, Arata, to Kabushiki Kaisha Toshiba. Flat package integrated circuit chip storing apparatus. 4,562,924, Cl. 206-330.000.

Okamoto, Kenzo: *See*—
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Hiroichi; and Kitada, Fumihiko, 4,562,825, Cl. 126-96.000.

Okamura, Masanori: *See*—
Tanaka, Michio; Nasu, Kohji; and Okamura, Masanori, 4,562,714, Cl. 72-46.000.

Okamura, Yasushi; and Tanaka, Kiichiro, to Matsushita Electric Industrial Co., Ltd. Printer. 4,563,101, Cl. 400-603.000.

Okazaki, Yasuko: *See*—
Fukui, Shosin; Shinjo, Masayoshi; Okazaki, Yasuko; and Aoyama, Hirokazu, 4,563,493, Cl. 524-233.000.

Oki Electric Industry Co., Ltd.: *See*—
Ohta, Tomozo; Tsutsumi, Yoshio; and Konishi, Yoshihiro, 4,563,651, Cl. 329-110.000.

Okimoto, Haruo: *See*—
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Okino, Tadashi: *See*—
Saito, Syuichiro; and Okino, Tadashi, 4,563,070, Cl. 354-416.000.

Okudaira, Sadayuki: *See*—
Shibata, Fumio; Nagatomo, Katsuaki; Fukuhara, Hidetomo; Marumoto, Gen; and Okudaira, Sadayuki, 4,563,240, Cl. 156-643.000.

Okutome, Toshiyuki: *See*—
Fujii, Setsuro; Nakayama, Toyoo; Nunomura, Shigeki; Sudo, Kimio; Watanabe, Shin-ichi; Okutome, Toshiyuki; Sakurai, Yojiro; Kurumi, Masateru; and Aoyama, Takuo, 4,563,527, Cl. 546-169.000.

Olin Corporation: *See*—
Lewis, Brian G., 4,562,878, Cl. 164-467.000.

Oliver, W. Wayne, Jr. Belt buckle for holding a can of smokeless tobacco. 4,562,620, Cl. 24-163.00K.

Olympus Optical Company Limited: *See*—
Kano, Tokio; Tamagawa, Akira; and Doi, Masanori, 4,563,430, Cl. 436-164.000.
Oinoue, Kenichi; Aoki, Masahiro; Ida, Masatoshi; Nakamura, Junichi; and Hayashi, Asao, 4,563,705, Cl. 358-227.000.
Shirako, Hideo, 4,563,718, Cl. 360-132.000.
Yabe, Hisao, 4,562,830, Cl. 128-4.000.
Yamagishi, Masaaki, 4,563,060, Cl. 350-414.000.

O'Malley, Martin W.: *See*—
Lawson, Robert N.; O'Malley, Martin W.; and Rohwein, Gerald J., 4,563,608, Cl. 313-231.710.

Omega SA: *See*—
Xuan, Mai T., 4,563,604, Cl. 310-49.00R.

Omika, Hiroyoshi: *See*—
Otsuki, Yutaka; Araki, Yoshihiko; Omika, Hiroyoshi; Hara, Hajime; and Aoyama, Kazuho, 4,563,501, Cl. 525-108.000.

Onoda, Mutsuro: *See*—
Sugisaki, Kenzaburo; Onoda, Mutsuro; and Ishimaru, Hajime, 4,562,992, Cl. 251-159.000.

Onodera, Kaoru: *See*—
Ohbayashi, Keiji; and Onodera, Kaoru, 4,563,406, Cl. 430-513.000.

Optyl Eyewear Fashion International Corporation: *See*—
Kreissl, Franz, 4,563,065, Cl. 351-86.000.

Orban, John M., to Vivitar Corporation. Switching system for high voltage battery pack. 4,563,627, Cl. 320-19.000.

Orbisphere Corporation Wilmington, Succursale de Collonge-Bellerive: *See*—
Hale, John M., 4,563,249, Cl. 204-1.00T.

Orion Corporation Ltd.: *See*—
Ranki, Tuula M.; and Soderlund, Hans E., 4,563,419, Cl. 435-6.000.

Oritani, Atushi, to Fujitsu Limited. Low power consuming decoder circuit for a semiconductor memory device. 4,563,598, Cl. 307-449.000.

Ortemond, Leon D. Clamping apparatus for use on offshore platforms. 4,563,109, Cl. 405-195.000.

Ortho Pharmaceutical (Canada) Ltd.: *See*—
Anderson, Gregory K., 4,562,835, Cl. 128-130.000.

Ortner Freight Car Company: *See*—
Adams, Norman S.; Fehrenbach, Eugene T.; and Ritter, John A., 4,562,633, Cl. 29-401.100.

Osaka Transformer Co., Ltd.: *See*—
Shiramizu, Kousuke; Awano, Yoshirou; Okada, Hiroji; Yamagami, Hiromu; and Takai, Hiroshi, 4,563,569, Cl. 219-137.430.

Osaki Electric Co., Ltd.: *See*—
Arai, Yukio; and Endo, Masayasu, 4,563,679, Cl. 340-825.700.

Oscar Mayer Foods Corporation: *See*—
Anderson, James E.; and Holmes, Terry L., 4,562,615, Cl. 17-32.000.

Osgood Industries, Inc.: *See*—
Mueller, Martin, 4,562,688, Cl. 53-399.000.

Otaka, Masashi: *See*—
Ogawa, Yutaka; Asai, Shoji; and Otaka, Masashi, 4,563,414, Cl. 430-325.000.

Otsuka Chemical Co., Ltd.: *See*—
Kawaguchi, Akiyoshi; and Nakamura, Morihiko, 4,563,495, Cl. 524-413.000.

Otsuki, Toshinori; and Maruyama, Teruo, to Matsushita Electric Industrial Co., Ltd. Numerical control screw tightening machine. 4,562,756, Cl. 81-57.400.

Otsuki, Yutaka; Araki, Yoshihiko; Omika, Hiroyoshi; Hara, Hajime; and Aoyama, Kazuho, to Nippon Oil Company, Ltd. Cathode-precipitating electrodeposition coating composition. 4,563,501, Cl. 525-108.000.

Ottley, Thomas W., to P.A. Management Consultants Limited. Electrophotographic liquid developing apparatus and method. 4,563,080, Cl. 355-10.000.

Ouchi, Hirobumi: *See*—
Kuroda, Takao; Kajimura, Takashi; Kashiwada, Yasutoshi; Chinone, Naoki; Ouchi, Hirobumi; and Ohtoshi, Tsukuru, 4,563,764, Cl. 372-45.000.

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Blanchard, Clarence E., 4,563,155, Cl. 440-51.000.

Owens-Corning Fiberglas Corporation: *See*—
Greenwood, Mark E., 4,562,935, Cl. 220-85.00R.
Hammond, George K., 4,562,934, Cl. 220-75.000.
Johnson, Ken R.; and Sanik, Paul S., 4,563,633, Cl. 324-54.000.

Owens, Kenneth B.: *See*—
Dilgren, Richard E.; and Owens, Kenneth B., 4,562,727, Cl. 73-60.100.

Oyama, Noboru; Matsuda, Hiroaki; Tsuchida, Eishun; Ohnuki, Yukio; Shimomura, Takeshi; and Ushizawa, Norihiko, to Terumo Corporation. Selectively permeable film and ion sensor. 4,563,263, Cl. 204-418.000.

Oyama, Yoshishige: *See*—
Nishimura, Yutaka; Kuroiwa, Hiroshi; Kirisawa, Tadashi; and Oyama, Yoshishige, 4,562,731, Cl. 73-202.000.

Ozeki, Jiro, to Slidex Corporation. Cooling device for overhead type slide projectors. 4,563,067, Cl. 353-60.000.

P.A. Management Consultants Limited: *See*—
Ottley, Thomas W., 4,563,080, Cl. 355-10.000.

Pagluica, Gino, to United Technologies Corporation. Integrated reduction gear and counterrotation propeller. 4,563,129, Cl. 416-129.000.

Paik, Woo H.: *See*—
Heller, Jerrold A.; and Paik, Woo H., 4,563,702, Cl. 358-119.000.

Pak, In B.; and Kim, Soon; H. Apparatus for controlling lead distance of a dog leash. 4,562,792, Cl. 119-109.000.

Palara, Sergio; and Murari, Bruno, to SGS-ATES Componenti Elettronici SpA. Monolithically integratable constant-current generating circuit with low supply voltage. 4,563,632, Cl. 323-316.000.

Pallat, Jerome F. Pill container. 4,562,939, Cl. 221-312.00R.

Palley, Igor: *See*—
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,563,392, Cl. 428-394.000.

Panduit Corp.: *See*—
McSherry, William E.; and Sokol, Robert L., 4,562,982, Cl. 248-61.000.

Panzeri, Cesare, to Ansaldo S.p.A. Process and apparatus for the automatic welding of joints on large gauge sheets. 4,563,745, Cl. 364-477.000.

Papenfuhs, Theodor: *See*—
Rentel, Heinz; and Papenfuhs, Theodor, 4,563,533, Cl. 548-164.000.

Paradis, Roger O., to Nu-Tech Pools Inc. Cable supported pool structure. 4,562,603, Cl. 4-506.000.

Parchet, Pierre; and Bertho, Dominique, to Socapex. Device for mounting optical fibers within a terminal. 4,562,632, Cl. 29-281.100.

Pargamin, Laurent: *See*—
Bui, Ai; and Pargamin, Laurent, 4,563,544, Cl. 174-140.00C.

Parker-Hannifin Corporation: *See*—
Chin, Philip C.; and Lindsey, Charles T., 4,563,664, Cl. 335-274.000.
Gervais, Edward H.; Middlekauff, Carle A.; and Wescott, Donald C., 4,563,136, Cl. 418-1.000.

Parker, Keith E.: *See*—
Seddon, Richard J.; Parker, Keith E.; and Hing, Peter, 4,563,214, Cl. 75-234.000.

Parra, Jaime A. D., to Sarasota Automation Limited. Flowmeter. 4,562,745, Cl. 73-861.220.

Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH: *See*—
Jendrewski, Alfons, 4,563,729, Cl. 362-218.000.

Paternostro, Charles J. Underwater communicator. 4,563,758, Cl. 367-132.000.

Pattiselanno, Job, to Losinger AG. Holder of connecting bars for providing a positive connection of two structural members. 4,562,679, Cl. 52-378.000.

Pauly, Hans-Erwin; Kapmeyer, Wolfgang; and Seitz, Ulrich, to Hoechst Aktiengesellschaft. Biologically active latex conjugate. 4,563,431, Cl. 436-533.000.

Pausch, Josef, to General Resource Corporation. Plate heat exchanger and pressure blast cleaner. 4,562,885, Cl. 165-84.000.

Pavel, Laszlo, to Reliance Electric Company. Pole mounted cross-connect terminal. 4,563,053, Cl. 339-242.000.

Payton, Jay O.: *See*—
Payton, Kenneth J., 4,562,861, Cl. 137-493.900.

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Scheller, Herman, 4,562,989, Cl. 249-17.000.

Peake, Steven L., to American Cyanamid Co. Process for the preparation of reinforced thermoplastic composites. 4,563,232, Cl. 156-182.000.
PEDCo, Inc.: *See—*
Reed, Leland M.; Reed, William A.; and Saeman, Walter C., 4,563,246, Cl. 202-100.000.
Pelgrom, Marcellinus J. M.; Slob, Arie; Harwig, Hendrik A.; and Slotboom, Jan W., to U.S. Philips Corporation. Series/parallel/series shift register memory comprising redundant parallel-connected storage registers, and display apparatus comprising a picture memory thus organized. 4,563,752, Cl. 364-900.000.
Penco, Sergio: *See—*
Angelucci, Francesco; Penco, Sergio; and Arcamone, Federico, 4,563,444, Cl. 514-34.000.
Pennewiss, Horst: *See—*
Masanek, Juergen; Pennewiss, Horst; and Plainer, Hermann, 4,563,497, Cl. 524-732.000.
Penny, Glenn S., to Halliburton Company. Method of preparation of substituted amino-alkyl sulfonic acid compounds and use in the treatment of subterranean formations. 4,563,291, Cl. 252-8.55R.
Pershia, Avraham, to Pertec Computer Corporation. Servo preamplifier and demodulator chain using transconductance balanced modulators. 4,563,653, Cl. 330-254.000.
Peraud, Jean-Claude: *See—*
Fournier, Pascal; and Peraud, Jean-Claude, 4,562,877, Cl. 164-463.000.
Perdok, Peter M.: *See—*
Leemkuil, Hendrik; Deman, Samuel J.; and Perdok, Peter M., 4,562,921, Cl. 198-841.000.
Perrenoud, Blaise, to BBC Brown, Boveri & Company. High-voltage switch. 4,563,554, Cl. 200-48.00R.
Perron, Roger, to AMF Incorporated. Breathing tube. 4,562,836, Cl. 128-201.110.
Persch, Alois: *See—*
Brach, Ulrich; and Persch, Alois, 4,562,931, Cl. 215-220.000.
Persoon, Frederik G. A.: *See—*
Marneffe, Antonius C.; Persoon, Frederik G. A.; and Scholten, Gerard J., 4,562,628, Cl. 29-25.420.
Pertec Computer Corporation: *See—*
Pershia, Avraham, 4,563,653, Cl. 330-254.000.
Perten, Peter. Arrangement in infrared analyzers. 4,563,581, Cl. 250-338.000.
Pesola, Jussi: *See—*
Karhu, Niilo; and Pesola, Jussi, 4,562,668, Cl. 49-381.000.
Peter Wukovich OHG: *See—*
Bleyer, Franz, 4,562,721, Cl. 72-384.000.
Peters, Horst: *See—*
Lindner, Christian; Muller, Friedemann; Peters, Horst; Kress, Hans-Jurgen; and Buekers, Josef, 4,563,496, Cl. 524-430.000.
Petersen, Kurt-Eckhard: *See—*
Luders, Elke; and Petersen, Kurt-Eckhard, 4,563,228, Cl. 156-64.000.
Petersen, Uwe; Grohe, Klaus; and Kuck, Karl-Heinz, to Bayer Aktiengesellschaft. Bactericidal agents. 4,563,448, Cl. 514-187.000.
Petersen, Uwe: *See—*
Grohe, Klaus; Petersen, Uwe; and Kuck, Karl-Heinz, 4,563,459, Cl. 514-254.000.
Peterson, Carl A.: *See—*
Lemkin, Jack L.; Zilber, Eugene A.; and Peterson, Carl A., 4,562,865, Cl. 137-624.120.
Peterson, Carl W., to Nova Span International Ltd. Arch beam structure. 4,563,107, Cl. 405-124.000.
Petit, Jean-Pierre, to Facom. Dynamometric tightening apparatus. 4,562,746, Cl. 73-862.230.
Petkovic, Dominique: *See—*
Coratte, Jacques; and Petkovic, Dominique, 4,562,716, Cl. 72-286.000.
Petro Plastics Company, Inc.: *See—*
Woodland, Rommel J., 4,563,381, Cl. 428-156.000.
Petschacher, Reinhard; and Luschnig, Werner, to Siemens Aktiengesellschaft. Integrated digital/analog converter. 4,563,669, Cl. 340-347.0DA.
Pettersson, Ola, to KB Cold Isostatic Press Systems CIPS. Isostatic press. 4,563,143, Cl. 425-151.000.
Pharmacia Fine Chemicals AB: *See—*
Carlsson, Jan P. E.; Axen, Rolf E. A. V.; Drevin, Hakan N. Y.; and Lindgren, Goran E. S., 4,563,304, Cl. 260-112.00R.
Phillips Petroleum Company: *See—*
Hays, George E.; Young, Richard K.; and Nielsen, Richard H., 4,563,334, Cl. 422-140.000.
Kuerston, Richard D., 4,563,247, Cl. 202-265.000.
Liang, Yeon F., 4,563,509, Cl. 525-537.000.
Masino, Albert P.; Cowan, Kiplin D.; and Hawley, Gil R., 4,563,511, Cl. 526-119.000.
Rohlfing, Raymond G., 4,563,665, Cl. 366-184.000.
Scott, Richard L., 4,562,724, Cl. 73-23.100.
Phoenix Project Partnership: *See—*
Nicksic, Stephen W., 4,563,283, Cl. 210-696.000.
Piano, Renzo: *See—*
Arvedi, Giovanni; Gosio, Giovanni; and Piano, Renzo, 4,562,682, Cl. 52-648.000.
Picard, Gerard: *See—*
Seon, Francoise; Picard, Gerard; Tremillon, Bernard; and Bertaud, Yves, 4,563,338, Cl. 423-76.000.
Picault, Michel: *See—*
Kersuzan, Georges; Picault, Michel; and Sourdillon, Roland, 4,563,543, Cl. 174-68.500.
Picker International Limited: *See—*
Young, Ian R., 4,563,647, Cl. 324-309.000.
Pickett, Teddy L.; and Self, Henry L., to United States of America, Navy. Mechanical relocker for locking bolts. 4,562,706, Cl. 70-1.500.
Piez, Karl: *See—*
Nathan, Ranga; Seyedin, Saied; Piez, Karl; and Bentz, Hanne, 4,563,350, Cl. 424-95.000.
Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See—*
Ishiguro, Ikuo; and Nagao, Hiroyuki, 4,563,397, Cl. 428-469.000.
Pistner, Timothy W., to Mobil Oil Corporation. Thermoplastic bag, bag pack and method of making the same. 4,562,925, Cl. 206-554.000.
Pla, Luis C.: *See—*
Maldonado, Francisco S.; Pla, Luis C.; Puentes, Jose L. F.; and Sousa-Faro, Jose M. F., 4,563,477, Cl. 514-427.000.
Plainer, Hermann: *See—*
Masanek, Juergen; Pennewiss, Horst; and Plainer, Hermann, 4,563,497, Cl. 524-732.000.
Plant Genetics, Inc.: *See—*
Redenbaugh, M. Keith, 4,562,663, Cl. 47-58.000.
Plantema, Otto G.; Jetten, Arnold G. M.; and Haasen, Nicolaas F., to Stamicarbon B.V., Licensing Subsidiary of DSM. Recovery of caprolactam from caprolactam-containing distillation residue. 4,563,308, Cl. 260-239.30A.
Plasma Fusion, Inc.: *See—*
Reents, John A., 4,563,566, Cl. 219-121.0PB.
Plastik-Maschinenbau GmbH & Co. KG.: *See—*
Geng, Hans, 4,562,973, Cl. 241-260.100.
Plaza, Jaime P. Clasping device of double function for necklaces, bracelets and similar articles. 4,562,619, Cl. 24-116.00R.
Plourde, James K.: *See—*
O'Bryan, Henry M., Jr.; Plourde, James K.; and Thomson, John, Jr., 4,563,661, Cl. 333-202.000.
Plug-In Storage Systems, Inc.: *See—*
Maroney, Ralf P.; and Fishkind, Gregory A., 4,563,722, Cl. 361-212.000.
Podolak, Peter L.: *See—*
Friedman, Alexander A.; and Podolak, Peter L., 4,563,281, Cl. 210-614.000.
Poe, Jack L., to Rocky Mountain Nuclear Manufacturing and Engineering, Inc. Conduit connector structure and sealing-ring therefor. 4,563,025, Cl. 285-334.200.
Pointer, Odell, Jr. Drip irrigator for hanging baskets. 4,562,959, Cl. 239-38.000.
Pola Chemical Industries Inc.: *See—*
Katada, Hirofumi; Taniguchi, Tetsuya; and Ikarashi, Koji, 4,562,923, Cl. 206-235.000.
Polaroid Corporation: *See—*
Bronstein-Bonte, Irena Y., 4,563,411, Cl. 430-213.000.
King, Patrick F.; and Stroud, Stephen G., 4,563,412, Cl. 430-223.000.
Polendo-Loredo, Jose , to Industria del Alcali, S.A. Process for the secondary obtention of sodium carbonate from FLP waste liquor. 4,563,340, Cl. 423-186.000.
Pollack, Joel M.: *See—*
Genovese, Frank C.; Lannom, James W.; and Pollack, Joel M., 4,563,613, Cl. 313-497.000.
Pollack, Ronald M. Electric cord holder assembly. 4,563,542, Cl. 174-68.00C.
Polligkeit, Wolfgang: *See—*
Mesmer, Otto; Polligkeit, Wolfgang; Troger, Wolfgang; and Wolter, Andreas, 4,563,187, Cl. 8-137.000.
Polysar Financial Services S.A.: *See—*
Smith, Gregory A., 4,563,268, Cl. 209-257.000.
Polysar Limited: *See—*
Thompson, Ronald J., 4,563,289, Cl. 252-8.800.
Pont-a-Mousson S.A.: *See—*
Fournier, Pascal; and Peraud, Jean-Claude, 4,562,877, Cl. 164-463.000.
Ponthieux, Alain: *See—*
Boudigues, Serge; Frattacci, Georges; and Ponthieux, Alain, 4,563,125, Cl. 415-115.000.
Pool, James R. Self-cleaning mud pit. 4,563,280, Cl. 210-523.000.
Poon, Kwok C. P.: *See—*
Doumas, Basil T.; and Poon, Kwok C. P., 4,563,429, Cl. 436-97.000.
Poot, Albert L.: *See—*
De Jaeger, Antoine A.; Bertels, Alfons J.; Poot, Albert L.; De Keyzer, Rene M.; and Sels, Francis J., 4,563,410, Cl. 430-204.000.
Porrmann, Herbert; Seifried, Walter; Klenk, Ludwig; and Stenger, Karl, to Hoechst Aktiengesellschaft. Tubular casing, process for its manufacture, and its use as a sausage casing. 4,563,231, Cl. 156-90.000.
Porter, Julian; and Suhl, Larry. Containerized thermal spraying plant. 4,562,791, Cl. 118-326.000.
Possis Medical, Inc.: *See—*
Possis, Zinon C.; and Nicoloff, Demetre M., 4,562,597, Cl. 623-1.000.
Possis, Zinon C.; and Nicoloff, Demetre M., to Possis Medical, Inc. Method of supplying blood to blood receiving vessels. 4,562,597, Cl. 623-1.000.
PPG Industries, Inc.: *See—*
Criss, Russell C.; and Gillery, F. Howard, 4,563,400, Cl. 428-630.000.

PQ Corporation: *See—*
McLaughlin, John R.; and Hertzenberg, Elliot P., 4,563,441, Cl. 502-410.000.
Precision Measurement, Inc.: *See—*
Hall, Kenneth R.; and Holste, James C., 4,562,744, Cl. 73-861.020.
Precision Tool & Gauge Pty. Ltd.: *See—*
Dunk, Robert J., 4,562,718, Cl. 72-349.000.
Prevorsek, Dusan C.: *See—*
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,563,392, Cl. 428-394.000.
Priam-Doizi, Patrice M. Self-stable trimaran. 4,562,785, Cl. 114-39.000.
Price, Thomas E.: *See—*
Miller, Russell S.; and Price, Thomas E., 4,562,703, Cl. 62-514.00R.
Pringle, Ronald E.; Morris, Arthur J.; and Johnson, John J., to Camco, Incorporated. Piston actuated chemical injection valve. 4,562,854, Cl. 137-155.000.
Procter & Gamble Company, The: *See—*
Deflander, Joseph F., 4,562,936, Cl. 220-268.000.
Reiter, Godfrey, 4,563,185, Cl. 604-385.00A.
Prouvost S.A.: *See—*
Sorez, Jean-Claude, 4,563,229, Cl. 156-64.000.
Provesan S.A.: *See—*
Esteve Soler, Jose , 4,563,452, Cl. 514-222.000.
Soler, Jose E., 4,563,467, Cl. 514-336.000.
Prudhon, Francois: *See—*
Bernard, Philippe; and Prudhon, Francois, 4,562,778, Cl. 110-260.000.
Pruonto, Gene M. Collapsible pontoon boat. 4,562,786, Cl. 114-61.000.
Puentes, Jose L. F.: *See—*
Maldonado, Francisco S.; Pla, Luis C.; Puentes, Jose L. F.; and Sousa-Faro, Jose M. F., 4,563,477, Cl. 514-427.000.
Puffer, LeRoy G., to Essex Group, Inc. Method and apparatus for monitoring the surface of elongated objects. 4,563,095, Cl. 356-430.000.
Pujals, Charles, Jr. Device for cervical/occipital support. 4,562,833, Cl. 128-75.000.
Pulliam, George R.: *See—*
Ross, William E.; and Pulliam, George R., 4,563,236, Cl. 156-601.000.
Purex Corporation: *See—*
Flynn, Brian P.; Winetzky, Deborah S.; and Evans, George D., 4,563,186, Cl. 8-137.000.
Quantel Limited: *See—*
Taylor, Richard J.; Kellar, Paul R. N.; and Hinson, Neil R., 4,563,703, Cl. 358-160.000.
Quintarelli, Claudio. Apparatus applicable for the introduction of controlled and measured quantities of a liquid, into another body of liquid. 4,562,605, Cl. 8-158.000.
Qureshi, Shahid U. H.; and Linde, Yosef, to Codex Corporation. Frequency synthesizer and digital phase lock loop. 4,563,657, Cl. 331-25.000.
R. A. Jones & Co. Inc.: *See—*
Scarpa, Eric W.; and Landsiedel, David, 4,562,692, Cl. 53-566.000.
R. R. Brink Locking Systems, Inc.: *See—*
Kambic, Raymond V., 4,562,664, Cl. 49-14.000.
Raap, Teresa A.: *See—*
Thomas, Michael E.; Brander, Rita W.; Raap, Teresa A.; and Rankowitz, Marshall M., 4,563,362, Cl. 426-104.000.
Rach, Heinz-Dieter: *See—*
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,563,042, Cl. 301-37.0ST.
Rajagopalan, Narasimhan: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.
Rammler, Roland: *See—*
Weiss, Hans J.; Rammler, Roland; Hahn, Helmut; and Dreher, Ingo, 4,563,264, Cl. 208-11.00R.
Ranger, Marc L.: *See—*
Stallkamp, Richard W.; and Ranger, Marc L., 4,563,670, Cl. 340-347.0DA.
Ranki, Tuula M.; and Soderlund, Hans E., to Orion Corporation Ltd. Detection of microbial nucleic acids by a one-step sandwich hybridization test. 4,563,419, Cl. 435-6.000.
Rankowitz, Marshall M.: *See—*
Thomas, Michael E.; Brander, Rita W.; Raap, Teresa A.; and Rankowitz, Marshall M., 4,563,362, Cl. 426-104.000.
Ranner, Dietrich, to Bomadier-Rotax-Wien Produktions- und Vertriebsgesellschaft mbH. Front vehicle blade mount. 4,562,891, Cl. 172-821.000.
Rao, Vemulapalli Durga N.; Wade, Wallace R.; and Aimone, Michael G., to Ford Motor Company. Particulate trap system for engine exhaust using electrically powered regeneration. 4,562,695, Cl. 60-286.000.
Rapparini, Gino. Vertical packaging machine for bags with erectable self-supporting tensile structure with flat bottom. 4,562,691, Cl. 53-552.000.
Rasch, Heinz: *See—*
Schroder, Norbert; Milewski, Gunter; Neusser, Manfred; Dorr, Hermann; Supp, Armin; Rasch, Heinz; Heinemann, Otto; Baldus, Heinz-Dieter; and Manthey, Harald, 4,563,271, Cl. 209-427.000.
Ray, Malcolm G.: *See—*
Lehman, F. Allen; Sleffel, William M.; and Ray, Malcolm G., 4,562,739, Cl. 73-632.000.
Ray, William F.: *See—*
Davis, Rex M.; and Ray, William F., 4,563,619, Cl. 318-138.000.
Raychem Corporation: *See—*
Gen, Tamar G.; and Cydzik, Edward A., 4,563,224, Cl. 148-23.000.
Jervis, James E.; and Caponigro, Dennis A., 4,563,180, Cl. 604-280.000.
Rayner, Martin G., to Imperial Chemical Industries PLC. Polyolefin compositions and articles sterilizable by irradiation. 4,563,259, Cl. 524-99.000.
RCA Corporation: *See—*
Gullman, Larry S., 4,563,088, Cl. 356-244.000.
Haferl, Peter E., 4,563,618, Cl. 315-370.000.
Read, Mark E.; and Boswell, Ronald L. Mamographic device using localized compression cone. 4,563,768, Cl. 378-037.000.
Redenbaugh, M. Keith, to Plant Genetics, Inc. Analogs of botanic seed. 4,562,663, Cl. 47-58.000.
Reece Corporation: *See—*
Doucette, Eugene F.; Richardson, Donald; and Hoekstra, Joop F., 4,562,782, Cl. 112-104.000.
Reece, Marvin P., to Rexnord Inc. Installation tool for stud/insert with lock ring. 4,562,755, Cl. 81-53.200.
Reed, Leland M.; Reed, William A.; and Saeman, Walter C., to PEDCo, Inc. Apparatus for retorting particulate solids having recoverable volatile constituents. 4,563,246, Cl. 202-100.000.
Reed, William A.: *See—*
Reed, Leland M.; Reed, William A.; and Saeman, Walter C., 4,563,246, Cl. 202-100.000.
Reemtsma, Keith: *See—*
Fox, Charles L., Jr.; Modak, Shanta; and Reemtsma, Keith, 4,563,485, Cl. 523-113.000.
Reents, John A., to Plasma Fusion, Inc. Method of manufacturing particles having high surface areas and a particle made by the method. 4,563,566, Cl. 219-121.0PB.
Rees, Richard W. A., to General Motors Corporation. Latching arrangement for seat slide structures. 4,563,044, Cl. 308-3.800.
Reffelt, James: *See—*
Deavers, Clyde J.; and Reffelt, James, 4,563,622, Cl. 318-254.000.
Regie Natonale des Usines Renault: *See—*
Gonnord, Jacques; and Guillot, Bernard, 4,562,806, Cl. 123-270.000.
Reick, Franklin G.: *See—*
Wilder, Joseph R.; and Reick, Franklin G., 4,562,832, Cl. 128-20.000.
Reimann, Karl-Heinz: *See—*
Weiner, Eike; Sczepaniak, Werner; Thiele, Paul; Block, Detlef; and Reimann, Karl-Heinz, 4,563,252, Cl. 204-9.000.
Reinecke, Paul: *See—*
Kramer, Wolfgang; Weissmuller, Joachim; Berg, Dieter; Reinecke, Paul; Hanssler, Gerd; and Brandes, Wilhelm, 4,563,447, Cl. 514-184.000.
Reinert, Gerard E.: *See—*
Witman, Mark W.; and Reinert, Gerard E., 4,563,503, Cl. 525-148.000.
Reiter, Godfrey, to Procter & Gamble Company, The. Disposable diaper having elasticized waistband with non-linear severed edge. 4,563,185, Cl. 604-385.00A.
Reliance Electric Company: *See—*
Pavel, Laszlo, 4,563,053, Cl. 339-242.000.
Renneker, Dennis N., to American Motors Corporation. Vehicle drivetrain including viscous clutch. 4,562,897, Cl. 180-233.000.
Rentel, Heinz; and Papenfuhs, Theodor, to Hoechst Aktiengesellschaft. Process for the preparation of halogen-substituted 2-aminobenzothiazoles. 4,563,553, Cl. 548-164.000.
Reuschling, Dieter: *See—*
Clauss, Karl; Linkies, Adolf; and Reuschling, Dieter, 4,563,521, Cl. 544-2.000.
Reuter, Karl-Heinz: *See—*
Ehlert, Walter; Reuter, Karl-Heinz; and Dietzel, Klaus-Jurgen, 4,563,432, Cl. 501-81.000.
Rexnord Inc.: *See—*
Cosenza, Frank J., 4,563,119, Cl. 411-438.000.
Reece, Marvin P., 4,562,755, Cl. 81-53.200.
Reynolds, Scott D., to Xerox Corporation. Low mass heat and pressure fuser and release agent management system therefor. 4,563,073, Cl. 355-3.0FU.
Rheinmetall GmbH: *See—*
Janssen, Karl-Egon; and Breuer, Heinz G., 4,562,767, Cl. 89-14.300.
Weinfurth, Udo; Fischer, Helmut; and Sauerwald, Walter, 4,562,768, Cl. 89-33.040.
Rhemer, Chris C.; and Formanack, James D., to United Technologies Corporation. Directional recrystallization furnace providing convex isotherm temperature distribution. 4,563,558, Cl. 219-10.49R.
Rhoades, Lawrence J., to Extrude Hone Corporation. Chemical deburring system with a soluble mask. 4,563,238, Cl. 156-637.000.
Rhoe, Dale G.: *See—*
Black, Philip D.; and Rhoe, Dale G., 4,563,380, Cl. 428-100.000.
Rhone-Poulenc Chimie de Base: *See—*
Bernard, Philippe; and Prudhon, Francois, 4,562,778, Cl. 110-260.000.
Rich, Jonathan D.: *See—*
Liu, Wan-Li; and Rich, Jonathan D., 4,563,514, Cl. 427-54.100.

Richardson, Donald: *See—*
Doucette, Eugene F.; Richardson, Donald; and Hoekstra, Joop F., 4,562,782, Cl. 112-104.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Ezer, Elemer; Szporny, Laszlo; Hajos, Gyorgy; Szantay, Csaba; Keve, Tibor; Fekete, Gyorgy; Megyeri, Gabor; Aca, Tibor; and Bolcskei, Hedvig, 4,563,464, Cl. 514-299.000.

Ricoh Company, Ltd.: *See—*
Komada, Kenya, 4,563,077, Cl. 355-3.0BE.
Takahashi, Sadao; and Ohno, Yukihiro, 4,563,076, Cl. 355-3.0CH.

Rieger, Manfred: *See—*
Dreyer, Hans; and Rieger, Manfred, 4,563,574, Cl. 235-95.00B.

Rigga, Arthur D., to Genentech, Inc. Method and means for somatostatin protein conjugate expression. 4,563,424, Cl. 435-71.000.

Riker, Rudolf. Pump for concrete or the like. 4,563,135, Cl. 417-517.000.

Rineer, Arthur E. Rotary hydraulic energy-conversion device with two dams engaging a rotatable ring. 4,563,137, Cl. 418-63.000.

Rister, Gerald E.: *See—*
Stage, Edward C.; and Rister, Gerald E., 4,563,018, Cl. 280-402.000.

Ritter, John A.: *See—*
Adams, Norman S.; Fehrenbach, Eugene T.; and Ritter, John A., 4,562,633, Cl. 29-401.100.

Rittersdorf, Walter: *See—*
Deneke, Ulfert; Lange, Hans; and Rittersdorf, Walter, 4,563,422, Cl. 435-27.000.

Rivier, Jean E. F.; Spiess, Joachim; and Vale, Wylie W., Jr., to Salk Institute For Biological Studies, The. Human pancreatic GRF. 4,563,352, Cl. 514-12.000.

Robert Bosch GmbH: *See—*
Ziegler, Wolfgang, 4,563,678, Cl. 340-765.000.

Roberts, Thomas A.: *See—*
Nemcek, Jozef; and Roberts, Thomas A., 4,563,486, Cl. 523-115.000.

Robinson, John R.: *See—*
Frederick, Edward C.; and Robinson, John R., 4,562,651, Cl. 36-102.000.

Rockwell International Corporation: *See—*
McElreath, Kenneth W., 4,563,742, Cl. 364-433.000.

Rocky Mountain Nuclear Manufacturing and Engineering, Inc.: *See—*
Poe, Jack L., 4,563,025, Cl. 285-334.200.

Rogier, Leonce, to So.M.A. Europe Transmissions; and Societe Nouvelle Mecanique Et Automobile. Wheel hub with integral brake and reducer. 4,562,903, Cl. 188-18.00A.

Rohlfing, Raymond G., to Phillips Petroleum Company. Method for mixing and transferring polymer-coated catalyst compositions. 4,563,665, Cl. 366-184.000.

Rohm GmbH: *See—*
Masanek, Juergen; Pennewiss, Horst; and Plainer, Hermann, 4,563,497, Cl. 524-732.000.

Rohwein, Gerald J.: *See—*
Lawson, Robert N.; O'Malley, Martin W.; and Rohwein, Gerald J., 4,563,608, Cl. 313-231.710.

Rolls-Royce Limited: *See—*
Rowe, Rodney A.; and Norbury, David S., 4,562,699, Cl. 60-759.000.

Roper Corporation: *See—*
Cerola, Joseph J., 4,562,827, Cl. 126-299.00R.

Rose, Andrew F. Hydraulic block press. 4,563,144, Cl. 425-166.000.

Rose, Robert H. Die venting apparatus in molding of thermoset plastic compounds. 4,562,990, Cl. 249-141.000.

Ross, Peter F.: *See—*
Archer, John R.; and Ross, Peter F., 4,562,754, Cl. 76-107.00C.

Ross, William E.; and Pulliam, George R., to Litton Systems, Inc. Method for making large area stable domains. 4,563,236, Cl. 156-601.000.

Rossmann, Axel, to MTU Motoren-und Turbinen-Union Muenchen GmbH. Ceramic turbine blade having a metal support core. 4,563,128, Cl. 416-92.000.

Roth, David W., to 2500 Corporation, The. Automotive carpet construction and method of manufacture thereof. 4,563,378, Cl. 428-86.000.

Rothon, Stephen; and Collis, Ronald, to Haden Drysys International Limited. Separation system including a floatation tank having level control means. 4,563,274, Cl. 210-101.000.

Rotron Incorporated: *See—*
Deavers, Clyde J.; and Reffelt, James, 4,563,622, Cl. 318-254.000.

Rowe, Charles M.: *See—*
Cooper, Glenn D.; Rowe, Charles M.; and Holly, Henry M., III, 4,563,607, Cl. 310-260.000.

Rowe, Rodney A.; and Norbury, David S., to Rolls-Royce Limited. Mixing chambers for continuous flow engines. 4,562,699, Cl. 60-759.000.

Rubbermaid Incorporated: *See—*
Vaeth, Howard J.; and Crook, Gregory M., 4,563,561, Cl. 219-10.55E.

Rubery Owen Holdings Limited: *See—*
Ward, Terence H., 4,562,998, Cl. 267-54.00R.

Ruffles, Thomas J., Jr.: *See—*
Braunschweig, Peter M.; and Ruffles, Thomas J., Jr., 4,563,047, Cl. 312-350.000.

Ruhrkohle Aktiengesellschaft: *See—*
Seipenbusch, Jurgen, 4,563,196, Cl. 48-210.000.

Ruschek, Gerhard: *See—*
Sausner, Andreas; and Ruschek, Gerhard, 4,562,809, Cl. 123-339.000.

Russow, Jurgen: *See—*
Staab, Rudolf; and Russow, Jurgen, 4,563,261, Cl. 204-290.00R.

Ruthardt, Rolf: *See—*
Freytag, Friedrich-Carl; Gediga, Josef; Ruthardt, Rolf; and Wagner, Wolfgang, 4,562,943, Cl. 222-590.000.

Ryan, Dennis M., to Ampex Corporation. Tape transport. 4,562,946, Cl. 226-95.000.

Ryan, James W.; and Chung, Alfred, to University of Miami. Radiolabelled substrates for assaying mammalian enzymes. 4,563,305, Cl. 260-112.50R.

Ryser, Urs D., to Fribosa AG. Vise. 4,562,999, Cl. 269-137.000.

S.D.V. Incorporated: *See—*
Vandervort, James W.; and Hartevelt, Wim, 4,563,154, Cl. 434-87.000.

S & F Orthopadietechnik GmbH: *See—*
Frank, Xaver, 4,562,851, Cl. 135-78.000.

Sablev, Leonid P.; and Stupak, Rimma I. Consumable cathode for electric-arc metal vaporizer. 4,563,262, Cl. 204-298.000.

SACHS-Systemtechnik GmbH: *See—*
Fliege, Hans, 4,562,711, Cl. 70-276.000.

Sadaki, Hiroshi; Imaizumi, Hiroyuki; Takeda, Kenji; Inaba, Takihiro; Takeno, Ryuko; Morita, Seishi; Kajita, Tetsuya; and Saikawa, Isamu, to Toyama Chemical Co., Ltd. Process for producing 2-(2-aminothiazol-4-yl)glyoxylic acid derivative or a salt thereof, and intermediates therefor and process for producing the intermediates. 4,563,534, Cl. 548-194.000.

Sadove, Max S.: *See—*
Djordjevich, Ljubomir; and Sadove, Max S., 4,562,843, Cl. 128-672.000.

Saeman, Walter C.: *See—*
Reed, Leland M.; Reed, William A.; and Saeman, Walter C., 4,563,246, Cl. 202-100.000.

Safarik, C. Robert: *See—*
Bosshart, John; Allen, William W.; and Safarik, C. Robert, 4,562,655, Cl. 38-52.000.

Safstron, Thomas A.: *See—*
Mitchell, Vance C.; and Safstron, Thomas A., 4,563,332, Cl. 422-100.000.

Sahler, Rainer: *See—*
Ullrich, Manfred; and Sahler, Rainer, 4,563,326, Cl. 376-292.000.

Saikawa, Isamu: *See—*
Sadaki, Hiroshi; Imaizumi, Hiroyuki; Takeda, Kenji; Inaba, Takihiro; Takeno, Ryuko; Morita, Seishi; Kajita, Tetsuya; and Saikawa, Isamu, 4,563,534, Cl. 548-194.000.

Saint-Amand, Elmer, to Saint Amand Manufacturing, Inc. Liquid dispensing pipette and stirrer device. 4,563,104, Cl. 401-139.000.

Saint Amand Manufacturing, Inc.: *See—*
Saint-Amand, Elmer, 4,563,104, Cl. 401-139.000.

Saint-Gobain Vitrage: *See—*
Benard, Claude, 4,563,206, Cl. 65-348.000.
Gillner, Manfred; and Sieckmann, Juergen, 4,563,395, Cl. 428-423.300.

Saito, Hidenori, to Ichikoh Industries, Ltd. Vehicle head lamp with synthetic resin reflector and ring-shaped heat shielding member. 4,563,730, Cl. 362-264.000.

Saito, Seitoku: *See—*
Fukuda, Kazumasa; and Saito, Seitoku, 4,563,396, Cl. 428-457.000.

Saito, Shunji: *See—*
Nishio, Yasuharu; and Saito, Shunji, 4,563,712, Cl. 360-75.000.

Saito, Syuichiro; and Okino, Tadashi, to Canon Kabushiki Kaisha. Exposure control apparatus. 4,563,070, Cl. 354-416.000.

Saito, Yutaka: *See—*
Ishii, Shinzo; Katsumata, Shigeo; Arai, Yuko; Ashizawa, Tadashi; Morimoto, Makoto; Shirahata, Kunikatsu; Saito, Yutaka; and Kono, Motomichi, 4,563,462, Cl. 514-288.000.

Sakai, Eiichi, to Sharp Kabushiki Kaisha. Blocking condition detection device in a fluid injection system. 4,563,179, Cl. 604-244.000.

Sakai, Hiroichi: *See—*
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Hiroichi; and Kitada, Fumihiko, 4,562,825, Cl. 126-96.000.

Sakai, Hiroshi: *See—*
Asahara, Yoshiyuki; Sakai, Hiroshi; Shingaki, Seiichi; and Ohmi, Shigeaki, 4,563,205, Cl. 65-30.130.

Sakai, Hiroyuki; Kawakita, Kenji; Fujita, Tsutomu; and Takemoto, Toyoki, to Matsushita Electric Industrial Co., Ltd. Method for manufacturing a semiconductor device. 4,563,227, Cl. 148-187.000.

Sakai, Shinji; and Kawabata, Takashi, to Canon Kabushiki Kaisha. Control system for carrying out focus detection and light measurement of a camera. 4,563,069, Cl. 354-402.000.

Sakai, Takayuki: *See—*
Suzuki, Nobuo; Kurahashi, Takeo; Motohashi, Katsuichi; Sugiyama, Genpei; and Sakai, Takayuki, 4,563,409, Cl. 430-106.000.

Sakamoto, Masakatsu: *See—*
Mokuya, Kinji; Tsushima, Isao; and Sakamoto, Masakatsu, 4,563,112, Cl. 406-11.000.

Sakamoto, Yukio, to Murata Manufacturing Co., Ltd. Noise filter. 4,563,659, Cl. 333-181.000.

Sakane, Kazuo: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,563,449, Cl. 514-203.000.

Sakuma, Shin: *See—*
Ginnaga, Akihiro; Sakuma, Shin; Nishihara, Tsukasa; Tashiro, Tomitaka; Susumi, Sadao; Kawahara, Tetsuo; and Mizokami, Hiroshi, 4,563,303, Cl. 260-112.00R.

Sakurai, Yojiro: *See—*
Fujii, Setsuro; Nakayama, Toyoo; Nunomura, Shigeki; Sudo, Kimio; Watanabe, Shin-ichi; Okutome, Toshiyuki; Sakurai, Yojiro; Kurumi, Masateru; and Aoyama, Takuo, 4,563,527, Cl. 546-169.000.

Salas, Edward R.: *See—*
Boudreau, Daniel A.; Salas, Edward R.; and Zelley, Richard C., 4,563,736, Cl. 364-200.000.

Salathe, Heinz; Flensberg, Hermann; and Schaetzer, Harry, to Ciba-Geigy Corporation. Process for dyeing fibre material made of synthetic polyamides with anionic dyes and an auxiliary mixture. 4,563,192, Cl. 8-554.000.

Salina, Louis E.; and Lescovich, Joseph E., to GA Industries Inc. Programmable stepper for transducer controlled apparatus. 4,562,858, Cl. 137-392.000.

Salk Institute For Biological Studies, The: *See—*
Rivier, Jean E. F.; Spiess, Joachim; and Vale, Wylie W., Jr., 4,563,352, Cl. 514-12.000.

Salomon, Georges P. J., to Salomon S.A. Ski binding and boot. 4,562,653, Cl. 36-117.000.

Salomon S.A.: *See—*
Hue, Jean, 4,562,654, Cl. 36-117.000.
Salomon, Georges P. J., 4,562,653, Cl. 36-117.000.

Samcoe Holding Corporation: *See—*
Milligan, William D., 4,562,627, Cl. 26-18.500.

Sammells, Anthony F.: *See—*
Morduchowitz, Abraham; Sammells, Anthony F.; and Cook, Ronald L., 4,563,254, Cl. 204-59.00R.

Sanchez Alonso, Felix: *See—*
Gomez Parra, Vicente; Gonzalez Hernandez, Pedro; Sanchez Alonso, Felix; and Torres Cebada, Tomas, 4,563,528, Cl. 546-261.000.

Sand, Theodor: *See—*
Emberger, Roland; Kopael, Manfred; Bruning, Jurgen; Hopp, Rudolf; and Sand, Theodor, 4,563,365, Cl. 426-534.000.

Sanders, Edward L., Jr.; and Sanders, Edward L., III. Rotatable apparatus for storing paper forms for feeding to a printer. 4,563,102, Cl. 400-691.000.

Sanders, Edward L., III: *See—*
Sanders, Edward L., Jr.; and Sanders, Edward L., III, 4,563,102, Cl. 400-691.000.

Sanfllippo, Jasper B. Bulk product dispenser. 4,562,941, Cl. 222-108.000.

Sanik, Paul S.: *See—*
Johnson, Ken R.; and Sanik, Paul S., 4,563,633, Cl. 324-54.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Koike, Takashi, 4,562,801, Cl. 123-196.00S.
Suzuki, Tomonori, 4,562,797, Cl. 123-90.340.

Santeramo, Joseph J. Syringe dosage limiter. 4,563,178, Cl. 604-208.000.

Sanyo Chemical Industries, Ltd.: *See—*
Okada, Masashi; Noda, Kimihiko; and Shikata, Masami, 4,563,290, Cl. 252-8.55D.

Sanyo Electric Co., Ltd.: *See—*
Kamada, Shuhei, 4,563,761, Cl. 369-126.000.
Tomita, Hiroshi; Maeda, Junji; and Kunimitsu, Michio, 4,563,690, Cl. 346-76.0PH.

Sarasota Automation Limited: *See—*
Parra, Jaime A. D., 4,562,745, Cl. 73-861.220.

SASIB S.p.A.: *See—*
Manservisi, Renato; and Corticelli, Sandro, 4,562,911, Cl. 192-86.000.

Sato, Toshiaki; Maeda, Mikio; and Kosaka, Masahiro, to Matsushita Electric Industrial Co., Ltd. Resonant type constant voltage supply apparatus. 4,563,731, Cl. 363-17.000.

Sato, Yasushi, to Canon Kabushiki Kaisha. Apparatus for controlling image forming condition. 4,563,081, Cl. 355-14.0CH.

Sato, Yoshihiro, to Dai Nippon Insatsu Kabushiki Kaisha. Method of heat sealing and forming a video tape cassette package. 4,562,690, Cl. 53-456.000.

Sato, Yuichi, to Canon Kabushiki Kaisha. Picture signal processing method and apparatus therefor. 4,563,700, Cl. 358-75.000.

Sato, Yukio, to Canon Kabushiki Kaisha. Copying machine with automatic document feeder. 4,563,082, Cl. 355-14.0SH.

Satzinger, Gerhard; Herrmann, Manfred; Fritschi, Edgar; Hartenstein, Johannes; and Bartoszyk, Gerd, to Warner-Lambert Company. 4-Oxothiazolidin-2-ylidene-acetamide derivatives as CNS agents. 4,563,471, Cl. 514-369.000.

Sauder, Sylvester: *See—*
Leffke, Robert C.; and Sauder, Sylvester, 4,562,790, Cl. 118-24.000.

Sauerwald, Walter: *See—*
Weinfurth, Udo; Fischer, Helmut; and Sauerwald, Walter, 4,562,768, Cl. 89-33.040.

Sausner, Andreas; and Ruschek, Gerhard, to VDO Adolf Schindling AG. Device for regulating the idling speed of an internal combustion engine. 4,562,809, Cl. 123-339.000.

Scarpa, Eric W.; and Landsiedel, David, to R. A. Jones & Co. Inc. Accumulating apparatus between a cartoner and a side seam gluer. 4,562,692, Cl. 53-566.000.

Schaefer, Roland, to Kulzer & Co. GmbH. Dental composition containing pigment and methods of using the same. 4,563,153, Cl. 433-223.000.

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Schaller, Werner, to Siemens Aktiengesellschaft. Optical sensor and reflector to reflect a different wavelength. 4,563,577, Cl. 250-221.000.

Schaub, Martin; and Stucheli, Alexander, to Sulzer Brothers Limited. Method and apparatus for withdrawing a bottom product from a low-temperature rectifying column. 4,563,204, Cl. 62-21.000.

Schauster, John L.: *See—*
Jackson, Keith L.; Jones, W. Clifford; and Schauster, John L., 4,562,775, Cl. 105-186.000.

Scheffer, Herbert D. Ultraviolet curing lamp device. 4,563,589, Cl. 250-504.00R.

Scheinecker, Alois: *See—*
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Scheller, Franz X., to Daimler-Benz AG. Tire pressure control system. 4,562,874, Cl. 152-427.000.

Scheller, Herman, to Peabody Continental-Heine Co. Apparatus for construction of concrete walls. 4,562,989, Cl. 249-17.000.

Scheuering, Hans, to FAG Kugelfisher Georg Schafer Kommanditelgesellschaft Auf Aktien. Dual-circuit master valve. 4,563,043, Cl. 303-52.000.

Schilling, Walter W.: *See—*
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Schipfer, Rudolf; Daimer, Wolfgang; and Schmolzer, Gerhard, to Vianova Kunstharz, A.G. Cathodically depositable paint binders based on the reaction product of epoxy resins and secondary amines carrying carboxylic acid amide groups. 4,563,515, Cl. 528-111.000.

Schlenk, Manfred, to Siemens Aktiengesellschaft. Startup circuit for a switched power supply. 4,563,733, Cl. 323-284.000.

Schlenz, Rolf: *See—*
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Schlobohm, Joachim, to Dragerwerk Aktiengesellschaft. Air escape filter apparatus. 4,562,837, Cl. 128-206.170.

Schlomer, Heinz-Jurgen: *See—*
Grunewald, Peter; and Schlomer, Heinz-Jurgen, 4,562,765, Cl. 89-34.000.

Schlumberger Technology Corporation: *See—*
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Schmitt, Karl-Heinz: *See—*
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Schmitt, Thomas W. Universal cam for key cutting machine. 4,562,759, Cl. 83-414.000.

Schmolzer, Gerhard: *See—*
Schipfer, Rudolf; Daimer, Wolfgang; and Schmolzer, Gerhard, 4,563,515, Cl. 528-111.000.

Schmutzler, Richard W. Appliance carrier and storage device. 4,563,033, Cl. 294-146.000.

Schneider, Daniel J. Load distributing chain drive arrangement. 4,563,168, Cl. 474-207.000.

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Scholten, Gerard J.: *See—*
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Scholz, Donald T. String tuning and fastening arrangement. 4,562,766, Cl. 84-297.00R.

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Schreckenberg, Manfred; Dhein, Rolf; Lange, Ralf; and Waldenrath, Werner, to Bayer Aktiengesellschaft. Polyether-polycarbonates for dialysis membranes. 4,563,516, Cl. 528-196.000.

Schroder, Norbert; Milewski, Gunter; Neusser, Manfred; Dorr, Hermann; Supp, Armin; Rasch, Heinz; Heinemann, Otto; Baldus, Heinz-Dieter; and Manthey, Harald, to Krupp Polysius AG. Percussion jig. 4,563,271, Cl. 209-427.000.

Schroether, Gerhard, to Siemens Aktiengesellschaft. Circuit arrangement for actuating electromagnetic switchgear. 4,563,721, Cl. 361-196.000.

Schuele, Donald E.; and Wilhelm, John W., Jr., to Skidmore-Wilhelm Manufacturing Co. Impact wrench torque calibrator. 4,562,722, Cl. 73-11.000.

Schuler, Jakob. Antislip agent. 4,563,218, Cl. 106-36.000.

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Schwabe, Ulrich; and Werner, Christoph, to Siemens Aktiengesellschaft. Method for the simultaneous manufacture of fast short channel and voltage-stable MOS transistors in VLSI circuits. 4,562,638, Cl. 29-577.00C.

Schwartz, Hugo D., to Cercasbest Corp. Friction element comprised of heat resistant heterogeneous thermosetting friction material. 4,563,386, Cl. 428-283.000.

Schwelling, Hermann. Roller system for paper shredders. 4,562,971, Cl. 241-236.000.

Scibbe, Harold R., to Clark Equipment Company. Brake system. 4,562,902, Cl. 188-72.400.

Scott, Mark P.; and Brough, Steve A., to Keystone Industries, Inc. Backstop assembly for use with cushioning device in sill of railway car. 4,562,929, Cl. 213-20.000.

Scott, Richard L., to Phillips Petroleum Company. Gas sampling valve. 4,562,724, Cl. 73-23.100.

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SDS Relais AG: *See—*
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Sears, Roebuck and Co.: *See—*
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Seddon, James, to Dobson Park Industries Plc. Mine roof supports. 4,563,111, Cl. 405-295.000.
Seddon, Richard J.; Parker, Keith E.; and Hing, Peter, to Thorn EMI plc. End closure members for discharge lamps. 4,563,214, Cl. 75-234.000.
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Seipenbusch, Jurgen, to Ruhrkohle Aktiengesellschaft. Coal charging in a coal gasification installation. 4,563,196, Cl. 48-210.000.
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, to Continental Gummi-Werke Aktiengesellschaft. Covering ring for a vehicle wheel. 4,563,042, Cl. 301-37.0ST.
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Seon, Francoise; Picard, Gerard; Tremillon, Bernard; and Bertaud, Yves, to Aluminium Pechiney. Selective chlorination method for mixtures of metallic oxides of natural or synthetic origin. 4,563,338, Cl. 423-76.000.
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SGS-ATES Componenti Elettronici SpA: *See—*
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Shames, Sidney J.; and Shames, Harold. Ballcock assembly. 4,562,859, Cl. 137-414.000.
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Coffman, Paul M., 4,563,325, Cl. 264-550.000.
Dilgren, Richard E.; and Owens, Kenneth B., 4,562,727, Cl. 73-60.100.
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Sherlock, Paul; Brausen, Benjamin; and Klein, Phillip P., to Sherwood Medical Company. Drainage bag support. 4,562,984, Cl. 248-95.000.
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Shibata, Fumio; Nagatomo, Katsuaki; Fukuhara, Hidetomo; Marumoto, Gen; and Okudaira, Sadayuki, to Hitachi, Ltd. Method and apparatus for plasma process. 4,563,240, Cl. 156-643.000.
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Shigetomi, Yoshirou; Suzuki, Toshi; Fukui, Katsnori; Inoue, Masuo; Nomura, Motoaki; and Miyoshi, Katuyoshi, to Toho Titanium Co., Ltd. Process for preparation of catalytic components for polymerization of α-olefins. 4,563,437, Cl. 502-105.000.
Shikata, Kazuo; and Mizumoto, Yoshinori, to Tokuyama Soda Kabushiki Kaisha. Solid state track detector composed of copolymer of alkylene glycol bisallyl carbonate and minor amount of higher alkyl acrylate or methacrylate. 4,563,416, Cl. 430-533.000.
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Sibley, Henry C., to General Signal Corp. Vital communication system for transmitting multiple messages. 4,563,762, Cl. 371-16.000.
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Sirota, Vladimir. Umbrella unit, and car and the like provided therewith. 4,562,849, Cl. 135-16.000.
SKF Kugellagerfabriken GmbH: *See—*
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Smith, Donald A.; and LaFlesh, Richard C., to Canadian Patents and Development Limited/Societe Canadienne des Brevets et d'Exploitation Limitee. Atomizer. 4,562,966, Cl. 239-433.000.
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Kersuzan, Georges; Picault, Michel; and Sourdillon, Roland, 4,563,543, Cl. 174-68.500.
Sousa-Faro, Jose M. F.: *See—*
Maldonado, Francisco S.; Pla, Luis C.; Puentes, Jose L. F.; and Sousa-Faro, Jose M. F., 4,563,477, Cl. 514-427.000.
Southern Tool Company: *See—*
Green, James B. P., Jr., 4,562,687, Cl. 53-383.000.
Sova, Vladimir, to BBC Brown, Boveri & Company Limited. Method of electrolytically polishing a workpiece comprised of a nickel-, cobalt-, or iron-based alloy. 4,563,257, Cl. 204-129.850.
Speckman, Calvin A., to Bend Research, Inc. Pest control in animals. 4,562,794, Cl. 119-156.000.
Spectrospin AG: *See—*
Kellerhals, Hanspeter; and Allemann, Martin, 4,563,579, Cl. 250-291.000.
Spendel, Siegmund: *See—*
Seitz, Hans; Frerichs, Udo; Rach, Heinz-Dieter; and Spendel, Siegmund, 4,563,042, Cl. 301-37.0ST.
Sperber, Franz: *See—*
Wackerle, Peter M.; Sperber, Franz; and Weber, Walter, 4,562,975, Cl. 242-7.210.
Sperry Corporation: *See—*
Crawford, LeRoy A.; Jackson, Robert E.; and Hudson, Earl A., 4,563,026, Cl. 287-2.000.
Durbin, Larry L.; Zaborowski, Roy A.; and Wolf, Thomas R., 4,562,978, Cl. 244-1.00R.
Spiess, Joachim: *See—*
Rivier, Jean E. F.; Spiess, Joachim; and Vale, Wylie W., Jr., 4,563,352, Cl. 514-12.000.
Srikantan, Srinivasa: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.
Srinivasadesikan, Poonamalle: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.
Srinivasan, Kadathur S.: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasun-

daram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.

Srinivasan, Laguduva K. I.: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.

Staab, Rudolf; and Russow, Jurgen, to Hoechst Aktiengesellschaft; and Hoechst Aktiengesellschaft. Gas diffusion electrode with a hydrophilic covering layer, and process for its production. 4,563,261, Cl. 204-290.00R.

Staedeli, Otto: *See—*
Sigg, Hans; and Staedeli, Otto, 4,562,909, Cl. 192-48.910.

Stage, Edward C.; and Rister, Gerald E. Towing device. 4,563,018, Cl. 280-402.000.

Stahl, Benedict J. Clevis and method of manufacture. 4,563,105, Cl. 403-157.000.

Stahlmann, Rainer: *See—*
Beneking, Heinz; Stahlmann, Rainer; and Tsironis, Christos, 4,563,772, Cl. 455-321.000.

Stallkamp, Richard W.; and Ranger, Marc L., to Tektronix, Inc. High speed multiplying digital to analog converter. 4,563,670, Cl. 340-347.0DA.

Stamicarbon B.V., Licensing Subsidiary of DSM: *See—*
Forzatti, Pio; Trifiro, Ferruccio; and Villa, Pierluigi, 4,563,440, Cl. 502-215.000.
Plantema, Otto G.; Jetten, Arnold G. M.; and Haasen, Nicolaas F., 4,563,308, Cl. 260-239.30A.

Stamp, Thomas B. Apparatus for melting metal. 4,562,996, Cl. 266-242.000.

Standard Oil Company, The: *See—*
Bremer, Noel J.; and Dria, Dennis E., 4,563,439, Cl. 502-209.000.

Standard Oil Company (Indiana): *See—*
Hopkins, P. Donald; Nevitt, Thomas D.; and Unmuth, Eugene E., 4,563,266, Cl. 208-110.000.

Standard Products Company, The: *See—*
Zoller, Robert A., 4,563,141, Cl. 425-114.000.

Standard-Thomson Corporation: *See—*
Duprez, Wayne R.; and McKenzie, Bradley J., 4,562,953, Cl. 236-34.500.

Stanley Works, The: *See—*
Kornbrekke, Henning N.; and Boiucaner, Leon, 4,563,625, Cl. 318-603.000.

Starch, Michael S., to Dow Corning Corporation. Compositions used to condition hair. 4,563,347, Cl. 424-70.000.

Stavebni Strojirenstvi a Lehka Prefabrikace Generalni Reditelstvi: *See—*
Hrabak, Frantisek, 4,562,677, Cl. 52-211.000.

Steinberg, Meyer; and Fallon, Peter, to United States of America, Energy. Process for the production of ethylene and other hydrocarbons from coal. 4,563,197, Cl. 48-210.000.

Steiner, Gerd: *See—*
Franke, Albrecht; Steiner, Gerd; Hofmann, Hans-Peter; Muller, Claus-Dieter; and Teschendorf, Hans-Jurgen, 4,563,474, Cl. 514-417.000.

Steiner, Karl: *See—*
Wanke, Wilhelm; Hauser, Ludwig; and Steiner, Karl, 4,563,245, Cl. 162-358.000.

Steiner, Michel: *See—*
Canadas, Jean C.; and Steiner, Michel, 4,562,709, Cl. 70-169.000.

Steinke, Alexander, to Kraftwerk Union Aktiengesellschaft. Nuclear reactor fuel assembly. 4,563,328, Cl. 376-446.000.

Stelco Inc.: *See—*
Kelly, John H.; and Guest, Leonard E., 4,563,146, Cl. 425-256.000.

Stenger, Karl: *See—*
Porrmann, Herbert; Seifried, Walter; Klenk, Ludwig; and Stenger, Karl, 4,563,231, Cl. 156-90.000.

Stephenson, William I.: *See—*
Wilson, James C.; Stephenson, William I.; and Bratkowski, Walter V., 4,563,553, Cl. 200-17.00R.

Stevens, Carlile R. Non-saturating, self-driven switching inverter for gas discharge devices. 4,563,616, Cl. 315-220.000.

Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Lenhard-Backhaus, Hugo; and Strassgurtl, Anton, 4,563,015, Cl. 280-95.00A.

Stirling, Allan D. Valve and faucet handle tools. 4,562,758, Cl. 81-124.400.

Stol, Miroslav; Tolar, Miroslav; Adam, Milan; Cefelin, Pavel; and Kalal, Jaroslav, to Czechoslovenska akademie ved of Praha. Composite polymeric material for biological and medical application and the method for its preparation. 4,563,490, Cl. 524-24.000.

Stotts, Robert E.: *See—*
Bookout, Charles C.; Stotts, Robert E.; Waring, Douglass R.; and Folsom, Lawrence R., 4,563,131, Cl. 417-221.000.

Stouffer, Ronald D., to Bowles Fluidics Corporation. Fluid oscillator. 4,562,867, Cl. 137-811.000.

Stoy, George P.: *See—*
Stoy, Vladimir A.; and Stoy, George P., 4,563,182, Cl. 604-285.000.

Stoy, Vladimir A.; and Stoy, George P., to Health Products Research, Inc. Rectal insert. 4,563,182, Cl. 604-285.000.

Strassgurtl, Anton: *See—*
Lenhard-Backhaus, Hugo; and Strassgurtl, Anton, 4,563,015, Cl. 280-95.00A.

Stricker, David K.: *See—*
Kuhn, John B.; Wykhuis, Lloyd A.; and Stricker, David K., 4,563,019, Cl. 280-481.000.

Stroud, Stephen G.: *See—*
King, Patrick F.; and Stroud, Stephen G., 4,563,412, Cl. 430-223.000.

Stucheli, Alexander: *See—*
Schaub, Martin; and Stucheli, Alexander, 4,563,204, Cl. 62-21.000.

Studt, William L.: *See—*
Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,456, Cl. 514-242.000.
Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,460, Cl. 514-260.000.
Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,475, Cl. 514-427.000.

Stupak, Rimma I.: *See—*
Sablev, Leonid P.; and Stupak, Rimma I., 4,563,262, Cl. 204-298.000.

Stuwe GmbH & Co. KG: *See—*
Stuwe, Hartwig, 4,563,106, Cl. 403-370.000.

Stuwe, Hartwig, to Stuwe GmbH & Co. KG. Friction-transmitting shaft/flange connection. 4,563,106, Cl. 403-370.000.

Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., to Council of Scientific and Industrial Research. Process for the preparation of magnesium chloride for use as an electrolyte in electrolytic production of magnesium metal. 4,563,339, Cl. 423-178.000.

Subtex, Inc.: *See—*
George, Stephen; and George, Thomas H., 4,563,219, Cl. 106-287.190.

Suda, Seiji: *See—*
Okado, Terumi; Suda, Seiji; Sugiura, Noboru; Yoshinari, Takashi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; and Fujiwara, Hiroshi, 4,562,813, Cl. 123-425.000.

Sudderth, R. Brantley; Sierakoski, Joseph M.; and Lewis, Roy G., to Henkel Corporation. Solvent extraction process for recovery of zinc. 4,563,256, Cl. 204-108.000.

Sudo, Kimio: *See—*
Fujii, Setsuro; Nakayama, Toyoo; Nunomura, Shigeki; Sudo, Kimio; Watanabe, Shin-ichi; Okutome, Toshiyuki; Sakurai, Yojiro; Kurumi, Masateru; and Aoyama, Takuo, 4,563,527, Cl. 546-169.000.

Sugano, Hiroshi; Ishida, Ryuichi; and Yamamura, Michio, to Tanabe Seiyaku Co., Ltd. Peptides and process for preparing the same. 4,563,306, Cl. 260-112.5TR.

Sugano, Toshihiko: *See—*
Yokoyama, Masuzo; and Sugano, Toshihiko, 4,563,436, Cl. 502-104.000.

Sugden, David B.: *See—*
Bezette, Ian G.; and Sugden, David B., 4,562,974, Cl. 241-283.000.

Sugisaki, Kenzaburo; Onoda, Mutsuro; and Ishimaru, Hajime, to Fuji Seiko Kabushiki Kaisha; and Ishimaru, Hajime. Seal device for gate valve. 4,562,992, Cl. 251-159.000.

Sugita, Heiji; and Kato, Takehiko, to Sugita Wire Mfg. Co., Ltd. High strength bolt and method of producing same. 4,563,222, Cl. 148-12.00F.

Sugita Wire Mfg. Co., Ltd.: *See—*
Sugita, Heiji; and Kato, Takehiko, 4,563,222, Cl. 148-12.00F.

Sugiura, Noboru: *See—*
Okado, Terumi; Suda, Seiji; Sugiura, Noboru; Yoshinari, Takashi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; and Fujiwara, Hiroshi, 4,562,813, Cl. 123-425.000.

Sugiyama, Genpei: *See—*
Suzuki, Nobuo; Kurahashi, Takeo; Motohashi, Katsuichi; Sugiyama, Genpei; and Sakai, Takayuki, 4,563,409, Cl. 430-106.000.

Suhl, Larry: *See—*
Porter, Julian; and Suhl, Larry, 4,562,791, Cl. 118-326.000.

Sukolics, Ronald D. Building butt glazing system and method for butt glazing. 4,562,680, Cl. 52-403.000.

Sukumaran, Somasundaram: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyalmannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.

Sullivan, Wayne M.: *See—*
Tschirky, John E.; and Sullivan, Wayne M., 4,562,853, Cl. 137-75.000.

Sulzer Brothers Limited: *See—*
Schaub, Martin; and Stucheli, Alexander, 4,563,204, Cl. 62-21.000.

Sumar, Cesar P. Device for attachment to drawtwister machines to produce multifilament yarns with S or Z twist effect. 4,562,694, Cl. 57-288.000.

Sumitomo Chemical Company Limited: *See—*
Fujisawa, Koichi; Yokoyama, Akiko; and Suzukamo, Gohfu, 4,563,356, Cl. 426-44.000.
Takemoto, Ichiki, 4,563,535, Cl. 548-513.000.

Sumitomo Electric Industries, Ltd.: *See—*
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Kawakami, Akihiko, 4,563,093, Cl. 356-368.000.
Takimoto, Hiroaki; Miyajiri, Tetsuo; Yoshida, Kiminobu; and Turita, Tamio, 4,563,312, Cl. 261-59.000.

Sumitomo Metal Industries, Ltd.: *See—*
Kondoh, Yukio, 4,562,713, Cl. 72-24.000.

Suncoast Medical Manufacturing, Inc.: *See—*
Johns, David L., 4,563,570, Cl. 219-240.000.

Sundstrand Corporation: *See—*
Mosher, Philip C.; and Aleem, Mohd A., 4,562,641, Cl. 29-598.000.

Supp, Armin: *See—*
Schroder, Norbert; Milewski, Gunter; Neusser, Manfred; Dorr, Hermann; Supp, Armin; Rasch, Heinz; Heinemann, Otto; Baldus, Heinz-Dieter; and Manthey, Harald, 4,563,271, Cl. 209-427.000.

Sustmann, Scarlet, to Henkel Kommanditgesellschaft auf Aktien. Blank useful in the production of a tampon for feminine hygiene. 4,563,398, Cl. 428-542.800.

Susumi, Sadao: *See—*
Ginnaga, Akihiro; Sakuma, Shin; Nishihara, Tsukasa; Tashiro, Tomitaka; Susumi, Sadao; Kawahara, Tetsuo; and Mizokami, Hiroshi, 4,563,303, Cl. 260-112.00R.

Suzukamo, Gohfu: *See—*
Fujisawa, Koichi; Yokoyama, Akiko; and Suzukamo, Gohfu, 4,563,356, Cl. 426-44.000.

Suzuki, Junichiro: *See—*
Yamamoto, Yoshihiro; and Suzuki, Junichiro, 4,563,215, Cl. 75-238.000.

Suzuki, Kenji: *See—*
Matsumura, Susumu; Suzuki, Takashi; and Suzuki, Kenji, 4,563,576, Cl. 250-204.000.

Suzuki, Nobuo; Kurahashi, Takeo; Motohashi, Katsuichi; Sugiyama, Genpei; and Sakai, Takayuki, to Hogohaya Chemical Co., Ltd. Azo moiety containing metal complexes in toners. 4,563,409, Cl. 430-106.000.

Suzuki, Takashi: *See—*
Matsumura, Susumu; Suzuki, Takashi; and Suzuki, Kenji, 4,563,576, Cl. 250-204.000.

Suzuki, Takaya: *See—*
Kushima, Tadao; Soga, Tasao; and Suzuki, Takaya, 4,562,637, Cl. 29-572.000.

Suzuki, Tomonori, to Sanshin Kogyo Kabushiki Kaisha. Four-cycle engine for marine propulsion device. 4,562,797, Cl. 123-90.340.

Suzuki, Tomosaburo; and Kawakami, Sanji, to Kabushiki Kaisha Daisei Kikai. Fixed quantity feed apparatus for bean sprouts. 4,562,917, Cl. 198-505.000.

Suzuki, Toshi: *See—*
Shigetomi, Yoshirou; Suzuki, Toshi; Fukui, Katsnori; Inoue, Masuo; Nomura, Motoaki; and Miyoshi, Katuyoshi, 4,563,437, Cl. 502-105.000.

Swiss Aluminum Ltd.: *See—*
Heinzmann, Ulrich; and Braun, Werner, 4,563,255, Cl. 204-67.000.

Sybertz, Hans: *See—*
Krocher, Harro; Krautzenberger, Dieter; Sybertz, Hans; and Becker, Uwe, 4,562,873, Cl. 144-356.000.

Syed, Alexander; and Smillie, Rowena, to Wiggins Teape Group Limited, The. Apparatus for controlling deposition of a liquid onto a moving surface. 4,563,244, Cl. 162-344.000.

Syracuse University: *See—*
Friedman, Alexander A.; and Podolak, Peter L., 4,563,281, Cl. 210-614.000.

Syrbius, Gerhard: *See—*
Koch, Klaus; and Syrbius, Gerhard, 4,563,243, Cl. 162-18.000.

Szantay, Csaba: *See—*
Ezer, Elemer; Szporny, Laszlo; Hajos, Gyorgy; Szantay, Csaba; Keve, Tibor; Fekete, Gyorgy; Megyeri, Gabor; Acs, Tibor; and Bolcskei, Hedvig, 4,563,464, Cl. 514-299.000.

Szporny, Laszlo: *See—*
Ezer, Elemer; Szporny, Laszlo; Hajos, Gyorgy; Szantay, Csaba; Keve, Tibor; Fekete, Gyorgy; Megyeri, Gabor; Acs, Tibor; and Bolcskei, Hedvig, 4,563,464, Cl. 514-299.000.

Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Kawakami, Akihiko, to Sumitomo Electric Industries, Ltd. Voltage and electric field measuring device using light. 4,563,093, Cl. 356-368.000.

Tadokoro, Tomoo; Okimoto, Haruo; Shiraishi, Hideo; and Akagi, Toshimichi, to Mazda Motor Corporation. Intake system for rotary piston engine. 4,562,803, Cl. 123-216.000.

Tadokoro, Tomoo; Okimoto, Haruo; and Matsuda, Ikuo, to Mazda Motor Corporation. Intake system for rotary piston engine. 4,562,804, Cl. 123-216.000.

Tadokoro, Tomoo; Okimoto, Haruo; and Shiraishi, Hideo, to Mazda Motor Corporation. Intake system for rotary piston engine. 4,562,805, Cl. 123-216.000.

Tagawa, Takao; and Urakawa, Toshio, to Sharp Kabushiki Kaisha. Optical system for laser printer. 4,563,056, Cl. 350-6.800.

Tahara, Shu: *See—*
Oka, Shotaro; Tahara, Shu; and Kobayashi, Junya, 4,562,725, Cl. 73-29.000.

Takabatake, Hideo, to Yoshida Kogyo K.K. Slide fastener slider. 4,562,622, Cl. 24-427.000.

Takagi Chemicals, Inc.: *See—*
Takagi, Sadaaki; Yura, Shigetsugu; Fukuda, Masaki; and Oikawa, Yukio, 4,563,387, Cl. 428-300.000.

Takagi, Sadaaki; Yura, Shigetsugu; Fukuda, Masaki; and Oikawa, Yukio, to Takagi Chemicals, Inc. Cushioning material. 4,563,387, Cl. 428-300.000.

Takagi, Toshinori; Ishikawa, Junzo; and Matsuda, Koji, to Nissin-High Voltage Co., Ltd. Device for generating negative-ion beams by alkaline metal ion sputtering. 4,563,610, Cl. 313-362.100.

Takahashi, Sadao; and Ohno, Yukihiro, to Ricoh Company, Ltd. Imaging apparatus. 4,563,076, Cl. 355-3.0CH.

Takahashi, Yutaka: *See—*
Koga, Ryoichi; and Takahashi, Yutaka, 4,563,571, Cl. 219-299.000.

Takai, Hiroshi: *See—*
Shiramizu, Kousuke; Awano, Yoshirou; Okada, Hiroji; Yamagami, Hiromu; and Takai, Hiroshi, 4,563,569, Cl. 219-137.430.

Takai, Kazuki, to Clarion Co., Ltd. Tape player. 4,563,711, Cl. 360-74.100.

Takano, Yoshiya; and Hoshi, Yoshikazu, to Hitachi, Ltd. Fuel injection pump. 4,562,815, Cl. 123-450.000.

Takanobu, Osamu: *See—*
Akiyama, Hideo; Todokoro, Akio; and Takanobu, Osamu, 4,563,335, Cl. 422-159.000.

Takasago, Masahiro: *See—*
Maeda, Takeshi; Shigematsu, Kazuo; Takasago, Masahiro; Mizoguchi, Yasumitsu; Tsutsumi, Zenji; Tsunoda, Yoshito; and Uno, Motoo, 4,563,760, Cl. 369-44.000.

Takasugi, Hisashi: *See—*
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,563,450, Cl. 514-204.000.
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,563,522, Cl. 544-016.000.

Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,563,450, Cl. 514-204.000.

Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,563,522, Cl. 544-016.000.

Takeda Chemical Industries, Ltd.: *See—*
Miyata, Kouichi; Maejima, Kazutaka; and Tomoda, Katsumi, 4,563,349, Cl. 424-94.000.
Tanaka, Michio; Nasu, Kohji; and Okamura, Masanori, 4,562,714, Cl. 72-46.000.
Terao, Shinji; and Nishikawa, Kohei, 4,563,446, Cl. 514-63.000.

Takeda, Kenji: *See—*
Sadaki, Hiroshi; Imaizumi, Hiroyuki; Takeda, Kenji; Inaba, Takihiro; Takeno, Ryuko; Morita, Seishi; Kajita, Tetsuya; and Saikawa, Isamu, 4,563,534, Cl. 548-194.000.

Takehisa, Fumitaka: *See—*
Ogoshi, Yutaka; Yokoi, Mitsuyoshi; Takehisa, Fumitaka; and Yoshikawa, Sumi, 4,562,875, Cl. 164-72.000.

Takemoto, Ichiki, to Sumitomo Chemical Co., Ltd. Process for producing tetrahydrophthalimides. 4,563,535, Cl. 548-513.000.

Takemoto, Toyoki: *See—*
Sakai, Hiroyuki; Kawakita, Kenji; Fujita, Tsutomu; and Takemoto, Toyoki, 4,563,227, Cl. 148-187.000.

Takemura, Toji: *See—*
Iwata, Kazuro; Fukushima, Naoto; and Takemura, Toji, 4,562,997, Cl. 267-8.00R.

Takeno, Ryuko: *See—*
Sadaki, Hiroshi; Imaizumi, Hiroyuki; Takeda, Kenji; Inaba, Takihiro; Takeno, Ryuko; Morita, Seishi; Kajita, Tetsuya; and Saikawa, Isamu, 4,563,534, Cl. 548-194.000.

Takeshima, Kiyoshi; Murai, Ryukichi; and Nakada, Yoshinori, to Yoshida Kogyo K.K. Slide fastener stringer. 4,562,621, Cl. 24-408.000.

Takeuchi, Hiroshi, to Kabushiki Kaisha Daikin Seisakusho. Clutch with damper disc assembly. 4,563,165, Cl. 464-64.000.

Takeuchi, Motohiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and device for controlling the tracking. 4,563,714, Cl. 360-77.000.

Takimoto, Hiroaki; Miyajiri, Tetsuo; Yoshida, Kiminobu; and Turita, Tamio, to Sumitomo Electric Industries, Ltd. Gas supplying apparatus. 4,563,312, Cl. 261-59.000.

Takizawa, Tozo, to Jidosha Kiki Co., Ltd. Diesel engine glow plug. 4,563,568, Cl. 219-270.000.

Talleres Metalurgicos "Condor" Battistini & Cia, S.A.: *See—*
Battistini, Isocrate N., 4,562,772, Cl. 99-472.000.

Tamagawa, Akira: *See—*
Kano, Tokio; Tamagawa, Akira; and Doi, Masanori, 4,563,430, Cl. 436-164.000.

Tanabe, Hisaki: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; Kanakura, Akihiro; and Nakano, Shinji, 4,563,492, Cl. 524-90.000.

Tanabe, Junichi: *See—*
Shimizu, Keiichi; Tanabe, Junichi; and Kondo, Yoshikazu, 4,562,717, Cl. 72-347.000.

Tanabe Seiyaku Co., Ltd.: *See—*
Sugano, Hiroshi; Ishida, Ryuichi; and Yamamura, Michio, 4,563,306, Cl. 260-112.5TR.

Tanaka, Hiroaki; and Akita, Shigeyuki, to Nippon Soken, Inc. Capacitive-type position and reference angular rotation detecting apparatus. 4,563,683, Cl. 340-870.370.

Tanaka, Kiichiro: *See—*
Okamura, Yasushi; and Tanaka, Kiichiro, 4,563,101, Cl. 400-603.000.

Tanaka, Masaru, to Horiba, Ltd. Apparatus for measuring the luminous lifetime of samples. 4,563,588, Cl. 250-458.100.

Tanaka, Michio; Nasu, Kohji; and Okamura, Masanori, to Takeda Chemical Industries, Ltd. Precoat metal and its production. 4,562,714, Cl. 72-46.000.

Tanaka, Toshihiko; Hasegawa, Norio; and Hayashida, Tetsuya, to Hitachi, Ltd. Method of forming patterns. 4,563,241, Cl. 156-643.000.

Tanaka, Yasunori: *See—*
Tomita, Yoshiaki; Ohtsuka, Toshio; and Tanaka, Yasunori, 4,562,685, Cl. 53-201.000.

Tandy Corporation: *See—*
Leminger, Steven, 4,563,676, Cl. 340-749.000.

Tangney, Thomas J.: *See—*
Gornowicz, Gerald A.; Tangney, Thomas J.; and Ziemelis, Maris J., 4,563,539, Cl. 556-421.000.

Tani, Yoshiki: *See—*
Yamada, Hideaki; Tani, Yoshiki; and Izumi, Yoshikazu, 4,563,426, Cl. 435-119.000.

Taniguchi, Tetsuya: *See—*
Katada, Hirofumi; Taniguchi, Tetsuya; and Ikarashi, Koji, 4,562,923, Cl. 206-235.000.

Tanikawa, Yoshitaka: *See—*
Tominaga, Kazunori; and Tanikawa, Yoshitaka, 4,562,808, Cl. 123-339.000.

Tanioka, Kenkichi: *See—*
Nonaka, Yasuhiko; Inoue, Eisuke; Shidara, Keiichi; and Tanioka, Kenkichi, 4,563,611, Cl. 313-366.000.

Tanizawa, Ryozo; and Yanagisawa, Takeji, to Shin-Etsu Chemical Co., Ltd. Formable vinyl chloride-based resin composition. 4,563,482, Cl. 521-92.000.

Tanner, Curtis J.; Bender, Richard E.; Simson, Anton K.; and McCutchen, Hugh, Jr., to Henlan, Inc. Ribbon rod for use in oil well apparatus. 4,563,391, Cl. 428-365.000.

Tao, Masahiro, to Asahi Corporation. Two wheeled toy vehicle. 4,563,164, Cl. 446-440.000.

Tarutani, Yoshinobu; and Nishino, Toshikazu, to Hitachi, Ltd. Superconducting switching device. 4,563,695, Cl. 357-5.000.

Tashiro, Tomitaka: *See—*
Ginnaga, Akihiro; Sakuma, Shin; Nishihara, Tsukasa; Tashiro, Tomitaka; Susumi, Sadao; Kawahara, Tetsuo; and Mizokami, Hiroshi, 4,563,303, Cl. 260-112.00R.

Tateishi, Hiroshi; and Haga, Masakatsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Amorphous alloy for magnetic head and magnetic head with an amorphous alloy. 4,563,225, Cl. 148-31.550.

Tatsumi, Masami: *See—*
Tada, Kohji; Kuhara, Yoshiki; Tatsumi, Masami; and Kawakami, Akihiko, 4,563,093, Cl. 356-368.000.

Taylor, Richard J.; Kellar, Paul R. N.; and Hinson, Neil R., to Quantel Limited. Video processing systems. 4,563,703, Cl. 358-160.000.

Taylor, Thomas C., to Aeritalia; and Taylor, Thomas C. Expandable spacecraft. 4,562,979, Cl. 244-158.00R.

TDK Electronics Company Ltd.: *See—*
Fukuda, Kazumasa; and Saito, Seitoku, 4,563,396, Cl. 428-457.000.

Tektronix, Inc.: *See—*
Ericsen, Bret; Hastings, John C.; Murphy, Desmond L.; and Jansen, Scott, 4,563,564, Cl. 219-121.0LJ.
Stallkamp, Richard W.; and Ranger, Marc L., 4,563,670, Cl. 340-347.0DA.

Teldix GmbH: *See—*
Kaiser, Joachim, 4,563,092, Cl. 356-350.000.

Telefonaktiebolaget LM Ericsson: *See—*
Brandt, Harald E., 4,563,767, Cl. 375-107.000.

Telefunken Electronic GmbH: *See—*
Gillessen, Klaus; and Malinowski, Christopher, 4,563,590, Cl. 250-578.000.

Ten Pas, Carl E. Tree support device. 4,562,662, Cl. 47-43.000.

Terada, Hirokiyo: *See—*
Atsumi, Akira; Senshu, Takao; Oguni, Kensaku; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,562,700, Cl. 62-174.000.

Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,563,449, Cl. 514-203.000.

Teramoto, Kazuo: *See—*
Yoshioka, Toshio; Teramoto, Kazuo; and Shimamura, Masaharu, 4,563,425, Cl. 435-94.000.

Terao, Shinji; and Nishikawa, Kohei, to Takeda Chemical Industries, Ltd. Thromboxane synthetase inhibiting 3-(1-alkenyl) pyridines. 4,563,446, Cl. 514-63.000.

Terauds, Juris. Portable exercising device. 4,563,001, Cl. 272-72.000.

Ternes, Norman A. Method of producing lithographic plates. 4,563,085, Cl. 355-132.000.

Terumo Corporation: *See—*
Oyama, Noboru; Matsuda, Hiroaki; Tsuchida, Eishun; Ohnuki, Yukio; Shimomura, Takeshi; and Ushizawa, Norihiko, 4,563,263, Cl. 204-418.000.

Terzian, Rouben T.: *See—*
Herbstler, Horst-Dieter; Terzian, Rouben T.; and Dyson, Lewis R., 4,563,163, Cl. 446-354.000.

Teschendorf, Hans-Jurgen: *See—*
Franke, Albrecht; Steiner, Gerd; Hofmann, Hans-Peter; Muller, Claus-Dieter; and Teschendorf, Hans-Jurgen, 4,563,474, Cl. 514-417.000.

Tetra Pharmaceuticals Pty. Limited: *See—*
Govett, Peter J., 4,562,658, Cl. 42-1.0ST.

Texaco Inc.: *See—*
Morduchowitz, Abraham; Sammells, Anthony F.; and Cook, Ronald L., 4,563,254, Cl. 204-59.00R.

Texaco Limited: *See—*
Knowles, John P., 4,563,032, Cl. 294-90.000.

Texas Instruments Incorporated: *See—*
Chauvel, Gerard, 4,562,812, Cl. 123-417.000.
McElroy, David J., 4,562,639, Cl. 29-584.000.

Textron Inc.: *See—*
Dubler, Richard D., 4,562,762, Cl. 83-834.000.

Teys Bros. Pty. Ltd.: *See—*
Gerding, William, 4,562,614, Cl. 17-23.000.

Tharp, Charles E., to Environmental Dynamics, Inc. Apparatus for aerating and mixing waste water. 4,563,277, Cl. 210-220.000.

Thegel, Lennart: *See—*
Lenander, Bo; and Thegel, Lennart, 4,563,644, Cl. 324-232.000.

Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft: *See—*
Berentzen, Hardo, 4,562,705, Cl. 66-121.000.

Thibeault, Ronald, to Cooper Industries, Inc. Electrical plug of dead front design. 4,563,049, Cl. 339-83.000.

Thiele, Paul: *See—*
Weisner, Eike; Sczepaniak, Werner; Thiele, Paul; Block, Detlef; and Reimann, Karl-Heinz, 4,563,252, Cl. 204-9.000.

Thomas & Betts Corporation: *See—*
Greenwood, William S.; and Weinmann, Karl, 4,563,050, Cl. 339-99.00R.
Slachetka, Joseph P., 4,563,051, Cl. 339-143.00R.

Thomas, Michael E.; Brander, Rita W.; Raap, Teresa A.; and Rankowitz, Marshall M., to General Foods Corporation. Meat analog having a protein-gum-starch matrix. 4,563,362, Cl. 426-104.000.

Thompson, Ronald J., to Polysar Limited. Impregnation of non-woven webs. 4,563,289, Cl. 252-8.800.

Thomson-CSF: *See—*
Bornhofft, Wolfgang; and Irenkler, Gerhard, 4,562,789, Cl. 114-312.000.
Bourbin, Yannic; and Arditty, Herve , 4,563,087, Cl. 356-73.100.
Clerc, Guy; Gerlach, Pierre; and Hoet, Roger, 4,563,609, Cl. 313-343.000.
Desormiere, Bernard, 4,563,646, Cl. 324-244.000.
Jay, Paul R., 4,563,696, Cl. 357-22.000.
Mourier, Georges, 4,563,615, Cl. 315-39.300.

Thomson, John, Jr.: *See—*
O'Bryan, Henry M., Jr.; Plourde, James K.; and Thomson, John, Jr., 4,563,661, Cl. 333-202.000.

Thorn EMI plc: *See—*
Seddon, Richard J.; Parker, Keith E.; and Hing, Peter, 4,563,214, Cl. 75-234.000.

Thorpe, William, to British Telecommunications. Mounting dielectric resonators. 4,563,662, Cl. 333-219.000.

Ti Accles & Pollock Limited: *See—*
Bayliss, George T.; Ahmad, Edward S.; and Hutchcocks, John A., 4,563,007, Cl. 273-77.00A.

Tidd, James A., to Bedford Computer Corporation. Photocomposing apparatus and method. 4,563,747, Cl. 364-523.000.

Tietz, Joseph G.; and Wynne, John M., to Baker Industries, Inc. Supervision system for monitoring the condition of a battery and a series-connected fuse. 4,563,628, Cl. 320-20.000.

Tiffany, H. Robert, to Tiffany & Tiffany. Convertible furniture. 4,563,037, Cl. 297-105.000.

Tiffany & Tiffany: *See—*
Tiffany, H. Robert, 4,563,037, Cl. 297-105.000.

Tihanyi, Peter; and Bauer, Robert S., to Xerox Corporation. Passivation for surfaces and interfaces of semiconductor laser facets or the like. 4,563,368, Cl. 427-82.000.

Till, Henry R.: *See—*
Fantuzzo, Joseph; Monkelbaan, Edwin R.; and Till, Henry R., 4,563,078, Cl. 355-3.00R.

Timmerman, George E., to United Technologies Corporation. Absolute compression test. 4,562,728, Cl. 73-116.000.

Tinder, David V.: *See—*
Webber, Hugh C.; and Tinder, David V., 4,562,740, Cl. 73-651.000.

Tioxide Group PLC: *See—*
Humphreys, John P., 4,563,221, Cl. 106-300.000.

Todokoro, Akio: *See—*
Akiyama, Hideo; Todokoro, Akio; and Takanobu, Osamu, 4,563,335, Cl. 422-159.000.

Tofanelli, Adler: *See—*
De Bortoli, Marco; Tofanelli, Adler; and Varetto, Luigi, 4,563,637, Cl. 324-77.00A.

Toho Titanium Co., Ltd.: *See—*
Shigetomi, Yoshirou; Suzuki, Toshi; Fukui, Katsnori; Inoue, Masuo; Nomura, Motoaki; and Miyoshi, Katuyoshi, 4,563,437, Cl. 502-105.000.

Tohyama, Takashi: *See—*
Watanabe, Toshiro; Tohyama, Takashi; and Ohkoshi, Akio, 4,563,699, Cl. 358-60.000.

Toki, Hitoshi: *See—*
Kukimoto, Hiroshi; Morimoto, Kiyoshi; and Toki, Hitoshi, 4,563,297, Cl. 252-301.40R.

Tokoro, Masatoshi: *See—*
Negita, Moriyasu; Fukai, Masao; and Tokoro, Masatoshi, 4,563,692, Cl. 346-76.0PH.

Tokoro, Setsuo: *See—*
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, 4,562,818, Cl. 123-478.000.

Tokura, Norihito: *See—*
Moritugu, Mitiyasu; Kawai, Hisasi; and Tokura, Norihito, 4,562,823, Cl. 123-620.000.

Tokuyama Soda Kabushiki Kaisha: *See—*
Shikata, Kazuo; and Mizumoto, Yoshinori, 4,563,416, Cl. 430-533.000.

Tokyo Electric Co., Ltd.: *See—*
Hamamichi, Yoshihiro, 4,563,100, Cl. 400-208.000.
Nishio, Yasuharu; and Saito, Shunji, 4,563,712, Cl. 360-75.000.

Tokyo Elite Co., Ltd.: *See—*
Hayakawa, Hideo, 4,563,759, Cl. 367-139.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hiroi, Kazuo; and Ito, Kojiro, 4,563,735, Cl. 364-165.000.
Ichikawa, Kentaro; and Etoh, Shunji, 4,563,130, Cl. 416-213.00R.
Isobe, Mitsuo; and Ohtani, Takayuki, 4,563,593, Cl. 307-231.000.
Iwasaki, Hideo; and Izumi, Mamoru, 4,562,736, Cl. 73-587.000.
Koyama, Mikio, 4,563,594, Cl. 307-290.000.
Mori, Yasuchika; and Shigemasa, Takashi, 4,563,734, Cl. 364-157.000.
Mosholder, Michael B., 4,563,075, Cl. 355-3.0FU.
Takeuchi, Motohiko, 4,563,714, Cl. 360-77.000.
Tateishi, Hiroshi; and Haga, Masakatsu, 4,563,225, Cl. 148-31.550.
Tsuaki, Hajime, 4,563,313, Cl. 261-81.000.

Tolar, Miroslav: *See—*
Stol, Miroslav; Tolar, Miroslav; Adam, Milan; Cefelin, Pavel; and Kalal, Jaroslav, 4,563,490, Cl. 524-24.000.

Tominaga, Kazunori; and Tanikawa, Yoshitaka, to Mazda Motor Corporation. Engine idling speed control. 4,562,808, Cl. 123-339.000.

Tomita, Hiroshi; Maeda, Junji; and Kunimitsu, Michio, to Sanyo Electric Co., Ltd. Thermal printer. 4,563,690, Cl. 346-76.0PH.

Tomita, Tetsuo: *See—*
Kawamura, Noriyuki; Aizawa, Nobuhiro; Koizumi, Shigeki; Koyahara, Masaru; and Tomita, Tetsuo, 4,563,715, Cl. 360-78.000.

Tomita, Yoshiaki; Ohtsuka, Toshio; and Tanaka, Yasunori. Bottle capping apparatus. 4,562,685, Cl. 53-201.000.

Tomizawa, Akira: *See—*
Kikuchi, Hiroshi; Tomizawa, Akira; and Oka, Hitoshi, 4,563,217, Cl. 106-1.230.

Tomoda, Katsumi: *See—*
Miyata, Kouichi; Maejima, Kazutaka; and Tomoda, Katsumi, 4,563,349, Cl. 424-94.000.

Topfl, Rosemarie, to Ciba-Geigy Corporation. Dyeing assistant and use thereof for dyeing or printing synthetic polyamide fibre material. 4,563,190, Cl. 8-524.000.

Toray Industries, Inc.: *See—*
Yoshioka, Toshio; Teramoto, Kazuo; and Shimamura, Masaharu, 4,563,425, Cl. 435-94.000.

Torii & Co., Ltd.: *See—*
Fujii, Setsuro; Nakayama, Toyoo; Nunomura, Shigeki; Sudo, Kimio; Watanabe, Shin-ichi; Okutome, Toshiyuki; Sakurai, Yojiro; Kurumi, Masateru; and Aoyama, Takuo, 4,563,527, Cl. 546-169.000.

Torres Cebada, Tomas: *See—*
Gomez Parra, Vicente; Gonzalez Hernandez, Pedro; Sanchez Alonso, Felix; and Torres Cebada, Tomas, 4,563,528, Cl. 546-261.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Tsuboi, Hiroyuki, 4,563,744, Cl. 364-476.000.

Toyama Chemical Co., Ltd.: *See—*
Sadaki, Hiroshi; Imaizumi, Hiroyuki; Takeda, Kenji; Inaba, Takihiro; Takeno, Ryuko; Morita, Seishi; Kajita, Tetsuya; and Saikawa, Isamu, 4,563,534, Cl. 548-194.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Isaka, Tsutomu; and Nagano, Hiroshi, 4,563,316, Cl. 264-22.000.

Toyo Bussan Kabushiki Kaisha: *See—*
Hoshino, Takahiro, 4,563,157, Cl. 441-104.000.

Toyo Kohan Co., Ltd.: *See—*
Shimizu, Keiichi; Tanabe, Junichi; and Kondo, Yoshikazu, 4,562,717, Cl. 72-347.000.

Toyo Seikan Kaisha, Limited: *See—*
Nishikawa, Hirotaka, 4,562,720, Cl. 72-349.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Ikeda, Shinji, 4,562,821, Cl. 123-569.000.
Kobayashi, Nobuyuki; and Isobe, Toshiaki, 4,562,819, Cl. 123-491.000.
Shiramizu, Kousuke; Awano, Yoshirou; Okada, Hiroji; Yamagami, Hiromu; and Takai, Hiroshi, 4,563,569, Cl. 219-137.430.

Trask, Blair D., to Bixby International Corporation. Shoe stiffener. 4,562,607, Cl. 12-146.00D.

Travis Electronics, Inc.: *See—*
Moore, Armistead M., 4,563,621, Cl. 318-139.000.

Treber, Willi; Schlenz, Rolf; Fritsch, Gunter; and Hansmann, Joseph, to Gebr, Happich GmbH. Blow molded decorative or protective strip with temperature compensation. 4,563,374, Cl. 428-31.000.

Tremillon, Bernard: *See—*
Seon, Francoise; Picard, Gerard; Tremillon, Bernard; and Bertaud, Yves, 4,563,338, Cl. 423-76.000.

Trifiro, Ferruccio: *See—*
Forzatti, Pio; Trifiro, Ferruccio; and Villa, Pierluigi, 4,563,440, Cl. 502-215.000.

Troger, Wolfgang: *See—*
Mesmer, Otto; Polligkeit, Wolfgang; Troger, Wolfgang; and Wolter, Andreas, 4,563,187, Cl. 8-137.000.

Tromp, Denis: *See—*
Larrecq, Michel; Tromp, Denis; and Birat, Jean-Pierre, 4,562,880, Cl. 164-455.000.

Tsai, Shan-Pu: *See—*
Hruska, Louis W.; and Tsai, Shan-Pu, 4,563,260, Cl. 204-283.000.

Tsang, Dean Z.; and Walpole, James N., to Massachusetts Institute of Technology. Intra-cavity loss-modulated diode laser. 4,563,765, Cl. 372-50.000.

Tschernatsch, Gunther; and Kurz, Peter, to M.A.N. Maschinenfabrik Augsburg-Nurnberg. En-mass conveyor for verticle or steep delivery of bulk material. 4,562,918, Cl. 198-509.000.

Tschirky, John E.; and Sullivan, Wayne M., to Smith International, Inc. Downhole fire control. 4,562,853, Cl. 137-75.000.

Tsironis, Christos: *See—*
Beneking, Heinz; Stahlmann, Rainer; and Tsironis, Christos, 4,563,772, Cl. 455-321.000.

Tsuaki, Hajime, to Tokyo Shibaura Denki Kabushiki Kaisha. Humidifier. 4,563,313, Cl. 261-81.000.

Tsuboi, Hiroyuki, to Toshiba Kikai Kabushiki Kaisha. Apparatus for adjusting starting positions of high speed injection. 4,563,744, Cl. 364-476.000.

Tsuchida, Eishun: *See—*
Oyama, Noboru; Matsuda, Hiroaki; Tsuchida, Eishun; Ohnuki, Yukio; Shimomura, Takeshi; and Ushizawa, Norihiko, 4,563,263, Cl. 204-418.000.

Tsuchiya, Shigeyuki: *See—*
Niekawa, Yukihisa; and Tsuchiya, Shigeyuki, 4,563,663, Cl. 335-78.000.

Tsuji, Kiyoshi: *See—*
Takaya, Takao; Takasugi, Hisashi; Tsuji, Kiyoshi; and Chiba, Toshiyuki, 4,563,522, Cl. 544-016.000.
Ueda, Ikuo; Matsuo, Masaaki; Tsuji, Kiyoshi; and Kato, Masayuki, 4,563,524, Cl. 544-366.000.

Tsujibayashi, Yoshiyuki, to Nissan Motor Co., Ltd. Engine intake pipe arrangement for automotive vehicle. 4,562,800, Cl. 123-195.00A.

Tsujii, Yasuhiro: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,563,529, Cl. 546-345.000.

Tsunoda, Yoshito: *See—*
Maeda, Takeshi; Shigematsu, Kazuo; Takasago, Masahiro; Mizoguchi, Yasumitsu; Tsutsumi, Zenji; Tsunoda, Yoshito; and Uno, Motoo, 4,563,760, Cl. 369-44.000.

Tsuruoka, Takashi: *See—*
Inouye, Shigeharu; Niida, Taro; Miyauchi, Keinosuke; Matsumoto, Kuniomi; Akita, Eiichi; Koyama, Masao; Kai, Fumio; and Tsuruoka, Takashi, 4,563,472, Cl. 514-381.000.

Tsushima, Isao: *See—*
Mokuya, Kinji; Tsushima, Isao; and Sakamoto, Masakatsu, 4,563,112, Cl. 406-11.000.

Tsutsui, Eiji; Yoshioka, Masahiro; and Murakami, Masahiro, to Mita Industrial Co., Ltd. Engagement mechanism for a developing means in electrostatic copying machine. 4,563,074, Cl. 355-3.0DD.

Tsutsumi, Tadahiko: *See—*
Abe, Mitsuo; Atomori, Seiichi; Tsutsumi, Tadahiko; and Noro, Masahiko, 4,563,505, Cl. 525-316.000.
Kitagawa, Yozo; Nishioka, Akinori; Higuchi, Yasuo; Tsutsumi, Tadahiko; Yamaguchi, Takashi; and Kato, Tadashi, 4,563,393, Cl. 428-412.000.

Tsutsumi, Yoshio: *See—*
Ohta, Tomozo; Tsutsumi, Yoshio; and Konishi, Yoshihiro, 4,563,651, Cl. 329-110.000.

Tsutsumi, Zenji: *See—*
Maeda, Takeshi; Shigematsu, Kazuo; Takasago, Masahiro; Mizoguchi, Yasumitsu; Tsutsumi, Zenji; Tsunoda, Yoshito; and Uno, Motoo, 4,563,760, Cl. 369-44.000.

Tufco Corporation: *See—*
Green, Jerry T., 4,562,781, Cl. 112-79.00R.

Turecek, Donald J., to Armstrong Rubber Company. Apparatus for coating aligned cords. 4,563,140, Cl. 425-114.000.

Turita, Tamio: *See—*
Takimoto, Hiroaki; Miyajiri, Tetsuo; Yoshida, Kiminobu; and Turita, Tamio, 4,563,312, Cl. 261-59.000.

Turnbull, William G.: *See—*
Anderson, Weston A.; and Turnbull, William G., 4,562,900, Cl. 181-176.000.

UBE Industries, Ltd.: *See—*
Kamei, Eiichi; and Shimomura, Yasushi, 4,563,317, Cl. 264-28.000.

Uchida, Yasuhiko: *See—*
Kobayashi, Kenji; Uchida, Yasuhiko; and Utsunomiya, Tsuyoshi, 4,563,402, Cl. 429-178.000.

Udupa, Handady V.: *See—*
Subramanian, Panchapagesa; Selvakesavan, Arunachalam; Srinivasan, Laguduva K. I.; Srinivasadesikan, Poonamalle; Srinivasan, Kadathur S.; Kannan, Gajavalli N. R.; Sukumaran, Somasundaram; Rajagopalan, Narasimhan; Dhandapani, Koyaimannam S.; Augustin, Chanassery O.; Devasahayam, Thangaraj S.; Srikantan, Srinivasa; and Udupa, Handady V., 4,563,339, Cl. 423-178.000.

Ueda, Ikuo; Kato, Masayuki; and Kasai, Yosiharu, to Fujisawa Pharmaceutical Co., Ltd. Thiazine derivatives, processes for preparation thereof and pharmaceutical composition comprising the same. 4,563,453, Cl. 514-222.000.

Ueda, Ikuo; Kato, Masayuki; Nagano, Masanobu; and Akahane, Atsushi, to Fujisawa Pharmaceutical Co., Ltd. Antiulcer fused imidazole compounds. 4,563,455, Cl. 514-241.000.

Ueda, Ikuo; Matsuo, Masaaki; Tsuji, Kiyoshi; and Kato, Masayuki, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds and processes for preparation thereof. 4,563,524, Cl. 544-366.000.

Ueda, Toshitaka: *See—*
Yoshii, Tsuneo; and Ueda, Toshitaka, 4,563,265, Cl. 208-108.000.

Ueno, Takashi: *See—*
Abo, Toshimi; and Ueno, Takashi, 4,562,814, Cl. 123-488.000.

Ugelstad, John, to Sintef. Process for the preparation of polymer latex. 4,563,510, Cl. 526-66.000.

Ullrich, Manfred; and Sahler, Rainer, to Interatom Internationale Atomreaktorbau GmbH. High temperature nuclear power plant with

a hot-gas pipeline which can be separated from the reactor vessel. 4,563,326, Cl. 376-292.000.

Ulrich, Bohdan, to Hasler AG. Flat bag filled with thermally conducting liquid or paste. 4,563,375, Cl. 428-35.000.

Umemoto, Hirotoshi; Tanabe, Hisaki; Kanakura, Akihiro; and Nakano, Shinji. Resinous composition which is useful for the dispersion difficulty dispersible coloring matter. 4,563,492, Cl. 524-90.000.

Union Carbide Canada Limited: *See*—
Garvey, Paul W.; and Kert, John K., 4,562,856, Cl. 137-329.300.

Union Carbide Corporation: *See*—
Wegman, Richard W., 4,563,309, Cl. 260-549.000.

Union Oil Company of California: *See*—
Backlund, Peter S., 4,563,208, Cl. 71-28.000.
Ward, John W.; and Carlson, Timothy L., 4,563,434, Cl. 502-66.000.

Union Siderurgique du Nord et de l'Est de la France: *See*—
Brun, Charles G. H.; Bailleul, Jean F.; Lecendre, Freddy; and Coolen, Francoise, 4,562,715, Cl. 72-167.000.

United States of America
Agriculture: *See*—
Soderstrom, Edwin L.; Haddon, William F.; and Myerson, Joel, 4,563,348, Cl. 424-84.000.

Air Force: *See*—
Ludman, Jacques E.; Horner, Joseph L.; and Caulfield, Henry J., 4,563,057, Cl. 350-96.180.
Vitek, Edmund J.; Cherney, Robert O.; and Snyder, Robert F., Jr., 4,563,641, Cl. 324-158.00R.

Army: *See*—
Cytron, Sheldon J., 4,562,951, Cl. 228-234.000.
Dixon, Samuel, Jr.; and Malik, Roger J., 4,563,773, Cl. 455-327.000.

Energy: *See*—
Casstevens, John M., 4,563,114, Cl. 409-131.000.
Lawson, Robert N.; O'Malley, Martin W.; and Rohwein, Gerald J., 4,563,608, Cl. 313-231.710.
McNeilly, David R., 4,563,660, Cl. 333-181.000.
Minkov, Vladimir, 4,563,327, Cl. 376-359.000.
Mrochek, John E.; Dinsmore, Stanley R.; and Chandler, Edward W., 4,562,748, Cl. 73-863.730.
Steinberg, Meyer; and Fallon, Peter, 4,563,197, Cl. 48-210.000.

Navy: *See*—
Assard, Gerald L., 4,563,756, Cl. 367-13.000.
Losee, Jon R.; and Lapota, David, 4,563,331, Cl. 422-52.000.
Pickett, Teddy L.; and Self, Henry L., 4,562,706, Cl. 70-1.500.

U.S. Philips Corporation: *See*—
de Meij, Johannes P., 4,563,145, Cl. 425-174.80R.
Fleck, Harald; Muller, Johannes C. A.; and Hutter, Heinrich, 4,563,717, Cl. 360-95.000.
Horster, Horst; and Klinkenberg, Klaus, 4,562,955, Cl. 237-2.00B.
Kersuzan, Georges; Picault, Michel; and Sourdillon, Roland, 4,563,543, Cl. 174-68.500.
Marneffe, Antonius C.; Persoon, Frederik G. A.; and Scholten, Gerard J., 4,562,628, Cl. 29-25.420.
Pelgrom, Marcellinus J. M.; Slob, Arie; Harwig, Hendrik A.; and Slotboom, Jan W., 4,563,752, Cl. 364-900.000.

United Technologies Automotive, Inc.: *See*—
Webber, Hugh C.; and Tinder, David V., 4,562,740, Cl. 73-651.000.

United Technologies Corporation: *See*—
Adinolfi, Robert G.; Barlow, Melvin C.; and Hammond, Raymond M., 4,563,239, Cl. 156-639.000.
Heynau, Hans A.; and Hoover, Charles F., 4,562,769, Cl. 89-41.060.
Murphy, Richard D.; and Clelford, Douglas H., 4,563,743, Cl. 364-434.000.
Pagluica, Gino, 4,563,129, Cl. 416-129.000.
Rhemer, Chris C.; and Formanack, James D., 4,563,558, Cl. 219-10.49R.
Timmerman, George E., 4,562,728, Cl. 73-116.000.

Universal Forest Products, Inc.: *See*—
Knoth, Wayne M.; and Corbin, Dennis O., 4,562,949, Cl. 227-7.000.

University of Arizona Foundation, The: *See*—
Furst, Emanuel F.; Lampe, Louis F.; and Woods, William L., 4,562,845, Cl. 128-675.000.

University of Auckland: *See*—
Woodward, Jack L.; and Boys, John T., 4,563,630, Cl. 322-8.000.

University of California: *See*—
Urist, Marshall R., 4,563,489, Cl. 524-21.000.

University of Miami: *See*—
Ryan, James W.; and Chung, Alfred, 4,563,305, Cl. 260-112.50R.

Unmuth, Eugene E.: *See*—
Hopkins, P. Donald; Nevitt, Thomas D.; and Unmuth, Eugene E., 4,563,266, Cl. 208-110.000.

Uno, Motoo: *See*—
Maeda, Takeshi; Shigematsu, Kazuo; Takasago, Masahiro; Mizoguchi, Yasunitsu; Tsutsumi, Zenji; Tsunoda, Yoshito; and Uno, Motoo, 4,563,760, Cl. 369-44.000.

Urakawa, Toshio: *See*—
Tagawa, Takao; and Urakawa, Toshio, 4,563,056, Cl. 350-6.800.

Urist, Marshall R., to University of California. Biodegradable organic polymer delivery system for bone morphogenetic protein. 4,563,489, Cl. 524-21.000.

Ushida, Masao: *See*—
Matsui, Shigekazu; Kagaya, Kenichi; Ushida, Masao; and Maruyama, Kouichi, 4,563,407, Cl. 430-5.000.

Ushizawa, Norihiko: *See*—
Oyama, Noboru; Matsuda, Hiroaki; Tsuchida, Eishun; Ohnuki, Yukio; Shimomura, Takeshi; and Ushizawa, Norihiko, 4,563,263, Cl. 204-418.000.

USM Corporation: *See*—
Archer, John R.; and Ross, Peter F., 4,562,754, Cl. 76-107.00C.

USV Pharmaceutical Corp.: *See*—
Musser, John H.; and Brown, Richard E., 4,563,463, Cl. 514-293.000.

Utsunomiya, Tsuyoshi: *See*—
Kobayashi, Kenji; Uchida, Yasuhiko; and Utsunomiya, Tsuyoshi, 4,563,402, Cl. 429-178.000.

Vaeth, Howard J.; and Crook, Gregory M., to Rubbermaid Incorporated. Microwave ovenware assembly for popping grain. 4,563,561, Cl. 219-10.55E.

Vahrenkamp, Richard P.: *See*—
Ward, J. William; Wang, Victor; Vahrenkamp, Richard P.; and Seliger, Robert L., 4,563,587, Cl. 250-396.00R.

Vainaga Limited: *See*—
Fechner, Heinz J. B., 4,563,673, Cl. 340-568.000.

Vale, Wylie W., Jr.: *See*—
Rivier, Jean E. F.; Spiess, Joachim; and Vale, Wylie W., Jr., 4,563,352, Cl. 514-12.000.

Valeo: *See*—
Carmillet, Roger F. L., 4,562,636, Cl. 29-513.000.

Valk, Nick: *See*—
Cummings, Ernie W.; and Valk, Nick, 4,562,855, Cl. 137-195.000.

van der Voort, Eduard T. J. Heat generator. 4,562,777, Cl. 110-234.000.

Vandervort, James W.; and Hartevelt, Wim, to S.D.V. Incorporated. Tracing stencil tablet. 4,563,154, Cl. 434-87.000.

Van der Zwan, Jacobus J.: *See*—
Kotz, Michael E.; and Van der Zwan, Jacobus J., 4,563,344, Cl. 424-17.000.

Vandoni, Guido: *See*—
Gobetti, Marino; and Vandoni, Guido, 4,563,443, Cl. 514-29.000.

Van Duijn, Jan: *See*—
Chidlow, John W.; Van Duijn, Jan; and Siebesma, Jan, 4,563,096, Cl. 356-440.000.

Van Erden, Donald L.: *See*—
Ausnit, Steven; and Van Erden, Donald L., 4,563,319, Cl. 264-146.000.

van Os, Cornelis J., to Noord-Nederlandsche Machinefabriek B.V. Cylinder head locking construction. 4,562,798, Cl. 123-193.0CH.

Van Overloop, Ronald R.; and Miller, Frank N., to Kendall Company, The. Scrub sponge with opposed puncturing projections. 4,563,103, Cl. 401-134.000.

Varetto, Luigi: *See*—
De Bortoli, Marco; Tofanelli, Adler; and Varetto, Luigi, 4,563,637, Cl. 324-77.00A.

Varian Associates, Inc.: *See*—
Anderson, Weston A.; and Turnbull, William G., 4,562,900, Cl. 181-176.000.
Hill, Howard D., 4,563,648, Cl. 324-318.000.

VDO Adolf Schindling AG: *See*—
Kant, Bernhard, 4,562,733, Cl. 73-295.000.
Sausner, Andreas; and Ruschek, Gerhard, 4,562,809, Cl. 123-339.000.

Veb Kombinat Nagema: *See*—
Horig, Jurgen, 4,563,361, Cl. 426-231.000.

Velbon International Corporation: *See*—
Nakatani, Koma, 4,562,985, Cl. 248-183.000.

Verheijen, Johan H.; and Nieuwenhuizen, Willem, to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek. Process for assaying the activity of tissue plasminogen activator, and kit suitable for use in said process. 4,563,420, Cl. 435-13.000.

Versatile Corporation: *See*—
Lenton, Kenneth G., 4,563,562, Cl. 219-76.110.

Verson Allsteel Press Company: *See*—
Budrean, John D.; and Kirkpatrick, John A., 4,562,719, Cl. 72-349.000.

Vianova Kunstharz, A.G.: *See*—
Schipfer, Rudolf; Daimer, Wolfgang; and Schmolzer, Gerhard, 4,563,515, Cl. 528-111.000.

Victor Company of Japan, Ltd.: *See*—
Hirata, Atsumi, 4,563,709, Cl. 358-342.000.
Hirota, Akira, 4,563,704, Cl. 358-167.000.

Victor, Mark: *See*—
Watson, James M.; Butler, James R.; and Victor, Mark, 4,563,517, Cl. 528-493.000.

Victor Technologies, Inc.: *See*—
Seiler, William J., 4,563,677, Cl. 340-750.000.

Viel, Maurice, to Bat Taraflex & Notex S.A. Open-work knitted and bonded textile structure and method of obtaining same. 4,563,382, Cl. 428-198.000.

Villa, Pierluigi: *See*—
Forzatti, Pio; Trifiro, Ferruccio; and Villa, Pierluigi, 4,563,440, Cl. 502-215.000.

Virta, Arthur W.; and Lane, John R. Method and apparatus for folding container blanks. 4,563,169, Cl. 493-96.000.

Vitek, Edmund J.; Cherney, Robert O.; and Snyder, Robert F., Jr., to United States of America, Air Force. Radiation upset threshold detector apparatus. 4,563,641, Cl. 324-158.00R.

Vivitar Corporation: *See*—
Orban, John M., 4,563,627, Cl. 320-19.000.

Voest-Alpine Aktiengesellschaft: *See*—
Hargassner, Reinhard; and Scheinecker, Alois, 4,562,876, Cl. 164-459.000.

Vogel, Alfredo, to Cosworth Research & Development Limited. Method of and apparatus for treating granular material. 4,563,151, Cl. 432-15.000.

Vogel Tool & Die Corp.: *See*—
Kinsley, Robert J., 4,562,760, Cl. 83-693.000.

Von Roll AG: *See*—
Mutzenberg, Willi; and Deuscher, Albert, 4,563,278, Cl. 210-401.000.

von Orelli, Marcus: *See*—
Laanio, Verena; von Orelli, Marcus; and Hausermann, Walter, 4,563,457, Cl. 514-245.000.

von Resch, Julius M., to Gretsch-Unitas GmbH. Panel closure assembly for window, door or the like. 4,562,667, Cl. 49-176.000.

Vorwerk & Co. Interholding GmbH: *See*—
Mesmer, Otto; Polligkeit, Wolfgang; Troger, Wolfgang; and Wolter, Andreas, 4,563,187, Cl. 8-137.000.

W. A. Deutsher Proprietary Limited: *See*—
Lance, Mark A., 4,562,626, Cl. 24-689.000.

W. R. Grace & Co.: *See*—
Jachimowicz, Felek, 4,563,484, Cl. 521-129.000.

Wackerle, Peter M.; Sperber, Franz; and Weber, Walter, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for winding tubular structural components. 4,562,975, Cl. 242-7.210.

Wade, Wallace R.: *See*—
Rao, Vemulapalli Durga N.; Wade, Wallace R.; and Aimone, Michael G., 4,562,695, Cl. 60-286.000.

Wade, William J.: *See*—
Walter, John F.; Costa, Bruce M.; and Eminger, Harry E., 4,562,860, Cl. 137-454.600.

Wagner, Delmer W.; and Wagner, Edward D. Moisture measuring method and apparatus. 4,563,635, Cl. 324-61.00R.

Wagner, Edward D.: *See*—
Wagner, Delmer W.; and Wagner, Edward D., 4,563,635, Cl. 324-61.00R.

Wagner, Wolfgang: *See*—
Freytag, Friedrich-Carl; Gediga, Josef; Ruthardt, Rolf; and Wagner, Wolfgang, 4,562,943, Cl. 222-590.000.

Wakabayashi, Hiroshi; and Iwahara, Takahisa, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for stabilizing silicon-containing methacrylate. 4,563,538, Cl. 556-401.000.

Wakamatsu, Fumio: *See*—
Ogawa, Osamu; and Wakamatsu, Fumio, 4,563,028, Cl. 293-122.000.

Waldenrath, Werner: *See*—
Schreckenberg, Manfred; Dhein, Rolf; Lange, Ralf; and Waldenrath, Werner, 4,563,516, Cl. 528-196.000.

Walker, William S. Electrosurgery instrument. 4,562,838, Cl. 128-303.140.

Walpole, James N.: *See*—
Tsang, Dean Z.; and Walpole, James N., 4,563,765, Cl. 372-50.000.

Waltenspiel, Gordon G.: *See*—
Meyers, Joseph, 4,563,723, Cl. 361-305.000.

Walter, John F.; Costa, Bruce M.; and Eminger, Harry E., to Wilmington Trust Company; and Wade, William J. Ball valve having easy maintenance features for extreme environments. 4,562,860, Cl. 137-454.600.

Walter, Jurgen; Falz, Ulrich; and Lunke, Manfred, to Hackforth GmbH & Co. KG. Extra-resilient shaft coupling. 4,563,166, Cl. 464-96.000.

Walter, Karl H.; and Hill, Robert L., to Adelaide & Wallaroo Fertilizers Ltd. Production of particulate solids in rotary fluidizer. 4,563,315, Cl. 264-8.000.

Wang, Victor: *See*—
Ward, J. William; Wang, Victor; Vahrenkamp, Richard P.; and Seliger, Robert L., 4,563,587, Cl. 250-396.00R.

Wanke, Wilhelm; Hauser, Ludwig; and Steiner, Karl, to J. M. Voith GmbH. Press device, particularly for the removing of water from a web of paper. 4,563,245, Cl. 162-358.000.

Ward, J. William; Wang, Victor; Vahrenkamp, Richard P.; and Seliger, Robert L., to Hughes Aircraft Company. Focused ion beam microfabrication column. 4,563,587, Cl. 250-396.00R.

Ward, John W.; and Carlson, Timothy L., to Union Oil Company of California. Hydrocracking catalyst. 4,563,434, Cl. 502-66.000.

Ward, N. Robert, Jr., to Bio-Controls Systems, Inc. Process for detection of selected motile organisms. 4,563,418, Cl. 435-7.000.

Ward, T. Victor, to Moniteg Ltd. Monitoring gas and vapor concentrations. 4,563,585, Cl. 250-373.000.

Ward, Terence H., to Rubery Owen Holdings Limited. Leaf spring assemblies. 4,562,998, Cl. 267-54.00R.

Ward, Terence J.: *See*—
Archibald, John L.; and Ward, Terence J., 4,563,466, Cl. 514-319.000.

Waring, Douglass R.: *See*—
Bookout, Charles C.; Stotts, Robert E.; Waring, Douglass R.; and Folsom, Lawrence R., 4,563,131, Cl. 417-221.000.

Warner-Lambert Company: *See*—
Butler, Donald E.; and Leonard, James D., 4,563,469, Cl. 514-339.000.
Dato, Anthony L.; and Hultman, Carl A., 4,562,645, Cl. 30-346.580.
Satzinger, Gerhard; Herrmann, Manfred; Fritschi, Edgar; Hartenstein, Johannes; and Bartoszyk, Gerd, 4,563,471, Cl. 514-369.000.

Watanabe, Shin-ichi: *See*—
Fujii, Setsuro; Nakayama, Toyoo; Nunomura, Shigeki; Sudo, Kimio; Watanabe, Shin-ichi; Okutome, Toshiyuki; Sakurai, Yojiro; Kurumi, Masateru; and Aoyama, Takuo, 4,563,527, Cl. 546-169.000.

Watanabe, Takao: *See*—
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Watanabe, Toshiro; Tohyama, Takashi; and Ohkoshi, Akio, to Sony Corporation. Television receiver or projection type. 4,563,699, Cl. 358-60.000.

Watkins, John L.: *See*—
Hand, Richard A.; and Watkins, John L., 4,563,005, Cl. 273-26.00R.

Watson, James M.; Butler, James R.; and Victor, Mark, to Cosden Technology, Inc. Polymer modification system for vinylaromatic monomer production apparatus. 4,563,517, Cl. 528-493.000.

Watts, Warren G. Method of covering surfaces with tensile sheet materials. 4,562,634, Cl. 29-407.000.

Waukesha Cutting Tools, Inc.: *See*—
Ebenhoch, Sebastian, 4,563,113, Cl. 408-223.000.

Webber, Hugh C.; and Tinder, David V., to United Technologies Automotive, Inc. Vibration sensor and the method of and apparatus for manufacture thereof. 4,562,740, Cl. 73-651.000.

Weber, Walter: *See*—
Wackerle, Peter M.; Sperber, Franz; and Weber, Walter, 4,562,975, Cl. 242-7.210.

Wegman, Richard W., to Union Carbide Corporation. Production of carboxylic anhydrides from methyl carboxlyates using rhodium complex catalysts. 4,563,309, Cl. 260-549.000.

Wegmann & Co. GmbH: *See*—
Grunewald, Peter; and Schlomer, Heinz-Jurgen, 4,562,765, Cl. 89-34.000.

Weible, Robert: *See*—
Grothe, Wolfgang; and Weible, Robert, 4,562,967, Cl. 239-436.000.

Weinfurth, Udo; Fischer, Helmut; and Sauerwald, Walter, to Rheinmetall GmbH. Alternative ammunition belt feeder for an automatic machine cannon. 4,562,768, Cl. 89-33.040.

Weinmann, Karl: *See*—
Greenwood, William S.; and Weinmann, Karl, 4,563,050, Cl. 339-99.00R.

Weir, Harvey J. Chimney cleaning brush. 4,562,608, Cl. 15-163.000.

Weisner, Eike; Sczepaniak, Werner; Thiele, Paul; Block, Detlef; and Reimann, Karl-Heinz, to Kabelmetal Electro GmbH. Making a wave guide. 4,563,252, Cl. 204-9.000.

Weiss, Hans J.; Rammler, Roland; Hahn, Helmut; and Dreher, Ingo, to Metallgesellschaft Aktiengesellschaft. Method of dry distillation of volatile substances from mineral matter containing same. 4,563,264, Cl. 208-11.00R.

Weiss, Irving; and Schorr, Hans P., to Kryos Energy Inc., by said Irving Weiss; and Brooklyn Union Gas Company, The, by said Hans P. Schorr. Refrigeration from expansion of transmission pipeline gas. 4,563,203, Cl. 62-20.000.

Weiss, Mark D.; and Christoffersen, Stephen W. Corrosion test assembly. 4,563,427, Cl. 436-6.000.

Weissmuller, Joachim: *See*—
Kramer, Wolfgang; Weissmuller, Joachim; Berg, Dieter; Reinecke, Paul; Hanssler, Gerd; and Brandes, Wilhelm, 4,563,447, Cl. 514-184.000.

Welch, William R. Adjusting tool and means for adjusting the axial position of a tractor wheel and hub with respect to an axle. 4,562,631, Cl. 29-259.000.

Welwyn Electronics Limited: *See*—
Kirby, Peter L., 4,563,725, Cl. 361-388.000.

Werner, Christoph: *See*—
Schwabe, Ulrich; and Werner, Christoph, 4,562,638, Cl. 29-577.00C.

Wescott, Donald C.: *See*—
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Westinghouse Electric Corp.: *See*—
Boltrek, Henry, 4,562,914, Cl. 198-336.000.
Cooper, Glenn D.; Rowe, Charles M.; and Holly, Henry M., III, 4,563,607, Cl. 310-260.000.
Leone, David A., 4,563,557, Cl. 200-288.000.
Leschek, Walter C.; and Miller, Robert C., 4,563,643, Cl. 324-207.000.
Miller, Robert C.; and Wonn, James W., 4,563,675, Cl. 340-679.000.
Wilson, James C.; Stephenson, William I.; and Bratkowski, Walter V., 4,563,553, Cl. 200-17.00R.
York, Theodore H.; and Faulkner, James V., Jr., 4,563,650, Cl. 329-50.000.

Westplate, Adrian. Stake for concrete smoothing operation. 4,562,672, Cl. 52-105.000.

Wexler, Barry A.; and Zimmerman, William T., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,563,211, Cl. 71-92.000.

White, James A.: *See*—
Kramer, Donald L.; and White, James A., 4,563,089, Cl. 356-319.000.

Widdig, Arno; Kabbe, Hans-Joachim; Knorr, Andreas; and Benz, Ulrich, to Bayer Aktiengesellschaft. Substituted 4-aminomethylene-chromans and -chromenes, processes for their preparation and their use in medicaments. 4,563,458, Cl. 514-253.000.

Widmann, Dietrich; and Sigusch, Reiner, to Siemens Aktiengesellschaft. Method of manufacturing stable, low resistance contacts in integrated semiconductor circuits. 4,562,640, Cl. 29-591.000.

Widmer, Gerald L.; and Gray, Larry J., to Widmer, Gerald L. Pneumatic spreader. 4,562,968, Cl. 239-655.000.

Wiehe, Hans R.; and Hueber, Herbert, to Bayer Aktiengesellschaft. Elastic flat-surfaced woven fabric and its manufacture. 4,563,384, Cl. 428-231.000.

Wiggins Teape Group Limited, The: *See*—
Syed, Alexander; and Smillie, Rowena, 4,563,244, Cl. 162-344.000.

Wijayarathna, Bandula; and Hopkins, Ronald M., to Mallinckrodt, Inc. Fused flexible tip catheter. 4,563,181, Cl. 604-280.000.

Wilder, Joseph R.; and Reick, Franklin G. Medical instrument and light pipe illumination assembly. 4,562,832, Cl. 128-20.000.

Wilhelm, John W., Jr.: *See*—
Schuele, Donald E.; and Wilhelm, John W., Jr., 4,562,722, Cl. 73-11.000.

William H. Rorer, Inc.: *See*—
Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,456, Cl. 514-242.000.
Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,460, Cl. 514-260.000.
Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,475, Cl. 514-427.000.

Williams, James E., to Cuisinarts, Inc. Flip-over drive system for a removable oven rotisserie. 4,562,771, Cl. 99-397.000.

Williams, Raymond F.; and Smith, William H. Fluid-driven transducer vacuum tool. 4,562,612, Cl. 15-409.000.

Wilmes, Manfred, to C. A. Weidmuller GmbH & Co. Spring-pressure connector for electrical conductors. 4,563,054, Cl. 339-254.00R.

Wilmington Trust Company: *See*—
Walter, John F.; Costa, Bruce M.; and Eminger, Harry E., 4,562,860, Cl. 137-454.600.

Wilson, James C.; Stephenson, William I.; and Bratkowski, Walter V., to Westinghouse Electric Corp. Circuit breaker having integral cover/handle assembly. 4,563,553, Cl. 200-17.00R.

Winetzky, Deborah S.: *See*—
Flynn, Brian P.; Winetzky, Deborah S.; and Evans, George D., 4,563,186, Cl. 8-137.000.

Wingfield, Trevor M.: *See*—
Marty, Garry R.; Crawford, Dennis W.; and Wingfield, Trevor M., 4,562,960, Cl. 239-72.000.

Winkelman, Robert C.: *See*—
Wittmann, John W.; Winkelman, Robert C.; Mooers, Douglas F.; and Davie, Richard L., 4,563,282, Cl. 210-619.000.

Winter, Hermann: *See*—
Hammer, Klaus-Dieter; Kindl, Erwin; Luchterhand, Heinz; and Winter, Hermann, 4,563,376, Cl. 428-36.000.

Witman, Mark W.; and Reinert, Gerard E., to Mobay Chemical Corporation. Polycarbonate compositions having improved impact performance. 4,563,503, Cl. 525-148.000.

Witt, Paul R., Jr.; and Krone, Pamela A., to Grain Processing Corporation. Modification of soy isolate. 4,563,357, Cl. 426-46.000.

Witte, Wolfgang, to Bodenseewerk Perkin-Elmer & Co., GmbH. Grating spectrometer. 4,563,090, Cl. 356-328.000.

Wittmann, John W.; Winkelman, Robert C.; Mooers, Douglas F.; and Davie, Richard L., to Envirex Inc. Wastewater treatment plant and method. 4,563,282, Cl. 210-619.000.

Wolf, Thomas R.: *See*—
Durbin, Larry L.; Zaborowski, Roy A.; and Wolf, Thomas R., 4,562,978, Cl. 244-1.00R.

Wolff, Kurt. Self cleaning, perforated plate for oscillating sieve. 4,563,270, Cl. 209-379.000.

Wolter, Andreas: *See*—
Mesmer, Otto; Polligkeit, Wolfgang; Troger, Wolfgang; and Wolter, Andreas, 4,563,187, Cl. 8-137.000.

Wolter, Heinz. Key. 4,562,712, Cl. 70-456.00R.

Wolters, Peter: *See*—
Balzer, Erich; and Caspers, Willi, 4,562,669, Cl. 51-103.0WH.

Wonder Corporation of America: *See*—
Bruggeman, Paul; and Hastings, Nova C., 4,563,728, Cl. 362-206.000.

Wonn, James W.: *See*—
Miller, Robert C.; and Wonn, James W., 4,563,675, Cl. 340-679.000.

Woodland, Rommel J., to Petro Plastics Company, Inc. Plastic hinge. 4,563,381, Cl. 428-156.000.

Woods, Melvin E.; Cheng, Chi; and Kamo, Roy, to Cummins Engine Company, Inc. Monolithic ceramic cylinder liner and method of making same. 4,562,799, Cl. 123-193.00C.

Woods, William L.: *See*—
Furst, Emanuel F.; Lampe, Louis F.; and Woods, William L., 4,562,845, Cl. 128-675.000.

Woodson, Wayne D., to CL Industries, Inc. Curable epoxy resin compositions and use in preparing formed, shaped, filled bodies. 4,563,487, Cl. 523-139.000.

Woodward, Jack L.; and Boys, John T., to University of Auckland. Method of governing a generator and/or apparatus for governing a generator. 4,563,630, Cl. 322-8.000.

Wool Development International Ltd.: *See*—
Lewis, David M., 4,563,189, Cl. 8-493.000.

Wormald U.S., Inc.: *See*—
Anderson, Stephen F., 4,563,672, Cl. 340-512.000.

Wright, Douglas C. Spiral separators. 4,563,279, Cl. 210-512.100.

Wright, Leslie S., Jr., to Ladney, Michael. Chromium plating process and article produced. 4,563,399, Cl. 428-626.000.

Wu, Gerald. Reusable ice mold. 4,562,991, Cl. 249-141.000.

Wurz, Dieter: *See*—
Ernst, Gunter; and Wurz, Dieter, 4,563,314, Cl. 261-153.000.

Wykhuis, Lloyd A.: *See*—
Kuhn, John B.; Wykhuis, Lloyd A.; and Stricker, David K., 4,563,019, Cl. 280-481.000.

Wynn, Ronald K.: *See*—
McDorman, Kim C.; Boyington, William B.; and Wynn, Ronald K., 4,563,010, Cl. 273-187.00R.

Wynne, John M.: *See*—
Tietz, Joseph G.; and Wynne, John M., 4,563,628, Cl. 320-20.000.

Wynne, Kenneth J.; Marks, Tobin J.; and Inabe, Tamotsu, to Northwestern University. Electrically conductive cofacially crystallizing organomacrocycle compositions, articles and fabrication methods. 4,563,300, Cl. 252-518.000.

Xebec: *See*—
Cahoon, Dale L.; and Zolnosky, Larry D., 4,563,713, Cl. 360-75.000.

Xerox Corporation: *See*—
Fantuzzo, Joseph; Monkelbaan, Edwin R.; and Till, Henry R., 4,563,078, Cl. 355-3.00R.
Genovese, Frank C.; Lannom, James W.; and Pollack, Joel M., 4,563,613, Cl. 313-497.000.
Knapp, John F.; Gruber, Robert J.; and Bolte, Steven B., 4,563,086, Cl. 355-14.00D.
Lin, John W. P.; Dudek, Lesley P.; Limburg, William W.; and Schneider, Eric J., 4,563,408, Cl. 430-59.000.
Reynolds, Scott D., 4,563,073, Cl. 355-3.0FU.
Tihanyi, Peter; and Bauer, Robert S., 4,563,368, Cl. 427-82.000.

Xuan, Mai T., to Omega SA. Electromagnetic stepping motor with two coupled rotors. 4,563,604, Cl. 310-49.00R.

Yabe, Hisao, to Olympus Optical Co., Ltd. Suction device for an endoscope. 4,562,830, Cl. 128-4.000.

Yabuuchi, Shigeru; Endo, Takeyuki; Kodama, Kazuyuki; and Ide, Jushi, to Hitachi, Ltd. Floating point digital differential analyzer. 4,563,749, Cl. 364-702.000.

Yamada, Atsuhi: *See*—
Kurauchi, Takeo; Ishii, Keizou; Yamada, Atsushi; and Nozue, Jun, 4,563,372, Cl. 427-409.000.

Yamada, Hideaki; Tani, Yoshiki; and Izumi, Yoshikazu, to Nippon Zeon Co., Ltd. Process for producing biotin-vitamers. 4,563,426, Cl. 435-119.000.

Yamada, Yasuyoshi, to Canon Kabushiki Kaisha. Method and apparatus for automatic alignment. 4,563,094, Cl. 356-401.000.

Yamagami, Hiromu: *See*—
Shiramizu, Kousuke; Awano, Yoshirou; Okada, Hiroji; Yamagami, Hiromu; and Takai, Hiroshi, 4,563,569, Cl. 219-137.430.

Yamagishi, Masaaki, to Olympus Optical Co., Ltd. Microscope objective. 4,563,060, Cl. 350-414.000.

Yamaguchi, Takashi: *See*—
Kitagawa, Yozo; Nishioka, Akinori; Higuchi, Yasuo; Tsutsumi, Tadahiko; Yamaguchi, Takashi; and Kato, Tadashi, 4,563,393, Cl. 428-412.000.

Yamamoto, Yoshihiro; and Suzuki, Junichiro, to NGK Spark Plug Co., Ltd. Titanium nitride base cermets with high toughness. 4,563,215, Cl. 75-238.000.

Yamamura, Michio: *See*—
Sugano, Hiroshi; Ishida, Ryuichi; and Yamamura, Michio, 4,563,306, Cl. 260-112.5TR.

Yamato Scientific Co., Ltd.: *See*—
Yoshida, Naoki; Goto, Hideo; and Hayashi, Tomoaki, 4,563,272, Cl. 210-93.000.

Yamauchi, Katsuyoshi: *See*—
Minami, Akinori; and Yamauchi, Katsuyoshi, 4,563,488, Cl. 523-222.000.

Yamauchi, Takahiko: *See*—
Aoyama, Keizo; Yamauchi, Takahiko; and Seki, Teruo, 4,563,754, Cl. 365-190.000.

Yamazaki, Hisashi: *See*—
Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, 4,563,580, Cl. 250-327.200.

Yamazaki, Kikuo: *See*—
Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, 4,563,580, Cl. 250-327.200.

Yamazaki, Yasuo: *See*—
Kimura, Kazuo; Yamazaki, Yasuo; and Mukai, Hiromu, 4,563,068, Cl. 354-402.000.

Yanagisawa, Takeji: *See*—
Tanizawa, Ryozo; and Yanagisawa, Takeji, 4,563,482, Cl. 521-92.000.

Yang, Tai-Her. Single handle mixing valve with outlet selection. 4,562,864, Cl. 137-597.000.

Yang, Tai-Her. Coupling multi driving system. 4,562,894, Cl. 180-65.200.

Yao, Jame; Chen, Jong J.; and Elliot, Douglas G., to DM International Inc. Method and apparatus for purification of high CO_2 content gas. 4,563,202, Cl. 62-17.000.

Yardy, Raymond, to International Business Machines Corporation. Optical signal recorder employing a transducer having an adjustable dichroic mirror. 4,563,058, Cl. 350-166.000.

Yasuhara, Seishi, to Nissan Motor Co., Ltd. Fuel cut solenoid valve for fuel injection pump. 4,563,133, Cl. 417-295.000.

Yazawa, Chihiro: *See*—
Mori, Kogoro; Ohi, Hideo; and Yazawa, Chihiro, 4,563,209, Cl. 71-66.000.

Yeckley, Russell L.; and North, Bernard, to Kennametal Inc. Ceramic material and method of manufacture. 4,563,433, Cl. 501-97.000.

Yelnosky, John: *See*—
Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,456, Cl. 514-242.000.
Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,460, Cl. 514-260.000.

Kuhla, Donald E.; Studt, William L.; Campbell, Henry F.; and Yelnosky, John, 4,563,475, Cl. 514-427.000.

Yokoi, Mitsuyoshi: *See*—
Ogoshi, Yutaka; Yokoi, Mitsuyoshi; Takehisa, Fumitaka; and Yoshikawa, Sumi, 4,562,875, Cl. 164-72.000.

Yokomichi, Isao: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,563,529, Cl. 546-345.000.

Yokosuka, Shigeru, to NEC Corporation. Apparatus for controlling transmission output power. 4,563,775, Cl. 455-126.000.

Yokowo Manufacturing Co., Ltd.: *See*—
Arai, Kureo, 4,562,750, Cl. 74-89.210.

Yokoyama, Akiko: *See*—
Fujisawa, Koichi; Yokoyama, Akiko; and Suzukamo, Gohfu, 4,563,356, Cl. 426-44.000.

Yokoyama, Kageki; and Amano, Itaru, to Kabushiki Kaisha Kobe Seiko Sho. Mold clamping mechanism for tire curing machines. 4,563,139, Cl. 425-47.000.

Yokoyama, Masuzo; and Sugano, Toshihiko, to Mitsubishi Petrochemical Co., Ltd. Catalyst component for α-olefin polymerization and method of producing the same. 4,563,436, Cl. 502-104.000.

Yoon, Young-No, to Crown Confectionery Co. Method for manufacturing a jelly confectionery coated with chocolate. 4,563,363, Cl. 426-303.000.

York, Theodore H.; and Faulkner, James V., Jr., to Westinghouse Electric Corp. Power line communication receiver with dual threshold signal interrogation capability. 4,563,650, Cl. 329-50.000.

Yoshida, Kenichi; Watanabe, Takao; and Kiguchi, Takashi, to Hitachi, Ltd. Method of operating power plants. 4,563,746, Cl. 364-492.000.

Yoshida, Kiminobu: *See*—
Takimoto, Hiroaki; Miyajiri, Tetsuo; Yoshida, Kiminobu; and Turita, Tamio, 4,563,312, Cl. 261-59.000.

Yoshida Kogyo K.K.: *See*—
Nagai, Yoshitaka; and Doguchi, Nobushige, 4,563,322, Cl. 264-267.000.
Takabatake, Hideo, 4,562,622, Cl. 24-427.000.
Takeshima, Kiyoshi; Murai, Ryukichi; and Nakada, Yoshinori, 4,562,621, Cl. 24-408.000.

Yoshida, Koichi; Iwaisako, Toshiyuki; Masamoto, Junzo; Hamanaka, Katsuhiko; and Komaki, Hajime, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for synthesizing trioxane. 4,563,536, Cl. 549-368.000.

Yoshida, Naoki; Goto, Hideo; and Hayashi, Tomoaki, to Yamato Scientific Co., Ltd. Demineralizer. 4,563,272, Cl. 210-93.000.

Yoshii, Tsuneo; and Ueda, Toshitaka, to Ueda, Toshitaka. Use of a catalyst in a hydrogenolysis process. 4,563,265, Cl. 208-108.000.

Yoshikawa, Sumi: *See*—
Ogoshi, Yutaka; Yokoi, Mitsuyoshi; Takehisa, Fumitaka; and Yoshikawa, Sumi, 4,562,875, Cl. 164-72.000.

Yoshinari, Takashi: *See*—
Okado, Terumi; Suda, Seiji; Sugiura, Noboru; Yoshinari, Takashi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; and Fujiwara, Hiroshi, 4,562,813, Cl. 123-425.000.

Yoshioka, Kazuo: *See*—
Atsumi, Akira; Senshu, Takao; Oguni, Kensaku; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,562,700, Cl. 62-174.000.

Yoshioka, Masahiro: *See*—
Tsutsui, Eiji; Yoshioka, Masahiro; and Murakami, Masahiro, 4,563,074, Cl. 355-3.0DD.

Yoshioka, Toshio; Teramoto, Kazuo; and Shimamura, Masaharu, to Toray Industries, Inc. Enzyme reaction method for isomerization of glucose to fructose. 4,563,425, Cl. 435-94.000.

Young, Archie, III. Burglar guard. 4,562,666, Cl. 49-62.000.

Young, Ian R., to Picker International Limited. Nuclear magnetic resonance methods and apparatus. 4,563,647, Cl. 324-309.000.

Young, Mary A.: *See*—
Barrodale, Patricia M.; Young, Mary A.; Humphreys, Joan H.; and Lowrey, James M., Jr., 4,563,183, Cl. 604-329.000.

Young, Richard K.: *See*—
Hays, George E.; Young, Richard K.; and Nielsen, Richard H., 4,563,334, Cl. 422-140.000.

Yu, Johnny D., to Copeland Corporation. Variable speed refrigeration compressor. 4,563,624, Cl. 318-472.000.

Yuhasz, Stephen J.; and Luchaco, David G., to Lutron Electronics Co. Inc. Wall box dimmer switch with plural remote control switches. 4,563,592, Cl. 307-115.000.

Yura, Shigetsugu: *See*—
Takagi, Sadaaki; Yura, Shigetsugu; Fukuda, Masaki; and Oikawa, Yukio, 4,563,387, Cl. 428-300.000.

Zaborowski, Roy A.: *See*—
Durbin, Larry L.; Zaborowski, Roy A.; and Wolf, Thomas R., 4,562,978, Cl. 244-1.00R.

Zambias, Robert A.: *See*—
Chang, Michael N.; Hammond, Milton L.; Jensen, Norman P.; and Zambias, Robert A., 4,563,476, Cl. 514-459.000.

Zanetta, Hugues: *See*—
Guenard, Claude; Zanetta, Hugues; and Grosjean, Jean-Claude, 4,562,961, Cl. 239-79.000.

Zeidler, Georg: *See*—
Bergmann, Udo; Hansen, Guenter; Lach, Dietrich; and Zeidler, Georg, 4,563,520, Cl. 534-678.000.

Zeller Plastik, Koehn, Grabner & Co: *See*—
Brach, Ulrich; and Persch, Alois, 4,562,931, Cl. 215-220.000.

Zelley, Richard C.: *See*—
Boudreau, Daniel A.; Salas, Edward R.; and Zelley, Richard C., 4,563,736, Cl. 364-200.000.

Ziegler, Wolfgang, to Robert Bosch GmbH. LCD Indicator with built-in fixed information display. 4,563,678, Cl. 340-765.000.

Ziemelis, Maris J.: *See*—
Gornowicz, Gerald A.; Tangney, Thomas J.; and Ziemelis, Maris J., 4,563,539, Cl. 556-421.000.

Zieschang, Jurgen: *See*—
Bick, Klaus; Harmsen, Lothar; Lachenmayer, Wilhelm; and Zieschang, Jurgen, 4,563,766, Cl. 373-72.000.

Zilber, Eugene A.: *See*—
Lemkin, Jack L.; Zilber, Eugene A.; and Peterson, Carl A., 4,562,865, Cl. 137-624.120.

Zimmerman, Jack I. Submersible toy. 4,563,161, Cl. 446-156.000.

Zimmerman, William T.: *See*—
Wexler, Barry A.; and Zimmerman, William T., 4,563,211, Cl. 71-92.000.

Zimmermann, Horst; and Lorenz, Joachim, to MTU Motoren und Turbinen-Union Munich GmbH. Sealing arrangement for counter-rotating shafts. 4,563,012, Cl. 277-13.000.

Zoecon Corporation: *See*—
Lee, Shy-Fuh; and Henrick, Clive A., 4,563,310, Cl. 260-941.000.

Zolier, Robert A., to Standard Products Company, The. Apparatus for making an elongated composite article. 4,563,141, Cl. 425-114.000.

Zolnosky, Larry D.: *See*—
Cahoon, Dale L.; and Zolnosky, Larry D., 4,563,713, Cl. 360-75.000.

Zouzoulas, John, to Andco Actuator Products, Inc. Rotary actuator. 4,562,908, Cl. 192-48.500.

Zuerner, Edwin C.: *See*—
Lindenberger, William H.; Sieder, Theodore P.; and Zuerner, Edwin C., 4,563,199, Cl. 55-85.000.

Zugger, William J.: *See*—
Messinger, Donald J.; and Zugger, William J., 4,562,661, Cl. 43-35.000.

2500 Corporation, The: *See*—
Roth, David W., 4,563,378, Cl. 428-86.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF JANUARY, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ellingson, Chester W., Jr., to Reese Enterprises, Inc. Coupling member for floor covering sections. Re. 32,061, Cl. 428-52.000.

Reese Enterprises, Inc.: *See*—
Ellingson, Chester W., Jr., Re. 32,061, Cl. 428-52.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Cohen, Stuart C.; and Dieck, Ronald L., to General Electric Company. Modified polyester compositions. B1 4,257,937, 1-7-86, Cl. 524-445.000.

Dieck, Ronald L.: *See*—
Cohen, Stuart C.; and Dieck, Ronald L., B1 4,257,937, Cl. 524-445.000.

General Electric Company: *See*—
Cohen, Stuart C.; and Dieck, Ronald L., B1 4,257,937, Cl. 524-445.000.

LIST OF DESIGN PATENTEES

Aaltosen Tehtaat Oy: *See*—
Muranen, Martti, 282,024, Cl. D6-300.000.

Abe, Karl H., to Bayerische Motoren Werke Aktiengesellschaft. Luggage case for motorcycle. 282,061, 1-7-86, Cl. D12-158.000.

Abe, Takeshi; Sibayama, Masato; Yabe, Yuhiko; Hisatomi, Ryouichi; Yoshikawa, Yoshiaki; Namura, Yuuichi; and Sasaki, Takeshi, to Hitachi, Ltd. Industrial robot. 282,077, 1-7-86, Cl. D15-199.000.

Adams, Peter G., to Hestair Kiddicraft. Child's elephant figure toy. 282,092, 1-7-86, Cl. D21-162.000.

American Commercial Incorporated: *See*—
Everhan, Walter, 282,039, Cl. D7-18.000.
Laslo, Larry R., 282,038, Cl. D7-17.000.
Murai, Toschio, 282,040, Cl. D7-18.000.

American Hospital Supply Corporation: *See*—
Gallagher, Abigail H., 282,042, Cl. D7-37.000.

Andersen, Foster N. Aerial toy. 282,089, 1-7-86, Cl. D21-86.000.

Arkoma Machine Shop, Inc.: *See*—
Bearden, Robert M.; and Haynes, W. A., 282,073, Cl. D15-21.000.

Bachelet, Bernard: *See*—
Menei, Laurent; Bachelet, Bernard; and Blaszykowski, Raymond, 282,066, Cl. D14-58.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Abe, Karl H., 282,061, Cl. D12-158.000.

BCM Manufacturing Ltd.: *See*—
Moreau, Pierre A., 282,105, Cl. D25-91.000.

Bearden, Robert M.; and Haynes, W. A., to Arkoma Machine Shop, Inc. Rotating head for drilling. 282,073, 1-7-86, Cl. D15-21.000.

Beaver, Ted L.; and Conrad, George R., to Quaker State Oil Refining Corporation. Container body for liquids and the like. 282,050, 1-7-86, Cl. D9-332.000.

Beaver, Ted L.; and Conrad, George R., to Quaker State Oil Refining Corporation. Container body for liquids and the like. 282,052, 1-7-86, Cl. D9-404.000.

Bellini, Mario, to Ing. C. Olivetti & C., S.p.A. Electronic typewriter. 282,080, 1-7-86, Cl. D18-1.000.

Black and Decker Manufacturing Company, The: *See*—
House, Lawrence E., II, 282,078, Cl. D15-125.000.

Blanke Plastic Company, Inc.: *See*—
Taylor, Beverly W., 282,104, Cl. D25-77.000.

Blaszykowski, Raymond: *See*—
Menei, Laurent; Bachelet, Bernard; and Blaszykowski, Raymond, 282,066, Cl. D14-58.000.

Bridgestone Tire Co., Ltd.: *See*—
Kojima, Hiroshi; Kawajiri, Junichi; and Hayakawa, Toshio, 282,059, Cl. D12-140.000.

Brinkers, Edith. Locket for the preservation of personal data. 282,055, 1-7-86, Cl. D11-80.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Morishita, Masayuki, 282,082, Cl. D18-13.000.

Canon Kabushiki Kaisha: *See*—
Hirooka, Junji, 282,081, Cl. D18-2.000.

Cassai, Gino H.: *See*—
Cassai, Henry J.; and Cassai, Gino H., 282,107, Cl. D28-7.000.

Cassai, Henry J.; and Cassai, Gino H. Adjustable cosmetic applicator. 282,107, 1-7-86, Cl. D28-7.000.

Cerutti, Roberto, to Vicom Italiana Di Nave Libero. Scissor. 282,047, 1-7-86, Cl. D8-57.000.

Chen, Ming-Ter. Plate or the like. 282,041, 1-7-86, Cl. D7-35.000.

Claggett, Joseph H. Closed-circuit television system enclosure. 282,068, 1-7-86, Cl. D14-77.000.

Clark Equipment Company: *See*—
Roney, Thomas W., 282,035, Cl. D6-502.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Nagata, Kazuo, 282,091, Cl. D21-128.000.

Conrad, George R.: *See*—
Beaver, Ted L.; and Conrad, George R., 282,050, Cl. D9-332.000.
Beaver, Ted L.; and Conrad, George R., 282,052, Cl. D9-404.000.

Cree, Alexander M., to Eldridge, Pope & Co. plc. Bottle. 282,051, 1-7-86, Cl. D9-395.000.

Cummings, John H., to Luma Lighting Industries, Inc. Fluorescent lamp adapter. 282,062, 1-7-86, Cl. D13-25.000.

Dawson, Robert E.: *See*—
Miller, David C.; Dawson, Robert E.; Pendleton, Thomas J.; and Krapowicz, Jacob A., 282,072, Cl. D15-7.000.

De Lucchi, Michele: *See*—
Sottsass, Ettore; and De Lucchi, Michele, 282,023, Cl. D6-422.000.
Sottsass, Ettore; and De Lucchi, Michele, 282,030, Cl. D6-422.000.
Sottsass, Ettore; and De Lucchi, Michele, 282,031, Cl. D6-428.000.

DiAntoni, Sante. Carrier for ski equipment. 282,060, 1-7-86, Cl. D12-157.000.

Drackett Company, The: *See*—
Maust, Daniel A.; and Nichols, Charles E., 282,112, Cl. D32-50.000.

Dumond, Joseph E.; and Trepanier, Dee W. Gas meter shut-off wrench. 282,046, 1-7-86, Cl. D8-21.000.

Eldridge, Pope & Co. plc: *See*—
Cree, Alexander M., 282,051, Cl. D9-395.000.

Electro-Voice, Incorporated: *See*—
Watson, Alan R., 282,063, Cl. D14-12.000.

Ells, Daniel E. Bunk bed frame. 282,029, 1-7-86, Cl. D6-390.000.

Emms, Norman R., to Hestair Kiddicraft. Simulative rattle. 282,086, 1-7-86, Cl. D21-65.000.

Everhan, Walter, to American Commercial Incorporated. Sugar bowl. 282,039, 1-7-86, Cl. D7-18.000.

Fountain, Michael W.: *See*—
Lawson, Douglas R.; and Fountain, Michael W., 282,037, Cl. D6-606.000.

Fox, Rosalind M.: *See*—
Kroll, Frederick H.; and Fox, Rosalind M., 282,088, Cl. D21-78.000.

Freytag, William D., to Manville Service Corporation. Luminaire. 282,106, 1-7-86, Cl. D26-24.000.

Fujitsu Limited: *See*—
Nakamura, Tadashi; and Nakano, Yutaka, 282,070, Cl. D14-100.000.

Gallagher, Abigail H., to American Hospital Supply Corporation. Serving tray. 282,042, 1-7-86, Cl. D7-37.000.

Georgevich, Christopher. Accessory work seat for a beautician's chair or the like. 282,026, 1-7-86, Cl. D6-353.000.

Golden, Olive H.: *See*—
Golden, William H.; and Golden, Olive H., 282,109, Cl. D29-2.000.

Golden, William H.; and Golden, Olive H. Fire extinguisher. 282,109, 1-7-86, Cl. D29-2.000.

Gray, Keith W. Design for a display stand. 282,033, 1-7-86, Cl. D6-455.000.

Gregoire, Raymond. Spiral staircase. 282,103, 1-7-86, Cl. D25-63.000.

Gural, Arthur W.: *See*—
Gural, Stpehen A.; Kay, Robert L.; and Gural, Arthur W., 282,098, Cl. D23-7.000.

Gural, Stpehen A.; Kay, Robert L.; and Gural, Arthur W. Sprinkler. 282,098, 1-7-86, Cl. D23-7.000.

Gwon, Pu G. Combined headband and radio. 282,020, 1-7-86, Cl. D2-230.000.

Hayakawa, Toshio: *See*—
Kojima, Hiroshi; Kawajiri, Junichi; and Hayakawa, Toshio, 282,059, Cl. D12-140.000.

Haynes, W. A.: *See*—
Bearden, Robert M.; and Haynes, W. A., 282,073, Cl. D15-21.000.

Hensley, Heinz H., to Lillian Hensley Unternehmensberatungs GmbH. Hexagonal board for a game. 282,085, 1-7-86, Cl. D21-25.000.

Hestair Kiddicraft: *See*—
Adams, Peter G., 282,092, Cl. D21-162.000.
Emms, Norman R., 282,086, Cl. D21-65.000.

Hirooka, Junji, to Canon Kabushiki Kaisha. Word processor. 282,081, 1-7-86, Cl. D18-2.000.

Hisatomi, Ryouichi: *See*—
Abe, Takeshi; Sibayama, Masato; Yabe, Yuhiko; Hisatomi, Ryouichi; Yoshikawa, Yoshiaki; Namura, Yuuichi; and Sasaki, Takeshi, 282,077, Cl. D15-199.000.

Hitachi, Ltd.: *See*—
Abe, Takeshi; Sibayama, Masato; Yabe, Yuhiko; Hisatomi, Ryouichi; Yoshikawa, Yoshiaki; Namura, Yuuichi; and Sasaki, Takeshi, 282,077, Cl. D15-199.000.

Hoffman, Saul. Picture hanging aide. 282,054, 1-7-86, Cl. D10-62.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Nakamura, Tetsuo, 282,071, Cl. D15-1.000.
Tanaka, Tetsu; and Tairabune, Kazuyuki, 282,058, Cl. D12-91.000.

House, Lawrence E., II, to Black and Decker Manufacturing Company, The. Bench-type belt sander. 282,078, 1-7-86, Cl. D15-125.000.

Inaba, Hiroshi, to Nippon Tsushin Kogyo Kabushiki Kaisha. Push button. 282,067, 1-7-86, Cl. D14-59.000.

Ing. C. Olivetti & C., S.p.A.: *See*—
Bellini, Mario, 282,080, Cl. D18-1.000.

Ishii, Yoshiyasu: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Nagata, Kazuo, 282,091, Cl. D21-128.000.

Janke, Scott P. Printer bench. 282,034, 1-7-86, Cl. D6-480.000.

John Manufacturing Limited: *See*—
Yuen, John S., 282,101, Cl. D23-122.000.
Yuen, John S., 282,102, Cl. D23-122.000.

Kabushiki Kaisha Niida Seisakusho: *See*—
Seyama, Tsuneo, 282,074, Cl. D15-69.000.

Kassai Kabushiki Kaisha: *See*—
Kassai, Kenzou, 282,087, Cl. D21-78.000.

Kassai, Kenzou, to Kassai Kabushiki Kaisha. Riding toy. 282,087, 1-7-86, Cl. D21-78.000.

Kawada Co., Ltd.: *See*—
Takahashi, Tokuo, 282,090, Cl. D21-108.000.

Kawajiri, Junichi: *See*—
Kojima, Hiroshi; Kawajiri, Junichi; and Hayakawa, Toshio, 282,059, Cl. D12-140.000.

Kay, Robert L.: *See*—
Gural, Stpehen A.; Kay, Robert L.; and Gural, Arthur W., 282,098, Cl. D23-7.000.

Kennedy, Bernard J., to Kennedy Houseboats, Inc. Boat chair. 282,028, 1-7-86, Cl. D6-380.000.

Kennedy Houseboats, Inc.: *See*—
Kennedy, Bernard J., 282,028, Cl. D6-380.000.

Kier, Mike. Illuminable note paper tray. 282,083, 1-7-86, Cl. D19-92.000.

Klamer, Reuben B.: *See*—
Robjent, Frederick B.; and Klamer, Reuben B., 282,095, Cl. D21-226.000.

Knoll International, Inc.: *See*—
Schultz, Moses R., 282,027, Cl. D6-373.000.

Koch, Walter L., to Water Marketers, Inc. Processed water vending machine. 282,084, 1-7-86, Cl. D20-1.000.

Kojima, Hiroshi; Kawajiri, Junichi; and Hayakawa, Toshio, to Bridgestone Tire Co., Ltd. Vehicle tire. 282,059, 1-7-86, Cl. D12-140.000.

Krapowicz, Jacob A.: *See*—
Miller, David C.; Dawson, Robert E.; Pendleton, Thomas J.; and Krapowicz, Jacob A., 282,072, Cl. D15-7.000.

Kroll, Frederick H.; and Fox, Rosalind M., to Kroll, Frederick H. Toy van. 282,088, 1-7-86, Cl. D21-78.000.

Krovina, Peter G. Snow sled. 282,057, 1-7-86, Cl. D12-9.000.

Larchmont Engineering and Irrigation, Inc.: *See*—
Tropeano, Philip L., 282,099, Cl. D23-12.000.

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Lawson, Douglas R.; and Fountain, Michael W., to Thomas Jourdan plc. Mattress insert. 282,037, 1-7-86, Cl. D6-606.000.

Lemmeyer, Gary R., to Quaker Oats Company, The. Toy box. 282,032, 1-7-86, Cl. D6-440.000.

Levand, Morton J. Kidney shaped pool table. 282,096, 1-7-86, Cl. D21-232.000.

Levine, Daniel E. Novelty sculpture. 282,056, 1-7-86, Cl. D11-157.000.

Lillian Hensley Unternehmensberatungs GmbH: *See*—
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Lindhe, Per O. R., to Telefonaktiebolaget LM Ericsson. Keyboard. 282,069, 1-7-86, Cl. D14-100.000.

Linn, Danny. Pocketed athletic shoe upper. 282,021, 1-7-86, Cl. D2-314.000.

Losenno, Luigi G. Hair treatment solution collector and receptacle. 282,108, 1-7-86, Cl. D28-20.000.

Luma Lighting Industries, Inc.: *See*—
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Maust, Daniel A.; and Nichols, Charles E., to Drackett Company, The. Broom shroud. 282,112, 1-7-86, Cl. D32-50.000.

McClelland, Donald R., to Rubbermaid Incorporated. Cover for a casserole. 282,044, 1-7-86, Cl. D7-40.000.

McFarland, John D. Putter. 282,094, 1-7-86, Cl. D21-217.000.

McGuire, Thayard A. Push stick for a hoop. 282,093, 1-7-86, Cl. D21-210.000.

Menei, Laurent; Bachelet, Bernard; and Blaszykowski, Raymond, to Thomson-CSF Telephone. Telephonic receiver. 282,066, 1-7-86, Cl. D14-58.000.

Miller, David C.; Dawson, Robert E.; Pendleton, Thomas J.; and Krapowicz, Jacob A., to Wagner Spray Tech Corporation. Power unit for paint roller. 282,072, 1-7-86, Cl. D15-7.000.

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Nakamura, Tetsuo, to Honda Giken Kogyo Kabushiki Kaisha. Internal combustion engine. 282,071, 1-7-86, Cl. D15-1.000.

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Nishida, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic teller machine. 282,114, 1-7-86, Cl. D99-28.000.

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Yuen, John S., to John Manufacturing Limited. Combined electric fan and fan heater. 282,101, 1-7-86, Cl. D23-122.000.
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LIST OF PLANT PATENTEES

Barberet, Nicole; and Ducloux, Yves. Carnation named Longorin. 5,628, 1-7-86, Cl. 70.000.
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Hopka, Christian. Distinct variety of streptocarpus named Snow Bunting. 5,626, 1-7-86, Cl. 68.000.
Meilland, Marie L., to Conrad-Pyle Company, The. Rose plant-meijason variety. 5,622, 1-7-86, Cl. 11.000.
Van der Salm, Gerardus C. Lily plant: Rhodos. 5,625, 1-7-86, Cl. 68.000.
Zaiger, Chris F. Nectarine tree (Tasty-Gold). 5,623, 1-7-86, Cl. 41.000.
Zaiger, Chris F.; Zaiger, Gary N.; Gardner, Leith M.; and Zaiger, Grant G. Plum tree ("Autumn Giant"). 5,624, 1-7-86, Cl. 38.000.
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Zee, Michael C.: *See—*
Zee, Theodore J., 5,629, Cl. 34.000.
Zee, Theodore J., to Zee, Douglas, Jr.; and Zee, Michael C., part interest to each. Apple tree 'Summer Granny'. 5,629, 1-7-86, Cl. 34.000.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 7TH DAY OF JANUARY, 1986

Ashmore, Charles B., to W. R. Grace & Co. Shrinkable package with vent holes. H9, 1-7-86, Cl. 206-497.000.
AT&T Bell Laboratories: *See—*
Chraplyvy, Andrew R., H15, Cl. 372-3.000.
Vratny, Frederick, H13, Cl. 339-17.0CF.
Basnar, Paul J.; Frank, Robert C.; and Hoh, Joseph C., to United States of America, Energy. Can-out hatch assembly and positioning system. H11, 1-7-86, Cl. 220-337.000.
Bennett, Gerald W.; Brill, A. Bertrand; Bizais, Yves J. C.; Rowe, R. Wanda; and Zubal, I. George, to United States of America, Energy. Nuclear medicine imaging system. H12, 1-7-86, Cl. 250-363.00S.
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Chraplyvy, Andrew R., to AT&T Bell Laboratories. Broadband source of picosecond radiation. H15, 1-7-86, Cl. 372-3.000.
Frank, Robert C.; and Hoh, Joseph C., to United States of America, Energy. Can-out hatch assembly with magnetic retention means. H10, 1-7-86, Cl. 220-337.000.
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Hays, James E., to United States of America, United States. Thermodynamic waste heat transfer system. H8, 1-7-86, Cl. 62-79.000.
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Kaun, Thomas D., to United States of America, Energy. Fuel cell electrode and method of preparation. H16, 1-7-86, Cl. 429-29.000.
Lewis, Bernard L., to United States of America, United States. Adaptive doppler filter banks. H14, 1-7-86, Cl. 343-7.700.
Martone, Ralph, to United States of America, Army. Explosive ordnance disposal protective suit. H7, 1-7-86, Cl. 2-2.500.
Rowe, R. Wanda: *See—*
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Hays, James E., H8, Cl. 62-79.000.
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Vratny, Frederick, to AT&T Bell Laboratories. Connecting a flat-pack-packaged chip to a printed circuit board. H13, 1-7-86, Cl. 339-17.0CF.
W. R. Grace & Co.: *See—*
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36 4,563,218
287.19 4,563,219
288 B 4,563,220
300 4,563,221

CLASS 108

111 4,562,776

CLASS 110

234 4,562,777
260 4,562,778

CLASS 111

1 4,562,779
88 4,562,780

CLASS 112

79 R 4,562,781
104 4,562,782
281 4,562,783

CLASS 114

39 4,562,784
4,562,785
61 4,562,786
97 4,562,787
311 4,562,788
312 4,562,789

CLASS 118

24 4,562,790
326 4,562,791

CLASS 119

109 4,562,792
153 4,562,793
156 4,562,794

CLASS 122

1 R 4,562,795

CLASS 123

65 BA 4,562,796
90.34 4,562,797
193 C 4,562,799
193 CH 4,562,798
195 A 4,562,800
196 S 4,562,801
200 4,562,802
216 4,562,803
4,562,804
4,562,805
270 4,562,806
276 4,562,807
339 4,562,808
4,562,809
380 4,562,810
416 4,562,811
417 4,562,812
425 4,562,813
450 4,562,815
456 4,562,816
478 4,562,817
4,562,818
488 4,562,814
491 4,562,819
557 4,562,820
569 4,562,821
620 4,562,822
4,562,823

CLASS 124

23 R 4,562,824

CLASS 126

96 4,562,825
132 4,562,826
299 R 4,562,827
435 4,562,828

CLASS 128

1.1 4,562,829
4 4,562,830
6 4,562,831
20 4,562,832
75 4,562,833
82 4,562,834
130 4,562,835
201.11 4,562,836
206.17 4,562,837
303.14 4,562,838
326 4,562,839
419 PG 4,562,841
419 PT 4,562,840
638 4,562,842
672 4,562,843
675 4,562,844
4,562,845
696 4,562,846
757 4,562,847

CLASS 134

123 4,562,848

CLASS 135

16 4,562,849
66 4,562,850
78 4,562,851

CLASS 137

68.1 4,562,852
75 4,562,853
155 4,562,854
195 4,562,855
329.3 4,562,856
375 4,562,857
392 4,562,858
414 4,562,859
454.6 4,562,860
493.9 4,562,861
522 4,562,862
559 4,562,863
597 4,562,864
624.12 4,562,865
625.65 4,562,866
811 4,562,867

CLASS 139

118 4,562,868
413 4,562,869

CLASS 140

149 4,562,870

CLASS 141

129 4,562,871

CLASS 144

134 D 4,562,872
356 4,562,873

CLASS 148

12 F 4,563,222
16.5 4,563,223
23 4,563,224
31.55 4,563,225
111 4,563,226
187 4,563,227

CLASS 152

427 4,562,874

CLASS 156

62.2 4,563,237
64 4,563,228
4,563,229
80 4,563,230
90 4,563,231
182 4,563,232
479 4,563,233
505 4,563,234
577 4,563,235
601 4,563,236
637 4,563,238
639 4,563,239
643 4,563,240
4,563,241
651 4,563,242

CLASS 162

18 4,563,243
344 4,563,244
358 4,563,245

CLASS 164

72 4,562,875
455 4,562,880
459 4,562,876
463 4,562,877
467 4,562,878
468 4,562,879
4,562,881
529 4,562,882

CLASS 165

1 4,562,883
41 4,562,890
76 4,562,884
84 4,562,885
94 4,562,886
158 4,562,887

CLASS 166

97 4,562,888
381 4,562,889

CLASS 172

821 4,562,891

CLASS 174

23 R 4,563,540
52 FP 4,563,541
68 C 4,563,542
68.5 4,563,543
140 C 4,563,544
152 R 4,563,545

CLASS 175

371 4,562,892

CLASS 178

22.01 4,563,546

CLASS 179

16 AA 4,563,547
84 VF 4,563,548

CLASS 180

6.5 4,562,893
65.2 4,562,894
68.1 4,562,895
142 4,562,896
233 4,562,897
292 4,562,898

CLASS 181

169 4,562,899
176 4,562,900
285 4,562,901

CLASS 188

18 A 4,562,903
32 4,562,904
72.4 4,562,902

CLASS 192

0.032 4,562,905
4 A 4,562,906
18 A 4,562,907
48.5 4,562,908
48.91 4,562,909
70.27 4,562,910
86 4,562,911
106.2 4,562,912
4,562,913

CLASS 198

336 4,562,914
432 4,562,916
501 4,562,915
505 4,562,917
509 4,562,918
750 4,562,919
781 4,562,920
841 4,562,921

CLASS 200

1 V 4,563,549
5 A 4,563,550
16 C 4,563,551
17 R 4,563,552
4,563,553
48 R 4,563,554
52 R 4,563,555
82 B 4,563,556
288 4,563,557

CLASS 202

100 4,563,246
265 4,563,247

CLASS 203

10 4,563,248

CLASS 204

1 T 4,563,249
4,563,250
4,563,251
9 4,563,252
37.6 4,563,253
59 R 4,563,254
67 4,563,255
4,563,256
129.85 4,563,257
157.15 4,563,258
4,563,260
290 R 4,563,261
298 4,563,262
418 4,563,263

CLASS 206

45.19 4,562,922
235 4,562,923
330 4,562,924
554 4,562,925
563 4,562,926

CLASS 208

11 R 4,563,264
108 4,563,265
110 4,563,266
159 4,563,267

CLASS 209

257 4,563,268
305 4,563,269
379 4,563,270
427 4,563,271

CLASS 210

93 4,563,272
4,563,273
101 4,563,274
198.2 4,563,275
4,563,276
4,563,277
401 4,563,278
512.1 4,563,279
523 4,563,280
614 4,563,281
619 4,563,282
4,563,283
4,563,284
714 4,563,285
721 4,563,286

CLASS 211

59.2 4,562,927
184 4,562,928

CLASS 213

20 4,562,929

CLASS 215

31 4,562,930
219 4,562,933
220 4,562,931
249 4,562,932

CLASS 219

10.49 R 4,563,558
10.55 D 4,563,560
10.55 E 4,563,559
4,563,561
76.11 4,563,562
85 G 4,563,563
121 LJ 4,563,564
4,563,565
121 LU 4,563,567
121 PB 4,563,566
137.43 4,563,569
240 4,563,570
270 4,563,568
299 4,563,571
347 4,563,572
405 4,563,573

CLASS 220

75 4,562,934
85 R 4,562,935
4,562,936
307 4,562,937

CLASS 221

46 4,562,938
312 R 4,562,939

CLASS 222

88 4,562,940
108 4,562,941
386.5 4,562,942
590 4,562,943

CLASS 224

39 4,562,944
150 4,562,945

CLASS 226

95 4,562,946
121 4,562,947

CLASS 227

7 4,562,949
147 4,562,948

CLASS 228

170 4,562,950
234 4,562,951

CLASS 229

87 A 4,562,952

CLASS 235

95 B 4,563,574
492 4,563,575

CLASS 236

34.5 4,562,953

CLASS 237

2 A 4,562,954
2 B 4,562,955
8 R 4,562,956
12.3 R 4,562,957

CLASS 239

7 4,562,958
38 4,562,959
72 4,562,960
79 4,562,961
200 4,562,962
273 4,562,963
288.5 4,562,964
346 4,562,965
433 4,562,966
436 4,562,967
655 4,562,968

CLASS 241

21 4,562,969
65 4,562,970
236 4,562,971
260 4,562,972
260.1 4,562,973
283 4,562,974

CLASS 242

7.21 4,562,975
84.2 G 4,562,976
107.4 D 4,562,977

CLASS 244

1 R 4,562,978
3.22 4,562,980
146 4,562,981
158 R 4,562,979

CLASS 248

81 4,562,982
95 4,562,984
97 4,562,983
183 4,562,985
188.1 4,562,986
278 4,562,987
340 4,562,988

CLASS 249

17 4,562,989
141 4,562,990
4,562,991

CLASS 250

204 4,563,576
221 4,563,577
4,563,578
291 4,563,579
327.2 4,563,580
338 4,563,581
363 S 4,563,582
4,563,583
368 4,563,584
373 4,563,585
374 4,563,586
396 R 4,563,587
458.1 4,563,588
504 R 4,563,589
578 4,563,590

CLASS 251

159 4,562,992
161 4,562,993
175 4,562,994

CLASS 252

2 4,563,287
8.55 D 4,563,290
8.55 R 4,563,291
4,563,292
8.8 4,563,288
4,563,289
32.7 E 4,563,293
45 4,563,302
49.3 4,563,294
49.9 4,563,299
67 4,562,995
69 4,563,295
182 4,563,296
301.4 R 4,563,297
313.2 4,563,298
518 4,563,300
519 4,563,301

CLASS 260

112 R 4,563,303
4,563,304
112.5 R 4,563,305
112.5 TR 4,563,306
239 E 4,563,307
239.3 A 4,563,308
549 4,563,309
941 4,563,310

CLASS 261

35 4,563,311
59 4,563,312
81 4,563,313
153 4,563,314

CLASS 264

8 4,563,315
22 4,563,316
28 4,563,317
119 4,563,318
146 4,563,319
151 4,563,320
255 4,563,321
267 4,563,322
279.1 4,563,323
328.13 4,563,324
550 4,563,325

CLASS 266

242 4,562,996

CLASS 267

8 R 4,562,997
54 R 4,562,998

CLASS 269

137 4,562,999

CLASS 272

72 4,563,000
4,563,001
75 4,563,002
118 4,563,003
131 4,563,004

CLASS 273

26 R 4,563,005
67 A 4,563,006
77 A 4,563,007
126 R 4,563,008
179 B 4,563,009
187 R 4,563,010
243 4,563,011

CLASS 277

13 4,563,012

CLASS 279

64 4,563,013

CLASS 280

47.18 4,563,014
95 A 4,563,015
293 4,563,016
294 4,563,017
402 4,563,018
481 4,563,019
602 4,563,020
612 4,563,021
708 4,563,022
748 4,563,023

CLASS 283

91 4,563,024

CLASS 285

334.2 4,563,025

CLASS 287

2 4,563,026

CLASS 290

53 4,563,591

CLASS 292

339 4,563,027

CLASS 293

122 4,563,028

CLASS 294

19.1 4,563,029
81.21 4,563,031
81.4 4,563,030
90 4,563,032
146 4,563,033

CLASS 296

91 4,563,034
195 4,563,035
218 4,563,036

CLASS 297

105 4,563,037
243 4,563,038
362 4,563,039
440 4,563,040
452 4,563,041

CLASS 301

37 ST 4,563,042

CLASS 303

52 4,563,043

CLASS 307

115 4,563,592
231 4,563,593
290 4,563,594
4,563,595
297 4,563,596
360 4,563,597
448 4,563,599
449 4,563,598
455 4,563,600
475 4,563,601

CLASS 308

3.8 4,563,044
6 C 4,563,045
10 4,563,046

CLASS 310

12 4,563,602
30 4,563,603
49 R 4,563,604
74 4,563,605
208 4,563,606
260 4,563,607

CLASS 312

350 4,563,047

CLASS 313

231.71 4,563,608
343 4,563,609
362.1 4,563,610
366 4,563,611
478 4,563,612
497 4,563,613
524 4,563,614

CLASS 315

39.3 4,563,615
220 4,563,616
312 4,563,617
370 4,563,618

CLASS 318

138 4,563,619
4,563,620
139 4,563,621
254 4,563,622
311 4,563,623
472 4,563,624
603 4,563,625

CLASS 320

2 4,563,626
19 4,563,627
20 4,563,628
48 4,563,629

CLASS 322

8 4,563,630
33 4,563,631

CLASS 323

284 4,563,733
316 4,563,632

CLASS 324

54 4,563,633
61 R 4,563,634
4,563,635
66 4,563,636
77 A 4,563,637
77 R 4,563,638
96 4,563,639
158 D 4,563,642
158 P 4,563,640
158 R 4,563,641
207 4,563,643
232 4,563,644
233 4,563,645
244 4,563,646
309 4,563,647
318 4,563,648
404 4,563,649

CLASS 329

50 4,563,650
110 4,563,651

CLASS 330

107 4,563,652
254 4,563,653
277 4,563,654
285 4,563,655
308 4,563,656

CLASS 331

25 4,563,657

CLASS 333

181 4,563,658
4,563,659
4,563,660
202 4,563,661
219 4,563,662

CLASS 335

78 4,563,663
274 4,563,664

CLASS 337

252 4,563,666
349 4,563,667

CLASS 339

37 4,563,048
83 4,563,049
99 R 4,563,050
143 R 4,563,051
4,563,052
242 4,563,053
254 R 4,563,054
262 R 4,563,055

CLASS 340

114 R 4,563,668
347 DA 4,563,669
4,563,670
347 DD 4,563,671
512 4,563,672
568 4,563,673
620 4,563,674
679 4,563,675
749 4,563,676
750 4,563,677
765 4,563,678
825.44 4,563,680
825.7 4,563,679
825.71 4,563,681
870.13 4,563,682
870.37 4,563,683
966 4,563,684
995 4,563,685

CLASS 343

17 4,563,686
882 4,563,687

CLASS 346

1.1 4,563,688
4,563,689
76 4,563,691
76 PH 4,563,690
4,563,692
4,563,693
160 4,563,694

CLASS 350

6.8 4,563,056
96.18 4,563,057
166 4,563,058
330 4,563,059
414 4,563,060
503 4,563,061
520 4,563,062
580 4,563,063
620 4,563,064

CLASS 351

86 4,563,065
122 4,563,066

CLASS 353

60 4,563,067

CLASS 354

402 4,563,068
4,563,069
416 4,563,070
473 4,563,071

CLASS 355

3 BE 4,563,077
3 CH 4,563,076
3 DD 4,563,074
3 FU 4,563,073
4,563,075
3 R 4,563,078
8 4,563,079
10 4,563,080
14 CH 4,563,081
14 D 4,563,086
14 SH 4,563,082
38 4,563,083
40 4,563,084
132 4,563,085

CLASS 356

73.1 4,563,087
244 4,563,088
319 4,563,089
328 4,563,090
349 4,563,091
350 4,563,092
368 4,563,093
401 4,563,094
430 4,563,095
440 4,563,096

CLASS 357

5 4,563,695
22 4,563,696
26 4,563,697
38 4,563,698

CLASS 358

60 4,563,699
75 4,563,700
111 4,563,701
119 4,563,702
160 4,563,703
167 4,563,704
213 4,563,708
227 4,563,705
280 4,563,706
294 4,563,707
342 4,563,709

CLASS 360

9.1 4,563,710
74.1 4,563,711
75 4,563,712
4,563,713
77 4,563,714
78 4,563,715
92 4,563,716
95 4,563,717
132 4,563,718

CLASS 361

45 4,563,719
58 4,563,720
196 4,563,721
212 4,563,722
305 4,563,723
306 4,563,724
388 4,563,725

CLASS 362

34 4,563,726
183 4,563,727
206 4,563,728
218 4,563,729
264 4,563,730

CLASS 363

17 4,563,731
35 4,563,732

CLASS 364

157 4,563,734
165 4,563,735
200 4,563,736
4,563,737
4,563,738
403 4,563,739
414 4,563,740
431.12 4,563,741
433 4,563,742
434 4,563,743
476 4,563,744
477 4,563,745
492 4,563,746
523 4,563,747
557 4,563,748
702 4,563,749
726 4,563,750
786 4,563,751
900 4,563,752

CLASS 365

104 4,563,753
190 4,563,754
230 4,563,755

CLASS 366

184 4,563,665

CLASS 367

13 4,563,756
33 4,563,757
132 4,563,758
139 4,563,759

CLASS 369

44 4,563,760
126 4,563,761

CLASS 371

16 4,563,762

CLASS 372

35 4,563,763
45 4,563,764
50 4,563,765

CLASS 373

72 4,563,766

CLASS 374

43 4,563,097
172 4,563,098

CLASS 375

107 4,563,767

CLASS 376

292 4,563,326
359 4,563,327
446 4,563,328

CLASS 378

037 4,563,768
121 4,563,769

CLASS 381

51 4,563,770

CLASS 382

7 4,563,771

CLASS 384

458 4,563,099

CLASS 400

208 4,563,100
603 4,563,101
691 4,563,102

CLASS 401

134 4,563,103
139 4,563,104

CLASS 403

157 4,563,105
370 4,563,106

CLASS 405

124 4,563,107
171 4,563,108
195 4,563,109
230 4,563,110
295 4,563,111

CLASS 406

11 4,563,112

CLASS 408

223 4,563,113

CLASS 409

131 4,563,114
134 4,563,115
136 4,563,116

CLASS 410

56 4,563,117

CLASS 411

34 4,563,118
438 4,563,119

CLASS 414

273 4,563,120
545 4,563,121
732 4,563,122

CLASS 415

52 4,563,123
98 4,563,124
115 4,563,125
119 4,563,126
184 4,563,127

CLASS 416

92 4,563,128
129 4,563,129
213 R 4,563,130

CLASS 417

1 4,563,136
63 4,563,137
97 4,563,138

CLASS 419

9 4,563,329

CLASS 420

435 4,563,330

CLASS 422

52 4,563,331
100 4,563,332
122 4,563,333
140 4,563,334
159 4,563,335
240 4,563,336

CLASS 423

24 4,563,337
76 4,563,338
178 4,563,339
186 4,563,340
278 4,563,341
556 4,563,342
644 4,563,343

CLASS 424

17 4,563,344
48 4,563,345
59 4,563,346
70 4,563,347
84 4,563,348
94 4,563,349
95 4,563,350
151 4,563,351
195.1 4,563,353
4,563,354

CLASS 425

47 4,563,139
114 4,563,140
4,563,141
145 4,563,142
151 4,563,143
166 4,563,144
174.8 R 4,563,145
256 4,563,146
376 A 4,563,147
503 4,563,148
547 4,563,149

CLASS 426

2 4,563,355
44 4,563,356
46 4,563,357
89 4,563,358
96 4,563,359
104 4,563,360
4,563,362
231 4,563,361
303 4,563,363
510 4,563,364
534 4,563,365
573 4,563,366

CLASS 427

39 4,563,367
54.1 4,563,514
82 4,563,368
118 4,563,369
123 4,563,370
305 4,563,371
409 4,563,372

CLASS 428

16 4,563,373
31 4,563,374
35 4,563,375
36 4,563,376
4,563,377
52 Re.32,061
61 4,563,379
86 4,563,378
100 4,563,380
156 4,563,381
198 4,563,382
216 4,563,383
231 4,563,384
251 4,563,385
283 4,563,386
300 4,563,387
304.4 4,563,388
357 4,563,390
365 4,563,391
394 4,563,392
412 4,563,393
422 4,563,394
423.3 4,563,395
457 4,563,396
469 4,563,397
542.8 4,563,398
626 4,563,399
630 4,563,400

CLASS 429

91 4,563,401
178 4,563,402
198 4,563,403
206 4,563,404

CLASS 430

5 4,563,407
59 4,563,408
106 4,563,409
204 4,563,410
213 4,563,411
223 4,563,412
281 4,563,413
325 4,563,414
340 4,563,415
460 4,563,405
513 4,563,406
533 4,563,416

CLASS 431

320 4,563,150

CLASS 432

15 4,563,151

CLASS 433

39 4,563,152
223 4,563,153

CLASS 434

87 4,563,154

CLASS 435

6 4,563,417
4,563,419
7 4,563,418
13 4,563,420
18 4,563,421
27 4,563,422
68 4,563,423
71 4,563,424
94 4,563,425
119 4,563,426

CLASS 436

6 4,563,427
21 4,563,428
97 4,563,429
164 4,563,430
533 4,563,431

CLASS 440

51 4,563,155

CLASS 441

99 4,563,156
104 4,563,157

CLASS 445

7 4,563,158

CLASS 446

47 4,563,160
74 4,563,159
156 4,563,161
175 4,563,162
354 4,563,163
440 4,563,164

CLASS 458

126 4,563,775
321 4,563,772
327 4,563,773
607 4,563,774

CLASS 464

64 4,563,165
96 4,563,166

CLASS 474

135 4,563,167
207 4,563,168

CLASS 493

4,563,169

CLASS 501

81 4,563,432
97 4,563,433

CLASS 502

66 4,563,434
71 4,563,435
104 4,563,436
105 4,563,437
168 4,563,438
209 4,563,439
215 4,563,440
410 4,563,441

CLASS 514

9 4,563,442
12 4,563,352
25 4,563,445
29 4,563,443
34 4,563,444
63 4,563,446
184 4,563,447
187 4,563,448
203 4,563,449
204 4,563,450
219 4,563,451
222 4,563,452
4,563,453
239 4,563,454
241 4,563,455
242 4,563,456
245 4,563,457
253 4,563,458
254 4,563,459
260 4,563,460
288 4,563,461
4,563,462
293 4,563,463
299 4,563,464
304 4,563,465
319 4,563,466
336 4,563,467
337 4,563,468
339 4,563,469
347 4,563,470
369 4,563,471
381 4,563,472
397 4,563,473
417 4,563,474
427 4,563,475
4,563,477
459 4,563,476
561 4,563,478
562 4,563,479

CLASS 518

728 4,563,480

CLASS 521

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For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *PCT Gazette* on Oct. 24, 1985 and in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

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Dec. 17, 1985. DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 11, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,367,561 through 4,368,543
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patent listed below has expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENT WHICH EXPIRED OCTOBER 27, 1985 DUE TO FAILURE TO PAY MAINTENANCE FEE

Patent Number	Serial Number	Issue Date
4,297,354	06/216,423	10/27/81

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,414,516, Re. S.N. 795,426, Filed Nov. 6, 1985, Cl. 333/21A, POLARIZED SIGNAL RECEIVER SYSTEM, H. Taylor Howard, Owner of Record: *Chaparral Communications, Inc., San Jose, Calif.,* Attorney or Agent: William E. Pelton, et al., Ex. Gp.: 252

4,415,170, Re. S.N. 795,646, Filed Nov. 6, 1985, Cl. 277/163, DOUBLE TORIC SEALING RING, Maurice Bonafous, Owner of Record: *Industrielle A.M.R.I., Paris, France,* Attorney or Agent: M. H. Gay, Ex. Gp.: 246

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Registration to Practice

The results of the examination for registration to practice before the United States Patent and Trademark Office held on Oct. 8, 1985 were mailed to 380 candidates on Dec. 13, 1985. The following list contains the names of persons who succesfully passed the examination. These persons have been given provisional recognition pursuant to 37 CFR 10.9(a) for a period of 90 days from Dec. 13, 1985 to prepare and prosecute patent applicaions before the Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. 37 CFR 10.7(a). Accordingly, any information tending to affect the eligibility of any of the following persons on moral, ethical, or other grounds should be furnished to the Director of Enrollment and Discipline on or before Feb. 17, 1986.

Abbatt, William G., 600 Morley Ct., Dearborn, Mich. 48124
Abrams, Hugh A., One Wheaton Center, #1906, Wheaton, Ill. 60187
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Barr, David K., 104–60 Queens Blvd., #6N, Forest Hills, N.Y. 11375
Benson, Christopher R., 1400 Woodhollow, #8708, Houston, Tex. 77057
Boehm, Douglas A., 1740 Chippendale, Hoffman Estates, Ill. 60195
Bohn, David C., 10440 Salem Ct., Eden Prairie, Ill. 55344
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Bruhn, Mildred S., 400 Eastlawn, Midland, Mich. 48640
Bujold, Michael J., 105 N. State St., Concord, N.H. 03301
Chartove, Alex, 116 Rose, #12, Venice, Calif. 90291
Coletti, Paul A., 1050 W. Dickens Ave., #17, Chicago, Ill. 60614
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Cornwell, David K., 20A Arroyo La., Los Alamos, N. Mex. 87544
Cox, Scott R., 3510 Sorrento Ave., Louisville, Ky. 40222
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Davis, Randall A., 3124 Spruce St., Midland, Mich. 48640
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Espinosa, Noemi C., 1332 10th Ave., #301, San Francisco, Calif. 94122
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Ference, Stanley J., 29554 Florence, Garden City, Mich. 48135
Fishman, Michael D., 537 Greenwood, #G, Grand Rapids, Mich. 49506
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Gorman, Thomas, W., 5130 N. 9th St., Arlington, Va. 22205
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Johnson, Harold V., 1010 E. Talbot, Arlington, Va. 60004
Jordan, Robert H., 6977 Collingwood La., #9, Woodbury, Minn. 55125
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McLaughlin, Jane R., 511 Florence Ave., Oakland, Calif. 94618
McSpadden, Michelle M., 1308 American Way, Menlo Park, Calif. 94025
McVeigh, James B., Jr., 1109 Village Rd., East, Norwood, Mass. 02062
Medlen, Virginia S., 3000 Duchess Trail, Plano, Tex. 75074
Mendel, Arthur, 4525 Oak Leaf Dr., White Bear Lake, Mich. 55110
Merrill, Erich W., Jr., 4929 S.W. Scholls Ferry Rd., # 60, Portland, Oreg. 97225
Mican, Stephen G., 4365 Raleigh Ave., Alexandria, Va. 22304
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Miller, Steven W., 3306 York La., Cincinnati, Ohio 45215
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Rose, Curtis G., 74-B N. Bedford St., Arlington, Va. 22201
R owland, Mark D., 4 Lark Ct., Old Bethpage, N.Y. 11804
Ruben, Bradley N., 805-336 N. Howard St., Alexandria, Va. 22304
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Stewart, David E., 5297 Scenic Ct., Middleton, Wis. 53562
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Wedemeyer, Lowell R., 3002 Catalina Dr., Davis, Calif. 95616
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Wixon, Henry N., 5800 Bell Station Rd., Glenn Dale, Md. 20769
Wolfs, Denise Y., 2 Rutgers Pl., Houston, Tex. 77005
Wolstoncroft, Bruce J., 523 Siesta Ct., Pittsburgh, Pa. 15205
Wrist, Christopher P., 5804 MacArthur Blvd., Washington, D.C. 20016
Zito, Joseph J., 2749 Loch Haven Dr., Ijamsville, Md. 21754

Dec. 17, 1985

CAMERON WEIFFENBACH,
Director, Office of Enrollment & Discipline.

Patents Available for Licensing or Sale

General Electric Co. is prepared to grant nonexclusive licenses under the following patent upon reasonable terms to domesitc manufacturers.

Applications for license may be addressed to: General Electric Co., Motor Business Group, 1635 Broadway, P.O. Box 2204, Attention: Patent Counsel.

3,862,491. METHOD FOR EVALUATING MANUFACTURING OPERATIONAL EFFECTS ON INSULATED WINDINGS.
4,205,247. PRIME MOVER AND METHODS.
4,233,535. PRIME MOVER HAVING A LEAKAGE FLUX CONDUCTING DEVICE SECURED THERETO.

3,844,901. COKE OVEN EMISSION CONTROL SYSTEM. *Adrian J. Good,* P.O. Box 1031, Elizabethton, Tenn., 37643, 615-543-3111, Ext. 3208.
4,401,894. AUTOMATIC UNINTERRUPTED D.C. POWER SOURCE SWITCH. *Daniel M. Weisner,* 127 Davis Ct., Mt. Airy, Md. 21771, 301-986-8881.
4,541,597. ADJUSTABLE SELF-SUPPORT STAND, *Neil F. Greenblum, Esq.,* c/o Sandler & Greenblum, 701 S. 23rd St., Arlington, Va. 22202, 703-521-7800.
4,550,691. FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES. *Duncan R. McWade, Rte. 2, Box 96, Foxworth, Miss. 39483.*

Holiday Relating to Birthday of Martin Luther King

Public Law 98-144 enacted Nov. 2, 1983, amended 5 USC 6103 to indicate that the third Monday in Jan. would be a new legal holiday relating to the birthday of Martin Luther King and that this amendment would take effect in 1986.

Accordingly, Jan. 20, 1986, and the third Monday in Jan. thereafter, will be included as Federal holidays within the District of Columbia. The Patent and Trademark Office will not receive papers on that date in accordance with 37 CFR 1.6(a) and 1.10(a). Actions required to be taken on the third Monday in Jan. may be taken on the next succeeding day that the Office is open for business in accordance with 37 CFR 1.7.

Dec. 23, 1985.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Jan. 14, 1986

D. 278,366	4,508,599	4,530,906	4,543,639
D. 279,220	4,510,207	4,531,063	4,543,707
D. 280,758	4,511,001	4,531,893	4,544,032
D. 280,790	4,511,354	4,531,894	4,544,724
3,760,003	4,511,675	4,533,730	4,544,819
4,252,591	4,511,781	4,534,376	4,545,234
4,337,340	4,513,026	4,534,557	4,545,258
4,361,924	4,515,763	4,534,793	4,545,324
4,364,888	4,516,515	4,534,857	4,545,382
4,408,013	4,517,013	4,535,669	4,545,522
4,417,864	4,517,096	4,535,727	4,545,544
4,434,047	4,517,244	4,536,842	4,545,597
4,436,398	4,517,355	4,536,878	4,546,352
4,443,429	4,517,605	4,537,411	4,546,616
4,458,084	4,518,044	4,537,600	4,546,962
4,468,390	4,518,456	4,538,945	4,547,308
4,470,185	4,521,901	4,538,969	4,547,334
4,472,825	4,522,409	4,539,040	4,547,359
4,476,134	4,522,582	4,539,175	4,547,621
4,477,682	4,522,734	4,539,490	4,547,635
4,480,879	4,522,788	4,539,732	4,547,665
4,482,239	4,522,944	4,539,921	4,547,883
4,482,240	4,523,127	4,540,215	4,548,272
4,482,570	4,523,500	4,540,497	4,548,279
4,484,724	4,523,826	4,540,895	4,548,751
4,491,900	4,524,178	4,541,505	4,548,969
4,493,662	4,524,289	4,542,062	4,549,444
4,498,050	4,524,554	4,542,456	4,550,193
4,498,521	4,525,613	4,542,628	4,550,524
4,499,327	4,526,528	4,542,746	4,550,842
4,499,680	4,528,575	4,543,330	4,551,103
4,501,419	4,528,598	4,543,347	4,551,232
4,504,902	4,528,702	4,543,399	4,551,253
4,506,749	4,529,170	4,543,421	4,551,396
4,506,963	4,529,384	4,543,430	4,551,450
4,508,160	4,529,615	4,543,627	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 7, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-14-84
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-14-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-11-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-30-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-19-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during October 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,413,656 to 3,419,906, inclusive
Plant Patents ..... Numbers 2,847 to 2,855 inclusive

REISSUES

JANUARY 14, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,062

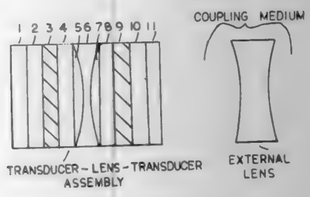
MULTIPLE FIELD ACOUSTIC FOCUSSER

Arthur J. Samodovitz, One Lakeshore Dr., Apt. A-4, Farmington, Conn. 06032

Original No. 4,387,599, dated Jun. 14, 1983, Ser. No. 222,947, Jan. 6, 1981. Application for reissue Aug. 29, 1983, Ser. No. 529,224

Int. Cl.[4] **G10K** *11/30*

U.S. Cl. 73—642 **16 Claims**



10. A unitary apparatus for focussing acoustic waves comprising:
a first acoustic lens,
a first piezoelectric element,
a second acoustic lens, and
a second piezoelectric element, said acoustic lenses and said piezoelectric elements located in order and situated such that one line can intersect opposite faces of each acoustic lens and each piezoelectric element, said first acoustic lens focussing acoustic waves produced by said first piezoelectric element, and said first and second acoustic lenses collectively focussing acoustic waves produced by said second piezoelectric element.

Re. 32,063

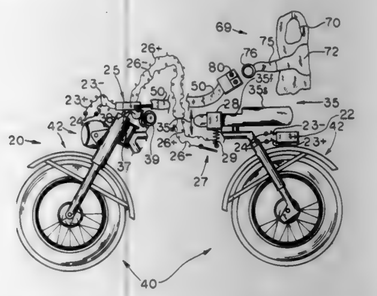
MOTORCYCLE SAFETY-RELEASE BACK REST

Gregory K. Schultz, 22386 Gratiot Rd., Merrill, Mich. 48637

Original No. 4,359,129, dated Nov. 16, 1982, Ser. No. 83,647, Oct. 11, 1979. Application for reissue Sep. 13, 1984, Ser. No. 650,268

Int. Cl.[4] **A62B** *35/02*

U.S. Cl. 180—268 **62 Claims**



52. A releasable back support assembly for use by a rider seated on a cycle frame having wheel means at its forward and rearward ends and a seat for such rider between said wheel means, said assembly comprising a sling-like member for embracing the rider's back; movable anchor means carried by said frame forwardly of said seat; strap means separably secured at one end to said anchor means and at its opposite end to said member, said strap means being of such length as to be taut and provide support for the rider's back when the rider leans rearwardly against said member; electrical operating means coupled to said anchor means and operable to move the latter from a first position in which it secures said one end of said strap means to said frame to a second position in which said one end of said strap means is disengageable from said anchor means; and electrical actuating means coupled to said operating means for operating the latter said actuating means including means movable between closed and open positions in response to seating and unseating of the rider on and from said seat.

Re. 32,064

ATOMIZER WHEEL FOR THE ATOMIZATION OF SUSPENSIONS OF HARD-WEARING MATERIALS

Kaj Nielsen, Bagsvaerd, Denmark, assignor to Aktieselskabet Niro Atomizer, Soborg, Denmark

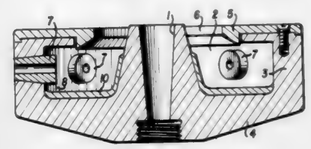
Reissued No. 3,454,226, dated Jul. 8, 1969, Ser. No. 536,326, Mar. 22, 1966.

Original No. Re. 29,083, dated Dec. 21, 1976, Ser. No. 389,637, Aug. 21, 1973. Continuation of Ser. No. 63,356, Aug. 3, 1979, abandoned. Application for reissue Aug. 30, 1982, Ser. No. 413,134

Claims priority, application Denmark, Mar. 26, 1965, 1602/65

Int. Cl.[4] **B05B** *3/10;* **B04B** *11/00*

U.S. Cl. 239—224 **16 Claims**



12. An atomizer wheel for the atomization of suspension of abrasive materials, comprising a hub, an outer wall part coaxially disposed about said hub and a bottom part connecting said outer wall part with said hub, a ring-shaped cover member detachably connected to said outer wall part, said outer wall part, said hub, said cover member and said bottom part defining between them a toroidal chamber, said cover member having an inner circumference defining together with said hub and unobstructed annular space in communication with said toroidal chamber, said outer wall part being provided with a plurality of regularly shaped holes uniformly distributed around the circumference of the outer wall part, said holes forming the only outlet openings of the wheel, each of said holes being lined with a bushing of wear-resistant sintered material, said holes and said bushings being tapered in direction radially outwardly from said chamber, the inner end of each of said bushings projecting into said chamber while their outer ends are substantially flush with the outside of said outer wall part and an annular plate of wearresistant material embedded in and clamped against the surface of said bottom part, facing said toroidal chamber.

Re. 32,065

MOLDED COLLAPSIBLE SOLUTION CONTAINER

Philip G. Ralston, Jr., Lindon, Utah; Joe A. Miller, Lake Zurich, and Frank Cammarata, III, Palatine, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Original No. 4,049,033, dated Sep. 20, 1977, Ser. No. 621,095, Oct. 9, 1975. Division of Ser. No. 526,092, Nov. 21, 1974. Application for reissue Sep. 18, 1979, Ser. No. 76,691

Int. Cl.[4] B65D *1/02*

U.S. Cl. 604—408 13 Claims



11. A molded collapsible solution container which container defines a chamber-defining body portion wall having an integral neck and shoulder portion at one end thereof and is sealed at its end opposite said one end, the improvement comprising, in combination:

the combination of such shoulder portion and the body portion adjacent the shoulder portion defining, in its normal unstressed state, a structure generally elongated in one transverse dimension, the transverse cross section of said body portion tapering progressively along a major portion of its length to a flat, sealed end portion at said end of the container opposite to said one end, the direction of tapering extending in the direction of the longitudinal axis of the container, to facilitate a uniform manner of flat collapse of said container progressively from said opposite end toward said one end as the contents thereof are withdrawn through said neck portion, when said container is disposed in a neck-downward position, the chamber end opposite to said one end being tapered sufficiently narrowly to permit essentially all of the chamber-defining wall of the body portion adjacent said chamber end to collapse flat together upon withdrawal of the contents;

a pair of generally triangular gusset portions being provided adjacent said shoulder portion at opposite ends of said generally elongated structure, said gusset portions having lines of flexing weakness to facilitate the collapse of said container under normal suction pressure, and opposed side edges of said shoulder portion between said gusset portions each defining a transverse line of folding weakness to facilitate the collapse of said container.

PLANT PATENTS

GRANTED JANUARY 14, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,630

MINIATURE ROSE PLANT 'MEREDITH ANNE'

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Aug. 22, 1983, Ser. No. 525,451

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by rich pink color in the petals with soft pink under surfaces, having a bloom of exhibition-quality form; and further characterized by a plant of vigorous growth habit, easy to propagate from cuttings, with an abundance of flowers borne singly or in sprays of usually 3 to b 5 or more.

5,631

MINIATURE ROSE VARIETY 'MINOCO'

Ernest D. Williams, Dallas, Tex., assignor to Mary Kay Cosmetics, Inc., Dallas, Tex.

Filed Apr. 30, 1984, Ser. No. 605,579

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by attractive azalea pink flowers with inner petals rolling downward and outer petals reflexing to star-like points and with flower color which remains substantially constant and unfading.

5,632

ROSE PLANT NAMED JELPIROFOR

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed May 15, 1984, Ser. No. 610,820

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—14 1 Claim

1. A new and distinct hybrid tea rose plant, substantially as herein shown and described, particularly distinguished by its large, fully double flowers of white color.

5,633

TEA ROSE NAMED TOBONE

Takeshi Shirakawa, Gamagori, Japan, assignor to Toshio Nakashima, San Leandro, Calif.

Filed Mar. 26, 1984, Ser. No. 596,000

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—19 1 Claim

1. A new and distinct rose plant, substantially as herein shown and described, characterized by the brilliant red-purple color of its very large flowers which are borne on long, strong stems, its year-around abundant production of long-lasting blooms, and its disease resistance.

5,634

ROSE PLANT NAMED JELROCAMI

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed May 14, 1984, Ser. No. 609,782

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—20 1 Claim

1. A new and distinct rose plant of the hybrid tea class, substantially as herein shown and described, particularly distinguished by its large double red flowers, a vigorous growth habit and a good aptitude for forcing.

5,635

TEA ROSE NAMED JELRAFLOKI

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed May 15, 1984, Ser. No. 610,821

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—20 1 Claim

1. A new and distinct hybrid tea rose plant, substantially as herein shown and described, particularly distinguished by its double flowers of medium size and bright red coloration, a vigorous growth habit and a very good aptitude for forcing and wintertime culture.

5,636

ROSE PLANT NAMED JELDANIRAN

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed May 14, 1984, Ser. No. 609,781

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—26 1 Claim

1. A new and distinctive floribunda rose plant, substantially as herein shown and described, particularly distinguished by its abundant inflorescence and its large, double, light pink flowers, a vigorous growth habit, and a good aptitude for forcing.

PATENTS

GRANTED JAN. 14, 1986

ERRATA

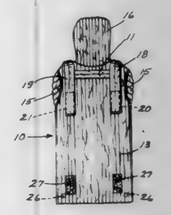
For CLASS	See PATENT NO.
623–022	4,563,778
623–005	4,563,779
525–505	4,564,466
270–021	4,564,470

PATENTS

GRANTED JANUARY 14, 1986

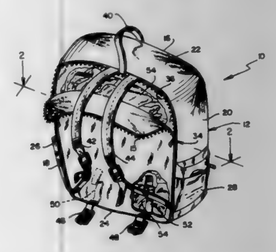
GENERAL AND MECHANICAL

4,563,776
STADIUM COAT
Connie J. Boesen, 801 Bertch Ave., Waterloo, Iowa 50702
Filed Sep. 4, 1984, Ser. No. 646,466
Int. Cl.[4] A41D *3/02*
U.S. Cl. 2—85 **5 Claims**



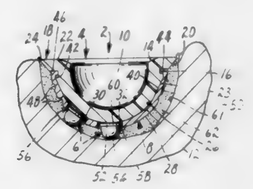
1. A stadium coat comprising:
a garment having a front, back, sides, top and an open bottom;
the top having closed shoulders thereon and an opening therebetween for receiving a person's head;
a pair of straps, one extending over each shoulder, one end of each said strap being permanently affixed to the back of the coat;
fastener means attached to the other end of each of said straps;
a pair of first fastener receiving means attached to a lower portion of the back for receiving each respective one of said fastener means and hereby holding the coat in a folded position when said fastener means are attached to said pair of first fastener receiving means;
a pair of second fastener receiving means attached to a top portion of said front, one just below each shoulder, for receiving respective ones of said coat is being worn whereby the straps can be stored unobstrusively while the coat is being worn; and
handle means attached at each end thereof to an intermediate portion of each of the straps for providing a handle when the coat is in the folded position thereof.

4,563,777
COMBINATION CARGO PACK
Taekyu Park, c/o York East Merchandise, Inc., 350 Fifth Ave., New York, N.Y. 10118
Filed Jul. 3, 1984, Ser. No. 627,656
Int. Cl.[4] A41D *1/02, 1/00, 3/02*
U.S. Cl. 2—108 **10 Claims**



1. A combination cargo pack comprising a carry pack defining at least one storage compartment, support means secured to the pack including a shoulder strap for carrying the pack, a garment attached to the pack and adapted for storage within the pack, flap closure means on the pack for providing selective access to the garment, said garment being affixed to the pack so as to register the pack in a shoulder strap carrying mode when the garment is worn.

4,563,778
PROSTHETIC ACETABULAR CUP
Karen M. Roche, Stillwater, and Robert M. Eyerly, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 23, 1983, Ser. No. 469,125
Int. Cl.[4] A61F *1/00*
U.S. Cl. 623—22 **7 Claims**

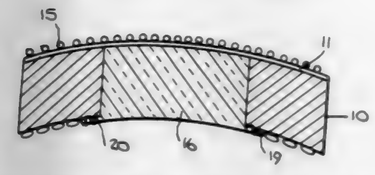


1. An integral, prosthetic acetabular cup assembly comprising:
a. a plastic inner liner comprising:
(1) a substantially hemispherically-shaped inner surface adapted to receive a femoral head prosthesis;
(2) a substantially hemispherically-shaped outer surface; and
(3) a peripheral rim joining the inner surface with the outer surface;
b. a metal backing having a plurality of apertures therein comprising:
(1) a substantially hemispherically-shaped inner surface juxtaposed the outer surface of the liner;
(2) a substantially hemispherically-shaped outer surface; and
(3) a peripheral rim joining the inner surface and the outer surface;
c. a plurality of spacers capable of bonding with a bone cement, each of said spacers having a compressive modulus substantially equal to the compressive modulus of said bone cement and each comprising:
(1) a body passed through an aperture in the backing; and
(2) a head joined to the body;
d. a portion of the periphery of each aperture in the backing formed into a recess dimensioned to receive one of the heads of the spacers whereby the head of each of the spacers is entrapped within one of the recesses when the acetabular cup assembly is assembled; and
e. means for mechanically locking the liner within the backing.

4,563,779
CORNEAL IMPLANT AND METHOD OF MAKING THE SAME
Charles D. Kelman, North Shore Towers, 269 Grand Central Pkwy, Bldg. 3, Floral Park, N.Y. 11005
Filed Jan. 27, 1984, Ser. No. 574,677
Int. Cl.[4] A61F *1/16, 1/24*
U.S. Cl. 623—5 **21 Claims**

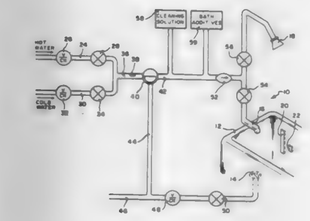
1. A corneal implant comprising:
a corneal plug removed from a donor eye and having a posterior surface and an anterior surface spaced from said posterior surface, a membrane covering one of said sur-

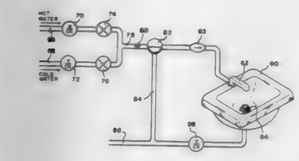
faces, and a bore therein extending substantially to said membrane from the other of said surfaces; and



an optically clear artificial plug having dimensions to fit said bore and disposed in said bore.

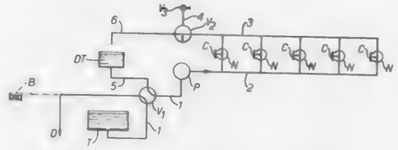
4,563,780
AUTOMATED BATHROOM
Simcha Z. Pollack, 1561 52nd St., New York, N.Y. 11219
Filed Jun. 29, 1983, Ser. No. 508,826
Int. Cl.⁴ E03C *1/04*
U.S. Cl. 4—192 **8 Claims**





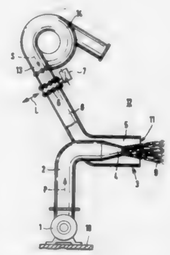
1. In an automated bathroom including:
a water dispenser;
hot and cold water supply means;
mixing means located between said water supply means and said dispenser for mixing the hot and cold water before it is dispensed;
a supply line connected between said mixing means and said dispenser;
a drain line connected to said supply line;
valve means for directing water from said supply line to only the dispenser or only the drain line;
means for sensing the temperature of the water in the supply line after it has been mixed;
control means responsive to said sensing means for operating said valve means such that water from said supply line will be directed to said dispenser when the sensed temperature is within a preselected range and such that water from said supply line will be prevented from being dispensed from said dispenser and will be directed to said drain line whenever the sensed temperature is outside said preselected range.

4,563,781
BATH INSTALLATIONS AND BATH TUBS
David R. James, Tirley, England, assignor to James Industries Limited, Gloucester, England
Filed Dec. 31, 1984, Ser. No. 687,945
Claims priority, application United Kingdom, Jan. 14, 1984, 8400995
Int. Cl.⁴ A61H *33/02*
U.S. Cl. 4—542 **17 Claims**



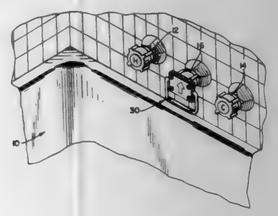
1. A method of disinfecting a circulating system of a whirlpool bath tub which comprises at least one nozzle, a circulating pump and associated pipework, said method comprising blanking off or capping the nozzle in such manner that the circulating pump and the nozzle together with the associated pipework form a closed path, connecting a small supply of disinfectant solution to said closed path and circulating the disinfectant solution around the closed path during a disinfection period in order to disinfect the pump, nozzle and associated pipework.

4,563,782
HYDROPNEUMATIC MASSAGE BATH
Okko K. Dijkhuizen, Roden, Netherlands, assignor to B. E. M. Wientjes B.V., Roden, Netherlands
Filed Dec. 21, 1983, Ser. No. 563,926
Claims priority, application Netherlands, Jan. 4, 1983, 8300018
Int. Cl.⁴ A61H *33/02*
U.S. Cl. 4—542 **7 Claims**



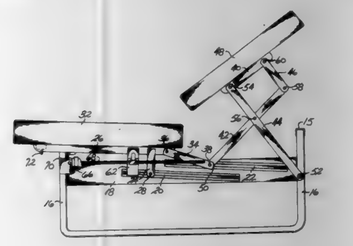
1. A hydropneumatic massage bath comprising:
a bath tub having high side walls, a bottom and an interior;
at least one pressurized water line having an outlet end terminating in a water jet nozzle for discharging water under pressure;
a member surrounding said outlet end of said water line and defining therewith a chamber, said member having an inlet end connected to an air supply line, such that discharge of said water under pressure from said nozzle creates a reduced pressure in said chamber surrounding said outlet end of said water line and draws air through said air supply line into said chamber to thereby form an air/water mixture, and said member having an outlet end with an orifice for discharging said air/water mixture into said interior of said bath tub; and
interrupter means, in said air supply line at a position upstream of said inlet end of said member, for partially or completely closing said air supply line at a desired frequency and thereby for supplying said air to said chamber in controlled pulsations at said frequency.

4,563,783
ASSIST HANDLE
James H. Jenkins, 6010 N. 26th St., Arlington, Va. 22207
Filed Aug. 3, 1983, Ser. No. 522,031
Int. Cl.⁴ A47K *3/12*
U.S. Cl. 4—576 **1 Claim**



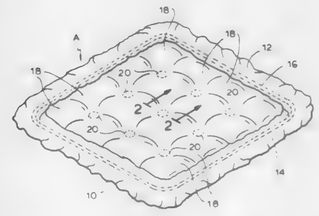
1. In a domestic tub of the type having a knob controlled diverting valve positioned between the knob controlled hot and cold water valves that lie above said tub, the improvement comprising: a safety assist grip comprised of a U-shaped handle with its ends pivotably retained between two plates by a trough in each plate with said plates held to one another by screws, and one of said plates fastened to one of said knobs by a single fastener that also serves to secure the knob to the valve controlled by the knob, whereby a user may facilitate egress from the tub by grasping the handle.

4,563,784
POWER ACTUATED SEAT-BED ASSEMBLY
Fred J. Shrock, P.O. Box 4022, Elkhart, Ind. 46515, and Harley Berkey, Elkhart, Ind., assignors to Fred Shrock, Elkhart, Ind.
Filed Aug. 17, 1984, Ser. No. 641,728
Int. Cl.⁴ A47C *17/16, 17/17*
U.S. Cl. 5—37 R **4 Claims**



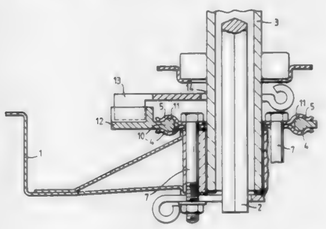
1. In a convertible seat-bed assembly comprising a base frame, a seat support, and a back support, linkage means connected between said frame and seat and back supports for supporting the seat and back supports for movement between a seat position wherein the seat support is generally horizonal and the back support is generally vertical, the improvement comprising motor means associated with said seat support and independent of said linkage means for urging said seat and back support into a selected one of their said seat and bed positions, wherein a threaded sleeve is pivotally connected to a bracket, which in turn is connected to said seat support, and a gear is associated with said bracket and motor means, said gear threaded within said sleeve and constituting means for shifting said seat support into a selected one of its said seat and bed positions, said sleeve pivotal connection constituting means for allowing said seat support to be raised upwardly when in its said seat position from its front towards said back support, said frame including first and second spaced frame end members whereby raising said seat support when in its seat position exposes a space between said frame and members.

4,563,785
CUSHION WITH SIMULATED BUTTON TUFT AND METHOD FOR MANUFACTURING SAME
Samuel Samelson, Goldsboro, N.C., assignor to EX-CELL Home Fashions, New York, N.Y.
Filed Apr. 5, 1985, Ser. No. 620,400
Int. Cl.⁴ A47C *27/14;* **D05C** *15/00*
U.S. Cl. 5—472 **6 Claims**



1. An article such as a cushion comprising a substantially solid compressible body having first and second surfaces, said body being substantially uninterrupted, having no openings therethrough, flexible sheet material situated along said surfaces to cover said body, a plurality of recessed areas spaced across the article, each of said recessed areas comprising a substantially closed stitch pattern defining the boundary of a substantially circular section of the article, each of said patterns comprising a plurality of stitches, said stitches passing through said body and aligned portions of said sheet material and maintaining the portion of said body within said circular section in a substantially compressed state, so as to simulate a tufted button effect.

4,563,786
SPEED EQUALIZING MEANS AND/OR LAUNDRY MACHINES INCORPORATING THE SAME
Robert Brunswick, and Warren J. Hancock, both of Melbourne, Australia, assignors to Fisher & Paykel Limited, Auckland, New Zealand
Filed Feb. 27, 1984, Ser. No. 583,602
Claims priority, application New Zealand, Mar. 28, 1983, 203725
Int. Cl.⁴ D06F *37/40*
U.S. Cl. 8—159 **6 Claims**



1. A method of equalizing the speeds of rotation of two coaxial rotatable members one of which includes a spin tub and the other of which includes an agitator and associated shaft of a laundry machine comprising the steps of:

interconnecting the rotatable members through interconnecting contacting members spaced radially from the axis of said rotatable members;

transmitting the force from at least one of said contacting members to its respective rotatable member through an energy absorbing/gripping means associated with one of said rotatable members and a sliding means associated with the other of said rotatable members, there being a relative resilience and/or compressibility as between said gripping means and said sliding means;

causing said gripping means to grip said sliding means; and

causing one of said means to slide relative to the other of said means in a manner such that energy resulting from the change in relative speeds necessary to achieve speed equalization of said rotatable members is absorbed by the frictional resistance to rotation between said gripping means and said sliding means.

2. Speed equalizing means for use in equalizing the speeds between two coaxial rotatable members one of which includes a spin tub and the other of which includes an agitator of a laundry machine comprising:

interengageable contacting members spaced radially from the axis of rotation of the rotatable members; and

means for attaching said contacting members to respective rotating members;

at least one of said attaching means comprising an energy absorbing device comprising,

a gripping means, and a sliding means slidingly engaged with said gripping means,

one of said gripping means and sliding means being fixedly attached to a respective one of said rotatable members, and the other of said gripping means and sliding means being fixedly attached to one of said contacting members;

so that relative movement between said rotatable members when said contacting members are interengaged is resisted by friction between said gripping means and sliding means which absorb energy resulting from a change in relative speeds between the rotatable members necessary to effect speed equalization of the rotatable members.

4,563,787

PRODUCTION OF INSOLES

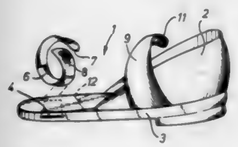
John A. Drew, Barnham, England, assignor to John Drew (London) Limited, Barnham, England

Filed Mar. 2, 1984, Ser. No. 585,551

Claims priority, application United Kingdom, Mar. 8, 1983, 8306294

Int. Cl.[4] A61F *5/14*; A43B *13/38*

U.S. Cl. 12—142 N **3 Claims**



1. A method of producing an insole conforming to a patient's foot comprising the steps of choosing a shoe which fits the foot, providing the shoe with a middle sole unit extending from the heel region to just behind the region of the metatarsal head and being covered by soft expanded plastics, heating at least one blank of thermosoftening expanded plastics for constituting the insole above the softening temperature and inserting it in the shoe, fitting the shoe on the patient's foot, and walking the patient until the insole is below the softening temperature.

4,563,788

TOP DRYING NOZZLE DEVICE FOR VEHICLE WASHING APPARATUS

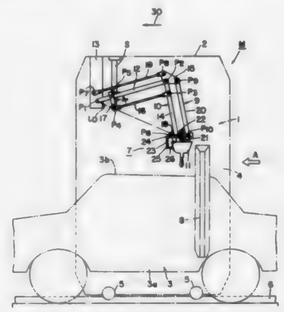
Minoru Kobayashi, 3-1-3-401, Mitsuwadai, Chiba-Shi, Chiba-Ken, Japan

Filed Apr. 9, 1984, Ser. No. 598,455

Claims priority, application Japan, Apr. 8, 1983, 58-51489[U]

Int. Cl.[4] B60S *3/04*

U.S. Cl. 15—312 R **2 Claims**



1. A top drying nozzle device for suspending a top drying nozzle from the top frame of an inverted U-shaped frame member, which frame member is movable forwardly over the body of a vehicle in order to blow off water drops or drips left on the top surface thereof after a water-spray washing operation, and then backward, said nozzle device being suspended so that the top drying nozzle is vertically movable in a position ahead of, in the forward direction of movement of the frame member, a pair of side nozzles provided on the side frames of said U-shaped frame member, said top drying nozzle device comprising:

(1) a top drying nozzle and an air source to which said top drying nozzle is connected;

(2) a link means for supporting the top drying nozzle, said link means comprising:

(a) a first main arm extending substantially horizontally, a supporting plate adapted to be fixed to said frame member, one end of said first main arm being pivotably connected to said supporting plate;

(b) a second main arm extending substantially vertically, the upper end of which is pivotably connected to the other end of the first main arm so as to form an L-shaped link,

(c) a first sub-arm located below and parallel to the first main arm, one end of which is connected to a mid-portion of the second main arm,

(d) a second sub-arm extending parallel to the second main arm, a lower end of which is pivotably connected to the other end of the first sub-arm, and an upper end of which is pivotably connected to a mid-portion of the first main arm,

(e) a first supplementary arm located above and parallel to the first main arm and forming a first parallel link with the first main arm, one end of which first main arm is pivotably connected to said supporting plate,

(f) a second supplementary arm located parallel to the second main arm and forming a second parallel link with the second main arm,

(g) a lower horizontal connecting plate pivotably connecting the lower ends of the second main arm and the second supplementary arm to each other, and

(h) an upper connecting plate on which the other end of said first supplementary arm, the connecting point of the first main arm and the second main arm, and the upper end of the second supplementary arm are connected;

said first and second main arms and said first and second sub-arms forming a pantagraph mechanism for moving the lower horizontal connecting plate vertically; and

(3) a driving means connected to the connecting point of the first and second sub-arms for moving said connecting point vertically,

said top drying nozzle being pivotally supported on said lower horizontal connecting plate so as to swing rearwardly and upwardly relative to the forward direction of movement of said frame member, away from said connecting plate about an axis extending transversely of the direction of movement of said frame member, and an extensible connecting member connected between said top drying nozzle and said lower horizontal connecting plate urging said top drying nozzle to the horizontal position against said connecting plate.

4,563,789

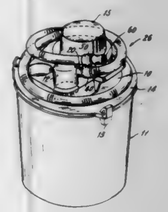
HOSE END HOLDER

Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.

Filed Apr. 19, 1984, Ser. No. 602,174

Int. Cl.[4] A47L *9/00*

U.S. Cl. 15—323 **4 Claims**



1. A hose end holder for holding a hose of a vacuum cleaner coiled upon itself, wherein the hose has a proximal end portion and has a distal end; a nipple; the proximal end portion of the hose being mounted over the nipple and being fitted thereon; a tubular member around the exterior of the proximal end portion of the hose and over the nipple for additionally securing the hose on the nipple; a detent inside the tubular member for engaging the hose inside the the tubular member and for preventing separation of the hose and the tubular member; the tubular member supporting a further hose support which is integral therewith and which is sized and shaped to surround and receive and retain the distal end of the hose, the further hose support having an axis substantially parallel to the axis of the tubular member and the nipple.

4,563,790

HOSE ATTACHMENT STRUCTURE FOR UPRIGHT VACUUM CLEANER

Paul M. Clark, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 18, 1984, Ser. No. 601,542

Int. Cl.[4] A47L *5/32*

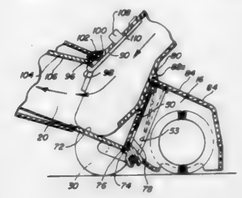
U.S. Cl. 15—337 **20 Claims**

1. In an on-the-floor cleaning suction cleaner of the type having a suction-generating means, a dirt collecting member and a cleaner head hood defining a hose attachment port, a chamber for a rotary agitator and an air passageway for communicating dirt laden air between the chamber and the dirt collecting member, an improved structure for converting the suction cleaner to off-the-floor operation comprising:

a converter connected to a suction hose for insertion into the hose attachment port;

a door pivotally mounted with respect to the cleaner head hood and movable between a first position wherein the door seals the hose attachment port and a second position wherein the door fully blocks air communication between the chamber and the air passageway; and

means on the converter engageable directly against the door for deflecting the door towards the second position as the converter is inserted into the hose attachment port; and



means on the converter directly rigidly engaging the door and bearing the door into the second position to positively retain the door in a blocking position between the chamber and the air passageway,

whereby suction developed by the suction-generating means is realized entirely at the hose attachment port with the door in the second position.

4,563,791

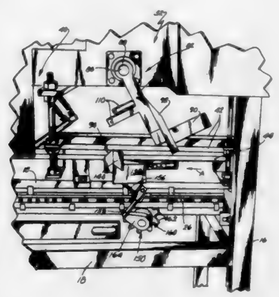
WING CUTTER APPARATUS

Eugene G. Martin, New Holland, and Harold C. Martin, Lancaster, both of Pa., assignors to Favorite Manufacturing, Inc., New Holland, Pa.

Filed Jan. 18, 1984, Ser. No. 572,205

Int. Cl.[4] A22C *21/00*

U.S. Cl. 17—11 **25 Claims**



1. A cut-off apparatus for severing a wing portion from a poultry carcass, said apparatus comprising: a frame; a poultry carcass support on said frame for supporting a carcass in a generally horizontal plane; a wing positioning means on said frame and adjacent said support for locking the wing in position to be severed, said wing positioning means including a wing stop; a wing holding means supported on said frame above said wing positioning means for engaging the wing portion and holding the wing portion against said positioning means; a knife on said frame for severing the wing portion from the carcass; a knife drive means connected to said knife for moving said knife to sever the wing portion after said wing holding means is engaging said wing portion and; wing positioning drive means operatively engaging said wing positioning means for moving said wing positioning means between an operative position and an inoperative position.

4,563,792

PROCESS OF MANUFACTURING TUBULAR WRAPPERS FROM A CONTINUOUS WEB OF PLASTIC MATERIAL SHEETING

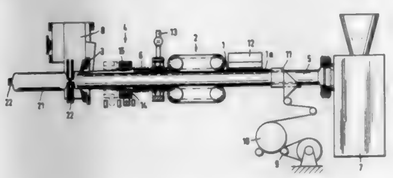
Herbert Niedecker, Am Ellerhang 6, D 6240 Königstein 2, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,755

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236553

Int. Cl.⁴ A22C *11/02*

U.S. Cl. 17—33 **2 Claims**



1. In an apparatus for making sausages comprising means for supplying a continuous web of plastic sheet to a filling tube and for forming said sheet into a continuous tubular wrapper before it leaves the filling tube, means for discharging sausage meat through the tube and into the tubular wrapper and for closing the filled wrapper at spaced locations to form sausages, the improvement which comprises means for sensing the amount of unfilled tubular wrapper on the filling tube and controlling the supplying and forming means and the discharging and closing means in response thereto, wherein the sensing means includes a stop in contact with the continuous tubular wrapper, means mounting the stop for longitudinal displacement downstream along the filling tube in response to a continuing supply of tubular wrapper, means urging the stop upstream, and switches located longitudinally along the filling tube and actuatable by the stop, wherein the switches are operatively connected with the discharging and closing means, and the supplying and forming means whereby the amount of unfilled tubular wrapper upstream of the stop determines the temporary position of the stop which in turn controls the activation of the supply of tubular wrapper.

4,563,793

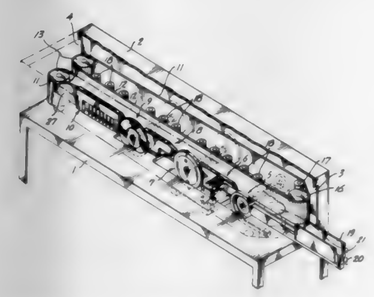
FRESH SALMON-CLEANING MACHINE

Robert M. Ryan, 312 NW. 40th St., Seattle, Wash. 98107

Continuation of Ser. No. 347,840, Feb. 11, 1982, abandoned. This application Oct. 23, 1984, Ser. No. 663,873

Int. Cl.⁴ A22C *25/14*

U.S. Cl. 17—58 **13 Claims**



1. In a machine for cleaning beheaded fish including fish-cleaning apparatus having arranged sequentially a rotating slitter disc for slitting open the belly of the fish, and an eviscerating gutter for eviscerating the fish, a rotating blooder disc for cutting open the kidney membrane, and belly cavity scouring means to clean the belly cavity; and elongated transport means having two conjointly moving endless belts with adjacent substantially horizontal stretches disposed in substantially parallel vertical planes spaced apart to hold a fish therebetween and move it through the fish-cleaning apparatus beheaded and first in belly down attitude; the improvement comprising:

a slitter disc guard overlying the slitter disc and having a portion extending generally tangentially beyond the slitter disc and in the path of the portion of the belly cavity below the viscera for protrusion into the belly cavity along the belly wall before the belly wall of the fish is engaged by the slitter disc, thereby holding the belly wall for engagement by the slitter disc, said guard being engageable by the tail end of the belly cavity adjacent to the vent of the fish to lift the tail portion of the fish by riding up on said guard to prevent the slitter disc from cutting the bottom portion of the fish tailward of the belly cavity;

a projection projecting from the gutter toward the slitter disc for penetration into the upper portion of the belly cavity adjacent the backbone for scooping the viscera out of the cavity;

said blooder disc being positioned to engage the belly cavity of the fish and having a cross-sectional profile adapted for supporting the side and upper walls of the belly cavity; and

a blade carried by the blooder disc and having a sharp edge portion projecting beyond the periphery of the disc for cutting open the kidney membrane in the upper portion of the fish cavity supported by said rotating disc.

4,563,794

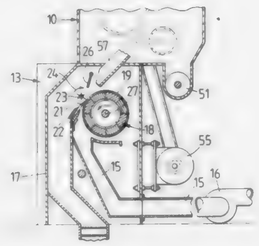
SELF-CLEANING ROLLER GIN

William D. Beeland, Columbus, Ga., assignor to Lummus Industries, Inc., Columbus, Ga.

Filed Jun. 7, 1984, Ser. No. 618,234

Int. Cl.⁴ D01B *1/06*

U.S. Cl. 19—48 R **3 Claims**



1. In a roller gin of the kind having a motor operated ginning roll and a knife cooperable therewith to remove lint from seed cotton, electromechanical means to reverse the direction of rotation of the roll, thereby to remove from the knife at least some of the lint, trash or the like which accumulates on the knife during ginning, said electromechanical means comprising:

(a) resetable timer means for initiating removal of said lint, trash or the like at predetermined intervals;

(b) delay means operably connected to said resetable timer means and responsive thereto for deenergizing said motor at a predetermined time;

(c) a time delay relay responsive to said delay means operably connected to said motor for energizing said motor for rotation in a reverse direction for a predetermined period; and

(d) means responsive to said time delay relay for resetting said resetable timer means.

4,563,795

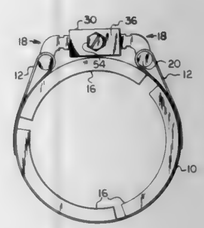
CONDUIT CLAMP

Paul J. E. Fournier, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Oct. 19, 1984, Ser. No. 662,612

Int. Cl.⁴ B65D *63/00*

U.S. Cl. 24—19 **5 Claims**



1. A circumferential conduit clamp operable by an actuator rotatable about an axis substantially parallel to the longitudinal axis of the conduit being clamped and characterized by its high strength and heavy duty construction comprising, in combination, a generally circular flexible tension band defining a central longitudinal axis and having ends, a rigid band anchor attached to each band end, said anchors being disposed adjacent to and displaceable toward each other, each anchor including a band attachment end attached to a band end and an outer end, said anchor outer ends each comprising an enlarged head having a radially inwardly facing side and a radially outwardly facing side, a radially extending first cam surface defined upon each head side, said cam surfaces being radially aligned and obliquely disposed to the length of said band axis, a U-shaped bracket having a base and parallel spaced legs extending from said base, said anchor heads being movably located between said bracket legs, a rigid slide receivable between said bracket legs, second cam surfaces defined upon said slide adjacent with an engaging said first cam surfaces, and a slide actuator mounted upon said bracket selectively translating said slide within said bracket to move said second cam surfaces across said first cam surfaces to draw said band anchors toward each other and contract said band.

4,563,796

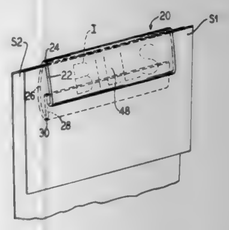
RETAINER WITH COACTING LEGS

John S. Kettlestrings, 2235 Stonegate La., Wheaton, Ill. 60187, assignor to John S. Kettlestrings, Wheaton, Ill. and A. Edward Maass, Minneapolis, Minn.

Filed Nov. 14, 1983, Ser. No. 551,039

Int. Cl.⁴ F04B *10/00*

U.S. Cl. 24—563 **9 Claims**



1. A retainer for use in holding sheets of material comprising:

a retainer body fabricated of a resilient memory-type material having,

a back portion,

a first leg portion connected by a bight to one edge of said back portion,

a second leg portion connected by a bight to an opposite edge of said back portion,

said first leg formed at a small acute angle to said back portion and having a length less than the distance between said two edges,

said second leg formed at an acute angle to said back portion greater than said small acute angle and having a length less than the distance between said two edges,

first and second legs projecting above the same face of said back and the combined length of said legs being greater than the distance between said two edges,

said second leg being manipulated to be tucked under said first leg such that said first leg is biased inwardly toward said second leg and second leg is biased outwardly toward said first leg,

said first leg having an inwardly projecting lip extending the width of the leg along the end thereof which engages the second leg, and

said second leg having an end engagable with said first leg at a point spaced from said lip

whereby, gripping action is provided between said first and second legs at two separate places.

4,563,797

SAFETY BELT BUCKLE

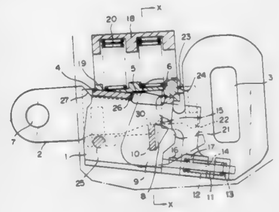
Osamu Kawai, Fujisawa, Japan, assignor to NSK-Warner K. K., Tokyo, Japan

Filed Nov. 2, 1984, Ser. No. 667,849

Claims priority, application Japan, Nov. 9, 1983, 58-172361[U]

Int. Cl.⁴ A44B *11/25*

U.S. Cl. 24—641 **9 Claims**



1. A safety belt buckle comprising a tang having a protrusion thereon at one side thereof, a base into which said tang is inserted, said base having a cut-away in a wall portion thereof that receives said protrusion of said tang, a lever member pivotally mounted on the base, said lever member being capable of assuming a latched position at which said lever member is oriented substantially perpendicular to the insertion direction of said tang into said base and engages a side of said tang opposite to the first-mentioned side to prevent movement of said protrusion out of said cut-away in a direction substantially perpendicular to the tang insertion direction, and a non-latched position in which said lever member is oriented in a direction different from its orientation in the latched position so as to permit movement of the protrusion out of said cut-away in a direction substantially perpendicular to the direction of tang insertion, holding means for holding said lever member in said latched position, operating means for moving said holding means to release said lever member from said latched position and for moving said lever member from said latched position to said non-latched position, and push-out means responsive to the movement of said lever member from said latched position to said non-latched position for pushing said protrusion of said tang out of said cut-away.

4,563,798

CORDUROY CUTTING MACHINE

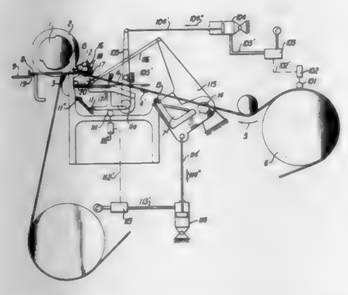
Albert Vroomen, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Franz Müller GmbH & Co., Monchen-Gladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 451,890, Dec. 21, 1982, abandoned. This application Feb. 19, 1985, Ser. No. 702,812

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3150734

Int. Cl.⁴ D06C *13/08*

U.S. Cl. 26—10 C **2 Claims**



1. Corduroy cutting machine, comprising means for moving a fabric web in a given travel direction, a shaft, a plurality of circular knives disposed adjacent each other on said shaft for cutting open floating wefts of the fabric web being movable along said given travel direction, a plurality of needles being normally novable in a given working area, said needles having points and having longitudinal slots formed therein for receiving portions of said knives at a cutting edge, means for inserting said needles into the floating wefts to be cut open in a direction opposite said given travel direction, upper and lower contact strips being respectively disposed above and below said needle points, means responsive to contact between at least one of said needles and at least one of said contact strips for stopping the cutting machine, said needles and said lower contact strips defining a working plane onto which the fabric is guidable from below over said lower contact strip to said cutting edge, means for lowering said lower contact strip from said working plane, a rear table supporting the fabric web in said working plan upstream of said contact strips as seen in said given travel direction, means for lowering said rear table with the fabric web from said working plane upon actuation of the stop motion, a needle supporting table being movable along said working plane, a collecting rail being associated with said upper contact strip for prohibiting an advance of said needles from the cut fabric web substantially beyond said given working area of said needle movement and means for moving said needle supporting table below said needles when said rear table is lowered and said collecting rail prohibits the advance of said needles.

4,563,799

AIR JET NOZZLE FOR TREATMENT OF YARNS

Peter Dammann, Remscheid, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Oct. 7, 1983, Ser. No. 539,929

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237273; Jun. 3, 1983, 3320180

Int. Cl.⁴ D02G *1/16*

U.S. Cl. 28—272 **16 Claims**

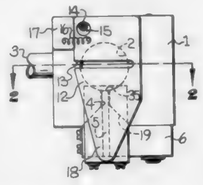
6. An air jet nozzle adapted for the entanglement of a running multifilament yarn and the like, and comprising

a body member,

a cylindrical yarn passageway extending through said body member and defining an inner cylindrical wall,

an air inlet channel formed in said body member and radially communicating with said yarn passageway,

a yarn guide plate mounted to said body member at at least one end of said yarn passageway, with such guide plate transversely overlying the associated end of said yarn passageway and including an elongate slot which is aligned with the passageway so that the axis of the passageway passes therethrough, and with said slot extending



in a direction parallel to the direction of said air inlet channel, and

means mounting said yarn guide plate to said body member so as to permit adjustment in a direction perpendicular to the direction of said slot in such guide plate, said mounting means including means permitting pivotal movement of said guide plate about an axis parallel to the axis of said yarn passageway so as to permit such guide plate to be selectively withdrawn from its position overlying the associated end of said yarn passageway.

4,563,800

ELECTRODE TOOL STORAGE MAGAZINE

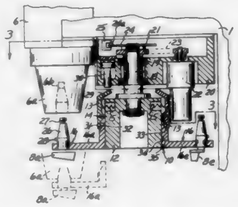
Benno I. Bonga, Crans, Switzerland, assignor to Ateliere des Charmilles, S.A., Geneva, Switzerland

Filed Aug. 3, 1983, Ser. No. 519,834

Claims priority, application Switzerland, Aug. 6, 1982, 4741/82

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—26 A **4 Claims**



1. In an EDM apparatus for effecting a machining operation on a workpiece, said EDM apparatus being provided with an automatic tool changer, said tool changer comprising a rotatable and indexable turret for supporting a plurality of electrode tools, and said EDM apparatus having a reciprocable machining head having a tool holder mounted on the end thereof, the improvement comprising a support member permanently attached to each of said electrode tools, said tool support member having a portion adapted to be removably attached to said turret, means for removably attaching said tool support member to said turret and for individually holding each said tool support member on said turret, said turret having a mounting surface for said tool support member portion, said mounting surface being located outside of the space occupied by said tool support member during reciprocation of said machining head with said electrode tool and tool support member attached to said tool holder, wherein said attaching and holding means comprise a clamping lever for each said tool support member, said clamping lever having pawl means co-operating with engaging means disposed on said tool support member portion for attaching said tool support member portion to said turret mounting surface during a retraction of said machining head from the workpiece causing engagement of said tool support member portion under said pawl means.

4,563,801

METHOD OF REINFORCING THE EDGES OF IMPELLER VANES OR THE LIKE

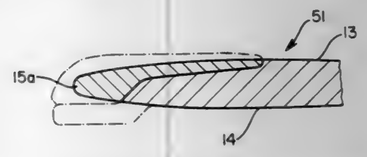
Jürgen Schill, Weisenheim; Werner Rupp, Frankenthal; Werner Schaff, Frankenthal/Flomersheim, and Jörg Urban, Ludwigshafen, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Continuation of Ser. No. 529,555, Sep. 6, 1983, abandoned. This application Jun. 27, 1985, Ser. No. 750,044

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235310

Int. Cl.⁴ B21K *3/04;* **B23P** *15/02, 15/04*

U.S. Cl. 29—156.8 B **6 Claims**



1. A method for reinforcing a metallic blank having a first side, a second side and an edge therebetween, particularly a blank which is to constitute or is to be converted into a vane of a centrifugal pump or like fluid machine wherein one side is to be a suction side and the other side a pressure side, said method comprising the steps of

(a) forming one of said sides of the blank with a pair of neighboring recesses, one of which is deeper than the other and immediately adjacent the edge of the blank;

(b) filling both recesses with an armoring material, said filling step including fusing the armoring material to the material of the blank; and,

(c) removing at least a substantial portion of the blank defining the deeper recess, as well as removing some of the armoring material, so that the blank is provided with a fresh edge which is defined solely by the armoring material.

4,563,802

METHOD AND APPARATUS FOR THE PRODUCTION OF EXHAUST PIPES FOR AUTOMOTIVE VEHICLES

Hubertus Benteler, Bielefeld, and Egon Olszewski, Paderborn-Elsen, both of Fed. Rep. of Germany, assignors to Benteler-Werke AG, Paderborn, Fed. Rep. of Germany

Filed May 6, 1980, Ser. No. 147,255

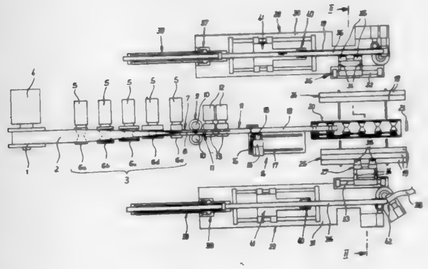
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928120

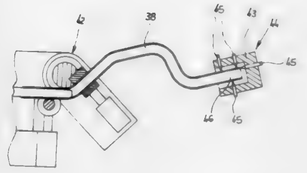
Int. Cl.⁴ B23K *31/06;* **B21D** *7/024*

U.S. Cl. 29—157 R **4 Claims**

1. A method for the continuous production of exhaust pipes for automotive vehicles comprising the steps of bending and welding a continuous metal strip to an endless pipe strand while continuously moving the strand in axial direction with a predetermined speed; straightening the strand; stepwise severing said pipe strand into pipe sections of predetermined length while the strand continuously moves at said predetermined speed; and thereafter alternatingly transferring the cut pipe sections into two bending apparatus for bending the pipe sections into exhaust pipes with predetermined bends, and wherein the two bending apparatus are respectively located to opposite sides of a path along which the cut pipe sections are moved, bending said pipe sections into predetermined bends having exhaust pipe configurations; and further including the step of gauging one end of the bent pipe section while still held by the bending apparatus by moving a gauging head provided with feeler means over said one end to indicate that the pipe dimensions are within predetermined tolerances.

2. In an apparatus for the continuous production of exhaust pipes for automotive vehicles, a combination, comprising means for continuously moving an elongated metal strip with a predetermined speed along a predetermined path extending in the longitudinal direction of the strip; forming and welding means along said path for continuously forming and welding said strip during the movement thereof with said predetermined speed, depending on the maximum obtainable welding speed, into a continuous pipe strand; severing means downstream of said forming and welding means for cutting said pipe strand into sections of predetermined length during continuous





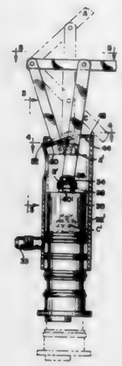
advance of said pipe strand; two bending means including an elongated mandrel for bending the successively produced pipe sections into exhaust pipes, said two bending means being arranged to opposite sides of said path and including transfer means for alternatingly transferring successive pipe sections respectively to the two bending means; control means coordinated with the bending means for gauging the dimensions at the free end of a finished tube section while the latter is still held by said bending means, said control means including a gauging head provided with a plurality of feelers adjusted to the desired dimension at the end of the bent tube section, means for moving said gauging head between a first position in which said gauging head receives said end of said bent tube section and a second position distant from said end, guide means for guiding said moving means along a rectilinear path, and means for adjusting the position of the guide means about two axes normal to each other and for arresting said guide means in any adjusted position.

4,563,803

VALVE REMOVING TOOL

John Dimoff, 7723 Ridgewood La., Burr Ridge, Ill. 60525

Filed Apr. 22, 1983, Ser. No. 487,506
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—213 R **3 Claims**



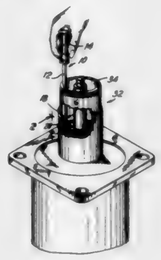
1. A tool for removing an article defining a projection from a hollow casing comprising an elongate handle having a distal end and a proximate end; a fulcrum member having a first end and a second end; means rotatably connecting the distal end of said handle to the first end of said fulcrum member; a lever arm having a first end and a second end; means rotatably connecting the first end of said lever arm to an intermediate portion of said handle; means secured to the second end of said lever arm for engaging the upper end of the article within the casing comprising a member having at its upper end a cut-away section for receiving the second end of said lever arm and a recess at its lower end for receiving said projection; a bar connected to the second end of said fulcrum member and removably connectable to said casing, said bar defining an opening through which the lever arm can pass to interconnect the handle to the article in said casing, whereby as the handle is moved downwardly the article is moved relative to said casing.

4,563,804

AIR CONDITIONING COMPRESSOR RETAINING RING REMOVER TOOL

Thomas W. Alesi, New Fairfield, Conn., assignor to Draf Industries, Inc., Bedford Hills, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,409
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—229 **8 Claims**



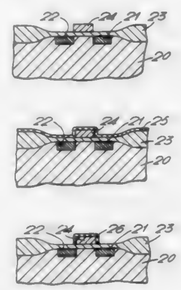
1. A tool for removing a C-ring formed with a hole in at least one end thereof, comprising a shaft, handle means attached to said shaft for aiding in the displacement thereof and a pin dimensioned for receipt within said C-ring hole and projecting from an end of said shaft from a position spaced from the axis of said shaft, said pin being angled relative to said axis, whereby said pin is adapted to engage said C-ring hole for removal of the C-ring, said shaft being formed with a groove extending about the circumference of the shaft in the surface thereof extending in a plane which extends substantially normally to the axis of said shaft, said groove being positioned in a region adjacent to the end of said shaft supporting said pin, whereby said groove is adapted to engage the inner edge of said C-ring as a secondary removal means following the use of said pin.

4,563,805

MANUFACTURE OF MOSFET WITH METAL SILICIDE CONTACT

Peter D. Scovell, Chelmsford; Paul J. Rosser, and Gary J. Tomkins, both of Harlow, all of United Kingdom, assignors to Standard Telephones and Cables, PLC, London, England

Continuation of Ser. No. 587,466, Mar. 8, 1984, abandoned. This application Jun. 24, 1985, Ser. No. 748,135
Int. Cl.⁴ H01L *21/385, 21/443*
U.S. Cl. 29—571 **4 Claims**



1. In a method of manufacturing an MOS semiconductor device which includes the two steps of providing a polysilicon gate element by etching a polysilicon layer disposed on an oxide layer which is itself disposed on a silicon substrate and of subsequently oxidizing the thus processed silicon substrate, said source and drain regions being disposed under said oxide layer and aligned with said gate element, the improvement consisting of performing the following additional steps between the above said two steps, said additional steps consisting of depositing a metal layer to extend over the entire exposed surface of the polysilicon gate element including side wall portions thereof and over the portions of the oxide layer exposed by said polysilicon etching step, performing an annealing step in which the metal and the polysilicon are caused to interdiffuse over said entire polysilicon gate element surface whereby to form a metallic silicide layer which extends up to said oxide layer at least at said side wall portions, and removing by etching the unreacted metal on the oxide layer.

4,563,806

METHOD FOR THE MANUFACTURE OF A DISPLAY SCREEN BASED ON THIN-FILM TRANSISTORS AND CAPACITORS

Pierre Coissard, 31 residence Corlay; Joseph Richard, 33 Lotissement Keranroux, and Francois Morin, le Carpont-Lanmerin, all of 22300 Lannion, France

PCT No. PCT/FR83/00177, § 371 Date May 7, 1984, § 102(e) Date May 7, 1984, PCT Pub. No. WO84/01239, PCT Pub. Date Mar. 29, 1984
PCT Filed Sep. 12, 1983, Ser. No. 610,490
Claims priority, application France, Sep. 14, 1982, 82 15499
Int. Cl.⁴ H01L *21/203*
U.S. Cl. 29—571 **2 Claims**



1. Method for the manufacture of an active matrix display screen formed from points constituted in each case by a thin file transistor and a capacitor, said method comprising the formation of a lower wall (**10**) carrying the first plates of the capacitors and thin-film transistors and an upper wall (**24**) covered with a counter-electrode (**26**) forming the second plates of the capacitors, characterized in that for forming the lower wall, the following operations are used:

deposition of a layer (**102**) of a first transparent, conductive material on an insulating substrate (**100**),

first photogravure applied to this first layer to constitute the rows and columns of blocks (**106**) forming one of the plates of the future capacitors, each block being connected to a projection (**108**), said first photogravure also leaving columns (**104**) of the first conductive material, said columns being positioned between the block columns,

deposition of a hydrogenated, amorphous silicon layer (**11**) on the entity,

deposition of an insulating layer (**112**),

deposition of a layer (**114**) of a second conductive material, and

second photogravure applied to the silicon layer - insulating layer - conductive layer assembly, said second photogravure leaving behind the rows (**116**) of the second conductive material, said rows passing above the projections (**108**), the overlap areas of a row (**116**) with a column (**104**) and a projection (**108**) defining the source and drain of a transistor, the grid of said transistor being constituted by that part of the row (**116**) located between the projection (**108**) and the column (**104**).

4,563,807

METHOD FOR MAKING SEMICONDUCTOR DEVICE UTILIZING MOLECULAR BEAM EPITAXY TO FORM THE EMITTER LAYERS

Hiroyuki Sakai, Moriguchi; Toyoki Takemoto, Yawata; Kenji Kawakita; Tsutomu Fujita, both of Hirakata, and Atsuko Akiyama, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 4, 1984, Ser. No. 596,592
Claims priority, application Japan, Apr. 6, 1983, 58-60145
Int. Cl.⁴ H01L *21/225, 21/285*
U.S. Cl. 29—591 **12 Claims**

1. Method for making a semiconductor device comprising at least the steps of;

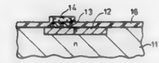
forming a first emitter layer of single-crystalline semiconductor;

forming a second emitter layer of polycrystalline or amorphous semiconductor on said first layer, said first and second emitter layers being continuously formed by means of molecular beam epitaxy without forming an oxide film therebetween;

forming an anti-oxidation layer on said second emitter layer;

forming a pattern by etching said first and second emitter layers; and





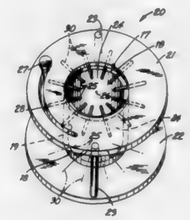
forming an oxide layer for at least surrounding side portions of said first and second emitter layers by use of said anti-oxidation layer as a mask.

4,563,808

METHODS OF PRODUCING SLOTLESS AND TOOTHLESS WOUND STATOR

Robert J. Lender, Weston, Conn., assignor to Edo Corporation, College Point, N.Y.

Filed Jul. 20, 1984, Ser. No. 632,667
Int. Cl.⁴ H02K *15/02*
U.S. Cl. 29—596 **11 Claims**



1. A method of producing a slotless and toothless wound stator for an electrical machine, comprising providing an iron stator cylinder having a smooth circumferential inner wall without slots or teeth between opposite ends of the stator cylinder, positioning temporary teeth solely at and about the circumference of opposite ends of the stator cylinder and extending inwardly toward the axis of the cylinder, positioning an electrical winding without supporting form upon the smooth inner cylinder wall and between and about the inwardly extending temporary teeth at the opposite ends of the cylinder, inserting an expandable retaining means into the stator cylinder central opening from one end thereof, expanding the retaining means within the stator cylinder to press the electrical windings against the smooth inner wall of the stator cylinder, and removing the temporary teeth to leave a slotless and toothless wound stator from end to end.

4,563,809

FUSE WITH CENTERED FUSE FILAMENT AND METHOD OF MAKING THE SAME

Conrad M. Reeder, Prospect Heights, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Dec. 9, 1982, Ser. No. 448,313
Int. Cl.⁴ H01H *69/02*
U.S. Cl. 29—623 **4 Claims**



1. A method for manufacturing electrical cartridge fuses having an insulating housing with a linear passageway therethrough for accommodating an axially disposed fuse filament therein, and end walls on the housing having centered holes therein through which said fuse filament extends, said method comprising:

providing a pair of solid resilient members configured to fit into said housing passageway;

securing said members within opposite end portions of said housing passageway;

providing a length of a fuse filament greater than the length of said housing;

passing the piercing front end of a needle completely through and beyond the housing so it passes through said end wall holes and pierces said resilient members; and

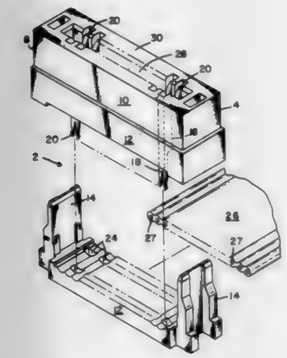
causing said fuse filament to traverse the path through said fuse formed by the needle and removing the needle from the housing so that the fuse filament extends through and beyond the ends of the fuse, said pair of resilient members collapsing around and resiliently capture portions of said fuse filament and hold the same taut and centered in said housing.

4,563,810

ELECTRICAL CONNECTOR TRANSFER NEST

Daniel T. Adlon, Swatara; Edward A. Bianchi, Hummelstown; Neil F. College, Elizabethtown, and George D. Reuss, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 25, 1985, Ser. No. 704,837
Int. Cl.⁴ H01R *43/04*
U.S. Cl. 29—749 **17 Claims**



1. A transfer nest for an electrical connector having electrical terminals with conductor receiving portions projecting from a face of the connector, the nest comprising:

a frame adapted for attachment to connector transfer means for transport thereby;

a connector support and a counter-abutment mounted for relative movement towards and away from one another in the frame;

return means urging the connector support and the counter-abutment relatively away from one another;

means for retaining the connector between the connector support and the counter-abutment with said face directed towards the latter;

means on the transfer nest for guiding a multi-conductor flat cable into a position parallel with said face and between said face and the counter-abutment;

means on the counter-abutment for stuffing the conductors of said cable into said wire receiving portions as a result of relative movement towards one another of the connector support and the counter-abutment; and

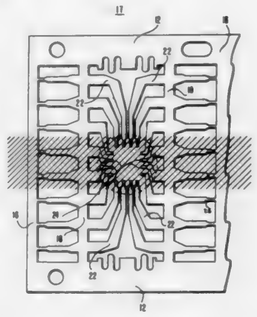
means for releasing the connector from the nest and upon subsequent relative movement of the connector support and the counter-abutment away from one another under the action of the return means.

4,563,811

METHOD OF MAKING A DUAL-IN-LINE PACKAGE

Benjamin H. Cranston, Hopewell Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Oct. 28, 1983, Ser. No. 546,714
Int. Cl.⁴ H01R *43/00*
U.S. Cl. 29—827 **3 Claims**



1. A method for fabricating a dual-in-line package having internal leads thermocompression bonded to a ceramic substrate and external leads depending from a body portion molded about the ceramic substrate, the method comprising the steps of:

indexing an elongated, hard metal strip, having a soft metal stripe through the central portion thereof, through a punching apparatus;

punching the strip to form a pattern of internal and external leads wherein the internal leads are formed of the soft metal and the external leads are formed of hard metal; and

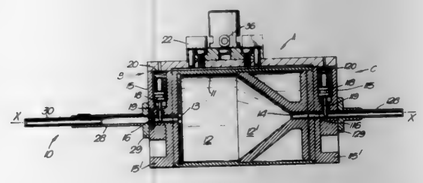
thermocompressively bonding the soft internal leads to a metallized ceramic substrate.

4,563,812

FILAMENT LAYING APPARATUS AND A METHOD OF FABRICATING A HARNESS

Mark Goddard-Watts, Basingstoke, England, assignor to British Aerospace Public Limited Co., London, England

Filed Feb. 14, 1984, Ser. No. 580,140
Claims priority, application United Kingdom, Feb. 15, 1983, 8304103
Int. Cl.⁴ H01R *43/00*; B23P *19/00*
U.S. Cl. 29—857 **13 Claims**



1. In filament laying apparatus including arm means movable in accordance with a predetermined programme of commands to move along a selected path, a filament laying tool including attachment means for attachment to said arm means, a main body portion having a generally closed internal storage chamber and an inlet and an outlet disposed in opposed end regions of said storage chamber for filament to pass into and out of said chamber, hollow elongate probe means attached to said main body portion adjacent said outlet and in communication therewith, stop means operatively associated with said probe means and actuable to prevent the passage of filament therethrough, the storage chamber being shaped such that filament having entered said storage chamber via said inlet is caused to pass through said probe means via said outlet and that on actuation of said stop means, further filament entering into said chamber is caused to accumulate therein in compact condition.

9. A method of fabricating a filament harness comprising the steps of:

(i) selecting a filament laying tool having a main body portion having a generally closed internal storage chamber and an inlet and an outlet disposed in opposed end regions of said chamber for filament to pass into and out of said chamber, hollow elongate probe means attached to said main body portion adjacent said outlet and in communication therewith, and stop means associated with said elongate probe means and operable to prevent the passage of filament therethrough,

(ii) initially feeding a free end portion of a predetermined length of filament via said inlet port to pass into said storage chamber and thence to protrude from the free end of said hollow elongate probe means,

(iii) actuating said stop means to prevent further movement of said filament through said hollow elongate probe means while continuing to feed filament into said chamber via said inlet to be stored therein in compact form,

(iv) moving said tool to a position adjacent a first station,

(v) attaching the free end protruding from said hollow elongate probe means to a predetermined attachment point,

(vi) moving said tool along a predetermined path to a position adjacent a second station, and

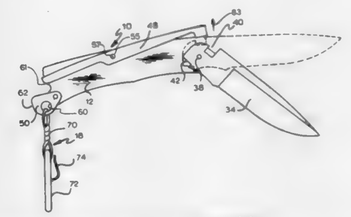
(vii) releasing the other free end of the filament adjacent a further attachment point.

4,563,813

CAM LOCK KNIFE STRUCTURE

Charles K. Fortenberry, Barlow Lake, Box 102, Woodville, Tex. 75979

Filed Apr. 9, 1984, Ser. No. 597,913
Int. Cl.⁴ B26B *1/04*
U.S. Cl. 30—161 **1 Claim**



1. A cam lock knife structure, comprising:

(a) a main handle assembly;

(b) a knife blade assembly pivotally mounted to one end of said main handle assembly and movable from a folded, storage position to an open, usage position;

(c) a cam lock assembly including an actuator lever member pivotally connected to said main handle assembly and a cam assembly pivotally mounted at another end of said main handle assembly;

(d) said actuator lever member having a cam blade section engagable with a portion of said knife blade assembly in both the folded and open positions and a cam section engagable with said cam assembly to rigidly anchor said knife blade assembly both in the folded and open positions against movement;

(e) said cam blade section of V-shape in transverse crosssection adapted to contact a similarly shaped but reverse portion of an open cam lock section of said knife blade assembly so as to hold same rigidly in the open/usage position;

(f) a convey and actuator assembly attached to said cam lock assembly operable to aid in movement of said cam lock assembly from the closed actuated position to an open released position;

(g) said convey and actuator assembly is attached to a portion of said cam assembly so as to aid in the movement thereof from a latched and unlatched position;

(h) said convey and actuator assembly includes a strap member which is secured to said cam assembly and a conveyance member;

(i) said conveyance member having a hook section which is engagable with a porion of one's pocket or belt structure; and

(j) said conveyance member including a cutter section which is operable for slicing thin material such as a person's clothing for removing same during an emergency.

4,563,814

DISPOSABLE CLIPPER HEAD

John Trichell, 301 A East Dr., and Ronald M. Wheeler, 2606 Drummond St., both of Vicksburg, Miss. 39180

Filed Jan. 11, 1984, Ser. No. 569,961
Int. Cl.⁴ B26B *19/06*
U.S. Cl. 30—225 **7 Claims**

1. A disposable two piece clipping head adapted for attachment to an electric clipper for clipping hair,

(a) one of said two pieces comprising a fixed member formed of synthetic plastic material, including

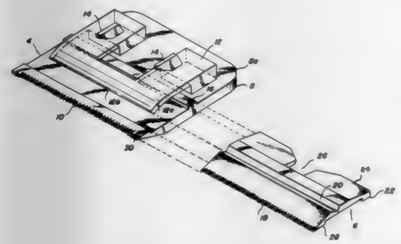
(1) a generally rectangular, planar base portion having one toothed edge;

(2) a spring portion integrally connected with and extending from an upper planar surface of said base portion, said spring portion extending forwardly and being

spaced from and parallel with said surface and terminating at a forward edge spaced rearwardly from said toothed edge; and

(3) lug means integrally connected with and extending from an upper surface of said spring portion, said lug means being adapted for interlocking attachment to the electric clipper; and

(b) the other of said two pieces comprising a movable member formed of synthetic plastic material and arranged between said fixed member base portion and said spring portion, said movable member having a generally rectangular planar configuration and one toothed edge arranged adjacent said fixed member toothed edge, the upper surface of said movable member containing a groove spaced from and parallel with said movable member toothed edge, said groove being adapted to receive said forward edge of said fixed member spring portion, whereby said spring portion retains and guides said movable member relative to said fixed member when said fixed member is attached to an electric clipper and said movable member is driven by the clipper for reciprocal movement to clip strands of hair between said adjacent toothed edges.



4,563,815

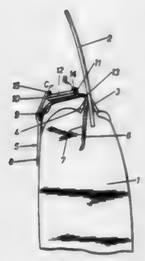
DEVICE FOR CUTTING THROUGH AUTOMOBILE BELTS WITH A KNIFE

Volkwin Hoffelner, Hötzendorfergasse 10A, A-3423 St.Andrä-Wördern, Austria

Filed Jul. 20, 1984, Ser. No. 632,888

Int. Cl.[4] B26B *29/02*; B60R *7/08*

U.S. Cl. 30—296 A **8 Claims**



1. A device for cutting through automobile safety belts with a knife, said device comprising:

a holder including a pair of spaced flanges to engage a portion of a vehicle door between a window and an inner door surface, a web extending between said flanges, a pair of spaced, upwardly protruding lugs extending from said holder and terminating in inwardly facing, spaced end portions to define with said web a knife-receiving opening;

a substantially planar knife adapted to be slidably received in said knife-receiving opening, said knife including a handle having a side wall and a slot positioned obliquely relative to said side wall and having an opening to receive an automobile safety belt, said slot including a knife edge positioned at an inner portion thereof to permit the cutting of an automobile safety belt, said knife edge being removable from said holder.

4,563,816

CUTLERY

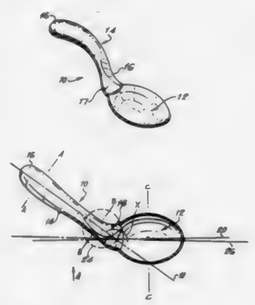
Vivienne D. Jagger, West Perth, Australia, assignor to Little People Limited, Hong Kong

Filed Jun. 30, 1983, Ser. No. 509,358

Claims priority, application United Kingdom, Jul. 5, 1982, 8219408

Int. Cl.[4] B25G *1/00*; A47J *43/28*

U.S. Cl. 30—343 **14 Claims**



1. A piece of cutlery comprising

a handle having a front end and a remote end, said handle defining a longitudinal axis positioned in a vertical plane when said cutlery piece is viewed in top plan view, said remote end being of a generally round barrel-shaped configuration for easy grasping by the four fingers of a user's hand when said handle is to be held in fist like fashion by the user,

an operative portion joined to said handle's front end, said operative portion defining a longitudinal axis also positioned in a vertical plane when said cutlery piece is viewed in top plan view said handle's longitudinal axis and said operative portion's longitudinal axis being angled to form an obtuse angle therebetween when said cutlery piece is viewed in top plan view, and

a relatively flattened area defined on said handle's surface adjacent to the joint between said operative portion and said handle's front end, said flattened surface being sized to accommodate, and to locate on said handle, the ball of a user's thumb when the four fingers of the user's hand grasp said handle's remote end in fist like fashion, and said flattened surface being angled downwardly from the top surface of said handle toward a horizontal plane that includes said operative portion's longitudinal axis, and said flattened surface being angled inwardly toward the interior of said obtuse angle, relative to that vertical plane that includes said handle's longitudinal axis as is apparent when said handle's flattened surface is viewed in cross section view or in top plan view,

the orientation and location of said flattened surface for a user's thumb cooperating with said handle's remote end to permit a user of relatively young age to grip said cutlery piece, and to control said cutlery piece, so that when said cutlery piece is held by said relatively young user said operative portion can be moved during normal usage of said cutlery piece by said user between the user's food dish and the user's mouth simply by raising the user's arm.

4,563,817

CHAIN SAW SLACK ADJUSTER

Dawson N. Leighton, Rte. 3, Box 332, Dover, Fla. 33527

Filed Jul. 7, 1983, Ser. No. 512,106

Int. Cl.[4] B27B *17/02, 17/14*

U.S. Cl. 30—386 **7 Claims**



6. A chain saw including a chain saw bar mounting flange having a pair of threaded shank means projecting outwardly from one side thereof, an elongated chain saw bar including a base end provided with at least one elongated longitudinal slot and overlying said one side of said mounting flange with said shank means slidably received through said slot, clamp plate structure overlying the side of said base end remote from said mounting flange and having openings formed therein through which said shank means are received, threaded nut means engaged with said shank means for clamping said base end between said clamp plate structure and mounting flange, the opposing sides of said clamp plate structure and base end including coacting ratchet and pawl means preventing longitudinal displacement of said chain bar relative to said mounting flange in a direction in which said base end faces and allowing longitudinal, displacement of said saw bar in the opposite direction relative to said mounting flange when said threaded nut means are partially loosened.

4,563,818

CAN OPENERS

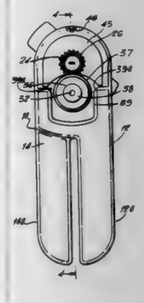
Julis Kreth, Pfungstadt; Alfons Schreiber, Ebenweiler, and Willi Steinko, Nassau, all of Fed. Rep. of Germany, assignors to Mike & Kremmel Limited, Kowloon, Hong Kong

Filed May 8, 1984, Ser. No. 608,059

Claims priority, application United Kingdom, Aug. 1, 1983, 8320669; Apr. 4, 1984, 8408685

Int. Cl.[4] B67B *7/72*

U.S. Cl. 30—417 **7 Claims**



1. A hand-held can opener intended to provide a cut around the wall of a can below the lid and rim which are severed by the cut from the rest of said can, the can opener comprising:

a pair of body members pivotally joined to one another,

an integrally-formed handle for each body member extending generally away from the point of pivoting and movable between a more open position and a more closed position, said handles being intended to be grasped by one hand of the user in the more closed position,

a spindle,

a driving wheel attached to said spindle to be brought into contact with the lip of the lid of a can,

means for manually rotating said spindle to cause said driving wheel to orbit the can opener relatively around the top of the can,

a cutting wheel which, in an operating cutting position, forms a nip with said driving wheel so that the cutting edge of said cutting wheel is forced to penetrate through the wall of the can and provide a cut around the can as the opener orbits relatively around the can,

a mounting plate slidably supported by one of said body members and on which said cutting wheel is rotatably mounted, the sliding plate being movable between the operating cutting position where the driving wheel forces the cutting edge to penetrate the can wall and an inoperative position where said cutting wheel is moved away from said cutting wheel, and

cam means for moving said plate and said supported cutting wheel to said cutting position as said handles are pivoted towards the said more closed position and moving it away to its inoperative position when said handles are pivoted away from that said limit of pivoting towards said more open position, said cam means including a substantially straight slot inclined at an angle to the axis of sliding of the mounting plate and formed in the said other body member, i.e. the one which does not slidably support the mounting plate, and a pin projecting from said mounting plate into the slot.

4,563,819

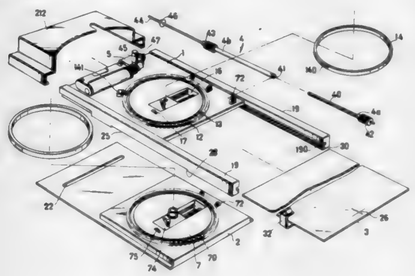
ELLIPSOGRAPH CAPABLE OF DRAWING DOTTED LINE

Tien-Fu Ching, 14, Pei Chan Rd., Pei Shan Li, Hsi Chih City, Taipei Hsien, Taiwan (221), and Lung-Chiao Chou, 1, Alley 9, Lane 250, Cheng Kung Rd., Sec. 2, Nei Hu, Taipei, Taiwan (114)

Filed Oct. 11, 1984, Ser. No. 659,802

Int. Cl.[4] B43L *11/04*

U.S. Cl. 33—30.4 **4 Claims**



1. An ellipsograph comprising:

(a) a base consisting of a pair of parallel rails having grooves formed in their inwardly facing sides, and a plate bridging said rails, said plate being attached to an upper surface of said rails and extending from one end of said rails to approximately the mid-point of said rails;

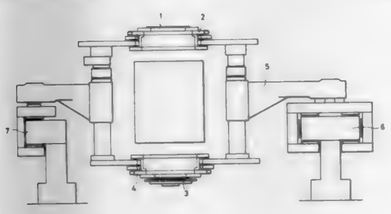
(b) a support plate slidably mounted in a lower groove in said rails, said support plate having a U-bracket partially surrounding one of said rails;

(c) a slide plate slidably mounted in an upper groove of said rails, said slide plate having a transverse groove formed near one end and a first circular opening formed near the opposite end;

(d) a motor having a shaft bearing a gear, said motor being

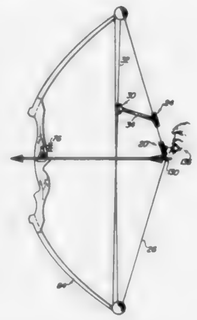
mounted upon the surface of said bridging portion of said base, adjacent to the end of said base;
(e) a battery case mounted upon said base and connected to said motor by conductive wires, at least one of which is connected to a switch;
(f) a second circular opening formed in a portion of said bridging portion of said base;
(g) a puller disc fitted into said second circular opening having gear teeth at its circumference and a lateral slot formed along a diameter, said lateral slot having rails formed in the long sides;
(h) a puller carrier slidably fitted into said lateral slot engaging said rails;
(i) an adjusting screw rod threaded through said puller carrier and rotatably engaged into the end walls of said lateral slot, having a knurled knob thumb wheel affixed to one end;
(j) a puller rod mounted in said puller carrier projecting below said base and slidably engaging said transverse groove in said slide plate;
(k) a pen carrier disc mounted in said first circular opening having gear teeth at its circumference and a lateral slot formed along a diameter, said lateral slot having rails formed in the long sides of said lateral slot;
(l) a pen carrier slidably fitted into said lateral slot of said pen carrier disc and engaging said rails;
(m) an adjusting screw rod threaded through said pen carrier and rotatably engaged into the end walls of said lateral slot, having a knurled knob thumb wheel affixed to one end;
(n) a pen holder mounted in said pen carrier, adapted to hold a pen projecting below said pen carrier disc; and
(o) a transmission rod rotatably and slidably mounted through fasteners on said bridging portion of said base and on said slide plate, said transmission rod carrying a gear for engagement with said bevel gear attached to said motor shaft and worm gears engaging said gear teeth on the circumference of said puller disc and said pen carrier disc.

4,563,820
ALIGNING SYSTEM
Junji Isohata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 18, 1983, Ser. No. 542,978
Claims priority, application Japan, Oct. 27, 1982, 57-189684
Int. Cl.⁴ G01B *5/24*
U.S. Cl. 33—180 R **8 Claims**



1. An aligning system for aligning a first object and a second object with each other by establishing a predetermined condition between the two and in relation to an imaging optical system for projecting the image of the first object onto the second object, said aligning system comprising:
means for holding the first and second objects;
means for altering the condition between the first and second objects held by said holding means by moving one of the first and second objects relative to the other thereof; and
means for supporting said holding means through fluid, said supporting means including means for further altering the condition between the first and second objects and in relation to the imaging optical system to the predetermined condition by changing the attitude of said holding means relative to the imaging optical system by controlling the pressure of said fluid through which said holding means is supported.

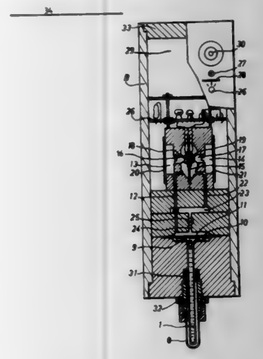
4,563,821
PEEP SIGHT FOR COMPOUND BOW
Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Co., Columbus, Nebr.
Filed Oct. 31, 1984, Ser. No. 666,771
Int. Cl.⁴ F41G *1/00*
U.S. Cl. 33—265 **18 Claims**



1. A sighting assembly including a peep sight for use with a compound bow including a bow string having a plurality of cable segments including a straight cable segment,
said peep sight including an elongate body, post means integral with and projecting from said body for coupling with divided strands of a bow string and for shiftably selectively positioning and mounting said peep sight in place on a bow string of a compound bow,
said peep sight being formed with bore means for sighting through said body from a rear face thereof toward a target zone,
control means for aligning a drawn bow string and for stabilizing and positively positioning the string-mounted said peep sight to orient said body of said peep sight to bring said bore means in said peep sight to extend in a plane paralleling a longitudinal axis of an arrow held in the drawn bow,
said control means including band means for establishing a tensioned connection between a forwardly positioned straight cable segment and the drawn bow string of a compound bow, and
fastening means for securing opposed ends of said band means respectively to the straight cable segment and to the drawn bow string of the compound bow.

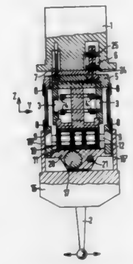
4,563,822
LEVEL DEVICE FOR MASONRY WORK
Marcel Legris, Place de la Parette Air Bel Bt. 48, 13011 Marseille, France
Filed Mar. 16, 1984, Ser. No. 590,304
Claims priority, application France, Mar. 18, 1983, 83 04618
Int. Cl.⁴ G01C *5/04*
U.S. Cl. 33—367 **9 Claims**

1. Level device of the type used for masonry work, comprising a first chamber and a second chamber, a flexible tube (**1**) connected to one end to said first chamber (**2**) closed by a first diaphragm (**3**) offering resistance to movements of the liquid contained, the movements of the said first diaphragm (**3**) limited within a first space (**4**), the other end of the tube (**1**) being connected to said second chamber (**9**) closed by a second diaphragm (**10**) and being slightly stretched, this second diaphragm (**10**) having a second space (**11**) thereabove containing air, a first channel (**12**) connecting said second space (**11**) to a third chamber (**13**) separated from a fourth chamber (**14**) by another slightly tightened third diaphragm (**15**) controlling on each side an adjustable needle-type contact switch and each of the elements of which are electrically connected to an outside source of current, this third diaphragm (**15**) at rest being perfectly flat and maintaining the said contact switches very slightly opened, said third and fourth chambers (**13–14**) being of the same volume and located in order to be subject to the same temperature variations, the volume of air in said first channel (**12**) and said second space (**11**) being compensated for in a manner as equal as possible because of temperature variations through a second channel (**22**) and a fifth chamber (**23**), a third channel (**24**) connecting the various spaces on each side of said slightly tightened third diaphragm (**15**) and being opened and closed by a valve (**25**), and electric batteries, a main switch, two indicator lights controlled by needle-type contact switches operated by said third diaphragm (**15**) which is itself actuated by compressed air through said first diaphragm (**10**) in relation to the movements of the liquid in accordance with the principle of communicating vessels and connected to the mechanical effects of said first and second diaphragms (**3** and **10**), a piston moved relative to one of said third and fourth chambers (**13** or **14**) allowing pressure in these chambers to be corrected with respect to the third diaphragm (**15**) losing shape.



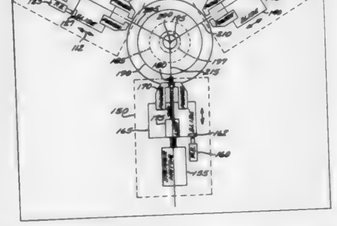
4,563,823
MEASURING HEAD OF A MULTI-CORD MEASURING MACHINE
Otto Klingler, Oberndorf, and Kurt Linder, Karlsruhe, both of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany
Filed Jul. 25, 1984, Ser. No. 634,124
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 8322759[U]
Int. Cl.⁴ G01B *7/02*
U.S. Cl. 33—558 **7 Claims**

1. A measuring head of a multi-coordinate measuring machine comprising:
an upper part defining a fixed frame of reference;
a plurality of carriers each connected to said upper part for movement in a mutually-exclusive orthogonal direction; and
an electrodynamic transducer connected between two of said carriers and said upper part for driving and stopping movement in each of the mutually exclusive orthogonal directions respectively:
each electrodynamic transducer comprising two electrical coils extending in one of the mutually exclusive orthogonal direction and a core movable with respect to said two coils, said core carrying a permanent magnet for each coil, said coil being connected to one of the two carriers and



upper part and said core being engageable and fixable with respect to the other of said two carriers and upper part.

4,563,824
METHOD AND APPARATUS FOR DISC POSITION CENTERING
Kenneth W. Baun, El Toro, Calif., assignor to Charlton Associates, Irvine, Calif.
Filed Dec. 12, 1983, Ser. No. 560,533
Int. Cl.⁴ G01B *5/25*
U.S. Cl. 33—568 **18 Claims**



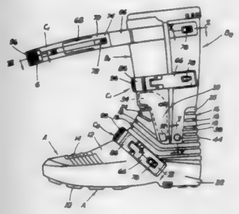
1. Apparatus for centering an object having a substantially circular periphery, comprising:
first object positioning means for contacting the periphery of the object and adapted to operate in response to first positioning signals;
second positioning means for contacting the periphery of the object and adapted to operate in response to second positioning signals, said second positioning means including a displacement measuring means adapted to generate a displacement signal indicative of its position relative to a reference location;
controller means, coupled to said first and second positioning means and adapted to provide said first and second positioning signals thereto, for controlling the positioning means to contact the object, determining the radius of the object as a function of the displacement signal and subsequently controlling the first and second positioning means so as to position the center of the object substantially at a predetermined axis.

4,563,825

BOOT PARTICULARLY FOR SPORTSWEAR

Igino Tesser, Treviso, Italy, assignor to Nava & C. S.p.A., Como, Italy

Filed Sep. 8, 1982, Ser. No. 415,776
Claims priority, application Italy, Nov. 20, 1981, 25216 A/81
Int. Cl.⁴ A43B *5/00*
U.S. Cl. 36—131 **15 Claims**



1. A boot, particularly for use by a motorcyclist or other wearer,

comprising in combination,

an inner part to be worn by the wearer,

an outer part formed of three complementary portions including a first portion forming a shoe of said boot and being located at the bottom of said boot, and

two semi-leggings which are complementary to each other and which join at an upper part of said shoe; said two semi-leggings having perforated appendices at their respective bottom portions,

said shoe including a vamp, said vamp being provided with a legging,

articulated elements which are held, at the height of the malleolus of the wearer's foot, by said legging and which are hinged to said perforated appendices; and

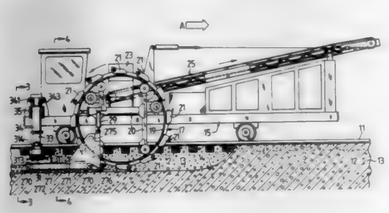
securing devices for movably securing said two semi-leggings to each other.

4,563,826

APPARATUS FOR REMOVING BALLAST FROM BENEATH A RAILROAD TRACK

John B. Whitaker, Jr., Wetumpka, Ala., assignor to Kershaw Manufacturing Company, Inc., Montgomery, Ala.

Filed Oct. 24, 1984, Ser. No. 664,256
Int. Cl.⁴ E02F *5/08, 5/22*
U.S. Cl. 37—97 **5 Claims**



1. An apparatus for removing material from beneath a railroad track comprising in combination:

(a) rotary trench digging means having digging buckets arranged to circulate about a horizontal axis so as to dig a trench along said track when said buckets are in their lowest position and to discharge material therefrom at or near their highest position;

(b) undercutter means for digging and transporting said material extending horizontally beneath said track during normal operation and having a discharge end disposed within said trench for discharging said material thereinto rearward of said trench digging means; and

(c) horizontal conveying means extending longitudinally within said trench beneath said undercutter means during said normal operation for receiving material discharged thereby and conveying said material in a forward direction to a point proximal said rotary trench digging means for removal from said trench thereby, said horizontal conveying means including:

(i) a frame member pivotally mounted in cooperative relation with said rotary trench digging means, such that said frame member is supported selectively in a substantially horizontal position and in a pivoted position substantially removed from horizontal;

(ii) an auxiliary conveyor mounted within said frame member and aligned therewith having a discharge end proximal said rotary trench digging means when said frame member is supported in said substantially horizontal position;

(iii) drive means operatively connected to said auxiliary conveyor for supplying motive force thereto; and

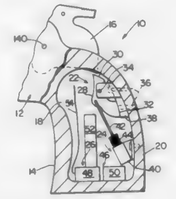
(iv) means for moving said frame member selectively to said substantially horizontal position and to said pivoted position.

4,563,827

SAFETY SYSTEM FOR DISABLING A FIREARM

James Heltzel, Rte. 1, Box 351, Mauertown, Va. 22644

Filed Mar. 14, 1984, Ser. No. 589,543
Int. Cl.⁴ F41C *17/00*
U.S. Cl. 42—70 R **12 Claims**



1. A safety system for selectively disabling a firearm which is fired by a mechanical movement comprising:

a block which is moved between an engaged position whereby the mechanical firing movement is blocked and a disengaged position whereby the mechanical firing movement is not blocked, said block having a bearing surface which engages a relatively immovable part of the firearm when said block is in the engaged position to positively prevent the mechanical firing movement from operating;

a moving means for moving said block from the disengaged position to the engaged position, said moving means being normally biased to move said block to and hold said block in the disengaged position; and

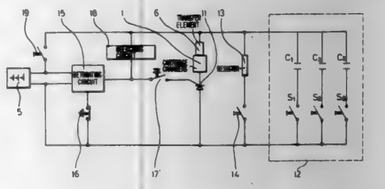
a remotely controlled actuating means for actuating said moving means including (a) a transmitter means for selectively transmitting a signal, said transmitter means being designed to be carried by the operator of the firearm, and (b) a receiver means located adjacent said moving means for receiving the signal from said transmitter means and for operating said moving means.

4,563,828

DETONATOR MECHANISM FOR CARTRIDGES, PARTICULARLY FOR CARTRIDGES USED IN MANUAL WEAPONS

Arndt Kriegeskorte, Aichtal-Aich, Fed. Rep. of Germany, assignor to Kriegeskorte & Co., GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 563,086
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1982, 3247211; Sep. 9, 1983, 3332530
Int. Cl.⁴ F41C *19/12;* **F42B** *5/08*
U.S. Cl. 42—84 **12 Claims**



1. A detonator mechanism for cartridges, particularly cartridges for use in a manually actuatable weapon, and normally actuatable by a firing pin, each cartridge including a casing having at least a partial region which is electrically conductive, and a detonator with an electrically conductive detonator housing, including a floor portion, said detonator housing containing detonating means ignitable above a predetermined detonating temperature, a portion of said weapon being adapted to contain at least one of said cartridges, and being electrically connected to said conductive region of said casing, comprising, in combination,

detonating current transfer means made of an electrically conductive material, being movably supported with respect to said floor portion, and being arranged to establish a contact with said floor portion, there being formed external of said detonator housing a transition resistance between said floor portion and said detonating current transfer means during said contact establishment,

at least one rechargeable capacitor serving as a source of detonating current, said source of detonating current, said detonating current transfer means, said detonator, said casing, and said portion of said weapon forming a series-connected circuit,

a switch connected in said circuit for the activation thereof,

said detonator housing being free of any resistive element disposed therein which is proximate to said detonating means,

said detonating current and said transfer resistance being selected so that heat generated by said detonating current in said transfer resistance is sufficient to heat said detonating means at least up to said detonating temperature.

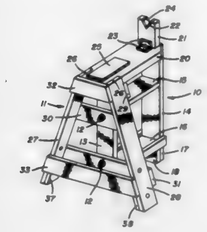
4,563,829

SHOOTING BENCH

Thomas J. Bozick, 5485 Carbon Hill Rd., East Palestine, Ohio 44413

Filed Jun. 11, 1984, Ser. No. 619,572
Int. Cl.⁴ F41C *29/00*
U.S. Cl. 42—94 **5 Claims**

1. A shooting bench comprising a pair of vertical supports, one of which has vertical and horizontal frame members and a flat body member forming the top portion thereof and the other one of which vertical supports comprises a triangular frame unit having inclined oppositely disposed frame members and secondary horizontal frame members, means at the upper end of said other vertical support for receiving a portion of said flat body member forming the top of said first mentioned vertical support and a notched block mounted on said flat body member adjacent one end thereof oppositely disposed with



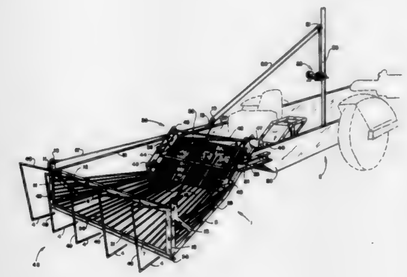
respect to said other vertical support on which a target pistol or the like may be movably positioned and supported.

4,563,830

PROCESS AND APPARATUS FOR HARVESTING SOFT SHELL CRAYFISH

C. Dean Cain, Jr., Baton Rouge, and Ronnie A. Bean, Maringouin, both of La., assignors to Tommy French, Baton Rouge, La., a part interest

Filed May 9, 1983, Ser. No. 492,627
Int. Cl.⁴ A01K *80/00*
U.S. Cl. 43—4.5 **10 Claims**



1. A process for harvesting from a water body crayfish which comprises:

(a) applying in a portion of the water body a pulsating electric current of sufficient current density to cause the crayfish to move toward a moving trawl assembly and having a pulse rate that allows the tail of the crayfish to contract in synchronization with the pulse rate;

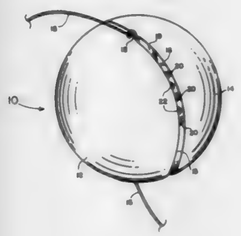
(b) moving the location of the current at a speed greater than the speed of the crayfish;

(c) catching the moving crayfish by said moving trawl assembly;

(d) conveying the caught crayfish to a sorting area; and

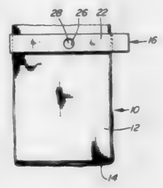
(e) sorting the crayfish as desired; said electric current being pulsed 2–10 times/sec., having a pulse duration of 10–200 msec. and creating a pulsed electric field with a current density of 0.05–0.30 ma/cm^2.

4,563,831
FISHING FLOAT
James W. Gibney, P.O. Box 263, Edgewater, Fla. 32032
Continuation-in-part of Ser. No. 453,775, Dec. 22, 1982, abandoned. This application May 25, 1984, Ser. No. 614,268
Int. Cl.⁴ A01K *93/00*
U.S. Cl. 43—44.91 **8 Claims**



1. A unitary fishing float comprising:
an essentially hollow buoyant body having a first central longitudinal axis provided with a slot defined by a pair of slot faces extending radially from said longitudinal axis to the exterior surface of said body and a second central axis at right angles to said first axis and parallel to said slot faces;
a plurality of fishing line holding ridges disposed adjacent to said second axis and extending normally from said longitudinal axis toward the exterior surface of said body, a set of said ridges formed in each of said slot faces of said body such that the ridges of one of said slot faces interleaves with the ridges of the other of said slot faces; and
a pair of hooks homogeneously formed integral with said body and disposed within said slot, one of said hooks at each end thereof, each of said hooks having a line holding notch aligned with said longitudinal axis, one of said slot faces having a respective access groove complementary to each hook and lying outside said slot.

4,563,832
BAIT CONTAINER
Michael A. Drebot, Bedford, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Province of Nova Scotia, Nova Scotia, Canada
Filed Apr. 19, 1983, Ser. No. 486,578
Claims priority, application Canada, Feb. 15, 1983, 1152745
Int. Cl.⁴ A01K *71/00*
U.S. Cl. 43—44.99 **5 Claims**



1. A reusable container adapted for the controlled release of bait therefrom over an extended period of time during trap fishing, said container having
apertured side walls, the apertures therethrough being in the size range of about 250 to about 1,000 microns and the apertures comprising about 45 percent to 55 percent of the area of said side walls, said container being closed at one end and open at the other end for the filling thereof with bait;
means for closing said open end when said container has been filled with bait, comprising an elongate closure member having a slot therein, said slot being open at one end and closed at the other, and being defined by two parallel arms, said arms clampingly receiving the side walls of said container; and
means for holding said filled container relatively unmoveably within a crustacean fishing trap comprising a bore extending through said parallel arms of said closure member and alignable with openings in the side wall of said container to define a passage adapted to receive an upright member of a bait spindle.

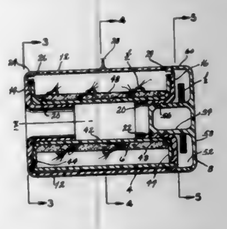
4,563,833
FISH HOLDING DEVICE
Raymond U. Aucoin, P.O. Box 777, St. James City, Fla. 33956
Continuation-in-part of Ser. No. 503,519, Jun. 13, 1983, abandoned. This application Mar. 15, 1985, Ser. No. 712,084
Int. Cl.⁴ A01K *97/00*
U.S. Cl. 43—54.1 **1 Claim**



1. A fish holding device comprising two identical contoured members, each having handle and jaw elements pivoted together at a point between said handle and jaw elements, and biasing means urging the jaw elements toward an open position, said jaw elements being relatively narrow, elongated and in substantial part, arcuately curved with transversely extending shallow rounded fish contacting corrugations, the terminal ends of the jaw elements being planar and having transversely extending teeth adapted to come together when the handle elements are in a closed position leaving the central portion of said jaw elements arcuately spaced from each other a distance of at least one inch at the widest point for accommodating a captured fish in a non-injurious manner, said contacting portions being spaced approximately 7/16 of an inch apart and being approximately 3/16 of an inch in depth, the width of said jaw elements being approximately 1/10 the length of said jaw elements, the length of said jaw elements being substantially equal to that of the handle elements to permit, in an alternative mode of usage, one of the jaw elements to be projected into a fish's mouth whereby the jaw elements of the fish holding device can clamp the lower jaw of the fish to hold and manipulate said fish.

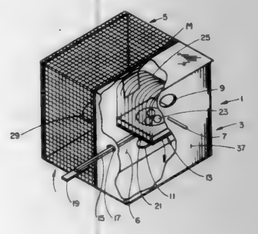
4,563,834
CONTAINER FOR FISHING TACKLE
Donald R. Spencer, Rte. 1, Box 181, Grafton, Ill. 62037
Filed Jul. 2, 1984, Ser. No. 626,764
Int. Cl.⁴ A01K *97/00*
U.S. Cl. 43—57.1 **22 Claims**

1. A box for holding fishing lures, said box comprising: a housing having an opening that provides access to the interior of the housing and is large enough to accommodate fishing lures; the housing also having a cavity that is large enough to accommodate a digit on a person's hand so as to enable that person to stabilize and hold the housing with that hand by reason of the digit being in the cavity; a spool located within the housing and being capable of rotating in the housing, the spool having a hub and a driving portion that is attached rigidly to the hub, the driving portion being located at least in part



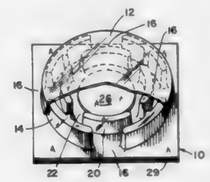
where it may be manipulated from outside of the housing by another digit on the same hand; and retaining means on the spool for holding fishing lures.

4,563,835
BIRD HOUSE TRAP
Clarence A. Job, P.O. Box 163, Arlington Dr., Kelso, Mo. 63758
Filed Sep. 19, 1983, Ser. No. 533,412
Int. Cl.⁴ A01M *23/04*
U.S. Cl. 43—69 **1 Claim**



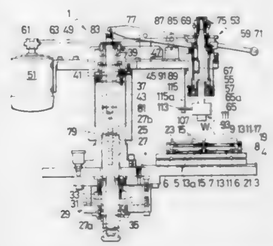
1. A bird trap comprising a bait compartment, a containment compartment, a dividing wall between said bait and containment compartments, said bait compartment formed of a series of walls, an entrance opening in said bait compartment, an escape opening in said dividing wall leading from said bait compartment to said containment compartment, said entrance opening being above said escape opening, a bait housing within said bait compartment movable between a raised position in which said bait housing is in register with said entrance opening thereby to permit a bird to enter said bird trap via said entrance opening and a lowered position in which said bait housing is in register with said escape opening thereby to permit a bird within said bait housing to enter said containment compartment, said bait housing being pivotally mounted with respect to one of said bait compartment walls to provide movement between said raised and lowered positions, means biasing said bait housing in its upper position, and the entrance of a bird into the bait housing effecting movement of said bait housing to its lowered position upon a bird entering therein, said biasing means extending externally of said bait compartment, said biasing means being a counterbalance, said counterbalance including an adjustable counterweight, said counterbalance including an arm carrying said counterweight, said arm supporting the bait housing, and extending laterally exteriorly of said bait compartment, said arm supporting said bait housing at one end, and the counterweight at its other end, and said arm being pivotally connected to one of the bait compartment walls and providing for the pivotal movement with respect thereto, a trap door hinged at the top of the containment side of the dividing wall and cooperating with said escape opening permitting a bird to enter said containment compartment, but preventing the escape therefrom via said escape opening, and said trap door being transparent.

4,563,836
INSECT FEEDING STATION
Keith Woodruff, Mountainside, and Eugene Brandli, Towaco, both of N.J., assignors to American Cyanamid Co., Stamford, Conn.
Continuation of Ser. No. 476,976, Mar. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 251,672, Apr. 6, 1981, abandoned. This application Nov. 2, 1983, Ser. No. 548,027
Int. Cl.⁴ A01M *1/20*
U.S. Cl. 43—131 **13 Claims**



1. An insect feeding station for administering poison to insects comprising a base portion and a cover, said base portion comprising a floor, an outer wall having a plurality of openings, an inner wall spaced apart from said outer wall and having a plurality of openings, said inner wall openings being offset in a horizontal plane from said outer wall openings, said inner wall forming an inner compartment for said poison, and means on the interior of said outer walls for guiding insects toward said openings in said inner walls, said base portion being formed as a unitary piece from a flat deformable sheet of material.

4,563,837
ULTRA-PRECISION GRINDING MACHINE
Yoshihiko Ono, Machida, Japan, assignor to Tokiwa Seiki Industrial Company, Limited, Kanagawa, Japan
Filed Mar. 24, 1983, Ser. No. 478,324
Claims priority, application Japan, Jun. 14, 1982, 57-100763; Jun. 14, 1982, 57-100764; Jun. 28, 1982, 57-109844; Jul. 2, 1982, 57-114064; Jul. 24, 1982, 57-128347
Int. Cl.⁴ B24B *5/08*
U.S. Cl. 51—34 R **9 Claims**



1. An ultra-precision grinding machine comprising: a grinding tool; means for supporting said grinding tool in a selected position; means for revolving said grinding tool; and means for supporting a workpiece to be machined with said grinding tool; said supporting means including an upper plate on which the workpiece may be mounted, and a plate-like floating retainer means having ball bearing means for enabling said upper plate to shift smoothly and swiftly its horizontal position in a plane by a rolling of balls of said ball bearing means responsive to an external force being applied to the workpiece.

4,563,838

APPARATUS COMPRISING A MACHINING TOOL FOR MACHINING ROLLERS

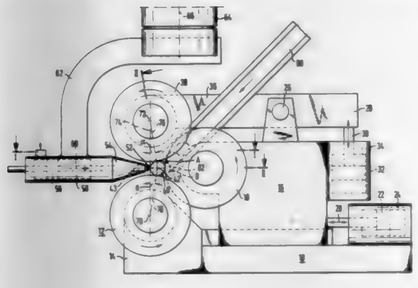
Wolfgang Winkelmann, Wolfach, Fed. Rep. of Germany, assignor to Maschinenbau Grieshaber GmbH & Co., Wolfach, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,433

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311720

Int. Cl.⁴ B24B *5/26*

U.S. Cl. 51—58 **11 Claims**



1. An apparatus for machining workpieces, such as barrel-shaped rollers or the like, having a surface curvature and being capable of rotation while being machined; said apparatus comprising a machining tool, a machine frame, a rotatable supporting disk mounted on said machine frame in spaced generally opposed alignment with the machining tool, two rotatable guiding disks mounted on said machine frame laterally to opposite sides of said machining tool, said guiding disks and supporting disk having workpiece retaining positions defining a work station therebetween for retention and rotation of a workpiece for machining engagement of said machining tool therewith, each guiding disk having two laterally spaced parallel disk components for engagement with a workpiece at laterally spaced points, said supporting disk lying in a plane parallel to and equidistant between said disk components, means mounting said supporting disk and one of said guiding disks for selected movement from the workpiece retaining position thereof to a remote position and means for selective feeding of workpieces into and out of said defined work station in a direction lateral to the aligned machining tool and supporting disk and generally perpendicular to the plane of said supporting disk.

4,563,839

FLAP WHEEL

James C. Huppert, St. Croix, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 516,292, Jul. 22, 1983, abandoned. This application Apr. 18, 1985, Ser. No. 724,486

Int. Cl.⁴ B24D *13/04*

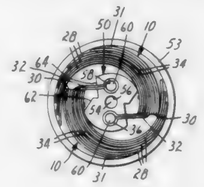
U.S. Cl. 51—334 **2 Claims**

1. In a abrasive flap wheel assembly comprising:

a hub having an axis, including means for affording attachment of the hub to a source of power to rotate the hub in a first direction of rotation about said axis, having a periphery about said axis, and having a plurality of similarly shaped slots parallel to said axis and spaced about said axis, each of said slots opening through said periphery, having a narrow portion adjacent said periphery and an enlarged inner portion spaced from said periphery by said narrow portion;

a plurality of abrasive packets, each abrasive packet comprising a plurality of pieces of abrasive-coated sheet material disposed face-to-back with first edges generally aligned and with the abrasive coatings of said pieces on corresponding faces thereof, a sheet of tough flexible attachment material having opposite end portions projecting between the pieces from said first edges with a generally U-shaped bight portion of said sheet of attachment material projecting from said first edges, and means for attaching said pieces of abrasive-coated sheet material and said sheet of attachment material together along said first edges, the generally U-shaped portion of each of said abrasive packets being inserted in a different one of the slots in said hub, and said abrasive packets each further including a rod within its U-shaped portion and the enlarged portion of said slot to attach said abrasive packet to said hub, the improvement wherein:

said hub has a plurality of longitudinally extending recesses each defined in part by a trailing surface when said hub is rotated in said first direction, and a different one



of said slots opens through each of said trailing surfaces with said slot being disposed at about a right angle with a radius of said hub through the enlarged portion of said slot, said recesses being sufficiently large to provide clearance for the portions of said abrasive packets adjacent said first edges and the sheet of tough flexible attachment material for each abrasive packet being sufficiently long to afford bending of the sheet of tough flexible attachment material at about a right angle at the first edge of each abrasive packet and positioning of the entire lengths of the sheets of coated abrasive for each abrasive packet at about a right angle to a radius of said hub to afford a compact assembly with contact between a large portion of the outer faces of the outer piece of coated-abrasive sheet material in each of said abrasive packets and an inner cylindrical surface within which said flap wheel assembly is rotated in said first direction.

4,563,840

CLEANING PARTICLE IMPINGING DEVICE AND AIR BLAST CLEANING APPARATUS USING SAID DEVICE

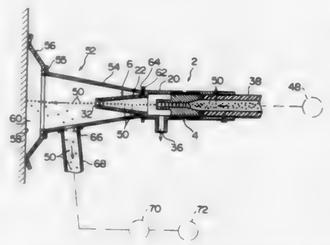
Fukashi Urakami, 5-21-204 Konandai 4-chome, Konan-ku, Yokohama, Japan

Filed Oct. 3, 1983, Ser. No. 538,734

Claims priority, application Japan, Oct. 11, 1982, 57-178178

Int. Cl.⁴ B24C *5/04*

U.S. Cl. 51—410 **9 Claims**



1. A cleaning particle impinging device for impinging cleaning particles entrained in compressed air fed through a supply pipe against a surface to be cleaned, said device comprising a first nozzle means having a first nozzle passage extending from a first inlet portion connected to the downstream end of the supply pipe to a first impinging opening located at the downstream end of the first nozzle passage, and a second nozzle means having a second nozzle passage extending from a second inlet portion surrounding the first impinging opening of the first nozzle means to a second impinging opening located at the downstream end of the second nozzle passage in the impinging direction of the first nozzle means and an exhaust port located out of alignment with the impinging direction of the first nozzle means; the compressed air and cleaning particles to be supplied through the supply pipe being impinged from the first impinging opening through the first nozzle passage, at least a greater portion of the cleaning particles impinged from the first impinging opening and a part of the compressed air impinged from the first impinging opening being impinged from the second impinging opening through the second nozzle passage, and the remainder of the compressed air impinged from the first impinging opening being discharged from the second nozzle passage through the exhaust port.

4,563,841

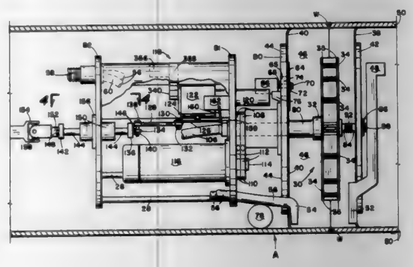
INTERNAL GRIT BLAST WELD JOINT CLEANER

Milburn L. Hart, Tulsa, and Robert J. Hart, Oologah, both of Okla., assignors to Resource Engineering & Manufacturing Company, Tulsa, Okla.

Filed Jun. 22, 1984, Ser. No. 623,345

Int. Cl.⁴ B24C *3/32*

U.S. Cl. 51—411 **8 Claims**



1. A machine for cleaning the interior uncoated surfaces surrounding the weld joints in an otherwise internally coated pipeline comprising a first plate mounted on the machine and extending transversely across the pipeline when the machine is disposed within the pipeline, a second plate mounted on the machine in spaced parallel relation with the first plate, a first resilient member mounted on the first plate and having a circular periphery adapted to engage the inner periphery of the pipeline wall, a second resilient member mounted on the second plate and having a circular periphery adapted to engage the inner periphery of the pipeline wall, said first and second plates with their attached resilient means forming a closed cleaning chamber sealed at its ends with respect to the pipeline, a hollow rotatable hub mounted on the machine and within the cleaning chamber and rotatable on an axis substantially coaxial with the longitudinal central axis of the pipeline, a plurality of hollow tubes extending radially outward from the hub and in communication with the interior of said hub, means for rotating said hub whereby air is forced outwardly through said tubes to create a partial vacuum within the interior of said hub, means for supplying particulate abrasive material to the interior of said hub whereby the vacuum created upon rotation of said hub will cause said particulate material to be propelled outwardly against the interior of the pipeline wall, means for moving the machine so as to position the radial tubes in alignment with a weld joint whereby, upon rotation of said hub and upon supplying said hub with particulate abrasive material, said tubes will propel the particulate material against the weld joint to clean the same by a sand blasting effect, means acting in timed response to the initial rotation of said hub for oscillating said plates and hub as a unit longitudinally with respect to weld joint whereby said tubes will move alternately back and forth across said weld joint to clean the entire weld joint area, and means for removing accumulated spent particulate material and blasted-off material continuously from said cleaning chamber.

4,563,842

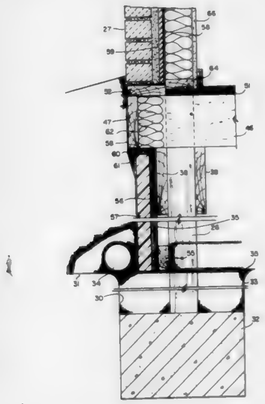
POLE-TYPE STRUCTURE AND METHOD OF CONSTRUCTING SAME

Bradley D. Lewis, 3682 Shelbourne Ct., Carmel, Ind. 46032

Continuation of Ser. No. 320,074, Nov. 10, 1981, abandoned. This application Nov. 25, 1983, Ser. No. 555,073

Int. Cl.⁴ E02D *27/00*

U.S. Cl. 52—169.9 **10 Claims**



1. A pole-type structure comprising:

earth beneath said structure, said earth having an existing earth grade;

a plurality of walls arranged together to define an interior region, at least one of said walls including a plurality of substantially vertical poles spaced apart from each other;

means for supporting each of said plurality of poles against vertical and horizontal displacement in the earth beneath said structure;

a plurality of floor joists spanning the interior regions, each joint having a support portion adjacent one end, the support portions extending exteriorly of said poles;

means for connecting said floor joists to said poles;

an exterior wall veneer disposed exteriorly of said poles and supported by the support portions of said floor joists, said exterior wall veneer having a bottom;

a retaining wall disposed exteriorly of and attached to said poles, and extending substantially from the existing earth grade to the bottom of said exterior wall veneer; and

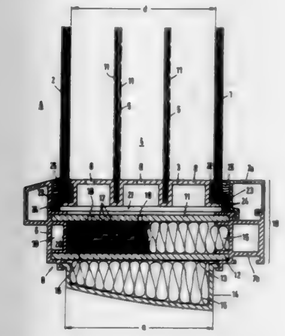
earth fill placed against said retaining wall above the existing earth grade at least to the level of the bottom of said exterior wall veneer, whereby the structure is given an exterior appearance indistinguishable from conventional frame structures built upon conventional poured concrete or block foundations.

4,563,843

HEAT INSULATION WINDOW

Paul Grether, Seuzach; Kurt Brader, Winterthur, and Bruno Keller, Zurich, all of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Feb. 2, 1984, Ser. No. 576,332
Claims priority, application Switzerland, Feb. 9, 1983, 715/83
Int. Cl.⁴ E06B *7/12*
U.S. Cl. 52—172 **14 Claims**



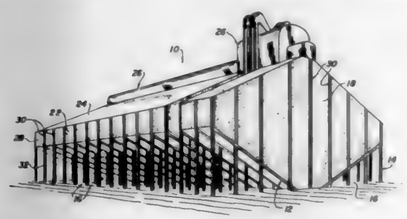
1. A heat insulation window comprising
a pair of outer panes defining an air space therebetween and spaced from each other by a clearance of at least 50 millimeters;
a non-metallic air-permeable peripheral spacer spacing said panes from each other;
at least one transparent partition spaced between said panes;
a selectively reflective coating on at least one of said partition and said panes;
a frame mounting said panes, said partition and said spacer therein, said frame including pair of separate lateral metallic frame members and at least one thermally insulating web joining said frame members together circumferentially in shear resistant relation to form a closed rigid unit, said frame members being spaced from each other to define an insulation path of at least 0.8 times said clearance between said panes and said web having a thermal expansion at least approximately equal to said frame members; and
a drying chamber for a desiccant disposed between said air space and an exterior of the window.

4,563,844

GRAIN ELEVATOR

Klaus U. Driedger, Edmonton, Canada, assignor to Buffalo Beton Ltd., Calgary, Canada

Filed Feb. 28, 1983, Ser. No. 470,629
Claims priority, application Canada, Oct. 25, 1982, 414123
Int. Cl.⁴ E04H *7/00*
U.S. Cl. 52—192 **5 Claims**



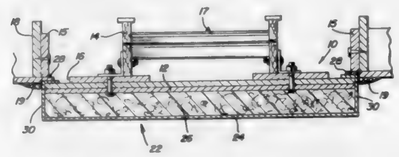
1. In a sloped bin grain elevator constructed of preformed structural components and having the bins therein sloped at or near the angle of repose of the stored material to create a non-confined grain flow pattern; the improvement to provide flexibility in the depth and shape of said bins comprising:
a building structure defined by an inclined base, vertical columns supporting said inclined base, a sloped roof, side and end walls and a plurality of interior partitioning walls;
a row of polygonally-shaped bins, each bin being discrete in relation to adjacent bins;
each bin having a series of staggered intermediate levels to divide the depth of the bin into layers;
said staggered intermediate levels of said bins comprising a series of precast slabs, the width of each slab being slightly less than half the width of said bin, said slabs being positioned end-to-end in a staggered pattern whereby the entire length of each bin forms one intermediate continuous layer of slabs.

4,563,845

ATTIC STAIRWAY INSULATING AND SEALING DEVICE

James J. Stipe, P.O. Box 428, Highlands, Tex. 77562

Filed May 30, 1984, Ser. No. 616,253
Int. Cl.⁴ E06B *5/00*
U.S. Cl. 52—202 **6 Claims**



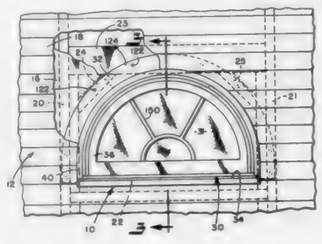
1. An energy saving attachment for use in insulating an attic access opening, comprising a panel structure having a box or tray-like support member specifically dimensioned substantially to cover the access opening, thermal insulating material substantially filling the support member, and means for attaching the support member from below to a swing-down door closing the access opening, wherein the support member includes channel-like flanges along opposed longitudinal sides thereof and wherein the flanges and insulating material are dimensioned for sliding the panel structure into engagement with an outer panel of the attic door with said flanges gripping opposed longitudinal edges of the door to provide the attaching means.

4,563,846

MOLDED WINDOW ASSEMBLY

Dale P. Webb, Conneaut, Ohio, assignor to Webb Manufacturing, Inc., Conneaut, Ohio

Filed Mar. 7, 1983, Ser. No. 472,946
Int. Cl.⁴ E06B *3/00*
U.S. Cl. 52—208 **18 Claims**



1. A window assembly comprising an integrally molded

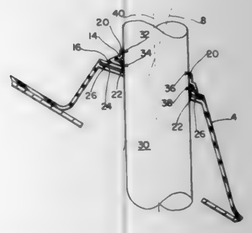
sash, sill, frame and exterior trim unit formed of plastic, wooden interior trim parts fastened to the interior side of said unit, said integrally molded unit including an opening for receiving an insert, said opening being defined at least partially by a perimetric surface integrally formed with said unit and being in a vertical plane against which a marginal portion of the insert may abut, positioning means for accurately locating the insert with respect to said opening and including a lip integrally formed with said sill and sash and extending approximately perpendicular to the plane of said opening, a plurality of bosses extending interiorly of said perimetric surface, and fastening means for securing one of said trim parts to said unit in abutting engagement with said bosses.

4,563,847

UNIVERSAL FLASHING FOR ROOF VENT PIPES

William E. Hasty, Dallas, Tex., assignor to W F Products Corporation, Garland, Tex.

Filed Jun. 17, 1982, Ser. No. 389,332
Int. Cl.⁴ E04D *1/36, 13/14*
U.S. Cl. 52—219 **5 Claims**



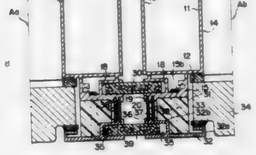
1. In a universal flashing for roof top and vent pipe geometries as characterized by differing pipe diameters and roof slope angles, wherein said flashing comprises a planar base flange adapted to engage a roof top surface and support the bottom of a frustoconical body member, having a centerline of symmetry, wherein the top end of said body member comprises a ring collar assembly adapted to be distended by, and sealingly engage against, outer diameters of more than one vent pipe diameter, the improvement in said flashing which comprises
a ring collar assembly which comprises a plurality of stepped sealing portions, each portion adapted to engage a different vent pipe diameter and frangibly be separated as by inserting a knife point or a sharp object, cutting a slotted opening approximately 1" to 1¼" long, inserting a finger into the slotted opening and ripping off a top section from the wall of said body member, wherein at least two sets of sealing projections are provided, and for a first given pipe diameter a sealing portion further comprises a first set of first and second projections separated by a connecting wall portion and disposed generally perpendicular to said body centerline, wherein said first set comprises at least two adjacent projections, wherein a first projection of said first set extends from a proximate end connected at a first location on said body member to a distal end which defines a circular flange surface spaced a first dimension about said centerline, and said second projection of said first set is below and longitudinally adjacent thereto, and extends from a proximate end connected at a second location on said body member to a distal end which defines a circular flange surface spaced a second dimension about said centerline, wherein said first dimension is less than said second dimension and both first and second dimensions are less than the outer diameter of said first given pipe diameter for which sealing engagement is desired, whereby the distal ends of the first and second projections in the first set resiliently and sealingly will engage separately against a first given vent pipe outer surface when used according to its intended purpose and the second projection in the first set also comprises a first projection in a second set, longitudinally below and adjacent to the first set, wherein, further, said projections are of a uniform thickness less than the wall thicknesses of the body member and each of said projections is removable from said body member through a frangible wall section defined as a reduced wall thickness within the connecting wall portion of said body member proximate to the surface of the below and immediately adjacent projection, so that the second projection for a given pipe diameter becomes the first projection for sealing a larger pipe diameter, and said frangible wall section is configured so that removal of a sealing section requires separation along a plane substantially colinear with the top surface of the adjacent projection, and at a point spaced outwardly from the distal end of said adjacent projection, so that the resulting separation contour has no effect upon the sealing ability of said adjacent projection, whereby modification of the ring collar assembly for successively larger vent pipe diameters is accomplished simply by separating one or more projections at one of said frangible wall sections.

4,563,848

SECTION FOR BUILDING

Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 1, 1983, Ser. No. 519,194
Claims priority, application Japan, Aug. 2, 1982, 57-116167[U]
Int. Cl.⁴ F04H *1/00*
U.S. Cl. 52—235 **6 Claims**



1. A section for building used as vertical and horizontal members and mounted around a panel in the form of a square frame, the section comprising:
(a) a frame body;
(b) a batten disposed across from a mounting piece integrally formed on the outside facing side wall of said frame body and fixedly secured through a screw bolt (62) to the mounting piece so as to leave a predetermined space between the batten and the mounting piece;
(c) a relatively large connecting body formed of heat insulating material disposed in said space; and
(d) at least one connecting plate substantially smaller than said connecting body disposed in said space between the batten and the mounting piece and fitted in small mounting recesses formed in an outside wall of said mounting piece and in an inside wall of said batten opposite to the outside wall of the mounting piece, said connecting plate being separated from said connecting body to block a hollow space fully between said connecting plate and said connecting body to prevent air convection within the layer of air adjacent said connecting body in said hollow space;
whereby said panel is mounted at one side of said space between the batten and the mounting piece and said connecting

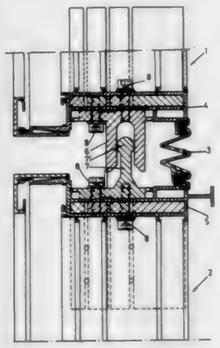
plate is mounted at the other side of said space relative to the interposition of said connecting body.

4,563,849

DEVICE FOR INTERLOCKING TOGETHER TWO ADJACENT METAL FRAMES FROM TWO DIFFERENT LEVELS

Michel Mangal, Bois d'Haine, Belgium, assignor to SADACEM, Belgium

Filed Apr. 4, 1984, Ser. No. 596,585
Claims priority, application Belgium, Apr. 14, 1983, 0/210554
Int. Cl.⁴ E04H *1/00*
U.S. Cl. 52—235 **2 Claims**



1. A device for interlocking two adjacent metal frames from two different levels, said frame being rigidly or flexibly mounted to a framework of a building forming a glass skin said device comprising:

a female part integral with a first metal frame, said female part having a lengthwise recess section projecting from said metal frame in parallel relationship with the general frame plane;

a male part integral with a second metal frame on a vertically adjacent level with said first metal frame, said male part projecting from said second metal frame and extending within said lengthwise recess section, said male part including an enlarged end having a diameter slightly smaller than the spacing between the inner walls of said recess section;

whereby under the action of a translational movement of one frame relative to another, said male part is free to perform a translational and/or rotational movement relative to said female part in the general plane of said frames and said male part is free to perform a hinging movement relative to said female part in a plane at a right angle to the building framework.

4,563,850

DEVICES FOR ASSEMBLING TOGETHER THE SLABS OF CONCRETE CONSTITUTING HIGHWAYS

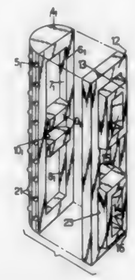
Pierre Guinard, Maintenon, France, assignor to Freyssinet International (STUP), Boulogne Billancourt, France

Filed Jun. 29, 1984, Ser. No. 626,317
Claims priority, application France, Jul. 1, 1983, 83 11003
Int. Cl.⁴ E01C *23/03*
U.S. Cl. 52—396 **9 Claims**

1. In a device for joining together two concrete slabs (**1**, **2**) juxtaposed side by side along a crack (**3**) and having two rigid semi-cylindrical half shells (4_1, 4_2) which are joined together longitudinally, but not transversely, by a rigid inner key member (**11**), said half shells being urged transversely apart by elastic means and having two opposing peripheral bearing surfaces (6_1, 6_2) joined together by a seal, the improvement comprising:

said elastic means including a relatively thick belt (**12**) interposed between the two peripheral bearing surfaces and itself forming the seal therebetween;

said half shells each having a step (9_1, 9_2) forming a part of



said half shells, said steps projecting toward each other and each step extending beyond the plane of the peripheral bearing surface of its respective half shell; and

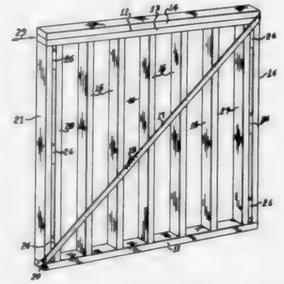
said key member being housed in two recesses (10_1, 10_2) formed respectively in said two steps, said key member being slidable in said recesses transversely, but not longitudinally, of said half shells.

4,563,851

BRACING FOR STUDWALLS

Charles E. Long, Jacksonville, Fla., assignor to Altech Industries, Inc., Jacksonville, Fla.

Filed Oct. 18, 1984, Ser. No. 662,034
Int. Cl.⁴ E04C *2/38, 3/18*
U.S. Cl. 52—656 **12 Claims**



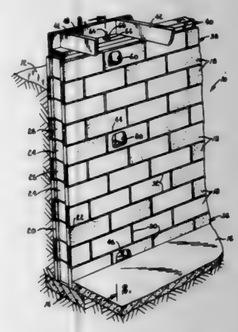
1. In combination a generally rectangular wooden stud wall for a building and a diagonal brace for tensile loading to prevent the wall from being distorted under a racking load, the stud wall including a horizontal top plate and a horizontal sole plate fastened to the respective ends of spaced vertical studs, including end studs joining the respective ends of said top plate and said sole plate and having outer planar surfaces substantially coplanar with the planar surfaces of said ends of said top and said sole plates, the brace comprising an elongated flat metal strap having over its entire length a plurality of spaced holes therethrough for attaching said strap to said plates and said studs with fastening means, said strap extending diagonally across said wall from an upper corner thereof, including the end of said sole plate and the lower end of the adjoining end stud, said brace being bent adjacent each end thereof substantially 90° to lie against said planar surface of said end of said top plate and against said planar surface of said end of said sole plate and against the contiguous planar surface of said adjoining end stud; and fastening means attaching said brace to said studs and attaching said bent ends of said brace to said ends of said top plate and of said sole plate and said adjoining stud at said planar surfaces.

4,563,852

METHOD OF REINFORCING CONCRETE BLOCK FOUNDATION WALLS

Irving Achtenberg, 1028 W. Seventieth St., Kansas City, Mo. 64113, and Otto W. Fleck, 1102 Essex St., Liberty, Mo. 64068

Filed Dec. 21, 1984, Ser. No. 684,944
Int. Cl.⁴ E04G *23/02;* **E04D** *37/00*
U.S. Cl. 52—743 **20 Claims**



13. A method of reinforcing a building foundation wall having inside and outside surfaces and a generally vertical passage extending within the wall, said method comprising the steps of:

forming upper and lower openings in the inside surface of the wall each providing access to the passage from the inside wall surface;

inserting upper and lower anchor elements into the passage through the respective upper and lower openings;

anchoring the upper and lower anchor elements in the passage adjacent the respective upper and lower openings;

inserting an elongate flexible member into the passage and securing opposite end portions of said member to the upper and lower anchor elements to retain the flexible member in the passage in a taut condition;

forming an intermediate opening in the inside surface of the wall at a location to provide access to the passage between the upper and lower openings;

inserting a spacer into the passage through said intermediate opening and engaging said spacer against an intermediate portion of said flexible member in a manner to maintain said member in a bowed shape with said intermediate portion being closer to said inside surface than said end portions; and

inserting cement into the passage to form a cement column therein reinforced by said flexible member when the cement sets with the flexible member embedded therein.

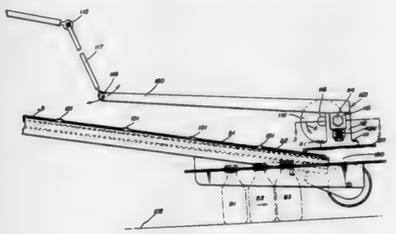
4,563,853

PACKAGING MACHINE

Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 1, 1984, Ser. No. 636,830
Int. Cl.⁴ B65B *21/24*
U.S. Cl. 53—48 **11 Claims**

1. A machine for packaging a plurality of articles arranged in at least one row in rectilinear relation in a wraparound-type carrier having a top portion, spaced sidewalls, a pair of bottom lap panels and a plurality of pairs of flaps struck from certain portions of the carrier and constituting article retaining and carrier reinforcing means, said machine comprising means for advancing a group of articles along a predetermined path, means for advancing a wrapper blank along said path and in contact with the upper parts of the articles in a group of articles to be packaged, one flap of each pair of flaps being remote from the adjacent leading or trailing edge of the blank and one flap of each pair of flaps being near the adjacent leading or trailing edge of the blank means for folding said side walls and said lap panels downwardly alongside said group of articles, a tucking stud movable in synchronism with the group of articles and with the blank and disposed generally alongside the path of movement thereof and in generally normal relation to said



side walls and lap panels, said tucking stud being movable in a direction convergent to said predetermined path and into engagement with a leading and trailing flap arranged as a pair of flaps and thereafter in a direction generally parallel to said predetermined path for folding said flaps inwardly of the carrier, a flap folding element pivotally mounted on said tucking stud and having a flap engaging part, a cam follower mounted on said flap folding element, and a fixedly mounted cam having a cam surface for receiving said cam follower whereby said flap folding element is rotated so as to swing said flap engaging part into engagement with one of said flaps thereby to fold said one flap inwardly of the carrier and beyond the position to which said one flap is folded by said tucking stud.

4,563,854

ROUND BALER FOR FORMING BALES OF AGRICULTURAL PRODUCTS

Gustav Ackermann, Harsewinkel; Gerhard Clostermeyer, Gütersloh, and Werner Müller, Harsewinkel, all of Fed. Rep. of Germany, assignors to CLAAS OHG, Harsewinkel, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,614
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1983, 3330757
Int. Cl.⁴ B65B *41/12, 63/04*
U.S. Cl. 53—118 **12 Claims**



1. A round baler for forming roll bales of agricultural products comprising a housing; rotatable bale-forming rolls ar-

ranged in said housing and spaced from each other; a binding tape supply container mounted on said housing and accommodating a tape supply roll supplying the binding tape to be wrapped around the bale being formed by said rolls; cutoff blade means for cutting off tape portions of a predetermined length from the binding tape supplied from said roll, said cutoff means including a pivotable blade holder, a blade supported in said blade holder and a support shaft which supports said blade holder for a pivoting movement, said blade holder being pivotable between an operative position in which said blade cuts off a tape portion from the binding tape pulled from said supply roll and an inoperative position in which said blade is remote from the binding tape, a pair of tape advancing rollers receiving a starting end of the binding tape from the tape supply roll, at least one of said advancing rollers being rotated after a bale has been formed by said bale-forming rolls in said housing so as to advance said starting end into a gap between two neighboring bale-forming rolls, whereby the binding tape is taken along by said bale forming rolls and the formed bale and is completely wrapped around the formed bale; drive means for rotating said at least one advancing roller, said drive means including a drive wheel connected to said one advancing roller, a pivotable lever having two deflection rollers rotationally supported on said pivotable lever, a hydraulic piston-cylinder unit for pivoting said pivotable lever, and a drive chain running over said deflection rollers and said drive wheel to rotate the latter upon a pivoting motion of said pivotable lever; and means for returning said blade holder to said inoperative position after said blade has cut off a tape portion from the binding tape, said returning means including a returning lever connected to said support shaft, said pivotable lever having an abutment provided with an abutment roller, said abutment roller cooperating with said returning lever to return said blade holder to said inoperative position after a tape portion has been cut off from the binding tape.

4,563,855

APPARATUS FOR PACKAGING AN EDIBLE LIQUID

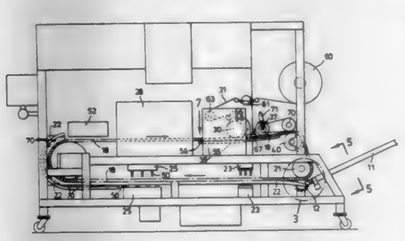
Lewis W. Smith, and Eric T. Warburton, both of Peterborough, Canada, assignors to Innopac Inc., Toronto, Canada

Filed Feb. 21, 1984, Ser. No. 581,534

Claims priority, application Canada, Oct. 17, 1983, 439155

Int. Cl.⁴ B65B *55/10*

U.S. Cl. 53—128 **31 Claims**



1. An apparatus for packaging an edible liquid in sterile, sealed containers having rims about the openings thereof, comprising:

an endless conveyor having upper and lower levels by which at least one row of containers are conveyed through the apparatus;

means for feeding inverted containers onto the lower level of the conveyor which is provided with parallel rails for supporting the containers by the rims thereof, comprising escapement wheels for delivering individual inverted containers onto individual teeth of a feeder wheel which in turn feeds each inverted container onto the lower level of the conveyor;

means for chemically sterilizing the containers as they move along the lower level of the conveyor;

means for filling the sterile containers with the liquid as they move along the upper level of the conveyor;

means for sealing the filled containers about the rims thereof, comprising a ribbon of sterile cover stock having a heat sensitive adhesive thereon, being fed over a payout wheel onto a heated sealing wheel for application to the containers; and

a cutoff wheel located after the heated sealing wheel for severing the connecting ribbon of cover stock between containers.

4,563,856

BAG CLOSING APPARATUS USING CLOSURE TAGS

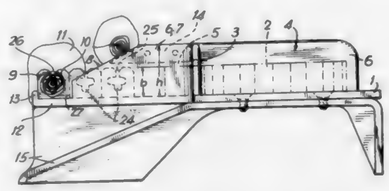
Willy Kusters, Bruggen, Fed. Rep. of Germany, assignor to Clements Industries, Inc., South Hackensack, N.J.

Filed Aug. 23, 1983, Ser. No. 525,535

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1982, 8224132

Int. Cl.⁴ B65B *61/06*

U.S. Cl. 53—138 A **14 Claims**



1. A bag closing apparatus for applying a closure to a collapsed end of a bag, said closure including engagement means for retaining said collapsed end of said bag, comprising:

a channel of extended length having an outlet end, a horizontal base surface extending beyond said outlet end, and side walls extending substantially vertically from said base surface, the distance between said side walls corresponding to the dimensions of said closure allowing for sliding motion on said base of said closure within said channel, a first portion of said channel having said side walls extending away from said base by a distance greater than the extension of said closure from said base, a second portion of said channel having said side walls extending from said base to form inclined surfaces leading to said outlet end, said side walls and said outlet end extending from said base by a distance less than the extension of said closure from said base, a closure sliding through said first portion toward said outlet end having said engagement means between said side walls such that engagement with said bag is prevented, said engagement means at least in part being exposed beyond said side walls during movement of said closure through said second tapered portion and opening upward to receive said bag end such that engagement with said bag is enabled while said closure is in said channel, and means for terminating the sliding of said closure along said base surface, said means for terminating acting after said closure has entirely cleared said outlet end of said channel.

4,563,857

METHOD AND APPARATUS FOR STRETCH FILM WRAPPING OF GOODS AGGREGATES

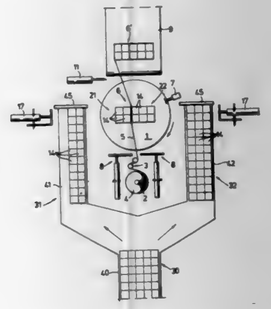
Jan K. A. Bergling, and Ralph H. Widenbäck, both of Jönköping, Sweden, assignors to TRIO-LENG Pac System AB, Jönköping, Sweden

Filed Jul. 16, 1984, Ser. No. 631,094

Claims priority, application Sweden, Jul. 21, 1983, 8304084

Int. Cl.⁴ B65B *11/04*

U.S. Cl. 53—399 **14 Claims**



1. A method of stretch film wrapping of a goods aggregate positioned in a generally horizontal plane, each aggregate including at least two articles, the method comprising the steps:

arranging a goods aggregate in a wrapping station, wrapping tensioned stretch film round the goods aggregate in the station during withdrawal of stretch film from a stretch film store, removing the wrapped goods aggregate from the station,

taking a new goods aggregate to the station, anchoring the stretch film part extending between the wrapped aggregate and the store at the new goods aggregate, and

parting the stretch film between the new goods aggregate and the wrapped aggregate after anchorage, including forming the new goods aggregate by moving at least two articles towards each other and into contact with both sides of the stretch film, which uninterruptedly extends between the stretch film store and the stretch film-wrapped aggregate, so that the film is anchored by being clamped between the articles of the newly formed aggregate.

4,563,858

METHOD OF MATERIAL DISTRIBUTION AND APPARATUS FOR USE IN THE METHOD

Jan Van Der Wal, Rotterdam, Netherlands, and Gerardus L. Nederpel, Sanderstead, United Kingdom, assignors to NAT Shipping Bagging Services Limited, Bermuda

Filed Jun. 7, 1982, Ser. No. 386,064

Claims priority, application United Kingdom, Jun. 10, 1981, 8117753

Int. Cl.⁴ B65B *51/07, 7/02, 1/04*

U.S. Cl. 53—418 **8 Claims**

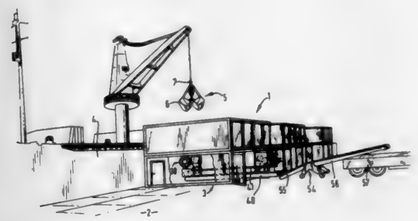
7. A method of distributing free-flowing material, comprising the steps of:

transporting free-flowing material in bulk and a bagging apparatus with weighing means and housed in at least one transportable module of standard shipping container dimensions from a second location to a first location, said module being compatible with other like standardized containers so that said module is stackable on and among said other like containers;

siting said bagging apparatus at said first location;

supplying the material to the bagging apparatus;

weighing the material into batches of predetermined weight in said receptacle;



positioning bags to receive the batches from said receptacle; and

delivering the batches of material into the bags.

4,563,859

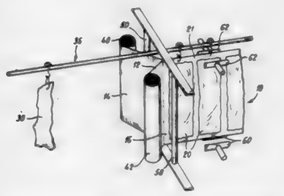
METHOD AND APPARATUS FOR PACKAGING PRODUCTS

Berend L. Visser, Kalmthout, Belgium, assignor to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Filed Jul. 13, 1983, Ser. No. 513,172

Int. Cl.⁴ B65B *9/02*

U.S. Cl. 53—450 **12 Claims**



1. A method of packaging products comprising:

suspending vertically products to be packaged from a conveyor rail system to be moveable in a path of movement along said conveyor rail system;

providing a pair of supply guide rolls having a sheet of flexible and sealable plastic packaging material extending therebetween and being present in substantially equal amounts on each supply roll;

positioning said supply guide rolls on either side of said conveyor rail system such that said packaging material extends between rolls in a vertical plane transverse to said path of movement, said plastic material having a vertical dimension sufficient to package said products;

moving said products along said path of movement into engagement with said packaging material and beyond said vertical plane while unwinding simultaneously said plastic material from both supply rolls, whereby upon movement beyond said vertical plane said products are wrapped by said packaging material; and

after wrapping each product, clamping together said plastic material at a location upstream of the said product and sealing said plastic material together along the vertical seam so as to completely wrap around said product.

4,563,860

METHOD AND APPARATUS FOR ENVELOPING ARTICLES WITH A PLASTIC FOIL OR THE LIKE

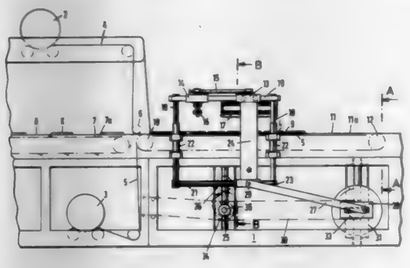
Claus K. Pfankuch, Käthnerort 19a, D-2000 Hamburg 76, Fed. Rep. of Germany

Filed Dec. 7, 1983, Ser. No. 558,859

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245156

Int. Cl.⁴ B65B *9/02, 51/10, 61/10*

U.S. Cl. 53—450 **7 Claims**



1. A method for enveloping articles with a plastic foil, and welding and separating the enveloped articles, the method comprising the steps of:

(a) enveloping the articles by supplying foil to articles on a continuously moving conveyor belt, the conveyor belt being driven at a speed higher than the speed with which the foil is supplied thereto;

(b) longitudinally and transversely welding the enveloped articles during continuous movement of the articles along the conveyor belt using (i) a welding device moveable up and down and forward and backwards in relationship to the enveloped articles continuously moving along the conveyor belt and having a transverse welding member and a longitudinal welding member; (iii) a slide for mounting the welding members, the slide being moveable forwards and backwards in relationship to the enveloped articles continuously moving along the conveyor belt; and (iii) a frame for slidably mounting the slide thereon, the frame being moveable up and down in relationship to the enveloped articles continuously moving along the conveyor belt; and

(c) separating the enveloped, welded articles by the longitudinal and transverse welding and the speed of the conveyor belt being higher than the speed with which the foil is supplied thereto.

4,563,861

METHOD OF PACKING COLLECTED OBJECTS AND PACKING STATION THEREFOR

Christian Barillec, 325 boulevard Gambetta, Tourcoing (Nord); Dominique Janvier, 31 Avenue de la Roseraie, Lille (Nord), and Marc Bonneton, 325 boulevard Gambetta, Lille (Nord), all of France

Filed Feb. 10, 1984, Ser. No. 578,863

Claims priority, application France, Nov. 29, 1983, 83 19255

Int. Cl.⁴ B65B *47/10*

U.S. Cl. 53—453 **7 Claims**

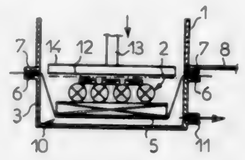
1. Apparatus for packaging objects of various shapes and sizes, comprising:

a container open at the top to receive objects to be packaged and having a peripheral edge and a bottom which is removable laterally, and

a chest open at the top and having a peripheral wall with an upper peripheral edge of a size and shape to support the lower peripheral edge of said container with a plasticized plastic film between the upper peripheral edge of said chest and lower peripheral edge of said container, a bottom and means for applying suction to said chest, after a container containing objects to be packaged is placed on said chest and the bottom of said container is removed laterally to deposit said objects on said plasticized plastic film, to draw said film down into said chest until said objects are within said chest, whereupon said container is removed and a rigid support is placed over said object and bonded to peripheral portions of said film, further comprising means for sensing the uppermost portion of said objects when said plasticized film with said objects thereon is drawn down into said chest by said suction means, said sensing means comprising a sensor positioned over said objects and means for lowering said sensor into contact with uppermost portions of said objects and then raising said sensor before said support is placed over said objects.

4. A method of packaging objects of various shapes and sizes which comprises the steps of:

placing said objects in a container having an open top to receive said objects, a peripheral wall having a lower peripheral edge, and a bottom removable laterally from the container,



placing said container having said objects therein on a chest open at the top and having a peripheral wall with an upper peripheral edge of a shape and size to receive said lower peripheral edge of said container and a closed bottom, said container being placed on said chest with a plasticized plastic film between the lower peripheral edge of said container and the upper peripheral edge of said chest,

removing the bottom of said container laterally from the container whereby said objects rest on said film,

applying suction to said chest to draw said film toward the bottom of said chest until uppermost portions of said objects are within said chest.

removing said container,

placing a support over said chest and bonding it to a peripheral portion of said film supported by said upper peripheral edge of said chest, and

sensing the uppermost portion of said objects when said film is drawn into said chest to determine that said objects are within said chest, the level of the uppermost portion of said objects being sensed by lowering a sensor into contact with the uppermost portion of said objects and then removing said sensor before said support is placed over said chest.

4,563,862

PACKAGE FORMING APPARATUS WITH COMBINED HOLDING AND STRIPPER MECHANISM

Howell T. McElvy, Decatur, Ga., assignor to Kliklok Corporation, Greenwich, Conn.

Filed Oct. 23, 1984, Ser. No. 663,891

Int. Cl.⁴ B05B *9/08*

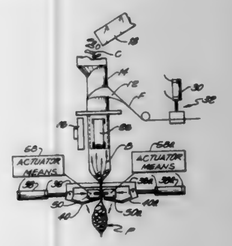
U.S. Cl. 53—552 **12 Claims**

1. A combined holding and stripper jaw apparatus for use in forming a package in a form, fill and seal packaging machine or the like, comprising:

(a) positive holding jaw means operative to close and grasp the packaging film formed into a tube;

(b) stripper jaw means mounted to said holding jaw means for movement between a ready position adjacent said holding jaw means and a strip position at the top of the package for stripping product previously delivered into the packaging film tube; and

(c) sealing jaw means positioned between said holding and stripping jaw means, said sealing jaw means including cam means for contacting and moving said stripper jaw means



into the strip position as said sealing jaw means are moved in a path to close and seal the packaging film tube and form a bag, whereby stripping occurs during inward movement of the sealing jaws and a minimum length of packaging film is required for each package.

4,563,863

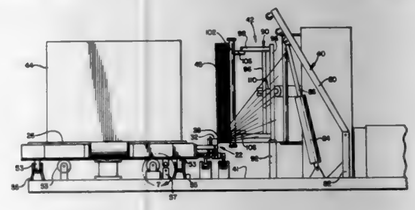
AUTOMATIC STRETCH WRAPPING MACHINE

John R. Humphrey, Naples, Fla., assignor to International Packaging Machines, Inc., Naples, Fla.

Filed Jul. 15, 1983, Ser. No. 514,048

Int. Cl.⁴ B65B *11/04*

U.S. Cl. 53—556 **33 Claims**



1. An automatic wrapping machine comprising:

(a) a turnthble having a surface for rotatably supporting a load to be wrapped with a wrapping material;

(b) means for providing wrapping material of a given width to be used to wrap a load disposed on the turntable, the load being wrapped with a section of wrapping material which is defined by a leading edge and a trailing edge;

(c) means for rotating the turntable to cause wrapping of the load with the wrapping material under tension during wrapping;

(d) means for gathering the wrapping material into a reduced width relative said given width comprising a means for engaging the edge of said material;

(e) clamping means mounted for rotation with the turntable for clamping a gathered leading edge of the wrapping material during initiation of wrapping of the load to cause the wrapping material to be wrapped around the load without slippage as it rotates with the turntable and for clamping gathered wrapping material at a conclusion of wrapping the load which becomes the gathered leading edge for wrapping the next load, the clamping means being disposed below the wrapping material at all times during wrapping of the load, except when the means for gathering has gathered the wrapping material and having means to open and close said clamping means;

(f) means for moving said material engaging means in a path aligned with the clamping means to move said material into the open clamping means at the end of the wrapping operation;

(g) cutting means carried by the turntable disposed between the surface of the turntable and the clamping means for severing the gathered wrapping material clamped by the clamping means at the conclusion of wrapping to form the trailing edge;

(h) means, separate from said gathering means, for attaching the portion of the wrapping material located between the load and the wrapping material providing means and the trailing edge to an underlying wrap of wrapping material with a width of contact with the underlying wrapping material being substantially equal to the given width and for aligning the material with the material engaging means; and

(i) means for controlling the operation of the wrapping machine to cause in the following sequence:

(i) the clamping means to clamp the gathered leading edge of the wrapping material gathered during the previous wrapping operation at the initiation of wrapping of a load to hole the wrapping material under tension to maintain stretch in the wrapping material and to release the clamped gathered leading edge of wrapping material at a time before the activation of the means for gathering to allowed the gathered wrapping material to assume a non-stretched condition;

(ii) the means for attaching to be activated to attach the said portion of the wrapping material to an underlying layer of wrapping material along its full width before the activation of the gathering means;

(iii) the means for gathering to be activated after the release of the gathered leading edge of the wrapping material from the clamping means to reduce the width of the wrapping material and move the material engaging means in its path so that it pushes the material into the open clamping means;

(iv) the clamping means to be reactivated after the wrapping material is gathered in the open clamping means to clamp the gathered wrapping material in proximity to the trailing edge of the material; and

(v) the cutting means to be activated to sever the clamped gathered material to sever the trailing edge from the clamped wrapping material whereby the clamping means holds the leading edge for the next load to be wrapped and the means for attaching attaches the trailing edge to the wrapped load.

4,563,864

APPARATUS FOR FILLING SACKS

Heinz Eschmann, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Dec. 12, 1983, Ser. No. 560,514

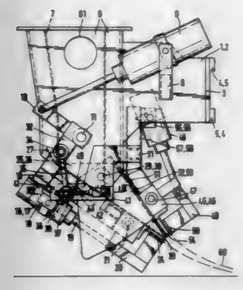
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1982, 3246089

Int. Cl.⁴ B65B *43/30*

U.S. Cl. 53—570 **8 Claims**

1. Apparatus for filling sacks, said apparatus comprising: a supporting frame; a pair of opposed closure flaps which are pivotable on said frame about spaced, parallel horizontal axes, said flaps having edges spaced from the axes and including clamping means for clamping opening-defining edges of sacks to be filled; a substantially vertical filling conduit having an axis and positioned between the flaps for supplying filling material for filling the sacks, said conduit being rigid and having an opening inclined to the conduit axis and which is closed by one of said closure flaps upon pivoting of the flaps to a substantially V-shaped receiving position for a new sack; one of said closure flaps being longer than the other flap and completely covering the opening of the filling conduit when the apparatus is in a first, sack-receiving position wherein said longer flap can be pivoted to sealingly abut and cover the opening of the filling conduit when the apparatus is in the

sack-receiving position; and pivoting means to pivot said closure flaps from said first, sack-receiving position to a second, sack filling position wherein said longer flap is pivoted away from the opening of the filling conduit to permit material to flow therethrough into the sack, wherein one of the closure flaps is secured to an arm of a lever means comprising part of



said pivoting means and the lever means is pivoted to the frame and to one end of a piston-cylinder unit carried on said frame, and the other closure flap is secured to an arm of a second lever means comprising part of said pivoting means, coupling means to couple said second lever means to said first lever means so that said pivoting means simultaneously pivots said pair of closure flaps always in the same direction.

4,563,865

Patent Not Issued For This Number

4,563,866

MULTI-ROW CORN CUTTER FORAGE HARVESTER AND/OR PICKER FORAGE HARVESTER

Eberhard Wistüba, Rettenbach; Martin Nüsser, Niederstotzingen, and Xaver Lenzer, Kötz, all of Fed. Rep. of Germany, assignors to Karl Mengele & Söhne, Günzburg, Fed. Rep. of Germany

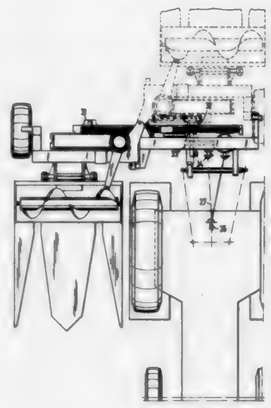
Filed May 9, 1984, Ser. No. 608,500

Claims priority, application Fed. Rep. of Germany, May 9, 1983, 3316966

Int. Cl.⁴ A01D *73/00, 69/00*

U.S. Cl. 56—228 **7 Claims**

1. A multi-row corn cutter forage harvester and/or picker forage harvester, such as a forage harvester of the disk wheel type, comprising an elongated first support bar arranged to be mounted on the three-point attachment linkage of a tractor so that said first support bar extends transversely of the normal forward travel direction of the tractor and has a first end, a second elongated support bar, harvesting means mounted on said second support bar, a lockable swivel hinge interconnecting said second support bar to said first support bar adjacent the first end of said first support bar so that said second support bar can be pivoted about the swivel axis from a first position extending laterally outwardly from the first end of said first support bar where the elongated directions of said first and second support bars extend generally in series whereby said second support bar is in a side-mounted position relative to the tractor and to a second position located behind said first bar in the normal forward travel direction of the tractor so that in the first position harvesting operations can be performed and in the second position the harvesting means are in a transport position, and means for driving said harvesting means at least in the first position, wherein the improvement comprises that said drive means comprises a belt drive including a first shaft connection on and spaced along said first support bar from the swivel axis, a second shaft connection on and spaced along said second support bar from the swivel axis, a first pulley mounted on said first shaft connection, a second pulley mounted on said second shaft connection, a belt extending continuously around said first and second pulleys, said swivel hinge located between



and spaced from said first and second pulleys in the first position of said second support bar and said first and second pulleys being located on the same side of said swivel hinge in the second position of said second support bar, means located on said first support bar and on said second support bar, in spaced relation from said swivel hinge, for holding said belt on said first and second pulleys in the first and second positions of said second support bar, said means for holding said belt comprises a first bracket attached to said first support bar and a second bracket secured to said second support bar with said first and second brackets being located closely spaced from said swivel hinge and a first web secured to said first bracket and a second web secured to said second bracket so that said first and second webs engage said belt and retain said belt on said first and second pulleys in the first and second positions of said second support bar.

4,563,867

MOWER MEANS

William S. Bokon, 6111 Geremander Ave., Rialto, Calif. 92376

Continuation-in-part of Ser. No. 237,379, Feb. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 54,132, Jul. 2, 1979, abandoned, which is a continuation of Ser. No. 816,291, Jul. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 661,157, Feb. 25, 1976, abandoned. This application Nov. 16, 1981, Ser. No. 321,596

Int. Cl.⁴ A01D *55/20*

U.S. Cl. 56—249 **11 Claims**

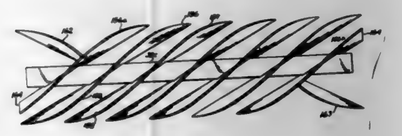
1. In a mower having a frame mounted on ground wheels with a transverse cutting bar on the frame at a selected cutting

height above ground level and with a rotary cutter assembly cooperative with the transverse bar for cutting operation,

the improvement to eliminate hazard to the operator by the cutting operation comprising:

said rotary cutter assembly having a plurality of outer circumferential cutting edges spaced along the transverse bar of circular profile configuration as seen along the axis of the rotary cutter assembly, and

said circumferential edges being operative to shift along the bar in response to rotation of the rotary cutter assembly



thereby to make the cutting operation nonhazardous by pushing away from the cutting operation any part of the operator's body that may inadvertently intrude into the zone of the cutting operation,

said rotary cutter assembly including arrays of resilient filaments thereon extending beyond its rotary cutting edges to brush against the cutting bar and thus flick loose material rearwardly from the zone of the cutting operation.

4,563,868

LARGE BALING PRESS FOR AGRICULTURAL PRODUCTS

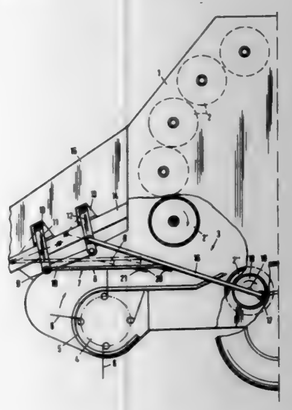
Gerhard Clostermeyer, Gütersloh, Fed. Rep. of Germany, assignor to Claas Ohg, Harsewinkel, Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,073

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3339925

Int. Cl.⁴ A01D *39/00*

U.S. Cl. 56—341 **11 Claims**



1. A large baling press for agricultural products, comprising a plurality of driven winding elements which at least partially limit a pressing chamber and form an inlet opening; means forming a product supply passage before said inlet opening and including prong drum unit limiting said product supply passage at its lower side, and a holding down rack limiting said product supply passage at its upper side, said rack being arranged to perform an oscillating movement in a traveling or product flowing direction and during said movement also to move downwardly in a direction toward said inlet opening so that a product is supplied to said inlet opening by cooperation of said prong drum unit and said holding down rack which limit said product supply passage from above and from below respectively, said rack including a plurality of bars extending parallel to and at a distance from one another and having two ends, and a transverse rod connecting said bars with one another at one of said ends; and a reciprocating coupler connected with said transverse rod.

4,563,869

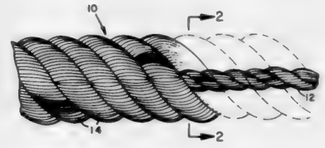
ROPE WITH REDUCED LASH-BACK CONSTRUCTION

Robert L. Stanton, Honesdale, Pa., assignor to American Manufacturing Company, Inc., Honesdale, Pa.

Filed May 17, 1982, Ser. No. 378,908

Int. Cl.⁴ D07B *1/02, 5/00*

U.S. Cl. 57—211 **18 Claims**



1. A multi-component rope comprising:

(a) a selected number of first components having first predetermined elongation characteristics, and

(b) a selected number of second components having second predetermined elongation characteristic which are considerably lower than said first elongation characteristics, said second components having an aggregate mass which is considerably greater than the aggregate mass of said first components.

4,563,870

LUBRICATED WIRE ROPE

Wilbert A. Lucht, Danville, Calif., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 549,060, Nov. 7, 1983, abandoned. This application Jun. 8, 1984, Ser. No. 618,797

Int. Cl.⁴ D07B *1/16, 7/12*

U.S. Cl. 57—223 **4 Claims**

1. Wire rope comprising a core of a plurality of strands of wire and a plurality of outer strands surrounding said core, each of said outer strands being nested in a space between two

of said core strands and oriented in the same helical lay as the core strands, all of said wires and strands being (a) made of a steel including about 0.03% to about 0.3% chromium, vanadium, molybdenum, or mixtures thereof, (b) coated with a lubricant composition comprising a viscous vehicle solid at ambient temperatures and including at least about 5% finely divided solid lubricant, and (c) stress-relieved at a temperature of at least 675° F.

4,563,871

YARN PIECING METHOD AND APPARATUS

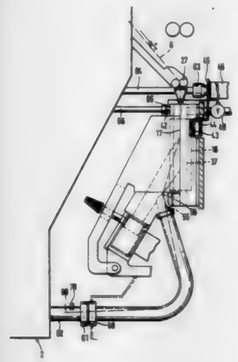
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haidenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany, assignors to Hans Stahlecker and Fritz Stahlecker, both of, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 619,139

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321234

Int. Cl.⁴ D01H *15/02*

U.S. Cl. 57—263 **29 Claims**



1. A yarn piecing process for piecing a spun yarn end with fibers in an open-end friction spinning machine of the type having:

two friction rollers rotatably drivable in the same direction and disposed adjacent one another to form a yarn forming wedge-shaped gap therebetween;

fiber supplying means for supplying individual fibers to the wedge shaped gap,

yarn holding suction means for applying suction forces to hold the spinning yarn in the wedge-shaped gap during normal spinning operations; and

yarn withdrawing means for withdrawing yarn from the wedge-shaped gap,

said process comprising piecing the yarn end without exposing the wedge-shaped gap, including:

(i) returning the spun yarn end to beyond the yarn forming region of the wedge-shaped gap utilizing yarn return suction means, and

(ii) subsequently switching on the fiber supplying means and the yarn withdrawing means to facilitate piecing of the yarn end with fibers supplied to the wedge shaped gap,

(iii) wherein said yarn holding suction means is switched off during the return of the yarn end.

4,563,872

START SPINNING ARRANGEMENT FOR AN OPEN END FRICTION SPINNING MACHINE

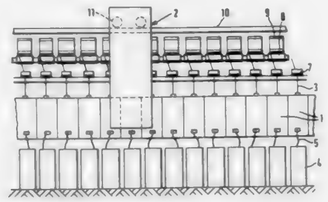
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Ueberkingen, Fed. Rep. of Germany, assignor to Fritz Stahlecker, Fed. Rep. of Germany and Hans Stahlecker, Fed. Rep. of Germany

Filed Apr. 26, 1984, Ser. No. 604,373

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1983, 3315034

Int. Cl.⁴ D01H *15/02*

U.S. Cl. 57—263 **41 Claims**



1. Process for start spinning yarn at a spinning unit of an open end friction spinning machine of the type having a yarn forming region composed of friction surface means, fiber feeding means for feeding individual fibers to the yarn forming region, yarn withdrawal means for withdrawing formed yarn from the yarn forming region, and suction means for applying suction air flow to assist in holding the forming yarn in the yarn forming region, said process comprising:

interrupting the feeding of fibers to the yarn forming region by the fiber feeding means,

exposing the yarn forming region by moving a cover part of the spinning unit from its closed normal spinning position to an open position,

returning a previously formed yarn end portion to a predetermined intermediate position adjacent the exposed yarn forming region,

moving the cover part to the closed normal spinning portion,

transferring the yarn end portion from the intermediate position to the yarn forming region while activating the fiber feeding means to supply individual fibers to the yarn forming region to piece up with the yarn end portion,

and activating the yarn withdrawal means to withdraw the yarn end portion and the pieced together newly forming yarn.

11. Apparatus for start spinning yarn at a spinning unit of an open end friction spinning machine of the type having a yarn forming region composed of friction surface means, fiber feeding means for feeding individual fibers to the yarn forming region, yarn withdrawal means for withdrawing formed yarn from the yarn forming region, and suction means for applying suction air flow to assist in holding the forming yarn in the yarn forming region, said apparatus comprising:

interrupting means for interrupting the feeding of fibers to the yarn forming region by the fiber feed means,

a movable cover part for closing a housing around the yarn forming region during normal spinning operations,

cover part moving means for exposing the yarn forming region by moving the cover part of the spinning unit to an open position,

yarn end return means for returning a previously formed yarn end portion to a predetermined intermediate position adjacent the yarn forming region,

yarn end transfer means for transferring the yarn end portion from the intermediate position to the yarn forming region while activating the fiber feeding means to supply individual fibers to the yarn forming region to piece up with the yarn end portion,

and yarn withdrawal activating means for activating the yarn withdrawal means to withdraw the yarn end portion and the pieced together newly forming yarn.

4,563,873

APPARATUS FOR CONTROLLING PRODUCTION IN A SPINNING MACHINE

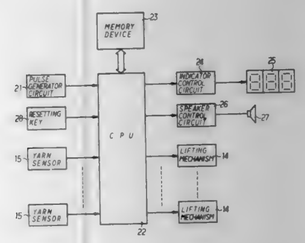
Takuzo Tooka, Toyoake, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Oct. 19, 1983, Ser. No. 543,256

Claims priority, application Japan, Oct. 21, 1982, 57-185298

Int. Cl.⁴ D01H *13/24, 9/14*

U.S. Cl. 57—264 **6 Claims**



1. An apparatus for controlling production in a spinning machine having a plurality of spinning stations each having a sliver can thereat, comprising:

a pulse generating circuit for generating pulse signals cyclically in synchronization with the yarn spinning operation at each of said spinning stations, each pulse signal corresponding to a unit length of yarn spun at any one of said spinning stations;

detecting means at each of said spinning stations for detecting normal passage of said yarn spun at the station, said detecting means being energized by the absence of said spun yarn to provide a detector signal when, and for the period during which the yarn is absent in its normal course of passage at the station;

respective warning means for each said station; and

control circuit means comprising a memory for storing a preset limit on the quantity of sliver consumption at each said spinning station, said limit substantially corresponding to the sliver capacity of said sliver can at the station, and central processing means connected to said pulse generating circuit and to each of said detecting means for receiving said pulse signals and said detector signals therefrom, said central processing means having means for computing the actual quantity of sliver consumption at each said spinning station by counting said pulse signals and, for each said station, respectively, subtracting from said count the number of pulse signals generated during each said time period when said detector signals are received from said detecting means at the station, said control circuit further having means providing a signal for energizing that one of said warning means associated with any one of said spinning stations when said computed sliver consumption at said one station attains said preset limit for the station.

4,563,874

DRIVING GEAR OF ROTOR TYPE OPEN END FINE SPINNING MACHINE

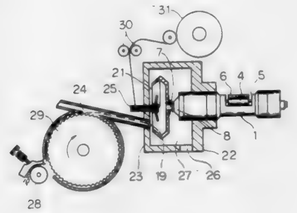
Junzo Hasegawa; Susumu Kawabata; Nobuharu Mimura, and Masao Kitano, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Oct. 18, 1983, Ser. No. 543,512

Claims priority, application Japan, Nov. 1, 1982, 57-193060

Int. Cl.⁴ D01H *1/12, 7/882*

U.S. Cl. 57—406 **6 Claims**



1. A rotational driving mechanism for a yarn spinning machine, said rotational driving mechanism comprising:

(a) a rotor comprising a cavity therein and an opening in communication with said cavity to permit fiber to be introduced therethrough into said cavity and mounted to be rotated for forming the fibers into a fiber bundle due to the rotation of said rotor;

(b) means disposed towards said opening for forming a first passage to feed fiber into said chamber;

(c) means disposed towards said opening for forming a second passage to extract yarn from said fiber bundle within said cavity;

(d) a rotation shaft coupled to rotate said rotor;

(e) a drive shaft driven at a first relatively low rotational speed;

(f) speed multiplying means interposed between said rotation shaft and said drive shaft for rotating said rotor at a second, relatively high speed;

(g) a cover disposed about said rotor and said rotational shaft, and having an exhaust port; and

(h) means for providing an air flow along a path within said cover to be exhausted through said exhaust port, whereby the fiber is transported through said first passage and into said chamber, said air flow directed about said rotational shaft to eliminate the friction heat caused by the rotation of said rotor.

4,563,875

COMBUSTION APPARATUS INCLUDING AN AIR-FUEL PREMIXING CHAMBER

Werner E. Howald, 5970 Crabtree La., Cincinnati, Ohio 45243

Continuation of Ser. No. 377,128, May 11, 1982, which is a continuation of Ser. No. 93,260, Nov. 13, 1979, which is a continuation of Ser. No. 877,897, Feb. 15, 1978, which is a division of Ser. No. 707,326, Jul. 21, 1976, Pat. No. 4,084,371, which is a continuation of Ser. No. 491,611, Jul. 24, 1974, abandoned. This application Mar. 21, 1985, Ser. No. 714,475

Int. Cl.⁴ F02C *9/00;* **F02G** *3/00*

U.S. Cl. 60—39.23 **4 Claims**

1. A combustor for generating a hot gas stream by the combustion of fuel in a pressurized air stream, said combustor comprising:

a housing;

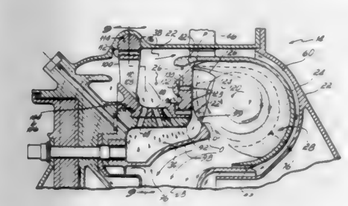
a combustion zone therein;

a plurality of radially spaced air-fuel premixing chambers each having an upstream end and opening downstream into said combustion zone;

means for injecting fuel into said premixing chambers at said upstream end independently of each other; and

a compressed air inlet plenum surrounding said premixing chambers and separated therefrom by baffles, said plenum communicating with said premixing chambers through openings in said baffles to generate a substantially homogeneous vapor-phase air-fuel premixture in each of said premixture chambers;

said plenum further communicating with said combustion zone through a plurality of radially spaced orifices adjacent the outer periphery of said baffles providing for the entry of main stream outwardly circumferential of each of said premixing chambers at the downstream end thereof;



said premixture entering said main air stream and having a substantial tangential gas flow velocity component when introduced therein such that said air-fuel premixture is substantially instantaneously intermixed into said main air stream to generate a combustible air-fuel mixture for burning in said combustion zone;

the main air streams being radially spaced and having a vector component of flow effective to generate overlapping vortical recirculation zones of burned gases.

4,563,876

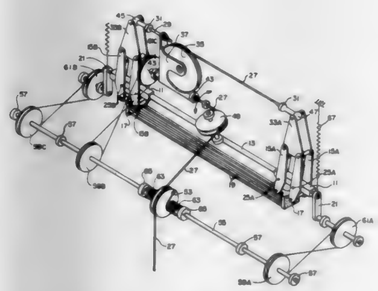
LINEAR OUTPUT NITINOL ENGINE

Ridgway M. Banks, 7411 Park Vista, El Cerrito, Calif. 94530

Filed Feb. 25, 1985, Ser. No. 704,660

Int. Cl.[4] F03G *7/06*

U.S. Cl. 60—527 **5 Claims**



1. A linear output nitinol engine comprising

an external support framework for said engine including a pair of parallel fluid baths in the lower end thereof and an internal bridge structure,

a wire transport mechanism including a pair of pivot blocks secured to the opposite ends of a compression member, a pair of identical linkage levers journalled between each of their ends at the same pivot points to each of the pivot blocks, a loom secured to the lower ends of each of said pair of linkage levers, a multiplicity of nitinol wires strung between said looms, and a power takeoff block secured to the top ends of each of said pair of linkage levers,

a pair of throw over arms supporting the opposite ends of said compression member, said throw over arms journalled to reciprocate the looms and wires disposed on the lower ends of said parallel linkage levers into and out of said parallel baths,

a pulley journalled in a flip-flop supporting bracket mounted on said bridge structure and arranged to reciprocate in a manner whereby a tangent line to the top of said pulley continually intersects the power takeoff points on said power takeoff blocks,

a power takeoff means including a tension member disposed on said above-described tangent line secured between the power takeoff point on one of said power takeoff blocks and said pulley supporting bracket, and a power output cable secured to and extending from the power takeoff point on the other of said power takeoff blocks and around said pulley to said load,

timing means for synchronizing said throw over arms and the flip-flop of said pulley, and

means for storing energy extracted from said power output cable for biasing the timing means.

4,563,877

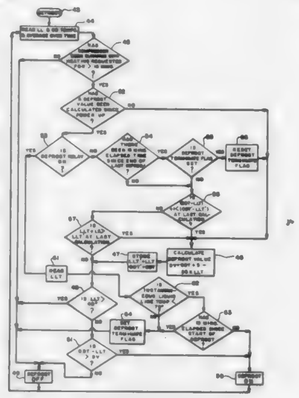
CONTROL SYSTEM AND METHOD FOR DEFROSTING THE OUTDOOR COIL OF A HEAT PUMP

James R. Harnish, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 12, 1984, Ser. No. 619,957

Int. Cl.[4] F25D *21/06*

U.S. Cl. 62—80 **16 Claims**



1. In a heat pump having an outdoor coil through which refrigerant flows and absorbs heat from outdoor ambient air, a defrost control system for the outdoor coil comprising:

a first temperature sensor for sensing the outdoor ambient temperature;

a second temperature sensor for sensing a temperature which is related to the temperature of the outdoor coil;

control means responsive to said first and second temperature sensors under clean coil conditions for determining a Defrost Value which is the difference that will exist between the two sensed temperatures under frosted coil conditions when defrosting will be required;

and defrost means, controlled by said control means, for defrosting the outdoor coil when the Defrost Value is reached,

said control means functioning, before defrosting occurs, to recalculate the Defrost Value any time there is a predetermined change in sensed temperatures, which will be the result of changes in weather conditions.

4,563,878

SUPER-HEAT MONITORING AND CONTROL DEVICE FOR AIR CONDITIONING REFRIGERATION SYSTEMS

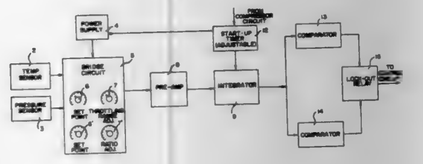
Richard A. Baglione, 2220 Park Ave., Apt. #15, Santa Clara, Calif. 95050

Filed Dec. 13, 1984, Ser. No. 681,030

The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.

Int. Cl.[4] F25B *41/00*

U.S. Cl. 62—115 **18 Claims**



1. Apparatus for quantitatively monitoring the amount of super-heat contained in the refrigerant vapor of an air conditioning refrigeration system and locking-out the refrigeration system in response to sustained variation for longer than a selected interval of the super-heat above or below predetermined quantitative limits defining a "deadband" comprising:

(a) means for independently sensing the temperature and pressure of the refrigerant vapor and reflecting the sensed values of the temperature and pressure as values of electrical resistance;

(b) a power supply adapted to provide a predetermined regulated output;

(c) a bridge circuit connected to said power supply and to said temperature and pressure sensors and responsive to said values of electrical resistance and calibrated to balance said values of electrical resistance to produce a predetermined electrical output signal correlated quantitatively to said super-heat;

(d) a preamplifier connected to receive said predetermined electrical output signal from said bridge circuit;

(e) a preamplifier bias circuit connected to receive the output from said preamplifier, said preamplifier bias circuit being calibrated to produce a zero voltage output from said preamplifier when said bridge circuit produces said predetermined electrical output signal;

(f) an integrator circuit connected to receive the output signal of the preamplifier bias circuit and adapted to produce either a positive or negative output when said super-heat varies from said predetermined value;

(g) a pair of comparator circuits connected to receive the output from said integrator circuit and adapted to produce an output signal through one or the other of two output circuits depending upon whether the output from said integrator is positive or negative and of a predetermined value; and

(h) lock-out means responsive to variations in said bridge circuit output above or below said predetermined quantitative limits whereby lock-out timing becomes a function of the amount that said predetermined quantitative limits of super-heat are exceeded.

4,563,879

HEAT PUMP WITH CAPILLARY TUBE-TYPE EXPANSION DEVICE

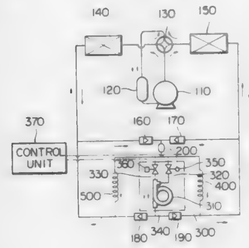
Hiroaki Hama; Masami Imanishi, both of Wakayama, and Naoki Tanaka, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1985, Ser. No. 736,357

Claims priority, application Japan, May 23, 1984, 59-106736; May 23, 1984, 59-106737

Int. Cl.[4] F25B *13/00*

U.S. Cl. 62—160 **4 Claims**



1. A heat pump apparatus comprising:

a compressor;

a first heat exchanger connected to the discharge side of said compressor;

a second heat exchanger connected to the suction side of said compressor;

a main capillary tube connected between said first heat exchanger and said second heat exchanger;

adjustable means for cooling refrigerant flowing through said main capillary tube;

a solenoid valve connected to the intake side of said main capillary tube;

means for controlling the opening and closing of said solenoid valve in accordance with operating conditions;

an auxiliary cooling capillary tube which is connected in parallel with said main capillary tube between said first heat exchanger and said second heat exchanger and which has a higher resistance to flow than said main capillary tube; and

an auxiliary heating capillary tube which is connected in parallel with said main capillary tube and said auxiliary cooling capillary tube between said first heat exchanger and said second heat exchanger and which has a higher resistance to flow than said main capillary tube.

4,563,880

ICE-CREAM MACHINE FOR FAMILY USE

Alberto Cipelletti, Guardamiglio, Italy, assignor to Firm Alberto Cipelletti, Guardamiglio, Italy

Filed Aug. 2, 1984, Ser. No. 637,110

Claims priority, application Italy, Aug. 4, 1983, 22591/83[U]

Int. Cl.[4] A23G *9/00*

U.S. Cl. 62—234 **1 Claim**

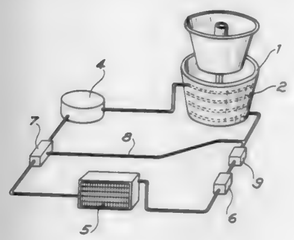
1. An ice-cream making machine for family use; wherein the ice-cream machine includes an integral refrigerating unit having an evaporator, an expansion nozzle, a condenser and a compresser connected to one another in series by a refrigerant line; the evaporator including a container with coils therein which container retains a removable whisking vessel having the ice-cream therein which whisking vessel is cooled by the evaporator, the improvement characterized by:

an auxiliary duct connected to the refrigerant line upstream of the expansion nozzle and downstream of the evaporator for receiving hot refrigerant from the evaporator,

a solenoid valve disposed in the refrigerant line between the condenser and compressor; the solenoid valve having a first mode of operation wherein condensed, cool refriger-

ant flows from the compressor to the condenser, and a second mode of operation wherein uncondensed, hot refrigerant flows from the compressor to the evaporator to feed hot refrigerant to the evaporator, wherein ice which has formed between the container of the evaporator and the whisking vessel is melted freeing the whisking vessel for easy removal from the container;

pushbutton means for operating the solenoid to switch the solenoid from the first mode to the second mode;



timing means for limiting duration of the solenoid valve operation in the second mode to a time just sufficient to melt the ice disposed between the container and whisking vessel, and

a check valve positioned between the evaporator and capillary for preventing refrigerant from flowing towards the condenser.

4,563,881

CONTAINER FOR COOLING A COOLED COMMODITY

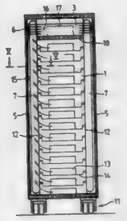
Peter Bucher, Pfäffikon, Switzerland, assignor to Firma Heinrich Bucher, Fällanden, Switzerland

Filed Aug. 6, 1984, Ser. No. 638,015

Claims priority, application Switzerland, Aug. 8, 1983, 4302/83

Int. Cl.⁴ F25D *3/08*

U.S. Cl. 62—457 **5 Claims**



1. A container for cooling a commodity uniformly over the entire surface thereof using a coolant comprising a coolant storage part, a commodity storage part, means for separating said coolant storage part from said commodity storage part and a plurality of self contained heat pipes each having a cold part located in said coolant storage part and a hot part located in said commodity storage part for increasing the heat flow between said coolant storage part and said commodity storage part wherein both of the hot and cold parts of the said plurality of heat pipes are provided with conducting surfaces which improve the heat transfer of the heat pipes wherein the conducting surface for said hot part comprises a container wall in the commodity storage part which is in contact with the hot part of said plurality of heat pipes and the conducting surface for said cold part comprises a carrier for the coolant wherein the cold part of the heat pipe is bent in the coolant part and extends below the carrier for the coolant.

4,563,882

AIR COOLING TYPE ABSORPTION COOLER

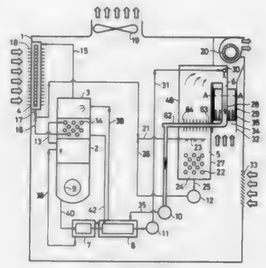
Yoshifumi Kunugi; Shigeo Sugimoto, both of Ibaraki; Kisaburo Minakawa, Tsuchiura, and Kenzi Machizawa, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1985, Ser. No. 746,666

Claims priority, application Japan, Jun. 20, 1984, 59-125107; Sep. 28, 1984, 59-201606

Int. Cl.⁴ F25B *15/00*

U.S. Cl. 62—476 **14 Claims**



1. An air cooling type absorbing cooler comprising:

a first generator with a heating source into which is poured absorbing solution composed by mixing lithium bromide as an absorbent with water as a refrigerant;

a second generator into which said absorbing solution is poured and in which the refrigerant vapor generated by said first generator is used as a heating source;

a condenser for cooling with air the refrigerant generated by said first and second generators;

an evaporator for producing a chilled water by evaporating the refrigerant from said condenser;

an air cooling type absorber which uses air as a cooling source for producing dilute absorbing solution containing more refrigerant by making the absorbing solution which is returned from said first and secohd generators absorb the refrigerant vapor from said evaporator;

a solution pump for supplying said dilute absorbing solution generated by said air cooling type absorber to said first and second generators; and

a heat exchanger for exchanging heat between said dilute absorbing solution supplied from said absorber to said first and second generators and the absorbing solution which is returned from said first and second generators to said absorber;

said air cooling type absorber including an absorbing pipe for the passage of said absorbing solution and refrigerant vapor and a passage provided outside of said absorber through which the air which is to cool said absorbing solution and said refrigerant vapor may pass and so constituted as to exchange heat between said cooling air at the inlet side and said absorbing solution and refrigerant vapor at the outlet side, and between said cooling air at the outlet side and said absorbing solution and refrigerant vapor at the inlet side.

4,563,883

SPECIMEN IMMERSING DEVICE

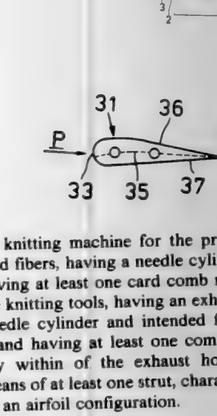
Hellmuth Sitte, Siefeld, Austria, assignor to C. Reichert Optische Werke AG, Vienna, Austria

Filed Sep. 17, 1984, Ser. No. 651,381

Int. Cl.⁴ F25B *19/00*

U.S. Cl. 62—514 R **11 Claims**

1. A device for immersing a specimen into a cryogenic cooling liquid comprising a holder for carrying a specimen, means for injecting said holder at a predetermined velocity



downwardly into the liquid, and means for rotating the holder while in said liquid.

4,563,884

CIRCULAR KNITTING MACHINE FOR THE PRODUCTION OF GOODS WITH ENMESHED FIBERS

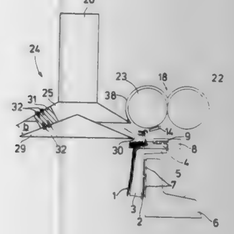
Klaus Kunde, Kohlberg; Helmut Grimm, Neckartailfingen, and Lorenz Becker, Aichtal, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Fed. Rep. of Germany

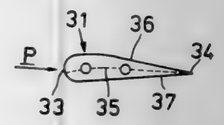
Filed Dec. 22, 1983, Ser. No. 564,413

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3247957

Int. Cl.⁴ D04B *9/14, 35/32*

U.S. Cl. 66—93 **7 Claims**





1. Circular knitting machine for the production of goods with enmeshed fibers, having a needle cylinder carrying knitting tools, having at least one card comb means for combing fibers into the knitting tools, having an exhaust hood disposed above the needle cylinder and intended for the removal of loose fibers, and having at least one component disposed at least partially within of the exhaust hood and fastenable thereto by means of at least one strut, characterized in that the strut **(31)** has an airfoil configuration.

4,563,885

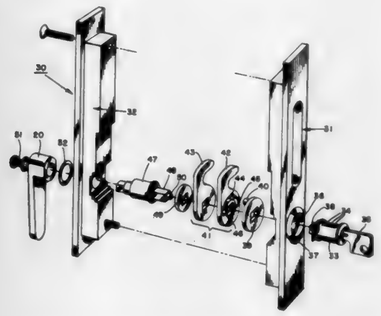
PATIO SLIDING DOOR LOCK ASSEMBLY AND METHOD

Roy H. Madden, Burlington, N.C., assignor to Excalibur Locks, Inc., Alamance County, N.C.

Continuation of Ser. No. 366,762, Apr. 8, 1982, abandoned. This application May 24, 1984, Ser. No. 613,763

Int. Cl.⁴ E05B *65/08*

U.S. Cl. 70—97 **6 Claims**



1. A key operated lock assembly for a patio sliding door having first and second locking positions for engaging a catch means comprising: a cylinder means, a cam wheel means, said cam wheel means including a lug member, said cam wheel means joined to said cylinder means, said cylinder means defining a key receiving slot, a latch member, said latch member for engaging said catch means, said latch member having a semi-circular lug slot, said lug member slidably received in said semi-circular lug slot, an independent rotatable handle member, said handle member rigidly joined to a shaft, said shaft joined to said latch member for rotation therewith, said cylinder means including a tumbler element and a shoulder stud, a first support means, said cylinder means mounted on said first support means, said first support means defining a plurality of tumbler receiving grooves, said shaft having an extension means, said extension means including an axle member, said shoulder stud receiving said axle member, said cylinder means being rotatable to a first locking position by a key for moving said lug member to one end of said semi-circular slot urging said latch member into engagement with the catch means whereat said handle member cannot be rotated and said cylinder means being rotatable to a second locking position by a key for moving said lug member to said other end of said semi-circular slot whereat said handle member can be rotated to disengage said latch member from said catch means.

4,563,886

LOCKING ARRANGEMENT FOR SECURING DOORS

Karl Kletzmaier, Ottensheim, and Gunther Krippner, Linz, both of Austria, assignors to ELEKTRONIKBAU Krippner & Kletzmaier Gesellschaft m.b.H. & Co., Linz, Austria

Filed May 26, 1983, Ser. No. 498,309

Claims priority, application Austria, Jun. 7, 1982, 2208/82

Int. Cl.⁴ E05B *47/00*

U.S. Cl. 70—118 **11 Claims**

1. A locking arrangement for securing a door having a door frame, which comprises

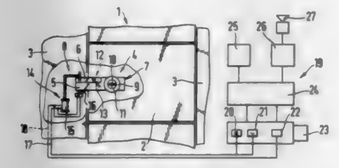
(a) a lock bolt and a safety bolt mounted for displacement relative to the door,

(b) a first locking device associated with the lock bolt and having

(1) a key-operated locking mechanism for locking the lock bolt,

(c) a second locking device associated with the safety bolt and having

(1) a latch element for engaging the safety bolt,
(2) a remote-controllable unlocking drive for the latch element and
(3) a drive device effective in an opening direction and cooperating with the safety bolt for adjustment therewith into a locking position and into a starting position allowing for the displacement of the safety bolt, respectively,



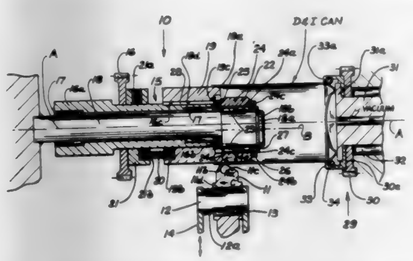
(d) a positioning means associated with the lock bolt, and
(e) a circuit control arrangement for the remote-controllable unlocking drive,
(1) the lock bolt positioning means assuming a circuit switching position when the lock bolt is open, wherein the remote-controllable unlocking drive for the latch element is actuated by the control arrangement to release the latch element.

4,563,887

CONTROLLED SPIN FLOW FORMING

Renato J. Bressan; Andrew Halasz, both of Crystal Lake, Ill., and Lawrence S. Maccherone, Severna Park, Md., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 14, 1983, Ser. No. 542,309
Int. Cl.⁴ B21D *17/04*
U.S. Cl. 72—84 **4 Claims**



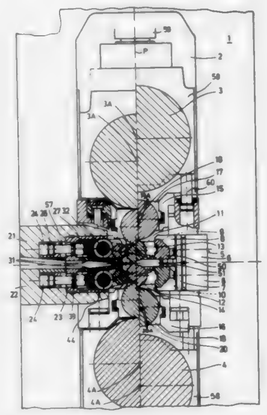
1. An apparatus for holding and rotating a thin wall hollow cylindrical container about its axis whereby same is supported with a straight wall open end for receiving a spin flow forming tool to neck and flange that end comprising:
a holder for engaging the inside of the straight wall open end of the container being mounted for driven rotary motion about and axial motion along the axis of the container and having a resilient means located thereon to bias said holder along that axis and into the open end of the container,
a roller with a peripheral deforming nose positioned externally of the container and mounted upon a mandrel for free rotary and controlled radial movement toward and away from the sidewall of the container, said roller being biased for axial movement along its mandrel and said roller mandrel being located parallel to the axis of the container but external thereof,
a sleeve member within the container and supported on another axis positioned parallel to the axis of the container but offset therefrom a predetermined distance and said sleeve member supported for free rotary motion in a predefined fixed axial position inwardly of the container relative to said holder for engagement with the inside wall of the container open end and abutment with the inward face of said holder to define a plane therebetween near which the nose of said roller first contacts the straight wall open end for spin flow forming the contacted wall inwardly when said roller is moved toward said container axis against the straight wall and between said holder and said sleeve member, said sleeve member having a flat circumferential chamfer at its end opposed to the inward face of said holder and said roller having a peripheral flat surface and also having a sloped trailing surface opposed to said chamfer, said container having a portion of its open end supported by said holder so that said open end portion extends across said plane, and said roller being positioned opposite the portion of the container which extends across said plane, whereby during radial inward movement of the roller into said plane the biased holder forces the biased roller toward the axially fixed sleeve while the chamfer on the axially fixed sleeve cooperates with the opposed sloped surface of the roller to shape a cone on the can as the roller continues its radial inward movement as part of the necking operation performed on the can.

4,563,888

SIX-HIGH ROLL STAND WITH BRACED AND REMOVABLE WORKING ROLLS

Wilfried Bald, Hilchenbach; Hans Römmen, Dormagen, and Erich Stoy, Ratingen, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag AG, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 3, 1984, Ser. No. 657,415
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1983, 3335857
Int. Cl.⁴ B21B *29/00*
U.S. Cl. 72—243 **13 Claims**



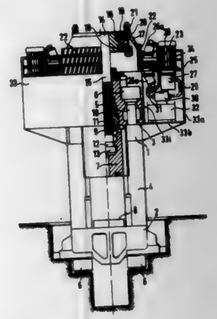
1. A roll stand comprising:
a frame having a pair of sides spaced apart transversely of a workpiece travel direction and formed with respective throughgoing windows aligned transversely of the direction and a pair of vertically spaced traverses extending horizontally perpendicular to the direction between the frame sides;
two outer backup rolls centered on parallel axes transverse to the direction and spaced vertically apart and each having two journal blocks vertically displaceable and guided in the windows of the respective frame sides;
respective upper and lower guide elements limitedly vertically displaceable in the windows between the outer-roll journal blocks;
two inner backup rolls centered on parallel axes between and coplanar with the outer-roll axes and each having two journal blocks vertically displaceable and guided in the respective guide elements;
respective pairs of positioning actuators in the windows vertically between the respective inner-roll blocks, the actuators of each pair confronting each other in the direction and being oppositely braced in the direction against the respective frame side;
respective supports carried on and between the actuators of each pair;
respective second upper and lower guide elements limitedly vertically displaceable on the supports, the positioning actuators being expansible and contractile to displace the guide elements in the direction;
two working rolls centered on parallel axes between and parallel to the other roll axes and each having two journal blocks fitted to and axially slidable in the respective second guide elements, whereby the positioning actuators can position the working rolls in the direction;
an insert carried in the traverses axially between and secured to the positioning actuators upstream of the roll-axis plane;
respective rows of bracing rollers carried on the insert and extending axially along the working rolls between same and the traverses, the insert, bracing rollers, and upstream positioning actuators forming an integral bracing unit, at least one of the windows being shaped such that the bracing unit can be withdrawn axially through the respective frame side; and
means including respective rows of bracing actuators braced in the direction between the rollers and the traverses for displacing the rollers through at least 50 mm in the direction and pressing the rollers opposite to the direction against the respective working rolls.

4,563,889

SCREW PRESS

Hubert Landwehr, Neuss, Fed. Rep. of Germany, assignor to SMS Hasenclever Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 13, 1984, Ser. No. 589,030
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309594; Apr. 14, 1983, 3313472
Int. Cl.⁴ B21J *9/18*
U.S. Cl. 72—454 **5 Claims**



1. A screw press comprising:
a press frame;
an upper cross member on said frame;
a platform on said frame surrounding said upper cross member;
a press spindle;
a flywheel rotatably mounted on said frame;
a friction coupling operatively connecting said flywheel to said spindle so that rotation of said flywheel rotatably drives said spindle;
an internally screw threaded nut non-rotatably mounted in said upper cross member;
an external screw thread on said spindle in axially displaceable screw threaded engagement with said nut;
external gear teeth on said flywheel;
a plurality of external gear toothed pinions rotatably supported on said platform operatively engaging said external teeth on said flywheel so that rotation of said pinions rotatably drives said flywheel;
said external teeth on said flywheel having an axial length at least as great as the maximum press stroke plus the axial length of said teeth on said pinions;
respective oil-hydraulic axial piston motor means mounted on said platforms and operatively connected to each pinion for rotatably driving each pinion; and
a respective fluid supply means for driving each piston motor means comprising,
a separate controllable hydraulic pump mounted on said platform operatively connected to a respective axial piston motor means for pumping oil-hydraulic fluid to drive said motor means, said pump being reversible with respect to the fluid flow direction to operate said motor means to drive said respective pinion in opposite directions, and
an electric motor for each pump mounted on said platform operatively connected to a respective pump to drive said respective pump.

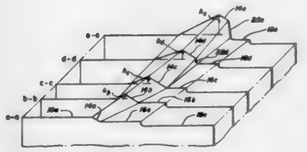
4,563,890

CUT-OFF STYLE, ROLL THREAD FLAT DIES

Joseph F. Dickson, Boylston, Mass., assignor to Litton Industrial Products, Inc., Holden, Mass.

Filed Jan. 27, 1984, Ser. No. 574,411
Int. Cl.⁴ B21H *3/06*
U.S. Cl. 72—469 **7 Claims**





1. A cut-off style, roll thread flat die for use with a matched cut-off style, roll thread flat die to form a threaded, pointed fastener such as a gimlet point screw, said cut-off style, roll thread flat die having a top operating surface extending horizontally comprising means to form body-threads and point threads in said fastener, a slug traction ramp to provide controlled rotation for the cut-off slug and a slug extrusion taper to provide proper extrusion of the cut-off slug from the fastener, said slug traction ramp and said slug extrusion taper extending in side-by-side relation from a start location, past a transition location to a termination location,
said slug traction ramp and said slug extrusion taper having a common edge and thereby being laterally continuous from said start location to said transition location,

said slug extrusion taper forming an obtuse angle with said slug traction ramp from said start location to said transition location,

the edge of said slug extrusion taper adjacent said slug traction ramp being substantially vertically spaced above the edge of said slug traction ramp adjacent said slug extrusion taper from said transition location to said termination location, said spacing continuously increasing from said transition location to said termination location,

said slug extrusion taper having a selected and constant angle of inclination,

said slug traction ramp having a selected and constant orientation, and

said slug traction ramp and extrusion taper being oriented relative to each other so that the cut-off slug is controllably rotated by the slug traction ramp as the fastener is threaded and the slug cut from the fastener body.

4,563,891

PIPE BENDING MACHINE

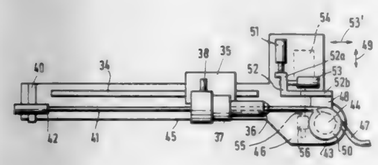
Rigobert Schwarze, Olpener Str. 460-474, 5000 Köln 91, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 549,884

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1982, 3240799

Int. Cl.⁴ B21D *7/04, 9/05*

U.S. Cl. 72—149 **11 Claims**



1. A pipe bending machine comprising a supporting frame, defining an upper side, two opposite longitudinal sides and a head face, a flat beam secured to said upper side of the frame and having a projecting portion extending forwardly in longitudinal direction of the frame past said head face to leave free space underneath; a feeding carriage movable along an upper edge of one longitudinal side of the frame; a collet mounted on the carriage for holding a pipe; a bending table of a rotation symmetrical configuration arranged on said projecting portion of the flat beam to turn about an upright axis of rotation; a bending die secured on the bending table; a clamping jaw and a slide bar arranged opposite the bending die to cooperate therewith; first driving means arranged on said frame at said one longitudinal side thereof, said first driving means being coupled to said slide bar to move the same in two opposite radial directions relative to said upright axis of rotation and in the longitudinal direction of the frame; second driving means including a hydraulic motor having a shaft provided with a worm shaft extending transversely to the longitudinal direction of the frame, and the bending table being provided with a circumferential worm gear engaging said worm shaft; said first driving means for the slide bar including a hydraulic cylinder and piston unit which is arranged above said hydraulic motor to act in said opposite radial directions, and an additional hydraulic cylinder and piston unit arranged above the hydraulic motor to act in said longitudinal direction; said bending table including an outer housing and a sleeve within said housing, said sleeve being constructed as a hydraulic cylinder in which a double sided piston is arranged for reciprocating axial movement, the piston being provided with an upwardly directed piston rod projecting out of the sleeve; said bending die being assembled of an upper die part and a lower die part separated by a horizontal separation plane, the lower die part being connected to a top part of said sleeve and the upper die part being connected to a projecting part of said piston rod, and the bending die being formed in the region of its separating plane with a circumferential groove for accommodating a pipe.

4,563,892

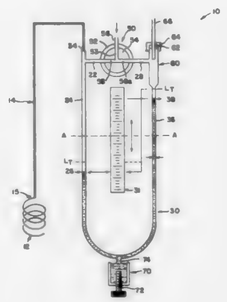
TOTAL DISSOLVED GAS PRESSURE MEASURING DEVICE

Brian G. D'Aoust, 7595 Finch Rd. NE., Bainbridge Island, Wash. 98110

Filed Jul. 24, 1984, Ser. No. 634,147

Int. Cl.⁴ G01N *7/10*

U.S. Cl. 73—19 **17 Claims**



1. A total dissolved gas pressure measuring device for liquids, comprising:

(a) a minimal internal volume partly bounded by a gas permeable membrane formed so as to separate the liquid from said minimal internal volume,

(b) a connecting volume on the gas phase side of said membrane between said membrane and a pressure responsive means such that the volume thereof is as small as possible and resistant to hydrostatic pressure so that for changes in measured total gas pressure the changes in gas content of the internal volume space are also as small as possible,

(c) means for maintaining constancy of said internal volume on said gas phase side of said membrane, and

(d) a gas pressure measuring means connected to and partly bounding said internal volume space so as to define a closed connection, said gas pressure measuring means including a pressure sensitive surface to be contacted by said gas and said pressure measuring means also including a pressure responsive, visual read-out means for registering pressure exerted by said gas on said pressure sensitive surface.

4,563,893

METHODS AND APPARATUS FOR DETECTION AND IDENTIFICATION OF VOLATILE MATERIALS AND ODORS

Necmi Tanyolac, Bogazici University, Istanbul, Turkey, and John N. Labows, Horsham, Pa., assignors to Necmi Tanyolac, Istanbul, Turkey

Filed Apr. 22, 1983, Ser. No. 487,870

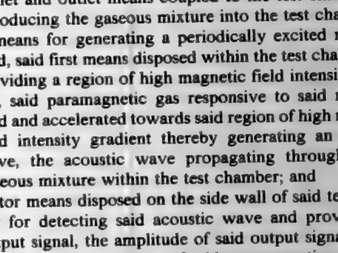
Int. Cl.⁴ G01N *31/06*

U.S. Cl. 73—23 **24 Claims**

1. An apparatus for the detection of odor comprising:

dielectric sensing means having a dielectric potential responsive to odor molecules adsorbed onto said sensing means, said sensing means being at least partially permeable to flow of gas,

carrier gas flow means for directing a substantially uniform flow of carrier gas into contact with and through said sensing means, and



means for detecting the dielectric potential of said sensing means.

4,563,894

PARAMAGNETIC OXYGEN SENSOR

Henry E. Karrer, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 21, 1984, Ser. No. 642,972

Int. Cl.⁴ G01N *29/02;* **G01R** *33/12;* **G01F** *1/66*

U.S. Cl. 73—24 **11 Claims**

1. Apparatus for measuring the concentration of a paramagnetic gas in a gaseous mixture, said apparatus comprising:

a test chamber;

gas inlet and outlet means coupled to the test chamber for introducing the gaseous mixture into the test chamber;

first means for generating a periodically excited magnetic field, said first means disposed within the test chamber for providing a region of high magnetic field intensity gradient, said paramagnetic gas responsive to said magnetic field and accelerated towards said region of high magnetic field intensity gradient thereby generating an acoustic wave, the acoustic wave propagating throughout the gaseous mixture within the test chamber; and

detector means disposed on the side wall of said test chamber for detecting said acoustic wave and providing an output signal, the amplitude of said output signal indicative of the concentration of said paramagnetic gas in the gaseous mixture.

4,563,895

APPARATUS AND METHOD FOR ULTRASONIC DETECTION OF INCLUSIONS IN MOLTEN METALS

Charles E. Eckert, Plum Boro, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 20, 1984, Ser. No. 642,488

Int. Cl.⁴ G01N *29/02*

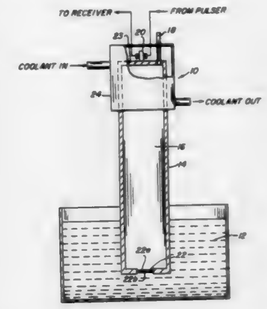
U.S. Cl. 73—61 R **20 Claims**

1. A probe for carrying ultrasonic waves between a transducer and a body comprising a molten metal or alloy, said probe comprising

(a) a refractory shell, said shell being inert to molten metals,

(b) a coupling medium for carrying ultrasonic waves between a transducer and a window spaced from said transducer, said coupling medium comprising a liquid metal contained within said shell, the acoustic attenuation factor for ultrasonic waves between the transducer and coupling medium being less than about 3 dB,

(c) a window for carrying ultrasonic waves between said



coupling medium and said body, said window being supported by said shell and comprising

(1) an interior surface portion contacting said coupling medium, the acoustic attenuation factor for ultrasonic waves between said coupling medium and said interior surface portion being less than about 3 dB, and

(2) an exterior surface portion wettable by said body, the acoustic attenuation factors for ultrasonic waves between said interior and exterior surface portions and between said exterior surface portion and said body each being less than about 3 dB.

4,563,896

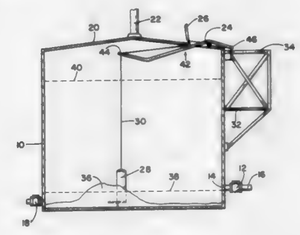
GAUGER'S AID FOR USE IN SAMPLING BOTTOM SEDIMENT CONDITIONS IN OIL STORAGE TANKS

Lewis R. Arnold, Nowata, Okla., assignor to Bigheart Pipe Line Corporation, Reno, Nev.

Filed Nov. 9, 1983, Ser. No. 549,900

Int. Cl.⁴ G01F *23/00*

U.S. Cl. 73—290 R **5 Claims**



1. A gauger's system for use in sampling bottom sediment conditions in an oil storage tank in which a sample is taken through a thief latch opening in the tank top, the opening being adjacent the tank peripheral edge, comprising:

a thief having means for taking a sample of bottom sediment;

a rope, said thief being secured to one end thereof;

a tool having an elongated slender body member of a length to extend through a thief hatch opening in a tank top and to at least about the central vertical axis of the tank for which it is dimensioned;

a forked member on the end of said tool body member dimensioned to be passed through a tank thief hatch opening, the forked member adaptable to slideably receive said rope having said thief at the end thereof; and

a handle member on the other end of said tool body member, the handle member extending transversely of said body member and configured to be engaged by the user to cause said body member to extend generally horizontally within a tank to permit the user to manipulate said rope to raise and lower said thief in a tank.

4,563,897

APPARATUS FOR MONITORING TOOL LIFE

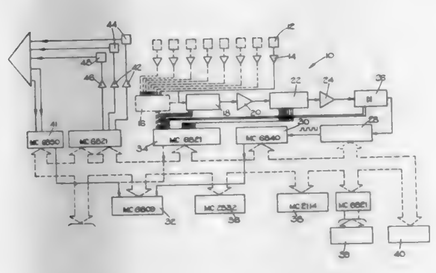
Arthur I. W. Moore, Melton Mowbray, England, assignor to Production Engineering Research Assoc., Melton Mowbray, England

Filed Jan. 12, 1984, Ser. No. 570,180

Claims priority, application United Kingdom, Jan. 12, 1983, 8300792

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—587 **40 Claims**



1. A method of monitoring the operating condition of a cutting tool during machining of a workpiece comprising the steps of

(a) monitoring the level of vibration of the tool on commencement of machining and generating a first signal representative of said monitored level,

(b) applying said first signal to a variable gain circuit means to provide a second signal which is a function of said first signal,

(c) adjusting the gain of said gain circuit means to adjust said second signal to a preselected value,

(d) generating a first reference value which is a preselected function of said preselected value and generating a second reference value representing a minimum reference level generated when the cutting tool commences machining a workpiece,

(e) storing said first and second reference values and a factor representing the adjusted gain of said gain circuit means,

(f) prior to commencing subsequent machining under the same or similar machining conditions, adjusting the gain of said gain circuit to said adjusted gain, and on commencement of said subsequent machining

(g) monitoring the level of vibration of the tool to generate a further second signal,

(h) comparing said further second signal with said first reference value and generating a first control signal in dependence on said further second signal level exceeding said reference value and generating a second control signal if the monitored level is less than the second reference value for a predetermined length of time;

whereby generation of the first control signal is indicative of a worn or defective cutting tool and generation of the second control signal is indicative of a broken or missing cutting tool.

4,563,898

ACOUSTIC MICROSCOPE

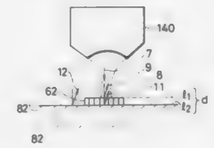
Hiroshi Kanda, Tokorozawa; Kageyoshi Katakura, Meguro, and Isao Ishikawa, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1984, Ser. No. 586,806

Claims priority, application Japan, Mar. 7, 1983, 58-35828

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—606 **8 Claims**



1. An acoustic microscope comprising:

an acoustic transducer which performs both generation and detection of acoustic wave beams passing from and to said transducer by way of an acoustic wave transmitting and receiving surface thereof,

a sample holding member which is positioned to oppose said acoustic wave transmitting and receiving surface of said transducer, so as to hold an object sample in an acoustic wave propagating medium disposed between said acoustic transducer and said sample holding member and providing behind the sample a layer of a material having an acoustic impedance unequal to that of the sample,

mechanical means for moving said sample holding member laterally in a plane transverse to the axis of said transducer so that first acoustic waves reflected from a front surface and a rear surface of the sample and second acoustic waves reflected from a surface of said sample holding member without reaching the sample are detected by said transducer, and

measuring means for measuring the amplitudes and the time periods of return of each of said first and second acoustic waves on the basis of the output signals of said transducer so as to determine the elastic physical quantities of said sample.

4,563,899

ULTRASONIC IMAGING APPARATUS USING TRANSDUCER CONTROL

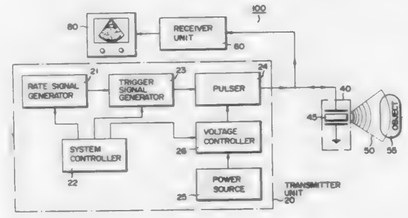
Kenichi Nakamura, Noda, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jan. 29, 1985, Ser. No. 696,054

Claims priority, application Japan, Jan. 31, 1984, 59-15492

Int. Cl.⁴ G01N *29/06*

U.S. Cl. 73—626 **13 Claims**



1. An ultrasonic imaging apparatus comprising:

transducer means having a plurality of transducer elements arranged in an array for transmitting ultrasonic pulses toward an object under examination upon receipt of drive pulses, and for receiving ultrasonic echoes reflected from the object, thereby producing echo signals;

transmitter means including generator means for generating rate pulses, generator means for generating trigger pulses in response to the rate pulses, source means for producing drive voltages for the transducer means, control means for controlling the drive voltages so as to obtain the drive pulses having a desirable mode, and pulser means for supplying to the transducer elements the drive pulses having the desirable mode upon receipt of the trigger pulses;

receiver means coupled to the transducer means for processing the echo signals so as to produce tomographic image signals; and

means for displaying tomographic images of the object scanned by the ultrasonic pulses based upon the tomographic image signals.

4,563,900

ACOUSTIC MICROSCOPE

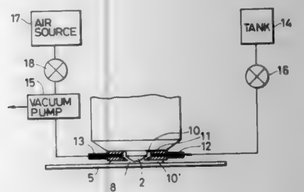
Kunio Harada, Hachioji; Sumio Yamaguchi, Nishitama; Hiroshi Kanda, Tokorozawa; Isao Ishikawa, Hino, and Yuzuru Ohji, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1984, Ser. No. 603,937

Claims priority, application Japan, Apr. 27, 1983, 58-72897

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—644 **4 Claims**



1. An acoustic microscope comprising:

means including an acoustic lens for projecting an acoustic wave onto a specimen and for receiving acoustic waves reflected from said specimen via said acoustic lens;

a specimen holder for supporting a specimen adjacent said acoustic lens;

scanning means for moving said acoustic lens and said specimen holder relative to each other to cause a scanning of said acoustic wave on said specimen; and

a ring-shaped member disposed between said acoustic wave projecting means and said specimen holder and having an annular space through which said acoustic lens projects so that a slight clearance space is formed between said acoustic lens and said ring-shaped member in which a fluid acoustic propagation medium is held by capillary action.

4,563,901

TRANSDUCER

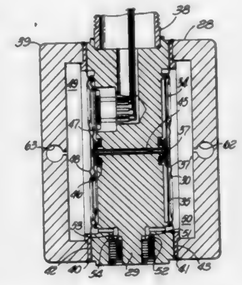
Gurnam Singh, Riverside, Calif., assignor to International Telephone & Telegraph Corp., New York, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,562

Int. Cl.⁴ G01L *7/08, 9/06*

U.S. Cl. 73—706 **4 Claims**

2. A differential pressure/static pressure dual unit comprising: a housing having a central hole therethrough; outer and inner substantially parallel diaphragms sealed around said housing on one side thereof; a third diaphragm sealed around said housing on the other side thereof in a position approximately parallel to said outer and inner diaphragms; a first fill fluid in compression between said third and inner diaphragms; a second fill fluid in compression between said outer and inner diaphragms; a differential pressure sensor having a sensor side and an underside; a static pressure sensor having a sensor side and an underside; a first passageway in said housing to conduct said second fill fluid from the space between said outer and inner diaphragms to the underside of said differential pressure sensor; a second passageway in said housing to conduct said



first fill fluid from the space between said third and inner diaphragms to the sensor sides of said differential pressure sensor and said static pressure sensor; and a third passageway in said housing to conduct atmospheric pressure to the underside of said static pressure sensor.

4,563,902

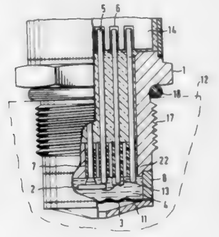
PRESSURE AND TEMPERATURE SENSOR

Rainer Köhnlechner, Schloss-Holte, Fed. Rep. of Germany, assignor to Ermeto Armaturen GmbH, Bielefeld, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,393

Int. Cl.⁴ G01L *9/06*

U.S. Cl. 73—708 **6 Claims**



1. A device for measuring pressure and temperature in a fluid system, said device comprising:

a housing having a pressure chamber and a non-pressurized chamber, said pressure chamber being connected to said non-pressurized chamber by borings;

electrical contacts and connecting posts that are located in said borings:

an electronic circuit that is located in the non-pressurized chamber of said housing and that is electrically connected to said electrical contacts;

a pressure sensor located in the pressure chamber of said housing and that is electrically connected to said electrical contacts;

a pressure transferring membrane that separates said pressure chamber from the fluid system;

an imcompressible, pressure transmitting medium that fills said pressure chamber; and

a temperature sensor located in said pressure chamber and electrically connected to the electronic circuit, said temperature sensor being continuously responsive to the tem-

perature of the pressure transmitting medium to adjust the output of the pressure measuring device.

4,563,903

PRESSURE SENSOR

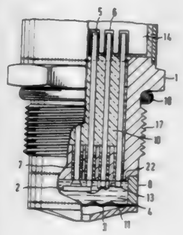
Rainer Köhnlechner, Peuzberg; Herbert Beeke, Hüllhorst, and Hans Suckow, Bielefeld, all of Fed. Rep. of Germany, assignors to Ermeto Armaturen GmbH, Bielefeld, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,395

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313259

Int. Cl.⁴ G01L *9/06*

U.S. Cl. 73—727 **8 Claims**



1. A device for measuring pressure in a fluid system, said device comprising:

a housing having a pressure chamber and a non-pressurized chamber, said pressure chamber being connected to said non-pressurized chamber by conical borings that are aligned substantially parallel to the longitudinal axis of said housing and that are arranged along a straight line, the diameter of said boring decreasing in the direction from the pressure chamber to the non-pressurized chamber;

electrical contacts and connecting posts that are located in said borings and that are insulated from the wall of the boring by a glass filling;

an electronic circuit that is located in the non-pressurized chamber of said housing and that is electrically connected to said electrical contacts;

a pressure sensor located in the pressure chamber of said housing and that is electrically connected to said electrical contacts;

a pressure transferring membrane that separates said pressure chamber from the fluid system; and

an incompressible, pressure transmitting medium that fills said pressure chamber.

4,563,904

EXCITATION CIRCUIT FOR ELECTROMAGNETIC FLOWMETER

Gottfried Geisler, and Jörg-Ulrich Breithaupt, both of Goettingen, Fed. Rep. of Germany, assignors to Fischer & Porter Company, Warminster, Pa.

Filed Sep. 12, 1984, Ser. No. 649,656

Int. Cl.⁴ G01F *1/60*

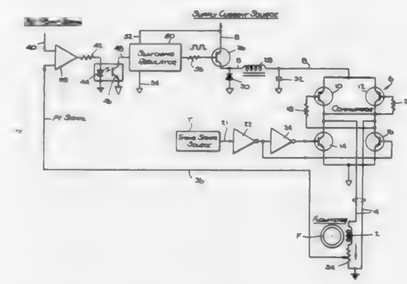
U.S. Cl. 73—861.12 **7 Claims**

1. An electromagnetic flowmeter provided with at least one field coil to establish an alternating magnetic field across a flow tube through which flows the fluid to be metered, and an excitation circuit for supplying current to said coil periodically of alternating polarity, and for maintaining the intensity of this current at a constant level, said circuit comprising:

A. a polarity-reversing commutator whose input is connected to a direct current source and whose output is connected through a cable to said coil to periodically supply current thereto of alternating polarity;

B. an actuatable switch interposed between said source and the input of the commutator;

C. a switching regulator coupled to said switch to actuate same, said regulator generating actuating pulses whose duty cycle depends on the magnitude of a control signal applied to the regulator;



D. means including a comparator for comparing a variable signal derived from the field coil proportional to the current flow therethrough with a set point to produce a control signal whose magnitude depends on the deviation of the variable signal from the set point; and

E. means to apply said control signal to the regulator to so vary the actuating pulse duty cycle as to maintain the intensity of the current flowing in the coil at a constant level.

4,563,905

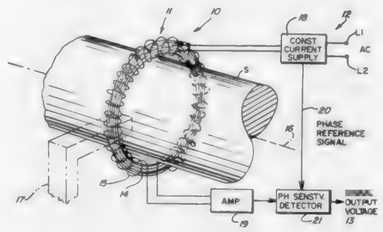
SHAFT TORQUEMETER

Sydney Himmelstein, Barrington Hills, Ill., assignor to S. Himmelstein and Company, Hoffman Estates, Ill.

Filed Aug. 27, 1984, Ser. No. 644,877

Int. Cl.⁴ G01L *3/10*

U.S. Cl. 73—862.36 **8 Claims**



1. A torquemeter for measuring torque in a shaft having variable reluctance as a result of torque stresses developed therein, said torquemeter comprising:

an annular first coil constructed to be disposed coaxially about the shaft;

a second coil wound about the first coil coaxially of the annular axis of the first coil to be in space quadrature with said first coil;

means for mounting said coils coaxially about the shaft to include the shaft in the magnetic flux coupling path between said coils;

means for electrically exciting one of said coils to cause said one of said coils to comprise an excitation winding and the other of said coils to comprise a pickup winding, said coils being effectively uncoupled in the absence of torque in the shaft and being variably coupled as an incident of torque being developed in the shaft causing a corresponding change in the reluctance of the shaft; and

means for providing a signal corresponding to a voltage developed in the pickup winding coil as a result of a change in the magnetic reluctance of the shaft resulting from torque developed in the shaft.

4,563,906

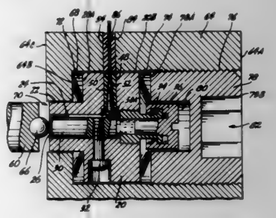
LOAD MEASUREMENT APPARATUS INCLUDING MINIATURE INSTRUMENTED HYDROSTATIC CELL

Richard A. Mathias, Renton, Wash., assignor to Camtech, Inc., Renton, Wash.

Filed Nov. 23, 1983, Ser. No. 554,600

Int. Cl.⁴ G01L *1/02*

U.S. Cl. 73—862.58 **29 Claims**



5. A miniature instrumented hydrostatic cell for use in measuring the load exerted on a structural member, said cell comprising:

a housing that consists of a first cylindrical portion and a second cylindrical portion projecting from and integral with said first cylindrical portion, wherein said first and second cylindrical portions have a common longitudinal axis, and wherein the diameter of said first cylindrical portion is greater than that of said second cylindrical portion;

a cavity defined in said housing;

a membrane for receiving at least a portion of the load to be measured, said membrane forming a first wall of said cavity, said membrane being integral with said second cylindrical portion and forming a portion of an end face thereof, the rigidity of said membrane being substantially less than that of said housing;

a temperature compensation insert disposed within said cavity;

sealing means mounted in said housing and extending to a second wall of said cavity, for introducing an incompressible fluid into said cavity and for permitting said cavity to be substantially evacuated of air so that all portions of said cavity not occupied by said insert are completely filled with the incompressible fluid; and,

pressure measurement means for providing measurements of the pressure within said cavity.

4,563,907

DIRECT READING AUTOMATIC PIPETTE

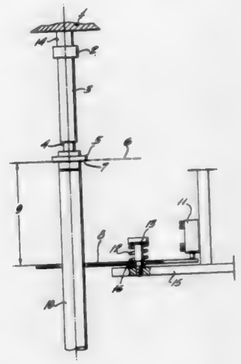
Edgar G. Johnson, Jr., Huntsville; James J. Cornelison, Gurley, and Paul V. Mackovjak, Huntsville, all of Ala., assignors to Micromedic Systems Inc., Horsham, Pa.

Filed Oct. 31, 1983, Ser. No. 546,796

Int. Cl.⁴ G01N *1/14*

U.S. Cl. 73—864.16 **7 Claims**

1. In an automated apparatus for dispersing or diluting metered amounts of fluid having interchangeable syringe assemblies, the improvement comprising means on each of said assemblies for indicating the maximum delivery volume of



each of said assemblies and means on said apparatus for automatically sensing said indicating means by said apparatus.

4,563,908

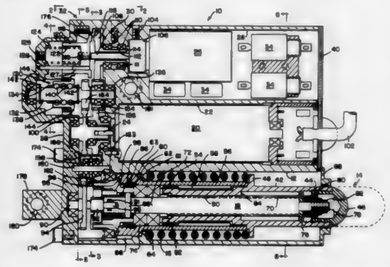
HIGH SPEED, DUAL OPERATED ELECTROMECHANICAL ACTUATOR

Eugene E. Shube, Elmont, N.Y., assignor to Plessey Incorporated, New York, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,572

Int. Cl.⁴ G05G *17/00*

U.S. Cl. 74—2 **21 Claims**



1. A high speed stored energy operated electromechanical actuator comprising:

energy storage means;

an operating means for executing a power delivery mechanical motion and and an energy storing mechanical motion, coupling means coupling said energy storage means and said operating means such that when said operating means executes a power delivery mechanical motion said operating means is being driven by said energy storage means, and when executing an energy storage mechanical motion said operating means is driving said energy storage means and storing energy therein;

reversible gear transmission means having an output coupled to said operating means and having two independent inputs;

trigger means coupled to one input of said transmission means to trigger operation of said operating means whereupon said operating means is driven by said energy storage means to execute a power delivery mechanical motion, said trigger means being capable of resetting itself, and a reversible electric motor coupled to said other input which in one direction of rotation drives said operating

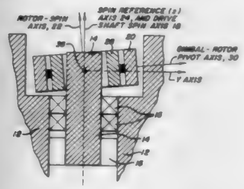
means through said transmission means to execute an energy storage mechanical motion to store energy in said energy storage means and which in its other direction of rotation drives said operating means through said transmission means to execute a power delivery mechanical motion.

4,563,909

SYSTEM FOR ELECTRONICALLY TUNING AND SUPPRESSING 2N RECTIFICATION TORQUES IN A DYNAMICALLY TUNED FREE ROTOR GYROSCOPE

Raymond Carroll, Andover, and Byong-Ho Ahn, Wayland, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jul. 2, 1982, Ser. No. 394,720
Int. Cl.⁴ G01C *19/28, 19/30*
U.S. Cl. 74—5.5 **5 Claims**



1. A system for suppressing 2N rectification torques in a free rotor gyroscope, said gyroscope including

a case,

a drive shaft and associated means for rotating and supporting said drive shaft with respect to said case at an angular rate w_s about a drive shaft spin axis,

a rotor adapted for rotation about a rotor spin axis, and

a gimbal coupling said rotor and drive shaft, said gimbal including first pivot means for elastically coupling said drive shaft to said gimbal about a gimbal-shaft pivot axis orthogonal to and intersecting said drive shaft spin axis, and including a second pivot means for elastically coupling said rotor to said gimbal about a gimbal-rotor pivot axis orthogonal to and intersecting said rotor spin axis and said gimbal shaft pivot axis, comprising:

means for adjusting said angular rate w_s whereby direct elastic restraint torques are nulled, and means for applying a nulling torque to said rotor proportional to the bending of said first and second pivot means about the respective ones of said pivot axes, whereby elastic restraint torques due to angular vibrations of said drive shaft with respect to said rotor are substantially cancelled.

4,563,910

POSITIVE-LOCKING INDEXING SYSTEM FOR HIGH-SPEED OPERATION

Hiroo Miyazaki; Teruo Shirai, both of Ueda, and Tsutomu Ogawa, Fuchu, all of Japan, assignors to Kabushiki Kaisha Miyano Tekkosho, Nagano, Japan

Filed Feb. 29, 1984, Ser. No. 584,596
Claims priority, application Japan, Mar. 16, 1983, 58-45114
Int. Cl.⁴ B23Q *16/10*
U.S. Cl. 74—820 **6 Claims**

1. An indexing system for indexing a driven member to be indexed, with respect to rotation thereof about an axis thereof in a machine having a frame structure, said index system comprising:

a main shaft fixed coaxially to the driven member and rotatably supported in a manner permitting some translation thereof in the axial direction thereof;

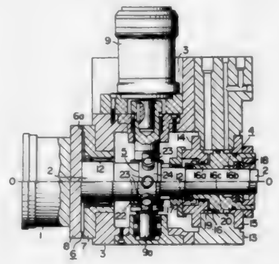
an indexing mechanism driven by a hydraulic motor and intercoupled to the main shaft to rotate the same intermittently through specific angular increments between indexing position;

a clutch coupling comprising a movable plate fixed coaxially to the driven member and a stationary plate fixed to the frame structure in a position to coaxially and parallelly confront the movable plate, the movable and stationary plates being adapted to become mutually engaged in positively licked state and to become disengaged when the movable plate is pressed against and separated from the stationary plate;

a hydraulic cylinder fixed relative to the frame structure and operating through a piston accomodated therein and connected to the main shaft to drive the same in said translation thereby to act through the driven member to move the movable plate against and away from the stationary plate; and

an operating system for controllably operating the hydraulic cylinder and the indexing mechanism,

said operating system being a hydraulic system having a



pump line, a tank line, and a changeover valve of two-position, four-connection type provided with a pump port connected to the pump line, a tank port connected to the tank line, a first actuator port, and a second actuator port, the area of the surface of the piston to receive pressure for actuating the clutch coupling in the engaging direction being greater than that of the opposite surface of the piston, the actuation chamber of the hydraulic cylinder on the side of the smaller piston surface area being connected to the pump line, the opposite actuation chamber on the side of the greater piston surface area being connected, when the changeover valve is in its one changeover position, to the pump port via the first actuator port and being connected, when the changeover valve is in its other changeover position, to the tank port via the first actuator port, the hydraulic motor being connected to the pump line and to the second actuator port, which is closed when the valve is in said one changeover position and is communicated with the tank line when the valve is in said other changeover position.

4,563,911

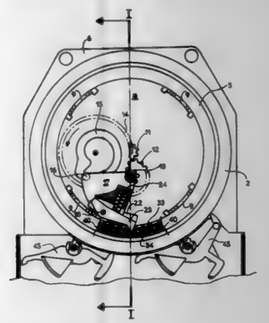
PROGRAMMER CONTROL DEVICE

Michel Chauvigne, Cluses, France, assignor to Societe Industrielle de Bellevaux Sibel, Cluses, France

Filed Jul. 6, 1984, Ser. No. 628,340
Int. Cl.⁴ F16H *29/12*
U.S. Cl. 74—125 **3 Claims**

1. A programmer control device comprising a rotary cam block comprising a first part and a second part which are rotatable relative to one another, a rate reduction collar rotatable relative to said cam block and having an integral toothed ring having at least one orifice therein, said second part of said cam block having a toothed ring underlying said toothed ring of said rate reduction collar, said second part of said cam block further having a smooth ring having at least one orifice therein, and said first part of said cam block having a toothed ring having a first portion underlying said smooth ring of said

second part and a second portion not underlying said smooth ring, an oscillatable support having three pawls pivotally mounted thereon and means for oscillating said support at a predetermined rate, said pawls comprising a first pawl resiliently engaging teeth of said toothed ring of said rate reduction collar to advance said collar as said support oscillates and also extending through said orifice in said toothed ring of said rate reduction collar to engage teeth of said toothed ring of said second part of said cam block to advance said second part of



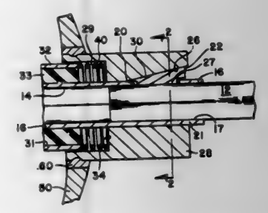
said cam block at a lower rate than said rate reducing collar, a second pawl resiliently engaging said smooth ring of said second part of said cam block and extending through said orifice in said smooth ring to engage teeth of said first portion of said toothed ring of said first part of said cam block to advance said first part at a lower rate than said second part of said cam block, and a third pawl selectively engageable with said second portion of said toothed ring of said first part of said cam block to advance said first part rapidly.

4,563,912

TELESCOPING POLYGONAL STEERING COLUMN

Kevin B. Parks, Mishawaka, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Dec. 19, 1983, Ser. No. 562,658
Int. Cl.⁴ B62D *1/18*
U.S. Cl. 74—493 **12 Claims**



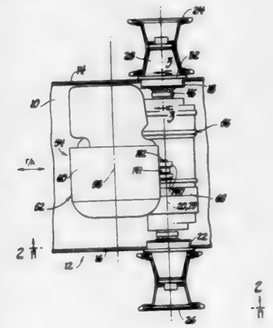
1. An axially movable steering column comprising inner and outer shafts one of which is axially movable with respect to the other of said shafts, said inner shaft having a polygonal shape and said outer shaft having a corresponding polygonal bore therein for receiving said inner shaft, and means operatively connected to said inner and outer shafts for causing rotation and continuous frictional engagement of one of said shafts with respect to the other of said shafts and eliminating torsional lash therebetween, said means comprising a plurality of slots located in said outer shaft and circumferentially offset relative to one another, a plurality of inclined wedges each being located in a respective slot for abutting a polygonal surface of said inner shaft, a collar member telescoped over said inner and outer shafts and having a plurality of inclined ramps located at the interior thereof, each inclined ramp in alignment and contact with a respective inclined wedge for loading and causing inward movement of the inclined wedge against said inner shaft upon axial movement of said collar member relative to said outer shaft, means for preventing rotation of said collar member relative to said outer shaft but permitting axial movement of the collar member relative to the outer shaft, and means telescoped over said inner and outer shafts for biasing said collar member against said inclined wedges, the engagement of the inclined ramps with the inclined wedges causing a plurality of surfaces of said inner shaft to engage a plurality of adjacent surfaces of said outer shaft in surface-to-surface contact to eliminate torsional lash therebetween and causing the axial center line of said inner shaft to be offset from the axial center line of said outer shaft.

4,563,913

SIDE-BY-SIDE ENGINE AND TRANSMISSION ASSEMBLY

James F. Hartz, Indianapolis, and Harry E. Latshaw, Danville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 29, 1984, Ser. No. 626,441
Int. Cl.⁴ F16H *57/02*
U.S. Cl. 74—606 R **4 Claims**



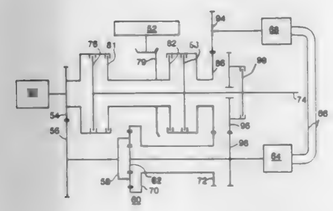
1. In an engine and transmission assembly including an engine having a block defining a primary rotating group axis and a transmission having a housing defining a drive output axis and a power input axis parallel thereto and laterally spaced therefrom, the combination comprising, transfer case means rigidly attached to said engine block generally amidships thereof defining an engine power output axis parallel to said primary rotating group axis and laterally spaced therefrom, means on one of said transfer case means and said transmission housing defining a pair of spaced trunnions aligned on the corresponding one of said engine power output and said transmission power input axes, means on the other of said transfer case means and said transmission housing defining a pair of axially spaced saddles aligned on the corresponding one of said engine power output and said transmission power input axes, respective ones of said trunnions being rotatably received in corresponding ones of said saddles so that said engine power output and said transmission power input axes coincide and said transmission housing is attached to said engine block for relative rotation about said coincident axes, intermediate drive means including a rotating shaft member aligned on said coincident axes operative to transfer power from said transfer case means to said transmission, and torque reaction control means between said engine block and said transmission housing remote from said coincident axes operative to prevent relative rotation between said engine block and said transmission housing.

4,563,914

CONTINUOUSLY VARIABLE TRANSMISSION WITH AUXILIARY DRIVE

Moshe Miller, Jerusalem, Israel, assignor to Industries Development Corporation (International Services), Tel-Aviv, Israel

Filed Jan. 10, 1983, Ser. No. 456,551
Claims priority, application Israel, Jan. 10, 1982, 64739
Int. Cl.⁴ F16H *47/04*
U.S. Cl. 74—687 **4 Claims**



2. Drive apparatus for a vehicle having drive wheels, a rotational energy source and a flywheel, said apparatus comprising:

first and second continuously variable transmission components;

power transfer means communicating between the first and second continuously variable transmission components;

differential means including a sun, a carrier and a ring;

selectable coupling means comprising:

first and second shaft means, wherein the flywheel is coupled to said first shaft means and the second shaft means is connected to the drive wheels of the vehicle;

primary means, operative in a primary mode of operation to couple:

1. the rotational energy source and said shaft means to the carrier;
2. the ring to the second continuously variable transmission component; and
3. the sun to the first continuously variable transmission component and to the second shaft means

first means, operative in a first mode of operation to couple:

1. the rotational energy source and the first shaft means to the carrier;
2. the sun to the first continuously variable transmission component; and
3. the ring to the second continously variable transmission component and to the second shaft means;

second means operative in a second mode of operation to connect:

1. the first shaft means to the ring;
2. the ring to the second continously variable transmission component;
3. the first continuously variable transmission component to the sun; and
4. the rotational energy source to the carrier and to the second shaft means.

4,563,915

WOBBLE TYPE AXIAL SPEED REDUCER APPARATUS

Edward C. Tibbals, Jr., High Point, N.C., assignor to William R. Loeffler, Denver, Colo.

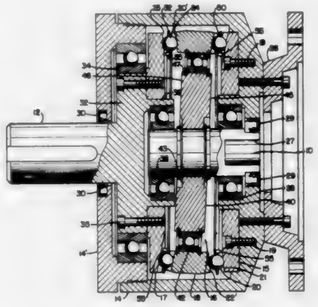
Filed Jul. 1, 1983, Ser. No. 509,999
Int. Cl.⁴ F16H *13/08*
U.S. Cl. 74—800 **23 Claims**

1. A speed reducer assembly comprising:

a rotatable input shaft having drive means therefor;

a first gear member journaled for independent rotation with respect to said input shaft and mounted in canted relation thereto whereby to circumscribe a sinusoidal path of movement, said first gear member being driven by said input shaft, said first gear member including axially directed gear portions on one face thereof having uniformly spaced, axially directed crests and valleys;

a second gear member mounted in axially spaced relation to said first gear member and provided with gear portions having uniformly spaced, axially directed crests and valleys differing in number from and disposed in spaced relation to the crests and valleys of said first gear portions; and



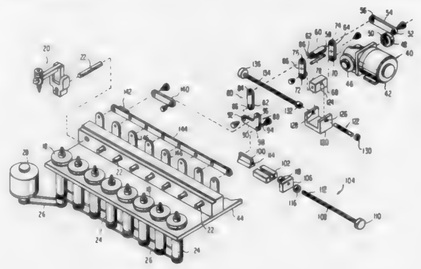
a plurality of rolling members interposed between the crests and valleys of said first and second gear portions for transmitting torque from said first gear portion to said second gear portion, the speed reduction ratio being a function of the relative pitch as defined by the relative number of crests and valleys between said first and second gear portions.

4,563,916

DYNAMICALLY VARIABLE OSCILLATING ADJUSTMENT ASSEMBLY

Joseph Tusinski, Muskogee, Okla., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Sep. 7, 1983, Ser. No. 530,086
Int. Cl.⁴ F16H *35/08*
U.S. Cl. 74—829 **16 Claims**



1. A dynamically variable oscillating stroke and position adjustment assembly comprising:

a frame;

a first link means;

first means connected to said frame for pivotably connecting one end of said first link means to said frame;

a second link means pivotably connected at one end to the other end of said first link means;

a bell crank having a first arm and a second arm and an intermediate pivot;

second means connected to said frame for pivotably connecting said bell crank intermediate pivot to said frame, including

means for adjusting the position of said bell crank intermediate pivot with respect to said frame and said one end of said first link means; and

means for pivotably connecting said first arm of said bell crank to the other end of said second link means, wherein oscillation of said other end of said first link means will operaly oscillate said second arm of said bell crank and adjustment of the position of said bell crank intermediate pivot with respect to said one end of said first link means will operably vary the position of the oscillation of said second arm of said bell crank and the stroke of the oscillation thereof;

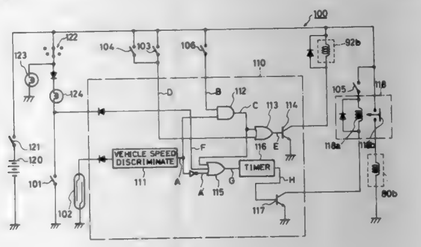
said first means connected to said frame for pivotably connecting said one end of said first link means to said frame includes means for translating said first link means with respect to said frame such that the pivot point of said first link means may be selectively adjusted with respect to said frame and said intermediate pivot of said bell crank to vary the stroke of the oscillation of said second arm of said bell crank.

4,563,917

TWO STAGE KICKDOWN CONTROL SYSTEM FOR A MOTOR VEHICLE AUTOMATIC TRANSMISSION

Haruki Higashi; Kouichirou Waki; Masaru Fukuiri, and Kazuo Yukitomo, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 28, 1984, Ser. No. 655,723
Claims priority, application Japan, Sep. 30, 1983, 58-183779
Int. Cl.⁴ B60K *41/06*
U.S. Cl. 74—866 **11 Claims**



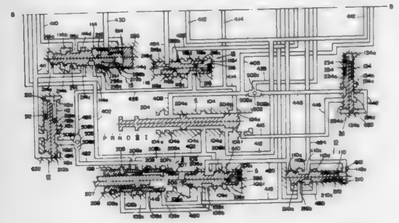
1. A vehicle automatic transmission including a hydraulic torque converter, a transmission gear mechanism connected with the torque converter and having at least three gear stages of different gear ratios for forward drive, friction means for selecting one of said gear stages, kickdown control means comprising first shift down circuit means for controlling said friction means so that the transmission gear mechanism is shifted down from a high gear stage to a lower gear stage, kick down solenoid means provided in said first shift down circuit means for controlling said first shift down circuit means and kick down switch means adapted to be actuated by an engine control member when the engine control member is moved substantially to a full power position to thereby control said kick down solenoid means to effect a shift down from a high gear stage to a lower gear stage, shift down control means comprising second shift down circuit means for controlling said friction means so that the transmission gear mechanism is shifted down from a high gear stage to a next adjacent lower gear stage, shift down solenoid means provided in said second shift down circuit means for controlling said second shift down circuit means and shift down switch means adapted to be actuated by the engine control member when the engine control member is moved to a position spaced a predetermined distance from said full power position so that said shift down switch means is actuated earlier than said kick down switch means when the engine control member is moved toward said full power position to thereby control said shift down solenoid means to effect a shift down from a high gear stage to the next adjacent lower gear stage, time delay means responsive to an actuation of said shift down switch means for delaying operation of said kick down solenoid means for a predetermined time when the kick down switch means is actuated after the actuation of said shift down switch means.

4,563,918

LINE PRESSURE CONTROL OF HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Kazuhiko Sugano, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 29, 1983, Ser. No. 518,413
Int. Cl.⁴ B60K *41/16*
U.S. Cl. 74—869 **7 Claims**



1. A hydraulic control system for an automatic transmission including an input shaft operatively connected via a torque converter to an engine which has a throttle which opens in degrees, an output shaft, and fluid operated friction units which are selectively made operative and inoperative for producing a plurality of speed ratios between the input and output shafts, comprising:

means for generating a throttle related fluid pressure which is variable in a pattern corresponding approximately to the pattern of output torque of the engine;

means for generating a governor fluid pressure variable with the rotational speed of the output shaft;

a cut back valve communicating with said throttle related fluid pressure generating means and with said governor fluid pressure generating means for generating a cut back fluid pressure which increases with an increase in said throttle related fluid pressure and decreases with an increase in said governor fluid pressure;

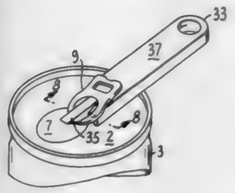
a pressure regulator valve communicating with said throttle related fluid pressure generating means and said cut back fluid pressure generating means for generating a line fluid pressure which is variable with said throttle related fluid pressure and said cut back fluid pressure;

means for supplying said line fluid pressure from said pressure regulator valve to the fluid operated friction units,

said cut back valve comprising a pressure regulating means movable in a first direction in response to said throttle related fluid pressure and movable in a second direction opposite to said first direction in response to said governor fluid pressure and said cut back fluid pressure, said cut back valve generating said cut back fluid pressure when said pressure regulating means assumes an equilibrium state thereof wherein the force due to the throttle related fluid pressure acting on said pressure regulating means balances with a sum of the force due to said governor fluid pressure acting on said pressure regulating means and the force due to said cut back fluid pressure acting on said pressure regulating means, wherein said pressure regulating means comprises a first valve spool formed with a first pressure acting area which is exposed to said throttle related fluid pressure, and a second spool having a second pressure acting area which is exposed to said governor fluid pressure and a third pressure acting area which is exposed to said cut back fluid pressure, said first spool

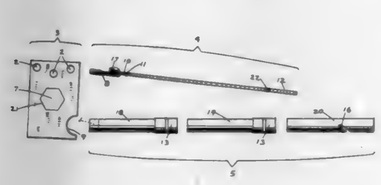
being biased in said first direction to abut said second spool which is biased in said second direction to abut said first spool.

4,563,919
CAN OPENER FOR FLIP TOP CANS
William H. Sellars, 1618 Manzanita Dr., Belmont, Calif. 94002
Filed Nov. 5, 1984, Ser. No. 668,558
Int. Cl.⁴ B67B *7/40*
U.S. Cl. 81—3.55 **11 Claims**



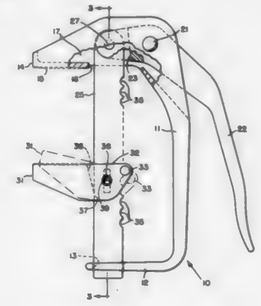
1. A tool for opening flip-top cans of the type having a combination ring and displaceable disc structure which comprises:
an elongated handle, with one end thereof having two opposed, downwardly projecting rails, said rails extending from said one end along the length of said handle to a point intermediate the length thereof, said tool further including a blade projecting outwardly from said one end substantially along the axis of said elongated handle, with the lower surface of said blade being above the plane defined by the lower surface of the downwardly projecting rails, whereby in use, said blade is inserted through the ring of said flip-top structure with said rails functioning to guide said blade to and over said displaceable disc whereupon said tool is rotated upwardly in a manner to lift said ring and push said displaceable disc downwardly into said can.

4,563,920
HIGH TORQUE OUTPUT, COLLAPSIBLE AND LIGHT WEIGHT WRENCH
Thomas S. Ingersoll, 130 Fountain Ave., Pacific Grove, Calif. 93950
Filed May 1, 1984, Ser. No. 605,886
Int. Cl.⁴ B25B *13/00*
U.S. Cl. 81—177.8 **3 Claims**



1. A high torque output, collapsible and light weight wrench comprising:
a head portion having work engaging surfaces, first handle attaching means consisting of two or more bores located a suitable distance above said work engaging surfaces and second handle attaching means consisting of a recess located a suitable distance below said work engaging surfaces;
a first handle member being flexible and elongated and having a first end portion including first end portion attaching means consisting of a hook and a further end portion including further end portion attachment means consisting of a fixed loop;
a second handle member composed of two or more removably attached units, being rigid and elongated and having a first end portion including first end portion attaching means consisting of a mortise and a further end portion including further end portion attaching means consisting of a slot.

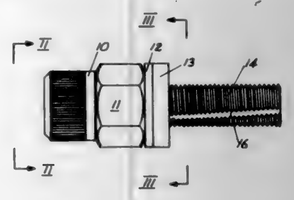
4,563,921
COMPACT PLIERS WITH LARGE, ADJUSTABLE JAW SPAN
John Wallace, 287 Elliot St., #12, Newton, Mass. 02164
Filed Mar. 5, 1985, Ser. No. 708,498
Int. Cl.⁴ B25B *7/12*
U.S. Cl. 81—373 **16 Claims**



1. Adjustable pliers, comprising
a first member having thereon an elongate hand-grip portion,
an elongate second member,
means supporting said second member adjacent opposite ends thereof on said first member for reciprocation generally parallel to the hand-grip portion of said first member,
a first jaw secured to and projecting transversely from said first member adjacent one end thereof,
a second jaw projecting from said second member and having on one end thereof a plane operating surface disposed in spaced, confronting relation to a corresponding operation surface on said first jaw,
said supporting means comprising a handle connected at one end to said second member,
means pivotally connecting said handle intermediate its ends to said first member for swinging movement relative thereto in opposite directions, thereby to reciprocate said second member and to shift said second jaw toward and away from said first jaw, and
means mounting said second jaw on said second member for longitudinal adjustment thereon into any one of a plurality of different operating positions.

4,563,922
TORQUE TRANSMITTING DEVICE
Daryl Wheeler, 4 Hope Rd., Ardross, Australia (6153)
Continuation of Ser. No. 387,878, as PCT AU81/00142, Oct. 2, 1981, published as WO82/01150, Apr. 15, 1982, § 102(e) date Jun. 4, 1982, Pat. No. 4,446,765. This application Feb. 21, 1984, Ser. No. 582,187
Claims priority, application Australia, Oct. 6, 1980, PE5886; Nov. 3, 1980, PE6333
Int. Cl.⁴ B25B *23/08*
U.S. Cl. 81—441 **19 Claims**

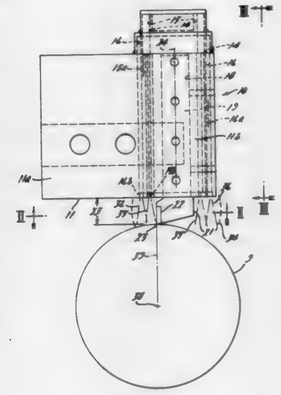
1. A torque transmitting device comprising a shaft having a longitudinal axis, a first end on said shaft arranged to be inserted foremost into a bore in a workpiece, a second end on said shaft, at least one groove extending longitudinally of the shaft, a workpiece engaging jaw slidingly mounted in each groove for sliding movement along the length of the groove, and means for retaining each jaw in its respective groove, each groove being non-aligned longitudinally parallel to the longitudinal axis of the shaft but being angled across the face of the shaft towards said first end thereof in the direction of rotation of the shaft during removal of a workpiece.



4,563,923
IMPACT TOOL
Douglas A. McDonald, Thornleigh, Australia, assignor to Rotopack Tools Pty. Limited, Sydney, Australia
Continuation-in-part of Ser. No. 370,247, Apr. 20, 1982, abandoned. This application Aug. 15, 1983, Ser. No. 523,360
Claims priority, application Australia, Mar. 30, 1983, PF8698
Int. Cl.⁴ B25B *19/00*
U.S. Cl. 81—466 **11 Claims**

1. An impact tool for applying impact torque comprising:
a shaft defining an axis,
a transversely extending striker bar mounted for rotation about said axis,
at least one anvil member connected to said shaft and spaced from said axis in the path of said striker bar,
said at least one anvil member extending between a pair of spaced, parallel circular discs extending normally with respect to said axis,
said shaft intersecting said discs and defining a center of rotation for said impact tool at the intersection,
said circular discs having centers displaced from the intersection of said shaft therewith,
said at least one anvil member eccentrically located with respect to said centers of said circular discs thereby providing an eccentric structure to said tool.

4,563,924
METHOD AND APPARATUS FOR INCREASING WEAR LIFE OF CERAMIC TOOLS
Franklin D. Runkle, Novi, and Gerald J. Tennenhouse, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
PCT No. PCT/US83/02028, § 371 Date Dec. 22, 1983, § 102(e) Date Dec. 22, 1983, PCT Pub. No. WO85/02798, PCT Pub. Date Jul. 4, 1985
PCT Filed Dec. 22, 1983, Ser. No. 584,433
Int. Cl.⁴ B23B *1/00;* **B23Q** *11/00*
U.S. Cl. 82—1 C **7 Claims**

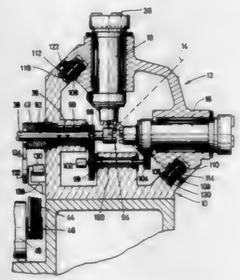


7. A method of reducing the oxygen concentration in a zone about the interface between a nonoxide ceramic cutting tool and a relatively rotating metal workpiece, comprising:
(a) directing first streams of inert gas to substantially and closely surround the point of contact of said tool with said workpiece; and
(b) directing second streams of inert gas to at least partially surround said first stream, said first streams of inert gas forming a first annular curtain surrounding said interface and said second streams of inert gas forming a second annular curtain at least partially surrounding said first curtain of inert gas, the rates of flow of inert gas in said first curtain exceeding the rates of flow of inert gas in said second curtain by at least 1 ft^3/min, said curtains of inert gas being directed in a manner to displace the ambient atmosphere in said zone to a level in which the oxygen concentration therein is equal to or less than 1% of the gas in the zone.

4,563,925
MULTISPINDLE-AUTOMATIC TURRET LATHE
Helmut F. Link, Aichwald, Fed. Rep. of Germany, assignor to Index-Werke Konn.-Ges. Hahn & Tessky, Esslingen, Fed. Rep. of Germany
Filed Apr. 26, 1983, Ser. No. 488,746
Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3216891
Int. Cl.⁴ B23B *19/02, 13/02*
U.S. Cl. 82—28 R **6 Claims**

1. A multispindle automatic turret lathe including in combination, a headstock, a spindle support, means mounting said spindle support on said headstock for rotation about a central indexing axis, a plurality of workspindles, means mounting said workspindles on said support for rotation around respective axes which intersect said indexing axis at a common point of intersection, said workspindles being movable into a working position by rotation of the spindle support, a drive shaft having an axis of rotation, means mounting said drive shaft in said

headstock for rotation about said drive shaft axis, a main driving motor to rotate said drive shaft, control means to control said motor including angular position control means to adjust said drive shaft to a predetermined position of angular rotation, first coupling means on the drive shaft and workspindles to couple the shaft with a workspindle which is in said working position, said first coupling means being shiftable along said drive shaft axis on a path including said common point of



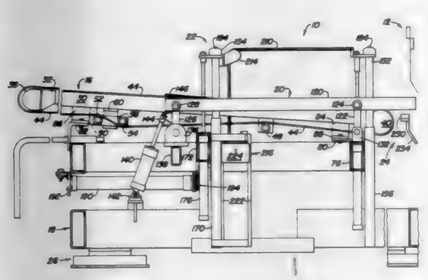
intersection between an engaged position in which the drive shaft is coupled with a work spindle which is in said working position and a disengaged position, means for shifting said first coupling means, second coupling means between said drive shaft and said spindle support to rotate said spindle support about said indexing axis, said first and second coupling means being rigidly interconnected so that said second coupling means is in driving engagement when said first coupling means is in said disengaged position.

4,563,926

CONVEYOR SYSTEM FOR SHEAR DISCHARGE

Peter W. Boardman, St. Catharines, Canada, assignor to Deere & Company, Moline, Ill.

Filed Nov. 28, 1983, Ser. No. 555,780
Int. Cl.[4] B21D *43/00*; B23D *15/09*
U.S. Cl. 83—107 **48 Claims**



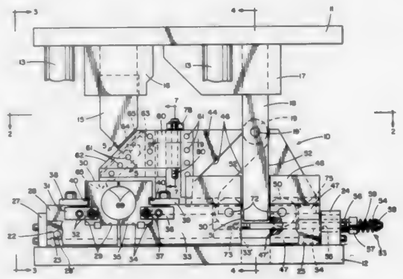
1. A metal shear discharge conveying assembly for conveying sheared material, comprising:
- a plurality of self-contained, elongated conveying modules, each module comprising an elongated module frame, a pair of opposed end support pulleys rotatably supported at opposite ends of the module frame for rotation about axes transverse to the axis of the frame, said module frame including an upwardly directed support surface extending between the pulleys, a drive shaft extending axially from one of the pulleys, and a belt trained around the pulleys and over the upwardly directed support surface;
- a main conveyor frame supported adjacent the shear;
- module support bracket means for releasably supporting the individual modules in spaced side-by-side relationship on the main conveyor frame with the drive shafts generally aligned and the portion of the belts above the support surfaces defining a sheared material transport area which extends below the shear;
- means coupling the drive shafts together in driving relation when the modules are supported on the main frame by the bracket means while selectively permitting individual modules to be uncoupled, said support bracket means when released permitting the entire corresponding conveying module to be lifted from the main frame independently of any modules which remain supported on the main frame; and
- drive means drivingly coupled to the shafts to rotate the pulleys and thereby drive the belts.

4,563,927

TUBE CUT-OFF APPARATUS

Robert J. Kinsley, Elmhurst, Ill., assignor to Vogel Tool & Die, Stone Park, Ill.

Continuation of Ser. No. 427,715, Sep. 29, 1982, abandoned. This application Sep. 7, 1984, Ser. No. 648,612
Int. Cl.[4] B23D *21/00, 25/04*
U.S. Cl. 83—319 **33 Claims**



1. A tube cut-off apparatus comprising an upper plate and a lower plate positioned in vertical alignment and for relative vertical reciprocation,
- a tube cut-off blade on said upper plate,
- a first cam means on said upper plate projecting downwardly toward said lower plate,
- a guide member on said lower plate extending longitudinally thereof,
- first and second longitudinally spaced die block supports carried on said guide member for relative longitudinal movement,
- said die block supports having adjacent ends in relatively spaced relation,
- a pair of cut-off jaws forming a gripping opening, supported on said adjacent ends, and being adapted to clamp and support a tube to be cut during movement of said jaws in closing relation,
- said jaws having a recess for receiving said cut-off blade to cut a tube supported within said jaws,
- a jaw operating cam structure operatively connected to one of the die block supports and engaged by said first cam means for moving relatively said die block supports together and clamping said cut-off jaws together responsive to downward motion of said first cam means,
- a slide member supported for reciprocal horizontal movement on said lower plate relative to said lower plate,
- said slide member having a first slide operating cam means,
- a cutting blade on said slide member adapted to move horizontally in said recess with said slide member relative to said lower plate,
- a second slide operating cam means operatively associated with said first cam means and operative thereby and engaging said first slide operating cam means to move said slide member thereby cutting an opening in a tube to be cut supported in said jaws prior to movement of said cut-off blade through said recess and said jaws.

4,563,928

BLADE GUIDE FOR SAW BLADES

Krister Salomonsson, Lästad Säteri, S-342 00 Alvesta, Sweden

Continuation-in-part of Ser. No. 366,448, Apr. 7, 1982, Pat. No. 4,466,323. This application Jun. 26, 1984, Ser. No. 634,643
Claims priority, application Sweden, Apr. 22, 1981, 8102557
The portion of the term of this patent subsequent to Aug. 2, 2001, has been disclaimed.
Int. Cl.[4] B27B *11/02*
U.S. Cl. 83—821 **6 Claims**



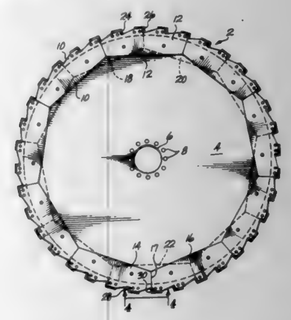
1. A blade guide for saw blades comprising
- a base plate,
- a plurality of carbide plates attached to said base plate at spaced intervals,
- a supporting matrix of material softer than said carbide plates embedding said carbide plates therein with the side of said carbide plates facing the saw blades being free of said material of said supporting matrix,
- a surface facing the saw blades including said carbide plates and said material of said supporting matrix being substantially smooth with said carbide plates at the same level as said material of said supporting matrix.

4,563,929

FIELD REPAIRABLE CIRCULAR SAW

David R. Ringlee, Gig Harbor, and Paul G. Gaddis, Bellevue, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Aug. 30, 1984, Ser. No. 646,277
Int. Cl.[4] B27B *33/02*
U.S. Cl. 83—840 **13 Claims**



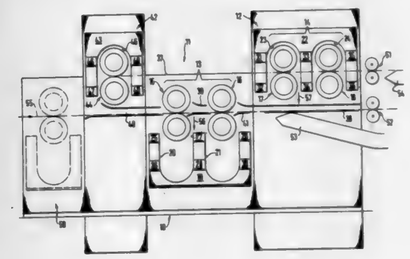
1. A circular saw which comprises:
- a. a flat metallic saw plate of circular configuration;
- b. a plurality of flat segment members attached to each face of the saw plate around the entire periphery thereof, each segment member having a plurality of generally buttress-shaped tooth retaining portions located on the outer periphery thereof and extending beyond the periphery of the saw plate, said segment members being in an abutting end-to-end relationship, the segment members on opposite sides of the plate being in a staggered configuration so that the abutting end portions of the members on one side are generally located opposite the central portions of the segment members on the opposite side in a manner in which the tooth retaining portions on each side remain in aligned opposing relationship;
- c. segment member attachment means to attach the segment members to the saw plate;
- d. tooth means adapted to fit between the opposed buttress-shaped tooth retaining portions of the segment members; and
- e. tooth retaining means to lock the sawteeth between the segment members.

4,563,930

MACHINE FOR LONGITUDINALLY CUTTING AND GROOVING A LENGTH OF MATERIAL, ESPECIALLY CORRUGATED BOARD

Manfred Schommler, Quickborn-Heide, and Arthur Dirks, Hamburg, both of Fed. Rep. of Germany, assignors to Werner H. K. Peters Maschinenfabrik GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 438,606, Nov. 2, 1982, abandoned. This application Aug. 22, 1984, Ser. No. 643,671
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 8132018[U]
Int. Cl.[4] B26D *1/24, 5/02*
U.S. Cl. 83—862 **9 Claims**



1. A machine for longitudinally cutting and grooving a length of material continuously oncoming without interruption, especially corrugated board, comprising a longitudinal cutting and grooving device having at least two longitudinal cutting and grooving units arranged at different levels and capable of height adjustment provided with separate cutting and grooving tools, to which the front edge of a length of material is capable of being selectively supplied, characterized in that the longitudinal cutting and grooving units (**13, 14**) are disposed one after the other in the working direction, with a track guide above the lower and beneath the upper longitudinal cutting and grooving unit respectively connected to the associated said unit in such a manner that the track guide of one unit is respectively constantly aligned with the processing plane of the other unit and the longitudinal cutting and grooving units (**13, 14**) are coupled for synchronous height adjustment to apply said lower unit to the material by simultaneously moving the lower and upper units to an upper height position and to apply the upper unit to the material by simultaneously moving the lower and upper units to a lower height position.

4,563,931

SYSTEM FOR SCANNING MECHANICAL VIBRATIONS

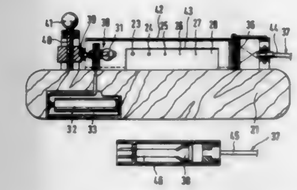
Günter Siebeneiker, Wetter; Hartmut Brunn, Sprockhövel, and Uwe Steiger, Witten, all of Fed. Rep. of Germany, assignors to Kromberg & Schubert, Wuppertal, Fed. Rep. of Germany

Filed Nov. 23, 1983, Ser. No. 554,833

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243563

Int. Cl.⁴ G10H *3/18*

U.S. Cl. 84—1.16 **17 Claims**



1. A system for scanning mechanical vibrations of an object comprising a source of radiation arranged for transmitting a radiation beam against one side of said object, the cross-section of said radiation beam exceeding the cross-section of said object; radiation collecting means including a lens having a radiation receiving surface arranged in the path of propagation of said beam at the opposite side of said object so as to receive a portion of said beam delimited by a shadow cast by said object; said receiving surface having a peripheral contour which converges in the direction of propagation of said shadow so that the irradiated portion of said receiving surface bounded by said contour and the moving shadow changes in size proportionally to the amplitude of vibrations; and said radiation collecting means further including means for converting the changes of said irradiated portion into corresponding electrical signals.

4,563,932

WAVEFORM DATA READ SIGNAL GENERATING APPARATUS

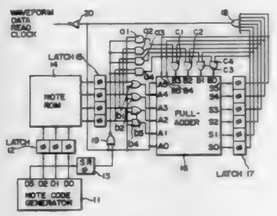
Takuya Sunada, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,636

Claims priority, application Japan, Apr. 4, 1983, 58-57980; Apr. 4, 1983, 58-57981

Int. Cl.⁴ G10H *1/06, 7/00*

U.S. Cl. 84—1.22 **26 Claims**



1. A waveform data read signal generating apparatus, comprising:

note code signal generating means for generating a plurality of note code signals in accordance with a musical performance, said note code signals representing respective notes, the frequencies of the notes designated by at least two of said note code signals being set at an integer ratio, said note code signals each including a common bit signal comprised of a plurality of bits and also including other different bit signals;

basic data generating means for generating basic data according to the common bit signals of said note code signals supplied from said note code signal generating means;

multiplying means coupled to said note code signal generating means and to said basic data generating means for multiplying the basic data by an integer, as determined by the other bit signals of said note code signals, to provide an integer multiple data; and

calculating means for generating a waveform data read signal in accordance with the integer multiple data provided by the multiplying means, said waveform data read signal having a frequency corresponding to the note code signals.

4,563,933

DYNAMICALLY ILLUMINATED GUITAR

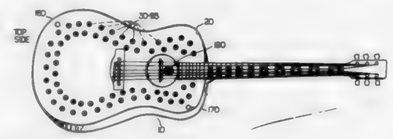
Chung C. Kim, 331 S. Harvard Blvd., Los Angeles, Calif. 90020

PCT No. PCT/US82/00883, § 371 Date Jan. 26, 1984, § 102(e) Date Jan. 26, 1984

PCT Filed Jun. 30, 1982, Ser. No. 575,432

Int. Cl.⁴ G09B *15/02;* **G10D** *1/08*

U.S. Cl. 84—267 **9 Claims**



1. A dynamically illuminated guitar, comprising:

(a) a guitar;

(b) a plurality of lamps, embedded into or mounted on the face of said guitar;

(c) an internal microphone, mounted in the interior or on the face of said guitar;

(d) a plurality of light-dependent resistors, embedded into or mounted on the face of said guitar;

(e) a pulse-forming circuit that produces a train of digital pulses in various formats consisting of:

(1) a first format consisting of a series of pulses whose time spacing is proportional to and varied by the electric signals produced by the pitch of the musical and vocal sounds into the internal microphone,

(2) a second format consisting of a series of pulses whose time spacing is proportional to and varied by electrical signals produced by the amount of light energy received by the light-dependent resistors,

(3) a third format consisting of pulses produced when the sound volume into the interior microphone exceeds an upper threshold, the pulse rate being equivalent to the frequency of the sound signals,

(4) a fourth format consisting of a time period of a few seconds when no pulses appear, followed by a brief burst of very high frequency pulses, further followed by a train of pulses similar to the first format, and

(5) a fifth format consisting of a time period of a few seconds when no pulses appear, followed by a very brief burst of very high frequency pulses, further followed by a train of pulses similar to the second format;

(f) a first two-terminal mercury tilt switch, equivalent to an electrical single-pole, single-throw switch having open and closed positions that are determined by the physical orientation of the switch, for switching between formats of said pulse-forming circuit, the closed position allowing either of the first two formats, and the open position allowing any of the latter three formats;

(g) a second two-terminal mercury tilt switch of similar construction as said first mercury tilt switch for switching between the third, fourth and fifth formats, the closed position allowing the third format and the open position allowing either the fourth or fifth formats;

(h) a single-pole, double position electromechanical switch for switching between pulse formats of said pulse-forming circuit, the first position allowing the first pulse format to appear if the first mercury tilt switch is in the closed position and the second mercury tilt switch is in the open position, or the first position allowing the fourth pulse format to appear if both said first and second mercury tilt switches are in the open position, the second position allowing the second pulse format to appear if said first mercury tilt switch is in the closed position and said second mercury tilt switch is in the open position, or the second position allowing the fifth pulse format to appear if both said first and second mercury tilt switches are in the open position;

(i) a sequential lighting circuit capable of accepting pulses at a forward input port and lighting each of the plurality of said lamps in a fixed sequential order, each pulse causing only one lamp to be lit at a time, said sequential lighting circuit also being capable of accepting pulses at a reverse input port and lighting each of the plurality of said lamps in a fixed sequential order that is the reverse of the sequence produced by pulses at the forward input port;

(j) a three-terminal mercury tilt switch equivalent to a single-pole, double position switch whose two positions are determined by the physical orientation of the switch, the first position of the switch allowing pulses from said pulse-forming circuit to be sent to the forward input port of said sequential lighting circuit, the second position of the switch allowing pulses from said pulse-forming circuit to be sent to the reverse input port of said sequential lighting circuit;

(k) an electric battery for supplying electrical power to said pulse-forming circuit and said sequential lighting circuit;

(l) a single-pole, single-throw electromechanical switch having an open and closed position, the closed position allowing electrical power to be supplied to said pulse-forming circuit and said sequential lighting circuit, the open position preventing the power from being supplied to the circuits; and

(m) an electronics and battery compartment mounted in the guitar, for housing said pulse-forming circuit, said sequential lighting circuit, said first and second two-terminal mercury tilt switches, said three-terminal mercury tilt switch, said single-pole, double position electromechanical switch, said single-pole, single-throw electromechanical switch, and said electric battery.

4,563,934

CAPO-TREMOLO-SLIDE ATTACHMENT FOR GUITARS

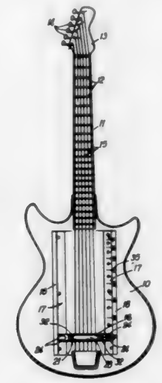
Jon Keizer, 271 B Pleasantview Ave., Piscataway, N.J. 08854

Filed Oct. 10, 1984, Ser. No. 659,427

Int. Cl.⁴ G10D *3/04*

U.S. Cl. 84—313 **6 Claims**

5. A capo-tremolo-slide device for guitars comprising spaced parallel guide tracks mountable upon the top of a guitar sounding body to extend for the major portion of the length of said sounding body, an arched carriage bridging the strings of a guitar on which the device is installed and having a central elongated opening formed therethrough adjacent to and above the guitar strings, spaced arms carrying wheels on the opposite ends of said arched carriage and said wheels being engaged guidingly with said tracks, a slide bar floatingly held on the arched carriage within said opening and having a bottom surface element adapted to engage all of the guitar strings across their longitudinal axes, and variable tension resilient supporting and guidance means for the slide bar within said opening and being connected between the arched carriage and opposite end portions of the slide bar, whereby the slide bar



can be depressed toward the guitar strings by a musician, the slide bar being resiliently biased away from said strings.

4,563,935

MACHINE FOR THE DOUBLE TREATMENT OF WORKPIECES WHILE THEY ARE CONTINUALLY MOVING AND RECYCLED UPON A OPERATING DRUM, PARTICULARLY THE SUCCESSIVE VARNISHING OF BODIES OF REVOLUTION

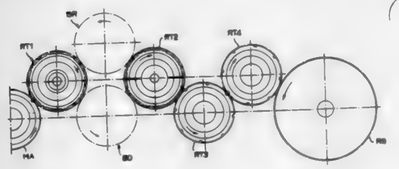
Jean C. Rinck; Alain M. Lecomte, both of Mulhouse, and Alain Scherrer, Pfastatt, all of France, assignors to Manufacture de Machines du Haut Rhin, "Manurhin" , Mulhouse, France

Filed Oct. 25, 1983, Ser. No. 545,066

Claims priority, application France, Oct. 25, 1982, 82 17794

Int. Cl.⁴ F42B *33/14*

U.S. Cl. 86—17 **11 Claims**



1. In apparatus for the treatment of cartridge-cases moving continuously through a train of manipulating and cartridge-case-treating instrumentalities, said train having an operative drum adapted to carry out a treatment, transfer means downstream of the operating drum to lead the cartridge-cases to and from the operating drum, respectively, and to replace them respectively, and recycling drum disposed between the transfer means downstream and upstream of the operating drum, the operating drum and the transfer means being of such construction as to permit cartridge-cases to pass a plurality of times through the operating drum, as well as means for feeding cartridge-cases to the upstream transfer element and the means for returning the cartridge-cases after their discharge by the downstream transfer element, the improvement wherein:

the operating drum is provided with a first and a second level of circulation of cartridge-cases where there are carried out two treating operations which are at least partially different, the working positions in the two superimposed levels of the working drum being displaced a distance which is a fraction of the normal distance be-

tween successive cartridge-cases as they travel through the train,

the upstream transfer means and the downstream transfer means each has a first and a second wheel, the wheels being superposed, the wheels being displaced by the same said fraction of the normal spacing between the cartridge-cases,

the first wheels of the upstream transfer means and the downstream transfer means each cooperating with the first level of the operating drum, while the second wheels of the upstream and the downstream transfer wheels cooperate with the second level of the operating drum,

the means for feeding the cartridge-cases to the continuous chain cooperates with the first wheel of the upstream transfer means, while the means for returning the cartridge-cases cooperate with the second wheel of the transfer means downstream of the operating drum, said two transfer means passing the cartridge-cases with a normal spacing between consecutive cartridge-cases, and

the recycling drum is provided with means to change the level of travel of the cartridge-cases thereover to cause the cartridge-cases to pass from the first wheel of the downstream transfer wheels to the second wheel of the upstream transfer means,

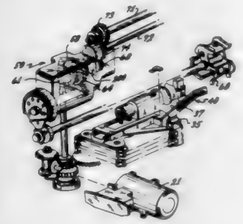
whereby to permit at one time the use of simple elements at the different levels of the transfer wheels, with guiding means without switching means, all while increasing the angular displacement between the two levels of the operating drum to permit the interposition of means for shaping or treating of the cartridge-cases, the two operations of treatment being varnishing or gumming of the flange of a cartridge-case on the one hand and the percussion cap therefore on the other hand.

4,563,936

WEAPON WITH NEXT ROUND SELECT FEED SYSTEM

Michael M. Cleary, Pacific Palisades, and Luis A. Bohorquez, Inglewood, both of Calif., assignors to Hughes Helicopters, Inc., Culver City, Calif.

Filed May 28, 1982, Ser. No. 383,149
Int. Cl.⁴ F41D *10/32;* **F41F** *9/00*
U.S. Cl. 89—11 **16 Claims**



1. In an externally driven gun in combination with a source of external power for driving said gun including an ammunition feeder and firing mechanism, said feeder including at least one sprocket for feeding ammunition into said firing mechanism within said gun, a gear transmission comprising;

input means for providing a driving torque for said sprocket, said input means being coupled to said source;

accelerating means for converting substantially uniform angular velocity into oscillatory angular velocity and

output means coupled to said accelerating means for coupling said oscillatory angular velocity from said accelerating means to said sprocket for delayed feeding of ammunition into said firing mechanism of said gun, said delayed feeding being timed relative to firing of said ammunition according to a predetermined relationship, said accelerating means being coupled to said output means,

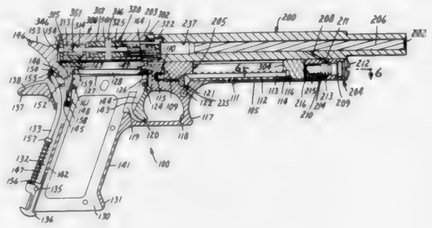
whereby an externally powered gun driven at a uniform speed feeds ammunition into said firing mechanism of said gun at a nonlinearly changing velocity wherein the velocity of said sprocket and ammunition fed thereby is selectively provided with periodic acceleration and deceleration in order to delay said handing-off until the last opportunity possible to do so.

4,563,937

GAS ACTUATED PISTOL

Bernard C. White, Robbinsdale, Minn., assignor to Magnum Research, Inc., Minneapolis, Minn.

Filed Jan. 4, 1983, Ser. No. 455,506
Int. Cl.⁴ F41C *5/02*
U.S. Cl. 89—185 **7 Claims**



1. A gas operated pistol comprising:

(A) a frame assembly having a forward trough-shaped portion and breech end bearing means comprising first horizontal grooves,

(B) resilient biasing means in said trough-shaped portion of said frame assembly,

(C) a barrel assembly having means for securing said barrel assembly to said frame assembly and comprising:

(1) a barrel in said forward trough-shaped portion having muzzle and breech ends,

(2) a passage through the wall of said barrel,

(3) a muzzle locking assembly projecting beneath the muzzle end of said barrel and supported in the forward end of said trough-shaped portion of said frame assembly, said muzzle locking assembly including a housing defining a chamber with an opening into said trough-shaped portion of said frame assembly, and an orifice connecting said passage to the muzzle end of said chamber,

(4) a breech locking assembly projecting beneath the breech end of said barrel and supported by said breech end bearing means in the rearward end of said trough-shaped portion of said frame assembly, said breech end locking assembly comprising (i) a vertically curved muzzle-facing cam surface, (ii) a locking cam pivotable on said frame to engage said cam surface to secure said barrel assembly to said frame and (iii) first horizontal locking rails on opposed vertical sides of said breech locking assembly for engagement in said first horizontal grooves in said breech end bearing means,

(D) a bolt carrier assembly slidable on said frame assembly, said bolt carrier assembly comprising a rearward bolt section aligned with said barrel, and a forward barrel-receiving section having a lug connecting spaced vertical side walls, said lug being positioned in said forward trough-shaped portion of said frame assembly, and said bolt carrier assembly being urged toward the muzzle end of said pistol by said resilient biasing means, and

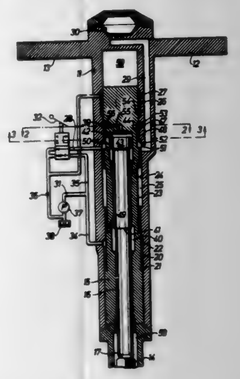
(E) a piston slidable in said chamber in said muzzle locking assembly, said piston projecting out of said chamber and engaging said lug on said bolt carrier.

4,563,938

PRESSURE FLUID OPERATED PERCUSSIVE TOOL

Stig R. Henriksson, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jul. 23, 1984, Ser. No. 633,190
Claims priority, application Sweden, Aug. 1, 1983, 8304210
Int. Cl.⁴ F01B *15/02*
U.S. Cl. 91—25 **6 Claims**



1. A pressure fluid operated percussive tool comprising:

a housing (11);

a cylinder (15) reciprocable in said housing (11) in an axial direction of said cylinder;

a piston hammer (16) reciprocable in said cylinder (15) and arranged to impact upon an anvil surface (17) coupled to a work implement (14);

a constantly pressurized chamber (20) between said housing (11) and said cylinder (15) for biassing said cylinder (15) forwardly in said housing (11);

a first chamber (40) for urging said piston hammer (16) rearwardly in said cylinder (11);

a periodically pressurized and depressurized second chamber (42) between said piston hammer (16) and said cylinder (15) for urging said piston hammer (16) forwardly in said cylinder (11);

an inlet (28) which is constantly pressurized during operation of said tool;

an inlet chamber (25) formed between said housing and said cylinder (15) and which is constantly coupled to said inlet (28);

an outlet chamber (27) formed between said housing (11) and said cylinder (15) at the rear of said inlet chamber (25) and which is constantly coupled to an outlet (36);

valve means comprising a valving chamber (48) located intermediate said inlet and outlet chambers (25,27) and which is arranged to be alternatively coupled to said inlet and outlet chambers (25,27) in response to the axial position of said cylinder (15) in said housing (11), said valving chamber (48) being constantly connected to said second chamber (42) by means of a passage (50) through said cylinder (15);

said piston hammer (16) being arranged to close off a rear end portion (57) of said second chamber (42) from said passage (50) from said valving chamber (48) when said piston hammer (16) reaches a rear end position in said cylinder (15);

a trigger passage (55) leading between said rear end portion (57) of said second chamber (42); and

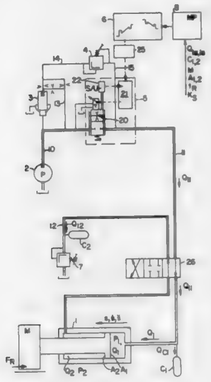
a triggering valve means (56) formed between said housing (11) and said cylinder (15) and which is arranged to alternatively pressurize and drain said trigger passage (55), said triggering valve means (56) being arranged to pressurize said trigger passage (55) only when said cylinder (15) is forwardly of a position which is a predetermined distance forwardly of the position in which said valving chamber (48) is opened to said inlet chamber (25).

4,563,939

HYDROSTATIC OR PNEUMATIC DRIVE AND METHOD OF OPERATING SAME

Ronald Siegrist, Oberuzwil, Switzerland, assignor to Vickers, Incorporated, Troy, Mich.

Filed Jun. 9, 1983, Ser. No. 502,524
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222008
Int. Cl.⁴ F01L *25/08;* **F15B** *13/16;* **H03K** *4/08*
U.S. Cl. 91—275 **19 Claims**



1. A method of operating a pressure fluid drive device for accelerating and decelerating a mass, which drive device includes a pressure fluid source, a valve means and a pressure fluid actuated motor means, said valve means having a controllable flow opening for metering-in an increasing and decreasing fluid flow to said motor means, which is subject to a generally increasing or decreasing fluid pressure, whereby said fluid is compressed or decompressed, respectively, resulting in a compression or decompression volume which increases or decreases, respectively, the accelerating or decelerating rate of said mass relative to a condition without such compression or decompression, said metering-in for accelerating said mass including the following steps:

(a) from a first initial flow value, said increasing fluid flow is abruptly and temporarily increased by a volume flow rate which corresponds at least to said compression volume;

(b) after said temporary increased volume flow rate has been metered-in, said increasing fluid flow is metered-in, beginning with a level near to said first initial flow value and ending with a lever near a desired first final flow value;

(c) when said increasing fluid flow approaches said first final flow value, said metered-in flow is abruptly and temporarily decreased by a volume rate which corresponds to said compression fluid, and thereafter said fluid is metered-in at said first final flow value; said metering-in for decelerating said mass including the following steps:

(d) from a second initial flow value, said decreasing fluid flow is abruptly and temporarily decreased by a volume flow rate which corresponds to said decompression volume;

(e) after said temporary decreased volume flow rate has been metered-in, said decreasing fluid flow is metered-in beginning with a level near to said second initial flow value and ending with a level near a desired second final flow value;

(f) when said decreasing fluid flow approaches said second final flow value, said metered-in flow is abruptly and temporarily increased by a volume rate which corre-

sponds at most to said decompression volume, if said second final flow value is not zero, and thereafter said fluid is metered-in at said second final flow value.

4,563,940

OIL INFEED DEVICE FOR AN ADJUSTABLE PITCH PROPELLER

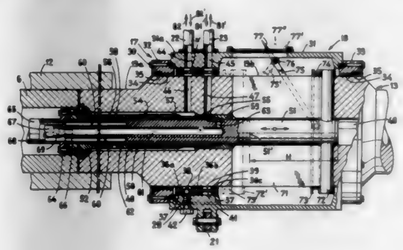
Wolfgang Wührer, Ravensburg, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

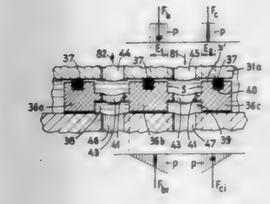
Filed Apr. 4, 1983, Ser. No. 482,038

Claims priority, application Switzerland, Apr. 15, 1982, 2277/82

Int. Cl.⁴ B63H *3/04, 3/08*

U.S. Cl. 92—106 **6 Claims**





1. An oil infeed device for a hydraulic servo motor of an adjustable pitch propeller, comprising:

a non-rotatable housing member having a bore;

a hollow intermediate shaft for operating said servo motor;

said hollow intermediate shaft being arranged in said bore of said housing;

control means for controlling the supply of pressurized oil;

two oil supply passages formed in said housing member and flow connectable to said control means;

distributor ring means sealingly arranged in said bore of said housing and supported on said intermediate shaft;

axial sections formed at said distributor ring means;

two annular channels formed by said axial sections and extending about the circumference of said intermediate shaft;

each of said oil supply passages opening into a respective one of said two annular channels;

each said axial section comprising a seal-less inner bearing surface;

each said inner seal-less bearing surface bounding a respective bearing gap formed with said intermediate shaft and open in both axial directions;

each axial section having a larger diameter which is smaller than the diameter of said bore of said housing member in order to form a gap permitting radial adjusting displacements of the related one of said axial sections;

radially flexible holding means interconnecting neighboring ones of said axial sections operatively associated with the same annular channel;

annular sealing ledges extending around an outer circumference of said distributor ring means on both sides of side annular channels for sealingly guiding said distributor ring means in said bore of said housing member;

connecting passages formed in said intermediate shaft and connecting said annular channels to working chambers of the servo motor; and

said radially flexible holding means permitting said radial adjusting displacements of each said related one of said axial sections to provide for good sealing contact of said annular sealing ledges against said bore of said housing member.

4,563,941

HYDRAULIC ACTUATOR FOR CONTROL OF VALVES

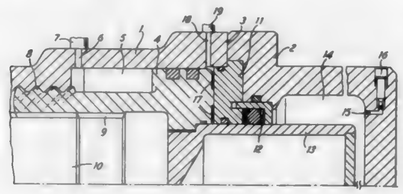
Joergen Soendergaard, Naestved, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Sep. 12, 1984, Ser. No. 649,693

Claims priority, application Denmark, Sep. 16, 1983, 4224

Int. Cl.⁴ F01B *7/00*

U.S. Cl. 92—134 **1 Claim**



1. A hydraulic actuator assembly for controlling a valve, comprising, a housing defining a cylindrical bore forming a piston chamber and an end cap section forming an end chamber, transversely extending wall means having a central opening and being between said piston and end chambers, said housing forming a sleeve portion spaced from said wall means and having a central opening of lesser diameter than said wall means, piston means having a head portion slidably disposed in said piston chamber and a body portion of lesser diameter extending through said sleeve portion central opening, an actuator spindle connected to said piston means body portion, a cylindrically shaped piston extension of smaller diameter than said piston attached to said piston and extending into said end chamber, said piston extension being in sliding and sealing engagement with said wall means central opening, said housing having inlet and outlet passage means for said piston chamber to operate said piston, said housing having inlet air passage means for providing a piston return pressure gas in said end chamber, said piston head having a cylindrically shaped protruding portion which forms annular chamber means in surrounding relation to said piston extension when said protruding portion is in abutting engagement with said wall means, said housing having emergency passage means in fluid communication with said annular chamber when said protruding portion abuts said wall means to effect an emergency moving of said piston in a valve closing direction when a pressure medium is admitted into said emergency passage means.

4,563,942

EQUIPMENT PART COVERED BY A CASING AND HAVING A FAN

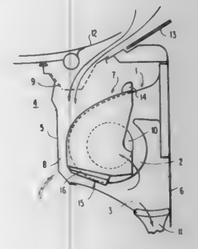
Hermann Grimm, Ostelsheim; Volkmar König, and Gernot Karioth, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 25, 1982, Ser. No. 436,704

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1981, 3142484

Int. Cl.⁴ B60H *1/28*

U.S. Cl. 98—2.16 **9 Claims**



1. Apparatus for a motor vehicle having an equipment part having at least one of a fan, a heating, ventilation and air conditioning system, the equipment part being accommodated in a space located between one of an engine compartment and a trunk and a splash wall, and a casing means surrounding the equipment part for deflecting water from entry into the equipment and forming, together with a wall of the space on the same side as the engine compartment or trunk, a channel through which fresh air only is supplied to an air-inflow orifice in the equipment part, comprising

second means surrounding the equipment part at least from below, and having at least one dimension variable in magnitude for yielding during installation and during removal of the casing means and connected to the casing means for maintaining the casing means in its water deflecting condition after installation of the casing means.

4,563,943

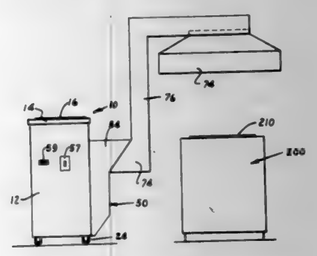
FILTER APPARATUS FOR HIGH SPEED PRINTERS

John C. Bertelsen, 3060 Baker Rd., Dexter, Mich. 48130

Continuation-in-part of Ser. No. 443,122, Nov. 19, 1982, abandoned. This application Mar. 6, 1985, Ser. No. 708,649

Int. Cl.⁴ F23J *11/00*

U.S. Cl. 98—115.1 **3 Claims**



1. In a computer printing room, the combination comprising:

a printer housing having an outlet opening;

high speed laser or the like printing means in the printer housing providing a source of airborne carbon black particles employed in the printing process and disposed to pass through the outlet opening;

a filter housing having an inlet opening, and an outlet opening, the filter housing being spaced from the printer housing;

a plurality of filter means suited for removing airborne paper dust, carbon black and the like, removably mounted in the filter housing between the inlet opening and the outlet opening;

fan means mounted in the filter housing for moving air carrying such airborne particles into the inlet opening, through the filter means, and out the outlet opening;

a duct having an outlet opening, and means attaching the duct to the filter housing such that the duct outlet opening is adjacent the filter housing inlet opening; and

a hood mounted on the duct to define a hood inlet opening remote from the filter housing inlet opening and horizontally spaced therefrom, the hood inlet opening being disposed closely adjacent and aligned with the outlet opening of the printer housing, but not being attached thereto, to receive airborne particles from the printer housing outlet opening and to pass such airborne particles through the duct and said filter means such that the airborne particles are removed by the filter means, and the filtered air passes from the filter housing outlet opening into said computer printing room.

4,563,944

PRODUCT ORIENTING CONVEYOR

Warren L. Tate, Duncanville, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Jun. 29, 1984, Ser. No. 626,030

Int. Cl.⁴ A47J *37/12*

U.S. Cl. 99—355 **15 Claims**



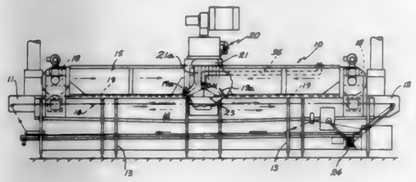
1. An automatic product orienting elongated endless conveyor having one end extending into a body of liquid for automatically removing generally disc-shaped food articles from the body of liquid and automatically orienting the articles with the plane of the faces of the articles generally vertically, but not necessarily parallel from article to article so that liquid may drain by gravity from the food articles, said conveyor comprising an endless conveyor having a drainable surface, said surface including means for automatically orienting the articles vertically, said automatic orienting means comprising a plurality of rods extending from said surface in a generally perpendicular orientation with said surface, wherein the rods are of at least two different lengths, said rods being arranged in a generally symmetrical pattern in which the nearest adjacent rods are separated by a distance less than the average diameter of the articles and the nearest adjacent rods are generally of different lengths to thereby cause the articles to fall on their edges between the rods with the planes of the faces of the articles generally vertical, said rods comprising short rods and long rods, said long rods having a length which is within the range of about 75% to 150% of the average diameter of the articles, and the long rods and the short rods having a length differential within the range from about 60% to 65%.

4,563,945

HEAT SHIELD-STEAM DISTRIBUTOR FOR COOKING OVEN

Yong Y. Hwang, Huron, Ohio, assignor to Stein Associates, Inc., Sandusky, Ohio

Filed Nov. 13, 1984, Ser. No. 670,383
Int. Cl.[4] A47J *27/04*
U.S. Cl. 99—443 C **8 Claims**



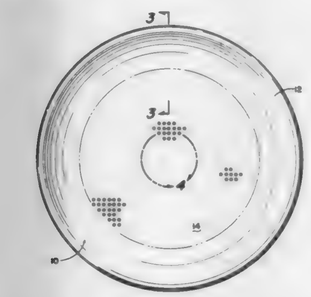
1. Heat shield-steam distributor means for use in an oven for cooking food product, said oven having an enclosed elongated food cooking chamber through which food product is moved along a conveyance path and wherein a cooking medium comprising a mixture of hot air and steam in controllable proportions is brought into contact with the food product as it is moved along the conveyance path and wherein the primary heat source for heating the cooking medium is a combustion unit adapted to direct flame into the cooking medium in the cooking chamber of said oven and toward the moving product, said heat shield-steam distributor means being located between said combustion unit and said food product and effective to protect said product from direct exposure to the flame of said combustion unit, and said heat shield-steam distributor means also embodying means for distributing steam into said cooking chamber.

4,563,946

PIZZA PAN

Richard A. Barlow, 949 Marymount Rd., Salina, Kans. 67401, and Eugene T. Logan, 2404 Parkwood Cir., Claremore, Okla. 74017

Filed Jul. 24, 1984, Ser. No. 633,850
Int. Cl.[4] A47J *37/01*
U.S. Cl. 99—450 **5 Claims**



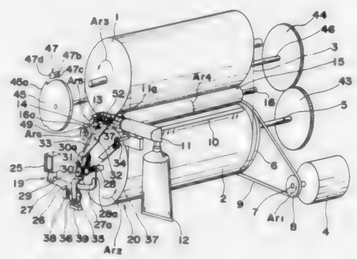
1. A pizza pan comprising a substantially flat bottom, a large radius, smooth peripheral wall conterminous with the bottom as a uniform uninterrupted surface, the wall extending upwardly and outwardly therefrom, and a plurality of spaced relatively small apertures provided in the bottom and contained within a central area smaller than the diameter of the bottom leaving a border of no apertures for the even distribution of heat to the central underside of the pizza during a pizza baking operation.

4,563,947

INK DETECTING DEVICE FOR ROTARY PRINTER

Ken Matsushita; Hiroki Ikeda, and Yoshihide Sugiyama, all of Wakayama, Japan, assignors to Duplo Seiki Corporation, Wakayama and Duplo Manufacturing Corporation, Komae, both of, Japan

Filed Jan. 29, 1985, Ser. No. 696,066
Claims priority, application Japan, Feb. 1, 1984, 59-17739
Int. Cl.[4] B41F *15/40, 31/02*
U.S. Cl. 101—122 **7 Claims**



1. For use in a rotary printing machine comprising at least one printing drum supported for rotation, an image carrier medium having an image area bearing an image to be printed on an image supporting material, and an ink supplying means to selectively supply a proper quantity of a printing ink onto desired portions of the outer periphery of the printing drum, in an axial direction thereof, said printing ink on the outer periphery of the printing drum being, during the rotation of the printing drum, allowed to penetrate through the image area of the image carrier medium to the image supporting material, an ink detecting device which comprises, in combination:

a plurality of sensor rolls rotatably supported in series on a single fixed shaft in frictional contact with the printing drum through a layer of printing ink interposed between said sensor rolls and said printing drum;

a first means for separately detecting rotational speed of each sensor rolls;

a second means for detecting rotational speed of the printing drum;

a control means for comparing the rotational speed of each sensor roll and corresponding reference values respectively indicative of rotational speed of each sensor roll measured under such a condition that optimum quantity of printing ink is applied on the outer periphery of the printing drum, and accordingly controlling said ink supplying means so as to replenish the printing ink onto desired portions of the outer periphery of the printing drum which correspond to such sensor rolls the rotational speed of which exceeds the corresponding reference values.

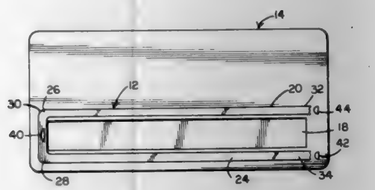
4,563,948

STENCIL APPARATUS FOR USE WITH ABRASIVE PARTICLE SPRAYER FOR MARKING ITEMS SUCH AS AUTOMOBILE PARTS

Terrance Cafferty, Huntington, N.Y., assignor to Auto Id Inc., Wilmington, Del.

Filed Mar. 13, 1984, Ser. No. 589,024
Int. Cl.[4] B41L *13/12;* **B05C** *17/08*
U.S. Cl. 101—128 **16 Claims**

1. Apparatus comprising a base member provided with an opening and including tracks on opposite sides of said opening, a plurality of plates arrangeable in and extending between said tracks to obturate said opening at least in part, said plates being provided with openings constituting indicia of intelligence including characters, and a mask slidable in said tracks to a position superposed on said plates, said mask being provided with windows wherethrough the openings in the plates are exposed, said mask holding said plates in position on said base member, said base member and mask respectively comprising cooperative interlocking means which engage with each other









as the mask slides in said tracks, the thusly engaged interlocking means preventing detachment of said mask from said tracks and thereby preventing detachment of said plates from said track and said base.

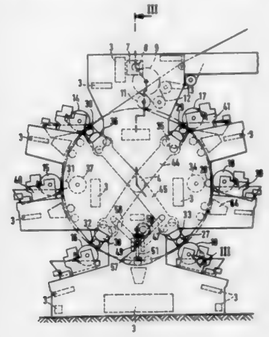
4,563,949

PRINTING PRESS

Dieter Rogge, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Apr. 30, 1984, Ser. No. 605,562
Claims priority, application Fed. Rep. of Germany, May 2, 1983, 3315891
Int. Cl.[4] B41F *5/24*
U.S. Cl. 101—174 **5 Claims**

1. A printing press, which comprises a plurality of inking mechanisms having inking cylinders, and a plurality of plate cylinders and backing cylinders mounted on support shafts and driven by a common central gear, the plate cylinders, inking mechanisms and inking cylinders being mounted on carriages which are mounted for movement toward and away from the associated backing cylinders along respective guides, said guides being located at spaced positions around the central gear, said guides extending from approximately tangentially to radially of the central gear, gears of the backing cylinders have pitch circles located relative to the central gear such that the pitch circles will, when projected axially, make contact with a pitch circle of the central gear, and wherein, at contact point zones of the press, gears of the plate cylinders engage the central gear as well as the gears of the backing cylinders, a plurality of two armed levers pivotally mounted at their centers on the central shaft of said central gear to intersect in pairs, support shafts of the respective backing cylinders being mounted at the ends of said two-armed levers, and means for



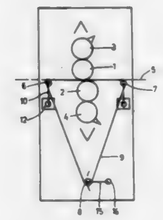
simultaneously pivoting pairs of the two-armed levers by equal amounts in opposite directions.

4,563,950

ROTARY PRINTING MACHINE WITH PAPER GUIDE

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Nov. 15, 1984, Ser. No. 671,556
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402515
Int. Cl.[4] B41F *13/02*
U.S. Cl. 101—178 **13 Claims**



1. Rotary offset printing machine for printing on a flexible substrate, subject to flutter, and random oscillations, having

at least one blanket cylinder (**2**, **41–44**, **49–52**, **59**; **62,63**; **75,76**);

at least one plate cylinder (**3,4,64,65,77,78**) associated with each blanket cylinder; and

at least one impression cylinder (**61,72,73**) positioned for engagement along a nip line of contact against a respective rubber blanket cylinder, with the substrate interposed and supported thereat, to define a printing line with the respective rubber blanket cylinder,

comprising, in accordance with the invention,

means to suppress flutter and random movement of the substrate transverse to an intended substrate path (**5,47**) located between, and diverging from the respective surface of said impression (**61,72,73**) and blanket (**63,75,76**) cylinders downstream of said nip line of contact, including

a thin, endless, flexible guide element (**9**, **40**, **48**, **54**, **68**, **83**, **84**) passing, along and on a portion of a major surface of said substrate, through said nip between said blanket and impression cylinders and serving to increase support for the substrate adjacent the print line, said guide element having a width which is up to the width of an unprinted zone of the substrate; and

a plurality of guide rollers (6, 7, 8; 17; 45, 46; 55, 56, 57, 58; 69, 70; 80, 81, 82) guiding the endless guide element about a respective blanket cylinder and along a portion of the path (5, 47) of the substrate immediately adjacent the printing line.

4,563,951

CLAMPING AND ADJUSTING DEVICE FOR THE SMOOTHING MEANS ON THE STORAGE CYLINDER OF A SHEET OFFSET PRESS

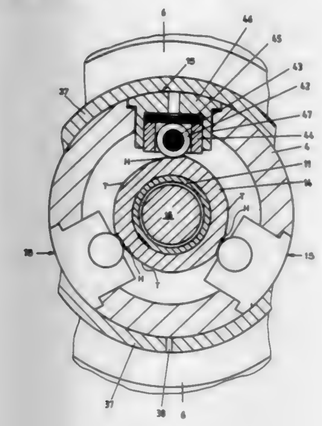
Josef Mathes, Offenbach am Main, and Roland Höll, Weiterstadt, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 25, 1985, Ser. No. 715,476

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410689

Int. Cl.⁴ B41F *5/00*

U.S. Cl. 101—216 **7 Claims**



1. A clamping and adjusting device for the smoothing means on a storage cylinder of a sheet offset press adapted for selective first printing or perfecting printing operation, wherein the smoothing means are mounted by way of carrying elements on a hollow main shaft of the storage cylinder and are adapted to be released, adjusted and, by way of clamping elements, clamped relative to the outer shell of the storage cylinder by central actuators, comprising, in combination, a unitary hollow drive shaft rotatably mounted within the hollow main shaft of the storage cylinder and having a first control element at one end and clamping cams on its periphery adjacent its other end, clamping elements including cam followers in bearing relationship between the clamping cams and the carrying elements; and an adjusting shaft rotatably mounted within the unitary hollow drive shaft and having a second control element at one end and having at its other end a gear wheel forming part of epicyclic gearing adapted to pivot the smoothing means on the storage cylinder.

4,563,952

LITHOGRAPHIC WATER BASED FOUNTAIN SOLUTION CONCENTRATES

Bernard A. Thiebaut, Oilliers, France, assignor to Inmont Corporation, Clifton, N.J.

Division of Ser. No. 597,798, Dec. 21, 1983. This application Jan. 22, 1985, Ser. No. 693,541

Int. Cl.⁴ B41M *1/06*

U.S. Cl. 101—451 **7 Claims**

1. In a method of lithographic or web-offset printing comprising the preparation of a fountain solution by mixing a water dilutable fountain solution concentrate in an amount of about 1.0 wt.% to 6.0 wt.% with water wherein said fountain solution concentrate contains water, a buffer, a polyol and surfactant, and treating a planographic plate with said fountain solution such that the non-image areas of said plate are rendered hydrophilic, thereby inhibiting the deposition of ink on said areas and improving the printing process, the improvement comprising, as

the buffer, at least one salt of (a) a polycarboxylic acid and (b) an organic amine, wherein the polycarboxylic acid has a pK_a between about 3 and about 6, the organic amine has a pK_b between about 2 and about 9, said fountain solution having a pH between about 4.7 and about 5.3, a surface tension between about 32×10^{-3} Newton/m and about 52×10^{-3} Newton/m and sufficient buffer effect such that the pH variation will be less than about one pH unit when 5 cc of the decinormal HCl is added to 100 cc of said fountain solution.

4,563,953

TAMPING HEAD WITH LIMITING STOP FOR TOOL RECIPROCATION

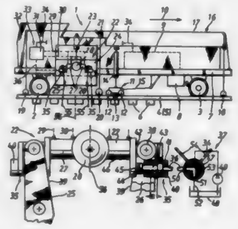
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH, Vienna, Austria

Filed May 3, 1983, Ser. No. 491,027

Claims priority, application Austria, Jul. 7, 1982, 2643/82

Int. Cl.⁴ E01B *27/16*

U.S. Cl. 104—12 **6 Claims**



1. In a tamping head for a mobile track working machine arranged for tamping ballast underneath a respective one of a plurality of spaced ties resting on the ballast and having two track rails fastened thereto, the tie defining cribs therebetween, the tamping head comprising a tamping tool carrier vertically adjustably mounted on the machine, a vibratory tamping tool mounted on the carrier for immersion in a respective one of the cribs adjacent the respective tie and for pivoting towards and away from the tie in a reciprocating stroke between two end positions, and a hydraulic drive for pivoting the tamping tool, the hydraulic pivoting drive including a cylinder element and a piston element, and a reciprocating stroke limiting stop cooperating with the hydraulic pivoting drive for selectively adjusting a respective one of the end positions: a hydraulic actuator fixedly connected to one of the hydraulic drive elements for setting the stop for the selective adjustment of a respective end position, the hydraulic actuator including a cylinder element and piston element, the piston element of the hydraulic actuator including a piston rod having a free end extending from the cylinder element of the hydraulic actuator, the free piston rod end constituting the stop and the other hydraulic drive element having an abutment fixedly connected thereto and arranged to cooperate with the free piston rod end, the hydraulic actuator piston element being movable in relation to the cylinder element, the hydraulic pivoting drive and the hydraulic actuator having axes extending parallel to each other, and the hydraulic actuator being mounted on the hydraulic drive.

4,563,954

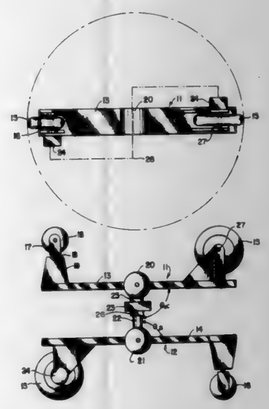
FOUR-WHEELED ADJUSTABLE VEHICLE

Tokuji Okada, and Takeo Kanade, both of Pittsburgh, Pa., assignors to Carnegie-Mellon University, Pittsburgh, Pa.

Filed Oct. 11, 1983, Ser. No. 540,178

Int. Cl.⁴ B61B *13/10*

U.S. Cl. 104—138 G **7 Claims**



1. A vehicle for automatically traversing the interior of a pipe comprising a pair of two-wheeled powered trucks each including a separate bolster to which its wheels are attached, the bolsters being attached to oppostie ends of a stretcher member so that the trucks travel along diametrically opposite paths on the pipe wall.

4,563,955

CHAIRLIFT OR GONDOLA LIFT INCLUDING FRICTION DRIVE WHEELS

Serge Tarassoff, Fontaine, France, assignor to Pomagalski S.A., Fontaine, France

Filed Jun. 25, 1984, Ser. No. 624,281

Claims priority, application France, Jul. 6, 1983, 83 11475

Int. Cl.⁴ B61B *12/00;* **B61F** *19/00;* **B65G** *45/00;* **B60S** *3/04*

U.S. Cl. 104—168 **11 Claims**

1. Overhead cable transport installation, in particular a gondola lift or a chairlift comprising:

a continuously moving endless overhead cable extending between two terminals,

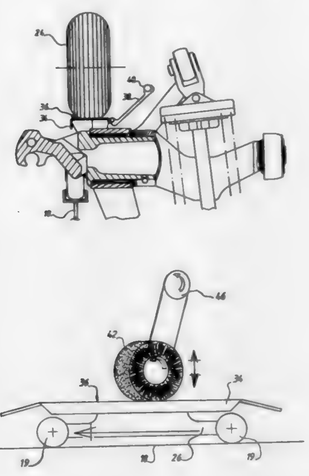
a transfer rail in each terminal for connecting the downhill line and the uphill line constituted by said endless cable,

carriages, each supporting a gondola or a chair and having a detachable grip for coupling on said cable, support wheels for running on said rail in the terminal, and a plate extending in the carriage travel direction and including an upper friction face,

a grip actuation device for uncoupling the grip from the cable at the entrance of the terminal, the carriage running on the transfer rail,

at least one driven friction wheel disposed along the travel path of the grip carriage in the terminal for engaging said friction face for braking, accelerating or driving the carriage uncoupled from the cable and running on the transfer rail,

clearing means disposed along the carriage travel path to clear said upper friction face from frozen precipitant before the passage of the carriage along said friction



wheel so as to provide a correct friction drive of the carriage by said friction wheel.

4,563,956

TRAVELLING MECHANISM OF A TRANSPORT CAR RUNNING ON PROFILE RAIL TRACK

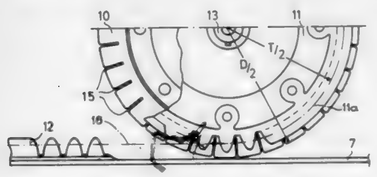
Edelbert Wiechert, and Herbert Lehmann, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 25, 1983, Ser. No. 555,160

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243914

Int. Cl.⁴ B61C *11/00*

U.S. Cl. 105—29 R **5 Claims**



1. A transport car drive assembly of a transport car for the conveying of files and/or transport goods having similar dimensions or weight contained in a transport car container,

said drive assembly comprising a transport car drive mechanism for propelling a transport car associated therewith and running on horizontal and, in sections, vertical profile rail tracks,

said transport car drive mechanism including a frictional wheel having a track-engaging periphery defining an external diameter of the frictional wheel and having rolling frictional engagement with horizontal and vertical track surfaces during drive of an associated transport car along horizontal and vertical profile rail tracks,

said transport car drive mechanism further including a toothed wheel for rolling engagement with vertically disposed toothed racks of vertical profile rail tracks for

controlling the rate of movement of an associated transport car along such vertical profile rail tracks,

said transport car drive mechanism also including an electric motor providing the motive power therefor and having a drive shaft driven thereby, said drive shaft carrying the frictional wheel and the toothed wheel for joint rotation therewith to effect the transport of an associated transport car, said toothed wheel having a pitch diameter smaller than the external diameter of the track-engaging periphery of the frictional wheel,

the frictional wheel having radial slots and being composed of an elastic material at least in regions thereof between the slots and close to the track-engaging periphery,

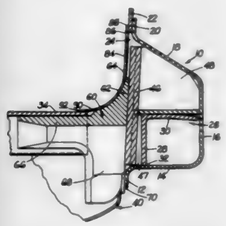
the dimensions of the radial slots and the spacing of the slots from one another being such that, taking account of the elasticity of the elastic material of the frictional wheel and the difference between the external diameter of the track-engaging periphery of the frictional wheel and the pitch diameter of the toothed wheel, the slip differential of the frictional wheel due to such difference in diameters during rolling engagement of the toothed wheel in a vertically disposed toothed rack is compensated by elastic deformation of the elastic material at the regions of the frictional wheel between neighboring slots.

4,563,957

CAR BOTTOM-TO-SIDE SILL CONNECTION

Robert H. Billingsley; George Reed, both of St. Louis, and Arnold Schlobohm, Ballwin, all of Mo., assignors to ACF Industries, Incorporated, Earth City, Mo.

Filed Feb. 16, 1983, Ser. No. 467,099
Int. Cl.⁴ B61D *17/00, 5/00, 7/00*
U.S. Cl. 105—418 **7 Claims**



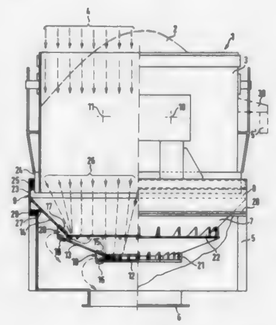
1. In a center stub sill railroad car having, at each end thereof, a center stub sill extending in longitudinal direction of the car along the centerline thereof, a pair of spaced side sills at the lower margin of the car and extending lengthwise of the car, each of said side sills being generally channel-shaped in cross section with the open face of each of said side sills facing generally inwardly of the car, a shear plate at each end of the car connected to a respective said center stub sill and to said side sills for transferring longitudinal train loads therebetween, a side plate extending upwardly from each of said side wills forming a respective side of said car, and a bottom extending inwardly between said side sills forming the bottom of the car, wherein the improvement comprises: a generally vertically disposed plate secured to the face of each of said side sills facing inwardly of the car generally at each end thereof proximate the securement of at least a portion of said shear plate to said side sill; a rigid one-piece member of a suitable weldable material welded to said plate for rigidly interconnecting said side sill, said shear plate, said bottom, and said side plate, said rigid one-piece member comprising a base having an outside face adapted to be welded to said plate, a body portion inwardly of the base, and a portion extending downwardly from said body portion welded to its respective said side sill and to said bottom, said body portion being welded to said shear plate, said base portion having a curved inner face for at least in part mating with a closure plate, the latter constituting a transition between said side plate and said shear plate.

4,563,958

FURNACE CHARGE PREHEATER

Ferdinand Minarik, Karlstein, and Hans-Joachim Paletzki, Viersen, both of Fed. Rep. of Germany, assignors to Fuchs Systemtechnik GmbH, Fed. Rep. of Germany

Filed Oct. 13, 1983, Ser. No. 541,422
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3238017
Int. Cl.⁴ F23G *5/02*
U.S. Cl. 110—219 **8 Claims**



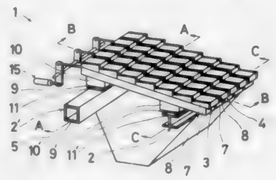
1. Furnace charge preheater comprising a bucket for receiving charge material to be heated by means of a heating gas, said bucket having a bottom containing at least two half-shells adapted to be swung apart to an open position and swung together to a closed position, and wherein in the closed position of the bucket bottom, said bucket bottom has a central part having an outer edge portion, and at least one ring, the ring having an inner edge portion which overlaps said outer edge portion of the central part, and said outer edge portion of the central part being located beneath the inner edge portion of the ring at a distance therefrom, forming an annular gap for the passage of hot gases.

4,563,959

STEP TYPE STOKER WITH OSCILLATION MECHANISM

Koji Fujiwara, Osaka, Japan, assignor to Kabushiki Kaisha Takuma, Osaka, Japan

Filed Nov. 21, 1984, Ser. No. 673,706
Claims priority, application Japan, Jan. 9, 1984, 59-2463
Int. Cl.⁴ F23H *7/08, 7/14*
U.S. Cl. 110—281 **5 Claims**



1. A step type stoker with an oscillating mechanism comprising:

a plurality of stoker frames which are installed at fixed intervals in an upstream to downstream direction, and at least one of which is tubularly-shaped to form an air supply path;

movable fire grates each of which is formed of a plurality of fire-grate members installed in a step-like manner on a groove-shaped frame, said groove-shaped frame being equipped with an air path which is in communication with the air supply path in the aforementioned tubularly-shaped stoker frame at all times, said groove-shaped frame being supported by, but reciprocating on, the aforementioned stoker frames; and

fixed fire grates each of which is formed with a plurality of fire grate members installed in a step-like manner on a groove-shaped frame equipped with an air path which is in communication with the air supply path in the aforementioned stoker frame at all times, each said fixed fire grate being arranged to be adjacent to and parallel with the aforementioned movable fire grate, and being fixed on each of the aforementioned stoker frames;

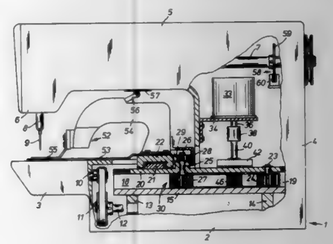
wherein is further included at least one sliding box which is fixed to the underside of the groove-shaped frame of a movable grate which rides on an upper surface of a turbularly-shaped stoker frame, the air supply path in the stoker frame and the air supply path in the groove-shaped frame being in communication by means of a communicating path passing through said at least one sliding box.

4,563,960

SEWING MACHINE HAVING A DRIVE FOR A WORK CLAMP

Ernst Albrecht, Hochspeyer, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,643
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406484
Int. Cl.⁴ D05B *21/00*
U.S. Cl. 112—121.15 **9 Claims**



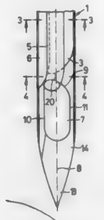
1. A sewing machine drive for moving a workpiece clamp relative to a reciprocating thread guide needle, comprising a slide, tail wheel means mounted to said slide for movement with respect to said slide, first and second stepping motors each having a driving shaft with a drive pinion, a draw member having first and second spaced apart strand portions each engaged with one drive pinion, said draw member being engaged with said tail wheel means for movement of said slide and said tail wheel means with selective rotation of at least one shaft, a plate member carried by said slide and operatively connected to said tail wheel means for movement of said plate member with respect to said slide with selective rotation of at least one shaft, said plate member being connected to the workpiece clamp whereby selective rotation of the drive shaft for each of said first and second stepping motors effects selective movement of said slide, said tail wheel means and said plate member to move the workpiece clamp.

4,563,961

TUFTING NEEDLE

Walter Beyer, Eschweiler, and Joachim Beyer, Aachen, both of Fed. Rep. of Germany, assignors to Jos. Zimmerman, Aachen, Fed. Rep. of Germany

Filed May 18, 1984, Ser. No. 611,887
Claims priority, application Fed. Rep. of Germany, May 21, 1983, 8315049
Int. Cl.⁴ D05B *85/00*
U.S. Cl. 112—222 **3 Claims**



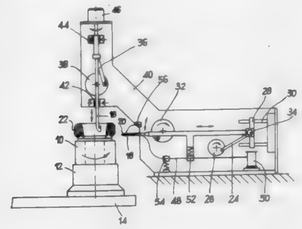
1. A tufting needle of which the shank adjoining a ram is flat, has a yarn groove and is provided near its point with an eye which is elongate in the direction of the needle axis and at the end remote from the point has a curved upper edge, one side face of the shank being bevelled towards one of its longitudinal edges by a land and towards its other longitudinal edge by a bias grind reaching into the eye zone, characterised in that the zone of the upper eye edge (**9**), which zone is furthest from the point (**13**), is asymmetrically offset only towards the land (**6**) relatively to the central axis (**8**) of the eye (**7**).

4,563,962

BOUND-STATORS OR ROTORS FOR ELECTRICAL MACHINES

Willi Muskulus, An der Pfaffenmauer 17, 6000 Frankfurt/Main 60, Fed. Rep. of Germany

Filed May 25, 1982, Ser. No. 381,754
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1981, 3121934
Int. Cl.⁴ D05B *3/00, 23/00;* **H01F** *41/02*
U.S. Cl. 112—262.1 **6 Claims**



1. In a method of producing a hollow stator or rotor for electrical machines, said stator or rotor comprising winding ends having peripherally spaced openings adjacent said winding ends and wire thread wound thru said openings and around said winding ends, the steps of:

(a) mounting said stator or rotor so that it is rotatable about its longitudinal axis;

(b) providing a supply of wire thread;

(c) forming loops of said wire thread in succession to one another and in progression about the periphery of said stator or rotor;

(d) drawing loops through respective loops formed previously from said wire thread;

(e) drawing all of said loops radially inwardly from the outside of said rotor or stator into the hollow interior thereof; and

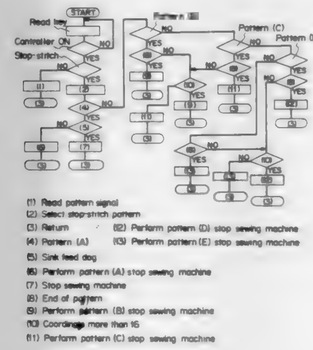
(f) performing step (d) on the internal side of said winding ends.

4,563,963

METHOD OF FORMING STOP STITCHES IN A COMPUTERIZED SEWING MACHINE

Susumu Hanyu, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1984, Ser. No. 602,416
Claims priority, application Japan, Apr. 21, 1983, 58-69233
Int. Cl.⁴ D05B *3/02*
U.S. Cl. 112—266.1 **3 Claims**



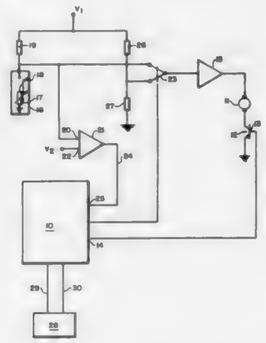
1. A method of forming stop stitches in a computerized sewing machine having a needle with a maximum needle swinging region having a plurality of needle positions, and a fabric feed dog, the sewing machine storing needle amplitude control signals and fabric feed signals for forming a plurality of stitch patterns, and also temporarily storing a plurality of patterns in accordance with a designation by an operation and pattern stitching order, the method comprising the steps of: storing a plurality of different stop stitch patterns as a combination of signals, each being substantially specific to individual stitch patterns of the plurality of stitch patterns; selecting a number of the stitch patterns so that they may be stitched in series; designating a stop stitch while said selected stitch patterns are being stitched; and selecting, by means of a microcomputer, a desired stop stitch pattern from said plurality of stop stitch patterns so that said desired stop stitch pattern is specific to a selected stitch pattern which is being stitched when said stop stitch designation is made, said micro-computer detecting whether the needle is in a position laterally of a center position of the maximum needle swinging region when said step of designating a stop stitch is performed, said microcomputer also determining the position of an initial stitch for said selected stop stitch pattern in dependence upon the detected needle position.

4,563,964

SEWING MACHINE DRIVE CONTROL

Gunnar O. M. Sjödin, Lekeryd, Sweden, assignor to Husqvarna Aktiebolag, Sweden

PCT No. PCT/SE82/00106, § 371 Date Dec. 20, 1982, § 102(e) Date Dec. 20, 1982, PCT Pub. No. WO82/03879, PCT Pub. Date Nov. 11, 1982
PCT Filed Apr. 5, 1982, Ser. No. 453,886
Claims priority, application Sweden, Apr. 30, 1981, 8102758
Int. Cl.⁴ D05B *69/26*
U.S. Cl. 112—275 **6 Claims**



1. In an electronic sewing machine having a motor for moving a needle upwardly and downwardly, an operator foot pedal control, and control means for varying the speed of the motor by controlling the current to said motor in response to movement of said operator control, said foot pedal control having an upper position the improvement further comprising position detectors for sensing the upper and lower end positions of said needle, said foot pedal control having a switch operable at said upper position, said control means being responsive to operation of said switch at said upper position for driving said motor at a lower speed and then stopping the motor when the upper position detector indicates the uppermost positioning of said needle, said control means being further responsive to operations of said switch in periods less than one-half of the movement cycle of said needle for moving said needle to the next respective position of said uppermost and lowermost positions, whereby an operator may selectively stop said needle at said uppermost and lowermost positions by movement of said foot pedal control and when the foot pedal is actuated for a period longer than one half of the movement cycle said position detectors are disconnected.

4,563,965

ACOUSTICAL SHIELD ASSEMBLY AND MATING THREAD PREGUIDE UNIT

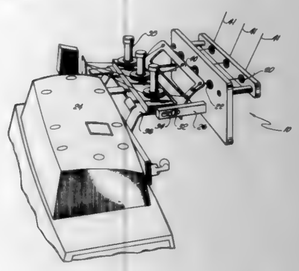
Lee W. Gregory, Hickory, N.C., assignor to Marvel Specialty Company, Hickory, N.C.

Filed Aug. 2, 1984, Ser. No. 636,834
Int. Cl.⁴ D05B *47/00, 77/00*
U.S. Cl. 112—302 **15 Claims**

1. An acoustical shield assembly and thread preguide unit adapted for attenuating noise generated by a sewing machine of the like,

said acoustical shield assembly including a series of panels closely spaced from and substantially surrounding and conforming to the sewing machine so as to be operative in attenuating noise generated by the sewing machine, said acoustical shield assembly further including an opening for easy access to the sewing machine during routine operation;

means for mounting said preguide unit to the sewing machine; and



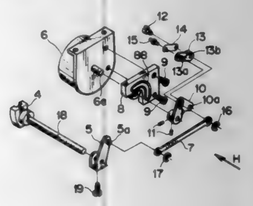
means for mating said preguide unit in substantially sealing relation with said acoustical shield assembly for maximum noise attenuation.

4,563,966

SWITCHING MECHANISM FOR ELECTRONICALLY CONTROLLED SEWING MACHINE

Yasuro Sano, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1984, Ser. No. 568,805
Claims priority, application Japan, Jan. 19, 1983, 58-5860
Int. Cl.⁴ D05B *3/02*
U.S. Cl. 112—455 **4 Claims**



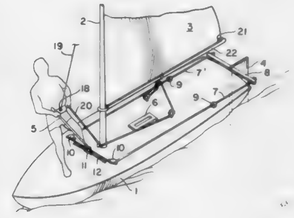
1. A switching mechanism for a sewing machine having a needle laterally swingable and vertically reciprocated to penetrate a fabric to form stitches therein; a fabric feeding device including a feed regulator variably adjustable to change a fabric feeding amount; a control motor including a rotor shaft having a central axis of rotation and having a predetermined minimum angular step with which said rotor shaft is steppingly and continuously rotated, said rotor shaft being connected to at least one of said needle and said feed regulator, and an electronic memory storing stitch control data for controllingly driving said control motor to control at least one of the needle swinging amplitude and the fabric feeding amount, the switching mechanism comprising link means connected to the rotor shaft of the control motor; follower means secured to said link means and spaced radially from said central axis of said rotor shaft; cam means including a first cam groove and a second cam groove each being arc shaped and spaced radially from said central axis of said rotor shaft and receiving therein said follower means, said first and second cam grooves each extending in a predetermined angular range and each having a different radius, said first cam groove and said second cam groove being connected to each other to form a single continuous cam groove; and transmission means including a transmission rod connecting said follower means to at least one of said needle and said feed regulator, said control motor being driven to switch said follower means between said first cam groove and said second cam groove and vice versa to thereby control a fabric feeding amount and a needle amplitude.

4,563,967

SPORT SAILBOAT STEERING AND BALANCING ARRANGEMENT

G. Timothy Oksman, 15 N. 29th St., Richmond, Va. 23223

PCT No. PCT/US82/00252, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO83/02927, PCT Pub. Date Sep. 1, 1983
Continuation of Ser. No. 428,489, Sep. 29, 1982, abandoned. This PCT application Feb. 26, 1982, Ser. No. 665,517
Int. Cl.⁴ B63B *35/00*
U.S. Cl. 114—39 **9 Claims**



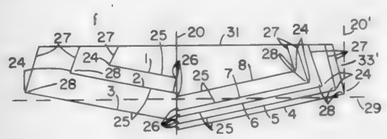
6. In a sport sailboat of the type including a hull, a fixed mast, a boom, a mainsail attached to the mast and boom, and a stern-mounted rudder, the improvement comprising providing a control station forward of the mast, a tiller at the control station, steering lines operably connecting the rudder to the tiller, a mainsheet rigged to be controllable from the control station, a trapeze harness at the control station attached high up on the mast by a support line, a slide car carried on a track running athwartships across the deck forward of the mast, a universal joint connecting the tiller to the car, and a transverse steering bar affixed to the rudder, the steering lines being arranged to connect the car to the transverse bar, whereby the tiller may move the car to cause the lines to adjust the rudder.

4,563,968

BOAT WITH IMPROVED HULL

Joseph Wawrzynek, 544 Lake Ave., Manchester, N.H. 03103

Continuation of Ser. No. 378,338, May 14, 1982, abandoned. This application Oct. 19, 1984, Ser. No. 662,768
Int. Cl.⁴ B63B *1/04*
U.S. Cl. 114—56 **3 Claims**



1. A boat comprising:

an elongated hull having a bottom curving gently from above the water line in the bow to below the water line in mid-section and up to the water line at the stern;

said hull having a curved keel and a curved chine, above the water line, a central plane passing centrally through the curved keel, the bottom extending symmetrically from the keel to the chine on both port and starboard sides and said bottom affording an outer surface on each side for the entire over all length of said boat;

said outer surface being free of steps, or water tunnels, and in any cross-section at right angles to the central plane from bow to stern, defining at the intersection with the curved keel, throughout the over all length of said boat, a straight hull line making an acute angle with the keel center line,

the said angles being equal each said straight hull line extending beyond the water line to the chine;

whereby, as the boat planes the bow and stern both rise out of the water at the same rate and the boat retains a relatively stable and level attitude.

4,563,969

SAIL HAVING VARIABLE PROPELLING AND LIFTING EFFECTS

Roland C. Le Bail, 80 Boulevard De Legenese B. P. 76, 56340 Carnac, France

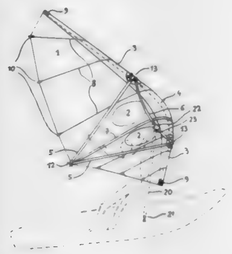
PCT No. PCT/FR82/00038, § 371 Date Nov. 3, 1982, § 102(e) Date Nov. 3, 1982, PCT Pub. No. WO82/03053, PCT Pub. Date Sep. 16, 1982

Continuation of Ser. No. 441,526, Nov. 3, 1982, abandoned. This PCT application Mar. 5, 1982, Ser. No. 685,593

Claims priority, application France, Mar. 11, 1981, 81 04814

Int. Cl.⁴ B63H *9/04*

U.S. Cl. 114—102 **11 Claims**



1. A navigational sail device comprising:

an elongate front member;

a sail secured to said front member along the length thereof;

a plurality of prebent slats incorporated in the sail at laterally spaced locations and extending transversely to said front member, said slats being curved in the region of the front member so as to permanently support the sail in a windwardly concave shape in the region of the front member along the length of the front member;

a generally triangular manipulation device for manual control of said sail device during operation comprising a pair of elongate members connected together at one end and spaced apart at the other end thereof by an elongate connecting member forming the base of the triangle, said manipulation device being secured, at the apex of the triangle formed at said one end of said pair of elongate members, to the trailing edge of the sail centrally thereof, and said pair of elongate members being connected to the front member at the said other ends thereof.

4,563,970

SAIL WITH RETRACTABLE AIR DIRECTING ELEMENT

John G. Walker, 7 Kingfisher Close, Hamble, Hampshire, England

Filed Jun. 3, 1983, Ser. No. 500,951

Claims priority, application United Kingdom, Jun. 4, 1982, 8216269

Int. Cl.⁴ B63H *9/06*

U.S. Cl. 114—103 **6 Claims**

1. A sail assembly comprising:

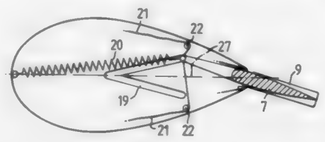
(a) a first upright rigid symmetrical aerofoil;

(b) a second upright rigid symmetrical aerofoil disposed closely behind the first aerofoil;

(c) means for mounting the second aerofoil for pivoting movement about an upright axis relative to said first aerofoil from an aligned position wherein the second aerofoil is aligned with the first aerofoil to positions angularly displaced from said aligned position and on each side thereof;

(d) an air-directing slat disposed at the trailing portion of the first aerofoil; and

(e) means for retracting the slat within the first aerofoil to allow the second aerofoil to pass through the said aligned position and for extending the slat outwardly and rear-



wardly of said first aerofoil to overlap the second aerofoil when said second aerofoil is angularly displaced from the said aligned position, said means for retracting and extending said slat including means for coupling said pivoting movement of said second aerofoil to the retraction and extension of said slat.

4,563,971

RETRACTABLE BOAT KEEL

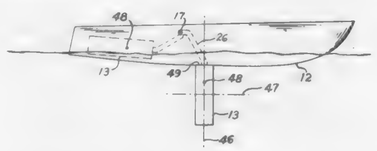
George P. Carver, 26 Linda Isle, Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 436,317, Jan. 27, 1983, abandoned. This application Oct. 25, 1984, Ser. No. 664,574

The portion of the term of this patent subsequent to Mar. 15, 2000, has been disclaimed.

Int. Cl.⁴ B63B *41/00*

U.S. Cl. 114—132 **1 Claim**



1. A retractable boat hull keel, the keel operating at two positions, fully retracted or fully extended, the keel retracting by rotation about a fixed pivot, the rotation being stroked by a positive actuator, the pivot being located aft of the trailing edge of the keel, located aft of the major axis of the downwardly located keel, and located above the bottom line of the hull, the improvement comprising:

the keel pivot being located by a combination of two distances relative to the keel geometry, the keel center-of-gravity, and the bottom of the hull, the first distance being more than ¼ the maximum keel chord length aft of the trailing edge of the keel at the keel-hull intersection in the keel position of complete extension, and being more than one maximum keel chord length aft of the keel center-of-gravity in the fully extended keel position, the second distance being more than one maximum keel chord length above the bottom surface of the boat hull, the effect of the keel pivot location being a rearward movement of the boat center-of-gravity upon the retraction of the keel, the alternate rearward and forward changes in the position of the boat center-of-gravity allowing two performances modes for the boat hull, in conjunction with the two keel positions, the performance modes being powered and sail propulsion.

4,563,972

ANCHORING ARRANGEMENT FOR FLOATING STRUCTURES

Horst Poppe, Hamburg, Fed. Rep. of Germany, assignor to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

Filed Dec. 22, 1983, Ser. No. 564,646

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247463

Int. Cl.⁴ B63B *21/24*

U.S. Cl. 114—293 **18 Claims**



1. In an anchor cable and weight system in which at least two separate weights are interconnected by anchor cable for the purpose of securing a floating structure to an anchoring ground the improvement wherein each said weight comprises a concrete mass having an axially disposed tube therein, said tube having a plurality of retainer means therein securing said tube within said concrete mass and a spindle rotatably mounted within said tube, said spindle having eyelets at each end thereof for securing the anchor cable thereto, and wherein each said weight has a predetermined cross-sectional dimension and the anchor cable interconnecting two adjacent weights of said at least two weights, said interconnecting anchor cable having a length selected to have a pre-determined relationship with said predetermined cross-sectional dimension to avoid substantial contact, in use, between the cable and the anchor ground therebelow whereby damaging contact between said interconnecting anchor cable and the anchor ground is substantially eliminated.

4,563,973

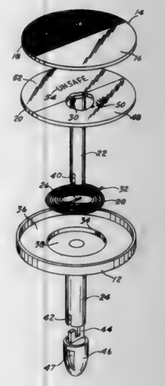
HEAT DETECTION APPARATUS

Dean P. Stull, 6225 Niwot Rd., Longmont, Colo. 80501, and Raymond E. Bennett, 4166 Culebra Ct., Boulder, Colo. 80302

Filed Jul. 12, 1984, Ser. No. 630,030

Int. Cl.⁴ G01K *1/02, 1/14*

U.S. Cl. 116—218 **3 Claims**



1. A heat detection apparatus comprising a disc having a protruding stem extending perpendicularly from the center thereof, said stem and disc disposed in a housing in a fixed frame means and connected to a tension means in a tensioned mode in said housing, with the disc residing in a portion of said housing with said housing also having a hollow stem essentially the length of and in which resides said protruding stem and wherein the ends of the hollow stem and the protruding stem have grooves therein registered with each other, said protruding stem and disc maintained in a first position under tension by a clip disposed in said grooves and meltable at an elevated temperature, and wherein melting of said clip permits relaxation of said tension means resulting in said protruding stem and disc moving to a second position under relaxation, and further wherein said disc displays a first indicator of non-elevated temperature in the first position and a second indicator of elevated temperature in the second position.

4,563,974

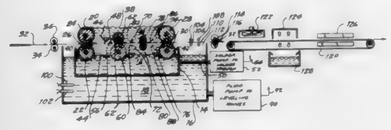
APPARATUS FOR THE APPLICATION OF SOLDER TO WORKPIECES

Robert G. Price, Bicknell, Ind., assignor to Monitrol, Inc., Vincennes, Ind.

Filed Sep. 16, 1983, Ser. No. 532,787

Int. Cl.⁴ B05C *3/10*

U.S. Cl. 118—66 **14 Claims**



1. Soldering apparatus for applying solder to a workpiece, said apparatus comprising first means for applying solder to said workpiece, second means in operative association with said first means to provide a bath of solder assisting fluid in which to receive said workpiece and provide a medium in which the solder can be applied, conveying means for conveying said workpiece into operative relationship with said first means for the application of said solder to said workpiece, said conveying means conveying said workpiece into said bath of solder assisting fluid, and levelling means immersed in said bath of solder assisting fluid to direct at least one jet of said fluid against the workpiece while the workpiece is immersed in said bath of solder assisting fluid whereby to dislodge excess solder from the workpieces, said first means including a bath of solder upon which rests the bath of solder assisting fluid, said bath of solder being positioned to receive the thusly dislodged excess solder, said conveying means including means to convey the workpiece at least generally horizontally through said bath of solder assisting fluid, said first means further comprising soldering means to remove solder from the bath of solder and to deposit the thusly removed solder on the workpiece while the workpiece is immersed in the bath of solder assisting fluid.

4,563,975

TIRE SOAPING APPARATUS FOR TIRE MOUNTING

Chester P. Kozlowski, Royal Oak, and Thomas J. Curcuri, Grosse Pointe Woods, both of Mich., assignors to Dominion Tool & Die Co., Roseville, Mich.

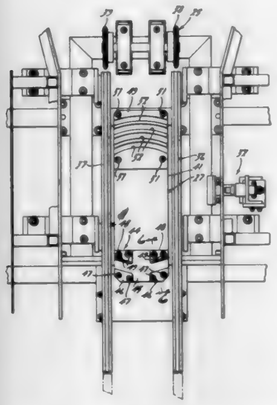
Filed Oct. 24, 1983, Ser. No. 544,857

Int. Cl.⁴ B05B *13/02*

U.S. Cl. 118—320 **21 Claims**

1. An apparatus for performing an operation on a vehicular wheel before mounting a tire thereon comprising conveyor means for moving wheels along a fixed path through a station where the operation is to be performed, intercept means positioned in proximity to said station and movable between a free position wherein wheels may be moved by said conveyor means through said station, a stop position wherein wheels delivered to said station by said conveyor means will engage said intercept means and be stopped thereby while still on said conveyor means and a work position wherein a wheel engaged with said intercept means will be raised from said conveyor means and power means for moving said intercept means selectively between said positions, said intercept means in-

cludes means for stopping successive wheels of varying sizes in rim dimensions and radii and a plurality of support members spaced from said stop means at different distances and cooperating therewith to support said successive wheels of varying sizes whereby said apparatus may operate on said wheels of varying sizes when they are intermixed on said conveyor means.



4,563,976

DEVICE FOR MANUFACTURING LARGE-SURFACE, TAPE-SHAPED SILICON BODIES FOR SOLAR CELLS

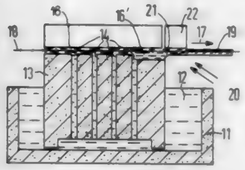
Helmut Foell, Munich; Josef Grabmaier, Berg, and Richard Falckenberg, Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,733

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1982, 3231326

Int. Cl.⁴ B05C *3/15, 11/02*

U.S. Cl. 118—401 **4 Claims**



1. In an apparatus for manufacturing large-surface, tape-shaped silicon bodies for solar cells by coating a carrier body with molten silicon, said carrier body having a mesh structure and being resistant to the silicon melt but being wettable by said melt, said apparatus having a melt vat accepting the silicon melt and guide devices for ensuring that the carrier body to be coated is continuously brought into contact with the melt, the improvement comprising:

a capillary body disposed in said melt vat having a system of parallel capillary passages extending in a vertical direction in the capillary body and terminating in a substantially horizontal top surface of said body for drawing melt from said vat to form a melt pool at said top surface; and

said guide devices comprising a horizontal guide channel communicating with said capillary passages and completely filled by said melt pool for guiding the carrier body to be coated in a horizontal direction through said melt pool.

4,563,977

ELECTROSTATIC COATING PLANT

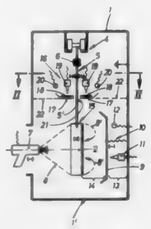
Walter Spengler, Strehlgasse 23, CH-4105 Biel-Benken, Switzerland

Filed Aug. 28, 1984, Ser. No. 645,543

Claims priority, application Switzerland, Aug. 29, 1983, 4727/83

Int. Cl.⁴ B05D *1/04*

U.S. Cl. 118—623 **11 Claims**



1. An electrostatic coating plant for applying dry or wet surface coatings to articles having an electrically conducting surface, said apparatus comprising

an enclosing wall defining an enclosed treatment area,

a spraying gun for spraying electrostatically charged particles of a predetermined polarity into the treatment area,

a support device electrically insulated from said enclosing wall for supporting an article to be coated in said treatment area within the spraying range of said gun,

inductor means cooperating with said support device for charging the article which is supported thereon with an electrostatic potential of a polarity opposite that of the electrostatically charged particles from said spraying gun,

at least one electrically conducting curtain electrically insulated from said enclosing wall and positioned in said treatment area opposite said spraying gun and behind the article to be coated, and

means for charging said at least one curtain with an electrostatic potential of the same polarity as the electrostatically charged particles from said spraying gun, whereby particles which may be sprayed past the article are reflected back onto the rear side of the article.

4,563,978

DEVELOPING APPARATUS

Shunji Nakamura, Kawasaki; Fumitaka Kan, Yokohama; Hidemi Egami, Zama; Atsushi Hosoi, Tokyo; Hatsuo Tajima, Matsudo, and Kimio Nakahata, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1984, Ser. No. 594,863

Claims priority, application Japan, Apr. 8, 1983, 58-61852; Apr. 8, 1983, 58-61854; Apr. 8, 1983, 58-61855; Apr. 18, 1983, 58-68645

Int. Cl.⁴ G03G *15/09*

U.S. Cl. 118—658 **20 Claims**

1. A developing apparatus wherein a thin layer of a non-magnetic developer is formed, comprising in combination:

a developer container for containing non-magnetic developer and magnetic particles;

a developer carrying member movable for carrying the non-magnetic developer toward an image bearing member and then back to said developer container;

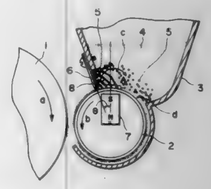
regulating means disposed adjacent to a non-magnetic developer outlet of said developer container with a clearance

with respect to a surface of the developer carrying member;

magnetic field generating means having a magnetic pole disposed across said developer carrying member from said regulating means; and

a magnetic sealing member for preventing leakage of the non-magnetic developer disposed adjacent to the returning developer inlet of said developer container with a clearance with respect to a developer carrying surface of said developer carrying member, and disposed within a magnetic field of said magnetic field generating means;

wherein said regulating means and said magnetic field generating means cooperate to confine the magnetic particles within said developer container to apply the non-magnetic developer on said developer carrying member.



4,563,979

APPARATUS FOR MANUFACTURING LARGE-SURFACE, BAND-SHAPED SILICON FOR SOLAR CELLS

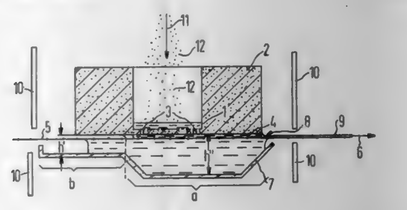
Richard Falckenberg, Wald, and Josef Grabmaier, Berg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 560,047

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1983, 3306515

Int. Cl.⁴ B05C *3/15*

U.S. Cl. 118—694 **12 Claims**



1. Apparatus for manufacturing large-surfaced, band-shaped silicon bodies for solar cells including a carrier unit having a netlike structure of graphite material which, although resistant to silicon smelt can be wetted by said smelt and is continuously layered by said smelt, said apparatus comprising:

(a) a melting pot for receiving said silicon smelt, said smelting pot being provided in its floor with vertical, and outwardly extending drain openings for feeding said smelt to the carrier unit, the floor of said melting pot is comprised of a material easily wettable by said silicon smelt;

(b) a receptacle for holding said smelt comprising a material which cannot be wetted by said silicon smelt, the receptacle containing two areas "a" and "b" of different depths, wherein the distance from its bottom to the melting pot floor of area "a" located in the vicinity of a portion of the carrier unit being layered is larger by at least a factor of two than the distance from its bottom to said melting pot floor of area "b" located in the vicinity of a portion of the carrier unit which is non-layered;

(a) a heatable canal being defined by the bottom of said melting pot and the upper surface of said smelt to be held in said receptacle, said heatable canal extending horizontally therebetween so as to guide and move the carrier unit located therein for layering with said melt.

4,563,980

MARKING DEVICE FOR USE WITH AN ANIMAL MARKING HARNESS

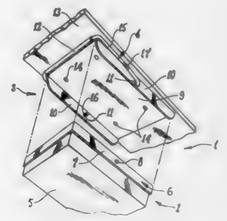
Edward Thompson, Mt. Waverley, Australia, assignor to Hortico Limited, Laverton North, Australia

Filed Aug. 3, 1983, Ser. No. 519,802

Claims priority, application Australia, Aug. 16, 1982, PF5412

Int. Cl.⁴ A01K *45/00, 67/00*

U.S. Cl. 119—1 **4 Claims**



1. An animal marking device for incorporation into a harness worn by an animal, usually a male animal, comprising

a cartridge carrier having a base member attached to the harness and having a pair of longitudinally opposed upwardly extending side walls at least one of which is provided with an aperture therethrough;

a replaceable cartridge member adapted to fit on said base member between said upwardly extending side walls;

a releasable retaining means to hold said replaceable cartridge member on said base member and having at least one yieldably resilient arm connected to said base member and contacting said replaceable cartridge member through said aperture in at least one of said side walls of said base member with said resilient arm extending from said aperture below the height of said upwardly extending sidewalls;

said replaceable cartridge member having a hole on at least one side located to coincide with said aperture in said side wall when said replaceable cartridge member is in place on said base member and with said hole located to receive an end of said yieldably resilient arm extending through said aperture into said hole.

4,563,981

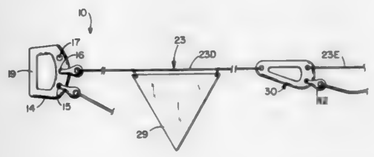
GROUP TETHER APPARATUS

Roy L. Kramer, 731 11th Ave. W., Kalispell, Mont. 59901

Filed Nov. 9, 1984, Ser. No. 670,054

Int. Cl.⁴ A01K *29/00*

U.S. Cl. 119—96 **14 Claims**



1. A group tether apparatus for providing directional control to a group of individual members, comprising:

main handle means for control by a group leader;

a plurality of handle strings, each string comprised of a plurality of linearly aligned second handles adapted to be grasped by the individual group members, a plurality of intermediate line segments connecting adjacent second handles on each handle string;

first connecting means on the main handle means, each handle string having second connecting means for releasable connection to the first connecting means on the main handle means.

4,563,982

METHOD AND APPARATUS FOR INTRODUCTION OF A FLUID MEDIUM INTO WORKING SPACE OF AN INTERNAL COMBUSTION ENGINE

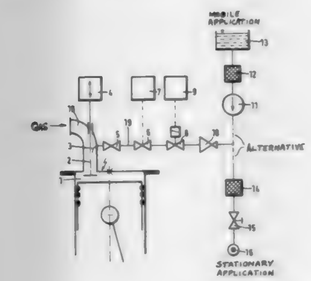
Franz Pischinger, Aachen, Fed. Rep. of Germany, and Robert Söllner, Jenbach, Austria, assignors to Forschungsgesellschaft für Energietechnik und Verbrennungsmotoren mbH, Aachen, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,522

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1983, 3308886; Jan. 14, 1984, 3401143

Int. Cl.⁴ F02B *75/12*

U.S. Cl. 123—1 A **16 Claims**



1. A method for introduction of the fluid medium into a working combustion chamber of an internal combustion engine operated with gaseous fuels including a power gas rather than liquid fuel, comprising the steps of admixing the fluid medium to the gaseous fuel alone before combustion procedure at least intermittently whereby feeding of air supply occurs separately in the combustion chamber, then thereafter blowing-in a power-gas/fluid medium mixture combined therewith specifically during inner mixture formation in the working combustion chamber, said flowing-in occurring under the pressure of the power gas for reduction of NO_x-emission; and providing bound OH-groups in the fluid medium being admixed to the gaseous fuel, the fluid medium being selected from a group including water, alcohol and also employing alcohol/water mixtures as the fluid medium.

4,563,983

INTERCOOLER ARRANGEMENT FOR SUPERCHARGED INTERNAL COMBUSTION ENGINE

Yoshimasa Hayashi, Kamakura, and Yoji Itoh, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 4, 1985, Ser. No. 697,924

Claims priority, application Japan, Feb. 7, 1984, 59-20498

Int. Cl.⁴ F01P *3/22*; **F02B** *29/04*

U.S. Cl. 123—41.21 **10 Claims**

1. In a supercharged internal combustion engine having

a combustion chamber,

a compressor, and

an induction conduit leading from said compressor to said combustion chamber and through which supercharging air passes from said compressor to said combustion chamber,

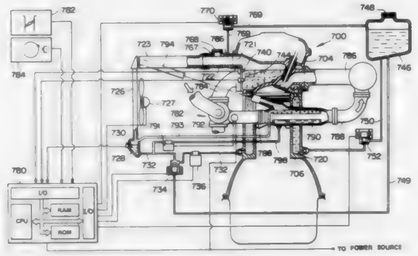
a cooling system comprising:

a first coolant jacket formed about structure of said engine subject to high heat flux;

a radiator in which coolant vapor is condensed to its liquid form;

a first vapor transfer conduit leading from said first coolant jacket to said radiator;

means for returning liquid coolant from said radiator to said first coolant jacket in a manner to maintain said structure subject to high heat flux immersed in liquid coolant and



define a vapor collection space within said first coolant jacket;

a second coolant jacket arranged with said induction conduit for cooling the air which passes through said induction conduit;

a second vapor transfer conduit leading from said second coolant jacket to said radiator; and

a first pump which pumps liquid coolant from said radiator to said second coolant jacket in response to a first parameter sensor which senses a parameter which varies with the supercharging of said engine.

4,563,984

SUCTION PIPE APPARATUS FOR AN INTERNAL-COMBUSTION ENGINE

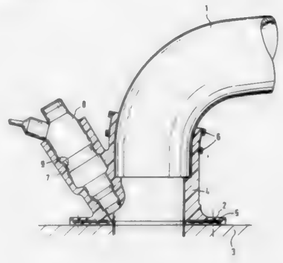
Gerhard Ziegler, Besigheim; Karl Gregotsch, Heimerdingen, and Rolf von Sivers, Rutesheim, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Weissach, Fed. Rep. of Germany

Filed Sep. 20, 1984, Ser. No. 652,513

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333843

Int. Cl.⁴ F02M *61/14*

U.S. Cl. 123—52 M **4 Claims**



1. Suction pipe apparatus for internal-combustion engine having fuel injection, especially intermittent fuel injection into an intake pipe connected to a cylinder head of the engine, comprising a one-piece structure-borne-noise insulating connecting pipe formed of a vibration attenuating material being arranged between the cylinder head and the intake pipe, said

connecting pipe having sleeve-shaped receiving means for receiving a fuel injection valve, wherein an inner surface of the sleeve-shaped receiving means conforms to and encloses a noise-reflecting surface of a nozzle end of the fuel injection valve to reduce a major portion of vibration emanating from the noise-reflecting surface.

4,563,985

CAM SHAFT DRIVE OF AN INTERNAL COMBUSTION ENGINE

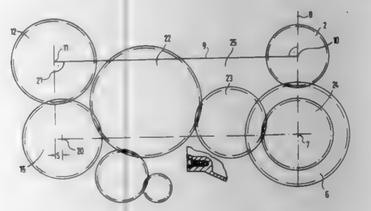
Heinz Dorsch, Weissach-Flacht, and Michael Beer, Wimsheim, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Weissach, Fed. Rep. of Germany

Filed Mar. 14, 1984, Ser. No. 589,319

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1983, 3309152; Mar. 16, 1983, 3309376

Int. Cl.⁴ F01L *1/46*

U.S. Cl. 123—90.31 **11 Claims**



1. Driving gear arrangement for a cam shaft bearingly supported in the cylinder head of a combustion engine, the driving gear arrangement comprising toothed gear transmission means for connecting the engine crank shaft to the cam shaft, the transmission means including a cam shaft toothed wheel on the cam shaft, a crank shaft toothed wheel on the crank shaft, and a plurality of intermediate toothed gear wheels, the cylinder head being heated to a thermal elongation-inducing temperature during operation of the combustion engine, the intermediate gear wheels being arranged partly at the frontal side in a crank shaft housing and partly in a gear housing flangedly connected to the crank shaft housing, wherein one of the intermediate toothed gear wheels is rotatably engaged with the cam shaft toothed gear wheel to position the axial middle of the one intermediate gear along an outgoing line extended from the axial middle of the cam shaft toothed wheel in one of a collinear relation and an inclined relation to a perpendicular reference line that is perpendicular to a connection line connecting the axial middles of the crank shaft toothed gear wheel and the cam shaft toothed gear wheel to permit the axial middle of the cam shaft toothed gear wheel to move along an arcuate path about the axial middle of the one intermediate gear wheel in response to thermal elongation of the cylinder head induced by heating the cylinder head during operation of the combustion engine.

4,563,986

SPLASH LUBRICATED OVER HEAD VALVE ENGINE

Keiichi Nakano, Sakaishi, Japan, assignor to Kubota Ltd., Osaka, Japan

Filed Aug. 31, 1984, Ser. No. 646,143

Claims priority, application Japan, Sep. 9, 1983, 58-140575[U]

Int. Cl.⁴ F01M *9/10*

U.S. Cl. 123—90.38 **7 Claims**

1. A splash lubricated over head valve engine comprising:

a cylinder having a cylinder head;

a rocker chamber, having a plurality of rocker arms therein, disposed on a first side of said cylinder head, said rocker chamber inclined lower toward said first side of said cylinder head;

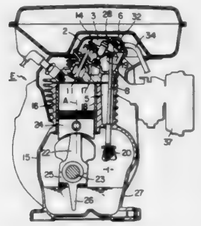
an inlet valve and an outlet valve disposed on a first side of said rocker chamber;

a crank case;

a breather chamber having an inlet means, said breather chamber connected to said rocker chamber via said inlet means, said breather chamber disposed above a second side of said rocker chamber;

a gas inducing passage having an outlet means;

an oil return passage substantially parallel to said gas inducing passage, said gas inducing passage and said oil return



passage connecting said rocker chamber and said crank case;

wherein said outlet means of said gas inducing passage is opened at one side portion of an end surface on said first side of said rocker chamber; and wherein said inlet means of said breather chamber is opened at an opposite side portion of an end surface on said second side of said rocker chamber, such that blow-by gas flows along a line extended from said outlet means through said rocker chamber to said inlet means, traversing said rocker arms.

4,563,987

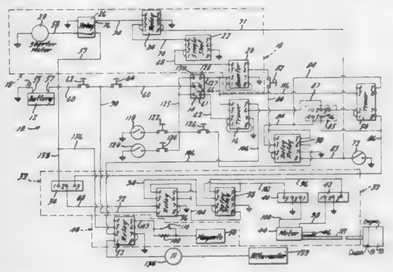
AUTOMATIC ENGINE CONTROL SYSTEM

William C. Geary; Mohammad V. Mirsaiidi, both of Broken Arrow; Timothy Redfern, and David W. Wolfe, both of Tulsa, all of Okla., assignors to Arrow Specialty Company, Tulsa, Okla.

Filed Feb. 1, 1984, Ser. No. 576,033

Int. Cl.⁴ F02N *11/08*

U.S. Cl. 123—179 B **19 Claims**



1. An engine automatic control circuit for an internal combustion engine and clutch assembly, said circuit comprising:

first timer means for determining alternating first and second periods of time, such that said first period of time being when the engine is allowed to run and the clutch is allowed to be engaged and said second period of time being when the clutch is automatically disengaged;

starter means responsive to said first timer means for starting the engine near the beginning of each first period of time;

clutch actuating means responsive to said first timer means for engaging the clutch near the beginning of each first period of time after said starter means starts said engine;

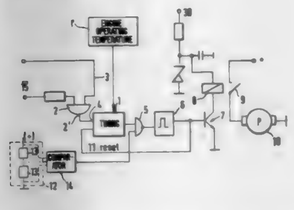
shut down means responsive to said first timer means for shutting off the engine during the second period of time;
said clutch actuating means being responsive to said first timer means for disengaging the clutch at the beginning of each second period of time;
supplemental timer means for determining alternating third and fourth periods of time within said alternate second period of time such that said third period of time being when the engine is shut off and said fourth period of time being when said engine is allowed to run with said clutch remaining disengaged;
said starter means responsive to said supplemental timer means for starting the engine near the beginning of each fourth period of time; and
said shut down means responsive to said supplemental timer for shutting the engine off at the beginning of each third period of time and being deactuated during each fourth period of time and first period of time.

4,563,988

APPARATUS FOR DETERMINING THE FILLING QUANTITY OF LUBRICATING OILS IN DRIVE INSTALLATIONS

Walter Weishaupt, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Sep. 1, 1983, Ser. No. 528,635
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1982, 3232465
Int. Cl.⁴ F01M *1/00*
U.S. Cl. 123—196 S **7 Claims**



1. Apparatus for determining the fill quantity condition of lubricating oils in an internal combustion engine having an oil sump comprising
a fill level pickup comprising two sensing elements wired in series one physically located above the other in the oil sump,
a timing member activated, after a predetermined time period of several minutes following the shutoff of said internal combustion engine,
means responsive to the timing member and fill level pickup for transmitting an output signal indicative of an abnormal fill condition if the two sensing elements show differing responses, said responsive means control lubricating oil refilling device.

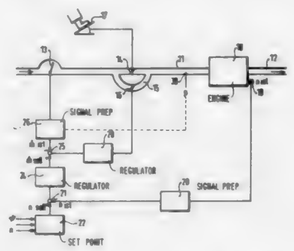
4,563,989

REGULATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Cornelius Peter, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 521,477, Aug. 8, 1983, abandoned. This application Mar. 19, 1985, Ser. No. 713,108
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1982, 3238189
Int. Cl.⁴ F02D *11/10, 1/04;* F02P *5/04*
U.S. Cl. 123—339 **11 Claims**

1. A regulation system for an internal combustion engine having an air intake tube comprising,
means for generating actual values of air-flow in said intake tube,
means for generating actual and reference values of rpm,
means for comparing the actual and reference values of rpm,
means for generating reference values of air-flow in said intake tube in response to said comparison means of the actual and reference values of rpm,
means for comparing the actual and reference values of air-flow in said intake tube,
means for controlling the air-flow in said air intake tube, and
means for regulating said means for controlling air-flow in said air intake tube in response to said comparison means



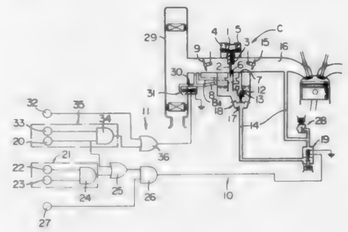
for the actual and reference values of air-flow in said intake tube, whereby said means for generating actual values of air-flow, said means for comparing actual and reference values of air-flow, said means for controlling air-flow, and said means for regulating said means for controlling air-flow comprise an inner control loop, and said internal combustion engine, said means for generating actual value of rpm, said means for comparing the actual and reference value of rpm, and said means for generating reference values of air-flow comprise an outer control loop.

4,563,990

FUEL SUPPLY CONTROL SYSTEM FOR ENGINE CARBURETORS

Eiji Kishida, Tokyo; Hideo Kobayashi, and Kano Hidekazu, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1983, Ser. No. 554,883
Claims priority, application Japan, Nov. 24, 1982, 82-204512
Int. Cl.⁴ F02M *7/12*
U.S. Cl. 123—438 **10 Claims**



1. In a fuel supply control system for a vehicle internal combustion engine having a variable venturi type carburetor with a fixed main nozzle and a variable nozzle in which a higher suction of intake air than a predetermined rate increases the opening area of the variable nozzle, comprising, separate first and second fuel supply increasing means connected to said main nozzle for selectively increasing the amount of fuel supplied through said main nozzle, means operative to cause said first means to increase the fuel supply within a low-speed range of vehicle operation and to cause said first and second means to

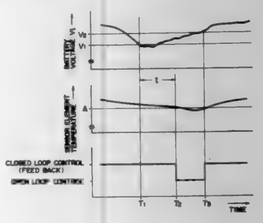
increase the fuel supply within a high-load range of engine operation.

4,563,991

ENGINE AIR/FUEL RATIO CONTROL METHOD AND SYSTEM SELECTIVELY PROVIDING FEEDBACK CONTROL OR OPEN LOOP CONTROL ACCORDING TO OXYGEN SENSOR HEATING CONDITION

Takao Akatsuka; Jiro Nakano; Takao Ishibashi, and Masao Kawaguchi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 30, 1984, Ser. No. 666,465
Claims priority, application Japan, May 7, 1984, 59-090675
Int. Cl.⁴ F02B *3/00*
U.S. Cl. 123—440 **4 Claims**



1. For an internal combustion engine comprising an exhaust system and an oxygen sensor fitted to said exhaust system comprising a sensor element and an electrically powered heater for heating said sensor element:
a method for controlling the air/fuel ratio of the air-fuel mixture supplied to said engine, wherein:
when the voltage of the power supply to said heater has dropped below a first predetermined value and thereafter has remained below a second predetermined value higher than said first predetermined value for longer than a predetermined time period, said air/fuel ratio is controlled according to engine operational parameters by an open loop form of control with no account being taken of the output signal of said oxygen sensor; while, otherwise, said air/fuel ratio is controlled according to engine operational parameters by a closed loop form of control taking into account the output signal of said oxygen sensor, so as to obtain an optimum air/fuel ratio for the engine by a feedback control process.

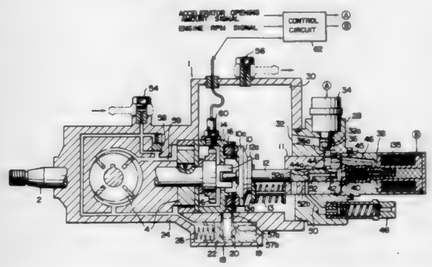
4,563,992

DIESEL FUEL INJECTION PUMP WITH ELECTRONICALLY CONTROLLED FUEL SPILLING AND CUTOFF AND RECIRCULATION VENTING OF SPLIT FUEL

Fumiaki Kobayashi, and Yoshiyasu Ito, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 13, 1984, Ser. No. 650,165
Claims priority, application Japan, Nov. 18, 1983, 58-178946[U]
Int. Cl.⁴ F02M *41/00*
U.S. Cl. 123—458 **4 Claims**

1. A fuel injection pump for a diesel engine, the pump comprising:
(a) a housing having a bore formed therein;
(b) a plunger slidably fitted in said bore for reciprocation with respect to the housing in response to rotation of the engine, the bore defining a high pressure chamber at one end of the plunger;
(c) a first electromagnetic valve for shutting off fuel to the pump when the engine is not running, the valve having an inlet adapted to be connected to a source of fuel at relatively low pressure and an outlet;
(d) a fuel supply passage having an upstream end connected to the outlet of the first electromagnetic valve and a downstream end leading to said high pressure chamber;
(e) means for communicating the downstream end of the fuel supply passage with said high pressure chamber substantially only when the plunger is moving in a first direction to enlarge the high pressure chamber;
(f) means for communicating the high pressure chamber with a fuel injection line substantially only when the plunger is moving in a second direction to reduce the size of the high pressure chamber;



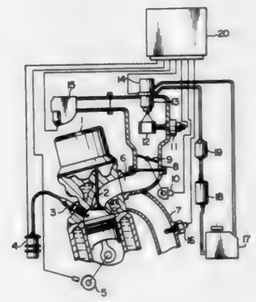
(g) means for selectively communicating the high pressure chamber with a vent passage for controlling the amount of fuel delivered during each fuel injection, wherein the improvement comprises:
a second electromagnetic valve having an inlet connected to the high pressure chamber and an outlet connected to the fuel supply passage; and
means for selectively opening the second electromagnetic valve to communicate the high pressure chamber with the fuel supply passage for at least a predetermined minimum time period in response to closing of the first electromagnetic valve.

4,563,993

FUEL FEEDING APPARATUS

Teruo Yamauchi, and Yoshishige Oyama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1984, Ser. No. 585,195
Claims priority, application Japan, Mar. 7, 1983, 58-35970
Int. Cl.⁴ F02B *3/00*
U.S. Cl. 123—478 **11 Claims**



1. A fuel feeding apparatus comprising:
(a) an intake passage feeding air to an internal combustion engine;
(b) fuel feeding means disposed midway of said intake passage;
(c) vibrating means disposed in said intake passage at a posi-

tion of impingement of fuel fed from a fuel feeding part of said fuel feeding means;

(d) vibration generating means having said vibrating means fixed thereto and converting electrical oscillation into mechanical vibration; and

(e) electrical oscillation generating means for periodically changing the frequency of said electrical oscillation at a predetermined time interval and applying the same to said vibration generating means.

4,563,994

FUEL INJECTION CONTROL APPARATUS

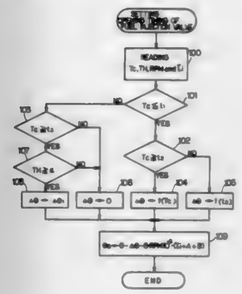
Michiaki Ujihashi, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 27, 1984, Ser. No. 635,102

Claims priority, application Japan, Aug. 9, 1983, 58-145263

Int. Cl.⁴ F02D *5/02*

U.S. Cl. 123—491 **9 Claims**



1. A fuel injection control apparatus for controlling fuel injection valves which feed fuel to each cylinder of an engine for use in a vehicle, comprising:

a first sensing means for detecting an engine coolant temperature;

a second sensing means for detecting a parameter which indicates a driving condition of the engine

a first calculation means for calculating an amount of fuel to be injected into each cylinder according to an amount of the parameter detected by said second sensing means;

a second calculation means for determining an opening timing of each fuel injection valve according to the amount of the parameter detected by said second sensing means and the amount of the fuel to be injected calculated by said first calculation means;

a memorizing means for memorizing at least three zones of engine coolant temperatures;

a determining means for determining which of said at least three zones said detected engine coolant temperature falls within; and

a third calculation means for determining a compensation value, said compensation value being an amount of compensation that an opening timing of each fuel injection valve is adjusted by, according to the determining means.

4,563,995

METHOD OF AND CIRCUIT FOR ANALYZING OUTPUT SIGNALS FROM A SENSOR INSTALLED IN AN INTERNAL COMBUSTION ENGINE

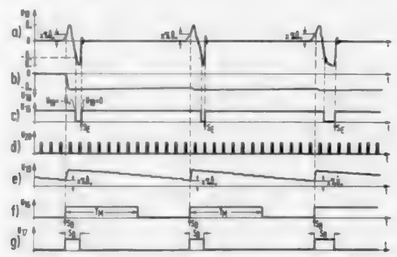
Johannes Locher, Stuttgart, and Wolfgang Schmidt, Vaihingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 7, 1983, Ser. No. 549,794

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244940

Int. Cl.⁴ F02B *3/00*

U.S. Cl. 123—494 **18 Claims**



2. A circuit arrangement for evaluating an output signal from a sensor installed in an internal combustion engine to pick up data characteristics of operational conditions of the engine comprising threshold switches connected to said data sensor, means for adjusting the threshold values of at least one of said switches, said adjusting means including at least one storage device connected to said data sensor, and means for coupling one of said threshold switches to said storage device.

4,563,996

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

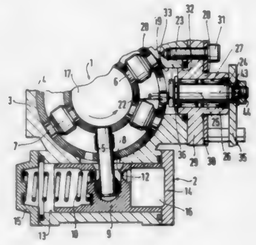
Karl Konrath, Ludwigsburg, and Otmar Weiss, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 17, 1984, Ser. No. 651,666

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336870

Int. Cl.⁴ F02M *59/20*

U.S. Cl. 123—502 **3 Claims**



1. A fuel injection pump for internal combustion engines, comprising a housing; a cam drive including at least one roller running on a circular cam track, a pump piston, said cam drive effecting a conveying stroke of said pump piston, said cam drive including one portion which is rotated by a drive of the fuel injection pump, and another stationary portion which is ring-shaped and is positioned in a circular recess in said housing; an adjustment mechanism adapted to rotate said another portion relative to said housing for changing an injection start, said another portion being formed with a recess, said adjustment mechanism including an adjusting lever, a shaft positioned in said housing and connected to said lever and having an axis, and a stop engaged in the recess of said another portion and connected to said shaft, said stop being arranged eccentrically to said axis to form a lever arm, said adjustment mechanism further including an injection adjustment piston connected to said another portion of the cam drive and adjustable in dependence on the speed of the pump; said adjustment mechanism further including a sleeve having a bore, a roller bearing positioned in said bore and supporting said shaft, said housing having a wall formed with a circular recess, said sleeve having a cylindrical portion received in the circular recess of said wall, said cylindrical portion having an axis extending eccentrically with the axis of the shaft, fixing means for connecting said sleeve to the wall of said housing in a respective rotational position of the sleeve, and at least one limiting stop member which defines such a rotational position of said shaft in which said lever arm is in alignment with a circumferential direction of said another portion of said cam drive, said roller bearing being a needle bearing which has an outer ring pressed in said sleeve, said shaft forming an inner ring of said needle bearing, said sleeve having a flange formed with oblong openings, said fixing means including bolts which are guided through said oblong openings, said bolts fixing said sleeve in said housing in an adjusted rotation position.

4,563,997

CONTROL SYSTEM AND METHOD FOR COMPREX SUPERCHARGER

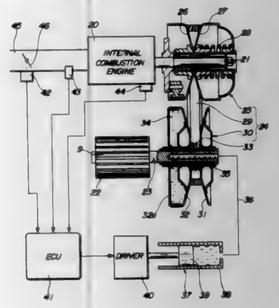
Hachiro Aoki, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1985, Ser. No. 693,112

Claims priority, application Japan, Feb. 1, 1984, 59-16821

Int. Cl.⁴ F02B *33/42*

U.S. Cl. 123—559 **5 Claims**



1. A control system for controlling a "comprex" supercharger for an internal combustion engine, said supercharger including a rotor formed along a whole periphery thereof with a plurality of cells extending axially of the rotor and arranged circumferentially thereof, means for introducing exhaust gas into said cells at one end of said rotor during rotation thereof, means for introducing air into said cells at another end of said rotor during rotation thereof, the air introduced into said cells being compressed by the exhaust gas introduced into said cells, and means for feeding the compressed air to said engine, said control system comprising: drive means for rotatively driving said rotor; sensor means for sensing operating conditions of said engine and for providing an output; and electronic control means responsive to said output from said sensor means for controlling said drive means to control the rotational speed of said rotor so as to achieve supercharging pressure optimum to operating conditions of said engine.

5. A control method of controlling a "comprex" supercharger for an internal combustion engine, said supercharger including a rotor formed along a whole periphery thereof with a plurality of cells extending axially of the rotor and arranged circumferentially thereof, means for introducing exhaust gas into said cells at one end of said rotor during rotation thereof, means for introducing air into said cells at another end of said rotor during rotation thereof, the air introduced into said cells being compressed by the exhaust gas introduced into said cells, and means for feeding the compressed air to said engine, said control method comprising the steps of: sensing load on said engine; sensing the rotational speed of said engine; sensing supercharging pressure of intake air being supplied to said engine; determining an optimum load line from the sensed engine load; determining an optimum value of the rotational speed of said rotor from the determined load line and the sensed engine rotational speed; determining an optimum value of the supercharging pressure corresponding to at least the sensed engine load and the sensed engine rotational speed; determining the difference between the determined optimum supercharging pressure value and the sensed supercharging pressure; correcting the determined optimum value of the rotor rotational speed by the determined difference; and controlling the rotational speed of said rotor to the corrected optimum value thereof.

4,563,998

CONTROL ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

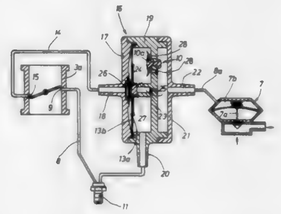
Hans-Karl Weining, Esslingen; Juergen Kienle, Stuttgart, and Wilfried Christl, Winterbach, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 8, 1984, Ser. No. 587,700

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308261

Int. Cl.⁴ F02M *25/06*

U.S. Cl. 123—568 **20 Claims**



1. A method of controlling a vacuum-operated control device for an internal combusion engine comprising the steps of:

applying a vacuum to a control device, said vacuum being generated by said engine operating in a first operating condition;

retaining said vacuum throughout a range of engine operating conditions with vacuum retaining means; and

relieving said vacuum when said engine operates in a no-load idling condition by activating by-pass means for by-passing said vacuum retaining means, said by-pass means including by-pass valve means connected to an engine induction pipe by a pressure tube, said pressure tube being connected to said induction pipe at a point which is downstream of throttle butterfly means in said induction pipe.

4. Control apparatus for an internal combustion engine, comprising:

an exhaust pipe;

an induction pipe for channeling a flow of air to the engine;

throttle butterfly means located in said induction pipe for regulating said flow of air;

exhaust gas return means for channeling a flow of exhaust gas from said exhaust pipe to said induction pipe in response to a vacuum generated by the engine;

means for communicating said vacuum to said exhaust gas return means;

vacuum retaining means for retaining said vacuum supplied to said exhaust gas return means throughout a range of engine operating conditions; and

by-pass means for by-passing said vacuum retaining means, said by-pass means being capable of connecting points upstream and downstream of said vacuum retaining means when the engine is operating in a no-load idling condition, said by-pass means including by-pass valve means connected to said induction pipe by a pressure tube, said pressure tube being connected to said induction pipe at a point which is downstream of said throttle butterfly means.

4,563,999

BALL SEPARATING DEVICE FOR BALL THROWING MACHINES, ESPECIALLY FOR SQUASH BALLS OR TENNIS BALLS

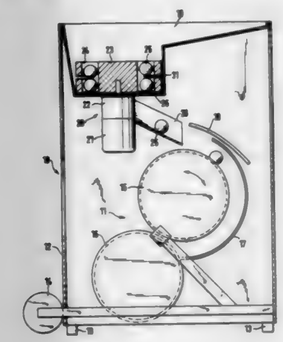
Dieter Miehlich, Holzweg 59, D-8900 Augsburg, Fed. Rep. of Germany

Filed Feb. 25, 1983, Ser. No. 469,923

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 32010828; Apr. 22, 1982, 8211663[U]; Aug. 12, 1982, 3230052

Int. Cl.⁴ F41B *15/00*

U.S. Cl. 124—50 **15 Claims**



1. A ball feed device for use in a ball-throwing machine, especially in a machine for throwing squash balls or tennis balls, comprising a container arranged to store a supply of balls each having a predetermined diameter; a driven turntable rotatable in said container below the supply of balls therein in a substantially horizontal plane about a substantially vertical axis and having at least one substantially vertical passage of a width somewhat greater than said diameter and a length at least twice said diameter so that the passage can receive at least two superimposed balls, said passage being remote from said axis and having an open ball-receiving upper end and an open ball-dispensing lower end, said turntable further having a groove communicating with said passage at a location spaced apart from said lower end by a distance at least approximating said diameter; and a ball separating member extending into said groove and into said passage between two lowermost balls therein when said passage is in a ball feed position with an aligned separate ball discharge opening can discharge only one ball at a time.

4,564,000

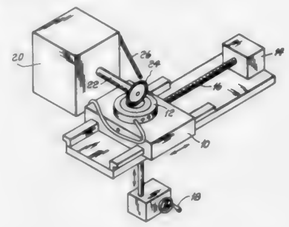
PRECISION CUTTING OF MILLIMETER WAVE FERRITE MATERIALS

Richard A. Stern, Allenwood, and Richard W. Babbitt, Fair Haven, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 6, 1984, Ser. No. 628,553

Int. Cl.⁴ B28D *1/04*

U.S. Cl. 125—13 R **7 Claims**



1. A method of precision cutting of millimeter wave ferrite material comprising:

securing said ferrite material on a platform capable of controlled lateral movement; and

moving said platform at a controlled feed rate of from 0.0254 to 0.127 cm/sec relative to a rotating transversely positioned circular saw;

said circular saw having a diameter and a spindle speed which combine to yield a cutting speed of 5400 cm/sec and having a blade fabricated of resin bonded diamond material.

4,564,001

VESSEL FOR USE WITH HIGH-FREQUENCY INDUCTION HEATER

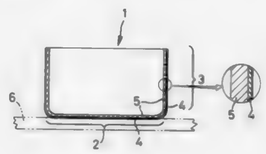
Tsuneo Maeda, Toyonaka, Japan, assignor to The Nippon Aluminium Mfg. Co., Ltd., Osaka and The Nippon Alumi Tsurmuraru Corp. Co., Mikunihon, both of, Japan

Filed Jun. 18, 1984, Ser. No. 621,788

Claims priority, application Japan, Jun. 20, 1983, 58-95614[U]

Int. Cl.⁴ A47J *27/00*

U.S. Cl. 126—390 **12 Claims**



1. A vessel having a bottom wall adapted to be heated through high-frequency induction heating for heating fluid contents contained in the vessel, the improvement comprising:

at least said bottom wall being made from a cladding which consists of an aluminum alloy layer having a thickness of 0.5–3.0 mm and a stainless steel layer having a thickness of 0.1–0.5 mm clad with each other under pressure, said aluminum alloy layer being disposed on the inner side of the vessel;

said aluminum alloy layer consisting of not more than 0.30 wt% Si, not more than 0.7 wt% of iron, not more than 0.25 wt% of copper, 1.0–1.5 wt% of iron, not more than 0.25 wt% of copper, 1.0–1.5 wt% of manganese, 0.8–1.3 wt% of magnesium, not more than 0.25 wt% of zinc, and the balance being aluminum.

4,564,002

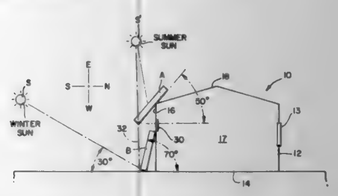
SOLAR ENERGY COLLECTING SYSTEM

Lawrence H. Taylor, Box 49-58, 48 P.O. Branch, Union City, N.J. 07087

Filed Aug. 27, 1984, Ser. No. 644,455

Int. Cl.⁴ F24J *2/00*

U.S. Cl. 126—417 **5 Claims**



1. Solar energy collecting system employing a multiplicity of specially positioned collector panels for a south facing wall and roof of a building structure comprising first and second solar panels, said first and second panel being connected to each other for fluid flow therethrough to form part of said system; each of the first and second solar panels being rectangular and having top, bottom and side edges; means mounting the first solar panel with the bottom edge paralleling the ground line of the south facing wall with the major axis of the panel extending east and west; the minor axis of said first panel being positioned at an angle of from about 60° to about 80° to the horizontal; said second solar panel mounted above said first solar panel with the bottom edge thereof spaced above the top edge of the said first solar panel; the major axis of said second solar panel extending east and west and the minor axis positioned at an angle of from about 40° to about 60° to the horizontal; whereby said first and second solar panels receive maximum effective winter sunlight and in summer said panels intercept substantially less solar rays; said solar energy collecting system further characterized in that the upper second solar panel projects outwardly of said first solar panel to thereby shade said first solar panel at high summer angles of the sun.

4,564,003

SOLAR/GAS HEATER

Walter Iwanicki, and Brian Duane, both of Adelaide, Australia, assignors to The Commonwealth of Australia, Canberra, Australia

PCT No. PCT/AU81/00037, § 371 Date Nov. 25, 1981, § 102(e) Date Nov. 25, 1981, PCT Pub. No. WO81/02774, PCT Pub. Date Oct. 1, 1981

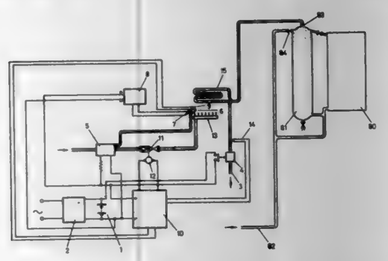
Continuation of Ser. No. 328,597, Nov. 25, 1981, abandoned.

This PCT application Mar. 26, 1981, Ser. No. 633,067

Claims priority, application Australia, Mar. 26, 1980, PE2925

Int. Cl.⁴ F24J *3/02*

U.S. Cl. 126—427 **4 Claims**



1. A domestic hot water system comprising in combination an instantaneous gas water heater, a solar water heater, and a hot water storage reservoir, said solar water heater being connected to the hot water storage reservoir to heat the water therein, said instantaneous gas hot water heater comprising a heating tube assembly connected to said hot water storage reservoir to receive water therefrom, a gas burner for supplying heat to said heating tube assembly, and an outlet from said heating tube assembly for delivering heater water to a consumer, said gas burner including a pilot burner and ignition means for said pilot burner, and control means to control the instantaneous gas hot water heater, said control means including a flow switch sensing water flow in said outlet, a temperature sensing device sensing the temperature of water flowing in said outlet, a main gas valve and a gas control valve, said flow switch controlling said main gas valve, said temperature sensing device being connected to said gas control valve to control the gas flow, said temperature sensing device being connected to a motor control unit controlling an electric motor operating the gas control valve, the motor control unit delivering electrical pulses to drive the electric motor with a pulsing movement to actuate the gas control valve, said pulses actuating said gas control valve in a stepwise movement, the motor control unit having a dead zone between upper and lower limits, said upper and lower limits being determined by the upper and lower limits of the temperature of water flowing in said outlet, whereby when said temperature sensed by said temperature sensing device is below the lower limit of said dead zone said motor is pulsed to supply gas to said pilot burner and the ignition means ignites said pilot burner which ignites said burner which burns at full capacity, and when said temperature reaches said dead zone said motor is no longer pulsed, and when said temperature exceeds the upper limit of said dead zone, the motor is pulsed to terminate said gas flow to said burner and said pilot burner.

4,564,004

HYDROLYZED CASSAVA STARCH FLOCCULANTS

Raymond N. Yong, Beaconsfield, and Amar J. Sethi, Baie D'Urfe, both of Canada, assignors to Suncor, Inc., Toronto, Canada

Division of Ser. No. 562,355, Dec. 16, 1983, Pat. No. 4,502,961.

This application Nov. 19, 1984, Ser. No. 672,514

Int. Cl.⁴ C08B *30/12*

U.S. Cl. 127—33 **3 Claims**

1. A composition comprising a hydrolyzed cassava starch obtained by the aqueous hydrolysis of cassava starch in the presence of about 10 to about 30 gms per 100 gms of starch of insoluble metal salts formed in situ, and wherein the salts employed during the hydrolysis to form said insoluble salts are the soluble salts of metals selected from the group consisting of sodium, potassium, ammonium, magnesium, calcium, and aluminum, and the respective anions of said soluble salts are selected from the group consisting of sulfates, acetates, chlorides, nitrates, chlorates, bromides, iodides, thicoyanates, and phosphates.

4,564,005

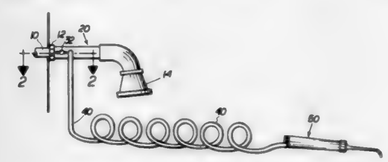
ORAL IRRIGATING DEVICE

Paul A. Marchand, 1171 71st St., Miami Beach, Fla. 33141, and Noel W. Abramson, 830 W. 32 St., Hialeah, Fla. 33012

Filed Dec. 5, 1983, Ser. No. 558,039

Int. Cl.⁴ A61M *3/00*

U.S. Cl. 128—66 **11 Claims**



1. An oral irrigating assembly of the type primarily designed

for use with a substantially conventional water outlet, the assembly comprising:

(a) conduit means secured to a conventional water supply and structured for delivery of water therefrom,

(b) said water conduit means comprising a hollow interior portion including a first channel means extending along at least a portion of the length thereof and disposed for water delivery from the water supply to a delivery portion of said conduit means,

(c) a second channel means formed within said hollow interior portion and structured and disposed for water delivery from the water supply to an exterior of said conduit means, said second channel means structured to define diverse paths of liquid flow therethrough,

(d) water pulsing means movably mounted within said hollow interior portion in interruptive relation to said diverse paths of liquid flow,

(e) said diverse paths of liquid flow comprising a first channel segment and a second channel segment at least partially disposed in spaced relation to one another and each structured to define a path of liquid flow from the water supply to said water pulsing means,

(f) said second channel segment disposed to direct liquid flow into driving engagement with said water pulsing means, causing its rotation, said first channel segment disposed to direct water flow into flow regulating engagement with said water pulsing means,

(g) said water pulsing means disposed in interruptive relation to liquid flow from said first channel segment and structured to alternately stop and pass said liquid flow beyond said water pulsing means,

(h) said first and said second channel segments and said water pulsing means cooperatively disposed and structured to cause a pulsed liquid flow from said first channel segment concurrently to driving rotation of said water pulsing means by liquid flow from said second channel segment.

4,564,006

RECLOSABLE CONDOM

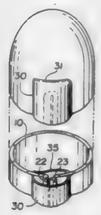
Mark L. Pomeranz, 9760 Viceroy Dr. East, Jacksonville, Fla. 32217

Continuation of Ser. No. 490,450, May 2, 1983, Pat. No. 4,498,466, which is a continuation-in-part of Ser. No. 388,107, Jun. 15, 1982, Pat. No. 4,432,357. This application Jul. 25, 1984, Ser. No. 634,442

The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.

Int. Cl.⁴ A61F *5/00*

U.S. Cl. 128—79 **14 Claims**



1. A condom comprising:

an elongated generally tubular member of thin, flexible material;

an elongated opening provided along at least a substantial portion of the length of said elongated tubular member so as to facilitate placing said elongated tubular member over a flaccid penis;

said elongated tubular member having an open base end and a closed, continuous, substantially smooth head end portion at the end thereof opposite said open end, said closed head end portion being adapted to cover a head portion of a penis and to contain ejaculated spermatozoa;

said elongated opening having opposed edges and extending from said open base end along the length of said elongated tubular member, except for said closed head end portion of said elongated tubular member; and

means for closing said elongated opening after placing of said condom on a flaccid penis, said closing means comprising a first elongated member on one of said edges of said elongated opening and defining an elongated groove-like receptacle which is substantially coextensive with said elongated opening, and a second elongated member extending along the other of said edges of said elongated opening and having an elongated projection thereon which is substantially coextensive with said elongated groove-like receptacle and which is lockingly and sealingly engageable in said groove-like receptacle to close said elongated opening along the complete length of the condom portion which extends along the penis after said condom is placed over a penis to provide a liquid tight closing of said elongated opening, said closing means presenting substantially smooth inner and outer surfaces along its length when in its liquid tight closed position.

4,564,007

ORTHOPAEDIC EXTERNAL FIXATION DEVICES

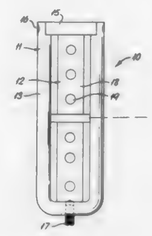
Richard R. H. Coombs, Kingston, and Mekki M. El-Saba, North Cheam, both of England, assignors to National Research Development Corp., London, England

Filed Oct. 20, 1983, Ser. No. 543,969

Claims priority, application United Kingdom, Oct. 20, 1982, 8229994

Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—92 A **9 Claims**



1. An orthopaedic external fixation device comprising:

a main support structure having a plurality of like threaded bores therethrough and a plurality of similar bone pins,

each said pin having spaced leading and trailing threaded portions of the same hand and pitch, but with the latter portion being of larger diameter and threadably engageable with any one of said bores,

said main support structure comprising an elongate apertured frame, two slide members movably mounted in mutual end-to-end relation within said frame, and means for urging said slide members towards interengagement,

said bores being formed in said slide members in an array disposed generally longitudinally of said frame, and p0 said bores each being directed generally orthogonally of said frame and slide members.

4,564,008

ARM SUPPORT APPARATUS

Lloyd E. Donahoo, 7386 Pomona Way, La Mesa, Calif. 92041

Filed Jun. 15, 1984, Ser. No. 620,958

Int. Cl.⁴ A61F *5/40*

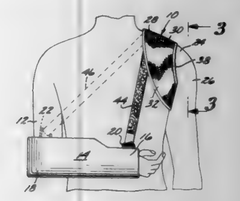
U.S. Cl. 128—94 **8 Claims**

1. Arm support apparatus comprising:

a single annular band defining a shoulder anchorage adapted to pass under the wearer's unaffected arm and over the adjacent shoulder;

a single front strap attached to the inner margin of the front portion of said band and adapted to be attached to the wrist portion of a unitary arm support extending from the wrist to the elbow of the opposite affected arm of the wearer; and

a single rear strap attached to the inner margin of the upper rear portion of said band and be attached to the elbow portion of the arm support for the affected arm of the wearer whereby the weight of the wearer's affected arm may be borne by the shoulder rather than the neck.



4,564,009

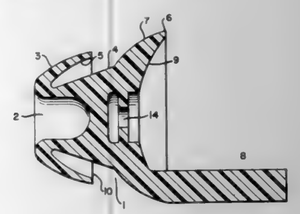
UNIVERSAL EAR PLUG

Carl H. Brinkhoff, Pittsburgh, Pa., assignor to Mine Safety Appliances Company, Philadelphia, Pa.

Filed Aug. 24, 1983, Ser. No. 525,988

Int. Cl.⁴ A61F *11/02*

U.S. Cl. 128—152 **2 Claims**



1. An integral molded ear plug comprising:

a frustum-shaped, non-deformable in use, semirigid main body which increases in diameter from its tip end to its back end and having an axial cavity in the tip end;

a flexible front flange of circular cross section extending outwardly from the tip end and rearwardly over a portion of the distance of the main body and terminating in a rim spaced from the back end, and having a diameter that is greater than the major diameter of the main body;

a second, cup-shaped, semi-spherical flange extending radially outwardly from the back end and rearwardly of the main body and terminating in a rim, and having a diameter greater than the diameter of the front flange; and

an extraction tab extending rearwardly from the rim of the second flange.

4,564,010

PRESSURE SENSITIVE ADHESIVE FILM FOR MEDICAL USE

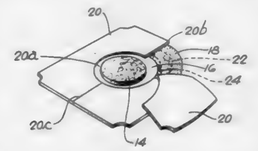
Raymond T. Coughlan, Darien, and Terrence J. Anderson, Chicago, both of Ill., assignors to Daubert Coated Products Inc., Chicago, Ill.

Filed Apr. 18, 1984, Ser. No. 601,708

Int. Cl.⁴ A61L *15/00*; **B32B** *7/10*

U.S. Cl. 128—156 **11 Claims**

1. A pressure sensitive adhesive film for securing a medical device on human skin, comprising: a base layer in the form of a laminate, one layer of which is formed of a polyolefin and another layer of which is formed of a mixture of a polyolefin and an ethylene-vinyl ester copolymer; and a layer of a water base coated pressure sensitive adhesive on the surface of the layer of said laminate which is formed of said copolymer, said water base coated pressure sensitive adhesive layer consisting essentially of a mixture of a water-insoluble polyacylic latex and a water-insoluble ester resin, and being characterized in that it is water and perspiration resistant and inert with respect to drugs or medicaments with which it may come into contact with while securing a medical device on human skin, and further being characterized in that it is non-irritating to the human skin.



4,564,011

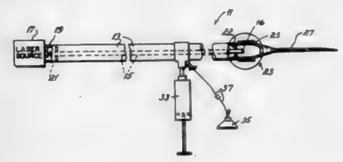
LASER OPTIC DEVICE AND METHOD

Leon Goldman, 2324 Madison Rd., #1807, Cincinnati, Ohio 45208

Continuation-in-part of Ser. No. 360,244, Mar. 22, 1982, abandoned. This application Oct. 6, 1983, Ser. No. 539,160

Int. Cl.⁴ A61B *17/36*

U.S. Cl. 128—303.1 **7 Claims**



1. A laser optic device for the treatment of a blood vessel, comprising:

a source of laser energy;

a catheter communicating at one end with said source of laser energy;

at least one optic fiber disposed within and protected by said catheter, said optic fiber being adapted to transmit said laser energy;

a probe including a hub mounted to the other end of said catheter, and a hollow needle connected to said hub for receiving said laser energy, said needle being insertable within or adjacent to said blood vessel and being adapted to transmit said laser energy thereto;

means for applying pressure to said blood vessel at a location spaced from the point of insertion of said needle in the direction of blood flow in said blood vessel; and

rinsing means disposed along said catheter for rinsing said needle.

5. A method of creating a blood clot within a blood vessel comprising the steps of:

inserting a probe within said blood vessel, said probe being operable to transmit laser energy produced by a laser energy source into said blood vessel;

applying pressure to said blood vessel at a location spaced from the point of insertion of said probe in the direction of the flow of blood within said blood vessel; and

activating said laser energy source, said laser energy being transmitted through said probe and entering the interior of said blood vessel causing a blood clot to form therewithin.

4,564,012

LASER SURGICAL EQUIPMENT

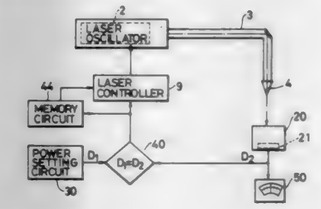
Tamotsu Shimada, Akishima; Chiaki Shinbo, Mitaka; Hideyuki Horiuchi, Kokubunji, and Masamoto Takatsuji, Setagaya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,402

Claims priority, application Japan, Sep. 28, 1981, 56-152083; Sep. 28, 1981, 56-152084

Int. Cl.⁴ A61N *5/06*

U.S. Cl. 128—303.1 **15 Claims**



1. A laser surgical equipment comprising:
a laser oscillator for oscillating a laser output;
control means for controlling the laser output of said laser oscillator;
an optical waveguide connected to said laser oscillator and transmitting the laser output;
a hand piece connected to said optical waveguide and radiating the laser output to a diseased part to be radiated;
first detection means for detecting the laser output from said hand piece;
setting means for setting a desired laser output from said hand piece;
comparison means for comparing the output of said first detection means with an output of said setting means and for controlling said control means; and
memory means for storing the output of said comparison means, said memory means providing an output to said control means controlling the laser output of said laser oscillator during the period other than the period in which said first detection means detects the laser output.

4,564,013

SURGICAL FILAMENTS FROM VINYLIDENE FLUORIDE COPOLYMERS

Robert Lilenfeld, Flemington; Nicholas M. Popadiuk, Raritan; Peter Steinheuser, Manville, and Edgar Menezes, Somerville, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed May 24, 1984, Ser. No. 613,558

Int. Cl.⁴ C08F *14/22*

U.S. Cl. 128—335.5 **9 Claims**

1. A drawn and oriented surgical filament comprising a copolymer of vinylidene fluoride and hexafluoropropylene, wherein said copolymer contains from about 1 to about 15 weight percent polymerized hexafluoropropylene, the remainder being polymerized vinylidene chloride.

4,564,014

VARIABLE LENGTH DILATATION CATHETER APPARATUS AND METHOD

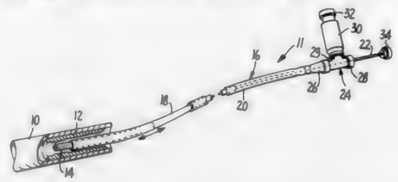
Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304, and Albert K. Chin, San Francisco, Calif., assignors to Thomas J. Fogarty, Palo Alto, Calif.

Filed Jan. 30, 1980, Ser. No. 116,923

Int. Cl.⁴ A61M *29/02*

U.S. Cl. 128—344 **16 Claims**

1. A catheter for dilating a partially occluded blood vessel, said catheter comprising: an elongate inflatable elastomeric tube extending substantially the full length of the catheter and proportioned for extension through the vessel; means to inflate the tube; a primary non-inflatable sheath telescopically positioned around the tube in closely fitting relationship thereto confining a predetermined portion of the inflatable length of the tube against inflation, said sheath being proportioned for



extension through the vessel with the tube and being longitudinally movable relative to the tube to selectively expose varying distal portion lengths of the tube for inflation.

4,564,015

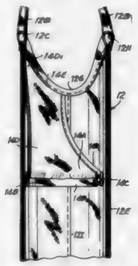
GARMENT WITH BUILT-IN INTERIOR SUPPORT STRUCTURE

Allen Friedman, 429 E. 52nd St., New York, N.Y. 10022

Filed Mar. 22, 1984, Ser. No. 592,110

Int. Cl.⁴ A41C *3/08*

U.S. Cl. 128—455 **5 Claims**



1. An article of lightweight women's wearing apparel to furnish support for the bust of the wearer, comprising a main body portion adapted to be worn on the upper torso of the wearer and including a front neckline, a rear neckline, a pair of shoulder portions at the opposite ends of said front and rear necklines, and a pair of armholes under said shoulder portions and having lower arcs, said main body portion being composed of front and rear pieces of sustantially equal areas joined along vertical seams at diametrically opposed sides thereof, an inner garment member located within said main body portion and having a front section adapted to cover and extend below the wearer's bust, a lower section encircling the wearer's torso just below the region of the bust, and a releasably engageable section, including rear adjustment means, defining the lower terminal periphery of said inner garment member, said inner garment member being attached to said main body portion transversely of the same along the length of said front neckline and rearwardly along the lower arc of each of said armholes up to the locations of said vertical seams, respectively, and including a pair of opposed side panels having upper and lower borders and extending rearwardly of the respective vertical seams and terminating at said rear adjustment means to provide side and uplifting support to the bust of the wearer.

4,564,016

APPARATUS FOR INTRODUCING IONIZED DRUGS INTO THE POSTERIOR SEGMENT OF THE EYE AND METHOD

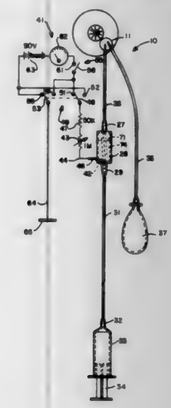
David M. Maurice, Atherton, Calif., and Darrell Brooks, Lathrop, Mo., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation of Ser. No. 381,151, May 24, 1982, abandoned. This application Aug. 13, 1984, Ser. No. 639,806

Int. Cl.⁴ A61B *10/00*

U.S. Cl. 128—645 **11 Claims**

1. In an apparatus for introducing an ionized drug into the eye, a cup-shaped member formed of an insulating material and having an outwardly extending annular lip adapted to be placed in contact with the exterior scleral surface of the eye, said member having a nipple formed integral therewith disposed within the confines of the annular lip and having its outer extremity lying generally in the same plane as the plane of the annular lip, said annular lip and said nipple being adapted to come in contact with the eye and to form a liquid-tight seal therewith, said member having a passageway therein extending through the nipple with a cross-sectional area of less



than approximately one millimeter in diameter, an ionized drug solution filling said passageway and electrical power supply means remote from the member and coupled to said passageway for causing a current flow of at least 50 milliamperes per square centimeter through the drug solution to establish a high current density in the eye in the vicinity of the portion of the eye in contact with the ionized drug solution in said passageway whereby the drug is carried from the passageway into the eye.

4,564,017

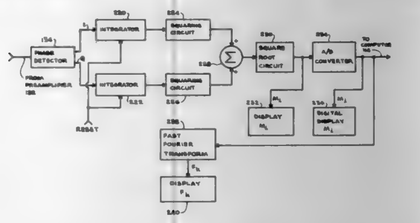
METHOD AND APPARATUS FOR RESPIRATION MONITORING WITH AN NMR SCANNER

Gary H. Glover, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 21, 1984, Ser. No. 673,688

Int. Cl.⁴ A61B *5/05*

U.S. Cl. 128—653 **12 Claims**



1. A method of determining the respiration period of a patient using scan data obtained with an NMR scanner, said method comprising the steps of:
acquiring amplitude-modulated NMR scan data of a predetermined region of the patient; and
analyzing said scan data to derive the respiration rate of the patient.

4,564,018

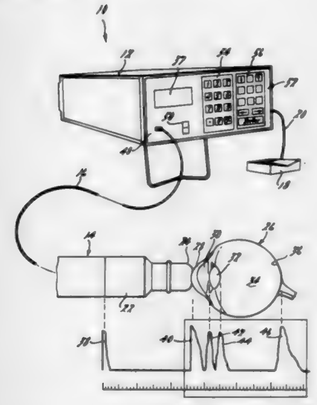
ULTRASONIC SYSTEM FOR OBTAINING OCULAR MEASUREMENTS

Stephen Hutchison, Kirkwood; J. Alan Ritter, Des Peres, and Mark Virkus, Ellisville, all of Mo., assignors to Storz Instrument Company, St. Louis, Mo.

Filed Oct. 28, 1982, Ser. No. 437,487

Int. Cl.⁴ A61B *10/00*

U.S. Cl. 128—660 **24 Claims**



1. An ultrasonic diagnostic scanner for measuring at least one parameter of an eye, comprising:
transmitter means for causing a transducer to transmit an ultrasonic signal;
receiver means for receiving echo signals representing reflections of said transmitted ultrasonic signal and for producing a peak signal only at substantially the maximum amplitude of said echo signals when said echo signals exceed a predetermined threshold level which is below said maximum amplitude;
programmable means responsive to said peak signals for producing a first count signal indicative of the time between the transmission of said ultrasonic signal and the occurrence of a selectable number of peak signals and for producing a second count signal indicative of the time between the occurrence of predetermined peak signals;
microcomputer means for controlling said transmitter means and said programmable means, said microcomputer means determining said selectable number and said predetermined peak signals, and for determining said eye parameter from at least one of count signals; and
output means responsive to said microcomputer means for generating a perceptible output indicative of said eye parameter.

4,564,019

METHOD FOR MEASURING CHARACTERISTICS OF LIVING TISSUES BY ULTRASONIC WAVES

Hirohide Miwa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 30, 1983, Ser. No. 480,589

Claims priority, application Japan, Apr. 7, 1982, 57-57573

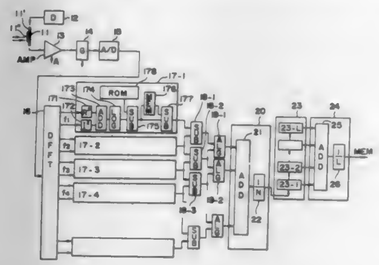
Int. Cl.⁴ A61B *10/00*

U.S. Cl. 128—660 **16 Claims**

1. A method for measuring the internal characteristics of a body, comprising:
transmitting pulses of ultrasound pressure waves into said body, each said pulse comprising ultrasound pressure waves of at least three frequencies;
selectively receiving as different respective return signals

the corresponding ultrasound pressure waves reflected from different ranges of depths in said body;

determining values corresponding to the relative energy of respective frequency components in each said return signal corresponding to said at least three frequencies; and



processing said values to determine information on spatial variation of the reflection coefficient at different depths in said body.

4,564,020

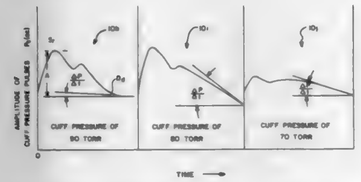
METHOD AND APPARATUS FOR OBTAINING AN INDIVIDUAL'S SYSTOLIC BLOOD PRESSURE

William T. Link, Berkeley, Calif., assignor to Norse Instruments, Inc., Hayward, Calif.

Filed Jun. 19, 1984, Ser. No. 622,079

Int. Cl.[4] A61B *5/02*

U.S. Cl. 128—677 **8 Claims**



1. A method of determining the systolic pressure of a given mammal, comprising the steps of:

(a) determining the diastolic pressure of said mammal;

(b) establishing an arterial curve characteristic of said mammal in a way which does not require the systolic pressure;

(c) placing a blood pressure cuff around a particular artery of said mammal;

(d) pressurizing the cuff at a number of different pressure levels from zero pressure to a pressure at least equal to the mammal's systolic pressure and generating cuff pulses having peak to peak amplitude values corresponding to and dependent on said different pressure levels;

(e) graphically providing a reference curve of said peak to peak amplitude values against said pressure levels;

(f) using said arterial curve, said diastolic pressure and an assumed systolic pressure, obtaining peak to peak amplitude values at different cuff pressures from this information and graphically providing a comparison curve of these latter peak to peak amplitude values against said different cuff pressures;

(g) comparing said reference curve with said comparison curve, whereby if they are similar, then the assumed systolic pressure is approximately equal to the given mammal's actual systolic pressure; and

(h) repeating steps (f) and (g) for one or more different assumed systolic pressures if said first-mentioned comparison curve is different than said reference curve until a comparison curve is established which corresponds to said reference curve.

4,564,021

MOUTHPIECE FOR A BREATH-ALCOHOL MEASURING DEVICE

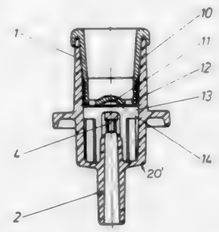
Klaus Siegmann, Lubeck, and Martin Schmidt, Bad Schwartau, both of Fed. Rep. of Germany, assignors to Dragerwerk AG, Fed. Rep. of Germany

Continuation of Ser. No. 522,662, Aug. 12, 1983, abandoned. This application Jan. 18, 1985, Ser. No. 692,726

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233462

Int. Cl.[4] A61M *16/00*; A61B *10/00*

U.S. Cl. 128—716 **3 Claims**



1. A mouthpiece for a breath-alcohol measuring device, comprising: a hollow cylindrical mouth portion (**1**) having an open tubular mouth engaging end (**1***a*) and an opposite partly closed end (**1***b*); a central hollow tubular connecting portion (**2**) having an open outer end (**2***a*) and an opposite inner closed top end (**6**), said connecting portion closed top end being connected to and extending through said partly closed end (**1***b*) of said mouth portion, into an interior of said mouth portion and having a lateral inlet opening (**7**) on its side adjacent said inner closed top end, which inlet opening opens into the interior of said mouth portion (**1**) and communicates the hollow cylindrical mouth portion with the inlet opening of said connecting portion for the flow of breathing gas through said connecting portion from the open outer end thereof; said mouth portion having a diameter and wall thickness suitable for taking the mouth portion into a person's mouth and including an exterior flange (**8**) projecting radially outwardly from an exterior of said mouth portion at a spaced location from its open end (**1***a*) and being of a size wider than the person's mouth to limit the length of penetration of the mouth portion into the person's mouth up to the flange; said mouth portion, said flange and said connecting portion being made of one piece of plastic material; a tubular insert member (**10**) engaged into said mouth portion open end and having an inner end portion (**11**) overlying and spaced from said closed top end (**6**) of said connecting portion (**2**) with an off-center opening (**12**) therethrough; and an elastic valve plate (**14**) disposed in the space between said inner end portion (**11**) and said closed top end (**6**) and being free to move between the closed top end of said connecting portion and said insert member and being bendable against said closed top end (**6**) during blowing into said mouth portion to permit the breathing gas to flow around said plate and into the lateral inlet opening (**7**) of said connecting portion and being movable against said inner end portion (**11**) of said insert member during inhaling to close the off-center opening of said insert member inner end portion.

4,564,022

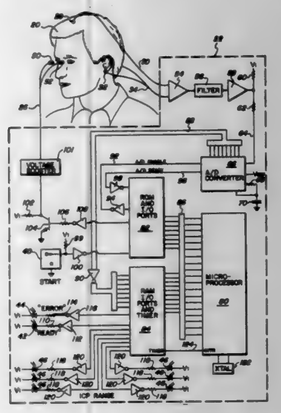
METHOD AND APPARATUS FOR INTRACRANIAL PRESSURE ESTIMATION

John G. Rosenfeld, 518A Sooner, Norman, Okla. 73069; Clark Watts, Rte. 4, Box 61, and Donald H. York, 3714 Berrywood, both of Columbia, Mo. 65201

Filed Mar. 12, 1982, Ser. No. 357,482

Int. Cl.[4] A61B *5/00*

U.S. Cl. 128—748 **23 Claims**



1. A method for estimating intracranial pressure comprising the steps of:

(a) generating at least one evoked potential;

(b) measuring the value of the latency of a peak of said evoked potential; and

(c) comparing the value of said latency with known latency/intracranial pressure correlations to determine an estimated intracranial pressure.

4,564,023

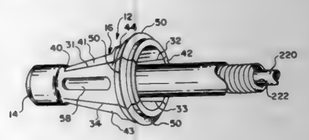
RETENTION SKIRT FOR PACING ELECTRODE ASSEMBLY

Stanley R. Hess, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Mar. 28, 1983, Ser. No. 479,854

Int. Cl.[4] A61N *1/04*

U.S. Cl. 128—785 **26 Claims**



1. An electrode assembly, mounted at the distal end of a pacing lead comprising lead body and at least one electrical wire conductor in the lead body, at least a tip electrode including a tip and means for connecting said tip to the wire conductor, and a skirt coupled to the lead body adjacent said tip and extending around and outwardly of said lead body, extending rearwardly from said tip and having in the rearward portion of said skirt, at least two slits for separating said skirt into at least two adjacent, but physically separated sections, said slits extending radially through said skirt and axially forwardly from a rear edge of said skirt toward but not to a forward edge of said skirt, said skirt being made of a flexible material and yet being capable of engaging trabeculae in a heart chamber for maintaining said electrode assembly in a desired position in a heart chamber, said adjacent, but physically separated skirt sections facilitating folding over of said skirt to allow said electrode assembly to be removed when desired by the application of sufficient tension to the pacing lead to cause said adjacent, but physically separated skirt sections to fold back over themselves independent from each other as the pacing lead is withdrawn and said adjacent, but physically separated skirt sections, when in an open space, being capable of returning to their original position independent of each other.

4,564,024

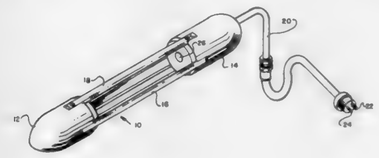
ELECTRO-EJACULATOR PROBE

Wilson H. Wohler, Jr., 1202 N. Bell St., San Angelo, Tex. 76905

Filed Jul. 2, 1984, Ser. No. 628,201

Int. Cl.[4] A61N *1/18*

U.S. Cl. 128—788 **3 Claims**



1. In an electro-ejaculator probe having

a. a cylindrical profile about an elongated axis,

b. a front and back,

c. a bullet-shaped nose at the front,

d. a rounded structure at the back,

e. the front and back having outer surfaces along the cylindrical profile,

f. a plurality of elongated electrodes

(i) along the cylindrical profile,

(ii) parallel to the axis, and

(iii) structurally attached to the front and back,

g. a handle attached to the back, and

h. electrical wires connected to the electrodes extending through the handle;

i. wherein the improved structure comprises:

j. a fecal pocket within the cylindrical profile between the front and back,

k. said pocket opening to outside the profile between adjacent electrodes.

4,564,025

SELF-PROPELLED HARVESTER THRESHER

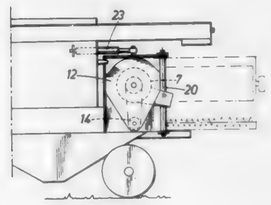
Johannes Dammann, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,091

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1983, 3307633

Int. Cl.[4] A01F *7/00*

U.S. Cl. 130—27 R **12 Claims**



1. A self-propelled harvester thresher, comprising a housing;

at least two non-removable axial threshing and separating devices arranged in said housing and each including a rotatable threshing drum and a casing surrounding the latter with a small distance therebetween and provided with a product supply opening and a product discharge opening, said axial threshing and separating devices being non-removably movable between two positions including a working position in which said axial threshing and separating devices extend transverse to a longitudinal axis of the harvester thresher, and a transporting position in whcih said axial threshing and separating devices extend along the longitudinal axis of the harvester thresher so that they do not exceed a permissible street width.

4,564,026

METHOD OF AND APPARATUS FOR BUILDING A TOBACCO STREAM

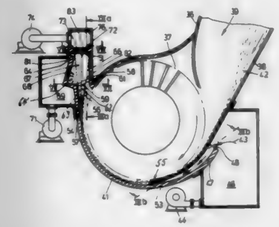
Günter Wahle, Reinbek; Dieter Ludszeweit, and Uwe Heitmann, both of Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,735

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244532

Int. Cl.⁴ A24C *5/18, 5/39*

U.S. Cl. 131—84.3 **23 Claims**



1. A method of building a tobacco stream on an air-permeable conveyor which is driven to advance the stream in a predetermined direction and cooperates with first and second sidewalls to define a channel extending in said direction and disposed at one side of the conveyor, comprising the steps of establishing a pressure differential between the one side and another side of the conveyor to thus induce the flow of air from the channel through the conveyor; establishing a source of tobacco particles; conveying streams of air into the channel and toward selected portions of the one side of the conveyor which are staggered with reference to one another, as considered transversely of and in said direction; and admitting tobacco particles from the source into the air streams so that the thus admitted particles of tobacco share the movements of the air stream and are deposited on and adhere to the selected portions of the one side of the conveyor with the attendant formation of a tobacco stream containing particles in a predetermined distribution in and transversely of said direction.

11. Apparatus for building a continuous tobacco stream, comprising a conveyor including a driven air-permeable element having first and second sides and arranged to advance the stream in a predetermined direction; suction generating means adjacent to the first side of said element; spaced-apart first and second sidewalls adjacent to the second side of and defining with said element an elongated channel extending in said direction; a source of tobacco particles; and guide means for conveying tobacco particles from said source into said channel, including a plurality of guide faces which are staggered with reference to each other, as considered transversely of and in said direction, said guide means further having edge faces remote from said element and each of said guide faces terminating at a different one of said edge faces, each of said guide faces being arranged to direct tobacco particles toward a selected portion of the second side of said element with the attendant formation of a tobacco stream containing particles in a predetermined distribution in and transversely of said direction.

4,564,027

APPARATUS FOR BUILDING A CONTINUOUS TOBACCO STREAM

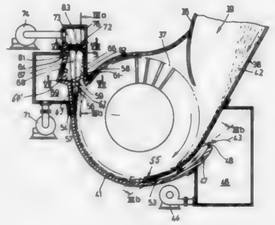
Uwe Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,732

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244534

Int. Cl.⁴ A24C *5/18, 5/39*

U.S. Cl. 131—84.3 **20 Claims**



1. Apparatus for building a continuous tobacco stream in the distributor of a filler forming machine, comprising a conveyor including an air-permeable tobacco advancing element arranged to move in a predetermined direction and having a first side and a second side; suction generating means adjacent to the first side of said element; first and second sidewalls adjacent to the second side of and defining with said element an elongated channel extending in said direction; a source of tobacco particles; a source of compressed air; and means for feeding tobacco particles to said conveyor, comprising means for supplying particles of tobacco from the respective source along an arcuate path and into said channel so that the particles advance toward and adhere to the second side of said element under the action of said suction generating means, and means for admitting into said arcuate path streams of compressed air from the respective source in substantial parallelism with said arcuate path so that the compressed air entrains the particles of tobacco by conveying such particles along said path, each such stream of compressed air being inclined with reference to and having s component of movement in said direction to thus compel the particles of tobacco in said channel to advance toward the second side of said element while simultaneously advancing in said direction before the articles reach said element.

4,564,028

APPARATUS FOR MAKING A TOBACCO FILLER

Uwe Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

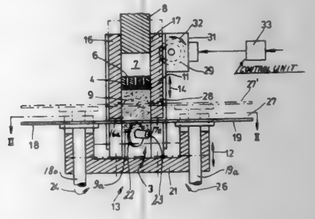
Filed Mar. 16, 1984, Ser. No. 590,204

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3310035

Int. Cl.⁴ A24C *5/18, 5/31*

U.S. Cl. 131—84.4 **10 Claims**

1. Apparatus for converting a stream of tobacco particles into a filler, comprising an elongated tobacco channel arranged to receive particles of tobacco which form therein a continuous stream containing particles in excess of the quantity required in the filler and including a foraminous first wall arranged to move lengthwise of the channel and having a first side and a second side, said channel further including spaced-apart first and second sidewalls extending from the first side of said first wall; a suction chamber adjacent to the second side of said first wall to attract the particles of the stream to said first side; a trimming device spaced apart from the first side of said first wall and arranged to remove the excess from the tobacco



stream in said channel, said sidewalls having portions adjacent to said trimming device; and means for jointly moving said trimming device and said portions of said sidewalls toward and away from said first wall.

4,564,029

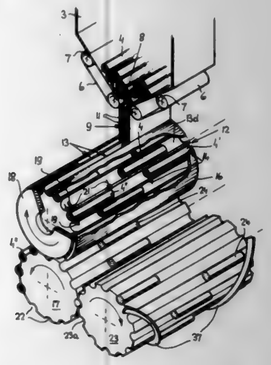
METHOD AND APPARATUS FOR ASSEMBLING PLAIN CIGARETTES WITH FILTER ROD SECTION

Alfred Hinzmann, Weams; Peter M. Preisner, Mechanicsville, and Timour T. Shu, Chesterfield, all of Va., assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 13, 1983, Ser. No. 531,918

Int. Cl.⁴ A24B *5/52*

U.S. Cl. 131—94 **42 Claims**



1. A method of assembling plain cigarettes or analogous rod-shaped tobacco-containing articles with filter rod sections on an endless conveyor preparatory to conversion of assembled articles and sections into filter cigarettes or like rod-shaped smokers' products, comprising the steps of delivering successive articles to the endless conveyor whereon the articles occupy first positions; advancing the delivered articles with the conveyor at right angles to their respective axes; shifting the articles axially to second positions which are spaced apart from the respective first positions by distances at least matching the length of a filter rod section so that the shifted articles provide room for delivery of fresh articles to the first positions previously occupied by the shifted articles and each shifted article is in axial register with a non-shifted article; and introducing filter rod sections between the thus obtained pairs of registering articles.

4,564,030

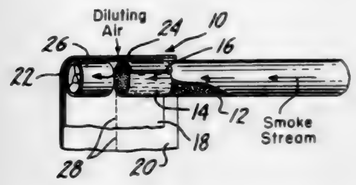
CIGARETTE FILTER ASSEMBLY

Terry D. Jessup, and Albert B. Hudson, both of Greensboro, N.C., assignors to Loew's Theatres, Inc., New York, N.Y.

Filed Jul. 16, 1982, Ser. No. 398,962

Int. Cl.⁴ A24D *3/04*

U.S. Cl. 131—336 **8 Claims**



1. A filter assembly for a smoking article comprising a filter mass and a wrapper means for attaching said filter assembly to a smoking article such that said filter mass is in end-to-end relation thereto, wherein said wrapper means includes an at least substantially non-porous wrapper surrounding and directly engaging said filter mass, wherein said filter assembly has a distal end and said wrapper means retains said filter mass at a fixed position spaced from said distal end, wherein said filter assembly has an open mixing chamber between said filter mass and said distal end, wherein said wrapper means has at least one perforation arranged to communicate between said chamber and outside air and sized for admitting a pre-selected ratio of diluting air to mix with mainstream smoke when smoke is drawn into said chamber through said filter mass, and comprising a secondary filter disposed in said wrapper and arranged between said open mixing chamber and said distal end, wherein said mixing chamber extends between said filter mass and said secondary filter and said secondary filter has a flow resistance value substantially lower than the flow resistance value of said filter mass such that smoke and diluted air are passed substantially unimpeded from said mixing chamber to said distal end.

4,564,031

SMOKABLE, COHERENT SHEET AND METHOD FOR ITS MANUFACTURE

Laszlo Egri, Basel, Switzerland, assignor to Tamag Basel AG, Basel, Switzerland

Filed Jun. 29, 1983, Ser. No. 509,205

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224416

Int. Cl.⁴ A24B *3/14*

U.S. Cl. 131—353 **10 Claims**

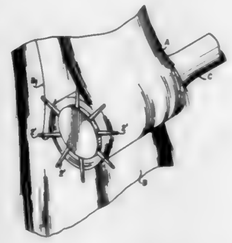
1. A smokable, coherent sheet of disintegrated vegetable material and/or tobacco waste, comprising a dried pressure-formed sheet of said disintegrated vegetable material and/or tobacco waste, having a water-insoluble surface coating formed by the exchange of bivalent and/or trivalent metal ions of a salt with cations of at least one water-soluble, modified pectin from the group of low-esterified pectins with an esterification degree of below 40% and/or amidified, low-esterified pectin with an amidation degree of over 15%, with the concentration of the modified pectin on the sheet surface based on weight of the finished product being at least 0.5% by weight.

4,564,032

HAIR CURLER

Masakatsu Araki, Hikone, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 24, 1982, Ser. No. 381,574
Claims priority, application Japan, May 30, 1981, 56-82958
Int. Cl.⁴ A45B *25/18*
U.S. Cl. 132—33 R **20 Claims**



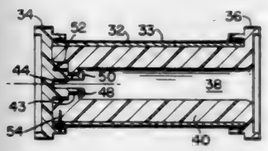
1. A hair applicance having a main body and a hair-winding portion, said hair-winding portion comprising a hollow rod assembly and a cap, said hollow rod assembly comprising:
a hollow cylinder;
an initially flat bristle-mounting platform having integrally formed means for fastening to said hollow cylinder and being formed about and enveloping said cylinder, said platform being made of flexible silicone rubber;
bristles integral with and extending outwardly from one surface of said platform, said bristles being made of flexible silicone rubber;
said means for fastening comprising a pair of protrusions extending from opposing edges of the surface of said platform which is opposite to the surface from which said bristles extend;
said cap being fitted over one end of said hollow rod assembly, the other end of said hollow rod assembly being mounted on said main body.

4,564,033

HAIR CURLING SYSTEM

Lai Kin, Kowloon, Hong Kong, assignor to Windmere Corporation, Hialeah, Fla.

Filed Jun. 10, 1983, Ser. No. 503,181
Int. Cl.⁴ A45D *2/02*
U.S. Cl. 132—39 **24 Claims**



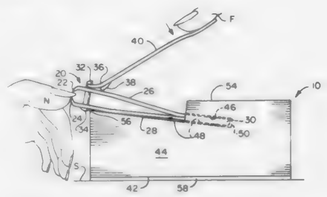
1. A hair curling roller system comprising:
a housing;
a plurality of elongated post members arranged within said housing and being capable of generating heat in hair rollers placed on said post members, all of said post members of said system having substantially the same diameter;
a plurality of rollers for curling hair, each of said rollers having an inner core means and an outer cylindrical surface for contact with hair to be rolled, said outer cylindrical surface surrounding said inner core means;
a first group of said plurality of rollers having a first outer diameter along their center section of their outer surface and a second group of said plurality of rollers having a second outer diameter along their center section of their outer surface with said second outer diameter being larger than said first outer diameter, each of said rollers of both of said groups of rollers having an axially extending elongated inner cavity extending from an opening at one end of said roller and said inner cavities of all of said rollers having substtantially the same inner diameter so that each of said rollers can be mounted on any of said post members, each of said rollers being capable of being arranged on one of said post members such that said post member extends into said inner cavity of the respective said roller;
said inner core means of each of said rollers of said second group of rollers including heat transfer means for facilitating the transfer of heat from its said inner cavity to its said outer surface so that when said rollers are heated the level of heat on the outer surface of each of said second group of rollers is approximately the same as the level of heat on said first group of rollers, said heat transfer means being located between said axially extending inner cavity and said outer cylindrical surface of each of said rollers and said second group of rollers, each of said heat transfer means in said rollers of said second group of rollers including a cylindrical hub surrounding said inner cavity and a plurality of ribs arranged around said hub forming heat radiating fins extending in a radial direction out from said hub with air spaces remaining between adjacent ribs.

4,564,034

NAIL CLIPPER HOLDER

Nathaniel T. Mackel, 1510 Mosher St., Apt. 7-A, Baltimore, Md. 21217

Filed Jan. 23, 1984, Ser. No. 573,016
Int. Cl.⁴ A45D *29/00*
U.S. Cl. 132—73 **7 Claims**



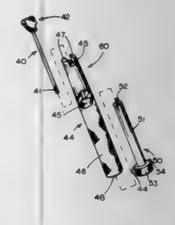
1. In a system for cutting fingernails and toenails by means of a conventional clipper of the type having:
an elongate cutting head with first and second ends,
an upper jaw and a lower jaw with respective cutting edges spacedly opposed in a vertical plane on the first end,
substantially congruous respective rearward extensions of the upper jaw and lower jaw, substantially transverse to the upper jaw and lower jaw,
means at the second end joining together as a butt a portion of the length of said rearward extensions,
means adjacent the first end for forcing the upper and lower jaws together, including a member fixed to the lower jaw and protruding upward through a hole in the upper jaw,
a lever with a handle for pressing, the handle having a free end protrusive upwardly at an angle from a bent end of the handle resting on the upper jaw rearward extension, said bent end pivotally engaging said member,
means for holding the clipper, and said means for holding having a portion for resting on a supporting surface, the improvement comprising in combination with said clipper:
said means for holding being unitary and including: a base, means for securing instantly the clipper to or removing the clipper from the base with one motion of a user's hand, the means for securing, securing the clipper with said upper and lower jaws of the clipper projecting free of the base in position for clipping nails, with the free end of the handle upward, said position for clipping nails being with said upper and lower jaws upwardly inclined to a height above the portion for resting on a supporting surface permitting a toenail to be inserted between the jaws by a nominal size foot resting, with said portion for resting, on a said supporting surface; said means for securing including structure of the base defining a socket freely receiving said butt and having an incline at an angle downwardly towards said second end, means for preventing said clipper from shifting in said socket, comprising said structure of the base that defines a socket laterally fitting said butt, and said means for preventing said clipper from shifting further including a part of the base extending beyond the socket and underlying the rearward extension of the lower jaw.

4,564,035

TOOTHPICK HOLDER

Tomie L. Turner, 3220 Anderson Dr., Lithia Springs, Ga. 30057

Filed Sep. 21, 1984, Ser. No. 652,672
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—90 **9 Claims**



1. A toothpick holder comprising a rod-shaped member having a flange formed on one end thereof providing a ledge extending normally to the longitudinal axis of the rod-shaped member and with said one end being formed with an opening extending transversely to said longitudinal axis that merges with a trough formed in said ledge, and a tubular member telescopically positioned about said rod-shaped member and an end of said tubular member movable into engagement with the ledge of said rod-shaped member, the end of said tubular member extending normally to the longitudinal axis of said rod shaped member, and when a toothpick is inserted in the openings of the rod-shaped member the tubular member is moved toward abutment with the ledge of the rod-shaped member to grip the portions of the toothpick extending out of said opening and into said trough substantially without applying shearing forces to the toothpick.

4,564,036

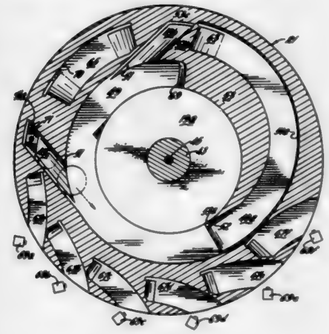
COIN SORTING SYSTEM WITH CONTROLLABLE STOP

Victor G. Ristvedt, Manchester, Tenn., assignor to Ristvedt-Johnson, Inc., Mount Prospect, Ill.

Filed Sep. 15, 1983, Ser. No. 532,616
Int. Cl.⁴ G07D *3/14*
U.S. Cl. 133—3 A **14 Claims**

4. A coin sorting apparatus for sorting a group of mixed coins by denomination and terminating the sorting process when a predetermined number of coins have been sorted, said apparatus comprising:
rotating means for imparting a rotational movement to said group of mixed coins,
stationary means proximate to said rotating means, for guiding the rotating coins from the center of said stationary means through a region between said rotating and stationary means to the periphery of said stationary means by way of a radially outward spiral sorting path such that the rotating coins exit at the periphery of the stationary means at discrete locations determined by coin denomination,
counter means located proximate the periphery of said stationary means for counting the number of sorted coins of each denomination, and
recycle means in said stationary means responsive to a predetermined count total of any coin denomination by said counter means for redirecting said rotating coins in said region inwardly such that the rotating coins are returned to the center of the stationary means so as to prevent exiting of the coins at the periphery of said stationary means.

13. A method for terminating the sorting of coins by a stationary disk and a rotating disk mounted with the surfaces parallel to, and in close proximity with, one another, said method comprising the steps of:
(a) rotating the coins on said rotating disk,



(b) radially outwardly guiding the coins with the stationary disk into the region between said stationary and rotating disks in a single file circumferential path so as to position the radially inner edge of each coin denomination at a unique radial position,
(c) intercepting each denomination and exiting that denomination from the periphery of the stationary disk into receptacles positioned at different discrete locations for each denomination,
(d) counting said coins as they exit the stationary disk at each discrete location,
(e) reaching a predetermined count at any of the discrete location, and
(f) radially inwardly redirecting said coins in said single file circumferential path in said region back to the center of said stationary disk so as to stop further exiting of sorted coins at the periphery of the stationary disk.

4,564,037

COIN-QUEUEING HEAD FOR HIGH-SPEED COIN-SORTING AND COUNTING APPARATUS

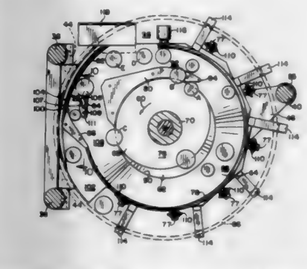
Roger K. Childers, Portland County, and Andrew L. Trumbo, Washington County, both of Oreg., assignors to Childers Corporation, Wilsonville, Oreg.

Filed Aug. 25, 1983, Ser. No. 526,420
Int. Cl.⁴ G07D *3/00*
U.S. Cl. 133—3 A **14 Claims**

1. A coin-queueing head positionable in a spaced relationship over a rotating flexible surface to process randomly oriented coins of varying diameters and place them in a single layer, single file, comprising:
guide means for guiding said randomly oriented coins to provide a queue of coins including stacked pairs of coins having a first diameter and other ones of said coins having a larger second diameter;

engagement means for engaging and blocking passage of one of said stacked pair of coins;

a coin-depressing means positioned in the path of travel of said queue for permitting unrestricted travel of said stacked pair of coins to said engagement means and for depressing coins having said second diameter into said



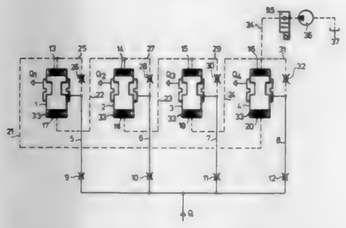
flexible surface for travel unrestricted by said engagement means, whereby when said head is operated with said surface rotating said coins are processed into a single layer and a single file ready for sorting by denomination, even when processing coins of said second diameter having a thickness approximating or greater than the height of said stacked pair of coins.

4,564,038

HYDRAULIC FLOW DIVIDER/INTEGRATOR WITH REGULATING SLIDE VALVES WITH SINGLE CONTROL EDGE FOR TWO OR MORE CONSUMERS

Gábor Kálmánczhelyi, Budapest, Hungary, assignor to Danuvia Kozponti Szerszam-es Keszulekgyar, Budapest, Hungary

Filed Jan. 27, 1984, Ser. No. 574,598
Claims priority, application Hungary, Feb. 1, 1983, 327/83
Int. Cl.⁴ G05D *11/03*
U.S. Cl. 137—101 **3 Claims**



1. A hydraulic flow divider and integrator for operating a plurality of hydraulic loads comprising:

a source of pressurized hydraulic fluid;

a plurality of slide valves each connected between a respective load and said source and subjected to hydraulic pressure bias from opposite ends by respective regulating spaces at the opposite ends of each slide valve, said slide valves each having an inlet communicating with said source;

a respective throttle connected between each inlet and a respective one of said regulating spaces of a respective slide valve functioning to bias the respective slide valve in a valve opening direction;

means communicating between each one of said regulating spaces and the other regulating space of another of said slide valves whereby a tendency to open one of said slide valves results in a reciprocal tendency to close the others of said slide valves; and

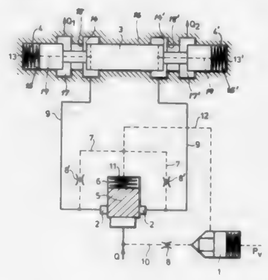
means independent of said slide valves for pressuring the said one of said spaces of at least one of said slide valves for locking same in an open state.

4,564,039

HYDRAULIC DIFFERENTIAL LOCKING DEVICE WITH ADJUSTABLE SENSITIVITY

Gábor Kálmánczhelyi, Budapest, Hungary, assignor to Danuvia Kozponti Szerszam-Es Keszulekgyar, Budapest, Hungary

Filed Jan. 27, 1984, Ser. No. 574,597
Claims priority, application Hungary, Feb. 1, 1983, 326/83
Int. Cl.⁴ G05D *11/03*
U.S. Cl. 137—101 **1 Claim**



1. A hydraulic differential locking device comprising:

a housing;

a slide valve displaceable in said hosing and formed with first and second control edges;

first and second valve passages formed in said housing and connected to respective first and second hydraulic loads, said first valve passage being formed with a third control edge juxtaposed with said first control edge and said second valve passage being formed with a fourth control edge juxtaposed with said second control edge, whereby displacement of said slide valve varies oppositely the respective spacings between said first and said third control edges and between said second and said fourth control edges;

first and second chambers in said housing, each chamber formed at a respective endface of said slide valve, said slide valve being formed with a first passageway communicating between said first valve passage and said first chamber and a second passageway communicating between said second valve passage and said second chamber, said first and second chambers each being provided with a respective spring disposed therein and acting on the respective endface of said slide valve biasing same into a centered position wherein the spacings are equal;

a primary hydraulic circuit connecting said first and second valve passages with a high-pressure hydraulic source for feeding a pressure flow to said first and second hydraulic loads, said primary circuit being provided with a flow-splitting variable throttle valve between said high pressure source and said first and second valve passages and having a first spring-loaded member acting against said high pressure source, whereby when the forces acting on said first and second hydraulic loads are equal the pressures in said first valve passage and the first chamber and said second valve passage and said second chamber are in equilibrium and said slide valve remains in a centered position and the pressure flow through said first and second valve passages is equal and when the forces acting on said first and second hydraulic loads is unequal the respective pressures become unequal, whereby when the inequality of the respective pressures is sufficient to overcome the resistance of a respective spring, said slide valve is displaced and the spacings become unequal, so that the pressure flow through said first and second valve passages becomes unequal; and

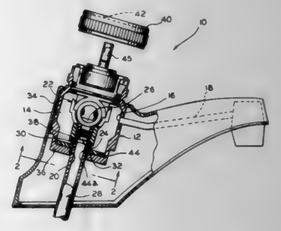
a secondary hydraulic circuit connecting said first and second valve passages and said first spring-loaded member with said high-pressure hydraulic source, said secondary circuit being provided with a check valve between said first and second valve passages and said first member and said pressure source and having a second spring-loaded member acting against said high pressure source and held in a flow closing position by an external control pressure, with at least one fixed throttle valve between said high pressure source and said check valve and at least one fixed throttle valve each between said first valve passage and said check valve and between said second valve passage and said check valve, whereby upon the removal of said external control pressure, the pressure flow from said high pressure source acts on said second member to open same and allow the pressure flow to act on said first member to close said variable throttle valve, whereby the pressure from said source can flow through the fixed throttle valves to said first and second valve passages, said springs being dimensioned to maintain said slide valve centered until the imbalance of pressure reaches about 10%.

4,564,040

FAUCET AND LIQUID SUPPLY TUBE THEREFOR

John Rudelick, Milwaukee, Wis., assignor to Milwaukee Faucets (Div. of Universal-Rundle Corporation), Milwaukee, Wis.

Filed Jan. 24, 1983, Ser. No. 460,566
Int. Cl.⁴ F16K *51/00*
U.S. Cl. 137—454.6 **13 Claims**



1. A faucet, comprising:

a body portion defining a valve chamber, said valve chamber having a discharge opening communicating with a spout, said body portion including a generally cylindrical wall terminating in a closed end having a bore defining an inlet opening;

a control valve received in said valve chamber, said control valve having an inlet passage communicating with said inlet opening, said control valve having a discharge port communicating with said discharge opening;

a flexible non-metallic liquid supply tube adapted to have one end associated with said inlet opening, said liquid supply tube having an area of increased wall thickness defining an enlarged head terminating in a shoulder at the end associated with said inlet opening, said liquid supply tube having a substantially uniform inner diameter for carrying liquid through said inlet opening and into said inlet passage, said liquid supply tube being adapted to be inserted through said bore in said closed end until said shoulder of said liquid supply tube is resting about said bore in said closed end on the side facing said valve chamber;

seal means associated with said enlarged head externally of said liquid supply tube;

means for radially confining said seal means to prevent spreading of said seal means and leakage; and

a threaded cap adapted to be secured to said wall of said body portion to form a closed top having an opening for receiving a stem of said control valve directly opposite said closed end;

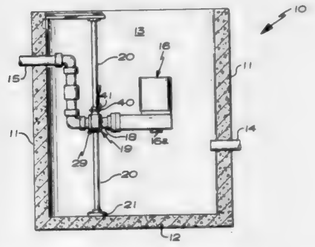
said control valve being adapted to be inserted into said valve chamber without tools after insertion of said liquid supply tube, said seal means being disposed between the top of said enlarged head and the bottom of said control valve and coaxial with said inlet passage in said control valve, said inlet passage being disposed substantially coaxial with respect to said liquid supply tube and having a diameter substantially the same as the inner diameter of said liquid supply tube, said liquid supply tube, seal means, control valve and threaded cap being arranged such that said threaded cap can be tightened without tools to cause said control valve to force said seal means into radially confined sealing engagement with said enlarged head of said liquid supply tube.

4,564,041

QUICK DISCONNECT COUPLING DEVICE

Dean C. Kramer, Mason City, Iowa, assignor to Martinson Manufacturing Company, Inc., Sheffield, Iowa

Continuation-in-part of Ser. No. 547,328, Oct. 31, 1983, abandoned. This application Aug. 27, 1984, Ser. No. 644,224
Int. Cl.⁴ F16L *5/00;* **F04B** *39/14*
U.S. Cl. 137—565 **5 Claims**



1. A quick disconnect coupling device for coupling the discharge outlet of a sump pump with the outlet pipe through which waste water is discharged, the sump pump being positioned in a sump and having an intake through which waste water from the sump inlet is directed, said device comprising:

a pair of vertically disposed coupling members formed of a chemically inert metallic material and each including a vertically disposed body and a cylindrical internally threaded coupling element integral with said body and extending horizontally therefrom, the cylindrical coupling element on one coupling member being connected in communicating relation with the discharge outlet of the sump pump and the cylindrical coupling element of the other coupling member being connected in communication relation with the outlet pipe,

one of said coupling members including means integral with said body and defining a pair of vertical guide ways adjacent the marginal portions of said body of said one coupling member, the other of said coupling members having vertical guide elements integral with the body thereof adjacent the marginal portions of the latter and engaging said guide ways to couple the coupling members together so that the coupling elements thereof are in registering relation with each other, the body of said other coupling member having a horizontal flange on the upper portion thereof engaging the upper portion of the body of said one coupling member when said coupling member is in coupled relation to position said coupling in registering relation with each other,

a pair of laterally spaced apart, substantially parallel vertical guide rails in the sump and extending upwardly therefrom, one coupling member having a pair of cylindrical rail engaging elements integral therewith adjacent opposite

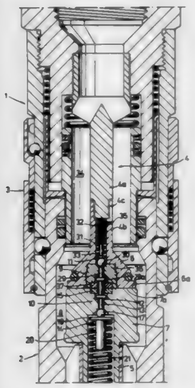
sides of the body thereof, the other coupling member having a pair of rail engaging elements integral with the horizontal flange thereof, said rail engaging elements of each coupling member engaging the guide rails to guide the associated coupling member during vertical movement of the latter.

4,564,042

PRESSURE-REDUCTION DEVICE FOR PRESSURIZED COUPLING MEMBERS

Kjell R. Ekman, Aberenrain 43, CH-6340 Baar, Switzerland

Filed Sep. 13, 1984, Ser. No. 650,152
Claims priority, application Sweden, Sep. 22, 1983, 8305130
Int. Cl.[4] F16L *37/28*
U.S. Cl. 137—614.05 **14 Claims**



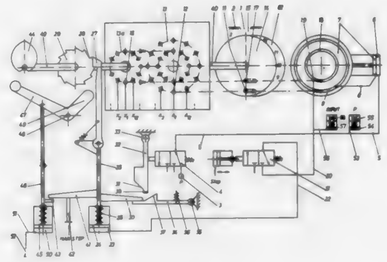
1. A pressure-reduction device for a quick coupling having first and second parts, at least said first part being provided with said device and including a first valve member having a valve body by means of which a first passageway for a fluid is able to be opened and closed, said device comprising a spherical member arranged in said valve body so as to be capable of bearing against a seat in a closed position in response to a biasing effect of a spring member positioned in a first recess defined by a wall of said valve body, and a pressure pin held in a second recess in said valve body by means of a bushing capable of interacting with a flange on an intermediate portion of said pressure pin, one end of said pressure pin being capable of interacting with said spherical member and another end of said pressure pin being capable of interacting with said second part of the coupling; said spring member biasing said spherical member against said seat via a power transmission member which is guided by the wall of said first recess; said spherical member being arranged to be moved to an open position against the biasing effect of said spring member by said pressure pin as the first part of the coupling is connected to the second part of the coupling so as to open a second passageway for said fluid before said first passageway is opened by the valve body of said first valve member; and said opening of said second passageway causing a pressure-reduction effect in the first part of the coupling by diverting a small quantity of said fluid from the inside to the outside of the first part of the coupling via said second passageway.

4,564,043

STEPPING VALVE

Karl Trittler, Aldingen, Fed. Rep. of Germany, assignor to J. Hengstler KG., Aldingen and Festo KG, Esslingen, both of, Fed. Rep. of Germany

Filed Jul. 3, 1984, Ser. No. 627,432
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326134
Int. Cl.[4] F15B *18/00*
U.S. Cl. 137—624.18 **22 Claims**



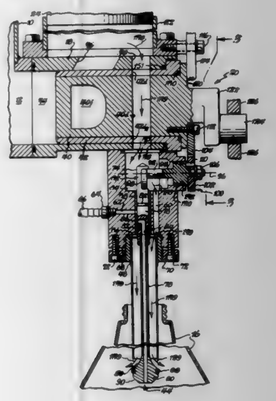
1. In a stepping valve comprising
a plurality of fluid outlets for delivering a pneumatic actuating fluid for performing respective operations,
a plurality of feedback inlets, each of which is associated with one of said fluid outlets and adapted to receive a pneumatic feedback signal indicating that the operation performed by actuating fluid from the associated fluid outlet has been completed,
an actuating fluid inlet adapted to be connected to a source of pneumatic actuating fluid,
a non-rotatable valve body having a port face formed with a first circular series of fluid inlet ports and with a second circular series of fluid outlet ports, said first and second circular series being concentric to each other, said fluid inlet and outlet ports communicating with respective ones of said feedback inlets and fluid outlets, each of said feedback inlet ports and one of said fluid outlet ports constituting a pair of ports,
a rotatable valve member, which is concentric to said first and second series of fluid ports and formed with radially spaced apart first and second through passages, each of which opens on the side of said valve member facing said port face and on the opposite side of said rotary valve member, said rotatable valve member being rotatable to a plurality of angularly spaced apart positions in each of which said first and second through passages register and communicate with said feedback inlet port and said fluid outlet port of one of said pairs of fluid ports,
drive means operable to rotate said rotary valve member in successive steps to successive ones of said angularly speed apart positions,
drive control means for controlling the operation of said drive means in response to said feedback signals, said drive control means having a feedback signal inlet, and
coupling means for coupling said feedback control inlet to said first through passage for connecting said actuating fluid inlet to said second through passage,
the improvement residing in that
said coupling means comprise a sealing piston, which is held against rotation and disposed on said opposite side of said rotatable valve member and has a sealing face facing said opposite side of said rotatable valve member, said sealing piston being axially movable into and out of sealing engagement between said sealing end face and said opposite side of said rotatable valve member, said sealing piston having first piston passage means communicating with said feedback signal inlet and second piston passage means communicating with said actuating fluid inlet, said first and second piston passage means being arranged to communicate with said first and second through passages, respectively, when said sealing end face of said piston is in sealing engagement with said rotatable valve member on said opposite side thereof and said rotatable valve member is in any of said angularly spaced apart positions,
spring means are provided, which urge said sealing piston away from said rotatable valve member,
signal-generating means are provided for generating a step completion signal in response to the completion of each of said steps,
pressure-applying means are provided for applying pneumatic pressure from said actuating fluid inlet to said sealing piston in response to each of said step completion signals to force said sealing piston toward said rotatable valve member against the action of said spring means, and
pressure-relieving means are provided for pressure-relieving said piston in response to each of said feedback signals.

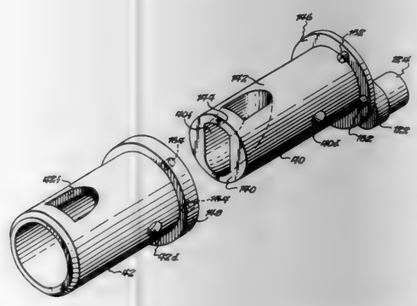
4,564,044

ROTATABLE VALVE ASSEMBLY

Victor Biller, Penfield, N.Y., and Adelmar Faessler, Hendersonville, N.C., assignors to Figgie International Inc., Willoughby, Ohio

Filed Mar. 12, 1984, Ser. No. 588,861
Int. Cl.[4] F16K *11/085, 25/00*
U.S. Cl. 137—625.24 **7 Claims**





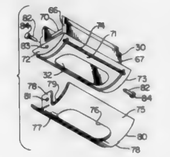
1. A rotatable valve assembly for an apparatus of the character described, and capable of being received within a valve body having a cylindrical valve bore therein, said rotary valve assembly comprising:
a substantially solid valve plug provided with a suction inlet at one end, a radially outwardly extending flange at the other end, a main body portion which extends from said one end to said flange, said portion having a cylindrical surface, and an intermediate discharge port in said main body portion and intersecting said cylindrical surface at a pair of opposed locations, said suction inlet also intersecting said cylindrical surface at another location;
a generally cylindrical rotary valve sleeve, the diameter of the inner cylindrical surface of the sleeve being approximately the same as the diameter of the cylindrical surface of the main body portion of the valve plug, and the outer cylindrical surface of the sleeve being approximately the same diameter as the cylindrical bore of the valve body so that the valve sleeve may be telescopically received therein, said valve sleeve being provided with a first opening and a pair of opposed second openings, all of said openings capable of being simultaneously aligned with the suction inlet and the discharge port in the valve plug, respectively;
alignment means extending between a radially outwardly extending surface of said flange adjacent the cylindrical surface on said valve plug and one end of the sleeve to hold the parts in their desired assembled relationship but permitting disassembly of the parts, said alignment means causing the valve sleeve to rotate when the valve plug is rotated; and
seal means between said cylindrical surfaces to insure that there is no contamination past the seal means.

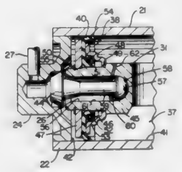
4,564,045

REVERSING VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME

Rudolf K. Koch, and Octávio F. Affonso, both of Rua Tronca, 1370 - Caxias do Sul - C.P. 308, Brazil

Filed Jun. 18, 1984, Ser. No. 621,608
Int. Cl.[4] F16K *11/02, 31/122*
U.S. Cl. 137—625.43 **10 Claims**





1. In a reversing valve construction having a housing means provided with a chamber carrying a movable valve member therein that controls port means of a valve seat means of said housing means through the relative position of a cavity of said valve member relative to said port means, said port means comprising first, second and third ports disposed in spaced apart and straight line relation and said cavity bridging said first and second ports while exposing said chamber to said third port when said valve member is in one position thereof and bridging said second and third ports while exposing said chamber to said first port when said valve member is in another position thereof, said valve member carrying a flexible annular sealing member that is disposed between an annular surface of said valve member and said valve seat means and surrounds

said cavity to seal said cavity to said valve seat means while permitting sliding movement therebetween, said housing means carrying biasing means that is operatively associated with said valve member and said housing means to urge and flex said sealing member into sealing engagement with said valve seat means so as to tend to sealingly conform said flexible sealing member to the contour of said valve seat means, the improvement wherein said valve member has a rigid annular projection extending from said annular surface thereof and engaging said annular sealing member outboard of and around said cavity.

6. In a reversing valve construction having a housing means provided with a movable valve member therein that is operatively interconnected to a piston unit disposed in said housing means and having opposed piston heads each of which is disposed in sliding and sealing engagement with an internal peripheral surface of said housing means so as to define a main chamber between said piston heads and a pair of outboard control chambers respectively between said piston heads and opposed ends of said housing means, each said piston head having bleed orifice means interconnecting its respective control chamber to said main chamber, each said piston head having a poppet valve member for closing a valve seat carried by the respective end of said housing means and leading to its respective control chamber, the improvement wherein each said poppet valve member has a stem provided with an end that is universally mounted to its respective piston head so as to self-align said poppet valve member with its respective valve seat when moved thereagainst by said piston unit, each said piston head having an opening therein receiving said stem of its respective poppet valve member and leading to its respective control chamber, each said opening defining an end surface thereof in its respective piston head against which said end of said stem of its respective poppet valve member universally engages, said bleed orifice means of each said piston head interconnecting said main chamber to its respective opening and, thus, to its respective control chamber.

4,564,046

SOLENOID VALVE

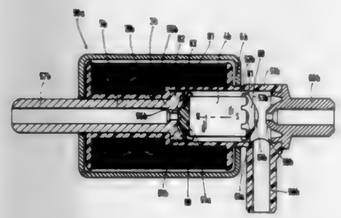
Corneliu Lungu, Bühlertal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 432,395, Sep. 30, 1982, Pat. No. 4,524,797. This application Jul. 14, 1983, Ser. No. 513,988

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, 3206692

Int. Cl.⁴ F16K *31/08, 11/04*

U.S. Cl. 137—625.65 **7 Claims**



1. A solenoid valve, including an exciter coil and an armature in the form of a permanently magnetic bar which is coaxially movable in said coil and polarized in the direction of its axial movement, comprising a first magnetic flux conducting member of a soft magnetic material which is inserted partially into said coil to form a limit stop for a rest position of the armature, a second magnetic flux conducting member of a soft magnetic material adjoining said coil in the range of movement of the armature and being spaced from the armature by an air gap, the cross-section of said second magnetic flux conducting member when viewed in the direction of movement of the armature, being in the range of said air gap shorter than the axial dimension of the armature to close magnetic force lines holding said armature in said rest position when said coil is deenergized; at least one valve seat facing an end face of the armature, an annular magnetically conductive piece having on its periphery a plurality of clamping fingers attached to a peripheral portion of the armature, and a valving element of a non-magnetic material held in position on said end face and projecting through said annular piece to cooperate with said valve seat.

4,564,047

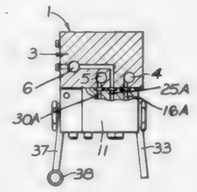
CONTROL VALVE

Lewis R. B. Bower, Wakefield, United Kingdom, assignor to Fletcher Sutcliffe Wild Limited, Wakefield, England

Filed Mar. 27, 1984, Ser. No. 593,807

Int. Cl.⁴ E03B *3/00*

U.S. Cl. 137—627.5 **15 Claims**



14. A control valve particularly for effecting control of a hydraulic circuit comprising: a plurality of first valve means, each including a first valve body; a hydraulic fluid supply port, a hydraulic fluid exhaust port, and a hydraulic fluid delivery port provided in said first valve body; means for normally biasing each of said first valve means to a position for making fluid flow connection between said delivery port and said exhaust port, and for closing said supply port; and first manual control means associated with each first valve means for manually displacing its associated first valve means to a first extent in a first direction for causing closure of said connection between said delivery port and said exhaust port and to a further extent in said first direction for opening a fluid flow connection between said delivery port and said supply port; and a second valve means including a second valve body; a second inlet port connectable to a source of hydraulic fluid, a second hydraulic fluid exhaust port, and a second hydraulic fluid delivery port provided in said second valve body, said second delivery port being connectable to said supply port of each said first valve body; means for normally biasing said second valve means to a position for making fluid flow connection between said second delivery port and said second exhaust port, and for closing said second inlet port; and second manual control means for manually displacing said second valve means to a first extent in a second direction which is opposite to said first direction for causing closure of said connection between said second delivery port and said second exhaust port, and to a further extent in said second direction for opening a fluid flow connection between said inlet port and said delivery port, to make fluid available to said supply port of each of said first valve bodies; whereby a hydraulic pressure is only transmitted from said control valve when there is activated not only at least one said first manual control means of one said first valve body, but also said second manual control means of said second valve body; wherein at least one of said first manual control means and second manual control means are located sufficiently closely to one another to be gripped by one hand of an operator for simultaneous operation.

4,564,048

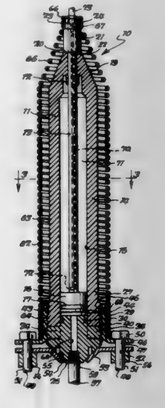
PRESSURE ACCUMULATOR WITH COMPOSITE HELICAL SPRING

Paul H. Taylor, Grand Island, N.Y., assignor to Tayco Developments, Inc., North Tonawanda, N.Y.

Filed May 25, 1984, Ser. No. 614,334

Int. Cl.⁴ F16L *55/04*

U.S. Cl. 138—31 **27 Claims**



1. A pressure accumulator comprising a cylinder having first and second cylinder ends, a piston in said cylinder, a bore in said first cylinder end, a piston rod attached to said piston and extending through said bore, a fluid inlet at said second cylinder end for conducting fluid into said cylinder, an external portion on said piston rod located outside of said cylinder, a helical spring encircling said cylinder, first and second spring ends on said helical spring, first attachment means fixedly coupling said first spring end to said external portion of said piston rod, and second attachment means coupling said second spring end to said cylinder remote from said first end.

4,564,049

WEAVING DEVICE

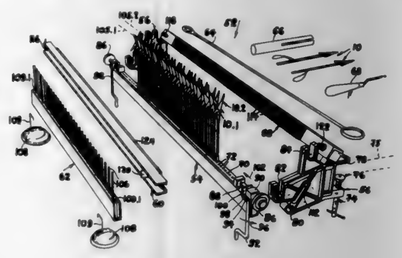
Rüdiger O. M. Allihn, Bellville, South Africa, assignor to Eager Weaver (Proprietary) Limited, Cape Town, South Africa

Filed Jan. 5, 1984, Ser. No. 568,410

Claims priority, application South Africa, Jan. 6, 1983, 83/0064

Int. Cl.⁴ D03D *29/00*

U.S. Cl. 139—33 **12 Claims**



1. A weaving device, which includes
(a) a support base adapted to support a number of weaving needles in spaced substantially parallel relationship;
(b) two groups of weaving needles, each needle having a longitudinal axis and being adapted to be supported removably at one end by the support base, each needle further having a needle body, a free projecting tip at one end of the needle body and, remote therefrom, attachment means for attachment of a warp thread; and
(c) moving means adapted for causing at a first instance tips of the first group of needles to be on a first substantially straight line and the tips of the second group of needles to be on a second substantially straight line, and at a second instance the tips of the first group of needles to be moved to be on a third substantially straight line.

4,564,050

METHOD FOR STARTING THE OPERATION OF A LOOM

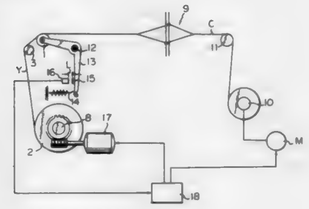
Hideo Hirano, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Feb. 23, 1984, Ser. No. 583,058

Claims priority, application Japan, Feb. 28, 1983, 58-31986

Int. Cl.⁴ D03D *49/04*

U.S. Cl. 139—97 **8 Claims**



1. A method for starting the operation of a loom from a stationary condition, comprising the steps of:
a. presetting a first value V_1 in a control unit, which corresponds to first wrap tension T_1 desirable for starting the loom operation, as well as a reference value O corresponding to a standard warp tension T_0 during normal weaving,
b. detecting tension T of a warp let off from a warp beam,
c. comparing the detected value V corresponding to the tension T to the preset value V_1 in the control unit,
d. outputting, when both values V_1 and V are different from each other, a command signal for rotating the warp beam in the normal or reverse direction until both values V_1 and V coincide with each other, to means for driving the wrap beam independently from the remaining part of the loom,
e. starting the operation of the loom after the first warp tension T_1 has been attained as a result of step d, and
f. controlling the loom operation so that the standard warp tension T_0 is attained.

4,564,051

MULTIPLE PLY DEWATERING SCREEN PARTICULARLY FOR A WEB FORMING PART OF A PAPER MAKING MACHINE

Heinz Odenthal, Monheim, Fed. Rep. of Germany, assignor to Andreas Kufferath GmbH & Co. KG, Dueren-Mariaweiler, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 631,936

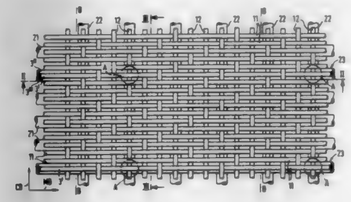
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3325780[U]; Jul. 16, 1983, 8320610

Int. Cl.⁴ D03D *13/00*

U.S. Cl. 139—425 A **10 Claims**

1. A multi-ply dewatering screen for use in a paper making machine, comprising at least two fabric plies made of longitudinal and traverse filamentary elements whereby the top side of the normally upper ply represents the top side of the screen and the lower side of the lowermost ply represents the machine side of the screen; the plies being tied together at different tie points; the longitudinal and traverse filamentary elements in the upper ply being mono- or multi- or staple-filaments; a part

of the longitudinal and/or traverse filamentary elements in the lowermost ply being mono- or multi- or staple-filaments and another part being in the form of non-twisted bundles of component filaments; the thickness of each bundle corresponding substantially to the thickness of the mono- or multi- or staple-filaments in the lowermost ply; said the points between the plies being formed, respectively, by passing a component fila-



ment of a bundle over at least one crossing mono- or multi- or staple-filament in the upper ply and diverting a corresponding mono- or multi- or staple-filament in the upper ply under the crossing mono- or multi- or staple filaments in the latter and the thickness of the component filaments forming tie points in the upper ply corresponding substantially to that of the mono- or multi- or staple-filaments in the upper ply.

4,564,052

DOUBLE-LAYER FABRIC FOR PAPER MACHINE SCREEN

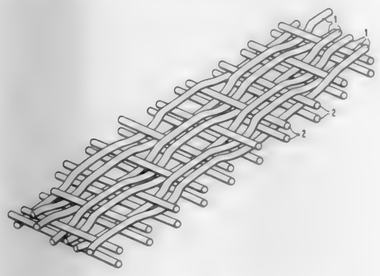
Georg Borel, Reutlingen, Fed. Rep. of Germany, assignor to Hermann Wangner GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 443,053, Nov. 19, 1982, abandoned. This application Nov. 28, 1984, Ser. No. 676,208

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1981, 3146385

Int. Cl.⁴ D03D *15/00*; D21F *1/10*

U.S. Cl. 139—425 A **3 Claims**



1. A paper machine forming fabric comprising a double layer woven fabric, said fabric having longitudinally extending warp wires and two layers of transversely extending weft wires, at least part of the warp wires being interwoven with the weft wires of both said layers, said fabric being characterized in that said warp wires are passed pair-wise in parallel over at least two weft wires on the paper side of the fabric and in that, in the fabric interior, said warp wires of each pair extend at an angle with respect to each other, and form an opening in the transverse direction.

4,564,053

WEFT GRIPPER DRIVE FOR LOOMS

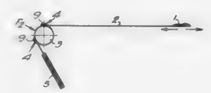
Philippe van Bogaert, Brussel, Belgium, assignor to N.V. Weefautomaten Picanol, Ieper, Belgium

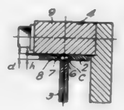
Filed Mar. 21, 1984, Ser. No. 591,986

Claims priority, application Belgium, May 18, 1983, 2/60094

Int. Cl.⁴ D03D *47/00*

U.S. Cl. 139—449 **8 Claims**





1. A weft gripper drive for looms of the type comprising a flexible perforated tape at one end of which a gripper is fixed and an oscillating gear-wheel that enmeshes with the said tape along an arc of its circumference, whereby guiding devices are provided at the points where the tape leaves the wheel, characterized thereby that the tooth height of the wheel is smaller than the thickness of the tape and that the form and dimensions of the teeth and of the perforations barely allow a mutual enmeshment, whereby the side of the tape directed towards the wheel, in the enmeshment zone, is tangent to the root circle of the gearing of the wheel.

4,564,054

FLUID TRANSFER SYSTEM

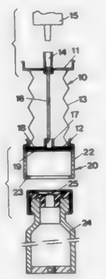
Bengt Gustavsson, Bergsbogatan 29, Västra Frölunda, Sweden (421079)

Continuation-in-part of Ser. No. 536,647, Sep. 28, 1983, abandoned. This application May 2, 1984, Ser. No. 606,184

Claims priority, application Sweden, Mar. 3, 1983, 8301176

Int. Cl.⁴ B65B *3/04*

U.S. Cl. 141—329 **27 Claims**



1. A fluid transfer system for transferring a substance from a first vessel to a second vessel avoiding contamination, said system being attached or connectible to said first vessel or a cover enclosing the first vessel, comprising:

(1) a first member hermetically enclosing a puncturing member provided with a passageway, said first member having a first sealing member for being passed and retracted therethrough, at which the sealing effect of said sealing member is maintained after retraction of the puncturing member;

(2) a second member having a second sealing member; mating connection means arranged on said first and second members for providing a releasable locking of said members with respect to each other, said sealing members in the connected position of the first and second members being located in a position with respect to each other so that they can be penetrated by the puncturing member, wherein after transfer of said substance the puncturing member is retractable to a position in which said puncturing member is hermetically enclosed in said first member and the first and second members are disconnectable from each other.

4,564,055

MOLDING PROFILE OF TIRE CARCASSES

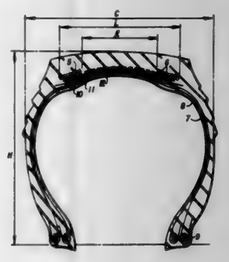
Giuliano Ghilardi, Milan, Italy, assignor to Societa Pneumatici Pirelli S.p.A., Milan, Italy

Continuation of Ser. No. 229,505, Jan. 29, 1981, abandoned. This application Feb. 2, 1983, Ser. No. 463,241

Claims priority, application Italy, Feb. 29, 1980, 20247 A/80

Int. Cl.⁴ B60C *3/00, 9/22*

U.S. Cl. 152—450 **6 Claims**



1. A pneumatic tire for motor vehicles comprising a toric-shaped radial carcass of one or more plies of rubberized cord fabric, a tread band on a crown portion of said carcass, a breaker structure inserted between said tread band and said carcass, a pair of sidewalls connected through shoulders to said tread band and terminating radially inwardly with bead portions, said breaker structure comprising at least two radially superimposed layers of metallic crossed cords, parallel to each other in each layer and crossed with those of an adjacent layer and symmetrically inclined with respect to the circumferential direction of the tire at an angle between 10° and 30°, said layers being staggered one with the other at their extremities, and comprising also a restraining structure extending circumferentially at each edge of said breaker structure, the axial outer border of said restraining structure being substantially coincident with that of the widest metallic crossed cord layer, wherein said carcass ply or plies have, after molding and vulcanizing, a cross-section profile with a curvilinear tract, adjacent to each shoulder, whose concavity is directed towards the outside of the tire, the axial outer extremity of said tract being substantially coincident with the axial outermost portion of said restraining structure.

4,564,056

VALVE FOR WHEELS FOR TUBELESS BICYCLE TIRES

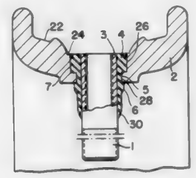
Heinrich Doring, Arolsen, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Oct. 19, 1983, Ser. No. 543,267

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3238928

Int. Cl.⁴ B60C *29/00*

U.S. Cl. 152—427 **12 Claims**



1. A valve for a wheel for a tubeless bicycle tire having mounted beads, said wheel having a wellbase including a base of a narrow bicycle rim which is provided with a valve opening for receiving said valve sealingly therein regardless of overall dimensional limitations thereof; said vlave comprising:

a valve body having two end portions, with the axially outer one of said end portions being provided with a cylindrical projection having an outer dimension; the base of said wellbase of said rim of said wheel being provided with a valve opening recess having an inner dimension, and the outer dimension of said cylindrical projection corresponds to the inner dimension of said valve opening recess in such a way that in the installed state of said valve, the axially outer end portion of said valve body is flush with the base of said well base of said rim so that said valve body is kept out of the way of the tubeless tire beads in the mounting position thereof on the narrow bicycle rim.

4,564,057

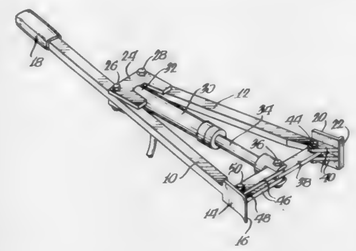
BEAD LOOSENING TOOL

Francis L. Zrostlik, Garner, Iowa, assignor to Iowa Mold Tooling Company, Inc., Garner, Iowa

Filed Nov. 21, 1983, Ser. No. 553,960

Int. Cl.⁴ B60C *25/00*

U.S. Cl. 157—1 **2 Claims**



1. A method of loosening an axially inner bead of a tire forming one of two slightly spaced tires mounted on repective adjacent wheels defining a dual wheel set without disassembling one wheel from the set or removing the set from a vehicle comprising the steps of:

(a) inserting a tool having two relatively movable surfaces between the tires of a dual wheel set while the wheels thereof are interconnected on a vehicle;

(b) locating one of said tool surfaces against the bead of one

of the tires while locating of other of said tool surfaces against the wheel mounting the other of the tires;

(c) moving said tool surfaces apart to loosen the bead of said one tire; and

if necessary to fully loosen the bead of said one tire, repeating steps (b) and (c) at one or more different locations about the periphery of the dual wheel set.

4,564,058

CONTROLLING THE FEEDING OF CASTING POWDER

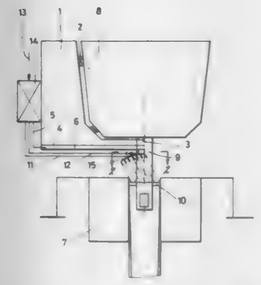
Hans Schrewe, Duesseldorf; Fritz-Peter Pleschiutschnigg, Dortmund; Hans van Bonn, Duisburg; Karl Hölter, and Gustav Wiegard, both of Witten, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf and Gustav Wiegard Maschinenfabrik, Witten, both of, Fed. Rep. of Germany

Filed Jul. 20, 1979, Ser. No. 59,266

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833867

Int. Cl.⁴ B22D *27/00*

U.S. Cl. 164—72 **4 Claims**



1. Apparatus for the control of feeding casting powder to a mold for continuous casting, there being a storage bin for powder having an outlet and a perforated bottom underneath of which is disposed a plenum chamber, the apparatus comprising:

gas feeder means connected to the plenum chamber;

pneumatic control means disposed in the gas feeder means to adjust a rate of flow of gas through the feeder means, thereby adjusting the pressure in the plenum chamber and the amount of gas forced into the bin to cause fluidization of powder therein and fluid-like outflow of powder onto molten metal in the mold;

a metal sheet disposed adjacent to the surface of molten metal in the mold and being heated by radiation therefrom; and

a temperature-sensitive element operatively connected to the sheet for being heated by the sheet, having, in turn, been heated by said radiation, and providing a signal representing accordingly the surface temperature of the content of the mold, the element being connected to the control means for causing the control means to provide the adjustment in response to said signal.

4,564,059

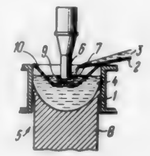
METHOD FOR CONTINUOUS CASTING OF LIGHT-ALLOY INGOTS

Vladimir I. Dobatkin, Rezervny proezd, 8, kv. 252; Georgy I. Eskin, ulitsa Vavilova, 48, kv. 281; Stella I. Borovikova, Vinnitskaya ulitsa, 13, kv. 140; Robert R. Malinovsky, Leningradsky prospekt, 75, kv. 448, all of Moscow; Viktor K. Junyshev, Verkhnaya Salda, ulitsa K. Marxa, 11, kv. 41; Alexandr I. Matveev, Verkhnaya Salda, ulitsa K. Libknekhta, 12, kv. 34, both of Sverdlovskaya oblast; Gennady S. Makarov, ulitsa Matveevskaya, 10, korpus 2, kv. 64, Moscow; Viktor A. Danilkin, ulitsa Bobruiskaya, 16, kv. 18, Moscow; Andrei D. Andreev, ulitsa Bobruiskaya, 20, kv. 69, Moscow; Boris I. Bondarev, Mozhaiskoe shosse, 80, kv. 113, Moscow; Petr N. Shvetsov, Barvikhinskaya ulitsa, 8, korpus 2, kv. 51, Moscow; Pavel E. Khodakov, Skolkovskoe shosse, 16, kv. 51, Moscow; Gennady V. Cherepok, prospekt Metallurgov, 73, kv. 54, Kuibyshev; Vladimir M. Baranchikov, ulitsa Isetskaya, 6, kv. 16, Kamensk-Uralsky, all of U.S.S.R.; Petr N. Silaeva, deceased, late of Sverdlovskaya oblast, U.S.S.R., and by Anna A. Silaeva, administrator, Verkhnaya Salda, ulitsa K. Libknekhta, 8, kv. 3, Sverdlovskaya oblast, U.S.S.R.

Continuation-in-part of Ser. No. 273,655, Jun. 13, 1981, abandoned. This application Dec. 23, 1983, Ser. No. 565,140

Int. Cl.⁴ B22D *27/02*

U.S. Cl. 164—478 **19 Claims**



1. A method for continuous casting of a light-alloy ingot, comprising:

pouring a melt material into a continuous casting mold,

applying an ultrasonic action to said melt by means of at least one radiator for purifying said melt and refining the structure of said ingot solidifying from said melt; said ultrasonic action being effected uniformly throughout the cross-section of said melt to form a cavitation zone, h, at an intensity of 2 to 60 W/cm² depending on the cross-sectional areas of said solidifying ingot, said radiator being immersed in said melt to a depth of 1/12 to 1/4 of the sound wavelength in said melt material, the temperature of said melt material being maintained between 60 to 150° C. above the liquidus temperature of said melt material wherein $W \approx S_1 \cdot h$; and

withdrawing ingot now having an extra refined structure.

4,564,060

RADIATOR INCLUDING A COVER THEREFOR

Rudolf Andres, Sindelfingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 661,209

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337780

Int. Cl.⁴ F01P *7/10*

U.S. Cl. 165—98 **3 Claims**

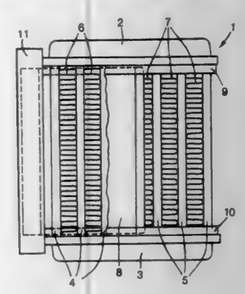
1. Radiator arrangement comprising:

a first group of cooling fluid tubes and cooling fins disposed for the flow of cooling air transversely thereto,

a second group of cooling fluid tubes and cooling fins disposed for the flow of cooling air transversely thereto,

said first and second groups being disposed in series one behind the other in the direction of flow of cooling air, and

movable cover means interposed in an interspace between said first and second groups, such that the functioning



capacity of the cover under adverse circumstances is improved.

4,564,061

COOLING SYSTEM FOR COMMUNICATIONS DEVICES WITH HIGH POWER LOSSES

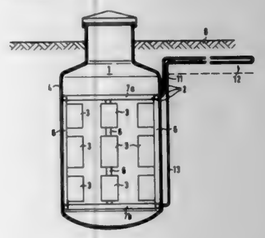
Erich Rauth, Auenwald, and Ernst Form, Sulzbach, both of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,425

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150166

Int. Cl.⁴ F28D *15/00*; H01F *27/10*

U.S. Cl. 165—104.33 **20 Claims**



1. A cooling system for communications equipment, said system comprising:

a closed container for housing the equipment and protecting the equipment against environmental influences, said container having an outer wall made of heat conductive material, and said container being constructed for burial of a major portion of said container in the earth and for a heat transfer relationship therewith;

a fluid filled conduit system including conduits disposed within said container and a conduit portion which is in heat transfer relationship with said outer wall and which has a fluid inlet positioned near the bottom of the container and a fluid outler positioned above the fluid inlet, said inlet and outlet being associated with said major portion, said conduit system further including outside disposed conduits arranged outside said container for burial in the earth and for a heat transfer relationship therewith, said outside disposed conduits including a riser conduit connected to said outlet for receiving heated fluid from said conduit portion and a down conduit connected to said inlet for delivering cooled fluid to said conduit portion; and

heat conducting means in thermal contact with the equipment and said wall for transmitting heat generated by the equipment to said wall and to said conduit system, wherein heat generated by said equipment is transferred to the fluid in said conduit system and heat in said fluid is transferred to the earth, said fluid being circulated in said conduit system solely due to temperature and density variations of said fluid.

10. A cooling system for communications equipment, said system comprising:

a closed container for housing the equipment and protecting the equipment against environmental influences, said container having an outer wall made of heat conductive material, and said container being constructed for burial of a major portion of said container in the earth and for a heat transfer relationship therewith;

a fluid filled conduit system including a conduit portion which is in heat transfer relationship with said outer wall and which has a fluid inlet positioned near the bottom of the container and a fluid outlet positioned above the fluid inlet, said inlet and outlet being associated with said major portion, said conduit system further including outside disposed conduits arranged outside said container for burial in the earth and for a heat transfer relationship therewith, said outside disposed conduits including a riser conduit connected to said outlet for receiving heated fluid from said conduit portion and a down conduit connected to said inlet for delivering cooled fluid to said conduit portion; and

heat conducting means comprising Peltier elements, said equipment being in thermal communication with said wall and said conduit system only via said Peltier elements for transmitting heat generated by the equipment to said wall and to said conduit system, wherein heat generated by said equipment is transferred to the fluid in said conduit system and heat in said fluid is transferred to the earth, said fluid being circulated in said conduit system solely due to temperature and density variations of said fluid.

4,564,062

RECIRCULATION HEAT EXCHANGER AND APPARATUS INCLUDING SAME

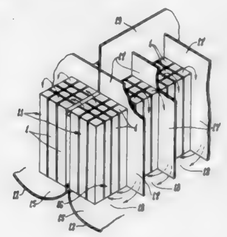
Edward E. McDougall, Mackay, Australia, assignor to Racecourse Co-Operative Sugar Association Ltd., Queensland, Australia

Filed Dec. 9, 1981, Ser. No. 329,055

Claims priority, application Australia, Dec. 9, 1980, PE6846

Int. Cl.⁴ F28F *13/06, 1/04, 9/02*

U.S. Cl. 165—108 **7 Claims**



1. A heat exchanger including, a group of open-ended tubes arranged substantially parallel to one another, each said tube being substantially rectangular in transverse cross-section, said group being formed by a plurality of substantially parallel and laterally spaced rows of said tubes, adjacent tubes of each said row being laterally spaced apart, the transverse cross-sectional area of the space between each two adjacent tubes of the same and different said rows is substantially smaller than the transverse cross-sectional area of each said tube, transverse spacer means at each of two opposite ends of said group closing-off the space between the terminal end portions of adjacent tubes of both the same and different said rows, a steam chamber

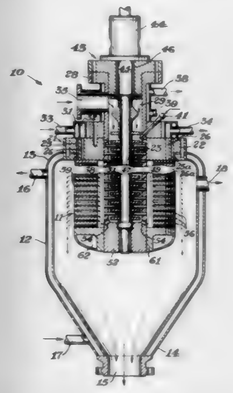
formed at least in part by the interconnected spaces between adjacent said tubes, a plurality of longitudinal spacer members provided at each of two opposite sides of said group of tubes, each said spacer member comprises a flat metal bar which extends in the longitudinal direction of said tubes and is located edgewise within the space and between a respective two adjacent said tubes, the transverse cross-sectional size of each said spacer member is substantially less than the transverse cross sectional size of the said space within which it locates, each said spacer member is located at the periphery of said group of tubes and closes off the space between the respective said adjacent tubes at the respective said side of the group of tubes, and the surface of each said tube which extends between each two adjacent said spacer members forms part of an external surface of said heat exchanger.

4,564,063

ANNULAR HEAT EXCHANGER

James E. Tollar, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 16, 1984, Ser. No. 600,935
Int. Cl.⁴ F28F *13/12;* **B01F** *15/06*
U.S. Cl. 165—109.1 **6 Claims**



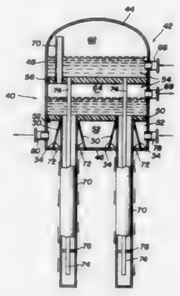
1. A devolatizing heat exchanger, the heat exchanger comprising a generally annular body having a first axially closed end and a second open end, the annular body having a generally annular wall and generally axially extending heat exchange fluid conduits generally uniformly axially disposed, within the body a plurality of generally radial conduits disposed in the annular wall, providing communication between an inside space defined by the annular wall and space external to the annular wall, the radial passageways having a length to diameter ratio of at least 4, the heat exchanger being disposed within a jacketed vessel having heat exchange fluid connections providing ingress and egress for a heat exchange fluid to a jacket of the jacketed vessel, the jacketed vessel having an upper end and a lower end, a volatile outlet port disposed between the upper and lower ends, the volatile outlet port providing communication between space internal to the jacketed vessel and space external thereto, a material discharge port at the lower end of the jacketed vessel, a header assembly directly affixed to the upper end of the jacketed vessel, the header assembly being of generally cylindrical configuration, the header assembly being partially disposed within and coaxial with the annular heat exchanger and partially external to the jacketed vessel, the header defining a generally cylindrical cavity within the header adjacent the heat exchanger, said cavity being generally coaxial with the heat exchanger, an annular space between the heat exchanger annular wall and header assembly defined by the heat exchanger and header assembly, a material supply passage defined by the header assembly disposed external to the jacketed vessel, the material supply passage being in communication with the header generally cylincrical cavity, the generally cylindrical cavity being in coummunication with the annular space between the heat exchanger and the header assembly at a location remote from the material supply passage and generally adjacent the first axially closed end of the generally closed body, a plurality of pins disposed within the cylindrical cavity of the header assembly, the pins extending generally radially inward, and a rotatable agitator rotatably disposed within the cylindrical cavity, the agitator having a plurality of blades adapted to interdigitate with the pins.

4,564,064

FALLING FILM HEAT EXCHANGER WITH MEMBER TO DISTRIBUTE LIQUID ON EXTERNAL SURFACES OF TUBES

Vincent F. Allo, Warrenville, and Donald C. Stafford, Hinsdale, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Division of Ser. No. 494,937, May 16, 1983, Pat. No. 4,519,448. This application Dec. 5, 1984, Ser. No. 678,419
Int. Cl.⁴ F28D *3/04*
U.S. Cl. 165—118 **6 Claims**



1. A falling film heat exchanger comprising:
a vessel having a top, bottom and side wall enclosing a liquid feed box in the bottom portion, and heat exchange liquid space in the top portion separated by a tube sheet;
a plurality of heat exchange tubes, supported by the tube sheet, extending downwardly in the feed box and out through oversized holes larger than the tubes in the vessel bottom, said tubes being closed at their lower ends and having their upper ends in fluid communication with the heat exchange liquid space;
a liquid feed distribution member surrounding each tube in the liquid feed box, said member being joined at a lower end to the vessel bottom around said oversized hole and means preventing liquid from flowing between the member upper end and the tube, said member having means which directs feed liquid, in the feed box, against the tube external wall and permits flow of liquid to the tube external wall only from said member;
means to deliver a liquid feed stream into the feed box; and
means to deliver a heat exchange liquid to the heat exchange liquid space and means to remove heat exchange fluid therefrom.

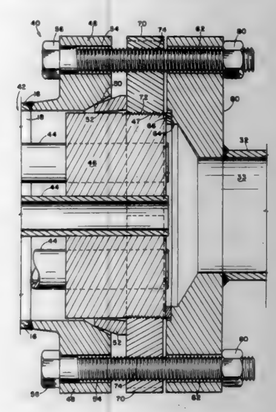
4,564,065

DUAL PURPOSE CLOSURE FOR HEAT EXCHANGES

Wf Roberts, 4731 S. Columbia Pl., Tulsa, Okla. 74105

Continuation-in-part of Ser. No. 551,573, Nov. 14, 1983. This application Aug. 17, 1984, Ser. No. 641,865
Int. Cl.⁴ F28F *9/26*
U.S. Cl. 165—158 **1 Claim**

1. An end closure for a heat exchanger of the type having a shell side enclosure and at least one tube within said shell, the closure comprising a shell flange attached to the end of said shell, a tube sheet encompassing said tube and situated within said shell adjacent said end, said tube sheet having peripheral threads, a tubular connection and a tube flange for said tubular connection, said tube flange in facing alignment with said shell flange, a thrust flange positionable between said shell flange and said tube flange, said thrust flange surrounding said tube sheet and including inner peripheral threads for interconnection with said tube sheet threads, means to seal between said



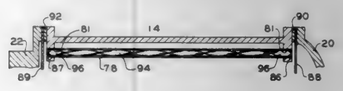
tube sheet and said shell side flange, and means to seal between said tube flange and said tube sheet, a plurality of axially aligned openings in said shell side, tube and thrust flanges to receive threaded connection bolts or studs to assemble said closure, said shell opening in said shell side flange and said tube flange being unthreaded and larger in diameter than said bolt, said opening in said thrust flange being threaded to match said threaded bolt, the head and nut for said bolt being outside said shell side flange and said tube flange whereby rotation of said bolt will apply compressive force of said thrust flange to said means to seal between said tube sheet and said shell side flange.

4,564,066

PERFORATE BEARING PLATE FOR TURBULATORS IN HEAT EXCHANGERS

Jeremy W. Gorman, 5 Cedar Hill Rd., West Simsbury, Conn. 06092

Continuation-in-part of Ser. No. 287,941, Jul. 29, 1981, abandoned. This application Aug. 9, 1983, Ser. No. 522,033
Int. Cl.⁴ F28F *13/02, 9/24, 13/12*
U.S. Cl. 165—158 **11 Claims**



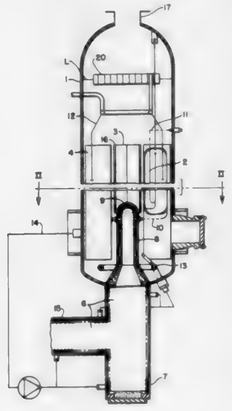
1. In a heat exchanger, the combination comprising:
an assembly of an elongated shell and first and second end mounted bonnets closing the respective ends of said shell, said assembly having an inlet and an outlet for passage of a heat exchange fluid therethrough;
a plurality of elongated tubes mounted within said shell for external contact by a heat exchange fluid, each of said tubes having first and second ends, all of said first ends substantially abutting a common geometric plane, said geometric plane having disposed therein a header plate having holes therein for receiving said tubes and each of said tubes being adapted for passage of a heat exchange liquid therethrough in physical isolation from the heat exchange fluid;
a generally helical elongated blade disposed within each of said tubes for free rotation and free axial movement, each of said blades having first and second end portions and a laterally centered pointed portion on at least said one of said end portions thereof, said blades having a diameter relative to that of said tube associated therewith, such as to cause said blade to pass in closely spaced relation to the inside surface of said tube during rotation of said blade, each of said end portions of said blades being disposed within said one end of one of said tubes; and
a bearing member having a substantially planar perforate face disposed within one of said bonnets in abutting relation to said one end portion of said blades and disposed in spaced relationship to said one end of each of said tubes and said header plate and also disposed in substantially parallel relationship to said header plate, whereby passage of the heat exchange liquid through said tubes from said second end portions to said first end portions thereof will cause the blades disposed therein to rotate within said tubes with said one end portion bearing upon said bearing member, said blade disturbing any stagnant layer or laminar film of the heat exchange liquid that might otherwise tend to form adjacent said inside surface of said tube, and thus promoting efficient heat transfer between the heat exchange liquid and the heat exchange fluid.

4,564,067

WASTE-HEAT TANK

Ulrich Premel, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Feb. 23, 1983, Ser. No. 468,895
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1982, 3206511
Int. Cl.⁴ F28D *7/10;* **F22B** *1/18*
U.S. Cl. 165—163 **4 Claims**



1. A waste-heat tank which is constructed as a pressure tank, is charged with coolant, and is connected downstream of a pressure gasification, said waste-heat tank comprising in combination:
a cooled feed device which has a tube-fin-tube construction and includes an ash container; and
a gas/liquid heat exchanger having an operative connection with said feed device, said heat exchanger including tubular elements equal in overall length which serve as heat exchange surfaces and are installed into locations defined

by wall components; each tubular element being formed of a tube having an axis which is located to extend generally parallel to the container axis of said waste-heat tank, and each tube itself being guided in a winding manner; said feed device including a closed-top finger-like end portion which is coated with refractory material and which is far less thermally burdened to permit elimination of constructively costly and complex cooling thereof; said tubular elements of said heat exchanger respectively being provided with feed tubes which respectively open into said closed-top finger-like end portion to effect said operative connection of said heat exchanger with said feed device without having to cool said feed tubes of said tubular elements which serve as the heat exchange surfaces and as a result thereof stress and corrosion problems caused by temperature at the same time can be structurally and procedurally controlled, and at least one polygonal insert forming an inner space therewith as well as conduit-like chambers disposed about said space, each of said tubular elements of said heat exchanger being arranged in said conduit-like chambers provided therewith so that due to said heat exchange surfaces, which are constructed as tubular elements, in connection with said cooled feed device, length of said waste-heat tank can be reduced by one meter; diameter thereof can be reduced by about 5%; and weight thereof can be reduced by about 10%.

4,564,068

EMERGENCY RELEASE FOR SUBSEA TOOL

Benton F. Baugh, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Nov. 22, 1983, Ser. No. 554,209
Int. Cl.⁴ E21B *23/06*
U.S. Cl. 166—123 **26 Claims**

1. A tool adapted for suspension from a drill string for running a casing hanger and a sealing assembly including a sealing member into a subsea wellhead, and for setting the sealing member in the annulus between the casing hanger and a surrounding tubular member by applying torque on the sealing assembly, comprising:

means for releasably attaching the casing hanger and the sealing assembly to the tool;

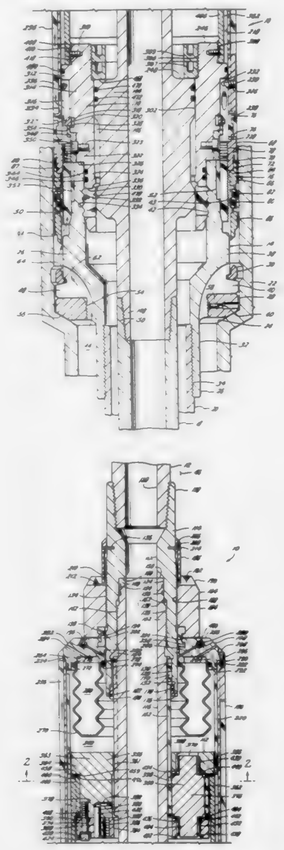
means for applying an axial compressive force on the sealing assembly and axially advancing the sealing member;

first means for releasing said releasably attaching means for disengaging the tool from the casing hanger, whereby the tool may be lifted up and removed to the surface in normal operations;

emergency release means for releasing said releasably attaching means for disengaging the tool from the casing hanger in the event said first means fail, whereby the tool may be lifted up and removed to the surface in emergency operations; and

wherein said means for applying an axial compressive force on the sealing assembly includes

means for receiving torque from the drill string; and



means for transmitting the torque to the sealing assembly to set the sealing member.

4,564,069

IN-PLACE WELLBORE CONSOLIDATION IN PETROLEUM RESERVOIRS USING SULFUR-OIL POLYMERS

Ian Rubinstein, and Raymond B. Woodford, both of Calgary, Canada, assignors to Exxon Production Research Co., Houston, Tex.

Filed Apr. 13, 1984, Ser. No. 600,272
Int. Cl.⁴ E21B *33/138, 43/02*
U.S. Cl. 166—288 **18 Claims**

10. A method for reducing said production from an unconsolidated subterranean hydrocarbon formation penetrated by a wellbore while leaving said formation permeable to the flow of formation fluids, said method comprising (a) injecting steam carrying droplets of elemental liquid sulfur into said formation, (b) allowing said injected sulfur to react with hydrocarbon in said formation to produce a consolidating agent in said formation radially from said wellbore and thus (d) reducing said production during hydrocarbon production from said formation.

4,564,070

HYDROCARBON RECOVERY PROCESS USING AN IN SITU SILICATE/POLYMER GEL

Charles J. Norton, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 337,638, Jan. 7, 1982, abandoned. This application Nov. 25, 1983, Ser. No. 554,875
Int. Cl.⁴ E02D *3/12;* **E21B** *33/138*
U.S. Cl. 166—295 **16 Claims**

1. A process for treating a porous earthen matrix with a silicate/polymer gel comprising the steps of:

injecting into said matrix an undried, water-soluble; partially hydrolyzed polyacrylamide, a water-soluble silicate and a gelling agent selected from the group consisting of water-soluble strong acids and water-soluble salts of strong acids; and

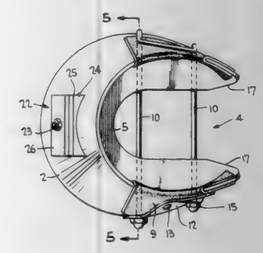
reacting a mixture of said partially hydrolyzed polyacrylamide, silicate and gelling agent in said matrix to form said silicate/polymer gel in situ.

4,564,071

HORSE SHOE

James M. Lee, South Orange, N.J., assignor to Barrett F. Kalb, Roseland, N.J., a part interest

Filed Oct. 31, 1984, Ser. No. 666,992
Int. Cl.⁴ A01L *3/00*
U.S. Cl. 168—19 **10 Claims**



1. A nailess reusable horse shoe comprising:

a molded polyurethane shoe having a substantially planar bottom and side walls extending upwardly from the outer edges of said bottom inclined at least at the frontal area from the front toward the rear to substantially conform with the inclination of the hoof;

said bottom and side walls extending from the frontal area rearwardly to form a substantially C-shaped cross-sectional configuration parallel to said bottom and open at the rear;

each side wall extending upwardly at least one half of the height of the hoof at the frontal part and having a downwardly sloping upper contoured edge toward the rear;

an opening in said bottom extending from the rear open end forwardly toward the front of said shoe and having a rounded front edge;

a rubber sole attached to the lower surface of said bottom;

at least one rod member extending below the upper surface of said bottom between said side walls;

retaining means on opposite ends of said at least one rod member engaging against respective surfaces of said side walls;

a clamping plate attached to and conforming with the outer surface of the side wall at one end of said at least one rod member to tension said at least one rod member;

a hole through said clamping plate through which said one end of said at least one rod member extends;

a screw thread on said one end of said at least one rod member; and

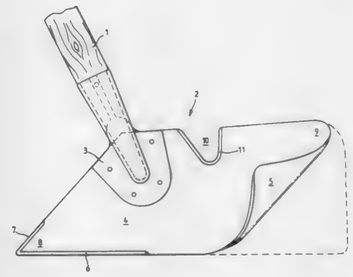
a threaded nut operatively engaging said screw thread to draw said side walls on opposite sides of said opening toward each other so that said shoe can be tightened in clamping engagement onto the hoof.

4,564,072

MULTI-PURPOSE GARDEN TOOL

Peter R. Corbett, Hayne Barton, Stowford, Lewdown, Devon, EX20 4BS, United Kingdom

PCT No. PCT/GB83/00180, § 371 Date Mar. 21, 1984, § 102(e) Date Mar. 21, 1984, PCT Pub. No. WO84/00470, PCT Pub. Date Feb. 16, 1984
PCT Filed Jul. 25, 1983, Ser. No. 596,457
Claims priority, application United Kingdom, Jul. 23, 1982, 8221276
Int. Cl.⁴ A01B *1/20, 1/24;* **A01G** *3/06*
U.S. Cl. 172—13 **3 Claims**



1. A multi-purpose garden tool comprising a handle and a tool head carried at one end of said handle, wherein:

said tool head includes:

a substantially flat blade portion having first and second ends and a straight bottom cutting edge, said flat blade portion and said bottom cutting edge being in the same plane as said handle, said first end of said flat blade portion having a leading cutting edge extending upwards from said bottom cutting edge in said same plane, and a soil deflecting portion provided at said second end of said flat blade portion and projecting from one side of said flat blade portion, said soil deflecting portion positioned to deflect soil to said one side of said flat blade portion as said flat blade portion is advanced forward along said bottom edge in a direction toward said leading cutting edge and a portion of said soil deflecting portion furtherest from said bottom cutting edge is formed as a scoop-like member which can be used to excavate soil; and said handle being inclined upwardly relative to said bottom edge and in a forward direction away from said soil-deflecting portion.

4,564,073

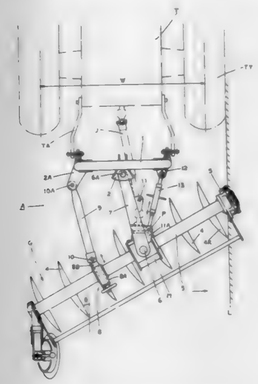
PLOW OR HARROW

Katsuyuki Ide; Masatoshi Yamada, both of Chitose, and Katsusuke Sasaki, Eniwa, all of Japan, assignors to Star Farm Machinery Mfg. Co., Ltd., Hokkaido, Japan

Filed Jul. 16, 1984, Ser. No. 631,159
Claims priority, application Japan, Jan. 17, 1984, 59-4981[U]
Int. Cl.⁴ A01B *63/24*
U.S. Cl. 172—120 **4 Claims**

1. A plow or a harrow comprising a cultivator frame connected at an angle with respect to a direction of travel of a tractor through a parallel linkage mechanism including a center link and a left link to said tractor, a plurality of saucer-like disks set at an inclined angle with respect to the direction of travel of said tractor and carried by a rotary shaft disposed below said cultivator frame, said center link having a first bracket extended from a rear end thereof and a second bracket extended from a point forwardly spaced apart from said rear

end, and a connecting member having one end pivotably connected to said tractor and the other end connected selectively to said first or second brackets, the rear end of said left link



being connected to a disk angle adjustment device comprising a screw rod which can be extended and retracted in the direction of travel of said tractor.

4,564,074

AGRICULTURAL IMPLEMENT

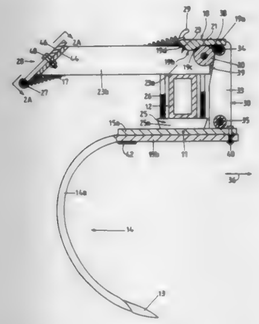
Austin T. Ryan, 19 Hewitt St., Warracknabeal, Victoria, Australia

Filed Jul. 20, 1983, Ser. No. 515,938

Claims priority, application Australia, Jul. 30, 1982, PF5141

Int. Cl.⁴ A01B *61/04*

U.S. Cl. 172—265 **22 Claims**



1. An agricultural implement comprising:

a support body;

a ground treatment tool depending from said support body;

means mounting said tool to said support body for pivotal movement upwardly and rearwardly from a work position;

roller means mounted to said support body and located above said tool mounting means with its axis generally horizontal;

a lever slidably resting on said roller means, said roller means providing a movable fulcrum for the lever;

means pivotally coupling said tool and said lever forwardly of said mounting means and said roller means; and

resilient biasing means connected between said support body and said lever, being connected to said lever behind the roller means and arranged to bias the tool to said work position;

wherein as the tool retracts in response to a predetermined resistance to its forward movement through the ground, it pulls the lever across and about the roller means against the biasing means, resulting in relative movement of the fulcrum along the lever and consequent variation in the effective biasing force on the tool.

4,564,075

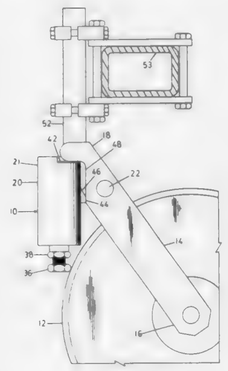
SPRING-LOADED TILLAGE IMPLEMENT

Carl J. Chekouras, 3207 Post Rd., Stevens Point, Wis. 54481

Filed Apr. 3, 1984, Ser. No. 596,410

Int. Cl.⁴ A01B *61/04*

U.S. Cl. 172—572 **15 Claims**



1. A tillage implement for attachment to agricultural soil cultivation machinery adapted for use in soil including trash, the tillage implement comprising:

(a) a knee having a unitary knee body having means for attaching the knee to the agricultural machinery and a spring channel having a generally upwardly opening end, the spring channel including means for containing and substantially enclosing a spring, supporting it from below, and thus protecting it from becoming fouled with soil and trash;

(b) a longitudinally extended pivot arm having a downward end and an upward end, pivotably attached to the knee body at a point between the downward and upward ends, whereby the pivot arm may so pivot that the downward end moves between down and up positions such that the downward end is at positions respectively of greatest descent and assent;

(c) a tillage blade rotatably attached to the downward end of the pivot arm and adapted to roll over and engage the soil being cultivated; and

(d) a compression spring contained and supported within the spring channel, whereby it may be resiliently flexed by and resist the application of force from above, the spring having means for applying pressure directly to the pivot arm to bias the downward end thereof toward its down position.

4,564,076

WELL COMPLETION METHOD AND APPARATUS

Roy R. Vann, Katy, Tex., and Emmet F. Brieger, Nogal, N. Mex., assignors to GEO Vann, Inc., Houston, Tex.

Filed Apr. 11, 1983, Ser. No. 483,478

Int. Cl.⁴ E21B *43/185*

U.S. Cl. 175—4.52 **32 Claims**

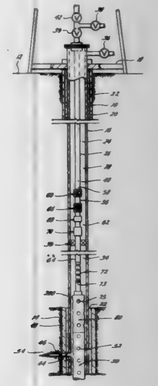
1. An actuator apparatus for a perforating gun suspended on a pipe string below a packer in a well, the packer separating an upper well annulus from a lower portion of the well, comprising:

a first tubular body adapted for suspension on the pipe string above the packer;

the first tubular body having a first opening communicating with the upper well annulus;

a piston movably disposed within said first tubular body and movable within said first tubular body upon the creation of a pressure differential across said piston;

one side of the piston being subjected to fluid pressures in the upper well annulus by means of said first opening and another side of the piston being subjected to fluid pressures at the interior of said body;



a second tubular body attached to the perforating gun;

a firing pin movably disposed in said second tubular body and adapted for engagement with the perforating gun to detonate the gun;

a solid member extending between said first and second tubular bodies and connected to said piston and said firing pin for moving said firing pin to a firing position; and

said piston acting on said solid member to move said firing pin to said firing position in response to the pressure differential.

4,564,077

POWERED CONVEYING AND WEIGHING MACHINE

Victor Del Rosso, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.

Filed May 24, 1984, Ser. No. 613,438

Int. Cl.⁴ G01G *19/00, 21/00, 23/00*

U.S. Cl. 177—145 **9 Claims**

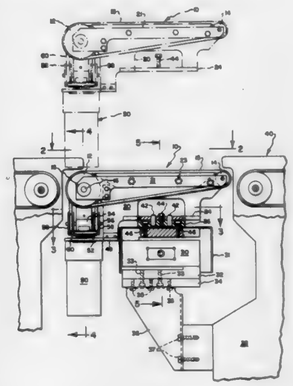
1. A high speed operating motorized conveying and weighing or checkweighing machine for transporting and weighing articles in succession for use such as in between rapid article feeding and take-away conveyors and in conjunction with interim weight measuring and readings transmitting analog converting and print-out, visual display price-labeling of item price-calculated devices or the like; said machine comprising;

(a) a machine support member (**34**);

(b) compression type strain gage transducer means (**30**) having a plan view longitudinally extended configuration mounted upon said support member (**34**);

(c) an angularly configured structure including a bottom horizontal bracket portion (**24**) fixed upon a top portion of said transducer means (**30**) and a side wall portion (**20**) vertically upstanding from one edge of said bracket portion (**24**) and extending in parallel offset relation to the plan view longitudinal profile of said transducer means (**30**), said side wall portion (**20**) having one end thereof longitudinally offset relative to said transducer means (**30**);

(d) conveyor means (**10**) cantilever supported by said side wall portion (**20**) to extend in an overlying relation with the longitudinal profile of said transducer means (**30**), said conveyor means (**10**) including a conveyor belt driving roller (**12**) keyed to axle means (**16**) which is rotatably mounted upon and extends in cantilever relation laterally away from said one end of said side wall portion (**20**), a conveyor belt idler roller (**14**) rotatably carried by axle means (**22**) which is mounted upon and extends in cantilever relation horizontally away from an opposite end of said side wall portion (**20**) and endless conveyor belt means (**15**) training about said drive and idler rollers;



(e) a power supply unit (**50**) cantilever supported by said one end of said side wall portion (**20**) to underlie said conveyor means in longitudinally offset relation with said transducer means (**30**); and

(f) power transmission means (**51**) operatively interconnecting said power supply unit (**50**) and said conveyor drive roller (**12**), characterized in that said transducer means and said power supply unit and said power transmission means and said conveyor means are substantially congruent within a common plan-view profile which is of minimal width.

4,564,078

APPARATUS FOR STORING FELT PENS FOR AN ELECTRONIC BOARD

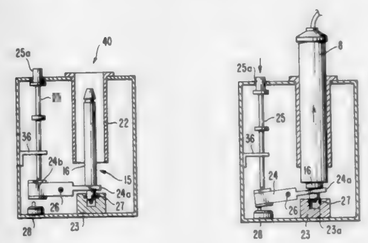
Shunji Enokido, Yokohama; Hideyuki Kodani, Kawasaki, and Hajime Ohta, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 16, 1984, Ser. No. 571,189

Claims priority, application Japan, Jan. 18, 1983, 58-005089[U]; Jan. 31, 1983, 58-012203[U]; **May 9, 1983, 58-080505**

Int. Cl.⁴ G08C *21/00*

U.S. Cl. 178—18 **23 Claims**



1. An apparatus for storing felt pens, having tips, used for

marking an electronic board in an electronic board input system, comprising:

a case having a top and bottom;

a plurality of pen loaders positioned in said case, each of said plurality of pen loaders for storing a respective one of the felt pens when it is not being used and for loading a felt pen when it is to be used, each of said pen loaders comprising:

a cap positioned on the bottom of said case, said cap being adapted to enclose the tip of the corresponding felt pen in an airtight manner;

a guide sleeve extending into said case; and

a lever pivotally mounted to said case, said lever having a forked shaped end which is positioned between said cap and said guide sleeve, said forked shaped end of said lever lifting the felt pen in the corresponding one of said plurality of pen loaders in a direction towards the top of said case when a force is applied to the opposite end of said lever; and

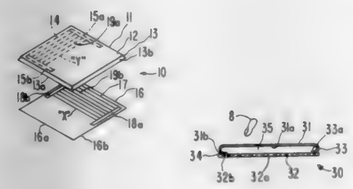
sensors respectively positioned adjacent the lever for each of said plurality of pen loaders, each of said sensors being activated in dependence upon movement of the corresponding lever to generate a signal indicating that the corresponding felt pen is in use.

4,564,079

DIGITIZER PAD

Cecil A. Moore, San Jose, Calif., and Gordon B. Langford, Glendale, Ariz., assignors to Koala Technologies Corporation, San Jose, Calif.

Filed Jul. 30, 1984, Ser. No. 635,381
Int. Cl.⁴ G08C *21/00*
U.S. Cl. 178—18 **10 Claims**



1. In a digitizer pad having two or more spaced parallel sheets having at least two electrically-isolated facing surfaces, said pad having at least ten electrical input points per square inch on said facing surfaces, adapted to be brought into point contact when pressed by a stylus or human operator finger, the improvement comprising:

a top flexible sheet depressible by stylus or finger force;

a substantially inflexible bottom sheet;

a energy-storing flexible hinge means attached to and extending between peripheral edge portions of said top sheet and said bottom sheet for normally electrically separating said sheets, depression of said top sheet causing energy to be stored in said hinge means; and

wherein stored energy in said hinge means is released by cessation of said stylus or finger force for returning said sheets into electrical separation at said point contact.

4,564,080

INVALID'S WHEELCHAIR AND LIKE CONVEYANCES

Jeffery M. Pagett, Griffith, Australia, assignor to Australian Transcenders International Pty. Ltd., Australia

Filed Jan. 27, 1983, Ser. No. 461,654
Int. Cl.⁴ B62D *55/04*
U.S. Cl. 180—8.2 **14 Claims**

1. A conveyance comprising:

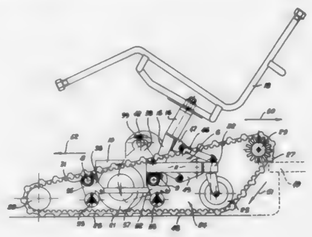
a chassis frame,

an upright support column pivoted by its lower end on said frame for fore-and-aft swing movement relative to said frame,

a load carrier mounted on the upper end of said column,

road wheels, whereof at least some of motor-driven, borne on said frame and providing the conveyance with a first wheel-base for movement over substantially level travel surfaces,

two carrier-plates respectively placed at the sides of said frame and each carrying a motor-driven crawler belt the two of which define a second wheel-base for movement over substantially inclined travel surfaces,



mounting means whereby said carrier-plates may be translationally movable in unison thereby to bring one of said wheel-bases into travel surface contact to the exclusion of the other of said wheel-bases, and

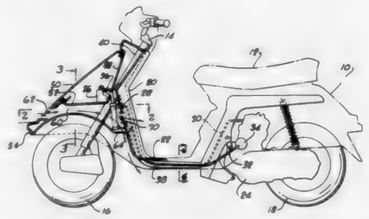
linkage mechanism coupling said support column and said mounting means whereby the angular disposition of said column is varied by a predetermined amount with respect to said chassis frame, upon operation of said mounting means.

4,564,081

MOTORCYCLE COOLING SYSTEM

Masumi Hamane; Takanori Onda, and Masayoshi Baba, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1983, Ser. No. 530,994
Claims priority, application Japan, Sep. 11, 1982, 57-158382
Int. Cl.⁴ B60K *11/04*
U.S. Cl. 180—229 **8 Claims**



3. A motorcycle having a front leg shield, a step floor and an engine mounted behind the step floor, comprising

a radiator mounted at the front leg shield;

tubes extending from said radiator, below the step floor and to the engine;

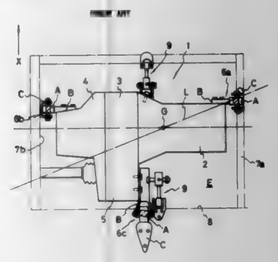
side channels supporting the step floor, said tubes being positioned to extend beneath the step floor in said side channels.

4,564,082

STRUCTURE FOR SUPPORTING A POWER UNIT FOR A VEHICLE

Shin Takehara, Zama, and Toshiyuki Tabata, Sagamihara, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 31, 1983, Ser. No. 528,151
Claims priority, application Japan, Sep. 1, 1982, 57-152130
Int. Cl.⁴ B60K *5/12*
U.S. Cl. 180—312 **12 Claims**



1. A structure for supporting a power unit for a vehicle of front-engine and front-drive type wherein said power unit comprises an engine proper disposed transversely of the vehicle body, and a transmission housing having a transmission gear train received therein, said transmission housing connected with said engine proper in a direction which is transverse of the vehicle body, said structure comprising:

first supporting means provided on the engine proper side of said power unit on the principal axis of inertia of said power unit and which supports said power unit on a first longitudinal side member; and

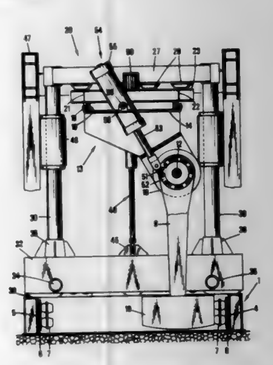
second and third supporting means provided on the transmission side of said power unit at two positions in opposed relation to each other respective to the principal axis on a second longitudinal side member.

4,564,083

DEVICE FOR GENERATING ACOUSTIC SHEAR WAVES IN THE EARTH

Pierre-Claude Layotte, Les Mathes; Jacques Cholet, L'Etang-la-Ville; Pierre Grolet, Orgerus, and Roland Huin, Montesson, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jul. 19, 1983, Ser. No. 515,245
Claims priority, application France, Jul. 19, 1982, 82 12696
Int. Cl.⁴ F16H *33/00*; G01V *1/147*
U.S. Cl. 181—114 **8 Claims**



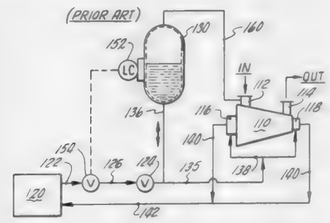
1. A device mounted on a vehicle frame for generating acoustic shear waves in the earth, comprising a target member having an earth coupling surface, an upwardly facing surface, and at least one inner facing wall forming a lateral striking surface substantially perpendicular to said coupling surface; a mass for striking the target-member, a platform for supporting the mass, a rigid arm pivotable with respect to the platform for supporting the mass and guiding the fall of the mass along a circular trajectory towards said lateral striking surface, and operating means for lifting the mass by pivoting the rigid arm with respect to the platform from a lower position where the mass is in contact with the striking lateral surface to an upper position wherefrom the fall is initiated; a rigid cage comprising an assembly for supporting the platform, four vertical columns and a lower frame having downwardly facing surfaces and vertically extending surfaces the target-member being connected through deformable coupling means disposed between the target-member and both the downwardly facing walls and vertical walls to the lower frame of the rigid cage and being displaceable with respect to the vehicle frame from a position where the target-member is in contact with the earth to a lifted position, the assembly for supporting the platform also supporting the associated pivoting arm, and rigid arm operating means; an axle about which the arm pivots being secured to the platform so that the mass, in the lower position of said arm, comes into contact with the inner striking surface; the sizes of the rigid arm, of the platform and of the operating means being selected so as to maintain the displacements of the mass within a space defined by the cage and the vehicle frame and two hydraullic jacks disposed between the vehicle frame and cage for displacing the cage and target member with respect to the vehicle frame.

4,564,084

METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE OF OIL IN AN OVERHEAD TANK

Bruce G. Heckel, Level Green, Pa., assignor to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Mar. 22, 1984, Ser. No. 592,130
Int. Cl.⁴ F01M *5/00*
U.S. Cl. 184—6.11 **8 Claims**



1. An oil delivery system for supplying oil to seal a portion of a turbomachine having a pressurized fluid flowing therethrough which comprises:

an oil supply means for supplying oil under pressure to the turbomachine and for receiving oil from the turbomachine;

first conduit means connecting the oil supply means to the turbomachine;

second conduit means connecting the turbomachine to the oil supply means;

a tank a least partially filled with oil and connected at a first location by a discharge line to the first conduit means and mounted at an elevation sufficiently above the turbomachine that oil may be routed from the tank through the discharge line and first conduit means to the turbomachine at a pressure higher than the pressure of the fluid received by the turbomachine; and

means for altering the temperature of the oil in the tank to approximate the operating temperature of the oil in the oil

delivery system including a supply line connected between the first conduit means and a second location on the tank for routing a portion of the oil flowing from the oil supply means through the supply line, through the tank and through the discharge line to the turbomachine whereby oil from the supply means is mixed with the oil in the tank to maintain the temperature of the oil in the tank similar to the temperature of the oil discharged from the oil supply means.

5. A method of maintaining a reliable alternate source of oil using a tank positioned vertically above a turbomachine while maintaining the desired relative pressure of the oil supplied from the tank, said tank being a portion of an oil delivery system for supplying oil to seal a portion of the turbomachine and including an oil supply means for supplying oil under pressure and for receiving oil, first conduit means for conducting oil from the oil supply means to the turbomachine, second conduit means for conducting oil from the turbomachine to the oil supply means and a discharge line connecting the tank at a first location to the first conduit means which comprises the steps of:

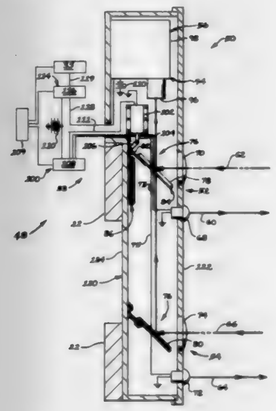
regulating the temperature of the oil in the tank to maintain the desired oil flow characteristics which includes routing a portion of the oil discharged from the oil supply means to the first conduit means to the tank at a second location, passing said oil through the tank to mix with the oil in the tank to maintain the temperature of the oil in the tank similar to the temperature of the oil supplied and discharging oil from the tank through the discharge line connected to the tank at the first location.

4,564,085

CONTROLLING ARRANGEMENT

Grant C. Melocik, Chardon, and John E. Wible, Painesville, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jan. 22, 1985, Ser. No. 693,415
Int. Cl.⁴ B66B *9/20*
U.S. Cl. 187—9 R **13 Claims**



1. A controlling arrangement, comprising:

a signal assembly having first and second spaced apart portions, said first portion being adapted to deliver a first signal and receive a reflection of said first signal, and said second portion being adapted to deliver a second signal and receive a reflection of said second signal;

said first signal assembly portion having a first source of light and a first lens, and said second signal assembly portion having a second source of light and a second lens, said first signal being a light beam delivered from the first source of light and said second signal being a light beam delivered from the second source of light, said first lens being adapted to receive a reflection of the first light beam and said second lens being adapted to receive a reflection of the second light beam, said lenses each being adapted to pass the received light beam reflection;

a single sensing device adapted to receive the reflected signals from each of said first and second signal assembly portions and deliver a control signal in response thereto;

means for selectively actuating one of the first and second portions of said signal assembly;

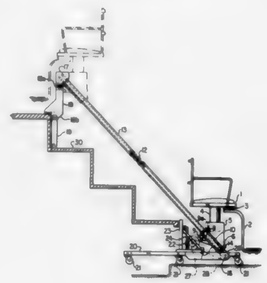
means for directing the reflected signals received by the first and second portions to the single sensing device, said directing means includes a first mirror positioned between the first lens and said single sensor, said first mirror being adapted to direct reflected light passed by the first lens to said single sensing device, and a second mirror positioned between the second lens and said single sensing device, said second mirror being adapted to direct reflected light passed by the second lens to said single sensing device.

4,564,086

TRANSPORT SEAT FOR CONVEYING DISABLED TRAVELLERS THROUGH A STAIRWELL OPENING OF A PASSENGER CARRYING VEHICLE

John C. Kingston, 261 Cooper St., Suite 1210, Ottawa, Ontario, Canada (K2P 0G3)

Filed Oct. 28, 1983, Ser. No. 546,300
Claims priority, application Canada, May 4, 1983, 427379
Int. Cl.⁴ B66B *9/08*
U.S. Cl. 187—12 **15 Claims**



1. A portable conveyance device having a seat moveably mounted thereon for loading and unloading disabled travellers through a stairwell of a passenger carrying vehicle, said device comprising:

(a) a support base carried by rollers for freely rolling the device from one location to another on a passenger loading platform, said support base being stable on said passenger loading platform when located exteriorly of said vehicle stairwell;

(b) an elongate boom section pivotally connected at one end thereof to said support base and projecting outwardly therebeyond terminating in an opposite free outer end having connected thereto a boom-head, said boom section projecting from said base in a direction toward the interior of said vehicle over said stairwell when in use with said support base on said loading platform;

(c) carriage means mounted on said boom section for reciprocal movement therealong in a direction from one end toward the other;

(d) means for reciprocally moving said carriage means along said boom section;

(e) a seat rotatably mounted on said carriage means and located on a side of said boom section opposite said stairwell;

(f) seat angle adjustment means for selectively setting the horizontal attitude of said seat on said carriage;

(g) support means connected to said opposite free outer end of said boom section for supporting the same from at least one of a floor of said vehicle and a stair tread of said stairwell during transport of a traveller through said stairwell by said device;

(h) means on said base selectively operable to prevent rolling movement of the same for maintaining said conveyance device in a fixed position on said loading platform during loading and unloading of travellers; and

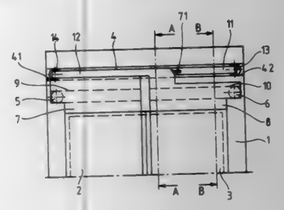
(i) locking means selectively operable preventing pivotal movement of said boom when said carriage means is at a position in the vicinity of said base whereby, when operated, the boom section is cantilevered from the base and wholly supported thereby.

4,564,087

DOUBLE PANEL SLIDING DOOR, ESPECIALLY FOR ELEVATORS

Max Haas, Kriens, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Mar. 28, 1983, Ser. No. 479,656
Claims priority, application Switzerland, Apr. 2, 1982, 2040/82
Int. Cl.⁴ B66B *13/30;* **E05D** *15/08*
U.S. Cl. 187—56 **2 Claims**



1. A double panel sliding door for a transportation system, especially for passenger and cargo elevators and the like, having a door frame, comprising:

a pair of panels;

a panel suspension and guiding arrangement provided for each panel of said pair of panels;

at least one of said panel suspension and guiding arrangements comprising:

a fixedly positioned roller mounted at the door frame;

a guide rail movable in conjunction with a related one of said pair of panels;

said movable guide rail being displaceable over said fixedly positioned roller;

an arm carried by said related panel;

a movable roller mounted at an end of said arm;

a fixed guiding rail mounted at the door frame and provided with two opposite rail parts between which said movable roller is displaceable;

said pair of panels are each provided with substantially identical door panel suspension and guiding arrangements;

said pair of panels being slidable in opposite directions;

each said arm of each panel carrying the related movable roller being reversed in orientation from one panel to the other; and

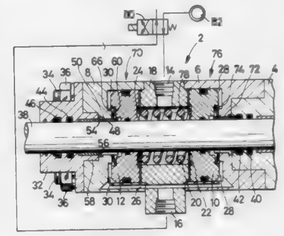
said fixed guiding rails of said pair of panels jointly defining a continuous single guiding rail for said movable rollers.

4,564,088

AXIAL BRAKING DEVICE

Mikio Takahashi, and Motoichi Nakayama, both of Toyota, Japan, assignors to Kyoho Machine Works, Ltd., Aichi, Japan

Filed Jan. 9, 1984, Ser. No. 569,452
Int. Cl.⁴ B65H *59/10*
U.S. Cl. 188—67 **9 Claims**



1. An axial braking device for arresting a relative movement between bearing means, and a shaft member slidably engaging the bearing means and movable axially thereof relative to the bearing means, said axial braking device comprising:

a cylinder which is disposed immovably along an axis thereof relative to said bearing means, and through which said shaft member extends along said axis;

first and second braking means associated with said cylinder for braking said shaft, said first and second braking means being substantially identical and disposed symetrically relative to each other on opposite sides of a plane perpendicular to the axis of the shaft member, each of said first and second braking means including

an annular piston having a central bore to define an inner surface thereof and received within said cylinder, said annular piston engaging said cylinder fluid-tightly and slidably at an outer surface thereof and further engaging said shaft member fluid-tightly and slidably at said inner surface;

a cylindrical brake shoe having at least one slit formed axially thereof and through a wall thickness thereof, and radially contractible, said cylindrical brake shoe slidably engaging said shaft member and being disposed immovably relative to said cylinder along said axis thereof;

a radial clamp member of generally coned disc shape made of a resilient material, and engaging the outer surface of said cylindrical brake shoe, said radial clamp member being compressible in a direction along the axis of said cylinder by said annular piston and thereby reduced in inside diameter thereof so as to radially force the inner surface of said cylindrical brake shoe against the outer surface of said shaft member;

piston drive means for moving the annular pistons of said first and second braking means along the axis of said shaft member, said piston drive means comprising a spring which is interposed between the annular pistons of said first and second braking means to bias said annular pistons in opposite directons away from each other along said axis so as to cause axial compression of the respective radial clamp members, and further comprising a pressurized-fluid supply device for effecting a controlled selective supply of a pressurized fluid to said cylinder, said pressurized-fluid supply device having an operating position for moving said annular pistons against a biasing force of said spring and thereby releasing said radial clamp members from said axial compression by said annular pistons, and a non-operating position for applying a brake to said shaft member through the cylindrical brake shoes; and

a brake releasing device comprising a single lock screw which is threaded in one of said cylinder and a member fixed thereto, in a direction perpendicular to the axis of

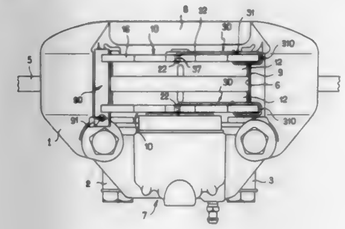
said shaft member, said brake releasing device further comprising a lock member which is disposed between opposed ends of said annular pistons and is connected to said lock screw so that the lock member is movable in said perpendicular direction to a locking position upon rotation of said lock screw in one direction, said lock member having tapered surfaces which slidably contact mating tapered surfaces of said annular pistons formed at said opposed ends thereof when said lock member is moved to said locking position, said lock member thereby forcing said annular pistons to move toward each other against the biasing force of said spring, and locking said annular pistons in their brake-releasing positions to keep said radial clamp members free from said axial compression to release said shaft member regardless of the operating and non-operating positions of said pressurizied-fluid supply device.

4,564,089

FRICTION-ELEMENT ASSEMBLY EQUIPPED WITH AN ANTI-NOISE SPRING FOR A DISC BRAKE

Jean-Louis Gérard, Paris, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Dec. 2, 1983, Ser. No. 557,559
Claims priority, application France, Dec. 23, 1982, 82 21684
Int. Cl.⁴ F16D *55/224, 65/12;* **F16F** *15/06*
U.S. Cl. 188—73.38 **2 Claims**



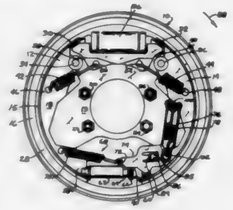
1. A friction-element assembly equipped with an anti-noise spring, the friction-element incorporating a lining-support plate intended to cooperate in anchoring and sliding engagement with dihedral guide surfaces of a torque support member of a disc brake by means of notches formed in the lateral edges of the support plate, the support plate incorporating, at a level of at least one of said notches, an aperture formed in an adjacent transverse edge for fitting of the anti-noise spring, said aperture and an adjacent one of said notches forming a neck prolongated outwardly by a widened lug part, the spring comprising an elastic wire and having an end part in the form of a closed loop engaged around the neck part to bear normally by means of a central part against a bearing zone of the aperture, the loop being prolongated by a strand portion provided at an end opposite the loop with means for fitting on a central zone of the lining support plate, characterized in that the lining support plate has, at a level of the central zone, a single through-orifice receiving therethrough a transversely bent end of said strand portion of said spring, the closed loop comprising an orthogonally bent end of the central part extending over and engaging the elastic wire and a radially inwardly bent nose portion at an end of said loop, the length of said strand portion being greater than a distance between said orifice and an adjacent end of said lug part limiting the aperture for the spring, and the length of said strand portion being less than a distance between the orifice and a bottom portion of said aperture delimiting said neck part laterally, the end of said strand portion opposite the loop forming the transversely bent end which is received in the orifice of the plate and extends to an orthogonally bent end portion located on a side of the support plate opposite a side along which said strand portion extends.

4,564,090

SELF-CENTERING BRAKE ASSEMBLY INCORPORATING A BRAKE DRUM AND AUTOMATIC ADJUSTING MECHANISM

Robert Spaargaren, Granger, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Dec. 29, 1983, Ser. No. 566,857
Int. Cl.⁴ F16D *51/14*
U.S. Cl. 188—331 **10 Claims**



1. A self centering brake assembly incorporating a brake drum and an automatic adjusting mechanism which maintains centered relation of the brake in reference to the brake drum, comprising:

A torque spider consisting of two torque plates disposed in flat face-to-face engagement at their inner brake mounting surfaces and axially spaced apart at their outer peripheral portions;

a primary brake shoe and a secondary brake shoe each having a friction material lined rim and a web loosely fitted between the torque plates at their outer periphery and forming a shoe ring;

a moveable anchor secured one to each of the expandable shoe ends and engageable with complementary anchoring seats provided by outer peripheral portions of said torque plates;

a wheel cylinder for expanding the actuated ends of said shoes; and,

an automatic adjuster for extending the distance between the articulated shoe ends responsively to shoe overtravel; characterized in that the automatic adjuster consists of a serrated adjuster wheel, an adjuster lever pivotally mounted on the secondary shoe and having a pawl which engages successive teeth of the adjuster wheel, an adjuster lever return spring fastened between the primary shoe and the adjuster lever, a solid form link and overtravel spring connected between the adjuster lever and torque plate and disposed so that it develops a force of such magnitude on the adjuster lever and shoes and along a force line to create together with the force exerted by the adjuster lever return spring a net balance of all said forces exerted on the shoes about their anchors whereby the shoe ring when the brake is unactuated will remain centered at all phases of adjustment in relation to the surrounding brake drum.

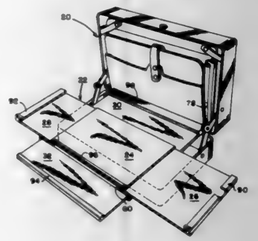
4,564,091

WRITING BOARD

August F. Coneglio, 8083 Rollingbrook Rd., Sagamore Hills, Ohio 44067

Filed Jun. 16, 1983, Ser. No. 504,815
Int. Cl.⁴ A45C *3/02*
U.S. Cl. 190—11 **20 Claims**

1. A portable writing board accessory for use with a briefcase and elsewhere including a main panel assembly having a pair of internal planar passages extending in planes parallel to the plane of the main panel assembly and in directions normal to each other, and four auxiliary panels telescopically received



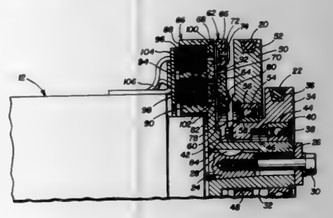
in said passages, each of said passages receiving a pair of said auxiliary panels for movement in opposite directions.

4,564,092

TWO SPEED, TWO PULLEY COMPRESSOR DRIVE CLUTCH

William C. Pierce, Carrollton, Tex., assignor to Pitts Industries, Inc., Dallas, Tex.

Filed Dec. 15, 1983, Ser. No. 562,193
Int. Cl.⁴ F16D *27/02*
U.S. Cl. 192—48.2 **7 Claims**



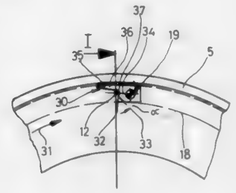
1. An electromagnetic clutch for driving an input shaft of a compressor in an air conditioning system of a bus or similar vehicle by connecting the input shaft to an output shaft of an internal combustion engine subject to frequent periods of low rotational output speed and high rotational output speed with the clutch providing approximately constant drive speed to the air conditioning compressor for efficient cooling, said clutch comprising a pair of pulleys with one pulley having a diameter larger than the other, a rotor having a hub connected with the input shaft of the air conditioning compressor, a pair of armature disposed in close axially spaced relation to one side of the rotor, means connecting the armatures to the larger and smaller diameter pulleys and enabling axial movement of the armatures into driving engagement with the rotor and a pair of coil assemblies supported stationarily adjacent the rotor in opposed relation to the armatures for selectively moving the armatures into driving engagement with the rotor for transferring driving force from selective pulleys to the rotor and input shaft of the air conditioning compressor to enable substantially constant input speed to the air conditioning compressor when the vehicle engine speed varies considerably.

4,564,093

FLUID FRICTION CLUTCH

Werner Storz, Benningen, Fed. Rep. of Germany, assignor to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co KG, Stuttgart, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,197
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1982, 3226634
Int. Cl.⁴ F16D *35/00*
U.S. Cl. 192—58 B **14 Claims**



1. A fluid friction clutch comprising: primary part means having a driving disk; secondary part means defining a housing;

bearing means rotatably supporting said primary and secondary means for relative rotation;

intermediate wall means separating said housing into a working space and a clutch fluid storage space, said driving disk being disposed in said working space;

at least one return bore means in said intermediate wall means for accommodating return of clutch fluid from the working space to the storage space; and

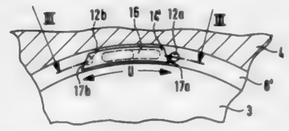
damming body means disposed adjacent each of the return bore means for guiding return flow of clutch fluid to said return bore means, said damming body means exhibiting a fluid guide surface facing the rotational direction of the driving disk, said fluid guide surface including a first portion disposed radially inwardly of the return bore means which extends diagonally radially inwardly and in the driving disk rotational direction and a second portion disposed radially outwardly of the return bore means which extends diagonally radially outwardly and opposite the driving disk rotational direction, whereby the configuration of the fluid guide surface assures an improved temperature responsive control of the rotational speed of the secondary means.

4,564,094

FLUID FRICTION CLUTCH

Werner Storz, Benningen, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 440,946
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1981, 3147797
Int. Cl.⁴ F16D *35/00, 43/25*
U.S. Cl. 192—58 B **18 Claims**



1. A fluid friction clutch comprising:

a primary part having a driving disk,

a secondary part defining a housing, bearing means rotatably

supporting said primary and secondary part for relative rotation,

an intermediate disk means separating said housing into a working space and a clutch fluid storage space,

said driving disk being disposed in said working space,

return bore means for accommodating return of clutch fluid from the working space to the storage space, and

baffle means for damming-up the fluid adjacent the return bore means to increase the return flow pressure of the fluid,

wherein said baffle means is supported at a guide in the intermediate disk means to be movable within limits in the circumferential direction while being fixed in the radial direction,

wherein said intermediate disk means is fixed to said housing,

wherein the guide is formed as an elongated circumferentially extended oblong hole through said intermediate disk means, and

wherein the baffle means is provided with a guidance part which protrudes through the oblong hole and extends beyond the surface of the intermediate disk means in the direction of the storage space, and wherein the baffle means is axially secured to the intermediate disk means by gripping means at the storage space side of the intermediate disk means.

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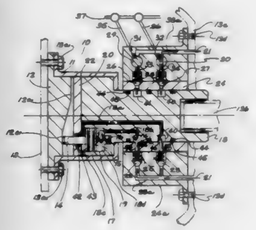
FRICTION-LESS HYDRAULIC CLUTCH DEVICE

Darrell D. Lackey, Detroit, Mich., assignor to Febco Inc., Livonia, Mich.

Filed Jan. 23, 1984, Ser. No. 572,709

Int. Cl.⁴ F16D *31/02*

U.S. Cl. 192—59 **1 Claim**



1. A hydraulic clutch for an engine having a rotatable engine output shaft comprising

a fluid reservoir,

a cam secured to the output shaft of said engine,

a fixed clutch housing,

a rotatable clutch output shaft, journaled in said clutch housing,

a cylinder in said clutch output shaft,

a piston in said cylinder having a front side and a rod side,

a piston rod extending from the rod side of said piston and engageable with said cam to effect reciprocation of said piston within said cylinder upon rotation of said engine output shaft relative to said clutch output shaft,

an annular torque application groove in said clutch output shaft,

first hydraulic passage means in said clutch output shaft communicating with said torque application groove and with the face of said piston,

an annular torque release groove in said clutch output shaft,

second hydraulic passage means in said clutch output shaft communicating with said annular torque release groove and with the rod side of said piston,

third hydraulic passage means in said clutch housing communicating with each of said torque application and torque release grooves and with said hydraulic fluid reservoir,

a pair of one-way fluid check valves in said third hydraulic passage means for admitting fluid to said first and second hydraulic passage means from said reservoir but precluding flow of fluid back to said reservoir,

fourth hydraulic passage means in said clutch housing communicating with each of said torque application and torque release grooves and with said hydraulic fluid reservoir,

a torque application fluid flow control valve in said clutch housing between and communicating with said torque application groove and fourth hydraulic passage,

a torque release fluid flow control valve in said clutch housing between and communicating with said torque release groove and fourth hydraulic passage, and

linkage means connecting said torque application and release control valves so as to close said torque release valve upon opening of said torque application valve and open said torque release valve upon closing of said torque application valve thereby to control reciprocation of said piston and relative rotation between said engine output shaft and said clutch output shaft.

4,564,096

DISENGAGEABLE ROTARY CLUTCH

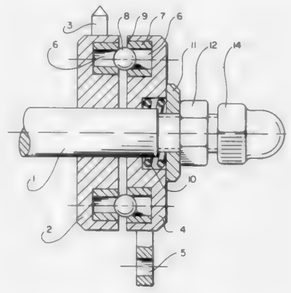
Kurt Neumann, Buxtehude, Fed. Rep. of Germany, assignor to Claudius Peters, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,387

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1982, 3236926

Int. Cl.⁴ F16D *1/00, 11/00, 23/02;* **F16L** *23/00*

U.S. Cl. 192—67 R **5 Claims**



1. A mechanically actuatable rotary clutch for rotating a driven shaft in response to a drive means, the clutch comprising:

a first clutch flange having a device for connection to the drive means;

a second clutch flange is fixedly mounted on the driven shaft, the first clutch flange is also mounted on the driven shaft coaxial with the second clutch flange, the second clutch flange is capable of being rotated together with or relative to the first clutch flange;

rolling means are positioned between the two clutch flanges, each clutch flange is provided with opposed recesses into which the rolling means is received the recesses are provided with circumferential inclined surfaces wherein the rolling means cooperates with the circumferentially inclined surfaces of the opposed recesses;

a rigid locking element including a nut and a means for directly abutting the first clutch flange in a locking position for forcing and locking the first clutch flange and the rolling means against the second clutch flange for directly transferring movements initiated by the drive means to the second clutch flange and rotational movement to the driven shaft; and

a spring means for pressing the clutch flanges together when the rigid locking element is released from the locking position for forcing and locking the clutch flanges together.

4,564,097

CLUTCH DISC

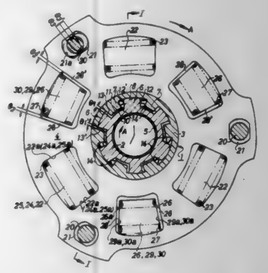
Yoshiaki Kabayama, Kadoma, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Dec. 27, 1983, Ser. No. 566,114

Claims priority, application Japan, Dec. 28, 1982, 57-197234

Int. Cl.⁴ F16D *3/64*

U.S. Cl. 192—106.1 **5 Claims**



1. A clutch disc comprising a hub means having an inner hub adapted to be connected to a shaft and provided with outer teeth and an outer hub having a flange and a corresponding number of inner teeth meshing with the outer teeth of inner hub wherein circumferential spaces are formed therebetween; weak elastic means disposed in at least one of the circumferential spaces to circumferentially connect the outer and inner teeth together, and the other circumferential spaces in which the weak elastic means are not disposed having a circumferentially shorter length than the circumferential spaces for the elastic means so that the elastic means may be prevented from being fully compressed; stopper means for preventing both hubs from relative axial movement and preventing the elastic means for dropping out of the circumferential spaces; a pair of side plates disposed at both sides of the flange and connected to a torque input member; and strong elastic means for connecting the side plates to the flange.

4,564,098

DRIVE ASSEMBLY FOR DOOR OPERATOR

Michael Hörmann, Steinhagen, Fed. Rep. of Germany, assignor to Hormann KG, Harsewinkel, Fed. Rep. of Germany

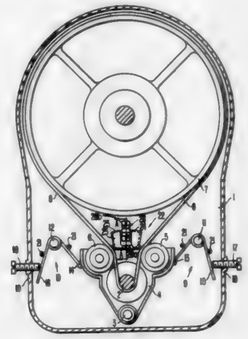
Continuation-in-part of Ser. No. 162,088, Jun. 23, 1980, abandoned. This application Jun. 9, 1982, Ser. No. 386,581

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 7917854[U]; Jun. 10, 1981, 8117194[U]; Feb. 3, 1982, 8202713[U]

Int. Cl.⁴ E05F *15/16, 15/20;* **F16P** *5/00*

U.S. Cl. 192—150 **32 Claims**

1. A door operator drive assembly comprising an electric drive motor mechanically connected to a door pulling means by a transmission in the form of a drive belt, the drive belt being movably supported on three pulleys and being in driven association with a motor output shaft, two of said pulleys being belt guide pulleys mounted on opposite sides of the motor output shaft on a plate which is swingable on a shaft that extends parallel to the motor output shaft so that the belt passes between the said two of the pulleys and about an output pulley, forming the third of said three pulleys, for driving a chain, and the plate being elastically loaded toward a middle position of its range of swingable movement and being provided with an extension means, extending to a position adjacent a switching arrangement located in the plate swinging range, for actuation thereof upon swinging of said plate from said middle position in response to deviations of application pressure of said drive belt on said belt guide pulleys sufficient to overcome said elastic loading, wherein adjusting means are provided for adjusting the elastic loading on said plate and wherein said



extension means comprises a shield which penetrates a beam path between a transmitter and a receiver of a switching arrangement in the form of a photoelectric cell during said swinging of the plate from said middle position.

4,564,099

SAFETY DEVICE FOR A PASSENGER CONVEYOR

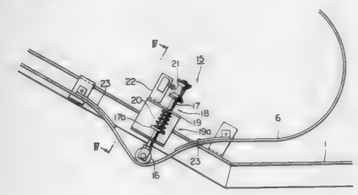
Akira Uozumi, Ichinomiya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1983, Ser. No. 557,363

Claims priority, application Japan, Jan. 25, 1983, 58-10126

Int. Cl.⁴ B65G *43/00*

U.S. Cl. 198—323 **3 Claims**



1. A safety device for a passenger conveyor having a main frame, sprockets at the upper and lower parts of the main frame, endless tread board chains reeved on said sprockets, tread boards connected to said endless tread board chains, endless handrails loosely circulatingly driven along with said tread boards, a driving means for said endless board chains, and handrail driving rollers driven by said driving means and frictionally engaging said handrails in frictional contact for driving said handrails, said safety device comprising:

a stationary member on said main frame;

thrust means corresponding to each of said handrails and shiftably held on said stationary member and having the forward end portion directed toward and engaging the inside of the corresponding one of said handrails;

a tension application means engaged with said thrust means for applying tension to said one of said handrails through said thrust means;

a detecting means engageable by said thrust means for detecting a shift of said thrust means beyond predetermined limits; and

a pair of guide means on said main frame and extending along the inside of said one of said handrails on opposite sides of said thrust means and being curved concavely outwardly of said stationary member for positively guid-

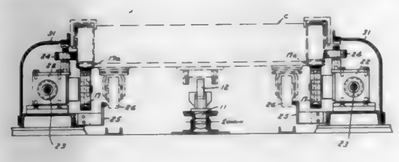
ing said one of said handrails therealong, and having free ends spaced from each other and the said one handrail being bent freely between said free ends with said forward end portion of said thrust means engaging the bent portion of the one handrail between said free ends, and said free ends being freely movable toward and away from each other with changes in tension in said handrail, whereby said thrust means is positively shifted even for a minor change in the tension of said handrail and any shift of said thrust means beyond the predetermined limits is surely detected.

4,564,100

CARRIER CONVEYOR SYSTEM

Edward E. Moon, Grosse Pointe Woods, Mich., assignor to Acco Babcock Inc., Fairfield, Conn.

Filed Jun. 23, 1983, Ser. No. 507,054
Int. Cl.[4] B65G *43/08, 13/06*
U.S. Cl. 198—341 **22 Claims**



1. A carrier conveyor system comprising

a main conveyor,

a plurality of carriers positioned in closely spaced relation on said main conveyor,

said main conveyor having means in closely spaced relation for engaging and moving said carriers,

a work station at which a carrier is to be stopped to perform a work function,

said main conveyor having a first portion in advance of the work station and a second portion beyond the work station,

means defining a first track associated with the first portion of the main conveyor along which the carriers are movable,

means defining a second track associated with the second portion of the main conveyor along which the carriers are movable,

means associated with the first track and first portion of the conveyor for successively disengaging the carriers from the first portion at the end of the first portion and disengaging the carriers relative to the first track,

means associated with the second track and the second portion for successively re-engaging the carriers with the second portion and the second track,

and a transfer conveyor between the end of said first track and said second track for transferring the carriers to the work station, removing the carriers from the work station and returning the carriers to the second track,

said transfer conveyor comprising a plurality of pairs of closely spaced transfer assemblies, one on each side of the path of the carriers from the first track to the work station and to the second track, at least a first transfer assembly at a first station being provided between the first track and the work station, a second transfer assembly being provided at the work station, and at least a third transfer assembly being provided at a third station between the work station and the second track,

each transfer assembly comprising a plurality of longitudinally spaced wheels mounted with their axes transverse to the path of the carriers and adapted to engage the underside of a carrier adjacent the longitudinal sides of the carrier,

the space between said wheels on one side of the path of a carrier and the wheels on the other side of said path of a carrier being substantially unobstructed,

motor means individual to each said transfer assembly for driving the wheels of each transfer assembly on at least one side of the path of the carriers,

each motor means for driving the wheels of each first and third transfer assembly being operable independently of the other and of the main conveyor to accelerate a carrier thereon to a speed higher than the speed of the main conveyor, and thereafter to decelerate the carrier and to permit free wheeling or braking of the carrier on each transfer assembly,

each motor means for driving the wheels of each second transfer assembly at said work station being operable independently of the other and of the main conveyor to accelerate a carrier thereon to a speed higher than the speed of the main conveyor, and thereafter to decelerate the carrier and to permit braking of the carrier on each transfer assembly,

said first track being positioned such that the first portion of the conveyor delivers a carrier to the wheels of the first transfer assembly adjacent to the first track so that the motor means of the first transfer assembly can be operated to accelerate the carrier and rapidly move the carrier onto the first transfer assembly,

said second track being positioned such that the wheels of the third transfer assembly adjacent the second track deliver a carrier to the second track,

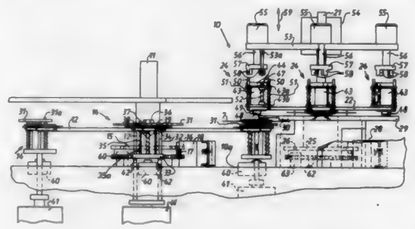
the number of transfer assemblies being such that a carrier will be returned to the main conveyor so that there are no vacant spaces between the closely spaced carriers on the main conveyor while providing necessary work and safety time at the work station.

4,564,101

APPARATUS FOR TRANSPORTING DEVELOPED DISC FILMS IN COPYING MACHINES

Erich Nagel, Anzing, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,743
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245539
Int. Cl.[4] B65G *47/00*
U.S. Cl. 198—346.2 **20 Claims**



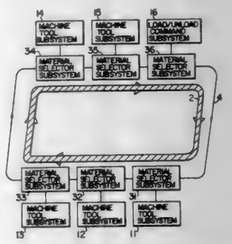
1. Apparatus for transporting exposed and developed disc films to and away from and for manipulating disc films at a copying station, comprising a first conveyor defining a first endless path, said first conveyor including a first indexible turntable; film supplying, film transferring and film receiving means adjacent to successive first, second and third portions of said path and respectively arranged to deliver discrete films into said path, to transfer the thus delivered films from and back into said path, and to receive films from said path; a second conveyor defining a second endless path having an initial portion adjacent to the second portion of said first path so that said transferring means can deliver films into and receive films from such initial portion, said second path further having an additional portion at the copying station, and said second conveyor including a second indexible turntable overlapping a portion of said first turntable in the region of said transferring means, said turntables being disposed in different planes which are at least substantially parallel to each other and are located at different levels, and said transferring means comprising elevator means for moving disc films between said levels; and means for rotating each disc film which reaches said additional portion on its way back to the initial portion of said second path.

4,564,102

METHOD AND APPARATUS FOR TRANSPORTATION OF MATERIALS

Kinji Mori, Yokohama; Yasuo Suzuki, Ebina; Masayuki Orimo, Machida; Shoji Miyamoto, Kawasaki, and Hirokazu Ihara, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 31, 1983, Ser. No. 547,133
Claims priority, application Japan, Oct. 29, 1982, 57-189060
Int. Cl.[4] B65C *43/00*
U.S. Cl. 198—341 **4 Claims**



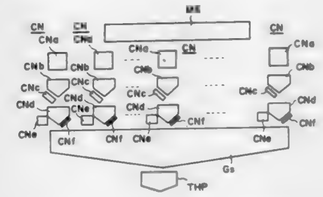
1. A method for transportation of materials in a work-processing system including a plurality of work-processing means processing materials transported thereto by transporting means, comprising the steps of loading newly externally supplied materials on said transporting means detecting material transported by said transporting means by using a detector means associated with each of said work-processing means and storing the results of detection; issuing a material request from any work-processing means when the work-processing means requires a material which is not detected by said work-processing means; communicating the material request from the work-processing means which issued the material request to other processing means; causing each of said work-processing means to search a requested material indicated by the material request, based on the stored results of detection while keeping coordination with the other work-processing means in response to receipt of the material request; reserving said requested material for the work-processing means which issued the material request when said material is found on said transporting means as a result of the searching step while maintaining the material request when the searching step cannot find said requested material on said transporting means; and unloading said reserved material from said transporting means upon arrival of said material at the position of said work-processing means which issued the material request thereby supplying said material to said work-processing means.

4,564,103

METHOD AND APPARATUS FOR CONVEYING LINEAR ARTICLES

Takashi Sashiki, Nagaokakyo, and Keiko Sakaeda, Kyoto, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Mar. 17, 1982, Ser. No. 359,138
Claims priority, application Japan, Mar. 19, 1981, 56-41093; Jul. 24, 1981, 56-116837
Int. Cl.[4] B65G *43/08;* **G01G** *19/34*
U.S. Cl. 198—358 **1 Claim**



1. A conveyance apparatus for conveying linear articles while maintaining the specific orientation thereof, which apparatus comprises:

a supply station for supplying linear articles having a specific orientation, said supply station including an electromatic feeder, and a main trough vibrated by said electromagnetic feeder in such a manner as to dispense a required amount of the linear articles;

distribution means for distributing to a plurality of locations the linear articles supplied by said supply station, and for holding said linear articles at said locations, said distributing means including an arraying tray for receiving the linear articles dispensed by the main trough, said arraying tray having an opening in the bottom thereof, a mechanism for reciprocating said arraying tray along the direction of conveyance, and a stand-by tray adapted to be raised through the opening in said arraying tray, said stand-by tray having a multiplicity of V-shaped grooves in the floor thereof for receiving and holding the linear articles in said arraying tray as said stand-by tray is raised through said opening;

a pair of walking beams having a multiplicity of first holders disposed along the direction of conveyance for taking up the distributed linear articles;

a crank mechanism for oscillating said pair of walking beams while moving them in the direction of conveyance so that said first holders describe circular orbits;

first holder drive means provided on said walking beams for actuating the first holders corresponding to those linear articles that are to be conveyed from the linear articles previously distributed articles to said plurality of locations, in order that the linear articles to be conveyed may be taken up from said previously distributed articles, linear articles being distributed to said plurality of locations so as to be positioned on the circular orbits of the actuated first holders, the linear articles on the circular orbits of said first holders being taken up by said actuated first holders in the course of their circular orbits, and being conveyed forwardly in the direction of conveyance;

a weighing station provided with a plurality of weighing machines arranged in the direction of conveyance, each having a weighing scale, the linear articles distributed to said plurality of locations being conveyed selectively to the weighing scales of said weighing machines;

a multiplicity of second holders provided on said walking beams along the direction of conveyance for taking up the linear articles conveyed to the weighing scales of said weighing machines;

second holder drive means provided on said walking beams for actuating said second holders; and

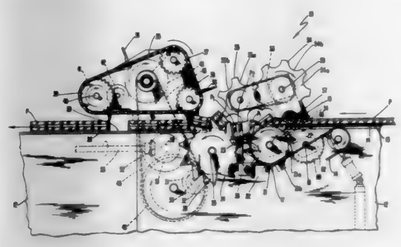
an electronic computing unit for forming combinations of weight values of the linear articles conveyed to the weighing scales of said weighing machines, for selecting from said combinations the best combination of weight values whose sum is closest to a preset target weight, and for causing said second holder drive means to actuate those second holders that correspond to the weighing machines which give said best combination of weight values, linear articles being deposited in each of said weighing scales so as to be positioned in the circular orbits of the actuated second holders, the linear articles on the circular orbits of said second holders being taken up by said actuated second holders in the course of their circular orbits and being conveyed to a discharge station and, at the same time, predetermined linear articles distributed to said plurality of locations are supplied to the weighing scales of said weighing machines that give the best combination, along the circular orbits of said first holders.

4,564,104

ARTICLE FEEDING AND STACKING MECHANISM

Andrew W. Anderson, deceased, late of West Caldwell, N.J. (by Miriam Anderson, executrix), assignor to Scandia Packaging Machinery Co., Clifton, N.J.

Filed Aug. 1, 1983, Ser. No. 518,890
Int. Cl.⁴ B65G *47/26*
U.S. Cl. 198—422 **9 Claims**



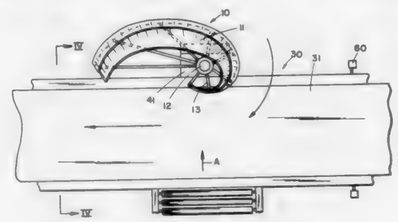
1. An article feeding and stacking mechanism, comprising:
(a) article feeding means for supporting and feeding articles;
(b) article receiving means for receiving a plurality of the articles in predetermined assembled relationship for further processing of the articles;
(c) indexing wheel means between the article feeding means and article receiving means for receiving articles from the feeding means and delivering them in predetermined assembled relationship to the article receiving means;
(d) said indexing wheel means including a plurality of angularly disposed article support pockets having intersecting surfaces thereon for engaging the articles as they are fed from the article feeding means and supporting the articles as the wheel means rotates;
(e) a pair of rotatable control guide wheels adjacent the periphery of the indexing wheel means in alignment therewith and including a plurality of peripheral guide pockets having a curved shape;
(f) the control guide wheels being rotatable in timed relation to each other and to the indexing wheel to move the guide pockets in proximity to articles being transmported on the support pocket surfaces of the indexing wheel means to prevent displacement of articles from the indexing wheel means as it rotates;
(g) the wheel means includes first and second indexing wheels rotatably supported in alignment and adjacent one another;
(h) the article supporting pockets on the first indexing wheel having a size to hold one article and the article supporting pockets on the second indexing wheel having a size to hold two articles;
(i) the indexing wheels being rotatable in timed relationship to cause the first wheel to turn twice as fast as the second wheel whereby the first wheel deposits two articles on the intermediate article support means before the second wheel picks them up;
(j) the control guide wheels being positioned relative to the indexing wheels such that the guide pockets, during their movement with the indexing wheels, remain in position to constrain movement of the articles supported on both of the indexing wheels during substantially the entire time the articles are on the indexing wheels in the transference of the articles from the article feeding means to the article receiving means; and
(k) intermediate article support means located between said indexing wheels in a position to receive articles from the first indexing wheel as the first indexing wheel rotates, and to deliver the articles supported thereon to the second indexing wheel as it rotates past the intermediate article support means.

4,564,105

TILTED SPIRAL ARTICLE DIVERTER

Gerald A. Brouwer, Grandville, and Charles R. DeVries, Grand Rapids, both of Mich., assignors to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Dec. 29, 1983, Ser. No. 566,824
Int. Cl.⁴ B65G *47/53, 47/74, 47/82*
U.S. Cl. 198—457 **19 Claims**



1. An article transfer for moving an article laterally from a conveyor to a laterally positioned receiving means, said transfer having an article engaging sweep of spiral configuration, a shaft and means supporting said shaft for rotation, said shaft being located adjacent one edge of said conveyor and inclined laterally of the conveyor whereby its upper end extends at an angle at which the shaft's extended axis would project over said conveyor, said sweep being secured to said shaft for rotation therewith, said attachment being adjacent the point of generation of said spiral sweep whereby at a first position in its rotation substantially all of said sweep is laterally displaced from said conveyor and at a second position in its rotation a portion of said sweep extends laterally substantially across said conveyor, the lower edge of said sweep tracing a curve which maintains a zone characterized by a substantially constant distance between said lower edge and the surface of the conveyor as the sweep is rotated by the shaft between said first and second positions in its rotation, said zone moving outwardly along said sweep and transversely of said conveyor as said sweep rotates.

4,564,106

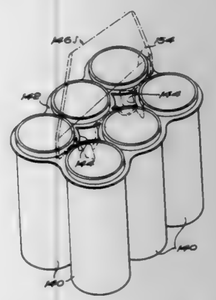
LIFTING DEVICE WITH TONGUE FLAPS

John Shilcock, Liversedge, England, assignor to Waddingtons Limited, Leeds, England

Continuation-in-part of Ser. No. 492,301, May 6, 1983, abandoned. This application Dec. 5, 1983, Ser. No. 557,815
Int. Cl.⁴ B65D *5/46*
U.S. Cl. 206—165 **12 Claims**

1. A lifting device comprising a blank of cut and creased sheet material, said blank being adapted to be folded to a condition suitable for insertion into aperture means of a holding device holding a group of containers together so that a part of the lifting device will hook under the holding device whereby the group of containers can be lifted by lifting the lifting device, the said lifting device comprising
(a) a first panel portion having a hinge edge and a free edge at the opposite side of the first panel portion from the hinge edge,
(b) a second panel portion having a hinge edge and a free edge at the opposite side of the second panel portion from the hinge edge,
(c) a main hinge line connecting the hinge edges of the first and second panel portions,
(d) first tongue means extending from the free edge of the first panel portion,
(e) second tongue means extending from the free edge of the second panel portion, said first and second tongue means being located so that hinging the blank about the main hinge line brings the first and second panel portions face to face and the first and second tongue means face to face,
(f) first tongue hook flap means,
(g) first tongue hinge line means hingedly connecting the first tongue hook flap means to the first tongue means,
(h) second tongue hook flap means,
(i) second tongue hinge line means hingedly connecting the second tongue hook flap means to the first tongue means so that the first and second hook flap means can be folded about the first and second tongue hinge line means onto the outsides of the first and second tongue means when the first and second panel portions are folded into face to face condition, so that the device can be held in folded but flat condition for insertion of the tongues and folded flap means into the aperture means of the holding device;
(j) first hook edge means on the first tongue flap means,
(k) second hook edge means on the second tongue flap means, said first hook edge means and second hook edge means lying at the tops of the first and second tongue flap means and extending from said first and second tongue hinge means in an upwardly inclined manner towards the main hinge line when the device is in the folded condition ready for insertion in said aperture means with the main hinge line at the top thereof.

9. A lifting device comprising a flat blank of cut and creased sheet material, such device being adapted to fit into an aperture of a holding device such as a HICONE holding device holding a group of containers together, said device comprising:
(a) a first panel portion;
(b) a second panel portion;
at least one of said first and said second panel portions defining a handle and also a display area whereby printing may be carried thereby for the purposes, for example, of indicating a special offer,
(c) first tongue means extending from an edge of the first panel portion;
(d) second tongue means extending from an edge of the second panel portion;
(e) a main hinge line connecting the first and second panel portions and about which the device can be folded into substantially flat condition to bring said edges of the first and second panel portions together and the first and second tongue means into face to face relationship;
(f) secondary hinge line means in said first and second tongue means defining first and second catching flap means for folding onto the outsides of the tongues when they are face to face so that the device remains substantially flat and so that the face to face tongues and the folded back catching flap means can be inserted through an aperture in the holding device, until the flap means spring back to engage under the holding device to provide a means for lifting the group of containers;
(g) the handle has a finger engaging aperture; and
(h) the device has a panel of trapezium shape from one side of which projects one of said tongues and the other tongue with its flap means is defined in said panel and can be folded out of the panel into superimposed face to face relationship with said one tongue, the folding of the tongues out of the panel defining a finger engaging aperture.

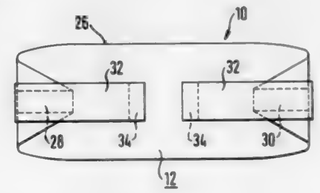


4,564,107

CONTAINER FOR THE PRESSURE TIGHT PACKAGING OF ARTICLES, IN PARTICULAR TENNIS BALLS

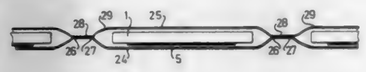
Hans F. Heltzenröder, Langenselbold; Ernst Wachter, Hanau, and Kurt Bitsch, Langenselbold, all of Fed. Rep. of Germany, assignors to Dunlop Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Feb. 9, 1984, Ser. No. 578,523
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304590
Int. Cl.⁴ B65D *81/20*
U.S. Cl. 206—315.9 **28 Claims**



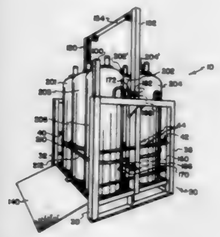
1. A self-supporting pressure-tight container, especially for tennis balls, said container consisting of a strip of a multi-layer foil defining an inner surface and an outer surface of said container, said strip having spaced opposite edges, said foil including a layer impermeable to gas, and at least one layer capable of withstanding the pressure within the container, the layers defining said inner and outer surfaces being of the same material and being weldable, said foil being welded to itself along a longitudinal seam formed between overlapping portions of the inner surface of the foil at one of said edges and the outer surface of the foil at the other edge, said container having at each end a transverse weld seam, said transverse weld seams being formed without overlap by welded-together confronting portions of said internal surface; said transverse weld seams being folded back onto the container; means for pressurizing said container and means for securing said folded back weld seams to said container.

4,564,108
PACKAGE FOR SANITARY NAPKINS
Leif U. R. Widlund; Stefan Nedestam, both of Mölnlycke, and Arne Fröidh, Stenungsund, all of Sweden, assignors to Molnlycke AB, Gothenburg, Sweden
Filed Jun. 12, 1984, Ser. No. 620,076
Claims priority, application Sweden, Jun. 14, 1983, 8303383
Int. Cl.⁴ A61F *13/16*
U.S. Cl. 206—438 **19 Claims**



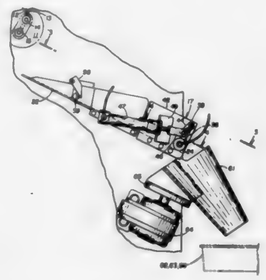
1. Package for menstrual protectors such as sanitary napkins and pads or panty protectors having, on their side facing away from the body of the user, areas coated with pressure-sensitive adhesive intended, when using the napkin, for sticking to the underwear of the user to keep the napkin in place, characterized in that a plurality of sanitary napkins are detachably disposed and mutually spaced in one or more rows with their adhering side placed in contact with a film, preferably of paper or plastic, the film with the napkins applied thereon being folded so that the napkins are laid on top of one another to form one or more piles, the film in its folded condition enclosing the sanitary napkins applied thereon, the film extending laterally outside the sanitary napkins, after folding of the film with the napkins placed thereon, being sealed there by welding, gluing or the like.

4,564,109
METHOD AND APPARATUS FOR TRANSPORTING PRESSURIZED GAS CYLINDERS
Lars G. Stavlo, Sigtuna, Sweden, assignor to AGA, A.B., Cleveland, Ohio
Filed Sep. 9, 1982, Ser. No. 416,237
Int. Cl.⁴ B65D *19/00*
U.S. Cl. 206—597 **12 Claims**



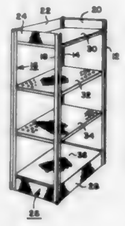
5. A package of integrated gas cylinders which comprises:
(a) an even number of gas cylinders arranged in two side-by-side rows of equal numbers of cylinders with the cylinders defining a linear array of pairs, and with there being at least three cylinders in each row;
(b) a pair of elongated spacer bars between said rows in contact with the cylinders of each row;
(c) separate bands for tightly banding all of the pairs of cylinders and the spacer bar therebetween except the end pairs of the array with a separate band for banding each of the pairs, with each of the separate bands extending tightly around each of the cylinders of its associated pair for a distance extending through about 180 degrees of the perimeter thereof; and,
(d) still another separate band tightly peripherally embracing the entire array of cylinders to securely clamp the cylinders of the array and the said spacer bar wherein said spacer bars constitute the sole cylinder spacing elements in the multi-cylinder package.

4,564,110
APPARATUS FOR POSITIONING GRAVITY FED COMPONENTS IN AN ELECTRICAL TEST FACILITY
Marion Z. Kasprzyk, Westchester, Ill., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Jun. 22, 1984, Ser. No. 623,064
Int. Cl.⁴ B07C *5/02, 5/344*
U.S. Cl. 209—544 **13 Claims**



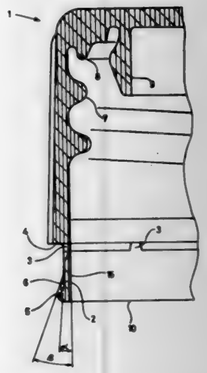
1. An apparatus for orienting articles, which comprises:
a gravity chute for receiving an article;
a pivotally mounted gate located at the lower end of said chute for retaining an article advanced down said chute;
means for detecting an article retained by said gate in a predetermined orientation and for accordingly pivoting and opening said gate to pass the article under the opened gate; and
means responsive to said detecting means failing to detect the article in the predetermined orientation for pivoting the gate in an upstream direction to kick the article back up said gravity chute.

4,564,111
POST-PANEL CONNECTION FOR SHEET METAL FURNITURE
James M. Suttles, Elberton, Ga., assignor to The Mead Corporation, Atlanta, Ga.
Filed Dec. 29, 1983, Ser. No. 566,657
Int. Cl.⁴ A47B *47/00*
U.S. Cl. 211—189 **13 Claims**



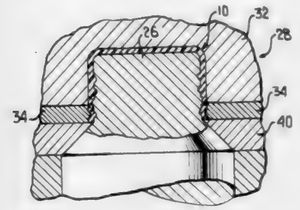
1. In an article of sheet metal furniture such as a merchandising display stand, comprising a sheet metal upright post and at least one panel having a face situated in a substantially vertical plane and extending horizontally from the post, the improved structure wherein:
the sheet metal upright post comprises a first planar section and a return flange extending substantially parallel to the first planar section in spaced relationship therewith to provide a space between the first planar section and the flange, a web connecting the return flange to the first planar section, the web having at least one opening for receiving a tab;
the panel has at least one tab extending in a horizontal direction from its face, the face of the panel being positioned outside of the space between the first planar section and the flange, and said tab extending through the tab-receiving opening into the space between the first planar section and a flange, and a projection formed on said tab and extending horizontally from the tab in a direction transverse to said horizontal direction in which the tab extends from the face of the panel; and
the sheet metal upright post includes means having an oblique locking surface facing both downwardly and, in said direction of the tab, away from the location at which the tab meets the face of the panel, the oblique locking surface being in engagement with the projection on the tab and preventing the tab from being withdrawn through the opening in the web.

4,564,112
CLOSURE CAP FOR A CONTAINER
Hans-Werner Breuer, Himmelried, Switzerland, assignor to Crown Obrist AG, Reinach, Switzerland
PCT No. PCT/CH83/00149, § 371 Date Jul. 26, 1984, § 102(e) Date Jul. 26, 1984, PCT Pub. No. WO84/02694, PCT Pub. Date Jul. 19, 1984
PCT Filed Dec. 28, 1983, Ser. No. 638,476
Claims priority, application Switzerland, Jan. 7, 1983, 84/83
Int. Cl.⁴ B65D *41/54*
U.S. Cl. 215—246 **4 Claims**



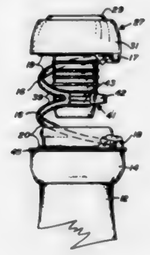
1. A closure cap for a container, which cap is provided with a heat-shrinkable guarantee strip (2) and is produced integrally with the guarantee strip from thermoplastic material in an injection moulding process, wherein the guarantee strip is connected to the lower edge (4) of the closure cap by way of a plurality of rupturable connecting web portions (3) and is intended at least partially to embrace the neck of the container and can be brought into engagement therewith by heat-shrinking, and wherein the wall thickness of the guarantee strip has a reinforcement portion (5) in the region between each two rupturable connecting web portions and the individual reinforcement portions are interrupted and spaced apart by portions of smaller wall thickness, including the improvement in that the reinforcement portions (5) are arranged on the outward side (6) of the gurantee strip (2) and that the cross-sections of the reinforcement portions increase towards the lower edge of the guarantee strip.

4,564,113
INJECTION MOLDED PLASTIC CLOSURE
Leo R. Mendler, Chicago, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.
Filed Sep. 6, 1984, Ser. No. 647,762
Int. Cl.⁴ B65D *41/34, 41/48*
U.S. Cl. 215—252 **7 Claims**



1. A molded plastic member, said plastic member being of the injection molded type and including a cylindrical portion having an internal projection of the type including threads, beads and ribs and being of the type formed by injection molding over a core, said member being improved by there being provided in the external surface of said cylindrical portion in radial alignment with said internal projection a groove generally of the size and shape of said internal projection whereby when said member is stripped from a core said internal projection may generally deform into said groove of said cylindrical portion and thus be readily stripped from a groove in the core in which said internal projection is formed.

4,564,114
MOLDED SAFETY CLOSURE DEVICE
Harold E. Cole, Magalia, Calif., assignor to James R. Goldberg, Novato, Calif.
Filed Dec. 21, 1984, Ser. No. 684,810
Int. Cl.⁴ B65D *41/48*
U.S. Cl. 215—256 **5 Claims**



1. A safety closure device comprising a closure element adapted to close the mouth of a bottle or the like by frictional engagement with the interior facing surface of the mouth, a retainer collar, and an intercoupling means connecting said collar to said closure element with said closure element and said collar extending substantially coaxially with each other, said intercoupling means comprising a tabbed tether strip, said tether strip being integrally formed with and secured at its respective ends to said closure element and said collar, said tether strip being joined to said closure element and said collar along a preselected length of said tether strip by frangible webs of a preselected thickness to permit said tether strip to be manually separated from said closure element and said collar along said preselected length, said tether strip being folded upon itself at least once and being of a length unfolded such

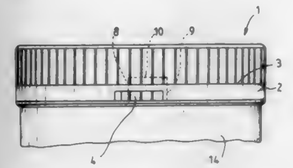
that said closure element may be removed from the bottle or the like but is restrained by said collar and said tether strip from flying free.

4,564,115

COVERS WITH A TEARABLE TAMPER-PROOF BAND

Jean P. Imbert, Villefranche sur Saone, France, assignor to La Bellignite, Bellignat, France

Filed Oct. 5, 1984, Ser. No. 659,821
Claims priority, application France, Oct. 5, 1983, 83 15851
Int. Cl.⁴ B65D *41/18*
U.S. Cl. 215—256 **2 Claims**



1. A repeatedly reusable cover for closing a receptacle of the type having a ring carried by a neck portion, said cover comprising a skirt having a tearable tamper-proof band between a lower edge of said skirt and a peripheral line of reduced resistance formed in a lower region of said skirt substantially parallel to said lower edge, a lever for wrenching off said band, said lever being rigidly connected to one region of said band, a peripheral groove on the inside face of said skirt for cooperating with the ring of said receptacle to ensure the closing thereof, an opening tongue covered by the wrenching lever when the tamper-proof band is in an initial position, said tongue being formed as an integral part of the tamper-proof band, before the wrenching off thereof, and bounded by two lateral lines of reduced resistance which tear during the wrenching off of the tamper-proof band and by a horizontal line of articulation of the tongue, said cover being characterized in that said lateral lines of reduced resistance are formed on the tamper-proof band and extend beyond the peripheral line of reduced resistance defining the upper edge of the tamper-proof band and in that the line of articulation of the tongue is situated on the skirt of the cover a small distance above the region of the tongue corresponding to the lower edge of the skirt of the cover.

4,564,116

CLOSURE CAP FOR BEVERAGE CONTAINERS

Helmut Prohaska, Pöttenberg, Austria, assignor to Folienwalzwerk Bruder Teich Aktiengasellschaft, Wien, Austria

PCT No. PCT/EP82/00082, § 371 Date Dec. 8, 1982, § 102(e) Date Dec. 8, 1982, PCT Pub. No. WO82/03612, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 8, 1982, Ser. No. 448,895
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114613
The portion of the term of this patent subsequent to Feb. 14, 2001, has been disclaimed.
Int. Cl.⁴ B65D *41/42*
U.S. Cl. 215—256 **29 Claims**

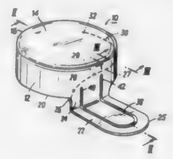
1. A closure cap for a beverage bottle of the type which has a beaded rim including an annular axial end and an annular groove defined by the beaded rim where it terminates on the exterior or the bottle neck, the beverage when contained in the bottle after the closure cap has been installed thereon being at some time subjected to physical effects likely to increase the interior pressure in the interior space above the beverage, and said closure cap comprising:

A. a substantially cylindrical inverted dish-like member having a disc-shaped crown, a substantially cylindrical side wall defining a cylindrical jacket and a rounded annular juncture between the crown and the cylindrical jacket forming an interior fillet, said closure cap being engagable over the beaded rim of the bottle, and the cylindrical jacket having a vertical dimension sufficient to enable crimping thereof into engagement with the annular groove beneath said beaded rim,

B. a rip tab having opposite side edges and a free end, said rip tab being connected to said lower edge of said jacket along a small fraction of the circumference of said lower edge thereof, said rip tab extending generally radially outwardly of said jacket when said rip tab is in a horizontal plane and adapted to be bent downwardly to lay close to the bottle neck when said closure cap is installed,

C. a sealing member of gasket material disposed in said fillet on the interior of said dish-like member covering at least the upper portion of the interior of said cylindrical jacket and extending radially inwardly of said crown a distance at least sufficient to engage the annular axial end of the beaded rim of the bottle when installed,

D. a rip line at least most of which is formed in said cylindrical jacket and extending with continuity having at least



first and second portions, the first commencing at a location where a corner of one side edge of the rip tab and the lower edge of the cylindrical jacket meet, extending in a shallow rise from said lower edge and continuing circumferentially of said side wall toward the rounded annular juncture in a direction to pass the second side edge of the rip tab and the second portion commencing at a level located below the crown and continuing in said cylindrical jacket circumferentially at least about half-way around said jacket from the commencement of the rip line,

E. said dish-like member and rip tab being integrally formed by metal working from readily bendable sheet metal so that the installed closure cap is capable of containment of the interior pressures while enabling facile opening of said closure cap by pulling said rip tab in a generally circumferential movement to sever the jacket along said rip line,

F. and means for effecting controlled relief or internal pressure, said means comprising at least one groove formed on the inner surface of said cylindrical jacket, said groove located to avoid an acute angled intersection with said rip line.

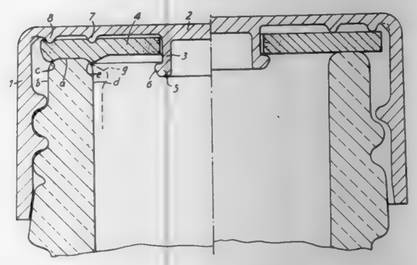
4,564,117

BOTTLE CLOSURE

James F. Herbert, Staffordshire, England, assignor to Metal Closures Limited, Staffordshire, England

Filed Jul. 18, 1984, Ser. No. 631,881
Claims priority, application United Kingdom, Jul. 27, 1983, 8320266
Int. Cl.⁴ B65D *53/04*
U.S. Cl. 215—329 **8 Claims**

1. A closure device for a standard containerhaving an externally screw threaded neck and a mouth presenting an upwardly facing sealing surface, bounded by an outer rounded corner service, said closure comprising a moulded plastics shell and a substantially planar liner gasket supported in said shell, said shell comprising a top panel and an internally threaded shirt, said top panel carrying, on its under surface, a central spigot, having an enlarged lower end and having at least one circular rib near its periphery, said liner gasket having a control aperture, within which said spigot fits loosely, of smaller size than said enlarged lower end of the spigot, said gasket having an outer diameter which is larger than the external



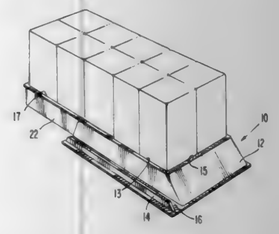
diameter of the neck of the container but which is smaller than the diameter of the undersurface of the top panel of said shell whereby said liner gasket may turn in relation to said shell.

4,564,118

ADJUSTABLE SLIDE TRAY

Robert E. Heyer, Milltown, and Michael A. Tannenbaum, Freehold, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 31, 1984, Ser. No. 688,089
Int. Cl.⁴ B65D *6/04, 6/16*
U.S. Cl. 220—8 **3 Claims**



1. An adjustable tray comprising:

(a) a base unit having a substantially rectangular shape having a bottom, a front wall, and two side walls, there being a pair of dovetailed slots extending along the interiors of said side walls from said front wall out the open rear portion of said base, there being at least one dovetailed slot in said base which does not extend beyond said open rear of said base, said base unit being made of a relatively thin, vacuum formed plastic;

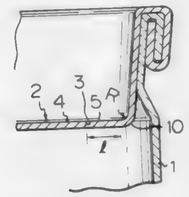
(b) a sliding tray having a rear wall and two side walls, said sliding tray having a pair of dovetailed guides which fits within said pair of dovetailed slots in said side walls of said base, whereby said sliding tray may be slid in and out of the base, thereby adjusting the overall size of the slide tray unit, said sliding tray including slide stop means comprised of a substantially rectangular dovetailed portion which extends down from the bottom of said sliding tray into said slot in said base which does not extend out of the rear portion of said base for limiting the rearward travel of said sliding tray, said sliding tray being made of the same relatively thin, vacuum formed plastic material as said base unit.

4,564,119

ALUMINUM CAN END

Mitsuo Tsuge, Mishima; Shigeru Kohmura; Keiichi Sugiyama, both of Shizuoka; Hisao Saitoh, Fuji, and Shigenori Saitoh, Ihara, all of Japan, assignors to Nippon Light Metal Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1984, Ser. No. 679,383
Int. Cl.⁴ B65D *17/34*
U.S. Cl. 220—270 **6 Claims**



1. In a can end of an aluminum alloy can consisting of a body having a closed bottom and an upper open end and made of a thin aluminum alloy sheet and said can end made of a thin aluminum alloy sheet with the peripheral edge thereof being sealingly curled together with the periphery of said upper open end of said body so as to form an upwardly diverging frustoconical portion along the periphery of said can end thereby forming a hermetically sealed vessel adapted to sealingly contain therein pressurized liquid such as carbonated beverage or beer, said can end being formed with a circular score within the area of said can end along the periphery thereof so as to form a severable portion from said can end, a manipulating tab being secured at an appropriate portion thereof to said can end within the area defined by said circular score adjacent thereto so as to permit the area defined by said score to be severed from said can end by pulling said manipulating tab apart from said can end, the improvement wherein said aluminum alloy sheet forming said can end is so regulated that it has the yield strength in the range of 24–29 kgf/mm^2 and the elongation equal to or greater than 6%, while the aperture rate defined by the ratio of the area defined by said score with respect to the total area of said can end is selected to be at least equal to or greater than 60%, so that the pressure resisting strength of said can end is kept to be substantially at least 5 kgf/cm^2, said score being spaced from the corner formed around the bottom of said frustoconical portion at least a distance equal to or greater than 1 mm inwardly of the area of said can end, the inner radius of curvature of said corner being selected to be equal to or less than 0.5 mm.

4,564,120

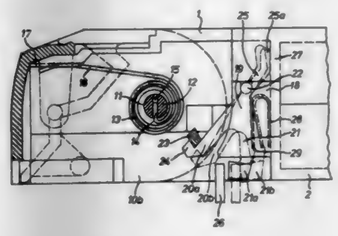
MAGNETIC TAPE CASSETTE

Albert Pertzsch; August Liepold, both of Munich; Hubert Brunner, Weil, and Ludwig Zeroni, Ottobrunn, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 17, 1984, Ser. No. 641,598
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1983, 3331258
Int. Cl.⁴ B65D *43/14, 51/04*
U.S. Cl. 220—337 **4 Claims**

1. A magnetic tape cassette for magnetic recording and play-back devices comprising a substantially rectangular, two-part housing comprised of an upper part which has an upper main wall and a lower part which has a lower main wall, each part with three side walls, and an opening along a front side of the cassette, along which a magnetic tape is transportable from two plane-parallel-positioned reels, and a pivotal front lid mounted on said housing which partly overlaps the side walls and which releases and closes said opening and comprises an outer cover and an inner cover positioned intermediate said

outer cover and said upper part, by which the magnetic tape is enclosable in the closed position of said front lid, the front lid being biassed by a two-armed safety bar which may be moved backwards and forwards and is positioned on one side of the lower part of the cassette, the swivel range of which is restricted by a pin on the inside of the side part of the front lid,



characterised in that the two-armed safety bar extends beyond its bearing journal, and the extension in the closed position of the front lid serves as a stop on the wall, positioned behind, on the upper part of the cassette, and a U-shaped leaf spring is provided to bias the safety bolt between the back wall of the safety bar bearing and the adjacent safety bar arm.

4,564,121

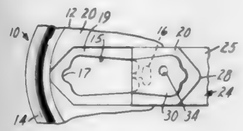
TAPE CLOSURE FOR A CAN END

Wilfred R. Brochman, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 458,564, Jan. 7, 1983, abandoned. This application Dec. 14, 1983, Ser. No. 561,462

Int. Cl.⁴ B65D *41/00*

U.S. Cl. 220—359 **7 Claims**



1. A container end assembly comprising:

a container end formed of tin-free steel having an exterior surface and an interior surface and being formed with a pour opening;

a polymeric layer comprised of a vinyl chloride/vinyl acetate copolymer bonded to said exterior surface of said end; and

a tape strip comprising a backing coated on one surface with a thermoplastic adhesive and bonded by said adhesive to an area of the exterior surface of said layer circumjacent and covering said pour opening, said adhesive forming a bond between said tape strip and said layer having greater strength than the bond between said layer and the exterior surface of said tin-free steel end supporting said layer, causing said layer to break and peel from said end upon removal of the tape strip from the container end.

4,564,122

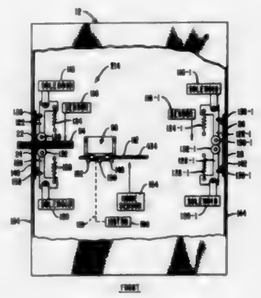
PRESENTER MECHANISM FOR USE IN A SHEET DISPENSER

Robert H. Granzow, Miamisburg; Dale L. Placke, Dayton; Harold L. McMorrow, Kettering, and Charles S. Nagy, Dayton, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 28, 1984, Ser. No. 594,450

Int. Cl.⁴ G07F *11/00*

U.S. Cl. 221—12 **6 Claims**



1. A sheet dispenser comprising:

a housing having first and second sheet delivery areas therein;

means for selectively delivering a stack of sheets to said first and second sheet delivery areas,

first sensing means and second sensing means positioned at said first and second sheet delivery areas, respectively, for sensing when a said stack of sheets approaches said first and second sheet delivery areas, respectively;

first and second closures located at said first and second sheet delivery areas, respectively; said first and second closures also being moveable between closed and opened positions with respect to the first and second sheet delivery areas, respectively; and

first holding means and second holding means located at said first and second sheet delivery areas, respectively, for holding a stack of sheets delivered by said delivering means to said first and second sheet delivery areas, respectively;

said first holding means comprising:

first and second members for holding a stack of sheets delivered to said first sheet delivery area by said delivering means; said first and second members being moveable between holding and non-holding positions with respect to a said stack of sheets;

an actuator; and

coupling means for coupling said first and second members with said actuator and also for coupling said first closure with said first and second members so as to move said first and second holding members to said non-holding position and also to move said first closure to said opened position when said actuator is energized to thereby enable a said stack of sheets to be positioned between said first and second holding members and also to extend out of said first sheet delivery area to be grasped; said coupling means also being effective for moving said first and second members towards each other to hold said stack of sheets therebetween and also for moving said first closure towards said closed position when said first actuator is de-energized; and

said dispenser also including means for energizing said actuator when said first sensing means senses an approaching said stack of sheets.

4,564,123

MAGAZINE DRIVING DEVICE IN PAPER TUBE RELEASING APPARATUS

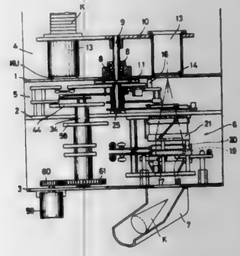
Shinji Noshi, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Sep. 28, 1983, Ser. No. 536,526

Claims priority, application Japan, Oct. 1, 1982, 57-149343[U]

Int. Cl.⁴ G07F *11/12*

U.S. Cl. 221—11 **8 Claims**



5. A magazine driving device of the type used in conjunction with a tube releasing apparatus having a sectionalized tube storage magazine, a tube releasing section and a magazine driving device for rotating the storage magazine and thereby enabling each section of the magazine to supply at least one tube to the tube releasing section after the tube supply in the previous magazine section is exhausted, the magazine driving device comprising:

(a) a rotatable latch wheel coupled to the storage magazine and having an axis of rotation;

(b) a clutch mechanism for transmitting a rotational force to the latch wheel, the clutch mechanism comprising:

(i) a rotatable first clutch member having the same axis of rotation as the rotatable latch wheel;

(ii) a second clutch member rotatably coupled to a distal portion of the first clutch member;

(iii) a latch pin for engaging the latch wheel, the latch pin being coupled to a distal portion of the second clutch member; and

(c) tube detecting means associated with the clutch mechanism for detecting the presence or absence of a tube and rotating the second clutch member to engage the latch pin with the latch wheel when no tube is detected; and

(d) rotating means for rotating the first clutch member so that, when the latch pin is engaged with the latch wheel, the latch pin rotates the latch wheel.

4,564,124

DISPENSING CONTAINER

George W. Burton, London, England, assignor to Johnsen & Jorgensen (Plastics) Ltd., London, England

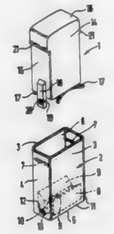
Filed Dec. 20, 1983, Ser. No. 563,507

Claims priority, application United Kingdom, Dec. 21, 1982, 8236304

Int. Cl.⁴ B65H *3/00*

U.S. Cl. 221—263 **7 Claims**

1. A dispensing container comprising an inner element and an outer element with a filling opening and a bottom wall, the outer element substantially enclosing the inner element when the two parts of the container are assembled, an article orienting member at the bottom of the outer element in the form of a block with spaced ends and inclined top surfaces sloping inwards to a channel extending substantially from end to end of the block to receive articles arranged in alignment ready to be dispensed one at a time, there being relatively small spaces provided at each side and at one end of the block and a larger space at the other end of the block, a projecting attachment on the inner element with a pocket therein to receive a single article, a dispensing opening in the bottom wall of the outer element in the large space and in alignment with the end of the channel, which slopes downwards towards the dispensing opening, said outer element so dimensioned that the projecting attachment can pass through the opening but is normally positioned so as to close the opening and spring means at the lower



end of the inner element, the arrangement being such that when the inner member is pressed it is moved axially downwards relative to the outer element so that the projecting attachment is moved through the dispensing opening in the bottom of the outer element to dispense a single article from the pocket and at the same time to close the end of the channel to prevent a second article being dispensed.

4,564,125

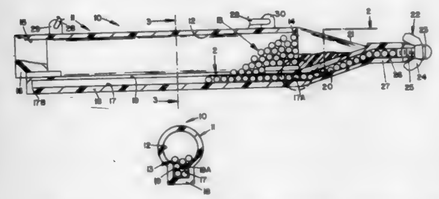
BB LOADER

James J. Esslinger, 1314 N. Drexel Ave., Indianapolis, Ind. 46201

Filed Apr. 20, 1984, Ser. No. 602,553

Int. Cl.⁴ F41C *25/00*; A47F *1/00*

U.S. Cl. 221—288 **7 Claims**



1. A BB loader comprising a housing having a forward end and a rearward end and further having a reservoir therebetween for storage of BB's, the housing further having a longitudinal trough means formed therein laterally of the reservoir and in communication therewith, the trough means having an open forward end and a closed rearward end, and chute means carried by the forward end of the housing and in communication with the forward end of the trough means, whereby a substantially predetermined quantity of BB's may be loaded into the trough means from the reservoir, and whereby subsequently, substantially the entire predetermined quantity of BB's may be dispensed as a row out of the trough means and through the chute means, wherein the trough means comprises a longitudinal member carried on the side of the housing, the longitudinal member having a trough formed therein, the trough having a transverse width sufficient for two BB's side-by-side, and the housing having a longitudinal slot formed therein and communicating the reservoir with the trough, the longitudinal slot having a transverse width sufficeint to accommodate one BB.

4,564,126

ARRANGEMENT FOR SUPPLYING GAS TO A LIQUID IN A CONTAINER THEREFOR

Bengt O. Adolfsson, Stockholm, Sweden, assignor to Kommanditbolaget Aldolf, Västerås, Sweden

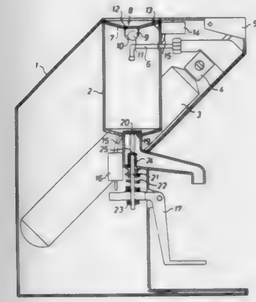
PCT No. PCT/SE82/00184, § 371 Date Jan. 24, 1983, § 102(e) Date Jan. 24, 1983, PCT Pub. No. WO82/04244, PCT Pub. Date Dec. 9, 1982

PCT Filed May 19, 1982, Ser. No. 463,445

Claims priority, application Sweden, May 25, 1981, 8103281

Int. Cl.⁴ B67D *5/54*

U.S. Cl. 222—61 **8 Claims**



1. An apparatus for domestic use for carbonating water for the subsequent preparation of carbonated beverages by flavouring the carbonated water and including a container (2; 30; 45) having a gas pipe (6) discharging thereinto, said container being provided with a fill orifice (8; 31) through which water is introduced into the container, an orifice (19) for emptying water from the container, and gas-venting means (13, 15, 16), characterized by: means (8; 31; 48) for permitting gas supplied to the container to escape therefrom unless the container is filled with water to a given level, the fill orifice being closeable, a discharge outlet of the gas pipe being disposed below said given level, a small volume of gas always being enclosed in the container above the water surface, and the gas-venting means having an inlet orifice disposed in communication with said gas volume.

4,564,127

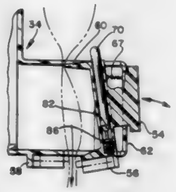
DISPENSER WITH PUMP FOR DISPENSING LIQUID FROM A COLLAPSIBLE BAG

Michael E. Garabedian, Arlington, and Glenn E. Morgan, Sr., Ft. Worth, both of Tex., assignors to Dexide, Inc., Fort Worth, Tex.

Filed Mar. 22, 1984, Ser. No. 592,075

Int. Cl.⁴ B65D *35/56*

U.S. Cl. 222—96 **11 Claims**



1. A liquid dispenser for use with a bag comprising:
(a) a frame;
(b) a bag support means attached to said frame for holding a bag containing a liquid in a substantially upright position, said bag having a releasable seal formed by a clip;
(c) a pumping means moveable with respect to said frame to permit the attachment of said bag to said frame, said pumping means further comprising:
(i) a pump arm frame which is moveable with respect to said frame;
(ii) a pump arm pivotally attached to said pump arm frame for movement between a closed and open discharge position;
(iii) a spring means connected to said pump arm and said pump arm frame to hold said pump arm in the closed position;
(iv) a first bag clip receiving means attached to the bottom of said pump arm for receiving a clip on the bag;
(v) a pump arm activating means attached to said pump arm for pivoting said arm; and
(d) a second clip receiving means attached to said frame in a location opposite to said first bag clip receiving means when said pump means is attached to said frame for receiving the opposite side of the clip on the bag, movement of the pump arm to the discharge position separates the two sides of the clip on the bag to permit discharge simultaneously opens the valve, and moves the pump arm against the bag to force the discharge of liquid from the bag between the pump arm and bag valve.

4,564,128

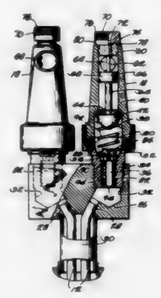
BEVERAGE DISPENSING SYSTEM AND TAP

Daniel E. Belich, 6750 W. Monona Pl., Milwaukee, Wis. 53219

Continuation of Ser. No. 357,935, Mar. 15, 1982, abandoned. This application Jul. 10, 1984, Ser. No. 629,327

Int. Cl.⁴ B67D *3/04*

U.S. Cl. 222—135 **3 Claims**



1. A beverage dispensing system for conveying beverages from plural remote containers to dispensing means in a tapping area, comprising:
A. an independent tap line communicating between each beverage container and an independent tap in the tapping area; and
B. means in the tapping area for enabling and disabling the operation of each said tap; and a valve body and a slide movable within said body for operating said tap, an end portion of said slide being withdrawn within said tap body when said tap is opened; a novel locking device comprising a screw having a shank for being threaded into a corresponding bore in the end portion of said slide and a head for bearing against an external portion of said valve body to prevent said slide from being withdrawn into said body when said screw is advanced into said threaded bore, and to allow said slide to be withdrawn into said valve body when said shank is threadedly retracted at least part way out of the bore in said slide, whereby to provide a system in which the plural containers can be successively drawn without leaving the tapping area by enabling one tap at a time and disabling the taps not in immediate use.

4,564,129

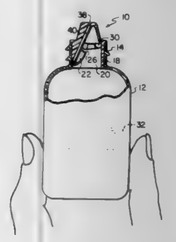
DOSAGE DISPENSING UNIT

Joseph J. Urban, Richboro, Pa., and Norman L. Henderson, Gladstone, N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Jan. 27, 1983, Ser. No. 461,289

Int. Cl.⁴ B65D *37/00*

U.S. Cl. 222—207 **6 Claims**



1. A dosage dispensing unit for attachment to a container, said unit comprising:
a cylindrical body member for attachment to the open mouth of a bottle, said member having a cylindrical chamber defined by an interior wall and being open at one end for communicating with the interior of the bottle, said cylindrical chamber also communicating with a dispensing outlet,
a dosage well formed on one side of the interior wall of said body member, said well being formed by a wall extending upwardly from the lower portion of the cylindrical body, and being open at the top and closed at the bottom,
a semi-annular trough extending around said interior wall, the inner surface of the trough defining a communicating channel between the interior of the bottle and the upper surface of the trough, and communicating at both ends thereof with said dosage well for receiving liquid upon tilting of said bottle and channeling same to said dosage well, and
an overflow depression defined by the upper edge of the wall of the well and the communicating channel, which depression allows air to escape from the well upon filling with liquid.

4,564,130

DISPENSER FOR PASTE-LIKE PRODUCTS

Jürgen Eulenburg, Neuss, Fed. Rep. of Germany, assignor to Josef Wischerath GmbH & Co., KG, Fed. Rep. of Germany

PCT No. PCT/EP83/00165, § 371 Date Feb. 28, 1984, § 102(e) Date Feb. 28, 1984, PCT Pub. No. WO84/00140, PCT Pub. Date Jan. 19, 1984

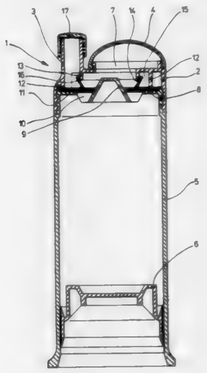
PCT Filed Jun. 29, 1983, Ser. No. 589,067

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224199

Int. Cl.⁴ G01F *11/00*

U.S. Cl. 222—207 **12 Claims**

1. A dispenser for paste-like products comprising: a headpiece including a discharge channel with a dispensing orifice and a pump chamber, the volume of said pump chamber being variable by external actuation and said pump chamber being in communication with said discharge channel via a path blockable only in the direction of said dispensing orifice by means of an outlet check valve; and a container with opposite longitudinally spaced apart ends having one end connected to said headpiece, the end of the container remote from the headpiece having an orifice and a slidable piston in said orifice and in sealing engagement with the interior wall of said container, said container being in communication with said pump chamber via an inlet check valve opening only in the direction of said pump chamber and mounted on a support base extending between said pump chamber and the interior of said container, wherein said inlet check valve includes a valve seat comprising a conical element tapering toward said pump chamber, said conical element being connected to said support base through bridges and surrounded by a plurality of passageways between said bridges, said inlet check valve including further an inlet closure member comprising an apertured disk of flexible material having a radial outer area, a radial inner area and having an inner rim defining the aperture therein, said apertured disk being positioned coaxially with said conical element and with



said radial outer area tightly held on said support base and, in the closed position of said inlet closure member, said inner rim being positioned in sealing engagement with said conical element thereby closing said passageways, wherein said headpiece includes an integral annular collar having a free rim terminating at a distance from said support base and defining an annular gap between said free rim and said apertured disk, and wherein said outlet check valve includes an outlet closure member comprising a flexible annular wall positioned concentrically and integral with said apertured disk and flaring conically therefrom to provide a free flared end of said annular wall and, in the closed position of said outlet closure member, said free flared end being positioned in sealing engagement with the free rim of said annular collar, thereby closing said annular gap.

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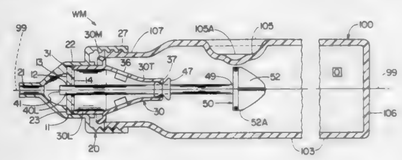
DISPENSING CLOSURE MECHANISM FOR RESILIENTLY SQUEEZABLE RECEPTACLES

Gerald F. Lantry, 2002 Ave. G, Council Bluffs, Iowa 51501

Filed Feb. 8, 1985, Ser. No. 699,945

Int. Cl.⁴ B65D *37/00*

U.S. Cl. 222—213 **11 Claims**



1. In combination with an elongate receptacle for liquid type fluids and that comprises manually resiliently squeezable de-

flectable wall means surrounding a longitudinally extending central-axis and comprises as two longitudinally separated terminii a leadward open-neck surrounding and a trailward closed bottom-wall intersecting said central-axis, said receptacle deflectable wall means between said terminii being provided with visual indicator means to indicate where manual pressure is to be correctly exerted for causing fluid delivery past the leadward open-neck, a dispensing closure mechanism for the receptacle open-neck and comprising:

(A) a cp means provided with a leadward outlet-opening for fluid delivery and further provided with a trailward annular cap-skirt secured to the receptacle open-neck, and said cap means trailwardly of the outlet-opening being internally provided with an interior annular boss surrounding said central-axis;

(B) an elongate spindle extending parallel said central-axis, said spindle length including:

i. a lead-end located trailwardly of the cap means outlet-opening,

ii. a leadward-length located trailwardly of said lead-end and being surrounded by the receptacle open-neck and the cap means cap-skirt, and

iii. a trailward-length located trailwardly of said leadward-length and terminating at a spindle trail-end within said receptacle, said trailward-length being provided with a circumferential discontinuity type fulcrum;

(C) clampably mounted within said cap means at the internal annular boss thereof, a centrally-open gasket surrounding said central-axis, said gasket in directions normal to said central-axis being resiliently stretchable, and said gasket constrictable surrounding the spindle nearer to the lead-end thereof than to the discontinuity type fulcrum;

D. an adapter separable from but having a longitudinally arrested relationship to said cap means, said adapter surrounding the central-axis and the spindle, said adapter including a medial flange portion extending in sealing relationship between the cap means and the receptacle open-neck, said adapter including a tubular leadward-skirt securely removably engaged by the cap means and bearing against the trailward side of said centrally-open gasket and in surrounding relationship to the gasket central-opening, and said adapter including a fluid-pervious reticulated trailward-skirt surrounding and being pivotably secured to the spindle circumferential discontinuity type fulcrum; and

E. a rim type shoulder surrounding and attached to the spindle trailwardly of the circumferential discontinuity type fulcrum and being co-longitudinal with the receptacle visual indicator means, whereby maintenance of manual pressure against the visually indicated wall means contacts the rim type shoulder causing it and the spindle to pivot at said fulcrum and resiliently stretch the gasket central-opening to permit fluid delivery therethrough and thence ultimately through the cap means outlet-opening.

4,564,132

FLUID DISPENSING ASSEMBLY

William T. Lloyd-Davies, Irvine, Calif., assignor to Scholle Corporation, Irvine, Calif.

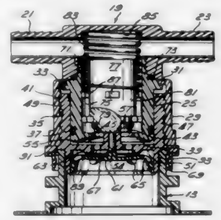
Filed Feb. 24, 1984, Ser. No. 583,380
Int. Cl.⁴ B22D *37/00*
U.S. Cl. 222—522 **21 Claims**

1. A fluid dispensing assembly for continuous dispensing of fluid from a fluid container to a fluid passageway comprising:

a connector valve adapted to be in fluid communication with the passageway and a container valve adapted to be in fluid communication with the container, the valves being mutually engageable and adapted to open upon engagement to permit fluid flow from the container through the valves to the passageway;

each of the valves comprising a cylindrical housing open to fluid flow therethrough, the housings having proximal ends and being adapted for mutual locking engagement to permit fluid flow therebetween, the container valve housing having a distal end adapted for mounting to the container, and the connector valve housing having a distal end adapted for fluid flow engagement wwith the fluid passageway;

one of the valve housings having an intermediate transverse wall, with at least one fluid opening therein; a valve displacement member extending from the proximal side of the wall; a transverse resilient diaphragmic sealing valve member mounted in the housing adjacent the transverse wall in sealing engagement therewith to prevent fluid flow through the transverse wall opening, the diaphragmic valve member having at least one fluid opening therein radially displaced from the transverse wall opening; and a valve stem slidably extending through the transverse wall member and having a first portion protruding



beyond the proximal side of the wall, and a second portion disposed in proximal relationship to the diaphragmic valve member such that depression of the stem causes resilient deflection of the diaphragmic valve member out of sealing engagement with the transverse wall to permit fluid flow between and through the valve member opening and the transverse wall opening; and

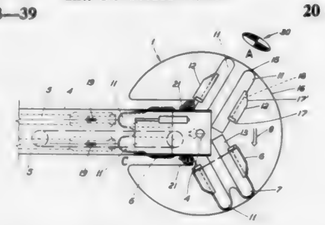
the other valve housing comprising a stem opposing surface disposed in engageable axial alignment with the stem first portion and a normally closed valve mechanism having a resiliently displaceable valve closure, disposed in engageable axial alignment with the valve displacement member such that upon engagement of the housings the the stem opposing surface depresses the stem and the valve displacement member displaces the closure to permit fluid flow through the dispensing assembly.

4,564,133

APPARATUS AND METHOD FOR RAPID LOADING OF PANTYHOSE ONTO A STOCKING FINISHING MEDIUM

Vinicio Gazzarrini, Florence, Italy, assignor to Solis s.r.l., Florence, Italy

Filed Sep. 17, 1984, Ser. No. 651,664
Claims priority, application Italy, Sep. 19, 1983, 9517 A/83
Int. Cl.⁴ A41H *43/02*
U.S. Cl. 223—39 **20 Claims**



1. Apparatus for rapid loading of pantyhoses onto a stocking finishing machine having a pneumatic reversing mechanism including two tubes for receiving the legs of the pantyhose, comprising:

a carrousel structure including at least two intermittently rotating radially arranged arms, each of said arms including means for supporting a panty portion of the pantyhoses;

means for engaging an elastic edge portion of the panty portion for opening thereof and stretching it into a generally rectangular configuration, removing the panty portion from said supporting means and superimposing the panty portion on said tubes and reversing the panty portion thereon while said pneumatic reversing machanism draws the legs into said tubes;

track means extending radially from the center of said carrousel towards the outer periphery thereof; and

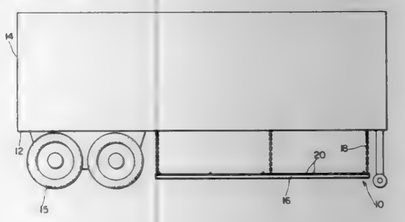
means for moving said engaging means with the pantyhose thereon from said supporting means to said tubes.

4,564,134

PALLET STORAGE RACK

Charles Seibert, Rte. 2, Box 164, Penfield, Ill. 61862

Filed Jan. 31, 1983, Ser. No. 462,447
Int. Cl.⁴ B60R *9/00*; **B62D** *25/20*
U.S. Cl. 224—42.41 **4 Claims**



1. A pallet storage rack for the trailer of a tractor-trailer truck comprising:

a rigid support frame comprising a first plurality of elongated metallic elements disposed generally parallel to each other at spaced intervals and a second plurality of elongated metallic elements disposed generally parallel to each other and at a generally right angle to said first plurality of elements, said first and second plurality being disposed substantially coplaner and being rigidly secured to each other where adjacent, said plurality of elements being dimensioned to form a generally planar rectangular grid support frame disposed under the trailer of a tractor trailer truck against the underside thereof forward of the rear wheels without lateral extension; and

a plurality of metal chains each connected at one end to the trailer and at the other end to said support frame and being selectively variable in effective length, said chains being at least four in number, at least four of said chains being connected to the trailer at the lateral extremeties thereof and to said support frame at the corners thereof,

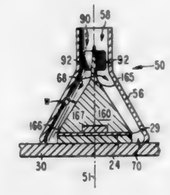
whereby the spacing between the underside of the trailer and said support frame may be relatively varied from a first position adjacent the underside of the trailer when it is desirable to carry the pallets internally of the trailer to a second position spaced approximately sixty percent of the distance between the underside of the trailer and the ground when it is desirable to carry the pallets externally of the trailer to thereby free the internal space of the trailer for cargo.

4,564,135

CHIP CARRIER SOLDERING TOOL

Anthony J. Barresi, Hammonton, and Leonard Nelson, Cherry Hill, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 29, 1983, Ser. No. 566,826
Int. Cl.⁴ B23K *1/12*
U.S. Cl. 228—6.2 **10 Claims**



6. Apparatus for use with surface mounted chip carriers, comprising:

a conduit, having lateral walls, an inlet end, an outlet end, and a flared portion in which the interior cross section of said conduit increases with increasing distance from said inlet end toward said outlet end, for conducting hot gas;

a diverter device within said flared portion, said diverter device having a main portion whose cross section increases with increasing distance from said inlet end toward said outlet end of said conduit;

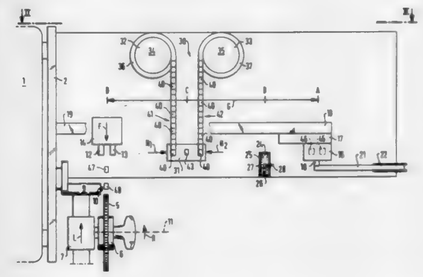
said diverter device being positioned within said flared portion to divert said flow from the central portion of said conduit and to leave a channel for gas flow surrounding said diverter within said flared portion.

4,564,136

APPARATUS FOR THE AUTOMATIC SOLDERING-ON OF HARD METAL TEETH

Peter Kähny, Auenwald, and Norbert Gerling, Aspach, both of Fed. Rep. of Germany, assignors to Kahny-Maschinenbau GmbH, Backnang-Steinbach, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,317
Int. Cl.⁴ B23K *13/00*
U.S. Cl. 228—6.1 **15 Claims**



1. Apparatus for the automatic soldering of hard metal teeth onto the prongs of a circular saw blade, wherein said apparatus comprises

a soldering mount being movable to and fro between a soldering mount tooth pick up position and a soldering position in which a hard metal tooth, on the top of which a solder platelet is placed having a drop of a flux on its bottom side, is held and pressed by said soldering mount from below against a prong of the circular saw blade during the heating-up, soldering and cooling-down operations,

a tooth transport means being movable to and fro between a tooth feeding means placing ready individual hard metal teeth with a defined orientation and said soldering mount tooth pick up position, said tooth transport means being adapted at each to and fro going stroke of its movement to pick up one individual hard metal tooth from said tooth feeding means, to transport said individual hard metal tooth and to transfer it to said soldering mount at said soldering mount tooth pick up position,

a solder platelet transport means being movable to and fro between a solder platelet pick up position and a solder platelet deposition position which is arranged on the movement path of said soldering mount, said solder platelet transport means being adapted at each to and fro going stroke to pick up one individual solder platelet at said solder platelet pick up position, to transport said individual solder platelet to said solder platelet deposition position and to place said solder platelet at said deposition position on the top of a hard metal tooth being held by said soldering mount, and

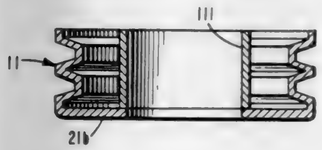
a flux feeding means being adapted for placing a drop of the flux on the bottom side of each solder platelet.

4,564,137

METHOD OF MAKING A CLUTCH ROTOR FOR AN ELECTROMAGNETIC CLUTCH

Yasuo Nakamura, Isesaki, Japan, assignor to Sanden Corporation, Japan

Continuation-in-part of Ser. No. 511,961, Jul. 8, 1983. This application Jul. 27, 1983, Ser. No. 517,703
Claims priority, application Japan, Jul. 30, 1982, 57-133260
Int. Cl.⁴ B23K *31/02*
U.S. Cl. 228—173.6 **8 Claims**



1. A method of making a clutch rotor for use in an electromagnetic clutch consisting of the steps of:

(a) forming a cup-shaped blank with a straight, generally cylindrical flange wall and bottom plate having an aperture sized to accommodate a drive shaft so that the clutch rotor is rotatably supported on the drive shaft by pressing a piece of sheet metal into said cup-shaped blank and punching out said aperture;

(b) forming an annular outward bulge portion in said flange wall by a pressing operation;

(c) pressing said bulge portion into at least one approximately V-shaped inwardly projecting groove wherein the walls of said V-shaped groove each comprise a single layer of sheet metal;

(d) forming a final V-shaped groove adapted to receive a drive belt by applying a roller working operation to said approximately V-shaped groove; and

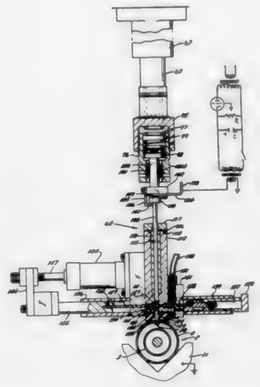
(e) welding an inner cylindrical member to a radial inner surface of said bottom plate of cup-shaped blank.

4,564,138

GAS PRESSURIZED SHOCK ABSORBER ASSEMBLY

Michael R. Bethell, Monroe; Michael G. Gaines; James F. Mowat, Jr., both of Temperance, all of Mich.; Roger D. Wheeler, Sylvania, and Richard P. Woidke, Toledo, both of Ohio, assignors to Monroe Auto Equipment Company, Monroe, Mich.

Filed Sep. 17, 1984, Ser. No. 610,313
Int. Cl.⁴ B65B *31/04*
U.S. Cl. 228—176 **8 Claims**



1. A method for gas pressurizing a sealed completely assembled, but unpressurized, shock absorber assembly, said assembly having a pressure tube, a piston reciprocatable in said pressure tube, a piston rod affixed to said piston and reciprocatable with respect to said pressure tube and a weldable metallic reserve tube coaxial with and radially outwardly spaced from said pressure tube, said pressure tube and said reserve tube being sealingly engaged to form a sealed unit containing a liquid and having a substantially liquid free space, said method comprising the following steps performed in succession in a gas pressurizing apparatus:

(a) placing said shock absorber assembly in a fixed position in a moveable holding fixture with the piston rod extended, in a said gas pressurizing apparatus;

(b) piercing an opening in said reserve tube said opening being contiguous with said liquid free space;

(c) placing said pierced opening in sealed fluid flow communication with a working chamber of said gas pressurizing apparatus;

(d) passing a pressurizing fluid through said working chamber and said opening into said liquid free space;

(e) placing a continuous annular portion of a weldable plug in contact with a continuous annular portion of the exterior of said reserve tube surrounding said pierced opening;

(f) welding said plug to said reserve tube to seal said pierced opening for maintaining said shock absorber gas pressurized; and

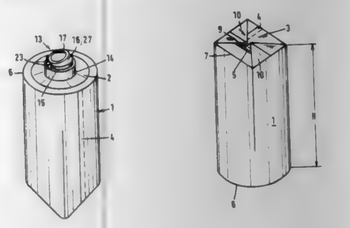
(g) removing said assembly from said holding fixture.

4,564,139

PACKAGING MEANS FOR FILLING MATERIALS WHICH ARE CAPABLE OF FLOW, HAVING A RE-CLOSABLE OPENING MEANS

Wilhelm Reil, Bensheim, Fed. Rep. of Germany, assignor to Tetra Pak Developpement S.A., Pully, Switzerland

Filed Apr. 4, 1983, Ser. No. 481,634
Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217156
Int. Cl.⁴ B65D *3/10*
U.S. Cl. 229—5.5 **7 Claims**



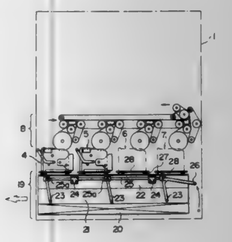
1. In a container to be filed with materials which are capable of flowing comprising a side wall of a sheet of carrier material coated with a thermoplastic material, and having longitudinal edges joined at a longitudinal seam to form a generally tubular body; a bottom formed by folding a bottom portion of said side wall at a fold line in the side wall, and in a plane transverse the axis of the tubular body, the bottom including a plurality of triangular flaps defining a quadrangular configuration and folded over to lie against at least one adjacent panel portion of the transversely folded bottom portion of said side wall, and a top disposed at a top edge of the tubular body, said top being formed of said thermoplastic material and affixed onto said top edge by injection molding the top onto said tubular body; the improvement wherein at least two of said flaps disposed opposite each other are folded inwardly at said fold line to lie along the plane of said bottom against said panel portion of said bottom portion and are affixed in such position, and wherein wherein said bottom has a transverse sealing seam extending at least between said fold lines and to the apexes of said oppositely-disposed, inwardly folded triangular flaps.

4,564,140

STACKER SUPPORTING DEVICE IN AUTOMATIC MONEY DEPOSITING AND DISBURSING MACHINE

Eiichi Kokubo; Junichi Arikawa; Kowichi Goi, and Shinichi Imura, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,169
Claims priority, application Japan, Sep. 2, 1981, 56-137973
Int. Cl.⁴ B65G *11/04*
U.S. Cl. 232—57.5 **3 Claims**



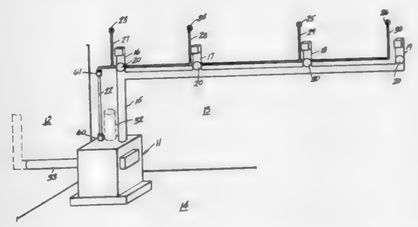
1. An automatic money depositing and disbursing machine wherein notes inserted into a transacting port are fed into a discriminating section to detect the presence or absence of abnormal notes and to receive normal notes and wherein at least a portion of the received notes are used as notes to be disbursed, which machine comprises: a housing for containing the several elements of the machine, note circulating delivery passage means for delivering along a common route received notes and notes to be disbursed, note transfer means disposed below said note circulating delivery passage for transferring notes between said note delivery passage and at least one box for containing notes therein, a plurality of boxes for containing notes therein and movably positioned below and adjacent said note transfer means, and stacker supporting means disposed below said note transfer means for movably supporting said plurality of boxes, said note transfer means including means for receiving notes from the note circulating delivery passage means, and note removing means to suck notes from the boxes supported on the stacker supporting means so as to transfer the notes to the note circulating delivery passage means, said stacker supporting means including a stationary rail portion attached to the bottom of the housing and a movable portion adapted to carry the boxes thereon, said movable portion slidably supported on the stationary rail portion for movement in horizontal opposite directions to permit removal of the boxes from the housing and to permit insertion of the boxes into the housing in either horizontal direction, and pivot means provided on said movable portion for vertically raising the boxes relative to the movable portion and toward the means for receiving notes and the note removing means of the note transfer means to permit notes to be transferred to and removed from said boxes by said note transfer means, and for vertically lowering the boxes away from the means for receiving notes and note removing means of the note transfer means to permit the boxes to be horizontally slidably removed from the housing without contacting the note transfer means.

4,564,141

APPARATUS AND METHOD FOR DOMESTIC HOT WATER CONTROL

Douglas J. Montgomery, Trumbull, Conn.; Leonard H. Goldstein, Hyde Park, and Ernest Stumbo, Clinton Corners, both of N.Y., assignors to Doleer Electronics, Inc., Clinton Corners, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,286
Int. Cl.⁴ F23N *5/02*
U.S. Cl. 236—20 R **22 Claims**



1. In a domestic hot water system which comprises a means providing a source of hot water, an aquastat for controlling the heating of hot water at said source between predetermined temperature limits, and a manifold leading from said source to one or more user stations;

means for disabling said aquastat during predetermined intervals of time,

a first temperature sensing means closely positioned to said source on said manifold, a second temperature sensing means positioned on said manifold and spaced from said first sensing means, away from said source,

comparison means responsive to said first and second sensing means for comparing the temperatures sensed,

means responsive to said comparison means sensing a predetermined temperature difference for enabling said aquastat to heat the water at said source during said predetermined intervals of time.

4,564,142

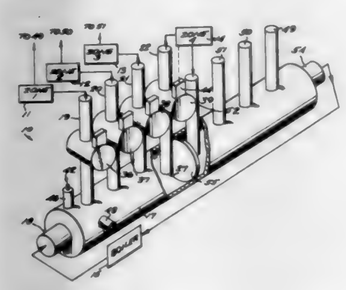
HYDRONIC SYSTEM WITH CIRCULATORS CONNECTED TO A HEADER

Clarence W. Cleer, Jr., R.D. 2, Box 90, Kane, Pa. 16735

Filed Jun. 1, 1984, Ser. No. 616,186

Int. Cl.[4] F24D *3/00*

U.S. Cl. 237—8 R **12 Claims**



1. A hydronic multi-zone heating installation for connection to a water heating device, and comprising: a header having an inlet adapted to be connected to the water heating device; a plurality of supply pipes operatively connected at a first open end thereof to said header in fluid communication therewith, and adapted to be connected at a second end thereof to a heating zone; means for mounting said header so that it extends generally horizontally; a circulator connected to each supply pipe for circulating liquid from said header through said supply pipe to a heating zone;

means for eliminating air from liquid in said instllation, said means comprising: said header having a significantly larger cross-sectional area than the inlet thereto, and than each of said supply pipes; each of said supply pipes extending into said header a significant distance so that during operation said first open end of each of said supply pipes will always be below the level of liquid in the header; and air vent means operatively connected to a top portion of said header above the level of liquid for venting air therefrom;

a plurality of return pipes connected to said header, and an outlet extending from said header; said supply pipes connected to said header adjacent the inlet to said header, and said return pipes connected to said header adjacent the outlet from said header, and wherein each of said return pipes having a first open end thereof extending from the top or bottom of the header inwardly into said header to approximately the center line of said header; and

said header being completely open so that liquid may flow freely through said header from the inlet to the outlet thereof.

4,564,143

HOT-BLAST NOZZLES, PARTICULARLY FOR BLAST FURNACES

Francois Touze, Chateau de Logne, 57310 Guenange, France

Filed May 3, 1982, Ser. No. 374,151

Claims priority, application France, May 15, 1981, 81 09772

Int. Cl.[4] B05B *15/00*

U.S. Cl. 239—132.3 **19 Claims**

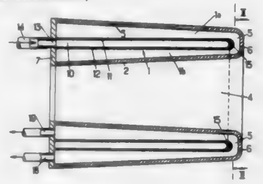
1. A hot-blast nozzle, particularly for a blast furnace, comprising:

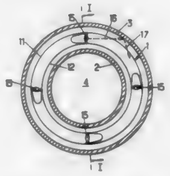
an outer hollow tubular enclosure defined by two substantially cylindrical walls extending between a front part or and a rear part and through which a current of a supplied cooling liquid can flow,

an inner hollow tubular chamber substantially coaxial with the outer enclosure and disposed at a radial distance from the substantially cylindrical walls thereof, said inner chamber having a rear end located at said rear part of the outer enclosure and a front end located in the immediate vicinity of said snout;

liquid supply means for connecting said inner enclosure to a cooling liquid supply network; and

means for discharging a supplied cooling liquid connected to the outer enclosure;





characterized in that said nozzle further comprises at least one orifice located substantially in the front end of the inner chamber and opening tangentially into said enclosure so as to communicate to the supplied cooling liquid a tangential component; and characterized in that the outer enclosure has inwardly no obstacle likely to oppose the movement of the cooling liquid, whereby said orifice and said obstacle-free outer enclosure are such that the cooling liquid is projected against the inner face of the snout of the enclosure and then set in free helical rotational motion within the outer enclosure between the snout and the discharge means.

4,564,144

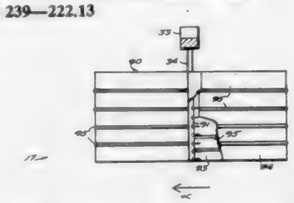
STATIONARY DIFFUSER

Oliver A. Laakso, Haralyn (West), #2 Middle Rd., Smiths Parish, Bermuda (3-18)

Division of Ser. No. 498,801, May 27, 1983, Pat. No. 4,441,224, which is a division of Ser. No. 374,763, May 4, 1982, Pat. No. 4,468,319. This application Jan. 31, 1984, Ser. No. 575,683

Int. Cl.[4] B05B *3/02*

U.S. Cl. 239—222.13 **8 Claims**



1. A fluid introducing structure comprising: a rotatable substantially linear nozzle member having means defining a plurality of spaced fluid-flow providing openings therein; and a substantially cylindrical wall having solid exterior surfaces, said wall attached to said nozzle member at a first end thereof and rotatable therewith, and disposed adjacent said nozzle member at a second end thereof; said wall having a continuously decreasing cross-sectional area from said first end to said second end thereof.

4,564,145

ELECTROMAGNETIC FUEL INJECTOR

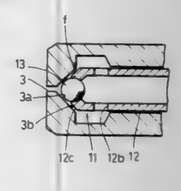
Shigetaka Takada, Obu; Toshiro Makimura, Nagoya, and Mamoru Matsubara, Obu, all of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 17, 1983, Ser. No. 495,152

Claims priority, application Japan, Aug. 4, 1982, 57-119438[U]; Nov. 1, 1982, 57-166868[U]

Int. Cl.[4] F02M *51/06*

U.S. Cl. 239—585 **3 Claims**



1. In combination with an electromagnetic fuel injector for an internal combustion engine including a valve housing provided with a fuel injection nozzle and a valve seat at its front end and a guide hole extending along the axis of said valve housing, a valve body slidably inserted into said guide hole, said valve body being composed of a cylindrical slide member having a fuel passage therein and a substantially spherical valve member fixed on the tip of said slide member, a compression spring adapted to normally urge said valve body so as to close said fuel injection nozzle, an armature fixed to the rear end of said valve body, a fixed magnet core having a front end opposite to the rear end of said armature and having a fuel passage extending through its central portion, an exciting coil surrounding said fixed magnet core and an electromagnetic housing combining said valve housing with said fixed magnet core, wherein said electromagnetic fuel injector is adapted to discharge pressurized fuel when said exciting coil receives control signal to open said valve body, the improvement comprising a fuel outlet opening formed at the front portion of said slide member, an annular fuel passage leading from said fuel outlet opening to said valve seat and an annular restricted portion provided along a definite length of said annular fuel passage.

4,564,146

PAPER SHREDDING MACHINE

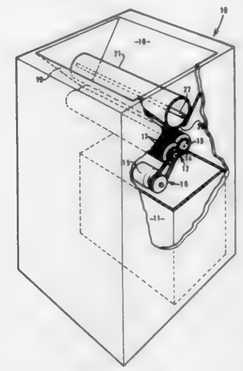
Stephen F. Bleasdale, Holmfirth, England, assignor to Ofshred Limited, Huddersfield, England

Filed Jul. 5, 1983, Ser. No. 510,603

Int. Cl.[4] B02C *18/22*

U.S. Cl. 241—236 **10 Claims**

1. A paper shredding machine for shredding paper sheets comprising: a housing having inclined guide surfaces spaced apart by a gap; a cutter assembly disposed within said housing and beneath said gap; drive means for driving said cutter assembly; a non-positively driven, free-wheeling hollow tubular closure member rotatable about its longitudinal axis, normally resting on said guide surfaces while covering said gap, and mounted for limited movement relative to said guide surfaces; and pin means not connected to said hollow tubular closure member and extending from the housing into said hollow tubular closure member with a radial clearance between said pin means and said hollow tubular closure member; wherein when said hollow tubular closure member is in a first position relative to said housing, said hollow tubular closure member rests upon said guide surfaces and closes said gap, and when said hollow tubular closure member is in a second position relative to said housing, a rectilinear infeed opening is formed between said hollow tubular closure member and at least one of said guide surfaces so that paper sheets can be fed to the cutter assembly along a path transverse to the length of said infeed opening with said hollow tubular closure member rolling on said paper sheets and displacement of said hollow tubular member being limited by said pin means.



4,564,147

WINDING MACHINE

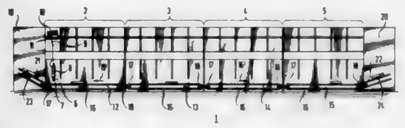
Joachim Rohner, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 640,087

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1983, 3329362

Int. Cl.[4] B65H *54/20, 67/06*

U.S. Cl. 242—35.5 A **6 Claims**



1. In a winding machine having a plurality of sequentially disposed winding sections and end sections, each of said winding sections comprising a plurality of winding stations, and a plurality of separate bobbin tube transporters each being disposed at a respective one of said winding sections and each having a bobbin supporting surface being selectively adjustable for movement in opposite directions for discharging empty bobbin tubes from said winding sections to said end sections, said bobbin tube transporters of all of said winding sections being mutually sequentially aligned.

4,564,148

TOILET PAPER DISPENSING SYSTEM

Michael B. Wentworth, 7015 Buckingham Rd., Berkeley, Calif. 94705

Filed Jun. 25, 1984, Ser. No. 624,061

Int. Cl.[4] B65H *19/04*

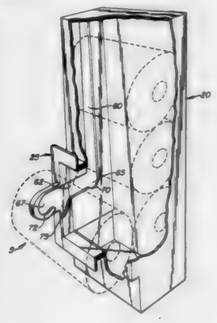
U.S. Cl. 242—55.3 **13 Claims**

1. A toilet paper roll dispenser comprising:

a chamber adapted to be mounted within a stud wall, said chamber having internal dimensions sufficient to accommodate a stacked plurality of rolls to be dispensed, said chamber having a rear wall, first and second side walls, and a front wall, said front wall being formed at a lower portion thereof with with an opening sized to allow the rolls to pass therethrough for loading and dispensing;

first and second guides, having respective substantially uninterrupted first and second vertical channels, each extending upwardly along a respective one of said side walls, and respective first and second horizontal channels, each extending from a lower point on the corresponding vertical channel, through and beyond said opening in said front wall, to a point outside said chamber;

said first and second guides opening toward one another in facing relationship and having lateral dimensions sized to accommodate spindle ends extending beyond the end faces of the rolls; and



first and second roll holder means, associated with said first and second horizontal channels, respectively, and located at respective terminal regions thereof, for establishing a position at the ends of said horizontal channels at which a roll is disposed for use;

at least said first horizontal channel being formed with an open segment to allow insertion of the spindle ends into said first and second horizontal channels, said horizontal channels and said vertical channels being configured relative to said opening and said chamber to permit a roll, the spindle ends of which are thus inserted into said horizontal channels, to pass through said opening and up into said chamber.

4,564,149

DEVICE FOR JOINING TOGETHER IN A REGISTERED AND/OR ABUTTING MANNER THE ENDS OF TWO PAPER OR CARDBOARD WEBS WHICH UNWIND FROM TWO DIFFERENT WHEELS POSITIONED ON A REEL STAR UNIT OF TWO OR MORE POSITIONS

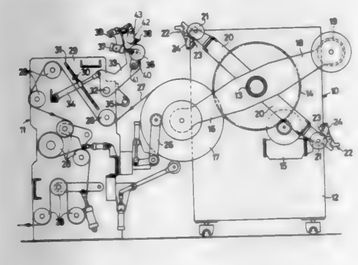
Piero Barzano', Bergamo, Italy, assignor to IMS S.p.A., Calcinate, Italy

Filed Dec. 28, 1983, Ser. No. 566,339

Claims priority, application Italy, Jan. 7, 1983, 20416/83[U]

Int. Cl.⁴ B65H *19/14, 19/18*

U.S. Cl. 242—58.1 **4 Claims**



1. A device for joining together in a registered relationship a tail end of a first web unwound from a first reel with a lead end of a second web of a second reel, comprising:

a star reel unit having a pair of arms rotatably supporting said first reel and another pair of arms rotatably supporting said second reel;

means for rotating said star reel unit for positioning said second reel in place of said first reel when said first reel is near to expire but continues to have the first web unwound therefrom;

means for cutting said first web to provide said tail end of said first web and for splicing said tail end of said first web to said lead end of said second web comprising, cutting and splicing support arms pivotally mounted on a machine frame, means to pivotally move said cutting and splicing support arms between an inoperative position and an operative position when said first web is slowing down, a movable cutting blade mounted on said cutting and splicing support arms, a bracket pivotally mounted on said star reel unit, a counterblade mounted on said bracket for cooperating with said cutting blade when in said operative position to cut said first web, a splicing roller rotatably supported on said cutting and splicing support arms, and means operatively associated with said cutting blade and roller to actuate said cutting blade and roller to produce the cutting and splicing when said cutting and splicing support arms are in the operative position and said first web is stopped;

means for rotating said second reel;

a first photoelectric means on said star reel unit for controlling said means for rotating said second reel for positioning said second reel in a predetermined stationary angular position in which said lead end faces said first web; and

second photoelectric means responsive to register marks on said first web for controlling slowing down and momentarily stopping of said first web in a position in which said tail end of said first web is in registered joining relationship with said stationary angularly positioned lead end of said second web and for substantially simultaneously actuating said cutting and splicing means and restarting movement of said joined webs.

4,564,150

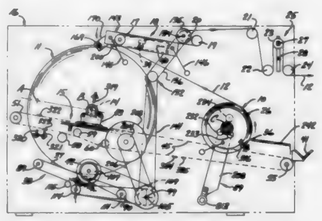
APPARATUS FOR CONTINUOUSLY SUPPLYING A WEB OF SHEET MATERIAL

John F. Keene, Roscoe; Bengt L. Kuller, Rockford, and Robert G. Kemmeter, Rockton, all of Ill., assignors to Enkel Corporation, Rockford, Ill.

Filed Nov. 28, 1983, Ser. No. 555,823

Int. Cl.⁴ B65H *19/18, 19/30, 23/08*

U.S. Cl. 242—58.1 **15 Claims**



1. In an apparatus for continuously supplying a web of sheet material, the combination of, a base, means on said base to support first and second circular rolls of web to turn about parallel axes, means for guiding the web from said first roll as the web is unwound from the latter at a preselected linear speed, a frictional drive member frictionally engaging the circular periphery of said second roll and operable when driven to rotate said second roll, clutch means, a power actuator operable through said clutch means to drive said frictional drive member at one speed and accelerate said second roll to a peripheral speed near the linear speed of the web from said first roll, means responsive to the linear speed of the web from said first roll and operable after operation of said power actuator to drive said frictional drive member at a different speed through said clutch means to cause said frictional drive member to rotate said second roll at a peripheral speed matching the linear speed of the web from said first roll, and means subsequently operable to attach the web from said first roll to the web on said second roll.

4,564,151

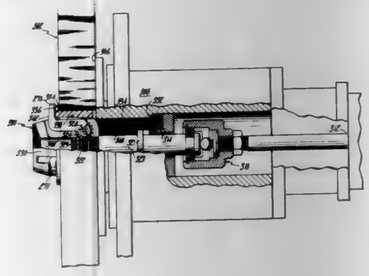
CORE LATCH CHUCK ASSEMBLY

Christopher Pali, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Jun. 4, 1984, Ser. No. 617,310

Int. Cl.⁴ B65H *75/24, 19/12*

U.S. Cl. 242—68.3 **9 Claims**



1. A core latch chuck assembly for securing a roll of wound material having an annular core for rotational movement which comprises:

a generally cylindrical casing sized to have a diameter less than the internal diameter of the core;

motion limiting means for slidably displacing the cylindrical casing between a mounting position wherein the casing extends within the core of the roll and an unloading position wherein the casing is removed from the core;

at least one core latch pivotally mounted within the casing, said latch having a locking position wherein the latch extends from the casing to engage the roll and a withdrawn position wherein the latch is maintained within the casing, said latch additionally including gear teeth;

a shaft slidably secured within the casing and including rack teeth mating with the gear teeth such that sliding motion of the shaft relative to the casing may cause the latch to rotate between the locking position and the withdrawn position; and

actuator means connected to the shaft such that displacement of the actuator means results in displacement of the shaft, said shaft being connected to the casing by the motion limiting means for allowing relative motion between the shaft and the casing to effect positioning of the latch.

4,564,152

APPARATUS FOR STORING AND TRANSPORTING WIRE ON REELS AND FOR DISPENSING WIRE FROM THE REELS

A. A. Herriage, P.O. Box 967, Jasper, Tex. 75951

Filed Jun. 18, 1984, Ser. No. 621,266

Int. Cl.⁴ B65H *17/40, 17/46*

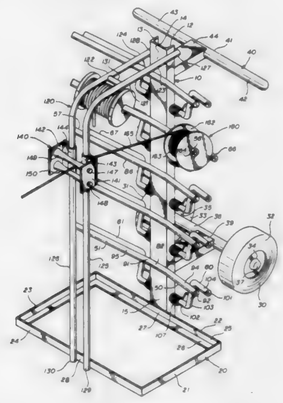
U.S. Cl. 242—86.5 **12 Claims**

1. A new and improved apparatus for storing and transporting a plurality of reels of wire, each reel having an axial bore therethrough, and for dispensing wire from any of the reels, comprising:

(a) a frame including a front side and a back side;

(b) a base connected to said frame;

(c) a plurality of spindles connected to said frame and projecting upwardly from said frame, each of said spindles being adapted for insertion into the bore of the reel so that the reel may be mounted upon said spindle and the weight of the reel retains the reel upon said spindle and so that the reel may rotate as wire is pulled from the reel;



(d) means for restricting the wire as a tension force pulls the wire from the reel mounted upon said spindle so that the application of the tension force to the wire does not lift the reel from said spindle and so that the wire may be dispensed at a desired height, said restricting means includes a guide having a passageway therethrough and a track, with said guide being mounted to and movable along said track, and with said track being located forward of said spindles and being connected to said frame; and

(e) means for stopping the rotation of the reel mounted upon said spindle when wire ceases to be pulled from the reel.

4,564,153

RETRACTOR

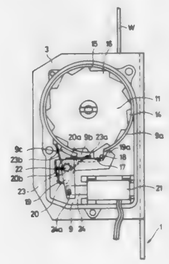
Masaru Morinaga, Yamato, and Shinobu Mogi, Fujisawa, both of Japan, assignors to NSK-Warner K.K., Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,212

Claims priority, application Japan, Dec. 16, 1982, 57-189214[U]; Jul. 29, 1983, 58-117136[U]

Int. Cl.⁴ A62B *35/00;* **B65H** *75/48*

U.S. Cl. 242—107 **9 Claims**



1. A retractor having a webbing take-up shaft rotatably

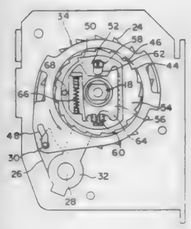
supported by a base, biasing means for biasing said take-up shaft in a webbing take-up direction, said biasing means including plural parts, a connecting member for connecting one part and another part of said biasing means, locking means capable of assuming a locking position in which it is engaged with said connecting member to prevent the biasing force of said other part of said biasing means from acting on said take-up shaft and a non-locking position in which it is not engaged with said connecting member to permit the biasing forces of said one part and said other part of said biasing means to act on said take-up shaft, said locking means having an engaging portion, control means for controlling said locking means, means for permitting at least the engaging portion of said locking means engaged with said connecting member to move toward said non-locking position without substantially affecting said control means when a force greater than a predetermined value which tends to bring said locking means toward said non-locking position acts on said locking means after said locking means has been brought to said locking position by said control means, and a cam member movable in a predetermined range in response to movement of said take-up shaft and adapted, when said take-up shaft moves in a webbing draw-out direction, to move to one end of said predetermined range and engage said locking means in said locking position to thereby bring at least said engaging portion of said locking means to said non-locking position and, when said take-up shaft moves in the webbing take-up direction, to move to the other end of said predetermined range and to be disengaged from said locking means, said locking means including a stop spring with a first portion and a second portion and a stop lever having said engaging portion thereon, said stop spring being operatively connected to said control means, said first portion being in contact with said stop lever for bringing said stop lever into engagement with said connecting member, said second portion being in contact with said stop lever for bringing said stop lever into disengagement from said connecting member, and said permitting means including said first portion which flexes for permitting said engaging portion to move toward said non-locking position.

4,564,154

SAFETY BELT RETRACTOR

Juichiro Takada, 3-12-1 Shinmachi, Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,763
Claims priority, application Japan, Nov. 11, 1982, 57-196792
Int. Cl.⁴ B65H *75/48*
U.S. Cl. 242—107.4 B **3 Claims**



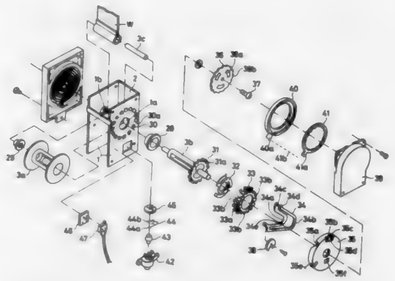
1. A safety belt retractor having a frame; a takeup shaft rotatably journalled on the frame and normally biased to wind a safety belt therearound; a ratchet wheel coaxially affixed to the shaft; an inertia member coaxially mounted on the takeup shaft for rotation relative therto; a clutch mechanism composed of a lock ring coaxially and rotatably mounted on the takeup shaft, the lock ring having internal teeth and a cam slot, and engagement means for engaging at least one of the internal teeth of the lock ring to couple the lock ring with the takeup shaft for rotation therewith when there is a difference between the speeds of rotation of the takeup shaft and the said inertia member; and a pawl pivotably supported on said frame and having a cam follower affixed thereon and received in the cam slot in the lock ring; the pawl being pivotably movable into an operative position in which it engages the ratchet wheel in response to rotation of the lock ring in the belt-unwinding direction when the lock ring is coupled to the takeup shaft, and also pivotably movable into an inoperative position out of engagement with the ratchet wheel in response to rotation of the lock ring in the belt-winding direction when the lock ring is uncoupled from the takeup shaft, characterized in that the engagement means includes a retainer affixed on the shaft, a carrier having at least one tooth engageable with an internal tooth of the lock ring, means coupling the retainer to the carrier for rotation therewith and for movement in a direction substantially diametrically relative to the shaft between a first position in which the carrier tooth is out of engagement with any lock ring tooth and a second position in which the carrier tooth engages a lock ring tooth, thereby to couple the retainer to the lock ring for rotation in the belt-unwinding direction, the carrier also being movable transversely to said diametrical direction relative to the retainer, a pin coupling the carrier to the inertia member at a location spaced apart radially from the shaft and substantially 90° from the said diametrical direction along which the carrier is movable relative to the retainer, and an inertia spring engaged between the retainer and carrier biasing the carrier toward the first position; and further characterized in that the cam slot includes an extension portion for allowing the lock ring to rotate in the belt-unwinding direction without moving the cam follower in a direction to disengage the pawl from the ratchet wheel when the pawl is in the operative position.

4,564,155

EMERGENCY LOCKING TYPE RETRACTOR PROVIDED WITH A TAKE-UP FORCE LOCKING MECHANISM

Masahiro Tsukamoto, Fujisawa, Japan, assignor to NSK-Warner K. K., Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,569
Claims priority, application Japan, Jun. 29, 1983, 58-99398[U]
Int. Cl.⁴ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **6 Claims**



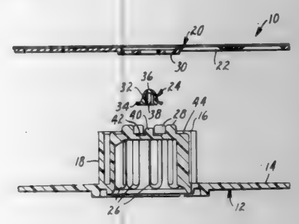
1. An emergency locking type retractor comprising:
reel shaft means biased in a belt take-up direction and rotatably supported by a base member;
belt take-up force locking means capable of assuming an operative condition and an inoperative condition, said locking means preventing a belt take-up force from being applied to a belt at at least one point during belt wearing in said operative condition and incapable of preventing the belt take-up force from being applied to the belt in said inoperative condition;
emergency locking means capable of assuming first and second conditions, said emergency locking means permitting said reel shaft means to rotate freely in the first condition and being operated, upon detecting a speed change of a vehicle body over a predetermined value, to act on the reel shaft means to prevent draw-out of the belt in the second condition; and
releasing means for bringing said belt take-up force locking means into the inoperative condition in response to change of said emergency locking means from the first condition to the second condition when said take-up force locking means is in said operative condition.

4,564,156

VIDEOCASSETTE WEAR BUTTON

Claude E. Cybulski, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 15, 1984, Ser. No. 621,113
Int. Cl.⁴ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—197 **5 Claims**



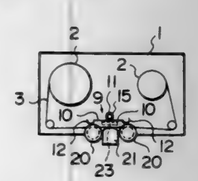
1. In a tape spool for a tape cassette, which spool comprises two flanges connected by a hub having a cylindrical tape-winding surface and a wear button projecting beyond the flanged hub at the axis of the spool, the improvement comprising:
a stud including an outer surface and projecting from said hub at and coaxial with said axis; and
a separate piece mounted on said stud and including a blind bore adapted to accept said stud in an interference fit which generates sufficient friction between said stud surface and said separate piece to prevent relative movement between said stud and said separate piece during normal usage of said tape spool in a said tape cassette, said separate piece further including a terminal outer surface along said axis which is rounded and projects beyond one of said flanges to serve as said wear button.

4,564,157

MAGNETIC RECORDING TAPE CASSETTE

Kengo Oishi, and Osamu Suzuki, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1984, Ser. No. 625,018
Claims priority, application Japan, Aug. 15, 1983, 58-126352[U]
Int. Cl.⁴ G11B *15/32, 15/60*
U.S. Cl. 242—199 **7 Claims**



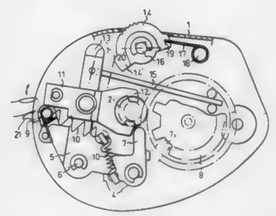
1. A magnetic recording tape cassette suitable for recording and/or playing digital signals magnetically recorded in a multiplicity of narrowly spaced tracks on a magnetic tape, comprising a pair of tape hubs, said magnetic tape being wound around the hubs, a cassette casing for accommodating therein the tape hubs and the magnetic recording tape, a pair of guide rollers rotatably mounted in the cassette to guide the tape between said reels and past a front side of the cassette casing, a magnetic head receiving opening disposed centrally on said front side of said casing and through which a magnetic recording and/or playback head can be inserted to contact said tape, a pair of tape guide openings disposed on either side of said magnetic head receiving opening on said front side of said cassette casing, a pair of tape supports within said casing and respectively disposed on opposite sides of said magnetic head receiving opening at the positions of said tape guide openings, and resilient means mounting said tape supports yieldably biasing said supports towards said tape guide openings and permitting displacement of said tape supports away from said openings, the tape supports being of sufficient with and suitably positioned to be displaced away from the magnetic recording tape by a respective pair of tape guide members provided in a tape recorder on opposite sides of a magnetic head in said recorder, each tape guide member being provided with a pair of collars having inside portions spaced from each other in the direction of tape width of said tape by a distance substantially equal to the width of said tape, the collars having outside portions spaced from each other by a distance smaller than the width of the respective guide openings to permit insertion of said tape guides into said tape guide openings, said collars including means for abutting against the corresponding tape support to push the same away from the recording tape with the recording tape accommodated between the collars when the cassette is loaded into the tape recorder such that during operation the tape runs in a fixed path relative to said head under the guidance of the pair of tape guide members.

4,564,158

FISHING REEL CLUTCH RELEASE MECHANISM

Börje S. Moosberg, and Jarding U. Karlsson, both of Mörrum, Sweden, assignors to Abu Aktiebolag, Svangsta, Sweden

Filed Oct. 26, 1983, Ser. No. 545,428
Claims priority, application Sweden, Nov. 9, 1982, 8206342
Int. Cl.⁴ A01K *89/00*
U.S. Cl. 242—220 **12 Claims**



1. A fishing reel, comprising:
a rotatable line spool;
a transmission means for rotating the line spool;
a disengageable clutch member (**12**) for engaging the transmission means with the line spool;
a disengaging mechanism movable between an engaging and a disengaging position corresponding to an engaging and a disengaging position of said clutch member, said disengaging mechanism having a lever (**5**) attached thereto, said lever having a protruding arm forming a first member (**13**) movable together with said lever (**5**) of the disengaging mechanism between a engaged and said disengaging position corresponding to the engaging and disengaging position of said clutch disengaging mechanism, respectively, thereby defining a path;
a clutch member disengaging means (**9**) adjacent said lever for acting upon said lever to disengage said clutch member (**12**) from the line spool thus disengaging the line spool from said transmission means;
cooperable and disengageable locking members (**7, 8**), at

least one of which is attached to said lever (**5**), for engaging with one another to lock said disengaging mechanism in its disengaging position;

an engaging mechanism including:

spring means (**10**) for releasing said locking members from said engagement with one another and returning said disengaging mechanism and said clutch member into engaging position with said line spool, wherein said fishing reel further comprises:

a second member (**14**), manually movable between a free position and a blocking position, said second member for encroaching upon said path to block the motion of said first member (**13**) between said engaged and disengaged position of said first member (**13**) at such a position along said path so as to provide sufficient freedom of motion for said disengaging mechanism to permit the movement of said disengaging mechanism, and thereby said clutch member, from the engaging position to the disengaging position, but insufficient freedom of motion to permit locking members (**7, 8**) from engaging with one another to lock said disengaging mechanism, and thereby said clutch member, in said disengaging position, said spring means (**10**) returning said disengaging mechanism from its disengaging position to the engaging position thereof as soon as said activating means (**9**) is released;

and means, comprising said second member and said activating means, for automatically effecting the reengagement of said clutch member, when said second member is in the blocking position, upon release of said actuating means.

4,564,159

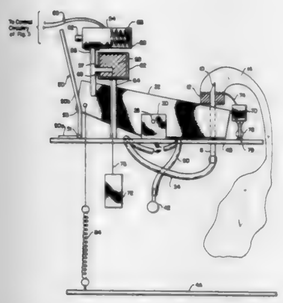
AUTOMATIC BALLOON LAUNCHING SYSTEM

Geoffrey E. Hill, 1789 Country Club Dr., Logan, Utah 84321, and Duard S. Woffinden, Logan, Utah, assignors to Geoffrey E. Hill, Logan, Utah

Continuation-in-part of Ser. No. 446,656, Dec. 3, 1982, Pat. No. 4,494,714. This application Aug. 8, 1983, Ser. No. 521,242

Int. Cl.⁴ B64B *1/58*

U.S. Cl. 244—98 **10 Claims**



1. A system for automatically launching balloons comprising a balloon station frame,

nozzle means mounted on the frame on which the narrow end of a balloon may be mounted and through which gas may flow into the balloon,

flexible conduit means for supplying gas to the nozzle means,

gas flow control means responsive to an "open" signal for allowing gas to flow through the conduit means, and responsive to a "close" signal for preventing the flow of gas through the conduit means,

release means responsive to "release" signals for separating the balloon from the nozzle means to thereby release the balloon to the atmosphere, said release means including

a rocker arm mounted on the frame to rock between a first position, in which the arm is out of contact with the flexible tubing, and a second position, in which the arm contacts and pinches closed the flexible tubing to prevent the flow of gas to the nozzle means and also contacts the balloon to force it off the nozzle means,

a support member movable between a support position, where the rocker arm is held in the first position by the support member, and a release position where the rocker arm is released from being held, and

biasing means for biasing the rocker arm to the second position upon movement of the support member from the support position to the release position, and

control circuit means for producing the "open", "closed", and "release" signals.

4,564,160

THRUST REVERSER BLOCKER DOOR ASSEMBLY

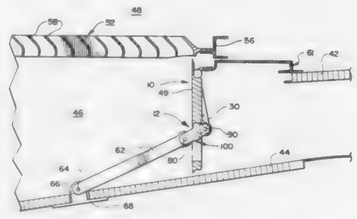
Michael L. Vermilye, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01355, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO84/01344, PCT Pub. Date Apr. 12, 1984

PCT Filed Sep. 29, 1982, Ser. No. 459,903

Int. Cl.⁴ F02K *3/06*

U.S. Cl. 244—110 B **3 Claims**



1. A thrust reverser blocker door assembly for a fanjet engine wherein a plurality of blocker doors are disposed aerodynamically about a peripheral circumferential zone of a central fan duct of the engine in a cruise configuration and are pivoted radially inward into an annular ring interrupting said fan duct in a thrust reversing configuration for diverting air radially outward and forward through a cencentric bypass duct, each of said blocker doors being secured for pivotal displacement by an articulated linkage comprising a drag link disposed for arcuate motion about a fixed pivot point at its proximal end, an overcenter link pivotally spanning said blocker door and the distal end of said drag link at a longitudinally translatable pivot point, and biasing means for tensioning said articulated linkage and biasing said blocker door radially outward about said translatable pivot point when in said cruise configuration, said blocker door being comprised of a panel having a slot formed therein, said overcenter link being disposed within said slot about axle means generally normal to the action of said articulated linkage, said biasing means being a spring means bridging said panel and said overcenter link, said overcenter link being a generally "H"-shaped link having a first throat receiving said drag link and a second throat receiving boss means on said blocker door, said spring means being a torsion spring means enveloping said axle means on either side of said second throat and bridging said overcenter link in torsional engagement therewith.

4,564,161

HELICOPTER RESCUE BASKET

Sally Z. Frye, 1422 E. Blackburn Rd., Mount Vernon, Wash. 98273

Filed Dec. 30, 1983, Ser. No. 567,167

Int. Cl.⁴ B63C *9/26*

U.S. Cl. 244—137 P **15 Claims**

1. Apparatus for suspension from a helicopter and the like for use in rescue and recovery operations, the apparatus comprising a suspension frme, means for attaching the frame to a helicopter winch cable and the like, means for suspending a basket-like container from the frame, and fin means or the frame for stabilizing the apparatus when airborne, wherein the suspension frame includes an elongate frame member, and a



cross bar, the means suspending the container comprises cables connected at opposite ends of the elongate member and cross bar, the means for attaching the frame to a helicopter winch cable or the like is located substantially centrally of the elongate member, and the fin means is located at one end of the elongate member.

4,564,162

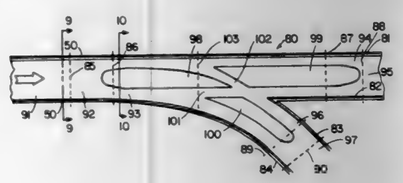
TRACK INTERSECTION FOR TOY TRAINS

Thomas H. Grimm, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 6, 1984, Ser. No. 568,663

Int. Cl.⁴ E01B *7/00*

U.S. Cl. 246—432 **2 Claims**



1. For use in combination with a toy railroad vehicle having a plurality of wheel pairs wherein each wheel defines an inner rolling surface and an outer rolling surface having a diameter reduced from said inner rolling surface, said outer rolling surfaces of said wheels within each wheel pair being spaced by a predetermined distance, a track intersection comprising:

a track intersection region having a first pair of rails spaced apart by said predetermined distance and dividing into a second and third pair of similarly spaced rails;

a raised roadbed section extending between said first, second and third pairs of rails throughout said track intersection region, and having a height with respect to said rails such that said wheels roll upon said inner rolling surfaces, said raised roadbed section including first, second, and third downwardly sloping ramp portions;

a lowered roadbed portion having a height with respect to said rails such that said wheels roll upon said outer rolling surfaces, beginning at each of said ramp portions between said first, second, and third pairs of rails, and extending away from said track intersection region; and first, second, and third islands located between said first, second, and third pairs of rails within said track intersection region; said first, second, and third islands being mutually spaced apart to permit said wheels to roll upon said rolling surfaces from said first pair of rails to either said second or third pair of rails.

4,564,163

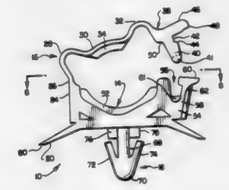
RETAINING CLIP

Barry R. M. Barnett, Aylesbury, Great Britain, assignor to TRW United-Carr Limited, Aylesbury, Great Britain

Filed Jun. 4, 1984, Ser. No. 616,525

Int. Cl.⁴ B65D *67/02*

U.S. Cl. 248—71 **12 Claims**



1. A clip for attaching an elongate element having a series of lands and risers circumferentially disposed on its surface to a support comprising a body portion provided with a fastening member adapted to attach the clip to the support, the body portion including means defining a seat for the elongate element and having a flexible arm extending from one side thereof, a free end of the arm being engageable in the other side of the body portion to hold the elongate element in the seat, the body portion comprising at least one fin configured to engage said lands on the elongate element to resist longitudinal sliding of the element in the clip.

4,564,164

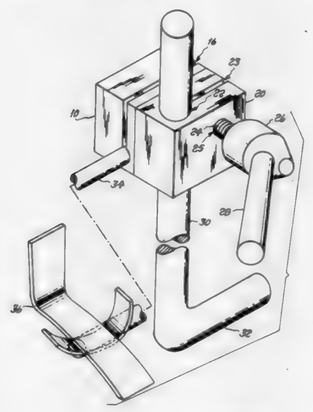
ADJUSTABLE SUPPORT SYSTEM

R. Daniel Allen, 14429 Bass Lake Rd., P.O. Box 189, Newbury, Ohio 44065, and Howard F. Fink, 2313 19th Ave. West, Bradenton, Fla. 33505

Filed Jun. 8, 1984, Ser. No. 618,817

Int. Cl.⁴ B68G *5/00*

U.S. Cl. 248—118 **7 Claims**



1. An adjustable support system comprising:

a first block having a cylindrical passage therethrough and a slot extending from one side of said first block to said cylindrical passage;

said first block also having a hole drilled at right angles to said cylindrical passage and through said slot;

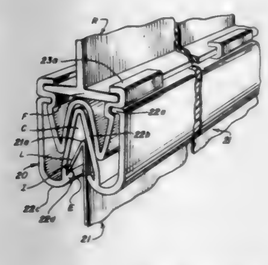
the portion of said hole beyond said slot having threads therein;
a first rod sized to be contained in the cylindrical passage of said first block;
a second block having a cylindrical passage therethrough and a slot extending from one side of said second block to said cylindrical passage;
said second block also having a hole drilled at right angles to said cylindrical passage and through said slot;
the hole in said second block extending completely through said second block;
a second rod sized to be contained in the cylindrical passage of said second block; and
a compression head having a threaded member extending therefrom long enough to pass through the hole in said second block and through the hole in said first block to mate with the threads in said first block.

4,564,165

ATTACHING DEVICE

Edward L. Grant, Jackson County, Mo.; Earl E. Stops, and Edward Saltz, both of Waukesha County, Wis., assignors to Hallmark Cards, Inc., Kansas City, Mo.

Filed Mar. 31, 1983, Ser. No. 480,718
Int. Cl.⁴ B42F *13/00*
U.S. Cl. 248—343 **5 Claims**



1. The combination of a plurality of elongated ceiling supports, each having an exposed surface portion, an elongated device for attaching a depending unit to the exposed surface portion of a selected ceiling support, and means for magnetically securing a surface portion of said device to the exposed surface portion of said selected ceiling support, at least one of the surface portions being of ferrous metal; said device being provided with an elongated interior cavity accessible at least through an elongated, narrow opening formed in the exterior of said device, said cavity being provided with an internal ledge, said ledge being adapted to be engaged by a peripheral segment of the depending unit wherein the peripheral segment is retained within the cavity and is impassable relative to the elongated opening.

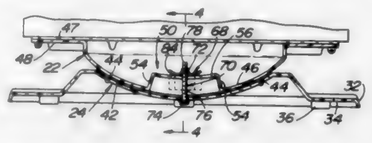
4,564,166

ROTARY TILT BASE FOR VIDEO TERMINAL

Charles E. Craft, Croydon, Pa.; Lester Winter, Willingboro, and Robert Hawley Pote, Pitman, both of N.J., assignors to Delta Data Systems Corporation, Trevose, Pa.

Filed Jan. 21, 1983, Ser. No. 459,907
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—349 **7 Claims**

1. A base for supporting a video terminal on a supporting surface, with said base having front and back portions and said terminal having a display screen which is situtated adjacent said front portion when said terminal is resting on said base, said base comprising an upper member, a lower member and connecting means, wherein said lower member has a downwardly concave section, said upper member has a correspondingly shaped downwardly convex section which is slidably situated generally within said concave section of said lower member, said lower member rests generally adjacent said external supporting surface and said upper member is situated generally adjacent and beneath said video terminal, and said connecting means includes slotted guide means and fastening means which together serve to connect said lower member to said upper member in a manner permitting pivotable movement of said upper member about a predetermined tilt axis which is parallel to said supporting surface and unlimited rotational movement about a rotational axis which is perpendicular to and rotatable about said tilt axis through a predetermined arc, wherein said guide means is an upwardly extending projection located on and secured to the top surface of the downwardly convex section of said upper member, said pro-



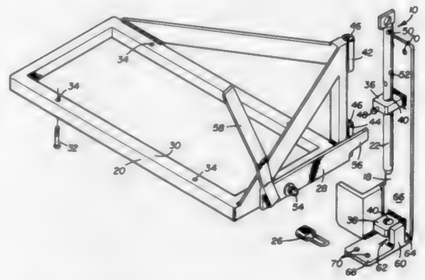
jection having a pair of generally parallel side surfaces and a top surface which includes an elongated slot with the direction of said slot establishing the direction of said tilt axis and the length of said slot generally establishing said predetermined arc, and wherein said fastening means includes a fastening member and a generally U-shaped bracket having an apertured base section and a pair of downwardly extending legs, said base section being disposed over and adjacent said top surface of said guide means and said legs being located adjacent respective side surfaces of said guide means, with said bracket serving to insure that said fastening member is centered within said slot irrespective of its longitudinal position within said slot, the angle of tilt of said base being established by longitudinally positioning a portion of said fastening means within said slot.

4,564,167

TOOL BOX MOUNTING ASSEMBLY

James H. Smith, P.O. Box 144, Glenn, Calif. 95943

Filed Oct. 31, 1983, Ser. No. 547,205
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—552 **9 Claims**



1. An assembly for mounting a container on a structural element, comprising
a bracket adapted for attachment to the structural element, said bracket having a vertical plate portion and a horizontal plate portion,
a frame mounted for pivotable movement on said bracket, said frame including means for supporting the container,
pin means for securing said pivotable frame on said bracket, said pin means being removable from said bracket for releasing said frame and container from said bracket,
locater means arranged for interaction between said frame and bracket for selectively fixing the pivotable frame in at least one position relative to said bracket,
a projection on said vertical plate portion, and
a locking projection on said horizontal plate portion,
wherein said locater means comprises lever means movable into engagement with a first receiving slot between said projection and said locking projection for selectively fixing said frame in said one position and movable into engagement with a second receiving slot between said locking projection and said vertical plate portion for selectively fixing said frame in a second position relative to said bracket.

4,564,168

UPPER SUPPORT FOR A RADIATOR

Yasuhiro Ikuta, Okazaki, and Toshihiro Takami, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 11, 1984, Ser. No. 629,896
Claims priority, application Japan, Jul. 26, 1983, 58-135070
Int. Cl.⁴ F16M *1/02*; B60K *11/04*
U.S. Cl. 248—638 **8 Claims**



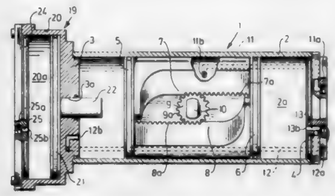
1. An upper support for a radiator comprising:
a body bracket adapted to be fitted to a car body;
a radiator bracket spaced from the body bracket and adapted to be in pressure-contact with the top of the radiator, the upper support having a bracket axis that intersects the body bracket and the radiator bracket; and
a rubber member connecting the radiator bracket to the body bracket and having at least one rubber prop on one side of the bracket axis and at least one rubber prop on a side of the bracket axis opposite to said one side, with a bore-like cavity defined between the rubber props on the one side and the opposite side, respectively, of the bracket axis, said rubber props being inclined upwardly from the body bracket toward the radiator bracket when the support is oriented with the bracket axis vertical and the radiator bracket below the body bracket.

4,564,169

FLUID ACTUATOR FOR STEPWISE REGULATION OF VALVES

Sven Nordlund, Vällingby, Sweden, assignor to WM Regler AB, Vällingby, Sweden

PCT No. PCT/SE84/00048, § 371 Date Sep. 19, 1984, § 102(e) Date Sep. 19, 1984, PCT Pub. No. WO84/03128, PCT Pub. Date Aug. 16, 1984
PCT Filed Feb. 10, 1984, Ser. No. 653,269
Claims priority, application Sweden, Feb. 11, 1983, 8300756
Int. Cl.⁴ F16K *31/163*
U.S. Cl. 251—58 **1 Claim**



1. A fluid actuator for the stepwise regulation of a ball valve, cock valve or the like between at least three different and distinct rotational positions, such as 0°, 90° and 180°, said fluid actuator comprising a cylinder (**2**) having two end walls (**3**,**4**), two pistons (**5**, **6**) disposed in the cylinder for movement towards and away from one another, each of said pistons having an axial gear rack (**7**, **8**) with teeth (**7***a*, **8***a*) in mesh with a toothed wheel (**9**) mounted on an actuating member (**10**) rotatably journalled in and passing sealingly through at least one cylinder wall to extend transversely to the direction of movement of said pistons, and at least three fluid supply and discharge passages (**11**, **12**, **13**), a first one of said passages (**11**) opening out between the pistons, a second one of said passages (**12**) opening out in one of said end walls (**3**) of the cylinder opposite a first one of said pistons (**5**), and a third one of said passages (**13**) opening out in another of said end walls (**4**) opposite a second one of said pistons (**6**), characterized by: a further cylinder chamber (**20***a*) defined axially outwardly of said one end wall, a third piston (**21**) disposed in said further cylinder chamber for movement towards and away from said one end wall, a bore (**3***a*) in said one end wall, and a piston rod (**22**) coupled to said third piston and extending through said bore for movement into and out of a cylinder chamber defined between said one end wall and said first piston, the cross-sectional area of the third piston exceeding the sum of the cross-sectional areas of the first and the second pistons, and the length of stroke of the piston rod of the third piston corresponding to one-half the length of stroke of the first and second pistons, whereby the full extension of the piston rod into said a cylinder chamber establishes a limit stop restricting the movement of the first and second pistons to one-half of their stroke length, and the respective cross-sectional areas of the pistons prevents such limit stop from being overridden.

4,564,170

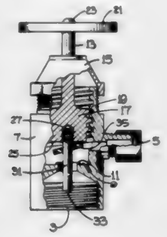
VALVE CLOSURE MEANS

William P. Gaines, 1953 Riviera Dr., Vista, Calif. 92083

Filed Feb. 27, 1984, Ser. No. 583,822
Int. Cl.⁴ F16K *1/46, 1/48*
U.S. Cl. 251—88 **1 Claim**

1. In a valve comprising communicating inlet and outlet ports, an annular valve seat therebetween and a valve body including a valve face adapted for reciprocating movement against said seat, closure means comprising an elongated headless valve stem, fixedly anchored for nonrotary motion in said valve body and of a constant diameter throughout and having a portion thereof extending from said valve face and directed through said seat and terminating between said seat and said inlet port when said valve is fully opened and a resilient washer

annularly received on said stem, between said face and said seat, having a central opening larger than said stem to permit free turning thereon and free movement along the length thereof when the valve is opened, and having an outside diameter larger than said seat to permit full closure between said



face and said seat when the valve is closed including means on the ends of said valve stem for attaching it to said valve face wherein said means include threads on one end of said stem for receipt in a threaded hole formed in said valve face and a slot formed in the other end thereof for receipt therein of a screwdriver blade.

4,564,171

FLOW REGULATOR FOR SETTING AND MAINTAINING A CONSTANT FLOW OF BLOOD, BLOOD-SUBSTITUTE, OR SIMILAR LIQUID

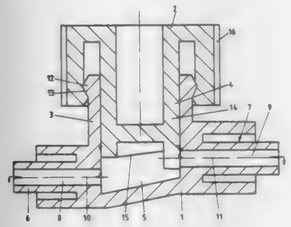
Walter C. Heinzerling, Maisfeld Beiseförth, Fed. Rep. of Germany, assignor to Infusionstechnik Clinico GmbH & Co., Bad Hersfeld, Fed. Rep. of Germany

Continuation of Ser. No. 542,366, Oct. 17, 1983, abandoned. This application Apr. 8, 1985, Ser. No. 720,060

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 8311508[U]

Int. Cl.[4] F16K *5/04*

U.S. Cl. 251—209 **7 Claims**



1. Flow regulator for setting and maintaining a constant flow of blood-substitute, or similar liquid, comprising: a main member having a bore; a movable part mounted on said main member and serving as a closure element; a valve chamber forming said bore and having two connections communicating substantially perpendicular to an axis of said bore and having ducts for a flow line; said connections having axes displaced relative to each other in said chamber so that the closure element in said valve chamber can move only in the vicinity of one duct from a complete open position to a completely closed position; said flow line being fully blocked in said closed position, flow through said movable part being free of flow resistance when in said open position, said ducts being displaced relative to each other so that said movable part leaves said ducts fully uncovered when in said open position for unthrottled flow though the flow regulator, said ducts having substantially parallel axes, a passage surface being present for blood flow when said flow regulator is substantially half closed, said surface comprising substantially a sector of a circular surface having a length and width substantially equally large, one of said ducts forming also a valve seat; an extension projecting into said bore, said main member being formed of a substantially 360° incline on said extension, said incline having a circular shape dependent on a position of free passage cross-section of said duct and substantially blocking off said duct at partial settings of said flow regulator, blood through said flow regulator having minimum deflections and minimum change in direction of flow.

4,564,172

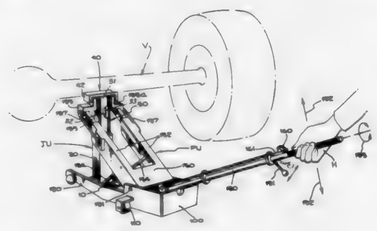
METHOD OF USING A HYDRAULIC POWER UNIT TO CONTROL A MECHANICAL JACK

Harry H. Arzouman, Los Angeles, Calif., assignor to Safe-T-Jack, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 261,686, May 7, 1981, Pat. No. 4,462,569. This application Jun. 18, 1984, Ser. No. 621,268

Int. Cl.[4] B66F *5/04*

U.S. Cl. 254—1 **5 Claims**



1. A method of jacking up and supporting a vehicle or structure, comprising the steps of:

selecting a plurality of jack stand units, each being capable of being vertically telescoped to an initial condition, of being vertically extended for raising a load, and of being locked in its vertically extended position;

selecting a machine that is capable of positioning and controlling a jack stand unit;

operating the machine so as to position the plurality of jack stand units, in their initial conditions, in corresponding fixed locations underneath the vehicle or structure;

operating the machine to control the units, one at a time, so that each unit is vertically extended and then locked, so as to raise and support the vehicle or structure; and

when it is desired to lower the vehicle or structure, operating the machine to control the units, one at a time, so that each unit is unlocked and then telescoped to its initial condition.

4,564,173

TREE PUSH

Peter W. Atherton, and George Spector, both of 233 Broadway, Rm. 3615, New York City, N.Y. 10007

Filed Mar. 19, 1984, Ser. No. 591,195

Int. Cl.[4] B66F *3/24*

U.S. Cl. 254—133 R **1 Claim**



1. In combination with a bumper jack having a jack post, a jack mechanism and a jack handle, an apparatus for pushing a tree over when the tree is being cut down comprises:

(a) a base member having a notched out bottom to prevent the base member from sliding on the ground surface, the base member mounted to the bottom of the jack post;

(b) a support member having an aperture mounted to the jack mechanism;

(c) a guide member having an aperture mounted to the top side of the jack post;

(d) an elongated shaft slidably placed through the aperture in the guide member with the bottom end of the shaft affixed into the aperture in the support member whereby the shaft is parallel with the jack post; and

(e) a tip member having a plurality of points on top, the tip member affixed onto the top end of the shaft so that when the apparatus is tipped at an angle between the round surface and the tree the jack handle will operate the jack mechanism to rise along the jack post causing the support member to push the shaft through the aperture in the guide member until the points on the tip member will contact the tree, pushing the tree over when the tree is being cut down, wherein the guide member in the apparatus further comprises:

(f) a cylinder having an aperture therethrough;

(g) a first diagonal vertical plate having an elongated slot therethrough affixed perpendicular to the side of the cylinder;

(h) a second diagonal vertical plate having an elongated slot therethrough;

(i) a plate affixed perpendicular to end of the second plate;

(j) at least one bolt that slideably fits into the elongated slots in the first and second plates; and

(k) at least one nut that is tightened on the bolt so that the first and second plates can be adjusted to maintain a uniform distance between the jack post and the shaft.

4,564,174

DEVICE FOR THE RECOVERY OF MERCURY

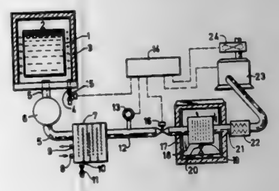
Ake Sikander; Ake Biörkman, and Günther Jönsson, all of Karlskrona, Sweden, assignors to Lumalampan Aktiebolag, Karlskrona, Sweden

Division of Ser. No. 442,767, Nov. 18, 1982, Pat. No. 4,468,011. This application Jun. 11, 1984, Ser. No. 618,927

Claims priority, application Sweden, Dec. 1, 1981, 8107177

Int. Cl.[4] C22B *9/04*

U.S. Cl. 266—149 **15 Claims**



1. Apparatus for recovering mercury from waste containing plastic material by distilling the mercury from the waste, comprising:

a treatment chamber (**2**) for receiving the waste;

inlet means (**4**) for supplying inert gas into said treatment chamber, said inlet means including a controllable inlet valve (**15**) for regulating the inert gas supplied to said treatment chamber (**2**);

means in said treatment chamber for first heating the waste to about 200° C. in a slight vacuum and with a limited supply of said inert gas, and for subsequently heating the waste to temperatures higher than 200° C.;

a discharge line (**5, 12**) coupled to said treatment chamber (**2**) for discharging gases emitted by the heated waste material in said treatment chamber, said discharged gases containing organic decomposed products;

an afterburner chamber (**6**) coupled in said discharge line (**5, 12**) for combusting said discharged gases from said treatment chamber;

cold trap means (**7, 18**) coupled in said discharge line (**5, 12**) downstream of said afterburner chamber (**6**) for receiving gases exhausted from said afterburner chamber (**6**);

a selectively operable vacuum pump (**23**) coupled to said discharge line (**5, 12**) downstream of said cold trap means (**7, 18**) for drawing said gases from said treatment chamber through said afterburner chamber (**6**) and through said cold trap means (**7, 18**);

shut-off valve means (**16**) in said discharge line (**5, 12**) upstream of said vacuum pump (**23**) for selectively opening and closing said discharge line (**5, 12**);

control means (**14**) coupled to said vacuum pump (**23**), to said inlet valve (**15**), and to said shut-off valve means (**16**) for selectively opening and closing said shut-off valve means (**16**) and said inlet valve, and for selectively controlling operation of said vacuum pump (**23**).

4,564,175

MOLTEN METAL TRANSFER CRUCIBLE WITH EXTERNAL FILTER

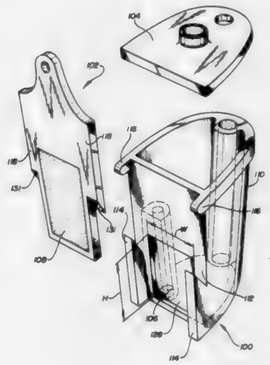
Daniel E. Groteke, Cincinnati, Ohio, and Avery L. Kearney, Valparaiso, Ind., assignors to Metcast Associates, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 398,406, Jul. 14, 1982, Pat. No. 4,444,377. This application Apr. 20, 1984, Ser. No. 602,508

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.[4] C21C *7/04*

U.S. Cl. 266—227 **9 Claims**



1. A transfer crucible for containing molten metal, having a cavity, an inlet at a first position, and an outlet at a second position, the improvement comprising:

a removable blade bound by a first side edge, a second side edge and a bottom edge, having a first surface and a second surface spaced apart with a passage therebetween;

a filter element positioned in said passage; and

means for positioning and affixing said blade with respect to said inlet such that said removable blade is external to the crucible cavity and said filter element interrupts the flow of metal through said inlet.

4,564,176

HYDRAULIC DASHPOT

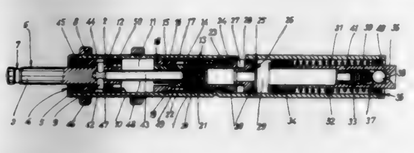
Rainer Schnetz, Munich, Fed. Rep. of Germany, assignor to Firma Albert Schnetz, Fed. Rep. of Germany

Filed Jan. 25, 1984, Ser. No. 573,608

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1983, 3302790

Int. Cl.⁴ F16F *9/34*

U.S. Cl. 267—64.11 **20 Claims**



1. A shock damping hydraulic apparatus comprising a cylinder, a piston placed in said cylinder and sealingly fitting therein for axial motion therealong, a piston rod for moving said piston axially along in said cylinder when acted upon by an external force to be damped, cylinder space dividing means in said cylinder, said dividing means and said piston walling off a high pressure liquid space between them in said clinder, means walling off a low pressure space in said cylinder, a spring loaded spill valve for forming a hydraulic connection between said high pressure space and said low pressure space, return means for producing return motion of said piston and said piston rod thereof outwards in relation to said cylinder, a check valve for letting liquid off from said low pressure space into said high pressure space when such return motion is taking place, said spill valve having a pressure-dependent function and being positioned stationarily inside said cylinder.

4,564,177

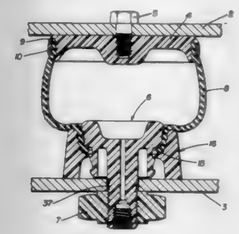
CLAMP FOR NON-BEADED PNEUMATIC ASSEMBLIES

Daniel J. Leonard, Oaklandon, Ind., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 21, 1983, Ser. No. 487,327

Int. Cl.⁴ F16F *9/54*

U.S. Cl. 267—64.24 **7 Claims**



1. An apparatus for clamping a non-beaded end of an airspring bellows to a piston means comprising:

(a) piston means having a generally annular opening adapted to receive said end of said airspring bellows therein, wherein said generally annular opening has associated therewith an inwardly extending ramp;

(b) clamp means having a first end and a second end, said second end having a frustrum shaped portion adapted to coact with said annular opening and said inwardly extending ramp of said piston means in order to retain said non-beaded end of said airspring bellows between said piston means and said clamp means wherein said clamp means includes barb means adapted to coact with said ramp in order to cause said non-beaded end of said airspring bellows to be retained between said piston means and said clamp means.

4,564,178

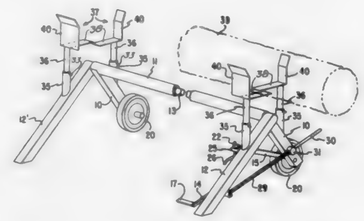
LOG HOLDER

Harlan E. Steffe, Rural Rte., Moville, Iowa 51039

Filed Jun. 25, 1984, Ser. No. 624,124

Int. Cl.⁴ B23Q *3/00*

U.S. Cl. 269—17 **8 Claims**



1. Log supporting device comprising a back group of legs fixedly joined together, a front group of legs fixedly joined together, said front group being pivotally joined to said back group, each leg of said front group being opposed by a corresponding leg of said back group to form a set, each set thereby comprising one back leg and one front leg, said front legs being pivotally tiltable relative to said back legs, log support means on at least two of said sets of legs, said support means being thereby tilted toward each other as said legs are pivotally separated.

4,564,179

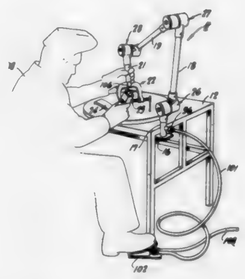
ARTICULATED SUPPORT ARM APPARATUS

Ashley J. Hollingsworth, 48 Manzanita Rd., Atherton, Calif. 94025

Filed Apr. 12, 1984, Ser. No. 599,493

Int. Cl.⁴ B23Q *1/04*

U.S. Cl. 269—71 **27 Claims**



1. In an articulated support arm apparatus for use by an operator, a base, first, second and third arms supported by said base, a work device supported by said arms, a dual axis joint interconnecting said first and second arms, an additional dual axis joint interconnecting said second and third arms, said joints being movable between locked and unlocked positions and control means for moving said joints to said locked and unlocked positions substantially simultaneously whereby in the unlocked positions said work device can be moved by the operator to a desired position and in locked positions the work device is held in a predetermined position.

4,564,180

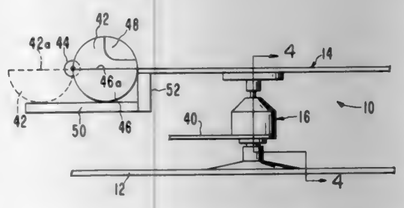
HAND HOLDING APPARATUS FOR HAND SURGERY

John M. Agee, 3980 Bartley Dr., Sacramento, Calif. 95822, and Francis C. King, Shingle Springs, Calif., assignors to John M. Agee, Sacramento, Calif.

Filed Nov. 15, 1983, Ser. No. 552,185

Int. Cl.⁴ A61G *13/00*

U.S. Cl. 269—75 **10 Claims**



1. Apparatus for holding and supporting a patient's hand for surgery comprising:

a support adapted to be placed on a surface;

a plate above the support;

means pivotally mounting the plate on the support in any one of a number of operative positions with respect thereto, said pivot means having means for releasably holding the plate in a fixed operative position;

a first device secured to and extending laterally from one end edge of the plate, said first device having an outer end edge; and

a second device hingedly coupled to the outer end edge of the first device and movable from a first position extending outwardly from the first device to a second position overlying the first device, the devices having flat surfaces substantially flush with and aligned with the upper surface of the plate when the second device is in its first position, said devices providing additional upper surface area for the plate when the second device is in said first position to allow exposure of the palmar surface of a patient's hand, said second device having means for supporting the fingers of a patient's hand in a curved condition when the second device is in said second position to allow exposure of the dorsal surface of the patient's hand.

4,564,181

BENCH

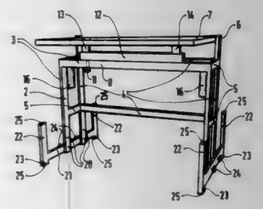
Eduard Gansel, Dettenhausen; Günter Schaal, Stuttgart; Helmut Schneider, Leinfelden-Echterdingen; Heribert Schramm, Stuttgart; Eberhard Seidel, Ostfildern, and Günter Zilly, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 513,990

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233586

Int. Cl.⁴ B25B *1/00*

U.S. Cl. 269—88 **5 Claims**



1. A bench comprising a rigid carrier frame having an upper portion; a work board having two opposite edge portions; pivoting means for pivoting said work board relative to said frame and including two pivot pins each interconnected between said upper portion of the frame and a respective edge portion of the work board; and supporting means including a supporting arm pivotable about a vertical axis in a horizontal plane under said work board and supporting said work board, said work board being pivotable about a pivot axis on said pivot pins relative to said frame from a first operating horizontal position, in which the work board is disposed immediately above said frame, to a second operating and also horizontal position, in which the work board projects outwardly away from said frame, said supporting arm being movably supported and adjustable relative to said frame so as to support said work board in said first and second horizontal position, said supporting means further including two support blocks connected to said arm and spaced from each other on said arm, said work board having an underside which lies on at least one of said support blocks when the work board is in said first position, said arm having one end at which a pivot for pivoting said arm is located and another free end, one of said two support blocks being positioned near said one end and another of said two support blocks being positioned near said free end of the arm, said frame being provided with a plurality of bearing openings formed in said upper portion of the frame, said openings being distributed along said upper portion and adapted to selectively receive said pivot for pivoting said arm in said horizontal plane, said openings being remote from the pivot axis of said work board.

4,564,182

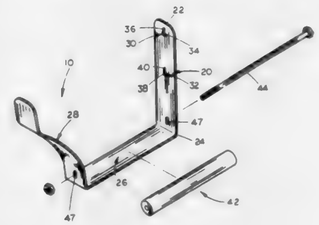
TEMPORARY SUPPORT FOR GUTTERS

Donald E. Svajgl, 4205 Polk St., Omaha, Nebr. 68107

Continuation-in-part of Ser. No. 491,595, May 4, 1983, abandoned. This application Feb. 11, 1985, Ser. No. 700,047

Int. Cl.⁴ B23Q *3/02*

U.S. Cl. 269—102 **3 Claims**



1. An apparatus for temporarily supporting an elongated room gutter during the installation thereof, comprising,

a substantially vertically disposed inner frame member adapted to be secured to the fascia board extending downwardly from the edge of the roof of the house upon which the gutter is to be installed,

a horizontally extending bottom frame member extending outwardly from the lower end of said vertically disposed frame member,

an outer frame member extending upwardly from the outer end of said bottom frame member, said inner frame member including at least one opening closed at the top and including an enlarged portion and an elongated slot portion extending upwardly therefrom whereby, upon suspending said inner frame member on a nail extended through said slot, said opening provides clearance for upward movement of the inner frame member relative to the nail,

and vertically yieldable support means positioned between said outer frame member and said inner frame member for supporting the bottom of the gutter thereon while the gutter is being installed,

said vertically yieldable support means permitting said inner

frame member, bottom frame member and outer frame member to be moved upwardly relative to the fascia board during the removal of the apparatus therefrom after the gutter has been installed.

4,564,183

FOLDING APPARATUS FOR A WEB-FED ROTARY PRINTING MACHINE

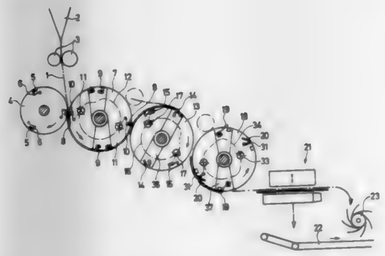
Hans Müller, Leimen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Feb. 7, 1985, Ser. No. 699,032

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1984, 3404170

Int. Cl.⁴ B41F *13/56*

U.S. Cl. 270—21.1 **5 Claims**



1. Folding apparatus for a web-fed rotary printing machine having a train of successive cylinders including a slot-type collecting cylinder, a blade cylinder with two cutting blades disposed on the periphery thereof for cutting full format lengths off a web and with cam-controlled folding blades offset 90° from the cutting blades, a folding-jaw cylinder with two controlled folding jaws disposed at the periphery thereof and a cam-controlled folding blade offset by 45° downstream from the folding jaws, and a second cross-folding cylinder having two gripper rows cooperating with the folding jaws of the folding-jaw cylinder and having two controlled folding jaws offset downstream from the gripper rows and cooperating with the folding blades of the folding jaw cylinder, comprising three needle rows for collecting being disposed with equal mutual spacing around the periphery of the slot-type collecting cylinder, the periphery of the collecting cylinder being able to accept three half format lengths of the web; two additional removable cutting blades located on the blade cylinder at an offset of 90° from the cutting blades already fixed thereon and being disposed together with the folding blades of the blade cylinder on a common support pivotable into a respective working position, the folding-jaw cylinder carrying controllable folding-blade spindles selectively with respective mutually opposing folding blades on a leading side thereof and removable needle rows on a trailing side thereof, the folding-jaw cylinder and a control cam carried thereby being pivotable into working position in accordance with the folded product to be produced; and the second cross-folding cylinder carrying two controlled folding-jaw spindles for selectively carrying a gripper row and a folding-jaw half, depending upon the folded product to be produced whereby, selectively, by turning the body of the second cross-folding cylinder and a control cam mounted thereon, a respective folding jaw is bringable into operative connection with a respective folding blade of the folding-jaw cylinder, and said gripper row of the second cross-folding cylinder is bringable into operative connection with a respective needle row of the folding-jaw cylinder.

4,564,184

PASTING STATION FOR A FAST PRINTER

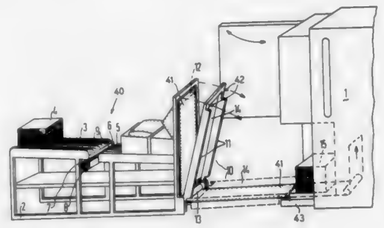
Peter Rumpel, Feldkirchen-Westerham, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 16, 1984, Ser. No. 631,079

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1983, 3328255

Int. Cl.⁴ B41L *1/32*

U.S. Cl. 270—39 **16 Claims**



1. In an apparatus with joining means for connecting individual respective bottom and top sheets of successive fanfolded stacks of prefolded continuous form paper at a seam to provide a continuous web to feed to a fast printer, the improvements comprising a longitudinally extending transfer plane comprising a work region which is adjacent the printer and a supply region spaced from the work region by means for forming a turning gap extending transverse to the longitudinal direction of the transfer plane, said means for forming a turning gap receiving a leading edge of a bottom sheet of a fanfolded stack as the stack is moved on said transfer plane in the longitudinal direction from the supply region to the work region and directing said leading edge to said joining means and thereby exposing said bottom sheet for connection by said joining means at said seam to a top sheet of the next following stack.

4,564,185

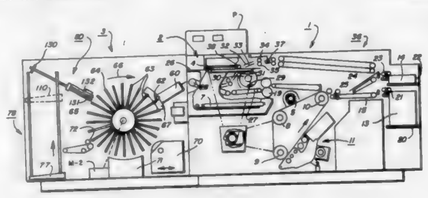
COPYING APPARATUS WITH FINISHER HAVING STAPLER AND ADHESIVE BINDER STATIONS

Thomas J. Hamlin, and William B. Edwards, both of Macedon, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1984, Ser. No. 684,814

Int. Cl.⁴ B42B *2/00*

U.S. Cl. 270—53 **10 Claims**



1. A finishing apparatus adapted to receive series of multiple sheets of like information, to collate the same into sets and to bind completed sets comprising:

a rotary sorter having radially extending bins arranged in the path of the stream of sheets to receive the stream of sheets in succession at a loading station and to collate the same into booklets,

means for imparting rotation to said sorter relative to said loading station whereat a sheet is received in each of said bins,

a first binding station adjacent said sorter, said first binding station having an adhesive binding device which when activated being arranged to apply adhesive material to the spline of the booklets for binding the same,

a second binding station adjacent said sorter, said second binding station having a stapler device which when activated being arranged to apply a staple to each of the booklets, and

means for activating each of said binding stations selectively for producing either adhesive bound booklets, or stapled booklets.

4,564,186

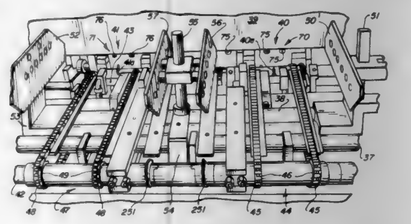
APPARATUS FOR GATHERING PRINTED SIGNATURES FOR SADDLE STITCHING

Frederick G. E. Clarke, Jr., Essex, Conn.; Anthony R. King, Bourbon, and Anthony Majewski, Warsaw, both of Ind., assignors to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Jun. 4, 1984, Ser. No. 617,904

Int. Cl.⁴ B65H *39/02*

U.S. Cl. 270—54 **10 Claims**



1. In a saddle type gathering machine having a lugged gathering conveyor chain for delivering unbound books consisting of gathered signatures to a saddle stitcher, in combination:

a supporting frame having parallel side beams which are in planes normal to the line of the chain, and structural members connecting said side beams;

first and second signature supply box means positioned side-by-side between and supported by said side beams, both said supply box means having forward ends toward the gathering conveyor chain;

signature transfer means including a plurality of parallel shafts mounted in said side beams between the first and second signature supply box means and the gathering conveyor chain and extending across the forward ends of both said supply box means, first signature transfer drum means carried on said plurality of shafts in operative association with said first signature supply box means, second signature transfer drum means carried on said plurality of shafts in operative association with said second signature supply box means, a first set of suction grippers for moving signatures seriatim from the first signature supply box means to the first transfer drum means, and a second set of suction grippers independent of said first set for moving signatures seriatim from said second signature supply box means to said second transfer drum means;

means for driving said plurality of shafts and said gathering conveyor chain in timed relationship with one another to deliver signatures from both transfer drum means to the gathering conveyor chain; and

means for operating each of said first and second sets of suction grippers independently of the other set to selectively move signatures from the respective associated signature supply box means to the respective associated transfer drum means for delivery to the gathering conveyor chain.

4,564,187

SHEET FEED DEVICE FOR A PRINTER OR TYPEWRITER

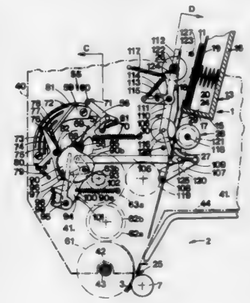
Jorge Costa, and Wolfgang Reichel, both of Yverdon, Switzerland, assignors to Hermes Precisa International S.A., Yverdon, Switzerland

Filed Jun. 1, 1984, Ser. No. 616,149

Claims priority, application Switzerland, Jun. 3, 1983, 3056/83

Int. Cl.⁴ B65H *1/28, 5/26*

U.S. Cl. 271—9 **9 Claims**



1. Sheet feed device for a printer or typewriter comprising a frame, two or more supports on which the sheets to be printed are stored in a stack, a removal mechanism associated with each of the supports intended to remove a sheet from the support for its introduction into the printer, and a selection mechanism intended to activate one of the removal mechanisms, the selection mechanism and the removal mechanisms being driven by a drive element in two opposite directions, characterized in that the selection mechanism comprises a selection lever driven by the drive element and a guide part working with a portion of the selection lever, this guide part comprising a selection slide working with said portion and a number of guide tracks for this portion at least equal to the number of removal mechanisms, the device comprising, associated with each of the guide tracks, a removal control part made to work with the selection lever, each of the guide tracks comprising an opening through which it communicates with the selection slide, the selection lever being pulled by an elastic element to a rest position from which is carried in one direction along the selection guide to said openings, which are made so that said portion follows one of the guide tracks, when the selection lever is moved in a second direction opposite the first to work with one of the removal control parts.

4,564,188

SINGLE SHEET FEEDING MECHANISM

John R. McNair, Scarsdale, N.Y., assignor to Westvaco Corporation, New York, N.Y.

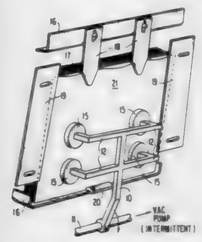
Filed Nov. 13, 1984, Ser. No. 671,009

Int. Cl.⁴ B65H *3/08*

U.S. Cl. 271—103 **1 Claim**

1. A suction head for a paper sheet feeder mechanism comprising rigid piping means secured to articulated arm means, axial aperture means through said piping means in fluid communication with vacuum pumping means for drawing atmospheric air through said aperture means comprising internally, threaded bore means disposed at the distal end of said piping means, rigid sealing face means terminating said piping means around said bore means, T-nut means having a flared compression surface of one end of an externally threaded shank for turning into said threaded bore means, rigid cup means having a cylindrical wall terminated at one axial end by a transverse bottom wall, said bottom wall having an axial aperture there-

through for receiving the shank of said T-nut means, an annular segment of said bottom wall means around said axial aperture finished to sealably engage said piping means sealing face, elastomer bellows means having convolutes axially disposed between an open mouth portion and an axially apertured base portion, said convolutes having an external diameter less than



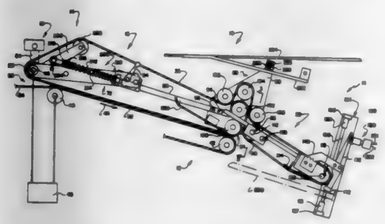
said rigid cup wall, said base portion aperture sized to axially receive therewithin and seal thereabout said T-nut shank and confinement ring means disposed externally of said bellows base portion for confining said base portion radially in a space between said confinement ring means and said cup bottom wall when said T-nut shank is turned into said threaded bore means.

4,564,189

ARTICULATING SHEET MATERIAL CONVEYOR

Harry C. Noll, Jr., Rouses Point, N.Y., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Apr. 19, 1984, Ser. No. 601,806
Int. Cl.[4] B65H *29/14, 29/50, 31/32*
U.S. Cl. 271—201 **13 Claims**



6. An apparatus for feeding a stream of sheet materials from a source location to a stacking workstation, said apparatus comprising:

a lower conveyor located between said source location and said stacking workstation, said lower conveyor transporting sheet materials from said source location to said stacking workstation;

an upper conveyor including a first conveyor section positioned above an end portion of said lower conveyor near said stacking workstation, said first conveyor section and said lower conveyor sandwiching said stream of sheet materials therebetween as said sheet materials are transported to said stacking workstation, said first conveyor section being pivotably fixed at an end upstream of said stacking workstation, said upper conveyor further including a second conveyor section pivotably mounted adjacent a downstream end of said first conveyor section, said second conveyor section extending beyond a downstream end of said lower conveyor and over a movable loading support of said stacking workstation, a downstream end of said second conveyor section adapted to be operatively coupled to a top of a stack of sheet materials being stacked on said movable loading support, sheet materials entering a sandwich portion between said first conveyor section and said lower conveyor causing said downstream end of said first conveyor section to pivot away from said lower conveyor, said second conveyor section pivoting with respect to said first conveyor section retaining said downstream end of said second conveyor section operatively coupled to the top of the stack of sheet materials being stacked;

drive means operatively connected to said lower conveyor and said upper conveyor for driving belts on said lower and said upper conveyors; and

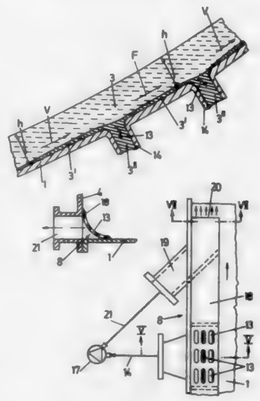
transformer section operatively connected to said downstream end of said first conveyor section and an upstream end of said second conveyor section, said first and said second conveyor sections having a continuous, common belt, said transfer section including belt rollers arranged to permit pivotal action between said first and said second conveyor sections while retaining belt contact between said upstream and downstream end of each said first and said second conveyor sections.

4,564,190

APPLIANCE FOR PRACTICING AQUATIC SPORTS

Otto Frenzl, Lanserstrasse 56, A-6080 Innsbruck, Austria

Filed May 23, 1983, Ser. No. 497,205
Claims priority, application Austria, Jun. 7, 1982, 2191/82
Int. Cl.[4] A63G *21/18*
U.S. Cl. 272—17 **6 Claims**



1. An appliance for practicing aquatic sports using gliding devices supported atop a turbulent, non-separated flow of water, comprising:

a. an open water reservoir having a sloping bottom surface, surrounded by substantially vertical side walls, water being passed from a feed nozzle along the lower rim of said bottom surface upwardly to an overflow along the upper rim of said bottom surface;

b. apertures through the bottom surface and side walls of said reservoir at least in the regions of each boundary layer in which the upwards flowing portions of water are increasingly slowed down by friction, said apertures forming the mouths of discharge pipes for the discharge of portions of slowed down water;

c. additional apertures through the bottom surface and side walls of said reservoir at least in the regions of each boundary layer in which the upwards flowing portions of water are slowed down by friction, said additional apertures forming the mouths of feed pipes for feeding water at an increased flow rate substantially tangential to the direction of flow of said turbulent flow of water for accelerating portions of slowed down water;

d. means for connecting each of said apertures with a respective one of said additional apertures such that said apertures and said respective additional apertures form the mouths of a common pipe; and

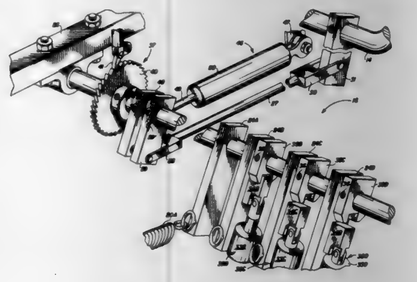
e. means associated with said common pipe discharging portions of slowed down water through the first of said apertures and refeeding them at an increased flow through said respective additional apertures to other portions of slowed down water.

4,564,191

ARM WRESTLING MACHINE

Norman M. Atkin, 5620 Amistad NE., Albuquerque, N. Mex. 87111

Filed Jun. 4, 1984, Ser. No. 617,252
Int. Cl.[4] A63B *5/00*
U.S. Cl. 272—67 **7 Claims**



1. An arm wrestling apparatus comprising:

a frame forming a table-like playing surface,

moveable handle means located on said frame and positioned above said surface for grasping and moving by a user,

a drive shaft journalled on said frame and connected to said handle means for rotation thereby,

adjustable biasing means connectable to said drive shaft for urging pivotal movement of said handle means in one direction,

said biasing means comprising a plurality of springs, some of which are selectively connectable to said drive shaft, and a solenoid means for selectively connecting said springs to said drive shaft associated with each of said springs

stop means associated with said frame means adjacent said drive shaft for limiting the extent of rotative movement of said handle means,

an elbow rest area positioned on said table-like playing surface and located below said handle means with the user putting his/her elbow in the elbow rest area and grasping said handle means when the apparatus is in use,

said handle means being moveable from an upper position down to a lower position at a level comparable to and to the side of the elbow area,

a depressable touch pad and a pad switch for scoring said touch pad linked to said pad switch operable in response to depression thereof,

an electrical signal means actuably connected to said touch pad,

a first circuit means for connecting said pad switch across a source of electrical power,

lockout means releasably engaging said drive shaft to prevent use of said apparatus,

solenoid means for controlling said lockout means to prevent unauthorized use of the apparatus,

a timer for controlling the length of authorized use of the apparatus,

means for selecting the springs to be connected to said drive shaft,

a coin acceptor, and

a second electrical circuit means for connecting in series across a source of electrical power said coin acceptor, the solenoids connected to the user selected springs, said timer and said solenoid means.

4,564,192

MARTIAL ARTS TRAINING APPARATUS AND METHOD

Leizer Lebowitz, 2396 Warrensville Center Rd., University Heights, Ohio 44118

Filed Jan. 25, 1984, Ser. No. 573,660
Int. Cl.[4] A63B *69/22*
U.S. Cl. 272—76 **15 Claims**



1. Training apparatus comprising support means, a pair of limb members connected with said support means and being adapted for universal movement relative to said support means, said limb members being yieldably and resiliently interconnected with each other in a manner that allows one limb member a range of movement relative to the other limb member in response to an external impact on the one limb member and causes a reaction force to be applied to the other limb member to cause follow-up movement of the other limb member when the one limb member is caused to move by an external impact, said support means comprising an axially extending post, universal coupling means for connecting each of said limbs to said post for universal movement relative to said post, said post being supported for rotation about its central axis and being supported for limited axial movement, to allow rotational and axial movement of said limb members along with said post, means for pivotally coupling each limb member to the universal coupling means so that each limb member can pivot relative to the universal coupling means that couples the limb member with the post, said spring means biasing each arm member to a neutral position, said universal coupling means comprising a ball connected to said post, and a socket coupled to said ball having universal movement relative to said ball, and each of said limb members being pivotally secured to said socket to allow each limb member to pivot relative to said socket, and to move universally with said socket relative to said ball.

4,564,193

EXERCISING DEVICE FOR LIFTING WEIGHTS

Lester Stewart, 6851 E. Paradise Pkwy., Scottsdale, Ariz. 85251

Filed Dec. 12, 1983, Ser. No. 560,755
Int. Cl.[4] A63B *21/06*
U.S. Cl. 272—118 **10 Claims**

1. A versatile adjustable universal exercise machine which uses detachable weights, said exercise machine comprising:

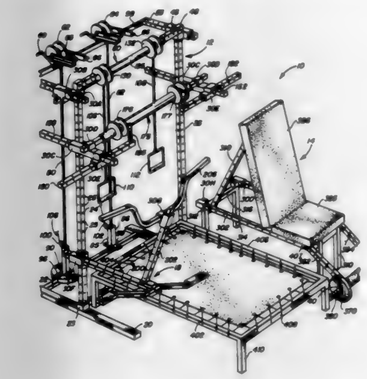
(a) a frame, a base supporting said, said frame having at least one upright frame member detachable from said base;

(b) at least one cable reel adjustably supported on said frame;

(c) a cable system including a flexible cable having a first end secured at said take-up reel and extendable about said one cable reel and having a handle at the other end for the user to grasp;

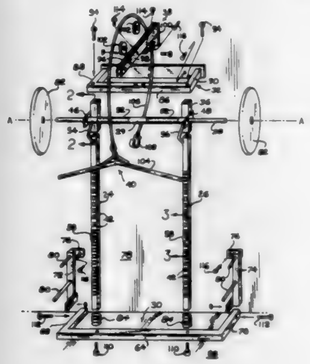
(d) a cable take-up reel means on said frame for varying the length of said flexible cable in accordance with the exercise to be performed with the flexible cable and which varies the position of the user relative to the frame;

(e) a guide rod supported on said frame; and
(f) a weight lift slidable along said guide rod and attached to



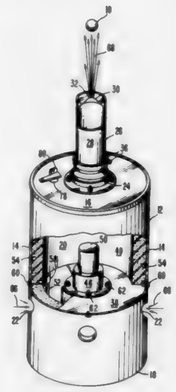
said cable by a pulley said lift permitting weight to be selectively positioned thereon to obtain a desired resistance force to extension of said cable at said handle.

4,564,194
EXERCISE APPARATUS
Fred Dawson, Spartan Manufacturing, 2270 Canoas Garden Ave., San Jose, Calif. 94086
Division of Ser. No. 555,078, Nov. 25, 1983, abandoned. This application Apr. 8, 1985, Ser. No. 720,973
Int. Cl.⁴ A63B *13/00*
U.S. Cl. 272—123 **12 Claims**



1. A weight lifting station comprising:
a pair of separated, substantially vertical guide posts;
elongated, substantially horizontal bar means adapted to receive one or more exercise weights extending between said guide posts and having an axis of rotation;
means attaching said bar means to said guide posts such that said bar means may reciprocate in a direction parallel to said guide posts and may at least partially rotate around said axis; and
pivotal stop means attached to said bar means for engaging at least one of said guide posts, said stop means being operated by a rotation of said bar means.

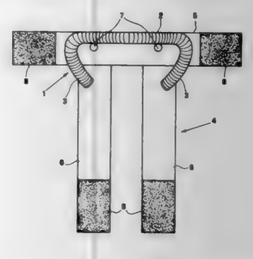
4,564,195
TENNIS BALL SUPPORT DEVICE
Robert H. McClure, 101 Farber Rd. A4, Princeton, N.J. 08540; Robert W. Peach, 888 Pine Trail, Arnold, Md. 21012, and John R. Peach, 3606 Moss Side Ave., Richmond, Va. 23222
Filed Jun. 13, 1984, Ser. No. 620,282
Int. Cl.⁴ A63B *69/38*
U.S. Cl. 273—29 A **16 Claims**



1. A tennis ball support device comprising:
(a) a housing including a wall, top and bottom with said top extending across the top of said wall to define a chamber therein, said housing defining at least one inlet aperture therein to readily allow flow of air from the external environment into said chamber, said housing defining an outlet aperture to readily allow flow of air outwardly from said chamber;
(b) an outlet control positioned adjacent to said outlet aperture to control the flow of air therethrough, said outlet control comprising a release nozzle which defines a release bore therethrough which air is forced to support a tennis ball thereabove, said release nozzle being movable in and out with respect to said housing and said chamber means;
(c) a mounting platform positioned extending across said chamber to divide same into two sections, said chamber now including an outlet zone in fluid flow communication with respect to said outlet aperture and an inlet zone in fluid flow communication with communication between said inlet zone and said outlet zone, said mounting platform defining a mounting aperture therein;
(d) a blower mounted securely with respect to said mounting platform in a position extending through said mounting aperture, said blower including an air intake positioned within said inlet zone and an air outlet exhaust positioned within said outlet zone, said blower being operable to draw in air through said intake and blow air out through said air exhaust; and
(e) a mounting attached with respect to said mounting platform for holding same in position extending in a horizontal orientation.

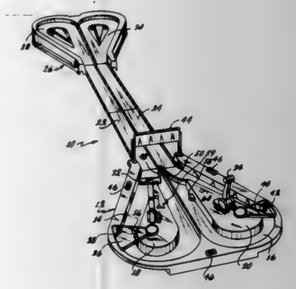
4,564,196
ANKLE APPLIANCE FOR PLAYING FOOTBALL
Italo Carbonetti, 11 Via Prassitele, 00125 Axa Acilia Sud (Roma), Italy
Filed Jul. 26, 1983, Ser. No. 517,273
Claims priority, application Italy, Sep. 16, 1982, 49129 A/82
Int. Cl.⁴ A43B *5/00*
U.S. Cl. 273—67 B **3 Claims**

1. An ankle apparatus for kicking a ball comprising a support member of web material, said support member including two substantially parallel elongated strips depending downwardly from a center portion of a third elongated strip, said two elongated strips spaced and each having its longitudinal axis substantially perpendicular to the longitudinal axis of the third elongated strip, and each of the strips being provided with fastening means at the free ends thereof, thereby enabling the



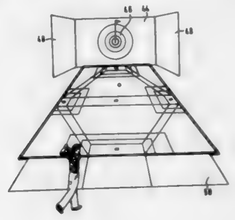
two substantially parallel strips to be secured under the sole of the foot and the third strip to form a continuous band around the ankle; and a flexible, semi-rigid, elongated-rounded ball contacting member, being 15–25 mm in diameter, comprising two free ends, each having a downwardly depending hook portion and a center portion therebetween, wherein the contacting member center portion is fixed to the third strip center portion substantially along the longitudinal axes thereof.

4,564,197
PORTABLE TOY RACING SET
Gerard L. Lambert; Michael T. McKittrick, both of Torrance; Hubert A. Rich, Westminster, and Gary M. Saffer, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 20, 1984, Ser. No. 684,405
Int. Cl.⁴ A63H *18/14*
U.S. Cl. 273—86 D **7 Claims**



1. A toy racing set, comprising:
a track for containing a toy vehicle, including a generally U-shaped curved portion; and
booster means for accelerating the vehicle on the track, including
an arm which extends over the track at a height which is above that of the vehicle and which is pivotably mounted about an axis substantially perpendicular to the track, the axis being offset from the center of the U-shaped curved portion of the track so that the arm pivoting motion is eccentric with respect to the track, a finger which depends from the arm a distance sufficient to contact the vehicle traveling on the track, means for accelerating the arm about the axis from a first position where the finger is adjacent one side of the track at a point which is clear of the path of the vehicle to a second position where the finger is in the path of the vehicle, whereby by accelerating the arm just after the vehicle has passed the first position, the finger contacts the vehicle and accelerates it as it is moving on the track.

4,564,198
APPARATUS FOR USE IN PLAYING A BALL GAME
Tommy S. O. Kwik, No. 298A S. Bridge Rd., Singapore 0105, Singapore
Filed Nov. 4, 1982, Ser. No. 439,136
Claims priority, application United Kingdom, Nov. 4, 1981, 8133290
Int. Cl.⁴ A63B *67/02*
U.S. Cl. 273—176 F **10 Claims**



1. Apparatus for playing a ball game comprising a frame having a base and an upwardly extending perimeter wall substantially defining the perimeter of the base, the base having a plurality of means each defining a respective aperture capable of receiving a ball used to play the game and including at least one means defining a centre aperture located adjacent the centre of the base with the other apertures being side apertures which are located adjacent the perimeter wall, the base being provided with markings defining a set of three similar rectangularly-shaped areas of decreasing size each associated with a respective side aperture.

4,564,199
TRACER GOLF BALL
James S. Adams, 5730 S. Mackinaw, Houston, Tex. 77053
Filed Jan. 30, 1984, Ser. No. 575,195
Int. Cl.⁴ A63B *43/00, 69/36, 37/02*
U.S. Cl. 273—213 **1 Claim**



1. A tracer golf ball, comprising, in combination, a spherical outer wall having a dimpled outer skin, a rubber core inside said outer wall, a spherical opening in a center of said core, a thin membrane lining said opening, a smoke producing chemical agent surrounded by said membrane, a radially extending opening through said wall extending from said membrane to an outer surface of said skin, perforations in said membrane for easy rupture of said membrane when said ball is being struck, for outward escape of said chemical agent, and a plurality of flotation air chambers contained in said core.

4,564,200

TETHERED RING GAME WITH HOOK CONFIGURATION

Wolson J. Loring, 1035 Mulberry St., Reading, Pa. 19604, and Charles C. Schaedler, 310 Noble Ave., Shoemakersville, Pa. 19555

Filed Dec. 14, 1984, Ser. No. 681,934
Int. Cl.⁴ A63B *67/06*
U.S. Cl. 273—332 **10 Claims**



1. A tethered ring game with a ring, a hook and a tether in combination comprising:

a. A ring assembly with a cube shaped pendulum base member with an overhead affixing means on its face adjacent to the overhead and which has disposed on its face opposite the adjacent face a tether connecting means connected to which is tied at a free end thereof a flexible tether of a defined length whose other end is tied to a ring, said length being such that the tether is tautly held from the pendulum base to

b. a hook portion of a hook member in a hook assembly which is mounted to an upright by affixing means a defined elevation from a floor and in which the hook assembly consists of a rectangularly shaped plate which forms a hook block which has the upright affixing means on its face adjacent to the upright and has installed centrally on its face opposite the adjacent face a mounting portion of the hook member which mounting portion has therein contained a break of a minimum radius whereby an obtuse angle is formed with the mounting portion and having at a defined distance from a free end of the hook member a sweep of circular arc which is less than 180°.

4,564,201

METHOD AND APPARATUS FOR SEALING A DISCONTINUITY IN A TUBULAR ASSEMBLY

Joseph R. Hannah, Reddish, England, assignor to Mavie Limited, Cheshire, England

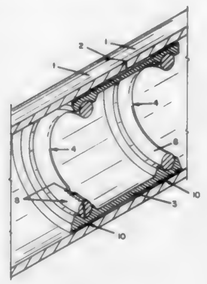
Filed Aug. 5, 1983, Ser. No. 520,854
Claims priority, application United Kingdom, Aug. 5, 1982, 8222616
Int. Cl.⁴ F16J *15/02*
U.S. Cl. 277—1 **14 Claims**

1. A method of sealing a discontinuity in a tubular assembly, comprising:

providing over the discontinuity on the interior surface of the tubular assembly a sealing element;

providing radially expensive clamping rings, one on each side of the discontinuity for expansion against the inner surface of the sealing element, wherein

each of said clamping means includes adjacent end portions, each end portion including teeth formations which mesh with the teeth formations on the other end portion, said teeth formations being defined by ridges and valleys which extend radially inward of the clamping ring and said teeth being formed such that they allow movement of the end portions away from each other to provide for said radial expansion but prevent movement of the end portions towards each other so that once expanded, the clamping ring remains in its expanded position; and



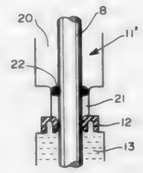
expanding each of the clamping rings so as to clamp the outer surface of the sealing element against the tubular assembly.

4,564,202

SEAL FOR PISTON ROD OF STIRLING ENGINE

Yutaka Momose, Anjyo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 18, 1985, Ser. No. 712,721
Claims priority, application Japan, Mar. 31, 1984, 59-46998[U]
Int. Cl.⁴ F16J *15/40, 15/56*
U.S. Cl. 277—3 **2 Claims**



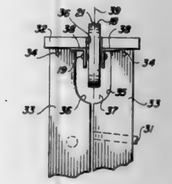
1. In a seal for a piston rod of a Stirling engine having a reciprocating piston rod, an intermediate chamber surrounding the piston rod and held at a minimum pressure of a working gas, a fluid-filled chamber surrounding the piston rod for lubricating the piston rod, and an oil scraper disposed between the intermediate chamber and the fluid-filled chamber for blocking flow of a fluid from the fluid-filled chamber to the intermediate chamber, an improvement comprising an annular sealing member fixedly secured to the piston rod at a position where said annular sealing member will be situated immediately above the oil scraper when the piston rod is at a bottom dead center point of its reciprocating motion, the intermediate chamber being formed to include a first space of a first diameter and a second space of a second diameter smaller than said first diameter, said second space having its diameter sized to an outer diameter of said annular sealing member and being contiguous to the oil scraper, whereby when the piston rod descends toward the bottom dead center point, said annular sealing member is carried thereby into said second space toward the oil scraper to pressurize said second space in order to forcibly return a fluid from said second space to the fluid-filled chamber through the oil scraper.

4,564,203

TRANSPORT AID FOR A-FRAME STEPLADDER

Ronald E. Wilson, 6218 E. Paradise La., Scottsdale, Ariz. 85254

Filed Nov. 23, 1984, Ser. No. 674,238
Int. Cl.⁴ B62B *1/18*
U.S. Cl. 280—47.32 **1 Claim**



1. A transport aid for a narrow oblong object, said object bounded by a parallelepiped having a narrow first end longitudinally opposite a narrow second end, between which ends communicates opposing narrow longitudinal sides and opposing broad longitudinal faces, a plane of weight symmetry parallel said opposing broad longitudinal faces, said transport aid comprising:

single wheel means having medially defined a plane of rotation for balancingly supporting said first end in coaction with manual support and propulsion of said second end; and

coupling means having axle means coaxial said single wheel means, said axle means orthogonal said plane of weight symmetry, said coupling means coupled to said narrow oblong object adjacent a dihedral intersection of said narrow first end and one of said narrow longitudinal sides, said medially defined plane of rotation coplanar said plane of weight symmetry,

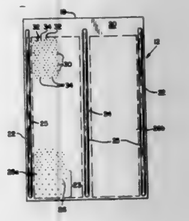
wherein said object comprises a collapsible A-frame type stepladder having in collapsed condition steps parallel said narrow first end communicating between legs adjacent said narrow longitudinal sides, an apical top step adjacent said narrow first end, said apical top step having a forked end adjacent a dihedral intersection of said narrow first end and one of said narrow longitudinal sides, a pair of said legs having cooperating notch means adjacent said forked end, said coupling means comprising axle mounting means straddlingly mounting said axle means adjacent said forked end of said apical top step, said single wheel means protrudingly disposed within a recess, said recess comprising said forked end and said cooperating notch means.

4,564,204

SPRAY-SUPPRESSANT MUD FLAP

Patrick F. Sullivan, 3645 Glen Oak, and Russell R. Wakefield, 5535 Cody, both of Eugene, Oreg. 97405

Filed Aug. 25, 1983, Ser. No. 526,436
Int. Cl.⁴ B62D *25/16*
U.S. Cl. 280—154.5 R **11 Claims**



1. A spray-suppressant material for use on a vehicle to reduce the amount of spray produced by such a vehicle during operation on a wet roadway, comprising:

(a) a base of flexible material, including a generally flat base surface;

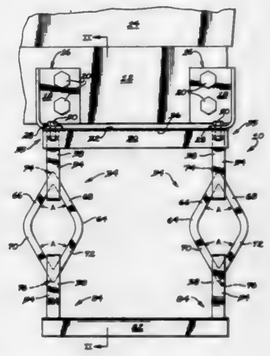
(b) a plurality of generally parallel elongate flexible fingers extending outwardly from said base surface, each said finger having a base and a central axis, and having a height at least about 2½ times as great as its thickness at its base, said fingers being located on and distributed over said base surface, so as to prevent an increased area in the paths of fluid droplets traveling toward said spray-suppressant material, said plurality of fingers being arranged in a plurality of rhombic groups, said rhombic groups being arranged in parallel rows defining channels between said rows, with said flat base surface within each channel being free from said fingers, and each of said fingers extending from said base in a non-perpendicular direction with the central axis of each said finger defining an angle in the range from about 2° to about 15° from perpendicular to said base surface.

4,564,205

FLEXIBLE STEP ASSEMBLY

Dennis R. Shookman, Oreana, and Vergil P. Hendrickson, Decatur, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/01365, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982
PCT Filed Sep. 30, 1982, Ser. No. 638,445
Int. Cl.⁴ B60R *3/02*
U.S. Cl. 280—166 **5 Claims**



1. In a flexible step assembly for a vehicle having a frame and a foot supporting member suspended from said frame by a pair of laterally spaced chain assemblies, the improvement comprising:

a first link in each of said chain assemblies having first and second side portions that converge toward one another to form a pre-selected angle and having a generally triangular cross-section with two sides of said triangle forming an angle corresponding to said pre-selected angle formed by said link side portions;

said first link being secured to said vehicle frame;

a second link in each of said chain assemblies having first and second side portions that converge toward one another to form an angle, and third and fourth side portions that converge toward one another to form an angle, said third and fourth side portions being connected to said first and second side portions at a mid-portion of said second link, said angles formed by said side portions of said second link corresponding to said pre-selected angle, said second link having a triangular cross-section with two sides of said

triangle forming an angle corresponding to said pre-selected angle; and

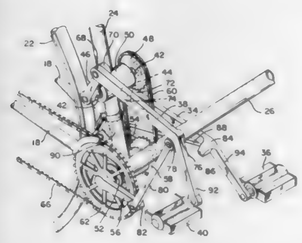
a third link in each of said chain assemblies having first and second side portions that converge toward one another to form an angle corresponding to said pre-selected angle and having a triangular cross-section with two sides of said triangle forming an angle corresponding to said pre-selected angle, and being connected to said foot supporting member, said third link being positioned with the first and second side portions thereof in interlocking engagement with the third and fourth side portions of the second link, and the first and second side portions of said second link being in interlocking engagement with the first and second side portions of the first link, the two sides of the respective triangular cross-sections of the respective links being in nesting engagement with the angles formed by the respective interlocking side portions of said links to provide a wedging force therebetween to render the chain assemblies substantially rigid when a downward force of a pre-selected magnitude is applied to said foot supporting member.

4,564,206

PEDAL DRIVE

Larry G. Lenhardt, 91666 Green Hill Rd., Junction City, Oreg. 97448

Filed Oct. 11, 1983, Ser. No. 540,534
Int. Cl.⁴ B62M *1/00*
U.S. Cl. 280—252 **16 Claims**



1. A pedal drive for driving a bicycle or the like having a driven wheel rotatably mounted to a frame, comprising:

a first rotatable shaft mounted to said frame;

a first sprocket attached to said first shaft;

a second rotatable shaft mounted to said frame at a location spaced apart from said first shaft, said first and second shafts being positioned generally one above the other;

a second sprocket attached to said second shaft and aligned in a common plane with said first sprocket; and

a first endless chain extending about and interconnecting said first and second sprockets;

a third sprocket attached to said second shaft;

a second endless chain extending about and interconnecting said third sprocket and a sprocket attached to said driven wheel;

a first crank arm attached to said first shaft to rotate said first shaft;

a second crank arm attached to said first shaft to rotate said first shaft, said second crank arm extending generally opposite to said first crank arm;

a third crank arm attached to said second shaft to rotate said second shaft;

a fourth crank arm attached to said second shaft to rotate said second shaft, said fourth crank arm extending generally opposite to said third crank arm;

a first pedal arm carrying a first pedal, said first pedal arm pivotally connected to said first crank arm;

a first link pivotally connected to said first pedal arm at a location spaced apart from the location of connection of said first pedal arm to said first crank arm, and pivotally connected to said third crank arm;

a second pedal arm carrying a second pedal, said second pedal arm pivotally connected to said second crank arm; and

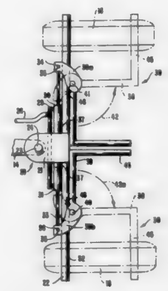
a second link pivotally connected to said second pedal arm at a location spaced apart from the location of connection of said second pedal arm to said second crank arm, and pivotally connected to said fourth crank arm.

4,564,207

HYDRAULIC WHEEL LIFT SYSTEM FOR TOW VEHICLES

Calvin W. Russ, 2119 E. Indian River Rd., Norfolk, Va. 23523, and David A. Craze, 1309 Ormer Rd., Chesapeake, Va. 23325

Filed Oct. 17, 1983, Ser. No. 542,666
Int. Cl.⁴ B60P *3/12*
U.S. Cl. 280—402 **17 Claims**



1. A device adapted to be attached to a towing vehicle and adapted to raise the wheels of a vehicle to be towed, said device comprising:

(a) at least one main boom adapted to be mounted on said towing vehicle;

(b) a wheel boom connected to said main boom in a position substantially transverse to said main boom;

(c) a pair of lift-arms, each of said arms being substantially L-shaped and each being pivotally attached to said wheel boom;

(d) means for pivoting said lift-arms between a rest position in which said lift-arms are adjacent to said wheel boom and an operative position in which each lift arm forms a substantially U-shaped frame with a portion of said wheel boom, said U-shaped frame comprising means for engaging and supporting the underside of a respective vehicle tire, said lift-arm pivoting means comprising a pair of hydraulically operated cylinders, each of said hydraulic cylinders including a cylinder portion and an arm portion which is adapted to reciprocate along a linear path parallel to the longitudinal axis of said wheel boom linear motion of respective hydraulic cylinders causing each of said generally L-shaped arms to pivot and to form, together with a portion of said wheel boom, a generally U-shaped, outwardly directed wheel bowl, each wheel bowl comprising means for receiving a vehicle wheel.

17. A device adapted to be attached to a towing vehicle and adapted to raise the wheels of a vehicle to be towed, said device comprising:

(a) at least one main boom adapted to be mounted on said towing vehicle;

(b) a wheel boom connected to said main boom in a position substantially transverse to said main boom, and means for moving said main boom in both horizontal and vertical planes, said wheel boom being pivotally connected to said main boom and being pivotal over at least 55° angle in either direction, as viewed along a horizontal plane, said wheel boom and said main boom being connected by a flange having one arcuate end attached to a central point of said wheel boom, said flange having a flange aperture located adjacent to an end of said flange opposite from said arcuate end, said flange aperture being aligned with an aperture in said main boom, a first pin being adapted to be inserted through said flange aperture and into said main boom aperture thereby pivotally connecting said wheel boom to said main boom;

(c) a pair of tire lift-arms, each of said arms being substantially L-shaped and each being pivotally attached to said wheel boom, on opposite sides of the connection between said wheel boom and said main boom, each of said lift-arms comprising an integral, arcuately shaped base portion and an arm portion having upper and lower segments, each base portion having first and second apertures, said second aperture of said base portion being located adjacent to said lower segment of said L-shaped arm; and

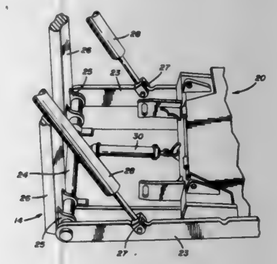
(d) means for pivoting said lift-arms between a rest position in which said lift-arms are adjacent to said wheel boom and an operative position in which each lift-arm forms a substantially U-shaped frame with a portion of said wheel boom, said U-shaped frame comprising means for engaging and supporting the underside of a respective vehicle tire.

4,564,208

TRAILER STABILIZER

Paul S. Kudler, New Waterford, Ohio, assignor to Majestic Rides Mfg. Co., Inc., New Waterford, Ohio

Filed Mar. 19, 1984, Ser. No. 590,903
Int. Cl.⁴ B62D *53/00*
U.S. Cl. 280—423 B **5 Claims**



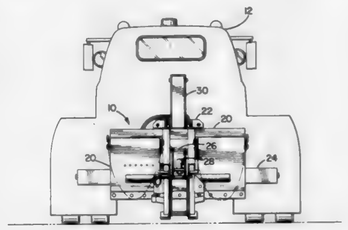
1. An improvement in a portable self-contained amusement ride, said amusement ride including a main trailer frame having a rear wheel support frame secured to a first end thereof, a truss assembly secured in spaced vertical relation to said main frame, pairs of oppositely disposed spaced support posts secured to said main trailer frame supporting said truss assembly, the improvement comprising a trailer gooseneck frame movably secured to a second end of said main trailer frame, a pair of oppositely disposed arms movably secured to said main trailer frame and said gooseneck frame, a self-adjusting stabilizer secured between said main trailer frame and said trailer gooseneck frame to reduce relative movement therebetween by adjustably urging the trailer gooseneck frame constantly towards the main trailer frame, means for moving said gooseneck frame in relation to said main trailer frame.

4,564,209

TRAILER HITCH ASSEMBLY

Bertis N. Kingsley, and Ronald D. Fisher, both of P.O. Box 1010, Centralia, Ill. 62801

Filed Sep. 22, 1983, Ser. No. 534,612
Int. Cl.⁴ B60D *1/18*
U.S. Cl. 280—468 **18 Claims**



1. A hitch assembly for attachment to a towing vehicle for towing a trailer, the assembly comprising:

(a) a frame fixedly mounted to the towing vehicle and including an upper portion, a lower portion and means connecting said upper and lower portions,

(b) a transverse carriage mounted to the frame,

(c) a horizontal ram assembly disposed between the frame and the transverse carriage for moving the transverse carriage laterally relative to the frame, said ram assembly including an elongate piston extending on both sides of the carriage, said piston having ends engageable with the frame and a length extending substantially between engagement points and a length at least as great as the travel of the carriage and having a piston head disposed intermediate the piston ends and a cylinder attached to the carriage for movement of the cylinder and the carriage relative to the piston,

(d) a vertical lift carriage mounted to the transverse carriage, and

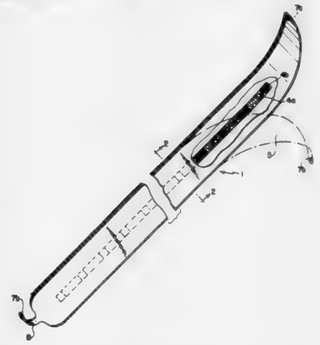
(e) a vertical ram assembly disposed between the frame and the transverse carriage for movement of the vertical carriage relative to the transverse carriage.

4,564,210

CROSS-COUNTRY SKI

Anthony R. Case, 518 Federal Ave., East, Seattle, Wash. 98102

Filed Sep. 26, 1983, Ser. No. 535,861
Int. Cl.⁴ A63C *5/00*
U.S. Cl. 280—604 **9 Claims**



1. A cross-country ski comprising a ski body and a detachable running surface, said ski body having an underface with a longitudinal slot therein, metal edges having an underface and

extending beneath said underface of said ski body and a climbing surface permanently fixed in said slot, and said running surface having an underface and a backside, said ski further comprising:

a first fastening means permanently fixed in said slot;

a second fastening means on the backside of said running surface;

a first element of a third fastening means on the underface of the ski body, and

a second element of the third fastening means on the backside of the running surface;

said first and second fastening means cooperating to secure the running surface to the underface of the ski body and said third fastening means serving to prevent creeping of the running surface relative to the ski body.

4,564,211

SKI BRAKE

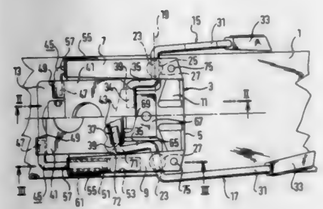
Max Luitz, Blaichach-Bihlerdorf, and Eugen Weiss, Burgberg, both of Fed. Rep. of Germany, assignors to Ess GmbH Skibindungen, Fed. Rep. of Germany

Filed Oct. 12, 1982, Ser. No. 433,919

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3140819

Int. Cl.⁴ A63C *7/10*

U.S. Cl. 280—605 **16 Claims**



1. Ski brake having a base plate attached to the top surface of a ski; having at least one brake lever between two ends thereof supported on the base plate pivotably both about a first axis extending transverse to the lengthwise direction of the ski and substantially parallel to the top ski surface and also about a second axis extending substantially perpendicular to the top ski surface, one end of the brake lever extending freely; having a spring coupled at one end thereof to the base plate; having a foot pedal coupled at an end thereof to a second end of the spring and connected with the second end of the brake lever, the foot pedal resiliently pretensioned by the spring into a braking position remote from the base plate in which the free end of the brake lever projects below the bottom surface of the ski, the foot pedal moveable into a ready position adjacent to the base plate against the spring pretensioning in which the free end of the brake lever is lifted into the region of the top ski surface; and having an inclined slide surface between the foot pedal and the base plate acting in the lengthwise direction of the ski upon the foot pedal approaching the ready position to slide the foot pedal lengthwise of the ski away from the second axis and produce a pivotal movement of the free end of the brake lever about the second axis and directed toward the middle of the ski, characterized in that the brake lever is connected to the foot pedal by a linkage positioned between the second axis and the middle of the ski for the pivotal movement about the first and second axes; in that the end of the foot pedal coupled to the spring is slidable along guidance means in the lengthwise direction of the ski and is guided upon the base plate pivotably about an axis which extends substantially parallel to the top ski surface and transverse to the ski and is pretensioned by the spring in the braking position which is determined by a projection of the base plate; in that the slide surface engages the end of the foot pedal which bears the linkage of the brake lever; in that a bearing portion having a bearing aperture extending in the direction of the first axis and pivotably about the second axis is attached to the base plate; in that from one end of a linkage shaft of the brake lever which pivotably transverses the bearing aperture a brake arm extends freely and from the opposite end a crank arm is spaced oppositely from the brake arm; and in that the crank arm spaced from the linkage shaft bears a linkage pin which engages a slotted bearing aperture of the foot pedal.

4,564,212

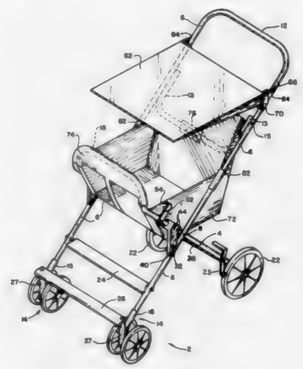
BABY STROLLER AND FRAME STRUCTURE THEREFOR

Michael J. Orlandino, 1455 Kendall Dr., Boulder, Colo. 80303, and David M. Chapman, 2018 W. 76th St. #2704, Denver, Colo. 80221

Filed Dec. 12, 1983, Ser. No. 560,145

Int. Cl.⁴ B62B *7/06*

U.S. Cl. 280—642 **7 Claims**



1. A foldable baby stroller frame including a pair of spaced apart sideframes, and means for transversely connecting said sideframes to provide a frame structure, wherein the improvement comprises, in combination:

each sidewall being comprised substantially of a pair of pivotally connected overlapped cross-struts; and

means for releasably latching said cross-struts into a braced, stable, rigid X configuration, said latching brace means including a head portion defining a through-opening for receiving and being fixedly attached to one said cross-strut, at a distance from its pivotal connection to the other said cross-strut, and a foot portion defining a gripping latching channel dimensioned to releasably receive, latch to, and grip the other said cross-strut to provide a rigid X configuration, whereby said latching brace means is substantially vertical when in latching and bracing use.

4,564,213

STRUT TYPE VEHICLE SUSPENSION MECHANISM

Jiro Maebayashi, and Shoji Kasai, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 438,654, Nov. 2, 1982, abandoned. This application Feb. 22, 1985, Ser. No. 704,151

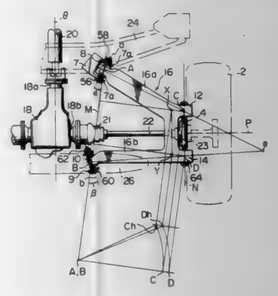
Claims priority, application Japan, Nov. 5, 1981, 56-178217

Int. Cl.⁴ B60G *3/00*

U.S. Cl. 280—690 **2 Claims**

1. A vehicle suspension mechanism including carrier means for carrying a rear wheel rotatably about an axis of rotation, strut means including a shock absorbing strut having an upper end connected with a vehicle body and a lower end connected with said carrier means, swingable arm means including a pair

of interconnected lever arms adapted to move as a unit and pivotably connected through resilient means with said vehicle body at a longitudinally spaced first forward pivot point and a first rearward pivot point and with said carrier means at a longitudinally spaced second forward pivot point and a second rearward pivot point, said first forward and rearward pivot points being located with respect to said second forward and rearward pivot points so that a line passing through said first forward and rearward pivot points is spaced apart from a line passing through said second forward and rearward points by a distance which increases in the rearward direction so that pivoting of said swingable arm means toward the vehicle body produces a toe-in movement of the wheel, said first and said second forward pivot points being located with respect to said first and said second rearward pivot points so that a line passing through the first and second forward pivot points intersects a line passing through the first and second rearward pivot points at a point rearwardly of said axis of rotation of the rear wheel and outwardly of a wheel center plane passing through



the center of the rear wheel and perpendicular to the axis of rotation of the rear wheel so that toe-in movements are produced in the rear wheel under an inwardly directed side force and a rearwardly directed brake force, said resilient means including a rubber bush provided at each of said first forward and rearward pivot points and comprised of inner and outer tubes connected with a cylindrical rubber element, each of the rubber bushes having a center and a longitudinal axis inclined with respect to a line connecting the centers of the rubber bushes at the first forward and rearward points and inclined relative to the longitudinal center line of the vehicle body in an outward direction toward the front of the vehicle, the angle of inclination of the longitudinal axis of the bush at the first forward pivot point relative to the longitudinal center line of the vehicle body being greater than the angle of inclination of the longitudinal axis of the bush at the first rearward pivot point relative to the longitudinal center line of the vehicle body, said second forward and rearward pivot points being located in a vertical plane which is inclined outwardly toward the front with respect to the longitudinal center line of the vehicle body.

4,564,214

SUSPENSION SYSTEM FOR MOTOR VEHICLE HAVING VARIABLE SUSPENSION CHARACTERISTICS

Toshimichi Tokunaga; Seita Kanai, and Yoshiaki Anan, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

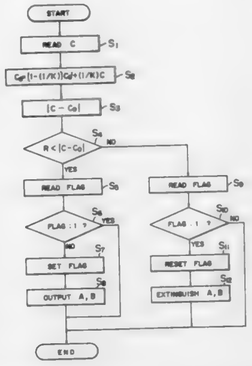
Filed Mar. 15, 1984, Ser. No. 589,946

Claims priority, application Japan, Mar. 18, 1983, 58-46498

Int. Cl.⁴ B60G *17/08*

U.S. Cl. 280—707 **10 Claims**

1. A motor vehicle comprising: a body, wheels for supporting said body, suspension means between said body and respective ones of said wheels; said suspension means including resistance means which provide resistance to vertical movement of said body with respect to said wheels, adjusting means for adjusting said resistance means of said suspension means to change the resistance, steering angle sensing means for producing steering angle signals, control means for controlling said adjusting means, said control means including means for comparing a last steering angle signal with an averge value of a plurality of steering angle signals produced by said steering angle sensing means during a period of time immediately preceding said last steering angle signal and generating a difference signal denoting the difference between said last steering angle signal and said average value of said steering angle signals, and means for comparing said difference signal with a predetermined difference signal value and for providing a drive signal for operating said adjusting means to increase the resistance of said resistance means when said difference signal is larger than said predetermined value.



4,564,215

ELECTRONICALLY CONTROLLED SUSPENSION SYSTEM

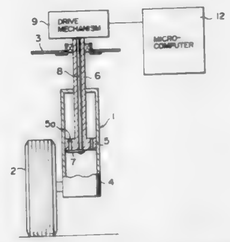
Naotake Kumagai, Aichi, and Minoru Tatemoto, Okazaki, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1984, Ser. No. 636,145

Claims priority, application Japan, Aug. 19, 1983, 58-127276[U]

Int. Cl.⁴ B60G *11/26*

U.S. Cl. 280—707 **5 Claims**



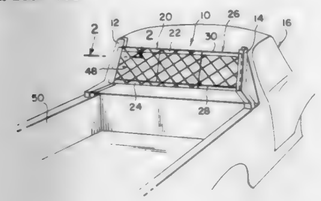
1. In an electronically controlled suspension system equipped with a mode selection switch that permits an alternative choice between a hard mode that puts a vehicle suspension in a hard state and an automatic mode that automatically puts the suspension into a soft state or a hard state depending upon the vehicle conditions, the improvement which comprises control means putting the suspension in the automatic mode when the engine key switch of a vehicle is turned on in preference to the mode to which said mode selection switch has been set.

4,564,216

CREEPER RAMP RACK

John P. Kinyon, and George Spector, both of 233 Broadway, RM 3615, New York, N.Y. 10007

Filed Oct. 31, 1983, Ser. No. 547,079
Int. Cl.⁴ B60P *1/00*; **B62B** *11/00*
U.S. Cl. 280—770 **3 Claims**



1. A creeper ramp rack adapted to be stored in a pair of standards located immediately behind the rear window of a pick-up truck wherein said standards have oppositely disposed means for receiving said rack, comprising:

(a) a first rectangular grillwork panel having top and bottom faces;

(b) a first pair of C-shaped channels each having a first pair of spaced parallel sides, one of said first pair of spaced parallel sides of each C-shaped channel is affixed, in the longitudinal direction, on opposite ends of the bottom face of said first panel;

(c) a second rectangular grillwork panel having top and bottom faces; and

(d) a second pair of C-shaped channels each having a second pair of spaced parallel sides, one of said second pair of spaced parallel sides of each C-shaped channel is affixed, in the longitudinal direction, on opposite ends of the bottom face of said second panel, said first pair and said second pair of C-shaped channels being disposed such that the other of said first pair of spaced parallel sides is received within the space between the parallel sides of said second pair of C-shaped channels and the other of said second pair of spaced parallel sides is received within the space between the parallel sides of said first pair of C-shaped channels so that the two pairs of C-shaped channels slideably engage one another, whereby in one position said rack may be stored in said pair of standards on the pick-up truck to form a protecting grill for the rear window of the pick-up truck and in another position may be lengthened to be placed on the rear end of the truck bed to form a ramp.

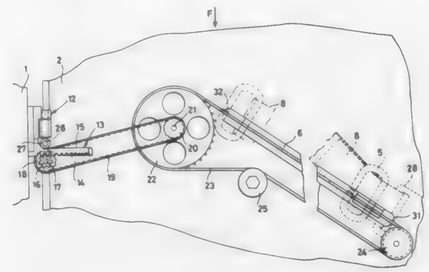
4,564,217

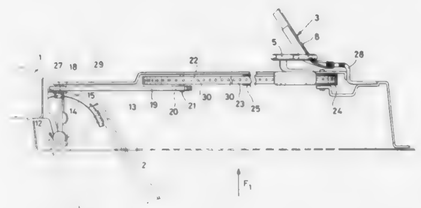
AUTOMATIC POSITIONING DEVICE FOR MOTOR VEHICLE SAFETY BELTS

Ferdinando Paludetto, Cesano Boscone, Italy, assignor to Alfa Romeo Auto S.p.A., Naples, Italy

Filed Nov. 25, 1983, Ser. No. 555,020
Claims priority, application Italy, Dec. 3, 1982, 23636/82[U]
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 280—804 **5 Claims**

1. An automatic positioning device for a passive safety seat belt of a vehicle having a body and a door hingedly connected to said body by a hinge having a hinging axis, said safety seat belt having a mobile positioning point defined by a positioning member and controlled by the open and closed positions of said vehicle door whereby to retain and release a seated occupant of said vehicle in accordance with the position of said door, the improvement residing in means for controlling the position of said mobile positioning point, said means comprising a rack bar having one end fixedly secured to said body and freely passing into said door, said rack bar having the shape of a circular arc and being positioned concentric to said hinging axis, a pinion carried by said door for rotation about a shaft fixed to said door, said pinion being positioned relative to said hinging axis to engage said rack bar in meshing relation and to be rotated by said rack bar in response to opening and closing movement of said door, a rectilinear movement amplifier mechanism coupled to said positioning member for converting





rotary movement of said pinion to amplified rectilinear movement of said positioning member, a rail fixedly mounted on said door in a diagonal position, said positioning member being mounted on said rail for guided movement in response to rotation of said pinion.

4,564,218

AUTOMATIC SEAT BELT DRIVING DEVICE

Yoshihiro Yokote, Yokohama, and Kazuo Yamamoto, Sagamihara, both of Japan, assignors to NSK-Warner K.K., Tokyo, Japan

Filed Apr. 16, 1984, Ser. No. 601,003
Claims priority, application Japan, Apr. 28, 1983, 58-63168[U]; Apr. 28, 1983, 58-63169[U]
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 280—804 **14 Claims**

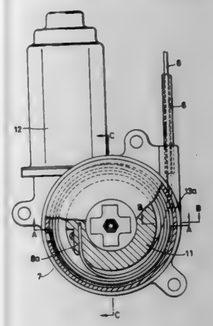
1. A driving device for moving a seat belt in an automatic seat belt system between a seat occupant liberating position and a seat occupant restraining position, said device comprising:

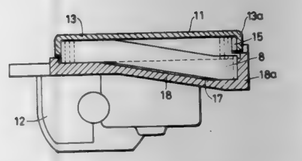
an elongate flexible drive member, one end of said drive member being operatively connected to the seat belt,

a rotatable member formed with a portion for containing the drive member, the other end of the drive member being attached to said rotatable member and the drive member being taken up into and pushed out from said containing portion by the rotation of said rotatable member,

driving means for rotating the rotatable member,

a fixed side member formed with a port through which the drive member is taken up into and pushed out from said containing portion, said port lying at a position deviated





from said containing portion in the direction of the rotational axis of the rotatable member.

4,564,219

APPARATUS FOR ADJUSTING THE HEIGHT OF THE UPPER FITTING FOR THE SHOULDER BELT IN A SAFETY BELT SYSTEM

Hans Baden, Norderstedt; Klaus Kühnemann, Willich; Gerhard Sedlmayr, Hamburg; Klaus Straszewski, Quickborn, and Monika Zeumer, Hamburg, all of Fed. Rep. of Germany, assignors to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

PCT No. PCT/DE82/00193, § 371 Date Jun. 2, 1983, § 102(e) Date Jun. 2, 1983, PCT Pub. No. WO83/01233, PCT Pub. Date Apr. 14, 1983
PCT Filed Oct. 1, 1982, Ser. No. 511,170
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 3139419; Oct. 6, 1981, 3139624; Oct. 7, 1981, 3139822; Oct. 21, 1981, 3141702
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 280—808 **35 Claims**

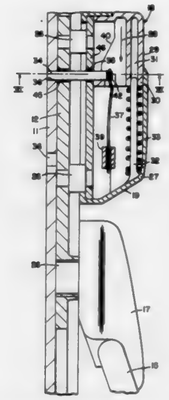
1. An apparatus for adjusting the height of the upper fixing or guide fitting for the shoulder belt of a safety belt system, with said belt being looped through said fitting, resulting in a belt looping axis; said apparatus comprising:

a guide rail having a guide slot and recesses;

a sliding member which is movable within said guide slot of said guide rail, said fixing or guide fitting being supported on said sliding member;

at least one locking member mounted on said sliding member and adapted to engage in said recesses of said guide rail for selective locking and releasing of said sliding member relative to said guide rail, said at least one locking member being symmetrical in construction with regard to its locking and releasing function; said belt looping axis, at said fixing or guide fitting, being located externally of the zone in which the forces between said at least one locking member and said guide rail are transmitted along a plane, a line, or pointwise when said sliding member is locked relative to said guide rail; and

operating means for selectively locking said at least one locking member into, and releasing it from, said recesses of said guide rail to effect said selective locking and releasing of said sliding member relative to said guide rail; said operating means having a finger pressure construction to permit operating thereof with one hand and with substantially no force of hand and arm, a spring-loaded locking member which is longitudinally movable at right angles to



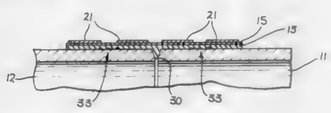
the direction of slide of said sliding member; and in which said operating means for selectively locking and releasing said lockingmember is in the form of a sliding key which is movable parallel to said guide rail in the manner of a known belt buckle having a PRESS buttom, and, by means of suitable configuration, controls the longitudinal movements of said locking member.

4,564,220

ELASTIC GASKET PIPE COUPLING FOR PRESSURIZED PLUMBING SYSTEMS

Andy B. Sills, and Cecil M. Sills, both of Newport Beach, Calif., assignors to Anaheim Foundry Company, Anaheim, Calif.

Filed Apr. 16, 1984, Ser. No. 600,996
Int. Cl.⁴ F16L *21/00*
U.S. Cl. 285—236 **4 Claims**



1. An improved elastic gasket-type pipe coupling for joining adjacent pipe segments, comprising:

a cylindrical elastic gasket having a first annular sealing berm associated with a first pipe segment and a second annular sealing berm associated with a second pipe segment, each sealing beam comprising at least two closely arranged sealing rings, each said ring encircling the outer surface of the associated pipe segment;

a metallic compression band circumferentially disposed about the cylindrical elastic gasket; and

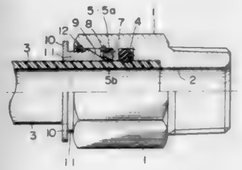
tensioning band encircling the metallic compression band, said tensioning bands disposed on the metallic compression band adjacent to and on both sides of each said sealing berm such that no portion of said tensioning bands is directly over said sealing berms, said tensioning bands upon tightening thereof applying loading force to either side of each said sealing berm and not directly over each said sealing berm thereby forcing each said sealing berm

into a sealing relationship with the associated pipe segment.

4,564,221
HOSE COUPLING

Hidesaburo Ishii, Tokyo, Japan, assignor to Chiyoda Tsusho K.K., Tokyo, Japan

Filed Mar. 12, 1984, Ser. No. 588,250
Claims priority, application Japan, Mar. 26, 1983, 58-043914[U]
Int. Cl.⁴ F16L *33/22*
U.S. Cl. 285—239 **3 Claims**

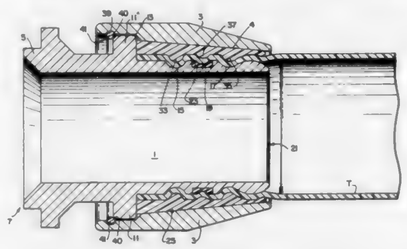


1. A hose coupling comprising:
(a) a coupling body having a fluid passageway formed therethrough, said fluid passageway having a first end into which a hose is introduced during use of the coupling and a second end opposite to the first end, said fluid passageway:
(i) having a circular cross-section throughout its length;
(ii) having a first diameter from its second end to a first annular shoulder which, during use of the coupling, abuts the end of the hose to define the axial position of the hose in said fluid passageway;
(iii) having a second diameter, larger than the first diameter, from said first annular shoulder to a second annular shoulder; and
(iv) having a third diameter, larger than the second diameter, from said second annular shoulder to the first end of said fluid passageway;
(b) an O-ring fitted in a first annular groove in the surface of said fluid passageway between said first and second annular shoulder, said O-ring being sized and shaped so that, during use of the coupling, it makes sealing contact with said coupling body and with the exterior surface of the hose;
(c) a radially expandable holding ring fitted in said fluid passageway in abutment with said second annular shoulder, said holding ring:
(i) having a radial gap therethrough which permits it to flx radially inwardly or radially outwardly;
(ii) having a first radial surface which abuts said second annular shoulder;
(iii) having a second radial surface which is narrower than said first radial surface;
(iv) having a tapered annular internal camming surface extending from the inner edge of said first radial surface to the inner edge of said second radial surface;
(v) having a tapered annular external camming surface extending from the outer edge of said first radial surface to the outer edge of said second radial surface; and
(vi) having inherent resiliency which biases said holding ring towards a shape in which said radial gap has a predetermined circumferential width;
(d) a first expansion ring fitted in a second annular groove in the surface of said fluid passageway, said first expansion ring being sized, shaped, and positioned to bear against said tapered annular external camming surface on said holding ring, whereby if, during use of the coupling, an attempt is made to withdraw the hose without first expanding said holding ring, the movement of the hose causes said holding ring to move axially against said first expansion ring and the contact of said first expansion ring with said tapered annular external camming surface on said holding ring causes said holding ring to be forced radially inwardly, thereby digging into the exterior of the hose;
(e) an axially movable collar fitted in said fluid passageway, said collar:
(i) having a circular inner bore sized to allow the hose to pass therethrough during use of the coupling and to permit ready axial movement of said collar relative to the hose;
(ii) having a tapered annular external camming surface sized, shaped, and positioned to make camming contact with the tapered annular internal camming surface on said radially expandable holding ring;
(iii) projecting axially outwardly of the first end of said fluid passageway over the full extent of the axial travel of said axially movable collar; and
(iv) having a third annular shoulder facing toward the first end of said fluid passageway; and
(f) a second expansion ring fitted in a third annular groove in the surface of said fluid passageway, said second expansion ring being sized, shaped, and positioned to abut against said third annular shoulder on said axially movable collar and to thereby limit axial movement of said collar toward the first end of said fluid passageway.

4,564,222
SEPARABLE COUPLING FOR THIN-WALLED FLEXIBLE HOSE

Ernest B. Loker, Edgewater, and Donald H. Turner, Annapolis, both of Md., assignors to Hydrasearch Co., Inc., Annapolis, Md.

Filed Aug. 27, 1984, Ser. No. 644,629
Int. Cl.⁴ F16C *33/18*
U.S. Cl. 285—243 **19 Claims**

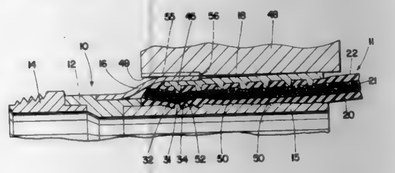


1. A coupling for use with flexible hose, tubing and the like comprising:
(a) a first inner member,
(b) a second intermediate member surrounding said first member,
(c) a third outer member surrounding said second member,
(d) said members each having a tubing receiving end,
(e) means for receiving and retaining tubing positioned between said first and second members, said receiving and retaining means comprising:
(1) at least one first substantially annular tubing groove on said first member,
(2) a substantially annular seal receiving groove on said first member between said tubing receiving end and said one tubing groove,
(3) a first substantially annular means on said second member cooperating with the tubing and said tubing groove for forcing the tubing into said tubing groove,
(4) sealing means in said seal receiving groove,
(5) a second substantially annular means in the form of a substantially annular element on said second member cooperating with said tubing and said sealing material for exerting a force into said sealing material.

4,564,223
HOSE COUPLING

George C. Burrington, Cleveland, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed May 2, 1983, Ser. No. 490,630
Int. Cl.⁴ F16L *33/20*
U.S. Cl. 285—256 **21 Claims**



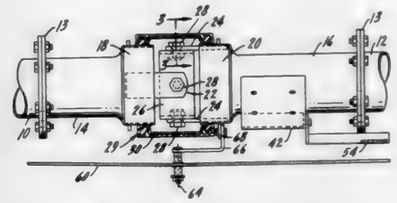
1. A permanently attachable hose coupling for high pressure, reinforced hose having a non-skived cover and core tube, comprising
a body member adapted for connection to a fluid system, said body member having a passage therein for flow of hydraulic fluid,
a nipple affixed on said body member, said nipple being of generally tubular configuration having a bore therein in fluid communication with said passage in said body member, said nipple extending outwardly from said body member and having an inner end and an outer free end,
an annular ridge on the periphery of said nipple, said ridge being spaced axially outwardly from said inner end of said nipple,
a first shell affixed on said body member, said first shell being a thin wall member having an inner section supported on said body member, an outer section of generally tubular configuration and a connecting section joining said inner and outer sections, said outer shell section surrounding said inner end of said nipple and said annular ridge thereon,
a second shell affixed to and supported by said first shell, said second shell being of generally tubular configuration and surrounding said nipple to form an annular space therebetween, said second shell having alternate grooves and projections on the inner periphery thereof forming teeth for gripping hose inserted in said annular space, said teeth being of a radial dimension to substantially freely receive said reinforced hose in said annular space, said second shell being partly received in said first shell to form an overlapping shell band, said shell band being of less axial extent than said second shell, said second shell extending axially outwardly of said first shell and having said projections therein axially outwardly of said first shell, and at least one of said projections being axially disposed in said shell band.

4,564,224
COUPLING DEVICE

Thomas J. Korus, Lindsay, Nebr., assignor to Lindsay Manufacturing Company, Lindsay, Nebr.

Filed Nov. 5, 1982, Ser. No. 439,346
Int. Cl.⁴ F16L *27/00*
U.S. Cl. 285—272 **8 Claims**

1. In a pipe joint, two generally axially aligned pipes terminating in planar ends which are in substantial spaced relation to each other, a gimbal ring between the pipe ends and of an outside diameter on the order of and no greater than the outside diameter of the pipe ends and of an axial extent such that it does not axially overlap the pipe ends, two pairs of coupler bars, 180° apart having inner and outer ends, and means connecting one pair at their outer ends to one of the pipe ends and the other pair at their outer ends to the other pipe end and means pivotally connecting said bars at their inner ends to the gimbal ring, one pair being spaced about 90° from the other

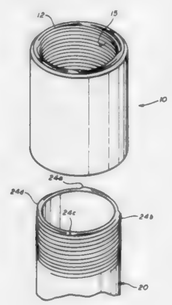


such that their pivot axes are generally perpendicular to each other, and a sealing sleeve in sealing engagement with said pipe ends and surrounding the ends of both pipes, the gimbal ring, and the coupler bars.

4,564,225
MULTIPLE LEAD THREADING

Vernon W. Taylor, 3923 Pleasant Valley, Missouri City, Tex. 77459

Filed Oct. 27, 1983, Ser. No. 545,821
Int. Cl.⁴ F16L *25/00*
U.S. Cl. 285—333 **1 Claim**



1. In a coupling system for use in a drilling operation, the combination of:
radially tapered, axially bored, interiorly threaded, collar means, said collar means' threads including plural leads from each of said collar means' opposite ends to approximately the axial center of said collar means; and
a pair of tubular members, each having radially tapered, exteriorly threaded, ends, said threaded ends each having plural leads, said tubular members being adapted to be threadedly engaged with said collar means.

4,564,226
SYSTEM AND METHOD FOR INCREASING WALL THICKNESS ON END OF PIPE ON WHICH THREAD IS TO BE FABRICATED

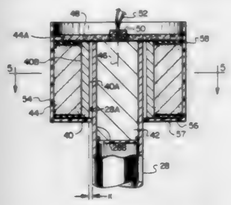
Alfred E. Doherty, Jr., Fort Worth, Tex., assignor to Explosive Research Ltd., Fort Worth, Tex.

Filed Nov. 2, 1981, Ser. No. 317,330
Int. Cl.⁴ F16L *25/00*
U.S. Cl. 285—334 **14 Claims**

1. A well pipe comprising:
a tubular metal body having an axial flow passage for conveying fluids;
a metal sleeve coaxially disposed around an end portion of

the tubular body having its inner surface metallurgically bonded to the outer surface of the tubular end portion by a high-energy impact of the sleeve against the tubular body; and

a thread machined into the metallurgically bonded sleeve in



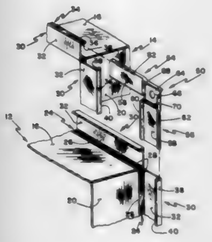
first and second paths, each extending substantially parallel to the axis of the tubular member at first and second diameters, respectively, the thread extending along the first path being machined within the tubular member, and the thread extending along the second path being machined within the sleeve.

4,564,227

FLANGED DUCT JOINT UTILIZING SNAP-IN CORNER PIECES

James W. Murck, Rte. 2, Maple Lake, Minn. 55358

Filed Jan. 26, 1984, Ser. No. 574,044
Int. Cl.⁴ F16L *23/00*
U.S. Cl. 285—364 **16 Claims**



1. A corner piece for joining two rectangular sheet metal duct sections together comprising a single first leg and a single second leg, said legs extending at right angles to each other and said first leg being offset from said second leg so that said first leg engages a flange on one of said two duct sections and said second leg engages a flange on the other of said two duct sections, and means extending only between the adjacent ends of said legs for maintaining said legs in their offset and angled relation.

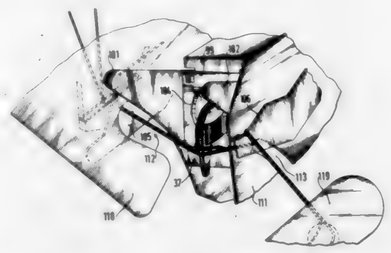
4,564,228

APPARATUS FOR MAKING TENSION-PROOF JOINT FOR ENDLESS-FIBER THREADS

Karl-Heinz Kohlen, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,368
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235135
Int. Cl.⁴ B65H *69/00*
U.S. Cl. 289—2 **17 Claims**

1. Apparatus for forming tension-proof joints in endless threads pointing in different directions, comprising a program control device for coordinating operation of the apparatus, a device connected to said program control device for finding, fetching and holding the threads pointing in different directions and for forming a common thread end with the ends of two threads lying adjacent each other in lengthwise direction, a joining device having a tying bill connected to said program control device for twisting the common thread ends of the threads into thread loops, a thread clamp of said tying bill for holding the common thread ends at least during rotation of said



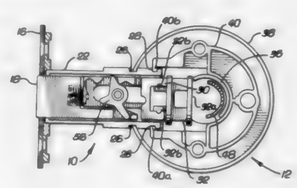
tying bill, a device connected to said program control device for placing the common thread ends behind said rotatable tying bill for twisting, and a device connected to said program control device for pulling the thread loops in the common thread ends off said tying bill.

4,564,229

LATCH ASSEMBLY HAVING SELECTABLE BACKSET DISTANCE

Richard O. Mullich, Burbank, and Anthony J. Rotondi, Whittier, both of Calif., assignors to TRE Corporation, Los Angeles, Calif.

Filed Apr. 18, 1983, Ser. No. 485,180
Int. Cl.⁴ E05C *1/12*; E05B *9/02*
U.S. Cl. 292—169.13 **6 Claims**



1. A latch mechanism having a selectable backset distance, comprising:

a hollow latch case assembly;

a face plate attached to the latch case assembly;

a latch bolt slidably carried within the latch case assembly and movable between an extended and retracted position;

a latch slide slidably carried within the latch case assembly and extending from the end of the latch case assembly opposite the latch bolt, one end of the latch slide having a pressing face for receiving a pushing force in the direction of latch bolt extension;

a coupling mechanism coupling the latch bolt to the latch slide so that movement of the latch slide will retract the latch bolt;

a one piece removable latch slide extension having two ends, one end attached to said one end of the latch slide, the other end of the extension having a pressing face for receiving a pushing force in the direction of said latch bolt extended position; and

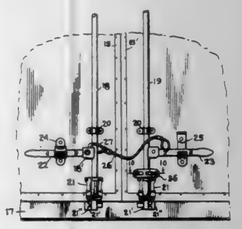
an actuator assembly including a spindle extending along an axis perpendicular to the direction of travel of the latch slide and an actuator housing, the spindle having a face for pressing against the other end of the latch slide extension thereby to apply said pushing force, the latch case assembly and the actuator housing including engaging means for mutually engaging said latch case assembly and said housing at two alternative locations, wherein in a first configuration the actuator housing is connected at the first location to the latch case assembly so that the spindle is positioned adjacent the latch slide extension and in a second configuration the latch slide extension is removed and the actuator housing is connected at the second location to the latch case assembly so that the spindle is positioned adjacent the end of the latch slide, said configurations defining first and second backset distances from the face plate to the spindle of the actuator assembly, wherein rotation of the spindle causes said spindle face to push against the pressing face of the latch slide extension thereby to cause retraction of the latch bolt.

4,564,230

RESTRAINT APPARATUS FOR CARGO BOX DOORS

Edward A. Haist, Maitland, Ontario, Canada

Filed Oct. 3, 1983, Ser. No. 538,344
Claims priority, application Canada, Oct. 5, 1982, 412826
Int. Cl.⁴ E05C *9/08*
U.S. Cl. 292—218 **6 Claims**



1. In a cargo box comprising an end frame having left and right vertical side members and top and bottom horizontal members, said members defining an end opening of said box, a pair of doors having vertical side edges pivotally mounted on said side members and having opposite vertical edges meeting centrally of said opening when said doors are closed on said opening, a vertical latch-actuating bar carried by each said door adjacent said opposite vertical edge, each said bar having latch means fixed on its ends, latch keeper structure carried on said top and bottom frame members engageable by said latch means, said bars having brackets and lever arms connectable with each bracket for effecting opening and closing rotations of respective bars by turning a lever arm in the horizontal plane, the improvement wherein a restraint link is connected by one end with the bar of a first door of said pair and by its other end with the lever arm of the second door and has a length such that when the lever arm of the second door is turned to release respective latches for opening said second door the opening door, swing is limited by said link to a predetermined minor amount, and wherein the second lever arm is rotatable relative to its associated bracket in a vertical plane and is disconnectable from the bracket only when the lever arm is substantially vertical.

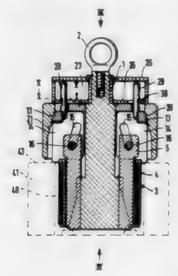
4,564,231

APPARATUS FOR THE LIFTING OF COILS, SPOOLS AND THE LIKE

Joachim Burkert, Neustadt, Fed. Rep. of Germany, assignor to Industriewerk Nachf. Seifert & Co. KG, Neustadt, Fed. Rep. of Germany

Filed Jun. 14, 1984, Ser. No. 620,404
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1983, 3323239
Int. Cl.⁴ B66C *1/54*
U.S. Cl. 294—96 **6 Claims**

1. Apparatus for the lifting of coils, spools and the like of the type which has an interior opening, the apparatus comprising a carrying shaft, guide track means arranged circumferentially about said carrying shaft, clamping segments disposed on said guide track means for movement in a radial and a longitudinal direction, said clamping segments and said guide track means having a cooperable aperture and a cross shaft accommodated in the aperture such that the cross shaft moves in the aperture during relative movement between the guide track means and the clamping segments, said carrying shaft having an outer conical surface, said clamping segments having an inner conical surface engaging said outer conical surface on said carrying shaft, and a locking means operable to lock said clamping segments into a radially inwardly disposed position such that



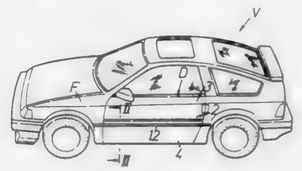
when the locking means is released, said clamping segments are extended radially outwardly relative to said carrying shaft as said inner conical surface of said carrying segments slide on said outer conical surface of said carrying shaft to thereby engage said interior opening, said clamping segments having an upper head section, a bell-shaped means on the carrying shaft and disposed about said head section, said bell-shaped means having an inner conical surface engaging an outer conical surface on said head section, said outer conical surface on said head section sliding on said inner conical surface on said bell-shaped means when said clamping segments are moved relative to said carrying shaft.

4,564,232

AUTOMOBILE DOOR

Yoshitsugu Fujimori, Saitama; Ryouhei Adachi, Tokyo; Hiroo Ebisawa, Saitama; Yukio Kurachi, Saitama, and Masami Koike, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 585,986
Claims priority, application Japan, Mar. 4, 1983, 58-35627
Int. Cl.⁴ B62D *27/00*
U.S. Cl. 296—146 **4 Claims**



1. An automobile door with an inner plate and an outer plate including an upper panel and lower panel with different thermal expansion characteristics, comprising, a plurality of holes including a reference hole formed along the longitudinal axis of the automobile through the upper and lower panels of the outer plate along the lower edge portion of the upper panel and along the upper edge portion of the lower panel, fastening means fitted through said holes attaching the lower panel to the upper panel, said reference hole being approximately equal

in size to the outer diameter of one of said fastening means, the other said holes being formed so as to allow different amounts of longitudinal expansion between the upper and lower panels, and a lip formed on the lower edge of the lower panel engaged with the lower edge of the inner plate.

4,564,233

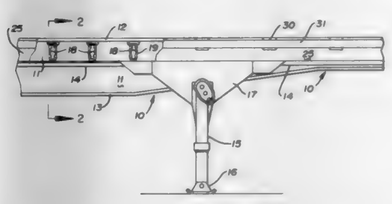
FLAT BED TRAILER STRUCTURE

Howard Booher, P.O. Box 277, Randolph, Ohio 44265

Filed Mar. 21, 1984, Ser. No. 591,928

Int. Cl.⁴ B62D *27/06*

U.S. Cl. 296—182 **9 Claims**



1. A flat bed trailer structure consisting of a pair of horizontally spaced, longitudinally extending, integral I-beams, each having vertically spaced upper and lower horizontally disposed portions and an intermediate vertically disposed web portion, a plurality of longitudinally spaced, transversely positioned tubular frame members having spaced vertically disposed side walls positioned in transversely registering apertures in said web portion of said I-beams contiguous with said upper horizontally disposed portions of said I-beams, each of said registering apertures defined by spaced vertically positioned sides, longitudinally extending flooring members positioned on the transversely positioned tubular frame members in side by side relation with one another and with said upper horizontally disposed portions of said I-beams, outside rails positioned on the opposite ends of said transversely positioned tubular frame members and welded thereto, said spaced vertically disposed side walls of said tubular frame members welded to said web portions of said I-beams on opposite sides of said apertures therein to form spaced double welds between said tubular frame members and said I-beams, said flooring members and the outside rails welded to said tubular frame members.

4,564,234

COVER FOR MIRROR FOR SUN VISOR, PARTICULARLY FOR AUTOMOBILES

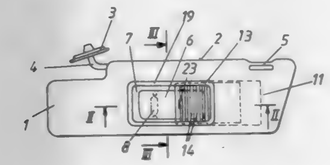
Klaus-Peter Kaiser, Wermelskirchen, and Lothar Viertel, Saarlouis, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 509,313, Jun. 30, 1983, abandoned. This application Jan. 24, 1985, Ser. No. 694,438

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1982, 82206295[U]

Int. Cl.⁴ B60J *3/00*

U.S. Cl. 296—97 H **11 Claims**



1. A sun visor for automobile vehicles, comprising:

a sun visor body having first and second opposed major surfaces spaced apart by a distance which is substantially smaller in dimension than the dimensions of said major surfaces, said distance defining the thickness of said visor body;

a mirror housed in said visor body and being viewable through an opening formed in said visor body;

a cover housed in said visor body and being movable between a first position wherein it covers said mirror so that said mirror cannot be viewed through said opening and a second position wherein it is withdrawn from said mirror so that said mirror can be viewed through said opening;

a non-exposed chamber located within said visor body adjacent said mirror for accommodating said cover in said chamber when said cover is in said second position; and

means for guiding said cover for movement between said first and second positions; said means, said cover and said chamber cooperating to cause said cover to assume a u-shaped configuration, as viewed along a cross section of said visor body which is taken along the thickness direction of said visor body, in said chamber when said cover is in said second position; said cover including a fixed end and a movable end, said fixed end being stationarily connected to a portion of said chamber adjacent said mirror, said movable end being manually movable past said mirror.

4,564,235

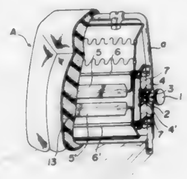
LUMBAR SUPPORT DEVICE

Susumu Hatsutta, and Takayuki Kosaka, both of Akishima, Japan, assignors to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1984, Ser. No. 670,367

Int. Cl.⁴ A47C *3/00*

U.S. Cl. 297—284 **4 Claims**



1. A lumbar support device for use in a vehicle seat, comprising a handle shaft rotatably mounted to a back frame of said vehicle seat, a polyhedral cam fixedly secured to said handle shaft, upper and lower arms engageable with the upper and lower surfaces of said polyhedral cam, and a pair of upper and lower lumbar plates respectively connected via connecting members to said upper and lower arms and movable longitudinally by means of the rotational displacements of said upper and lower arms, characterized in that said upper and lower lumbar plates can be moved independently of each other through said upper and lower arms by rotating said polyhedral cam.

4,564,236

SEAT, PARTICULARLY A POWER VEHICLE SEAT

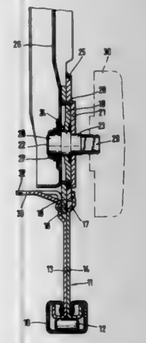
Bernd Klüting, Radevormwald, and Klaus D. Bertram, Remscheid, both of Fed. Rep. of Germany, assignors to Keiper Recaro GmbH & Co., Remschied, Fed. Rep. of Germany

Filed Dec. 16, 1983, Ser. No. 562,402

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246564

Int. Cl.⁴ A47C *1/02*

U.S. Cl. 297—344 **6 Claims**



1. A seat, particularly a power vehicle seat, comprising a seat part; a back part; two seat rail elements arranged at both longitudinal sides and connectable with a vehicle bottom, each of said seat rail elements including an elongated guide rail and a movable rail displaceable along said guide rail, said movable rail including a carrying member and a holding member connected with one another so that said movable rail is T-shaped; means for fixedly connecting said carrying member with said holding member; a hinge pivotally connecting said back part with said seat part, said hinge having a pivot axle and two axially adjacent hinge parts which are arranged on said pivot axle pivotally relative to one another and include position adjusting and fixing means, one of said hinge parts being fixedly connected with said carrying member of said T-shaped movable rails, whereas the other of said hinge parts is connected with said back part and at least partially surrounded and held by said holding member of said T-shaped movable rail so that said movable T-shaped rail axially assembles and holds together said hinge parts of said hinge.

4,564,237

SEAT ARRANGEMENT

Friedrich M. Steifensand, Sperberslohler Strasse 124, D-8501 Wendelstein, Fed. Rep. of Germany

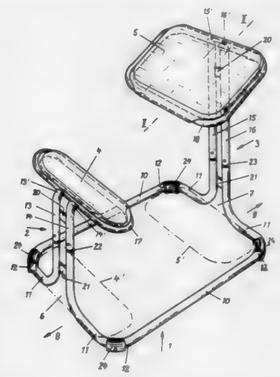
Continuation of Ser. No. 332,619, Dec. 21, 1981. This application Apr. 24, 1985, Ser. No. 725,502

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129647

Int. Cl.⁴ A47C *7/50*

U.S. Cl. 297—423 **8 Claims**

1. A seat arrangement comprising: a common frame including a horizontal base having a pair of spaced-apart ends with longitudinal side members extending therebetween, a first vertical support strut extending upwardly from a center of one end of the pair of spaced-apart ends and a second vertical support strut extending upwardly from the other end of said spaced-apart ends, said first vertical support strut being connected to an edge of a first support frame with the first support frame being a cantilever spaced above the base and extending inwardly from the first strut towards the second strut with a projection of the first support frame being within the confines of the base, said second vertical support strut being connected to an edge of a second support frame with the second support frame being a cantilever spaced above the base and extending inwardly from the second strut towards the first strut with a projection of the second support frame being within the confines of the base; a first unitary support surface for supporting the buttocks of a person seated on said seating arrangement, said first unitary support surface being mounted on said first support frame inward of the first vertical support strut; and a



second unitary support surface for supporting the knees and shins of said person, said second unitary support surface being mounted on said second support frame inward of said second vertical support strut so that both the first unitary support surface and the second unitary support surface are within the confines of the base.

4,564,238

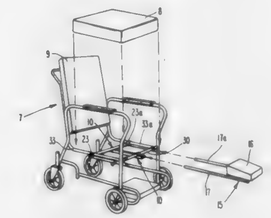
LEG-RESTS FOR MODIFIED WHEEL-CHAIR

George H. Wolpert, Jr., Colombia, Pa., assignor to Spectro Industries, Inc., Jenkintown, Pa.

Filed Oct. 3, 1983, Ser. No. 538,209

Int. Cl.⁴ A47C *7/50*

U.S. Cl. 297—430 **1 Claim**



1. A removable leg rest receiving assembly for use in connection with a wheel chair having a back frame connected to a seat frame wherein said assembly is supported by said seat frame and converts said wheel chair into one which includes leg/foot supports comprising:

a plurality of spaced-apart, parallel tubes with at least one said tube having an orifice therethrough oriented in a horizontal plane and having openings at the front ends thereof and being rigidly braced by transversely disposed members;

grasping means fixed to said brace members for removably attaching said assembly to the seat frame;

at least one coaxially-positioned inner tube telescopingly received in a parallel tube and having a plurality of orifices therethrough in sequential alignment with said paral-

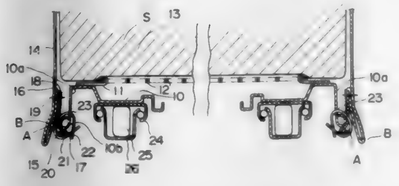
lel tube orifice as said inner tube is longitudinally extended;
at least one leg-rest attached to the distal end of said inner tube and rotatable from an inverted, storage position to an upright, cushion position;
a spring-biased bolt in said housing extending through said parallel tube orifice and said inner tube orifice.

4,564,239

VEHICLE SEAT CUSHION

Hisayoshi Akimoto, Atsugi, Japan, assignor to Ikeda Bussan Co., Ltd., Yokohama, Japan

Filed Nov. 8, 1982, Ser. No. 439,749
Int. Cl.⁴ A47C *31/02*
U.S. Cl. 297—452 **10 Claims**



1. A vehicle seat cushion including a frame having an outer peripheral portion, a cushioning material disposed over said frame and a surface material covering throughout said cushioning material with each end portion of said surface material being fixed to said frame, wherein at each end portion of said surface material there is provided a connection piece with a cover portion, said connection piece at a position opposed to the outer periphery of said frame with said connection piece connected to the outer peripheral portion of said frame, and said cover portion of said surface material extended to a position lower than said connection piece to form a depending cover surface for covering and concealing the connection of said connection piece to said frame; said outer peripheral portion of said frame being bent downwards to form a bent piece, a tubular turnup portion at the lower end of said bent piece, holes in the upper side of said turnup portion, ring-like clips adapted to surround said turnup portion pass through said holes, and means associated with said frame for securing said connection piece at opposite ends of said frame with said ring-like clips being hidden from view by said turnup portion.

4,564,240

LOUNGER OR RECLINING CHAIR MADE FROM A FLOATABLE PLASTIC BODY

Gerd Thieme, Auf der Wildbahn 2, 5060 Bergisch Gladbach, Fed. Rep. of Germany

Filed Oct. 18, 1983, Ser. No. 543,514
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1982, 8229761[U]
Int. Cl.⁴ A47C *7/02*
U.S. Cl. 297—457 **8 Claims**



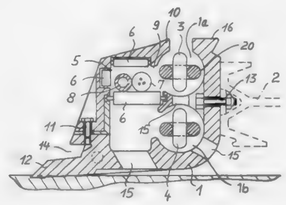
1. A lounger or reclining chair comprising a rigid plastic body with a continuous supporting surface, said plastic body being floatable and means defining at least one cavity in said plastic body for making said lounger bouyant, the top surface of the plastic body defining a supporting surface, and having first a depression which is adapted to the shape of a human body and additional wider depressions than said first depression for the buttocks and head, said reclining chair including two lateral armrests, each armrest having two lateral edges, each lateral edge of each said armrest depending downwardly to form a float spaced from the central portion of said plastic body in the manner of lateral outriggers to produce floating stability.

4,564,241

POWER SUPPLY ARRANGEMENT FOR PULLED MINING MACHINES

Joachim Holz, Dortmund; Wolfgang Meier, Oer-Erkenschwick; Kurt Ogorek, Oberhausen; Heinrich Goris, Hamminkeln, and Karl H. Schwarting, Voerde, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,348
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3224591
Int. Cl.⁴ E21C *29/14*; H02G *11/00*
U.S. Cl. 299—43 **15 Claims**



1. A device for extending flexible supply lines for mining machines which are guided on a conveyor structure moved back and forth along a longwall and over a mine floor by means of a traction element including a load strand and a return strand extending within an enclosed space, comprising a housing secured to the conveyor and enclosing a load strand channel, a return strand channel, and a cable channel alongside and communicating with said load strand channel, with the flexible supply line being stored at the ends of the longwall and towed along by a mining machine through said cable channel, said cable channel having four sides, one of which is open in a continuous slot to said load strand channel, said housing being secured to the conveyor and open at one side, and a plurality of idle rollers mounted in said housing in said cable channel, said supply lines being supported on some of said idle rollers, said idle rollers extending over three remaining sides of said cable channel and said cable channel being upwardly closed.

4,564,242

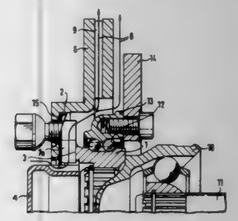
WHEEL HUB ASSEMBLY

Werner Krude, Siegburg, and Alfons Jordan, Hennef, both of Fed. Rep. of Germany, assignors to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed Oct. 26, 1983, Ser. No. 545,749
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239802
Int. Cl.⁴ F16D *65/78, 65/84, 65/847*
U.S. Cl. 301—6 CF **4 Claims**

1. A wheel hub assembly having a central axis and including a wheel hub, an integrated rotary constant velocity joint, and a flanged-on brake disc each encircling the central axis, comprising a wheel carrier, a wheel bearing encircling the central axis and comprising a radially outer bearing ring connected to said wheel carrier and a radially inner bearing ring, wherein the improvement comprises:

(a) said inner bearing ring having a first end and a second end spaced apart in the direction of the central axis, a flange-like extension formed on and extending radially outwardly from the first end of said inner bearing ring, said flange-like extension having a radially inner circumferential edge and a radially outer circumferential edge and uniformly circumferentially spaced radially extending through-slots formed therein and extending from the inner circumferential edge to the outer circumferential edge of said flange-like extension, and said brake disc being internally ventilated and mounted on the radially extending side of said flange-like extension most remote from said inner bearing ring;



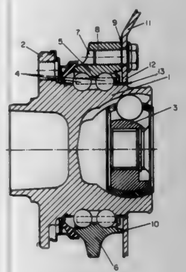
(b) said through-slots in said flange-like extension being covered by said brake disc and the combination of said through-slots and said brake disc defining cooling channels extending radially outwardly from the inner circumferential edge of said flange-like extension; and
(c) said inner bearing ring having a central bore therein located radially inwardly of said flange-like extension, a cover plate member inserted into the central bore of said inner bearing ring, said cover plate member has radially inwardly directed beads formed therein providing recesses aligned opposite the radially inner ends of the cooling channels located between said brake disc and said flange-like extension so that coolant can flow through the recesses formed by said beads into the cooling channels.

4,564,243

HUB BEARING UNIT

Sture L. Asberg, Gothenburg, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed Feb. 28, 1983, Ser. No. 470,220
Claims priority, application Sweden, Mar. 29, 1982, 8201969
Int. Cl.⁴ B60B *37/00*; B62D *7/06*; F16C *33/00*
U.S. Cl. 301—124 R **2 Claims**



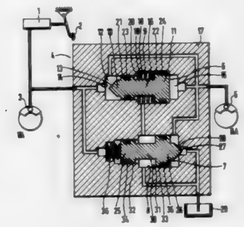
1. A hub unit for vehicles comprising an inner race ring (1) having means for mounting to a wheel of a vehicle, an outer race ring (5) having a radially directed flange (6) formed integrally therewith for mounting the hub unit to the vehicle and two axially spaced rows of rolling elements (4) mounted in the annular space between the raceways of the inner and outer race rings, said flange (6) being disposed in a plane through the axial center of the outer race ring and symmetrical relative to the rows of rolling elements a plurality of circumferentially spaced lugs (8) having axially extending through holes (7) for fasteners to secure the hub unit to a steering knuckle housing (11), one axial end face of the lugs aligned radially with an axial end face of the outer race ring, said housing having a radial wall portion contacting an outer axial end face of the outer ring and closely circumscribing the inner race ring to form with said inner ring a labyrinth seal.

4,564,244

PRESSURE CONTROL DEVICE

Hans-Dieter Reinartz, Frankfurt am Main, and Helmut Steffes, Eschborn, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,197
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1983, 3301901
Int. Cl.⁴ B60T *13/00*
U.S. Cl. 303—6 C **13 Claims**



1. A pressure control device for insertion into a connection between a wheel brake at the front axle and at least one wheel brake at the rear axle of an automotive vehicle and which sets a hydraulic pressure in the wheel brake of the rear axle as a function of the pressure in the wheel brake of the front axle, wherein two valve pistons which are connected in parallel are arranged in cylinder bores and are displaceable by the pressure of the wheel brake of the front axle in opposition to a control force and wherein after a proportional pressure rise in the wheel brakes upon attainment of a definable change-over pressure a pressure is set in the wheel brake of the rear axle which is reduced relative to the pressure in the wheel brake of the front axle, wherein the valve pistons (6, 7) are provided as stepped pistons guided in stepped bores (8, 9) wherein the effective surfaces of the smaller-diameter pistons steps (10, 25) are exposed to the pressure in the wheel brake (3) of the front axle while the effective surfaces of the larger-diameter piston steps (11, 26) are exposed to the pressure in the wheel brake (5) of the rear axle and wherein a shaped closure member (13) is provided at the smaller piston step (10) of the first piston (6) for the control of a first valve passage between the front and rear wheel brakes (3, 5), and a closure member (27) is provided at the larger piston step (26) of the second piston (7) for the control of a second valve passage between the wheel brake (5) of the rear axle and an unpressurized supply reservoir (29).

4,564,245

PARKING BRAKE CONTROL APPARATUS

Dario Barberis, Turin, Italy, assignor to WABCO Westinghouse Compagnia Freni S.p.A., Turin, Italy

Filed Jun. 22, 1984, Ser. No. 623,794
Claims priority, application Italy, Jun. 22, 1983, 67693 A/83
Int. Cl.⁴ B60T *7/00, 13/70, 15/14, 13/22*
U.S. Cl. 303—15 **5 Claims**

1. An electrofluidic parking brake control apparatus on a vehicle equipped with an electrofluidic brake system, such

electrofluidic brake system being responsive to an electrical signal and to a fluid pressure signal, said parking brake control apparatus comprising:

(a) at least one parking brake mounted on such vehicle;

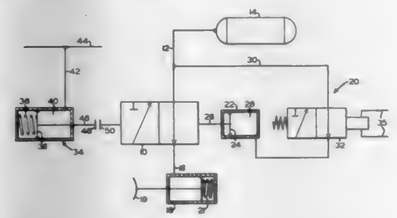
(b) a first source of pressurized fluid connected to supply a first fluid pressure to operate said parking brake on such vehicle;

(c) a pressurized fluid operated first cylinder connected intermediate said first source and said parking brake, said first cylinder being responsive to said first fluid pressure to release said parking brake and being responsive to apply said parking brake when said first fluid pressure is vented from said first cylinder;

(d) a two-position directional valve connected intermediate said first source and said first cylinder, said directional valve being operable in a first position to establish a first fluid communication between said first source and said first cylinder thereby releasing said parking brake and said directional valve being operable in a second position to close said first fluid communication and venting said first fluid pressure from said first cylinder thereby applying said parking brake;

(e) a second source of pressurized fluid connected to supply a second fluid pressure to maintain said directional valve in said first position;

(f) a pressurized fluid operated second cylinder mechanically connected to said directional valve and to said second source, said second cylinder being responsive to said



second fluid pressure to maintain said directional valve in said first position and being responsive to allow shifting of said directional valve to said second position when said second fluid pressure is vented from said second cylinder;

(g) a two-position directional electrovalve means responding to an electrical control signal and connected intermediate said second source and said second cylinder, said electrovalve being operable in a first position to establish a second fluid communication between said second source and said second cylinder when said signal is at least a predetermined minimum value and said electrovalve being operable in a second position to close said second fluid communication between said second source and said second cylinder and venting said second fluid pressure from said second cylinder thereby allowing said directional valve to shift to said second position when said electrical signal is below said predetermined minimum value;

(h) a third source of pressurized fluid connected to supply a third fluid pressure to shift said directional valve to said second position; and

(i) a pressurized fluid operated third cylinder connected intermediate said third source and said directional valve, said third cylinder being responsive to said third fluid pressure to allow said directional valve to remain in said first position and being responsive to urge said directional valve to said second position when both said third fluid pressure is vented from said third cylinder thereby shifting said directional valve to said second position and said electrical signal is below said predetermined minimum.

4,564,246

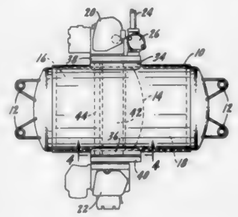
COMBINED RESERVOIR AND PIPE HANGER FOR RAILROAD BRAKES

Henry R. Billeter, deceased, late of Marco Island, Fla. (by Lucille Billeter, administratrix), assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Nov. 14, 1983, Ser. No. 551,402

Int. Cl.⁴ B60T *11/34*

U.S. Cl. 303—85 **5 Claims**



1. For use in a railroad car air brake system, a combined reservoir tank and pipe bracket including a tank, a partition within said tank dividing it into emergency and service portions, an emergency valve mounting saddle attached to the exterior of said tank and a connection between said emergency saddle and the emergency portion of said tank, a service valve mounting saddle attached to the exterior of said tank, spaced from said emergency saddle and a connection between said service saddle and the service portion of said tank, a tube extending within said tank and connecting said emergency saddle and said service saddle and functioning as a pipe bracket quick action chamber, and a plurality of conduits connecting said saddles and extending within said tanks in spaced relation to said tube, said conduits functioning to provide connections between said saddles for the emergency reservoir, brake pipe air and brake cylinder air.

4,564,247

ROLLER-BEARING-MOUNTED TELESCOPIC TRACK FOR DRAWERS OR THE LIKE

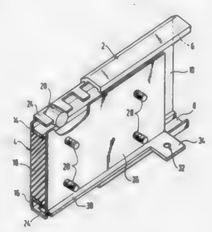
Franz-Josef Knoop, Sonnenhang 7, D-4793 Büren-Steinhausen, Fed. Rep. of Germany

Filed Dec. 7, 1983, Ser. No. 558,918

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245209

Int. Cl.⁴ A47B *88/10*

U.S. Cl. 308—3.8 **7 Claims**



1. A telescopic track for drawers or the like of the type including at least one outer track member including means defining two confronting rolling paths, at least one inner track member including means defining two rolling paths respectively confronting the rolling paths on said outer track; and bearing means interposed between the respective pairs of confronting rolling paths, characterized in that at least one of said track members is a composite structure including a central

main body portion formed of an elastomeric material and strips of rigid non-elastomeric material bonded to the upper and lower edge surfaces of said elastomeric main body portion to define said rolling paths thereon so that said elastomeric main body portion dampens and absorbs the running noises and vibrations generated along said paths during operation of the track; a plate of rigid non-elastomeric material is bonded to a side surface of said elastomeric main body portion for fastening the track to a drawer or cabinet; and said plate is isolated from said strips by said elastomeric main body portion so that the running noises and vibrations generated on said paths is not transmitted to the drawer or cabinet.

4,564,248

PULL-OUT GUIDE FOR DRAWERS

Alfred Grass, Konsumstrasse 20, Höchst, Austria

Filed Mar. 13, 1984, Ser. No. 589,125

Claims priority, application Austria, Mar. 25, 1983, 1057/83

Int. Cl.⁴ F16C *29/12*; A47B *88/00*

U.S. Cl. 308—3.8 **2 Claims**



1. A pull-out guide to be used in drawers and other similar objects comprising:

(a) a U-shaped guide rail attached to a side wall of the drawer;

(b) Z-shaped pull-out rail located within said U-shaped guide rail to move in a horizontal direction as the drawer is pulled out of and pushed into the furniture;

(c) a front roller rotatably mounted in a front area of said guide rail allowing the drawer to move in the horizontal direction;

(d) an upper guide leg paired with a lower guide leg fastened to the side wall of the drawer, said lower guide leg having a run-in slope in an area of said lower guide leg abutted by a run-in stop and this arrangement is used in moving said drawer;

(e) a rear roller rotatably fastened to a rear end area of said Z-shaped pull-out rail moving in the horizontal direction and guided by a rolling contact along one surface of said lower guide leg and one surface of said upper guide leg;

(f) an upper leg paired with a lower leg of said Z-shaped pull-out rail, said upper leg serving as a rolling surface of said front roller and having in a front end area a run-in slope parallel to said run-in slope of said U-shaped guide rail, and said run-in slope of said upper leg is disposed a short distance from an end of said pull-out rail to enable said front roller to slide into said drawer by passing a bending edge on said upper leg of said Z-shaped pull-out rail, while said rear roller is located along a horizontal area of said lower leg of said guide rail.

4,564,249

MINIATURE WASHING MACHINE BOX

Duane D. Logsdon, P.O. Box 186, Stanton, Calif. 90680

Filed Jan. 6, 1984, Ser. No. 568,892

Int. Cl.⁴ F16L *5/00*

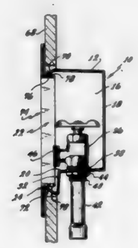
U.S. Cl. 312—229 **1 Claim**

1. A washing machine outlet box capable of fitting within a wall and attaching to support members located in said wall, said washing machine outlet box being an integrally formed water impervious plastic cabinet having a top, a back, sides, a front opening and a bottom with said bottom including a bottom drain opening, the improvement which comprises:

said top of said cabinet having a front edge, said front edge of said top extending forwardly and downwardly over said front opening so as to form an acute angle to the plane of said front opening of said cabinet,

the forwardmost portion of said bottom extending forwardly and upwardly over said front opening so as to form a front edge of said bottom, said front edge of said bottom sloping downwardly towards said drain opening and forming an acute angle to the plane of said front opening of said cabinet, said bottom including a vertically extending wall at the rear of said forwardmost portion which defines a channel with said forwardmost portion which slopes downwardly toward said drain opening,

a face plate shaped as a frame whose outside periphery is of a greater dimension than the outside periphery of the front opening of said cabinet and including an opening located



in said frame wherein the periphery of said opening is of a smaller dimension than the outside periphery of said front opening of said cabinet, said face plate including a flange located perpendicularly to said frame and extending around said opening in said frame, said flange sized and shaped so as to extend inwardly into said front opening of said cabinet, said face plate fitting against said cabinet with said flange fitting into said front opening so as to position portions of said flange against said front edges of said top and said bottom, said portions of said flange which fit against said front edges of said top and said bottom including a plurality of longitudinally oriented ridges capable of frictionally engaging said front edges of said top and said bottom.

4,564,250

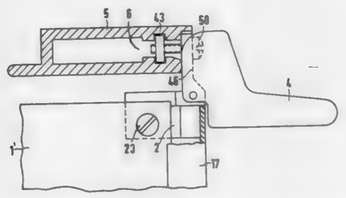
EJECTION AND GROUNDING SYSTEM FOR RACK-MOUNTED PLUG-IN MODULES

Klaus Klein, Rheinstetten, and Reinhard Schmitt, Hagenbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 22, 1984, Ser. No. 623,277

Int. Cl.⁴ H01R *4/66*

U.S. Cl. 339—14 R **2 Claims**



1. An ejection and grounding system for rack-mounted plug-in modules comprising:

a fixed and elongated frame element having an elongated recess that is open in front;

a groundable buss bar located in the recess;

an electrically conductive bracket adaped for physical and

electrical connection to a rack-mounted plug-in module, the bracket having an electrically conductive tang for electrical contact with the buss bar using electrically conductive hardware including a screw that is passed through a hole in the tang and threaded into a tapped hole in the buss bar; and

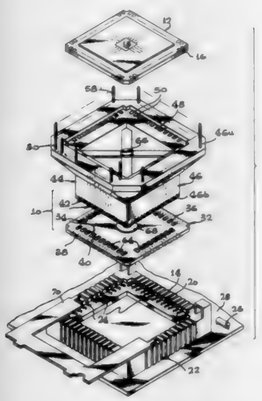
an angle lever pivotally secured to the bracket and rotatable parallel to the module, the lever having a cammed surface which rides on the frame element when the lever is urged against the frame to extract the module.

4,564,251

LEADLESS CHIP CARRIER ADAPTER

William D. Hansen, Bell Gardens, and Raymond F. Mix, Pomona, both of Calif., assignors to ITT Corporation, New York, N.Y.

Filed Dec. 13, 1984, Ser. No. 681,155
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 339—17 CF **7 Claims**



1. An adapter for making connection between the contact pads of a LCC (Leadless Chip Carrier) which has multiple pads spaced about its periphery, and the terminals of a LCC socket that normally receives an LCC and connects the pads of the LCC to a circuit on a printed circuit board or the like, while permitting monitoring of the interface between the LCC contact pads and the socket terminals by test instruments, comprising:

a base element which is shaped to fit into a LCC socket, said base element having multiple contact pads at substantially its periphery which form substantially the same contact footprint as the LCC, said contact pads having inner portions lying inward of said periphery;

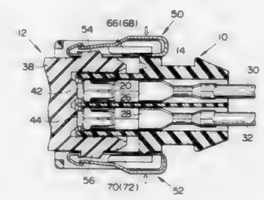
a test interfacer which includes a frame with a receiver for receiving a LCC and a multiplicity of leads, each lead having a lower end in electrical connection with the inner portions of said contact pads of the base element, a first upper portion that contacts the pads of the LCC held in the receiver, and a second upper portion that is accessible from outside the interfacer for connection to test instruments.

4,564,252

ELECTRICAL CONNECTOR ASSEMBLY

Shinichi Kato, Atsugi; Takeshi Tamura, Takasaki; Tsugio Ambo, Tokorozawa, and Katsuji Shimazawa, Tanashi, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama; Japan Electronic Control Systems Co., Ltd., Isesaki and Shinagawa Jidosha Densen Co., Ltd., Tokyo, all of, Japan

Filed Oct. 5, 1984, Ser. No. 658,277
Claims priority, application Japan, Oct. 7, 1983, 58-187854
Int. Cl.⁴ H01R *13/639*
U.S. Cl. 339—91 R **11 Claims**



1. In an electrical connector assembly comprising first and second matable parts which are respectively provided with first and second groups of terminal elements which are sufficiently mated with one another upon final coupling of said first and second parts,

locking means for locking said first and second parts when they are finally coupled together, said locking means comprising:

a locking clip made of resilient metal detachably fixed to said first part, said clip including a first portion lockably fixed to said first part, a second portion having a locking opening formed therein and a third portion having a free end which is in contact with one of said portions such that said clip is in the form of a loop, said third portion being resiliently moved together with the free end thereof toward said first portion when pressed toward said first portion;

a projection formed on said second part, said projection being thrusted into said locking opening of said locking clip when said first and second parts are finally coupled; and

fulcrum means formed on said first part to support partially said third portion of said clip in such a manner that when said third portion is pressed toward said first portion, said second portion is raised away from said first portion thereby disengaging said locking opening of said second portion from said projection.

4,564,253

CRIMP-ON CONNECTOR FOR FLAT CABLE

William Y. Sinclair, Stockton, N.J., assignor to Aries Electronics, Inc., Frenchtown, N.J.

Filed Dec. 11, 1984, Ser. No. 680,544
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 339—97 C **19 Claims**



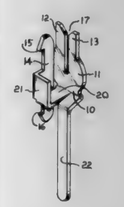
1. A crimp-on connector for a flat cable, said connector comprising opposed cable mounting and contact ends, said cable mounting end including an elongated generally planar support portion, a plurality of barbs extending generally perpendicular to said support portion and adjacent to the longitudinal axis thereof with alternate barbs being disposed on opposite sites of said longitudinal axis and a longitudinal alignment lance extending from said support portion intermediate said barbs and said contact end, whereby said longitudinal alignment lance enables a precise longitudinal positioning of the connector relative to the cable and whereby the barbs are operative to pierce through and mount on the cable.

4,564,254

IDC LATCHING TERMINAL

Wilhelmus B. T. van Alst, St. Oedenrode, Netherlands, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 6, 1983, Ser. No. 501,107
Claims priority, application United Kingdom, Jun. 10, 1982, 8216938
Int. Cl.⁴ H01R *13/39*
U.S. Cl. 339—99 R **6 Claims**



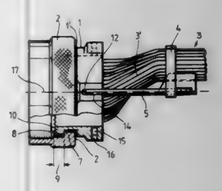
1. An electrical connector assembly for terminating a flat cable having multiple insulated conductors separated by a web, the assembly comprising a plastic block member and a plastic upper housing member, the block member having a multiplicity of channels each retaining an electrical terminal having an insulation displacement contact at a first end and another electrical contact at a second end with a body portion separating the first and second ends, a shoulder and support member together forming an L-shaped member extending perpendicularly from the body portion and supporting a pair of latches spaced apart from the first end, one latch engaging with a wall in the channel within the block member and the other with a wall in a recess in the upper housing member after piercing the web between a pair of the conductors of the flat cable.

4,564,255

STRAIN RELIEF DEVICE FOR AN ELECTRICAL PLUG CONNECTOR

Safa Kirma, Hamburg-Wedel, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Apr. 23, 1984, Ser. No. 602,930
Claims priority, application Fed. Rep. of Germany, May 19, 1983, 3318248
Int. Cl.⁴ H01R *13/58*
U.S. Cl. 339—103 R **9 Claims**



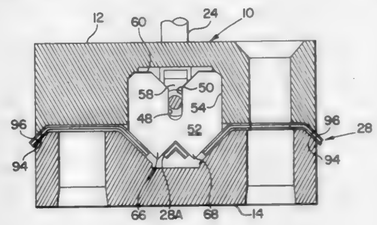
1. A strain relief device for a bundle of conductors, comprising a housing having a central axis, a cap nut having a radially inwardly extending flange with an axially facing flange surface, said housing comprising means for securing said cap nut to said housing in an axially substantially fixed manner but permitting a relative rotation between said cap nut and said housing about said central axis, conductor bundle holding means operatively secured to said housing for holding a conductor bundle against tensile stress in one of several positions relative to said central axis, said conductor bundle holding means comprising a wire bail having two prongs each with a free prong end forming a snap-in member, each prong further including a substantially straight prong section adjacent to each snap-in member, said housing having holes receiving said snap-in members for journalling said wire bail into one of several positions relative to said central axis, said housing further having grooves therein for arresting said substantially straight prong sections in any one of said several positions.

4,564,256

FLAT CABLE TRANSITION CONNECTOR

Ralph R. Damiano, Naugatuck; Wilfred R. Rogers, Bristol, and Charles A. Whitney, Canton, all of Conn., assignors to The Wiremold Company, West Hartford, Conn.

Filed Sep. 21, 1983, Ser. No. 534,203
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 339—99 R **15 Claims**



1. For establishing an electrical transition connection between a multiple conductor flat cable and a plurality of individual wire conductors, a connector comprising first and second mating housing blocks, the first housing block having multiple pairs of openings serving as wire conductor receiving apertures, the first and second housing blocks respectively having matching slots corresponding to each pair of openings in the first housing block, the matching slots being aligned in registration with one another when the housing blocks are in assembled relation, a blade contact received in each of the matching slots of the first and second housing blocks, each pair of openings in the first housing block being disposed on opposite sides of its corresponding blade contact slot and serving to secure a wire conductor, and fastening means for clamping the housing blocks in assembled relation, each blade contact being secured in an operative position when the housing blocks are in assembled relation for establishing an electrical transition connection between a flat cable conductor and an individual wire conductor.

4,564,257

LAMP ADAPTER FOR SCREW TERMINAL LAMPS

Frank G. Smerz, Addison, Ill., assignor to Cooper Industries, Houston, Tex.

Filed Mar. 25, 1983, Ser. No. 478,707
Int. Cl.⁴ H01R *33/74*
U.S. Cl. 339—145 R **20 Claims**

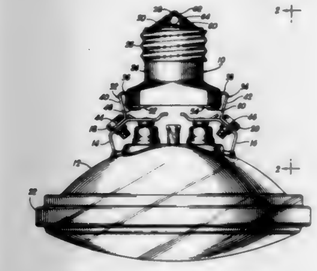
1. An adapter for adapting an electric lamp of the type having screw terminals to fit into a lamp socket comprising:

a body portion;

socket engaging base extending from said body portion; and

means including at least two screw terminal engaging mem-

bers affixed to said body portion in a predetermined spaced apart relationship for engaging said screw termi-



nals to affix and rigidly support said lamp to said body portion.

4,564,258

PRELOADED ELECTRICAL CONNECTOR

Jay H. Garretson; Thomas E. Lazor, both of Warren; John J. Merva, Southington; Charles R. Nestor, Niles; Robert G. Plyler, Vienna; Raymond C. Seiffert, Warren, and Jeffrey L. Ziegler, Columbiana, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 18, 1983, Ser. No. 495,632

Int. Cl.[4] H01R *4/24, 4/02*

U.S. Cl. 339—220 R **7 Claims**

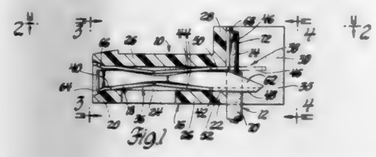


Fig. 1

1. A preloaded electrical connector for mass terminating a plurality of electrical conductors, comprising

a housing having a mating end, a conductor end and a row of parallel cavities extending therethrough from the mating end to the conductor end,

said housing having opposite side walls extending across the row of parallel cavities and a flange on one of said side walls at the conductor end of the housing,

a plurality of terminals having contacts at one end and electrical conductor attaching means at the opposite end which include bendable solder tabs,

said terminals being inserted into the cavities through openings at the mating end of the housing, opposite end first and being retained therein by said solder tabs being bent over against the flange,

said conductor attaching means being disposed outside of the cavities and further including slotted portions transverse to and spaced from the bent solder tabs for receiving the electrical conductors and positioning the ends of the electrical conductors on the bent solder tabs, and

said housing further including a plurality of cantilevered fins at the conductor end which isolates the electrical conductor attaching means of the terminals from each other.

4,564,259

ELECTRICAL CONTACT ELEMENT

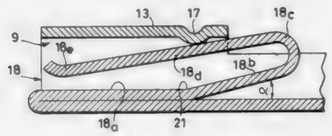
Bertrand Vandame, Villepreux, France, assignor to Precision Mechanique Labinal, Bois D'Arcy, France

Filed Feb. 13, 1985, Ser. No. 701,180

Claims priority, application France, Feb. 14, 1984, 84 02204

Int. Cl.[4] H01R *13/11*

U.S. Cl. 339—258 R **22 Claims**



1. An electrical contact element having a first end and a second end, said first end forming a means to communicate with an electrical circuit, and said second end forming a means for connection to another element, said means for connection including:

a channel comprising a base side and a lateral side; and

an elastic strap comprising a first section positioned against said base side, and a second section inclined at an acute angle with respect to said base side, said second section being U-shaped with a free end.

4,564,260

OPTICAL WAVEGUIDE BRANCHING UNIT AND METHOD OF MAKING SAME

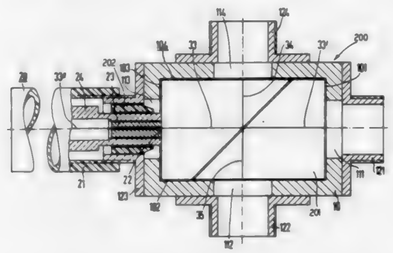
Josef Dirmeyer; Norbert Odemar, and Gerhard Winzer, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,730

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2921035

Int. Cl.[4] G02B *7/26, 5/14*

U.S. Cl. 350—96.16 **9 Claims**



1. An optical waveguide branching unit comprising a housing, and a branching element being secured in said housing, said branching element comprising a body portion of a cover member and substrate containing an arrangement of optically interconnected waveguides between the substrate and cover member, each waveguide in said arrangement extending between at least two different surfaces of the body portion, each of said different surfaces of the body portion being polished and forming an optically flat surface extending in a plane perpendicular to the longitudinal axis of the waveguide associated therewith, each of the waveguides associated with each of said surfaces having waveguide end surfaces polished to be optically flat end surfaces terminating in the plane of the polished surface of the body portion, said housing having a planar port directly adjacent and abutting each of the polished end surfaces of the waveguides of the branching element with no intervening mechanical structure and having means for receiving and securing external optical waveguides in axial alignment with each of the optical waveguides of the branching element so that an external waveguide received and secured in each port is in direct planar abutting contact with the polished optical flat waveguide end surface lying in the plane of the polished surface of the body portion and aligned with the waveguide of the branching element to form an optical waveguide communication therewith.

4,564,261

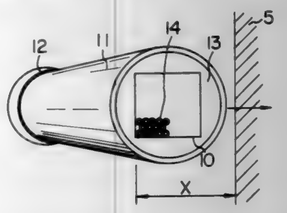
BUNDLE OF OPTICAL FIBERS

Tosaku Kojima; Kunio Matsumoto, and Yoshihisa Suzuki, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 14, 1983, Ser. No. 485,039

Int. Cl.[4] G02B *5/16*

U.S. Cl. 350—96.24 **14 Claims**



1. A bundle structure of optical fibers stacked tier upon tier in a close-packed structure for forming a light receiving surface, wherein each of said optical fibers has a core covered with a cladding layer and the ratio of a radius of a core of each optical fiber to a radius of said optical fiber including a cladding layer ranges from 0.55 to 0.65.

4,564,262

FIBER OPTIC DIRECTIONAL COUPLER

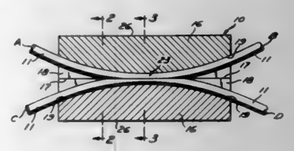
Herbert J. Shaw, Stanford, Calif., assignor to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

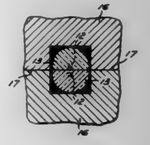
Division of Ser. No. 139,511, Apr. 11, 1980, Pat. No. 4,493,528.

This application Aug. 11, 1983, Ser. No. 522,108

Int. Cl.[4] G02B *5/172*

U.S. Cl. 350—96.15 **28 Claims**





1. A fiber optic coupler, comprising:

a pair of single mode optical fibers, each having cladding material removed from one side thereof, to form a flat, oval area;

means for positioning said pair of fibers to juxtapose said flat, oval areas in facing relationship with the core of each fiber within the evanescent field of the other, to form an interaction region in which evanescent field coupling occurs; and

means for adjusting the degree of overlap of said flat, oval areas to change the coupling efficiency of said coupler.

4,564,263

PROCESS FOR PRODUCING PLASTIC OPTICAL FIBER

Yoshinobu Ueba, and Shinichi Miyake, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 8, 1984, Ser. No. 608,085

Claims priority, application Japan, Dec. 7, 1981, 56-197351

Int. Cl.[4] B29C *71/04;* **G02B** *6/00*

U.S. Cl. 350—96.34 **11 Claims**

1. A process for producing a plastic optical fiber which consists of a core made of a homo- or co-polymer of alkyl methacrylate and a cladding made of a fluorine-containing polymer, which process comprises forming the cladding around the core and irradiating the optical fiber with an electron beam.

11. The plastic optical fiber which is produced by a process according to claim 1.

4,564,264

FLOATING LENS EXTENDING MECHANISM

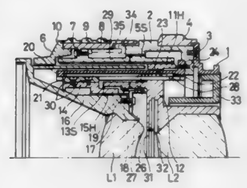
Shinsuke Komoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1983, Ser. No. 536,084

Claims priority, application Japan, Sep. 27, 1982, 57-146133[U]

Int. Cl.[4] G02B *7/10*

U.S. Cl. 350—255 **3 Claims**



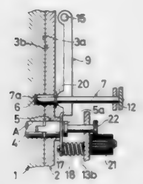
1. A mechanism for extending a floating lens comprising a stationary ring, a rear group helicoid ring rotatably supported on said stationary ring, a distance ring integral with said rear group helicoid ring, a rear group lens frame threadingly engaged with said rear group helicoid ring, first guide means for guiding said rear group lens frame for straight line reciprocal movement as said rear group helicoid ring is turned, a front group helicoid ring rotatably supported on said rear group lens frame and a front lens frame threadingly engaged with said front group helicoid ring, second guide means for guiding said front group lens frame for straight line reciprocal movement as said front group helicoid ring turns, a guide plate disposed outside said front group helicoid ring and fixedly secured to said stationary ring, a curved guide groove formed in said guide plate and a guide roller integral with said front group helicoid ring for turning said front group helicoid ring as said front group helicoid ring is moved with said rear group lens frame.

4,564,265

OPTICAL UNIT

Yukio Miki, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Sakai, Japan

Filed Aug. 29, 1983, Ser. No. 527,357
Claims priority, application Japan, Aug. 31, 1982, 57-151429
Int. Cl.⁴ G42B *7/14*; G43B *3/44*
U.S. Cl. 350—255 **6 Claims**



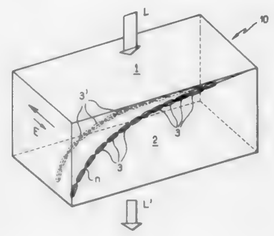
1. In an optical unit, comprising:
a main body including dirving means;
an exchangeable optical instrument including an optical system and driven means coupled with said optical system for shifting the same for focusing;
a first mounting portion disposed on said main body and provided with a first mount surface;
a second mounting portion disposed on said optical instrument and provided with a second mount surface, said optical instrument being mountable and dismountable on and from said main body through rotation thereof relative to said main body with said first and second mount surfaces being in a sliding contact;
a first shaft provided on said main body;
a second shaft provided on said optical instrument, said first shaft being coupled with said driving means for rotation driven by said driving means while said second shaft being coupled with said driven means for driving the same upon rotation thereof, said first shaft being supported for movement in the direction parallel to the optical axis of said main body between a projecting position projecting from said first mount surface to engage said second shaft and a retracting position retracting from said first mount surface to disengage from said second shaft;
a position restricting recess provided on said second mount surface;
a position restricting member provided on said main body to be movable in the direction parallel to the optical axis of said main body between a projecting position engaging said position restricting recess to restrict the rotational position of said optical instrument relative to said main body and a retracting position retracting from said recess to release the rotational position restriction of said optical instrument;
a means for interconnecting said manually operable member with manually operable member provided on said main body; and said first shaft and said position restricting member so as to move said first shaft and said position restricting member from their projecting position to their retracting position, respectively, upon a manual operation of said manually operable member,
the improvement wherein said interconnecting means includes movement enlarging means provided on said main body for enlarging the movement of said first shaft from its projecting position to its retracting position relative to that of said position restricting member from its projecting position to its retracting position so that said first shaft retracts from said first mount surface before said position restricting member retracts from said first mount surface.

4,564,266

ELECTRO-OPTICAL DEVICES USING LIQUID CRYSTALS HAVING A TWIST IN A PLANE PERPENDICULAR TO SUBSTRATES

Georges E. A. Durand, Orsay; Philippe Martinot-Lagarde, Marcoussis, and Ivan Dozov, Massy, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

Filed Apr. 21, 1983, Ser. No. 487,186
Claims priority, application France, Apr. 28, 1982, 82 07309
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—340 **23 Claims**



1. An electro-optical method using liquid crystals comprising the steps of:
filling a space between two parallel transparent plates with a material which comprises molecules having nematic properties, the structure of the molecules initially defining a substantially rectilinear nematic director perpendicular to the plates;
conferring on said material a structure defining a second nematic director curved at least once in a plane perpendicular to the plates by application of a high frequency electrical field to the material, such that the second nematic director arrives substantially perpendicularly at at least one of the two plates;
imparting a twist to the second nematic director along a component at right angles to said plane perpendicular to the plates to impart a twist in the second nematic director; and
causing light arriving with an incidence substantially at right angles to one of the plates to pass through the material, a rotation of polarization of the light, at an outlet from the plates, depending on the twist imparted to the second nematic director.

4. An electro-optical method using liquid crystals comprising the steps of:
filling a space between two parallel transparent plates with a material which comprises molecules having nematic properties, the structure of the molecule initially defining a substantially rectilinear nematic director perpendicular to the plates;
conferring on said material a structure defining a second nematic director curved at least once in a plane perpendicular to the plates by application of a magnetic field to the material, such that the second nematic director arrives substantially perpendicularly at at least one of the two plates;
imparting a twist to the second nematic director along a component at right angles to said plane perpendicular to the plates; and
causing light arriving with an incidence substantially at right angles to one of the plates to pass through the material, a rotation of polarization of the light, at an outlet from the plates, depending on the twist imparted to the second nematic director.

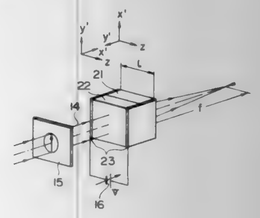
22. An electro-optical method using liquid crystals comprising the steps of:
filling a space between two parallel transparent plates with a material which comprises molecules having nematic properties and non-vanishing flexoelectric anisotropy;
conferring on said material a structure defining a nematic director curved at least once in a plane perpendicular to the said plates such that the nematic director arrives substantially perpendicularly at at least one of the two plates;
imparting a twist to the nematic director along a component at right angles to said plane perpendicular to the plates with application to the material of a low frequency electrical field parallel to the plates, and with simultaneous application of a high frequency electrical field; and
causing light arriving with an incidence substantially at right angles to one of the plates to pass through the material, a rotation of polarization of the light, at an outlet from the plates, depending on the twist imparted to the nematic director.

4,564,267

VARIABLE-FOCAL-LENGTH LENS

Yoshifumi Nishimoto, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 453,161
Claims priority, application Japan, Jan. 7, 1982, 57-1495
Int. Cl.⁴ G02B *1/29*
U.S. Cl. 350—379 **6 Claims**



1. A variable-focal-length lens comprising:
a lens system including at least one set of electrooptic crystals cemented together on curved surfaces thereof so that the directions of their respective axes of rotatory inversion are coincident with each other and so that the directions of their respective two corresponding rotation axes differ from each other;
means for applying an electric field of uniform intensity distribution to said cemented surfaces of said electrooptic crystals so as to make said cemented surfaces refraction surfaces having a lens action; and
means for varying the intensity of the electric field to be applied, to thereby vary the focal length of said lens system.

4,564,268

OPTICAL SYSTEM FOR SEMICONDUCTOR LASER

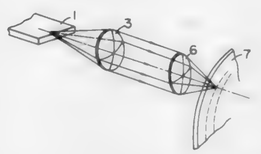
Kimio Tatsuno, Kokubunji, and Akira Arimoto, Musashimurayama, both of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,915
Claims priority, application Japan, May 29, 1981, 56-81053
Int. Cl.⁴ G02B *3/04*
U.S. Cl. 350—409 **20 Claims**

1. An optical system for focusing a laser beam emitted from a gain guide type semiconductor laser on a predetermined recording medium which comprises a non-cylindrical lens satisfying a relatiion

$$NA \leqq \sqrt{\frac{\lambda}{\Delta Z}}$$

so as to correct astigmatism of said semiconductor laser, where NA, ΔZ and λ indicate a numerical aperture of said lens, an



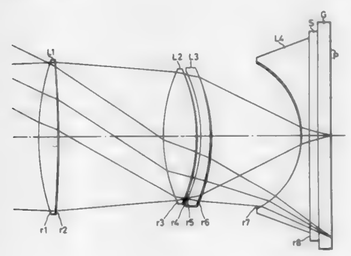
astigmatic focal distance in said semiconductor laser and a laser wavelength of said semiconductor laser, respectively.

4,564,269

PROJECTION LENS

Makoto Uehara, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,436
Claims priority, application Japan, Aug. 29, 1983, 58-157681
Int. Cl.⁴ G02B *9/34, 13/18*
U.S. Cl. 350—432 **25 Claims**



1. A projection lens for a projector which projects an image on a screen, said projection lens consisting essentially of, in succession from the screen side,
a first lens of a positive refractive power;
a second lens of a positive refractive power having a biconvex shape;
a third lens of a negative refractive power having a concave surface facing to the screen side and being of the meniscus type; and
a fourth lens of a negative refractive power having a concave surface facing to the screen side.

4,564,270

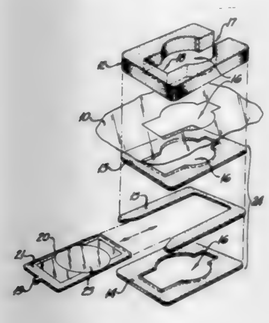
OBJECTIVE LENS COVER FOR AN OPERATING MICROSCOPE

Michael T. Willie, Redding, Conn., assignor to Surgikos, Inc., Arlington, Tex.

Filed Jul. 5, 1983, Ser. No. 510,494
Int. Cl.⁴ G02B *21/00*
U.S. Cl. 350—587 **4 Claims**

1. A disposable microscope drape for enclosing an operating microscope and having an objective lens cover secured thereto, the improvement comprising said lens cover being secured in a housing, said housing comprising a first lens contacting portion composed of a flexialbe, deformable, resilient material having a circular opening capable of being force-fitted over the objective lens ring of an operating microscope, a second portion having the same outside dimensions as said first portion sand having a circular opening aligned with the circular opening of said first section, the operating microscope drape being adhesively secured between said first and second portions, said second portion having a pocket section, a rectan-

gular lens cover removably fitted into the pocket in the second portion and a rectangular cutout on both sides of the circular



opening in the housing to provide openings for external illuminators adjacent the objective lens of the microscope.

4,564,271

RING RESONATOR AND METHOD OF FORMING

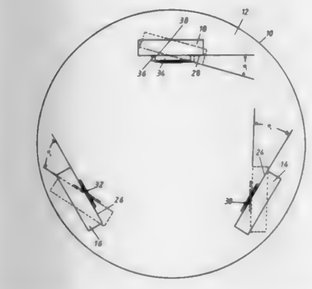
Walter Bernard, Meersburg, and Klaus Langner, Überlingen, both of Fed. Rep. of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Bodensee, Fed. Rep. of Germany

Filed Nov. 7, 1983, Ser. No. 549,287

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3322212

Int. Cl.⁴ G02B *7/18, 5/10*

U.S. Cl. 350—622 **7 Claims**



1. A method for mounting resonator mirrors in a laser, wherein

(a) a mirror carrier carrying the resonator mirror and a base are provided with accurately mutually complementary ground surfaces,

(b) the surfaces are polished to permit attachment by optical contact,

(c) the mutually complementary surfaces of the mirror carrier and the base are brought into proximity to each other, whereby a narrow gap remains therebetween and

(d) the mirror carrier is permanently attached to the base by attachment by optical contact,

the method comprising

(e) arranging said surfaces on the base and arranging said resonator mirror on the mirror carrier such that sliding movement of the surfaces relative to each other permits angular adjustment of the resonator mirror relative to the base,

(f) after the base and the mirror carrier have been assembled, adjusting the mirror carrier with the resonator mirror relative to the base, and

(g) in order to initiate the process of attachment by optical contact, placing an easily moistening, quickly evaporating auxiliary liquid on the edge of said gap between said polished, complementary surfaces, the auxiliary liquid being distributed by capillary action of the gap, the mirror carrier being attached to the base by optical contact after the auxiliary liquid has evaporated.

4,564,272

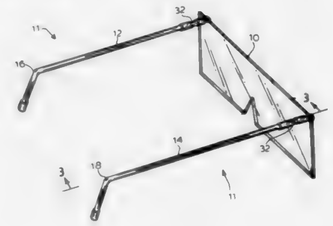
EYEGLASSES WITH INTERCHANGEABLE PARTS

Edmond A. Rinnooy Kan, 53 Mercer St., New York, N.Y. 10013

Filed Mar. 18, 1983, Ser. No. 476,540

Int. Cl.⁴ G02C *5/16*

U.S. Cl. 351—153 **6 Claims**



1. Eyeglasses having parts that are quickly and easily interchangeable comprising:

a lens frame

a left temple piece comprising a stem portion attached to a left side of the lens frame and a right temple piece comprising a stem portion attached to a right side of the lens frame,

means for detachably maintaining each temple piece to the lens frame, so that by manually pulling each temple piece the temple piece is detached from its connection with the lens frame and a subsequent manual application of force may be used to reattach each temple piece to the lens frame wherein the means for detachably maintaining each temple end to the lens frame comprises:

a seat means connected to the temple, and abutting the frame, a rod connected to the seat means and extending through an aperture in the frame and beyond the plane of the frame; and an elastic sleeve friction fitted to the portion of the rod that extends beyond the plane of the frame so that the sleeve abuts the frame, and so that the sleeve is detachably maintained to the rod.

4,564,273

RETINAL CAMERA

Youich Iba, and Kouji Inaba, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

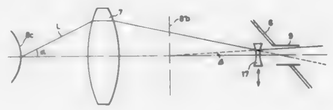
Continuation of Ser. No. 324,952, Nov. 25, 1981, abandoned.

This application May 3, 1984, Ser. No. 606,001

Claims priority, application Japan, Nov. 26, 1980, 55-165394

Int. Cl.⁴ A61B *3/14*

U.S. Cl. 351—209 **6 Claims**



1. A retinal cameral, comprising an objective lens for forming an image of a retina of an eye to be examined at a predetermined position and for forming an image of a front eye part of the eye to be examined at a rearward position relative to said image of the retina;

a relay lens system for re-forming said image of the retina and said image of the front eye part at a predetermined position; and

an auxiliary lens having a negative refractive power arranged movably in a light path between said image of the retina formed by said objective lens and said image of the front eye part formed by said objective lens, to form, at the position of said image of the retina when said auxiliary lens is inserted in said light path, a virtual image of said image of the front eye part of the eye to be formed by said objective lens.

4,564,274

VISIBILITY GAUGE

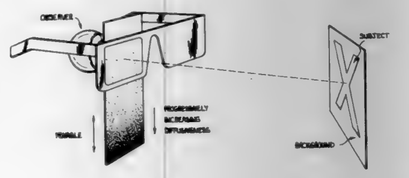
Barry A. Clark, Heidelberg, Australia, assignor to The Commonwealth of Australia, Australian Capital Territory, Australia

Filed Nov. 10, 1981, Ser. No. 320,133

Claims priority, application Australia, Nov. 13, 1980, PE6488

Int. Cl.⁴ A61B *3/00*

U.S. Cl. 351—233 **1 Claim**



1. A method of determining the visibility of a subject against a background thereof, comprising arranging a visibility gauge including a diffusing member so that the diffusing member is interposed in a light path between a subject and an observer at a position near to the observer so as to be out of focus, the diffusing member having different portions arranged in succession and operative to transmit progressively differing proportions of scattered light from the subject and its background therethrough, the total light transmittance for all said different portions being approximately constant so that no substantial change of adaptation of the observer's eye to differeng light intensitites takes place when said different portions are successively interposed in said light path, said method further including the step of progressively moving the diffusing means until a contrast between the subject and its background reaches a threshold.

4,564,275

AUTOMATIC HELIOSTAT TRACK ALIGNMENT METHOD

Kenneth W. Stone, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 21, 1984, Ser. No. 623,006

Int. Cl.⁴ F24J *3/02*

U.S. Cl. 353—3 **5 Claims**

1. A heliostat track alignment method, comprising the steps of:

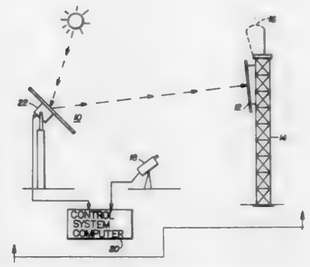
a. Commanding a sunbeam centroid to a target location to establish a reference position;

b. Searching for the actual sunbeam centroid position;

c. Determining the sunbeam centroid position error;

d. Analyzing the sunbeam centroid position error to correlate the sunbeam centroid position error to errors in a heliostat reference system;

e. Changing the heliostat reference system to correct for track misalignment to establish a revised heliostat reference system; and



f. Adjusting the heliostat track alignment to a new position based on the revised heliostat reference system to correct the track misalignment.

4,564,276

MICROFILM SENSING DEVICE WITH A PROJECTION LAMP AND COLD-LIGHT MIRROR

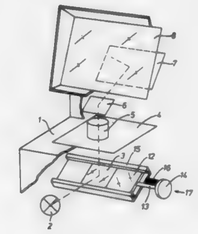
Wilfried Hofmann; Herbert Lusch, both of Taufkirchen; Walter Rauffer, Steinebach; Eberhard Zieran, Grünwald, and Jürgen Sylla, Sauerlach-Arget, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 15, 1984, Ser. No. 580,543

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310850

Int. Cl.⁴ G03B *21/28*

U.S. Cl. 353—55 **15 Claims**



1. A device for sensing microfilms, comprising at least one projection lamp radiating infrared-component rays in addition to visible light; a cold-light mirror adapted to receive from said lamp radiation rays in a predetermined path; a microfilm platform for receiving a microfilm thereon; a projection lens positioned above said platform; a microfilm sensing means; said rays passing onto said cold-light mirror from said lamp, then onto said platform and being directed to said projection lens from which they are projected to said microfilm sensing means; at least one infrared component-reflecting mirror; and means for selectively moving said infrared component-reflecting mirror into and away from said path of the rays before said microfilm platform.

4,564,277

APPARATUS FOR A PHOTOGRAPHIC CAMERA WITH LENS AND FILM CARRIERS WHICH CAN BE RESET IN RELATION TO ONE ANOTHER

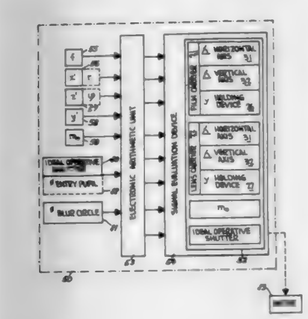
Hans-Carl Koch, Flurlingen; Carl Koch, Stetten, and Karl Gfeller, Langwiesen, all of Switzerland, assignors to Sinar AG Schaffhausen, Feuerthalan, Switzerland

Filed Oct. 5, 1984, Ser. No. 657,945

Claims priority, application Switzerland, Oct. 13, 1983, 5591/83

Int. Cl.⁴ G03B *27/68*

U.S. Cl. 354—160 **26 Claims**



1. An apparatus for a photographic camera having a lens carrier and a film carrier which are relatively adjustable to each other for the computational transmission of data regarding the lens and film carriers in regard to a facilitated attainment of optimal camera settings in relation to a motif scene to be photographed, the apparatus comprising means for generating spatial coordinate signals which define spatial positions of image points which have been optically image inverted for points of measurement of a motif scene, the spatial coordination signals capable of being entered into signal input points of an electronic calculator, and capable of being retained in the calculator, signal evaluation devices at the signal output points of the calculator, the calculator having a calculation program according to which the calculator generates electrical output signals based on the input spatial coordinate signals and Scheimpflug's Law, and passes them to the signal evaluation devices, which output signals comprise ideal-position signals corresponding to an ideal setting of one of the film carrier and the lens carrier for minimal unsharpness of the reproduction of the points of measurement, and comprise change-of-position signals corresponding to the resetting of one of the film carrier and the lens carrier required for the introduction of ideal settings.

4,564,278

EXPOSURE CONTROL DEVICE FOR CAMERA

Hiroshi Ohmura, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

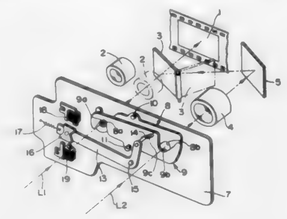
Filed Mar. 27, 1984, Ser. No. 595,543

Claims priority, application Japan, Mar. 31, 1983, 58-45832[U]

Int. Cl.⁴ G03B *3/00, 9/06, 9/14*

U.S. Cl. 354—195.12 **9 Claims**

1. In a camera having a first objective lens of a relatively long focal length, a second objective lens of a relatively short focal length, said first and second objective lenses being arranged side by side, and means selectively to establish an optical path to a film through either of said first and second lenses, the improvement comprising: first and second exposure control elements which comprise a first plate including first and second apertures which is adapted to move in a direction perpendicular to the optical axis of said first and second objective lenses and a second plate including third and fourth apertures respectively corresponding to said first and second apertures which is adapted to move in the direction opposite to that of said first plate, said corresponding apertures forming said first and second exposure control elements, respectively, a



pivotable driving lever having at least one end connected to said first and second plates and another end carrying an armature, and electromagnet means for moving said armature to control the light aperture openings of said exposure control elements.

4,564,279

PHOTOGRAPHIC CAMERA

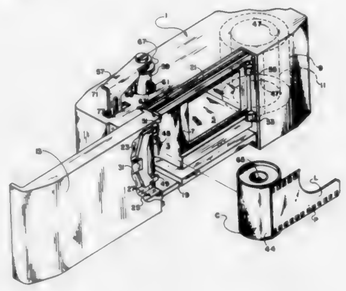
Klaus Sitzler, and Kurt Steisslinger, both of Stuttgart, Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 26, 1984, Ser. No. 674,905

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 3404410

Int. Cl.⁴ G03B *1/28*

U.S. Cl. 354—214 **7 Claims**



1. In a photographic camera of the type provided with (a) a chamber adapted to receive a film cartridge having an engageable spool about which the film is wound, (b) take-up means for advancing the film from the cartridge, (c) a rewind member movable in said chamber into engagement with the spool for rotating the spool to rewind the film into the cartridge, and (d) a camera back movable to open and close said chamber, the improvement comprising:

first motion imparting means for moving said rewind member into engagement with the spool in response to closing movement of said camera back; and

second motion imparting means for moving said rewind member out of engagement with the spool in response to opening movement of said camera back.

4,564,280

METHOD AND APPARATUS FOR DEVELOPING RESIST FILM INCLUDING A MOVABLE NOZZLE ARM

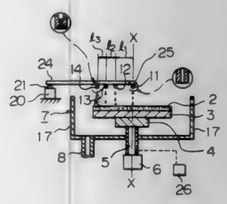
Yuji Fukuda, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 25, 1983, Ser. No. 545,329

Claims priority, application Japan, Oct. 28, 1982, 57-190250; Oct. 28, 1982, 57-190252

Int. Cl.⁴ G03D *5/04;* **B08B** *3/02*

U.S. Cl. 354—317 **11 Claims**



1. A method for developing a resist film coated on a rotatable base plate with a developer which is fed from a plurality of nozzles arranged on a nozzle arm along the length of the nozzle arm, said nozzle arm extending over the resist film, comprising feeding the developer from the respective nozzles onto the resist film while rotating the base plate and while scanning the nozzle arm in a plane parallel to the base plate, over the resist film so that the scan covers at least the surface area of the resist film between the axis of rotation of the base plate and the periphery of the resist film.

4,564,281

SIGNAL SELECTOR FOR AUTOMATIC EXPOSURE APPARATUS OF CAMERA

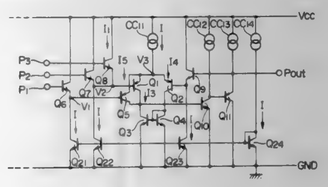
Mikio Takemae, Yokohama; Sakuji Watanabe, Warabi, and Yuji Okubo, Omiya, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 481,742, Apr. 4, 1983, abandoned. This application Nov. 14, 1984, Ser. No. 671,024

Claims priority, application Japan, Apr. 9, 1982, 57-59177

Int. Cl.⁴ G03B *7/087, 17/18;* **H03K** *5/22*

U.S. Cl. 354—442 **3 Claims**



1. A device for generating an analog signal in accordance with first, second and third analog signals, including:

(a) first producing means for producing a fourth analog signal in accordance with a difference between levels of said first and second analog signals, a level of said fourth analog signal being substantially equal to a higher level out of said first and second analog signals, said first producing means including two bipolar transistors, a base of one of said two bipolar transistors receiving said first analog signal, and a base of the other of said two bipolar transistors receiving said second analog signal, collectors of said two bipolar transistors being connected to each other, and emitters of said two bipolar transistors being connected to each other; and

(b) second producing means for producing a fifth analog signal inaccordance with a difference between levels of said third and fourth analog signals, a level of said fifth analog signal being substantially equal to a lower level out of said third and fourth analog signals, said second producing means including two bipolar transistors, a base of one of said two bipolar transistors receiving said fourth analog signal, a base of the other of said two bipolar transistors receiving said third analog signal, collectors of said two bipolar transistors being connected to each other, and emitters of said two bipolar transistors being connected to each other.

4,564,282

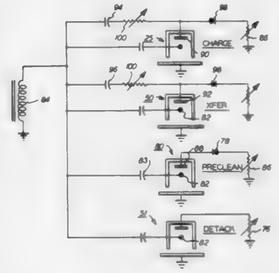
CORONA CHARGING DEVICE

Vittal U. Shenoy, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 15, 1982, Ser. No. 441,356

Int. Cl.⁴ G03G *15/02;* **H01T** *19/00*

U.S. Cl. 355—3 CH **1 Claim**



1. Xerographic reproducing apparatus, said apparatus comprising:

means for forming a powder image on a charge retentive surface and transferring the image to a substrate;

means for assisting in the removal of said substrate from said surface, said means comprising a corona device including an electrode and a conductive shield which is self-biased by means of a resistor through which the shield is connected to ground;

a preclean corona device comprising an electrode having an insulative coating and a conductive shield;

means for applying a.c. power to said preclean electrode, said insulative coating being thick enough to substantially preclude net d.c. current flow from said preclean electrode; and

a self-biasing electrical circuit connecting said conductive shield of said preclean corona to ground, said circuit including means to cause sufficient current to flow in said circuit for effecting substantial neutralization of charged residual toner electrostatically adhered to said charge retentive surface when said surface with said charged residual toner is moved past said preclean electrode and a.c. power is applied to said preclean electrode;

corona devices for uniformly electrostatically charging said charge retentive surface and electrostatically transferring toner images to said substrate, each of said corona devices for charging and transferring comprising a conductive shield and an electrode;

said means for applying a.c. power comprising a single secondary winding and all of said electrodes being operatively connected thereto; and

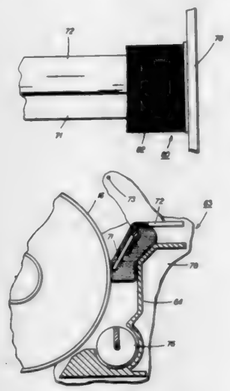
said shields of said corona devices for charging said charge retentive surface and transferring toner images being partially self-biased and partially biased via said secondary winding.

4,564,283

BLADE CLEANER APPARATUS FOR REMOVING TONER FROM A CHARGE-RETENTIVE SURFACE

Wayne D. Fox, and Barry J. Gheer, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 22, 1984, Ser. No. 623,067
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—15 **20 Claims**



1. Cleaner apparatus for removing residual toner from a charge-retentive surface movable through an endless path, said apparatus comprising:

a cleaner housing;

a blade and blade holder supported such that the blade's edge contacts the charge-retentive surface; and

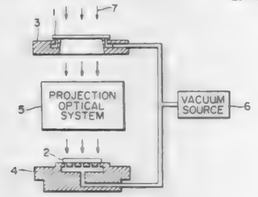
means contacting the ends of said blade and blade holder, said charge-retentive surface and said cleaner housing to block air movement created by the movement of said charge-retentive surface past the ends of said blade thereby redirecting the air movement to an area behind said blade whereby toner contained in said air separates therefrom.

4,564,284

SEMICONDUCTOR EXPOSURE APPARATUS

Shinji Tsutsui, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 531,298, Sep. 12, 1983, abandoned. This application Jun. 5, 1985, Ser. No. 741,218
Claims priority, application Japan, Sep. 12, 1983, 57-162029
Int. Cl.[4] G03B *27/52, 27/20*
U.S. Cl. 355—30 **19 Claims**



1. A semiconductor exposure apparatus having:

a mask clutch for holding a mask; and a wafer chuck for holding a wafer;

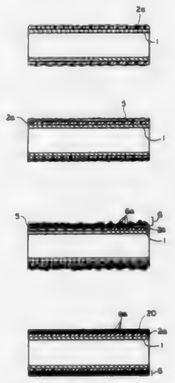
the holding portion of at least one of said chucks having a coefficient of linear expansion substantially coincident with the coefficient of linear expansion of the mask or the wafer held thereby.

4,564,285

DEVELOPING DEVICE HAVING DISPERSED FLOATING ELECTRODES IN A DIELECTRIC LAYER

Wataru Yasuda, Yokohama; Koji Sakamoto, Tokyo, and Fuchio Kanno, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed May 27, 1983, Ser. No. 498,988
Claims priority, application Japan, May 31, 1982, 57-91448; Jun. 7, 1982, 57-96344; Jun. 7, 1982, 57-96345; Jun. 25, 1982, 57-108390
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—3 DD **16 Claims**



1. A device for developing an electrostatic latent image on an image supporting member by applying a single component developer to said latent image, comprising;

a tank for containing therein a quantity of developer;

developer transporting means for transporting said developer supplied from said tank along a predetermined path including a developing region where said electrostatic latent image may be developed, said developer transporting means including first electrode means and second electrode means which is electrically isolated from said first electrode means, said second electrode means including a plurality of fine electrodes which are electrically isolated from each other and each of which is previously coated with an insulating material having a volumetric resistivity of approximately 10^{12} ohms-cm or more to a thickness approximately ranging between 0.5 microns and 0.5 mm, at least some of said fine electrodes being exposed at the surface of said developer transporting means of which said film of developer is formed: and

means for forming a film developer of a predetermined thickness on said developer transporting means before reaching said developing station.

4,564,286

ILLUMINATION DEVICE

Dominick J. Maiorano, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

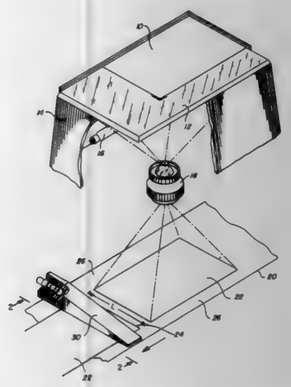
Filed Jun. 9, 1983, Ser. No. 502,783
Int. Cl.[4] G03G *15/00;* **G03B** *27/00*
U.S. Cl. 355—11 **12 Claims**

1. A linear illumination assembly comprising:

a linear, solid, transparent member at least one sector of which has a wedge-shaped configuration characterized by having a top specularly reflecting surface obliquely inclined to a horizontal bottom surface, and

an illumination source adapted to couple light into said wedge-shaped sector;

said illumination source positioned within an aperture formed in said transparent member and in a medium having a refractive index n ' and said transparent member having a refractive index n greater than n' wherein said light proceeds by internal reflection along the obliquely inclined surface of said member, said light being totally



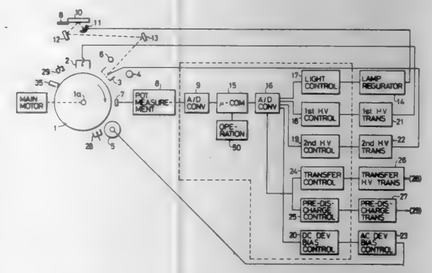
internally reflected from said surface when forming an angle of incidence greater than a critical angle I_c, a portion of said light exiting the base surface of said member when forming an angle of incidence less than angle I_c where $I_c = \arcsin n'/n$.

4,564,287

IMAGE FORMATION APPARATUS INCLUDING MEANS FOR DETECTING AND CONTROLLING IMAGE FORMATION CONDITION

Koji Suzuki, Yokohama; Kouki Kuroda, and Jyoji Nagahira, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 384,070, Jun. 1, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,654
Claims priority, application Japan, Jun. 11, 1981, 56-88898
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 D **22 Claims**



1. An image formation apparatus comprising:

image forming means for forming an image of an original on a recording medium;

standardizing means for standardizing image formation conditions of said image forming means prior to the operation of said image forming means to form an original image on the recording medium and without regard to conditions of the original;

detecting means for detecting conditions of the image of the original after completion of standardization of said image formation conditions by said standardizing means; and

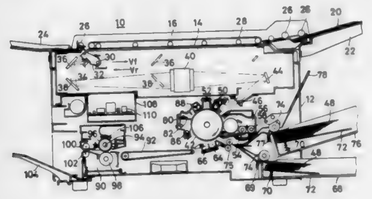
controlling means coupled to an output of said detecting means for controlling the image formation conditions in response to said detection by said detecting means so as to form an image in accordance with the image of the original.

4,564,288

ELECTROSTATIC RECORDING APPARATUS

Torahiko Nonoue; Etsuzo Moriki; Yoshifumi Miyazaki; Takahal Izawa; Shinichi Kikkawa, and Kenhachi Shiraki, all of Hyogo, Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jan. 14, 1985, Ser. No. 691,277
Claims priority, application Japan, Jul. 2, 1984, 59-136951
Int. Cl.[4] G03B *27/34, 27/40, 27/70*
U.S. Cl. 355—57 **8 Claims**



1. An electrostatic recording apparatus comprising

a scanning means being moved reciprocatively for scanning an original copy,

a paper feeding means for feeding papers,

a visible image forming means for forming an image responding to an original copy scanned by said scanning means as a visible image on a paper fed by said paper feeding means, and

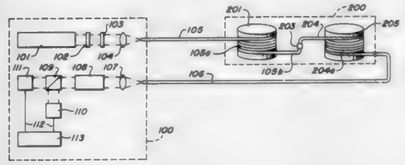
a moving speed changing means for changing the moving speed at returning motion of said scanning means associated with the time of paper feeding means.

4,564,289

SINGLE MODE OPTICAL FIBER POLARIMETRIC STRESS SENSOR HAVING OPTICAL COMMON MODE REJECTION

William B. Spillman, Jr., Acton, Mass., assignor to Geo-Centers, Inc., Newton Upper Falls, Mass.

Filed Jul. 31, 1984, Ser. No. 636,397
Int. Cl.[4] G01B *11/18;* **G01D** *5/26*
U.S. Cl. 356—33 **5 Claims**



1. In a polarimetric device of the kind having

(i) a first optical fiber of the kind exhibiting birefringence when stressed,

(ii) first stress applying means responsive to phenomenon to be sensed for stressing the first optical fiber,

(iii) a source of polarized light,

(iv) means for directing the polarized light into the first optical fiber along its longitudinal axis,

(v) beam splitting means for splitting the light transmitted through the first optical fiber into a plurality of beams, and

(vi) means responsive to the plurality of beams for providing a measure of the stress on the optical fiber,

the improvement providing optical common mode rejection comprising

(a) a second optical fiber having substantially the same properties as the first optical fiber, the two optical fibers being in series in relation to the longitudinal transmission of the polarized light through those fibers,

(b) second stress applying means for applying stress to the second optical fiber, the length subject to stress of the second optical fiber being the same as the length subject to stress of the first optical fiber,

(c) an optical fiber segment interposed between and connecting the first and second optical fibers, the optical fiber segment causing polarized light transmitted through the fiber segment to be rotated by 90° whereby stresses imposed equally on the first and second optical fibers have equal and opposite effects on the phase difference between orthogonal components of the polarized light transmitted through the first and second optical fibers.

4,564,290

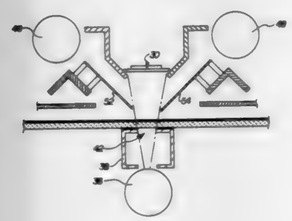
APPARATUS FOR DETERMINING IMAGE AREAS FROM FILMS AND PLATES

David D. Bell, and Gary A. Dobson, both of Westerly, R.I., assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Sep. 30, 1982, Ser. No. 430,886

Int. Cl.⁴ G01N *21/17*; G01B *11/28*

U.S. Cl. 356—73 — **4 Claims**



1. A combination film and plate scanning device for determining the image area of an image member which image area is to be printed, said device comprising:

transparent support means for supporting a plate or film to be scanned, said support means having a viewing area,

sensor means for detecting radiation from the plate or film, said sensor means being located above said viewing area,

control means including switching means for selectively switching between a plate scan mode and a film scan mode,

first radiation means for providing radiation to the film to be scanned at said viewing area on said support means, said first radiation means being located beneath said support means,

second radiation means for providing radiation to the plate to be scanned at said viewing area, said second radiation means being located above said support means,

means for channeling the light from said second radiation means and directing it an angle to the plate to be scanned at said viewing area, said means for channeling the light including optical baffle means, said optical baffle means including at least two optical baffle members each with edge portions which at least in part define an optical window at said viewing area and through which the radiation detected by said sensor means passes,

means for moving at least one of said optical baffle members to change the effective size of said optical window when switching between the plate scan mode and the film scan mode, and said switching means including means for disabling and actuating said first and second radiation means, respectively, when switching between the film scan and plate scan modes, respectively.

4,564,291

PROJECTION TYPE LENSMETER

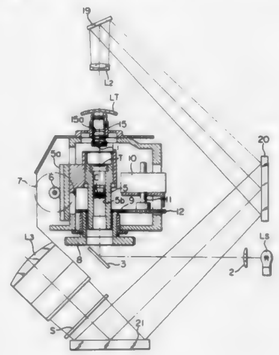
Hisakazu Yoshino; Masayuki Takasu, and Junji Kuroiwa, all of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 214,624

Claims priority, application Japan, Dec. 19, 1979, 54-165086

Int. Cl.⁴ G01M *11/02*

U.S. Cl. 356—125 — **1 Claim**



1. A projection type lens meter comprising: a lens mount for mounting a lens to be examined, a target-projecting optical system for projecting the target projection light through said lens on said lens mount and for magnifying and focussing said light on a screen, and an observation optical system for magnifying and observing the target image on said screen, said target-projecting optical system including a collimeter lens having a focal length f_1 and adapted to collimate said target projection light, and a projection lens having a focal length f_2 and adapted to project the target projection light beam on said screen, said observation optical system having an effective diameter ϕ and a magnification m_2, said focal lengths f_1, f_2, effective diameter ϕ and magnification m_2 satisfying the following relations of:

$$25\ \text{mm} \leqq f_1 \leqq 30\ \text{mm}$$

$$409\ \text{mm} \leqq f_2 \leqq 600\ \text{mm}$$

$$60\ \text{mm} \leqq \phi \leqq 70\ \text{mm}$$

$$1.25 \leqq m_2 \leqq 1.83$$

the overall magnification of said lens meter being 30 or greater.

4,564,292

REFRACTOMETER

Reinhard Omet, Babenhausen, Fed. Rep. of Germany, assignor to Phoenix Artmaturen-Werke Bregel GmbH, Frankfurt, Fed. Rep. of Germany

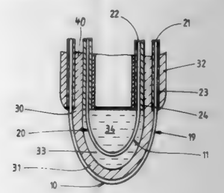
Filed May 25, 1984, Ser. No. 614,722

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321203

Int. Cl.⁴ G01N *21/41*

U.S. Cl. 356—133 — **5 Claims**

1. In a refractometer for measuring the index of refraction of a sample medium, comprising a source of light; a sample medium sensor surrounded by a sample medium, a first light conductor coupling said sample medium sensor to the source of light so that the light from said source is directed along said sample medium sensor, said first light conductor having a substantially U-shaped curved unscreened portion which forms said sample medium sensor, first photodetection means connected to said first light conductor for measuring the transmitted radiant energy passed through said sample medium sensor; a reference medium sensor surrounded by a reference medium; a second light conductor coupling said reference medium sensor to said source of light; second photodetection means connected to said second light conductor for measuring the transmitted radiant energy passed through said reference medium sensor; test data processing means for measuring the difference in light transmitted by each sensor; and indicator means for indicating the index of refraction in accordance with said difference, the improvement comprising a single measuring probe, said sample medium sensor and said reference medium sensor being combined into said single measuring probe;



a housing accommodating said source of light, said first and second photodetection means, said test data processing means and said indicator means; and cable means connecting said single probe to said housing, said probe including an elongated probe member, a casing surrounding said probe member, and a measuring tip having in the direction of elongation of the probe a substantially U-shaped cross-section and extended outwardly from said casing, said measuring tip having an outer surface carrying thereon said sample medium sensor, said measuring tip being formed with an internal hollow space filled with the reference medium, said reference medium sensor being positioned in said hollow space.

4,564,293

FIBER OPTIC LOOP INTERFEROMETER AND METHOD WITH COINCIDENT BACKSCATTER ELIMINATION

Steven A. Newton, Palo Alto; Herbert J. Shaw, Stanford, and Cassius C. Cutler, Palo Alto, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Division of Ser. No. 200,431, Oct. 24, 1980. This application Aug. 5, 1983, Ser. No. 520,605

Int. Cl.⁴ G01B *9/02*; G01C *19/64*

U.S. Cl. 356—350 — **19 Claims**



1. An interferometer comprising:

a loop of fiber optic material;

means for introducing a first light pulse and a second light pulse into said loop, said first and second light pulses having opposite directions of travel in said loop so that said first and second light pulses overlap in a predetermined segment of said loop;

means for combining said first and second light pulses to form an interference pattern; and

means for monitoring the interference pattern, said monitoring means being responsive to backscattered waves which originate only in said predetermined segment;

wherein said predetermined segment of said loop is formed of an optical fiber having a greater degree of purity than the fiber optic material which comprises the remainder of said loop.

4,564,294

ENCAPSULATED PHOTOELECTRIC MEASURING SYSTEM

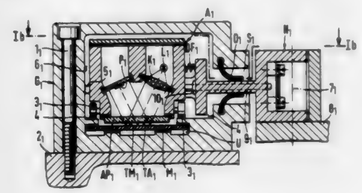
Alfons Ernst, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Feb. 29, 1984, Ser. No. 584,825

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311118

Int. Cl.⁴ G01B *11/14*

U.S. Cl. 356—374 — **7 Claims**



1. In an encapsulated photoelectric measuring system for measuring the relative position of two objects, of the type comprising a measuring scale, a scanning unit for scanning the scale, means, included in the scanning unit, for illuminating at least a first surface of the scale, means for connecting the scanning unit with one of the two objects, a housing which encapsulates the scale and the scanning unit and defines an opening through which the connecting means passes, and at least one sealing element for sealing the opening, the improvement comprising:

means for hermetically sealing the scanning unit, said scanning unit sealing means comprising:

a photopermeable surface positioned adjacent to the first surface of the scale substantially parallel thereto, said photopermeable surface and said first surface defining a gap therebetween having a width sufficiently small to spread liquid drops on the first surface in the region of the photopermeable surface into a continuously homogeneous wetted liquid layer.

4,564,295

APPARATUS AND METHOD FOR PROJECTION MOIRE TOPOGRAPHY

Maurice Halioua, Port Jefferson, N.Y., assignor to New York Institute of Technology, Old Westbury, N.Y.

Filed Mar. 7, 1983, Ser. No. 473,057

Int. Cl.⁴ G01B *11/24, 15/04*

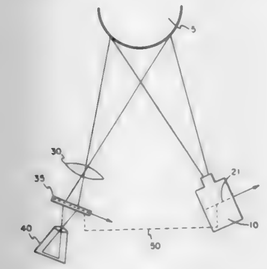
U.S. Cl. 356—376 — **20 Claims**

1. Apparatus for obtaining a moire fringe pattern images of an object, comprising:

means for projecting a beam of radiation at the object;

a movable projection grating disposed in said projecting means in the path of the beam projected at the object;

means for focusing the beam reflected from the object to obtain an image at an image plane;
a movable reference grating disposed at the image plane;



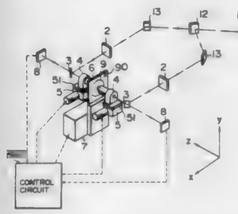
means for recording the image at the image plane; and means for moving said gratings in synchronism.

4,564,296

PLATE THICKNESS MEASURING METHOD AND APPARATUS

Yoshitada Oshida, Fujisawa; Hiroshi Makihara, and Nobuhiko Aoki, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 24, 1981, Ser. No. 305,374
Claims priority, application Japan, Sep. 26, 1980, 55-132923
Int. Cl.⁴ G01B *11/06*
U.S. Cl. 356—381 **14 Claims**



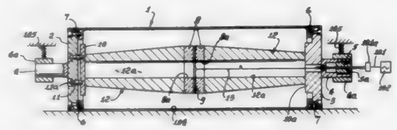
1. A plate thickness measuring apparatus comprising:
a light source;
a fine pattern of alternately arranged opaque and transparent stripes which includes a plurality of said opaque stripes and a plurality of said transparent stripes onto which light is radiated from said light source;
a pair of object lenses respectively provided oppositely to one another adjacent to front and rear sides of the object to be measured for projecting said fine pattern onto the front and rear surfaces of the object to be measured;
a pair of moving means for moving said pair of object lenses in the optical-axis direction perpendicular to the front and rear surfaces of the object to be measured, each of said moving means respectively providing a drive means for automatically moving an associated one of said object lenses;
a pair of imaging devices respectively disposed at predetermined positions adjacent to said front and rear surfaces to pick up images by scanning reflected images of said fine patterns formed on the front and rear surfaces of the object to be measured which are reflected through said pair of object lenses, each of the reflected images being formed of alternately arranged light and dark stripes;
calculating means for integrating a plurality of contrast signals each comprising a difference between a light stripe signal and dark stripe signal of an image signal of a reflected image pattern picked up by said imaging devices to thereby obtain integral contrast signals for said front and rear surfaces of said object to be measured;
control means for actuating each of said drive means provided in each of said moving means to control the positions of the object lenses so as to achieve a maximum value of said integral contrast signals for said front and rear surfaces of said object to be measured obtained from said calculating means;
a pair of position detecting means for detecting the positions of said object lenses such that the relative positions of said object lenses are at the same value when the thickness of the object to be measured is zero; and
measuring means for estimating the difference between the relative positions of the object lenses which are obtained from each of said position detecting means when each of said moving means are controlled by said control means to achieve the focused condition on the front and rear surfaces of the object, so as to determine the thickness of the object to be measured,
wherein said fine pattern is formed of regular arrangement of dense and coarse patterns having at least two different space frequencies.

4,564,297

VIBRATORY TREATMENT OF MOVING SURFACES

Francis G. Firth, 96 Blue Lagoon, 30781 S. Coast Hwy., Laguna Beach, Calif. 92651

Filed Aug. 19, 1983, Ser. No. 524,653
Int. Cl.⁴ B01F *11/00*
U.S. Cl. 366—108 **34 Claims**



1. The method of employing a body having a generally cylindrical wall to treat a work surface moving relative to the body, that includes
(a) effecting vibration of said wall, to produce radial oscillation thereof,
(b) causing said wall to rotate and to contact said relatively moving work surface while the wall rotates thereby to transmit said radial oscillation to said work surface,
(c) said vibration being at a frequency or frequencies to cause densification of the work,
(d) said (a) step carried out to produce wall oscillation along its length in contact with the work surface,
(e) said body comprising a tube defining said wall, and said (a) step vibration being carried out to effect generally lengthwise oscillating displacement of the tube which results in corresponding generally radial oscillating displacement of the tube wall.

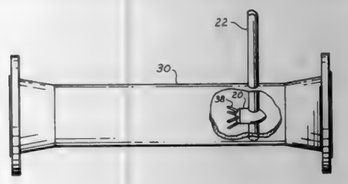
4,564,298

HYDROFOIL INJECTION NOZZLE

Gregory A. Gritters, Indio; Walter E. Nellis, Bermuda Dunes, and John L. Featherstone, El Centro, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed May 15, 1984, Ser. No. 610,323
Int. Cl.⁴ B01F *15/02*
U.S. Cl. 366—167 **29 Claims**

1. An injection nozzle useful for injecting a corrosive fluid into a fluid stream, comprising:
(1) a hydrofoil injection housing having a relatively paraboloid portion at one end;
(2) a tubular manifold conduit for delivering corrosive fluid into said injection housing, said tubular manifold conduit being connected thereto in fluid-tight arrangement; and
(3) a plurality of injection tubes which extend from said hydrofoil through the end of said injection housing opposite the vertex of the paraboloid, said injection tubes each having an axial bore which connects in fluid-tight arrangement with the interior of said housing and in fluid communication therewith.

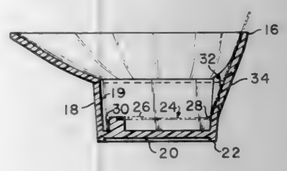


4,564,299

BODY LIQUID TEMPERATURE MEASURING DEVICE

Joel R. Ehrenkranz, 146 Irving Ave., So. Orange, N.J. 07079

Filed Jun. 15, 1984, Ser. No. 620,970
Int. Cl.⁴ G01K *13/00;* **G01N** *1/10*
U.S. Cl. 374—157 **18 Claims**



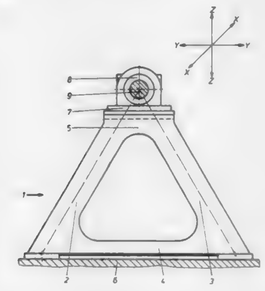
1. An apparatus for determining core body temperature by measuring the temperature of urine comprising:
a receptacle for receiving said urine, said receptacle including an upper portion having an opening therein, a base portion which functions to receive said sample of urine, a circumferential lip portion surrounding said opening, said opening have a generally eliptical shape and adapted to receive urine from human females;
a lid means for engaging said lip portion and forming an air and liquid-tight seal with respect to said lip portion;
temperature measuring means for measuring the temperature of said urine as it is being collected and for providing an indication of said temperature for a prolonged period after collection thereby serving as an indication that said sample of urine was fresh when collected, said temperature measuring means comprising a removable chemical melting point type of thermometer;
means for releasably attaching said temperature measuring means to said apparatus so that said temperature measuring means may be readily removed from said apparatus;
supporting means comprising a pedestal-like means for supporting a first portion of said temperature measuring means a predetermined distance above the inside bottom of said base portion of said receptacle;
pour spout means incorporated in said receptacle for removing urine from said receptacle; and,
dead air space means located on the exterior of said base portion on the opposite side thereof from said pedestal-like means for insulating said urine from the temperature of exterior surfaces upon which said apparatus may rest.

4,564,300

BEARING SUPPORT STAND

Gerd Schulze, Oberhausen, Fed. Rep. of Germany, assignor to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 178,857, Aug. 18, 1980, abandoned, which is a division of Ser. No. 935,740, Aug. 21, 1978, Pat. No. 4,235,483. This application Jun. 18, 1982, Ser. No. 390,066
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744697
Int. Cl.⁴ F16C *27/00*
U.S. Cl. 384—581 **2 Claims**



1. A bearing support stand for a rotating shaft comprising: a supporting plate; bearing means being carried by said supporting plate; said bearing means being arranged for providing relative movement of a housing of said bearing means exclusively about the axis of said shaft; spring means resilient in the direction of said shaft and substantially rigid in a plane perpendicular to said shaft; said supporting plate resting on said spring means; said supporting plate being parallel to a horizontal plane passing through said shaft; said spring means comprising a single spring; said plate being guided parallel to a horizontal plane intersecting said shaft upon deformation of said spring means, said bearing means being substantially rigidly fixed in direction perpendicular to the shaft, said shaft being held rigidly in direction of a load, said bearing means being supported by said spring means at the point of application of the load; said spring means comprising a bottom spring and a top spring; strut means connecting said bottom spring and said top spring; said springs being comprised of structural iron having an I-profile.

4,564,301

TYPEWRITER WITH TEXT MEMORY

Hideo Ueno, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

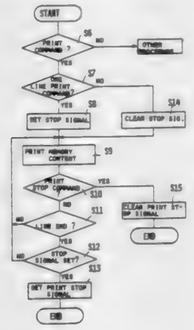
Filed Apr. 4, 1984, Ser. No. 596,587
Claims priority, application Japan, Apr. 12, 1983, 58-64328
Int. Cl.⁴ B41J *5/30;* **G06K** *3/00*
U.S. Cl. 400—63 **7 Claims**

1. A typewriter with text memory, comprising
a printer for performing operation using a printing head supported for movement along printing lines of a printing paper held on a paper holding member;
a keyboard having a number of character keys, symbol keys and function keys arranged thereon;
a text memory for sequentially storing printing data and function data, entered from said keyboard;
said function keys including a code key, said code key being operated together with any one of said above character keys, function keys, and symbol keys so as to generate code data which is different from code data generated when said any one of said character keys and symbol keys is operated solely;
printing stop command data generating means for storing a

printing stop command data in said text memory in response to said code key and one of said character keys being operated concurrently;

said function keys further including a continue key, said continue key operating to start printing operation again after printing operation is stopped according to said printing stop command data in said text memory;

first printing control means rendered operative in response to concurrent depressions of said code key and another



character key, except said one of said character keys, for causing said printer to print data stored in said text memory from a prescribed position until said printing stop command data is detected; and

second printing control means rendered operative in response to concurrent depressions of said code key and said continue key and including detecting means, for causing said printer to print data stored in said text memory until said detecting means detects a carriage return data in the text memory, and then to stop printing operation.

4,564,302

CONTROL DEVICE FOR PRINTER WHICH HAS FUNCTION OF FORMAT DATA PRINTING

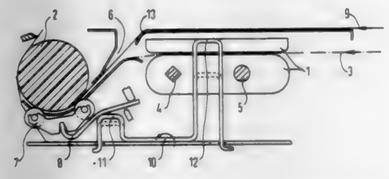
Kikuo Hatazawa, Atsugi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 15, 1983, Ser. No. 551,910

Claims priority, application Japan, Nov. 15, 1982, 57-200086

Int. Cl.⁴ B41J *5/30*

U.S. Cl. 400—76 **3 Claims**



1. A printer control device for outputting format data and printing data in a superposed state, comprising:

a first memory for storing printing data;

a second memory for storing format data, said format data containing control information indicative of a position where said printing data is superposed on said format data;

first control means for reading out said format data from said second memory to generate a first video signal, and generating a control signal when said control information is read out;

second control means responsive to said control signal for reading out said printing data from said first memory to generate a second video signal; and

superposing means for outputting said first and second video signals.

4,564,303

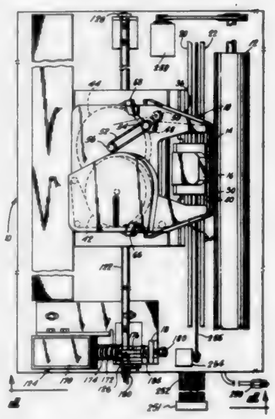
NONTILTABLE, STRAIGHT LINE PATH RIBBON CARTRIDGE SHIFTING MEANS FOR MULTICOLOR RIBBON INCLUDING MICR INK

Michael J. Rosenberg, 3327 Euclid Heights Blvd., Cleveland Hts., Ohio 44118, and Alfred C. Erpel, Doylestown, Pa., assignors to Michael J. Rosenberg, Cleveland Heights, Ohio

Filed Jun. 9, 1983, Ser. No. 502,671

Int. Cl.⁴ B41J *32/00*

U.S. Cl. 400—208 **9 Claims**



1. A cartridge and drive assembly for use with a printer having a frame and an axially reciprocatable print head, the improvement comprising ribbon cartridge means for containing a plurality of bands of inked ribbon, means for supporting a portion of each of said bands of inked ribbon in a common plane, and means for shifting said cartridge means along a straight line path between a first position in which one of said bands of inked ribbon is aligned for printing and a second position in which another of said bands of inked ribbon is aligned for printing, carriage means for supporting said ribbon cartridge means, said carriage means and ribbon cartridge means being movable with said print head, and said means for shifting comprising a shaft fixed against axial movement, rotatably mounted in fixed position relative to said frame, and extending axially parallel to the axis of reciprocation of said print head, motive means for producing a mechanical output to effect shifting, said motive means being mounted fixed to said frame against reciprocation with said carriage means and being coupled to said shaft to rotate said shaft to effect shifting, a crank arm axially slidable along said shaft and fixed against rotation relative to said shaft, and means for connecting the distal end portion of said crank arm with said ribbon cartridge means to effect movement of said ribbon cartridge means along the straight line path upon rotation of said shaft, and said carriage means including means for positioning the axis of said shaft with respect to said carriage and for positioning said crank arm with respect to said carriage.

4,564,304

TYPEWRITER WITH RESETTING FUNCTION FOR MARGIN POSITION AND TAB POSITION

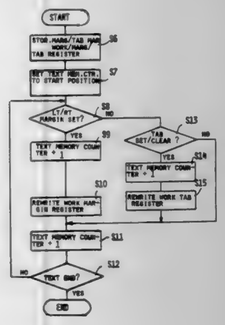
Hideo Ueno, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 26, 1984, Ser. No. 593,235

Claims priority, application Japan, Apr. 12, 1983, 58-64327

Int. Cl.⁴ B41J *19/60*

U.S. Cl. 400—279 **4 Claims**



1. A typewriter capable of resetting margin position and tab position after interruption of text creation, comprising

a printing unit for performing printing operation using a printing head supported for movement along printing lines of a printing paper held on a paper holding member;

a keyboard having a plurality of character keys, symbol keys and function keys, said function keys including a text memory key and text continuation means including a code key and, said text continuation means being concurrently with another key operable to enable continuing of text creation after interruption of text creation without manual resetting of said margin position and said tab position;

a text memory, responsive to operation of said text memory key, for sequentially storing printing data and function data, including margin information and tab information, entered from said keyboard by operation of said character keys, symbol keys and function keys of said keyboard;

a work register comprising a work margin register and a work tab margin register, for registering respectively said margin information and said tab information upon entry thereof through said text memory and responsive to below recited sequential rewriting means, for rewriting said margin and tab information;

reading means, responsive to turning ON of said text continuation means, for sequentially reading out said printing data and said function data, including said margin information and said tab information, stored in said text memory and in said work register;

detecting means for detecting whether data read out by said reading means is margin information or tab information; and

sequential rewriting means, responsive to said detecting means detecting margin information or tab information read out by said reading means, for sequentially rewriting contents of said work register to be equal to the contents at the time of said interruption.

4,564,305

TRANSPORT DEVICE FOR MARGIN-PERFORATED FANFOLD PAPER AND FOR CONTINUOUS ROLL PAPER

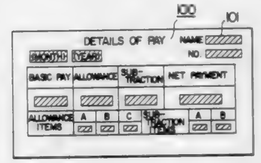
Rudolf Rekewitz, Wolfratshausen, and Hermann Wambach, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 14, 1983, Ser. No. 484,979

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214549

Int. Cl.⁴ B41J *11/50*

U.S. Cl. 400—605 **6 Claims**



5. A paper transport mechanism for data printers comprising a power driven platen, a platen opposed pinch roller assembly, means for applying a force to said pinch roller assembly for urging said pinch roller assembly against said platen, paper guide means for guiding paper to the nip area between the pinch roller assembly and the platen on an upstream infeed side of said nip area, a marginal perforation paper tractor drive positioned upstream of said platen for supplying, under positive drive, margin perforated paper to said guide means, means for supplying unperforated paper to said guide means independent of said tractor drive, means for adjusting said means for applying a force without withdrawing said pinch rollers from said paper, said means for adjusting providing a first force for use in connection with tractor drive supplied perforated margin paper and a second force for use with non-tractor drive supplied paper, said first force being a positive force less than said second force and allowing slip to occur between said paper and said platen.

4,564,306

FURNITURE FITTING

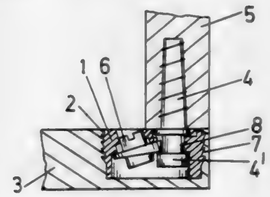
Erich Röck, Höchst, and Helmut Hollenstein, Dornbirn, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Feb. 2, 1983, Ser. No. 463,265

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 8206023[U]

Int. Cl.⁴ B25G *3/00*; **F16B** *12/00*

U.S. Cl. 403—14 **4 Claims**



1. In a joining device for joining at right angles two furniture parts, said joining device including a pin-like connecting member to be fastened to one furniture part and having a head portion, a cylindrical dowel casing to be inserted into a bore in the other furniture part, said casing having an eccentrically positioned aperture through which extends said head of said connecting member, and a holding member rotatably mounted

in an inclined orifice in said casing for contacting said head and fixing together said casing and said connecting member, the improvement of means for ensuring reliable insertion of said head into said aperture during assembly of the furniture parts, said means comprising:

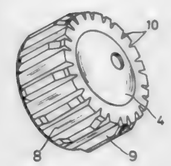
a generally funnel-shaped recess formed in said casing to lead into said aperture, said recess being elongated in directions generally transverse of a diametral plane of said casing extending through said orifice and said aperture, thereby guiding said head into said aperture during said assembly; and

said recess extending around no more than ¾ of the circumference of said aperture at locations other than that portion of said circumference directed toward said orifice.

4,564,307
BALL JOINT

Elichi Ito, Meerbusch, Fed. Rep. of Germany, assignor to TRW Ehrenreich GmbH & Co. K.G., Dusseldorf, Fed. Rep. of Germany

Filed Oct. 29, 1984, Ser. No. 666,244
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1983, 3341255
Int. Cl.⁴ F16C *11/06*
U.S. Cl. 403—140 **7 Claims**



1. A ball joint comprising:

a housing having a cavity,

a bearing shell located in said cavity, and a ball stud having a head received in said bearing shell,

said bearing shell being made of an elastic material and exerting a radial pressure on said ball head,

said bearing shell having elastically deformable elevations arranged around the circumference of said bearing shell and extending radially between the inner surface of said housing and said bearing shell to exert said radial pressure on said ball head,

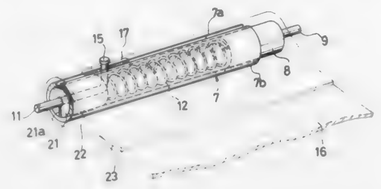
said elevations including a plurality of axially extending ribs and bars alternately arranged around said circumference and separated by axially extending grooves in said bearing shell, the circumferential width of said bars being greater than the circumferential width of said ribs, and the radial extent of said ribs being greater than the radial extent of said bars, whereby said bars bear against the housing only in the case of comparatively large loads acting on the joint.

4,564,308
SPRING ROD FOR STRAP

Iwao Ikegami, Nirayama, Japan, and Tooru Mashida, No. 26-16, Miyamae 5 chome, Suginami-ku, Tokyo, Japan (168), assignors to Tooru Mashida, Japan

Filed Feb. 25, 1983, Ser. No. 469,707
Claims priority, application Japan, Mar. 8, 1982, 57-31363[U]; Aug. 2, 1982, 57-117581[U]
Int. Cl.⁴ F16B *7/10*
U.S. Cl. 403—166 **5 Claims**

1. A spring rod for a strap, comprising a cylinder having a first projection at one end thereof and a longitudinal slit extending from the other end thereof, a slider which is slidably mounted at the other end of said cylinder and which has a second projection on an outer end thereof, and a biasing spring interposed between said first projection and said slider, wherein said cylinder has a stop for said slider at the other end

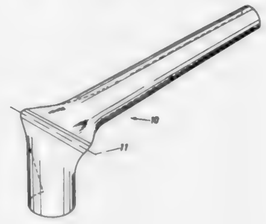


thereof, and wherein said stop comprises a pipe which is inserted into said cylinder.

4,564,309
POST, SUCH AS A ROADSIDE MARKING POST, A TRAFFIC SIGN POST OR A LAMP POST

John Björlund, Cederbourgsgatan 6, Göteborg, Sweden (412 55)

PCT No. PCT/SE82/00398, § 371 Date Jul. 14, 1983, § 102(e) Date Jul. 14, 1983, PCT Pub. No. WO83/01972, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 25, 1982, Ser. No. 517,530
Claims priority, application Sweden, Nov. 27, 1981, 8107081
Int. Cl.⁴ E01F *9/01*
U.S. Cl. 404—10 **16 Claims**



1. In a post, such as a roadside marking post, a traffic sign post or a lamp post, of the kind which is self-raising after having been hit by a vehicle and is made from a channel-shaped plastic material profile, the channel-shaped side of which faces away from the direction of impact in use, and which has an upper and a lower end, bending zone and a substantially arcuate cross-section at least along the bending zone, the improvement comprising:

the cross-sectional area of the post has a configuration that increases progressively towards the lower end,

so that upon bending the post away from the direction of impact a flared-out portion is formed having a folding line and the flared-out portion is larger below said folding line than above said folding line,

and thus the inherent resiliency of the material is greater below than above the folding line.

4,564,310
RESILIENT PAVING COMPOSITION FOR PLAYFIELDS SPORTS FIELDS AND RECREATION AREAS

Edmund Thelen, 658 Davis La., Strafford; Daniel N. Black, III, 330 Gulph Hills Rd., Radnor, both of Pa. 19087, and Thomas L. Kiley, 3908 Newport Gap Pike, Wilmington, Del. 19808

Filed Jun. 8, 1984, Ser. No. 618,495
Int. Cl.⁴ E01C *5/02, 5/18, 5/22*
U.S. Cl. 404—31 **4 Claims**

1. A paving system for well-drained soil comprising in combination

a. a soil covering layer consisting essentially of open graded mineral aggregate having a thickness in the range of from about 2 to about 4 inches;

b. a layer of fibrous scrap vulcanized rubber particles covering layer (1), said layer having a thickness in the range of from about one-half to about 2 inches;

c. a core composition layer covering layer (2), said core composition consisting essentially of from about 70 to 87 weight percent scrap vulcanized rubber fibers bonded with from about 14 to 30 weight percent of a rubber latex selected from the group consisting of natural rubber latex and synthetic rubber latex containing 45–60% rubber solids, said bonded rubber fibers comprising about 45% of the volume of said core composition, the remaining volume being void, said layer having a thickness in the range of from about one-half to about 2 inches, wherein the rubber fibers have a shape wherein the length is at least six times the diameter and have a size range of minus 2 plus 16 mesh (U.S. Sieve Series); and

d. a topping layer covering layer (3) consisting essentially of from about 68–78 weight percent vulcanized rubber particles of from about 12–30 mesh, zinc oxide in an amount from about 1–7 weight percent and bonded with about 25 weight percent of a rubber latex.

4,564,311
PROTECTIVE JACKET FOR USE IN REVETMENT STRUCTURES

John M. Scales, Norcross, Ga., assignor to Nicolon Corporation, Norcross, Ga.

Continuation-in-part of Ser. No. 201,569, Oct. 28, 1980, Pat. No. 4,370,075. This application Jan. 24, 1983, Ser. No. 460,447
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.⁴ E02B *3/12;* **F02D** *17/20*
U.S. Cl. 405—20 **3 Claims**

1. A flexible revetment structure, comprising:

(A) a plurality of rectangular precast grids in substantially abutting relationship of staggered interlocking rows, each of said grids having:

(a) two opposed longer sides, each of said longer sides having:

(i) a lower vertical surface;

(ii) an upper sloping surface which slopes inward from the longer side lower vertical surface; and

(iii) a vertical channel;

(b) two opposed shorter sides, each of said shorter sides having:

(i) a lower vertical surface;

(ii) an upper sloping surface which slopes inward from the shorter side lower vertical surface; and

(iii) a vertical channel of depth approximately equivalent to the difference in length between the longer and shorter sides and width sufficient to receive projecting portions of the shorter sides of two like grids in staggered abutting relationship with said grid, said vertical channel having:

(x) two tiers;

(y) lower vertical first and second tier surfaces; and

(z) upper sloping first and second tier surfaces;

(c) a horizontal lower top surface extending around the periphery of the grid;

(d) a horizontal upper top surface raised slightly above the lower top surface; and

(e) a plurality of through tunnels extending horizontally parallel to the larger sides;

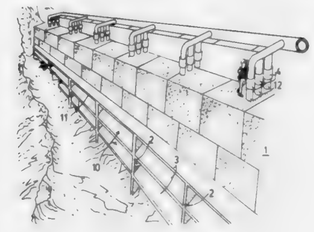
(B) a plurality of connecting means extending through the tunnels and interconnecting the grids; and

(C) tubing to receive the connecting means, which tubing itself is disposed within the tunnels in the grids, and extends through the revetment structure.

4,564,312
SYSTEM FOR UTILIZING THE ENERGY OF WAVES

Manuel Munoz Saiz, San Emilio, 16, Madrid, Spain

Filed Jun. 3, 1983, Ser. No. 500,630
Claims priority, application Spain, Dec. 14, 1982, 518.197
Int. Cl.⁴ E02B *9/08*
U.S. Cl. 405—76 **8 Claims**



1. A system for utilizing the energy of waves of a body of water comprising a wall, or the like, against which the waves advance, the system comprising a cavity in the wall, or the like, the cavity having an inlet side facing toward the waves and the inlet side of the cavity being shaped and defined such that it may be closed off by the wave water; an air transmitting conduit means connected at the other side of the cavity, and positioned such that the water entering the cavity from the advancing waves driving air from the cavity through the conduit means; a storage tank communicating with the conduit means for receiving the air pushed by the waves and a non-return valve in the conduit means for preventing return of air pushed into the tank by the advancing waves; air driven apparatus; means for directing air from said tank to said air driven apparatus to operate the same.

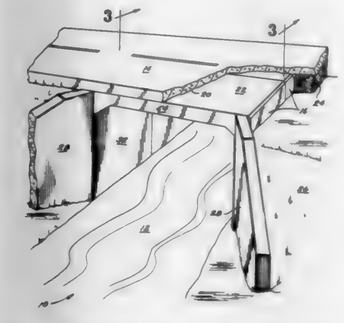
4,564,313
RECTILINEAR CULVERT STRUCTURE

Robert L. Niswander, and Tomy W. Cornwell, both of Findlay, Ohio, assignors to Hyway Concrete Pipe Company, Findlay, Ohio

Filed Sep. 29, 1983, Ser. No. 537,337
Int. Cl.⁴ E01F *5/00*
U.S. Cl. 405—125 **24 Claims**

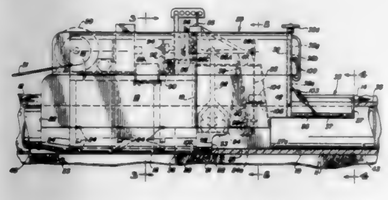
1. A bottomless concrete culvert assembly comprising, in combination, at least one unitary, rectilinear culvert structure and a pair of footers, said culvert structure having only one substantially planar span and a pair of parallel sidewalls inte-

grally and rigidly formed with and extending substantially perpendicularly from said planar span, one each of said footers



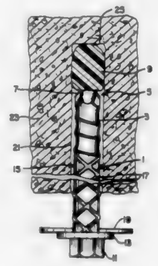
disposed in supporting relationship with a respective one of said sidewalls.

4,564,314
SELF-PROPELLED CONTINUOUS CONCRETE PIPE-LAYING MACHINE
Roger W. Gallagher, Scottsdale, Ariz., assignor to Fullerform, Inc., Phoenix, Ariz.
Filed Apr. 23, 1984, Ser. No. 602,815
Int. Cl.⁴ E02D *29/10*
U.S. Cl. 405—155 **1 Claim**



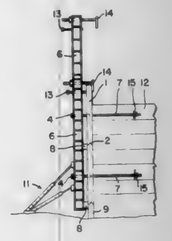
1. A self-propelled continuous concrete pipe-laying machine using a fluid pressure inflatable core comprising:
- a guide portion having a semi-cylindrical bottom and vertically disposed sides slidably engaging a mating semi-cylindrical bottom pre-dug trench to receive the pipe,
- a laterally disposed vertical baffle fixed to the rear end of said guide portion,
- an elongated horizontally disposed arcuate core support member fixed in spaced position from the inside surface of the bottom and sides of said guide portion and extending through a circular opening in said baffle and rearwardly of said baffle so as to define a space between the bottom of said trench and the underside of said core support member for troweling the lower half of the bore of said pipe to be formed,
- a hopper fixed to and extending rearwardly of said lateral baffle and located above said core support and troweling member,
- a top troweling member fixed to and extending rearwardly of said hopper,
- an intermediate transverse partition extending between the sides of said hopper forming a front and rear compartment in said hopper,
- a core receiving tunnel in the lower portion of said front compartment communicating with an opening in said transverse baffle and an arcuate cutout in the bottom of said partition.
- passageways each side of said tunnel and the sides of said hopper connecting said front compartment to said space below said core support member including a guide portion sloping upwardly and rearwardly from said baffle to said partition each side of and spaced from said core receiving tunnel,
- said rear compartment being in direct communication with the top half of said core carried on said core support member upon emergence from said partition cutout and with the top edges of the poured bottom half of said pipe and including a material discharge passageway above said core and top edges for supplying material under said top troweling member upon movement of said machine in the trench,
- winch means mounted atop the forward end of the machine comprising a cable connected at one end to the winch means and the other end connected to a deadman,
- said winch means comprising a frame detachably mounted on said machine and a hydraulically operated internal combustion engine driven apparatus mounted on said frame,
- a deadman for mounting in the pre-dug trench forward of the machine for providing a temporary anchor for the other end of the cable so that the winch means, upon actuation, may wind up the cable, thereby pulling the machine along the trench toward the deadman,
- said deadman comprising a pair of plates that are vertically oriented to each other and arranged substantially vertical to the walls of the trench,
- lever means forming a jackknife configuration comprising at least a pair of levers pivotally interconnected at common ends and each pivotally connected at its other end to a different one of said plates,
- an elongated draw bar connected at one end to said lever means and at the other end to said other end of said cable,
- whereby when said bar is pulled on and said jackknife configuration of said lever means is biased toward its straightened position, said deadman will anchor itself to the side walls of the trench.

4,564,315
METHOD FOR ANCHORING A BOLT IN A ROCK-LIKE STRUCTURE
Richard C. Rozanc, R.D. No. 3, McDonald, Pa. 15057
Filed Jul. 5, 1983, Ser. No. 510,580
Int. Cl.⁴ E21D *20/02*
U.S. Cl. 405—261 **5 Claims**



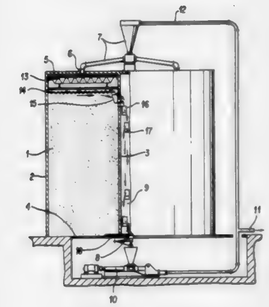
1. In a method of anchoring a bolt in a bore hole, having an open end and a closed end, formed in a rock-like structure, wherein the bolt is anchored solely by a resin material, under tension with a flange on the bolt at the open end of the bore hole, the improvement comprising:
- inserting into the open end of the bore hole a supply of mixable resin material in a frangible container;
- inserting a reinforcing bolt, without mechanical anchoring means, into the open end of said bore hole, which bolt has a helical channel therein adjacent the end so inserted and a flange at the other end thereof, to move the frangible container towards the closed end of the bore hole;
- rotating the reinforcing bolt in a first direction, opposite the direction of the thread of the helical channel of the bolt, to fragment the container and mix the resin, and pump the resin towards the closed end of the bore hole, whereby the resin initiates hardening; and
- prior to complete hardening of the resin but after substantial hardening thereof, rotating the reinforcing bolt in the reverse direction, while the resin completely hardens, to anchor the bolt.

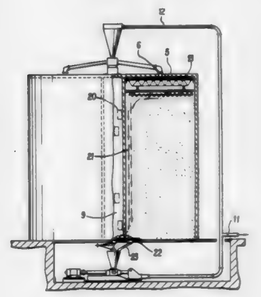
4,564,316
FACE PANEL SYSTEM
Kenneth J. Hunziker, Rte. 3, Box 715, Yakima, Wash. 98901
Filed Nov. 8, 1982, Ser. No. 439,778
Int. Cl.⁴ E02D *29/02*
U.S. Cl. 405—262 **13 Claims**



1. A method of constructing a panel-faced fill structure comprising the steps of:
- placing successive rows of exposed substantially vertical panel members to form the permanent exposed panel face of said fill structure;
- placing a back fill mass against one surface of said successive rows of panels at the rows are placed;
- anchoring each of said panels with tieback members extending into the back fill mass of said structure as the successive rows are placed; and
- supporting each successive row of panels against the lateral shear and overturning forces of said back fill mass by means of supports cantilevered from the preceding row until said tieback members are held by said back fill mass.

4,564,317
SILO FOR STORING SOLIDIFYING LOOSE MATERIAL, ESPECIALLY FLUE DUST
Ernst-Ove Färber, Hensted-Ulzburg, Fed. Rep. of Germany, assignor to Claudius Peters, Fed. Rep. of Germany
Filed Sep. 23, 1983, Ser. No. 535,035
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1982, 3241150
Int. Cl.⁴ B65G *53/48*
U.S. Cl. 406—56 **5 Claims**





1. A silo system characterized by a floor and a ceiling for storing solidifying loose material, especially flue ash, comprising:
- a silo enclosing a main storage area with at least one opening in said ceiling of said silo whereby to allow loading material into said silo and having a silo exit in said floor of said silo whereby material is removed;
- a hollow column located over said silo exit and having in the walls of said column a plurality of slideless openings communicating between said main storage area and the hollow center of said column;
- conveyor means adapted and constructed to strip part of said materials from the upper surface of said stored materials and convey said stripped materials to said openings in said hollow column; and
- aeration devices located in the main storage area, and beneath each of said openings into said hollow column.

3. A silo system characterized by a floor and a ceiling for storing solidifying loose material, especially flue ash, comprising:
- a silo enclosing a main storage area with at least one opening in said ceiling of said silo whereby to allow loading material into said silo and having a silo exit in said floor of said silo whereby material is removed;
- a hollow column located over said silo exit and having in the walls of said column a slideless passage opening near the floor communicating between said main storage area and the hollow center of said column;
- conveyor means adapted and constructed to strip materials from the upper surface of said materials and convey said stripped materials to said hollow column; and
- aeration devices located in said main storage area, and at least one series of aeration devices on the silo hollow column circumference in a helical distribution.

4,564,318

GATE OF THE PIPE-LINE OF A PNEUMATIC CONVEYER USED FOR TRANSPORTING CONTAINERS

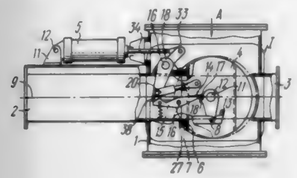
Adolf M. Alexandrov; Jury A. Tsimbler; Vitaly G. Iljukhin; Jury A. Yashin, and Igor V. Kiselev, all of Moscow, U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro "Transprogress", Moscow, U.S.S.R.

PCT No. PCT/SU82/00022, § 371 Date Jan. 31, 1984, § 102(e) Date Jan. 31, 1984, PCT Pub. No. WO84/00146, PCT Pub. Date Jan. 19, 1984

PCT Filed Jun. 25, 1982, Ser. No. 584,258

Int. Cl.⁴ B65G *51/22*

U.S. Cl. 406—192 **2 Claims**



1. A gate of a pipe-line of a pneumatic conveyer of containers, comprising a body hermetically connected with inlet and outlet branch pipes arranged coaxially relative to each other and connected to the pipe-line of the pneumatic conveyer, which pipe-line accomodates a branch pipe of a cross-section corresponding to the cross-sections of the inlet and outlet branch pipes, is kinematically connected to a turn drive to be connected to the inlet and outlet branch pipes, and carries a flat damper to overlap one of the branch pipes connected to the body, the improvement comprising the damper (**6**) used for overlapping one of the branch pipes (**2**) is rigidly secured to the outer wall of the branch pipe (**4**) disposed in the body (**1**) and has a ring-like sealing member (**7**) which is made from a resilient material and whose shape corresponds to the cross-section of the branch pipe (**2**) to be overlapped, the branch pipe (**4**) being mounted in the body (**1**) so that it can swing to a certain extent in a plane perpendicular to the plane of the damper (**6**) and relative to an axis (**8**) passing below the longitudinal axis (**9**) of the inlet (**2**) and outlet (**3**) branch pipes, and being provided with a catch (**14**) of the position of the branch pipe (**4**) when one of the branch pipes is overlapped, said catch being actuated by the drive (**5**) turning the branch pipe (**4**).

4,564,319

FLEXIBLE TUBE FOR CONVEYING A MIXTURE OF A LIQUID AND A SOLID MATERIAL

Karel C. van Waveren, Nijmegen, Netherlands, assignor to Vredestein N.V., Velp, Netherlands

Filed Oct. 9, 1981, Ser. No. 310,272

Claims priority, application Netherlands, Oct. 16, 1980, 8005695

Int. Cl.⁴ B65G *53/54*

U.S. Cl. 406—193 **9 Claims**



1. Flexible tube for conveying a mixture of a liquid and solid material containing objects with sharp points, edges or similar projections, the internal wall part of said tube comprising an elastic material, especially rubber, in which a wearproof material is included, wherein the wearproof material is present in the shape of rod-shaped elements, which are provided essentially parallel and at a distance from one another in the internal wall part of elastic material of the tube, in such a way that they extend themselves between the inner and outer surface of this part and in such a way that the distance between any two of said elements is at least as great as the width of any one of said elements, wherein the inner wall part and the rod-shaped elements define a smooth, continuous interior surface.

4,564,320

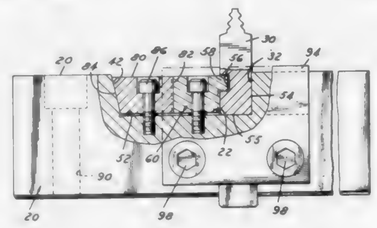
FORM BROACH ASSEMBLY

Robert E. Roseliep, 6 Elmsleigh La., Grosse Pointe, Mich. 48230

Filed Jan. 23, 1984, Ser. No. 575,498

Int. Cl.⁴ B23P *15/42*

U.S. Cl. 407—15 **2 Claims**



1. A slot broaching tool comprising:

(a) a base having means forming an elongate recess having a bottom and a locating wall to receive a plurality of individual broaching teeth in close array,

(b) a plurality of individual broaching teeth in alignment in said recess, each tooth having a cutting end ground to a true form relief,

(c) means to retain said teeth in accurate alignment in said recess against said locating wall,

(d) said means to retain said teeth in accurate alignment in said recess comprising block means to interengage each tooth and force said tooth down to said bottom of said recess and against said locating wall,

(e) each tooth being formed with a base end and a cutting end, said base end having a gauging side to lie in contact with said locating wall of said recess and said base end having a locking side opposite to said gauging side, and said block means comprising a first hold-down block to interengage the locking side of each tooth and a second wedge block to contact the first block and a wall of said recess opposite said locating wall to exert lateral holding force against said locating wall.

4,564,321

END-MILLING CUTTER WITH DRILLING CAPABILITY

Kunio Kondo; Katutoshi Haga, both of Toyota, and Tokunari Takeuchi, Chita, all of Japan, assignors to Fuji Seiko Limited, Aichi, Japan

Filed Apr. 27, 1984, Ser. No. 604,931

Claims priority, application Japan, May 13, 1983, 58-72234[U]

Int. Cl.⁴ B23C *5/20*; B23B *51/00*

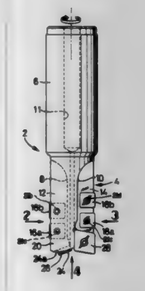
U.S. Cl. 407—36 **20 Claims**

1. An end mill having a drilling capability, and attachable to a rotatable spindle, said end mill comprising:

a generally elongate shank attached to said spindle;

a generally elongate body rotatable about an axis thereof with said shank, and having a proximal end adjacent to said shank and a distal end opposite to said proximal end, said body having two flutes which are formed in a periphery thereof generally in an axial direction thereof and which serve as grooves for removing chips, said two flutes defining a first and a second elongate land extending along said two flutes, said first and second lands having, on one side thereof, a first flute surface and a second flute surface, respectively, which face in a direction of rotation of said body, said lands having end faces at said distal end of the body;

at least two replaceable peripheral-cutting inserts of generally flat configuration removably fixed on said first and second flute surfaces for effecting a peripheral milling operation, each of said peripheral-cutting inserts having a back face held in contact with the respective one of said first and second flute surfaces, and a front face opposite to said back face, said front face including a peripheral-cutting edge and facing in said direction of rotation, said peripheral-cutting inserts being disposed in a staggered manner alternately in said first and second flute surfaces, and being displaced in said axial direction relative to each other such that cutting paths thereof obtained upon rotation of said body overlap each other in said axial direction and such that one of said peripheral-cutting inserts disposed on said first flute surface is located nearest to said distal end of said body, the peripheral-cutting edges of said peripheral-cutting inserts being located on a circumference of the same assumed cylinder having an axis on said axis of said body;



a replaceable inner drilling insert of generally flat configuration removably fixed on the end face of said first land for cutting a radially inward portion of a hole, said inner drilling insert having a back face held in contact with the end face of said first land and a front face opposite to said back face, said front face including at least one face-cutting edge and being inclined at a smaller angle with respect to a plane perpendicular to said axis of the body, than with respect to a plane parallel to said axis; and

a replaceable outer drilling insert of generally flat configuration removably fixed on said second flute surface for cutting a radially outward portion of said hole, said outer drilling insert having a back face held in contact with said second flute surface, and a front face opposite to said back face, said front face including a face-cutting edge and a peripheral cutting edge and facing in said direction of rotation, said outer drilling insert being located away from said one of the peripheral-cutting inserts on said first flute surface, in said axial direction from said proximal end towards said distal end, such that a cutting path thereof and a cutting path of said one of the peripheral-cutting inserts upon rotation of said body overlap each other in said axial direction, said peripheral-cutting edge being located on the circumference of said assumed cylinder.

4,564,322

DRILL SCOPE

Keith D. Stapley, 8950 E. 33rd Pl., Tulsa, Okla. 74145

Filed Sep. 6, 1983, Ser. No. 529,354

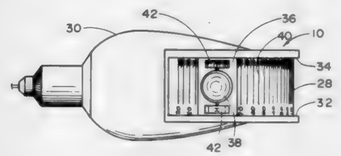
Int. Cl.⁴ B23B *49/00*; G01C *9/28*

U.S. Cl. 408—16 **4 Claims**

1. In a hand held drill the specific improvement comprising:

(a) a protractor means attached to said drill wherein said protractor means is a circular calibrated surface on the top back side of said drill and wherein said protractor means is calibrated in degree of tilt such as to correspond to the angle of tilt of the drill bit;

(b) an adjustable indexing means operably engaged to said drill and protractor means such as to be movable through and operative range of angles and be selectively held at one of said angles and wherein said adjustable indexing means is a sliding element operatively engaged to said



circular calibrated surface such as to slide over said circular surface and align a marker on said adjustable indexing means with said calibrations of said circular surface such as to indicate which angle of tilt is selected and wherein said adjustable indexing means is further adapted to hold a bubble spirit level such that said bubble reads level when said drill bit is tilted at said selected angle; and

(c) a bubble spirit level attached to said sliding element of said adjustable indexing means.

4,564,323

SWIRL APPARATUS

Hermann Berbalk, Göppingen, Fed. Rep. of Germany, assignor to Oerlikon-Boehringer GmbH, Göppingen, Fed. Rep. of Germany

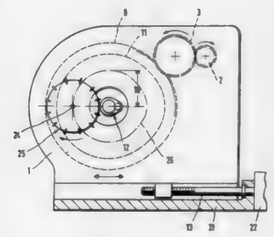
PCT No. PCT/EP83/00103, § 371 Date Dec. 8, 1983, § 102(e) Date Dec. 8, 1983, PCT Pub. No. WO83/03564, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 13, 1983, Ser. No. 579,895

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1982, 3213740

Int. Cl.⁴ B23C *3/06*

U.S. Cl. 409—200 **10 Claims**



1. An external milling machine for machining a planar shallowly curved or circular contour extending around a longitudinal axis of a workpiece, such as a crankshaft, comprising: a frame, supporting means on said frame for stationarily supporting said workpiece, guide means on said frame extending transversely to said longitudinal workpiece axs, a casing mounted on said guide means, an external cam rotatably mounted in said casing, an internal circular cam rotatably mounted in said external cam, tool means having at least one rotary tool with external cutting edges and being rotatably and eccentrically mounted in said internal cam, first driving means connected to said tool means for rotating the same, second driving means connected to said internal cam for driving the same, third driving means connected to said external cam for driving the

same, and fourth driving means connected to said casing for moving the same along said guide means.

4,564,324
DOWEL

Erich Leibhard, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Continuation-in-part of Ser. No. 370,483, Apr. 21, 1982, abandoned. This application Sep. 17, 1982, Ser. No. 419,421
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116424
Int. Cl.⁴ F16B *39/02*
U.S. Cl. 411—3 **10 Claims**



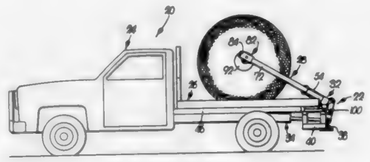
1. An anchor dowel comprising an axially elongated dowel body having a cylindrically shaped outside surface and an axially extending bore, said dowel body having a leading end and a trailing end spaced apart in the axial direction with said bore extending from the leading end to the trailing end, at least an axially extending section of said bore being conically shaped from the leading end toward the trailing end with the conically shaped section diverging in the direction from the leading end toward the trailing end, and an axially elongated spreading element having a leading end and a trailing end spaced apart in the axial direction and including at least an axially extending conically shaped portion extending from the leading end toward the trailing end, and said spreading element arranged to be inserted into the bore for spreading said dowel body radially outwardly, wherein said dowel body is formed of a sintered dry powdered metal, and said dry powdered metal comprises iron and has a weight in the range of 5 to 7 g/cm^3, the outside surface of said dowel body extending axially from the leading end thereof has a plurality of axially extending grooves with the grooves being spaced angularly apart and extending from the leading end of said dowel body for at least a portion of the axial length of said conical section of said dowel body.

4,564,325
FLUSH-MOUNTED ROUND BALE MOVER FOR TRUCK BEDS

Galen R. Ackerman, R.R. 4, Sabetha, Kans. 66534

Filed Mar. 14, 1983, Ser. No. 475,308
Int. Cl.⁴ A01D *87/12*
U.S. Cl. 414—24.5 **6 Claims**

1. Crop bale handling apparatus comprising:
a platform adapted for attachment to a vehicle above the ground as a load-carrying bed thereof,
said platform having a normally upper, flat surface;
a bale lift associated with said platform for loading bales onto and off of said upper surface when the platform is attached to the vehicle and having a pair of elongated, laterally spaced arms; and
mechanism coupled with said lift for moving the same between an unfolded, operating position in which the lift projects outwardly from the platform, and a folded up, stored position in which the lift at least generally falls within the confines of the platform,
said mechanism including a power device located below said upper surface of the platform, and said platform having clearance slots in said upper surface which receive said

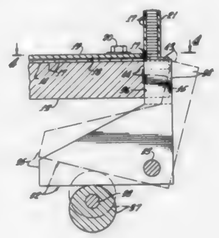


arms into an at least generally flush condition with the upper surface when the lift is in said storage position, whereby to render said upper surface unobstructed by said power device and the arms when the lift is in its storage position.

4,564,326
FEED ARRANGEMENT FOR PICK-AND-PLACE MACHINE

William E. Roberts, Rolling Hills Estates, and Milo Cripps, Manhattan Beach, both of Calif., assignors to Excellon Industries, Torrance, Calif.

Filed Aug. 25, 1983, Ser. No. 526,539
Int. Cl.⁴ B65G *59/06*
U.S. Cl. 414—131 **16 Claims**

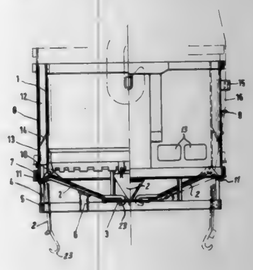


1. A feed arrangement for chips in a pick-and-place machine comprising
a first guide means having an entrance for receiving chips and means for directing said chips to a predetermined location,
a second guide means having an outlet for delivering chips one at a time at a location adjacent said entrance,
a drive member,
means for pivotally mounting said drive member for rotational movement, said drive member including an unbalanced mass for causing such rotation from a first position to a second position by gravity, said second position being adjacent said entrance,
said drive member having a portion thereof adjacent said entrance and engageable with a chip delivered by said second guide means for pushing said chip into said entrance of said first guide means upon such rotational movement of said drive member,
and means for positioning said drive member in said first position following such rotational movement thereof.

4,564,327
CONTAINER FOR FEEDING ARC FURNACES

Hermann Lünig, Moers, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 25, 1983, Ser. No. 488,206
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216102
Int. Cl.⁴ B65G *65/32*
U.S. Cl. 414—199 **3 Claims**

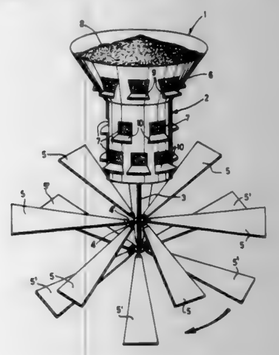


1. A container for feeding an arc furnace having a container element proper and foldable or hinged, bottom segments amenable to assume a closing position but upon release folding down for opening the bottom, the improvement comprising
a container, each of said segments being constructed as a double-arm lever, a second arm in each instance, respectively, extending radially outwardly from a point of hinging;
annular means extending underneath said container element and limiting radial outer displacement of the segments when folded down,
and a separate annular ring which acts upon said radially outwardly extending lever arms, tending to fold the segments up toward closing the bottom of the container.

4,564,328
APPARATUSES FOR THE LOADING OF AN ENCLOSURE WITH A PARTICULATE SOLID

Roben Loutaty, Le Havre, and Yvon Haquet, St Romain de Colbosc, both of France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed Dec. 29, 1983, Ser. No. 566,570
Claims priority, application France, Dec. 30, 1982, 82 22064
Int. Cl.⁴ B65G *65/32*
U.S. Cl. 414—301 **20 Claims**

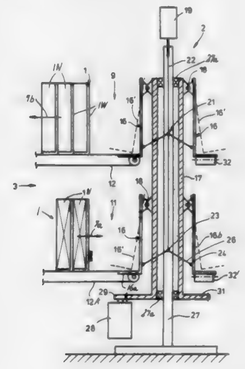


1. An apparatus for loading an enclosure with particulate solids in the form of a dense bed, which comprises a loading hopper for the particulate solids, a discharge chute for the hopper having a discharge end, a motor means, a shaft driven by said motor means and extending substantially parallel to the axis of the discharge chute and out the discharge end thereof, flexible moderately hard deflecting means which are articulated at a first end to the shaft beyond the discharge end of said chute in a manner adapted to provide a second free end of the deflecting means opposite the first end such that the deflecting means diverge angularly from a downward position towards an outward position by the effect of centrifugal force when the shaft is rotated, and at least one side discharge opening in the side of the hopper or in the side of the chute such that particulate solids passing therethrough are directed towards the free ends of the centrifugally extended deflecting means.

4,564,329
APPARATUS FOR MANIPULATING EMPTY AND FILLED TRAYS FOR CIGARETTES OR THE LIKE BETWEEN MAKING AND PROCESSING MACHINES

Jürgen Bantien, Hamwarde, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,514
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1982, 3220588
Int. Cl.⁴ A24C *5/352*
U.S. Cl. 414—403 **25 Claims**



1. Apparatus for manipulating receptacles for rod-shaped articles of the tobacco processing industry, particularly for manipulating chargers for cigarettes, comprising a first multi-level unit for filling of the receptacles; a second multi-level unit for evacuating articles from filled receptacles, each of said units having means for storing receptacles at its respective levels; and means for connecting said units, comprising at least one orientation changing device which is rotatable about a predetermined substantially vertical axis and includes at least one carrier at each level of a unit, each of said carriers being arranged to removably support a receptacle and said carriers being indexible about said vertical axis so as to transport receptacles between several storing means of said first unit and the corresponding storing means of said second unit.

4,564,330

SKIP FILLING APPARATUS AND METHOD

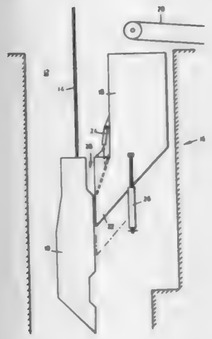
Ronald M. K. McKechnie, 9 8th Ave., Vaal Reefs, Transvaal, and Renier P. Swart, 7 Henley Rd., Orkney, Transvaal, both of South Africa

Filed Aug. 6, 1984, Ser. No. 638,001

Claims priority, application South Africa, Aug. 4, 1983, 83/5704

Int. Cl.[4] B66B *17/26*

U.S. Cl. 414—612 9 Claims



1. A method of filling a skip with material from a loading flask which includes the steps of supporting the flask on hydraulically actuable support means which permits vertical flask movement, discharging material from the flask into the skip, and causing or permitting the flask to move by varying the rate of hydraulic fluid flow from or to the support means in a manner which is dependent on the movement of the skip.

6. A material handling installation which includes a loading flask, a skip which is movable by means of a hoist and which is filled with material from the flask, at least one hydraulically actuable ram which supports the flask, and means for controlling the rate of hydraulic fluid flow to or from the ram thereby to control the movement of the flask while the skip is being filled.

4,564,331

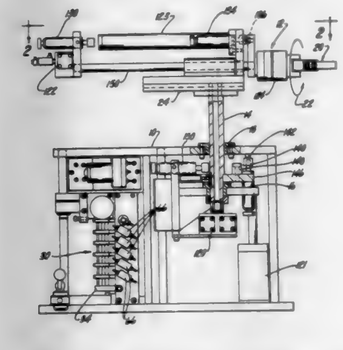
ROBOT

Wendell Karr-Ake, 1422 St. Clair River, Algonac, Mich. 48001

Filed Jan. 17, 1983, Ser. No. 458,479

Int. Cl.[4] B25J *9/00*

U.S. Cl. 414—730 10 Claims



1. In a robot of the type having a housing, a manipulator movable along predefined axes of movement, a drive means associated with each axis of movement for moving, upon actuation, said manipulator along said axis of movement, means for selectively controlling the actuation of each of said drive means comprising:

a drum,

means for rotatably mounting said drum to said housing,

a plurality of cam segments, said cam segments extending circumferentially around said drum,

means for adjustably securing said cam segments to said drum at user selected axially spaced positions along said drum,

a plurality of cam followers secured to said housing at axially spaced positions and adjacent said drum so that said cam followers register with said cam segments,

means associated with each cam follower for actuating a predetermined drive means when said cam follower engages a cam segment,

means for rotatably driving said drum; and

wherein said drum comprises an upper hub and a lower hub, said hubs being spaced apart from each other, a plurality of rods extending between said hubs at circumferentially spaced positions around the axis of said drum, and wherein said cam segment securing means comprises means for securing said cam segments to said rods.

4,564,332

APPARATUS FOR TRANSFERRING A BLANK

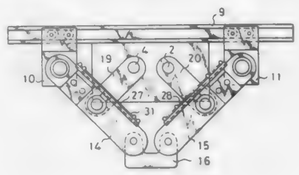
Masaru Orii, Machida, Japan, assignor to Yugengaisha Kyodogiken, Tokyo, Japan

Filed Apr. 2, 1984, Ser. No. 595,820

Claims priority, application Japan, Apr. 25, 1983, 58-71532; Apr. 30, 1983, 58-76585

Int. Cl.[4] B21B *41/06*

U.S. Cl. 414—759 13 Claims



13. An apparatus for transferring a blank comprising:

a first pivoting arm;

a second pivoting arm having its inner end rotatably linked to the inner end of said first pivoting arm;

first and second horizontally moving members adapted to be movable only in the horizontal direction and rotatably supporting the outer ends of said first and second pivoting arms, respectively;

two turnover jigs, one detachably mounted on said first pivoting arm, and one detachably mounted on said second pivoting arm;

two moving jigs, one detachably mounted on said first horizontally moving member, and one detachably mounted on said second horizontally moving member, each of said first and second horizontally moving members provided thereon with a pin, which is formed at its distal end with a mounting portion for mounting the corresponding one of said moving jigs;

a brake and a brake drum which rotatably comes in frictional contact with said brake, and said brake and brake drum being incorporated in each of said first and second horizontally moving members;

pins secured to said brake drums, respectively;

contact pieces attached to said moving jigs, respectively;

stoppers disposed at positions where said stoppers abut on said contact pieces, respectively, when said horizontally moving members are remotest from each other and when they are closest to each other;

a suction retainer mounted on each of said jigs for retaining a blank on the corresponding jig through suction; and

a driving force transmitting means which maintains said first and second pivoting arms at their respective horizontal positions in their inoperative states but draws down said linked inner ends of said first and second pivoting arms in their operative states to a delivery position where said blank is transferred from one of said jigs to the other jig and then returns said first and second pivoting arms to their respective horizontal positions.

4,564,333

FUEL SUPPLY APPARATUS

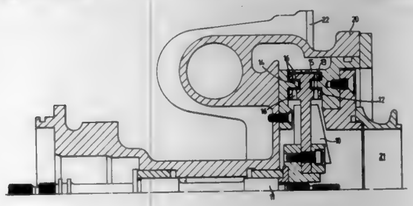
Ernest A. Timby, Camberley; Rodney H. Walsh, Hindhead, and Robert S. Wood, Gosport, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Great Britain

Continuation-in-part of Ser. No. 379,950, May 19, 1982, abandoned. This application Nov. 9, 1983, Ser. No. 550,208

Claims priority, application United Kingdom, May 22, 1981, 8115843

Int. Cl.[4] F02C *9/04;* B64D *37/32*

U.S. Cl. 415—86 8 Claims



1. A device for concurrently pumping and degrading an antimisting additive in a liquid fuel and comprising:

housing means defining an inlet, an outlet, a pumping chamber and an interior chamber establishing fluid communication between said inlet and said outlet,

a fuel pump having an impeller mounted for rotational movement within said interior chamber for urging the liquid fuel to flow from said inlet to said outlet,

stator degrader means including at least one stator flange surrounding said impeller, and

rotary degrader means including at least one rotary flange surrounding said impeller, said at least one rotary flange being interspersed with said at least one stator flange and drivably associated with said impeller so as to rotate relative said at least one stator flange, and wherein

said stator and rotary flanges together include means defining radial passages therethrough which have a length to passage mean diameter ratio of at least one so as to effectively align molecules of said antimisting additive as said fuel passes through said passages by means of said fuel pump to thereby encourage degradation of said additive molecules,

said stator degrader means and said rotary degrader means together cooperating to effect shearing, and thus further degradation of said additive molecules by virtue of the relative rotational movement therebetween whereby said fuel exiting the housing through said outlet is degraded.

8. A method of degrading an anti-misting additive in a hydrocarbon fuel while transferring the fuel from a fuel reservoir to a fuel burner and comprising passing the fuel through a device in the form of a fuel pump having an impeller, a stator array of at least one flange surrounding the impeller and a rotary array of at least one flange surrounding the impeller, the at least one rotary flange being interspersed with the at least one stator flange and drivably associated with the impeller, and the flanges having radial passages therethrough which have a length to mean passage diameter ratio of at least one, whereby with the impeller and associated rotary flanges being rotated with respect to the stator flanges, fuel is pumped through the passages, the additive molecules aligned, stretched and sheared therein, and the burning quality of the fuel retarded.

4,564,334

GUIDE WHEEL FOR MULTISTAGE CENTRIFUGAL PUMPS

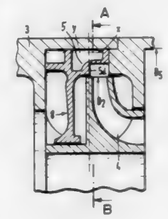
Peter Hergt, Ludwigshafen; Alexander Nicklas, Dirmstein, and Karl-Heinz Becker, Worms, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Apr. 26, 1984, Ser. No. 604,075

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315350

Int. Cl.[4] F04D *29/44*

U.S. Cl. 415—199.3 15 Claims



1. In a multistage centrifugal pump, a rotary impeller having means for discharging the conveyed fluid medium; a guide wheel having an outer surface and including a plurality of blades defining passages for the flow of fluid medium from said discharging means, each of said blades having an inner end portion which is remote from said outer surface and includes a tip of the respective blade, and each of said blades further having an outer end portion adjacent to said outer surface, each of said passages having an inlet at the respective tip, and an outlet spaced from the latter, and each of said passages being devoid of constrictions between the respective inlet and outlet, each passage including a first section which extends from the respective tip and diverges laterally and substantially axially of the guide wheel, and a second section disposed downstream of the first section and diverging substantially radially inwardly and axially of the guide wheel; and a housing surrounding said guide wheel.

4,564,335

AXIAL FLOW FAN

Siegfried Harmsen; Georg F. Papst, both of St. Georgen, and Günter Wrobel, Villingen, all of Fed. Rep. of Germany, assignors to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

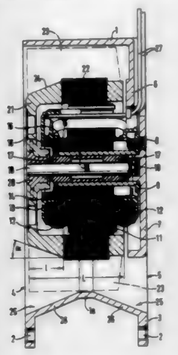
Continuation of Ser. No. 466,642, Feb. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 140,883, Apr. 16, 1980, Pat. No. 4,373,861. This application Apr. 2, 1985, Ser. No. 718,832

Int. Cl.[4] F04D *25/08, 29/44*

U.S. Cl. 415—213 C 21 Claims

1. An axially compact axial-flow fan comprising a fan wheel and a housing casing surrounding said fan wheel over at least substantially the entire axial length of said fan wheel, the fan wheel having a hub with a diameter which is at least half as large as the inner diameter of the housing casing, said housing casing having an inner axially extending cylindrical portion located in the axial central part and being broadened at least toward the exhaust side by way of corner pockets into a regular multicorner profile that circumscribes the diameter of the

fan wheel, said hub of the fan wheel being provided on the inlet side with annular surface means that reduces the diameter on



the inlet portion of said hub, said annular surface means extending at least over one-third of the entire axial length of said hub.

4,564,336

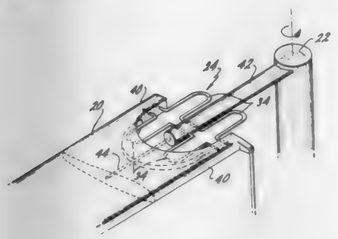
LOW DRAG, BEARINGLESS ROTOR HEAD FOR HELICOPTERS

Evan P. Sampatacos, Cypress, Calif., assignor to Hughes Helicopters, Inc., Culver City, Calif.

Division of Ser. No. 358,248, Mar. 15, 1982. This application Jul. 2, 1984, Ser. No. 627,043

Int. Cl.⁴ B64C *27/38*

U.S. Cl. 416—141 **9 Claims**



1. In a helicopter having a hub-to-blade, bearingless coupling, an improvement comprising:

a rotary hub having a plurality of radially extending hub arms;

a blade having a pair of blade shank arms proximate to one of said hub arms;

planar, elastic means for coupling said blade shank arms to said one hub arm, said means being disposed between said pair of blade shank arms and said hub arm and lying generally in a plane of flexure parallel to the plane defined by said hub arms,

wherein said planar elastic means is generally coplanar with said adjacent blade shank arms and has a substantially flat cross section in said plane of flexure to add substantially no additional drag to rotary operations of said hub and blade.

4,564,337

AIRCRAFT PROPELLER

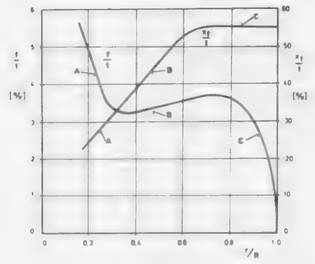
Herbert Zimmer, Friedrichshafen; Ingo Dathe, Immenstaad; Reinhard Hoffmann, Brannenburg; Petr Hora, Stephanskirchen, and Franz X. Wortmann, Böblingen, all of Fed. Rep. of Germany, assignors to Dornier Gesellschaft mit besehränkter Haftung, Friedrichshafen, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,493

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1982, 3237518; Mar. 25, 1983, 3310937

Int. Cl.⁴ B64C *11/18*

U.S. Cl. 416—223 R **5 Claims**



1. An aircraft propeller blade having a varying profile camber over its length or propeller radius (r/R), said propeller blade comprises three section (A, B, C) of equal or substantially equal length, where the maximum of the camber line (f/t) which extends in the inner section (A), including the hub region, decreases linearly or substantially linearly over the blade length (r/R) towards the blade tip, and the chordwise location of the maximum of the camber line (x_f/t), referred to the blade chord length (t), shifts linearly or substantially linearly towards the trailing edge (5) of the blade; the maximum of the camber line (f/t) which extends in the middle section (B) increases linearly or substantially linearly over the length of the blade (r/R), and the chordwise location of the maximum of the camber line (x_f/t) shifts towards the trailing edge of the blade and follows the course of the inner section (A), referred to the blade chord length (t), linearly or substantially linearly; and the maximum of the camber line (f/t) which extends in the outer section (C) decreases elliptically or substantially elliptically over the length of the blade (r/R), and the chordwise location of the maximum of the camber line (x_f/t) referred to the blade chord length (t) following the middle section (B), remains constant or substantially constant.

4,564,338

HIGH PRESSURE PUMP WITH A FLOW CONTROL VALVE

Rudolf Ilg, Aalen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 1, 1985, Ser. No. 718,299

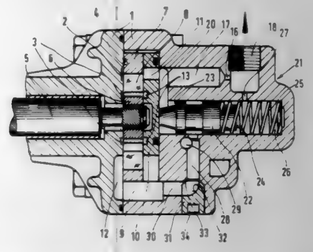
Claims priority, application PCT Int'l Appl., Apr. 6, 1984, PCT/EP84/00102

Int. Cl.⁴ F01B *49/00;* **F15D** *1/04*

U.S. Cl. 417—310 **12 Claims**

1. In a high pressure vane pump of the kind having a housing with a bypass valve for flow regulation wherein a bypass channel combines bypass flow with inlet feed flow from a tank and an angularly related inlet channel communicates with the

suction side of a vane pump, including a flow transition member between opposed open ends of the channels;



the improvement wherein said transition member comprises a plug fitted into said housing and having a groove shaped to form a flow juncture between said opposed ends.

4,564,339

SCROLL COMPRESSOR

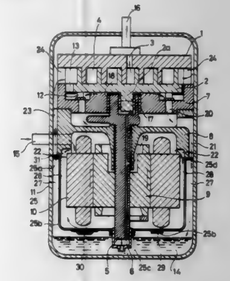
Toshiyuki Nakamura; Tsutomu Inaba, and Tadashi Kimura, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1984, Ser. No. 599,356

Claims priority, application Japan, Jun. 3, 1983, 58-99671

Int. Cl.⁴ F04B *39/02, 39/06;* **F04C** *18/02;* **H02K** *9/08*

U.S. Cl. 417—366 **12 Claims**



1. In a scroll compressor of a type including a stationary scroll and a motor driven oscillating scroll, said stationary scroll and said oscillating scroll together forming a compression chamber, said oscillating scroll being orbited relative to said stationary scroll, wherein the improvement comprises means for maintaining substantially separate an operating gas and a lubricant of said compressor, said means comprising cover means for said motor, said cover means comprising a boundary between an operating gas flow path and a lubricant flow path, said operating gas flow path including a portion extending interiorally of said cover means.

4,564,340

DEVICE FOR REGULATING THE PRESSURE AND FEED VOLUME OF A DIAPHRAGM PUMP

Friedrich R. R. Stahlkopf, Büchen, Fed. Rep. of Germany, assignor to Abel Pumpen GmbH, Büchen, Fed. Rep. of Germany

Filed Nov. 13, 1984, Ser. No. 670,535

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3341020

Int. Cl.⁴ F04B *43/10*

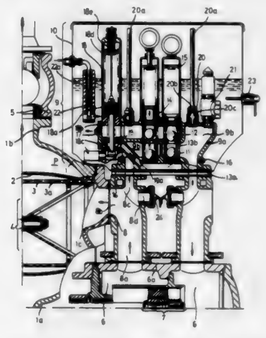
U.S. Cl. 417—388 **10 Claims**

1. In a device for regulating the pressure and feed volume of a diaphragm pump which includes a pumping section adapted to be traversed by a secondary fluid medium being transferred, a working section charged with a primary working fluid medium and coupled to said pumping section by a connecting fitting through which the primary working fluid medium flows, and a diahragm of elastomeric material adapted to be pulsed by the primary working fluid medium and constituting a part of the boundary of a pump chamber, said regulating device further including suction and overpressure valves controlled by the primary working fluid medium in the working section for enabling flow of primary working fluid medium out of and into a reservoir therefor, a pressure regulating valve, an expansion chamber, and a nozzle with a leakage bore for permitting flow of primary working fluid medium into the reservoir from a first portion of the regulating device which is separated from the working section by the overpressure valves;

the improvement comprising that:

(a) said regulating device includes a second portion which is in direct and uninterrupted communication with an associated working section of said pump, and a second nozzle with a leakage bore is arranged at said second portion of said regulating device and establishes communication between said second portion of said regulating device and said reservoir,

(b) a recovery channel having at inlet opening in communication with said reservoir leads from said inlet opening to said suction valves, and a throttling device is associated with said inlet opening for controlling the same, said



throttling device including an operating chamber having at one part thereof an access opening which is in communication with said first portion of said regulating device, a piston fluid-tightly slidable in said operating chamber and having first and second faces directed, respectively, toward and away from said access opening, a throttle element arranged at said inlet opening and mechanically rigidly connected with said piston, and a biasing spring bearing on said second face of said piston and having associated therewith means for adjusting the biasing force, said spring being operable normally to bias said throttle element away from said inlet opening to maximize the open area thereof, and said piston being operable, upon being displaced in said operating chamber against the force of said spring by primary working fluid medium acting on said first face of said piston via said access opening, to displace said throttle element so as to progessively reduce the open area of said inlet opening, and

(c) a gas charging device communicates with said second portion of said regulating device, said gas charging device including an entrance opening to said second portion of said regulating device, a normally closed spring-biased gas-admitting valve controlling said entrance opening, and an intake pipe located in said reservoir and extending from said gas-admitting valve to a point higher than the highest permissible level of primary working fluid medium in said reservoir, said gas-admitting valve being

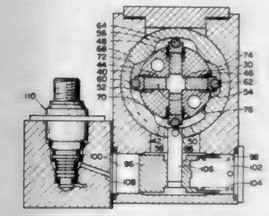
operable to open and enable gas from the interior of said reservoir to be drawn into said second portion of said regulating device to compensate at least partially for losses of primary working fluid medium from said working section.

4,564,341

FUEL INJECTION PUMP FOR AN INTERNAL COMBUSTION ENGINE

Toshiaki Tanaka, Chigasaki, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 2, 1984, Ser. No. 606,266
Claims priority, application Japan, May 4, 1983, 58-78804
Int. Cl.⁴ F04B *19/02*
U.S. Cl. 417—462 **7 Claims**



1. A fuel injection pump for an internal combustion engine provided with a fuel injection valve, comprising:
(a) a rotary distributor rotating in synchronism with engine revolution;
(b) a cam ring encircling the rotary distributor and having an inner surface formed with two or more cam protrusions; and
(c) two or more plungers equal in number to the cam protrusions and mounted on the rotary distributor for rotation in accordance with rotation of the rotary distributor, the plungers defining a common pumping chamber and engaging the inner surface of the cam ring for reciprocation in the radial direction with respect to the rotary distributor to pump fuel out of said common pumping chamber into the injection valve;
at least one of the cam protrusions having a cam lift profile different from those of the other cam protrusions so that the sum of the cam lift profiles of the cam protrusions determining fuel injection rate differs in shape from each of the cam lift characteristics, wherein:
said plungers are arranged radially, said cam protrusions are arranged around said cam ring, and said difference in cam lift profile includes a slight uneven angular offset of one of said cam protrusions with respect to the other cam protrusions; and
said offset cam protrusion engages one of said plungers before the other cam protrusions engage the other plungers, and said offset cam protrusion has less angular extent that said other cam protrusions.

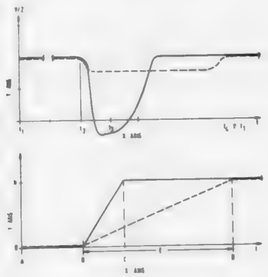
4. A fuel injection pump for an internal combustion engine provided with a fuel injection valve, comprising:
(a) a rotary distributor rotating in synchronism with engine revolution;
(b) a cam ring encircling the rotary distributor and having an inner surface formed with two or more cam protrusions; and
(c) two or more plungers equal in number to the cam protrusions and mounted on the rotary distributor for rotation in accordance with rotation of the rotary distributor, the plungers defining a common pumping chamber and engaging the inner surface of the cam ring for reciprocation in the radial direction with respect to the rotary distributor to pump fuel out of said common pumping chamber into the injection valve;
at least one of the cam protrusions having a cam lift profile different from those of the other cam protrusions so that the sum of the cam lift profiles of the cam protrusions determining fuel injection rate differs in shape from each of the cam lift characteristics, wherein:
said plungers are arranged radially, said cam protrusions are arranged around said cam ring, and said difference in cam lift profile includes a slight uneven angular offset of one of said cam protrusions with respect to the other cam protrusions; and
said offset cam protrusion engages one of said plungers before the other cam protrusions engage the other plungers, said inner surface of the cam ring defines an outermost base circle, and said offset cam protrusion has a radial dimension with respect to the base circle less than the corresponding radial dimensions of said other cam protrusions.

4,564,342

PERISTALTICALLY OPERATING ROLLER PUMP AND PUMP ROTOR THEREFOR

Wolfram Weber, Spiesen-Elversberg; Hans-Jürgen Neumann; Artur Meisberger, both of St. Wendel, and Bernd Mathieu, Spiesen-Elversberg, all of Fed. Rep. of Germany, assignors to Fresenius AG, Fed. Rep. of Germany

Filed Jul. 24, 1984, Ser. No. 633,804
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1983, 3326786
Int. Cl.⁴ F04B *43/12, 45/08*
U.S. Cl. 417—477 **11 Claims**



1. Peristaltically operating roller pump, comprising:
(a) a pump rotor,
comprising a drive member which is rotatably drivable by means of a drive shaft of the pump, and
rollers which are distributed symmetrically over the periphery of the drive member and are mounted on roller carriers which are radially outwardly loaded by springs bearing on the drive member, the roller carriers being coupled together via a connection, said connection being independent from said drive shaft which guides the roller carriers symmetrically with respect to the drive shaft, and
(b) a pump bed,
comprising a bottom surface disposed parallel to the rotation plane of the pump rotor;
a bearing wall extending continuously upright with respect to the bottom surface, the bearing wall comprising a working region in which the bearing wall is made arcuate and concentric with the axis of rotation of the pump rotor and in which a pump hose can be placed in order to be subjected to the action of the rollers of the pump rotor, and an exit region in which the bearing wall drops back from the circular path of the rotor,
characterized in that the connection between the roller carriers converts a constrained radial movement of one roller into a corresponding follow-up movement of the other roller carrier.

4,564,343

SCROLL COMPRESSOR HAVING IMPROVED SEALING

Toshiyuki Nakamura; Masahiro Sugihara; Tsutomu Inaba, and Tadashi Kimura, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1984, Ser. No. 630,603
Claims priority, application Japan, Jul. 30, 1983, 58-139573; Nov. 15, 1983, 58-216761
Int. Cl.⁴ F04C *18/04, 27/00*
U.S. Cl. 418—55 **1 Claim**



1. A scroll compressor having improved sealing, comprising:
(a) a fixed scroll comprising a spiral wrap projecting from an end plate;
(b) an orbiting scroll comprising a spiral wrap projecting from an end plate, said fixed and orbiting scrolls being assembled together to form compression chambers between said fixed scroll and said orbiting scroll, a fluid introduced into said compression chamber being compressed toward a center portion of said fixed and orbiting scrolls and discharged through a discharge port formed at said center portion as said orbiting scroll undergoes an orbiting motion with respect to said fixed scroll, a groove being formed in end surfaces of said spiral wraps of each of said fixed and orbiting scrolls adjacent the end plate of the other scroll;
(c) seal members having generally the same shape as said grooves and being inserted in said grooves of said fixed and orbiting scrolls;
(d) each said groove of each of said fixed and orbiting scrolls being longitudinally divided into a plurality of groove portions by partitions, each partition having a height less than the depth of the groove, the partitions being widely spaced apart and relatively small such that the groove portions between partitions constitute nearly the entirety of the groove; and
(e) a plurality of longitudinally aligned helical springs, one in each groove portion filling the groove portion from end to end; the turns of said springs abutting said seal member inserted in said groove and applying a force thereto which is directed outwardly from said groove bottom and is substantially uniform over the length of said seal member.

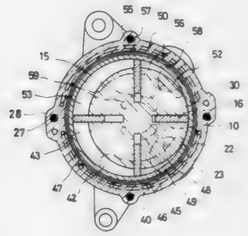
4,564,344

ROTARY COMPRESSOR HAVING ROTARY SLEEVE FOR ROTATION WITH VANES

Hiroshi Sakamaki, Utsunomiya; Susumu Sugishita, Hanyu, and Yukio Horikoshi, Kazo, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1983, Ser. No. 559,805
Claims priority, application Japan, Dec. 11, 1982, 57-216294
Int. Cl.⁴ F04C *18/348*
U.S. Cl. 418—173 **13 Claims**

1. A rotary compressor comprising
a center housing and front and rear side housings,
a rotary sleeve mounted for rotation in said center housing,
a rotor eccentrically disposed in said rotary sleeve, said rotor having a plurality of vanes radially, movably fitted therein,
an air-bearing room disposed between the inner periphery of said center housing and the outer periphery of said rotary sleeve, and a pair of discharge and suction chambers, said compressor comprising at least one high-pressure passage formed in the compression side of said center housing and



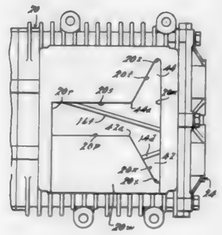
internally connected to air compressed in said rotary compressor, and
a plurality of throttles communicating with the compression side, inner periphery of said center housing from said high-pressure passage, said high pressure passage forming a circular arc having a subtended angle of less than 170 degrees, whereby said air-bearing room is supplied with air compressed in said rotary compressor to floatingly support said rotary sleeve.

4,564,345

SUPERCHARGER WITH REDUCED NOISE

Robert S. Mueller, Birmingham, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 4, 1984, Ser. No. 647,072
Int. Cl.⁴ F01C *1/24*
U.S. Cl. 418—206 **18 Claims**



1. In a rotary blower of the backflow-type including a housing, inlet and outlet Ports having longitudinal and transverse boundaries formed by wall surfaces defined by the housing, and a chamber defined by the housing; first and second meshed lobed rotors disposed in the chamber for transferring volumes of relatively low-pressure inlet port air via spaces between adjacent, unmeshed lobes to relatively high pressure outlet port air; means for controlling the rate at which outlet port air backflows into the transfer volume; the improvement comprising:
first and second expanding orifices disposed on transversely opposite sides of the outlet port and defining the control means, said orifices defined by transverse wall extensions of the outlet port wall surfaces and traversing of the transverse wall extensions by the lobes prior to traversal of the outlet port boundaries, and said expanding orifices alter-

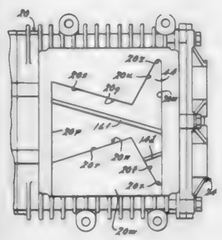
nately operative at predetermined rotor speeds and pressure differential relationships to maintain a substantially constant backflow rate into each of the transfer volumes.

4,564,346

SUPERCHARGER WITH HOURGLASS OUTLET PORT

D. L. Kimmons, Clawson, and Daniel Russell, Detroit, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 4, 1984, Ser. No. 647,071
Int. Cl.⁴ F01C *1/24*
U.S. Cl. 418—206 **11 Claims**



1. In a rotary blower of the backflow-type including a housing, inlet and outlet ports having longitudinal and transverse boundaries, and a chamber defined by the housing; first and second meshed lobed rotors disposed in the chamber for rotation about longitudinally extending and transversely spaced apart axes with the rotor lobes being formed with a helical twist and being operative to traverse the boundaries for transferring volumes of relatively low-pressure inlet port air via adjacent unmeshed lobes to relatively high-pressure outlet port air; the improvement comprising:

first and second spaced apart wall surfaces extending transverse to the rotor axes and defining the longitudinal boundaries of the outlet port; and

third and fourth spaced apart wall surfaces extending between the first and second wall surfaces and defining the transverse boundaries of the outlet port, said third and fourth wall surfaces including portions convergently extending from the first wall surface toward the second wall surface and portions convergently extending from the second wall surface toward the first wall surface with the portions of each wall surface intersecting at positions between the first and second wall surfaces, whereby the outlet port defined by said wall surfaces is somewhat hourglass in shape.

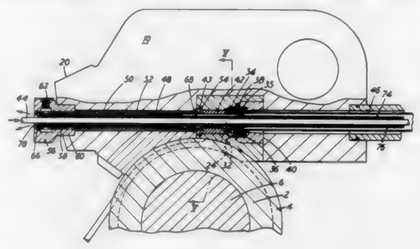
4,564,347

CONTINUOUS EXTRUSION APPARATUS

Anthony J. Vaughan, Challock, Near Ashford, England, assignor to Babcock Wire Equipment Limited, Ashford, England

Filed Apr. 12, 1984, Ser. No. 599,328
Claims priority, application United Kingdom, Apr. 12, 1983, 8309875
Int. Cl.⁴ B21C *23/30, 29/00*
U.S. Cl. 425—79 **1 Claim**

1. Continuous extrusion apparatus having a rotatable wheel formed with two identical circumferential grooves, arcuate tooling with portions bounding radially outer portions of the respective grooves provided with exit apertures extending in a generally radial direction from the respective grooves to a single chamber and abutments displaced in the direction of rotation from the apertures extending into the grooves, characterized in that the exit apertures extend through a die top from the respective grooves to a substantially toroidal chamber around a portal mandrel discharging a tubular extrusion product axially of the mandrel through a die orifice of uninterrupted annular cross-section intermediate the mandrel and a die body wall, a tubular shroud comprising a forward portion, an intermediate portion and a rear end portion, the intermediate portion having an increased wall thickness in relation to the wall thickness of both the forward portion and the rear end portion and being positioned internally co-axially of the mandrel and formed with alternating axially extending lands and grooves, the lands seating on the interior of the mandrel and the grooves providing a plurality of parallel cooling fluid flow passages, an outer sleeve extending co-axially externally of the rear end portion of the shroud and having an internal diameter equal the internal diameter of the mandrel secured to a rear end portion of the mandrel to form a first cylindrical passage intermediate the outer sleeve and the shroud, a spigot secured to the end of the outer sleeve by a fluid tight joint remote from the mandrel and seating in the arcuate tooling, the spigot being formed with a cooling fluid inlet tapping communicating with the said first cylindrical passage, the forward portion of the shroud extending internally co-axially of, and radially spaced



from, a portion of the hollow portal mandrel adjacent and beyond the extrusion orifice and around a continuous core member supplied to the extrusion orifice respectively to form a second cylindrical passage intermediate the tubular extruded product and the forward portion of the shroud and a third cylindrical passage intermediate the forward portion of the shroud and the continuous core member, the said third cylindrical passage extending rearwardly intermediate the intermediate portion of the shroud and the continuous core member and intermediate the rear end portion of the shroud and the continuous core member to a cooling fluid exit at a rear face of the spigot, thereby forming a cooling fluid path extending from the cooling fluid inlet tapping through the first cylindrical passage, the grooves in the intermediate portion of the shroud, the second passage and the third passage to the cooling fluid exit, and swaging means positioned forwardly of the forward end of the shroud arranged to swage down the tubular extrusion product on to the continuous core member.

4,564,348

MACHINE BASE FOR INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Nov. 22, 1982, Ser. No. 443,645
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3145972
Int. Cl.⁴ B29C *45/84*
U.S. Cl. 425—151 **8 Claims**

1. In an injection molding machine having a machine base, a parts discharge conveyor arranged in said machine base and a horizontally oriented die closing unit of which a stationary die carrier member with a stationary die half of an injection molding die is mounted on top of the machine base, near the center of the latter, and a movable die carrier member with a movable die half of said injection molding die is guided for horizontal opening and closing movements along the longitudinal center axis of the die closing unit by means of longitudinal guide members, and where the piston rod of a longitudinally oriented hydraulic cylinder assembly is connected to said movable die carrier member to produce its opening and closing movements, the weight of the die closing unit is supported on a forward portion of the machine base, while a rearward portion thereof is adapted to support an associated injection unit, and the injection-molded parts are discharged from the open die halves onto said parts discharge conveyor, the improvement in the machine base comprising:

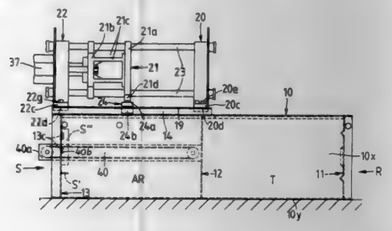
a substantially rectangular horizontal bottom wall;

two continuous, substantially rectangular vertical longitudinal side walls adjoining the bottom wall on opposite longitudinal edges thereof;

a substantially rectangular vertical front end wall transversely connecting the bottom wall and the two side walls near one longitudinal extremity thereof;

a substantially rectangular vertical rear end wall transversely connecting the bottom wall and the two side walls near the other longitudinal extremity thereof; and

a substantially rectangular vertical partition wall transversely connecting the bottom wall and the two side walls at a place which is located underneath the stationary die carrier member; and wherein



said constituent walls are of steel sheet and welded together to form a block-shaped, elongated container-like structure of high resistance against torsional deformation, the machine base defining an upwardly open reservoir chamber between the rear end wall and the partition wall and a likewise upwardly open forward chamber between the front end wall and the partition wall, said forward chamber being inaccessible from the longitudinal sides of the machine base, at least in the area underneath the injection molding die of the die closing unit;

the front end wall has a parts discharge opening for the arrangement of said parts discharge conveyor in the forward chamber of the machine base in such a way that the discharge extremity of said conveyor protrudes forwardly from said opening in the front end wall while being supported by the latter;

the front end wall is located at such a longitudinal distance from the injection molding die that manual access to the injection molding die through the parts discharge opening is impossible; and

the front end wall includes means for adjusting the height of said parts discharge conveyor which extends through its parts discharge opening.

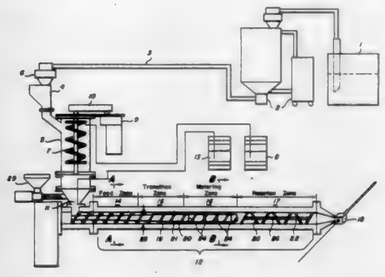
4,564,349

EXTRUDER ASSEMBLY FOR EXTRUDING WATER-CURABLE SILANE MODIFIED POLYMERS

Geoffrey D. Brown, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 498,341, Jun. 1, 1983, Pat. No. 4,489,029. This application Apr. 27, 1984, Ser. No. 603,143
Int. Cl.⁴ B29B *1/06*
U.S. Cl. 425—207 **3 Claims**

1. An extruder assembly, suitable for admixing and reacting a composition containing a silane and a thermoplastic polymer to form a water-curable, silane modified thermoplastic polymer and for extruding said silane modified polymer, comprising a cylindrical barrel housing and a rotating compression screw mounted within said barrel housing, the channel depth defined between the root diameter of said compression screw and said cylindrical barrel housing being substantially constant, uniformly decreasing and being substantially constant thereby defining in sequence, a feed zone, a transition zone and a metering zone, the portion of said cylindrical housing which, in conjunction with said compression screw defines the feed zone being axially grooved and that portion of the rotating compression screw in the metering zone having mixing pins extending substantially perpendiculary therefrom, a mixer, mounted at the terminal end of said rotating compression screw for receiving material from said metering zone, defining a reaction zone wherein the reaction between the silane and the



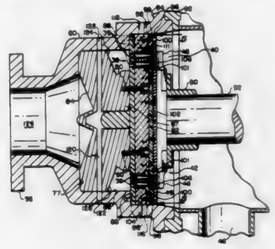
thermoplastic polymer is substantially completed and from which zone the reacted product is fed into an extrusion die positioned at the terminal end of said reaction zone, said mixer comprising a series of vanes on a stationary shaft mounted in a cylindrical barrel housing or said mixer is a dynamic device mounted to and rotating with said rotation compression screw comprising a rotating screw defining, in conjunction with the cylindrical barrel of the extruder assembly, a channel depth greater than the channel depth of said metering zone and means to rotate said rotating compression screw whereby material is fed through said feed zone, transition zone, metering zone and reaction zone and into and out of said extrusion die.

4,564,350

PLASTIC EXTRUDER ASSEMBLY

George Holmes, W. Chicago, and Frank Keyser, Streamwood, both of Ill., assignors to Thomas R. Vigil, Barrington, Ill.

Continuation of Ser. No. 386,873, Jun. 10, 1982, abandoned. This application Mar. 22, 1985, Ser. No. 715,058
Int. Cl.⁴ B29F *3/04, 3/08*
U.S. Cl. 425—313 **12 Claims**



1. In a plastic extruder assembly of the type having an extruder barrel assembly and an extruder die chamber in the distal end of said extruder barrel assembly, said die chamber having means for receiving and mounting a die assembly therein, a die assembly in said die chamber, said die assembly

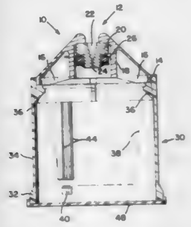
having extrusion orifices extending therethrough and an outer face, the improvement comprising: insulating means beneath said outer die face at least in the area of said die orifices for inhibiting if not altogether preventing freezing of the plastic in said die orifices; said die assembly comprising an annular die ring having die orifices extending therethrough; a die plate defining said face and having die inserts defining said orifices, extending therethrough; a die mounting ring extending peripherally about said die ring; said die ring including means for conveying hot fluid to and around said annular die ring and adjacent but spaced from said inserts to maintain the ambient temperature surrounding said die inserts at an elevated level thereby to keep the plastic passing therethrough molten, whereby said insulating means aid in maintaining said elevated temperature of said annular die ring which surrounds said die inserts, said conveying means comprising an outer annular passageway in said die ring, an inner annular passageway in said die ring, and radial passageways in said die ring situated between adjacent die inserts in said die ring and extending between said inner and outer annular passageways; said insulating means comprising an annular ring of insulating material which is disposed between said die plate and said die ring and which is of pressed asbestos and extensions of said die inserts extending through said annular ring of insulating material to said die insert extensions in said die plate.

4,564,351

DEVICE FOR SHAPING THE TIP OF A SOFT WAX MARKER

Gayle M. LaRue, 29846 45th Pl. South, Federal Way, Wash. 98002, and William A. Munday, 6503 57th Ave. Northeast, Seattle, Wash. 98115

Filed Jun. 15, 1984, Ser. No. 621,164
Int. Cl.⁴ B29C *33/02*
U.S. Cl. 425—383 **8 Claims**



1. A device for shaping the end of a soft wax marker, comprising:

a vertically oriented housing having a lower section and a removable top section, the top section having a central opening therein and the lower section being sized to receive an upwardly opening disposable receptacle therewithin;

a heat-conductive member mounted in the top section, the heat-conductive member having a substantially vertically oriented, internal, conically shaped cavity tapered along its length, with the larger diameter of the cavity being toward the top of the top section and communicating with the opening in the top section;

a relatively small opening in the heat-conductive member located at the bottom of the conically shaped cavity for draining melted wax and sized to permit the free gravity flow of the melted wax therethrough for removal of the melted wax from the cavity;

an electric heater for heating the heatconductive member to a temperture sufficient to partially melt the wax marker for shaping the tip thereof; and

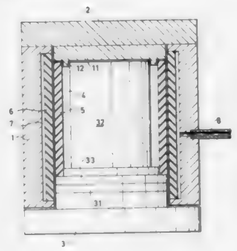
means for positioning and removably holding the disposable receptacle within the lower section and beneath the heat-conductive member with the opening of the receptacle in registration with the opening located at the bottom of the conically shaped cavity for receiving melted wax dripping from the opening, the lower section having an open upper end for removal therethrough of the receptacle when the top section is removed from the lower section.

4,564,352

APPARATUS FOR COMPENSATING AXIAL STRAIN IN AN ISOSTATIC PRESS

Ola Pettersson, Höganäs, Sweden, assignor to KB Cold Isostatic Press Systems CIPS, Höganäs, Sweden

Continuation of Ser. No. 548,082, Nov. 2, 1983, abandoned. This application Feb. 8, 1985, Ser. No. 699,500
Claims priority, application Sweden, Nov. 9, 1982, 8206359
Int. Cl.⁴ B30B *5/02, 11/02*
U.S. Cl. 425—405 H **16 Claims**



1. Apparatus for compensating axial strain in an isostatic press during pressurization, said isostatic press acting against a moulding tool enclosed in a dry pressing chamber of the isostatic press, a mould cavity of the moulding tool being defined in the isostatic press by an elastomeric enveloping wall, a core member and two rigid end walls meeting said elastomeric enveloping wall, the dry pressing chamber of the isostatic press being defined by a radially deformable elastomeric jacket, exercising pressure against the enveloping wall of the moulding tool, and two press end structures associated with the jacket, which carry the rigid end walls of the moulding tool, wherein at least one rigid end wall is carried by an adjacent end structure via an elastomeric element and in that the elastomeric element is disposed with its peripheral edge exposed to, and lying adjacent the deformable elastomeric jacket of the pressing chamber; the elastomeric element compensating for the axial strain of the isostatic press so as to prevent relative movement between the elastomeric enveloping wall and a pressed body in the mold cavity.

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CONTINUOUS VULCANIZATION AND/OR CROSS-LINKING APPARATUS

Gerald Smart, deceased, late of Whitefield, England (by Doris M. Smart, administratrix), assignor to General Engineering Radcliffe 1979 Ltd., Manchester, England

Filed Aug. 27, 1980, Ser. No. 181,743
Claims priority, application United Kingdom, Sep. 1, 1979, 7930380
Int. Cl.⁴ B29F *3/10*
U.S. Cl. 425—446 **8 Claims**

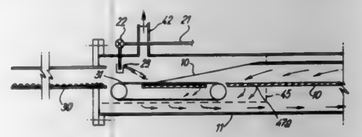
1. Apparatus for continuous vulcanizing and/or cross-linking comprising

elongated tube means open at its ends to permit passage therethrough of a continuous length of product to be vulcanized and/or cross-linked, said tube means being of generally straight configuration and generally horizontal orientation,

a surrounding shell in which said elongated tube means is positioned such that the open ends of the tube means open into the interior of said shell,

means for substantially continuously supplying an elastomeric or polymeric product to be treated such that the product to be treated will pass into said shell and through the tube means and thence out of said shell, and

circulating means communicating with said tube for circulating a vulcanizing treatment liquid through the wall of the tube means into the tube means intermediate its ends at a rate sufficient to completely fill the tube means at least apart from its ends, but insufficient to submerge the ends of the tube means by treatment liquid in the surrounding shell,



said shell being positioned to receive the treatment liquid issuing from the ends of the tube means,

drain means having a drain inlet opening into said shell at a location relatively lower than said tube means for removing treatment liquid from the shell to maintain the ends of the tube means unsubmerged by treatment liquid in the shell,

said circulating means comprising a reservoir,

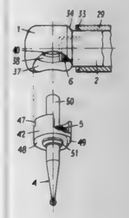
said reservoir being positioned for receiving treatment liquid which drains from said shell through said drain means.

4,564,354

ANGLE PIECE FOR DENTAL PURPOSES

Otto Rosenstatter, Seeham, Austria, assignor to Dentalwerk Büroos Gesellschaft m.b.H., Bürmoos, Austria

PCT No. PCT/AT83/00028, § 371 Date May 16, 1984, § 102(e) Date May 16, 1984, PCT Pub. No. WO84/01099, PCT Pub. Date Mar. 29, 1984
PCT Filed Sep. 19, 1983, Ser. No. 616,227
Claims priority, application Austria, Sep. 21, 1982, 3509/82
Int. Cl.⁴ A61C *1/12*
U.S. Cl. 433—133 **8 Claims**



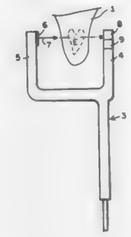
1. Angle piece for dental purposes comprising a head shaft, a head part, and a tool with cylindrical tool shaft, which tool is supported in the head part transversely relative to the drive axis of the head shaft, said tool securely connected with its drive gear wheel and interchangeable together with the latter, characterized in that a head bearing (**42**) is rotatably and axially immovably connected with said tool (**4**), wherein said head bearing is stationary when inserted in said head part, and in that an outer screw sleeve (**29**) which is axially displaceable on the head shaft (**2**) partly overlaps said head bearing (**42**) in its inserted position.

4,564,355

METHOD AND APPARATUS FOR THE NON-INVASIVE EXAMINATION OF THE TOOTH-JAW STRUCTURE OF A PATIENT TO DETERMINE THE CHARACTERISTICS OF UNERUPTED TEETH AND TO CONTROL NUTRITIONAL INTAKE PURSUANT THERETO

Harry A. Traiger, and Mark A. Traiger, both of New York, N.Y., assignors to Dentonaut Lab, Ltd., New York, N.Y.

Filed Jan. 9, 1984, Ser. No. 569,459
Int. Cl.⁴ A61C *5/00*
U.S. Cl. 433—215 **25 Claims**



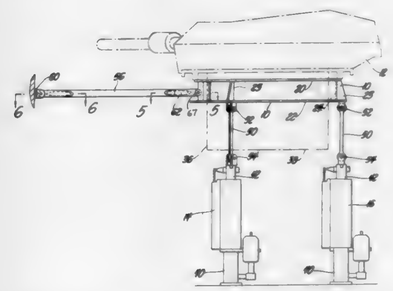
1. Apparatus for the non-invasive examination of the tooth-jaw structure of a patient to determine the characteristics of unerupted teeth in said structure, said apparatus comprising means for producing a beam of energy support means for said beam producing means for positioning the same such that the beam of energy strikes the tooth-jaw structure and undergoes modification depending on the presence of unerupted teeth and their size and position in the tooth-jaw structure, receiver means on said support means for receiving the beam of energy after striking the tooth-jaw structure or after re-radiation by the tooth-jaw structure to produce the characteristics of unerupted teeth in said structure, and locator means coupled to said receiver means for producing an indication of the location of said receiver means such that the characteristics of the unerupted teeth are related spatially.

4,564,356

LABORATORY TURRET SHAKER

Clarence H. Winfree, Macomb County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 18, 1985, Ser. No. 713,069
Int. Cl.⁴ G09B *9/04*
U.S. Cl. 434—29 **10 Claims**



1. A tank turret shaker mechanism comprising an annular platform sized to receive a turret; said platform having an opening therein to accommodate a circular basket depending from the turret; said platform occupying a horizontal plane when the turret has a level attitude; a first anchorage structure

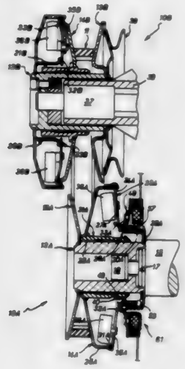
spaced laterally from said platform; a second anchorage structure spaced laterally from said platform; said platform and anchorage structures occupying a common horizontal plane when the turret has a level attitude; a first elongated stabilizer link extending from the platform to the first anchorage structure; a second elongated stabilizer link extending from the platform to the second anchorage structure; said stabilizer links being oriented at right angles to each other in a common horizontal plane when the turret has a level attitude; said first stabilizer link being located on an imaginary line representing the longitudinal axis of the tank designed to receive the turret; said second-stabilizer link being located on an imaginary line representing a pitch axis for the tank; three platform support structures spaced equidistantly around the platform; one of said platform support structures being located on the aforementioned longitudinal tank axis; each platform support structure comprising an upright fluid cylinder means located substantially directly below a section of the platform, and a support link extending upwardly from the fluid cylinder to the platform; each support link being oriented vertically when the turret has a level attitude.

4,564,357

PULLEY ASSEMBLY

Jacques Thirion de Briel, Levallois-Perret, France, assignor to Valeo, Paris, France

Filed Jul. 23, 1982, Ser. No. 401,333
Claims priority, application France, Jul. 31, 1981, 81 14925
Int. Cl.⁴ F16H *11/06*
U.S. Cl. 474—14 **28 Claims**



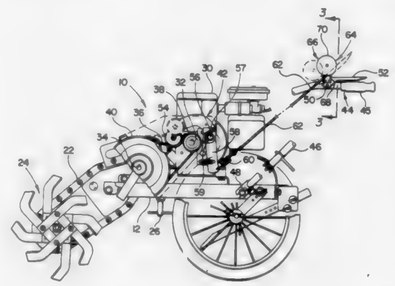
1. A pulley assembly suitable for use in a variable transmission drive system for an automobile vehicle, said pulley assembly comprising a rotatable shaft, two flanges keyed to said shaft so as to rotate therewith, at least a first of said flanges being mounted so as to move axially relative to said shaft between two extreme positions, namely a retracted position and an advanced position, a varaiable transmission device disposed axially between and in contact with said flanges and being movable radially relative to said flanges, said first flange being in a first of said extreme positions when said first flange is inoperative, releasable locking means associated with said first flange for locking said first flange temporarily in a second of said extreme positions, said locking means being automatically operable to lock said first flange in said second extreme position in response to predetermined movement of said first flange from said first extreme position to said second extreme position, and control means associated with said first flange for releasing said locking means.

4,564,358

NON-INCREMENTAL CLUTCH ADJUSTMENT ARRANGEMENT

John T. Durrant, Schaghicoke, N.Y., assignor to Garden Way Incorporated, Troy, N.Y.

Filed May 17, 1984, Ser. No. 611,321
Int. Cl.⁴ F16H *7/08*
U.S. Cl. 474—101 **11 Claims**



1. For use in a powered apparatus having a main frame and a motor having an output shaft, a non incremental belt tension adjuster for selectively connecting the motor output shaft to a work unit and comprising:

(a) an operating lever;

(b) a rotary cable adjusting means carried by said operating lever;

(c) a control cable fixed to said rotary cable adjusting means;

(d) a belt drive tensioning lever movable between two positions, a belt drive engagement position and a slack non-power transmitting position, being operably connected to said control cable; and

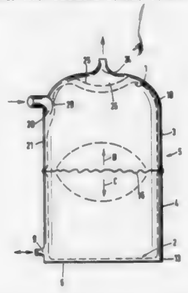
(e) means for selectively changing and fixing the position of said rotary cable adjusting means to effect non-incremental selective adjustment of the length of said control cable between said operating lever and said drive tensioning lever thereby to compensate for any wear or stretching of a belt drive to ensure the desired engagement of output shaft and work unit.

4,564,359

AUTOTRANSFUSION APPARATUS'

Dieter Rühland, Jungeblodtplatz 1, 4400 Münster, Fed. Rep. of Germany

Filed Feb. 3, 1984, Ser. No. 576,673
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304486
Int. Cl.⁴ A61M *1/02, 5/14*
U.S. Cl. 604—4 **20 Claims**



1. An autotransfusion apparatus for body fluid including blood, comprising

an evacuatable vacuum-resistant container defining an inside for the body fluid and having a bottom part and a cover part,

said cover part having means comprising an inlet opening into the inside of the container for the body fluid,

said cover part having means comprising an outlet opening from the inside of the container for the body fluid,

a screen covering said outlet opening,

means comprising another opening in said container for producing a gas-flow connection to space within the container having a gas pressure which differs from pressure in said inside of the container,

said another opening is arranged in the bottom part,

a membrane which is deformable by pressure and impervious to the body fluid being fixed hermetically at an edge of the membrane between said bottom part and said cover part,

said membrane dividing the container into the space forming a gas-fillable bottom space and a cover space defining said inside for the body fluid sealed from each other, said cover space communicating with said inlet and outlet openings, and

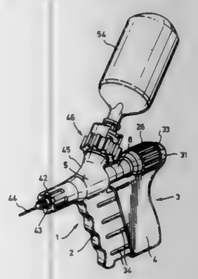
said membrane being deformable under the influence of fluid pressure, substantially against an inner contour of said cover part and against an inner contour of said bottom part, respectively.

4,564,360

ADJUSTABLE DOSE INJECTION PISTOL

David M. Young, Loughborough, and Andrew W. Blower, Ashby-de-la-Zouch, both of England, assignors to Fisons plc, Ipswich, England

Filed Sep. 28, 1983, Ser. No. 536,744
Claims priority, application United Kingdom, Oct. 8, 1982, 8228809
Int. Cl.⁴ A61D *7/00*
U.S. Cl. 604—183 **14 Claims**



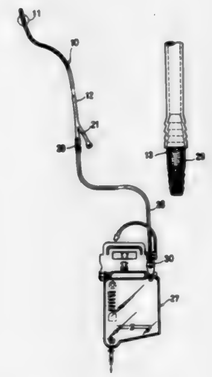
1. An adjustable dose injection pistol comprising a body assembly including an elongate chamber, a piston assembly including a piston slidable in the chamber along a piston-chamber axis and being filled and discharged positions and means for adjusting one of said positions, wherein the means comprise a selectable plurality of channels included in one of the assemblies, the channels being spaced about and parallel to the piston-chamber axis, wherein one end of each channel is open and terminates in a common plane transverse to the piston-chamber axis, and an arrestor located on the other assembly, the arrestor being selectably engagable via the common plane with an aligned channel upon movement of said piston between said positions.

4,564,361

CATHETER

Hiroshi Akiyama, 2-5-12, Honkomagome, Bunkyo-ku, Tokyo, Japan

Division of Ser. No. 470,690, Feb. 28, 1983, Pat. No. 4,483,688, which is a continuation-in-part of Ser. No. 189,244, Sep. 22, 1980, abandoned, which is a continuation-in-part of Ser. No. 923,440, Jul. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 740,285, Nov. 9, 1976, abandoned. This application Aug. 21, 1984, Ser. No. 642,922
Claims priority, application Japan, Nov. 18, 1975, 50-137790
The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 604—265 **7 Claims**



1. A catheter and drainage system adapted to be carried by a person and utilized to drain urine from a to-be-drained body cavity of said person to a drainage bag carried by said person comprising, in combination, an indwelling catheter adapted to extend partially into said body cavity, said catheter comprising a flexible tubular member having a main lumen for urine discharge, one end of said main lumen being closed, said tubular member having an aperture adjacent to said one end to allow communication between said main lumen and the exterior of said tubular member, a balloon provided adjacent said aperture, an auxiliary lumen connected to said main lumen for inflating said balloon, an oligodynamically active metal deposited on a portion of only the outside periphery of said tubular member for producing metal ions upon contact with the urine, a urine collecting bag adapted to be carried by said person, said collecting bag having an inlet, and a tubular sterilizing means having oligodynamic activity connecting said catheter tube to said inlet of said collecting bag.

4,564,362

VAGINAL DEVICE

Michael S. Burnhill, Rte. 24 R.D. 2, Mendham, N.J. 07945

Filed Jul. 7, 1983, Ser. No. 511,759
Int. Cl.⁴ A61F *13/20*
U.S. Cl. 604—286 **14 Claims**



1. A vaginal device consisting essentially of an outermost layer of resilient compressible open-celled polymeric foam, a

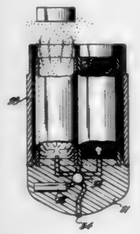
non-pororous barrier film layer formed of a liquid proof, soft elastomeric material affixed to said outermost foam layer and a second layer of open-celled polymeric foam affixed to the opposite surface of said non-porous film layer, said outermost and innermost foam layers differing in density and/or numbers of pores per inch with the more dense or smaller pored foam layer constituting the outermost layer, said outermost layer forming an expansion collar and being adapted to lie against the cervix of the uterus, where it aids in holding and securing the device in position and additionally reinforces the barrier effect of the film and innermost foam layer.

4,564,363

DELAYED ACTION ASSEMBLY

Brian G. Bagnall, Berwyn, and Robert J. Gyurik, Downingtown, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Jul. 13, 1983, Ser. No. 513,512
Int. Cl.⁴ A61M *31/00*
U.S. Cl. 604—891 **8 Claims**



1. A delayed release, ruminant dosage form comprising from 1 to 4 dosage unit release assemblies, at least one of which is a delayed action assembly which, in turn, comprises;
a closed, non-biodegradable outer wall;
a dosage unit of an active ingredient in dispersible form within said wall;
a water-tight cover or plug which is capable of being displaced by internal gas pressure and which extends through said outer wall;
weight means sufficient to retain said delayed action assembly in the rumen and arranged within said dosage form, and
an internally disposed electrical circuit means which, in turn, comprises, interconnected;
a source of current;
an internally disposed chemical squib for generating internal gas pressure, within the assembly,
sufficient to remove said removable cover or plug; means for timing and activating said chemical squib, and
means for activating said circuit.

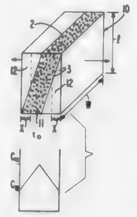
4,564,364

ACTIVE AGENT DISPENSER

Alejandro Zaffaroni, Atherton, and Patrick S. L. Wong, Hayward, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed May 26, 1983, Ser. No. 498,381
Int. Cl.⁴ A61F *15/00*
U.S. Cl. 604—897 **24 Claims**

1. A dispenser for releasing an active agent into an environment of use comprising in combination:
(a) at least onr non-depleted zone comprising a matrix material containing said agent at a concentration greater than the saturation concentration of the agent in said matrix material; and
(b) at least one depleted zone comprising a matrix material containing said agent at a concentration no greater than the saturation concentration of the agent in the matrix material, said depleted zone being disposed between a surface through which the agent is to be released to the environment and at least a substantial portion of said



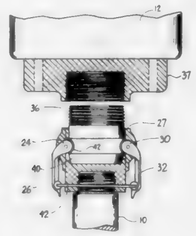
non-depleted zone with the interface between said depleted and non-depleted zones being disposed at a nonuniform distance from said releasing surface.

4,564,365

QUICK CHANGE MECHANISM FOR A LIMB PROSTHESIS

Richard A. Winer, P.O. Box 1673, Fort Lauderdale, Fla. 33302, and Kevin S. Garrison, 2301 N.W. 60th Ave., Sunrise, Fla. 33313

Filed Mar. 18, 1983, Ser. No. 476,704
Int. Cl.⁴ A61F *2/80, 2/74*
U.S. Cl. 623—27 **1 Claim**



1. A coupling system for use in the connection and disconnection of a prosthetic accessory to a socket portion of a lower limb amputation site, such socket portion adapted to extend back over the lower limb to secure the socket portion thereon, the inventive coupling comprising:
(a) a hollow, pipe-like female element integrally depending from said prosthetic accessory, said female element having two longitudinal side openings, each within opposite walls of said female element;
(b) a pair of cam latches rotatably secured within said longitudinal side openings, such cam latches comprising, in combination, a convex arc and handle element disposed in a plane wherein the selective downward rotation of said latches will bring said convex arc of said cam latches into said side openings and, thereby, within the walls of said female element; and
(c) a male element having a first end and a second end, said first end integrally secured to said socket portion and said second end comprising an annular, circumferential shoulder, the exterior dimensions of said male element, being generally complimentary to the interior dimensions of said female element, said second end of said male element being press-fittably insertable into said longitudinal side openings of said female element, said male element being radially rotationally adjustable relative to said female element prior to locking of the cam latches, wherein said male element may then be securably engaged to thereby achieve both radial and longitudinal engagement between said male and female elements by said selective downward rotation of said cam latches.
whereby, the lower extremity prosthetic accessory integrally secured to said female element may be readily connected or disconnected by the engagement or disengagement of the male and female elements through the selective locking of said cam latches.

4,564,366

LEATHER WITH FLUOROCHEMICAL FINISH

Kalyanji U. Patel, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 436,267, Oct. 25, 1982, Pat. No. 4,525,305.
This application Mar. 26, 1985, Ser. No. 716,365
Int. Cl.[4] C14C *00/00*; D06M *13/40*
U.S. Cl. 8—94.1 R 7 Claims

1. A process for imparting oil and water repellency to a fibrous substrate, which comprises contacting said substrate with a treating composition comprising fluorochemical compounds which are normally solid, water insoluble, aliphatic carboxylic acids and salts thereof which are self-dispersible in water, said compounds containing fluoroaliphatic and aliphatic carboxylic radicals, said fluoroaliphatic radicals having at least three fully fluorinated carbon atoms and a terminal perfluoromethyl group, and urylene and/or carbamato radicals, said radicals bonded together by organic linkages free of interfering moieties, said compounds containing at least 20 weight percent fluorine in the form of said fluoroaliphatic radical.

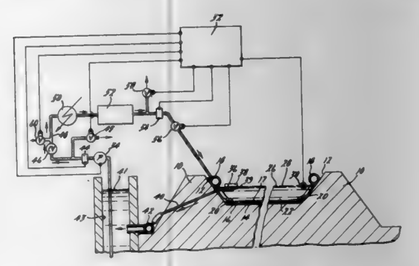
5. A fibrous substrate having deposited on a surface thereof fluorochemical compound according to the process of claim 1.

4,564,367

SOLAR SALT CRYSTALLIZER AND PROCESS FOR PRODUCING SALT

John F. Heiss, and Melvin E. Leverenz, both of St. Clair, Mich., assignors to Diamond Crystal Salt Company, St. Clair, Mich.

Filed Jun. 20, 1984, Ser. No. 622,475
Int. Cl.[4] B01D *9/02, 1/00*
U.S. Cl. 23—295 S 20 Claims



1. A solar crystallizer for producing salt comprising;
(a) means defining a shallow pond containing an aqueous salt solution provided with a substantially horizontal bottom and having the surface thereof exposed to solar radiation,
(b) inlet conduits positioned and arranged for discharging a substantially saturated brine into said pond at a lower stratum adjacent to the bottom thereof and above any salt crop deposited thereon,
(c) outlet conduits positioned and arranged for withdrawing solution from an upper stratum of the pond adjacent to the exposed surface thereof,
(d) level sensing means for sensing the level of solution in said pond,
(e) supply means for discharging brine into said pond through said inlet conduits in response to the solution level being disposed within a preselected range,
(f) skimmer means for withdrawing solution from said pond through said outlet conduits in response to the increase of solution level beyond a preset level,
(g) saturating means in said supply means for effecting substantially complete saturation of the brine discharged through said inlet conduits and
(h) control means operatively associated with said level sensing means, supply means, skimmer means and saturating means for controlling, in response to said level sensing means, said supply means, skimmer means and saturating means.

4,564,368

METHOD AND APPARATUS FOR USE IN DRYING BIOMASS PARTICLES

Willard C. Sawyer; Edith M. Sawyer; Sherron M. Keef, and John W. Sawyer, all of R.F.D. #2, Oxford, Me. 04270

Filed Apr. 11, 1983, Ser. No. 483,840
Int. Cl.[4] C10L *5/40, 9/08*
U.S. Cl. 44—1 D 10 Claims

1. Method of preparing biomass particles for use as fuel for stoves, heaters, furnaces, industrial boilers, pyrolizers and gasifiers or for use as feed stock for a chemical process, by way of examples, pulp mills and ethanol plants, said method consisting of the steps of processing biomass wastes to provide particles substantially all within a size range that they will pass through a four inch mesh screen but not through a one-eighth inch mesh screen, collecting said particles to provide a body thereof that is substantially uniform in width and depth throughout the length thereof, providing a continuous stream of hot gas the temperature of which is within the approximate range of from 50° F.–600° F., subjecting the body of said sized particles to the hot gas stream to reduce the moisture content of the particles on an average to a wanted extent in the approximate range of from 5% to 35% wet basis by introducing the hot gases through one surface of the body of particles and permitting the gas to escape from the opposite surface thereof while controlling the velocity and pressure of the gas stream to enable the layer of particles adjacent the opposite surface to serve as a relatively cool filter bed the temperature of which is in the approximate range of 50° F. to 150° F. to condense and/or to trap to the desired extent particulates and/or acids or hydrocarbon emissions from entering the air or harming operators.

7. A dryer for use in drying wood and other biomass particles that are substantially all within a size range such that they will pass through a four inch mesh screen but not through a one-half inch mesh screen, said dryer including a chamber for a body of particles, one wall of said chamber provided with a substantial number of apertures dimensioned to prevent particles from passing therethrough, plenum means with which said apertures are in communication, a source of hot gas connected to said plenum means and operable to deliver a continuous stream of hot gas thereto, into and through the particles and then to exit from the opposite side of the body, means to sense the temperature of a layer of particles adjacent the opposite chamber wall and means responsive thereto to so control said gas stream that said layer functions as a stable filter bed the temperature of which does not exceed the approximate range of 50° F.–150° F. to prevent such contaminating emissions as particulate matter, acid and hydrocarbon emissions from escaping from the dryer to an unwanted extent.

4,564,369

APPARATUS FOR THE ENHANCED SEPARATION OF IMPURITIES FROM COAL

Lester E. Burgess; Karl M. Fox, both of Swarthmore; Phillip E. McGarry, Palmerton, and David E. Herman, Jim Thorpe, all of Pa., assignors to The Standard Oil Company, Cleveland, Ohio

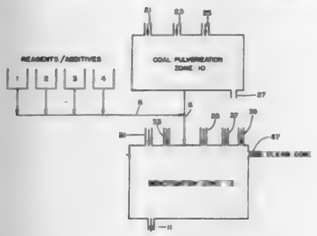
Division of Ser. No. 267,777, May 28, 1981, Pat. No. 4,406,664, which is a continuation-in-part of Ser. No. 114,357, Jan. 22, 1980, Pat. No. 4,332,593. This application Jul. 22, 1983, Ser. No. 516,449
Int. Cl.[4] C10L *1/32, 5/22*
U.S. Cl. 44—2 7 Claims

1. An arrangement for producing a beneficiated coal product, said arrangement comprising in sequential combination:
coal pulverization means;
means for feeding pulverized coal from said coal pulverization means to a surface treatment reaction zone;
a surface treatment reaction zone having means for introducing measured amounts of chemical reactants for providing surface treatment of said coal in an aqueous medium;

means for introducing surface treated coal from said surface treatment reaction zone to a water wash zone; and

at least one water wash zone having means for admixing ingredients introduced or contained therein under high shear agitation.

3. The arrangement of claim 1 wherein said water wash zone is comprised of a collection and separation means for permitting a water-wetted ash phase to be collected and separated and a collection and separation means for permitting floating



surface treated coal to be collected and separated from the surface of the water.

4. The arrangement of claim 3 further comprising transfer means to remove the collected coal to a mechanical drying means; mechanical drying means to remove excess water from the transferred coal; and high shear dispersing means by which the treated recovered coal is dispersed into a quantity of fuel oil sufficient to produce a non-settling fluid coal containing fuel product.

4,564,370

IGNITION ARTICLE AND COMPOSITION FOR THE RAPID IGNITION OF COAL OR CHARCOAL FIRES

Edward F. Gregory, 11 Pine St., Wellesley, Mass. 02181

Continuation of Ser. No. 578,559, Feb. 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 506,500, Jun. 21, 1983, abandoned. This application Jan. 25, 1985, Ser. No. 694,803

Int. Cl.⁴ C10L *11/06*

U.S. Cl. 44—38 **15 Claims**

1. An article for the rapid ignition of a coal or charcoal fire, which article consists essentially of:

(a) a tray having upright sides and a bottom surface and composed of a stiff, combustible, cellulosic fibrous sheet material, the sheet material of the tray substantially uniformly impregnated with and containing a combustible amount of from about 30 to 90 percent by weight of a low melting point solid hydrocarbon combustible material;

(b) a pressed wood fiber board sheet material having a top surface, which sheet material substantially covers the bottom surface of the tray;

(c) a plurality of charcoal briquettes to be ignited, the briquettes forming at least a single layer of spaced-apart positioned briquettes, the layer placed on and covering substantially the top surface of the pressed wood fiber board sheet material; and

(d) means to contain the tray and the layer of briquettes in positioned relationships.

2. The article of claim 1 wherein the combustible material comprises a paraffin wax.

4. The article of claim 1 wherein the tray is characterized by a plurality of separate spaced apart integrally formed cavities in the bottom surface of the tray, and the briquettes are positioned in said cavities to form the layer.

4,564,371

DISPERSANT FOR AQUEOUS SLURRY OF COAL

Tsunehisa Ueda, Zushi, and Tadao Natsuume, Yokosuka, both of Japan, assignors to Nippon Zeon Co Ltd, Tokyo, Japan

Continuation of Ser. No. 495,242, May 17, 1983, abandoned. This application Jan. 23, 1985, Ser. No. 693,823

Claims priority, application Japan, May 17, 1982, 57-82934

Int. Cl.⁴ C10L *1/18*

U.S. Cl. 44—51 **11 Claims**

1. A composition comprising an aqueous coal slurry having a viscosity of up to about 1400 centipoises and containing 50 to 90% by weight of coal and 0.3 to 1 parts by weight, per 100 parts by weight of coal, of a dispersant which is a water-soluble salt of a polymeric substance having a sulfonic acid residue bonded through an acid imide linkage or an acid amide linkage in the molecule.

4,564,372

QUATERNARY DEPOSIT CONTROL ADDITIVES

Curtis B. Campbell, Rodeo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

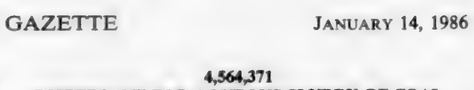
Continuation-in-part of Ser. No. 518,506, Jul. 29, 1983, abandoned, and Ser. No. 518,205, Jul. 29, 1983, abandoned, which is a continuation-in-part of Ser. No. 510,128, Jun. 30, 1983, abandoned. This application Jul. 20, 1984, Ser. No. 632,784

Int. Cl.⁴ C10L *1/22*

U.S. Cl. 44—71 **14 Claims**

1. A fuel composition comprising a major portion of hydrocarbon boiling in the gasoline range, and from 30 to about 10,000 ppm of a quaternized polyoxyalkylene amine salt of molecular weight from about 500 to about 2500, said polyoxyalkylene moiety comprising 1 to 30 oxyalkylene units selected from oxyalkylene units having 2 to 4 carbon atoms, said amine moiety comprising from 1 to about 12 amine nitrogen atoms and from about 2 to 40 carbon atoms, and further comprising a connecting moiety linking said polyoxyalkylene moiety and said amine moiety and wherein the anion of said quaternized polyoxyalkylene amine salts is a halide selected from the group consisting of chloride, bromide, and iodide.

13. A fuel composition comprising a major portion of hydrocarbon boiling in the gasoline range and from 30 to about 10,000 ppm of a fuel additive of the formula:



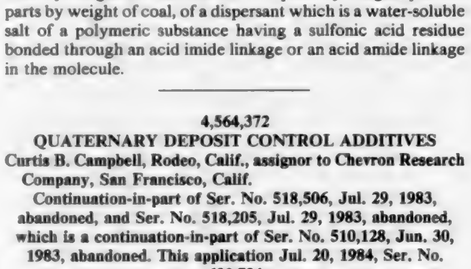
wherein

R=and alkyl group of 5 to 30 carbon atoms, aryl group of 6 to 30 carbon atoms, alkaryl group of 7 to 30 carbon atoms, aralkyl group of 7 to 30 carbon atoms, or methylol-substituted alkyl group of 5 to 30 carbon atoms;

R^{i} and R^{ii} independently=hydrogen, methyl or ethyl;

n=1 to 30;

X=a connecting group selected from the group consisting of:



-continued



where

Z and Z′=H, or an alkyl group of from 1 to 2 carbon atoms;

R^{iii}=a chemical bond, an alkylene or hydroxy-substituted alkylene group of 2 to 12 carbon atoms, or —NH—CH2—CH2)x, where x=1 to 5;

R^{iv} and R^{v} independently=alkyl groups of 1 to 20 carbon atoms, aralkyl group of 7 to 20 carbon atoms, alkaryl group of 7 to 20 carbon atoms, or phenyl;

R^{vi}=alkyl groups of 1 to 20 carbon atoms, aralkyl groups of 7 to 20 carbon atoms, alkaryl groups of 7 to 20 carbon atoms, phenyl, or —NH—CH2—CH2)x, where x=1 to 5;

Y=a halide selected from the group consisting of chloride, bromide or iodide.

4,564,373

METHOD FOR BUBBLE-FREE GAS FEED

Franz J. Schmitz; Rudi Wollbeck, both of Erlenbach, and Wolfgang Klein, Klingenberg, all of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Continuation-in-part of Ser. No. 352,846, Feb. 26, 1982, abandoned. This application Mar. 12, 1982, Ser. No. 357,560

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 3107874

Int. Cl.⁴ B01D *53/22*

U.S. Cl. 55—16 **8 Claims**

1. Method for the bubble-free feed of gaseous reactants of a chemical and/or biological reaction into a liquid reaction medium, comprising filling pores of a porous polymer membrane with the reaction medium and then providing one side of the porous polymer membrane with the gaseous reactants, while immersing the other side of the porous polymer membrane into the liquid reaction medium, with pressure of the gaseous reactants lying below the bubble pressure determined with the reaction medium and being at least so great that the liquid reaction medium does not pass through the porous polymer membrane to the gas side.

4,564,374

DEVICE FOR INCORPORATION IN DENTAL SUCTION APPARATUSES FOR SEPARATION OF LIQUID AND SOLID COMPONENTS

Hans-Joachim Hofmann, Geradstetten, Fed. Rep. of Germany, assignor to Durr-Dental GmbH & Co. KG, Bietigheim, Fed. Rep. of Germany

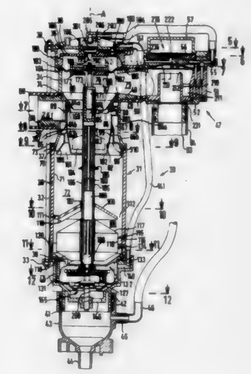
Continuation of Ser. No. 426,274, Jul. 27, 1982, abandoned, which is a continuation of Ser. No. 187,527, Sep. 15, 1980, abandoned, which is a continuation of Ser. No. 56,852, Jul. 12, 1979, abandoned, which is a continuation of Ser. No. 889,855, Mar. 24, 1978, abandoned. This application Sep. 21, 1983, Ser. No. 534,362

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713321

Int. Cl.⁴ B01B *49/12*

U.S. Cl. 55—57 **40 Claims**

1. A separator for incorporation in dental suction apparatus for processing a suction stream, composed of air and liquid and solid materials coming from the mouth of a patient to separate cleaned air from liquid and solid material, said separator comprising a housing, a separation chamber in said housing, an inlet for the suction stream into said separation chamber, an outlet opening for cleaned suction air from said separation chamber, means for continuously applying suction to said outlet opening, means in said separation chamber for separating air from liquid and solid materials of the incoming suction stream, a drainage chamber below said separation chamber, a discharge outlet for liquid-solid discharge from said drainage chamber, means for sensing liquid level in said separation chamber, first valve means between said separation chamber and said drainage chamber, second valve means between said drainage chamber and said discharge outlet and means for controlling said first and second valve means in coordination with one another to



position said first valve normally closed and said second valve normally open during operation of said apparatus and to open said first valve and close said second valve when the liquid in said separation chamber reaches predetermined level to drain liquid and any solids therein from said separation chamber into said drainage chamber while suction continues to be applied to said outlet opening.

4,564,375

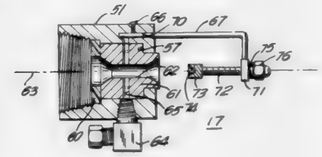
HUMIDIFICATION APPARATUS

Evelyn Munk, and Michael Munk, both of 28 Dorchester Dr., New York, N.Y. 10573

Continuation of Ser. No. 514,887, Jul. 18, 1983, abandoned. This application Feb. 1, 1985, Ser. No. 697,335

Int. Cl.⁴ B01D *50/00*

U.S. Cl. 55—259 **1 Claim**



1. Apparatus for humidifying and evaporatively cooling the air in a room, comprising:

an enclosure having an inlet port for receiving room air;

a fogging chamber in said enclosure, communicating with said input port;

an outlet port communicating with said fogging chamber for returning air to the room;

a circulating fan for creating a draft of air through said inlet port, fogging chamber, and outlet port;

an ultrasonic fogging device disposed in said fogging chamber, the fogging device including: a nozzle having an elongated open-ended passageway formed therein for receiving a supply of compressed air and an opening which communicates with said passageway through which a supply of water can enter the passageway; a parabolic resonator cup spaced from and facing the opening of the nozzle passageway; manually adjustable mounting means for said resonator cup for manu-

ally adjusting the spacing between said resonator cup and the opening of the nozzle passageway; said fogging device being oriented in said fogging chamber such that said spacing is transverse the direction of air circulation through said chamber; and

a filter disposed in said enclosure in the path of the humidified and cooled air from said fogging chamber, said filter containing silica to combine with calcium-containing residue in the humidified air.

4,564,376

FILTER ELEMENT AND METHOD OF MAKING A FILTER ELEMENT

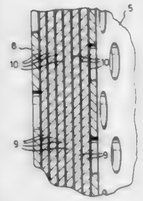
Colin T. Billiet, Durham, England, assignor to Domnick Hunter Filters Limited, Durham, England

Filed Oct. 14, 1983, Ser. No. 542,112

Claims priority, application United Kingdom, Oct. 15, 1982, 8229576

Int. Cl.⁴ B01D *46/00*

U.S. Cl. 55—486 **10 Claims**



1. A filter element comprising substantially coaxial inner and outer relatively rigid, permeable circumferentially continuous cylinders defining therebetween an annular space having a given radial dimension, and a spirally-wound cylindrical filter structure sandwiched in said annular space between said two cylinders, said filter structure comprising a plurality of layers of microporous non-woven borosilicate glass fibre material, each pair of adjacent layers being separated by a layer of strong, fluid-permeable flexible support material, said cylinders being positioned so as to maintain said filter structure under substantially uniform radical compression over the whole of its area, and said filter structure having a wall thickness in uncompressed condition thereof such that the difference between said wall thickness in uncompressed condition and said given radial dimension of said annular space is from 25% to 45% of said wall thickness of said filter structure in uncompressed condition so that said filter structure is compressed from 25% to 40% of its original thickness.

4,564,377

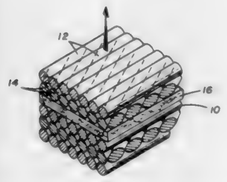
FIBER BED SEPARATOR

Babur M. Kocatas, Clayton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 29, 1984, Ser. No. 626,073

Int. Cl.⁴ B01D *46/10;* **B32B** *5/12*

U.S. Cl. 55—488 **10 Claims**



1. A fiber bed separator for collecting aerosols from a flowing gas stream comprising:

a bed of staple fibers having a diameter from about 5 microns to about 30 microns, and

means producing at least one discontinuity to produce a vertical passage for drainage of collected aerosols within said bed of fibers and to prevent the passage of aerosols from a downstream surface of the bed.

4,564,378

METHOD FOR PRODUCING A PREFORM FOR LIGHT WAVEGUIDES

Max Kuisl, Ulm, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 9, 1984, Ser. No. 578,573

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1983, 3304721

Int. Cl.⁴ C03B *37/01*

U.S. Cl. 65—3.12 **8 Claims**

1. In a method of producing a glasy preform for a light waveguide including depositing a glass forming layer on a tubular substrate disposed in a reaction chamber, and subsequently subjecting said glass forming layer to a heating process to convert said glass forming layer to a glassy layer; the improvement wherein said step of depositing comprises: providing a gaseous mixture of silicon tetrachloride ($SiCl_4$) gas and water vapor; cooling and maintaining said substrate at a temperature between 20° C. and 800° C. while heating said reaction chamber to a temperature of substantially greater than 800° C.; and flowing a stream of said gaseous mixture through the reaction chamber to react said silicon tetrachloride gas with said water vapor to precipitate a glass forming layer of silicon dioxide particles from the reacted gas and water vapor on the cooled substrate.

4,564,379

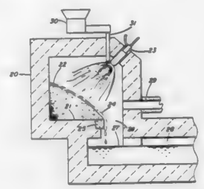
METHOD FOR ABLATING LIQUEFACTION OF MATERIALS

Gerald E. Kunkle, New Kensington, and Joseph M. Matesa, Plum Boro, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 481,970, Apr. 4, 1983, abandoned, which is a continuation-in-part of Ser. No. 288,581, Jul. 30, 1981, Pat. No. 4,381,934. This application Jun. 1, 1984, Ser. No. 616,103

Int. Cl.⁴ C03B *3/00*

U.S. Cl. 65—135 **16 Claims**



1. A method of liquefying a thermally meltable material to produce a molten product comprising:

insulating an interior side wall portion of a vessel encircling a central cavity with a lining of pulverulent material differing from the composition of the material being liquefied by a constituent whose presence is not essential to the final product;

feeding pulverulent material to be liquefied onto an upper inlet portion of the lining;

heating the cavity to partially liquefy the meltable material so that the partially liquefied material flows over the lining and flows freely to a lower outlet where it is drained from the vessel; and

balancing the rate of heating and the rate of feeding additional material onto the lining so as to maintain a stable thickness of the lining sufficient to protect the vessel from undue thermal deterioration.

4,564,380

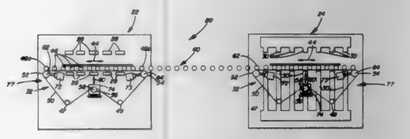
ANTIBACKLASH CONVEYOR DRIVE MECHANISM

Michael T. Fecik; Gary V. Cannon, both of Pittsburgh, and Gayland S. Beresik, Natrona Heights, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1984, Ser. No. 685,019

Int. Cl.⁴ C03B *35/18*

U.S. Cl. 65—163 **20 Claims**



1. A conveyor drive mechanism for driving an article conveyor, comprising:

first, second, and third pulleys spaced apart from each other;

an endless drive loop trained over said first, second, and third pulleys, wherein said drive loop has an active area disposed in driving relationship to said article conveyor;

a means for imparting a first torque of a predetermined magnitude and direction to said first pulley;

a means for imparting a second torque of a predetermined magnitude and a direction opposite to the direction of said first torque, to said second pulley, to impose opposed tensional forces in said active area of said drive loop; and

a means for imparting a drive torque of selected magnitude and direction to said third pulley to thereby impart commensurate rotational motion to said drive loop to drive said article conveyor.

4,564,381

INCREASE OF CARBOHYDRATE ACCUMULATION IN PLANTS BY MEANS OF SUBSTITUTED DERIVATIVES OF PHENOXYALKANOIC ACIDS AND CYCLOHEXANEDIONES

Hermann Bieringer, Eppstein; Helmut Bürstell, Frankfurt am Main; Reinhard Handte, Hofheim am Taunus; Helmut Köcher, Hofheim am Taunus, and Ernst-Friedrich Schulze, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

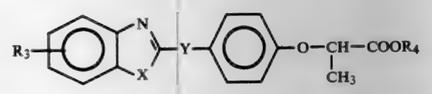
Continuation of Ser. No. 302,189, Sep. 14, 1981, abandoned. This application Oct. 7, 1983, Ser. No. 540,093

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034845

Int. Cl.⁴ A01N *43/76, 43/78*

U.S. Cl. 71—88 **5 Claims**

1. A process for increasing the carbohydrate content of plants which comprises treating the plants within about 1 to 13 weeks before harvest time of said plants with an effective amount of a compound of the formula



in which

Y is —O—,

X is oxygen or sulfur;

R_3 is H, and Cl, and

R_4 is (C_1–C_4)alkyl radical.

4,564,382

PHENOXYALKANOYL DERIVATIVES AND THEIR USE IN PLANT PROTECTION

Rainer Liebl, Gersthofen; Reinhard Handte, Gablingen; Hilmar Mildenberger, Kelkheim; Klaus Bauer, Rodgau, and Hermann Bieringer, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

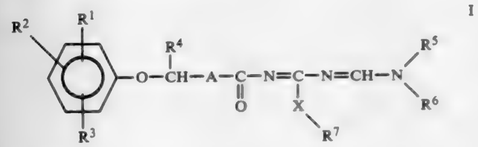
Filed Nov. 8, 1984, Ser. No. 669,762

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340770

Int. Cl.⁴ A01N *43/00, 31/00;* **C07D** *265/30, 211/60*

U.S. Cl. 71—88 **14 Claims**

1. A compound of the formula I



(I)

in which

R^1, R^2 and R^3 independently of one another are hydrogen, F, Cl, Br or (C_1–C_4)-alkyl; and R^1 also is CF_3, CN, NO_2 or COO-(C_1–C_4)-alkyl;

A is a direct bond, —CH_2—CH_2— or —CH=CH—;

X is O, S or NR^8;

R^4 is H or (C_1–C_4)-alkyl;

R^5 and R^6 are identical or different (C_1–C_4)-alkyl radicals;

R^7 is (C_1–C_4)-alkyl, benzyl or phenethyl, the phenyl radicals being unsubstituted or mono- or di-substituted by halogen, CF_3, NO_2 or (C_1–C_4)-alkyl; and

R^8 is H or (C_1–C_4)-alkyl; or

R^7 and R^8, together with the nitrogen atom, denote a pyrrolidine, piperidine, morpholine or piperazine ring, each ring being unsubstituted or substituted by 1 or 2 CH_3 groups.

8. A method of combating harmful plants, which comprises applying a herbicidally active amount of a compound as claimed in claim 1 to the cultivated areas to be treated.

4,564,383

USE OF 4-(HYDROXYIMINOMETHYL)CINNOLINE AND CONGENERS THEREOF FOR CONTROLLING THE GROWTH OF UNWANTED PLANTS

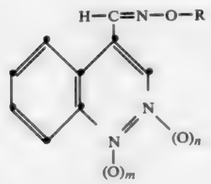
Herbert Estreicher, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 15, 1983, Ser. No. 523,228

Int. Cl.⁴ A01N *43/58*

U.S. Cl. 71—92 **1 Claim**

1. A method for controlling the growth of unwanted plants, which method comprises applying to the foliage of the plants an effective amount of a compound of the formula



(I)

wherein m is zero or one, n is zero or one, R is hydrogen, or contains from one to ten carbon atoms and is alkyl optionally substituted by alkenyl, and salts of the compounds wherein R is hydrogen.

4,564,384

AGRICULTURAL SULFONAMIDES

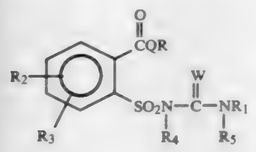
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours And Company, Wilmington, Del.

Division of Ser. No. 452,106, Dec. 22, 1982, which is a division of Ser. No. 98,781, Nov. 30, 1979, Pat. No. 4,394,508, Continuation-in-part of Ser. No. 29,281, Apr. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 15,341, Mar. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 965,070, Nov. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 910,965, May 30, 1978, abandoned. This application Aug. 15, 1983, Ser. No. 523,352

Int. Cl.⁴ A01N *43/54*

U.S. Cl. 71—92 **8 Claims**

1. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of the compound of the formula below, and at least one of the following: surfactant, solid or liquid diluent;



wherein

Q is O;

W is O;

R is C_1–C_4 alkyl;

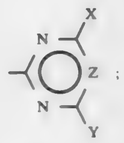
R_2 is H;

R_3 is H;

R_4 is H;

R_5 is H or CH_3;

R_1 is



X is H, CH_3, OCH_3 or OC_2H_5;

Y is H, Cl, CH_3, OCH_3 or OC_2H_5; and

Z is CH.

4,564,385

HERBICIDALLY ACTIVE SUBSTITUTED DIPHENYL ETHER OXIME DERIVATIVES

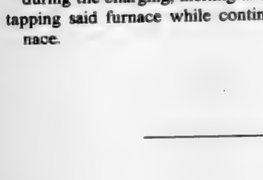
Dennis K. Krass, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 601,460, Apr. 18, 1984, abandoned, which is a continuation-in-part of Ser. No. 373,815, Apr. 30, 1982, which is a division of Ser. No. 136,171, Apr. 15, 1980, Pat. No. 4,344,789, which is a continuation-in-part of Ser. No. 38,043, May 11, 1979, abandoned. This application Jan. 28, 1985, Ser. No. 695,500

Int. Cl.⁴ A01N *37/42*

U.S. Cl. 71—98 **6 Claims**

1. A compound represented by the formula:



wherein:

X and Y are hydrogen or halogen provided that at least one of X or Y is halogen;

Z is nitro, halogen or cyano;

R is hydrogen, halogen, C_1 to C_4 alkyl or haloalkyl, C_1 to C_4 alkoxy or alkylthio, mono or dialkylamino;

R^1 is hydrogen or C_1 to C_4 alkyl;

R^2 is hydrogen or C_1 to C_{10} alkyl, haloalkyl or alkoxyalkyl; and

n is 0, 1, 2 or 3 with the provisos that when R is hydrogen or alkyl, R^1 is hydrogen or methyl, R^2 is hydrogen, alkyl or a salt ion and X and Y are selected from hydrogen or chlorine, then n is 1, 2 or 3.

4. A herbicidal composition containing an inert carrier and a herbicidally effective amount of a compound or mixture of compounds defined in claim **1**.

4,564,386

TRIFLUOROMETHANESULFONANILIDES, AND THEIR PRODUCTION AND USE

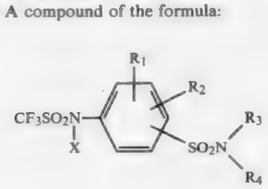
Hiroyuki Konishi; Shunichi Hashimoto, and Hiromichi Oshio, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 404,705, Aug. 3, 1982. This application Aug. 4, 1983, Ser. No. 520,211

Int. Cl.⁴ A01N *41/00*; C07C *143/72*

U.S. Cl. 71—103 **9 Claims**

1. A compound of the formula:



(I)

wherein R_1 and R_2 are, the same or different, each independently a hydrogen atom, a halogen atom or a C_1–C_4 alkyl group, R_3 and R_4 are, the same or different, each independently a hydrogen atom, a C_1–C_4 alkyl group, a C_3–C_6 cycloalkyl group, a C_3–C_4 alkenyl group, a C_3–C_5 alkynyl group, a C_1–C_4 alkoxy group, a C_7–C_8 hydrocarbyl aralkyl group, a C_1–C_4 alkoxy(C_1–C_4)alkyl group or a C_2–C_5 acyl group and X is a C_2–C_5 and acyl group, provided that R_3 and R_4 are not simultaneously a hydrogen atom or a C_2–C_5 acyl group.

4,564,387

WET ZINC DUST ATOMIZATION AND DISTRIBUTION

Nassef E. Ghatas, Valleyfield, and John G. Peacey, Pointe Claire, both of Canada, assignors to Brunswick Mining and Smelting Corporation Limited, Bathurst, Canada

Filed May 13, 1983, Ser. No. 494,310

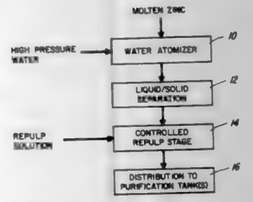
Claims priority, application Canada, Aug. 10, 1982, 409129

Int. Cl.⁴ C22B *19/00*

U.S. Cl. 75—0.5 A **4 Claims**

1. A method for forming from molten zinc a slurry having a concentration of zinc dust suitable for use in purifying zinc-containing solutions for electrolytic zinc plant operations, said method comprising the steps of:

(a) atomizing molten zinc into a slurry with a high pressure aqueous medium at a pressure higher than 1000 psi so as to produce zinc dust particles having a particle size of at least 70% passing 100 mesh and a surface area of irregular shape, said surface area being substantially larger per unit weight than the surface area of substantially spherical particles of the same particle size;



(b) performing a liquid/solid separation on the slurry for removing water from the zinc dust slurry to concentrate the slurry so that the water balance in the plant is controlled; and

(c) adding a zinc sulfate solution to said concentrated slurry to dilute said concentrated slurry at said concentration of zinc dust suitable for introduction into said electrolytic zinc plant operation.

4,564,388

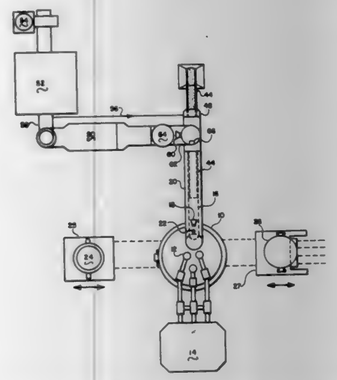
METHOD FOR CONTINUOUS STEELMAKING

John A. Vallomy, Charlotte, N.C., assignor to Intersteel Technology, Inc., Matthews, N.C.

Continuation-in-part of Ser. No. 636,944, Aug. 2, 1984. This application Apr. 5, 1985, Ser. No. 720,225

Int. Cl.⁴ C21C *7/00*

U.S. Cl. 75—12 **23 Claims**



1. A method for the continuous refining of steel, comprising:

segregating iron-bearing scrap according to its composition;

preheating said scrap;

feeding said iron-bearing scrap, direct reduced iron, or a mixture thereof to an electric powered steelmaking furnace for melting and refining therein;

feeding slag formers to the steelmaking furnace;

introducing carburizers into the steelmaking furnace;

heating the charge electrically to melt the charge and form a molten metal bath within the furnace with a molten slag layer on said molten metal bath;

maintaining said slag in a foaming condition during the steel making process;

continuously feeding metallics, slag formers, and carburizers to said furnace;

maintaining full electric power to said furnace at all times during the charging, melting and refining operations; and tapping said furnace while continuously feeding said furnace.

4,564,389

PROCESS FOR COAL-GASIFICATION AND MAKING PIG IRON

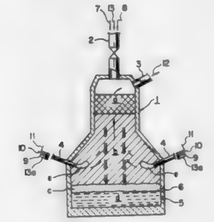
Hideyuki Yamaoka, Chiba; Michiharu Hatano, Sawara; Tomio Miyazaki, Hasaki; Teruhisa Shimoda, Itako, and Koji Oki, Omigawa, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 372,147, Apr. 27, 1982, abandoned. This application Jun. 6, 1984, Ser. No. 617,912

Claims priority, application Japan, Jun. 10, 1981, 56-89275; Jun. 22, 1981, 56-96390; Dec. 28, 1981, 56-209851; Apr. 2, 1982, 57-53703

Int. Cl.⁴ C21B *11/00*

U.S. Cl. 75—38 **30 Claims**



1. A process for the production of pig iron and the gasification of fuel which comprises:

(a) providing a furnace with a shaft-like furnace main;

(b) providing a static coke-filled bed packed substantially with coke of lump form within the furnace main, the coke-filled bed containing voids;

(c) charging unmolten reduced iron on the top of the coke-filled bed to form a melting section of a stock borne thereon;

(d) providing fuel comprising primarily carbon and hydrogen to the lower region of the said coke-filled bed;

(e) supplying a gas primarily comprising oxygen to said lower region of the said coke-filled bed through at least one tuyere,

(f) burning and gasifying the fuel in the lower region of the coke-filled bed by means of combustion with oxygen to thereby generate a reducing hot gas comprised of primarily carbon monoxide and hydrogen;

(g) allowing said reducing hot gas to ascend through the voids of the coke-filled bed and melt the reduced iron in said melting section by the sensitive heat of the reducing hot gas, with the resulting molten iron and iron oxide-containing slag flowing down through the voids of the coke-filled bed in countercurrent relationship to the ascending hot gas, while having the iron oxide reduced by the coke with the carbon in said coke dissolving in said molten iron to thereby convert the molten iron into molten pig iron,

(h) recovering the hot gas, and

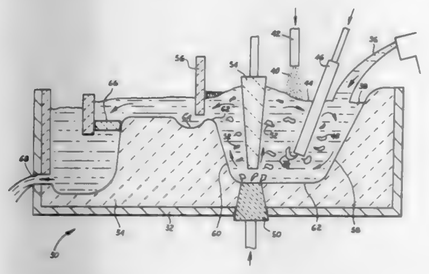
(i) discharging the pig iron and slag from the lowermost region of the furnace upon collecting same therein.

4,564,390

DECARBURIZING A METAL OR METAL ALLOY MELT

Debabrata Gupta, New Haven, and John C. Yarwood, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 21, 1984, Ser. No. 684,775
Int. Cl.⁴ C21C *7/00*
U.S. Cl. 75—51.7 **21 Claims**



1. A process for decarburizing a melt of metal or metal alloy, comprising the steps of:
(a) providing a melt comprising metal or metal alloy, carbon, and at least one oxide forming metallic alloying element;
(b) reducing the carbon content of the melt from an initial value of about 0.1 wt % carbon to an a final value of not less than about 0.003 wt % carbon by:
i. contacting the metal or metal alloy melt with a reactive oxide of said metallic alloying element; and
ii. simultaneously stirring said melt by injecting an inert gas below the surface of the melt.

4,564,391

METHOD FOR THE RECOVERY OF SILVER FROM SILVER ZEOLITE

George A. Reimann, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 5, 1985, Ser. No. 708,618
Int. Cl.⁴ C22B *11/00*
U.S. Cl. 75—63 **10 Claims**

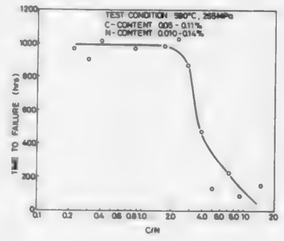
1. A method for recovering silver from silver exchanged zeolite comprising:
determining the weight of refractory aluminosilicate in the silver exchanged zeolite,
mixing with the silver exchanged zeolite, based on the weight of the aluminosilicate, from about 15 to 25 weight percent Na_2O, from about 2 to 6 weight percent B_2O_3, and 6 to 15 weight percent of one or more selected from the group of CaF_2 and NaF to form a mixture,
heating the mixture to a temperature sufficient to melt the mixture, forming a melt of molten slag, molten silver, and metallic impurities,
maintaining the temperature for a period of time sufficient for the molten silver to separate from the slag,
cooling the mixture, and
separating the silver containing the impurities from the slag thereby recovering the silver from the silver exchanged zeolite.

4,564,392

HEAT RESISTANT MARTENSITIC STAINLESS STEEL CONTAINING 12 PERCENT CHROMIUM

Tateo Ohhashi; Hideyuki Kawamoto, and Yutaka Murakami, all of Hokkaido, Japan, assignors to The Japan Steel Works Ltd., Tokyo, Japan

Filed Jul. 19, 1984, Ser. No. 632,174
Claims priority, application Japan, Jul. 20, 1983, 58-130773
Int. Cl.⁴ C22C *38/44, 38/46*
U.S. Cl. 75—128 V **7 Claims**



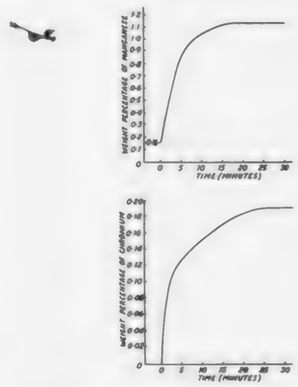
1. A heat resistant martensitic stainless steel consisting of, in weight percent, 0.05% to 0.12% carbon, not more than 0.5% silicon, not more than 1.5% manganese, not more than 1.5% nickel, 9.0 to 13.0% chromium, and 0.5 to 2.0% molybdenum, 0.05 to 0.50% vanadium and not more than 0.15% nitrogen, the balance being iron and impurities, and the weight ratio of carbon to nitrogen (C/N) being not more than 3:1.

4,564,393

INTRODUCING ONE OR MORE METALS INTO A MELT COMPRISING ALUMINUM

Peter Murray, and David Slinn, both of Rotherham, England, assignors to Shieldalloy Corporation, Newfield, N.J.

Filed Dec. 22, 1982, Ser. No. 452,112
Claims priority, application United Kingdom, Dec. 23, 1981, 8138667
Int. Cl.⁴ C22B *21/06*
U.S. Cl. 75—256 **40 Claims**



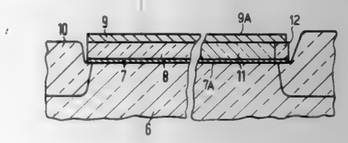
1. An additive composition for introducing at least one additive material into a melt comprising aluminum, the additive composition consisting of as essential ingredients an intimate admixture containing the following components:
(a) a metallic aluminum-comprising powder;
(b) a powder of at least one additive metallic material to be introduced into the said melt selected from the group consisting of metallic manganese, chromium, tungsten, molybdenum, titanium, vanadium, iron, cobalt, copper, niobium, tantalum, zirconium, hafnium, silver and alloys thereof; and
(c) a flux component selected from the group consisting of potassium aluminum fluoride (potassium cryolite), potassium chloride, potassium fluoride, sodium chloride, sodium fluoride, sodium carbonate, and admixtures thereof.

4,564,394

PREVENTING LATERAL OXIDE GROWTH BY FIRST FORMING NITRIDE LAYER FOLLOWED BY A COMPOSITE MASKING LAYER

Egon Bussmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 630,103
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3329074
Int. Cl.⁴ H01L *21/22, 21/265*
U.S. Cl. 148—1.5 **1 Claim**



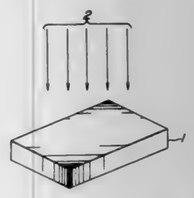
1. In an improved process for producing a semiconductor layer arrangement utilizing the so called LOCOS or isoplanar procedure wherein a first nitride layer is applied to a silicon substrate and is then covered either by (a) a combination layer structure of interventing silicon oxide layers and then a second nitride layer, or (b) by a polysilicon layer structure, either of such layer structures being suitable as a masking for a subsequently applied field oxide structure, the improvement which comprises in combination:
applying said first nitride layer in a thickness less than about 50 nm under low pressure conditions,
implanting into said first nitride layer nitrogen,
applying over said so implanted nitride layer an intermediate layer selected from the group consisting of silicon oxide and polysilicon, and thereafter
covering said intermediate layer with a further layer comprised of silicon nitride.

4,564,395

METHOD FOR PRODUCING AMORPHOUS METALS

Hirotaro Mori, Suita, and Hiroshi Fujita, Ibaraki, both of Japan, assignors to Osaka University, Suita, Japan

Filed Mar. 2, 1984, Ser. No. 585,912
Claims priority, application Japan, Jul. 16, 1983, 58-128709
Int. Cl.⁴ C22F *3/00*
U.S. Cl. 148—4 **1 Claim**



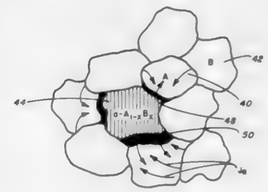
1. A method for converting at least the surface of an intermetallic compound selected from the group consisting of NiTi, Fe_2Ti, Zr_2Al, CuZr, Cu_3Ti_2, Co_2Ti, $CU_{10}Zr_7$, Zr_2Ni, Nb_7Ni_6, NoNi, Mn_2Ti, CuTi, V_3Si and iron-zirconium into an amorphous metal comprising the steps of:
(a) irradiating said intermetallic compound with an electron beam having a flux density not exceeding approximately 1.3×10^{24} e/m²-sec, the energy of said electron beam being sufficient to introduce a lattice defect into said intermetallic compound;
(b) heating said intermetallic compound to a temperature not exceeding approximately 290° K.; and
(c) maintaining said electron beam irradiation for at least approximately 60 seconds until at least the surface of said intermetallic compound has been converted into an amorphous metal.

4,564,396

FORMATION OF AMORPHOUS MATERIALS

William L. Johnson, Pasadena, Calif., and Ricardo B. Schwarz, Westmont, Ill., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jan. 31, 1983, Ser. No. 462,441
Int. Cl.⁴ C23C *8/00*
U.S. Cl. 148—4 **14 Claims**



1. A method of forming metastable solid, amorphous materials comprising the steps of:
contacting a solid material with a second substance;
heating the substance and the solid material to a temperature above the temperature at which the diffusion rate of the substance into the solid material to react with a component of solid material to form a metastable solid material is at least 10^4 times the rate of self-diffusion of a component of the solid material; and
reacting the substance and the solid material at a temperature no more than 25° C. above the glass crystallization temperature of the metastable, solid amorphous material for a time sufficient for the substance to diffuse a predetermined distance through the solid material to form said metastable solid, amorphous material.

4,564,397

COMPOSITION AND PROCESS FOR INHIBITING CORROSION OF FERROUS OR NON-FERROUS METAL SURFACED ARTICLES AND PROVIDING RECEPTIVE SURFACE FOR SYNTHETIC RESIN COATING COMPOSITIONS

Ross C. Opsahl, Roselle, Ill., assignor to J. N. Eltzroth & Associates Inc., Palatine, Ill.

Filed Jun. 21, 1984, Ser. No. 622,993
Int. Cl.⁴ C23F *7/10*
U.S. Cl. 148—6.15 R **13 Claims**

1. A process of passivating the surfaces of ferrous and nonferrous metals which have a coating of zinc phosphate, iron phosphate or manganese-iron phosphate which comprises rinsing said coated surfaces with an aqueous solution of urea, an acidulated urea, or a compound containing a urea moiety in sufficient amount and under conditions so as to form a resistant barrier on said surfaces and coating said corrosion resistant barrier with a synthetic resinous coating composition.

4,564,398

OPTIMIZED PHOTOVOLTAIC EFFECT

R. Gilbert Kaufman, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 11, 1985, Ser. No. 690,671
Int. Cl.⁴ H01L *31/00*
U.S. Cl. 148—6.31 **20 Claims**

1. A process for the production of an optimized photovoltaic film of cuprous oxide on copper metal by the oxidation of copper at an elevated temperature, comprising the steps of:

(a) providing a metallic copper foil having a thickness no greater than about 0.005 inch;

(b) oxidizing the copper foil in the presence of an oxygen-containing gas at a temperature within the range from about 900° C. to about 1100° C. to provide a surface film layer of cuprous oxide;

(c) thereafter heat treating the oxidized copper foil at a temperature within the range from about 300° to about 700° C. in a substantially oxygen-free inert gas atmosphere; and

(d) quenching the heat treated, oxidized copper foil to substantially ambient temperature.

4,564,399

AMORPHOUS ALLOY FOR MAGNETIC HEAD AND MAGNETIC HEAD WITH AN AMORPHOUS ALLOY

Hiroshi Tateishi, Zushi, and Susumu Hashimoto, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 24, 1984, Ser. No. 573,379
Claims priority, application Japan, Jul. 26, 1983, 58-136608
Int. Cl.⁴ C04B *35/00*
U.S. Cl. 148—31.55 **8 Claims**

1. An amorphous alloy for a magnetic head which, upon gradual cooling from a temperature of 500° C. at a speed of 3° C./minute, exhibits a minimum magnetic permeability above 350 at 5 MHz, and a coercivity maximum of 0.05 Oe, comprising a formula represented as follows:

$$Co_{100-T-X-Y-Z}Re_THf_XB_YSi_Z,$$

where T, X, Y and Z respectively represent the atomic densities of elements Re, Hf, B and Si, and satisfy the following inequalities of formulae (1) to (5), as follows:

$$0.2 \leqq T \leqq 6 \quad (1)$$

$$6 \leqq X \leqq 15 \quad (2)$$

$$3 \leqq Y \leqq 14 \quad (3)$$

$$0 \leqq Z \leqq 11 \quad (4)$$

$$0.5 \leqq X/(X+Y) \leqq 5/6 \quad (5).$$

4,564,400

METHOD OF IMPROVING MAGNETS

Kalatur S. V. L. Narasimhan, Monroeville, and Charles D. Preusch, Pittsburgh, both of Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 262,270, May 11, 1981, abandoned. This application Mar. 8, 1984, Ser. No. 587,412
Int. Cl.⁴ H01F *1/02*
U.S. Cl. 148—103 **14 Claims**

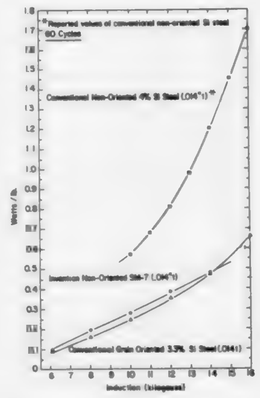
1. A method for improving the remanence of magnets produced by consolidating a particle charge of a transition metal-rare earth alloy to form a magnet article, said method comprising applying a magnetic field to said particle charge within a container to magnetically align said particles, said magnetic field being applied as a plurality of pulses with each said pulse having a duration not exceeding one second and a power level of at least 50,000 oersted and thereafter consolidating said particle charge to a final density.

4,564,401

METHOD FOR PRODUCING IRON-SILICON ALLOY ARTICLES

George A. Strichman, New Rochelle, N.Y.; Edward J. Dulis, Pittsburgh; Kalatur S. V. L. Narasimhan, Monroeville, both of Pa., and Thomas Lizzi, Zelienople, Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Filed Sep. 29, 1983, Ser. No. 537,135
Int. Cl.⁴ H01F *1/02*
U.S. Cl. 148—104 **19 Claims**



1. A method for producing iron-silicon alloy articles having an improved combination of hot-workability and electrical properties, particularly resistivity, said method comprising producing a molten alloy mass of an iron-silicon alloy from which said article is to be made, gas atomizing said molten alloy mass to form prealloyed particles, rapidly cooling to solidify said particles, hot compacting said particles to form a fully dense article and hot rolling said fully dense article to form sheet.

10. A method for producing an iron-silicon alloy laminate suitable for use in the manufacture of a transformer core, said method comprising producing a molten alloy mass of an iron-silicon alloy from which said laminate is to be made and having a silicon content within the range of 5 to 10% by weight, gas atomizing said molten alloy to form prealloyed particles, cooling to solidify said particles at a cooling rate of about 100° to 100,000° C. per second, hot compacting said particles to form a fully dense article and hot rolling said article to form a sheet.

4,564,402

METHOD FOR PREVENTING DISBONDING OF WELD-CLADDING

Norio Morishige, Yokosuka, and Ryoichi Kume, Yokohama, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1984, Ser. No. 642,789
Claims priority, application Japan, Aug. 25, 1983, 58-155449
Int. Cl.⁴ C21D *1/78*
U.S. Cl. 148—127 **3 Claims**

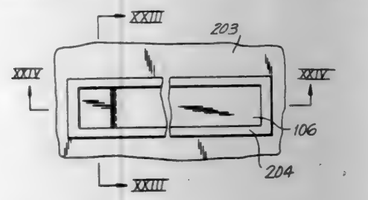
1. A method for preventing, during cooling to room temperature, hydrogen-induced exfoliation of austenitic stainless steel from a cladding of said stainless steel welded to the inside of a steel reaction vessel, after exposure to a reaction under high temperature and high pressure hydrogen atmosphere, comprising subjecting a reaction vessel having an austenitic stainless steel cladding which would exfoliate if cooled directly to room temperature, to cooling to an initial temperature of not lower than 100° C., maintaining said vessel at such temperature for a time sufficient to expel hydrogen from said steel, and thereafter further cooling said vessel.

4,564,403

SINGLE-CRYSTAL SEMICONDUCTOR DEVICES AND METHOD FOR MAKING THEM

Yoshinari Hayafuji; Akashi Sawada; Setsuo Usui, and Akikazu Shibata, all of Yokohama, Japan, assignors to Sony Corporation Research Center, Yokohama, Japan

Filed Jan. 27, 1984, Ser. No. 574,571
Int. Cl.⁴ H01L *21/208*
U.S. Cl. 148—171 **8 Claims**



1. A method of making a large, single-crystal semiconductor article, comprising the steps of:

providing a wafer including a substrate having thereon a seed layer of polycrystalline or amorphous material;

exposing a region of said seed layer to a beam of electrons to melt said region;

solidifying said molten region from one end of said region in a first direction and outwardly toward the edges of said region in a second direction substantially normal to said first direction for forming a seed comprising substantially a single crystal in said region; and

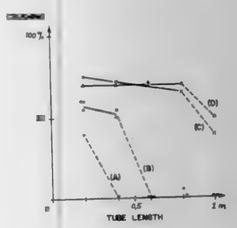
scanning an operating layer of polycrystalline or amorphous material on said substrate in contact with said seed with a beam of electrons having a strip-like configuration by moving said wafer and said beam relative to each other in said second direction to remelt a portion of said seed and to create a molten zone in said operating layer that recrystallizes substantially as a single crystal by lateral epitaxial recrystallization from said seed.

4,564,404

INERT PASTE OF THE NITRATE-FUEL TYPE, EXPLOSIVE PRODUCT OBTAINED THEREFROM BY THE INCORPORATION OF AIR AND PROCESSES OF MANUFACTURE THEREOF

Jacques M. Frémaux, Haisnes, France, and Hans W. Ehrlich, Colchester, United Kingdom, assignors to Societe Anonyme d'Explosifs et de Produits Chimiques, France

Filed Dec. 9, 1983, Ser. No. 559,758
Claims priority, application France, Dec. 10, 1982, 82 20786
Int. Cl.⁴ C06B *45/02*
U.S. Cl. 149—21 **11 Claims**



1. Inert, stable and pumpable paste of the water-nitrate-fuel type, said paste being non explosive in itself and not containing a sensitizing amount or form of air, said paste containing: (% by weight)

water	10.00	14.5
ammonium nitrate	84.75	79.65
fuel	4.00	4.39
hydration gums	0.51	1.13
cross linking agent (self cross-linking gum)	0.02	0.06(200–600 ppm)
surface-active agent	0.22	0.44
solvent for the surface active agent	0.11	0.22

4,564,405

PYX PURIFICATION TECHNIQUE

Robert G. Pallanck, Stafford Springs, Conn., assignor to Ensign-Bickford Industries, Inc., Simsbury, Conn.

Filed Jun. 13, 1984, Ser. No. 620,181
Int. Cl.⁴ C06B *45/02*
U.S. Cl. 149—21 **17 Claims**



1. A process for synthesizing crystals of 2,6-bis(picrylamino)-3,5-dinitropyridine, the process comprising the steps of:

(a) dissolving 2,6-bis(picrylamino)-3,5-dinitropyridine in dimethyl sulfoxide to form an adduct of 2,6-bis(picrylamino)-3,5 dinitropyridine and dimethyl sulfoxide;

(b) cooling the resultant solution to obtain a slurry of dimethyl sulfoxide and 2,6-bis(picrylamino)-3,5 dinitropyridine adduct;

(c) filtering the slurry to remove excess dimethyl sulfoxide; and

(d) dissociating the dimethyl sulfoxide and 2,6-bis(picrylamino)-3,5 dinitropyridine adduct to form particles of 2,6-bis(picrylamino)-3,5 dinitropyridine.

4,564,406

METHOD OF AND MEANS FOR COMBINATION DESIGN TRANSFER AND APPLICATION OF HEAT REACTIVATABLE ADHESIVE

Chester J. Binks, LaGrange, Ill., assignor to Solar-Kist Corporation, LaGrange, Ill.

Filed Feb. 21, 1984, Ser. No. 581,803
Int. Cl.⁴ B32B *31/10*
U.S. Cl. 156—63 **15 Claims**

1. A method of appliquéing, comprising:

supplying a self-supporting dry sheet of heat reactivatable adhesive;

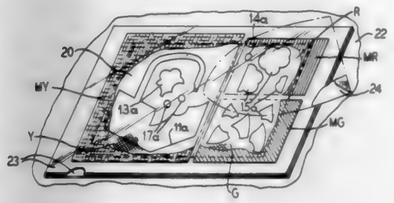
imprinting an appliqué design pattern onto said sheet;

providing appliqué material;

placing said adhesive sheet with said design pattern thereon

onto the back of said appliqué material in assembly therewith;

fusing and laminating said adhesive sheet with said appliqué design pattern thereon onto the back of said appliqué material, and thereby transferring said design pattern by



said laminating of the adhesive sheet onto said appliqué material;

trimming out of said material an appliqué piece in accordance with the transferred appliqué design pattern;

and bonding said piece to a base panel by reactivating the adhesive lamina on the piece.

4,564,407

MANUFACTURING METHOD AND MANUFACTURING EQUIPMENT FOR PLASTIC AIR CELL CUSHIONING MATERIAL

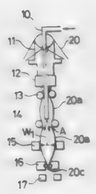
Orihiro Tsuruta, Tomioka, Japan, assignor to Orihiro Co., Ltd., Japan

Filed Apr. 16, 1984, Ser. No. 600,492

Claims priority, application Japan, Nov. 11, 1983, 58-210951

Int. Cl.⁴ B29D *23/00*

U.S. Cl. 156—147 **2 Claims**



1. A method for manufacturing cushioning material consisting of air-filled plastic cells, which comprises the following sequential steps:

(a) forming a single sheet of plastic film into a cylindrical shape;

(b) fusion bonding said cylindrical shape along the entire longitudinal edges thereof to form a cylindrical body;

(c) advancing downwardly said cylindrical body while concurrently fusion bonding the leading end of said body transversely to the downward direction of movement of said body;

(d) introducing air into the open end of said cylindrical body;

(e) intermittently restricting the expansion of said cylindrical body with at least one pair of forming plates transversely to the direction of movement of the body;

(f) fusion bonding said cylindrical body at predetermined distances from said fusion bonded lead end to form individual, air filed cells in a sequential manner.

4,564,408

PROCESS AND DEVICE FOR COVERING A LENS PREFORM WITH A PROTECTIVE SHEET

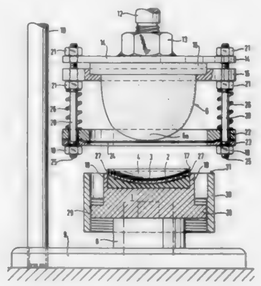
Richard Crumbach, Aachen; Heinz-Josef Schilde, Wuerselen, and Helmut Tiedemann, Baesweiler, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Aubervilliers, France

Filed May 25, 1984, Ser. No. 614,037

Claims priority, application France, May 25, 1983, 83 08580

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 156—212 **15 Claims**



1. A process for covering a concave face of a lens perform with a transparent plastic covering sheet of transparent plastic, said process comprising the steps of:

positioning said covering sheet over said lens concave face;

superimposing an elastic membrane over said sheet; and

using an elastic pressing element to press said elastic membrane onto said covering sheet and said lens concave face until said entire lens concave surface is homogeneously contacted by said covering sheet, whereby air between said covering sheet and said lens face is eliminated, wherein said pressing step is performed such that said membrane first contacts an entire peripheral edge of said preform and said elastic pressing element subsequently applies pressure to a central portion of said membrane and covering sheet, said pressure being progressively applied in a radially outward direction as said pressing element is applied to said membrane and covering sheet.

4. An apparatus for covering a concave face of a lens preform with a transparent plastic covering sheet, comprising:

a frame;

a die upon which said preform is positioned with said concave face facing upward, said die being mounted on said frame;

a support plate mounted on said frame for movement toward and away from said lens preform;

a convexly curved pressing element fixed to said support plate above said lens preform, whereby said pressing element is movable toward and away from said concave face;

retaining ring means supported by said support plate; and

a normally planar elastic membrane fixed to said retaining ring means and movable toward and away from said concave face with said pressing element, and positioned between said pressing element and said concave face, whereby said membrane presses a peripheral edge of said lens preform when said support plate is moved toward said concave face and prior to contact between said membrane and a central position of said preform due to pressing by said pressing element.

4,564,409

PLANAR CARD MADE OF A THERMOPLASTIC MATERIAL HAVING VISUALLY RECOGNIZABLE SAFETY MARKINGS AND METHOD OF MANUFACTURING SUCH CARD

Adolf Kuhl, Oberrieden, Switzerland, assignor to Orell Fussli Graphische Betriebe AG, Zurich, Switzerland

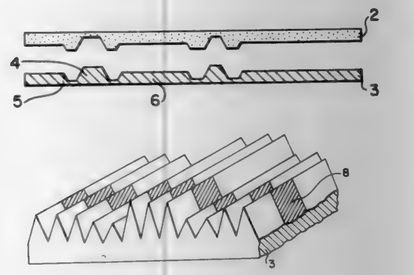
Division of Ser. No. 350,540, Feb. 19, 1982, Pat. No. 4,506,916.

This application Jan. 10, 1985, Ser. No. 690,511

Claims priority, application Switzerland, Mar. 3, 1981, 1421/81

Int. Cl.⁴ B32B *31/00;* **B29C** *65/00;* **B28B** *11/08;* **F16L** *7/00*

U.S. Cl. 156—219 **5 Claims**



1. A method of manufacturing a card of a thermoplastic material having planar surfaces and visually recognizable, internal safety markings comprising the steps of embossing a relief structure into an inner surface of a first sheet of transparent thermoplastic material by means of a first embossing mold; embossing a complementary relief structure into an inner surface of a second sheet of opaque thermoplastic material by means of a second embossing mold complementary to the first embossing mold; and laminating said first and second sheets upon each other with their inner surfaces contacting each other to to form an interface, and thereby providing an inseparable body with planar surfaces and an inner relief, whereby though said card said relief structure is visually recognizable as a varying brightness due to varying light absorption of the transmitted light in the opaque sheet.

4,564,410

ADHESIVE APPLICATION APPARATUS

Derek P. Clitheros, Newport Pagnell; David A. Livingstone; David B. Roberts, both of Luton, and Roland Cawthorne, Harpenden, all of England, assignors to General Motors Corporation, Detroit, Mich.

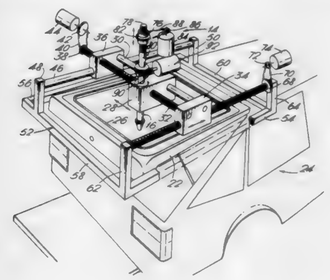
Filed Jun. 28, 1984, Ser. No. 625,454

Claims priority, application United Kingdom, Jul. 2, 1983, 8318038

Int. Cl.⁴ B05C *16/00*

U.S. Cl. 156—356 **6 Claims**

1. An adhesive application apparatus for applying a continuous strip of extrudable adhesive material to the periphery of either a window opening in a motor vehicle or a pane of glass sized to cover said window opening, said apparatus comprising a pressurized supply means connected to a source of said adhesive, the pressurized supply means including a reservoir which contains at least sufficient of said extrudable adhesive material for applying around the entire periphery of said window opening or pane of glass, which reservoir is emptied at a predefined rate during application of said adhesive material to said periphery, and is automatically refilled with adhesive material from a bulk reservoir when said application is not occurring; a dispensing means including an angularly movable nozzle having a tip alignable with said periphery and having a truncated conical-shaped opening across the tip thereof through which the adhesive material is extruded in a strip of predetermined cross-sectional shape upon movement of the nozzle along said periphery with the truncated conical-shaped opening moving parallel to said periphery, said nozzle being movably mounted within a stationary rigid framework surrounding said periphery, said dispensing means being in fluid connection with said pressurized supply means and being movable relative to said rigid framework by drive means, said drive means including three separate drive motors for controlling the movement of said dispensing means relative to said rigid framework in three dimensions all mutually at right angles to one another, each drive motor controlling said movement in one linear dimension, and a fourth drive motor controlling angular movement of said nozzle with respect to said periphery as the nozzle moved around each corner of said window opening or said pane of glass; and a computer numerical control system connected to both the pressurized supply means and said drive means, said computer numerical control system being operable by a predetermined program to exert full automatic control over the pressurized supply means and the drive means so that, when the apparatus is in operation, a predefined quantity of said strip of adhesive material is extruded at said predefined rate from said nozzle on to said periphery, the nozzle of the dispensing means is caused to accurately follow said periphery, and all four of said drive motors are under full positional and speed control exerted by said computer numerical control system with said fourth drive motor particularly controlling angular movement of the nozzle to assure the extrusion of a strip or adhesive material of predetermined cross-sectional area along the periphery and around the corners by maintaining a parallel orientation of said truncated conical-shaped opening with said periphery.



4,564,411

APPARATUS FOR PRODUCING LABELS

Joseph C. Holzer, Liverpool, N.Y., assignor to Gaylord Bros., Inc., Liverpool, N.Y.

Filed Dec. 13, 1983, Ser. No. 560,843

Int. Cl.⁴ B41J *15/16, 15/22, 15/24*

U.S. Cl. 156—387 **39 Claims**

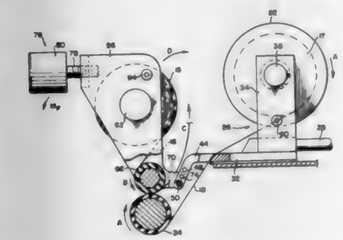
1. An apparatus for producing laminated labels used in combination with a conventional typewriter or printer, the apparatus comprising:

(a) means for rotatably mounting a spool of transparent overlay-tape material having an adhesive surface;

(b) means for rotatably mounting a spool of base-tape material having a printable surface and an opposite protected adhesive surface, said base-tape material mounting means including means for adjustably applying tension against the base-tape material spool independent of said overlay-tape material spool;

(c) friction-feed, pressure-loaded roller means associated with the print head of the typewriter or printer for pulling without slippage the overlay-tape material and the tensioned base-tape material into and through the roller

means at a constant surface speed therebetween and for pressing the adhesive surface of said overlay-tape material into intimate fixed contact with the printable surface of said base-tape material, said roller means including a drive roller, a frictionally surface driven, pressure-loaded feed roller having an outer compressible surface acting against the drive roller, and means for adjusting the friction-force



and pressure-load of said surface-driven feed roller against said drive roller to apply the appropriate material pulling force according to the drive force of the conventional typewriter or printer with which the apparatus is used; and

(d) means for mounting the roller means adjacent the print head of a conventional typewriter or printer for the roller means to receive the printed base-tape material therefrom.

4,564,412

METHOD OF AND APPARATUS FOR APPLYING SEAL STAMPS

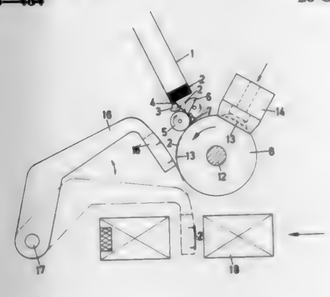
Manfred Oberdorf, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Oct. 26, 1984, Ser. No. 665,361

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339555

Int. Cl.[4] B65C *1/06, 9/10, 9/22*

U.S. Cl. 156—484 **20 Claims**



1. Apparatus for the affixation of stamps to moving articles comprising:

magazine means for receiving and temporarily storing a plurality of stamps;

means for extracting stamps from said magazine;

means for applying an adhesive to a first side of the extracted stamps, said adhesive applying means including:

means defining a generally cylindrically shaped adhesive transfer roller, said roller defining means having a plurality of discrete coaxial surface portions, at least some of said portions being provided with suction ports in the radially outwardly facing surface thereof for connection to a low pressure source and the other of said surface portions being provided with depressions in the radially outwardly facing surface thereof for receiving quantities of adhesive; and

adhesive supply means, said adhesive supply means including a plurality of adhesive delivery channels equal in number to and having a width complementary to said other portions of said roller defining means, an adhesive being supplied to said delivery channels, said adhesive supply means being positioned such that said other roller defining means portions cooperate with said channels during rotation of said transfer roller whereby adhesive will be delivered to said depressions in said roller defining means other portions, said adhesive supply means being located before said extraction means in the direction of rotation of said adhesive transfer roller defining means, said extraction device delivering the stamps to said transfer roller defining means whereby the stamps will be held by the low pressure applied to the suction ports of said some of said surface portions and adhesive will be transferred thereto from the depressions in the other of said surface portions; and

means for conveying stamps from said adhesive applying means to articles which are moving along a path, said conveying means having a pair of spacially displaced arms, simultaneous movement of said arms causing portions thereof to be substantially tangential to said roller defining means surface portions at the points of closest approach therebetween, the stamps being attracted to said arms and being removed from said adhesive applying means transfer roller defining means, said removed stamps being conveyed into position in registration with said path whereby articles moving along said path will contact the side of the stamps having adhesive thereon as the articles pass between said arms.

4,564,413

SHEET SPLICER

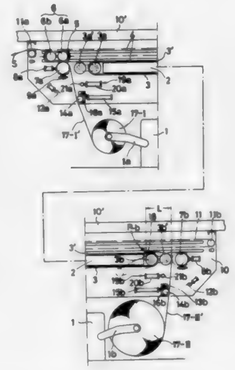
Tamotsu Murakami, Mishima, Japan, assignor to Shizuoka Kogyo Company, Ltd., Fuji, Japan

Filed Jun. 1, 1984, Ser. No. 616,242

Claims priority, application Japan, Sep. 27, 1983, 58-177008

Int. Cl.[4] B65H *19/18, 19/20*

U.S. Cl. 156—504 **20 Claims**



10. Sheet splicing apparatus, comprising:

a first sheet roll from which a first web of material is being unrolled and conveyed;

a second sheet roll from which a second web of material can be unrolled so as to have a leading edge portion thereof spliced to a trailing edge portion of said first web of material when said first web of material disposed upon said first sheet roll is about to be depleted;

a first roll disposed within the vicinity of said first sheet roll;

a second roll disposed within the vicinity of said second sheet roll;

roller means cyclically movable between said vicinity of said first and second sheet rolls for cyclically cooperating with said first and second rolls in defining a first nip through which said trailing edge portion of said first web of material can be conveyed upon nearing depletion thereof, and a second nip through which a trailing edge portion of said second web of material can be conveyed upon nearing depletion thereof;

adhesive means provided upon said leading edge portion of said second web of material for permitting said leading edge portion of said second web of material to be secured to said trailing edge portion of said first web of material whereby said first and second webs of material can be spliced together; and

cyclically movable conveyor belt means for transporting said leading edge portion of said second web of material from within the vicinity of said second sheet roll into said first nip defined between said roller means and said first roll disposed within said vicinity of said first sheet roll whereby said leading edge portion of said second web of material is spliced to said trailing edge portion of said first web of material within said nip defined between said roller means and said first roll by said adhesive means provided upon said leading edge portion of said second web of material, and for transporting a leading edge portion, having adhesive means thereon, of a third web of material disposed upon a third sheet roll, which has replaced said first sheet roll upon said depletion thereof, from within the vicinity previously containing said first sheet roll into said second nip defined between said roller means and said second roll disposed within said vicinity of said second sheet roll whereby said leading edge portion of said third web of material is spliced to said trailing edge portion of said second web of material within said nip defined between said roller means and said second roll by said adhesive means provided upon said leading edge portion of said third web of material.

4,564,414

MAGNETIC DEVICES, APPARATUS FOR USE IN CONNECTION WITH DRY TRANSFER SHEETS INCORPORATING SUCH DEVICES AND SHEETS FOR USE THEREIN

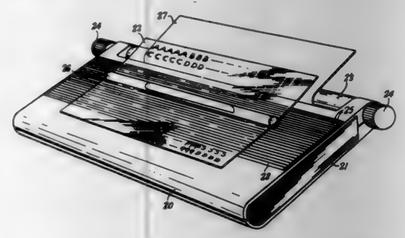
Vazgen Houssian, Union City, and Martin E. Dowzall, Wycoff, both of N.J., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed May 17, 1983, Ser. No. 493,801

Claims priority, application United Kingdom, May 21, 1982, 8214904

Int. Cl.[4] G09B *15/06*

U.S. Cl. 156—541 **12 Claims**



1. Apparatus for use in connection with a dry transfer sheet which consists of a base member and a sheetholder member, the sheet-holder member being in the form of an elongated bar having means on one side for attaching a sheet of dry transfer material thereto and its other side being substantially flat and having a rib projecting therefrom and running along the length of the bar, the base member comprising a magnetized material and having a series of evenly spaced parallel grooves therein the longitudinal extent of the grooves being at least as long as the bar, the two members being magnetically attracted one to the other, at least one of such members being permanently magnetized.

4,564,415

PROCESS FOR PRODUCING TERNARY OR QUATERNARY SEMICONDUCTOR COMPOUNDS

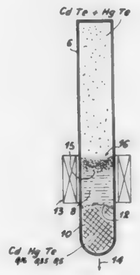
Alain Fillot, St. Ismier; Jean Gallet, Grenoble; Sylvain Paltrier, Meylan, and Bernard Schaub, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 30, 1983, Ser. No. 556,583

Claims priority, application France, Nov. 30, 1982, 82 20053

Int. Cl.[4] C30B *9/06*

U.S. Cl. 156—604 **8 Claims**



1. A process for producing a semiconductor compound selected from the group consisting of Cd Hg Te and Cd Hg Te Se which comprises the steps of

producing a homogeneous mixture, having a precise composition and corresponding to the compound to be obtained, of Cd Te and Hg Te powders when Cd Hg Te is to be obtained and a mixture selected from the group consisting of (1) Cd Te Se and Hg Te powders and (2) Cd Te and Hg Te Se powders when Cd Hg Te Se is to be obtained;

compacting the mixture by applying pressure;

subjecting the thus compacted mixture to thermal interdiffusion treatment, assisted by a grainwise material transfer, until a homogeneous solid solution of a polycrystalline compound is obtained; and

recrystallizing the compound in monocrystalline form by a single passage through a solvent zone.

4,564,416

METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE

Kazumoto Homma, Sagamihara, and Masaharu Watanabe, Yokosuka, both of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Division of Ser. No. 169,460, Aug. 16, 1980, abandoned. This application Dec. 8, 1981, Ser. No. 328,685

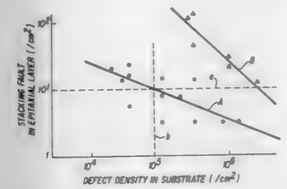
Int. Cl.[4] C30B *33/00*

U.S. Cl. 156—617 SP **7 Claims**

1. A method for manufacturing a semiconductor device comprising the steps of:

heat-treating a semiconductor substrate at a temperature of 600° C. to 900° C. for a predetermined period of time necessary to produce crystal defects of density of at least $10^5/cm^2$ in said substrate; and

forming an epitaxial layer on said substrate wherein said epitaxial layer has a reduced stacking fault density due to



said crystal defect density of at least $10^5/cm^2$ in said substrate.

4,564,417

METHOD OF MANUFACTURING AN OPTICAL COUPLING DEVICE

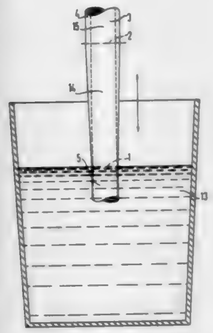
Josef Schoen, and Rudolf Hoffmann, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 538,964

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3239011

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—633 **10 Claims**



1. A method for manufacturing an optical coupling device comprising a large number of glass fiber optical waveguides arranged in a bundle with the ends having a very small space therebetween and the end faces of the waveguides of the bundle being held in optical contact with a mixing element, said method comprising the steps of providing a plurality of optical waveguides having a cladding of quartz glass of a given thickness; etching each of the fibers to form an end zone with a thin cladding connected by a transition zone having a cladding of increasing thickness from the thin cladding to the given thickness by holding the waveguide to extend perpendicularly to a surface of an etching solution with the end zone continually in the solution and by reciprocating the fiber along the axis to intermittently immerse the transition zone of the fiber into the solution; and assembling a plurality of the etched fiber waveguides into a bundle with the end zones adjacent each other and with a minimum spacing therebetween.

4,564,418

PAPER CONVERTING MACHINE VACUUM CYLINDER

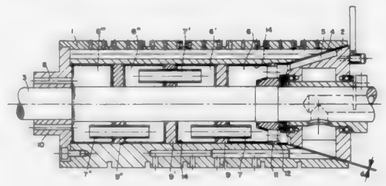
Martin Blümle, Güllesheim, Fed. Rep. of Germany, assignor to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Continuation of Ser. No. 554,983, Nov. 25, 1983, abandoned. This application Jan. 28, 1985, Ser. No. 695,745

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243778

Int. Cl.⁴ D21F *3/10;* **F01N** *1/10*

U.S. Cl. 162—368 **2 Claims**



1. In a high speed paper converting machine vacuum cylinder wherein a control head is attached at its control surface directly to the end face of a vacuum cylinder or inserted into the vacuum cylinder with an accurate fit and the canal for atmospheric pressure equalization is open on the control surface of the control head toward the interior of the vacuum cylinder, the improvement comprising:

the interior of said vacuum cylinder being subdivided as a reflection sound attenuator into a plurality of annular attenuation chambers interconnected by offset tubes which overlap each other in the projection, and openings in the side of the vacuum cylinder opposite the control head connecting the last attenuation chamber to the atmosphere,

so as to suppress the noise resulting from the fresh air inflow during atmospheric pressure equalization at the completion of the vacuum cycle of the vacuum cylinder.

4,564,419

NOZZLE PLATE CONSTRUCTION FOR UNDERJET COKE OVENS

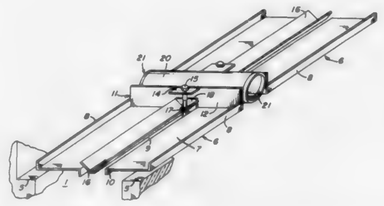
Heinz Spindeler; Folkard Wackerbarth, and Gerd Halbherr, all of Bochum, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,384

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347664

Int. Cl.⁴ C10B *1/04*

U.S. Cl. 202—123 **13 Claims**



1. A nozzle plate construction for underjet coke ovens for distributing and metering combustion-supporting air supplied upwardly to regenerators through a sole flue which extends parallel to a coke oven chamber axis, the sole flue being closed at its top by plate elements which are formed with apertures

therein and disposed releasably in end-to-end relationship, each of said plate elements being in the form of a trough having a plane base plate and low longitudinal side walls, at least one longitudinal gap formed in the base plate, and a metering element for each longitudinal gap mounted at its ends so as to be adjustable in its distance from the plane of said base plate.

4,564,420

COKE OVEN BATTERY

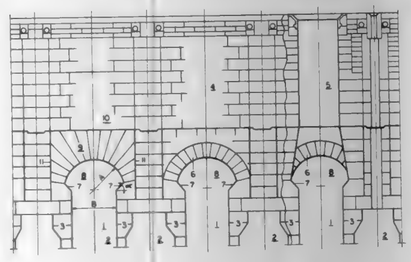
Heinrich Spindeler; Folkard Wackerbarth; Horst Kuhlmann; Helmut Dohle, and Horst Althaus, all of Bochum, Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. GmbH, Bochum, Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 558,020

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245551

Int. Cl.⁴ C10B *5/02, 29/02*

U.S. Cl. 202—139 **7 Claims**



1. A coke oven battery including a plurality of coking chambers disposed in an alternate relationship with heating flues which, like the coking chambers, extend transversely of the length of the coke oven battery, the heating flues being bounded by vertical heating walls separating the coking chambers from the heating flues, each coking chamber having a generally rectangular cross section, and a top arch above each coking chamber forming a mushroom-shaped gas-collecting chamber extending along the top of the coking chamber, said top arch being sprung from the top of the heating walls for the coking chamber and having an inner-arched surface defined by a segment of a circle whose diameter is greater than the internal width of the coking chamber, said arch including arched wall portions above the two heating walls bounding the coking chamber and extending to the spring of the arch, said arched wall portions having wall surfaces extending in an upwardly- and outwardly-inclined manner to define a width of the gas-collecting chamber which is wider than the width of the coking chamber at the joint with said inner-arched surface to thereby form said mushroom-shaped gas-collecting chamber.

4,564,421

ASCENSION PIPE FOR COKE OVENS

Theo Koddenberg, Bochum, and Franz-Josef Hegemann, Castrop-Rauxel, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. GmbH, Bochum, Fed. Rep. of Germany

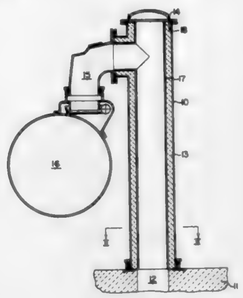
Filed May 21, 1982, Ser. No. 380,548

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1981, 3124356

Int. Cl.⁴ C10B *27/00*

U.S. Cl. 202—254 **5 Claims**

1. An ascension pipe for coke ovens comprising an outer shell, a refractory lining on the inner periphery of the outer shell, and a tube of heat-resistant metal on the inner periphery of the refractory lining, whereby the formation of deposits on the tube during operation of a coke oven will be minimized,



which deposits can be removed readily by vertically-guided scrapers without risk of damaging the lining.

4,564,422

METHOD AND APPARATUS FOR DETECTION OF EROSIVE CAVITATION IN AN AQUEOUS SOLUTION

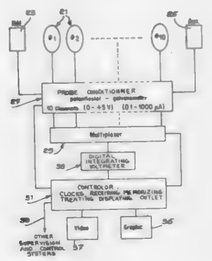
Raynald Simoneau, St-Bruno, Canada, and Lucien Chincholle, Verrières le Buisson, France, assignors to Hydro-Quebec, Montreal, Canada and Centre National de la Recherche Scientifique, Paris, France

Filed Aug. 31, 1983, Ser. No. 528,220

Claims priority, application Canada, Aug. 16, 1983, 434664

Int. Cl.⁴ G01N *27/46*

U.S. Cl. 204—1 T **26 Claims**



1. Method of quantitatively and directly measuring the intensity of erosive cavitation present in an aqueous solution, said method comprising:

mounting, in said solution, a set of electrodes, comprising a reference electrode, at least one auxiliary electrode, and at least one working electrode made of a metal selected from metals capable of forming highly insulating oxide films becoming thicker by ionic mobility under the action of an electric field, the said at least one working electrode being located in a zone where cavitation is to be measured;

incubating the said at least one working electrode, prior or after its mounting, by subjecting it to mechanical cavitation for a period of time sufficient to obtain stabilization of the erosive cavitation phenomenon;

applying a constant anodic voltage onto said at least one working electrode after the incubation step, by means of said auxiliary and reference electrodes;

measuring the intensity of the anodic current; and

detecting and measuring any variation in the said intensity of the current, each variation thus measured being directly related to the intensity of erosive cavitation in the said zone.

8. A device for quantitatively and directly measuring the intensity of erosive cavitation present in an aqueous solution comprising:

a set of electrodes mounted in the said solution and comprising a reference electrode, at least one auxiliary electrode, and at least one working electrode made of a metal selected from those capable of forming highly insulating oxide films becoming thicker by ionic mobility under the action of an electric field, the said at least one working electrode being located in a zone or zones where cavitation is to be measured;

means for incubating the said at least one working electrode by subjecing it to mechanical cavitation for a period of time sufficient to obtain stabilization of the erosive cavitation phenomena:

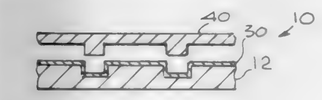
means for measuring the intensity of the anodic current and to detect and measure any variation in the intensity of the said current after having previously incubated said at least one working electrode, each variation thus measured being directly related to the intensity of erosive cavitation in the measuring zone.

4,564,423

PERMANENT MANDREL FOR MAKING BUMPED TAPES AND METHODS OF FORMING

William P. Dugan, Pomona, Calif., assignor to General Dynamics Pomona Division, Pomona, Calif.

Filed Nov. 28, 1984, Ser. No. 675,791
Int. Cl.⁴ C25D *1/20, 1/22, 17/10*
U.S. Cl. 204—12 **16 Claims**



1. The method of forming a reusable mandrel for producing bumped circuit sheets therefrom comprising the steps of:

providing a metal base plate;

forming a plurality of cavities on one surface thereof in a predetermined pattern corresponding to the desired locations of bumps on said sheet by selectively plating regions of the base plate to develop a plated layer with cavities therein;

plating a thin layer of a metal comprising nickel on said surface to coat the surface and the cavities therein; and

passivating the exposed surface of the plated layer to render it non-adhering with copper plating.

4,564,424

METALLIZATION OF ELECTRICALLY INSULATING POLYMERIC FILM SUBSTRATES

Robert Cassat, Ternay, and Maurice Alliot-Lugaz, Lyons, both of France, assignors to Rhone-Poulenc Recherches, Courbevoie, France

Filed Apr. 16, 1984, Ser. No. 600,833
Claims priority, application France, Apr. 15, 1983, 83 06405
Int. Cl.⁴ C25D *5/56*
U.S. Cl. 204—20 **35 Claims**

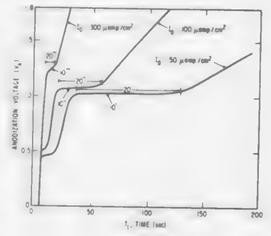
1. A process for conductively metallizing an electrically insulating thermoplastic or thermoplastic phase polymeric film substrate, comprising (1) shaping into said film substrate an intimate homogeneous admixture of a film-forming thermoplastic or thermoplastic phase polymer matrix having from 10 to 70 percent by total weight of said admixture of finely divided, non-conductive metal oxide particles uniformly distributed therein, (2) disrupting at least one face surface of said shaped film substrate to expose thereon a plurality of said finely divided, non-conductive metal oxide particles, and (3) treating said at least one disrupted face surface with a reducing agent to reduce said exposed metal oxide particles into a layer of electrically conductive free metal, whereby said at least one face surface is rendered electrically conductive.

4,564,425

ELECTROCHEMICAL ETCHING OF A MERCURY-CADMIUM-TELLURIDE SUBSTRATE

Bruce K. Janousek, Los Angeles, and Richard C. Carscallen, Torrance, both of Calif., assignors to The Aerospace Corporation, Los Angeles, Calif.

Filed Apr. 4, 1983, Ser. No. 481,894
Int. Cl.⁴ C25D *11/32;* **C25F** *3/12, 3/30*
U.S. Cl. 204—34.5 **15 Claims**



1. A method of electro etching a substrate electrode having mercury-cadmium-telluride components, comprising:

(a) applying current density at a predetermined level within the range of 10–80 μamp/cm^{-2} to the substrate electrode that has been immersed in an electrolyte having a viscosity element of ethylene glycol and a pH element of potassium hydroxide whose concentrations are inversely related to enable the components on the surface of the electrolyte to dissolve into the electrolyte; and

(b) reducing the concentration of said dissolved components in the electrolyte that are spatially proximate to the substrate electrode for disallowing precipitation of said dissolved components onto the surface of the electrode.

4,564,426

PROCESS FOR THE DEPOSITION OF PALLADIUM-NICKEL ALLOY

Timothy P. Henning, Endwell, and Robert D. Topa, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1985, Ser. No. 723,371
Int. Cl.⁴ C25D *3/56*
U.S. Cl. 204—44.6 **17 Claims**

1. An electroplating aqueous bath for depositing palladium-nickel alloy which comprises:

(a) about 9 to about 15 grams per liter of palladium ion derived from palladosammine chloride;

(b) about 10 to about 24 grams per liter of nickel ion;

(c) about 10 to about 50 grams per liter of ammonium sulfate;

(d) about 10 to about 50 grams per liter of ammonium chloride;

(e) and sufficient ammonium hydroxide to provide a pH of about 7.0 to about 8.3 and to solubilize the palladium and nickel metal ions into soluble ammonia complexes.

4,564,427

CIRCULATING ELECTROLYTE ELECTROCHEMICAL CELL HAVING GAS DEPOLARIZED CATHODE WITH HYDROPHOBIC BARRIER LAYER

Gary A. Gruver, South Windsor, and Harold R. Kunz, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 24, 1984, Ser. No. 686,178
Int. Cl.⁴ C25B *1/34, 11/06*
U.S. Cl. 204—98 **6 Claims**



4. A method of electrolyzing solutions of halide containing compounds in circulating electrolyte electrochemical cells that contain electrolyte, an anode, a gas depolarized cathode and means to separate the two, by maintaining the electrolyte in contact with the cathode and anode, maintaining a supply of a reactive oxidant gas at the cathode, maintaining a supply of a reductant at the anode, and passing a direct electric current through the cell, causing reduction of the oxidant gas at the cathode and oxidation of the reductant at the anode, wherein the improvement comprises utilizing a gas depolarized cathode comprising:

(a) a carbonized fiber ribbed porous substrate;

(b) a fluorocarbon polymer layer containing carbon particles bonded to the porous substrate; and

(c) a layer of an oxygen reducing catalyst bonded to said fluorocarbon polymer layer;

resulting in the prevention of electrolyte leakage through the cathode when the electrolyte pressure is up to three pounds per square inch above ambient.

4,564,428

AMMONIATED ETCHING SOLUTION AND PROCESS FOR ITS REGENERATION UTILIZING AMMONIUM CHLORIDE ADDITION

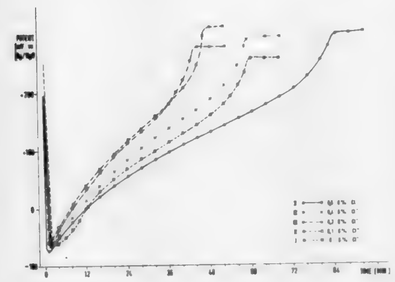
Leander Fürst, Jülich; Walter Holzer, Meersburg, and Bertel Kastening, Hamburg, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Jun. 26, 1984, Ser. No. 624,585
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1983, 3324450
Int. Cl.⁴ C25C *1/12*
U.S. Cl. 204—107 **9 Claims**

5. Process for regenerating an etching solution containing an etching agent and an alkaline ammonium salt having an oxygen-containing anion which is not a reducing agent, comprising the steps of:

incorporating into said solution a quantity of chloride which produces a chlorine ion content in said solution not less than 0.05% and not more than 0.4% by weight;

passing a gas containing free oxygen through said solution for oxidation thereof, and



electrolyzing at least a circulated portion of said solution through an electrolysis cell and thereby cathodically depositing etched-away metal out of said solution.

4,564,429

METHOD OF ELECTROCHEMICALLY ROUGHENING ALUMINIUM SURFACES IN THE MANUFACTURE OF OFFSET PRINTING PLATES

Wolf-Rüdiger Depiereux, Allemannenweg 3, 5160 Düren, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,808
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1983, 3339410
Int. Cl.⁴ C25F *3/04*
U.S. Cl. 204—129.75 **12 Claims**

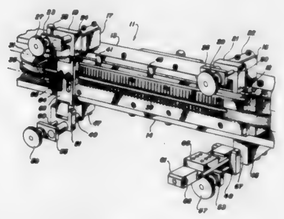
1. A method of electrochemically roughening the surfaces of aluminium material comprising passing the material to be roughened as a continuous band through an electrolyte bath consisting essentially of nitric acid, boric acid, water and from 3 to 15 g/l of aluminium under an alternating current and varying the degree of surface roughness from fine to coarse by varying the density of the alternating current from 15 and 90 A/dm^2.

4,564,430

CONTINUOUS CONTACT PLATING APPARATUS

Jeffery E. Bacon, Long Beach; James E. Craig, South Pasadena, and Mark K. Pedersen, Yorba Linda, all of Calif., assignors to Robbins & Craig Welding & Mfg. Co., South El Monte, Calif.

Filed Sep. 25, 1984, Ser. No. 654,760
Int. Cl.⁴ C25D *17/00, 17/14*
U.S. Cl. 204—206 **17 Claims**



1. A selective contact plater for continuously plating a plurality of zones, comprising:

a manifold, having plating solution therein, with a header having at least one opening for allowing the solution to pass through;

an anode mounted in close proximity to the opening in the

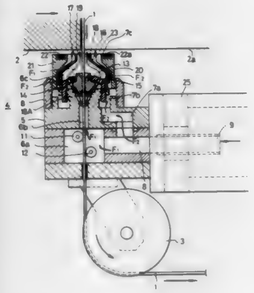
header so that all plating solution leaving the manifold must pass over the anode;
a slide bar sealably mounted to the header over the anode and the opening in the header, said slide bar having openings therein for directing flow of the plating solution from the manifold after it passes over the anode;
a continuous loop of material that is structurally stable and inert to the plating solution, having openings therein that are related to the openings in said slide bar, said loop contacting said slide bar and moving lengthwise along the surface thereof;
porous material for absorbing the plating solution fixedly mounted to said continuous loop of stable and inert material overlaying the openings therein, on the side opposite to the one contacting said slide bar; and
means for moving a series of parts to be selectively plated past said porous material along its length so that the areas to be plated on each part contacts the porous material.

4,564,431

TW-ELECTROEROSION MACHINES WITH DOUBLE-FLOATING NOZZLE ASSEMBLIES

Kazuyoshi Miyano, Yokohamashi, Japan, assignor to Inoue-Japax Research Incorporated, Japan

Filed Oct. 11, 1984, Ser. No. 660,865
Claims priority, application Japan, Oct. 11, 1983, 58-189538
Int. Cl.⁴ C25D *17/00*
U.S. Cl. 204—224 M **2 Claims**



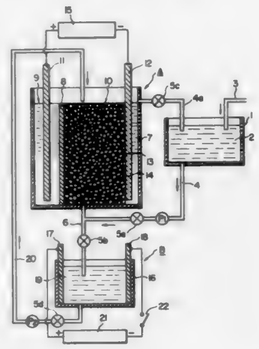
1. An electroerosion machine having a pair of fluid delivery assemblies disposed at opposite sides of a conductive workpiece traversed by an axially traveling wire-like electrode for discharging a machining liquid medium along the electrode into a machining zone in the workpiece, at least one of the assemblies comprising:
a hollow base member having a first and second internal fluid passage traversed by a first and a second pressurized inlet flow of the liquid medium, respectively;
an inner movable nozzle constituted by a first movable hollow body supported by said base member so as to surround the traveling electrode and ending with an outlet portion forming a first annular face adjacent the workpiece and defining a principal nozzle orifice for discharging the liquid medium of said first inlet flow about the electrode into constricted fluid flow passages defined around the electrode adjacent the machining zone, said first hollow body being movably supported by said base member so as to be thrustable outwards thereof under pressure of the liquid medium flowing through said first internal fluid passage to urge said first annular face towards engagement with the workpiece against pressure of the discharged liquid medium flowing through said constricted flow passages; and
an outer movable nozzle constituted by a second movable hollow body supported by said base member so as to be movable independently of said first hollow body and to surround said first hollow body and ending with an outlet portion forming a second annular face adjacent the workpiece and defining with the first-mentioned outlet portion an annular, auxiliary nozzle orifice for discharging the liquid medium of said second inlet flow about the liquid medium being discharged through said principal nozzle orifice, said second hollow body being supported by said base member so as to be thrustable outwards thereof to urge said second annular face towards engagement with the workpiece against pressure of the discharged liquid medium flowing between the second annular face and the workpiece.

4,564,432

APPARATUS FOR RECOVERING METALS DISSOLVED IN A SOLUTION

Hiroshi Nagai, and Yoshinori Kanno, both of Yokohama, Japan, assignors to Nanao Kogyo Co., Ltd., Yokohama, Japan

Filed Jul. 25, 1983, Ser. No. 516,793
Int. Cl.⁴ C25D *21/18;* **C25C** *7/08, 1/20*
U.S. Cl. 204—237 **4 Claims**



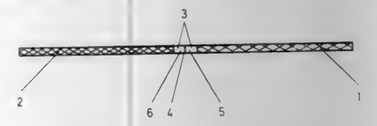
1. An apparatus for recovering metal in a solution comprising:
an electrolyzing depositing device means comprised of an electrolytic cell, a diaphragm dividing said cell into compartments, electrodes comprising a main anode and main cathode disposed in each respective compartment, a mixture of conductive and non-conductive particles in each of said compartments, said conductive particles being arranged in each compartment to have the same polarity of said electrodes in each respective compartment without causing bipolarization, a power source for applying an electric current through said electrolytic cell to deposit said metals dissolved in said solution on said conductive particles by reaction of said solution with said electrodes;
a dissolving chamber having an aqueous solution of cyanide for dissolving said metals deposited on said particles in the presence of air, said dissolving chamber being formed by adding said aqueous solution of cyanide to said cathode compartment of said electrolyzing depositing device means, said cathode compartment being open to the air;
an electrolyzer recovering device means having an anode and a cathode for recovering said metals dissolved in said aqueous solution of cyanide, a second power source for applying a current to said electrolyzer recovering device means to electrolize said aqueous solution of cyanide, said metals being recovered on said cathode of said electrolyzer recovering device means; and pipe means connecting said dissolving chamber to said electrolyzer recovering device means whereby said aqueous solution of cyanide containing said dissolved metals is introduced into said electrolyzer recovering device means from said dissolving chamber through said pipe means.

4,564,433

BIPOLAR ELECTRODE

Waltraud Werdecker, Hanau, and Peter Fabian, Freigericht, both of Fed. Rep. of Germany, assignors to Heraeus Elektroden GmbH, Hanau, Fed. Rep. of Germany

PCT No. PCT/EP83/00265, § 371 Date Jun. 21, 1984, § 102(e) Date Jun. 21, 1984, PCT Pub. No. WO84/01789, PCT Pub. Date May 10, 1984
PCT Filed Oct. 8, 1983, Ser. No. 626,860
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 3239535
Int. Cl.⁴ C25B *9/00*
U.S. Cl. 204—254 **11 Claims**



1. Bipolar electrode in flat, particularly plate form, especially for use in electrochemical processes such as chlorate electrolysis, consisting of three elements, namely
a plate-like anode (**1**);
a plate-like cathode (**2**), the cathode and anode, each consisting of metal which cannot be welded together; and
an intermediate piece (**3**) joining the anode and cathode edge-to-edge,
wherein
the intermediate piece consists of a two-part (**5**, **6**) composite element (**3**) having a first anode part (**5**) consisting of the material of the anode and a second cathode part (**6**) consisting of the material of the cathode,
said first anode part and said second cathode part being joined together by an intermetallic phase bond of materials formed by at least one of:
hot isostatic pressure;
explosion-plating;
diffusion-welding,
of said first anode part and said second cathode part into said composite element;
the anode part (**5**) of the intermediate composite element (**3**) of the composite intermediate piece (**3**) and the cathode part (**6**) of the composite intermediate piece being joined, respectively, to the anode (**1**) and the cathode (**2**) by welding to facing side edges of the anode and cathode, respectively, whereby the bipolar electrode will be located essentially in a single plane with the intermediate piece (**3**) between the anode and the cathode in essentially said plane.

4,564,434

ELECTRODE FOR ELECTROLYSIS OF SOLUTIONS OF ELECTROLYTES

Vladimir B. Busse-Machukas, Izmailovsky bulvar, 37, kv. 27; Florenty I. Lvovich, I Nizhne-Mikhailovsky proezd, 16, kv. 55; Evdokia K. Spasskaya, Vishnyakovskaya ulitsa 6, korpus 3, kv. 97; Vladimir L. Kubasov, Kirovogradskaya ulitsa, 4, korpus 2, kv. 135; Anatoly F. Mazanko, Stavropolskaya ulitsa, 56, korpus 1, kv. 73; Ernest A. Druzhinin, Gvardeiskaya ulitsa, 4, kv. 32; Alexandr N. Martynov, Yakornava ulitsa, 10, korpus 1, kv. 60, and Ljudmila N. Nelipa, bulvar Matrosa Zheleznyaka, 11, kv. 2, all of, Moscow, U.S.S.R.

Filed Sep. 28, 1984, Ser. No. 656,163
Int. Cl.⁴ C25B *11/00*
U.S. Cl. 204—290 F **3 Claims**

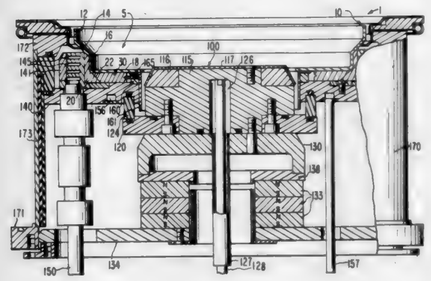
1. An electrode for electrolysis of solutions of electrolytes comprising a support of a passivated metal, a coating applied onto said support consisting of a mixture including titanium oxide, ruthenium oxide and iridium oxide, wherein the molar ratio of titanium oxide to the total of oxides of iridium and ruthenium is equal to 1–3:1 at a molar ratio of iridium oxide to ruthenium oxide equal to 0.75–3:1.

4,564,435

TARGET ASSEMBLY FOR SPUTTERING MAGNETIC MATERIAL

Charles E. Wickersham, Columbus, Ohio, assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 23, 1985, Ser. No. 738,205
Int. Cl.⁴ C23C *14/00*
U.S. Cl. 204—298 **8 Claims**



1. An annular sputter coating target assembly for use in sputter coating apparatus, said annular target assembly comprising:
a-sputter target piece having:
a first portion of substantially right cylindrical shape,
a second portion of substantially right cylindrical shape of smaller diameter than said first portion,
a third portion interconnecting said first and second portions and having a truncated conical shape, and
a fourth portion extending radially inward from said second portion and having a substantially planar shape, all of said four portions being made of magnetic material; and
a backing structure on the side of said sputter target piece opposite the surface from which sputtering is to occur, said backing structure being made of nonmagnetic material.

4,564,436

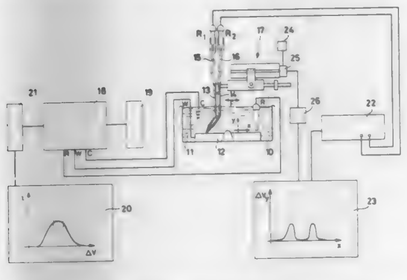
APPARATUS FOR MEASURING THE DEGREE OF SENSITIZATION OF METAL ARTICLES

Giovanni Buzzanca, Bergamo; Camillo Ronchetti, Milan; Franco Uberti, Milan, and Renato Anzani, Milan, all of Italy, assignors to CISE-Centro Informazioni Studi Esperienze S.p.A., Milan, Italy

Filed May 29, 1985, Ser. No. 739,015
Claims priority, application Italy, Jun. 1, 1984, 21225 A/84
Int. Cl.⁴ G01N *27/02*
U.S. Cl. 204—400 **4 Claims**

1. An apparatus for measuring the degree of sensitisation of metal articles, comprising a cell containing an electrochemical solution which wets at least a portion of the metal article under measurement, an electrical contact adapted to be connected to a test-piece acting as a first electrode, a second counter-electrode unit immersed in the electro-chemical solution, a third reference electrode unit immersed in the electrochemical solution in proximity to said portion under measurement, means for feeding an electric current through said first electrode unit and said second counter-electrode unit, and means for controlling said feed means in such a manner as to impose a linear variation in the potential difference between said first electrode unit and said third reference electrode unit, characterised by compris-

ing a fourth and a fifth electrode unit which are secured in such a manner as to maintain a constant distance apart and are supported by a support and drive assembly which drives them along a surface of the portion of the metal article, said fourth and fifth electrode units having respective sensing ends dis-



posed along an axis which remains substantially perpendicular to said surface during the driving of said fourth and fifth electrode units along it, one of said sensing ends resting on said surface, means also being provided for measuring the potential difference between said fourth and fifth electrode units as a function of their position along said surface.

4,564,437

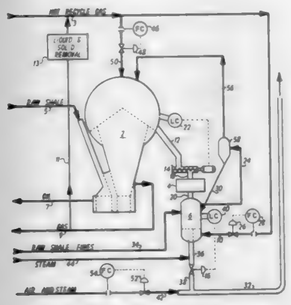
PROCESS FOR RETORTING OIL SHALE WITH FLUIDIZED RETORTING OF SHALE FINES

Roland F. Deering, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 510,402, Jul. 5, 1983, Pat. No. 4,515,679, which is a continuation-in-part of Ser. No. 451,602, Dec. 20, 1982, Pat. No. 4,448,668. This application Jul. 2, 1984, Ser. No. 626,673

Int. Cl.⁴ C10G *1/02*

U.S. Cl. 208—11 R **43 Claims**



1. A process for retorting raw hydrocarbon-containing fines, which process comprises:

(1) retorting hydrocarbon-containing particles of a size not readily fluidizable in a retorting zone by contacting said particles at an elevated temperature with a first recycled portion of an eduction gas comprising (a) recycled hydrocarbon vapors educed from said particles in said retorting zone and (b) hydrocarbon vapors educed in step (4) and recovered in step (5) hereinafter;

(2) crushing hot, uncombusted particles removed from said retorting zone in a crushing zone to a size more readily fluidizable;

(3) maintaining hot, crushed, uncombusted particles removed from said crushing zone in a fluidization zone as a fluidized bed under substantially non-combustive conditions and fluidized with a gas comprising a second recycled portion of the eduction gas;

(4) introducing raw hydrocarbon-containing fines into said fluidization zone so as to educe hydrocarbon vapors from said fines;

(5) recovering the educed hydrocarbons vapors from said fluidization zone; and

(6) recovering retorted particulates from said fluidization zone.

4,564,438

STYRENE-DIALKYL MALEATE COPOLYMERS AS DEWAXING AGENTS

Sophia Wang, Houston, and Alan A. Millard, Richmond, both of Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed May 31, 1985, Ser. No. 739,644

Int. Cl.⁴ C10G *73/04*

U.S. Cl. 208—33 **4 Claims**

1. A solvent dewaxing process of the type wherein a waxy lubricating oil is treated with a dewaxing solvent and a dewaxing aid, the improvement which comprises using as the dewaxing aid a styrene dialkyl maleate copolymer wherein the alkyl side chain group contains from C_{16}–C_{24}^{+} carbon atoms, said copolymer having a molecular weight within the range of 10,000–150,000.

4,564,439

TWO-STAGE, CLOSE-COUPLED THERMAL CATALYTIC HYDROCONVERSION PROCESS

Christopher W. Kuehler, Larkspur, and Arthur J. Dahlberg, Rodeo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 29, 1984, Ser. No. 625,937

Int. Cl.⁴ C10G *65/12*

U.S. Cl. 208—59 **16 Claims**

1. A two-stage, close-coupled process for hydroprocessing a heavy hydrocarbonaceous feedstock at least 30 volume percent of which boils above 1000° F. and having greater than 100 parts per million by weight total metal contaminants to produce high yields of transportation fuels boiling below 650° F., which comprises:

(a) introducing said feedstock and dispersed contact particles having activity sufficient to suppress adverse coke formation under coking conditions and having demetalizing activity, into a first-stae hydrothermal zone in the presence of hydrogen; wherein said feedstock and contact particles are introduced into said hydrothermal zone under conditions sufficient to substantially demetalate said feedstock and to convert a significant amount of the hydrocarbons in said feedstock boiling above 1000° F. to hydrocarbons boiling below 1000° F.;

(b) rapidly and without substantial reduction of pressure through the system passing a substantial portion of the substantially demetalated, contact particle-entrained effluent of said first-stage hydrothermal zone directly into a second-stage catalytic reaction zone at a reduced temperature relative to said first-stage hydrothermal zone and contacting said effluent with hydroprocessing catalyst under hydroprocessing conditions, including a temperature in the range of 650° F. to 800° F.; and

(c) recovering the effluent from said catalytic reactor zone.

4,564,440

VISCOSITY INDEX IMPROVEMENT IN DEWAXED LUBE BASESTOCK BY PARTIAL DESULFURIZATION IN HYDROTREAT BED

William E. Garwood, Haddonfield, N.J.; William C. Starr, Wilmington, Del., and John W. Walker, Sewell, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,510

Int. Cl.⁴ C10G *65/12, 67/04*

U.S. Cl. 208—87 **14 Claims**

1. A process for preparing a high quality lube base stock oil in high yield and of improved viscosity index from waxy crude oil, which comprises:

extracting a distillate fraction that boils within the range of 600°–1100° F. or deasphalted short residuum fraction of said waxy crude with a solvent selective for aromatic hydrocarbons to yield a raffinate;

mixing the raffinate with hydrogen and contacting the mixture at a temperature of 500°–675° F. with a dewaxing catalyst comprising an aluminosilicate zeolite having a silica/alumina ratio of at least about 12 and a constraint index of about 1 to about 12, thereby converting wax contained in the raffinate to lower boiling hydrocarbons; and

cascading dewaxed raffinate to a hydrotreating zone wherein the dewaxed raffinate is contacted in the presence of hydrogen with a hydrotreating catalyst comprising hydrogenation component on a non-acidic support, hydrotreating at a temperature of about 625°–700° F. and a hydrogen partial pressure of about 200–700 psig so as to partially desulfurize said dewaxed raffinate by about 30–90% with less than about 5 weight percent loss of yield in the lube range.

4,564,441

HYDROFINING PROCESS FOR HYDROCARBON-CONTAINING FEED STREAMS

Simon G. Kukes; Edward L. Sughrue, II, and Robert J. Hogan, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 520,780, Aug. 5, 1983, abandoned. This application May 21, 1984, Ser. No. 612,539

Int. Cl.⁴ C10G *45/08, 47/12, 49/04*

U.S. Cl. 208—108 **60 Claims**

1. A process for hydrofining a hydrocarbon-containing feed stream comprising the steps of:

introducing a suitable quantity of a suitable decomposable compound of a metal selected from the group consisting of copper and the metals of Group V-B, Group VI-B, Group VII-B and Group VIII of the Periodic Table into said hydrocarbon-containing feed stream; and

contacting said hydrocarbon-containing feed stream containing said decomposable compound under suitable hydrofining conditions with hydrogen and a suitable refractory inorganic material, wherein the concentration of transition metals selected from the group consisting of the metals of copper and Group V-B, Group VI-B, Group VII-B and Group VIII of the Periodic Table in said refractory inorganic material is less than about 1 weight-%, based on the weight of said refractory inorganic material, when said refractory inorganic material is initially contacted with said hydrocarbon-containing feed stream, and wherein said decomposable compound is selected from the group consisting of carbonyls and dithiocarbamates.

4,564,442

OPERATING PROCEDURE AND SIFTER FOR THE SIFTING OF CEMENT

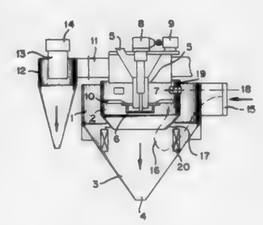
Heinz Jäger, Nevelstrasse 40, 4630 Bochum 1, Fed. Rep. of Germany

Continuation of Ser. No. 546,888, Oct. 31, 1983, abandoned. This application May 28, 1985, Ser. No. 738,500

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1982, 3240793

Int. Cl.⁴ B07B *9/02*

U.S. Cl. 209—148 **16 Claims**



1. In a method for operating a circulating-air sifter particularly a cyclone circulating-air sifter for sifting cement, wherein the material to be sifted is distributed in a rising sifting air-stream which separates the fine material from the material to be sifted by entraining the fine material in the rising sifting air-stream with the coarse material not entrained by the sifting air-stream precipitating into the sifter and discharged therefrom, wherein the entrained fine material is separated from the air-stream and the air-stream recirculated to the sifter for further sifting of material, the improvement comprising dividing the circulating air-stream into a primary air-stream which is recirculated to the sifter for further sifting of material and a secondary air-stream which branches off from said circulating air-stream before said entrainment of the fine material in the rising sifting air-stream and combines with the primary air after said entrainment of the fine material in the rising sifting air-stream, said primary air-stream combined with said secondary air-stream continuing to rise upwardly and discharging through the sifter, the combined air steam then passing through ducts into external cyclone separators preventing deposition of entrained material in the ducts leading to the external cyclone separators, said primary and secondary air-streams being the only source of circulated air.

4,564,443

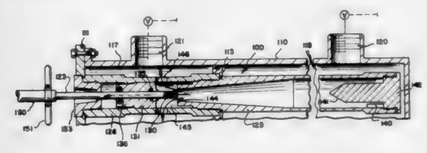
REVERSE CENTRIFUGAL CLEANING OF PAPER MAKING STOCK

Terry L. Bliss, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio

Continuation of Ser. No. 513,579, Jul. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 384,835, Jun. 4, 1982, abandoned. This application Apr. 30, 1985, Ser. No. 728,164

Int. Cl.⁴ B04C *3/06*

U.S. Cl. 209—211 **5 Claims**



1. A centrifugal cleaner particularly adapted for the treatment of paper making stock containing light contaminant materials of similar and lower specific gravities to separate the

paper making fibers therein from said light contaminant materials comprising:

(a) a main tubular vessel enclosing a frustoconical interior space and having the apex end thereof open and of predetermined diameter which is substantially less than the maximum diameter of said space,

(b) means defining an inlet port to said space adjacent the other end of said vessel for delivering said paper making stock to said space,

(c) said inlet port means being constructed and arranged to deliver said stock to said space with a substantial circumferential flow component causing vortical separation of said stock into an outer flow fraction containing the large majority of said paper fibers and an inner flow fraction containing the large majority of said light contaminant materials,

(d) housing means secured to the apex end of said vessel and defining a chamber aligned and in open communication with said open apex end of said vessel,

(e) said housing means including means defining a discharge port from said chamber,

(f) an outlet tube of smaller outer diameter than said open apex end of said vessel,

(g) means supporting said outlet tube in said housing means for axial movement in substantially coaxial relation with said open apex end of said vessel,

(h) said tube being of sufficient length that with one end portion thereof inserted within said open apex end of said vessel, the opposite end portion thereof extends through said supporting means to space outside of said housing,

(i) means for securing said tube to said supporting means with said one end of said tube inserted within said open apex end of said vessel,

(j) said one end of said tube being of predetermined sufficiently smaller outer and inner diameter than the inner diameter of said open apex end of said vessel to define therewith, when inserted therein, an annular outlet port leading from said frustoconical space to said chamber which is of substantially greater flow area than the flow area through said tube to receive said fiber-containing outer flow fraction,

(k) whereby the flow through said tube is correspondingly less than the flow through said annular outer port and comprises said light contaminant-containing inner flow fraction, and

(l) means for effecting release of said securing means from said support means to provide for temporary axial retraction of said tube one end portion from said open apex end into said chamber to effect complete opening of said apex end of said vessel for discharge from said vessel into said chamber of contaminant material trapped in said annular outlet port without interrupting the operation of said cleaner.

4,564,444

FILAMENTOUS MICROORGANISM DETECTOR AND AN APPARATUS WITH THE DETECTOR FOR CONTROLLING THE PROCESS USING MICROORGANISMS

Masakatsu Hiraoka, Uji; Kazushi Tsumura, Nagaokakyo; Kenji Baba, Hitachi; Shunsuke Nogita, Hitachi, and Shunji Mori, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 26, 1984, Ser. No. 634,536

Claims priority, application Japan, Jul. 28, 1983, 58-140423

Int. Cl.⁴ C02F *3/20*; C12M *1/36*

U.S. Cl. 210—96.1 **6 Claims**

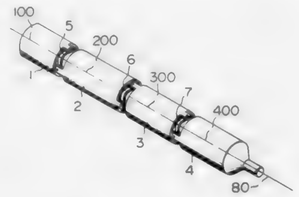
5. A system for controlling a sewage treatment apparatus including an aeration tank having inlets receiving a flow of external sewage and a flow of air for mixing and agitating the received sewage and air and producing activated sludge by growth of filamentous fungi in the sewage, a settling tank connected to said aeration tank for receiving from said aeration tank a mixture containing the activated sludge treated in said aeration tank and settling said activated sludge, and return pipe means connected between said aeration tank and said settling tank for returning part of the activated sludge settled in said settling tank to said aeration tank, said sewage being treated by utilizing the activity of the filamentous fungi in said activated sludge additionally containing sludge flocks; said system comprising:

means for determining the amount of filamentous fungi in said aeration tank from a specimen of a mixture containing the filamentous fungi and sludge flocks in said aeration tanks;

a sensor for detecting the dissolved oxygen concentration of the mixture in said aeration tank;

means for determining a target value of the dissolved oxygen concentration of the mixture from the amount of filamentous fungi determined; and

means for controlling the amount of air supplied to said



aeration tank on the basis of the error of the detection value of said dissolved oxygen concentration as compared with said target value wherein said means for determining the amount of filamentous fungi comprises means for forming an optical image of said specimen, scanning means for scanning said optical image two-dimensionally and producing a series of brightness signals indicating brightness levels of scanned points on said optical image, means for extracting from said brightness signals those brightness signals indicating a predetermined range of the brightness levels which are lower than a predetermined upper limit representing the background brightness of said optical image, but higher than a predetermined lower limit representing the brightness of the sludge flocks and means for counting the number of said extracted brightness signals thereby determining the amount of the filamentous fungi from said count.

4,564,445

SELF-CONTAINED SEWAGE WASTE DISPOSAL SYSTEM

Clifton F. Briner, Lafayette, Ind.; William R. Bocchini, Wyckoff, and Brian Wilcockson, Long Beach Island, both of N.J., assignors to American Standard Inc., New York, N.Y.

Division of Ser. No. 320,595, Nov. 12, 1981, Pat. No. 4,393,524.

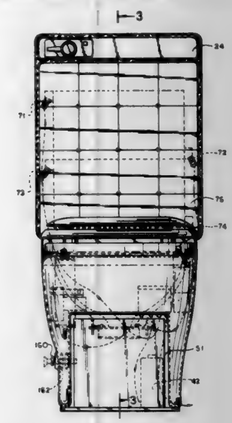
This application Apr. 21, 1983, Ser. No. 487,004

The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.

Int. Cl.⁴ C02F *9/00*

U.S. Cl. 210—167 **10 Claims**

1. A filter cassette adapted to be used as part of a self-contained sewage waste disposable system employing a toilet bowl for receiving human waste, recirculating fluid for facilitating the transportation of the human waste from the bowl to the filter cassette, pump means including interconnected conduits to transport the fluid between the bowl and the filter cassette and control means to circulate the fluid through the system to facilitate the collection and disposal of sewage waste within the system is a predetermined sequence, the filter cassette comprising; a casing having a hollow interior and an entrance opening adapted to be positioned for receiving contents flushed from the bowl and an exit opening for interconnection with conduits for removing stored filtered fluid from the cassette for recirculation, filter means in the cassette for separating the coarse and fine particles of solid waste material from the liquid received from the bowl, storage means in the cassette for storing the solid material in a compact manner for subsequent disposal upon rmoval of the cassette, and means on the cassette



for removably interconnecting the control means therewith to facilitate passage of the fluid through the system and the collection and disposable sewage waste within the system in a predetermined sequence.

4,564,446

SELF-CONTAINED SEWAGE WASTE DISPOSAL SYSTEM

Kenneth J. De Graw, Montvale; William R. Bocchini, Wyckoff; Brian Wilcockson, Wayne; Armen Bogossian, Teaneck; Robert J. Uhl, Wayne; Earl E. Nause, Bellville, and Ernest R. Ramirez, Far Hills, all of N.J., assignors to American Standard Inc., New York, N.Y.

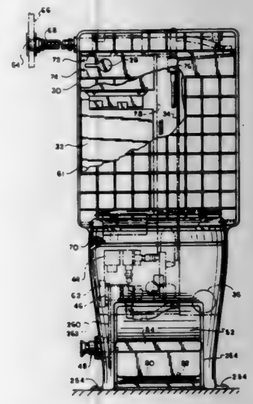
Division of Ser. No. 320,654, Nov. 12, 1981, Pat. No. 4,519,103.

This application Apr. 21, 1983, Ser. No. 487,257

The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.⁴ C02F *9/00*

U.S. Cl. 210—167 **5 Claims**



1. A filter cassette adapted to be used as part of a self-contained sewage waste disposal system employing a toilet bowl for receiving human waste, recirculating fluid for facilitating the transportation of human waste from the bowl to the filter cassette, pump means including interconnected conduits to transport the fluid between the bowl and the filter cassette and control means to circulate the fluid through the system to facilitate the collection and disposal of sewage waste within the system in a predetermined sequence, the filter cassette comprising; a casing having a hollow interior and an entrance opening adapted to be positioned for receiving contents flushed from the bowl and an exit opening for interconnection with conduits for removing filtered fluid from the cassette for recirculation, filter means in the cassette for separating the coarse and fine particles of solid waste material from the liquid received from the bowl, storage means in the cassette to store the solid material in a compact manner for subsequent disposal upon removal of the cassette, the cassette having a configuration facilitating the separation between the stored waste and the filtered fluid to prevent recontamination of the filtered fluid including separation means, said separation means including a table spaced from the bottom of the cassette and supported by the cassette wall and supporting ribs so as to form an enclosed chamber, an access opening in the table in position to permit filtered fluid to pass there through for collection in the chamber and the ribs and cassette walls entrapping the filtered fluid and preventing contact with the stored waste, means for facilitating the immediate evacuation of the filtered fluid from the chamber, and means on the cassette for removably interconnecting the control means therewith to facilitate passage of the filtered fluid from the cassette to a position for recirculation and to a reservoir for storage and later use within the system and the collection and disposal of sewage waste within the system in a pre-determined sequence.

4,564,447

PURIFICATION APPARATUS

Wolfgang Tiedemann, Sigtuna, Sweden, assignor to VICO Kemisk Tekniska Fabrik AB, Bandhagen, Sweden

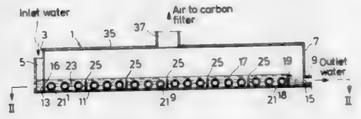
PCT No. PCT/SE83/00222, § 371 Date Jan. 20, 1984, § 102(e) Date Jan. 20, 1984, PCT Pub. No. WO83/04185, PCT Pub. Date Dec. 8, 1983

PCT Filed Jun. 2, 1983, Ser. No. 577,620

Claims priority, application Sweden, Jun. 4, 1982, 8203481

Int. Cl.⁴ C02F *1/20*; B01D *3/00*

U.S. Cl. 210—220 **5 Claims**



1. Apparatus for purifying liquid contaminated by a solvent of at least one of the chlorinated or fluorinated hydrocarbon types, comprising a vessel adapted to receive a contaminated liquid with an inlet for receiving said contaminated liquid at an inlet end and an outlet for discharging purified liquid at an outlet end positioned opposite the inlet end, the vessel being arranged so that the liquid flows generally horizontally therethrough, means provided in conjunction with the outlet for maintaining the liquid flow through the vessel at a predetermined level, at least over a working section of the vessel, means arranged in the working section for being covered by the liquid at a shallow depth and for being supplied with cleaning air so as to cause the air to flow upwardly in finely divided form through the liquid flow and remove contaminating solvent dissolved in said liquid, said means for being covered by the liquid and for being supplied with cleaning air including a plurality of transversely arranged localized air outlet elements with intermediate liquid compartments and a large number of air outlet orifices distributed over the working section and arranged at a distance of approximately 5 to 15 mm below the liquid level as determined by said means for maintaining the

liquid level when said vessel is in an operative state, the working section being divided into a plurality of sub-sections, each sub-section provided with a number of said plurality of air outlet elements and a barrier provided between contiguous sub-sections, said air outlet elements including a plurality of tubular portions operatively connected to a source of air, said portions extending transversely to the flow direction of the liquid over the working section, the air outlet elements having upwardly curved upper sides which meet and define an uppermost top section of the air outlet elements and air outlet orifices arranged on the upper sides with the uppermost top section between the orifices, the air outlet elements being separated so as to define free compartments formed therebetween for the liquid and being tightly connected to a bottom side of the vessel at bottom sides of the air outlet elements, and means for taking air away from the vessel, said air having passed through the liquid and the entrained solvent.

4,564,448

DEVICE FOR TREATING FLUIDS WITH MAGNETIC LINES OF FORCE

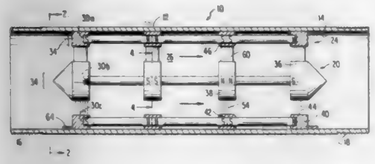
James R. O'Meara, Jr., P.O. Box 58170-MS-888, Houston, Tex. 77258

Continuation-in-part of Ser. No. 301,696, Sep. 14, 1981, Pat. No. 4,417,984, which is a continuation-in-part of Ser. No. 151,864, May 21, 1980, Pat. No. 4,289,621. This application Nov. 28, 1983, Ser. No. 555,799

The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.

Int. Cl.[4] **B01D** *35/06;* **B03C** *1/02*

U.S. Cl. 210—222 **19 Claims**



1. A device for the treatment of fluids with magnetic lines of force comprising:

at least one elongated core magnet assembly and at least one spaced-apart and longitudinally coextensive elongated ring magnet assembly, each said magnet assembly having a longitudinal axis substantially parallel with that of an adjacent magnet assembly to form at least one elongated passageway having fluid inlet and outlet ends for passage of said fluid therebetween;

each said magnet assembly comprising at least one tier of at least two coaxially aligned magnetic sections in each of at least one permanent magnet magnetized along its longitudinal axis with like polar ends of said magnetic sections adjacent each other, and with like polar ends of each said tier in each said magnet assembly being adjacent each other, thereby providing at least three spaced poles of alternating polarity in coaxial line in each said tier and in each said magnet assembly;

each said tier having one end supported by an inlet end support member and its other end supported by an outlet end support member;

said magnet assemblies being positioned so that the polarities of adjacent poles of magnetic sections in one said magnet assembly are unlike the polarities of the oppositely disposed adjacent poles of magnetic sections in a spaced-apart magnet assembly, thereby providing at least three concentrated flux lines of magnetic force and adjacent flux lines of reversed polarity in each said passageway.

4,564,449

DEVICE FOR SEPARATING TWO LIQUIDS OF DIFFERENT DENSITY

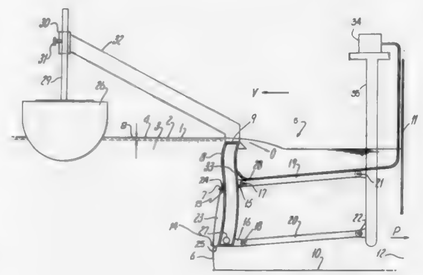
Gerrit Kampers, Puttershoek, Netherlands, assignor to Doseq Dutch Oil Spill Eq v.o.f., Netherlands

Filed Feb. 17, 1983, Ser. No. 467,329

Claims priority, application Netherlands, Feb. 19, 1982, 8200679

Int. Cl.[4] **E02B** *15/04*

U.S. Cl. 210—242.3 **4 Claims**



1. A device for separating a first, lower density liquid from a second, higher density liquid, said liquids having a boundary layer between them, said device being horizontally movable relative to the liquids and comprising:

a support means (**26–32**) positionable with respect to the exposed, upper surface of the liquids;

a generally vertical, separating wall (**8**) immersible in said second liquid and mounted on said support means so that the position of said separating wall in said second liquid is adjustable in the vertical direction, said separating wall having a generally vertically surface along at least a portion of which the second liquid impinges during the relative movement of said device in the liquids, an upper portion of said surface of said separating wall presenting a horizontally convex configuration, the lower portion of said surface of said separating wall presenting a horizontally concave configuration, said wall having an upper overflow edge (**9**) positionable by the vertical movement of said separating wall proximate the boundary layer between the liquids and such that the first liquid flows over said overflow edge;

a vessel behind said overflow edge for receiving liquids passing over said edge;

a weir (**6**) mounted on said vessel and positioned in front of the lower portion of said separating wall in the direction of relative movement, said weir presenting a concave surface to the lower portion of said separating wall;

means (**13, 14**) intermediate said separating wall and weir for sealing said separating wall to said weir along two spaced parallel, horizontal planes while permitting vertical adjustment of said separating wall;

a fixed, base member with a pair of vertically spaced mounting means generally horizontally opposite said separating wall (**8**),

said separating wall having a second surface on the other side of said wall from said convex-concave surface with a pair of spaced lugs (**15, 16**) mounted on said second surface and vertically spaced by the same amount as said mounting means; and

a pair of generally parallel connecting rods (**19, 20**) having one end pivotally connected to said lugs and the other end pivotally connected to said mounting means of said base member.

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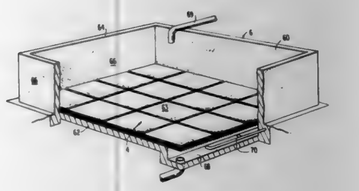
RIGID FILTER ELEMENTS, RELATED APPARATUS AND METHODS

Louis H. Piper, Richmond, Va.; J. David White, Stone Mountain, Ga., and Ronald H. Hartman, Richmond, Va., assignors to Dehydro Corporation, Charlotte, N.C.

Filed Nov. 14, 1984, Ser. No. 671,428

Int. Cl.[4] **B01D** *39/20*

U.S. Cl. 210—293 **11 Claims**



4. A polyhydral module for use in forming a rigid filter bed by laying a plurality of the modules upon a planar support base comprising:

a bottom grid member and

a top rigid porous layer defined by an upper surface and a lower surface spaced apart from said upper surface,

said grid member comprising

a first series of spaced apart strip elements positioned in planes at an angle to said lower surface, said first series elements comprising an upper portion with a top edge and a lower portion with a bottom edge, said top edges of said first series elements lying substantially in a first single plane and said bottom edges of said first series elements lying substantially in a second single plane,

a second series of spaced apart strip elements positioned in planes at an angle to said lower surface and intersecting said first series elements at an angle, said second series elements comprising an upper portion with a top edge and a lower portion with a bottom edge,

said first and second series elements defining a multiplicity of polygonal channels depending from said lower surface,

the peripheral sides of said module being defined by peripheral strip elements different from said first and second series elements, said peripheral elements having lateral outward extending projections that form a peripheral ledge around said module,

said second series elements having lateral openings therein that extend upwardly into their lower portions from said bottom edges thereof, said lateral openings defining a plurality of transverse channels in said module,

said upper portions of at least one of said first and second series elements having integral anchor portions embedded at least in part in said top porous layer, said anchor portions serving as means to fix said top porous layer to said grid member.

11. Apparatus for the dewatering of water and wastewater sludge which comprises;

a tank having a substantially flat bottom, an open top, and vertical sides,

exit means through which filtrate may be removed from said tank,

a plurality of the modules as defined in claim **4** positioned side by said within said tank with the bottom surfaces of said modules resting on said flat bottom of said tank, and

sealing material forming liquid-tight seals between adjacent edges of said modules.

4,564,451

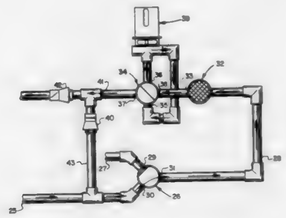
APPARATUS FOR CLEANING A SWIMMING POOL STRAINER

Joseph D. Cohen, Frisco, Tex., assignor to Performance Pool Products, Ltd., Frisco, Tex.

Filed Mar. 21, 1983, Ser. No. 477,378

Int. Cl.[4] **B01D** *35/00, 35/02*

U.S. Cl. 210—411 **12 Claims**



1. An apparatus for circulating water in a swimming pool comprising:

a swimming pool intake;

a strainer means for retaining particles from a flow of water and including a strainer inlet and a strainer outlet;

a pump including a suction inlet and a discharge outlet;

a filter for removing sediment from water;

a swimming pool return connected to the filter; and

valve means for providing a first valve configuration having the strainer inlet connecting to the swimming pool intake, the strainer outlet connecting to the pump suction inlet and the pump discharge outlet connecting to the filter and for providing a second valve configuration having the pump suction inlet connecting to the swimming pool intake, the pump discharge outlet connecting to the strainer outlet and the strainer inlet connecting to a waste receptacle.

4,564,452

APPARATUS FOR FILTRATION

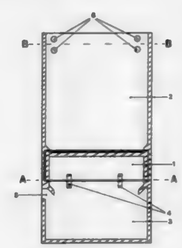
Anthony N. Sharpe, 230 Christian St., (P.O. Box 1224), Almonte, Canada K0A 1A0

Filed Oct. 5, 1984, Ser. No. 657,836

Claims priority, application Canada, Dec. 9, 1983, 443000

Int. Cl.[4] **B01D** *25/04*

U.S. Cl. 210—497.2 **10 Claims**



1. A complete filtration apparatus comprising filter means and flexible impermeable film welded or adhesively joined together in such a way that receptacles for the whole volumes of both the fluid to be filtered and the filtered fluid are formed from said film, said receptacles being internally connected with one another solely by said filter means, said receptacles also being initially flat and of minimum internal volume before use but being capable of flexibly dilating or collapsing to accommodate the addition of fluid and its movement through the

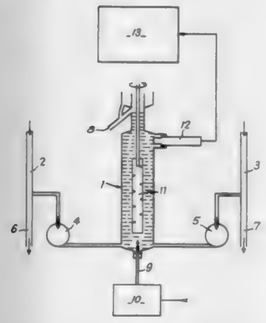
apparatus under the influence of gravity and also of holding the filtered fluid until such time as it is removed for further use.

4,564,453

METHOD AND APPARATUS FOR THE DETECTION OF TOXIC SUBSTANCES IN WASTE WATER FEEDING A BIOLOGICAL TREATMENT PLANT

Daniel Coplot, Franconville, and Georges Picon, Gennevilliers, both of France, assignors to Atochem (Societe Anonyme Styled), France

Filed Jan. 20, 1984, Ser. No. 572,465
Claims priority, application France, Jan. 24, 1983, 83 01027
Int. Cl.⁴ C02F *3/12*; C12M *1/36*; G01N *33/18*
U.S. Cl. 210—614 **8 Claims**



1. A method for detecting toxic substances in the waste water supplied to a biological treatment plant wherein the waste water is brought in contact with activated sludge samples taken from the biological treatment plant inside a reactor, comprising the steps of:

continuously supplying the reactor with activated sludge samples from the plant;

supplying the reactor with waste water to be analyzed;

continuously supplying the reactor with oxygen;

measuring the quantity of oxygen dissolved in the reactor;

comparing the measured quantity of oxygen dissolved in the reactor to selected maximum and minimum values;

regulating the flow of waste water supplied to the reactor by respectively reducing and increasing the waste water flow when the measured dissolved oxygen content value is respectively below the selected minimum value and above the selected maximum value in order to maintain the load applied to the reactor substantially constant; and

activating a toxicity alarm when the measured content exceeds said maximum value and when the waste water supply to the reactor reaches a selected water flow rate maximum.

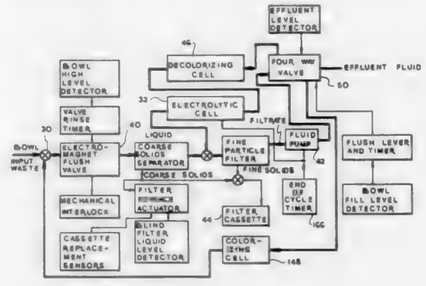
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SELF-CONTAINED SEWAGE WASTE DISPOSAL SYSTEM

Clifton F. Briner, Lafayette, Ind.; William R. Bocchini, Wyckoff, and Brian Wilcockson, Long Beach Island, both of N.J., assignors to American Standard Inc., New York, N.Y.

Division of Ser. No. 320,595, Nov. 12, 1983, Pat. No. 4,393,524.
This application Apr. 21, 1983, Ser. No. 487,078
The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.
Int. Cl.⁴ C02F *9/00*
U.S. Cl. 210—668 **27 Claims**

1. A method of disposing of sewage waste within a self-contained system comprising; providing a toilet bowl adapted to receive human waste and a predetermined amount of internally housed fluid in the system for diluting the waste, transporting the waste and rinsing the bowl, placing a removable filter cassette in alignment and in communication with the toilet bowl, flushing the bowl and dumping the contents into the filter cassette, filtering the fluid and separating coarse and fine particles of solid material from the fluid received from the bowl, storing the solid material in a compact manner in the cassette for subsequent disposal upon removal of the cassette from alignment with the toilet bowl, transporting fluid from



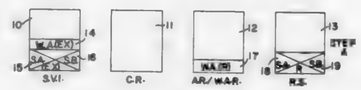
the interior of the system through interconnected conduits to fill the bowl after a flush and to transport filtered fluid from the filter cassette to a position for recirculation, and removing and controlling by control means the passage of the internally housed fluid in a predetermined sequence to facilitate the collection and disposal of sewage waste without the need for introduction of external fluid to the system other than that received from human waste.

4,564,455

THREE COMPONENT RESIN SYSTEM AND METHOD FOR PURIFYING AQUEOUS SOLUTIONS

George C. Flynn, Chester; Eli Salem, Deal, both of N.J., and Robert Kunin, Yardley, Pa., assignors to The Graver Company, Union, N.J.

Filed Dec. 13, 1983, Ser. No. 560,806
The portion of the term of this patent subsequent to Oct. 15, 2002, has been disclaimed.
Int. Cl.⁴ C02F *1/42*
U.S. Cl. 210—675 **18 Claims**



1. A method for removing impurities including ammonia and sodium ions from a liquid comprising the steps of:

(a) preparing a bed of filter materials including a first layer of a weakly acidic cation exchange resin and a second layer of a mixture comprising a strongly acidic cation exchange resin and an anion exchange resin, said weakly acidic cation exchange resin having a pK_a in the range of about 3.5 to 5.8 and

(b) passing the liquid through said first layer and then said second layer of said bed at a temperature less than 200° F. and at a flow rate of less than about 75 gallons per minute per square foot to substantially remove the impurities and purify the liquid.

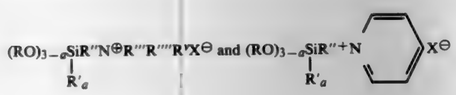
4,564,456

METHOD OF TREATING WATER TO INHIBIT CORROSION AND DIMINISH MINERAL DEPOSITION

Gary R. Homan, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 1, 1984, Ser. No. 616,088
Int. Cl.⁴ C02F *5/12*
U.S. Cl. 210—698 **32 Claims**

1. A method of treating water in order to inhibit corrosion and diminish mineral deposition in a neutral or basic pH, the method comprising adding to the water, in an amount sufficient to inhibit corrosion and diminish mineral deposition, an organosilane having a general formula selected from the group consisting of



wherein, in each formula,

R is an alkyl radical of 1 to 4 carbon atoms or hydrogen;

a has a value of 0, 1 or 2;

R′ is an alkyl radical of 1 to 4 carbon atoms;

R″ is an alkylene group of 1 to 4 carbon atoms;

R‴,R⁗ and R^{v} are each independently selected from a group consisting of alkyl radicals of 1 to 18 carbon atoms, $-CH_2C_6H_5$, $-CH_2CH_2OH$, $-CH_2OH$, and $-(CH_2)_xNHC(O)R^{vi}$, wherein x has a value of from 2 to 10 and R^{vi} is a perfluoroalkyl radical having from 1 to 12 carbon atoms;

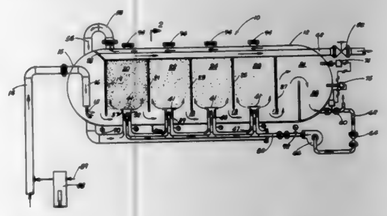
X is chloride, bromide, fluoride, iodide, acetate or tosylate.

4,564,457

UPFLOW GAS EDUCTOR INDUCED AIR FLOATATION SEPARATOR

John A. Cairo, Jr., Baton Rouge, La., and Christopher A. Jahn, Mission Viejo, Calif., assignors to L'eau Claire Systems, Inc., Kenner, La.

Filed Nov. 3, 1983, Ser. No. 548,282
Int. Cl.⁴ C02F *1/24*
U.S. Cl. 210—704 **5 Claims**



1. An upflow separator apparatus for treating a contaminated liquid stream comprising:

a. a substantially cylindrical, gas tight fluid flow chamber, defining a lower liquid flow portion and an upper gas collection portion;

b. means for introducing a first flow of contaminated liquid into said liquid portion of said chamber;

c. an outlet line for flowing clarified liquid from said chamber;

d. baffle means dividing said chamber into a plurality of aeration chambers, said chambers in fluid flow communication with one another;

e. means for educting gas through said contaminated liquid in each of said aeration chambers, comprising:

i. a clarified liquid inlet line;

ii. a gas inlet line, said gas being educted into said eductor means by the flow of clarified liquid in said liquid line;

iii. header means, further comprising first and second spaced apart plate members emitting a mixture of said educted gas and liquid therebetween for achieving maximum upward dispersion of gas bubbles through the contaminated liquid in each of said aeration chambers; and

iv. said means for educting gas protruding from the floor portion of each of said aeration chambers;

f. a single channel extending substantially the length of said gas collection portion transverse said baffle means for receiving and collecting contaminants removed from said liquid portion into said gas collection portion;

g. means for recirculating said gas collected within said upper gas collection portion by normal eduction, comprising a gas flow line in fluid communication with said upper gas collection portion and said means for educting gas into said liquid flow;

h. means in fluid communication with said channel for siphoning said contaminants from said channel as a result of a predetermined signal; and

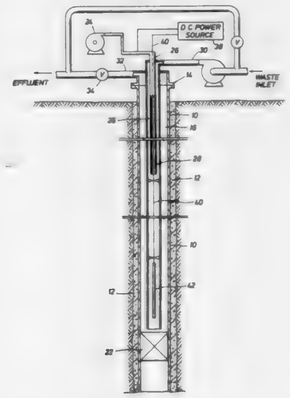
i. means for recirculating a portion of clarified liquid from said outlet line back into said chamber through said educting means.

4,564,458

METHOD AND APPARATUS FOR DISPOSAL OF A BROAD SPECTRUM OF WASTE FEATURING OXIDATION OF WASTE

James C. Burleson, 374 Dawn Hill, Friendswood, Tex., 77546

Continuation of Ser. No. 550,357, Nov. 10, 1983, abandoned.
This application Sep. 12, 1984, Ser. No. 649,907
Int. Cl.⁴ C02F *1/74, 11/08*
U.S. Cl. 210—747 **13 Claims**



1. A method of wet oxidation of organic waste materials in waste water comprising the steps of:

(a) flowing a stream of waste water including organic waste materials into an insulated well;

(b) compressing a flow of oxygen to be injected into the flowing stream of waste water;

(c) extending the flow of waste water to a depth such that pressure in the insulated well is increased to the pressure required for supercritical water;

(d) initially heating with a separate control means the waste water at the bottom of the insulated well by flowing an electric current through the water at the bottom of the insulated well to generate resistance heat for the water to initiate oxidation for sustaining supercritical conditions in the insulated well;

(e) oxidizing the organic waste materials in the waste water

to liberate heat in the insulated well to sustain the temperature required for supercritical water wherein the initial heating step with the control means is ended after the oxidized wastes sustain exothermic oxidation; and

(f) over a period of time, injecting the flow of oxygen into the insulated well with the waste water, and also removing water from the insulated well to enable continuous oxidation of waste in the insulated well at supercritical conditions to sustain supercritical temperatures.

4,564,459

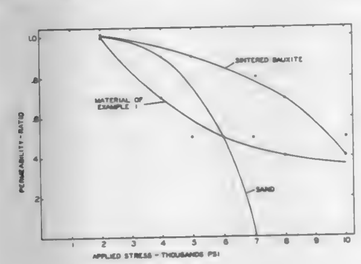
PROPPANT CHARGE AND METHOD

David R. Underdown, Alvin, and O. Howard Glaze, Kingwood, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Division of Ser. No. 494,548, May 13, 1983, Pat. No. 4,443,347, which is a continuation-in-part of Ser. No. 327,002, Dec. 3, 1981, abandoned. This application Apr. 13, 1984, Ser. No. 599,924

Int. Cl.⁴ C09K *3/00;* **E21B** *43/267*

U.S. Cl. 252—8.55 R **2 Claims**



1. A pre-cured proppant charge for propping a fracture in a subterranean well, said pre-cured proppant charge being pre-cured prior to injection into the subterranean well, said pre-cured proppant charge comprising, prior to injection of the pre-cured proppant into said well, resin coated sand particles most of which are composed of a single substrate particle with a thermoset resite coating thereon, the resite coating being one of which, when it is the resin coating on sand particles of a proppant charge, produces a charge wherein at least one of: (a) the Conductivity Ratio thereof, throughout a given closure stress range, is greater than that of a charge of the uncoated sand particles having substantially the same particle size distribution; or (b) the Permeability Ratio thereof throughout the stress range of about 2,000 to 10,000 p.s.i. is at least about 30 percent that of a sintered bauxite charge of substantially the same particle size, the resin for said coating being at least one of: (1) a resole; or (2) a novolac.

4,564,460

HYDROCARBYL-SUBSTITUTED CARBOXYLIC ACYLATING AGENT DERIVATIVE CONTAINING COMBINATIONS, AND FUELS CONTAINING SAME

Casper J. Dorer, Jr., 4852 Fairlawn Rd., Lyndhurst, Ohio 44124, and Katsumi Hayashi, 8290 Mentorwood Dr., Mentor, Ohio 44060

Filed Aug. 9, 1982, Ser. No. 404,845

Int. Cl.⁴ F16K *31/44*

U.S. Cl. 252—73 **111 Claims**

1. A composition comprising a mixture of two individual components, said components being:

(A) as a first component, a pour point depressant selected from the group consisting of

(i) an oil-soluble ethylene backbone polymer having a number average molecular weight in the range of about 500 to about 50,000;

(ii) a hydrocarbyl-substituted phenol of the formula

$$(R^*)_a\text{—Ar—}(OH)_b \quad \text{I}$$

wherein R* is a hydrocarbyl group selected from the group consisting of hydrocarbyl groups of from about 8 to about 30 carbon atoms and polymers of at least 30 carbon atoms, Ar is an aromatic moiety having 0 to 4 optional substituents selected from the group consisting of lower alkyl, lower alkoxyl, nitro, halo or combinations of two or more of said optional substituents, and a and b are each independently an integer of 1 up to 5 times the number of aromatic nuclei present in Ar with the proviso that the sum of a and b does not exceed the unsatisfied valences of Ar; or

(iii) mixtures of (i) and (ii); and

(B) as a second component, an agent for dispersing and/or suspending wax crystals, said second component being the oil-soluble reaction product of (B)(I) a hydrocarbyl-substituted carboxylic acylating agent with (B)(II) one or more amines, one or more alcohols, or a mixture of one or more amines and/or one or more alcohols, the hydrocarbyl substituent of said agent (B)(I) being selected from the group consisting of

(i') one or more mono-olefins of from about 8 to about 30 carbon atoms;

(ii') mixtures of one or more mono-olefins of from about 8 to about 30 carbon atoms with one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of polymers of mono-1-olefins of from 2 to 8 carbon atoms, or the chlorinated or brominated analogs of such polymers; and

(iii') one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of

(a) polymers of mono-olefins of from about 8 to about 30 carbon atoms;

(b) interpolymers of mono-1-olefins of from 2 to 8 carbon atoms with mono-olefins of from about 8 to about 30 carbon atoms;

(c) one or more mixtures of homopolymers and/or interpolymers of mono-1-olefins of from 2 to 8 carbon atoms with homopolymers and/or interpolymers of monoolefins of from about 8 to about 30 carbon atoms; and

(d) chlorinated or brominated analogs of (a), (b), or (c).

4,564,461

METHOD FOR THE MECHANICAL WORKING OF CAST IRON AND AN AQUEOUS CONCENTRATE TO BE USED IN THE METHOD

Rolf O. Sköld, Stenungsund; Lars-Gösta von Dahn, Hjälteby, and Anna K. Sterky, Stenungsund, all of Sweden, assignors to Berol Kemi AB, Stenungsund, Sweden

Filed Jan. 30, 1984, Ser. No. 575,220

Claims priority, application Sweden, Feb. 10, 1983, 8300704

Int. Cl.⁴ C10M *3/38*

U.S. Cl. 252—32.5 **22 Claims**

1. In a method for the mechanical working of cast iron comprising mechanically working the cast iron in the presence of an alkaline aqueous metalworking composition, the improvement wherein said metalworking composition is essentially free of mineral oil and comprises:

an organic copper (II) complex in an amount of 0.05–2% by weight of the composition; and

an iron corrosion inhibitor in an amount of 0.1–5% by weight.

4,564,462

MENTHOL SOAP

Hajime Watanabe, Machida; Yoshio Tanaka, Tokyo, and Seiichi Abe, Yokohama, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo and Sunstar K.K., Takatsuki, both of, Japan

Filed Jun. 8, 1984, Ser. No. 618,462

Claims priority, application Japan, Jun. 23, 1983, 58-111905

Int. Cl.⁴ C11D *17/00*

U.S. Cl. 252—134 **11 Claims**

1. A menthol soap in bar form comprising a soap base, 2 to 7% by weight of menthol based on the weight of the soap base, 2 to 7% of a crack-preventing agent, and a solvent for said menthol in an amount of from ½ to 3/2 that of the menthol;

said crack-preventing agent being a higher alcohol/ethylene oxide adduct containing 10 to 50 moles of ethylene oxide per mole of alcohol and said higher alcohol being an alkyl or alkenyl C_{12} to C_{18} alcohol; and

said solvent for said menthol being an alkylene diol having from 2 to 6 carbon atoms.

4,564,463

LIQUID LAUNDRY DETERGENTS WITH IMPROVED SOIL RELEASE PROPERTIES

Isaac I. Secemski, Flushing, N.Y.; Lynn H. Lander, Harrington Park, and Henricus M. Princen, Bedminster, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Jun. 15, 1984, Ser. No. 621,289

Int. Cl.⁴ C11D *17/00*

U.S. Cl. 252—174.17 **10 Claims**

1. A heavy duty liquid detergent composition with improved soil release properties comprising:

(a) from about 2 to 10% of a nonionic surfactant selected from the group consisting of a C_{12}–C_{13} fatty alcohol ethoxylated with an average of 6.5 moles ethylene oxide, a C_9–C_{11} fatty alcohol ethoxylated with an average of 6 moles ethylene oxide, and mixtures thereof;

(b) from about 10 to 25% of an anionic surfactant; and

(c) from about 0.1 to 0.8% of methylcellulose.

9. A method for imparting soil release benefits to a fabric comprising washing the fabric with a liquid detergent composition comprising:

(a) from about 2 to 10% of a nonionic surfactant selected from the group consisting of a C_{12}–C_{13} fatty alcohol ethoxylated with an average of 6.5 moles ethylene oxide, a C_9–C_{11} fatty alcohol ethoxylated with an average of 6 moles ethylene oxide, and mixtures thereof;

(b) from about 10 to 25% of an anionic surfactant; and

(c) from about 0.1 to 0.8% of methylcellulose.

4,564,464

HECTORITE BASED PAINT SPRAY BOOTH DETACKIFYING SLURRIES AND METHODS OF USE THEREOF

William L. Harpel, Langhorne; Deborah L. Purnell, Folsom, and Richard J. Pilny, Warrington, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Dec. 27, 1984, Ser. No. 686,951

Int. Cl.⁴ C02F *1/56*

U.S. Cl. 252—181 **3 Claims**

1. A pumpable slurry for the detackification and clarification of paint spray booth wastes comprising, in combination, from about 99.9%–10% of a hectorite clay material, from about 0.1–20% of a thinning agent, wherein said thinning agent comprises a member or members selected from the group consisting of water soluble aliphatic and alicyclic amines, about 0–10% of a water soluble polyphosphate water conditioning agent, from about 0 –15% alumina, from 0– about 40% montmorillonite clay, and about 0–5% of an antifoam, and water, all of said percentages being based upon the total weight of the non-aqueous components of said slurry.

4,564,465

CORROSION INHIBITION ADDITIVE FOR FLUID CONDITIONING

John W. Bibber, Norman, Okla., assignor to Air Refiner, Inc., Oklahoma City, Okla.

Filed Apr. 20, 1983, Ser. No. 486,669

Int. Cl.⁴ C23F *11/00*

U.S. Cl. 252—389 R **23 Claims**

1. A corrosion inhibitor for addition to the cooling fluid in a fluid circulating cooling system, comprising:

an additive of a soluble alkali metal salt of perchlorate in solution with said fluid in a concentration in the range of 100 to 1000 ppm and forming ions of perchlorate.

4,564,466

METHOD FOR THE MANUFACTURE OF A POLYMER

Gerd Weddigen; Robert Huber, both of Heidelberg; Birgit Schmidt, Ludwigshafen, and Hartmut Schneider, Plankstadt, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany

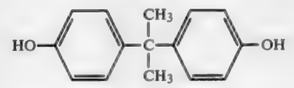
Filed Dec. 21, 1983, Ser. No. 563,871

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3248088

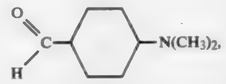
Int. Cl.⁴ C08G *8/28, 14/12*

U.S. Cl. 525—505 **1 Claim**

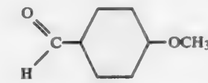
1. Method for the production of a synthetic polymer with triaromatic methane units as basic building blocks having an electric conductivity through formation of charge transfer complexes, said polymer selected from the group consisting of a polymer formed by polycondensation of bisphenol-A,



and 4-dimethylaminobenzaldehyde



by polycondensation of bisphenol-A and para-anisaldehyde



and by polycondensation of benzaldehyde and resorcinol, which comprises, adding 20% by weight sulfur trioxide relative to the total weight of the polymer as an electron acceptor and reacting the sulfur trioxide with the polymer to form charge transfer complexes and produce a fusible and soluble polymer with an electric bulk conductivity of 2×10^{-5} $(ohm\times cm)^{-1}$.

4,564,467

OIL COMPOSITION

Alain J. Rauline, Pavilly, France, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 28, 1983, Ser. No. 566,203

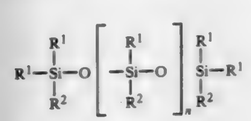
Claims priority, application United Kingdom, Dec. 31, 1982, 8237073

Int. Cl.⁴ H01B *3/22, 3/46*

U.S. Cl. 252—573 **11 Claims**

1. An electrical oil composition having suitable dielectric properties comprising a major proportion by weight of an oil

having a kinematic viscosity of 5 to 30 cSt at 40° C. and a pour point depressing amount in the range of 0.01 to 10.0 weight percent of an organo siloxane having the formula:



wherein

R^1 is independently methyl, ethyl or propyl,

R^2 is independently a C_{10} to C_{20} alkyl group and

n is 12 to 28.

4,564,468

FLAME RETARDANT FOR POLYURETHANES

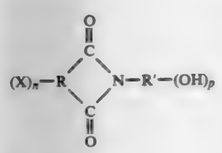
Henry J. Barda, North Brunswick, N.J., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 303,055, Sep. 17, 1981, abandoned. This application Dec. 12, 1984, Ser. No. 680,930

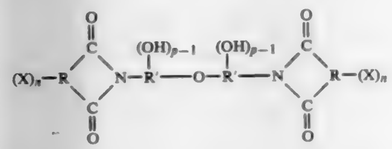
Int. Cl.⁴ C09K *2/10*

U.S. Cl. 252—609 **10 Claims**

1. A reactive flame retardant mixture comprising about 1–99 weight percent of a halogenated imide-containing polyol having the formula:



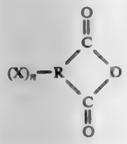
and about 99–1 weight percent of the corresponding ether having the formula:



wherein R is a hydrocarbon group having the valence n+2 and is selected from the group consisting of benzene groups, naphthalene groups and alicyclic hydrocarbon groups containing 5 to 10 carbon atoms, R′ is an aliphatic hydrocarbon group containing 3–12 carbon atoms, X is selected from the group consisting of bromine and chlorine, n is an integer from 1–6 and p is an integer from 2–6.

7. A process for preparing a reactive flame retardant mixture, said process comprising reacting at a temperature of about 50°–350° C.

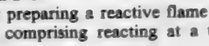
(a) about one mole of a halogenated dicarboxylic anhydride compound having the structure:



wherein R is a hydrocarbon group having the valence n+2 and is selected from the group consisting of benzene groups, naphthalene groups and alicyclic hydrocarbon groups containing 5 to 10 carbon atoms, X is selected from the group consisting of bromine and chlorine and n is an integer from 1 to 6,

(b) about 0.8–50 moles of an alcohol containing 1–10 carbon atoms and

(c) about 0.5–2.5 moles of an aminopolyol having the structure:



wherein R′ is an aliphatic hydrocarbon group containing 2–6 carbon atoms having the valence p+1 and p is an integer from 2–6.

4,564,469

PROCESS FOR STORING FLEXIBLE CONTAMINATED MATERIALS

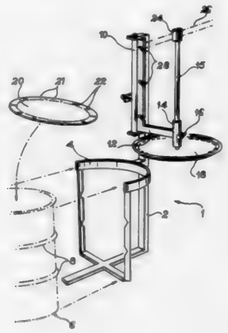
André Cochet, Saint Cyr l'Ecole; Roger Droussent, Saint Remy les Chevreuse, and Marcel Jurado, Argenteuil, all of France, assignors to Commissariat a l'Energie, Paris, France

Filed Sep. 28, 1983, Ser. No. 536,505

Claims priority, application France, Sep. 28, 1982, 82 16285

Int. Cl.⁴ B30B *15/00;* **C09K** *11/04*

U.S. Cl. 252—626 **4 Claims**



1. A process for storing by compacting waste comprising contaminated flexible materials in a drum comprising the steps:

(a) placing the waste in a drum,

(b) placing above the waste in said drum a precover having a diameter slightly greater than the internal diameter of the drum, said precover having an outer edge which is deformable,

(c) inserting the precover into the drum to compact the waste therein, said insertion resulting in a deformation of the edges of said precover and withdrawal of the precover from said drum being prevented after compaction by friction between said deformed edge of the precover and the drum walls,

(d) and repeating steps (a), (b), and (3) until said drum is filled.

4,564,470

FOLDER ASSEMBLY

Günter K. Schmitt, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Würzburg, Fed. Rep. of Germany

Filed May 28, 1985, Ser. No. 738,318

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1984, 3422755

Int. Cl.⁴ B41F *13/56*

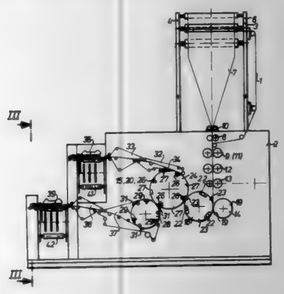
U.S. Cl. 270—21.1 **7 Claims**

1. A folder assembly for book folding a web printed in a web-fed rotary printing machine, said folder assembly comprising:

means for directing said printed web to a rotatable cutting cylinder, said cutting cylinder severing said web into signatures and cooperating with a rotatable folding blade cylinder which cross folds said signatures;

a rotatable folding jaw cylinder having folding jaws which receive said cross folded signatures from said folding blade cylinder;

a rotatable gripper cylinder having gripper rows and cooperable with said folding jaw cylinder to receive selected ones of said cross folded signatures;



an upper third fold assembly and a lower third fold assembly, said upper third fold assembly being stationary and said lower third fold assembly being displaceable in a horizontal plane generally parallel to an axis of rotation of said folding jaw cylinder, each of said upper and lower third fold assemblies being operable to form a longitudinal fold in said cross folded signatures; and

an upper transport tape assembly extending between said folding jaw cylinder and said upper third fold assembly and a lower transport tape assembly extending between said gripper cylinder and said lower third fold assembly.

4,564,471

METHOD FOR REDUCTIVE ELIMINATION OF PROTECTING GROUPS

Katsumi Sugiyama; Hideo Takeda, both of Kawasaki; Hiroko Sato, Yokohama; Yuji Nonaka, Shinnanyo; Kiyotaka Oyama, Shinnanyo, and Masashige Kubo, Shinnanyo, all of Japan, assignors to Ajinomoto Co., Inc.; Toyo Soda Mfg. Co., Ltd. and Sagami Chem. Rsch. Cntr., all of, Japan

Filed Sep. 17, 1980, Ser. No. 188,107

Claims priority, application Japan, Sep. 27, 1979, 54-123178

Int. Cl.⁴ C07C *103/52*

U.S. Cl. 260—112.5 K **3 Claims**

1. In a method for eliminating a benzyloxycarbonyl group from a lower alkyl ester of N-benzyloxycarbonyl-α-L-aspartyl-L-phenylalanine by catalytic reduction with hydrogen in a liquid reaction medium, an improvement which comprises using a two-phase medium composed of water and toluene as the liquid reaction medium.

4,564,472

3-AMINOMETHYLENE-2,4-PENTANEDIONE BIS(THIOSEMICARBAZONE) DERIVATIVES, AND THEIR PRODUCTION AND USE

Nobuo Ueda, Kawanishi; Susumu Kondo, and Masaaki Hazue, both of Hyogo, all of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

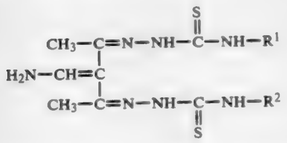
Division of Ser. No. 332,152, Dec. 18, 1981. This application Jun. 30, 1983, Ser. No. 509,669

Claims priority, application Japan, Dec. 19, 1980, 55-180770; Dec. 19, 1980, 55-180771

Int. Cl.⁴ C07G *7/04, 7/00*

U.S. Cl. 260—113 **19 Claims**

1. A physiologically active substance-combined compound comprising a compound of the formula:



(I)

wherein R^1 and R^2 are each hydrogen, C_1-C_3 alkyl or phenyl, and a physiologically active substance bound therewith by a chemical bond.

4,564,473

6-UNSUBSTITUTED-7-OXO-4-OXA-DIAZABICYCLO(3.2.0)HEPT-2-ENE DERIVATIVES

Dieter Häbich, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

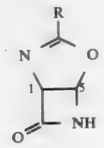
Filed Aug. 4, 1983, Ser. No. 520,097

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3231060

Int. Cl.⁴ C07D *498/04*

U.S. Cl. 260—245.4 **3 Claims**

1. A compound of the formula



in which

R is phenyl, phenyl substituted by methyl, ethyl, aminomethyl, hydroxyl, methoxy, ethoxy, carbamoyloxy, acetoxy, amino, mesylamino, methylamino, aminosulphonylamino, amidino, mesyl, methylsulphinyl, methoxycarbonyl, carbamoyl, sulpho, methylthio, silyl, silyloxy or halogen.

4,564,474

23,23-DIFLUORO-25-HYDROXY-VITAMIN D_3 AND PROCESS FOR PREPARING SAME

Hector F. DeLuca; Yoko Tanaka, both of Madison, Wis.; Nobuo Ikekawa, and Yoshiro Kobayashi, both of Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

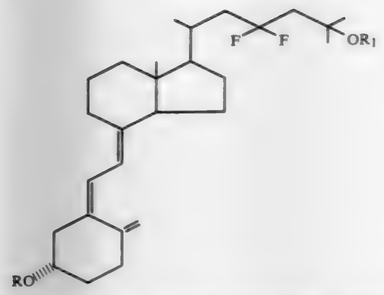
Continuation-in-part of Ser. No. 524,269, Aug. 18, 1983. This application Aug. 13, 1984, Ser. No. 639,776

The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.

Int. Cl.⁴ C07J *9/00*

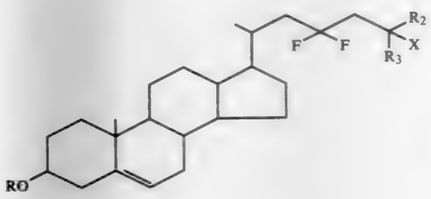
U.S. Cl. 260—397.2 **3 Claims**

1. Compounds having the formula



wherein R and R_1 are each selected from the group consisting of hydrogen, an acyl group having from one to about four carbon atoms and benzoyl, with the proviso that R and R_1 cannot both be hydrogen.

3. A compound having the formula



where R_1 is acetyl
X is hydroxy and
R_2 and R_3 are methyl.

4,564,475

COMPOSITIONS CONTAINING UNSATURATED FATTY ACID COMPOUNDS AND METHOD OF STABILIZING UNSATURATED FATTY ACID COMPOUNDS

Masui Masaichiro, Takarazuka, Japan, assignor to Hiroshi Sekimoto, Ishikawa; Michio Nakanishi, Osaka and Masataka Akiyoshi, Hyogo, all of, Japan

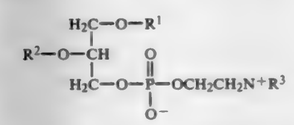
Filed May 29, 1984, Ser. No. 615,095

Claims priority, application Japan, May 28, 1983, 58-94489; Jul. 2, 1983, 58-120693

Int. Cl.[4] A23J *1/00*

U.S. Cl. 260—398.5 **7 Claims**

1. A stable composition containing at least one fatty acid compound selected from the group consisting of an unsaturated fatty acid having 20 to 22 carbon atoms and 3 or more double bonds, an amide thereof and an ester thereof, and as a stabilizing agent for the fatty acid compound, at least one compound of the formula:



(I)

wherein R^1 and R^2 respectively stand for a fatty acid residue, and R^3 stands for $(H)_3$ or $(CH_3)_3$.

4,564,476

ARYL FATTY ACID LEUKOTRIENE SYNTHESIS INHIBITORS

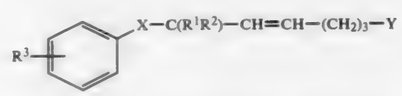
Chih Y. Ho, Lansdale, Pa., assignor to McNeilab, Inc., Fort Washington, D.C.

Filed Oct. 29, 1984, Ser. No. 665,683

Int. Cl.[4] C07C *57/42, 69/108, 103/76, 33/30*

U.S. Cl. 260—404 **11 Claims**

1. An aryl fatty acid compound of the following formula (I):



(I)

wherein

R^1 and R^2 are independently hydrogen, methyl or fluorine or taken together are ethylene of the formula $—CH_2CH_2—$;

R^3 is hydrogen, alkyl, alkoxy, alkylthio, halo, alkenyl or hydroxy;

X is $—CH_2OCH_2—$, —CH=CH—, or $—CH=CH—CH_2—O—CH_2—$;

Y is COOH, alkoxycarbonyl, $—CONH_2$, $—CONHR^4$, $—CONR^5R^6$, or hydroxyalkyl;

R^4 is alkyl or hydroxy;

R^5 is alkyl;

R^6 is alkyl; and,

when Y is $—CO_2H$, the pharmaceutically acceptable base addition salts thereof.

4,564,477

POLYPRENYL COMPOUNDS AND METHOD OF PRODUCING THE SAME

Tetsuo Takigawa; Koichi Ibata; Masafumi Okada; Masao Mizuno, and Takashi Nishida, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

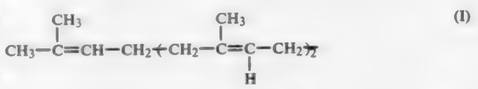
Filed Feb. 17, 1983, Ser. No. 467,253

Claims priority, application Japan, Feb. 19, 1982, 57-26300; Mar. 18, 1982, 57-44256; Mar. 19, 1982, 57-44839; Mar. 24, 1982, 57-47658; Mar. 29, 1982, 57-51903; Mar. 29, 1982, 57-51904; Apr. 6, 1982, 57-57863; May 14, 1982, 57-82040; May 24, 1982, 57-88320; Jun. 2, 1982, 57-95119

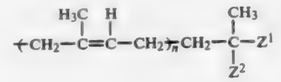
Int. Cl.[4] C07C *49/203;* **C09F** *5/00*

U.S. Cl. 260—405.5 **10 Claims**

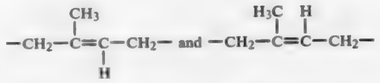
1. A polyprenyl compound represented by the fomrula



(I)



wherein



represent a trans-isoprene unit and a cis-isoprene unit, respectively, n is an integer of 11 to 19, and Z^1 and Z^2 combinedly represent =O, =CH—COOH, =CH—$COOR^1$, =CH—CN, $=C(CN)COOR^2$, =CH—$CO—NH_2$, =CH—$CO—N(R^3)(R^4)$, =CH—$CO—NHR^5$, =CH—$CH_2—N(R^3)(R^4)$, =CH—$CH_2—NHR^5$ or =CH—CHO or Z^1 is a hydrogen atom and Z^2 is $—CH_2COOH$, $—CH_2COOR^6$, $—CH(CN)COOR^2$, $—CH_2CN$, $—CH_2—CO—NH_2$, —CH=CH—$N(R^3)(R^4)$ or $—CH_2—CH=N—R^5$, R^1, R^2 and R^6 each being a lower alkyl group, R^3 and R^4 each being independently a lower-alkyl, cycloalkyl, aryl or aralkyl group or R^3 and R^4 combinedly representing an alkylene group containing 2 to 5 carbon atoms, and R^5 being a lower-alkyl, cycloalkyl, aryl or aralkyl group.

4,564,478

FLUORINATED THIOCARBONIC ACID ESTER-FLUORIDES

Erich Klauke, Odenthal, and Engelbert Kühle, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 13, 1984, Ser. No. 670,693

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341516

Int. Cl.[4] C07C *153/017, 153/023, 148/00*

U.S. Cl. 260—455 R **12 Claims**

1. A fluorinated thiocarbonic acid ester-fluoride of the formula



(I)

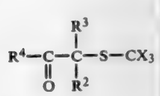
in which

R^1 represents straight-chain or branched alkyl with 1 to 12 carbon atoms, cycloalkyl with 3 to 8 carbon atoms, or phenyl or phenyl substituted with substituents selected from the group consisting of halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, halogenoalkoxy with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkylthio with 1 to 4 carbon atoms, halogenoalkylthio with 1 to 4 carbon atoms and 1 to 5 halogen atoms and nitro, and

R^2 and R^3 independently of one another represent hydrogen or straight-chain or branched alkyl with 1 to 4 carbon atoms, or

R^1 and R^2 together represent an alkylene chain with 3 to 5 carbon atoms.

9. A β-keto-trihalogenomethylthio-ether of the formula



(IIc)

in which

R^2 and R^3 independently of one another represent hydrogen or straight-chain or branched alkyl with 1 to 4 carbon atoms,

R^4 represents phenyl or phenyl substituted with substituents selected from the group consisting of halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, halogenoalkoxy with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkylthio with 1 to 4 carbon atoms, halogenalkylthio with 1 to 4 carbon atoms and 1 to 5 halogen atoms, and nitro and

X represents fluorine or chlorine, at least one X representing chlorine.

4,564,479

PROCESS FOR THE PD-CATALYZED ARYLATION OF OLEFINS WITH ARYL HALIDES

Alwyn Spencer, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

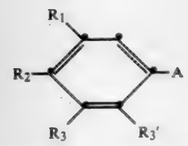
Filed Oct. 29, 1982, Ser. No. 437,704

Claims priority, application Switzerland, Nov. 4, 1981, 7055/81

Int. Cl.[4] C07C *121/50, 69/76;* **C07D** *407/00, 319/06, 317/00*

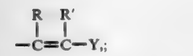
U.S. Cl. 260—465 H **19 Claims**

1. A process for the preparation of a compound of formula I



(I)

in which A is



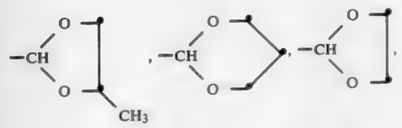
wherein Y is cyano;

R is selected from the group consisting of hydrogen, methyl, cyano, and —COOR″;

R′ is selected from the group consisting of hydrogen, methyl, and $—CH_2COOR''$;

R″ is selected from the group consisting of C_1–C_{12}-alkyl and phenyl;

R_1, R_2, and R_3, independently of one another, are selected from the group consisting of hydrogen, phenyl, C_1–C_8-alkyl, C_1–C_5-alkoxy, $—CH(OCH_3)_2$, $—CH(OC_2H_5)_2$,



OH, halogen, nitro, cyano, —CHO, —CO, —(C_1–C_4)-alkyl, —COO—(C_1–C_4)-alkyl, —NHCO—(C_1–C_4)-alkyl, amino, —NH—(C_1–C_4)-alkyl, —N((C_1–C_4)-alkyl)$_2$ and SO_3M;

R_2 being further selected from the group consisting of —CH=N-phenyl, p-bromophenyl, and $—C(R_4)=C(R_5)(R_6)$;

R_3′ is selected from the group consisting of hydrogen, methyl, cyano, —CHO, and SO_3-phenyl;

R_4 is selected from the group consisting of hydrogen, C_1–C_4-alkyl, cyano, —COO—(C_1–C_4)-alkyl;

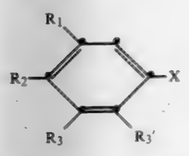
R_5 is selected from the group consisting of hydrogen, C_1–C_4-alkyl, —NHCHO, $—(CH_2)_m—COO—(C_1–C_4)$-alkyl and $—(CH_2)_m—CN$, is which m is 1–4;

R_6 is selected from the group consisting of cyano and —COO—(C_1–C_4)-alkyl; or

R_1 and R_2 are both hydrogen and R_3 and R_3′ together are $—CH=CH—CH=CH—$; and

M is a monovalent metal cation;

which process comprises reacting a compound of formula II



with a compound HA in the presence of

(i) an alkali salt or alkaline earth metal salt of

(a) an aliphatic monocarboxylic acid having 1 to 12 carbon atoms or

(b) benzoic acid;

(ii) a cyclic or N,N-di-substituted amine as a solvent; and

(iii) a palladium catalyst containing arsenic or phosphorous, X being selected from the group consisting of iodine and bromine; A, Y, R, R', R_1, R_2, R_3, and R_3' being as defined above, said palladium catalyst being present in an amount of 0.1 to 0.0001 mole percent based on the compound of formula II, said reaction taking place at a temperature between 50° and 200° C.

4,564,480

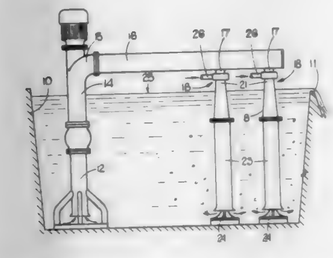
AERATION SYSTEM AND METHOD

Eduard Kamelmacher, 77 Lionel Rd., Brentford, Middlesex, England

Continuation of Ser. No. 971,250, Dec. 20, 1978, abandoned, which is a continuation of Ser. No. 796,166, May 12, 1977, abandoned. This application Aug. 29, 1980, Ser. No. 182,674

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—36 R **16 Claims**



1. A liquid treatment plant for a two-phase, gas-liquid mass transfer process, comprising a tank for containing a liquid so as to provide a gas volume above the liquid surface, means for maintaining said liquid at a predetermined level in said tank, a circulating pump for withdrawing liquid from said tank, a liquid injector pump downstream of said circulating pump, said injector pump having a nozzle opening through which liquid from said circulating pump can pass, an outlet spaced axially a small distance from said nozzle opening, and an inlet passage communicating with the space between said nozzle and said outlet, said inlet passage providing means through which only gas can be drawn as a result of passage of liquid through said nozzle opening to said outlet, a substantially vertical mixing pipe communicating with said outlet and extending from adjacent said predetermined level to a position adjacent the bottom of the tank, and a deflector for urging a gas-liquid stream emerging from said mixing pipe in a direction transverse to the axis thereof, a portion of said injector pump outlet adjacent said nozzle opening having a cross-sectional area of between 1.05 and 1.4 times the cross-sectional area of said nozzle opening, and the cross-sectional area of said mixing pipe being between 4 and 11 times the cross-sectional area of said nozzle opening.

4,564,481

APPARATUS FOR STARTING AND WARMING UP AN INTERNAL COMBUSTION ENGINE

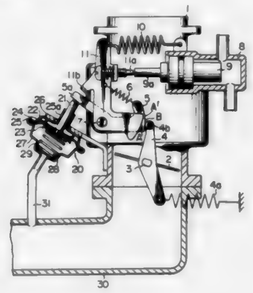
Sunao Kitamura, Ohbu, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Ohbu, Japan

Filed Sep. 26, 1984, Ser. No. 654,662

Claims priority, application Japan, Oct. 19, 1983, 58-161540[U]

Int. Cl.⁴ F02M *1/10*

U.S. Cl. 261—39 A **4 Claims**



1. An apparatus for controlling the opening degree of a throttle valve during starting and warming up of an internal combustion engine, having a fast idle cam which operates to progressively decrease the opening degree of the throttle valve as the warming up of the engine proceeds, said apparatus comprising:

a starting cam provided separately from said fast idle cam and adapted to maintain a large opening degree of said throttle valve;

a first means for bringing, while the engine is not operating, said starting cam into operative position for holding said throttle valve, in response to a throttle opening operation;

a second means for releasing, when a predetermined engine temperature is reached after the starting of said engine, the holding of said throttle valve by said starting cam and instead bringing said fast idle cam into operation for controlling the opening degree of the throttle valve, and

a throttle lever having a cam engaging portion, said starting cam and said fast idle cam being mounted in side-by-side relationship on opposite sides of an intermediate plane, with each cam engaging said throttle lever portion on opposite sides of said plane.

4,564,482

VARIABLE VENTURI TYPE CARBURETOR

Michio Tahata, Niiza; Masao Okamoto, Asaka, and Hiroshi Enomoto, Ooi, all of Japan, assignors to Honda Giken Kogyo Kabushiki, Tokyo, Japan

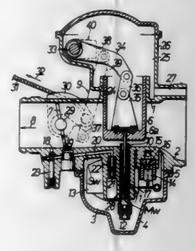
Filed Jun. 15, 1984, Ser. No. 621,072

Claims priority, application Japan, Sep. 6, 1983, 58-163698

Int. Cl.⁴ F02M *9/06*

U.S. Cl. 261—44 B **16 Claims**

1. A variable venturi type carburetor comprising a carburetor body having an intake passage, a slide valve slidably supported in said body for travel across said intake passage to function as a variable venturi, a butterfly throttle valve pivotably supported by said body in said intake passage downstream of said slide valve, a low-speed fuel passageway and a main fuel passageway which opens into said intake passage proximate said butterfly throttle valve and directly below said slide valve, respectively, interlocking means operatively connecting said slide valve and said butterfly throttle valve for interlocked operation over a range from their fully closed positions to their fully open positions with a degree of opening of the slide valve higher than that of the butterfly valve by a predetermined magnitude at least for low opening degrees thereof, said interlocking means being constructed for controlling interlocked opening and closing operations of the slide valve and the butterfly throttle valve such that the slide valve is in open state by a predetermined degree of opening when the butterfly throttle



valve is fully closed and the slide valve is completely retracted from the intake passage with no part thereof projecting into the passage in its fully open position, and control means for applying an external force to one of said valves for operating said slide valve and said butterfly throttle valve.

4,564,483

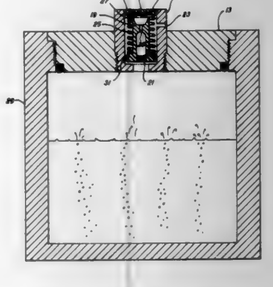
METHOD AND APPARATUS FOR BATCH CARBONATING

Edward L. Jeans, Lydart, Wales, assignor to Cadbury Schweppes, PLC, London, United Kingdom

Filed Nov. 10, 1983, Ser. No. 550,455

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—64 B **10 Claims**



1. A method of batch carbonating water and then dispensing in a carbonator using carbon dioxide at a supply pressure, such as to result in fast and efficient carbonating and unrestricted dispensing comprising:

(a) disposing a slow feed valve at the inlet of said carbonator, said slow feed valve having a small orifice and larger orifice;

(b) causing a flow of the carbon dioxide through the water being carbonated at a controlled rate by causing carbon dioxide gas to flow in a controlled manner through said small orifice until a predetermined pressure less than the supply pressure is reached in the carbonator and, upon reaching said predetermined pressure effectively terminating flow through said small orifice; and

(c) after said predetermined pressure is reached then allowing gas to flow through said larger orifice.

2. Apparatus for controlling flow of gas in a batch carbonator comprising:

(a) an inlet slow feed valve disposed at the inlet to said carbonator, said inlet slow feed valve containing a small orifice and which will limit flow of gas through water in said carbonator and a valve responsive to the pressure within said carbonator for controlling the flow through said orifice and an orifice of larger size, said valve adapted to maintain said orifice of larger size closed until said predetermined pressure is reached whereupon said valve opens to permit flow through said larger orifice; and

(b) a check valve in said slow feed valve to prevent backflow therethrough.

4,564,484

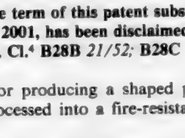
PRODUCTION OF SOFT LENSES HAVING REDUCED SPHERICAL ABERRATIONS

Charles W. Neefe, 811 Scurry St., P.O. Box 429, Big Spring, Tex. 79720

Filed Nov. 26, 1984, Ser. No. 674,984

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 264—2.6 **2 Claims**



1. A method of making a contact lens having reduced spherical aberration when in place on the eye made by the steps of providing an aspheric convex optical mold having a longer radius of curvature at the center and a progressively shorter radius of curvature toward the edge of the mold, casting a selected liquid lens monomer over the aspheric convex mold, allowing the liquid lens monomer to polymerize to form a solid xerogel monolithic lens blank, the aspheric lens blank having a concave aspheric surface is removed from the mold, a spherical convex optical surface is cut and polished on the concave aspheric blank to form a xerogel contact lens, the xerogel contact lens is hydrated to form a hydrogel soft contact lens having a spherical convex surface and an aspheric concave surface, the concave lens surface having a shorter radius of curvature toward the lens edge, the soft hydrogel contact lens is placed on the cornea of the eye and the concave lens surface assumes the curvature of the cornea and the convex lens surface becomes an aspheric surface having a longer radius of curvature toward the lens edge and spherical aberration is reduced.

4,564,485

PROCESS FOR PRODUCING A PLASTIC COMPOSITION WHICH CAN BE PROCESSED INTO A FIRE-RESISTANT MATERIAL

Axel Eschner, Wiesbaden; Rudolf Ganz, Mainz-Gonsenheim; Günter Tkotz, Wiesbaden; Hermann Stein, Bad Durkheim, and Klaus Kreuels, Eltville, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 349,244

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105593

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.⁴ B28B *21/52;* **B28C** *5/40*

U.S. Cl. 264—30 **32 Claims**

1. A process for producing a shaped plastic composition which can be processed into a fire-resistant material, which comprises:

mixing 100 parts by weight of ceramic fibers with 1 to 3 parts by weight of a substantially dry organic bonding agent to produce a substantially uniformly dispersed first mixture, mixing said first mixture with 10 to 50 parts by weight of

water to produce a substantially uniformly dispersed second mixture,

mixing said second mixture with 10 to 20 parts by weight of clay and 1 to 5 parts by weight of a solid inorganic bonding agent to produce a substantially uniformly dispersed third mixture,

mixing said third mixture with an aqueous solution of 1 to 3 parts by weight of an organic bonding agent to produce a substantially uniformly dispersed fourth mixture, and

extrusion molding said fourth mixture to form said shaped plastic composition,

with the proviso that at least 74% by weight of the solids content in said shaped plastic composition is said ceramic fibers.

26. A plastic composition produced in accordance with the process of either claim **1** or **5**.

4,564,486

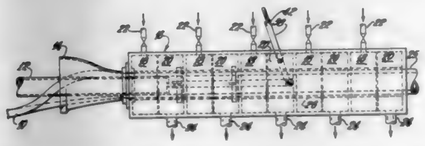
CURING FIBROUS MINERAL MATERIAL

Mark S. Wherry, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 19, 1984, Ser. No. 590,594

Int. Cl.⁴ B29C *33/72*

U.S. Cl. 264—39 **8 Claims**



1. Apparatus for curing fibrous mineral material comprising a curing mold through which is advanced the material containing uncured binder thereon, alternating positive and negative pressure zones through which the material passes as the material is advanced through said mold, inlet openings in the walls of said mold for introducing curing gases into the material during advancement through said positive pressure zones, elongated slots in said mold for exhausting curing gases from the material during advancement through said negative pressure zones, and a plurality of members positioned within said elongated slots, said members being mounted for movement within said elongated slots for cleaning said elongated slots without interrupting the advancement of the material through said mold.

4,564,487

METHOD AND APPARATUS FOR MAKING A CONTINUOUS LENGTH OF TUBING HAVING FOAMED PLASTIC WALLS

Larry P. Bennett, Charlotte, N.C., assignor to Lambda Corporation, Charlotte, N.C.

Filed Sep. 19, 1983, Ser. No. 533,501

Int. Cl.⁴ B29D *27/04*

U.S. Cl. 264—40.7 **23 Claims**

1. Apparatus for making a continuous length of tubing with walls formed of foamed material, said apparatus comprising:

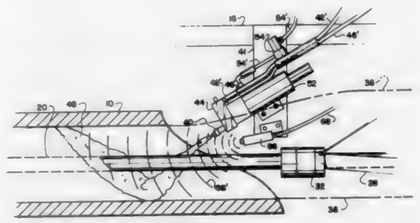
a. a forming cylinder having mandrel means extending centrally along the length of said cylinder;

b. first means for feeding a first strip of flexible material into one end of and through said forming cylinder, and forming said first strip of material into a cylindrical shape about said mandrel;

c. second means for feeding a second strip of flexible material into said one end of and through said forming cylinder, and forming said first strip of material into a cylindrical shape at the interior surface of said forming cylinder;

d. means for injecting a curable foaming plastic mixture into said one end of said forming cylinder and into the annular space between said first and second strips of flexible material; and

e. control means comprising a sensor means disposed adjacent said one end of said forming cylinder for sensing the point along the length of said forming cylinder at which



said foaming plastic mixture begins to cure into a solid across the cross-section of said annular space between said strips of material, and regulating means responsive to said sensing means for selectively varying the speed at which said first and second strips of flexible material are fed through said forming cylinder.

4,564,488

METHODS FOR THE PREPARATION OF POROUS FIBERS AND MEMBRANES

Klaus Gerlach, Aschaffenburg-Obernau, and Erich Kessler, Hoechst, both of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Continuation-in-part of Ser. No. 360,631, Mar. 22, 1982, abandoned, and Ser. No. 360,632, Mar. 22, 1982, abandoned, each is a continuation of Ser. No. 61,989, Jun. 30, 1979, abandoned, and Ser. No. 61,990, Jun. 30, 1979, abandoned. This application Jan. 10, 1983, Ser. No. 456,758

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833568; Jul. 31, 1978, 2833493; Jul. 31, 1978, 2833623

Int. Cl.⁴ B29C *67/20, 47/00;* **C08J** *9/26*

U.S. Cl. 264—41 **13 Claims**

1. A process for preparation of porous fibers and membranes in the form of flat foils, tube foils or hollow fibers, comprising forming a homogeneous mixture of at least two components, wherein one component is a meltable polymer and a second component is a liquid inert to said polymer which forms a binary mixture with said polymer in its liquid state, said binary mixture in liquid aggregate form exhibiting a temperature range of complete miscibility and a range with a miscibility gap; and extruding said mixture at a temperature above the temperature at which said components separate directly into a bath containing at least some of said inert liquid, said bath having a temperature below said separation temperature, whereby the fiber structure of said porous fiber is fixed.

4,564,489

METHOD AND HOLDER FOR THE MANUFACTURE OF ANNULAR CORES

Jozef T. A. M. Welzen; Theodorus G. W. Stijntjes; Aant B. D. van der Meer, all of Eindhoven; Rudolf O. M. Löbel, and Berend J. Nijhof, both of Uden, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 19, 1983, Ser. No. 533,338

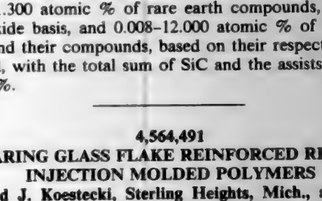
Claims priority, application Netherlands, Sep. 20, 1982, 8203620

Int. Cl.⁴ F27B *9/14*

U.S. Cl. 264—58 **2 Claims**

1. A method of manufacturing rotationally symmetrical flared annular cores of oxide-ceramic ferromagnetic material suitable for a television deflection unit, in which mouldings consisting of compressed starting material and having a flared outer surface are sintered to form such flared annular ferromagnetic cores, comprising:

locating each of said mouldings in an individual holder, each holder having a substantially square base, the corners of which have a projection one one side thereof and a matching recess on the other side thereof so that the projections of one base may be fitted into the recesses of another base, said base including a central aperture connected with a



frustoconical wall tapered to support one of said mouldings along a portion of said flared outer surface;

stacking the holders having mouldings therein in a vertical column by fitting the projections of one base into the recesses of another base; and

sintering said stacked mouldings, said mouldings during sintering being free to slide in contact with said frustoconical wall in response to expansion and contraction of said moulding without cracking said molding.

4,564,490

METHOD OF PREPARING SINTERED SHAPES OF SILICON CARBIDE

Mamoru Omori, 2-18-1, Kano, Sendai-shi, Miyagi-ken, and Humihiko Takei, Sendai, both of Japan, assignors to Mamoru Omori, Miyagi, Japan

Continuation-in-part of Ser. No. 361,299, Mar. 24, 1982, abandoned. This application Jun. 1, 1984, Ser. No. 616,787

Claims priority, application Japan, Mar. 27, 1981, 56-44109

Int. Cl.⁴ C04B *35/56*

U.S. Cl. 264—65 **2 Claims**

1. A method for producing sintered silicon carbide shapes of high strength, including the steps of addition and mixing sintering assists with silicon carbide powder, and separate or simultaneous compacting and sintering of the mixture at a temperature in the range of approximately 1300° C. to 2300° C., wherein the sintering assists are selected from the group consisting of (a) a solution of at least one member selected from the group of rare earth compounds, and (b) a solution of at least one member selected from the group of rare earth compounds and another solution of at least one member selected from the group consisting of aluminum compounds and boron compounds; and when the sintering assists in group (a) are used, 0.027–11.300 atomic % of rare earth compounds are used, on a rare earth oxide basis, with the total sum of SiC and assists being 100 atomic %; and when the sintering assists in group (b) are used, 0.021–11.300 atomic % of rare earth compounds, on a rare earth oxide basis, and 0.008–12.000 atomic % of aluminum, boron and their compounds, based on their respective oxides are used, with the total sum of SiC and the assists being 100 atomic %.

4,564,491

PREPARING GLASS FLAKE REINFORCED REACTION INJECTION MOLDED POLYMERS

Raymond J. Koestecki, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 353,562, Mar. 1, 1982, abandoned. This application Jan. 16, 1984, Ser. No. 570,905

Int. Cl.⁴ B29C *45/16;* **B29K** *75/00*

U.S. Cl. 264—108 **9 Claims**

1. A method of molding a reinforced polymeric panel by injecting a hardenable liquid polymer precursor carrying high aspect ratio glass flake particles into a mold cavity defining said panel, the initial injection pressure of said glass flake carrying liquid being at least about 2000 pounds per square inch, causing said liquid to flow away from the point of injection such that said glass flakes are layered with their planar surfaces substantially parallel to the planar surfaces of the panel as the mold is filled, and immediately gelling said liquid precursor in the mold such that the glass flakes are captivated in the hardened polymeric panel in said layered positions, the amount of said glass flake dispersed in said precursor being such that the hardened panel has a reduced coefficient of thermal expansion in all directions in the plane of the panel compared to a like unfilled panel and a substantially less wavy surface than a like glass fiber filled panel both having been molded from the liquid polymer precursor in like manner.

4,564,492

POLYACETYLENE PRODUCTION

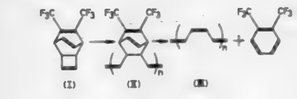
David C. Bott, Woking, and Donald White, Sunbury-on-Thames, both of England, assignors to The British Petroleum Company, p.l.c., London, England

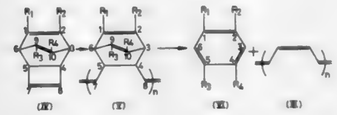
Filed Mar. 20, 1984, Ser. No. 591,470

Claims priority, application United Kingdom, Apr. 8, 1983, 8309583

Int. Cl.⁴ B29D *7/02*

U.S. Cl. 264—154 **11 Claims**





1. A process for producing an oriented, crystalline poly(acetylene) (III) in film or fibrillar form comprising solvent casting a film from a solution of precursor polymer of the general formula (V) derived from a precursor monomer (IV), and transforming under tension or in a stress field the pre-cast precursor polymer (V) into an oriented, crystalline film or fibrillar form of the poly(acetylene) (III) and a by-product (VI) at a temperature between 20° and 200° C. under reduced pressure over a duration of between 1 and 100 hours in an atmosphere inert to the precursor polymer (V) film and to the poly(acetylene) (III), wherein in the general formulae IV, V and VI each of the groups R_1 and R_2

either (a) represent a radical selected from H, CX_3, C_mH_{2m+1} and $COOR_5$ wherein X is a halogen atom, m has a value between 1 and 4 and R_5 is an alkyl group with 1–4 carbon atoms,

or (b) form together with the respective carbon atoms to which they are attached a benzene nucleus,

and

each of R_3 and R_4

either (c) represent H atoms,

or (d) form together with the respective carbon atoms to which they are attached a benzene nucleus.

4,564,493

METHOD OF MANUFACTURING A CASTING NOZZLE BRICK

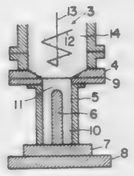
Tsuneo Shintani, Kitakyushu; Soichi Kojima, and Masuo Goto, both of Okayama, all of Japan, assignors to Kurosaki Refractories Co., Ltd., Kitakyushu and Kurosaki Rozai Co., Ltd., Bizen, both of, Japan

Continuation of Ser. No. 347,418, Feb. 10, 1982, abandoned. This application Apr. 20, 1984, Ser. No. 602,097

Claims priority, application Japan, Feb. 13, 1981, 56-19908; Jul. 10, 1981, 56-107965; Jul. 10, 1981, 56-111905

Int. Cl.[4] B29D *23/04*

U.S. Cl. 264—209.1 7 Claims



1. A method of manufacturing a graphitic casting nozzle brick using an auger machine having an extrusion screw and an extrusion die, comprising the steps of:

providing a mold connected to the extrusion die and including a central core therein which terminates short of said extrusion die;

extruding a mass of graphitic material through said extrusion die into said mold without separating and rejoining said mass during said extruding and after leaving contact with said screw and prior to contact with said core and forming a graphitic casting nozzle brick therein which has a longitudinal bore defined by said central core with one axial end of the bore closed, wherein said graphitic material is a mixture comprising graphite in an amount of at least 10% by weight; and

providing at least one stage of deaeration in said auger machine and dearating said graphitic material thereby in order to prevent lamination and enhance compact structure of said nozzle.

4,564,494

ENCAPSULANT OF CDTE BOULES FOR MULTIBLADE WAFERING

Thomas E. Nohava, Inver Grove Heights, and Joseph L. Schmit, Hopkins, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 395,521, Jul. 6, 1982, Pat. No. 4,490,441. This application Jul. 20, 1984, Ser. No. 632,980

Int. Cl.[4] B29D *7/18*

U.S. Cl. 264—275 2 Claims

1. A process for preparing a boule of crystalline cadmium telluride for multiblade sawing into wafers by encapsulating the boule, comprising the steps of:

determining the (III) orientation of a single crystal within a cadmium telluride boule;

orienting the boule within a mold so that the boule can be cut along the (III) plane;

filling the mold with a casting mixture of β-phase calcium sulfate hemihydrate and α-phase calcium sulfate hemihydrate and water; and,

curing the casting mixture to encapsulate and support the boule wherein, the hardness of the cured mixture has about the same cutting rate as the cutting rate of the cadmium telluride boule.

4,564,495

METHOD OF PRODUCING A CONTAINER

Torsten Nilsson, Prämvägen, and Kjell M. Jakobsen, Hökvägen, both of Sweden, assignors to PLM AB, Malmo, Sweden

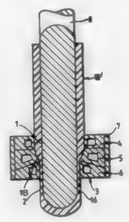
Filed Nov. 23, 1982, Ser. No. 443,918

Claims priority, application Sweden, Nov. 26, 1981, 8107045

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.[4] B29C *17/02, 17/07*

U.S. Cl. 264—291 7 Claims



1. A method of producing a container of thermoplastic material, preferably of polyethylene terephthalate (PET) from a tubular blank of amorphous material, said container having a body and a mouth portion, said method comprising reducing the wall thickness of a tubular blank of amorphous material while concurrently elongating the blank at a temperature conducive to orientation to orient the material of the thus stretched blank by engaging a mechanical forming element with said blank to form a transition zone between amorphous, thicker material and oriented, thinner material and relatively moving said blank and forming element to move said transition zone axially of the blank while concurrently elongating the blank, heating the thus stretched blank to a temperature above the temperature of the blank immediately before stretching to relieve internal stresses produced in said material during stretching, forming the container from the stretched blank in successive forming stages, and maintaining the temperature in each forming stage lower than the temperature in the immediately preceding forming stage.

4,564,496

METHOD OF MAKING POROUS SILICON CARBIDE BODIES

Ashok K. Gupta; Ernö Gyarmati, both of Jülich; Hermann Kreutz, Monchen-Gladbach; Rudolf Münzer, Alsdorf; Aristides Naoumidis, and Hubertus Nickel, both of Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 352,006, Feb. 24, 1982, abandoned. This application Jun. 10, 1985, Ser. No. 742,654

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108266

Int. Cl.[4] C01B *31/36*

U.S. Cl. 264—44 12 Claims

1. Method of producing porous silicon carbide bodies comprising the steps of:

preparing a carbon precursor body having a density between 0.5 and 0.9 g/cm^3 by the substeps of:

mixing a cokable organic binder with a carbon powder of a minimum grain size not less than 50 μm and having a degree of uniformity of grain size such that the maximum grain size is not more than twice the minimum grain size, said binder providing between 15 and 30% by weight of the mixture;

pressing said mixture to form a precursor body;

heating said precursor body to drive off volatile components at a temperature between 40° and 200° C.; and

further heating said precursor body up to 850° C. and thereby coking said binder; and

heating said precursor body in contact with gaseous silicon at a temperature between 1650° and 1950° C. to convert the material of said body substantially to porous silicon carbide.

4,564,497

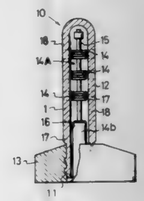
METHOD OF PRODUCING BOTTLES OF SATURATED POLYESTER

Akiho Ota, Tokyo, and Yukio Koshidaka, Tochigi, both of Japan, assignors to Yoshino Kogyosho Co., Ltd., Japan

Continuation of Ser. No. 402,653, Jul. 28, 1982, abandoned, which is a continuation of Ser. No. 68,242, Aug. 20, 1979, abandoned. This application May 7, 1984, Ser. No. 607,724

Int. Cl.[4] B29C *17/07*

U.S. Cl. 264—521 5 Claims



1. A method of producing a polyester resin bottle, having whitened and transparent regions, from a transparent parison comprising:

forming a substantially cylindrical transparent polyester resin parison; inserting into said parison a pattern forming device having at least one heat absorbing element positioned thereon so that at least one heat absorbing element contacts the interior wall of said parison and no other portion of said pattern forming device other than at least one heat absorbing element contacts said parison;

applying heat to an outer surface of said parison and simultaneously absorbing heat from a portion of an inner surface of said parison by means of said pattern forming device, said element contacting said portion of said inner surface of said parison thereby preventing whitening of a portion of said outer surface opposite said heat absorbing element, while those portions of said outer surface not opposite said heat absorbing element are whitened and the entire inner surface of said pairson remains unwhitened; and blow-molding said parison into a resin bottle.

4,564,498

SYSTEM FOR THE ANALYSIS OF NUCLEAR FUEL RODS

Leonard N. Grossman, Bratenahl, Ohio; James D. Landry, Wilmington, N.C.; William Masaitis, Castle Hayne, N.C.; Robert O. Canada, and Gerald W. McKenzie, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 26, 1982, Ser. No. 436,921

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—245 9 Claims

1. A system for analyzing the additive, paramagnetic material content of a nuclear fuel rod, said rod further including a base paramagnetic material and ferromagnetic impurities, the susceptibility of said additive material being measurably larger than that of said base material;

said system comprising:

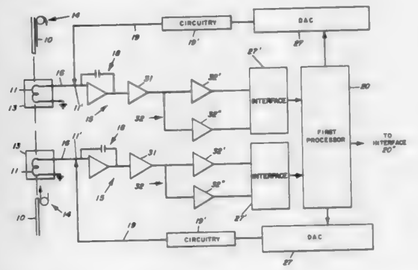
means for establishing a pair of direct current magnetic fields of different strengths;

first and second inductive coils each positioned in one of said magnetic fields;

means for moving said nuclear fuel rods through said inductive coils to provide an electrical output indication from each coil representative of susceptibility changes caused by the movement of said fuel rod through said coil;

first and second signal channels coupled to said first and second coils respectively, each of said channels including an integrating means at the channel input followed by a plurality of serially connected amplifier stages, each of said channels being responsive to said output indication of the corresponding coil to provide a channel output signal including a quiescent signal portion when said fuel rod is absent from both of said coils;

means for establishing a reference value corresponding to each of said quiescent signals;



means corresponding to each of said channels for correcting signal drift in said channel, said drift correction means including means for repeatedly sampling said quiescent signal, means for averaging said sampled signals, means for comparing said averaged quiescent signal with the corresponding reference value, means responsive to said comparing means for deriving a drift correction signal, and feedback means for applying said drift correction signal to said channel input; and

means for analyzing the output signals derived from respective ones of said channels when said fuel rod passes through said coils to determine said additive paramagnetic material content.

4,564,499

METHOD OF INHIBITING CORROSION OF CARBON STEEL PIPING OF CONDENSATE AND FEED WATER SYSTEMS IN POWER GENERATING PLANT

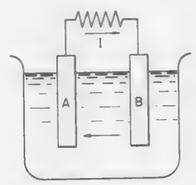
Takashi Honda, Katsuta; Akira Minato, Hitachi; Masakiyo Izumiya, Mito; Eizi Kashimura, and Katsumi Ohsumi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 347,033, Feb. 8, 1982, which is a continuation-in-part of Ser. No. 156,640, Jun. 4, 1980, abandoned. This application Oct. 29, 1984, Ser. No. 666,033

Claims priority, application Japan, Jun. 8, 1979, 54-71201

Int. Cl.[4] G21C *9/00*

U.S. Cl. 376—305 19 Claims



1. A method of inhibiting corrosion of metallic piping of condensate and feed water systems in a power generating plant having a heat generator, during shutdown of said plant, characterized by continuing the water in said piping to flow, at a

flow velocity of at least 0.2 cm/sec, after said plant has been shut down until it is restarted up, the water being kept flowing in the piping without flowing through the heat generator of the power generating plant, and by keeping the specific electric conductivity of the flowing water at 0.5 μS/cm or less, and wherein the dissolved oxygen concentration of said water is 40 to 30,000 ppb, whereby the dissolving of at least 40 ppb oxygen in the water, together with continuation of the water flow and keeping the specific electrical conductivity at 0.5 μS/cm or less, passivates the metal of the piping and prevents corrosion thereof.

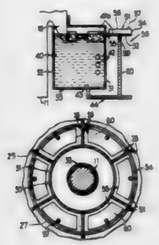
8. A method of inhibiting corrosion of metallic piping of condensate and feed water systems in a power generating plant as claimed in claim 1, wherein said piping is made of at least one material selected from the group consisting of carbon steel, low alloy steel, stainless steel, and copper and its alloys.

4,564,500

OIL POT FOR REACTOR COOLANT PUMP MOTOR AND APPARATUS FOR CONTROLLING THE OIL LEVEL THEREIN

Richard J. Keady, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1983, Ser. No. 545,420
Int. Cl.⁴ G21C *9/00*
U.S. Cl. 376—463 **3 Claims**



1. Apparatus for controlling the level of bearing lubricating oil in an oil pot of a nuclear reactor coolant pump motor with the oil pot having a substantially flat bottom and a predetermined normal oil level, said apparatus comprising: a plurality of containers, substantially equidistantly spaced apart around the perimeter of the oil pot with at least one said containers being substantially closed and vented and with each of said containers having a surface area which is relatively large in comparison to its depth, each of said containers having a flat planar bottom surface disposed substantially at the normal oil level of the oil pot, and an unobstructed fluid conduit connected between the bottom of the oil pot and the bottom surface of each of said containers for providing liquid communication between the oil pot and each of said containers so as to equalize the oil levels therein, whereby an increase in the volume of the oil produces an increase in the oil level in said containers inversely proportional to the surface area of the oil in containers.

4,564,501

APPLYING PRESSURE WHILE ARTICLE COOLS

David Goldstein, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1984, Ser. No. 627,938
Int. Cl.⁴ B22F *3/14*
U.S. Cl. 419—25 **10 Claims**

1. In a process for consolidating powder metals comprising the steps for

(a) placing unconsolidated powder nickel-titanium alloy comprising from 53 to 62 weight percent of nickel the remainder of the alloy being essentially titanium in a sealable glass mold which becomes plastic upon heating,

(b) evacuating the atmosphere from the powder filled mold,

(c) sealing the mold,

(d) placing the mold in a open top refractory container and packing with free flowing refractory powder selected to freely flow at all the temperatures used in the process,

(e) heating the mold and contents of the mold to a temperature at which sintering of the powder metal takes place and holding at this temperature for a time sufficient to cause substantially complete densification of the powder nickel-titanium alloy,

(f) cooling and removing the mold to recover a dense article, and

whereby the glass mold is supported by the free flowing refractory powder as the mold becomes plastic and shrinks in volume as its contents densify,

the improvement comprising:

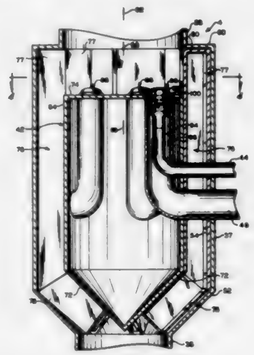
after step (e), transferring the open top refractory container, refractory powder, glass mold, and nickel-titanium object directly into an insulated, refractory lined covered container and then placing the covered container into a pressure chamber and applying an isostatic pressure of 2,000 psi or more to the nickel-titanium alloy object while it slowly cools down.

4,564,502

APPARATUS FOR MIXING OF FLUIDIZED SOLIDS AND FLUIDS

Frank W. Skraba, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 29, 1984, Ser. No. 645,386
Int. Cl.⁴ B01J *8/20, 8/22*
U.S. Cl. 422—140 **20 Claims**



1. An apparatus comprising:

(a) an outer hollow elongated member having an upper end, a lower end, and an interior surface;

(b) an inner elongated member having an upper end, a lower end and an outer surface, said inner member being mounted within said outer member so as to extend axially into said outer member from the lower end of said outer member, a space being defined between the interior surface of said outer member and the outer surface of said inner member;

(c) a plurality of filler elements within said space so as to define a limited flow path within said space;

(d) means for introducing a fluidized solid into said space at the lower ends of said members;

(e) means for directing the fluidized solid across the upper end of said inner member;

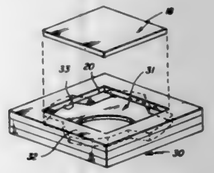
(f) means for releasing a fluid into said outer member from the upper end of said inner member.

4,564,503

MOUNT FOR FRAGILE TEST ELEMENT

Danny L. Greisch, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,489
Int. Cl.⁴ B01L *9/00*
U.S. Cl. 422—104 **2 Claims**



1. An article of manufacture comprising:

a non-circular, substantially planar, at least partially fragile object;

a mount having said object retained therein;

walls defining a recess in said mount adapted to permit insertion of said object into said recess along a predetermined axis;

at least one overhang above an undercut in said walls, said undercut constructed so that rotation of said object about said axis positions a part of said object within said undercut;

means for engaging said part of said object in its rotated position with said mount so that further rotation of said object is inhibited, wherein said means for engaging said object with said mount is at least one point at which said part of said object and said mount are embossed together, whereby said object is secured in said mount.

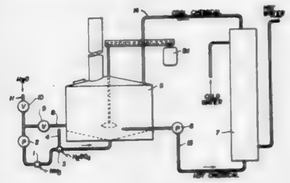
4,564,504

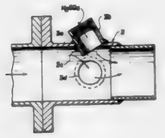
APPARATUS FOR PRODUCING AN ACID COMPOUND

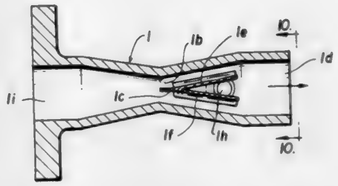
Kenneth H. Sorber, Atlanta, Nebr., assignor to Sorco Corporation, Odessa, Nebr.

Filed Nov. 29, 1983, Ser. No. 556,091
Int. Cl.⁴ B01J *14/00, 19/02;* **C01C** *1/242;* **F28D** *7/00*
U.S. Cl. 422—189 **3 Claims**

1. Apparatus for producing an acid compound comprising: a first reactor having a first inlet through which an aqueous medium is pumped, a second inlet through which ammonia is injected and an outlet, said first reactor comprising, a venturi section having a mixing deflector rigidly mounted in the throat portion thereof, said mixing deflector comprising a stem portion extending axially from the throat portion of the venturi section toward the outlet thereof, said stem terminating in a pair of divergent fingers secured to the interior side wall of said venturi section, said fingers having an arcuate cross-section, said first inlet of the first reactor communicating with the upstream side of said venturi section, said second inlet of the first reactor comprising an inclined fitting secured to the side wall of the venturi section in proximity to the divergent fingers, said outlet of the first reactor communicating with the downstream side of said venturi section whereby ammonia is injected into the venturi section through said second inlet of the first reactor and mixed with the aqueous medium flowing through the first inlet of the first reactor and into the venturi section resulting in a reaction temperature of approximately 350° F. and forming an aqueous ammonia mixture; a second reactor comprising a pipe having a first inlet communicating with the outlet of the first reactor, a second inlet through which sulfuric acid is injected and an outlet, said second inlet of the second reactor comprising an inclined fitting secured to the side wall of said pipe, a portion of said fitting extending into said pipe to form a baffle to facilitate the mixing of the sulfuric acid and the aqueous ammonia mixture resulting in an exothermic reaction temperature of approximately 1100° F., to thereby form an acidic compound; a vat having a top portion and a bottom portion, the outlet of said second reactor communicating with the bottom portion of said vat; a cooling tower comprising a housing having a top portion and a bottom portion; a first communicating means connecting to the bottom portion of said vat and the bottom portion of said cooling tower for conveying the hot acidic compound from the bottom







of the vat to the bottom of said cooling tower; and a second communicating means connected to the top portion of said cooling tower and the top portion of said vat for returning cooled acidic compound from the cooling tower to the vat to maintain the acidic compound in the vat at approximately 200° F.

4,564,505

PROCESS AND APPARATUS FOR SIMULTANEOUS MATERIAL GRANULATION AND CLASSIFICATION

Norval K. Alfrey, Rte. 9, Box 143B, Lake City, Fla. 32055

Filed Mar. 9, 1984, Ser. No. 587,890
Int. Cl.⁴ B01J *8/10*
U.S. Cl. 422—209 **3 Claims**

1. An apparatus for simultaneous feedstock material granulation and classification, comprising:

(a) a rotary granulation-classifier having a circular floor having a plurality of annular tiers an annular outer wall, pivotally and rotatably attached to a stationary base and titled at an acute angle maintained between 36° and 44° to horizontal;

(b) a stationary base having an upper end and a lower end, fixedly attached to a surface at said lower end and rotatably and pivotally attached to said granulator-classifier at said upper end;

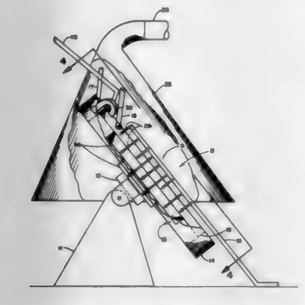
(c) a power means, connected to said granulator-classifier, for rotating said granulator-classifier at a desired speed;

(d) a heat application means comprising a plurality of nozzles fixedly positioned at a desired distance from a portion

of said floor of said granulator-classifier, for directing heated gases into a portion of said granulator-classifier as said granulator-classifier rotates;

(e) a heat exchange means connected to a preheated feedstock transfer means, for preheating feedstock material prior to introduction of said feedstock material into said granulator-classifier;

(f) a preheated feedstock transfer means, connected between said heat exchange means and said granulator-classifier,



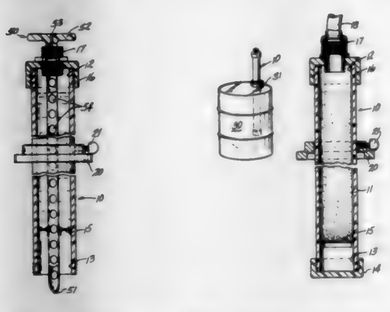
for transferring said feedstock material from said heat exchange means to said granulator-classifier; and wherein said heat exchange means comprises an annular trough, rectangular in section, fixedly attached to said outer wall of said granulator-classifier; and said preheated feedstock transfer means comprises at least one stationary transfer plow means, positioned between said trough and said granulator-classifier, for scooping said feedstock from said trough and transferring said feedstock over said feedstock said outer wall into said granulator-classifier.

4,564,506

WATER TREATMENT DISPENSING SYSTEM

Lorraine E. Saputo, and Vincent J. Saputo, both of 202 Crosswoods Rd., Branford, Conn. 06405

Filed May 23, 1983, Ser. No. 497,089
Int. Cl.⁴ B67C *3/30*
U.S. Cl. 422—266 **7 Claims**



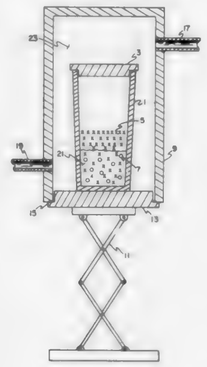
1. The combination of a storage container for storing concentrated chemicals and a storage receptale engageable with a water source for diluting said chemicals and providing same in diluted form for storage in said receptacle which comprises: a storage receptacle having an inlet means; an elongated generally cylindrical storage container; a storage container outlet on said storage container insertable within said storage receptacle inlet means; a storage container inlet on said storage container spaced from said outlet; a concentrated chemical storage compartment within said storage container for storing a predetermined amount of concentrated chemical within said storage container and communicating with said outlet and inlet of said storage container; openable sealing means inside said storage container adjacent the storage compartment for sealing the chemical within said storage compartment when said sealing means is closed and releasing the chemical when said sealing means is open; a collar on said storage container comprising means for engaging the storage container and means for engaging the receptacle inlet means for fixedly securing said storage container to said receptacle inlet means; and means on said storage container inlet for engaging a water source supply means.

4,564,507

REDUCTIVE DECONTAMINATION OF MAGNESIUM FLUORIDE

Guy R. B. Elliott, 133 La Senda Rd., Los Alamos, N. Mex. 87544

Filed Oct. 24, 1983, Ser. No. 544,472
Int. Cl.⁴ C01G *43/00*; G21F *9/00*
U.S. Cl. 423—5 **12 Claims**



1. A method for separating radioactive components from magnesium-fluoride residues resulting from the magnesium reduction or uranium fluoride, comprising: (a) charging a container with radioactive magnesium-fluoride residues, at least one reactant selected from the group consisting of magnesium, magnesium alloys, lithium, calcium, barium, strontium, and the rare-earth metals, and with carbon, (b) heating the said container, in an inert atmosphere, until substantial melting of said residues is achieved thus causing said residues to react with said at least one reactant and carbon to form molten MgF_2 and uranium carbide, and (c) separating the resulting uranium carbide, which is essentially insoluble in the molten MgF_2, from said molten MgF_2, which is thus substantially radioactive free.

4,564,508

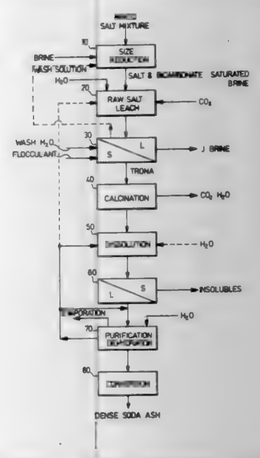
PROCESS FOR THE RECOVERY OF SODIUM CARBONATE FROM SALT MIXTURES

Michael J. Fairweather; Michael A. Rockandel, both of Rossland, Canada; Abraham Sadan, Salt Lake City, Utah, and Godefridus M. Swinkels, Rossland, Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Aug. 21, 1984, Ser. No. 642,797
Int. Cl.⁴ C01D *17/14*; B01D *9/00*
U.S. Cl. 423—189 **10 Claims**

1. A process for the recovery of sodium carbonate from salt deposits comprising sodium carbonate, sodium bicarbonate, sodium sulfate, sodium chloride, trona and burkeite, which process comprises subjecting solid raw salt obtained from such

deposits to a raw salt leach with a solution substantially saturated with sodium bicarbonate whereby the sodium sulfate, sodium chloride, and burkeite are preferentially dissolved into a leach solution and the trona is substantially left in a leach residue; maintaining a sodium chloride content in the leach of above about 5%; adding a controlled amount of carbon dioxide to the raw salt leach, said amount being sufficient to convert sodium carbonate released by the dissolution of the burkeite and the sodium carbonate in the raw salt to trona and insuffi-



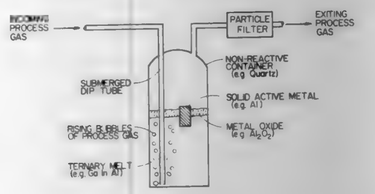
cient to precipitate sodium bicarbonate; precipitating additional trona by the carbonation of sodium carbonate dissolved from the burkeite and the sodium carbonate in the raw salt; carrying out the leach so as to form a raw salt leach slurry of a raw salt leach residue consisting mainly of trona and a raw salt leach solution consisting of substantially J brine, said J brine approaching saturation with respect to sodium bicarbonate, trona and sodium sulfate; separating the leach solution of substantially J brine from the leach residue substantially consisting of trona; and recovering said trona.

4,564,509

METHOD AND APPARATUS FOR IMPROVED GETTERING FOR REACTANT GASES

James R. Shealy, and Lester F. Eastman, both of Ithaca, N.Y., assignors to Northeast Semiconductor Inc., Ithaca, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,871
Int. Cl.⁴ B01D *47/02*
U.S. Cl. 423—210.5 **17 Claims**



1. A method of treating reactant gases by removing oxygen and water vapor and other oxygen bearing gas species, including trace amounts thereof, comprising the steps of:

a. in a nonreactive container containing a liquid solution comprising a ternary melt of gallium-indium and calcium as an active gettering metal in liquid phase, bubbling the reactant gas through a liquid solution at a operating temperature in the range from a low room temperature at least high enough that the solution remains liquid, up to a temperature below that at which the gas being treated would thermally decompose or a significant amount of vapor from the calcium component of the melt is incorporated in the reactant gas being processed, whereby oxygen in the gas reacts with the calcium to form calcium oxides and the degree of purification depends on the completion of the oxidation of the calcium being within the time required for the oxygen bearing species in the reactant gas to reach the bubbles outer edge where the reaction with the calcium occurs, the time required being directly dependent on the height of the ternary melt relative to the size of the bubble;

b. maintaining a quantity of the calcium in the ternary melt in solid form, so that theternary melt remains saturated with the calcium, whereby the calcium removed from the ternary melt in the form of oxides is replaced from the solid calcium.

4,564,510

METHOD FOR REMOVING NITROGEN OXIDES FROM WASTE GASES

Horst Bechthold, Erftstadt-Friesheim; Heinz J. Fischer, Neunkirchen-Seelscheid, and Wolfgang Schulte, Monheim, all of Fed. Rep. of Germany, assignors to Buckau-Walther Aktiengesellschaft, Grevenbroich, Fed. Rep. of Germany

Filed Jul. 27, 1983, Ser. No. 517,789
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1982, 3233316
Int. Cl.⁴ C01B *21/00, 21/48*; C01C *1/18*
U.S. Cl. 423—235 **4 Claims**

1. A method of removing nitrogen oxides from waste gases, comprising the steps of:

(a) oxidizing the nitrogen oxides in the waste gases by contacting the waste gases in the gas phase with ozone to form NO_2;

(b) contacting the formed NO_2 in an absorbing stage with an absorbing agent selected from the group consisting of ammonia, a calcium compound and a sodium compound to form a solution comprising nitrates and nitrites of a cation selected from the group consisting of ammonium, calcium and sodium while substituting fresh water for vaporized water in corresponding amounts during said absorption;

(c) processing the resultant solution by contacting it with an oxidizing agent in a subsequent oxidation step to oxidize nitrites contained therein and to produce a solution predominantly comprising nitrates selected from the group consisting of ammonium, calcium, and sodium nitrates;

(d) maintaining the pH of the solution during said oxidation step at between about 3 and about 4 by the addition of an acid selected from the group consisting of nitric acid and sulfuric acid

(e) drying the resultant solution after said oxidation step; and,

(f) pelletizing the resultant product.

4,564,511

SYNTHESIS OF MOLECULAR SIEVING METALLOSILICATES USING HETEROPOLYMETALLATES

Michael J. Desmond, Cleveland Hts., and Frederick A. Pesa, Aurora, both of Ohio, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Nov. 16, 1984, Ser. No. 672,394
Int. Cl.⁴ C01B *35/10*
U.S. Cl. 423—277 **38 Claims**

1. A method for preparing a molecular sieving metallosilicate comprising

(A) providing a mixture comprising: water; an oxide of silicon source; a mineralizing agent and/or synthesis directing agent; and a heteropolymetallate of the formula

$$A_a[L_lM_mJ_zO_y].dH_2O$$

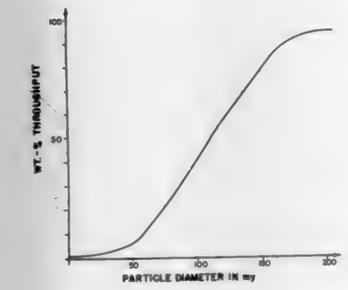
wherein
A is an ion selected from the group consisting of hydrogen; one or more of the Group I-A to VI-A or Group I-B to VI-B metals; one or more of the rare earth metals; ammonium, alkyl ammonium, alkyl phosphonium or alkyl arsonium; or a mixture of two or more thereof;
M is Zn, Ga, Ge, Ti, Cr, Mn, Fe, Co, B, Ni, Rh, Zr or a mixture of two or more thereof;
L is P, As, Si, Al, H or a mixture of two or more thereof;
J is Mo, W, V, Nb or a mixture of two or more thereof;
a is a number which when multiplied by the charge of A will result in balancing the charge on the complex within the brackets;
l is a number ranging from zero to about 20;
m is a number ranging from zero to about 20;
z is a number ranging from about 1 to about 50;
y is a number ranging from about 7 to about 150;
d is a number ranging from about zero to about 150; and
(B) maintaining said mixture at a temperature of about 80° C. to about 300° C. for an effective period of time to form said molecular sieving metallosilicate.

4,564,512

PROCESS FOR THE PRODUCTION OF COARSE PARTICLE MORDENITE

Mi·sel Baacke, and Peter Kleinschmit, both of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 1, 1982, Ser. No. 432,294
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146153; Apr. 1, 1982, 3212106
Int. Cl.⁴ C01B *33/28*
U.S. Cl. 423—328 **1 Claim**



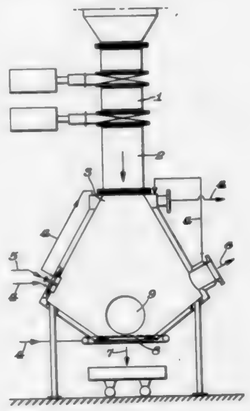
1. A process for the production of mordenite particles having a size between 20 μm and 300 μm consisting essentially of heating a reaction mixture consisting essentially of sodium aluminate, sodium chloride, and sodium hydroxide dissolved in water and silica suspended in the water, the reaction mixture having the composition 6.5 moles Na_2O, 1 mole Al_2O_3, 30 moles SiO_2, 1400 moles H_2O, and 20 moles NaCl to a temperature of 140° to 180° C. until the formation of mordenite crystals, separating off the crystalline product, washing and drying it.

4,564,513

PROCESS FOR THE PRODUCTION OF CARBON MONOXIDE

Dieter Becher, Brunsbuettel; Christian König, Kaarst; Eckhard Tiemann, Dormagen; Hans Czwalinna, Pulheim, and Wilhelm Hagen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 29, 1984, Ser. No. 665,724
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340929
Int. Cl.⁴ C01B *1/04, 31/18*
U.S. Cl. 423—415 A **10 Claims**



1. In a process for the production of carbon monoxide in a carbon-filled, water-cooled generator in the configuration of a truncated cone in the longitudinal section, by the gasification of said carbon with a mixed gas of oxygen and carbon dioxide, wherein the improvement comprises injecting the mixed gas into the generator through at least one downwardly-directed, coolable nozzle arranged in the generator sidewall and removing the carbon monoxide formed in a direction opposite to the nozzle orientation at the side or head of the generator.

4,564,514

PROCESS FOR THE PRODUCTION OF WATER-FREE ORGANIC HYDROGEN PEROXIDE SOLUTION

Karlheinz Drauz, Freigericht; Axel Kleemann, and Rolf Wirthwein, both of Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,162
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225307; Mar. 11, 1983, 3308740
Int. Cl.⁴ C01B *15/023*
U.S. Cl. 423—589 **43 Claims**

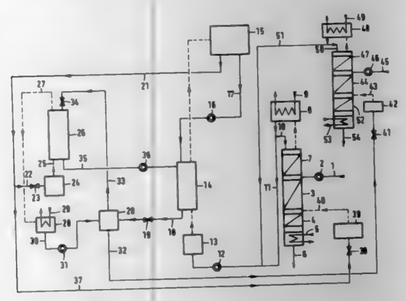
16. A process wherein the azeotrope consists of water and the ester.

4,564,515

METHOD FOR SEPARATING AT LEAST ONE HEAVY ISOTOPE FROM A HYDROGEN-CONTAINING MEDIUM

Charles Mandrin, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 2, 1984, Ser. No. 606,376
Claims priority, application Switzerland, May 5, 1983, 2453/83
Int. Cl.⁴ C01C *1/04*
U.S. Cl. 423—648 A **5 Claims**



1. A method of separating at least one heavy isotope from a hydrogen-containing medium comprising the steps of
bringing a flow of deuterium and tritium containing feed water into a first isotope exchange with a flow of ammonia vapor depleted in deuterium and tritium with the ammonia molar throughput being greater than two-thirds of the water molar throughput;
depleting the flow of water almost completely of deuterium and tritium during said isotope exchange to obtain water depleted of deuterium and tritium as a product while enriching the flow of ammonia vapor in deuterium and tritium to obtain ammonia vapor enriched with deuterium and tritium at a concentration lower than the concentration of deuterium and tritium in the feed water;
thereafter liquefying the enriched ammonia vapor;
separating the enriched liquid ammonia into a mixture of hydrogen and nitrogen;
bringing a flow of the mixture of hydrogen and nitrogen into a second isotope exchange with a flow of liquid ammonia depleted of deuterium and tritium to deplete the mixture of deuterium and tritium while enriching the flow of liquid ammonia in deuterium and tritium;
synthesizing the depleted mixture of hydrogen and nitrogen to obtain the liquid ammonia for said second isotope exchange; and
evaporating one part of the synthesized liquid ammonia and recycling said part to said first isotope exchange.

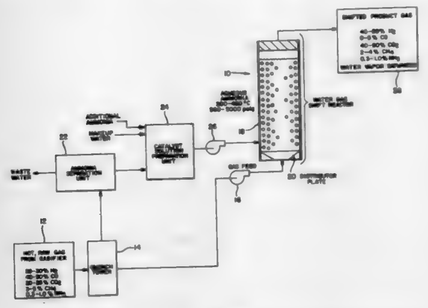
4,564,516

AMMONIA-BASED CATALYST FOR WATER-GAS SHIFT REACTION

Douglas C. Elliott, Richland; L. John Sealock, Jr., West Richland, and Richard T. Hallen, Richland, all of Wash., assignors to Gas Research Institute, Chicago, Ill.

Filed Jul. 5, 1983, Ser. No. 510,908
Int. Cl.⁴ C01B *3/16*
U.S. Cl. 423—655 **13 Claims**

1. A process for shifting an incoming gas stream containing carbon monoxide to an outgoing gas stream enriched in hydrogen using the water-gas shift reaction which comprises carrying out the reaction in the presence of an aqueous solution containing a catalytically effective amount of a catalyst that consists essentially of a material selected from the group consisting of ammonia, ammonia yielding compounds, and mixtures thereof.



4,564,517

METHOD FOR EVALUATING PARAMETERS RELATED TO THE THERAPEUTIC AND/OR PROPHYLACTIC TREATMENT OF SOLID NEOPLASMS IN HUMANS

Herman H. Fudenberg, P.O. Box 118, Isle of Palms, S.C. 29451, and Kwong Y. Tsang, P.O. Box 264, Mount Pleasant, S.C. 29464

Filed Feb. 22, 1984, Ser. No. 582,452
Int. Cl.⁴ A61K *49/00;* **C01N** *33/48*
U.S. Cl. 424—9 **13 Claims**

1. A method for evaluating parameters related to treatment and/or prophylaxis of solid tumors in human subjects, comprising:
(a) inoculating a non-human animal subject in utero with a preparation consisting essentially of plasma membrane derived from cells of a given human solid tumor and free of cytoplasmic proteins to induce antigen specific tolerance;
(b) after birth of said non-human animal subject, inoculating said animal with a preparation comprising cells obtained from said given human solid tumor so as to induce in said animal subject said given human solid tumor; and
(c) utilizing said animal subject as a host for evaluating the effects of one or more therapeutic and/or prophylactic measures on said given human solid tumor.

7. A method for evaluating parameters related to treatment and/or prophylaxis of osteosarcoma tumors in human subjects, comprising
(a) inoculating a non-human animal subject in utero with a preparation consisting essentially of plasma membrane derived from human osteosarcoma cells and free of cytoplasmic proteins;
(b) after birth of said non-human animal subject, inoculating said animal with a preparation comprising human osteosarcoma cells so as to induce in said animal subject an osteosarcoma tumor; and
(c) utilizing said animal subject as a host for evaluating the effects of one or more therapeutic and/or prophylactic measures on human osteosarcoma tumor.

4,564,518

OPHTHAMOLOGICAL METHOD FOR TESTING TEAR FLOW AND COMPOSITION FOR USE IN SAME

Joseph G. Rosenbaum, 23511 Chagrin Blvd., Beachwood, Ohio 44122

Filed Apr. 26, 1984, Ser. No. 603,929
Int. Cl.⁴ A61K *49/00*
U.S. Cl. 424—9 **13 Claims**

1. A method for ophthamological patency testing, comprising the steps of

(a) applying a substantially isotonic liquid suspension of minute light reflective solid particles to the eye,
(b) permitting said suspension to form a meniscus at the margin of the eyelids, and
(c) observing the rate of flow of said particles in said meniscus toward the punctal orifices.

5. A composition for application to the eye in an ophthamological patency test, comprising a substantially isotonic liquid carrier which is substantially non-irritating to the eye, and a quantity of highly visible, minute, discrete, light reflective particles in said liquid carrier, said particles having a specific gravity of a value in relation to the specific gravity and viscosity of the liquid carrier, which will permit said particles to be suspended in and travel with the flow of said liquid carrier.

4,564,519

DI-ENZYMATIC CHEWABLE DENTIFRICE

Michael A. Pellico, Los Angeles, and Robert E. Montgomery, Pacific Palisades, both of Calif., assignors to Laclede Professional Products, Inc., Gardena, Calif.

Continuation-in-part of Ser. No. 501,383, Jun. 6, 1983, Pat. No. 4,537,764, which is a continuation-in-part of Ser. No. 292,633, Aug. 13, 1981. This application Dec. 8, 1983, Ser. No. 559,474
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.[4] A61K *9/68, 7/28, 37/50*
U.S. Cl. 424—48 **18 Claims**

1. A di-enzymatic chewable dentifrice containing, per gram of dentifrice, from about 0.015 to about 0.6 millimole of oxidizable substrate and from about 0.5 to about 500 International Units of an oxidoreductase enzyme specific to such substrate for producing hydrogen peroxide upon oral chewing of said dentifrice and further containing from about 0.0001 to about 0.01 millimole of a thiocyanate salt and from about 0.01 to about 50 International Units of lactoperoxidase for interacting with hydrogen peroxide to produce a hypothiocyanate bacterial inhibitor, wherein the concentration of lactoperoxidase in International Units is at least about 2% of the concentration of the oxidoreductase enzyme in International Units to thereby limit the ratio of hydrogen peroxide to lactoperoxidase during oral chewing of the dentifrice.

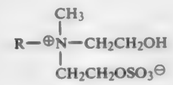
4,564,520

HAIR SHAMPOOS AND BODY CLEANSING AGENTS HAVING A CONTENT OF ALKYLSULFATOBETAINES

Winfried Ehrl, Neuötting; Alwin Reng, Kelkheim, and Jochen M. Quack, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,271
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138770
Int. Cl.[4] A61K *7/06;* **C11D** *1/18;* **C07C** *143/00*
U.S. Cl. 424—70 **4 Claims**

1. Surfactant-containing hair shampoo and body cleansing agent the surfactant component of which consists essentially of an alkylsulfatobetaine of the formula



wherein R is coconut fatty alkyl.

4,564,521

MEDICATION FOR PAIN RELIEF IN JOINTS OF HUMANS

James Altadonna, 90 E. 2nd St., Deer Park, N.Y. 11729

Filed Mar. 21, 1984, Ser. No. 591,933
Int. Cl.[4] A61K *33/18*
U.S. Cl. 424—150 **4 Claims**

1. A method of treating pains in joints in humans which comprises the topical application to the skin over an effected joint for absorption by the joint of a solution comprising:
(a) iodine in the proportion of 1 to 5 grams of iodine to 1 liter of solution;
(b) sodium iodine in the proportion of 1 to 10 grams of sodium iodine to 1 liter of solution;
(c) ethanol alcohol in the amount of 400 milliliters
(d) oil of lemon in the amount of 2 milliliters; and
(e) water in the amount to obtain 1 liter of solution.

4,564,522

PHARMACEUTICAL PREPARATIONS AND COMPOSITIONS

Dennis Rocke, London, England, assignor to Shelleden Products Limited, London, England

PCT No. PCT/GB82/00331, § 371 Date Jul. 20, 1983, § 102(e) Date Jul. 20, 1983, PCT Pub. No. WO83/01898, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 23, 1982, Ser. No. 525,048
Claims priority, application United Kingdom, Nov. 24, 1981, 8135311
Int. Cl.[4] A61K *35/78, 31/355, 31/07*
U.S. Cl. 424—195.1 **16 Claims**

1. A pharmaceutical composition characterised in that it comprises
(a) Vitamin A,
(b) at least one tochopherol
(c) an oil of the genus prunus, and
(d) an oil of the genus sesamum
in that the weight of each of (c) and (d) is between 5 and 75 times the weight of (a); in that the weight of each of (c) and (d) is between 4 and 125 times the weight of (b); and in that the composition has a consistency suitable for topical application.

4,564,523

FUNCTIONAL PROTEIN PRODUCTS

Lucas K. Shay, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 518,593, Jul. 29, 1983, Pat. No. 4,536,407. This application Mar. 18, 1985, Ser. No. 713,506
Int. Cl.[4] A23D *5/00;* **A23J** *3/00;* **A23L** *1/27*
U.S. Cl. 426—60 **39 Claims**

1. A process of preparing a functional protein product which comprises the steps:
(a) culturing a yeast under aqueous aerobic fermentation conditions to produce a crude aqueous fermentation effluent containing nucleic acid-containing yeast cells,
(b) adjusting the pH of said crude aqueous fermentation effluent with alkali metal or ammonium hydroxide to about 9 to 11,
(c) adjusting the cellular concentration to an aqueous cream of about 10 to 25 weight percent cells,
wherein said steps (b) and (c) can be reversed,
(d) heat-shocking said pH-adjusted cream under heat-shock conditions at a temperature of about 110° C. to 160° C. for a time of about 40 to 200 seconds, thereby reducing the nucleic acids of said cells and increasing the nucleic acids in the aqueous phase of the heat-shocked cream,
(e) separating said heat-shocked cream to produce a stream of heat-shocked nucleic acid-reduced microbial yeast cells as a first functional protein product, and an aqueous liquor stream containing proteinaceous materials and nucleic acids as a second functional protein product.

4,564,524

FODDER AND PROCESS FOR PRODUCTION THEREOF

Asko Haarasilta, Helsinki, Finland, assignor to Vaasanmylly Oy, Helsinki, Finland

Filed May 18, 1983, Ser. No. 495,683
Int. Cl.[4] A23K *1/00*
U.S. Cl. 426—74 **4 Claims**

1. A process for producing a coarse ruminant feedstuff having a stabilized granular consistency, said process comprising:
a. preparing a feed composition comprising one or more cellulose-containing materials selected from the group consisting of straw, sawdust and wood chips in an amount of from 50 to 92% by weight and from 4 to 10% by weight of polymerizable colophonium for stabilizing the granular consistency of said feedstuff under rumen conditions to thereby mechanically stimulate rumination;
b. extruding said feed composition under pressure to thereby polymerize said polymerizable colophonium and granulate said feed composition into a coarse ruminant feedstuff having a stabilized granular consistency.

4,564,525

CONFECTION PRODUCTS

Cheryl R. Mitchell; Pat R. Mitchell, both of 446 N. Powers, Manteca, Calif. 95336, and William A. Mitchell, 175 Jacksonville Rd., Lincoln Park, N.J. 07035

Filed Mar. 30, 1984, Ser. No. 595,280
Int. Cl.[4] A23G *1/00, 3/00*
U.S. Cl. 426—104 **31 Claims**

1. A confection product comprising about 2–50% by weight powdered roasted dahlia tuber syrup, about 0–60% by weight sweetener and about 20–60% by weight confectioner fat.

4,564,526

METHOD FOR MANUFACTURING PROCESSED FOODSTUFFS FROM ALGAE AS MATERIALS

Shuji Takashima, Numazu, Japan, assignor to Kabushiki Kaisha Yamagataya Nori Ten, Tokyo, Japan

Filed Sep. 14, 1983, Ser. No. 532,183
Claims priority, application Japan, Sep. 22, 1982, 57-165871
Int. Cl.[4] A23D *5/02;* **A23L** *1/06, 1/24, 1/337*
U.S. Cl. 426—262 **4 Claims**

1. A method for the manufacture of processed food which comprises heating an algae selected form the group consisting of single-petaled weed, stripe green laver, *Ulopteryx pinnatifida,* sea tangle, sea moss, and mixtures thereof in an aqueous medium containing at least one metal selected from the group consisting of copper, zinc and cobalt at a temperature and for a sufficient time to replace at least a portion of the magnesium in the chlorophyll with the selected metal thereby to effect fixation of the green color and then mixing selected food materials with resulting algae to produce said processed foodstuff.

4,564,527

ACIDIFIED VEGETABLES FOR PASTRIES

Richard B. Bucsko, Seattle, Wash., and Paul E. Holland, Rancho Polos Verdes, Calif., assignors to Carlin Foods Corporation, Chicago, Ill.

Continuation of Ser. No. 374,025, May 3, 1982, abandoned. This application Dec. 3, 1984, Ser. No. 677,198
Int. Cl.[4] A21D *10/04;* **A23L** *3/34*
U.S. Cl. 426—335 **8 Claims**

1. A method for preparation of batter comprising the steps of:
(a) placing substantially unbuffered vegetables, a sweetener, a preservative amount of preservative and an edible acid in a vessel;
(b) heating said vegetables, sweetener, preservative and edible acid in said vessel to a temperature of about 170 degrees F. and maintaining said temperature of about 170 degrees F. for approximately 5 minutes;
(c) agitating said vegetables, sweetener, preservative and edible acid in said vessel until a substantially homogenous pourable preparation of acidified vegetables is formed; and
(d) adding said preparation of acidified vegetables to an acid-balanced, chemically-leavened baking mix.

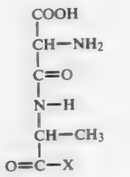
4,564,528

AMINOMALONYL ALANINE COMPOUNDS AND USE AS DIETARY SWEETENERS

Herbert H. Seltzman, Raleigh, and Yung-Ao Hsieh, Durham, both of N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Filed Sep. 18, 1984, Ser. No. 651,859
Int. Cl.[4] A23L *1/236, 2/38*
U.S. Cl. 426—548 **7 Claims**

1. Aminomalonyl-D-alanine derivatives having the formula:



and pharmaceutically acceptable salts thereof, wherein X is —OR with R being alkyl of from 3 to 10 carbon atoms.

4,564,529

DRY MIX FOR WHIPPED TOPPINGS

Francis L. Watson, Ocean Gate; Stevan A. Angalet, Jackson, and Richard A. Carlson, Freehold, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,777
Int. Cl.[4] A23G *3/00;* **A23L** *1/22, 1/19*
U.S. Cl. 426—570 **10 Claims**

1. A dry mix which is able to be combined with cold water or milk and whipped into a stable, foamed topping comprising a dry blend of (1) an encapsulated, spray dried fat component and (2) a hydrocolloid stabilizer comprising unhydrated hydroxypropyl cellulose, and wherein the encapsulated fat component includes fat, carbohydrate encapsulating agents, proteinaceous encapsulating agents and emulsifying agents.

4,564,530

PROCESS FOR THE PRODUCTION OF SOYA JELLY AND PRODUCT RESULTING THEREFROM

Alison Hugelshofer, Konolfingen, Switzerland, assignor to Nestec S. A., Vevey, Switzerland

Filed Aug. 23, 1984, Ser. No. 643,683
Int. Cl.[4] A23L *1/064*
U.S. Cl. 426—575 **5 Claims**

1. A process for the production of a soya jelly in a hermetically sealed pack comprising the steps of preparing an aqueous suspension containing 3–10% by weight of whole or defatted soya solids, 0.2–0.7% by weight of agar-agar and 0–12% by weight of sucrose, sterilizing by heating the suspension thus prepared and then precooling it to 40°–48° C., aseptically packing it in hermetically sealed containers at 40°–48° C. and allowing it to set by cooling in the containers.

4,564,531

PROCESS FOR PRODUCTION OF PROCESSED SWEET CORN

Tadashi Ohgami; Zenjiro Naitoh, both of Yokohama; Haruo Saotome; Kenji Takekoshi, both of Kawasaki, and Kimio Saitoh, Atsugi, all of Japan, assignors to Knorr Shokuhin Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 571,522, Jan. 17, 1984, abandoned. This application Jul. 15, 1985, Ser. No. 755,537

Int. Cl.⁴ A23L *1/212, 1/40*

U.S. Cl. 426—589 **11 Claims**

1. A process for enhancing the flavor of sweet corn, consisting essentially of:

(a) converting sweet corn kernels into a paste;

(b) contacting said sweet corn paste with about 1 to 15% by weight of at least one reducing sugar selected from the group consisting of dextrose, fructose and maltose; and about 0.1 to 0.8% of at least one amino acid selected from the group consisting of glutamic acid, aspartic acid, glycine, proline and alanine; and

(c) heating the mixture of sweet corn paste-reducing sugar-amino acid to a temperature of about 80° to 100° C. for about 10 to 30 minutes thereby causing a reaction between the reducing sugar and amino acid to occur, resulting in an enhancement of the sweet corn flavor.

4,564,532

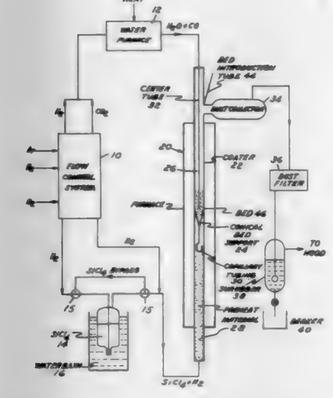
GLASS-SURFACE MICROCARRIER FOR ANCHORAGE-DEPENDENT CELL CULTIVATION

Timothy M. Henderson, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Jan. 7, 1985, Ser. No. 689,488

Int. Cl.⁴ A01N *1/02;* **B05D** *3/06;* **C12N** *11/14, 5/02*

U.S. Cl. 427—2 **7 Claims**



1. A chemical vapor deposition process for manufacture of microcarriers for anchorage-dependent cell cultivation in a culture medium so as to possess a predetermined microcarrier density in the range of 1.01 to 1.2 g/cc, said process comprising the steps of:

(a) selecting a multiplicity of spherical precursor substrates having densities equal to or less than said predetermined density,

(b) positioning said spherical precursor substrates in a fluidized bed within a reaction chamber,

(c) feeding reaction gasses separately into said bed under conditions for promoting chemical reaction of said gasses and deposition of silicate glass as a surface coating onto said precursor substrates and for a time sufficient to raise the densities of the coated substrates to said predetermined density within the range of 1.01 to 1.2 g/cc, and then

(d) removing the coated substrates from said reaction chamber.

4,564,533

METHOD FOR DEPOSITING SILICON CARBIDE NON-SINGLE CRYSTAL SEMICONDUCTOR FILMS

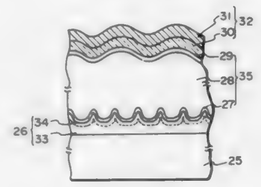
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1985, Ser. No. 693,296

Claims priority, application Japan, Jan. 23, 1984, 59-9865

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—39 **13 Claims**



1. A method of forming a silicon carbide non-single crystal semiconductor, characterized in that said method comprises the step of:

applying electric or light energy to a methylsilane expressed by the formula of $SiH_{4-n}(CH_3)_n$ (where n=1 to 3) or $Si_2(CH_3)_nH_{6-n}$ (where n=1 to 5) and a silane hydride (of Si_mH_{2m+2}, where m=1 to 3);

thereby forming a silicon carbide non-singe crystal semiconductor layer containing Si_xC_{1-x} (where $0<x<1$) as a major component thereof.

4,564,534

HEAT-SENSITIVE TRANSFER MATERIAL AND HEAT-SENSITIVE TRANSFER RECORDING METHOD

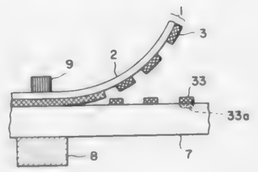
Naoki Kushida, Yokohama, and Tomoko Kusumoto, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1984, Ser. No. 631,646

Claims priority, application Japan, Jul. 23, 1983, 58-133586; Jul. 23, 1983, 58-133587; Jul. 23, 1983, 58-133588; Jul. 23, 1983, 58-133589

Int. Cl.⁴ B41M *5/26*

U.S. Cl. 427—256 **12 Claims**



10. A heat-sensitive transfer recording method, which comprises:

providing a heat-sensitive transfer material and a heat-transferable ink layer formed on a support, the heat-transferable ink layer comprising a heat-fusible binder, microcapsules dispersed in a heat-fusible binder and enclosing a colorant and an oil agent which is liquid or semi-solid at room temperature, and a foaming agent dispersed in the heat-fusible binder,

superposing the heat-sensitive transfer material on a recording medium with its heat-transferable layer facing the recording medium, and

heating the heat-transferable layer of the heat-sensitive transfer material in a desired pattern to leave the image of the heat-transferable ink corresponding to the desired pattern on the recording medium after separation of the recording medium and the heat-sensitive transfer material.

4,564,535

PRODUCT AND PROCESS FOR SCENTING PACKAGING MATERIALS

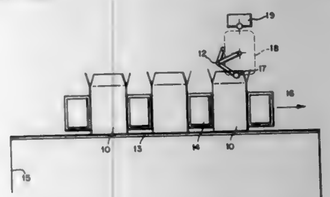
Theodor Altenschöpfer, Düsseldorf; Walter Giesen, Haan; Klaus Schumann, Erkrath, and Benno Streschnak, Krefeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 19, 1983, Ser. No. 459,135

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201941

Int. Cl.⁴ A61K *7/46;* **C11B** *9/00;* **B05D** *5/00, 3/12*

U.S. Cl. 427—285 **12 Claims**



1. A process for scenting a packaging container comprising applying to a section of the packaging container a scented paste comprising a perfume and a thickening quantity of a gelling agent wherein the paste has thixotropic properties.

4,564,536

AUTODEPOSITION COATING WITH REDUCED CLEANER EXUDATE

Bashir M. Ahmed, Ambler, Pa., assignor to Amchem Products Inc., Ambler, Pa.

Filed Mar. 11, 1985, Ser. No. 710,187

Int. Cl.⁴ B05D *1/18, 3/10, 7/14*

U.S. Cl. 427—327 **14 Claims**

1. In an autodeposition coating process of the type wherein a metal workpiece is first cleaned with cleaning chemicals in a cleaning stage, optionally subjected to a pickling stage, immersed in autodeposition chemicals to form an autodeposited coating in a coating stage, and then heated to cure the autodeposited coating in a curing stage, with water rinses between said stages, the improvement comprising maintaining the temperature of the workpiece sufficiently constant during the cleaning stage, optional pickling stage, and their respective water rinses, to substantially prevent expansion or contraction of the metal of the workpiece, so that bleed-out of the cleansing and/or pickling chemicals onto the cured coating is substantially eliminated.

4,564,537

PROCESS FOR DEPOSITING A SILICA COATING ON A METAL SURFACE

Frederick D. Austin, Weybridge, and Peter Watson, Epsom, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Jan. 18, 1985, Ser. No. 692,706

Claims priority, application United Kingdom, Jan. 21, 1984, 8401636

Int. Cl.⁴ B05D *3/02*

U.S. Cl. 427—376.4 **10 Claims**

1. The process for depositing a silica coating on a metal surface comprises

(1) a mixing step of mixing finely divided moist silicic acid having a particle size distribution such that not more than 10% by weight has a particle size in excess of 3 millimeters with hot pure water over a period of not more than 1 hour,

(2) a depolymerisation step of heating the mixture at a temperature above 95° C., and a pH of 4–6, quantity of moist silicic acid, and the duration of the heating step being so chosen that at the end of the depolymerisation step substantially all the silica is depolymerised to active silica and, after the depolymerisation step,

(3) a coating step of passing the aqueous silica over the metal surface to be coated while maintaining the solution at a temperature above 80° C. for a time sufficient to deposit the desired thickness of a hard bound silica coating but not sufficient to cause formation of a substantial amount of loosely bound gel.

4,564,538

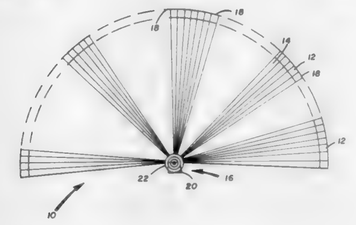
FIREPLACE FAN

Martin P. Scholtz, 22 W. 25th St., Baltimore, Md. 21218

Filed Aug. 13, 1984, Ser. No. 640,445

Int. Cl.⁴ A45B *27/00*

U.S. Cl. 428—12 **20 Claims**



1. A method of manufacturing a decorative object, the steps comprising:

layering first and second papers;

aligning the first and second papers relative to one another;

temporarily joining with a joining means the first and second papers to each other;

reinforcing the layered first and second papers along at least one common edge thereof;

pleating the layered first and second papers;

removing the joining means;

gathering and securing one end of the pleated first and second papers, and

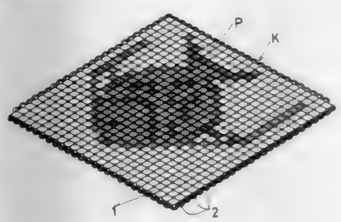
mounted a decorative member to the gathered and secured end of the first and second papers.

4,564,539

METAL MESH NETWORK

Tadashi Tsuji, Kyoto, Japan, assignor to Kabushiki Kaisha Tsuji, Kyoto, Japan

Filed May 25, 1984, Ser. No. 614,463
Int. Cl.⁴ F16B *2/00*
U.S. Cl. 428—33 **11 Claims**



1. A metal mesh network comprising plural unit piece members made by shearing, punching and bending a metal sheet, each of which having plural pawls, and plural joint ring members made by punching said metal sheet, wherein:

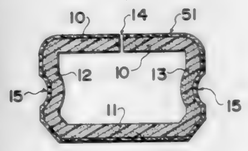
said unit piece members are disposed adjacent to each other on a plane, and said plural pawls of said unit piece members, adjacent and facing with each other, are loosely fitted in each joint ring member and are bent outward opposite to each other so that said unit piece members are engaged with said joint ring members in a cloth-like form, said metal mesh network being characterized in that a metal sheet is first coated with thermosetting resin paint selected from epoxy type, urethane type and thermosetting acrylic type resin paints, then sheared, punched and bent to make said unit piece members and joint ring members so that said unit piece members and joint ring members are entirely coated with said resin paint.

4,564,540

PULTRUDED FIBREGLASS SPACER FOR SEALED WINDOW UNITS

Lawrence W. Davies, 139 Brentford Rd., Winnipeg, Manitoba, Canada (R2M 4M3); Jeff Martin, Hudson; Joseph E. Sumerak, both of 207 N. Hayden Pkwy., Hudson, Ohio 44236, and Kenneth Church, Box 1186, Gimli, Manitoba, Canada R0C 1B0

Filed Jul. 11, 1983, Ser. No. 512,469
Claims priority, application United Kingdom, Dec. 8, 1982, 8234951
Int. Cl.⁴ E06B *3/66*
U.S. Cl. 428—34 **19 Claims**



1. A spacer for a sealed window unit comprising an elongate hollow body of substantially rectangular cross-section defining two transverse faces dimensioned such that the transverse faces have a width sufficient to space two panes of glass in the sealed window unit, one of the transverse faces being apertured by the provision of a slot along the full length thereof having a slot width as as to allow the ingress of moisture into the hollow body while preventing the escape through the slot of a granular dessicant from the hollow body, wherein the hollow body is formed by pultrusion from a thermosetting material reinforced by a proportion of elongate continuous glass fiber material oriented longitudinally throughout the length of said body so as to provide for the body a coefficient of thermal expansion substantially equal to that of glass.

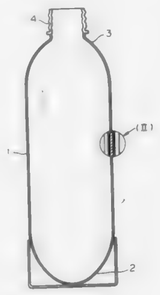
18. A sealed window unit comprising two panes of glass arranged in spaced parallel relationship, and four spacers each arranged between the panes along two adjacent edges of the panes and each comprising an elongate hollow body of substantially rectangular cross-section defining two transverse faces dimensioned such that the transverse faces have a width sufficient to contact the panes in the spaced parallel relationship, a granular dessicant within the hollow body, the transverse face of the hollow body extending inwardly of the panes being apertured by the provision of a slot along the full length thereof having a slot width so as to allow the ingress of moisture into the hollow body to the dessicant while preventing the escape through the slot of the granular dessicant from the hollow body, the hollow body being formed by pultrusion from thermosetting material reinforced by a porportion of elongate continuous glass fiber material oriented longitudinally throughout the length of said body so as to provide for the body a coefficient of thermal expansion substantially equal to that of the glass panes.

4,564,541

PLASTIC LAMINATE STRUCTURE AND VESSEL

Kazuo Taira, Tokyo; Akira Sakamoto, Yokohama; Muneki Yamada, Fujisawa; Masanori Aizawa, Yokohama, and Hiroshi Ueno, Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Feb. 7, 1984, Ser. No. 577,823
Claims priority, application Japan, Feb. 8, 1983, 58-18041; Nov. 15, 1983, 58-213334
Int. Cl.⁴ B65D *1/00;* **B32B** *27/08, 27/36*
U.S. Cl. 428—35 **23 Claims**



1. A laminate structure comprising (1) a layer of a creep-resistant resin composed of ester recurring units selected from the group consisting of polyethylene terephthalate, polybutylene terephthalate, polycarbonate and polyarylate and (2) a gas barrier layer containing an olefin-vinyl alcohol copolymer, said layers (1) and (2) being laminated through (3) a thermoplastic resin adhesive layer, wherein the adhesive resin is composed of a copolyester or copolyester composition comprising in the main chain at least two acid components selected from (i) an isophthalic acid component, (ii) a terephthalic acid component and (iii) a linear or cyclic aliphatic dibasic acid component, and at least one glycol component selected from the group consisting of ethylene glycol, propylene glycol, 1,4-butane diol, neopentyl glycol, cyclohexane diol, xylene glycol and hexahydroxylene glycol, said copolyester having a glass transition temperature (Tg) of −40° to 75° C.

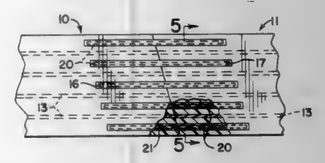
2. A sealing and packaging multi-layer plastic vessel formed of a laminate structure as set forth in claim 1.

4,564,542

BELT AND METHOD OF SPLICING THE SAME

Winthrop S. Worcester, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 20, 1985, Ser. No. 714,143
Int. Cl.⁴ B32B *3/00, 31/08, 31/12*
U.S. Cl. 428—58 **9 Claims**



1. In a longitudinal extending endless reinforced belt having a first end belt section and a second end belt section, said end sections being cemented together across their abutting faces to define a splice line, said belt having a body proper with parallel reinforcing cords extending therethrough, said cords extending in the longitudinal direction of the belt for the entire length of such belt and terminating at said splice line, said endless reinforced belt having strands embedded therein and extending across said splice line into both of said end belt sections, said strands spaced laterally from said cords in said end belt sections, and said strands being cemented to the body proper of said end belt sections.

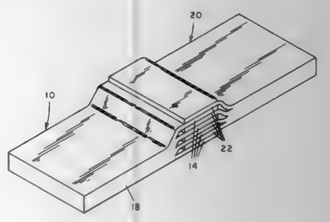
5. The method of splicing the respective end belt sections of a polyurethane belt having parallel reinforcing cords therein to form an endless belt comprising the steps of shearing the respective belt ends to form a linear face on each section, cutting narrow slots that are laterally spaced from said reinforcing cords in each of said end sections and with said slot in said sections being in alignment; cementing said faces of said end sections, and cementing cords into said aligned slots to form an integral endless conveyor belt.

4,564,543

MULTIPLE LAP-JOINT FOR THERMOPLASTIC LAMINATES

James D. Ritter, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 567,773, Jan. 3, 1984, Pat. No. 4,496,412.
This application Sep. 13, 1984, Ser. No. 650,261
Int. Cl.⁴ B32B *3/00;* **B31F** *5/00*
U.S. Cl. 428—58 **1 Claim**



1. A multiple lap-joint formed between the edges of two sheets of thermoplastic ply laminates, the joint comprising:

feathered edges of one sheet interleaved with feathered edges of the other sheet, the interleaved edges heated under pressure and bonded together forming an integral multiple lap-joint between the sheets.

4,564,544

FIRE-RESISTANT GYPSUM BOARD

Edward A. Burkard, East Amherst, and James J. Segada, North Tonawanda, both of N.Y., assignors to National Gypsum Company, Dallas, Tex.

Filed Dec. 1, 1983, Ser. No. 556,969
Int. Cl.⁴ B32B *1/04, 5/18, 13/04, 31/00*
U.S. Cl. 428—70 **2 Claims**

1. A gypsum wallboard comprising a set gypsum core and two opposed paper faces, said core comprising, as a major portion, set gypsum, and in minor portions muscovite and short glass fibers, said muscovite being substantially free of feldspar wherein substantially all of said muscovite will pass a 60 mesh screen, said core further comprising minor portions of a set accelerator, starch and foaming agent.

4,564,545

LIGHT-POLARIZING PLATE HAVING EXCELLENT DURABILITY AND PRODUCTION OF THE SAME

Takuzo Okumura, Osaka; Masataka Yanase, Tokyo, and Hitoshi Kikui, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 29, 1984, Ser. No. 584,908
Claims priority, application Japan, Mar. 1, 1983, 58-034236
Int. Cl.⁴ B32B *15/08, 27/30*
U.S. Cl. 428—76 **2 Claims**

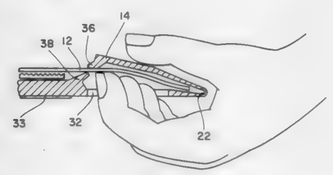
1. A light-polarizing plate comprising a light polarizing film covered with a high polymer film protector, wherein said light polarizing film is made of uniaxially stretched polyvinyl alcohol or its derivative and has a moisture content of not more than 5% and said highpolymer film protector is made of high density polyethylene or polypropylene and is prepared by uniaxially stretching by means of pressure rolls and has an average light transmission in the visible region of not less than 30%, the water vapor transmission of the protector film being not more than 10 g/m^2 day.

4,564,546

EASILY RELEASABLE MAT HOLDER

W. Gregory Jones, Woodstock, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 24, 1984, Ser. No. 685,436
Int. Cl.⁴ B32B *3/02;* **A47L** *23/22*
U.S. Cl. 428—81 **6 Claims**



1. Holder for a floor mat or the like comprising,

(a) a self-supporting frame having a base and four sides generally forming a rectangle and adapted to support a mat or other flat, flexible structure,

(b) flap means adjacent at least one side of said rectangle and hingedly connected to said sides so as to open to admit said flat structure and close over the corresponding edge of said structure to maintain it in position,

(c) means associated with said flap and said base to hold said flap in the closed position; and

(d) at least one aperture in said base position so as to be covered by said flap and of a size adapted to permit hand pressure to be applied through said aperture against said flap or against said flat structure sufficient to overcome said holding means and open said flap.

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HANDLEABLE SHAPES OF THERMAL INSULATION MATERIAL

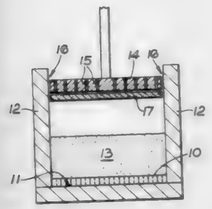
John T. Hughes, Worcester, United Kingdom, assignor to Micropore International Limited, Worchestershire, England

Filed Aug. 3, 1984, Ser. No. 638,113

Claims priority, application United Kingdom, Aug. 4, 1983, 8321104; Oct. 8, 1983, 8326977; Jan. 11, 1984, 8400701

Int. Cl.⁴ B32B *3/12*

U.S. Cl. 428—117 **14 Claims**



1. A thermal insulation body comprising:
a reinforcing honeycomb structure; and
a finely divided thermal insulation material comprising a microporous insulation material selected from the group consisting of silica aerogel and pyrogenic silica, the finely divided thermal insulation material being compacted into the cells of the honeycomb structure such that residual pressure in the insulation material acts against the walls of the honeycomb structure so as to hold the walls of the honeycomb structure firmly in position.

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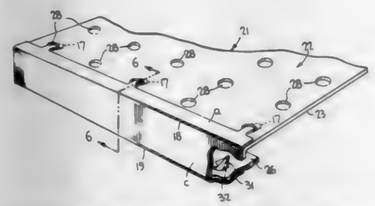
COVER STRIP FOR DISPLAY SHELF

Jac ob Fast, 6850 NW. 12th Ave., Ft. Lauderdale, Fla. 33309

Filed Nov. 21, 1984, Ser. No. 673,739

Int. Cl.⁴ E04F *13/00*

U.S. Cl. 428—121 **14 Claims**



1. A cover strip for a front surface of a shelf wherein the shelf has a generally horizontally extending support member with an upper support surface for supporting merchandise items for display and an undersurface, a front surface member, generally vertically-oriented and having a predetermined vertical height with an upper corner at its junction with the support member and a spaced lower corner, the front surface member having a horizontal width which is very much greater than its height, said cover strip comprising:
an integral sheet of flexible plastic material having a generally rectangular configuration with a width very much greater than its height and having at least a first fold line defined therein extending widthwise across the entire width of said sheet and dividing said sheet into an upper section and a lower section, said strip further comprising a first widthwise extending edge at the upper terminus of said upper section and a second widthwise extending edge at the lower terminus of said lower section, said upper section, when said sheet is folded along said first fold line, resting on the support surface of the shelf, means for securing said upper section to the support surface of the shelf, and means for securing said lower section to the shelf to cover at least the upper corner and a major portion of the front surface member of the shelf with said cover strip.

4,564,549

MAGNETIC RECORDING MEDIA AND PROCESS FOR FABRICATING THE SAME

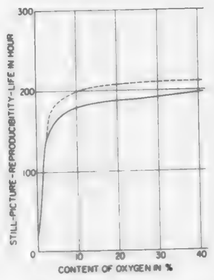
Takashi Suzuki, Osaka; Koichi Shinohara, Hyogo; Masaru Odagiri, Hyogo, and Takashi Fujita, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 575,480, Jan. 30, 1984, abandoned, which is a continuation of Ser. No. 293,147, Aug. 17, 1981, abandoned. This application Oct. 3, 1984, Ser. No. 657,056

Claims priority, application Japan, Aug. 18, 1980, 55-113898; Aug. 18, 1980, 55-113904

Int. Cl.⁴ B32B *3/00;* **G11B** *5/70*

U.S. Cl. 428—141 **5 Claims**



1. A magnetic recording medium characterized in that a thin film of ferromagnetic metal containing oxygen is formed over the surface of an elongated polyester film which is coated with worm-like or particle-like projections comprising a cured high-molecular weight compound having a surface roughness, R_{max}, of 0.003 to 0.1 micrometers and wherein the back surface of said film also has worm-like or particle-like projections comprising a cured high-molecular weight compound and is further formed with a thin film of a high-molecular weight compound containing a lubricant.

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FOAM SEALING TAPE

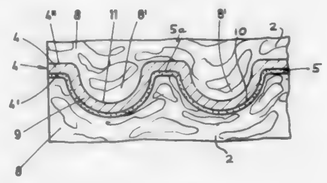
Rolf Tschudin-Mahrer, Lausen, Switzerland, assignor to Irbit Research & Consulting A.G., Fribourg, Switzerland

Filed Feb. 28, 1985, Ser. No. 704,390

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407995

Int. Cl.⁴ B32B *1/08, 7/06;* **A61L** *15/00*

U.S. Cl. 428—159 **10 Claims**



1. A foam sealing tape comprising

a foam sealing tape layer and an interlayer strip rolled up together in a compressed form,
at least one wide-side surface of the interlayer strip has elevations which press into the foam sealing tape layer.

4,564,551

WET-PRESSING BELT FOR PAPER MACHINES

Walter Best, Duren, Fed. Rep. of Germany, assignor to Thomas Josef Heimbach GmbH & Co., Duren, Fed. Rep. of Germany

Filed Jan. 16, 1984, Ser. No. 572,888

Claims priority, application European Pat. Off., Jun. 28, 1983, 106268.2

Int. Cl.⁴ D03D *13/00*

U.S. Cl. 428—222 **20 Claims**



1. A paper machine dehydration belt, comprising:
(a) a liquid impermeable belt stratum;
(b) a plurality of consecutively arrayed water drainage channels disposed along a first face of said stratum for draining water away therefrom;
(c) each of said channels defined by a plurality of adjacently disposed filamentary loops and each of said loops having a portion thereof disposed in said stratum and a portion extending beyond said first face;
(d) each of said loops comprised generally of substantially straight first and second legs and end portions connecting the legs; and,
(e) each loop of a channel having an end portion disposed between and pivotally connected by means with the end portions of the adjacent loops of the adjacent channels so that the loops of said channels are successively disposed with clockwise and counterclockwise pitches.

4,564,552

GAS PERMEABLE, WATER AND OIL RESISTANT COMPOSITE STRUCTURE

Joseph G. Adiletta, Thompson, Conn., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 566,404, Dec. 28, 1983, Pat. No. 4,508,775, which is a continuation-in-part of Ser. No. 542,026, Oct. 14, 1983, abandoned. This application Oct. 5, 1984, Ser. No. 658,664

Int. Cl.⁴ B32B *7/00*

U.S. Cl. 428—246 **16 Claims**

1. A water and oil resistant, microporous article of footwear comprising:
(1) an outer layer of fabric;
(2) an intermediate layer comprising
(a) from about 60 to about 40 parts by weight of inorganic, reinforcing microfibers,
(b) from about 40 to about 60 parts by weight of a polymeric binding agent in the form of a continuous matrix, said binding agent being derived from an emulsion or latex of particles of said binding agent having a size of less than one micrometer in a liquid, said binding agent and said microfibers being present in the intermediate layer in a total amount of 100 parts by weight, based on the weight of said binding agent and said microfibers, and
(c) a treating agent present in an amount sufficient to render the intermediate layer both hydrophobic and oleophobic; and
(3) an inner layer of fabric.

4,564,553

MANUFACTURED ARTICLES, INCLUDING FABRICS COMPRISING THERMALLY BONDED POLYOLEFINIC FIBERS

Antonio Pellegrini, Milan, and Benito Beghelli, Monza, both of Italy, assignors to Merak S.p.A., Milan, Italy

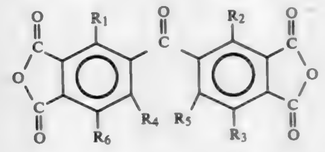
Division of Ser. No. 521,265, Aug. 8, 1983, Pat. No. 4,473,677.

This application Apr. 26, 1984, Ser. No. 604,134

Int. Cl.⁴ D02G *3/00;* **D04H** *1/04*

U.S. Cl. 428—296 **5 Claims**

1. A fibrous material comprising polyolefinic fibers having improved thermal bonding properties as a result of containing from 0.1 to 5% by weight of the dianhydride of 3,3',4,4'-benzophenone tetracarboxylic acid or of an alkyl derivative thereof having the general formula



wherein each of R_1 to R_6, inclusive, which may be the same or different, is hydrogen or an alkyl radical containing from 1 to 3 carbon atoms.

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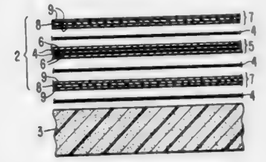
COMPOSITE SHEATHING

John J. Mikuski, Adrian, Mich., assignor to Anthony Industries, Inc., Commerce City, Calif.

Filed Aug. 21, 1984, Ser. No. 642,804

Int. Cl.⁴ B32B *5/24, 5/18, 7/12*

U.S. Cl. 428—311.9 **8 Claims**



1. A laminated composite sheathing adapted to provide structural support and resist weakening from weathering, comprising:
a panel having front and back facing surfaces and formed from a thermal insulating material; and
a supporting laminate sheet bonded to at least one of said panel facing surfaces, comprising a water-resistant fiberboard core adhesively secured between facing sheets.

4,564,555

COATED PART, COATING THEREFOR AND METHOD OF FORMING SAME

Dennis A. Hornberger, Reading, Pa., assignor to Sermatech International Incorporated, Limerick, Pa.

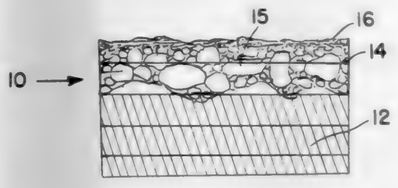
Filed Oct. 27, 1982, Ser. No. 436,989

Int. Cl.⁴ B32B *3/26*

U.S. Cl. 428—312.8 **55 Claims**

1. A corrosion, temperature and abrasion resistant coated article comprising:
(a) a metal base surface;
(b) a first layer adhering to said base surface, said first layer comprising at least one layer of inorganic particulate material bonded in substantially water-insoluble material of a cured aqueous acidic binder comprising phosphate

ions and ions selected from the group consisting of chromate and molybdate ions; and



(c) a second layer on said first layer, said second layer comprising a substantially uniform porous layer of a flame sprayed metal oxide, said metal oxide being substantially electrically neutral.

4,564,556

TRANSPARENT NON-VITREOUS CERAMIC PARTICULATE

Roger W. Lange, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 24, 1984, Ser. No. 653,779
Int. Cl.⁴ B32B *5/16, 9/00;* **C01B** *33/16*
U.S. Cl. 428—325 **25 Claims**

1. Solid, transparent, non-vitreous, dense, ceramic microspheres comprising at least one crystalline phase comprising at least one metal oxide other than titanium dioxide, although titanium dioxide may be present in minor amounts, and having an average particle size of more than 125 micrometers, said microspheres being useful as lens elements.

11. A sheet material comprising polymeric binder film in which is embedded a multiplicity of the solid, transparent, ceramic microspheres of claim 1.

12. A pavement marking sheet material comprising:

a. a base sheet adherable to a roadway surface; and

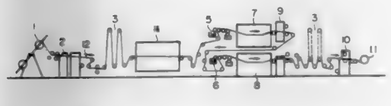
b. the sheet material of claim 11 adhered to one surface of the base sheet.

4,564,557

THERMOSET ACRYLIC RESIN COMPOSITION FOR COATING METALLIC MATERIALS AND STAINLESS STEEL COATED WITH THE COMPOSITION

Masuhito Ohgushi; Hiroshi Ohtsuka; Tsutomu Asaba, all of Yokohamashi; Hironobu Hoshi, Tokyoto; Kenichi Goshokubo, Nakakubikigun; Takeo Wakui, Kashiwashi; Kiminori Ishii, Ebinashi; Masashi Ohno, Hatanoshi, and Yukio Okada, Fujisawashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Apr. 3, 1985, Ser. No. 719,429
Claims priority, application Japan, Apr. 14, 1984, 59-75375; Sep. 25, 1984, 59-199775
Int. Cl.⁴ B32B *27/38, 9/04;* **C08F** *24/00, 30/08*
U.S. Cl. 428—333 **9 Claims**



6. A stainless steel piece having thereon a coating comprising a modified acrylic resin as an active ingredient, prepared by subjecting to radical copolymerization 1 20 to 2% by weight of a vinyl group-containing alkoxysilane, 2 20 to 0.01% by weight of a vinyl group-containing polysiloxane, 3 20 to 5% by weight of a hydroxyl group- or epoxy group-containing acrylic acid ester or methacrylic acid ester and 40 to 80% by weight of 4 an acrylic acid ester having 1 to 12 carbon atoms in the ester group moiety or 5 a methacrylic acid ester having 1 to 12 carbon atoms in the ester group moiety, in the presence of 0.1 to 5% by weight of an organic acid having 3 or more carbon atoms, the respective % by weight being based on the total weight of the monomers 1 – 5 , and baked at a temperature of 100° to 350° C.

8. A stainless steel piece according to claim 6 wherein a pigment having an average particle diameter of 2μ or less is contained in said coating.

4,564,558

ORIENTED MULTI-LAYER HEAT SEALABLE FILM

Robert E. Touhsaent, Fairport; John R. Wagner, Jr., Rochester, and Melvil B. Clauson, Newark, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1984, Ser. No. 687,308
Int. Cl.⁴ B32B *27/00*
U.S. Cl. 428—349 **9 Claims**

1. A heat sealable multi-layer structure comprising:

(a) a substrate comprising a polyolefin film;

(b) a layer on at least one surface of (a), said layer consisting essentially of a terpolymer of ethylene, propylene, and 1-butene;

(c) a primer coating between layers (b) and (d) on at least one of said layer (b); and

(d) a heat sealable layer on said coating (c) said heat sealable layer being a member selected from the group consisting of a vinylidene chloride polymer and an acrylic polymer.

4,564,559

ORIENTED MULTI-LAYER HEAT SEALABLE FILM

John R. Wagner, Jr., Rochester, and Melvil B. Clauson, Newark, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1984, Ser. No. 687,417
Int. Cl.⁴ B32B *27/00*
U.S. Cl. 428—349 **9 Claims**

1. A heat sealable multi-layer structure comprising:

(a) a substrate comprising a polyolefin film;

(b) a layer on at least one surface of (a), said layer consisting essentially of a blend of (1) a linear low density copolymer of ethylene with a minor proportion of a C_3–C_{10} alpha olefin (LLDPE) and (2) polypropylene;

(c) a primer coating between layers (b) and (d) on at least one of said layer (b); and

(d) a heat sealable layer on said coating (c) said heat sealable layer being a member selected from the group consisting of a vinylidene chloride polymer and an acrylic polymer.

4,564,560

RECORDING SHEETS FOR WATER BASE INK AND PROCESS FOR MAKING THE SAME

Hideki Tani, Tokorozawa; Makoto Arai; Takayuki Sasaki, both of Wakabayashi; Kazuhide Hayama, and Akira Yamashita, both of Yokkaichi, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd. and Mitsubishi Yuka Fine Chemicals Co., Ltd., both of Tokyo, Japan

Filed Aug. 31, 1984, Ser. No. 646,080
Claims priority, application Japan, Dec. 29, 1983, 58-250560
Int. Cl.⁴ B41M *5/00*
U.S. Cl. 428—411.1 **4 Claims**

1. A sheet for water base ink jet recording or X–Y plotter recording, in which a backing substrate includes a surface layer obtained by ultraviolet or radiation curing of a composition composed mainly of an ultraviolet or radiation curing type resin starting from a natural high-molecular substance.

4,564,561

FLUORINE-CONTAINING POLYMER COMPOSITIONS AND THEIR PREPARATION

Albert L. Lore, and Stuart Raynolds, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 27, 1985, Ser. No. 716,422
Int. Cl.⁴ C08L *27/12, 33/14*
U.S. Cl. 428—422 **25 Claims**

1. Fluorine-containing polymeric compositions consisting essentially of mixtures of

(1) an addition polymer of at least one monomer having the formula

$$CF_3CF_2(CF_2)_kC_mH_{2m}OC(O)C(R)=CH_2, \text{ and}$$

(2) an addition copolymer of

(a) at least one monomer having the formula

$$CF_3CF_2(CF_2)_kC_mH_{2m}OC(O)C(R)=CH_2,$$

(b) at least one monomer having the formula

$$XCH_2CH(OH)CH_2OC(O)C(R^1)=CH_2,$$

(c) at least one monomer having the formula

$$R^2OC(O)C(R^3)=CH_2, \text{ and}$$

(d) at least one monomer having the formula

$$H(OCH_2CH_2)_nOC(O)C(R^4)=CH_2$$

wherein

R, R^1, R^3, and R^4 are the same or different H or CH_3;

R^2 is alkyl containing 2 to 18 carbons;

X is Cl or Br;

k is an integer from 2 to 18;

m is an integer from 1 to 15; and

n is an integer from 5 to 50;

based upon the total weight of the polymeric composition, the fluorinated monomer or mixture of fluorinated monomers constituting 20 to 80 percent by weight of the composition; the chlorine- or bromine-containing monomer constituting between 5 and 35 percent by weight of the composition; the alkyl acrylate or methacrylate constituting between 5 and 55 weight percent of the composition and the oxyethylated acrylate or methacylate constituting between 0.1 and 3 weight percent thereof.

4,564,562

SILICONE ENCAPSULATED DEVICES

Ching-Ping Wong, Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed May 29, 1984, Ser. No. 614,898
Int. Cl.⁴ B32B *9/04*
U.S. Cl. 428—447 **10 Claims**

1. An article of manufacture comprising an electronic device having a heat cured silicone resin encapsulant thereover wherein said encapsulant is derived from curing an oxime and water free heat curable resin silicone elastomer prepolymer consisting essentially of from 20 to 25 weight percent of the prepolymer having an average molecular weight of from 400,000 to 600,000; 0.5 to 2 weight percent of a dialkylaminoalkoxysilane wherein neither of the amine nitrogen atoms are directly coupled to the silicon atom; 0 to 80 weight percent inorganic filler; and 0 to 2 weight percent curing catalyst.

4,564,563

SOLDERABLE CONDUCTOR

F. Wayne Martin, Baldwin Place; Samson Shahbazi, Yonkers, and Ronald J. Schoonejongen, Carmel, all of N.Y., assignors to Electro Materials Corp. of America, Mamaroneck, N.Y.

Filed Sep. 30, 1983, Ser. No. 537,740
Int. Cl.⁴ H01B *3/30*
U.S. Cl. 428—546 **7 Claims**

1. A solderable electrically conductive composition comprising metallic silver particles embedded in a matrix formed from acrylic, carboxylated vinyl and an epoxy, in which said metallic silver particles make up approximately 82% by weight of said composition, said acrylic makes up from 6 to 9% by weight of said composition, said carboxylated vinyl makes up from 7 to 9% by weight of said composition and said epoxy makes up from 1.7 to 3% by weight of said composition.

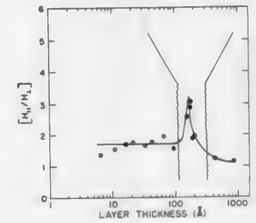
3. An article comprising a substrate carrying a solderable electrically conductive composition comprising metallic silver particles embedded in a matrix formed from acrylic, carboxylated vinyl and an epoxy in which said metallic silver particles make up approximately 82% by weight of said composition, said acrylic makes up from 6 to 9% by weight of said composition, said carboxylated vinyl makes up from 7 to 9% by weight of said composition and said epoxy makes up from 1.7 to 3% by weight of said composition, said composition being capable of accepting solder.

4,564,564

SUPERCONDUCTING MAGNET WIRE

Ivan K. Schuller, Woodridge; John B. Ketterson, Evanston, both of Ill., and Indrajit Banerjee, San Jose, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 16, 1983, Ser. No. 523,990
Int. Cl.⁴ B32B *15/04, 15/20;* **H01L** *39/12*
U.S. Cl. 428—662 **15 Claims**



1. A superconducting metallic tape comprising at least 100 alternating layers of a niobium-containing superconductor and copper, with each layer of the superconductor having a thickness in the range of about 0.5–1.5 times the coherence length for the superconducting composition and each copper layer thickness in the range of about 170–600 Å.

4,564,565

METHOD OF MAKING LOW CONTACT RESISTANCE METALLIC COATINGS AND ELECTRICAL CONTACTS SO PRODUCED

Rodger L. Gamblin, Dayton, Ohio, assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed May 18, 1984, Ser. No. 611,968
Int. Cl.⁴ C25D *3/12*
U.S. Cl. 428—680 **17 Claims**

7. An electrical contact having a nickel matte contact surface with a contact resistance shortly after production of less than 1.5 milliohms, and produced by practicing the steps of:

(a) immersing an electrically conductive substrate in a plating bath consisting of between about 0.1 and 2 molar nickel ion, and between about 1 gram per liter up to the

solubility limit of anions selected from the group consisting of TiF_6—, ZrF_6—, HfF_6—, and TaF_7—;

(b) controlling the bath temperature conditions, pH, and current density to effect electrolytic deposition of the nickel on the substrate; and then

(c) removing the substrate from the bath.

8. A method of forming an electrical contact surface consisting of the steps of:



(a) immersing an electrically conductive substrate in a plating bath including nickel cations, and anions selected from the group consisting of: TiF_6—, ZrF_6—, HfF_6—, and TaF_7;

(b) controlling the bath temperature, pH, and current density to effect electrolytic deposition of the nickel, in crystalline form, on the substrate; and

(c) removing the electrolytically deposited substrate from the bath.

4,564,566

CHROMIUM CONTAINING ALLOY FOR FABRICATING PRESSING TOOLS, PRESSING PLATES FORMED FROM SUCH ALLOY AND METHOD OF FABRICATION THEREOF

Werner J. Jerlich, Mürzzuschlag; Hans Kaiserfeld, Krieglach, and Alfred Kügler, Mürzzuschlag, all of Austria, assignors to Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna, Austria

Filed Jun. 8, 1984, Ser. No. 618,938
Claims priority, application Austria, Jun. 28, 1983, 2359/83
Int. Cl.⁴ C22C *39/00*; C03B *9/00*
U.S. Cl. 428—687 **17 Claims**

1. A method of using a stainless hardenable chromium steel essentially consisting of, each in percent by weight:

carbon	up to	0.3
silicon	up to	1.0
manganese	up to	1.5
Chromium in the amount of		11 to 17.2
molybdenum	up to	1.5
nickel	up to	6.0
copper	up to	4.5
columbium	up to	0.45
nitrogen	up to	0.10
the remainder being iron and impurities resulting from the melting conditions;		

said chromium alloy containing ferrite in an amount smaller than or equal to 5% by weight,

wherein a chromium equivalent defined as the sum of % chromium + % molybdenum + 1.5×% silicon + 0.5×% columbium has a value smaller than or equal to 17.2, a nickel equivalent defined as the sum of % nickel + 0.5×% manganese + 30×% carbon + 20×% nitrogen has a value greater than or equal to 4.65 and the chromium equivalent to nickel equivalent ratio has a value smaller than or equal to 3.0; and

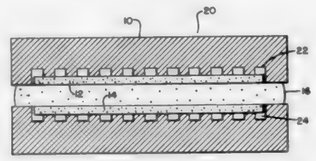
for producing a pressure plate of a pressing tool containing a structured working surface.

4,564,567

ELECTRONICALLY CONDUCTIVE CERAMICS FOR HIGH TEMPERATURE OXIDIZING ENVIRONMENTS

Gene H. Kucera, Downers Grove; James L. Smith, Lemont, and James W. Sim, Evergreen Park, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 10, 1983, Ser. No. 550,697
Int. Cl.⁴ H01M *4/86*
U.S. Cl. 429—41 **4 Claims**



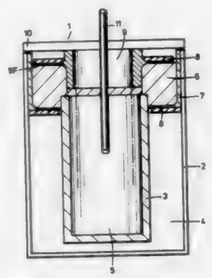
1. A fuel cell comprising a fuel electrode, and oxidant electrode, an electrolyte member disposed between the electrodes, said member containing alkali metal carbonate mixture including lithium carbonate, the oxidant electrode comprising the electronically-conductive lithium, transition-metal oxide selected from the group consising of Li_2MnO_3 with magnesium dopant and $LiFeO_2$ with manganese dopant the oxide having electronic conductivity as measured by a resistivity below about 100 ohm-cm., high temperature stability in the presence of molten alkali metal carbonate including lithium carbonate at a temperature in the order of 500°–700° C., and a crystalline structure incorporating the lithium and transition metals and the dopant incorporated in the crystalline structure as a partial substituent for one of said metals.

4,564,568

ELECTROCHEMICAL STORAGE CELL

Dieter Hasenauer, Weinheim, and Kuno Hug, Heidelberg, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Nov. 2, 1984, Ser. No. 667,871
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340424
Int. Cl.⁴ H01M *10/39*
U.S. Cl. 429—104 **12 Claims**



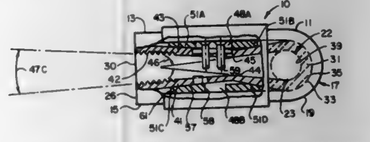
1. Electrochemical storage cell based on alkali metal and chalcogen comprising an anodic space for the alkali metal and a cathodic space for the chalcogen which spaces are separated from each other by an alkali ion-conducting solid electrolyte and are limited at least area-wise by a metallic housing, and ceramic structural elements connected with metallic structural elements by thermocompression, the combination therewith of metallic structural elements connected with ceramic structural elements by thermocompression to form joints, wherein the metallic structural elements made of aluminum are in the joint region reduced in thickness and made thin-walled with a thickness of at most 0.5 mm, and the thin walls are supported areawise by reinforcement elements arranged in the joint region.

4,564,569

BATTERY TERMINAL CONNECTOR

Frank Pechal, 519 E. St. Apt. D17, Chula Vista, Calif. 92010

Filed Aug. 10, 1984, Ser. No. 639,573
Int. Cl.⁴ H01M *2/20*; H01R *4/50*
U.S. Cl. 429—121 **10 Claims**



1. A connector for electrical conductive connection to a terminal post, said connector comprising:

a nonconductive chassis;

a conductor positioned within said chassis and formed to removably fit about, but not entirely surround, a terminal post for conductive connection thereto, said conductor being formed with an extension which extends away from said post substantially normal thereto, said extension formed to be spring-like;

compression means in mechanical association with said chassis and operable to move said extension to tighten and loosen said conductor means about said post, wherein said compression means include wedge means movable between a first position in which the wedge means urges the extension to tighten it about the terminal post, and a second position in which the wedge means does not urge the extension to tighten it about the said post so that said connector can be positioned on and removed from said terminal post; and

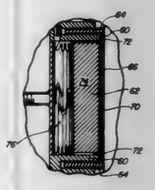
cable security means to conductively connect a cable to said conductor.

4,564,570

SEAL FOR REACTIVE METAL ANODE

Arnold Z. Gordon, Lyndhurst, Ohio, assignor to Gould, Inc., Rolling Meadows, Ill.

Filed Oct. 15, 1984, Ser. No. 661,061
Int. Cl.⁴ H01M *2/32*
U.S. Cl. 429—212 **22 Claims**



1. A seal for a reactive metal anode of an electrochemical cell comprising said anode, a cathode, and an electrolyte in which said anode and said cathode are in contact during operation of said cell, said anode defining a first surface which contacts said electrolyte and at least one additional surface at the perimeter of at least a portion of said first surface, said seal comprising a coating on said additional surface of a hydrophobic polymer which is substantially chemically inert with respect to said reactive metal and said electrolyte and wherein:

(a) the ratio of the flexural modulus to the flexural strength of said polymer is at least about 25;

(b) the Izod impact value of said polymer is less than or equal to about 2.0 ft.-lb./in.; and,

(c) the percent elongation of said polymer is less than or equal to about 20%.

4,564,571

TRANSFER SHEET WITH COLOR PATTERN HAVING METALLIC LUSTER, AND METHOD OF MANUFACTURING SAID SHEET

Jun Masaki, 9-11, Yamaashiya-cho, Ashiya-shi, Hyogo-ken, Japan

Filed Feb. 21, 1984, Ser. No. 581,829
Claims priority, application Japan, Mar. 31, 1983, 58-57029; Oct. 31, 1983, 58-204588
Int. Cl.⁴ G03C *1/68, 1/90*; G03F *7/00*
U.S. Cl. 430—15 **4 Claims**



1. A transfer sheet with a color pattern having metallic luster comprising: a transparent or semi-transparent base film, a mold-removing film layer on one side of said base film, a transparent semi-aqueous coloring agent layer in the form of a desired pattern on said mold-removing film layer, a vapor-coated aluminum layer in the form of said desired pattern on said transparent coloring agent layer, an oily ink protective film layer in the form of said desired pattern on said vapor-coated aluminum layer, and an adhesive film layer in the form of said desired pattern on said protective film layer, wherein the adhesive film layer is made of an oily paste.

4,564,572

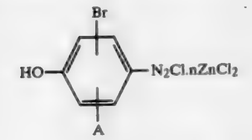
PROCESS FOR FORMING PATTERN

Hajime Morishita; Kiyoshi Miura, both of Tokyo; Osamu Sasaya, and Saburo Nonogaki, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1985, Ser. No. 694,237
Claims priority, application Japan, Jan. 25, 1984, 59-10066
Int. Cl.⁴ B05D *3/06*
U.S. Cl. 430—28 **11 Claims**

1. A process for forming a pattern which comprises

(1) a step of coating a photosensitive composition comprising p-diazo-N,N-dimethylaniline chloride-zinc chloride double salt and a p-diazo-bromophenol chloride-zinc chloride double salt of the formula:



(I)

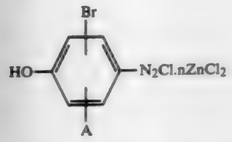
wherein A is hydrogen or bromine; and n is ½ to 1, on the interior side of a face plate of a color picture tube to form a coating film,

(2) a step of imagewisely exposing the coating film to light to make the exposed portions sticky, and

(3) a step of contacting powder particles with the exposed coating film to adhere the powder particles to the exposed portions.

7. A photosensitive composition comprising p-diazo-N, N-dimethylaniline chloride-zinc chloride double salt and a

p-azido-bromophenol chloride-zinc chloride double salt of the formula:



(I)

wherein A is hydrogen or bromine; and n is ½ to 1.

4,564,573

ELECTROSTATIC IMAGE FORMING TONER

Hideaki Morita; Takahira Kasuya; Goichi Yamakawa; Makoto Tomono, all of Hachioji; Isao Furuta, Suzuka, and Minoru Tsuneyoshi, Yokkaichi, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd. and Japan Synthetic Rubber Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 356,523, Mar. 9, 1982, abandoned. This application Jul. 24, 1984, Ser. No. 634,173

Claims priority, application Japan, Mar. 13, 1981, 56-35168; Mar. 13, 1981, 56-35169; Mar. 13, 1981, 56-35170

Int. Cl.⁴ G03G *11/00*

U.S. Cl. 430—109 **10 Claims**

1. A toner for developing electrostatic images which comprises a binder resin comprising at least 60% by weight of a styrene-butadiene copolymer, in which said copolymer contains a component having a molecular weight of at least 100,000 in an amount of at least 20% by weight of the entire binder resin provided that a component having a molecular weight of more than 500,000 is not more than 15% by weight of the entire resin and the ration $(\overline{M}_w/\overline{M}_n)$ of the weight average molecular weight to the number average molecular weight of said styrene-butadiene copolymer is at least 20.

4,564,574

LIQUID DEVELOPER FOR DEVELOPMENT OF ELECTROSTATIC IMAGES

Herman J. Uytterhoeven, Bonheiden; Walter F. De Winter, 's-Gravenwezel, and August M. Marien, Oevel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jul. 18, 1984, Ser. No. 632,059

Claims priority, application European Pat. Off., Aug. 5, 1983, 83201162.1

Int. Cl.⁴ G03G *9/12*

U.S. Cl. 430—115 **14 Claims**

1. A liquid electrophoretic developer composition suitable for rendering visible electrostatically charged areas, which composition contains in an electrically insulating non-polar carrier liquid having a volume resistivity of at least 10^9 ohm.cm and a dielectric constant less than 3, dispersed colouring matter acting as toner particles and at least one polymer comprising cationic groups neutralized with counter anions, characterized in that said cationic groups are positively charged groups of metal ion containing coordination compounds.

4,564,575

TAILORING OF NOVOLAK AND DIAZOQUINONE POSITIVE RESISTS BY ACYLATION OF NOVOLAK

Stanley E. Perreault, and Robert L. Wood, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

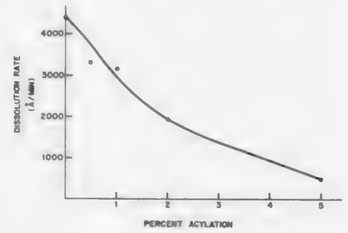
Filed Jan. 30, 1984, Ser. No. 560,781

Int. Cl.⁴ G03C *1/60, 1/76;* **G03F** *7/26*

U.S. Cl. 430—165 **39 Claims**

1. A positive lithographic resist composition comprised of an admixture of a novolak resin, in sufficient quantity amount when combined with a photoactive component to be developable to form a positive image, and a radiation-sensitive diazoquinone in sufficient amount to function as the photoactive component in an electron bem or optical process, wherein said novolak resin has hydroxyl groups thereof acylated so that an acyl group having the structure RCO— exists in place of the hydrogen at at least a portion of the phenolic hydroxyl locations in order to reduce solubility in alkaline developers, and where R is a saturated aliphatic group containing from 1 to 4 carbon atoms.

14. A substrate coated with a layer of a photoresist compriaed of an admixture of a novolak resin, in sufficient quantity amount when combined with a photoactive component to be developable to form a positive image, and a radiation-sensitive diazoquinone in sufficient amount to function as the photosensitive component in an electron beam or optical process, wherein said novolak resin has phenolic hydroxyl groups



acetylated so that an acyl group having the structure RCO— exists in place of the hydrogen at at least a portion of the phenolic hydroxyl locations in order to reduce solubility in alkaline developers, and where R is a saturated aliphatic group containing from 1 to 4 carbon atoms.

21. A method of reducing the dissolution rates of novolak-diazoquinone resists in alkaline solution, comprising:

(a) providing said novolak resin;

(b) acylating the phenolic hydroxyl groups of said novolak resin, so that an acyl group having the structure RCO— exists in place of the hydrogen at at least a portion of the phenolic hydroxyl locations, and where R is an alkyl group containing from 1 to 4 carbon atoms; and

(c) adding said diazoquinone thereto.

4,564,576

RESIST MATERIAL COMPRISING POLYMER OF ALLYLSILYL COMPOUND AND PATTERN FORMING METHOD USING THE RESIST MATERIAL

Kazuhide Saigo, and Masayoshi Suzuki, both of Tokyo, Japan, assignors to NRC Corporation, Tokyo, Japan

Filed May 22, 1984, Ser. No. 612,925

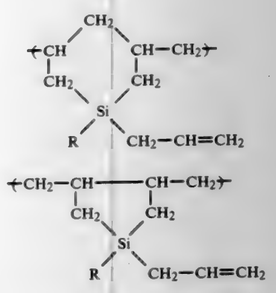
Claims priority, application Japan, May 27, 1983, 58-93577; Oct. 26, 1983, 58-200408

Int. Cl.⁴ G03C *1/68, 1/70, 5/16;* **C08F** *30/08*

U.S. Cl. 430—197 **11 Claims**

1. A resist material comprising a polymer produced by polymerization of a monomer having an allylsilyl group, said monomer being a triallylsilane expressed by the formula R—Si(CH_2—CH=CH_2)$_3$, where R represents a hydrogen atom, methyl group, ethyl group, propyl group or phenyl group; and a photosensitive cross-linking agent which is a bis-azide compound and amounts to 0.1-50% by weight of said polymer.

2. A resist material according to claim 1, wherein said polymer comprises at least one structural unit selected from the group consisting of the structural units of the formulas (I) and (II), said polymer being produced by carrying out bulk or solvent polymerization of said triallylsilane at a temperature in the range from 60° to 150° C. for a period of 4 to 50 hr using a radical polymerization initiator amounting to 1-10 mole % of said triallylsilane:

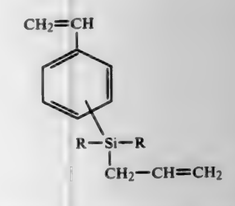


(I)

(II)

where R represents a hydrogen atom, methyl group, ethyl group, propyl group or phenyl group.

4. A resist material comprising a polymer produced by polymerization of a monomer having an allylsilyl group, said monomer being an allylsilylstyrene expressed by the general formula



where R represents a hydrogen atom, methyl group, ethyl group, propyl group or allyl group.

4,564,577

NAPHTHOQUINONE REDOX DYE-RELEASERS

William J. Begley, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 13, 1985, Ser. No. 733,151

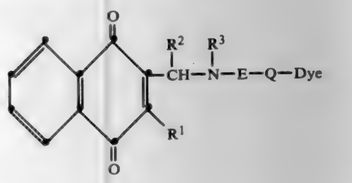
Int. Cl.⁴ G03C *1/40, 5/54*

U.S. Cl. 430—223 **26 Claims**

13. In a photographic assemblage to be processed with an alkaline processing composition comprising:

(a) a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a nondiffusible, positive-working, redox dye-releaser capable of releasing at least one diffusible dye moiety; and

(b) a dye image-receiving layer; the improvement wherein said compound has the formula:



wherein:

(a) R^1 represents a substituted or unsubstituted alkyl group of from 1 to about 30 carbon atoms or a substituted or unsubstituted aryl group of from 6 to about 12 carbon atoms;

(b) R^2 and R^3 each independently represents hydrogen or R^1;

(c) E represents carbonyl or thiocarbonyl;

(d) Q represents a nonmetallic atom of Group VA or VIA of the periodic table in its minus 2 or minus 3 valence state; and

(e) Dye represents a diffusible dye moiety or precursor thereof;

with the proviso that at least one of R^1, R^2 and R^3 is an organic ballasting radical of such molecular size and configuration as to render said compound nondiffusible in said photographic element during development in an alkaline processing composition.

4,564,578

NOVEL THIOXANTHONES SUBSTITUTED BY ALPHA-AMINOALKYL GROUPS

Jürgen Finter, Freiburg, Fed. Rep. of Germany, and Walter Fischer, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

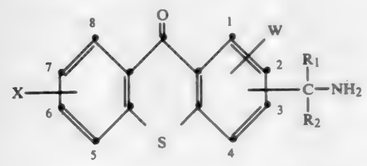
Filed Nov. 14, 1983, Ser. No. 551,761

Claims priority, application Switzerland, Nov. 25, 1982, 6873/82

Int. Cl.⁴ G03C *1/68, 1/70, 1/71;* **C07C** *87/28*

U.S. Cl. 430—270 **13 Claims**

1. A compound of the formula I

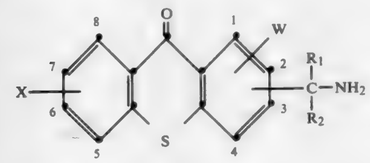


(I)

in which X is hydrogen, chlorine, bromine, C_{1-4}-alkyl or C_{1-6}-alkoxy, R_1 is hydrogen, C_{1-6}-alkyl, phenyl, —$COOCH_3$ or —$COOC_2H_5$ and R_2 is hydrogen, C_{1-6}-alkyl, —$COOCH_3$ or —$COOC_2H_5$, or R_1 and R_2 together are —$(CH_2)_e$—, where e=4 or 5, and W is hydrogen or —$COOC_{1-4}$-alkyl.

5. Photosensitive compositions of matter which are capable of undergoing condensation or addition reactions, containing

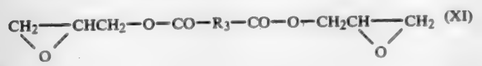
(1) a thioxanthone of the formula I



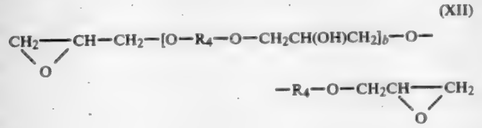
(I)

in which X is hydrogen, chlorine, bromine, C_{1-4}-alkyl or C_{1-6}-alkoxy, R_1 is hydrogen, C_{1-6}-alkyl, phenyl, —$COOCH_3$ or —$COOC_2H_5$ and R_2 is hydrogen, C_{1-6}-alkyl, —$COOCH_3$ or —$COOC_2H_5$, or R_1 and R_2 together are —$(CH_2)_e$—, where e,=4 or 5, and W is hydrogen or —$COOC_{1-4}$alkyl,

(2) one or more compounds selected from di- to poly-glycidyl ethers of phenol novolaks and cresol novolaks and compounds of the formulae XI to XIII



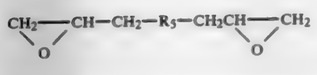
(XI)



(XII)

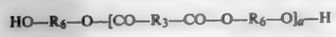
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and

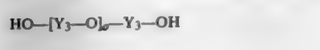


(XIII)

and, in the further presence or absence of, compounds of the formulae XIV, XV and/or XVI

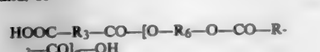


(XIV)



(XV)

and/or



(XVI)

the proportion of compounds of the formulae XIV, XV and/or XVI being at most 80 mole %, based on all the reactants mentioned under (2)

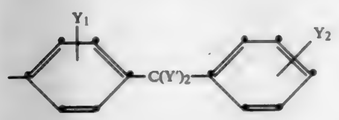
(3) in the presence or absence of a crosslinking agent and

(4) in the presence or absence of a salt of a metal of group Ib or VIII of the Periodic Table, in which a is a number form 1 to 100, b is a number from 0 to 150, R_3 is a direct bond, $—C_mH_{2m}O$, where m=2–12, or cyclohexylene, cyclohexenylene, phenylene or endomethylenecyclohexenylene, each of which is unsubstituted or substituted by a methyl group, R_4 is $—C_mH_{2m}—$, where m=2–12, phenylene,

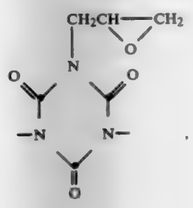




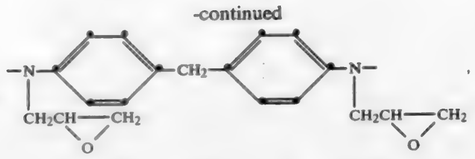
or a group of the formula



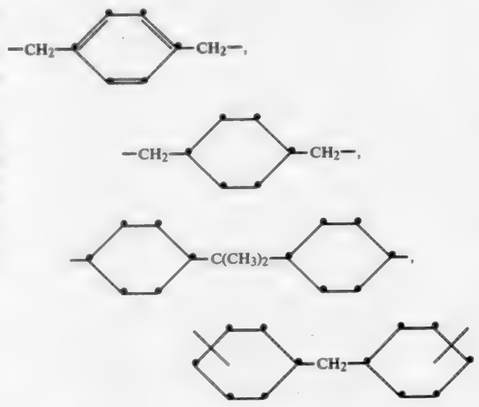
or $—(Y_3O)_o—Y_3—$ Y' is hydrogen or methyl, Y_1 and Y_2 independently of one another are hydrogen, chlorine or bromine, Y_3 is $—(CH_2)_2—$, $—CH_2CH(CH_3)—$ or $—(CH_2)_4—$, o is a number from 1 to 50, R_5 is



-continued



or the radical of ethylene-urea, 1,3-propylene-urea, 5,5-dimethylhydantoin, 2-hydroxyethyl-5,5-dimethylhydantoin or 2-hydroxypropyl-5,5-dimethylhydantoin and R_6 is $—C_mH_{2m}—$, where m=2–12, $—(CH_2CH_2O)_r—CH_2CH_2$, where r=1–40, $—CH(CH_3)CH_2OCH_2CH(CH_3)—$, $—CH_2—C(CH_3)_2—OCO—C(CH_3)_2CH_2—$, cyclohexylene,



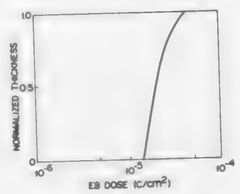
naphthylene or biphenylene, or phenylene which is unsubstituted or substituted by a methyl, methoxy or nitro group.

4,564,579

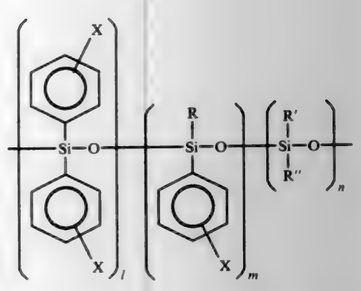
PATTERN FORMING MATERIAL OF A SILOXANE POLYMER

Masao Morita; Akinobu Tanaka; Saburo Imamura, all of Mito; Toshiaki Tamamura, Katsuta, and Osamu Kogure, Mito, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Division of Ser. No. 580,468, Feb. 15, 1984, Pat. No. 4,507,384.
This application Dec. 12, 1984, Ser. No. 680,739
Claims priority, application Japan, Apr. 18, 1983, 58-66892; Apr. 18, 1983, 58-66893; Jul. 11, 1983, 58-124766
Int. Cl.[4] G03C 5/00
U.S. Cl. 430—270 **6 Claims**



1. A pattern forming material containing a siloxane polymer having the general formula:



[wherein R, R' and R'' are the same or different and are respectively one member selected from the group consisting of hydrogen, an alkyl group and a phenyl group; X is one member selected from the group consisting of fluorine, chlorine, bromine, iodine and a $—CH_2Y$ group (wherein Y is one member selected from the group consisting of chlorine, fluorine, bromine, iodine, an acryloyloxy group, a methacryloyloxy group, and a cinnamoyloxy group); and l, m and n are respectively 0 or a positive integer, l and m not being simultaneously 0].

4,564,580

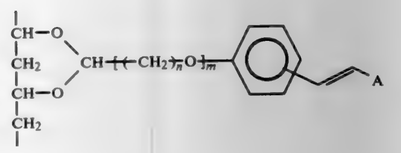
PHOTOSENSITIVE RESIN COMPOSITION

Kunihiro Ichimura, Yatabe; Tsuguo Yamaoka, Funabashi; Sadayoshi Kaneda, and Toru Shibuya, both of Tokyo, all of Japan, assignors to Kogyo Gijutsuin and Murakami Screen Kabushiki Kaisha, both of Tokyo, Japan

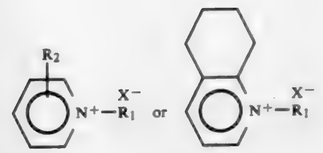
Filed Jun. 26, 1984, Ser. No. 624,963
Claims priority, application Japan, Jun. 30, 1983, 58-118486; Jun. 30, 1983, 58-118487; Jun. 30, 1983, 58-118488; May 23, 1984, 59-104236
Int. Cl.[4] G03C 1/68
U.S. Cl. 430—281 **7 Claims**

1. A photo-sensitive resin composition in the form of an aqueous emulsion comprising the following components (1) through (4):

(1) a water soluble saponified vinyl acetate polymer to which a styrylpyridinium or a styrylquinolinium group has been added, the polymer having been obtained by adding 0.3 to 20 mole % of a styrylpyridinium group or styrylquinolinium group to a saponified vinyl acetate polymer having a polymerization degree of 300 to 3000 and a saponification degree of 70 to 99 mole %, and having a styrylpyridinium group or styrylquinolinium group represented by the following formula inclusively of the chain of the vinyl acetate polymer:



wherein: m is 0 or 1; n is an integer of from 1 to 6; and A stands for;



in which: R_1 stands for a hydrogen atom or an alkyl or aralkyl group which may contain a hydroxyl group, a carbamoyl group, an ether bond or an unsaturated bond; R_2 stands for a hydrogen atom or a lower alkyl group; and X^- stands for a halide ion, a phosphate ion, a p-toluenesulfonate ion, a methyl sulfate ion, an ethyl sulfate ion or a mixture of two or more of these anions; the polymer being dissolved in said composition;

(2) a polymer selected from the group consisting of water-dispersible polymers and hydrophobic polymers, the water-dispersible polymers being dispersed in said composition and the hydrophobic polymers being emulsified in said composition;

(3) a photo-polymerizable unsaturated compound having at least one ethylenically unsaturated group, the unsaturated compound being insoluble or hardly soluble in water and capable of being emulsified in an aqueous solution of the polymer of the component (1);

(4) a photo-polymerization initiator, the initiator being soluble in the unsaturated compound of the component (3);

the amounts of the components being such that the amount of the polymer of component (1) is 0.2 to 10 parts by weight per part of the polymer of component (2), the amount of the unsaturated compound of component (3) is 0.1 to 15 parts by weight per part of the polymer of component (2), and the amount of the initiator of component (4) is 0.001 to 0.15 part by weight of the unsaturated compound of component (3); the composition being capable, in the form of dried film produced therefrom and when irradiated with light of, becoming insoluble at the portion which has been irradiated with light but remaining soluble in water at the portion which has not been irradiated with light.

4,564,581

PROCESS OF PREPARING SCREEN STENCIL USING DIAZO PHOTOSENSITIVE COMPOSITIONS WITH ACIDIC P-H INDICATOR

John R. Curtis, Thanet, and John D. Renwick, Ramsgate, both of England, assignors to Sericol Group Limited, London, England

Division of Ser. No. 389,487, Jun. 17, 1982, abandoned. This application Jul. 13, 1984, Ser. No. 629,759
Claims priority, application United Kingdom, Jun. 19, 1981, 8118929
Int. Cl.[4] G03F 7/12
U.S. Cl. 430—308 **3 Claims**

1. A process for preparing a screen stencil by the indirect method which comprises coating a photosensitive composition onto a transparent support, drying the coating, exposing the coating to actinic light via a positive transparency, developing the exposed coating, causing the developed coating to adhere to the screen mesh by pressure, drying the coating, and removing the support to produce a screen stencil wherein the photosensitive composition comprises:

25 to 53% by weight of film-forming polymers, including a water-soluble crosslinkable polymeric colloid;

0.2 to 2.5% by weight of a diazo salt as photosensitizer;

45 to 60% by weight of water;

and 0.06 to 0.15% by weight of an indicator which changes substantially in hue over a pH range of less than 3 units within the range 1.2 to 6;

the pH of the composition being maintained by a buffer on

the high side of the pH range over which the indicator changes hue and such that, in a light sensitive layer formed from the said composition, the indicator has the hue characteristic of its base form, so that after a layer thereof has been exposed to light the hue of the indicator shifts from that in the base form into that of the acid form.

2. A method of preparing a screen stencil by the direct method which comprises coating a composition onto the screen mesh, drying the coating, exposing the dried coating to actinic light via a positive transparency, and developing and drying the exposed layer to produce a screen stencil, wherein the composition comprises:

25 to 53% by weight of film-forming polymers, including a water-soluble crosslinkable polymeric colloid;

0.2 to 2.5% by weight of a diazo salt as photosensitizer;

45 to 60% by weight of water;

and 0.06 to 0.15% by weight of an indicator which changes substantially in hue over a pH range of less than 3 units within the range 1.2 to 6;

the pH of the composition being maintained by a buffer on the high side of the pH range over which the indicator changes hue and such that, in a light sensitive layer formed from the said composition, the indicator has the hue characteristic of its base form, so that after a layer thereof has been exposed to light the hue of the indicator shifts from that in the base form into that of the acid form.

3. A method of preparing a screen stencil by the direct-indirect method which comprises coating a composition onto a screen mesh in direct contact with an unsensitised film on a support, drying the coating, removing the support, exposing the dried coating to actinic light via a positive transparency, and developing the exposed coating to produce a screen stencil, wherein the composition comprises:

25 to 53% by weight of film-forming polymers, including a water-soluble crosslinkable polymeric colloid;

0.2 to 2.5% by weight of a diazo salt as photosensitizer;

45 to 60% by weight of water;

and 0.06 to 0.15% by weight of an indicator which changes substantially in hue over a pH range of less than 3 units within the range 1.2 to 6;

the pH of the composition being maintained by a buffer on the high side of the pH range over which the indicator changes hue and such that, in a light sensitive layer formed from the said composition, the indicator has the hue characteristic of its base form, so that after a layer thereof has been exposed to light the hue of the indicator shifts from that in the base form into that of the acid form.

4,564,582

METHOD FOR MAKING CARRIER TAPE

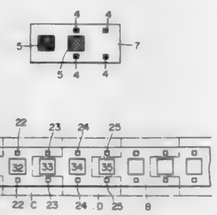
Shu Miyazaki, Fussa, Japan, assignor to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,380

Claims priority, application Japan, Nov. 12, 1982, 57-198735

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—311 **2 Claims**



1. A method of making a carrier tape which has a middle part, opposite outer parts, a succession of finger lead clusters which are equally spaced apart a predetermined distance (pitch) along its middle part and a succession of aligned pairs of sprocket holes which are equally spaced apart said predetermined distance (pitch) along its respective outer parts, said method including the steps of (a) providing a metallic foil tape having a photoresist material on one side thereof, (b) providing a photomask which consists of a base element which includes an elongated section that is divided into an elongated middle portion and opposite elongated outer portions, said base element having a single finger lead pattern and a single pair of aligned sprocket hole patterns extending therethrough, said single finger lead pattern being located in said elongated middle portion of said elongated section and the sprocket hole patterns of said single pair of aligned sprocket hole patterns being respectively located in said opposite elongated outer portions of said elongated section, said single pair of aligned sprocket hole patterns being displaced along said elongated section from said single finger lead pattern a certain distance equal to one pitch or multiples thereof, said single finger lead pattern having no sprocket hole patterns located laterally outwardly thereof and said single pair of sprocket hole patterns having no finger lead pattern located laterally inwardly thereof, and (c) exposing sequential sections of said photoresist material along the length of said metallic foil tape to radiation passing through said photomask, such that said metallic foil tape is provided with a succession of finger lead clusters formed in the middle part thereof which are separated by a distance equal to one pitch, each finger lead cluster having a pair of aligned sprocket holes located laterally thereof along the length of said metallic foil tape except for the number of finger lead clusters at the lead end of said metallic foil tape equal to the number of pitches the single pair of aligned sprocket hole patterns are spaced from the single lead patterns on said photomask.

4,564,583

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

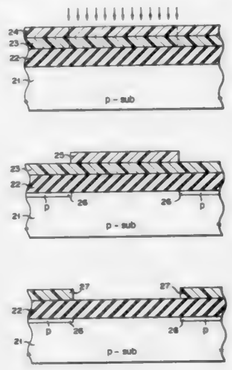
Kenji Maeguchi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 1, 1984, Ser. No. 575,921

Claims priority, application Japan, Feb. 7, 1983, 58-18533; Feb. 24, 1983, 58-29709; Feb. 24, 1983, 58-29724

Int. Cl.⁴ G03C *5/00;* **H01L** *21/00*

U.S. Cl. 430—312 **15 Claims**



1. A method for manufacturing a semiconductor device, comprising:

a step of forming a positive-type resist film and a negative-type resist film on a semiconductor substrate to form upper and lower resist films;

a step of exposing predetermined regions of the positive-type and negative-type resist films to radiation;

a step of developing the upper resist film, thereby forming a first resist pattern, and ion-implanting an impurity into the semiconductor substrate by using the first resist pattern as a mask;

a step of developing the lower resist film after peeling off the first resist pattern, thereby forming a second resist pattern; and

a step of treating the semiconductor substrate, using the second resist pattern as a mask.

4,564,584

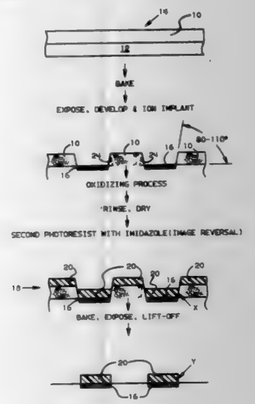
PHOTORESIST LIFT-OFF PROCESS FOR FABRICATING SEMICONDUCTOR DEVICES

Edward C. Fredericks, Haymarket, and Harish N. Kotecha, Manassas, both of Va., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,034

Int. Cl.⁴ G03F *7/26, 9/00*

U.S. Cl. 430—312 **3 Claims**



1. A photoresist lift-off process for fabricating semiconductor devices comprising the steps of:

applying a first layer of positive photoresist on the surface of a semiconductor substrate;

exposing said first photoresist layer to light through a mask having at least one aperture located where at least one hole is to be formed in said first photoresist layer;

developing said exposed first photoresist layer to remove portions of said first photoresist layer, which are exposed to light to form at least one hole in said first photoresist layer where a first part of a device is to be formed;

performing a first process step through said hole to form a first part of a device in said hole, said first process step selected from the group consisting of ion implantation, etching, and deposition;

oxidizing the surface of said first layer;

applying a second layer of negative photoresist containing imidazole which is at least light transmissive over the entire semiconductor device, parts of said second layer being disposed on said first layer and at least a part thereof being present within said hole;

exposing the device, including said second layer and said remaining first layer to light;

developing said first and second layers with a solvent to remove said first layer and overlying portions of said second layer, leaving portions of said second layer within said hole; and

performing a second process step selected from the group consisting of ion implantation, etching and deposition to form a second part of the device on said exposed surface adjacent said hole;

whereby said first and second parts are self-aligned.

2. A photoresist lift-off process for fabricating semiconductor devices comprising the steps of:

applying a first layer of positive photoresist on the surface of a semiconductor substrate;

exposing said first photoresist layer to light through a mask having at least one aperture located where at least one hole is to be formed in said first photoresist layer;

developing said exposed first photoresist layer to remove portions of said first photoresist layer which are exposed to light to form at least one hole in said first photoresist layer where a first part of a device is to be formed, said hole having sidewall angles in the range 80 to 110 degrees;

performing a first process step through said hole to form a first part of a device in said hole, said first process step selected from the group consisting of ion implantation, etching, and deposition;

oxidizing the surface of said first layer;

applying a second layer of negative photoresist containing imidazole which is at least light transmissive over the entire semiconductor device, parts of said second layer being disposed on said first layer and at least a part thereof being present within said hole, the sidewall angles of said second layer being complementary to the hole in which it was deposited, the total angle being 180 degrees;

exposing the device, including said second layer and said remaining first layer to light;

developing said first and second layers with a solvent to remove said first layer and overlying portions of said second layer, leaving portions of said second layer within said hole; and

performing a second process step selected from the group consisting of ion implantation, etching and deposition to form a second part of the device on said exposed surface adjacent said hole;

whereby said first and second parts are self-aligned.

4,564,585

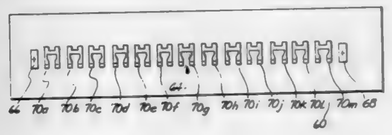
PROCESS FOR FABRICATING NEGATIVE PRESSURE SLIDERS

Paul S. Blaske, Maple Grove; Larry D. Zimmerman, Apple Valley; Arthur Calderon, Minnetonka, and Leroy L. Longworth, Buffalo, all of Minn., assignors to Magnetic Peripherals, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 555,763, Nov. 28, 1983, abandoned. This application Nov. 13, 1984, Ser. No. 671,062

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—313 **4 Claims**



1. A process for forming on each air bearing surface carried on a bar from which a plurality of air bearing sliders can be sawn each having a magnetic head whose pole tip projects to the air bearing surface of the slider and has a predetermined position therein, a negative pressure cavity of predetermined shape and having a predetermined position spaced apart from and with respect to the pole tip in the slider's air bearing surface, comprising the steps of:

(a) applying a layer of transparent negative photoresist material to said air bearing surfaces including the pole tips, said photoresist material having resolving ability only for lines greater than a preselected width; then

(b) positioning adjacent to the air bearing surfaces a mask having a pattern of apertures defining the entire portions of the air bearing surfaces surrounding the negative pres-

sure cavities, at least two of said apertures having within them at predetermined locations alignment marks comprising opaque lines of width less than the preselected width, said positioning step including positioning the mask with the alignment marks in a predetermined spatial relationship with the pole tips in the air bearing surfaces thereby positioning the opaque areas of the mask to define on the air bearing surfaces the positions to be occupied by the negative pressure cavities; then

(c) photographically exposing the photoresist material using light shining through the mask, to create therein a pattern of unexposed photoresist material corresponding to the predetermined shape and position of the negative pressure cavities; then

(d) removing the mask; then

(e) developing the photoresist to remove unexposed areas of it by washing with a solvent dissolving unexposed areas; and then

(f) ion milling the air bearing surfaces to create the negative pressure cavities.

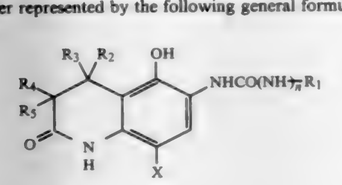
4,564,586

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kozo Aoki; Michio Ono, and Kiyoshi Nakazyo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 30, 1985, Ser. No. 696,610
Claims priority, application Japan, Jan. 31, 1984, 59-15502
Int. Cl.⁴ G03C *7/26*
U.S. Cl. 430—505 **18 Claims**

1. A silver halide photographic light-sensitive material comprising a support having coated thereon at least one silver halide emulsion layer, wherein the silver halide color photographic light-sensitive material contains a cyan dye forming coupler represented by the following general formula (I):



(I)

wherein R_1 represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted heterocyclic group; R_2, R_3, R_4 and R_5, which may be the same or different, each represents a hydrogen atom, a halogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted alkylthio group, a substituted or unsubstituted arylthio group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted sulfonamido group, a substituted or unsubstituted alkoxycarbonyl group, a substituted or unsubstituted arylcarbonyl group, a substituted or unsubstituted carbamoyl group or a nitrile group or R_2 and R_3 or R_4 and R_5 may together represents an alkylidene group, R_2, R_3, R_4 and R_5 may combine together to form a ring, three or more of R_2, R_3, R_4 and R_5 are not hydrogen atoms at the same time and when two of R_2, R_3, R_4 and R_5 are hydrogen atoms at the same time, R_2, R_3, R_4 and R_5 combine together to form a ring or R_2 and R_3 or R_4 and R_5 are hydrogen atoms; X represents a hydrogen atom or a group capable of being released upon oxidative coupling with a developing agent; and n represents 0 or 1.

4,564,587

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL COMPRISING MULTI-SILVER HALIDE EMULSION LAYERS HAVING SAME COLOR SENSITIVENESS BUT DIFFERENT IN SENSITIVITIES

Yoshikazu Watanabe, and Kenji Ito, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1984, Ser. No. 629,361
Claims priority, application Japan, Jul. 20, 1983, 58-133491
Int. Cl.⁴ G03C *1/08, 1/46*
U.S. Cl. 430—505 **18 Claims**

1. A light-sensitive silver halide color photographic material comprising at least one light-sensitive layer, which is constituted of a plurality of silver halide emulsion layers having substantially the same color sensitiveness but being different in sensitivities and contains a dye image-forming coupler, provided by coating on a support, said material being constituted so as to satisfy the four requirements as specified below:

(a) said plurality of silver halide emulsion layers in said light-sensitive layer are provided by coating in the order from the support side, a low sensitivity silver halide emulsion layer, medium sensitivity silver halide emulsion layer and high sensitivity silver halide emulsion layer;

(b) a non-sensitive intermediate layer is provided by coating between said low sensitivity silver halide emulsion layer and said medium sensitivity silver halide emulsion layer;

(c) the density of a dye image-forming coupler in said medium sensitivity silver halide emulsion layer is 10 to 60% of the density of the dye image forming coupler in said low sensitivity silver halide emulsion layer; and

(d) the maximum color-formed density (D) in said medium sensitivity silver halide emulsion layer is $0.6 < D < 1.2$.

4,564,588

SILVER HALIDE PHOTOGRAPHIC MATERIAL FOR RADIOGRAPHY

Eiichi Sakamoto, Hanno; Mikio Kawasaki, Hino; Kouji Ono, Mizuho, and Tomomi Yoshizawa, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 455,263, Jan. 3, 1983, abandoned. This application Feb. 6, 1985, Ser. No. 698,746
Claims priority, application Japan, Jan. 12, 1982, 57-3767
Int. Cl.⁴ G03C *1/36, 1/84*
U.S. Cl. 430—509 **6 Claims**

1. A silver halide photographic material for radiography comprising a transparent support having a hydrophilic colloid layer coated on each side thereof, said layer comprising

(a) photosensitive silver halide grains,

(b) silver halide grains whose surface is covered with a solubility reducing agent and which, in the absence of said solubility reducing agent, are more soluble in a material capable of dissolving silver halide than said (a),

said (b) having a sensitivity to light generally less than 1/10th that of said (a), and

(c) physical development nuclei,

wherein the molar ratio of (a) to (b), based on the silver content of each, is between 1:0.1 to 1:0.8 on each side of said support and the total silver content of (a) and (b) is from 1 to 8 g/m^2.

4,564,589

IMAGE-FORMING COMPOSITE WITH FILM

Robert W. Hallman, Poway; Eugene L. Langlais, San Diego, and Patrick G. Warner, Escondido, all of Calif., assignors to Advanced Imaging Systems Ltd., Poway, Calif.

Filed Feb. 6, 1984, Ser. No. 577,536
Int. Cl.⁴ G03C *1/82*
U.S. Cl. 430—524 **11 Claims**

1. A photo reproduction composite graphic arts intermediate lith film comprising a support base carrying:

a. a spectrally reflective layer and a light-blocking non-reflective dyed or pigmented secondary layer, said layers having a combined optical density of at least 2.0; and

b. an overlying non-silver subtractive positive or negative working photosensitive layer;



the conjunction of said reflective layer and said secondary layer preventing significant pinhole light leakage through said composite and providing adequate optical density with reduced combined layer thickness.

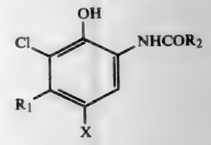
4,564,590

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Masao Sasaki; Toyoki Nishijima; Shun Takada; Takashi Kadowaki, and Kaoru Onodera, all of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

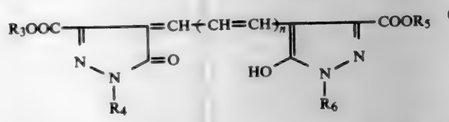
Filed Mar. 19, 1985, Ser. No. 713,474
Claims priority, application Japan, Mar. 29, 1984, 59-62886
Int. Cl.⁴ G03C *7/26*
U.S. Cl. 430—551 **6 Claims**

1. A silver halide photographic material having one or more silver halide emulsion layers formed on a reflective support, wherein at least one of said silver halide emulsion layers contains at least one cyan coupler of formula (I) dispersed therein with the aid of at least one high-boiling organic solvent having a dielectric constant of 6.1 or more, and wherein at least one photographic layer contains at least one dye of formula (II) and/or formula (III):



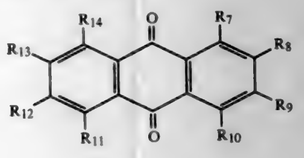
(I)

(wherein R_1 is a straight- or branched-chain alkyl group having 2 to 4 carbon atoms; R_2 is a ballast group; and X is a hydrogen atom or a group capable of leaving upon coupling reaction with the oxidized product of a color developing agent);



(II)

(wherein R_3 and R_5 are each a hydrogen atom, an alkyl group or an aryl group; R_4 and R_6 are each an aryl group or a hetero ring having at least one sulfonic acid group or carboxyl group either directly of via an alkylene group having 1 to 4 carbon atoms; and n is an integer of 0, 1 or 2);



(III)

[wherein R_7, R_{10}, R_{11} and R_{14} are each a hydrogen atom, a hydroxyl group, —OR (wherein R is alkyl or aryl),



(wherein R′ and R″ are each a hydrogen atom or an alkyl or aryl group having at least one sulfonic acid group or carboxyl group); R_8, R_9, R_{12} and R_{13} are each a hydrogen atom, a sulfonic acid group, a carboxyl group, or an alkyl or aryl group having at least one sulfonic acid group or carboxyl group].

4,564,591

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shigeo Tanaka, and Kaoru Onodera, both of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 446,162, Dec. 1, 1982, abandoned. This application Mar. 21, 1985, Ser. No. 715,035
Claims priority, application Japan, Dec. 2, 1981, 56-194782
Int. Cl.⁴ G03C *1/02, 1/28*
U.S. Cl. 430—567 **12 Claims**

1. A silver halide color photographic material comprising a support and an emulsion layer coated thereon, said emulsion layer comprising silver halide grains having silver halide core particles and a silver halide coating layer, said silver halide coating layer comprising at least 60 mol % silver bromide, and said silver halide core particles having a high chloride content, and wherein silver chloride comprises 90 to 99.5 mol % and silver bromide comprises 0.5 to 10 mol % of all of the silver halide present in said silver halide grains.

4,564,592

TOXOPLASMOSIS FACTOR AND PRODUCTION OF SAME

Hassan A. Gaafar, Voorheesville, and Brian G. Grimwood, Delmar, both of N.Y., assignors to Research Corporation, New York, N.Y.

Filed Jan. 21, 1983, Ser. No. 460,057
Int. Cl.⁴ C12P *21/00;* **A61K** *39/002*
U.S. Cl. 435—68 **3 Claims**

1. The method of preparing *Toxoplasma gondii* toxofactor (TF) the active immunogen of which is a glycoprotein in nature and has the following characteristics:

(a) is partially inactivated by heating at about 56° C. for about 30 minutes and completely inactivated by boiling for 1 hour;

(b) is inactivated at extreme of pH values of 2 and 12 but is more stable at a pH of 5 to 8;

(c) is partially inactivated when incubated with trypsin;

which is useful in protecting mammals from congential toxoplasmosis;

which comprises serially passing *Toxoplasma gondii* trophozoites in the peritoneal cavity of mice, aseptically isolating such infected peritoneal fluid, inoculating cell cultures with said fluid; propogating said trophozoites in a culture medium in vitro, harvesting the trophozoites and recovering a highly immunogenic toxplasmosis factor (TF) from the medium.

4,564,593

MESSENGER RNA, PRODUCTION AND USE THEREOF

Kyozo Tsukamoto, Toyonaka; Shuji Hinuma, Suita, and Haruo Onda, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 22, 1982, Ser. No. 452,282

Claims priority, application Japan, Dec. 28, 1981, 56-215723

Int. Cl.⁴ C12P *19/34;* **C07H** *17/00;* **C12N** *15/00, 5/00*

U.S. Cl. 435—91 **6 Claims**

1. A culture of cells containing exogenous messenger RNA isolated from human cells which has a sedimentation coefficient of 8S to 15S and which codes for human Interleukin 2.

2. Substantially pure messenger RNA isolated from human cells, which has a sedimentation coefficient of 8S to 15S and which codes for human Interleukin 2.

4. A method of producing messenger RNA isolated from human cells, the messenger RNA having a sedimentation coefficient of 8S to 15S and coding for human Interleukin 2, which comprises growing human Interleukin 2-producing lymphocytic cells isolated from human peripheral blood, in a medium for animal cell culture containing lectin and phorbol ester as an inducer, at 30° to 40° C., by spinner culture, for about 5 to 80 hours, to cause formation and accumulation of the messenger RNA in the cells, harvesting the grown cells by centrifugation, homogenzing the resulting cells in the presence of buffer containing thiocyanate and mercapto-alkanol, centrifuging the homogenate in the presence of cesium chloride, precipitating RNA from the resulting supernatant by adding sodium chloride and lower alkanol, and purifying the RNA by oligo (dT)-cellulose column chromatography and sucrose density gradient centrifugation.

6. The process of producing cDNA coding for human Interleukin 2 comprising contacting messenger RNA isolated from human cells and coding for human Interleukin 2 with reverse transcriptase for a time and under conditions sufficient to form said cDNA.

4,564,594

FERMENTATION PROCESS FOR PRODUCTION OF CARBOXYLIC ACIDS

Israel Goldberg, Jerusalem, Israel, and Barry Stieglitz, Overbrook Hills, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1983, Ser. No. 509,701

Int. Cl.⁴ C12P *7/56, 7/40, 7/44, 7/48, 7/46, 1/02, 1/845, 1/38*

U.S. Cl. 435—139 **12 Claims**

1. In a process for producing carboxylic acids selected from the group consisting of fumaric acid, succinic acid, malic acid, lactic acid, and mixtures thereof, by growing fungi of genus Rhizopus in a growth medium comprising a carbon source, a nitrogen source, and inorganic salts until said carboxylic acids are formed, the improvement which comprises growing said fungi in the presence of at least one growth medium additive selected from the group consisting of

(1) fatty acid esters having fatty acid residues of 12 to 24 carbons, and

(2) triglyceride mixtures wherein the triglyceride mixture is selected from the group consisting of corn oil, soybean oil, cottonseed oil, coconut oil, palm oil, peanut oil, olive oil, safflower oil and sunflower oil,

wherein the growth medium additive is present at a concentration effective to increase production and to facilitate excretion of said carboxylic acids.

4,564,595

ALCOHOL MANUFACTURING PROCESS

Alan M. Neves, Ogden, Utah, assignor to Biomass International Inc., Ogden, Utah

Continuation of Ser. No. 195,326, Oct. 20, 1980, Pat. No. 4,425,433, which is a continuation-in-part of Ser. No. 88,196, Oct. 23, 1979, abandoned. This application Jan. 9, 1984, Ser. No. 569,562

Int. Cl.⁴ C12P *7/08*

U.S. Cl. 435—163 **13 Claims**

1. A process for the conversion of cellulosic material into fermentable sugars, the process consisting essentially of the following steps:

obtaining a feedstock, at least a portion of which is a cellulosic material;

contacting the cellulosic material with a concentrated delignifying acid said concentrated delignifying acid being in a liquid phase and having a temperature of less than about 60° F. and having a concentration of from about 60% to about 90% acid by volume, thereby producing a cellulose-containing solution and a solid residue;

removing the solid residue from the cellulose-containing solution;

precipitating cellulose from the cellulose-containing solution; and

hydrolyzing the precipitated cellulose with a dilute hydrolyzing acid, thereby producing fermentable sugars.

4,564,596

UROKINASE DERIVATIVES COVALENTLY BOUND TO FIBRINOGEN

Alexandr V. Maximenko, Proezd Karamzina, 1, korpus 3, kv. 59; Elena G. Tischenko, ulitsa Eniseiskaya, 15, kv. 25; Vladimir P. Torchilin, Rostovskaya naberezhnaya, 1, kv. 90; Vladimir N. Smirnov, Juzhinsky pereulok, 3, kv. 7, and Evgeny I. Chazov, 3 Cherepkovskaya, 15a, all of Moscow, U.S.S.R.

PCT No. PCT/US84/00008, § 371 Date Jan. 3, 1985, § 102(e) Date Jan. 3, 1985, PCT Pub. No. WO84/04536, PCT Pub. Date Nov. 22, 1984

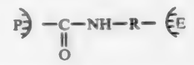
PCT Filed Mar. 1, 1984, Ser. No. 705,343

Claims priority, application U.S.S.R., May 10, 1983, 3590957

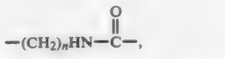
Int. Cl.⁴ C12N *9/72, 11/02;* **A61K** *37/48*

U.S. Cl. 435—177 **7 Claims**

1. Urokinase derivatives comprising urokinase covalently bonded with fibrinogen or urokinase covalently bonded, through an aliphatic diamine, with fibrinogen of the general formula:



wherein P is fibrinogen, E is urokinase, R is either a single bond or stands for



wherein n is 1–12, with a molecular mass of 360,000 to 440,000D, a content of protein of 10–30% by mass, and an esterase catalytic activity of 30–60%.

4,564,597

ANTI-SM HYBRIDOMA

Ethan A. Lerner, and Michael R. Lerner, both of New Haven, Conn., assignors to Research Corporation, New York, N.Y.

Filed Mar. 18, 1981, Ser. No. 244,899

Int. Cl.⁴ G01N *33/54, 33/56;* **C12N** *5/00*

U.S. Cl. 435—7 **11 Claims**

1. A continuous cell line which produces anti-Sm antibodies of the IgG class in vitro in hypoxanthine-aminopterin-thymidine medium and comprises a fused cell hybrid of cells from the spleen or lymph node of mice manifesting a lupus erythematosus-like syndrome and myeloma cells from mice or rats.

3. Murine monoclonal anti-Sm antibodies of the IgG2a class characterized by reacting specifically with Sm antigen and the ability to precipitate the small nuclear ribonucleic acids U1, U2, U4, U5 and U6.

5. A serological method for determining the presence of Sm antibody in human sera which comprises incubating the serum to be tested with an excess of Sm antigen, incubating resulting mixture with labeled monoclonal Sm antibody and determining the extent to which the labeled antibody is inhibited from reacting with the Sm antigen.

4,564,598

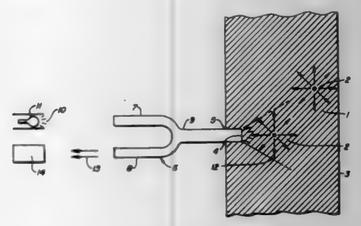
LIMITED VOLUME METHOD FOR PARTICLE COUNTING

Jonathan Briggs, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 12, 1982, Ser. No. 397,285

Int. Cl.⁴ G01N *33/54, 21/64, 33/50*

U.S. Cl. 436—501 **11 Claims**



1. A method for determining the presence of an analyte in a sample suspected of containing said analyte, said method comprising

irradiating at least small predetermined effective volume of a particle-containing assay medium containing said sample with excitation light, where at least one of said particles of said medium is fluorescent and wherein said effective sample volume is defined spatially and temporally solely by means of an optical fiber in contact with said medium to have a low probability that its fluorescence intensity will fluctuate substantially from the mean fluorescence intensity value of multiple sample volumes and where the presence of said analyte results in a variation of observed fluctuations in the fluorescent intensity values obtained from a plurality of effective sample volumes of said assay medium,

determining the fluorescent intensity values from a plurality of effective sample volumes employing said optical fiber to receive fluorescent light from said effective sample volumes, and

deriving the amount of analyte in said sample from the number of fluctuations in said fluorescent intensity values from the mean value.

4,564,599

LIPOSOME COMPOSITION FOR LUPUS ASSAY

Andrew S. Janoff, Lawrenceville; Marc J. Ostro, North Brunswick; Allan L. Weiner, Plainsboro, all of N.J.; Gerald Weissmann, New York, N.Y., and James R. Seibold, Piscataway, N.J., assignors to The Lipodome Company, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 410,249, Aug. 23, 1982, and a continuation-in-part of Ser. No. 362,382, Mar. 26, 1982. This application Mar. 24, 1983, Ser. No. 476,495

Int. Cl.⁴ G01N *33/564;* **B32B** *5/16, 9/02, 9/04;* **A01N** *25/00;* **A61K** *9/42*

U.S. Cl. 436—507 **46 Claims**

1. A method for detecting SLE antibodies in serum, comprising:

(a) contacting serum, for a period of time at least sufficient to permit equilibration of binding between SLE antibodies and cardiolipin, with liposomes having a multicomponent liposome bilayer comprising a flexible double tailed phosphatidylcholine and cardiolipin in a molar ratio of from about 1:7 to about 7:1, respectively;

(b) exposing said liposomes to conditions which cause destablization of the liposomes in the absence of SLE antibodies and which do not cause destablization of the liposomes in the presence SLE antibodies; and

(c) detecting any destablization of the liposomes,

said method being performed under conditions non-inhibiting to the binding between SLE antibodies and said cardiolipin.

4,564,600

ALLERGENS AND ANTIBODIES FROM ALLERGEN EXTRACTS AND POOLED SERUM

Majid Ali, 19 Edgemont Pl., 07666, and Madhava P. Ramanarayanan, 271 Briarcliffe Rd., both of Teaneck, N.J. 07666

Filed Oct. 26, 1982, Ser. No. 436,660

Int. Cl.⁴ A61K *39/00*

U.S. Cl. 436—513 **18 Claims**

1. A method of isolating allergenic components from allergen extracts and of obtaining purified antigen-specific antibodies comprising forming an antigen-specific antibody complex from pooled serum containing said antibodies and pooled material containing said antigen, and separating said complex from said serum and material.

4,564,601

SHAPED POLYCRYSTALLINE SILICON CARBIDE ARTICLES AND ISOSTATIC HOT-PRESSING PROCESS

Jochen Kriegesmann, Durach-Bechen; Klaus Hunold, Kempten; Alfred Lipp, Bad Worishofen; Klaus Reinmuth, Durach, and Karl A. Schwetz, Sulzberg, all of Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 396,437, Jul. 8, 1982, abandoned. This application Aug. 29, 1984, Ser. No. 646,022

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129633

Int. Cl.⁴ C04B *35/56*

U.S. Cl. 501—88 **5 Claims**

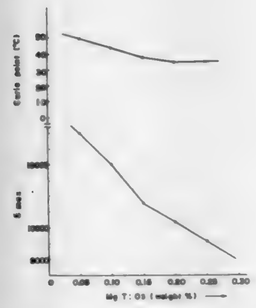
1. A substantially pore-free shaped article consisting essentially of pure polycrystalline α- and/or β-silicon carbide, said article having a total content of metal impurities less than about 0.1% by weight, and having a single-phase homogeneous microstructure with a grain size not exceeding about 8 μm, obtained from pure SiC powder having a total content of metal impurities less than about 0.1% by weight, by isostatic hot-pressing in a vacuum-tight casing at a temperature of from about 1900° C. to 2300° C. and a pressure of from about 100 to 400 MPa (1 to 4 kbar) using an inert gas as a pressure-transfer medium.

4,564,602

HIGH PERMITTIVITY CERAMIC COMPOSITION

Yasuyuki Nakazawa, Yokaichi, and Yoshiharu Kato, Takatsuki, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 28, 1984, Ser. No. 656,148
Claims priority, application Japan, Sep. 29, 1983, 58-182486
Int. Cl.⁴ C04B *35/46*
U.S. Cl. 501—137 **13 Claims**



1. A high permittivity ceramic composition having a dielectric constant not less than 9000 and a dielectric loss factor of not more than 2.5% consisting essentially of, by weight, 84.25 to 92.4% of substantially stoichiometric barium titanate; substantially stoichiometric calcium zirconate and substantially stoichiometric calcium stannate, the sum of said calcium zirconate and calcium stannate being 9.5 to 13.5%, the weight ratio of said calcium zirconate to calcium stannate being 1:2.5 to 3:1; 0.05 to 0.25% of substantially stoichiometric magnesium titanate wherein the mole ratio of MgO to TiO_2 is within the range of 0.75 to 1.25; and 0.05 to 2.0% of at least one oxide of rare earth elements.

4,564,603

OXIDATIVE-DEHYDROGENATION CATALYST AND PROCESS

Paul R. Robinson, and Eric L. Moorehead, both of Diamond Bar, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 592,422, Mar. 21, 1984, which is a division of Ser. No. 328,446, Dec. 7, 1981, Pat. No. 4,454,245, which is a continuation-in-part of Ser. No. 595,333, Mar. 30, 1984, which is a division of Ser. No. 335,531, Dec. 29, 1981, Pat. No. 4,455,388, which is a continuation-in-part of Ser. No. 328,446, Dec. 7, 1981, Pat. No. 4,454,245, which is a continuation-in-part of Ser. No. 461,942, Jan. 28, 1983, Pat. No. 4,481,363, which is a division of Ser. No. 289,806, Aug. 3, 1981, Pat. No. 4,388,221, which is a continuation-in-part of Ser. No. 646,291, Aug. 29, 1984, which is a continuation-in-part of Ser. No. 461,942, which is a continuation-in-part of Ser. No. 492,163, May 6, 1983, which is a continuation-in-part of Ser. No. 492,226, May 6, 1983, each is a continuation-in-part of Ser. No. 275,370, Jun. 19, 1981, abandoned. This application Oct. 31, 1984, Ser. No. 667,000
The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.
Int. Cl.⁴ B01J *29/06, 21/08, 27/00*
U.S. Cl. 502—60 **17 Claims**

1. An oxidative dehydrogenation catalyst comprising components of vanadium, phosphorus, and an alkali metal in combination with a microporous crystalline silica or a crystalline zeolite having a silica-to-alumina ratio of at least 6.0.

2. An oxidative dehydrogenation catalyst as defined in claim **1** wherein said catalyst contains a crystalline aluminosilicate zeolite.

11. A catalyst as defined in claim **2** further comprising a tin component.

15. An oxidative-dehydrogenation catalyst comprising components of vanadium, phosphorus, and one or more alkali metals, with the atomic ratio of total alkali metals to phosphorus being above about 0.4:1.0.

4,564,604

CATALYST FOR TREATING WASTE GASES

Kozo Iida, and Yoshiaki Obayashi, both of Kanonshin, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1984, Ser. No. 671,698
Claims priority, application Japan, Nov. 16, 1983, 58-214028
Int. Cl.⁴ B01J *29/08, 29/18, 29/28*
U.S. Cl. 502—64 **4 Claims**

1. A catalyst for treating waste gases comprising nitrogen oxides by a process which comprises adding ammonia to the waste gas and reducing the nitrogen oxides with catalytic ingredients of the catalyst to render the nitrogen oxides into non-noxious compounds, the catalyst comprising a catalytic ingredient for nitrogen oxides and a coating formed on the catalytic ingredient and consisting of a protonized zeolite.

4. The catalyst according to claim **1**, wherein said catalytic ingredient is supported on a carrier.

4,564,605

CATALYST AND PROCESS FOR POLYMERIZING OLEFINS

Joelle Collomb-Ceccarini, Marseilles, and Pierre Crouzet, Martigues, both of France, assignors to BP Chemicals Limited, London, England

Filed Nov. 21, 1984, Ser. No. 673,889
Claims priority, application France, Nov. 23, 1983, 83 18624
Int. Cl.⁴ C08F *4/64*
U.S. Cl. 502—110 **20 Claims**

1. Process for the preparation of a supported catalyst, the support containing magnesium chloride as a major component and optionally aluminium chloride and occurring in the form of spheroidal particles having a mean diameter by mass comprised between 10 and 100 microns and a particle size distribution such that the ratio of the mean diameter by mass Dm to the mean diameter by number Dn is less than or equal to 3, on which support there is precipitated a metal of a transition compound belonging to Groups IV, V and VI of the Periodic Table of Elements, the process being characterised in that the precipitation is performed by a reduction reaction in two stages of a compound of the said transition metal taken at its maximum valency, the first stage of the reduction reaction being carried out by means of a reducing agent chosen from among alkylaluminium dihalides of the formula $Al(R_8)X_2$ in which R_8 is an alkyl group containing from 2 to 12 carbon atoms and X is a chlorine or bromine atom, the second stage of the reduction reaction being carried out by means of another reducing agent chosen from among the organo-metallic compounds of metals belonging to Groups II and III of the Periodic Table of Elements and having in respect of the compounds of the said transition metals a greater reducing power than that of the alkylaluminium dihalides, the relative molar quantities of the various compounds employed being such that:

magnesium chloride and the optional aluminium chloride of the support/transition metal compound is comprised between 1 and 50,

alkylaluminium dihalide used in the first stage of the reduction reaction/transition metal compound, is comprised between 0.2 and 2,

reducing agent used in the second stage of the reduction reaction/transition metal compound, comprises between 0.1 and 2, at least 10% of the total quantity of the transition metal compound employed reacting in the first stage of the reduction reaction with the alkylaluminium dihalide.

4,564,606

POLYMERIZATION CATALYST, PRODUCTION AND USE

Steven A. Best, Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 6, 1984, Ser. No. 638,167
Int. Cl.⁴ C08F *4/62, 4/64, 4/68*
U.S. Cl. 502—117 **41 Claims**

1. A transition metal containing catalyst component comprising the solid reaction product obtained by treating an inert solid support material in an inert solvent sequentially with optionally (A) Cl_2, Br_2, interhalogen or mixtures thereof, (B) an organometallic compound of a Group IIa, IIb or IIIa metal wherein all the metal valencies are satisfied with a hydrocarbon group, (C) an oxygen containing compound selected from ketones, aldehydes, alcohols or mixtures thereof, (D) an acyl halide, (E) at least one transition metal compound of a Group IVb, Vb, VIb or VIII metal, and optionally (F) Cl_2, Br_2, an interhalogen or mixtures thereof with the proviso that the inert solid support material can alternatively be treated with (i) the (B) organometallic compound and the (C) oxygen containing compound simultaneously, (ii) the reaction product of the (B) organometallic compound and (C) oxygen containing compound or (iii) the (C) oxygen containing compound followed by treating with the (B) organometallic compound and at least one of (A) and (F) treatment is performed.

4,564,607

HETEROPOLYACID-TYPE CATALYST COMPOSITION CONTAINING WHISKERS

Tadahiro Yoneda, Ibaraki, and Michio Ueshima, Nishinomiya, both of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed Mar. 21, 1984, Ser. No. 591,835
Claims priority, application Japan, Mar. 24, 1983, 58-47871; Apr. 1, 1983, 58-55150
Int. Cl.⁴ B01J *27/20, 27/14, 23/84, 23/08*
U.S. Cl. 502—209 **8 Claims**

1. A catalyst composition having excellent mechanical strength consisting essentially of a compound containing a heteropolyacid aa a base and from about 1 to about 50% by weight of the catalyst composition of whiskers having an average diameter of not more than 5 microns and an average length of not more than 1000 microns.

4,564,608

METHOD OF PRODUCING MONOLITH CATALYSTS

Kazunori Ihara, Iwakuni, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Nov. 22, 1983, Ser. No. 554,449
Claims priority, application Japan, Nov. 29, 1982, 57-210382
Int. Cl.⁴ B01J *21/04*
U.S. Cl. 502—355 **1 Claim**

1. A method of producing a monolith catalyst for use in an automobile exhaust system wherein the catalyst has an alumina coat layer capable of withstanding temperatures of about 850° C. or higher without becoming separated, comprising the steps of

(i) adding from about 60 to 120 parts by weight of water with respect to 100 parts by weight of blended dust, which blended dust is provided through the blending of from about 85 to 95% by weight of hydroalumina powder and from about 5 to 15% by weight of aluminum nitrate powder;

(ii) blending and kneading the mixture of water and blended dust;

(iii) adding from about 30 to 70 parts by weight of activated alumina powder with respect to 100 parts by weight of blended dust to the mixture of water and blended dust, and then blending to produce an alumina slurry;

(iv) coating the surface of a cordierite catalyst carrier with the alumina slurry by dipping the cordierite catalyst into the alumina slurry;

(v) drying the cordierite carrier at about 100° to 200° C. for from about 1 to 3 hours; and then

(vi) burning the carrier at a temperature of from about 600° to 800° C. for from about 2 to 5 hours.

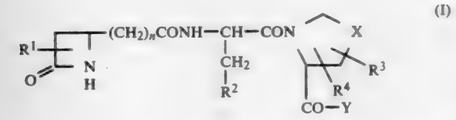
4,564,609

4-SUBSTITUTED-2-AZETIDINONE COMPOUND, PROCESS OF PRODUCING THE COMPOUNDS, AND MEDICAMENTS CONTAINING THE COMPOUNDS

Toshinari Tamura, Tokyo; Hidenori Iwamoto; Makoto Yoshida, both of Saitama, and Minoru Yamamoto, Kanagawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

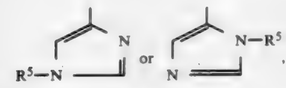
Filed Mar. 23, 1984, Ser. No. 592,866
Claims priority, application Japan, Mar. 25, 1983, 58-48989; Nov. 25, 1983, 58-221469; Nov. 25, 1983, 58-221470
Int. Cl.⁴ A61K *37/00*
U.S. Cl. 514—18 **25 Claims**

1. A 4-substituted-2-azetidinone compound of the formula (I)



(I)

wherein R^1, R^3 and R^4, which may be the same or different, each represent a hydrogen atom or a lower alkyl group; R^2 represents an imidazolyl group shown by



wherein R^5 represents a hydrogen atom, a lower alkyl group, an aromatic acyl group, or an aryl group; n represents 0, 1, 2 or 3; X represents a methylene group, an ethylene group, an oxygen atom, or a sulfur atom; and Y represents a hydroxy group, a lower alkoxy group, an aralkoxy group or an unsubstituted or substituted amino group shown by



wherein R^6 and R^7, which may be the same or different, each represents a hydrogen atom, a lower alkyl group, a hydroxy lower alkyl group, a lower alkoxy lower alkyl group, a cycloalkyl group, an aryl group, an amino lower alkyl group or an acyloxy lower alkyl group; said R^6 and R^7 may combine with each other to form, together with the nitrogen atom to which these groups are bonded, a 5-membered or 6-membered ring, which may contain an oxygen atom, a sulfur atom or a nitrogen atom; or a salt thereof.

4,564,610

SUBSTITUTED 5H-PYRIMIDO[5,4-B]INDOLES

Dieter Rahtz; Andreas Huth; Ralph Schmiechen; Dieter Seidelmann; Wolfgang Kehr; Herbert H. Schneider, all of Berlin, Fed. Rep. of Germany, and Claus T. Braestrup, Roskilde, Denmark, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

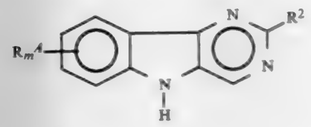
Filed Dec. 16, 1983, Ser. No. 562,248

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246932

Int. Cl.⁴ A61K *31/505;* **C07D** *487/04*

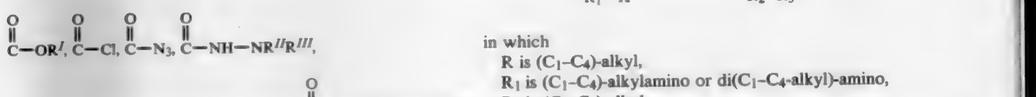
U.S. Cl. 514—80 **20 Claims**

1. A substituted 5H-pyrimido[5,4-b]indole of the formula

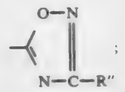


wherein

R_2 is halogen, C_{1-5}-alkyl, cycloalkyl, of 3–7 carbon atoms, aralkyl of 7–11 carbon atoms, aryl of 5–10 carbon atoms, OR^I, SO_nR^I,



or the oxadiazolyl group



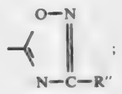
R″ is lower alkyl with up to 3 carbon atoms,

R^{II} and R^{III} each independently is hydrogen, C_{1-5}-alkyl, C_{3-5}-alkenyl, C_{3-7}-cycloalkyl, C_{7-11}-aralkyl, or C_{6-10}-aryl, or together with the connecting N-atom form a 5- or 6-membered heterocyclic ring with 0 or 1 additional hetero atom which is N, O or S;

each R^4 independently is halogen, nitro, OR^I, SO_nR^I,



or the oxadiazolyl group



R is C_{1-5}-alkyl:

n is 0, 1 or 2;

R^I is hydrogen, C_{1-5}-alkyl, C_{3-7}-cycloalkyl, C_{7-11}-aralkyl, or C_{6-10}-aryl;

m is 0, 1, 2, 3 or 4.

16. A pharmaceutical composition comprising a psychotropically effective amount of a compound of claim **1** and a pharmaceutically acceptable carrier.

18. A method of achieving a psychotropic effect in a patient in need of such treatment comprising administering to the patient an effective amount of a compound of claim **1**.

4,564,611

(DI)THIO-PHOSPHORIC AND -PHOSPHONIC ACID DERIVATIVES, AND THEIR USE IN PLANT PROTECTION

Gerhard Stähler, Frankfurt am Main; Werner Knauf, Eppstein/-Taunus; Burkhard Sachse, Kelkheim, and Anna Waltersdorfer, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt (Main), Fed. Rep. of Germany

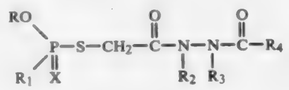
Filed Jul. 28, 1983, Ser. No. 518,295

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228631

Int. Cl.⁴ A01N *57/20, 57/24;* **C07F** *9/165, 9/40*

U.S. Cl. 514—99 **10 Claims**

1. A compound of the formula I:



in which

R is (C_1–C_4)-alkyl,

R_1 is (C_1–C_4)-alkylamino or di(C_1–C_4-alkyl)-amino,

R_2 is (C_1–C_4)-alkyl,

R_3 is H, (C_1–C_4)-alkyl, (C_5–C_6)-cycloalkyl, benzyl or furylmethyl,

R_4 is (C_1–C_4)-alkyl, and

X is oxygen or sulfur.

2. A method for combating harmful insects, acarides or nematodes which comprises applying an effective amount of a compound of claim **1** to the infested plants.

4,564,612

CONDENSED, SEVEN-MEMBERED RING COMPOUNDS AND THEIR USE

Hirosada Sugihara, Osaka; Kohei Nishikawa, Kyoto, and Katsumi Ito, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

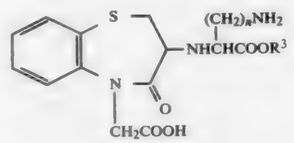
Filed Apr. 11, 1984, Ser. No. 599,187

Claims priority, application Japan, Apr. 22, 1983, PCT/JP83/00127; Oct. 13, 1983, PCT/JP83/00342; Mar. 22, 1984, PCT/JP84/00119

Int. Cl.⁴ A61K *31/55;* **C07D** *281/10*

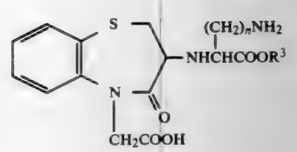
U.S. Cl. 514—211 **9 Claims**

1. A compound of the formula



wherein R^3 is hydrogen or C_{1-4} alkyl and n is 6 or 7, or a pharmaceutically acceptable salt thereof.

9. A method for treatment of hypertension in a mammal, which comprises administering to said mammal an effective antihypertensive amount of a compound of the formula



wherein $R^{3'}$ is hydrogen or C_{1-4} alkyl a nd n is 6 or 7 or a pharmaceutically acceptable salt thereof.

4,564,613

PYRIDOINDOLE DERIVATIVES, COMPOSITIONS AND USE

Karl-Heinz Boltze, Borod; Margaret A. Davies, Cologne; Bodo Junge, Wuppertal; Teunis Schuurman, Overath, and Jörg Traber, Lohmar, all of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co., Cologne, Fed. Rep. of Germany

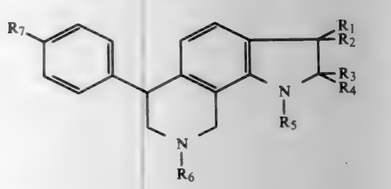
Filed Sep. 14, 1984, Ser. No. 651,001

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3333994

Int. Cl.⁴ A61K *31/44, 31/535;* **C07D** *471/14, 471/04*

U.S. Cl. 514—222 **10 Claims**

1. A pyridoindole of the formula



in which

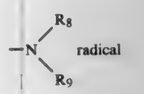
R_1 represents hydrogen or C_1–C_4-alkyl, which is optionally substituted by the radical



R_2 and R_3 represent H or form a bond, or

R_1 and R_2 together represent O, —O—CH_2—CH_2—O— or —S—CH_2—CH_2—S—,

R_4 represents H or the



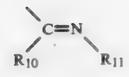
or

R_3 and R_4 represent O, or

R_1 and R_4 are members of an N-containing six-membered ring and

R_8 and R_9 represent H or C_1–C_4-alkyl, or optionally form, with the N atom, a heterocyclic 5-membered or 6-membered ring, which can optionally also contain a further hetero-atom from the series comprising N, O or S,

R_5 represents H, C_1–C_4-alkyl or the group



or

R_5 and R_3 form a bond, and

R_{10} and R_{11} represent C_1–C_4-alkyl or are members of an N-containing 5-membered or 6-membered ring,

R_6 represents H or C_1–C_4-alkyl and

R_7 represents H or halogen or an acid addition salt thereof.

8. A composition active on the central nervous system comprising a central nervous system-output modifying effective amount of a compound or salt according to claim **1** in admixture with a diluent.

4,564,614

ANTIINFLAMMATORY METHODS

Thomas C. Crawford; Stanley L. Keely, both of Ledyard; David L. Larson, East Lyme; Joseph G. Lombardino, Niantic, and James J. Maciejko, Mystic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 659,602, Oct. 11, 1984, abandoned. This application Jan. 28, 1985, Ser. No. 695,518

Int. Cl.⁴ A61K *31/54, 31/435*

U.S. Cl. 514—222 **3 Claims**

1. A method for the treatment of inflammation in a mammal which comprises, in addition to treatment with an antiinflammatory amount of piroxicam or a pharmaceutically acceptable salt thereof, treatment with a gastric antiirritation and ulcer inhibiting amount of pyridoxine or a pharmaceutically acceptable salt thereof.

4,564,615

IMMUNOACTIVATOR

Hideaki Matsuda, Abiko; Ryohta Tatezaki, Yachiyo; Hiroyuki Mizuno, Shisui, and Tatsuhiko Katori, Tone, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 331,760, Dec. 17, 1981, abandoned. This application Nov. 12, 1982, Ser. No. 441,177

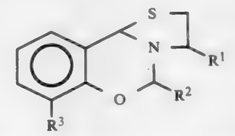
Claims priority, application Japan, Dec. 26, 1980, 55-186145; Oct. 21, 1981, 56-168199

Int. Cl.⁴ A61K *31/535*

U.S. Cl. 514—231 **8 Claims**

1. A method of stimulating antibody producing cells in a host having immunological abnormality or deficiency, comprising:

administering to said host an antibody stimulating amount of a compound of the formula:



or salt thereof wherein R^1 is hydrogen, carboxy or lower alkoxycarbonyl; R^2 is phenyl, substituted phenyl, lower alkyl or furyl and R^3 is hydrogen or lower alkoxy.

4,564,616

ANTI-CANCER QUINAZOLINE DERIVATIVES

Terence R. Jones, Sutton; Kenneth R. Harrap, Newdigate, and Alan H. Calvert, London, all of England, assignors to National Research Development Corporation, London, England

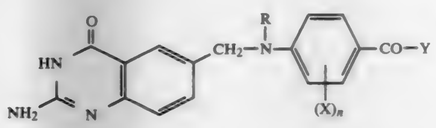
Division of Ser. No. 435,215, Oct. 19, 1982, Pat. No. 4,447,608, which is a continuation of Ser. No. 214,024, Dec. 8, 1980, abandoned. This application Mar. 20, 1984, Ser. No. 591,566

Claims priority, application United Kingdom, Dec. 19, 1979, 7943715; Feb. 28, 1980, 8006813

Int. Cl.⁴ A61K *31/505;* **C07D** *239/84*

U.S. Cl. 514—260 **15 Claims**

1. A pharmaceutical composition useful for aiding regression and palliation of cancer, comprising an effective amount of an active compound in association with a pharmaceutically acceptable carrier or diluent wherein the active compound is a compound of formula:



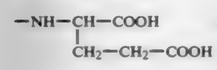
(I)

wherein

R represents a straight or branched chain unsaturated C_2–C_4 hydrocarbon group or a fluorine-substituted straight or branched chain hydrocarbon group having up to 4 carbon atoms;

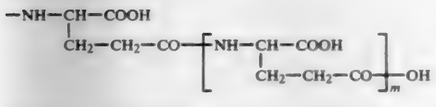
n is 0, 1 or 2;

X, which is linked in a position ortho to the —CO—Y group, represents a halogeno or C_1–C_4 alkyl group, and where two X's are present these may be the same or different; and Y represents a group of formula:



(L-glutamate)

m



wherein m is an integer of 1–9 (poly-L-glutamates);

or a pharmaceutically acceptable salt or ester thereof.

4,564,617

THEOPHYLLINE AND THEOBROMINE DERIVATIVES

Hachiro Sugimoto, Kawaguchi; Takaharu Nakamura, Abiko; Sachiyuki Hamazo, Tokyo; Toshiji Igarashi, Saitama; and Yoshiharu Daiku, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 298,227, Aug. 31, 1981, Pat. No. 4,426,383. This application Apr. 11, 1983, Ser. No. 484,044

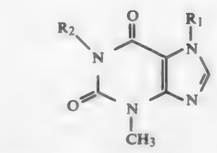
Claims priority, application Japan, Sep. 4, 1980, 55-121713

The portion of the term of this patent subsequent to Jan. 17, 2001, has been disclaimed.

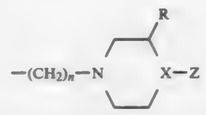
Int. Cl.⁴ C07D *473/08;* **A61K** *31/52*

U.S. Cl. 514—265 **14 Claims**

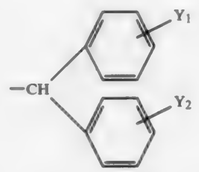
1. A compound having the formula



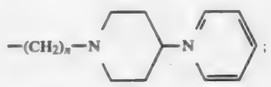
in which one of R_1 and R_2 is methyl and the other of R_1 and R_2 has the formula



wherein R is hydrogen or lower alkyl; Z is pyridyl and or



in which Y_1 and Y_2, which are the same or different, are hydrogen, lower alkyl, lower alkoxy, trifluoromethyl or halogen; X is C; and n is an integer of from 2 to 10; with the proviso that when R_1 is methyl, R_2 is not



or a pharmaceutically acceptable salt thereof.

4,564,618

5-HALOVINYL-2'-DEOXYURIDINE DERIVATIVES

David I. C. Scopes, Hoddesdon; Roger F. Newton, Royston, and Richard C. Cookson, Stratford Tony, all of United Kingdom, assignors to Glaxo Group Limited, England

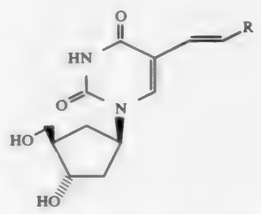
Filed Sep. 16, 1983, Ser. No. 532,859

Claims priority, application United Kingdom, Sep. 17, 1982, 8226515

Int. Cl.⁴ A61K *31/505;* **C07D** *239/46*

U.S. Cl. 514—274 **6 Claims**

1. Compounds of formula (I):



(I)

wherein R is a chlorine, bromine or iodine atom and physiologically acceptable salts thereof with bases.

6. A method of treating a patient infected with or susceptible to infection by a virus which comprises administering to said patient an effective amount of a compound as claimed in claim **1**.

4,564,619

CARBOSTYRIL DERIVATIVE

Tatsuyoshi Tanaka, Sapporo; Kazuyoshi Nagami; Shigeharu Tamada, both of Tokushima, and Kazuyuki Nakagawa, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Japan

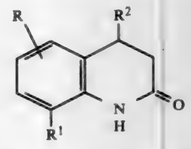
Filed Sep. 2, 1983, Ser. No. 528,887

Claims priority, application Japan, Sep. 3, 1982, 57-154090; Dec. 3, 1982, 57-213167; Jun. 24, 1983, 58-114679

Int. Cl.⁴ C07D *215/22;* **A61K** *31/47*

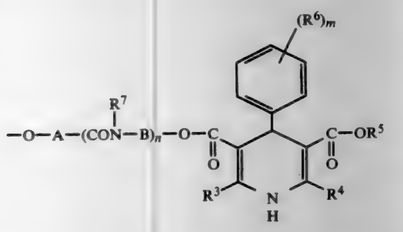
U.S. Cl. 514—312 **26 Claims**

1. A carbostyril derivative represented by the formula

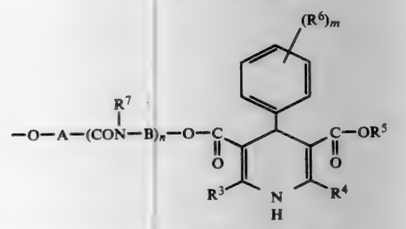


(1)

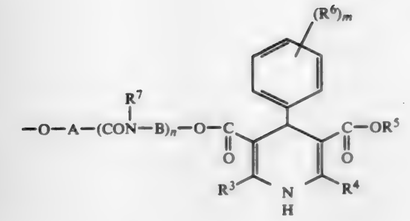
wherein R is a hydrogen atom or a group of the formula



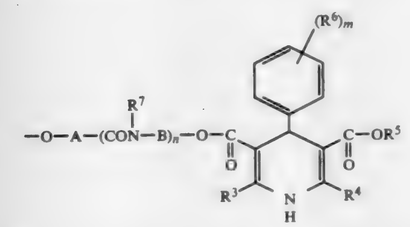
wherein R^3, R^4 and R^5 are each a lower alkyl group; A is a lower alkylene group which may have a hydroxyl group or a lower alkanoyloxy group as a substituent; R^6 is a nitro group, a lower alkyl group which may have a halogen atom as a substituent, a halogen atom, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group; R^7 is a lower alkyl group or a cycloalkyl group having 3 to 8 carbon atoms; B is a lower alkylene group; n is 0 or 1; and m is 0 or an integer of 1, 2 or 3, with the proviso that when R^6 is a nitro group, m is 1; R^1 is a hydrogen atom, a hydroxyl group, a lower alkoxy group, a lower alkenyloxy group, a lower alkynyloxy group, a 2-tetrahydropyranyloxy group or a group of the formula



wherein R^3, R^4, R^5, R^6, R^7, A, B, m and n are the same as defined above R^2 is a hydrogen atom, a lower alkyl group or a group of the formula



wherein R^3, R^4, R^5, R^6, R^7, A, B, m and n are the same as defined above; provided that, among R, R^1 and R^2, only one is a group of the formula



wherein R^3, R^4, R^5, R^6, R^7, A, B, m and n are the same as defined above; and the carbon-carbon bond between 3- and 4-positions in the carbostyril skeleton is a single or double bond, or a pharmaceutically acceptable acid addition salt thereof.

26. A pharmaceutical composition for inhibiting platelet aggregation containing a pharmaceutically effective amount of a carbostyril derivative as claimed in claim **1** or a pharmaceutically acceptable acid addition salt thereof as the active ingredient.

4,564,620

5,6,7,-TRINOR-4,8-INTER-M-PHENYLENE PGI_2 DERIVATIVES AND ANTI-ULCER, ANTI-THROMBOTIC AND ANTI-HYPERTENSIVE PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Kiyotaka Ohno, Fujisawa; Hiroshi Nagase; Mamoru Ishikawa, both of Kamakura; Kazuhisa Matsumoto, Fujisawa, and Shintaro Nishio, Ebina, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

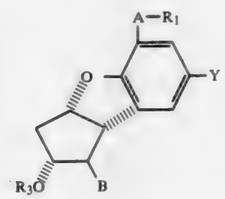
Continuation of Ser. No. 353,875, Mar. 2, 1982, abandoned. This application Jan. 3, 1984, Ser. No. 567,755

Claims priority, application Japan, Mar. 3, 1981, 56-29357

Int. Cl.⁴ A61K *31/34;* **C07D** *307/93*

U.S. Cl. 514—337 **36 Claims**

1. A 5,6,7-trinor-4,8-inter-m-phenylene PGI_2 derivative represented by the formula



(I)

wherein

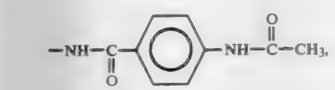
R_1 is a group selected from the class consisting of:

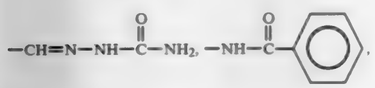
(a) a $COOR_2$, wherein R_2 denotes
(i) hydrogen or a pharmacologically acceptable cation,
(ii) a straight chain alkyl having 1–12 carbon atoms or a branched alkyl having 3–12 carbon atoms,
(iii)

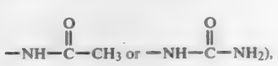


wherein Z denotes valence bond, or straight chain or branched alkylene which may be represented by C_tH_{2t}, wherein t denotes an integer of 1–5, further, m denotes an integer of 5–12, R_3 denotes hydrogen or alkyl having 1–5 carbon atoms, and n' denotes an integer of 1–3,
(iv) $—(CH_2CH_2O)_lCH_3$ wherein l is an integer of 1–5,
(v) —Z—Ar_1, wherein Z is the same as defined above, Ar_1 denotes phenyl, α-naphthyl, β-naphthyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, α-furyl, β-furyl, α-thienyl, β-thienyl or substituted phenyl (wherein the substituent is at least one chlorine, bromine, fluorine, trifluoromethyl, alkyl having 1–4 carbon atoms,

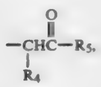
nitro, methoxy, phenyl, phenoxy,



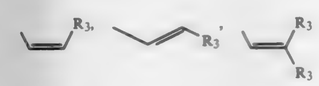




(vi) $—C_lH_{2l}COOR_3$
(vii) $—CH_2C_lH_{2l}N(R_3)_2$ (wherein l and R_3 are the same as defined above),
(viii)



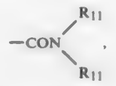
wherein R_4 *L denotes hydrogen or benzoyl and R5* denotes phenyl, p-bromophenyl, p-biphenyl, p-benzamidophenyl or 2-naphthyl,
(ix) $—C_pH_{2p}—B'$, wherein B' is



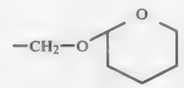
or —C≡C—R_6, wherein R_3 is the same as defined above, R_6 denotes straight chain or branched alkyl having 1–30 carbon atoms, and p is an integer of 1–5, or
(x)



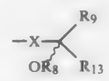
wherein R_7 denotes alkyl or acyl having 1–30 carbon atoms,
(b) —CH_2OH,
(c)



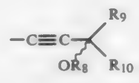
wherein R_{11} denotes hydrogen, alkyl having 1–10 carbon atoms, cycloalkyl having 3–12 carbon atoms, phenyl, substituted phenyl, aralkyl having 7–12 carbon atoms or —SO_2R_{12}, wherein R_{12} denotes alkyl having 1–10 carbon atoms, cycloalkyl having 3–12 carbon atoms, phenyl, substituted phenyl or aralkyl having 7–12 carbon atoms, the two R_{11} may be the same or different, however, when one denotes —SO_2R_{12}, the other is not —SO_2R_{12}, and
(d)



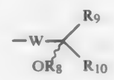
A denotes
(i) $—(CH_2)_n—$,
(ii) —CH=CH—CH_2—,
(iii) —CH_2CH=CH— or
(iv) —CH_2—O—CH_2—,
wherein n is an integer of 1–3
Y denotes hydrogen, alkyl having 1–4 carbon atoms, chlorine, fluorine, bromine, formyl, methoxy or nitro,
B denotes to all A and Y
(i)



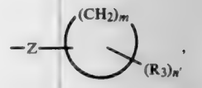
or
(ii)



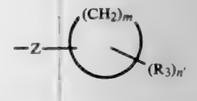
further, when A is (ii) —CH=CH—CH_2—, (iii) —CH_2CH=CH—, (iv) —CH_2O—CH_2— or when Y is an alkyl group having 2–4 carbon atoms, chlorine, fluorine, bromine, formyl, methoxy or nitro, B further denotes
(iii)



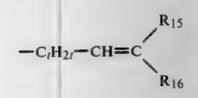
wherein R_9 denotes hydrogen or alkyl group having 1–4 carbon atoms, R_8 denotes hydrogen, acyl having 1–12 carbon atoms, aroyl having 6–15 carbon atoms, tetrahydropyranyl, tetrahydrofuranyl, 1-ethoxy ethyl or t-butyl,
X denotes
(i) —CH_2CH_2—,
(ii) —CH=CH— (trans) or
(iii) —C≡C—
R_{10} denotes
(i) straight chain alkyl having 4–10 carbon atoms, or
(ii)



wherein Z, m, R_3 and n' are the same as defined above, or
(iii) —Z—Ar_2, wherein Z is the same as defined above, and Ar_2 denotes phenyl, α-naphthyl, β-naphthyl or at least one chlorine, bromine, fluorine, trifluoromethyl, alkyl having 1–4 carbon atoms, nitro, methoxy, phenyl or phenoxy-substituted phenyl,
R_{13} denotes
(i) branched alkyl having 5–10 carbon atoms, or
(ii) $—C_lH_{2l}OR_{14}$, wherein C_lH_{2l} is the same as defined above, and R_{14} denotes straight chain or branched alkyl having 1–5 carbon atoms,



or —Z—Ar_2, wherein Z, m, R_3, n' and Ar_2 are the same as defined above, or
(iii)



wherein C_lH_{2l} is the same as defined above, R_{15} and R_{16} denote hydrogen, methyl, ethyl, propyl or butyl group,
W denotes
(i) —CH_2CH_2— or
(ii) —CH=CH— (trans)
and the general formula denotes d form, l form or dl form.

33. A pharmaceutical composition for use as an anti-ulcer agent comprising a pharmaceutically acceptable carrier and a PGI_2 derivative of claim **1** in sufficient amount to provide from about 0.01 to about 100 mg of said PGI_2 derivative per dose.

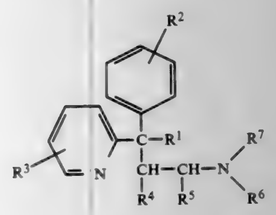
4,564,621

α-ARYL-α-PYRIDYLALKANOIC ACID DERIVATIVES, PROCESS FOR PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Ikuo Ueda, Toyonaka; Masanobu Nagano, Suita, and Atsushi Akahane, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Sep. 23, 1983, Ser. No. 535,298
Claims priority, application Japan, Sep. 30, 1982, 57-172936
Int. Cl.⁴ C07D *213/38*; A61K *31/44*
U.S. Cl. 514—357 **5 Claims**

1. α-Aryl-α-pyridylalkanoic acid compounds of the formula:



wherein
R^1 is carbamoyl,
R^2 is hydrogen or halogen,
R^3 is hydrogen or lower alkyl,
one of R^4 and R^5 is hydrogen and another is lower alkyl,
R^6 is lower alkyl, and
R^7 is lower alkyl,
and salts thereof.

4,564,622

TRIAZOLE DERIVATIVE AS AN ANTIVIRAL AGENT

Gert Streissle, Wuppertal; Manfred Plempel; Arnold Paessens, both of Haan; Graham Holmwood, Wuppertal, and Karl H. Büchel, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 536,409, Sep. 27, 1983, abandoned. This application Apr. 29, 1985, Ser. No. 728,061
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3238903
Int. Cl.⁴ A61K *31/41*
U.S. Cl. 514—383 **5 Claims**

1. A method for treating a warm-blooded animal suffering from the effects of herpes simplex virus or cytomegalo virus which comprises administering to said warm-blooded animals an effective anti-herpes simplex or an effective anti-herpes cytomegalo amount of 2-(4-chlorophenoxymethyl)-3,3-dimethyl-1-(1,2,4-triazol-1-yl)-2-butanol.

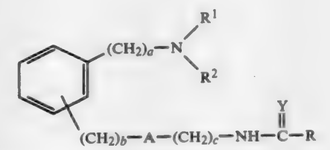
4,564,623

AMINOALKYLBENZENE DERIVATIVES

Kentario Hirai, Kyoto; Teruyuki Ishiba; Shigeru Matsutani, both of Osaka; Itsuo Makino, Hyogo; Toshio Fujishita, Osaka, all of Japan; Masami Doteuchi, Noordwyrerhout, and Koichi Otani, Voorgerg, both of Netherlands, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 277,161, Jun. 25, 1981, Pat. No. 4,482,566, which is a division of Ser. No. 164,016, Jun. 30, 1980, Pat. No. 4,309,433. This application Jan. 25, 1984, Ser. No. 573,685
Claims priority, application Japan, Jul. 3, 1979, 54-84801
Int. Cl.⁴ A01K *31/40*; C07D *257/04, 207/04*
U.S. Cl. 514—408 **9 Claims**

1. A compound of the formula:



wherein
A is oxygen or sulfur,
Y is oxo or thioxo,
a is an integer of 1 to 3,
b is an integer of 0 to 3,
c is an integer of 1 to 4,
R^1 and R^2 taken together represent pyrrolidinyl, and
R is phenyl or benzoly wherein the phenyl or benzolyl are unsubstituted or substituted by 1 to 3 substituents selected from the group consisting of hydroxy, halogen, amino, nitro, cyano, carboxy, carbamoyl, sulfamoyl, C_1—C_5 alkyl, C_1—C_5 alkoxy, C_2—C_6 alkoxy carbonyl, C_2—C_6 dialkylamino, C_1—C_5 alkanoylamnino and tetrazolyl, or a pharmaceutically acceptable acid addition salt thereof.

8. A pharmaceutical composition for use in the treatment of patients suffering from peptic ulcer which comprises a pharmaceutically effective amount of a compound or salt of claim **1** and an inert pharmaceutical carrier or diluent therefor.

9. A method for the treatment of peptic ulcer which comprises administering enterally or parenterally a pharmaceuti-

cally effective amount of composition of claim 8 to a patient suffering from peptic ulcer.

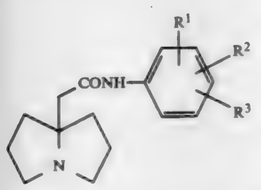
4,564,624

8-(SUBSTITUTED N-PHENYLCARBOXAMIDOMETHYL) PYRROLIZIDINES AND USE THEREOF AS ANTIARRHYTHMICS

Seiji Miyano, Fukuoka; Kunihiro Sumoto, Ohnojo; Minoru Morita, Minoo, and Fumio Sato, Nagaokakyo, all of Japan, assignors to Suntory Ltd., Osaka, Japan

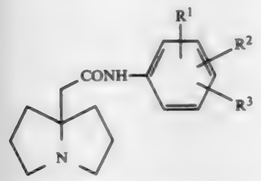
Filed Mar. 10, 1983, Ser. No. 473,947
Claims priority, application Japan, Mar. 16, 1982, 57-42297
Int. Cl.⁴ A61K *31/40*; **C07D** *487/04*
U.S. Cl. 514—413 **8 Claims**

1. An 8-substituted pyrrolizidine compound of the formula:



wherein R^1 stands for hydrogen or a lower alkyl group, R^2 stands for hydrogen, a lower alkyl group, a lower alkoxy group or halogen, and R^3 stands for a lower alkyl group, a lower alkoxy group, amino group or halogen.

6. An antiarrhythmic composition comprising a pharmaceutically acceptable carrier and a pharmaceutically effective amount of an 8-substituted pyrrolizidine compound of the formula:



wherein R^1 is hydrogen or a lower alkyl group, R^2 is hydrogen, a lower alkyl group, a lower alkoxy group or halogen, and R^3 is a lower alkyl group, a lower alkoxy group, amino group or halogen.

7. A method for the treatment of arrhythmia which comprises administering a pharmaceutically effective amount of the composition of claim 6.

4,564,625

BINARY COMPOSITIONS OF PENBUTOLOL AND FUROSEMIDE OR PIRETANIDE

Roman Muschaweck, Frankfurt am Main; Werner Fülberth, Kelkheim, and Alfred Sickmüller, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 279,736, Jul. 2, 1981, abandoned. This application May 10, 1984, Ser. No. 608,915
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025367
Int. Cl.⁴ A61K *31/135*
U.S. Cl. 514—429 **4 Claims**

1. A composition comprising the two components
(a) furosemide or piretanide and
(b) penbutolol,
in a ratio by weight of (a):(b) of 1:2.

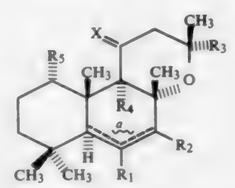
4,564,626

METHODS OF INDUCING BRONCHODILATION

William Krentner, West Caldwell, and Marvin I. Siegel, Florham Park, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

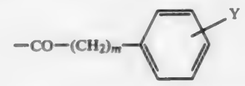
Filed Apr. 1, 1983, Ser. No. 481,503
Int. Cl.⁴ A61K *31/35, 31/38*
U.S. Cl. 514—430 **2 Claims**

1. A method for inducing bronchodilation in a mammal which comprises administering:
(a) a subthreshold bronchodilating effective amount of forskolin or a forskolin derivative chosen from those having the structural formula I,

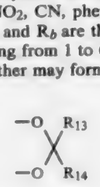


I

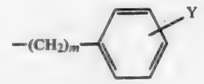
wherein R_1 and R_2 may be the same or different and are =O, H, or OR_{11} wherein R_{11} is H, carboxylic acyl having from 1 to 6 carbon atoms or



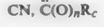
wherein m is 0, 1, 2 or 3 and Y is hydrogen, halogen, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, alkylthio having from 1 to 6 carbon atoms, OH, CF_3, NO_2, CN, phenyl, benzyl, phenoxy or NR_aR_b wherein R_a and R_b are the same or different and are H or alkyl having from 1 to 6 carbon atoms;
R_1 and R_2 when together may form



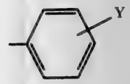
wherein R_{13} and R_{14} may be the same or different and are H, alkyl having from 1 to 6 carbon atoms, alkenyl having from 2 to 6 carbon atoms, alkynyl having from 2 to 6 carbon atoms or



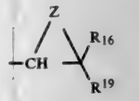
wherein m and Y are defined above;
R_3 is hydrogen; alkyl having from 1 to 10 carbon atoms; CH_2OH; CHO; CO_2R_{15} wherein R_{15} is H or alkyl having from 1 to 6 carbon atoms;
—CH=$CR_{16}R_{17}$ wherein R_{16} is H, halogen, alkyl having from 1 to 6 carbon atoms,



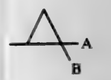
wherein n is O or 1 and R_c is H, alkyl having from 1 to 6 carbon atoms, 1 phenyl or benzyl, $CHOHR_c$ or $C(OR_d)_2R_c$ wherein R_c is defined above and R_d is alkyl having from 1 to 6 carbon atoms, R_{17} is H, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, benzyl, phenyl or halogen;
—C≡C—R_{18} wherein R_{18} is H, alkyl having from 1 to 12 carbon atoms, alkoxy having from 1 to 6 carbon atoms or



wherein Y is defined above;
—CHOH—C≡C—R_{19} wherein R_{19} is H, alkyl of from 1 to 6 carbon atoms, phenyl or benzyl;
—CH=C=CHR_{19} wherein R_{19} is defined above;
—CH=N—OR_{19} wherein R_{19} is defined above;



wherein Z is O or S, and R_{16} and R_{19} are defined above;
—$CH(ZR_{20})_2$ wherein Z is defined above and R_{20} is alkyl having from 1 to 6 carbon atoms, phenyl, benzyl or the two groups R_{20} may together form —$(CH_2)1_p$—wherein p is 2 or 3;



wherein A and B are H, halogen, alkyl having from 1 to 6 carbon atoms, phenyl, benzyl or



wherein n and R_c are defined above;
—CH=N—NDE wherein D and E are H, alkyl having from 1 to 6 carbon atoms, benzyl, phenyl, CoG, SO_2G wherein G is alkyl having form 1 to 6 carbon atoms, benzyl or phenyl;
R_4 is H or OH;
R_5 is OH; or when
R_4 and R_5 are taken together they may form



wherein Z is defined above;
a is an optional bond which may be located in either the 5, 6 or 6, 7 position; and X is O or H/OH; and
(b) a subthreshold bronchodilating effective amount of a beta adrenergic agonist chosen from among isoproterenol, terbutaline, metaproterenol and albuterol; to said mammal.

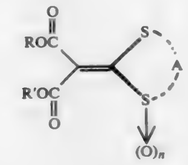
4,564,627

FEED COMPOSITION

Akio Hokazono, Yokohama, and Tatsuyoshi Sugimoto, Hashimoto, both of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1983, Ser. No. 523,772
Claims priority, application Japan, Aug. 19, 1982, 57-142651
Int. Cl.⁴ A61K *31/38, 31/385*
U.S. Cl. 514—430 **4 Claims**

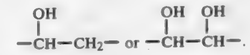
1. A method for enhancing the carcass utility effectiveness of livestock, poultry and fish by feeding a feed composition containing a carcass utility effectiveness enhancing amount of a dithia derivative represented by the formula:



wherein R and R′ are same or different lower alkyl groups, n is an integer of 0, 1 or 2, and A is —CH_2—,



(wherein M is hydrogen or a salt-forming residue), —CH=CH—, —CH_2—CH_2—,



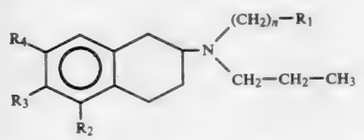
4,564,628

SUBSTITUTED 2-AMINOTETRALINS

Alan S. Horn, Noordhorn, Netherlands, assignor to Nelson Research & Development Co., Irvine, Calif.

Continuation-in-part of Ser. No. 455,144, Jan. 3, 1983, abandoned. This application Aug. 13, 1984, Ser. No. 640,685
Int. Cl.⁴ A61K *31/38*; **C07D** *333/12, 333/22, 307/02*
U.S. Cl. 514—438 **17 Claims**

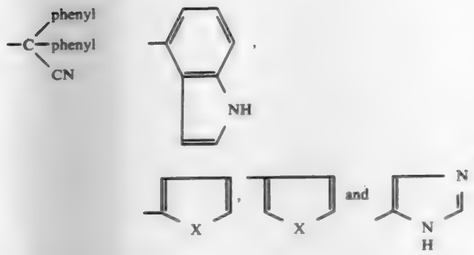
1. A compound having the structural formula



where R_2, R_3 and R_4 are each selected from the group consisting of H, and OA; A is H or



R_5 is selected from the group consisting of alkyl and aromatic residues; n is 2 or 3; and R_1 is selected from the group consisting of 3-pyridyl, 4-pyridyl,



where X is S, O or NH, with the proviso that at least one of R_2, R_3 and R_4 is H, that at least one of R_2, R_3 and R_4 is not H and that R_2 and R_4 are not both OA; and pharmaceutically-acceptable salts thereof.

4,564,629

FUNGICIDAL COMPOSITIONS

Walter Kunz, Oberwil, Switzerland; Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, and Adolf Hubele, Magden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

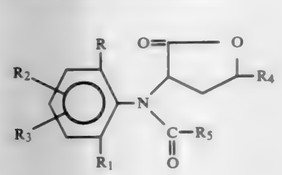
Division of Ser. No. 2,490, Jan. 11, 1979, abandoned, which is a division of Ser. No. 873,585, Jan. 30, 1978, Pat. No. 4,147,792. This application Aug. 22, 1980, Ser. No. 180,267

Claims priority, application Switzerland, Feb. 4, 1977, 1381/77; Mar. 28, 1977, 3884/77

Int. Cl.[4] A01N *43/08;* **C07D** *307/30*

U.S. Cl. 514—472 **12 Claims**

1. A compound of the formula I



wherein

R represents C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen,

R_1 represents C_1–C_3-alkyl, C_1–C_4-alkoxy or halogen,

R_2 represents hydrogen, C_1–C_3-alkyl, C_1–C_4-alkoxy or halogen,

R_3 represents hydrogen or methyl, with the total number of C atoms of the substituents R, R_1, R_2 and R_3 in the phenyl ring not exceeding the number 8,

R_4 represents hydrogen or methyl, and

R_5 represents an alkylthioalkyl or alkoxyalkyl group having 2 to 5 carbon atoms.

4,564,630

CARBAMYLOXYBENZHYDROL DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Edit Tóth; József Törley; István Hajdu; Sándor Görög; Andrea Maderspach; György Hajós; László Szporny, and András Jávor, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

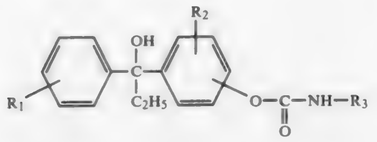
Filed Dec. 27, 1983, Ser. No. 565,922

Claims priority, application Hungary, Dec. 28, 1982, 4191/82

Int. Cl.[4] A61K *31/27;* **C07C** *125/067, 125/075*

U.S. Cl. 514—478 **4 Claims**

1. A compound of the formula (I)



(I)

wherein

R_1 is hydrogen, halogen, trihalomethyl, alkyl having from one to 4 carbon atoms or alkoxy having from one to 4 carbon atoms;

R_2 is hydrogen or an R_3—NH—COO— group;

R_3 is alkyl having from one to 6 carbon atoms, cycloalkyl having up to 7 carbon atoms, or phenyl which can be substituted with at least one halogens.

3. An antilipaemic composition containing a pharmaceutically effective amount of a compound of the formula (I) as defined in claim 1, together with a pharmaceutically acceptable carrier and/or auxiliary substance.

4,564,631

BAITS FOR COMBATING VERMIN

Alfred Elbert, Cologne; Wolfgang Behrenz, Overath, and Ingomar Krehan, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 14, 1983, Ser. No. 532,237

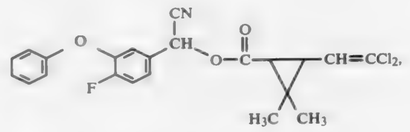
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1982, 3235931

Int. Cl.[4] A01N *37/34, 25/00*

U.S. Cl. 514—521 **3 Claims**

1. An insecticidal bait comprising an insecticidally effective amount of

(a) α-cyano-3-phenoxy-4-fluorobenzyl 2,2-dimethyl-3-(β,β-dichlorovinyl)-cyclopropanecarboxylate of the formula



and

(b) an insect attracting amount of sugar.

4,564,632

INSECTICIDAL AND ACARICIDAL AGENTS AND THEIR USE

Konrad Nonn; Karlheinz Wolf, both of Leverkusen; Johannes Haas, Grevenbroich, and Volker Paulat, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 25, 1981, Ser. No. 324,912

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048021

Int. Cl.[4] A01N *37/34*

U.S. Cl. 514—522 **5 Claims**

1. An insecticidal and acaricidal composition, which when diluted with water forms a clear colloidal solution, comprising

(a) an insecticidally and acaricidally active water-insoluble benzyl or phenoxybenzyl ester of a cyclopropanecarboxylic acid or an isopropylphenylacetic acid, and

(b) a water soluble product produced by condensing 1 mol of phenol with 1 to 3 mols of styrene or vinyltoluene and reacting the condensation product with 8 to 50 mols of ethylene oxide or propylene oxide, the weight ratio of (a) to (b) ranging from 1:1–20.

4,564,633

COMPOSITIONS AND METHODS USEFUL FOR PRODUCING ANALGESIA

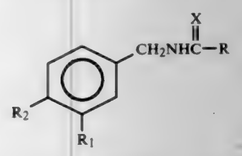
Thomas R. LaHann, Cleves, Ohio, and Brian L. Buckwalter, Yardley, Pa., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 514,206, Jul. 14, 1983, Pat. No. 4,493,848. This application Nov. 28, 1984, Ser. No. 676,025

Int. Cl.[4] A61K *31/24*

U.S. Cl. 514—538 **12 Claims**

1. A method for producing analgesia in humans or lower animals, which comprises administering to said human or lower animal a safe and effective amount of monoalkenamide compound or pharmaceutically-acceptable salt thereof, or mixtures thereof, of the formula:



wherein X is O or S; R is straight or branched, cis-monounsaturated alkenyl having from 11 to 23 carbon atoms; R_1 is OH or OCH_3; and R_2 is a short-chain ester containing from 1 to 6 carbon atoms.

4,564,634

SELENIUM COMPOUNDS HAVING ANTINEOPLASTIC ACTIVITY, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS THEREFROM

Emanuel Revici, New York, N.Y., assignor to Alphatime Ltd. Co., Inc., St. Treviglio, Italy

Filed May 19, 1983, Ser. No. 496,111

Claims priority, application Italy, May 28, 1982, 21552 A/82; Apr. 19, 1983, 20672 A/83

Int. Cl.[4] A01N *37/06;* **A61K** *31/22;* **C11C** *1/00*

U.S. Cl. 514—558 **5 Claims**

1. An organic compound of selenium prepared from eleostearic acid and selenium, which contains 0.1%–5% of selenium, exhibits ultraviolet absorption maxima typical of conjugated trienes and conjugated dienes.

4,564,635

ALLYLSULFOXIDE ENZYME INHIBITORS

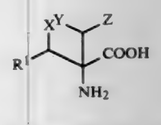
Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 498,344, May 26, 1983, Pat. No. 4,491,590, which is a division of Ser. No. 349,809, Feb. 18, 1982, Pat. No. 4,400,395, which is a division of Ser. No. 147,656, May 7, 1980, Pat. No. 4,332,813, which is a continuation-in-part of Ser. No. 66,603, Aug. 15, 1979, abandoned. This application Oct. 23, 1984, Ser. No. 663,925

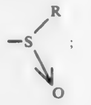
Int. Cl.[4] A61K *31/195;* **C07C** *101/10*

U.S. Cl. 514—562 **6 Claims**

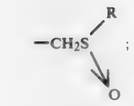
5. A method of inhibiting enzymes in a patient in need of such treatment which comprises the administration of an enzyme inhibitory amount of a compound of structural formula:



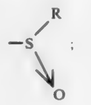
or a pharmaceutically acceptable salt thereof wherein X is hydrogen, fluoro, chloro, bromo, iodo, C_{2-4} alkanoyloxy, toluenesulfonyloxy, benzenesulfonyloxy, C_{1-3} alkanesulfonyloxy, p-nitrobenzoyloxy, or



is hydrogen or



and Z is fluoro, chloro, bromo, iodo, C_{2-4} alkanoyloxy, toluenesulfonyloxy, benzenesulfonyloxy, C_{1-3} alkanesulfonyloxy, p-nitrobenzoyloxy, or



or Y and Z taken together form $=CH_2$; with the proviso that one and only one of X, Y and Z is a sulfoxide, and one and only one of X and Z is halo;

wherein

R is

(1) phenyl,
(2) nitrophenyl,
(3) cyanophenyl,
(4) C_{1-3} alkylsulfonylphenyl,
(5) C_{1-3} alkoxycarbonylphenyl,
(6) di(trifluoromethyl)phenyl,
(7) o-C_{1-3} alkylphenyl, or
(8) o,o-di(C_{1-3} alkyl)phenyl, and

R^1 is

aminoethyl, or
hydrogen.

4,564,636

DIPHENYLAZOMETHINES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Jean P. Kaplan, Bourg la Reine, France, assignor to Synthelabo, Paris Cedex, France

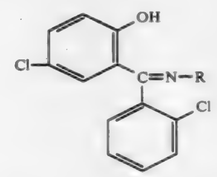
Filed Apr. 13, 1984, Ser. No. 599,799

Claims priority, application France, Apr. 14, 1983, 83 06081

Int. Cl.[4] C07C *101/30, 103/29, 119/14;* **A61K** *31/195, 31/165, 31/135*

U.S. Cl. 514—567 **2 Claims**

1. A diphenylazomethine of the formula

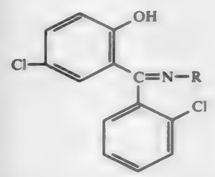


wherein R is selected from the group consisting of —CH_2—CHOH—CH_2—COOH, —CH_2—CHOH—CH_2CONH_2, —CH_2—CH_2—CHOH—CH_2OH, and —CH_2-

CHOH—COOH, in the form of a racemate or of an optically active isomer.

2. A pharmaceutical composition for treating depression comprising

an antidepressant effective amount of a diphenylazomethine of the formula



wherein R is selected from the group consisting of —$(CH_2)_4OH$, —$(CH_2)_2$—CHOH—CH_3, —CH_2—CHOH—C_2H_5, —CH_2—CHOH—CH_2—COOH, —CH_2—CHOH—CH_2CONH_2, —CH_2—CH_2—CHOH—CH_2OH, and —CH_2—CHOH—COOH, in the form of a racemate or of an optically active isomer when said diphenylazomethine contains an asymmetric carbon and a pharmaceutically acceptable carrier.

4,564,637

METHOD FOR MAINTAINING CORNEAL SHAPE AFTER RADIAL KERATOTOMY

Ronald A. Schachar, P.O. Box 145, Denison, Tex. 75020

Filed Aug. 19, 1981, Ser. No. 294,158

Int. Cl.⁴ A61K *31/19, 31/135, 31/557*

U.S. Cl. 514—573 **7 Claims**

1. A method for effecting and maintaining the curvature of the cornea of an eye in a predetermined curvature after radial keratotomy surgery wherein the cornea has at least one radial incision comprising elevating the intraocular pressure of said eye above normal levels by directly administering to said eye an amount of an intraocular pressure-raising compound effective to raise the intraocular pressure above the normal value, and maintaining the intraocular pressure at an elevated level for a period of time to permit the corneal incision of said radial keratotomy to heal, whereby the cornea is maintained in said predetermined curvature.

4,564,638

FUNGICIDAL NOVEL N-BENZYL-N-(2-NORBORNYL)-UREAS

Yasuo Yamada, Hino; Junichi Saito, Mitaka; Tatsuo Tamura, Hamura, and Shinji Sakawa, Hino, all of Japan, assignors to Nihon Tokushu Boyaku Seizo K.K., Tokyo, Japan

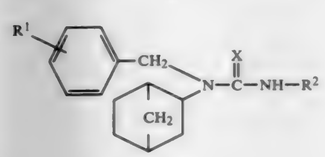
Filed Jun. 10, 1983, Ser. No. 503,212

Claims priority, application Japan, Jun. 17, 1982, 57-103004

Int. Cl.⁴ A01N *47/32;* **C07C** *157/05, 127/15*

U.S. Cl. 514—585 **11 Claims**

1. A benzylurea derivative of by the formula



in which

R^1 is a halogen atom or a lower alkyl group,

X is an oxygen or sulfur atom, and

R^2 is an alkyl group, a cycloalkyl group having 5 to 8 carbon atoms, or a phenyl group which may be substituted by at least one member of the class consisting of halogen atoms, lower alkyl groups, lower alkoxy groups and hydroxyl groups.

4,564,639

N-(2,6-DIFLUOROBENZOYL-N-'-(2-FLUORO-4-HALOPHENYL)UREA

Hiroshi Nagase, Kawanishi, and Yasuo Sato, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

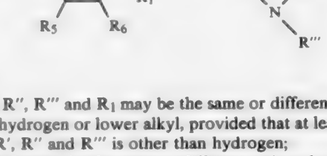
Filed Mar. 1, 1983, Ser. No. 471,191

Claims priority, application Japan, Mar. 1, 1982, 57-32623; Dec. 9, 1982, 57-215835

Int. Cl.⁴ C07C *127/22;* **A01N** *47/28*

U.S. Cl. 514—594 **18 Claims**

1. A compound of the formula:



wherein X is a halogen.

13. A method for killing insects which comprises contacting the insect with a compound of the formula:



wherein X is a halogen.

4,564,640

AMIDINOUREAS SUBSTITUTED IN BOTH THE UREA AND AMIDINO NITROGEN POSITIONS

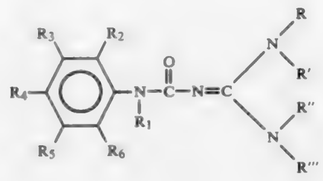
William L. Studt, Harleysville; Richard L. Riley, Chalfont, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 280,787, Jul. 6, 1981, abandoned. This application Feb. 2, 1984, Ser. No. 576,414

Int. Cl.⁴ A61K *31/17*

U.S. Cl. 514—598 **4 Claims**

1. A method for lowering blood pressure in mammalian species comprising administering orally to a patient an orally effective amount of an amidinourea compound of the formula



where:

R, R′, R″, R‴ and R_1 may be the same or different and and are hydrogen or lower alkyl, provided that at least one of R, R′, R″ and R‴ is other than hydrogen;

R_2 and R_6 may be the same or different and are lower alkyl, halo, lower alkoxy, halo lower alkyl, nitro, or lower alkylsulfonyl;

R_4 is hydroxy;

R_3 and R_5 may be the same or different and are hydrogen, hydroxy, lower alkoxy, arloweralkoxy, lower alkynyloxy, lower alkenyloxy, halo loweralkyl acyloxy or loweralkyl acyloxy;

provided that R_3, R_4 and R_5 are not all hydroxy; and wherein:

arloweralkoxy means lower alkoxy substituted with phenyl or phenyl in which one or more of the phenyl hydrogens has been replaced by the same or different substituents selected from the group consisting of halo, lower alkyl, halolower alkyl, nitro, amino, lower alkanoyl, hydroxy, lower hydroxy, phenyl-lower alkoxy, lower alkanoyl, cyano, halo-lower alkoxy, and lower alkyl sulfonyl;

or a nontoxic pharmaceutically acceptable salt thereof.

4,564,641

SUBSTITUTED 1-OXO-2-PHENYL-2-(2-ALKYLAMINOETHYL)-1,2,3,4-TETRAHYDRONAPHTHALENES, THEIR PREPARATION AND THEIR USE

Werner Seitz, Plankstadt; Hans-Jürgen Teschendorf, Dudenhofen; Alfred Michel, Enkenbach/Alsenborn; Martin Traut, Heidelberg; Hans P. Hofmann, Limburgerhof, and Horst Kreiskott, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

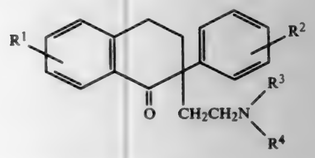
Filed Nov. 22, 1983, Ser. No. 554,298

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243518

Int. Cl.⁴ A61K *31/135, 31/205;* **C07C** *91/16*

U.S. Cl. 514—650 **8 Claims**

1. A 1-oxo-2-phenyl-2-(2-aminoethyl)-1,2,3,4-tetrahydronaphthalene of the formula I



where R^1 and R^2 are identical or different and are each hydrogen, halogen, trifluoromethyl, C_1–C_4-alkyl or C_1–C_4-alkoxy, R^3 is C_1–C_6-alkyl and R^4 is hydrogen, C_1–C_6-alkyl or benzyl, or R^3 and R^4 together may furthermore be a C_2–C_5-alkylene chain, and its salts with physiologically tolerated acids.

8. The method of treating mental disorders in a patient suffering therefrom, which comprises administering an effective amount of a compound as claimed in claim 1.

4,564,642

PROCESS FOR THE MANUFACTURE OF UNSATURATED HYDROCARBONS

Bernd Bussemeier, Mulheim; Carl D. Frohning; Gerhardt Horn, both of Oberhausen, and Werner Kluy, Bochum-Stiepel, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 122,744, Feb. 19, 1980, abandoned, which is a continuation of Ser. No. 963,149, Nov. 22, 1978, abandoned, which is a continuation of Ser. No. 832,722, Sep. 12, 1977, abandoned, which is a continuation of Ser. No. 711,857, Aug. 6, 1976, abandoned. This application Nov. 13, 1981, Ser. No. 321,086

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1975, 2536488

Int. Cl.⁴ C07C *1/04*

U.S. Cl. 518—717 **9 Claims**

1. A process for the production of unsaturated hydrocarbons having 2 to 4 carbon atoms by the catalytic hydrogenation of carbon monoxide which comprises the steps of reacting hydrogen and carbon monoxide in a reaction vessel at a reaction temperature of between about 250° C. and 350° C. and a reaction pressure of between about 10 and 20 bar in the presence of a catalyst consisting essentially of iron, an oxide of titanium, zinc oxide and potassium oxide, wherein the weight ratio of said iron to said titanium is between about 10:1 and 2:1.

4,564,643

PROCESS FOR THE PRODUCTION OF MIXED ALCOHOLS

Masatoshi Shibata; Soichi Uchiyama, and Yoshinobu Aoki, all of Chiba, Japan, assignors to Research Association for Petroleum Alternatives Development, Tokyo, Japan

Continuation of Ser. No. 551,330, Nov. 14, 1983, abandoned. This application May 7, 1985, Ser. No. 731,750

Claims priority, application Japan, Dec. 29, 1982, 57-229834

Int. Cl.⁴ C07C *27/06, 31/04*

U.S. Cl. 518—717 **8 Claims**

1. In a process for producing a mixed alcohol comprising methanol and higher alcohols than methanol comprising contacting a synthesis gas with a catalyst whereby methanol and higher alcohols are formed and recovered,

the improvement comprising using as said catalyst, a solid catalyst prepared by

calcining a mixture consisting essentially of (A) from 5 to 70% by weight, calculated as oxide, of a zinc compound, (B) from 1 to 50% of a nickel compound, and (C) from 1 to 70% of an aluminum compound or of a zirconium compound to form a calcined product;

impregnating said calcined product with (D) from 0.1 to 15% of an alkali metal compound;

calcining said calcined product impregnated with said alkali metal compound to form an alkali metal-containing calcined product; and

reducing said alkali metal-containing calcined product to form said catalyst.

4,564,644

ION EXCHANGE RESINS PREPARED BY SEQUENTIAL MONOMER ADDITION

William I. Harris, Parkmore, South Africa, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 404,028, Aug. 2, 1982, abandoned. This application Jun. 22, 1983, Ser. No. 506,911

Int. Cl.⁴ C08D *5/20;* **C08F** *2/00*

U.S. Cl. 521—28 **20 Claims**

1. A process for preparing crosslinked copolymer beads comprising:

(a) forming a suspension of particles of a crosslinked or noncrosslinked polymer in a continuous aqueous phase, then

(b) swelling said polymer particles with a first monomer mix comprising from about 75 to about 99.5 parts by weight of a monoethylenically unsaturated monomer, about 0.5 to about 25 parts by weight of a polyethylenically unsaturated monomer and a sufficient amount of a substantially water-insoluble free radical initiator to catalyze the polymerization of said first monomer mix and a second monomer mix, then

(c) polymerizing said first monomer mix within said polymer particles until about 40 to about 95 weight percent of said monomers are converted to polymer, then

(d) continue adding to said suspension a second monomer mix, which second monomer mix comprises a monoethylenically unsaturated monomer but contains essentially no free radical initiator, said addition of said second monomer mix being made under conditions including a temperature sufficient to initiate the free radical polymerization of the monomer in said second monomer mix such that said monomer mix is imbibed by said polymer particles and the polymerization of said second monomer mix within said polymer particles is catalyzed by the free radical initiator contained in said first monomer mix and

wherein the monomers of the second monomer mix, when polymerized, comprise from about 40 to about 90 weight percent of the product copolymer beads.

4,564,645

PROCESS FOR THE PRODUCTION OF DIANHYDROHEXITOL MIXTURES AND THE PRODUCTION OF POLYMERS FROM SUCH MIXTURES

Herbert Salzburg; Manfred Hajek, both of Cologne, and Holger Meyborg, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Division of Ser. No. 515,411, Jul. 20, 1983, Pat. No. 4,506,086. This application Jan. 7, 1985, Ser. No. 689,357

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1982, 3229412

Int. Cl.⁴ C08G *18/30*

U.S. Cl. 521—159 **1 Claim**

1. A process for the production of a poyurethane by reacting an organic polyisocyanate with a compound containing at least two active hydrogen atoms and having a molecular weight of from 400 to 12,000 and a chain extending agent in which the chain extending agent is a liquid isomer mixture of 1,4-3,6-dianhydrohexitols containing from 0.5 to 12 wt. % of 1,4-3,6-dianhydroiditol.

4,564,646

LIGHT- AND THERMOSETTING RESIN COMPOSITION AND INSULATED ELECTRICAL MACHINERY AND APPLIANCES USING THE SAME

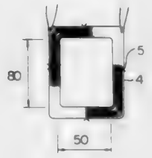
Hisashi Nishigaki, and Yuji Aimono, both of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 337,179, Jan. 5, 1982, abandoned. This application Feb. 16, 1984, Ser. No. 580,710

Claims priority, application Japan, Jan. 10, 1981, 56-2515; Mar. 11, 1981, 56-35637

Int. Cl.⁴ C08F *2/50;* **C08L** *63/10*

U.S. Cl. 522—13 **13 Claims**



1. A light- and thermosetting resin composition which comprises

(a) 30 to 70 parts by weight an unsaturated epoxy ester having a resin acid value of 5 or less obtained by reacting a polyepoxide with an α,β-unsaturated monobasic acid, or a reaction product having a resin acid value of 5 or less obtained by reacting an unsaturated epoxy ester having a resin acid value of more than 5, said unsaturated epoxy ester having been prepared by reacting a polyepoxide with an α,β-unsaturated monobasic acid, with a monoepoxide,

(b) 70 to 30 parts by weight of at least one α,β-unsaturated ethylenic monomer the total of component (a) and component (b) being 100 parts by weight, said monomer being selected from the group consisting of styrene, vinyltoluene, ethylvinylbenzene, divinylbenzene, diallyl phthalate, α-methylstyrene, 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, 1,6-hexanediol diacrylate, 1-6-hexanediol dimethylacrylate, trimethylolpropane triacrylate, trimethylolpropane trimethacrylate, polyethyleneglycol diacrylate and polyethyleneglycol dimethacrylate, and

(c) 0.1 to 3% by weight of at least one photosensitizer and 0.5 to 3% by weight of at least one peroxide based on the total weight of components (a) and (b).

4,564,647

PROCESS FOR THE PRODUCTION OF POLYETHYLENE COMPOSITIONS

Hiroshi Hayashi; Koichi Matono; Satoshi Asahi, all of Sodegaura, and Michitake Uoi, Ichihara, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,760

Claims priority, application Japan, Nov. 14, 1983, 58-212399; Nov. 15, 1983, 58-213337; May 14, 1984, 59-94690; May 28, 1984, 59-106544; May 30, 1984, 59-108289; Jun. 4, 1984, 59-113031

Int. Cl.⁴ C08K *3/04, 9/02;* **C08F** *2/44, 10/02*

U.S. Cl. 523—211 **26 Claims**

1. A low pressure process for producing a polyethylene composition which comprises polymerizing (i) ethylene or (ii) compolymerizing ethylene and a small amount of other α-olefins at low pressure to produce said polyethylene composition in the presence of an amount of a catalyst comprising:

(A) a product resulting from contact treatment of

(a) a high activity catalyst component containing a transition metal and soluble in a hydrocarbon solvent, and

(b) a filler; and

(B) an organoaluminum compound; wherein the component

(a) has sufficient activity so that at least 10 kilograms of polyethylene per gram of the transition metal atom per unit ethylene partial pressure is produced in a low-pressure polymerization of ethylene in the presence of the component (a) and the component (B), sufficiently small so that deashing of said polyethylene composition to remove catalyst is not required.

4,564,648

EPOXY GRAFT ACRYLIC WATER-BASED PRIMER SURFACES

Jozef T. Huybrechts, Turnhout, and Victor R. Vleminckx, Schelle, both of Belgium, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 21, 1984, Ser. No. 652,858

Int. Cl.⁴ C08L *63/10*

U.S. Cl. 523—423 **14 Claims**

1. An aqueous dispersion in water of:

(a) 10–60% of an epoxy ester graft acrylic polymer formed by reacting 5–30% of an epoxy ester polymer formed by reaction of n moles of a difunctional epoxy resin with terminal oxirane groups and a number average molecular weight ($M\bar{n}$) of 300–5,000, n−1 moles of a diacid, and 2 moles of a monofunctional acid to form a reaction product, onto which is grafted 5–30% of an acrylic monomer by using a peroxide or azo initiator, to produce said epoxy ester acrylic polymer with a $M\bar{n}$=1000–50,000 and an acid number of 30–150,

(b) amines being added to an extent equivalent to neutralizing 50–200% of the moles of acid functionality,

(c) organic solvents,

such dispersion having not more than 10% volatile organic solvents plus amines, and

(d) balance water.

4,564,649

POLYVINYL ALCOHOL AND LIGNIN SULFONATE CONTAINING ADHESIVE

Robert M. Hume, III, Cottage Grove; Robert A. LaBrash, Roseville, and Michael J. Vander Giessen, Blaine, all of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.

Filed Apr. 16, 1984, Ser. No. 600,400

Int. Cl.⁴ C08L *29.04, 97/00*

U.S. Cl. 524—13 **11 Claims**

1. An aqueous film-forming adhesive having elevated tack, extended open time, biological stability, heat stability, and strong adhesion which comprises:

(a) an aqueous phase comprising about 25 to 75 wt-% of the adhesive;

(b) a solid component consisting essentially of about 25 to 75 wt-% of the adhesive containing an ammonium or alkali metal lignin sulfonate composition and a polyvinyl alcohol composition wherein there are about 1 to 8 parts by weight of the lignin sulfonate composition per each part by weight of the polyvinyl alcohol composition; and

(c) an effective bond strength improving amount of a cellulosic fiber.

4,564,650

FLAME RETARDANT AMINE TERMINATED POLYAMIDE COMPOSITION

Arie Hochberg, Montclair, and Charles D. Mason, Chatham, both of N.J., assignors to Allied Corporation, Morris Township, N.J.

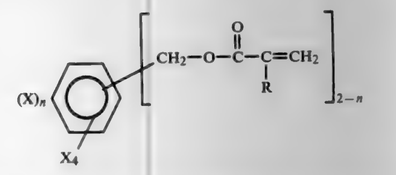
Filed Dec. 22, 1983, Ser. No. 564,610

The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.

Int. Cl.⁴ C08K *5/10*

U.S. Cl. 524—288 **19 Claims**

1. A composition comprising: from 5 to 20 weight percent of a homopolymer of a monomer having the formula



wherein n=0 or 1, X is bromine or chlorine and R is hydrogen or methyl, said polymer having a molecular weight between 1×10^3 and 10×10^6, said molecular weight determined by gel permeation chromotography in tetrahydrofuran;

from 80 to 95 weight percent of a polyamide having an excess of polymer chains terminated with amine end groups; and

from 0 to 10 weight percent of antimony oxide in place of a corresponding amount of polyamide.

4,564,651

METHOD FOR THE MANUFACTURE OF REACTION RESIN MOLDING MATERIALS

Helmut Markert, Nuremburg; Wolfgang Rogier; Klaus Kretzschman, both of Erlangen, and Klaus-Robert Hauschildt, Nuremburg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 27, 1984, Ser. No. 624,972

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1983, 3323122

Int. Cl.⁴ C08K *3/36;* **C08G** *18/58, 18/18, 71/02*

U.S. Cl. 524—589 **15 Claims**

1. A method for preparing reaction resin molded materials containing oxazolidinone and isocyanurate rings, which comprises:

mixing a polyepoxide and a polyisocyanate to form a resin mixture having a viscosity up to about 7000 mPa sec at 25° C. wherein the mole ratio of epoxy to isocyanate groups is in the range of about 1:1 to 5:1, said resin mixture being free of triallyl cyanurate;

reacting the resin mixture in the presence of a catalyst selected from the group consisting of an imidazole and a tertiary amine, under the conditions of elevated gelling temperatures of from about 80° C. to about 130° C. to form a cross-linked polymer;

heating the cross-linked polymer to about 130° to about 200° C. to cause post-hardening and produce a molded material;

the molded material having a mole ratio of oxazolidinone to isocyanurate rings greater than about 1 and the reaction of epoxy and isocyanate groups being greater than about 90% after hardening.

4,564,652

PROCESS FOR PREPARING AQUEOUS DISPERSION OF POLYTETRAFLUOROETHYLENE

Tetsuo Shimizu, and Masafumi Akamatsu, both of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Filed Sep. 12, 1984, Ser. No. 649,707

Claims priority, application Japan, Sep. 12, 1983, 58-168670

Int. Cl.⁴ C08L *27/12*

U.S. Cl. 524—805 **7 Claims**

1. A polymerization process for preparing an aqueous PTFE dispersion containing colloidal PTFE particles having a comparatively large average particle size, comprising polymerizing TFE in an aqueous medium at a temperature of from 10° to 100° C. in the presence of a fluorine-containing dispersant and a water soluble polymerization initiator, in which, during a first phase of said polymerization process including a period just after the initiation of the polymerization and before consumption of 30% of said TFE to be polymerized, said polymerization process is regulated at a pressure not higher than 4 Kg/cm_2, during which period at least 1 g of TFE per liter of said aqueous medium is consumed, and during a second phase of said polymerization process including a period wherein the remainder of said TFE is polymerized, said polymerization process is regulated at a pressure of from 6 to 30 Kg/cm^2.

4,564,653

IMPACT MODIFIER AND THERMOPLASTIC RESIN COMPOSITION USING THE SAME

Kazumasa Kamata, Koganei; Kazuo Ueda, and Kiyokazu Kitai, both of Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1984, Ser. No. 645,358

Claims priority, application Japan, Aug. 31, 1983, 58-159350; Sep. 21, 1983, 58-174878

Int. Cl.⁴ C08L *33/02, 51/00, 51/06*

U.S. Cl. 525—67 **8 Claims**

1. An impact modifier comprising a blend of

100 parts by weight of a multi-layer graft copolymer (1) composed of monomers selected from the group consisting of alkyl acrylates, alkyl methacrylates, aromatic vinyl compounds, vinyl cyanide compounds and butadienes and having a multi-layer structure consisting of at least three layers (A), (B) and (C) in which

the polymer constituting the outermost layer (A) has a glass transition temperature of 0° C. or below, said outermost layer (A) constituting 10 to 50% by weight of the multi-layer graft copolymer;

the polymer constituting the second layer (B) from said outermost layer (A) and has a glass transition temperature of 60° C. or above, said second layer (B) constituting 20 to 60% by weight of the multi-layer graft copolymer; and

the polymer constituting the third layer (C) from said outermost layer (A) has a glass transition temperature of 0° C. or below, said layer (C) constituting 10 to 60% by weight of the multi-layer graft copolymer;

each of said layers containing a polyfunctional crosslinking agent in an amount of 0 to 5% by weight of the layer, and

0.1 to 20 parts by weight of a copolymer (2) obtained by copolymerizing 3 to 30% by weight of an unsaturated acid monomer selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, itaconic acid, cinnamic acid, maleic anhydride and butenecarboxylic acid and 97 to 70% by weight of a vinyl monomer copolymerizable therewith selected from the group consisting of

alkyl acrylates, alkyl methacrylates, aromatic vinyl compounds and vinyl cyanide compounds.

3. A thermoplastic resin composition having excellent impact resistance and molding workability, comprising 100 parts by weight of a thermoplastic resin and 3 to 50 parts by weight of the impact modifier set forth in claim 1.

4,564,654

PROCESS FOR THE PREPARATION AND/OR FURTHER PROCESSING OF POLYMER BLENDS

Volker Serini, Krefeld; Christian Lindner, Cologne; Horst Peters, Leverkusen, and Wolfgang Nising, St. Augustin, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Nov. 26, 1984, Ser. No. 674,846

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1983, 3344102

Int. Cl.⁴ C08L *51/04, 69/00*

U.S. Cl. 525—67 13 Claims

1. A process for the production of a polymer blend consisting essentially of

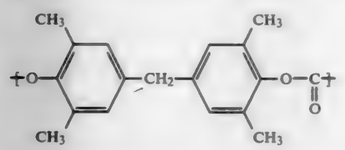
A-1 to 99% by weight of a thermoplastic aromatic tetramethylbisphenol F-containing polycarbonate and a copolymer selected from

B-99 to 1% by weight of a styrene/acrylonitrile copolymer or

C-99 to 1% by weight of a graft polymer, consisting of 5 to 95% by weight of a styrene/acrylonitrile copolymer and 95 to 5% by weight of a butadiene rubber with 0 to 50% by weight of comonomers in addition to butadiene, of an ethylene/propylene/diene rubber or of a rubber consisting of acrylates with 0 to 30% by weight of other comonomers, prepared by polymerisation of styrene/acrylonitrile blends in the presence of one of the stated rubbers, or combinations thereof,

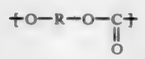
the sum of the components A+B+C being 100% by weight, in which

the aromatic polycarbonate (A) contains at least 80% by weight of repeating structural units of the formula (1)



(1)

and not more than 20% by weight of repeating structural units of the formula (3)



(3)

wherein —O—R—O— is a diphenolate radical, and the repeating structural units of the formula (1) must amount to at least 25% by weight of the aromatic polycarbonate; the amount of acrylonitrile in the styrene/acrylonitrile copolymer of components B and C is 1.5 to 15% by weight; and

mixing of the components to form the blend is carried out at a temperature of above 270° C., in an extruder or kneader.

4,564,655

POLYCARBONATE COMPOSITIONS

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 10, 1984, Ser. No. 680,330

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—92 13 Claims

1. A polycarbonate composition exhibiting improved resistance to organic solvents comprising, in admixture:

(i) at least one high molecular weight aromatic polycarbonate resin;

(ii) at least one selectively hydrogenated linear, sequential or radial teleblock copolymer of a vinyl aromatic compound (A) and (A') independently selected from styrene, alpha-methylstyrene, p-methyl-styrene, vinyl toluene, vinyl xylene, or vinyl naphthylene and an olefinic elastomer (B) of the type A—B—A'; A—(B—A—B)$_n$—A, A(BA)$_n$B, (A)$_4$B, B(A)$_4$ or B((AB)$_n$B)$_4$ wherein n is an integer having a value of from 1 to 10 inclusive; and

(iii) at least one ethylene propylene diene terpolymer;

components (ii) and (iii) being present in amounts at least effective to improve the solvent resistance of said polycarbonate resin.

4,564,656

PREPARATION OF GRAFT COPOLYMERS OF POLYPHENYLENE ETHER AND RUBBER, OPTIONALLY INCLUDING POLY(ALKENYL AROMATIC)

Glenn D. Cooper, deceased, late of Delmar, N.Y. (by Rose H. Cooper, executrix), and Philip L. Kinson, Breckville, Ohio, assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 543,386, Oct. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 322,088, Nov. 17, 1981, abandoned, which is a continuation-in-part of Ser. No. 322,089, Nov. 17, 1981, abandoned, which is a continuation-in-part of Ser. No. 322,090, Nov. 17, 1981, abandoned. This application Feb. 26, 1985, Ser. No. 705,621

Int. Cl.⁴ C08F *8/00*

U.S. Cl. 525—152 7 Claims

1. A process for preparing an impact resistant thermoplastic polymer, comprising the steps of:

(a) providing a mixture of (1) a polyphenylene ether resin and (2) a diene rubber, in a mutual solvent;

(b) heating the mixture in the presence of a source of catalytic free radicals at a temperature and for a period of time sufficient to achieve chemical bonding between at least a portion of the (1) and a portion of the (2), whereby a graft copolymer of the two is formed;

(c) forming a second mixture, comprising the graft copolymer from step (b) and an alkenyl aromatic monomer; and

(d) polymerizing the alkenyl aromatic monomer in the second mixture, whereby a terpolymer of the polyphenylene ether, diene rubber and poly(alkenyl aromatic) is formed.

4,564,657

RAPIDLY CURABLE ACRYLIC ADHESIVE COMPOSITIONS FOR BONDING POLYPROPYLENE

Toshihiko Nishikubo, Tokyo, and Kazuo Shimizu, Iwakunishi, both of Japan, assignors to Sanyo Kokusaku Pulp Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1984, Ser. No. 580,989

Claims priority, application Japan, Aug. 30, 1983, 58-157230

Int. Cl.⁴ C08L *61/20*

U.S. Cl. 525—158 3 Claims

1. A rapidly curable adhesive composition suitable for bonding to polypropylene comprising at least one polymer selected from the group consisting of sulfochlorinated and chlorinated polypropylene dissolved in at least one polymerizable monomer selected from the group consisting of acrylic monomer and methacrylic monomer, wherein the average chlorine content of the polymer is from 26% to 34% by weight, and the

weight average molecular weight of the polymer as determined by gas permeation chromatography is from 5,000 to 120,000.

4,564,658

THERMOPLASTIC POLYESTER-LINEAR LOW DENSITY POLYETHYLENE MOLDING COMPOSITIONS

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 24, 1982, Ser. No. 444,228

Int. Cl.⁴ C08L *67/02*

U.S. Cl. 525—177 7 Claims

1. A thermoplastic molding composition comprising

(a) poly(1,4-butylene terephthalate) and

(b) from 0.1 to about 20 percent by weight based on (a) & (b) of a linear low density polyethylene, which is a copolymer of ethylene and butene-1, having a density of from about 0.89 to about 0.96 grams/cc and a melt index of at least about 5 gm/IO min.

4,564,659

CHELATE RESIN AND PROCESS FOR PRODUCING THE SAME

Yushin Kataoka; Masaaki Matsuda; Kenji Ochi, and Masahiro Aoi, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

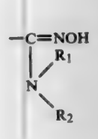
Filed Aug. 22, 1983, Ser. No. 525,473

Claims priority, application Japan, Sep. 1, 1982, 57-153028

Int. Cl.⁴ C08F *8/30*

U.S. Cl. 525—328.2 6 Claims

1. A chelate resin having a functional group represented by the formula:



(I)

wherein R_1 and R_2 are each independently a hydrogen atom, an alkyl group, an aminoalkyl group, or a phenyl group and a functional group represented by the formula:



(II)

wherein R_3 is an amino group, an alkylamino group, a polyethylenepolyamino group, a hydrazo group, a hydrazino group, a hydrazono group, an amidino group, a guanidino group, or a semicarbazide group, the equivalent ratio of the functional group of the formula (II) to that of (I), (II)/(I), being 0.1 to 1.

4,564,660

USE OF ALKYLALUMINUM COMPOUNDS AND HYDROXYL-CONTAINING COMPOUNDS TO INITIATE POLYMERIZATION OF ETHYLENE WITH CHROMIUM OXIDE CATALYSTS

Gary H. Williams, Somerville, and Frederick J. Karol, Belle Mead, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1983, Ser. No. 509,602

Int. Cl.⁴ C08F *2/34, 10/02*

U.S. Cl. 526—106 30 Claims

1. A method for initiating homopolymerization of ethylene, or copolymerization of ethylene with at least one other alpha-olefin containing from 3 to 8 carbon atoms, employing a supported chromium oxide catalyst which comprises

(1) adding an alkylaluminum compound and a hydroxyl-containing compound to the reactor of a fluidized bed polymerization reaction system prior to the commencement of polymerization, and subjecting said alkylaluminum compound and said hydroxyl-containing compound to a pressure of from 350 kPa to 2000 kPa and a temperature of from 20° C. to 150° C. for a time sufficient for said alkylaluminum compound to react completely with the moisture present in said reactor and said hydroxyl-containing compound,

said alkylaluminum compound having the formula

$$AlR_aR_bR_c$$

wherein R_a, R_b and R_c are alkyl radicals containing from 1 to 12 carbon atoms, and said alkylaluminum compound being added to said reactor in an amount sufficient to react with at least a major amount of the moisture present in the reaction system,

said hydroxyl-containing compound having carbon-hydroxyl or metal-hydroxyl linkages which are capable of reacting with the alkylaluminum compound to form a Lewis salt, and said hydroxyl-containing compound being added to said reactor in an amount sufficient to react with all of the alkylaluminum compound added to the reactor, and

(2) introducing a supported chromium oxide catalyst into the reactor under polymerization conditions suitable for said catalyst at a rate of from 5 percent to 100 percent of the rate normally employed during polymerization, and maintaining said conditions until polymerization is initiated.

4,564,661

TERTIARY PERFLUOROALKOXIDES AS SURFACTANTS IN PTFE DISPERSION POLYMERIZATION

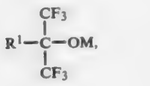
Aleksander Beresniewicz, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 12, 1985, Ser. No. 711,055

Int. Cl.⁴ C08F *2/24*

U.S. Cl. 526—212 11 Claims

1. In a process for producing a colloidal dispersion of polytetrafluoroethylene homopolymer or copolymers of tetrafluoroethylene and ethylenically unsaturated comonomers by polymerizing tetrafluoroethylene and, optionally, ethylenically unsaturated comonomers, in an aqueous medium in the presence of a suitable initiator and a surfactant, the improvement comprising use as surfactant of a compound of the formula



wherein

R^1 is (C_nF_{2n+1}) or $CF_3O(CF_2O)_mCF_2$;

M is a monovalent cation;

n is an integer from 6 to 12; and

m is an integer from 3 to 10.

4,564,662

FLUOROCARBON ELASTOMER

Loren D. Albin, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 23, 1984, Ser. No. 582,926

Int. Cl.⁴ C08F *16/24*

U.S. Cl. 526—247 17 Claims

1. Fluorocarbon elastomer gum having interpolymerized units derived from principal comonomers and a vinyl ether cure site monomer of the formula ROCX=CYZ where one or two of X, Y, and Z substituents are selected from bromine and iodine atoms and the remainder of the substituents are independently selected from hydrogen, fluorine, or chlorine atoms,

and where R is a straight or branched chain or cyclic alkyl or alkenyl radical, aryl radical, or combinations of such radicals, the hydrogen atoms of R may be substituted with chlorine or fluorine and R may contain catenary nitrogen or oxygen atoms, said principal comonomers being vinylidene fluoride with at least one terminally unsaturated comonomer containing at least one fluorine atom substituent on each vinylic or double-bonded carbon atom, each carbon atom of said comonomer being substituted only with fluorine, chlorine, hydrogen, lower fluoroalkyl radical, or lower fluoroalkoxy radical.

4,564,663

FREE RADICAL CURE OF THE BISMALEIMIDE OF DIMER DIAMINE

Eugene C. Martin, and Albert A. De Fusco, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 21, 1985, Ser. No. 703,633

Int. Cl.[4] C08F *222/40*

U.S. Cl. 526—262 **8 Claims**

1. The free radical cure of the bismaleimide of dimer diamine comprising the steps of:

mixing a promoter solution with said bismaleimide to form a first mixture;

adding a hydroperoxide to said first mixture to form a second mixture;

degassing said second mixture;

purging said second mixture; and

heating said second mixture.

4,564,664

EMULSION-ACRYLIC PRESSURE-SENSITIVE ADHESIVES FORMED IN TWO STEP POLYMERIZATION

Man-Chium Chang, Los Angeles; Chung-Ling Mao, Arcadia, and Richard R. Vargas, South Gate, all of Calif., assignors to Avery International Corporation, Pasadena, Calif.

Filed Aug. 12, 1983, Ser. No. 522,491

Int. Cl.[4] C08F *222/10, 120/04*

U.S. Cl. 524—833 **27 Claims**

1. A pressure-sensitive adhesive which is an interpolymer formed of an interpolymerizable hard-monomer system comprising at least one alkyl methacrylate containing from about 2 to about 6 carbon atoms, said hard-monomer system being present in an amount up to about 25% by weight, based on the total weight of the monomers, said alkyl methacrylate independently controlling cohesive strength of the interpolymer, and an unsaturated carboxylic acid containing from about 2 to about 8 carbon atoms and present in a positive amount up to about 10% by weight of the monomers; and a soft-monomer system comprising at least one alkyl diester of fumaric acid in which each alkyl group independently contains from about 2 to about 8 carbon atoms, said alkyl diester of fumaric acid being present in an amount up to about 30% by weight, based on the total weight of the monomers and independently controlling tack and peel of the formed interpolymer, and at least one additional soft monomer, including at least one alkyl acrylate, said adhesive being formed by an emulsion polymerization process in which, to a first emulsion containing from about 80% to about 100% of the total alkyl diester of fumaric acid, there is added, under polymerization conditions, a second emulsion containing the other monomers.

4,564,665

OIL GAS SEPARATION

Ian C. Callaghan, Wokingham, England; Hans-Ferdi Fink, Essen, Fed. Rep. of Germany; Clive M. Gould, Staines, England; Götz Koerner, Essen, Fed. Rep. of Germany; Hans-Jürgen Patzke, Gelsenkirchen-Resse, Fed. Rep. of Germany, and Christian Weitemeyer, Essen, Fed. Rep. of Germany, assignors to The British Petroleum Company p.l.c., London, England

Filed Apr. 5, 1983, Ser. No. 482,202

Claims priority, application United Kingdom, Apr. 7, 1982, 8210320

Int. Cl.[4] C08G *77/06*

U.S. Cl. 528—21 **4 Claims**

1. A polysiloxane characterized by the fact that it contains components of molecular weight in the range of 83,000 to 305,000 and containing not more than 2.8% by weight of components of molecular weight 7,100 or lower, not more than 28% by weight of components of molecular weight 83,000 or lower, not more than 14.5% by weight of components of molecular weight 305,000 or higher, and not more than 0.03% by weight of components of molecular weight 1,750,000 or higher, molecular weights being expressed as polystyrene equivalent molecular weights.

4,564,666

URETHANE ACRYLATES BASED ON POLYEPICHLOROHYDRIN POLYETHER DIOLS AND OPTICAL FIBER COATINGS BASED THEREON

Donald W. Fieder, Chicago; Joseph J. Stanton, Buffalo Grove; Christopher E. Fisher, LaGrange, and Orvid R. Cutler, Jr., Rolling Meadows, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Mar. 11, 1985, Ser. No. 710,337

Int. Cl.[4] C08G *18/67*

U.S. Cl. 522—33 **7 Claims**

1. A liquid ultraviolet-curable coating composition containing at least 45% up to about 95% by weight of acrylated polyurethane-based oligomer comprising at least 10%, based on the total weight of polymerizable material, of an acrylated polyurethane-based ultraviolet-curable oligomer in which the oligomer is the reaction product of an organic diisocyanate with a polyepichlorohydrin polyether diol having a number average molecular weight of from about 1,000 to about 15,000, said reaction product being capped at each end thereof with a monohydric acrylate, and at least about 5% up to 55% of the composition being a liquid which is rapidly polymerizable with ultraviolet radiation to provide said composition with coating viscosity.

4,564,667

UREA-FORMALDEHYDE RESIN MANUFACTURE

David Taylor, Halesowen, England, assignor to BIP Chemicals Limited, Manchester, England

Filed Feb. 22, 1985, Ser. No. 704,405

Claims priority, application United Kingdom, Feb. 23, 1984, 8404758

Int. Cl.[4] C08G *12/34, 12/30*

U.S. Cl. 528—256 **15 Claims**

1. A resin comprising a reaction product of urea and formaldehyde having a ratio of formaldehyde to urea which is between 2.0:1 and 1.1:1 wherein the degree of condensation of the resin is between 25% and 45%, and the resin is a solid at room temperature.

4. A solid resin according to claim 1 which comprises also units derived from an amide, a reactive hydroxyl compound or an amino-triazine compound or a formaldehyde reaction product of one of these compounds, said units comprising not more than 4 per cent by weight of the resin.

4,564,668

PROCESS FOR PREPARATION OF POLYVINYLENE SULFIDE

Tatsumi Arakawa; Masaru Ozaki, and Yukihiro Ikeda, all of Fuji, Japan, assignors to Director-General of Agency of Industrial Science and Technology

Filed Oct. 9, 1984, Ser. No. 658,996

Claims priority, application Japan, Mar. 31, 1984, 59-62157

Int. Cl.[4] C08G *75/14*

U.S. Cl. 528—388 **2 Claims**

1. A process for the preparation of polyvinylene sulfide which comprises reacting 1,2-dichloroethylene of the formula: ClHC═CHCl with sodium sulfide in the presence of dimethyl sulfoxide at a temperature of from 10° C. to 55° C.

4,564,669

THERMOTROPIC AROMATIC POLYESTERS HAVING A HIGH TENACITY AND AN IMPROVED MELT VISCOSITY, AND MOULDINGS, FILAMENTS, FIBRES AND FILMS THEREOF

Hans-Rudolf Dicke; Manfred Schmidt, both of Krefeld; Aziz El-Sayed, Leverkusen; Ulrich Biskup, Cologne; Ludwig Bottenbruch, Krefeld, and Dieter Freitag, Krefeld-Traar, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Jul. 3, 1984, Ser. No. 627,971

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3325705

Int. Cl.[4] C08G *63/60*

U.S. Cl. 528—173 **4 Claims**

1. A thermotropic fully aromatic polyester prepared by reacting

(a) p-hydroxybenzoic acid or p-hydroxybenzoic acid substituted by one or two of C_1–C_4 alkyl, C_1–C_4 alkoxy, C_6–C_{10} aryl, C_7–C_{12} alkylaryl or halogen;

(b) isophthalic acid, terephthalic acid, or mixtures thereof which are unsubstituted or substituted by one or two C_1–C_4 alkyl, C_1–C_4 alkoxy, C_6–C_{10} aryl, C_7–C_{12} alkylaryl or halogen;

(c) 2,7-dihydroxynaphthalene; and

(d) up to 90 mole-percent based on the total amount of (c) and (d) of unsubstituted or substituted hydroquinone, resorcinol, bisphenol A, 4,4′-dihydroxydiphenyl, 4,4′-diphenylether, 4,4′-diphenylsulphide, 4,4′-diphenylsulphone or mixtures thereof and when substituted are substituted by up to four of halogen, phenyl or methyl; which polyesters contain the condensed radicals (a) in quantities of at least 40 mole-percent, based on the total of radicals (a), (b), (c) and (d), contain the condensed radicals (c) plus (d) in quantities of from 5 to 30 mole-percent, based on the total of radicals (a), (b), (c) and (d), with the limitation that the mol ratio of the condensed radicals b/(c+d) is from 0.95 to 1.05.

4,564,670

DISPERSIBLE SULFUR PRODUCT AND ITS PROCESS OF MANUFACTURE

James E. Kearnan, Monongahela, Pa., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 28, 1985, Ser. No. 717,220

Int. Cl.[4] C08G *75/14*

U.S. Cl. 528—389 **20 Claims**

1. A flowable, particulate sulfur dispersion consisting essentially of particulate sulfur dispersed in liquid poly(cis-isoprene) dispersion agent in the substantial absence of a latex coagulation agent.

4,564,671

CONTINUOUS PREPARATION OF POLYOXYBUTYLENE POLYOXYALKYLENE GLYCOLS

Herbert Mueller, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 14, 1984, Ser. No. 681,546

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346136

Int. Cl.[4] C08G *65/20*

U.S. Cl. 528—416 **8 Claims**

1. A process for the continuous preparation of a polyoxybutlene polyoxyalkylene glycol or its half-esters or half-ethers by copolymerization of tetrahydrofuran with a 1,2-alkylene oxide in the presence of a compound containing reactive hydrogen, where the polymerization is carried out in a reactor at below 50° C. over a fixed-bed clay catalyst and with recycling of the reaction mixture, wherein less than 30% by weight, based on the reaction mixture to be recycled, of a mixture of tetrahydrofuran, 1,2-alkylene oxide and a compound containing reactive hydrogen is added to the reaction mixture, which is recycled to the reactor after flowing through the latter.

4,564,672

WATER-SOLUBLE MONOAZO AND DISAZO COMPOUNDS CONTAINING A FIBRE-REACTIVE 2-ALKOXY-5-CHLORO-ANILINE DIAZO COMPONENT AND COPPER COMPLEXES THEREOF, USEFUL AS DYESTUFFS

Ludwig Schläfer, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

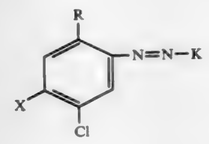
Continuation-in-part of Ser. No. 420,100, Sep. 20, 1982, abandoned, which is a continuation of Ser. No. 338,855, Jan. 12, 1982, abandoned, which is a continuation of Ser. No. 217,525, Dec. 17, 1980, abandoned. This application Jul. 27, 1983, Ser. No. 517,806

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951061

Int. Cl.[4] C09B *62/51, 62/513, 62/515;* D06B *1/38*

U.S. Cl. 534—629 **12 Claims**

1. A water-soluble monoazo or disazo compound of the formula (written in the form of the free acid)

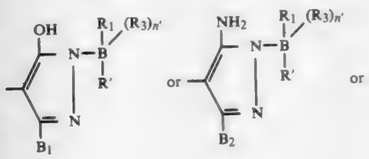


in which

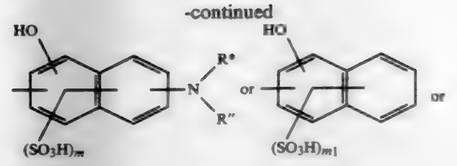
R is alkoxy of 1 to 4 carbon atoms,

X is vinylsulfonyl or beta-sulfatoethylsulfonyl or beta-thiosulfatoethylsulfonyl, and

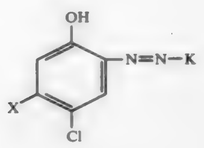
K is a group of the formula



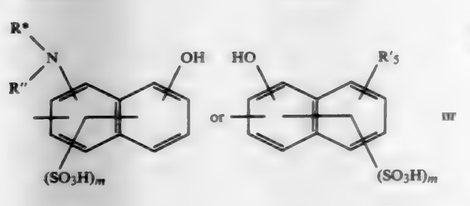
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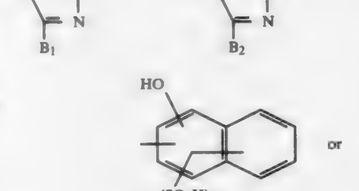
or



or



or



in which

R′ is carboxy or sulfo,

R_1 is hydrogen, lower alkyl, lower alkoxy, chlorine, bromine, lower alkanoylamino or sulfo,

R_3 is hydrogen, lower alkyl, lower alkoxy, chlorine or bromine,

R'_5 is phenylureido, lower alkanoylamino, lower alkenoylamino, benzoylamino or benzoylamino substituted by substituents selected from the group consisting of chlorine, methyl, methoxy, nitro, sulfo and carboxy,

R_8 is hydrogen, cyano, lower alkyl or lower alkyl substituted by lower alkoxy,

R_9 is sulfo or lower sulfoalkyl,

R″ is hydrogen, lower alkyl, phenyl or phenyl substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine and sulfo,

R* is hydrogen or lower alkyl,

B is a benzene or naphthalene ring,

B_1 is lower alkyl, carboxy, carbomethoxy, carboethoxy or phenyl,

B_2 is lower alkyl, carbomethoxy, carboethoxy, carbonamide, phenyl or phenyl substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine and sulfo,

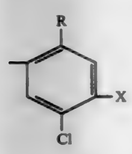
B_3 is hydrogen, lower alkyl or lower alkyl substituted by phenyl or sulfophenyl,

m is 1 or 2,

m_1 is 1, 2 or 3,

n′ is 1 or 2, and

D* is a group of the formula

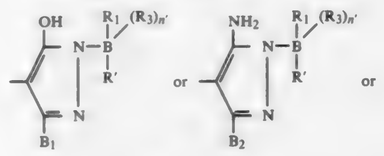


wherein R and X are defined as above.

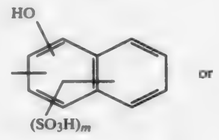
2. A water-soluble copper-complex compound of the monoazo or disazo compound of the formula (written in the form of the free acid)

in which X is vinylsulfonyl or beta-sulfatoethylsulfonyl or beta-thiosulfatoethylsulfonyl, and

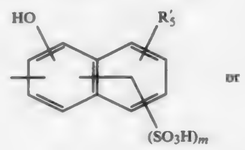
K is a group of the formula



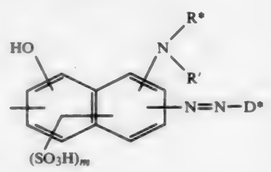
or



or



or



in which

R′ is carboxy or sulfo,

R_1 is hydrogen, lower alkyl, lower alkoxy, chlorine, bromine, lower alkanoylamino or sulfo,

R_3 is hydrogen, lower alkyl, lower alkoxy, chlorine or bromine,

R'_5 is phenylureido, lower alkanoylamino, lower alkenoylamino, benzoylamino or benzoylamino substituted by substituents selected from the group consisting of chlorine, methyl, methoxy, nitro, sulfo and carboxy,

R″ is hydrogen, lower alkyl, phenyl or phenyl substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine and sulfo,

R* is hydrogen or lower alkyl,

B is a benzene or naphthalene ring,

B_1 is lower alkyl, carboxy, carbomethoxy, carboethoxy or phenyl,

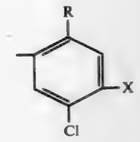
B_2 is lower alkyl, carbomethoxy, carboethoxy, carbonamide, phenyl or phenyl substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine and sulfo,

m is 1 or 2,

m_1 is 1, 2 or 3,

r′ is 1 or 2, and

D* is a group of the formula



wherein R and X are defined as above.

11. A compound according to claim 2, in which X is vinylsulfonyl or beta-sulfatoethylsulfonyl.

4,564,673

3-CYANO-5-NITROTHIOPHENE ANILINO MONOAZO DYE FOR SYNTHETIC FIBERS

Toshio Niwa; Kiyoshi Himeno, both of Kanagawa, and Shuichi Maeda, Saitama, all of Japan, assignors to Research Association Of Synthetic Dyestuffs, Tokyo, Japan

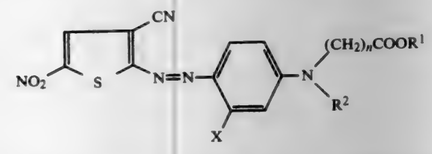
Filed Nov. 21, 1983, Ser. No. 554,112

Claims priority, application Japan, Nov. 22, 1982, 57-205259

Int. Cl.⁴ C09B *29/033, 29/08;* **D06P** *1/18, 3/54*

U.S. Cl. 534—794 **7 Claims**

1. A monoazo dye represented by the formula



wherein X is hydrogen, methyl, acetylamino or chlorine, R^1 is phenyl, benzyl, phenethyl, phenoxymethyl or phenoxyethyl, n is an integer of 1, 2 or 3, and R^2 is alkyl having 1 to 4 carbon atoms, allyl, alkoxyethyl having 1 to 4 carbon atom in the alkoxy moiety or $-(CH_2)_nCOOR^1$ wherein R^1 is the same as defined above.

4,564,674

PROCESS FOR AN ANTHRACYCLINE DERIVATIVE, AND AN ANTHRACYCLINONE DERIVATIVE USEFUL FOR THE PROCESS

Shiro Terashima, Tokyo; Yoshikazu Kimura, Sagamihara; Michiyo Suzuki, Sagamihara; Teruyo Matsumoto, Sagamihara, and Rumiko Abe, Sagamihara, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Oct. 19, 1984, Ser. No. 662,833

Claims priority, application Japan, Oct. 31, 1983, 58-202733; Oct. 31, 1983, 58-202734

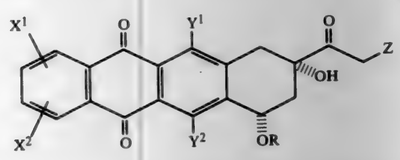
Int. Cl.⁴ C07H *15/24*

U.S. Cl. 536—6.4 **8 Claims**

1. In a process for producing an anthracycline derivative, the improvement comprising:

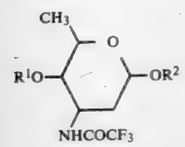
reacting an anthracyclinone derivative of the formula:

(II)



where R is a hydrogen or a lower trialkylsilyl group, and each of X^1 and X^2 is a hydrogen atom, a methoxy, a hydroxyl, a halogen, or a lower alkyl; each of Y^1 and Y^2 is a hydrogen, a lower alkoxy or a hydroxyl; and Z is a hydrogen or a protected hydroxyl; with a 1-acyl-sugar derivative of the formula:

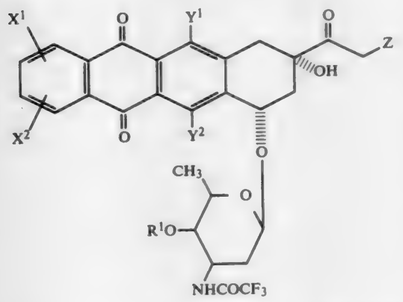
(III)



where each of R^1 and R^2 are independently a p-nitrobenzoyl, a trifluoroacetyl, and acetyl or a benzoyl; in the presence of a silyl sulfonic acid of the formula:

$R^5R^4R^3SiOSO_2A$

where each of R^3, R^4 and R^5 is a lower alkyl; A is benzenne, toluene, a polyfluoroalkyl or a hydrogen; to obtain an anthracycline derivative of the formula:



wherein X^1, X^2, Y^1, Y^2, Z and R^1 are as defined above.

4,564,675

PROCESS FOR PRODUCING 4′-DEMETHYL-EPIPODOPHYLLOTOXIN-β-D-ETHYLIDENE-GLUCOSIDE AND ACYL-DERIVATIVE THEREOF

Katsuhiko Kurabayashi, Annaka; Hidefumi Kinoshita; Hitoshi Saito, both of Takasaki, and Toshio Takahashi, Annaka, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

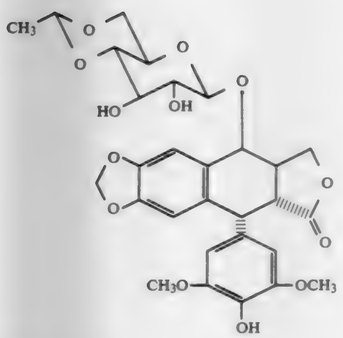
Filed Sep. 6, 1983, Ser. No. 529,749

Claims priority, application Japan, Nov. 26, 1982, 57-206188; May 18, 1983, 56-85868

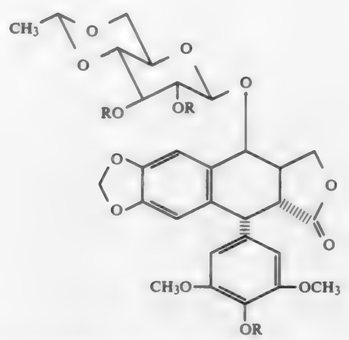
Int. Cl.⁴ C07H *15/24*

U.S. Cl. 536—18.1 **9 Claims**

1. A process for producing 4′-demethyl-epipodophyllotoxin-β-D-ethylidene-glucoside represented by the formula (II):



(II)



(I)

comprising reacting 4'-halogenoacetyl-4'-demethyl-epipodophyllotoxin-β-D-2,3-di-O-halogenoacetyl-4,6-O-ethylideneglucoside represented by the formula (I):

wherein R represents a halogenoacetyl group of the formula

$$-COCH_2X$$

wherein X is a halogen atom.

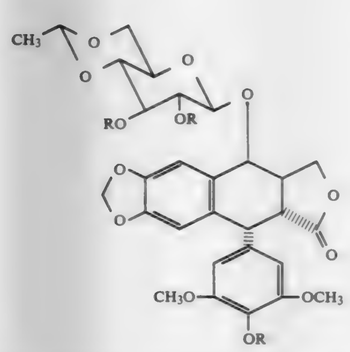
4,564,676

PROCESS FOR PREPARING CEPHALOSPORIN DERIVATIVES

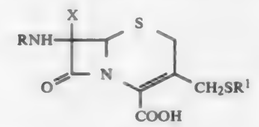
Junichi Nakazawa; Teruo Hashimoto; Masanao Kaneko, and Takeo Miyaoka, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 233,678, Feb. 11, 1981, abandoned, which is a continuation of Ser. No. 70,804, Aug. 29, 1979, abandoned. This application Mar. 23, 1983, Ser. No. 477,836
Claims priority, application Japan, Sep. 22, 1978, 53-116898
Int. Cl.⁴ C07D *501/04*
U.S. Cl. 544—21 **13 Claims**

1. A non-catalytic process for the preparation of a cephalosporin derivative of formula (I):



(I)

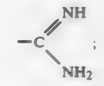


I

wherein:

R is a hydrogen atom; a substituted acetyl group in which the substituent is amino group, substituted amino group, carboxyl group, halogen atom, sulfonyl group, hydroxy group, heterocyclic group, heterocyclic-thio group, heterocyclic-oxy group, substituted or unsubstituted alkylthio group or alkynylthio group; a substituted valeryl group in which the substituent is nitro group, amino group or carboxyl group; or a substituted benzoyl group in which the substituent is amino group, hydroxyl group or sulfo group;

R^1 is a substituted or unsubstituted tetrazole, thiadiazole or triazole group; or the group



;

and

X is a hydrogen atom or an alkoxy group;

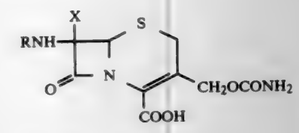
said process consisting essentially of heating a cephalosporin compound of formula II:

wherein R represents a halogenoacetyl group of the formula

$$-COCH_2X$$

wherein X is a halogen atom, with a material selected from the group consisting of (a) an amine, (b) ammonia, and (c) an amine and ammonia to remove said halogenoacetyl groups of (I), thereby obtaining said 4'-demethyl-epipodophyllotoxin-β-D-ethylidene-glucoside.

8. 4'-Halogenoacetyl-4'-demethyl-epipodophyllotoxin-β-D-2,3-di-O-halogenoacetyl-4,6-O-ethylidene-glucoside represented by the formula:



II

with a thiol of formula III

$$R^1SH \qquad III$$

under (i) (a) anhydrous conditions or (i) (b) in the presence of water in an amount that does not exceed 2 times the weight of said compound of formula II and (ii) in the absence of an organic solvent.

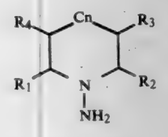
4,564,677

PREPARATION OF N-AMINO COMPOUNDS

Martin L. Kantor, Mamaroneck, N.Y., assignor to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Jan. 19, 1984, Ser. No. 571,977
Int. Cl.⁴ C07B *31/00, 43/02*
U.S. Cl. 544—164 **2 Claims**

1. A method of preparing an N-amino compound of the formula



from a secondary amine of the formula

wherein:

R_1 and R_2 are independently H, lower alkyl containing 1 to 6 carbon atoms; cycloalkyl containing 3 to 7 carbon atoms; phenyl; phenyl substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, or lower alkenyl containing 1 to 6 carbon atoms;

R_3 and R_4 are independently H; lower alkyl containing 1 to 6 carbon atoms; cycloalkyl containing 3 to 7 carbon atoms; phenyl; phenyl substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, or lower alkenyl containing 1 to 6 carbon atoms, and when taken together with the carbon atoms to which they are attached and the carbon atom denoted by Cn, R_3 and R_4 form a cycloalkyl group containing 4 to 7 carbon atoms; a benzo group; or benzo group substituted with halogen, hydroxy, carboxy, trifluoromethyl, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms;

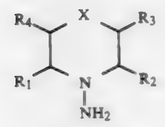
R_1 and R_4, when taken together with the carbon atoms to which they are attached form a cycloalkyl group containing 4 to 7 carbon atoms; a benzo group; or a benzo group substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms; said method comprising the steps of:

dissolving the secondary amine in a water-miscible solvent;

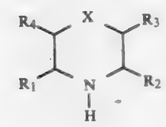
reacting said secondary amine with nitrous acid, followed by reaction with zinc in a neutral pH reaction media containing an ammonium salt to form the corresponding N-amine; and

separating said N-amine from the reaction media.

2. A method of preparing an N-amino compound of the formula



from a secondary amine of the formula



wherein:

R_1 and R_2 are independently H, lower alkyl containing 1 to 6 carbon atoms; cycloalkyl containing 3 to 7 carbon atoms; phenyl; phenyl substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, or lower alkenyl containing 1 to 6 carbon atoms;

R_3 and R_4 are independently H, lower alkyl containing 1 to 6 carbon atoms; cycloalkyl containing 3 to 7 carbon atoms; phenyl; phenyl substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, or lower alkenyl containing 1 to 6 carbon atoms, and when taken together with the carbon atoms to which they are attached and with the X atom, form a cycloalkyl group containing 4 to 7 atoms;

R_1 and R_4, when taken together with the carbon atoms to which they are attached form a cycloalkyl group containing 4 to 7 carbons; a benzo group; or a benzo group substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms or lower alkoxy having 1 to 4 carbon atoms; and

X is O; S or N substituted with lower alkyl containing 1 to 6 carbon atoms, cycloalkyl containing 3 to 7 carbon atoms; phenyl; phenyl substituted with halogen, hydroxy, carboxy, trifluoromethyl, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms; said method comprising the steps of:

dissolving the secondary amine in a water-miscible solvent;

reacting said secondary amine with nitrous acid, followed by reaction with zinc in a neutral pH reaction media containing an ammonium salt to form the corresponding N-amine; and

separating said N-amine from the reaction media.

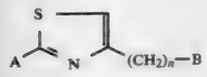
4,564,678

SUBSTITUTED AMINOTHIAZOLES AND METHOD OF MANUFACTURING THE SAME

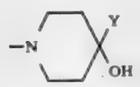
Tsuyoshi Tomiyama, Sakaki, Japan, assignor to Kotobuki Seiyaku Company, Limited, Sakaki, Japan

Filed Nov. 18, 1983, Ser. No. 553,182
Claims priority, application Japan, Nov. 19, 1982, 57-203432
Int. Cl.[4] A61K *31/495*; C07D *417/06*
U.S. Cl. 544—367 **7 Claims**

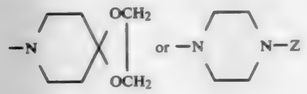
1. A thiazole compound of the formula



wherein:
A is an amino, acylamino, guanidino or N,N-di-lower alkylaminomethyleneamino group;
n is an integer from 1 to 3;
B is



wherein Y is a phenyl or chloro-substituted phenyl group,



wherein Z is carboxy lower alkyl group,
and pharmaceutically acceptable acid addition salts thereof.

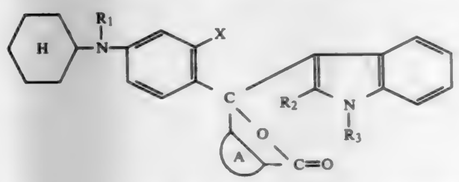
4,564,679

CHROMOGENIC COMPOUNDS

Yoshiharu Fujino; Hajime Kawai; Yasushi Nakai, and Katsuhiko Tsunemitsu, all of Kyoto, Japan, assignors to Yamada Chemical Co., Ltd., Kyoto, Japan

Filed Jun. 16, 1982, Ser. No. 388,935
Claims priority, application Japan, Jun. 23, 1981, 56-98662
Int. Cl.[4] C07D *471/02*
U.S. Cl. 546—116 **9 Claims**

1. A chromogenic compound of the formula:



where A is a pyridine ring forming a 4- or a 7-azaphthalide group; R_1 is a hydrogen atom or an alkyl radical of from 1 to 4 carbon atoms; X is a hydrogen atom, an alkyl radical of from 1 to 2 carbon atoms or an alkoxy radical of from 1 to 2 carbon atoms; R_2 is an alkyl radical of from 1 to 2 carbon atoms or a phenyl radical and; R_3 is a hydrogen atom or an alkyl radical of from 1 to 8 carbon atoms.

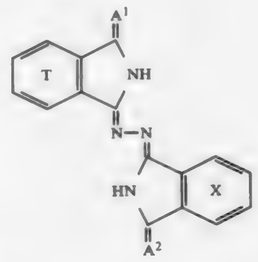
4,564,680

ISOINDOLAZINES

Meinhard Rolf; Rütger Neeff; Walter Müller, all of Leverkusen, and Volker Hederich, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

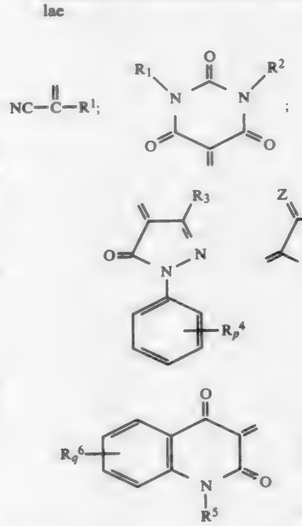
Filed Aug. 3, 1983, Ser. No. 519,792
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1982, 3229733
Int. Cl.[4] C09B *57/04*
U.S. Cl. 546—155 **5 Claims**

1. Isoindolazines which, in one of their tautomeric structures, have the formula

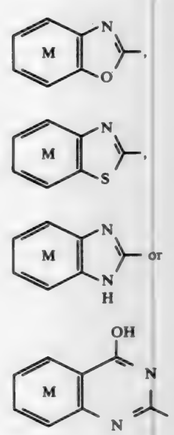


(I)

where
the rings designated X and T are unsubstituted or are substituted by 1,2,3 or 4 substituents selected from the group consisting of halogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, carboxyl, nitro and carbamoyl and
A^1 and A^2 represent the divalent radical of a compound having two replaceable hydrogen atoms on a C or N atom said radical being selected from the group consisting of the divalent radical of an amine, of a hydrazine, of a hydrazide, of a hydrazone or a divalent radical of the formulae



where R^1 designates cyano, C_1–C_6-alkoxy-C_1–C_6-alkoxycarbonyl, carbamoyl which is optionally substituted by C_1–C_6-alkyl, benzyl, naphthyl or phenyl, where phenyl, benzyl and naphthyl can be substituted by chlorine, bromine, C_1–C_6-alkyl, C_1–C_6-alkoxy, nitro, trifluoromethyl, C_1–C_6-alkylcarbonyl, cyano, C_1–C_6-alkylamino, benzylamino, phthalimidyl or carbamoyl, C_1–C_6-alkylcarbonyl, benzoyl, C_1–C_6-alkoxycarbonyl, benzyloxycarbonyl, phenoxycarbonyl, where benzoyl, benzyl and phenoxy can be substituted by halogen, nitro, C_1–C_6-alkyl, acylamino or phthalimidyl, phenyl which is optionally substituted by halogen, nitro, cyano or trifluoromethyl, or a heterocyclic radical of the formula



where
the rings designated M can be substituted by halogen, nitro, C_1–C_6-alkyl or C_1–C_6-alkoxy,
R_1 and R^2 designate hydrogen, C_1–C_6-alkyl, phenyl which is optionally substituted by halogen, C_1–C_6-alkyl, C_1–C_6-alkoxy or nitro, or α- or β-naphthyl,
R^3 represents C_1–C_6-alkyl, amino, C_1–C_6-alkylcarbonyl, carbamoyl or C_1–C_6-alkoxycarbonyl,
R^4 represents C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen or nitro,
p designates 0, 1 or 2,
Z designates O or S,
R^5 designates hydrogen or C_1–C_6-alkyl,
R^6 designates halogen or nitro and
q designates 0, 1, 2, 3 or 4.

4,564,681

PRODUCTION OF MIXTURES RICH IN 3-CHLORO-2-TRICHLOROMETHYL PYRIDINE

Michael J. Marinak, Kelso, and John L. Simonson, Longview, both of Wash., assignors to Kalama Chemical, Inc., Kalama, Wash.

Filed Sep. 24, 1982, Ser. No. 422,751
The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.
Int. Cl.[4] C07D *213/61*
U.S. Cl. 546—345 **4 Claims**

1. The process of non-catalytically chlorinating alpha-picoline hydrochloride in the liquid phase to produce at least a 14 percent by weight yield of 3-chloro-2-trichloromethyl pyridine based on alpha-picoline, said process comprising:
(a) establishing in a reactor means a diluent reactor charge which is made up of chlorinated pyridine and/or chlorinated picoline compunds, and diluent being essentially nonreactive with chlorine under the reaction conditions to which the reactants in the reactor means are subjected;
(b) while maintaining the reactor charge at a temperature of from about 135° C. to about 170° C., sparging chlorine and alpha-picoline hydrochloride into the reactor charge at the bottom thereof at a chlorine-to-picoline feed ratio of at least about 8:1 by weight in the absence of a catalyst and at a feed rate low enough so that any separation of the reactor charge into a second, lighter phase composed of unchlorinated alpha-picoline hydrochloride is less than about 10% of the reactor charge by volume, the excess of chlorine being fed to the reactor charge relative to the amount of alpha-picoline hydrochloride being fed thereto providing enhanced agitation of the reaction mass and sufficient chlorine to ensure that the chlorine partial pressure in the vapor space over the reactor charge is greater than 50%, and
(c) continuing chlorine addition, and maintaining the reaction mass at a temperature within the range indicated, for a time sufficient to give a recoverable yield of at least 14 percent by weight of 3-chloro-2-trichloromethyl pyridine.

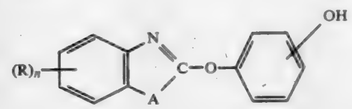
4,564,682

PROCESS FOR THE PREPARATION OF HETEROCYCLIC PHENYL ETHERS

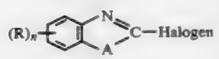
Ulrich Kussmaul, Karben; Johannes Becherer, Maintal; Reinhard Handte, Hofheim, and Rolf Müller, Karben, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt Am Main, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,713
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1983, 3311285
Int. Cl.[4] C07D *277/68*
U.S. Cl. 548—169 **7 Claims**

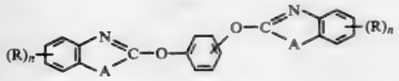
1. The process for preparation of heterocyclic phenyl ethers of the formula



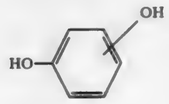
wherein each R is independently selected from halogen, trifluoromethyl, nitro, cyano, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms or alkylthio having 1 to 4 carbon atoms;
A is oxygen, sulfur or N-alkyl having 1 to 4 carbon atoms; and
n is a number from 0 to 3;
which process comprises reacting a compound of the formula



or



with a compound of the formula



in the presence of an acid.

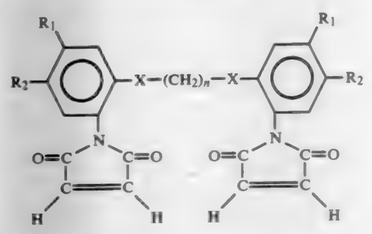
4,564,683

BISMALEIMIDE COMPOUNDS

Johnnie E. Adams, Grandview, Mo., and Donald R. Jamieson, Merriam, Kans., assignors to The United States of America as Represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 407,664, Aug. 12, 1982, Pat. No. 4,464,520. This application Apr. 10, 1984, Ser. No. 598,620
Int. Cl.[4] C08G *73/12*; C07B *403/10*
U.S. Cl. 548—521 7 Claims

1. A bismaleimide of the formula



wherein
R_1 and R_2 each independently is H, C_{1-4}-alkyl, C_{1-4}-alkoxy, Cl or Br, or
R_1 and R_2 together form a fused 6-membered hydrocarbon aromatic ring,
with the proviso that R_1 and R_2 are not t-butyl or t-butoxy;
X is O, S or Se;
n is 1–3; and
the alkylene bridging group, optionally, is substituted by 1–3 methyl groups or by fluorine.

4,564,684

3-AMINO-1-PHENYL-2-PYRAZOLINES

Frederick C. Copp, Rotherwood, 32 Stanley Ave., Beckenham, Kent; Albert G. Caldwell, 119 Gates Green Rd., West Wickham, Kent, and David Collard, 25 The Mead, Beckenham, Kent, all of England

Continuation of Ser. No. 256,072, Apr. 21, 1981, abandoned. This application May 23, 1984, Ser. No. 614,371
Claims priority, application United Kingdom, Dec. 16, 1980, 8040172
Int. Cl.[4] A61K *31/415*; C07D *231/06*
U.S. Cl. 548—362 5 Claims

1. A compound selected from the group consisting of:
3-(methylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;
3-(ethylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;
3-(n-propylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;
3-(iso-propylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;
3-(n-butylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;
3-(sec-butylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;
3-(tert-butylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;
3-(methylpropylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;
3-(benzylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;
3-(N,N-dimethylamino)-1-(4-trifluoromethylphenyl)-2-pyrazoline;
3-(methylamino)-1-(4-chlorophenyl)-2-pyrazoline;
3-(N-methyl-N-ethylamino)-1-(4-chlorophenyl)-2-pyrazoline;
3-(methylamino)-1-(4-fluorophenyl)-5-methyl-2-pyrazoline;
3-(benzylamino)-1-(4-bromophenyl)-4-methyl-2-pyrazoline;
3-(ethylamino)-1-(3-trifluoromethyl-4-fluorophenyl)-2-pyrazoline;
3-(tert-butylamino)-1-(3-trifluoromethyl-4-bromophenyl)-2-pyrazoline;
3-(allylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;
3-(cyclohexylmethylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline; or an
acid addition salt thereof.

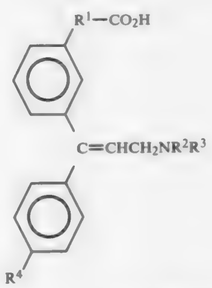
4,564,685

DIPHENYLMETHANE COMPOUNDS

John W. A. Findlay, Rte. 2, Box 514, Chapel Hill, N.C. 27514, and Geoffrey G. Coker, 80 Pickhurst Park, Bromley, Kent, England

Filed Mar. 10, 1983, Ser. No. 474,729
Int. Cl.[4] C07C *53/132*; C07D *207/04, 211/06, 295/00*
U.S. Cl. 548—578 12 Claims

1. A compound of the formula (I)



I

a straight or branched lower alkyl ester or a pharmaceutically acceptable salt thereof, wherein R^1 is $(CH_2)_n$ where n is an interger 0 to 7, or $(CH_2)_aCH{:}CH{-}(CH_2)_b$, a and b are independently 0 to 5 and the sum of a and b does not exceed 5; R^2 and R^3 are the same or different and are hydrogen, C_{1-4} alkyl or taken together with nitrogen are pyrrolidino, piperidino or morpholino and R^4 is hydrogen, halogen, lower alkyl or lower alkoxy.

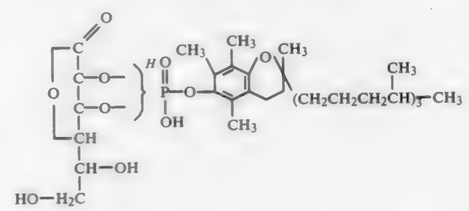
4,564,686

PHOSPHORIC ACID DIESTERS OR THEIR SALTS AND PROCESS FOR PRODUCING THE SAME

Kazumi Ogata, Toyonaka, Japan, assignor to Senju Pharmaceutical Co., Ltd., Osaka, Japan

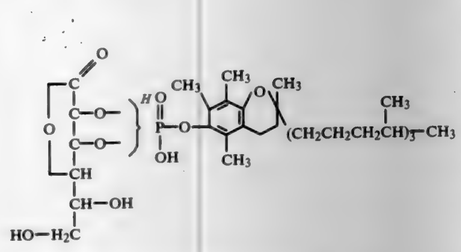
Filed May 30, 1984, Ser. No. 615,308
Claims priority, application Japan, May 30, 1983, 58-96428
Int. Cl.[4] C07F *9/06, 9/28*
U.S. Cl. 549—220 13 Claims

1. A phosphoric acid diester of the formula:



or its salt.

12. A pharmaceutical composition for the treatment of cataracts which comprises an anti-cataract effective amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof and a carrier.

4,564,687

PROCESS FOR PREPARING SUBSTITUTED PHTHALIC ANHYDRIDES

Jeffrey E. Telschow, Tarrytown, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 20, 1984, Ser. No. 684,225
Int. Cl.[4] C07D *307/89*
U.S. Cl. 549—240 12 Claims

1. A process for preparing a substituted phthalic anhydride which comprises reacting the Diels-Alder addition product of a conjugated diene and maleic anhydride with sulfuryl chloride in the presence of pyridine.

7. A process for preparing a substituted phthalic anhydride which comprises:
(a) reacting a conjugated diene and maleic anhydride to form a Diels-Alder addition product;
(b) reacting the addition product with sulfuryl chloride in the presence of pyridine.

4,564,688

PROCESS FOR THE PRODUCTION OF MALEIC ANHYDRIDE BY THE OXIDATION OF BUTANE

Carl A. Udovich, Joliet, and Robert C. Edwards, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 526,167, Aug. 25, 1983, Pat. No. 4,510,259, which is a continuation-in-part of Ser. No. 382,180, May 26, 1982, Pat. No. 4,416,802. This application Mar. 28, 1984, Ser. No. 594,328
Int. Cl.[4] C07D *307/60*
U.S. Cl. 549—259 3 Claims

1. A process for the manufacture of maleic anhydride, which process comprises contacting a feedstock comprising butane and a gas containing molecular oxygen with the catalyst prepared according to a process comprising reacting in an aqueous medium a vanadium compound and inorganic acid, then adding ortho-phosphoric acid to form a soluble vanadium-phosphorus catalyst, removing the acidified water, and adding an aliphatic alcohol having about 1 to about 8 carbon atoms, and either an aromatic acid, or an aromatic anhydride, or a mixture of these, removing the alcohol, and drying the catalyst syrup under vacuum of about 0 to about 300 mm Hg at a temperature of about 90° to about 150° C. to produce the solid catalyst.

4,564,689

PRODUCT SEPARATION FROM ELECTROLYTE SALTS MAINTAINED IN MOLTEN STATE

James P. Coleman, Maryland Heights, and Dudley E. McMackins, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 13, 1983, Ser. No. 503,982
Int. Cl.[4] C07D *307/32*
U.S. Cl. 549—326 7 Claims

1. A process for preparing γ-vinyl-γ-butyrolactone in which butadiene and acetic acid are reacted in the presence of metal ion oxidants with electrolytic regeneration of such oxidants during the reaction, and the reaction is carried out in liquid solvent medium containing salts comprising manganese salts employed as oxidants and electrolyte salts at temperatures in the range of 100° C. to 180° C. and separating γ-vinyl-γ-butyrolactone by distillation at a temperature sufficiently high to leave salt residue in a molten state and in the range of about 140° to about 175° C., and the salts are recycled to the reaction, and in which the salt composition present is in liquid state at a temperature in the range of about 140° C. to about 175° C.

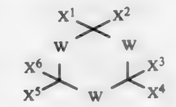
4,564,690

MACROCYCLIC COMPOUNDS

Iwao Tabushi, and Yoshiaki Kobuke, both of Kyoto, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Continuation of Ser. No. 202,614, Oct. 31, 1980, abandoned. This application Dec. 6, 1982, Ser. No. 447,443
Claims priority, application Japan, Nov. 14, 1979, 54-148136
Int. Cl.[4] C07C *61/00*; C07D *323/00*; C07F *9/38*
U.S. Cl. 549—352 11 Claims

1. A macrocyclic compound of formula (I)



(I)

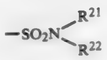
wherein X^1, X^3 and X^5 are individually taken from the first class consisting of —COOH,



$-SO_3H$, $-PO_3H_2$ and $-PO_4H_2$; and X^2, X^4 and X^6 are individually taken from the class consisting of said first class hydrogen, alkyl having 1–18 carbon atoms, phenyl, $-COOR^2$,



$-COR^1$, —CN, $-SOR^2$,



$-SO_2R^2$, $-NO_2$, $-PO_3R^{21}R^{22}$ and $-PO_4R^{21}R^{22}$; wherein R^1 is hydrogen, an alkyl having 1–18 carbon atoms, or a phenyl group, R^2 is an alkyl having 1–18 carbon atoms or a phenyl group, R^{11} and R^{12} are individually selected from the same group as R^1, and R^{21} and R^{22} are individually selected from the same group as R^2; and W is a divalent group taken from $-(CH_2)_n-$ wherein n=2–18 and wherein 0–9 (CH_2) groups have been replaced by a moiety selected from the group consisting of O, S, N—H, provided that any hetero atoms appearing within W are separated from each other by at least two carbon atoms and that the two terminal atoms of each W which are linked to non-W atoms of said compound are carbons.

4,564,691

PROCESS FOR PREPARING SUBSTITUTED 2,3-DIHYDROBENZOFURAN

Carlo Neri; Villiam Giroldini; Antonio Rinaldi, all of Milan; Mario Traversoni, Bergamo, and Mario Clerici, Milan, all of Italy, assignors to Enichimica Secondaria S.p.A., Palermo, Italy

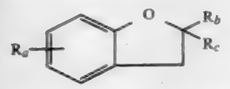
Filed Apr. 19, 1984, Ser. No. 602,215

Claims priority, application Italy, Apr. 22, 1983, 20737 A/83; Apr. 22, 1983, 20740 A/83

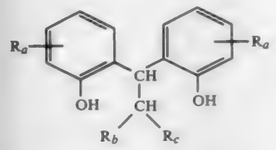
Int. Cl.⁴ C07D *307/86, 307/79*

U.S. Cl. 549—462 **4 Claims**

1. A process for the preparation of a substituted 2,3-dihydroxybenzofuran defined by the formula:



wherein R_a is selected from the group consisting of hydrogen, halogen, a straight lined or branched alkyl radical having from 1 to 4 carbon atoms, aryl, alkaryl, —OH, —OR_3, and -$N(R_d)_2$, R_d and R_3 being a straight lined or branched alkyl radical having from 1 to 4 carbon atoms; R_b is selected from the group consisting of a straight lined or a branched alkyl radical having from 1 to 6 carbon atoms, an aryl and an alkaryl; R_c is hydrogen or has the same meaning as R_b, comprising subjecting a starting compound defined by the general formula:



wherein R_a, R_b and R_c have the meanings explained above to a rearrangement reaction in the presence of a catalytic amount of at least one acid compound, at an elevated temperature, and removing from the reaction mass the products of the rearrangement reaction as they are formed.

4,564,692

PROCESS FOR RECOVERING PURE CRYSTALLINE MONOANHYDROHEXITOLS AND DIANHYDROHEXITOLS

John Feldmann, Krefeld, Fed. Rep. of Germany; Hubert Koebernick, Wyckoff, N.J.; Klaus Richter, Meerbusch-Boesinghoven, and Hans-Ulrich Woelk, Hamburg, both of Fed. Rep. of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jul. 18, 1983, Ser. No. 514,731

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230349

Int. Cl.⁴ C07D *493/04, 307/20*

U.S. Cl. 549—464 **19 Claims**

1. A process for recovering a pure crystalline anhydro sugar alcohol selected from the group consisting of 1,4-monoanhydro-D-sorbitol, 1,4:3,6-dianhydro-D-sorbitol, and 1,4:3,6-dianhydro-D-mannitol from an aqueous mixture, obtained by the acid-catalyzed dehydration of the corresponding sugar alcohols, of which at least 40% by weight on a dry solids basis is the desired anhydro sugar alcohol which consists of the sequential steps of

(a) concentrating the mixture to a heavy liquor with a dry solids content of at least 70% by weight;

(b) adjusting the temperature of the concentrated mixture to not more than 70° C.;

(c) inoculating the concentrated mixture with at least 0.1% by weight of the mixture of seed crystals of the desired anhydro sugar alcohol;

(d) stirring the inoculated mixture at such a rate as to promote crystallization of the anhydro sugar alcohol;

(e) maintaining the supersaturation of the mixture with respect to the anhydro sugar alcohol being crystallized in the range where the existing crystals continue to grow without the spontaneous formation of new seed crystals; and

(f) separating the crystalline anhydro sugar alcohol from the mixture.

4,564,693

PROCESS FOR STABILIZING ORGANOPOLYSILOXANES

Manfred Riederer, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 2, 1985, Ser. No. 761,935

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1984, 3428581

Int. Cl.⁴ C07F *7/08, 7/18*

U.S. Cl. 556—401 **4 Claims**

1. A process for stabilizing organopolysiloxanes prepared by condensation and/or equilibration of organosilicon compounds having Si-bonded oxygen in the presence of phosphorous compounds consisting of phosphonitrile chlorides and reaction products thereof, which comprises reacting the phosphorous compounds present in the organopolysiloxanes with at least one lithium compound which yields lithium chloride on reaction with chlorine bonded to phosphorous.

4,564,694

COLORLESS LIQUID CRYSTALLINE COMPOUNDS

Yoichi Hirai; Tsunenori Fujii; Kaoru Koto; Kenji Suzuki, all of Soka; Masahiro Yoshida, Saitama; Hisashi Okawa, Kasukabe; Yoshiaki Okabe, Hitachi; Teruo Kitamura, Katsuta; Hisao Yokokura; Shintaroo Hattori, both of Hitachi; Akio Mukoh, Mito, and Mikio Sato, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Kanto Chemical Co., Inc., both of Tokyo, Japan

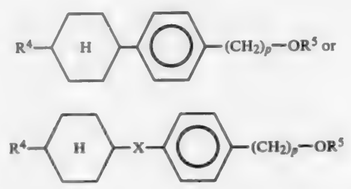
Filed Feb. 24, 1982, Ser. No. 352,019

Claims priority, application Japan, Feb. 25, 1981, 56-25502; Jul. 10, 1981, 56-107074; Nov. 18, 1981, 56-183763; Nov. 18, 1981, 56-183764

Int. Cl.⁴ C09K *3/34;* **G02F** *1/13;* **C07C** *69/74, 69/76, 41/00, 41/02, 41/18*

U.S. Cl. 560—1 **4 Claims**

1. A colorless liquid crystalline compound of the formula:



wherein R^4 and R^5 are independently a straight-chain or branched-chain alkyl group having 12 or less carbon atoms; X is —COO— or —OCO—; and p is an integer of 1 to 8.

4,564,695

PROCESS FOR PRODUCING ARGINYL-P-NITROANILIDE

Katsumasa Kuroiwa; Shuichi Nakatsuyama, both of Koriyama, and Takeshi Nagasawa, Urawa, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushimi, Japan

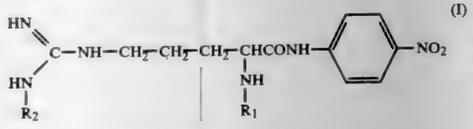
Filed Sep. 13, 1984, Ser. No. 650,353

Claims priority, application Japan, Sep. 14, 1983, 58-170402

Int. Cl.⁴ C07C *79/46*

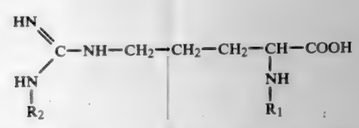
U.S. Cl. 560—13 **4 Claims**

1. A process for producing an N^{α}-protected-N^{G}-protected-arginyl-p-nitronilide of the formula:



(I)

wherein R_1 is an α-amino protective group selected from the group consisting of a carbobenzoxy group, a p-methoxy-carbobenzoxy group, a t-butyloxycarbonyl group, a t-amyloxycarbonyl group, a trityl group, a p-nitrocarbobenzoxy group, a formyl group, and a trifluoroacetyl group; R_2 is an N-guanidino protective group selected from the group consisting of a nitro group, a tosyl group, and a p-methoxybenzenesulfonyl group or hydrogen, and in the case of R_2 being hydrogen, the N-guanidino group is protected by an acid in the form of a hydrochloride, hydrobromide or p-toluenesulfonate acid adduct, which comprises reacting an N^{α}-protected-N^{G}-protected arginine of the formula:



(II)

wherein R_1 and R_2 are as defined above, with p-nitroaniline in pyridine as a solvent in the presence of a dialkylcarbodiimide or a water-soluble carbodiimide condensing agent at a temperature of 10° to 50° C.

4,564,696

PROCESS FOR THE PRODUCTION OF 4-ALKOXYACETOACETIC ACID ESTERS

Claudio Abacherli, Visp, Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

Filed Sep. 27, 1982, Ser. No. 423,569

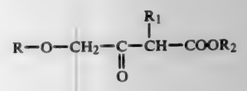
Claims priority, application Switzerland, Oct. 1, 1981, 6320/81

The portion of the term of this patent subsequent to Sep. 10, 2002, has been disclaimed.

Int. Cl.⁴ C07C *69/76*

U.S. Cl. 560—53 **14 Claims**

1. Process for the production of a 4-alkoxyacetoacetic acid ester from a 4-chloroacetoacetic ester or a 4-bromoacetoacetic ester consisting of reacting a 4-chloroacetoacetic ester or a 4-bromoacetoacetic ester with more than one equivalent of an alkali alcoholate in at least one aprotic solvent at a temperature of 50° to 100° C., whereby the 4-alkoxyacetoacetic acid ester results, the 4-alkoxyacetoacetic acid ester having the formula:



wherein R and R_2 are each alkyl, and R_1 is H, alkyl or substituted alkyl.

4,564,697

HALOGENATED POLYOL-ESTER NEUTRALIZATION AGENT

Burton J. Sutker, Edison, N.J., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 29, 1984, Ser. No. 676,433

Int. Cl.⁴ C07C *69/82, 69/753*

U.S. Cl. 560—83 **21 Claims**

1. A process for making a flame retarded halogenated polyol by (a) reacting 0.5–10 equivalents of an aliphatic polyol with 1 equivalent of a halogenated cyclic acid anhydride in the presence of a potassium salt of a C_{2-4} fatty acid to form an acid-ester intermediate and (b) reacting 0.5–20 equivalents of an epoxide with said acid-ester intermediate to form said flame retardant halogenated polyol, said halogenated cyclic acid anhydride containing about 0.1–0.3 weight percent residual sulfuric acid, the amount of said potassium salt being at least sufficient to substantially neutralize said residual sulfuric acid to give a halogenated polyol having a pH of about 5.0–9.0 and which is substantially haze-free.

2. A process of claim 1 wherein said halogenated cyclic acid anhydride is selected from halogenated phthalic anhydrides and halogenated bicyclo-(2,2,1)-5-heptene-2,3-dicarboxylic anhydride.

4,564,698

BIOLOGICALLY-ACTIVE TRICYCLIC AMINES

Johannes H. Wieringa, Heesch, and Frans A. van der Vlugt, Oss, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

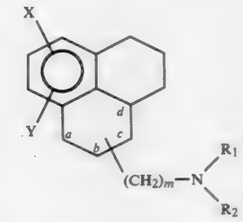
Continuation of Ser. No. 268,330, May 29, 1981, abandoned. This application Jan. 24, 1983, Ser. No. 460,259

Claims priority, application Netherlands, May 30, 1980, 8003141

Int. Cl.⁴ C07C *69/76, 87/28*

U.S. Cl. 560—109 **3 Claims**

1. A compound of the formula:



or an acid addition salt thereof wherein the substituent $-(CH_2)_m-NR_1R_2$ is present at one of the positions indicated by a, b or c; X and Y represent hydrogen, (C_1–C_6) alkyl, (C_1–C_6) alkoxy, halogen, hydroxy or benzoyl,

R_1 and R_2 represent hydrogen or (C_1–C_6) alkyl and

m represents the number 0.

4,564,699

OXYDEHYDROGENATION PROCESS

Stephen E. Reiter, Bartlesville, Okla., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed May 20, 1982, Ser. No. 379,842

Int. Cl.⁴ C07C *67/317*

U.S. Cl. 560—214 **5 Claims**

1. In a process for the catalytic conversion of an isobutyric acid ester to a methacrylic acid ester by oxydehydrogenation wherein an iron phosphate type of oxydehydrogenation cata-

lyst is contacted with a gaseous stream containing said isobutyric ester and molecular oxygen at a temperature of from about 300° C. to 500° C.; the improvement comprising including in the gaseous stream an amine selected from the group consisting of butyl amine and pyridine whereby the converion and selectivity to the desired methacrylic acid ester is increased and the undesirable formation of methacrylic acid is decreased.

4,564,700

PROCESS FOR THE PREPARATION OF FLUORENE-9-CARBOXYLIC ACID

Winfried Orth, Hassloch; Emmerich Pastorek, Hemsbach, and Werner Fickert, Mannheim, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 16, 1983, Ser. No. 552,459

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3243981

Int. Cl.⁴ C07C *51/09, 51/15, 69/753*

U.S. Cl. 562—405 **6 Claims**

1. A process for the preparation of fluorene-9-carboxylic acid comprising reacting fluorene and at least a stoichiometric amount of a dialkyl carbonate with alkyls of 1 to 5 carbon atoms in the presence of an at least stoichiometric amount of a member of the group consisting of alkali metal hydrides or potassium alcoholate of an aliphatic alcohol of 1 to 5 carbon atoms, neutralizing the mixture and saponifying the resulting fluorene-9-carboxylic acid ester to obtain fluorene-9-carboxylic acid.

4,564,701

CARBONYLATION PROCESS FOR THE PRODUCTION OF AROMATIC ACIDS

Carl M. Lentz, Mt. Carmel; James R. Overton, and David D. Cornell, both of Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 22, 1985, Ser. No. 693,488

Int. Cl.⁴ C07C *51/10, 51/14*

U.S. Cl. 562—406 **11 Claims**

1. A process for the preparation of aromatic organic acid compounds of the formula

$$ArCOH,$$

which comprises reacting a diaryliodonium salt of the formula

$$Ar\text{-}I^{+}\ X^{-}\text{-}Ar'$$

wherein Ar and Ar' each independently represents a carbocyclic or heterocyclic aromatic moiety having about 5 to about 20 atoms in the ring or rings thereof and X represents a weak acid anion,

with carbon monoxide in the presence of a zero-valent palladium catalyst in a hydrocarbon acid reaction medium.

4,564,702

HYDROGENATION REACTIONS

Arnold N. Wennerberg, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 28, 1983, Ser. No. 489,407

Int. Cl.⁴ C07C *63/04*

U.S. Cl. 562—493 **23 Claims**

1. A method for hydrogenating an alkenyl, alkynyl, aryl, cyano, imino, carbonyl or carboxyl group in one or more organic compounds, comprising: contacting an aforesaid compound with hydrogen under hydrogenation conditions comprising a temperature in the range of from about ambient temperature to about 260° C. with an active carbon catalyst having a cage-like structure and a BET surface area of at least 800 square meters per gram and a bulk density of at least 0.1 gram per cubic centimeter and comprising a substantially uniform dispersion of a metal, metal-containing material, or both in a porous carbon matrix, wherein the dispersed metal and metal in the dispersed metal-containing material are each a transition metal and wherein the total concentration of dispersed metal and dispersed metal-containing material is from about 0.001 to about 30 weight percent, calculated as the elemental metal and based on the weight of the catalyst, wherein the catalyst is formed by a process comprising:

forming a uniform co-crystallite of a precursor of the metal or metal-containing material and of a carbon precursor, wherein the metal in the precursor of the metal or of the metal-containing material is a transition metal;

forming a uniform powdered mixture of the co-crystallite and inorganic solids comprising an alkali metal hydroxide;

pyrolyzing the powdered mixture in an inert atmosphere at a temperature in the range of from about 400° C. to about 980° C. to form the carbon matrix having the metal or metal-containing material substantially uniformly dispersed therein; and

separating unreacted inorganic material and inorganic reaction products, other than the dispersed metal or metal-containing material, from the carbon matrix to form the catalyst.

4,564,703

PROCESS FOR PREPARING METHACRYLIC ACID

Haruhisa Yamamoto, and Shinichi Akiyama, both of Takaoka, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 843,691, Oct. 19, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,647

Claims priority, application Japan, Oct. 26, 1976, 51-128665

Int. Cl.⁴ C07C *51/25*

U.S. Cl. 562—534 **6 Claims**

1. In a process for preparing methacrylic acid by the vapor-phase catalytic oxidation of methacrolein or a methacrolein-containing mixture with molecular oxygen in the presence of an oxidation catalyst; the improvement wherein said process comprises

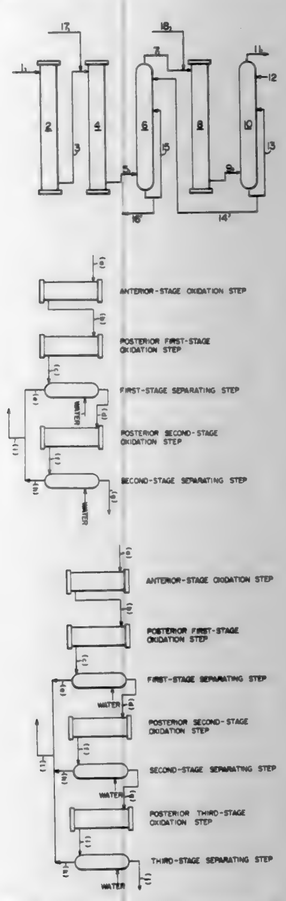
a first-stage oxidation step of oxidizing methacrolein or a methacrolein-containing mixture as a starting material,

a first-stage separating step of separating the resulting methacrylic acid from the reaction product obtained in the first-stage oxidation step, to form a mixture containing unreacted methacrolein,

a second-stage oxidation step of oxidizing said mixture containing the unreacted methacrolein, and

a second-stage separating step of separating the resulting methacrylic acid from the reaction product obtained in the second-stage oxidation step, and

with or without at least one additional oxidation step and separating step subsequent to the second-stage separating step,



and wherein the conversion of methacrolein in the first-stage oxidation step is adjusted to 30–85 mole% and the final conversion of methacrolein is adjusted to at least 90 mole%.

4,564,704

PRODUCTION OF 3,3-DIMETHYL-2-OXO-BUTYRIC ACID SALT

Karlfried Dickoré, Leverkusen; Hans D. Engels, Solingen; Hans Krätzer, Wuppertal, and Walter Merz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 788,867, Apr. 19, 1977, abandoned, which is a division of Ser. No. 650,651, Jan. 20, 1976, Pat. No. 4,052,460. This application Jan. 22, 1981, Ser. No. 227,552

Int. Cl.⁴ C07C *51/00, 51/285, 51/373*

U.S. Cl. 562—577 **3 Claims**

2. A process for the preparation of a salt of 3,3-dimethyl-2-oxo-butyric acid which comprises introducing into pinacolone twice the molar amount of chlorine, the exothermic reaction mass being cooled initially to maintain the temperature below about 50° C. until about 60 to 80% as the chlorine has been introduced, then heating the reaction mass to a temperature above 50° C. during introducing of the remainder of the chlorine, thereby to produce dichloropinacolone, terminating chlorine introduction when the dichloropinacolone content of the reaction mass is at least about 97%, adding the molten dichloropinacolone to an aqueous solution of an alkali maintained at a temperature of at least about 50° C., the alkali being present in more than three times the molar amount of the dichloropinacolone, thereby to produce a solution of a salt of 3,3-dimethyl-2-hydroxy-butyric acid of at least about 95% purity, contacting said solution at a pH of about 9 to 12 with approximately the stoichiometric amount of a permanganate, and separating the readily filterable coarsely crystalline MnO_2 which is formed from the substantially pure dissolved salt of 3,3-dimethyl-2-oxo-butyric acid.

4,564,705

BIS(AMINONEOPENTYL) AROMATICS

August H. Frazer, and John F. Harris, Jr., both of Wilmington, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 804,853, Jun. 8, 1977, abandoned. This application May 21, 1981, Ser. No. 266,058

Int. Cl.⁴ C07C *87/28*

U.S. Cl. 564—337 **6 Claims**

1. The aromatic-aliphatic diamine of the formula

$$H_2N-CH_2-C(CH_3)_2-Ar-CH_2-C(CH_3)_2-CH_2-NH_2$$

in which Ar is an arylene selected from the group consisting of 1,2-phenylenes, 1,3-phenylenes, 1,4-phenylenes, 2,2'-biphenylenes, 3,3'-biphenylenes, 4,4'-biphenylenes and 2,6-naphthylenes, said arylene being unsubstituted or substituted with methyl or chloro.

4,564,706

PROCESS FOR THE PREPARATION OF PROPARGYL AMINES

Zoltán Ecsery; Éva Somfai; Judit Hermann née Vörös, all of Budapest; Lajos Nagy, Szentnedre; Gabor Szabo, Budapest; Otto Orban, Budapest, and Laslzo Arvai, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

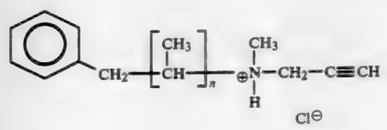
Filed Jul. 14, 1983, Ser. No. 514,149

Claims priority, application Hungary, Jul. 14, 1982, 2278/82

Int. Cl.⁴ C07C *87/28, 85/04*

U.S. Cl. 564—376 **6 Claims**

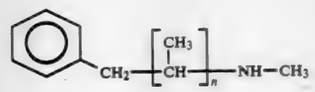
1. A process for the preparation of a salt of the Formula (I)



wherein n=0 or 1

which comprises the steps of:

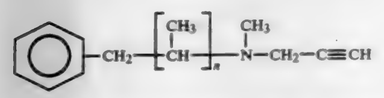
(a) dissolving a free base of the Formula (II)



in a water, non-miscible organic solvent and propargylating said free base with a compound of the Formula (III)

$X-CH_2-C\equiv CH$

wherein X is halo, in the presence of an alkali and water at 40°–70° C. to yield a mixture of the unreacted free base of the Formula (II) and a free base of the Formula (IV)



in a two-phase system containing an organic phase and a first aqueous phase;

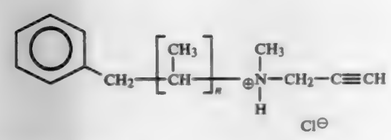
(b) separating the organic phase which contains the mixture of the free base of the Formula (II) and the free base of the Formula (IV) from the first aqueous phase;

(c) treating the organic phase containing the mixture of the free base of the Formula (II) and the free base of the Formula (IV) with water and an amount of acid sufficient to adjust the pH of the solution to 6.5 to 7 to selectively dissolve, in a second two-phase system thus formed, a salt of the compound of the Formula (II) in the aqueous phase while the free base of the Formula (IV) remains in the organic phase;

(d) separating the aqueous phase from the organic phase; and

(e) treating the organic phase containing the free base of the Formula (IV) with hydrogen chloride to precipitate the salt of the Formula (I).

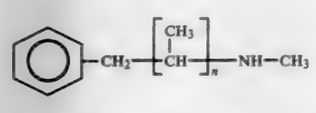
6. A process for the preparation of a salt of the Formula (I)



wherein n=0 or 1

which comprises the steps of:

(a) alkali decomposing an aqueous suspension of the D-tartarate of the l-isomer of a compound of the Formula (II)

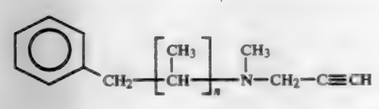


with an alkali, to obtain the free base of the Formula (II) without isolation;

(b) dissolving the free base of the Formula (II) in a water, non-miscible organic solvent and propargylating said free base with a compound of the Formula (III)

$X-CH_2-C\equiv CH$

wherein X is halo, in the presence of an alkali and water at 40° to 70° C. to yield a mixture of the unreacted free base of the Formula (II) and a free base of the Formula (IV)



in a two-phase system containing an organic phase and a first aqueous phase;

(c) separating the organic phase which contains the mixture of the free base of the Formula (II) and the free base of the Formula (IV) from the first aqueous phase;

(d) treating the organic phase containing the mixture of the free base of the Formula (II) and the free base of the Formula (IV) with water and an amount of acid sufficient to adjust the pH of the solution to 6.5 to 7 to selectively dissolve, in a second two-phase system thus formed, a salt of the compound of the Formula (II) in the aqueous phase while the free base of the Formula (IV) remains in the organic phase;

(e) separating the aqueous phase from the organic phase; and

(f) treating the organic phase containing the free base of the Formula (IV) with hydrogen chloride to precipitate the salt of the Formula (I).

4,564,707

LINEAR N,N'-TETRASUBSTITUTED DIAMINES AND PROCESS FOR THEIR PREPARATION

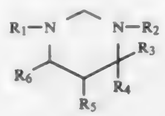
Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 873,322, Jan. 30, 1978, Pat. No. 4,281,126. This application Mar. 19, 1981, Ser. No. 245,469

Int. Cl.⁴ C07C *85/20*

U.S. Cl. 564—413 **10 Claims**

1. A process which comprises reacting a compound of the formula



where R_1 and R_2 are alkyl, alkenyl, aryl, cycloalkyl, arakyl or heterocyclic groups or amino substituted derivatives thereof and R_6, R_5, R_4 and R_3 are hydrogen or substituted groups with formaldehyde and formic acid.

4,564,708

OPTICAL RESOLUTION OF THE RACEMIC MODIFICATION OF 2,2'-BIS(DIPHENYLPHOSPHINO)-1,1'-BINAPHTHYLDIOXIDE

Misao Yagi, and Susumu Akutagawa, both of Kanagawa, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1984, Ser. No. 582,710

Claims priority, application Japan, Feb. 28, 1983, 58-30799

Int. Cl.⁴ C07F *9/53*

U.S. Cl. 568—14 **4 Claims**

1. A process for the optical resolution of dl-2,2'-bis(diphenylphosphino)-1,1'-binaphthyldioxide which comprises reacting dl-2,2'-bis(diphenylphosphino)-1,1'-binaphthyldioxide with any one of the optically active resolving agents d-camphor-10-sulfonic acid, l-camphor-10-sulfonic acid, d-3-bromocamphor-10-sulfonic acid or l-3-bromocamphor-10-sulfonic acid in a lower alkyl ester of acetic acid containing a lower alkyl carboxylic acid, thereby forming diastereomeric salts; and resolving said diastereomeric salts to afford the optically active isomers, and wherein said resolving agents are used in the amount of about 1 to 5 moles per mole of dl-DINAPO, and said lower alkyl ester of acetic acid is used in the amount of about 2 to 5 times by weight of the amount of dl-DINAPO, and wherein said lower alkyl carboxylic acid is used in an amount of about 1 to 20 times by mole per mole of dl-DINAPO.

4,564,709

PROCESS FOR THE PRODUCTION OF DIALKYL-TRISULFIDES

Yuichiro Koyama, Yokohama; Hiroshi Nakazawa, Nagano; Toshiaki Yamashita, Myoko, and Hitoshi Moriyama, Jyoetsu, all of Japan, assignors to Pennwalt Corporation, Philadelphia, Pa.

PCT No. PCT/JP83/00042, § 371 Date Oct. 7, 1983, § 102(e) Date Oct. 7, 1983, PCT Pub. No. WO83/02273, PCT Pub. Date Aug. 18, 1983

PCT Filed Feb. 12, 1983, Ser. No. 545,392

Claims priority, application Japan, Feb. 13, 1982, 57-21492

Int. Cl.⁴ C07C *149/12, 148/00*

U.S. Cl. 568—26 **9 Claims**

1. A process for the selective production of dialkyl trisulfides which consists essentially of reacting sulfur and an alkyl mercaptan at a quantitative ratio in the range of 0.5 gram atom to 1.0 gram atom of sulfur to 1 mol of alkyl mercaptan in the presence of magnesium oxide in an amount of 0.1 to 3 percent by weight of said alkylmercaptan and carried out at a temperature in the range of 30° C.–100° C.

4,564,710

PROCESS FOR MAKING MERCAPTO ALCOHOLS

Barry N. Steger, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 8, 1984, Ser. No. 669,558

Int. Cl.⁴ C07C *148/00*

U.S. Cl. 568—62 **10 Claims**

1. In a process wherein a mercapto alcohol is produced by the reaction of H_2S with a vicinal epoxide under suitable reaction conditions, excess H_2S is separated from the mercapto alcohol product and compressed for reuse, the improvement comprising subjecting the separated excess H_2S to reaction conditions sufficient to cause entrained epoxide to be converted to the mercapto alcohol before the separated H_2S is subjected to compression.

4,564,711

HYDROFORMYLATION CATALYST AND PROCESS

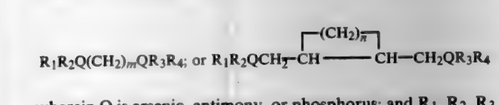
Chao-Yang Hsu, Media, and Paul E. Ellis, Jr., Downingtown, both of Pa., assignors to Sun Refining And Marketing Company, Philadelphia, Pa.

Division of Ser. No. 598,935, Apr. 11, 1984. This application May 9, 1985, Ser. No. 732,313

Int. Cl.⁴ C07C *45/50*

U.S. Cl. 568—454 **13 Claims**

1. In the process of hydroformylating an olefin having from about 2 to 20 carbon atoms by reacting the olefin with hydrogen and carbon monoxide at elevated pressures in the presence of a catalyst to produce an aldehyde, the improvement of using as the catalyst a catalyst system which comprises (1) a platinum (II) (acetylacetonate); (2) a Group IVB metal halide; and (3) a bidentate tertiary ligand of the formula:



wherein Q is arsenic, antimony, or phosphorus; and R_1, R_2, R_3 and R_4 are alkyl, aryl, alkoxyl, or aryloxyl groups, and may be the same or different, m is an integer of from 3 to about 5; and n is an integer of from 2 to about 4.

4,564,712

PROCESS FOR THE PREPARATION OF DIPHENYL ETHERS

Herbert Kuckertz, Kelkheim, and Georg Schaeffer, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 315,933, Oct. 28, 1981, abandoned. This application Nov. 23, 1983, Ser. No. 554,378

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040849

Int. Cl.⁴ C07C *41/16*

U.S. Cl. 568—635 **10 Claims**

1. In a process for preparing diphenyl ethers, which includes reacting an alkali metal phenolate with a halobenzene at elevated temperature and in the presence of a copper compound as catalyst, the improvement which comprises using as the copper compound a basic copper carbonate of the formula

$$xCuCO_3.Cu(OH)_2.yH_2O$$

wherein

x=1 to 2 and

y=0 to 1

and carrying out the reaction at a temperature of from about 130° to 170° C.

4,564,713

PROCESS FOR PRODUCING 4,4'-DIHYDROXYDIPHENYLS

Makoto Imanari; Hiroshi Iwane, and Takahiro Sugawara, all of Inashiki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

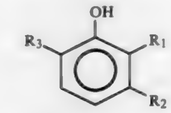
Filed Jan. 11, 1985, Ser. No. 690,614

Claims priority, application Japan, Jan. 23, 1984, 59-9856

Int. Cl.⁴ C07C *39/14, 39/15*

U.S. Cl. 568—730 **9 Claims**

1. A process for producing 4,4'-dihydroxydiphenyls comprising dimerizing alkylphenols represented by the formula:



wherein R_1 and R_3 each represents a straight or branched chain alkyl group having 1 to 12 carbon atoms and R_2 is a hydrogen atom or a straight or branched chain alkyl group having 1 to 12 carbon atoms, in an aqueous solution of pH 7 to 12 containing a surfactant in the presence of an oxidizing agent selected from the group consisting of oxygen and an oxygen-containing gas, said dimerization being conducted at 40°–100° C. in the presence of a copper compound selected from the group consisting of halides, basic halohydroxides, carboxylates, sulfates, nitrates, alkylsulfates, arylsulfates, carbonates, basic carbonates, hydroxides and chlorates of copper, and a material selected from the group consisting of (a) a basic boron compound selected from the group consisting of lithium metaborate, sodium metaborate, sodium perborate, lithium tetraborate, borax, trimethoxyborane and triphenoxyborane, and (b) a mixture of a basic substance selected from the group consisting of hydroxides, carbonates and bicarbonates of alkali metals and a boron compound selected from the group consisting of boric acid, boron oxide, lithium metaborate, sodium metaborate, sodium perborate, lithium tetraborate, borax, trimethoxyborane and triphenoxyborane.

4,564,714
PROCESS FOR THE PREPARATION OF 2,4,5-TRICHLOROPHENOL UNDER ACIDIC CONDITIONS

Joseph A. Virgilio, Wayne, and Joachim E. Freudewald, Basking Ridge, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Oct. 30, 1984, Ser. No. 666,411
Int. Cl.[4] C07C *39/32*
U.S. Cl. 568—776 11 Claims

1. A process for manufacture of 2,4,5-trichlorophenol which comprises reacting 2,5-dichlorophenol with sulfuryl chloride in the presence of diphenylsulfide and sulfuric acid at a temperature between minus ten degrees centigrade (−10° C.) and twenty-five degrees centigrade (25° C.).

4,564,715
PREPARATION OF MONOALKYLENE GLYCOLS IN TWO STAGES

John R. Briggs; George L. O'Connor, and John H. Robson, all of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 594,256, Mar. 28, 1984, abandoned. This application Oct. 23, 1984, Ser. No. 663,828
Int. Cl.[4] C07C *31/20, 33/26, 35/14, 33/035*
U.S. Cl. 568—867 22 Claims

1. A process for making alkylene glycols comprising contacting alkylene oxide with a selectivity enhancing, dissociatable, metalate anion-containing material under conditions sufficient to associate at least a portion of the alkylene oxide with the metalate anion, said contacting being in the substantial absence of polyglycol forming amounts of water; and then contacting with water the metalate anion associated with alkylene oxide under conditions sufficient to form alkylene glycol.

4,564,716
PREPARATION OF 1,1,1,3,3,3-HEXAFLUOROPROPANE-2-OL BY HYDROGENOLYSIS OF HEXAFLUOROACETONE HYDRATE

Yutaka Katsuhara, Kawagoe; Toshihiro Nakamichi, Kamifukuoka; Toshikazu Kawai, Kawagoe, and Toru Nakazora, Saitama, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Sep. 27, 1984, Ser. No. 654,876
Claims priority, application Japan, Sep. 27, 1983, 58-177017
Int. Cl.[4] C07C *31/38*
U.S. Cl. 568—842 12 Claims

1. A process for preparing 1,1,1,3,3,3-hexafluoropropane-2-ol, comprising the steps of adding to a hexafluoroacetone hydrate 0.1 to 0.5% aluminum hydroxide by weight of said hexafluoroacetone hydrate and contacting the mixture of hexafluoroacetone hydrate and aluminum hydroxide with hydrogen gas in the liquid phase in the presence of a catalyst which is active for hydrogenolysis of said hexafluoroacetone hydrate into 1,1,1,3,3,3-hexafluoropropane-2-ol.

4,564,717
FLUORINE-CONTAINING OLEFIN

Akira Ohmori, Ibaraki; Nobuyuki Tomihashi, Takatsuki; Hiroshi Inukai, and Yoshiki Shimizu, both of Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 21, 1984, Ser. No. 653,006
Claims priority, application Japan, Sep. 21, 1983, 58-175122
Int. Cl.[4] C07C *33/42;* C08F *12/20*
U.S. Cl. 568—843 1 Claim

1. A fluorine-containing olefin of the formula:

$$CF_2{=}CF(CF_2)_m(CH_2)_nOH$$

wherein m is an integer of 1 to 10 and n is an integer of 1 to 4.

4,564,718
FUNCTIONALLY TERMINATED POLYMERS FROM TERPENE MONOMERS AND THEIR APPLICATIONS

Richard H. Still, Disley; John L. Cawse, and John L. Stanford, both of Manchester, all of United Kingdom, assignors to The University of Manchester Institute of Science and Technology, Manchester, England

Filed Aug. 14, 1984, Ser. No. 640,769
Int. Cl.[4] C08F *2/38;* C07C *13/00*
U.S. Cl. 585—350 19 Claims

1. A method of preparing a liquid prepolymer having an average functionality greater than one comprising polymerising terpene monomer having a double bond or conjugated double bond available for polymerisation in a solvent with at least about two mole percent, based on the molar amount of monomer component, of an initiator having a grouping which provides or is a precursor of, the functional termination for the prepolymer.

4,564,719
CATALYSTS OVER ALF_3 ACTIVATED HIGH SILICA ZEOLITES

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

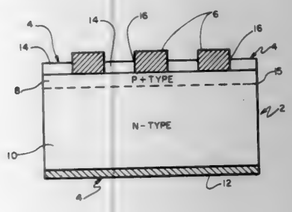
Continuation-in-part of Ser. No. 581,497, Feb. 17, 1984, Pat. No. 4,530,756, which is a continuation-in-part of Ser. No. 333,370, Dec. 22, 1981, Pat. No. 4,444,902. This application May 13, 1985, Ser. No. 733,338
Int. Cl.[4] C07C *1/20*
U.S. Cl. 585—640 22 Claims

1. A process for converting a feedstock comprising organic compounds selected from the group consisting of alcohol, carbonyl, ether and mixtures thereof to conversion products comprising hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst composition comprising a crystalline zeolite having an initial silica:alumina mole ratio of at least about 100:1 prepared by a method which comprises calcining the zeolite at a temperature of from about 200° C. to about 600° C. for a period of time ranging from about 1 minute to about 48 hours, contacting said calcined zeolite with from about 0.1 to about 1 gram of solid aluminum fluoride per gram of zeolite at a temperature of from about 0° C. to about 650° C., and converting said aluminum fluoride contacted zeolite to hydrogen form.

4,564,720
PURE SILVER OHMIC CONTACTS TO N- AND P- TYPE GALLIUM ARSENIDE MATERIALS

Stephen J. Hogan, Golden, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 13, 1983, Ser. No. 494,485
Int. Cl.[4] H01L *31/04, 31/18*
U.S. Cl. 136—256 4 Claims

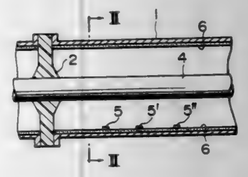


4. A gallium arsenide semiconductor device comprising: an n-type substrate layer, said n-type substrate layer being doped to doping carrier concentrations of less than 1×10^{18} cm^{-3}; a p-type diffused layer doped to a doping carrier concentration of less than 6×10^{18} cm^{-3}; and a pure silver ohmic contact system, and wherein said n-type layer includes a first pure silver ohmic contact thereon and said p-type layer includes a second pure silver ohmic contact thereon.

4,564,721
GAS-INSULATED ELECTRICAL APPARATUS WITH ELECTRET FOR CAPTIVATING CONDUCTIVE PARTICLES AND METHOD OF REMOVING SUCH PARTICLES DURING ASSEMBLY THEREOF

Toshio Ishikawa; Fumihiro Endo; Tokio Yamagiwa, and Yuzuru Kamata, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 17, 1985, Ser. No. 724,200
Claims priority, application Japan, Apr. 18, 1984, 59-76500; Sep. 5, 1984, 59-184494
Int. Cl.[4] H02G *5/06;* H02B *13/06;* H02G *1/00*
U.S. Cl. 174—10 15 Claims



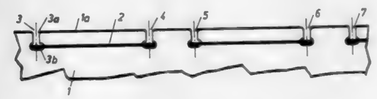
1. A gas-insulated electric apparatus comprising:
a metallic tubular member hermetically sealed with an insulating gas;
a high-voltage conductor supported by insulating supports in said metallic tubular member; and
at least one insulating layer disposed in said metallic tubular member, said insulating layer being an electret made of a high polymeric material capable of holding charges therein semi-permanently.

10. A method of removing conductive particles which intrude into or generate in a gas-insulated electric apparatus during assembly work thereof, the apparatus comprising a metallic tubular member and a high-voltage conductor supported by insulating support members in said metallic tubular member, comprising the steps of:
inserting at least one insulating layer made of an electret of high polymeric material capable of holding charges semi-permanently, into said gas-insulated electric apparatus, so that the conductive particles floating in said gas-insulated electric apparatus may be attracted to the surface of said insulating layer;
taking out said conductive particles from said gas-insulated electric apparatus together with said insulating layer; and
hermetically sealing an insulating gas in said metallic tubular member.

4,564,722
CONTACTING DEVICE FOR PROTECTING ELECTRONIC COMPONENTS AGAINST ELECTROMAGNETIC RADIATION

Jerry K. G. Nordin, Mandolinvägen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 26, 1984, Ser. No. 665,176
Claims priority, application Sweden, Oct. 27, 1983, 8305908
Int. Cl.[4] H05K *9/00*
U.S. Cl. 174—35 GC 2 Claims



1. A contacting device for shielding electronic components against electromagnetic radiation, said device comprising a metallic casing having removable sheet metal walls, a contact strip achieving electrically conductive contact between the sheet metal walls, the contact strip comprises a flexible elongate band, continuously extending along one of said sheet metal walls, and retaining means for the strip in the form of cut-outs along the edge of the wall, the strip being fixed in said cutouts so that the strip is given a continuous wave form running on both sides of the wall.

4,564,723
SHIELDED RIBBON CABLE AND METHOD

Donald D. Lang, Garden Grove, Calif., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 21, 1983, Ser. No. 553,651
Int. Cl.[4] H01B *13/06, 7/08, 7/34*
U.S. Cl. 174—36 9 Claims





1. A method of making shielded ribbon cable, comprising the steps of providing a length of ribbon cable having a plurality of laterally spaced conductors including first and second edge conductors adjacent first and second respective laterally

spaced edge portions of said cable, the remaining conductors being surrounded by an insulating layer;

covering at least one of said first and second edge conductors with a layer of a first conductive material;

enclosing said ribbon cable with an insulating material;

trimming at least one of said first and second edge portions of said cable to expose at least a portion of at least one of said first and second edge conductors and said first conductive material at said at least one edge portion of said cable; and

coating the trimmed ribbon cable with a second conductive material such that said second conductive material is in electrical contact with both the exposed portion of at least one of said first and second edge conductors, and said first conductive material adjacent said exposed portion to shield said cable.

5. A shielded ribbon cable, comprising:

a plurality of longitudinally extending laterally spaced conductors;

said conductors being electrically insulated from each other;

first and second ones of said conductors being disposed adjacent respective first and second edge portions of said ribbon cable;

a first conductive material covering at least one of said first and second ones of said conductors, with a portion of at least one of said first and second ones of said conductors having been trimmed so as to be free of said first conductive material;

a second conductive material surrounding said ribbon cable and being in electrical contact with said at least said one of said first and second ones of said conductors along substantially the entire length thereof and said portion of said at least one of said first and second ones of said conductors which is free of said first conductive material, said second conductive material shielding said ribbon cable,

said at least one of said first and second ones of said conductors being a drain conductor for said shielded cable.

4,564,724

TERMINAL INTERFACE CONNECTING TERMINAL UNIT HAVING CENTRAL OFFICE LINE INTERFACE TO KEY TELEPHONE SYSTEM

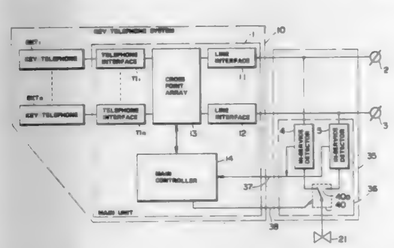
Yasunobu Nakayama, Musashino; Yasuji Sato, Hachioji, and Shinichi Shibata, Hino, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed May 23, 1984, Ser. No. 613,203

Claims priority, application Japan, May 31, 1983, 58-095039

Int. Cl.⁴ H04M *3/58*

U.S. Cl. 179—2 A **12 Claims**



1. A terminal interface device for connecting a terminal unit having a central office line interface to a key telephone system comprising: in-service detecting means connected to a selected plurality of central office lines leading to the input terminal of a main unit of said system and also connected to said terminal unit having the central office line interface for detecting the in-service state of said selected respective lines to be used by the terminal unit and for sending an in-service signal indicative of said detected in-service state to said main unit of the system, and switching means controllably switched by a switching control generated from the main unit of the system on the basis of said in-service signal for connecting one of said slected lines to the terminal unit.

4,564,725

TELECOMMUNICATIONS SYSTEM, PARTICULARLY A TELEPHONE EXCHANGE SYSTEM, HAVING OVERLOAD PROTECTED SEQUENTIAL LOGIC SYSTEMS

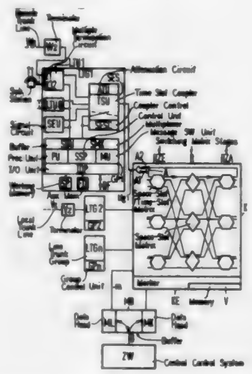
Georg Daisenberger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,607

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311900

Int. Cl.⁴ H04M *15/26*

U.S. Cl. 179—8 A **5 Claims**



1. A telecommunications systems comprising:

a plurality of lines and trunks, arranged in groups, for connection to subscriber stations and for carrying call information;

a central information-processing system having a limited call-handling capability with respect to its information-processing capacity;

a central switching network connected to said central information-processing system;

a plurality of partially-centralized switching devices each including a sub-switching matrix network connected to a respective line/trunk group and to said central switching network, and each including switch means operable to receive an intermediately store and transmit call information including line signals, selection identifiers, and line characters to said central information processing system for processing to set up calls between calling and called subscriber stations and for transmitting control signals including alternating current call pulses, audio signals, selection identifiers and line characters over said lines and trunks, and operable to set up incoming and outgoing connections over said central switching network so that a partially-centralized switching device is utilized at least once per through-connection event; and

a plurality of counting means, each including a cyclically-deincremented counter, each counting means connected to a respective partially-centralized switching device and each of said counters incremented in response to seizure of the respective partially-decentralized switching device and operable to produce and transmit an overload signal to the respective switch means of the partially-centralized switching device upon reaching a predetermined count representing a traffic load limiting value to prevent further seizures thereof during the existence of the overload signal.

4,564,726

PULSE/DIRECT CURRENT TRANSMITTING CIRCUIT IN A KEY TELEPHONE SYSTEM

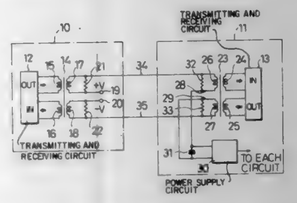
Kazuo Ibata, Kawasaki, Japan, assignor to Nitsuko Limited, Kanagawa, Japan

Filed May 25, 1984, Ser. No. 614,230

Claims priority, application Japan, Dec. 27, 1983, 58-250322

Int. Cl.⁴ H04Q *5/00*; **H04M** *19/00*

U.S. Cl. 179—99 M **5 Claims**



1. An apparatus for transmitting pulse data and DC-source power concurrently over a pair of transmission lines in a key telephone system including a main operating unit and at least one key telephone set, said main operating unit and said telephone set each including a transformer and a pulse transmitting and receiving circuit having a pair of input terminals and a pair of output terminals; said transformer including a core, a first winding connected across said output terminals, a second winding connected across said input terminals, and a third winding and a fourth winding opposed to said first and second windings, respectively; said third winding of said main operating unit having one terminal connected with one terminal of a DC power source, and another terminal connected with a first line of said pair of transmission lines; said fourth winding of said main operating unit having one terminal connected with another terminal of said DC power source, and another terminal connected with a second line of said pair of transmission lines; said third winding of said telephone set having one terminal connected with said first line, and another terminal connected with one terminal of a power supply circuit; said fourth winding of said telephone set having one terminal connected with another terminal of said power supply circuit, and another terminal connected with said second line; said telephone set including a capacitor connected across the terminals of said power supply circuit, thereby to prevent the DC source power from short-circuiting across said third and fourth windings of said telephone set.

4,564,727

SUBWOOFER SPEAKER SYSTEM

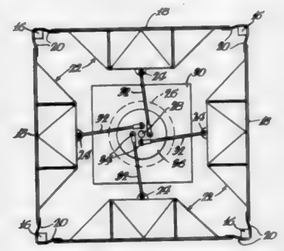
Thomas J. Danley, Highland Park, and Charles A. Rey, Naperville, both of Ill., assignors to Intersonics Incorporated, Northbrook, Ill.

Continuation-in-part of Ser. No. 325,578, Nov. 30, 1981. This application Jan. 12, 1984, Ser. No. 570,237

Int. Cl.⁴ H04R *13/02*

U.S. Cl. 179—116 **8 Claims**

1. A subwoofer speaker for producing audible sound at frequencies below 100 Hz, said speaker comprising sound radiating means for producing sound upon reciprocation thereof, drive means for reciprocating said sound radiating means, said drive means comprising an electrical motor having a rotary coil with the active elements thereof continuously immersed in a magnetic field, said coil exhibiting a substantially constant force per unit of excitation current irrespective of the rotary position of the coil, a rotary output shaft connected to the coil, and means for connecting said shaft to said sound radiating means.



4,564,728

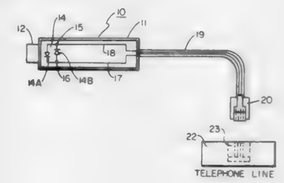
APPARATUS FOR TESTING A TELEPHONE LINE

Robert P. Romano, Glen Ridge, N.J., assignor to Comus International, Inc., Nutley, N.J.

Filed Apr. 13, 1984, Ser. No. 599,820

Int. Cl.⁴ H04B *3/46*

U.S. Cl. 179—175.3 R **7 Claims**



1. A telephone line tester apparatus for determining the operation of a telephone line supplying central office battery voltage and of the type terminating in a female receptacle for receiving a male receptacle associated with the telephone subset, comprising:

a light emitting diode wherein said light emitting diode is a bipolar light emitting diode consisting of a first light emitting diode in parallel with a second light emitting diode of opposite polarity having first and second terminals coupled to first and second wires,

a male telephone plug coupled to said wires and adapted to coact with said female receptacle, whereby when said male telephone plug is inserted in said receptacle, said diode illuminates providing a visual indication to the user of proper operation of said telephone line, independent of the polarity of the central office battery as coupled to said telephone plug.

4,564,729

TELEPHONE ILLUMINATION CIRCUIT

Kenneth R. Mills, Syracuse, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Feb. 27, 1984, Ser. No. 583,711

Int. Cl.⁴ H04M *1/22*

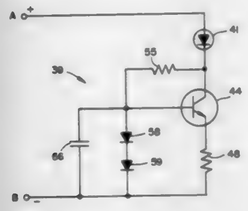
U.S. Cl. 179—81 C **7 Claims**

1. In a telephone circuit including a telephone line having DC and AC operating voltages, including voice signals, thereon during telephone operation, an illumination circuit comprising:

a light emitting means for illuminating a portion of the telephone, and

current control means connected in series with said light

emitting means across the telephone line, said current control means adapted to maintain high AC impedance



over the entire range of AC and DC operating voltages to protect the quality of AC voice signals on the telephone line.

4,564,730

ELECTRICAL SWITCH

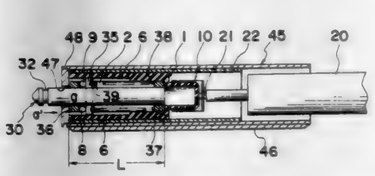
Motoyuki Tomizu, and Kunio Nagata, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 16, 1984, Ser. No. 641,560

Claims priority, application Japan, Aug. 16, 1983, 58-127136[U]; Aug. 23, 1983, 58-130721[U]; Sep. 16, 1983, 58-143772[U]; Sep. 22, 1983, 58-146776[U]

Int. Cl.⁴ H01H *15/00, 3/16*

U.S. Cl. 200—16 B **5 Claims**



1. An electrical switch which comprises a casing formed into a cylindrical configuration with a pair of recesses being formed on an outer peripheral face of said casing in opposed positions along said outer peripheral surface, a pair of fixed contacts each formed by cutting a rod member into a predetermined length, and disposed in the casing to confront each other, each of said pair of fixed contacts being connected to a corresponding end of a lead terminal made of an electrically conductive thin plate, with the other end of said lead terminal being connected to a core wire of an external cord, said lead terminal being fitted into said recesses of said casing, a plunger slidably accommodated in said casing for movement in an axial direction, a bearing member within said casing slidably supporting said plunger, a movable contact formed by cutting a rod member into a predetermined length and mounted to an intermediate portion of said plunger in a direction intersecting with said fixed contacts, and a restoring means within said casing directed around the outer periphery of said plunger, said movable contact being restored together with said plunger to close said pair of fixed contacts in a free state.

4,564,731

SCISSOR-TYPE DISCONNECT SWITCH WITH CONTACT ELEMENTS HAVING WEAR-RESISTANT ARMATURES

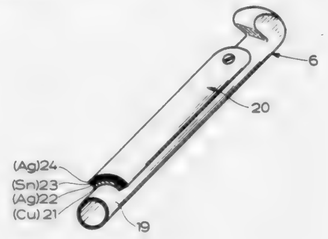
Alfred Hartig, Essen, Fed. Rep. of Germany, assignor to Ruhrtal-Elektrizitatsgesellschaft Hartig GmbH & Co., Essen, Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,358

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209667; Sep. 24, 1982, 3235379; Sep. 24, 1982, 3235380

Int. Cl.⁴ H01H *1/02*

U.S. Cl. 200—269 **17 Claims**



1. In an electrical switch comprising a first contact element fixedly secured to a power line, and a pair of mutually symmetrical second contact elements constituting extremities of a pair of scissor arms operable to grip said first contact element between them for connecting said power line to a load circuit,

the improvement wherein said first contact element comprises a metallic supporting rod of cylindrical shape with a reduced-diameter longitudinal cylindrical section and a pair of wear-resistant conductive part-cylindrical face plates respectively confronting said second contact elements while being detachably countersunk in said reduced-diameter section, each of said face plates having a thickness substantially corresponding to the difference between the radii of said reduced-diameter section and a pair of adjoining rod sections whereby said face plates have outer surfaces substantially flush with those of said adjoining rod sections, wherein each of said face plates comprises several metallic layers including an inner layer of silver overlain by a protective layer of tin, the latter being juxtaposed with an outer layer of silver engageable with a silver surface of the confronting second contact element.

4,564,732

DOVETAIL BASE ASSEMBLY FOR KEYSWITCHES

Eldon R. Lancaster, Anaheim; Manual T. Guest, Temple City, and Robert W. Bessire, Anaheim, all of Calif., assignors to Hi-Tek Corporation, Garden Grove, Calif.

Continuation of Ser. No. 379,961, May 19, 1982, abandoned. This application Oct. 18, 1984, Ser. No. 661,888

Int. Cl.⁴ H01H *9/02*

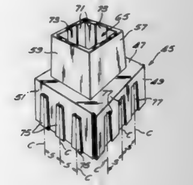
U.S. Cl. 200—307 **14 Claims**

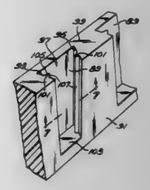
1. A modular base assembly for constructing a keyswitch array, comprising:

a foundation base module having a plurality of receptacles for receiving and supporting keyswitch elements, said receptacles grouped to form a standard typewriter key matrix;

plural accessory base modules, each having at least one receptacle for receiving and supporting keyswitch elements;

coupling means, comprising a flange and a recess, for coupling said accessory base modules to said foundation base module to form said keyswitch array, said coupling means including first and second contact surfaces, said first surface comprising a crush rib disposed on the sidewalls of said recess, said crush rib being adapted to deform when said base modules are coupled by engagement of said first and second contact surfaces, said second surface being more rigid than said first surface and adapted to tightly engage said first surface to provide interfering engagement between said flange and recess and to restrict movement between said flange and said recess.





4,564,733

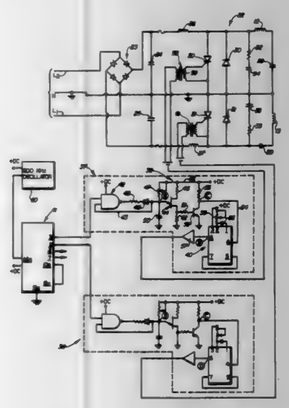
CURRENT LIMITING CONTROL CIRCUIT FOR INDUCTION RANGE

Joseph Karklys, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 11, 1983, Ser. No. 522,806

Int. Cl.⁴ H05B *6/06*

U.S. Cl. 219—10.77 **18 Claims**



1. In a range having at least two electrically energizable heating units, and control means selectively operable to cause energization of said heating units with an electrical current having an initial inrush buildup, the improvement comprising

circuit means for causing initiation of energization of a second of said heating units substantially at the time the inrush current of a first heating unit reaches its peak following initiation of energization of said first heating unit in the event said control means is operated to attempt to initiate energization of both heating units simultaneously.

4,564,734

WIRE BONDER

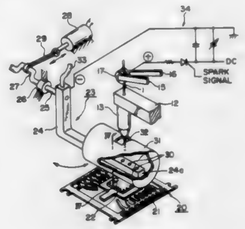
Susumu Okikawa, Ohme, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1983, Ser. No. 476,268

Claims priority, application Japan, Mar. 31, 1982, 57-51237

Int. Cl.⁴ B23K *31/00*

U.S. Cl. 219—56.22 **31 Claims**



1. A wire bonder for forming a ball at a free tip of a bonding wire by electrical discharge between the tip and an electrode comprising:

a wire conveying tool by which the bonding wire is guided;

a wire clamper for clamping said bonding wire;

a discharge electrode assembly carrying said electrode which is rotatable between a first angular position in which said assembly is located at a position displaced away from the free tip and a second angular position in which said assembly is located adjacent said free tip at a position where said electrical discharge can occur, said assembly being rotatably mounted on a pivot point and having said electrode being joined to said assembly, said electrode having a cover defining a chamber with an open portion for permitting the cover to swing into a position to surround the tip of the free end of the wire when pivoted into the second angular position;

means for introducing a dry reducing gas atmosphere into said chamber chosen from the group consisting of H_2, CO, N_2O or CH_4;

a power source for applying a potential of one polarity to said clamper and of an opposite polarity to said discharge electrode;

said wire being biased by said power supply at a positive potential and said electrode being biased by said power supply at a negative potential; and

said means for introducing a gas atmosphere comprising an electrical conductor which is part of said discharge electrode and having a hollow portion with a plurality of holes communicating with said chamber to permit the gas atmosphere to be introduced into said chamber.

5. A method for forming a ball at the free tip of a metallic wire which forms an oxide that effects the sphericity of the ball when an electrical discharge between the tip and an electrode is used to form the ball comprising:

positioning the tip of the wire at a position displaced by a gap from the electrode across which a discharge can be produced by the application of an electrical potential of a magnitude sufficient to cause the discharge; and

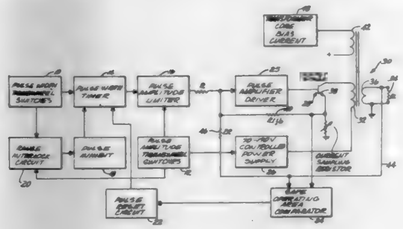
providing a dry reducing gas atmosphere prior to discharge chosen from the group H_2, CO, N_2O or CH_4 which envelops the gap between the tip and the electrode at the time of the discharge between the tip and the electrode to form said ball.

4,564,735

DIRECT CURRENT PULSE WELDER

Gerald Dufrenne, LaVerne, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Filed Mar. 30, 1984, Ser. No. 595,059
Int. Cl.⁴ B23K *11/24*
U.S. Cl. 219—110 **11 Claims**



1. A direct current resistance spot welder comprising:
pulse amplifying means having an input and an output side for generating a welding energy pulse;
electric circuit means interconnecting the output side of the amplifying means to welding electrodes of the welder;
voltage feedback means interconnected between the output and input sides of the amplifying means in a first feedback path to supply a voltage feedback signal to the input side;
current feedback means interconnected between the output and input sides of the amplifying means in a second feedback path to supply a current feedpack signal to the input side; and
a source of power electrically coupled to the pulse amplifying means and the electric circuit means for delivering energy through the amplifying means to the welding electrodes whereby the voltage and current feedback signals from the feedback means are summed to control the output impedance of the welder and produce an essentially constant voltage-current product at the welding electrodes.

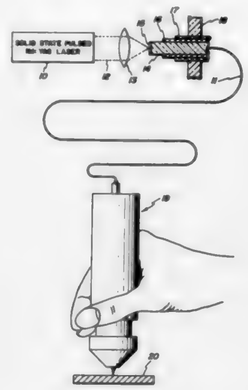
4,564,736

INDUSTRIAL HAND HELD LASER TOOL AND LASER SYSTEM

Marshall G. Jones, Scotia, N.Y., and Donald C. Richardson, Lynn, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed May 7, 1984, Ser. No. 608,042
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 L **8 Claims**

1. A laser system for manual material processing comprising:
a laser which produces a near infrared or visible wavelength beam;
a single fiber optic serving as a lightguide;
an input coupler to shape said laser beam to enter said fiber optic which transmits laser energy to the output end with peak powers in the kilowatt range; and
a hand held laser tool comprised of means for holding the output end of said fiber optic, means for focusing the emerging beam to a small spot at a high enough power density to do industrial laser material processing, and means for delivering process assist gas;
said fiber optic having a core, a cladding and protective shielding, and both ends of said fiber are prepared to reduce Fresnel losses by removal of said cladding and



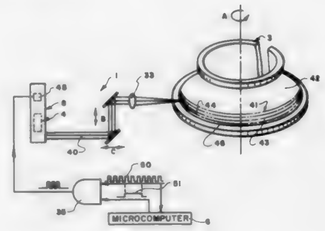
shielding for a short distance and removal of only said cladding for an equal distance.

4,564,737

AUTOMATIC LAYOUT MACHINE FOR TIRE TREAD PATTERNS

Victor B. Burke, and Charles R. Burkholder, both of Akron, Ohio, assignors to F.M.P. Enterprise, Inc., Akron, Ohio

Filed Jul. 11, 1983, Ser. No. 512,363
Int. Cl.⁴ B23K *26/08*
U.S. Cl. 219—121 LH **17 Claims**



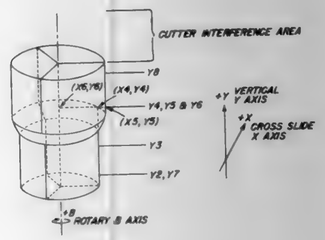
1. An automatic layout machine for marking a tire tread pattern on an object such as a model block or blank tire, said machine including:
(a) turntable means for rotatably mounting an object to be marked;
(b) laser means for producing a laser pulse;
(c) optic means for directing the laser pulse from the laser means against the object to mark said object;
(d) means for positioning the optic means in relationship to the rotation of the turntable means to control the contact point of the laser pulse on the object; and
(e) means for firing the laser means in a raster scan at predetermined position intervals of the rotating object to mark the object at predetermined points as the object is rotated by the turntable means, to define a tire tread pattern on the object upon a predetermined number of revolution of said turntable means; and
in which the fire means includes rotary encoder means for generating a predetermined number of counts per revolution of the turntable means, certain of said counts causing the laser means to produce the laser pulse; and computer means containing the tire tread pattern communicating with the rotary encoder to specify intervals during which the laser pulse is produced in response to said certain counts from the rotary encoder means to mark the object; and
in which the counts of the rotary encoder means are applied to a gate; in which a signal is applied to said gate from the computer means, said signal being derived in relationship to the tire tread pattern contained in said computer means; and in which an output signal from said gate fires the laser means.

4,564,738

METHOD FOR ALIGNMENT OF AN ELECTRON BEAM TO THE ADJACENT FACES OF SEGMENTS OF ROCK DRILL BITS

Jeffrey M. Estes, Downers Grove, Ill., assignor to Sciaky Bros., Inc., Chicago, Ill.

Filed Nov. 14, 1983, Ser. No. 551,483
Int. Cl.⁴ B23K *15/00*
U.S. Cl. 219—121 ED **6 Claims**



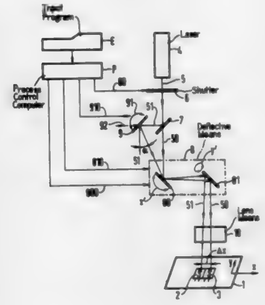
1. In a process for welding segments of a cylindrical workpiece along the abutting surfaces of adjoining segment surfaces utilizing a high energy particle beam which is arranged to move along two axes which are mutually perpendicular, the steps of:
fabricating the said segments so as to form at least two sections of differing radii on the assembled workpiece;
clamping the segments which form the said cylinder to a table arranged to rotate the said cylinder about its longitudinal axis;
positioning the said high energy particle beam so that it impinges upon a point at the outer edge of one of said abutting surfaces and recording the coordinates of said point of impingement with respect to said axes;
positioning the said beam so that it impinges upon a second point at the outer edge of the aforesaid abutting surface in the same section as the first point and recording the coordinates of said second point of impingement;
determining by extrapolation from the first two mentioned points a third point within the second section of the cylinder which is greater in radius than the first-mentioned section of cylinder and recording the coordinates of said third point;
positioning the beam so that it will pass through the third point which is inside the cylinder;
moving the beam so that it impinges upon a point at the outer edge of the abutting surfaces at the second of said cylindrical sections of different radii and recording the coordinates of said point of impingement;
determining by extrapolation along a line passing through the last-mentioned two sets of coordinates towards the center of said cylinder, the position of another point at a distance equal to the radius of the cylinder section from said point at the outer edge of said abutting surfaces and moving the beam so that it is in alignment with said point;
moving the rotary table so that the beam will pass through a point at the outer edge of the abutting surfaces so that the beam will be parallel to the abutting surfaces to be welded along a line passing through the last-mentioned points; and
energizing the high energy particle beam at welding power and causing the beam to be moved so that the beam passes through all the points determined above.

4,564,739

APPARATUS FOR LABELING PARTS WITH A LASER

Antoon Mattelin, Oostkamp, Belgium, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 13, 1984, Ser. No. 630,673
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333386
Int. Cl.⁴ B23K *26/06*
U.S. Cl. 219—121 LH **8 Claims**



1. In an apparatus for labeling parts, particularly electronic components, said apparatus comprising a laser for creating a laser beam, deflective means for deflecting the laser beam in at least two directions, said deflective means including deflection optics disposed in the beam path of the laser and being controllable in accordance with the labeling job, means for controlling the deflective means, and lens means disposed on the beam path after the deflection optics for focusing the laser beam onto the surface of the part disposed on a work surface of the apparatus, the improvements comprising beam splitter means being disposed in the beam path of the laser for dividing the beam into at least two sub-beams prior to being received by the deflective means, said deflection optics consisting of two deflecting mirrors which are positioned successively in the beam path, each of said mirrors being mounted for rotation about an axis with the axis of one mirror being at right angles to the axis of the other mirror, and means for guiding said sub-beams to the deflective means with a different angle of incidence for each of the sub-beams with respect to the deflective means so that the lens means focuses the sub-beams onto spaced positions to enable labeling at least two parts simultaneously.

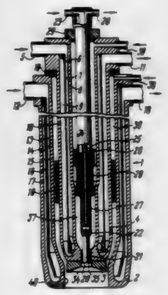
4,564,740
METHOD OF GENERATING PLASMA IN A PLASMA-ARC TORCH AND AN ARRANGEMENT FOR EFFECTING SAME

Boris E. Paton, ulitsa Chkalova, 41-a, kv. 26; Gary A. Melnik, ulitsa Prazhskaya, 3, kv. 169; Jury V. Latash, ulitsa Artema, 55, kv. 23; Oleg S. Zabarilo, ulitsa Zodchikh, 62-a, kv. 100; Vasily A. Tkalich, ulitsa Saratovskaya, 6, kv. 2; Sergei E. Gedzun, ulitsa Malinovskogo, 25, kv. 176; Ljudmila G. Odintsova, ulitsa Gorkogo, 62, kv. 3, all of Kiev; Gavriil D. Agarkov, ulitsa Engelsa, 12, kv. 16, V.Salda; Vladislav V. Tetjukhin, ulitsa Spartakovskaya, 20, kv. 27; Nikolai A. Tulin, ploschad Nogina, 2, kv. 5, both of Moscow; Gennady G. Vedernikov, ulitsa Zhukova, 8, kv. 21, Chelyabinsk; Nikolai P. Pozdeev, ulitsa B.Khmelnitskogo, 25, kv. 109, Chelyabinsk; Valery D. Azbukin, ulitsa Stalevarov, 46-a, kv. 60, Chelyabinsk; Georgy N. Okorokov, ulitsa Valovaya, 42/44, kv. 22, Moscow, and Nikolai V. Letnikov, ulitsa 8 Marta, 55, kv. 2, Elektrostal Moskovskoi oblasti, all of U.S.S.R.

Continuation of Ser. No. 1,862, Jan. 8, 1979, abandoned. This application Dec. 30, 1983, Ser. No. 565,852

Int. Cl.⁴ B23K *9/00*

U.S. Cl. 219—121 PM **6 Claims**



1. A plasma-arc torch for use with a work piece, said torch comprising:

an elongated water-cooled torch body having a nozzle portion;

a refractory metal hollow electrode having a central passage therein and positioned in said torch body in a radially spaced relationship thereto for forming a first annular gas passage between said electrode and said torch body;

an auxiliary electrode made from a metal similar to that of said hollow electrode, and positioned within the central passage of said hollow electrode in a radially spaced relationship thereto for forming a second annular gas passage between said auxiliary electrode and said hollow electrode, said second gas passage separate and distinct from said first gas passage, said auxiliary electrode terminating in an arcing tip that is positioned within and surrounded by said hollow electrode;

said hollow electrode and said auxiliary electrode being connected in an electric circuit for igniting a pilot arc therebetween when switching on the current, said pilot arc being ignited between the arcing tip of said auxiliary electrode and an interior portion of said hollow electrode that surrounds said arcing tip, said hollow electrode simultaneously igniting a main arc between said hollow electrode and the work piece due to the presence of a gas being ionized in said pilot arc, said pilot arc being ignited upstream of and being continuously in close proximity to said main arc;

said plasma-arc torch further comprising two elongated electrode holders, one for each of said refractory metal hollow electrode and said auxiliary electrode, each of said electrode holders including a fluid passage for circulating cooling fluid throughout the entire length of each holder, and passage means defined through the length of each holder, for circulating cooling fluid to said nozzle portion for cooling said electrodes, whereby to minimize electrode erosion; and

said arrangement further including means for igniting said main arc and said pilot arc while maintaining said pilot arc so that the current value across the pilot arc is at least 0.05 that across the main arc.

4,564,741
ARTICULATION MECHANISM OF AN ARC WELDING ROBOT

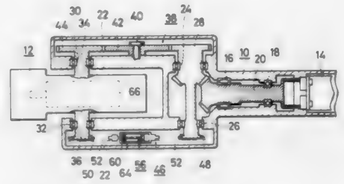
Hirotoshi Yasuoka, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1984, Ser. No. 574,217

Claims priority, application Japan, Jan. 26, 1983, 58-10881

Int. Cl.⁴ B23K *9/12*

U.S. Cl. 219—125.1 **4 Claims**



1. An articulation mechanism of an arc welding robot comprising a drive arm containing a motor therein and provided with an articulation housing at its tip end, and a driven arm pivotally supported by said articulation housing provided at the tip end of said drive arm and driven by said motor, and a transmission gear mechanism provided in one inner side of said articulation housing for transmitting the driving force of said motor from an output shaft of said motor to an input shaft of said driven arm and a position-shift preventing mechanism provided in the other inner side of said articulation housing for preventing the position-shift of said output and input shafts, wherein said articulation housing includes forked arm portions, said driven arm being provided with first and second axes portions extending into said forked arm portions, said first and second axes portions being coupled to said transmission gear mechanism and said position-shift preventing mechanism, respectively.

4,564,742
SOURCE OF POWER FOR ARC WELDING

Rolf L. Karlsson, Laxå, Sweden, assignor to ESAB Aktiebolag, Sweden

Filed Nov. 19, 1984, Ser. No. 672,720

Claims priority, application Sweden, Nov. 28, 1983, 8306550

Int. Cl.⁴ B23K *9/10*

U.S. Cl. 219—130.1 **9 Claims**

1. In a power source for arc welding aplications having rectifier means for providing a d.c. output from a.c. mains, smoothing capacitor means for shaping a d.c. output from said rectifier means and an inverter arrangement connected in parallel with said capacitor means for converting said shaped d.c. output into an a.c. voltage having a frequency substantially higher than that provided by said a.c. mains, the improvement comprising:

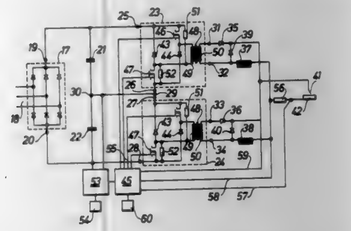
a plurality of individual inverter means forming said inverter arrangement, each of said plurality of individual inverter means having a pair of inputs, a pair of outputs, and including at least a pair of semiconductive elements, each of said pair of semiconductive elements being connected between one input and one output of said individual inverter means;

means for interconnecting selected inputs to each pair of said plurality of individual inverter means to connect each of said plurality of individual inverter means in said inverter arrangement in series;

control means for controlling the conductivity of a semiconductive element, said control means being connected to said at least said pair of semiconductive elements within each of said plurality of individual inverter means;

transformer means connected across each pair of outputs from each of said plurality of individual inverter means;

a plurality of capacitors forming said smoothing capacitor means, said plurality of capacitors being connected in series, each pair of serially connected capacitors within said plurality of capacitors being connected in parallel to each pair of serially connected individual inverter means



within said plurality of individual inverter means, and each of said plurality of capacitors being connected across said pair of inputs to one of said plurality of individual inverter means;

a plurality of pairs of resistor means, each one of said plurality of pairs of resistor means being connected in parallel with one of said plurality of capacitors and an associated one of said plurality of individual inverter means, each resistor means of each of said plurality of pairs of resistor means being connected to a differing one of said pair of inputs to said associated one of said plurality of individual inverter means and to a common one of said pair of outputs thereto; and

means for connecting each of said plurality of individual inverter means to a welding station.

4,564,743
FUSION WELDING OF ALUMINUM ALLOYS

Stuart S. Birley, and Philip E. Roper, both of Bracknell, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland

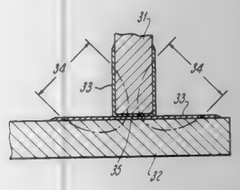
PCT No. PCT/GB83/00001, § 371 Date Aug. 23, 1983, § 102(e) Date Aug. 23, 1983, PCT Pub. No. WO83/02415, PCT Pub. Date Jul. 21, 1983

PCT Filed Jan. 7, 1983, Ser. No. 531,895

Claims priority, application United Kingdom, Jan. 20, 1982, 8201573

Int. Cl.⁴ B23K *9/235*

U.S. Cl. 219—137 R **10 Claims**



1. A method for fusion welding together two portions of a parent metal comprised by an alloy of aluminum, zinc and magnesium including the steps of surface abrading said portions in at least the region of their mutual interface and the intended weld zones, coating said portions by applying to each abraded surface a hot-sprayed coating comprised by a metal having a lower electrochemical potential than the parent metal, and abutting the two coated portions at the mutual interface and fusing them together by a fusion welding process, said fusion welding process being operative to destroy said coating in the fusion zone while leaving said coating intact at all the nonfused surfaces adjacent to the weld zones to provide a thermal barrier during the fusion welding process and subsequent galvanic protection against corrosion.

4,564,744
INTEGRATED INFRARED THERMOSTAT RESONATOR

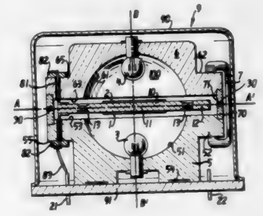
Jean P. Valentin, Poulley-les-Vignes, France, assignor to L'Etat Francais represented by Delegation Generale, Paris, France

Filed May 2, 1984, Ser. No. 606,247

Claims priority, application France, May 3, 1983, 83 07307

Int. Cl.⁴ H05B *1/00*; **H01L** *41/08*

U.S. Cl. 219—210 **9 Claims**



1. A resonator having an integrated infrared thermostat, comprisng:

a sealed, vacuum tight casing having therein:

a piezoelectric crystal having an actively vibratable central section and linkage bridges to an outer peripheral ring;

first and second electrodes deposited on opposite surfaces of the central section of the crystal;

means for supporting the peripheral ring of the crystal;

infrared heating means and reflecting means for reflecting heat from said heating means onto the crystal;

at least one temperature sensor;

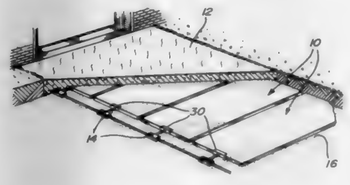
linkage conductors electrically connecting said first and second electrodes, the temperature sensor, and the infrared heating means, respectively, with electrical connection terminals which extend in a sealed manner through the casing from its interior to the exterior thereof:

wherein the reflecting means comprise reflectors including an electrically insulating material having a concave hemispherical dome in one surface thereof, said dome being coated with a layer of refecting metal, and said reflectors being located on opposite sides of the crystal with the concave metal coated domes facing the crystal;

the infrared heating means comprising small, low voltage incandescent electric light bulbs located between each concave reflective dome and the crystal;

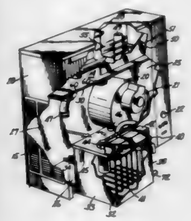
and the sensor is a thermocouple comprising two thin metal layers superimposed seriatim on one side of the central section of the crystal, at least one of said layers simultaneously comprising an excitation electrode for the crystal.

4,564,745
PRE-CAST HEATING PANEL
Maurice Deschenes, Ste.Thérèse d'en Haut, Canada, assignor to Geant Entrepeneur Electrique Ltee, Laval, Canada
Filed Feb. 24, 1984, Ser. No. 583,213
Int. Cl.⁴ H05B *3/28*
U.S. Cl. 219—213 **12 Claims**



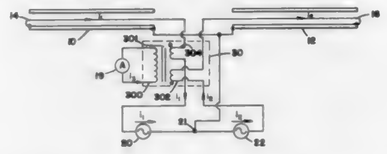
1. A heating panel comprising a fiber-reinforced mortar prepared from a mixture of a cementing material, a finely divided mineral aggregate and water and incorporating a fibrous non-electrically conductive reinforcement material homogeneously dispersed therein, and a flexible electric heating element embedded in said fiber-reinforced mortar.

4,564,746
STEAM HUMIDIFIER CABINET CONSTRUCTION
Bernard W. Morton, and Bruce K. Olseth, both of Minnetonka, Minn., assignors to DRI STEEM Humidifier Company, Hopkins, Minn.
Filed Jul. 11, 1984, Ser. No. 629,587
Int. Cl.⁴ F24F *6/18*
U.S. Cl. 219—276 **5 Claims**



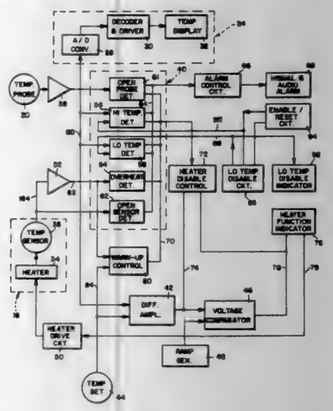
1. A cabinet mounted steam humidifier comprising an outer housing forming an enclosed cabinet of size to be mounted on a wall of a room and having first and second end walls and a side wall facing into such room comprising:
first wall means for dividing said cabinet into an upper and a lower chamber;
an air inlet in the first end of said housing leading to said lower chamber and open to a room;
an air outlet defined in upper chamber open to a room and defined in the side wall of the housing;
a fan mounted in said lower chamber and having an inlet drawing air from the air inlet, and a fan discharge opening to said upper chamber at a position at the second end of the housing;
second walls forming an enclosed evaporative chamber in which steam is formed including a heater unit forming steam from water, said evaporative chamber being mounted in said lower chamber;
a divider wall in the upper chamber alongside the fan discharge opening and spaced from the first side wall and located at the second end of the housing to form a duct passage in the upper chamber extending toward the first end of the housing; and
steam dispersion tubes mounted in said upper chamber within the duct formed by the divider wall and connected to said evaporative chamber for dispersing water vapor adjacent the discharge opening from said fan in an opposite direction from normal airflow from the fan whereby air from the fan flows in an airflow path past said steam dispersion tubes in the duct, toward the second end and causes the water vapor to change direction of flow and pass from the fan discharge opening to the air outlet of said housing, and the evaporative chamber and fan being isolated from the airflow path by said first wall means.

4,564,747
METHODS AND APPARATUS FOR DETECTING ABNORMALITIES IN PROXIMITY EFFECT HEAT-TRACING CIRCUITS
Paul F. Offermann, Redwood City, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Sep. 30, 1983, Ser. No. 537,995
Int. Cl.⁴ H05B *1/02;* **H02H** *3/16*
U.S. Cl. 219—482 **16 Claims**



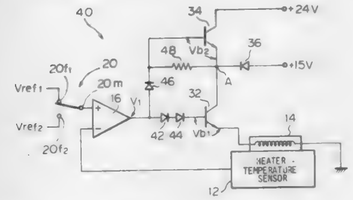
1. Apparatus for detecting current flow abnormalities in either of a pair of proximity-effect pipeline heat-tracing circuits for heating at least two serially connected pipeline sections, comprising:
a first source of alternating current for heating one of said pipeline sections;
a second source of alternating current for heating the other of said pipeline sections, said second source having the same voltage phase as said first source and having one output terminal connected to one output terminal of said first source to form a current node;
a first proximity effect heat-tracing segment in heat-exchange relation with one of said pipeline sections, said first segment including a first elongated insulated conductor extending through and surrounded by a first heat tube, said first heat tube having one end connected to said node and the other end connected to one end of said first insulated conductor;
a second proximity effect heat-tracing segment in heat-exchange relation with the other of said pipe sections, said second segment including a second elongated insulated conductor extending through and surrounded by a second heat tube, said second heat tube having one end connected to said node and the other end connected to one end of said second insulated conductor;
a single current transformer having (1) a first conductive element connected between said first alternating current source and the other end of said first insulated conductor extending through said first heat-tracing tube segment and (2) a second conductive element with opposite polarity to said first conductive element connected between said second alternating current source and the other end of said second insulated conductor extending through said second heat-tracing tube segment, and (3) a third conductive element inductively coupled to both said first and said second conductive elements; and
means for detecting current flow induced in said third conductive element by any difference between the currents flowing through said first conductive element and said second conductive element whereby abnormal current flow and unequal generation of heat in one of said heat-tracing segments relative to the other of said heat-tracing segments is detected by said current flow.

4,564,748
VARIABLE TEMPERATURE HEATING CONTROL SYSTEM FOR INHALATION THERAPY APPARATUS
John Gupton, Vernon Hills, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.
Filed Oct. 29, 1982, Ser. No. 437,562
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 219—497 **17 Claims**



1. A heating control system comprising, in combination:
heater means for heating a flowing gas, said heater means including a heater block;
temperature sensor means, downstream of said heater means, for sensing the temperature of said flowing gas and providing a sensor signal related thereto;
temperature probe means for sensing the temperature of said heater block and providing a probe signal related thereto;
set means for selecting a desired temperature for said flowing gas and providing a set signal related thereto;
control means, responsive and interconnected to said temperature sensor means, said temperature probe means, and said set means, for controlling the operation of said heater means; and
display means for displaying the temperature of said flowing gas as sensed by said temperature sensor means downstream of said heater means;
said control means defining a high temperature limit and a low temperature limit so as to establish a permissible temperature range, said control means disabling said heater means whenever said sensor signal indicates that the temperature of said flowing gas is outside said permissible temperature range;
said control means defining a block temperature limit and disabling said heater means whenever said probe signal indicates that the temperature of said heater block exceeds said block temperature limit so as to substantially avoid a runaway condition;
said control means monitoring said sensor signal and said set signal and enabling said heater means in a predetermined manner whenever said sensor signal indicates that the temperature of said flowing gas is below said desired temperature;
said control means including warm-up means for intermittently enabling and disabling said heater means to substantially avoid overshooting said desired temperature for said flowing gas, said warm-up means being interconnected with and responsive to said set means and said temperature probe means, said warm-up means including a predetermined warm-up limit based upon said desired temperature of said set means, said warm-up means becoming operative when said probe signal indicates that the temperature of said heater block exceeds said warm-up limit.

4,564,749
HEATER DRIVE CIRCUIT FOR CONTROLLING INK TEMPERATURE IN INK JET PRINTER
Kazumi Ishima, Kashiwa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Apr. 16, 1984, Ser. No. 600,718
Claims priority, application Japan, Apr. 19, 1983, 58-68830
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 219—497 **7 Claims**

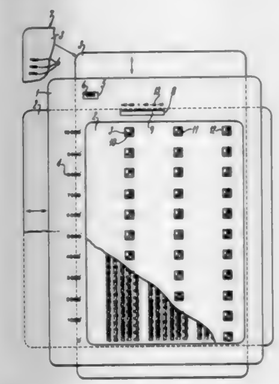


1. A heater drive circuit for controlling a temperature of a heater, comprising:
a sensor for sensing a temperature of the heater;
an error amplifier having a first input which is supplied with an output of said sensor, and a second input which is selectively supplied with a first reference voltage which supplies the heater with power necessary for a startup of the heater and a second reference voltage which supplies the heater with power necessary for a stationary operation of the heater to maintain the heater at a predetermined temperature;
a first output transistor having a base supplied with an output voltage of the error amplifier and switching a supply of a first power source voltage to the heater;
a second output transistor having a base supplied with an output voltage of the error amplifier and switching a supply of a second power source to the heater;
at least one diode connected between an output of the error amplifier and the first output transistor for shifting a level of an output voltage of the error amplifier; and
at least one diode connected between the output of the error amplifier and the second output transistor for shifting a level of an output voltage of the error amplifier;
each of the diodes being selected such that the level of the voltage applied to the heater is varied linearly without a sharp change.

4,564,750
DEVICE FOR COMBINATION OF DATA
Pal B. Olsen, Walter Roffs vei 4, N-4300 Sandnes, Norway
Filed Jun. 28, 1984, Ser. No. 625,313
Claims priority, application Norway, Jul. 7, 1983, 832476
Int. Cl.⁴ G06C *3/00*
U.S. Cl. 235—89 R **4 Claims**

1. A device for combining data, comprising a frame and at least an upper and a lower plate displaceably arranged in said frame, said plates being located in superimposed parallel planes and being freely displaceable in mutually perpendicular directions, said lower plate being provided with a plurality of data arrranged in rows and columns respectively parallel to and normal to the displacement direction of said plate, said upper plate being provided with a plurality of windows arranged in similar rows and columns, for displaying data on the lower

plate in dependence on the relative position of the plates, said frame being provided with a first and a second window for



positioning each of said plates in relation to said frame in dependence on given initial data.

4,564,751

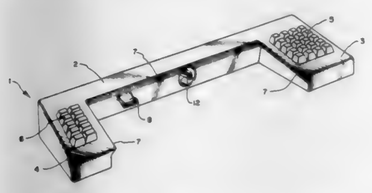
WRAP-AROUND AUXILIARY KEYBOARD

Lynn D. Alley, Riverton; Stephen W. Alley, Bountiful; William K. Sadlier, and Richard A. Burton, both of Salt Lake City, all of Utah, assignors to The Legacy Group Research and Development Limited Partnership, Salt Lake City, Utah

Filed Mar. 26, 1985, Ser. No. 716,200

Int. Cl.⁴ G06C *7/02*

U.S. Cl. 235—146 **21 Claims**



1. A wrap-around auxiliary keyboard comprising:
(a) housing;
(b) keys positioned in said housing; and
(c) circuitry means in said housing for input of character set data from said keys and for output of said character set data from said auxiliary keyboard;
wherein said housing comprises a base and an extension extending from said base; and wherein said base and said extension are shaped and are positioned with respect to each other so as to be able to wrap-around a primary keyboard.

4,564,752

CONCURRENT, IMAGE-BASED, REJECT-RE-ENTRY SYSTEM AND METHOD

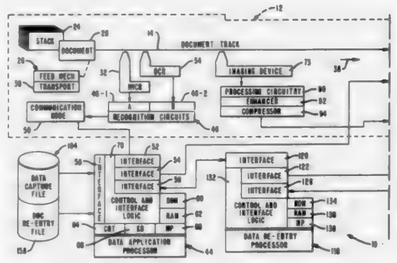
Daniel A. Lepic, and Robert B. Nally, both of Waterloo, Canada, assignors to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed Dec. 23, 1982, Ser. No. 452,663

Int. Cl.⁴ G06K *5/00*

U.S. Cl. 235—437 **7 Claims**

1. A document re-entry system comprising:
a transport system having a track along which documents are fed substantially in a feeding direction by an associated feed mechanism;
reading means positioned at said track in operative relationship with said documents as they are fed along said track so as to read therefrom data associated with each said document; said reading means including means to determine whether the data read from each said document is complete or incomplete with respect to predetermined criteria and to produce corresponding complete and incomplete signals, respectively;
diverting means positioned along said track for diverting into a reject area those of said documents having a said incomplete signal associated therewith;
processing means for processing said data read by said reading means and for controlling said diverting means;
said processing means including:
storing means for storing said data read from said documents and also for enabling said data read to be distinguished as complete or incomplete with regard to the associated documents;
means for completing data for those documents having an incomplete signal associated therewith, and comprising:
an imaging apparatus positioned along said track downstream along said feeding direction from said reading means to produce digitized image data of each said document passing thereby;



data development means including a memory for storing said digitized image data, a display and a keyboard; and
interface means for interfacing said processing means with said date development means to enable said data for a document having an incomplete signal associated therewith to be viewed on said display along with an image for said document derived from the associated digitized image data from said memory to enable an operator to key in additional data on said keyboard to thereby complete the data forming completed data for said last-named document;
said completed data being transferred from said data development means to said storing means via said interface means and said processing means upon actuation of a transfer key on said keyboard while the associated said last-named document is in said reject area;
said reading means including a reader for reading magnetic ink character recognition or MICR data; and
said storing means including a first memory for storing said data read by said reading means for all said documents fed along said track and also including a second memory for storing said completed data for those said documents having a said incomplete signal initially associated therewith.

4,564,753

RADIATION DETECTOR

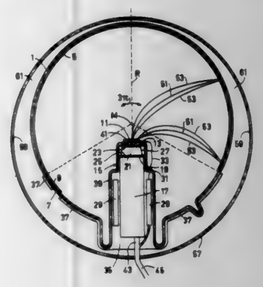
Gerardus Van Aller, and Walter H. Kühl, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 17, 1983, Ser. No. 505,538

Claims priority, application Netherlands, Jun. 23, 1982, 8202546

Int. Cl.⁴ H01J *31/50*

U.S. Cl. 250—213 VT **10 Claims**



1. A radiation detector, comprising:
an envelope;
an entrance screen for converting radiation outside the envelope into electrons inside the envelope, the entrance screen comprising a photocathode which extends within the envelope over substantially a solid angle of at least 180°, and
an electron-detecting exit screen for collecting the electrons from the entrance screen, the exit screen being proportioned and arranged such that the exit screen collects photoelectrons from the entire photocathode.

4,564,754

METHOD AND APPARATUS FOR OPTICALLY MEASURING A CURRENT

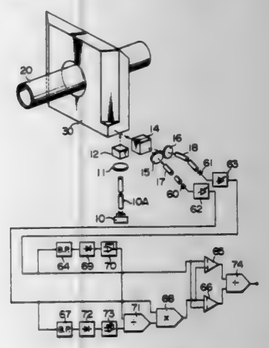
Tadashi Sato, Mito; Genji Takahashi, Hitachi, and Yoshiaki Inui, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,834

Claims priority, application Japan, Mar. 8, 1982, 57-35226; Jun. 28, 1982, 57-110019; Aug. 23, 1982, 57-144724

Int. Cl.⁴ G02F *1/01;* **H01J** *40/14*

U.S. Cl. 250—225 **16 Claims**



1. An optical current measuring apparatus comprising:
a conductor for conducting a current under measurement;
a Faraday effect glass disposed to link perpendicularly to said conductor and having at least two total reflection areas at corners thereof;
a light source for directing a light to a light input section of said Faraday effect glass;
a polarizer for linearly polarizing the light from said light source and directing the linearly polarized light to said Faraday effect glass;
said linearly polarized light being reflected at said total reflection areas of said Faraday effect glass such that said linearly polarized light circulates around said conductor as linearly polarized light and emits from a light output section of said Faraday glass as linearly polarized light, whereby said current is measured based on a Faraday rotation angle of the light by a magnetic field created by said current flowing in said conductor;
said total reflection areas of said Faraday effect glass being configured for enabling said linearly polarized light reflected thereat to circulate and be emitted from said Faraday effect glass as linearly polarized light;
said Faraday effect glass being planar and having an opening through which said conductor extends;
an analyzer disposed to face said light output section of said Faraday effect glass for splitting the light from said light output section into two light beams;
a pair of condenser lenses disposed to condense said two light beams from said analyzer;
a pair of optical fibers disposed to face said condenser lenses;
a pair of light detectors arranged to receive lights transmitted through said optical fibers; and
an arithmetic unit for calculating said Faraday rotation angle based on outputs from said light detectors.

4,564,755

TRANSMISSION AND RECEPTION DEVICE FOR A FIBER-OPTICAL SENSOR SYSTEM

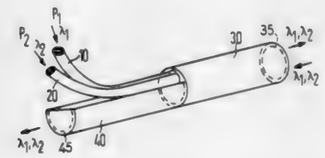
Gerhard Winzer, Putzbrunn, and Hans Mahlein, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 509,993

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1982, 3230570

Int. Cl.⁴ G01D *5/34*

U.S. Cl. 250—227 **19 Claims**



1. A transmission and reception device for a fiber-optic sensor system functioning with two wavelengths, comprising a transmitter emitting a first wavelength and a transmitter emitting a second wavelength, whereby each wavelength is supplied to a transmitter-side end of a fiber path of the sensor system for in-coupling, and comprising an evaluation means for measuring the power of a radiation having the first wavelength supplied from the transmitter-side end of the fiber path to the evaluation means and for measuring the power of a radiation having the second wavelength supplied to the evaluation means from the same end of the fiber path, characterized in that said transmission and reception device includes a fiber-optical light waveguide brancher which includes one gate at the side of said fiber path to which said fiber path is coupled and which includes one respective gate per transmitter at the side facing away from said fiber path to which an allocated transmitter is coupled, and also includes a gate allocated to said evaluation means to which said evaluation means is coupled,

the fiber-optical brancher further comprising two butt-coupled fibers of a first thickness of which one is laterally ground; and by one or more relatively thinner fibers applied to the laterally ground face of the one thicker fiber, said thinner fibers being likewise butt-coupled to the unground thicker fiber, whereby a respective gate of the brancher is allocated to each of said fibers.

4,564,756

PROXIMITY SENSOR WITH A LIGHT-EMITTING DIODE WHICH SIMULTANEOUSLY EMITS AND DETECTS LIGHT

Mark Johnson, Mt. Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 6, 1984, Ser. No. 568,667
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **9 Claims**



1. A self-detecting light-emitting diode proximity sensor, comprising:

a light emitting diode;

means forward biasing said diode at a substantially constant forward bias thereby illuminating a detection region adjacent said light emitting diode with light emitted from said diode, some of the light emitted by said diode reflecting back and illuminating said forward biased diode when an object to be sensed is within said detection region; and

signal amplifying means connected to said light emitting diode for sensing variations in the impedance of said forward biased diode caused by reflected light illuminating said diode,

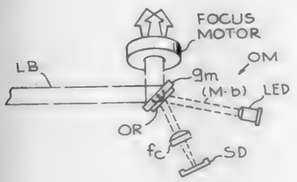
whereby the presence of an object within said detection region is thereby sensed.

4,564,757

MIRROR POSITION SENSOR FOR IMPROVED TRACK SELECTION IN OPTICAL DATA DISK SYSTEM

Edward V. LaBudde, Newbury Park; Jeffrey E. Niven, Camarillo; Der-Chang Hsieh, Thousand Oaks; Roger C. Parker, Camarillo, and Robert Jeffery Johnson, Thousand Oaks, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 30, 1982, Ser. No. 430,284
Int. Cl.⁴ H01J *5/02*
U.S. Cl. 250—239 **19 Claims**



1. An improved apparatus for monitoring the pivoting of reflector means, this apparatus comprising:

magnetic galvanometer motor means adapted to controllably pivot the reflector means;

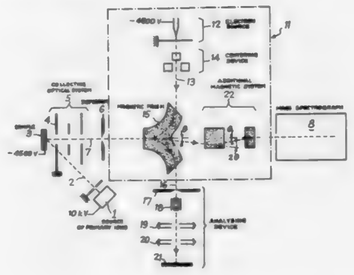
optical monitor means including source means, detector means and intermediate optical means, the source means being adapted to project a beam directed at a prescribed portion of the reflector means, the associated detector means being arranged and adapted to receive this beam and to responsively generate a "pivot signal" whose variance corresponds to the degree of pivoting; and unitary housing means adapted to mount and package the reflector means, the motor means and the monitor means being depolyed in fixed spatial relation, the monitor means being embedded in said housing means whereby to be isolated from optical interference and to be adapted for selective insertion, removal and re-insertion of said source means, detector means and optical means.

4,564,758

PROCESS AND DEVICE FOR THE IONIC ANALYSIS OF AN INSULATING SAMPLE

Georges Slodzian; Marcel Chaintreau, and Roger Dennebouy, all of Orsay, France, assignors to Cameca, Courbevoie, France

Filed Feb. 1, 1984, Ser. No. 575,828
Int. Cl.⁴ H01J *37/252*
U.S. Cl. 250—309 **5 Claims**



1. A process for ionic analysis of an insulating sample brought to a given negative potential, of a type in which a target on the surface of the sample to be analyzed is bombarded by means of a primary ion beam and negative ions emitted by the bombarded target are used for producing an ion image of the sample, wherein an electron beam, whose normal speed component cancels out just at the level of the surface of the target, is directed perpendicularly to the target, said electron beam being, after emission, deflected by a magnetic prism so as to brought into coincidence with the optical axis of the negative ion beam emitted by the target.

4,564,759

CORONA DISCHARGE DEVICE

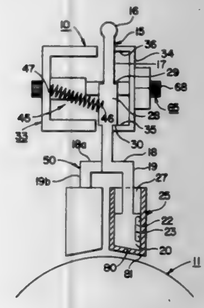
Andreas Tietje, Tariffville, Conn., assignor to Ensign-Bickford Industries, Inc., Simsbury, Conn.

Filed Sep. 26, 1983, Ser. No. 535,372
Int. Cl.⁴ H01T *19/04*
U.S. Cl. 250—324 **11 Claims**

1. A corona discharge device comprising first electrode means and second electrode means mounted in spaced electrically insulated relationship with respect to each other,

said first electrode means including a plurality of electrically conductive members, and means for independently supporting each conductive member for movement toward and away from said second electrode means, each such conductive member having a shank portion, an intermediate portion and an end portion, said end portion being laterally offset from said shank portion and connected thereto by said intermediate portion,

said plurality of conductive members being supported with side edges of the shank portion of each adjacent conductive member in abutting relationship, with the intermediate portion of each adjacent conductive member extending in opposite directions and with the offset end portion of one conductive member spaced apart from the offset end portion of the next adjacent conductive member.

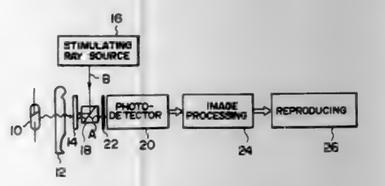


4,564,760

RADIATION IMAGE READ-OUT APPARATUS

Masaru Noguchi; Kazuo Horikawa, and Akihiro Ohga, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 19, 1984, Ser. No. 672,683
Claims priority, application Japan, Nov. 22, 1983, 58-218678
Int. Cl.⁴ G03G *5/16*
U.S. Cl. 250—327.2 **8 Claims**



1. A radiation image read-out apparatus provided with a stimulating ray optical system for exposing a stimulable phosphor carrying a radiation image stored therein to stimulating rays, a photodetector for detecting light emitted by the stimulable phosphor upon exposure to said stimulating rays, and a light guide member for guiding the emitted light to said photodetector, said light guide member having one end face positioned close to the stimulable phosphor and the other end face optically connected to said photodetector, wherein the improvement comprises:

(i) positioning a dichroic optical plane, which selectively reflects either said stimulating rays or said light emitted by the stimulable phosphor and selectively passes the other, in an optical path of said light guide member, and

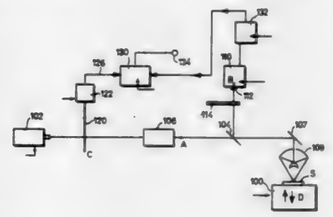
(ii) positioning said stimulating ray optical system so that said stimulating rays directly impinge upon said dichroic optical plane and come out of said one end face of said light guide member positioned close to the stimulable phosphor by being reflected by said dichroic optical plane or by passing therethrough, thereby stimulating the stimulable phosphor.

4,564,761

METHOD AND APPARATUS FOR THE ENHANCED DETECTION OF A COMPONENT OF A MATERIAL

Robert A. Buckwald, Ramat Yishai; Dario Cabib, Migdal Haemek, and Kurt Weiser, Haifa, all of Israel, assignors to C.I. Ltd., Ramat Yishai, Israel

Filed Feb. 24, 1983, Ser. No. 469,159
Claims priority, application Israel, Mar. 5, 1982, 65176
Int. Cl.⁴ G01T *21/71*
U.S. Cl. 250—341 **24 Claims**



1. A method for the enhanced detection of a component in the base material of a sample, characterized by the steps of:

exposing a restricted region of interest in the sample to an intense source of photons to heat said region of the sample sufficiently to cause it to emit infrared radiation therefrom by subjecting the said region to electromagnetic radiation having a wavelength selected so as to be absorbed by the component to an appreciably larger extent than by the base material;

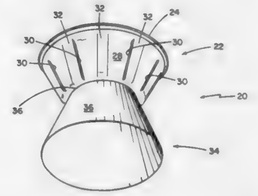
and detecting the infrared radiation emitted by said region of the sample as a result of the heating of said component therein produced by said exposure.

4,564,762

SMOKE DETECTOR

Charles F. Doherty, Quincy, and Robert E. Johnson, Pembroke, both of Mass., assignors to Pyrotector, Inc., Hingham, Mass.

Filed May 16, 1984, Ser. No. 610,760
Int. Cl.⁴ G01T *1/185*
U.S. Cl. 250—381 **8 Claims**



1. An ionization detector unit for use in a smoke detector comprising a housing wall enclosing an ionization chamber, said wall having openings for passage of air through said chamber, the frontal surface of said wall that is exposed to an oncoming air flow from a given direction being inclined relative to an intersecting second surface exposed to said flow,

said frontal surface being shaped and positioned to deflect said air flow generally toward said second surface, and said second surface being shaped and positioned to deflect said air flow generally toward said frontal surface, said frontal surface and said second surface conforming substantially to portions of the surface of axially aligned, intersecting, opposed right cones, the shape and position of said surfaces cooperatively arranged to cause said deflected air flows to converge and form a region of air in the vicinity of the intersection of said surfaces that is at higher pressure and slower velocity than said oncoming

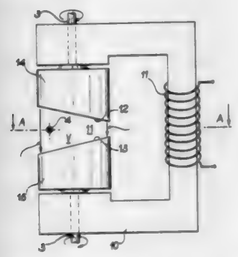
air flow, openings in said frontal surface of said housing are sized and positioned for entry of air from said vicinity in a relatively slow, laminar air flow through said chamber said frontal surface and said second surface comprising means for maintaining an effective ion current within said chamber despite the velocity of the oncoming air.

4,564,763

PROCESS AND APPARATUS FOR VARYING THE DEFLECTION OF THE PATH OF A CHARGED PARTICLE BEAM

Michel Bruel, Veurey, and Jean-Francois Michaud, St. Pierre de Seucy, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 26, 1983, Ser. No. 517,394
Claims priority, application France, Aug. 17, 1982, 82 14204
Int. Cl.⁴ G21K *1/08*; H01J *3/00*
U.S. Cl. 250—396 ML **3 Claims**



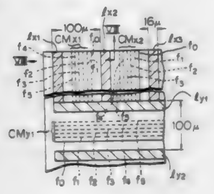
1. A device for deflecting a charged particle beam comprising:
a fixed magnetic circuit means;
two pole pieces having inclined faces positioned opposite each other which are coupled to said fixed magnetic circuit means which are separated from each other by way of an air gap;
rotating means coupled to said pole pieces for integrally rotating said pole pieces about their axes;
constant current means coupled to said fixed magnetic circuit means, for providing a constant current through a coil having a plurality of turns;
wherein the deflection of a charged beam passing through said air gap is varied in time.

4,564,764

WAFER HAVING CHIPS FOR DETERMINING THE POSITION OF THE WAFER BY MEANS OF ELECTRON BEAMS

Hiroshi Yasuda, Yokohama; Kenichi Kawashima, Sagamihara; Takayuki Miyazaki, Nagaokakyo, and Koichi Kobayashi, Yokohama, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 30, 1983, Ser. No. 537,624
Claims priority, application Japan, Sep. 30, 1982, 57-172170
Int. Cl.⁴ G01N *23/00*
U.S. Cl. 250—491.1 **8 Claims**



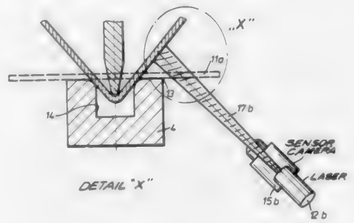
1. A wafer having position determining chips for determining the position of said wafer by means of electron beams, at least one of said position-determining chips comprising:
a plurality of first-direction line groups formed on one side portion of said at least one position-determining chip and extending in parallel to each other;
a plurality of second-direction line groups formed on the other region of said at least one position-determining chips and extending in the direction orthogonal to the direction of said first-direction line groups, said second-direction line groups extending in parallel to each other;
each of said first-direction line groups comprising one first-direction main mark and one first-direction code mark expressing the position of said one first-direction main mark, wherein said first-direction code mark is different for each of said first-direction line groups;
each of said second-direction line groups comprising one second-direction main mark and one second-direction code mark expressing the position of said one second-direction main mark, wherein said second-direction code mark is different for each of said second-direction line groups; whereby, by scanning one of said first-direction line groups and one of said second-direction line groups by means of an electron beam, the position of said wafer is determined.

4,564,765

OPTOELECTRONIC METHOD AND APPARATUS FOR MEASURING THE BENDING ANGLE OF MATERIALS

Michael Blaich, Stuttgart, Fed. Rep. of Germany, assignor to Karl Mengele & Söhne GmbH & Co., Günzburg, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 489,852
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3216053
Int. Cl.⁴ G01H *21/86*
U.S. Cl. 250—561 **4 Claims**



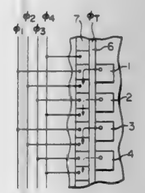
1. Optoelectronic measuring method for measuring the angular displacement of a surface on a workpiece about a bending line extending along the surface of the workpiece, such as a sheet metal plate, from a starting position A on the surface of the workpiece before angular displacement to a displaced position B on the surface of the workpiece after angular displacement using a light beam from a light source, such as a laser, comprising the steps of directing the light beam from the light source at the position A at an acute angle relative to the surface of the workpiece and relative to the bending line and forming a light spot at the starting position A, continuously measuring the angle of reflection formed by the light beam from the light spot on the surface of the workpiece using a photo detector, such as a diode-line camera and positioning the photo detector approximately perpendicularly to the bending line during the angular displacement of the workpiece surface, and determining when the displaced position of the workpiece surface has been reached when the measured angle determined in the photo detector equals an index angle corresponding to the displaced position B.

4,564,766

METHOD FOR DRIVING SOLID STATE IMAGE PICKUP DEVICE

Takao Kuroda, Osaka, and Kenju Horii, Shiga, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 370,049, Apr. 20, 1982. This application Feb. 14, 1985, Ser. No. 701,648
Int. Cl.⁴ H01L *27/14*
U.S. Cl. 250—578 **4 Claims**



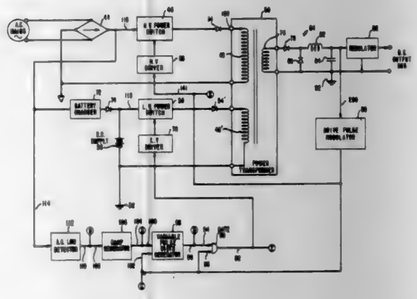
1. A method for driving a solid state image pick-up device having photoelectric conversion elements arranged in a row direction, comprising the steps of:
reading out, for discharging, signal charges stored in a first group of alternate rows of photoelectric conversion elements during a first field interval;
reading out, for detection, signal charges stored in a second group of the remaining alternate rows of photoelectric conversion elements during said first field interval;
reading out, for discharging, signal charges stored in said second group of photoelectric conversion elements during a subsequent second field interval; and
reading out, for detection, signal charges stored in said first group of photoelectric conversion elements during said second field interval.

4,564,767

UNINTERRUPTIBLE SWITCHING POWER SUPPLY SYSTEM

Arthur Charych, Stony Brook, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.

Filed Nov. 7, 1983, Ser. No. 548,944
Int. Cl.⁴ H02J *9/06*
U.S. Cl. 307—66 **20 Claims**



19. A power supply system for providing uninterruptible DC output power comprising, in combination:
(a) a power transformer having first and second primary windings, one end of said first primary winding being coupled to a source of AC power, one end of said second primary winding being coupled to a source of DC power isolated from said source of AC power, the other ends of said first and second primary windings being coupled to different reference grounds;
(b) first and second switching means, said second switching means being coupled between said DC power source and said second primary winding, wherein said first and second switching means including:
(i) a first and second power transistor disposed in a DC current path to said first and second primary power windings, respectively,
(ii) first and second driver means having input and output terminals, said driver means output terminals being coupled to the base electrodes of said first and second power transistors, respectively, each said driver means being capable of driving said respective power transistors between a normally open non-conducting state between their respective emitter and collector electrodes to a closed conducting state therebetween;
(c) input rectifying means connected in series with said first switching means between said AC power source and said first primary transformer winding, said rectifying means rectifying said AC power resulting in a DC voltage being coupled to said first switching means;
(d) at least one secondary output winding disposed upon said power transformer;
(e) at least one output rectifying means for providing a DC output voltage, said output rectifying means being connected to one of said secondary windings; and
(f) transition means coupled to said DC output voltage, said resulting DC voltage and said first and second swtiching means, for sensing the amplitude of said DC output voltage and said resulting DC voltage and controlling the duty cycle of said second switching means by increasing the duty cycle of said second switching means to supply additional power when said resulting DC voltage decreases, thereby providing a virtually transient-free DC output voltage, wherein said transition means including:
(i) drive pulse modulator means having an input and an output terminal, for providing a rectangularly-shaped switching voltage at said output terminal with a frequency directly proportional to the amplitude of said DC output voltage within a preselected range, said modulator means input terminal being coupled to said DC output voltage, said modulator means output terminal being coupled to said first driver means input terminal,
(ii) variable pulse width generator means, having a pair of input terminals and an output terminal, for providing on said generator means output terminal a variable pulse width switching voltage, one of said generator means input terminals having an internally generated sawtooth voltage coupled thereon, the other of said generator means input terminals being coupled to said driving pulse modulator means output terminals,
(iii) gating means having an output terminal and a pair of input terminals for providing a proportional variable duty cycle switching output voltage on said gating means output terminal, said gating means output terminal being coupled to said second driver means, said first gating means input terminal being coupled to said variable pulse width generator means output terminal, and
(iv) ramp generator means, having an input and an output terminal, for generating a ramp output voltage on said ramp generator means output terminal, said ramp generator means output terminal being coupled to said variable pulse generator means other input terminal, said ramp generator providing said ramp output voltage on said ramp generator means output terminal when receiving a voltage change appearing on its input terminal.

4,564,768

CONTACTLESS RELAY

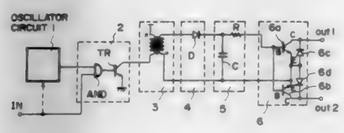
Hidetsugu Komiya, and Michiya Inoue, both of Hino, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Filed Apr. 27, 1983, Ser. No. 489,089

Claims priority, application Japan, Apr. 27, 1982, 57-61716[U]

Int. Cl.⁴ H03K *17/56*

U.S. Cl. 307—140 **2 Claims**



1. A contactless relay comprising:

oscillating means for generating an A.C. signal;

a transformer having primary and secondary windings for delivering the A.C. signal from said oscillating means, the A.C. signal being applied to the primary windings and delivered from the secondary windings;

AND gate means having a first input operatively connected to receive said A.C. signal, a second input operatively connected to receive input and an output, for providing said A.C. signal in accordance with said first and second inputs;

a transistor having a base operatively connected to said output of said AND gate means, a collector operatively connected to said primary of said transformer, and an emitter for applying said A.C. signal to the primary windings of said transformer;

a diode having an anode operatively connected to a first end of said secondary of said transformer and a cathode, for rectifying the A.C. signal obtained from the secondary windings of said transformer, said diode producing a rectified output;

a smoothing circuit including a capacitor operatively connected to said cathode and to a second end of said secondary, and a resistor having a first end operatively connected to said cathode and a second end, for smoothing the rectified output produced by said diode and for delivering a D.C. output signal; and

bipolar transistor switching means driven by the D.C. signal from said smoothing circuit and including –

a pair of bipolar transistors having interconnected emitters, interconnected bases operatively connected to said second end of said resistor and respective collectors,

a pair of diodes respectively and backwardly connected across a corresponding emitter and collector of one of said pair of bipolar transistors.

4,564,769

SATURATION CONTROL OF A SWITCHING TRANSISTOR

Anna Melamed, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

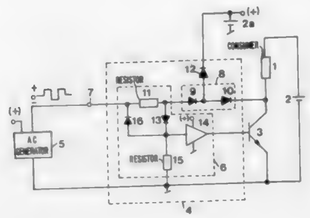
Filed Sep. 12, 1983, Ser. No. 531,340

Claims priority, application Denmark, Oct. 7, 1982, 3237141

Int. Cl.⁴ H03K *17/64*

U.S. Cl. 307—300 **2 Claims**

1. A transistor circuit comprising a switching transistor having a base, collector and emitter, a load and a DC power supply in series with the collector-emitter path of said transistor, a control input terminal, a base circuit diode connected between said input and said base poled to conduct current in the same direction as the base-emitter junction of said transistor, a current amplifier connected between said base circuit diode and said base, a saturation control circuit connected between said input and said collector including first and second diodes in series poled to conduct current towards said collector, said diodes interacting so that upon a switch-on voltage being applied to said input the base-emitter voltage is higher than the collector-emitter voltage an amount approximating the difference between the voltage drop across said first and



second diodes and the voltage drop across said base circuit diode.

4,564,770

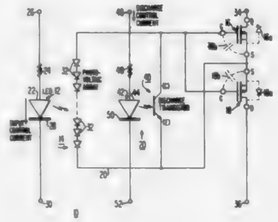
SOLID STATE RELAY WITH FAST TURNOFF

Jeffrey D. Sherman, Billerica, and Stephen E. Courcy, Westford, both of Mass., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 29, 1983, Ser. No. 479,988

Int. Cl.⁴ H03K *3/42;* **G02B** *27/00*

U.S. Cl. 307—311 **5 Claims**



1. In a solid state relay comprising in combination:

a pair of input terminals;

a light-emitting diode connected between said input terminals for generating radiation in response to current applied to said input terminals;

an array of photodiodes series connected between a pair of array electrodes and optically coupled to said light-emitting diode for developing a control voltage across said array electrodes in response to radiation from said light-emitting diode;

a field-effect-transistor (FET) including a pair of electrodes defining a principal conduction path, and a control electrode, one of said array electrodes coupled to said control electrode and the other of said array electrodes coupled to one of said FET pair of electrodes, whereby the impedance between said FET pair of electrodes has a first value in the absence of, and another greatly different second value in the presence of, said control voltage between said control electrode and said one of said FET pair of electrodes;

the improvement comprising:

an optical bipolar transistor coupled between said control electrode and said one of said FET pair of electrodes for providing a relatively low impedance therebetween when said FET impedance is at said first value and for providing a relatively high impedance when said FET impedance is at said second value; and

a second light emitting diode optically coupled to said bipolar transistor and responsive to a signal for controlling the state of conduction of said bipolar transistor.

4,564,771

INTEGRATED DARLINGTON TRANSISTOR COMBINATION INCLUDING AUXILIARY TRANSISTOR AND ZENER DIODE

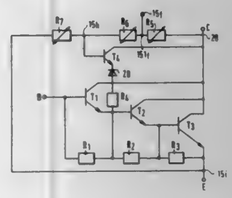
Peter Flohrs, Reutlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,154

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226850

Int. Cl.⁴ H03K *17/60*

U.S. Cl. 307—315 **12 Claims**



1. Darlington transistor combination comprising an input transistor (T_1), a driver transistor (T_2) and a power transistor (T_3), the respective collectors of said input and driver transistor being connected to the collector of said power transistor, the emitter of said input transistor being connected to the base of said driver transistor and the emitter of said driver transistor being connected to the base of said power transistor, the base of said input transistor being the control electrode of said transistor combination for connection of an input signal, and the collector and emitter of said power transistor providing the controlled path connection of said transistor combination, the base of said driver transistor (T_2) being connected to a series circuit containing a first resistance (R_4) connected to said driver transistor base and a Zener diode (ZD) having its anode connected to said first resistance (R_4), a second resistance (R_2) being connected in parallel to the base-emitter path of said driver transistor, said transistors, Zener diode, and first and second resistances being constituted as portions of an integrated circuit monolithically integrated by planar integrated circuit technology on a common semiconductor substrate which provides the collector zones of said transistors, the cathode of said Zener diode (ZD) being in circuit with the tap (15*h*) of a voltage divider consisting of a third resistance (R_5,R_6) and a fourth resistance (R_7), said voltage divider having its ends respectively connected to the collector and emitter of said power transistor (T_3), said transistor combination incorporating the improvement which comprises:

an auxiliary transistor (T_4) monolithically integrated on said common substrate and having its collector zone provided by said common substrate, coupled for conduction of the series circuit between said base of said driver transistor (T_2) and the cathode of said Zener diode (ZD) under control of the potential of said tap (15*h*) of said voltage divider and having its collector connected to the collector of said power transistor by virtue of its said collector, like the collectors of the others of said transistors (T_1, T_2, T_3), being provided by said common substrate, the base-emitter path of said auxiliary transistor (T_4) being connected for receiving current flowing between said tap and said Zener diode cathode.

4,564,772

LATCHING CIRCUIT SPEED-UP TECHNIQUE

Gerald A. Maley, Fishkill, and Douglas W. Westcott, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

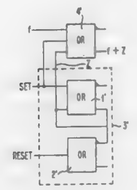
Filed Jun. 30, 1983, Ser. No. 509,273

Int. Cl.⁴ G11C *5/06*

U.S. Cl. 307—443 **4 Claims**

1. In a latching circuit array of logic gates wherein a latch comprising some of said gates and responsive to a logic signal is drivably connected to an output logic circuit comprising at least one other of said gates,

said latch having an output gate having at least two inputs, said output gate and said one other of said gates being of the same kind,



means for connecting each of the inputs of said output gate of said latch to respective ones of inputs of said one other of said gates, and

means for applying at least one additional signal to at least one additional input of said one other of said gates but not to any of said gates of said latch.

4,564,773

SEMICONDUCTOR GATE ARRAY DEVICE HAVING AN IMPROVED INTERCONNECTION STRUCTURE

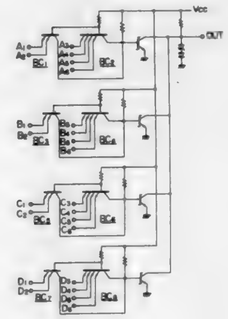
Tetsu Tanizawa; Hitoshi Omichi, both of Kawasaki, and Yoshiharu Mitono, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

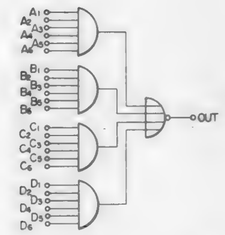
Filed Aug. 11, 1982, Ser. No. 407,148

Claims priority, application Japan, Aug. 13, 1981, 56-127072

Int. Cl.⁴ H03K *19/177, 19/003, 19/088;* **H01L** *27/00*

U.S. Cl. 307—445 **3 Claims**





1. A semiconductor device having a gate array structure, wiring channels, and wiring lines, comprising:

macro-cells formed on a semiconductor chip, each of said macro-cells comprising:

basic cells having terminals and performing a logic function; and

at least one of said macro-cells comprising more than a minimum number of said basic cells necessary to perform the logic function to be realized by said at least one of said macro-cells, thereby decreasing the ratio between the number of terminals in said at least one of said macro-cells and the number of wiring channels across said at least one of said macro-cells, on and along which the wiring lines are distributed.

4,564,774

BINARY LOGIC DEVICE HAVING INPUT AND OUTPUT ALTERNATING SIGNALS

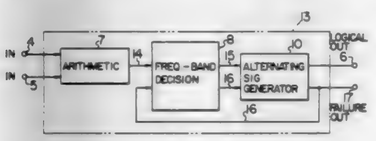
Korefumi Tashiro, Hitachi, and Hiroyuki Akiyama, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 520,687

Claims priority, application Japan, Aug. 9, 1982, 57-137312

Int. Cl.⁴ H03K *19/003*

U.S. Cl. 307—479 **17 Claims**



1. A logic device responsive to the frequencies of alternating signals which lie in predetermined frequency-bands having a one-to-one relationship to input logical values for performing logical operations, comprising:

means for inputting at least two input alternating signals;

arithmetic operation means connected to said inputting means for arithmetically operating on the frequencies of said two input alternating signals to provide a resultant signal having a frequency representing the result of the arithmetic operation;

decision means connected to the output of said arithmetic operation means for deciding among said predetermined frequency-bands which frequency-band the frequency of said resultant signal lies;

means responsive to the result of said decision by said decision means for delivering an alternating output signal having one of a number of predetermined frequencies which represent output logical values in a one-to-one relationship; and wherein said arithmetic operation means includes means for processing said alternating input signals to provide a resultant signal whose frequency is the arithmetic result of the frequencies of the input alternating signals, and wherein said decision means includes means for comparing said resultant signal of the arithmetic operation with a plurality of reference alternating signals to perform the frequency-band decision.

4,564,775

DEVICE FOR ROTATABLY DRIVING A COOLING FAN OF AN ELECTRIC ROTATING MACHINE

Alfred B. Mazzorana, Venissieux, France, assignor to Societe de Paris et du Rhone, S.A., Lyons, France

Filed Apr. 4, 1983, Ser. No. 482,434

Claims priority, application France, Apr. 15, 1982, 82 06800

Int. Cl.⁴ H02K *9/06*

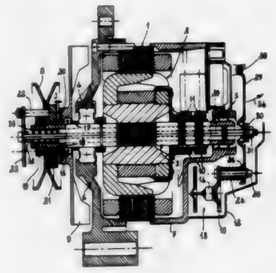
U.S. Cl. 310—62 **13 Claims**

1. In combination with an alternator intended for generation of electric current in a motor vehicle, said alternator normally operating at or below a characteristic operating temperature, and including a stator, a rotating shaft, a rotor mounted on the shaft, and fan means carried coaxially by the shaft for temporary cooling of the alternator, the combination comprising:

a bridge diode rectifier connected to said alternator;

means for mounting said fan means for free rotation on said shaft;

friction clutch means including means for selectively controlling the mechanical connection of said fan means with said shaft to drive said fan means in rotation with said shaft; and



temperature sensitive means including spring means, made of a "memory alloy", for effecting the connection of the fan means with said shaft, said temperature sensitive means being sensitive to a rise in temperature associated with said bridge diode rectifier for actuating said controlling means, and controlling the engagement of said friction clutch means to drive the fan means in rotation with said shaft when the temperature detected on the bridge diode rectifier corresponds to a temperature in excess of said characteristic normal operating temperature of the alternator.

4,564,776

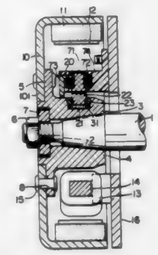
MAGNETO DEVICE FOR GENERATING SIGNALS

Tosio Tomite, Katsuta; Nobuhiko Ogasawara, Mito; Kaniti Isii, and Hisanobu Kanamaru, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 45,971, Jun. 6, 1979, Pat. No. 4,403,402. This application Jun. 22, 1983, Ser. No. 506,868

Int. Cl.⁴ H02K *11/00*

U.S. Cl. 310—70 R **7 Claims**



1. A magneto device for generating signals, the magneto device comprising a pole piece assembly secured to a soft steel rotary body and including a permanent magnet and a pole piece block, and a stationary signal output coil cooperative with said pole piece assembly, a recess formed in said rotary body at a position where said pole piece assembly is firmly held in said rotary body, said recess being dimensioned so as to accommodate said permanent magnet and pole piece block therein in this order while leaving an annular space between a wall of said recess and said permanent magnet and pole piece block, and a key means made of a non-magnetic metal keyed in said annular space by pressing for securing said pole piece assembly to said rotary body.

4,564,777

REINFORCED PERMANENT MAGNET ROTOR WITH CAST ZINC

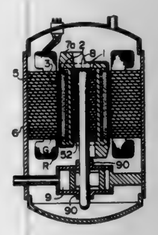
Masaharu Senoo, Narashino; Keizi Noma, Funabashi; Akira Saruta, Chiba; Masanori Yoshizaki, Yachiyo; Koichi Teshirogi, Narashino, and Kouei Yaegashi, Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 24, 1984, Ser. No. 603,430

Claims priority, application Japan, Apr. 27, 1983, 58-72832; Mar. 2, 1984, 59-38509

Int. Cl.⁴ H02K *21/12*

U.S. Cl. 310—156 **9 Claims**



1. A rotor comprising a cylindrical rotor core, plural permanent magnets arranged on the outer periphery of said rotor core, a protective cover on the outer periphery of said permanent magents, said rotor core including an axial through hole, and end rings which are positioned on both ends of said through hole of the rotor core and are integrally cast by molten metal of zinc said end rings including a balance weight, said protective cover covering at least a portion of the outer periphery of said end rings.

4,564,778

DC BRUSHLESS ELECTROMAGNETIC ROTARY MACHINE

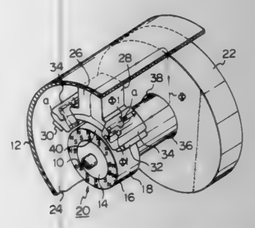
Makoto Yoshida, Machida, Japan, assignor to Aupac Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1984, Ser. No. 590,285

Claims priority, application Japan, Mar. 31, 1983, 58-55561

Int. Cl.⁴ H02K *23/00*

U.S. Cl. 310—177 **17 Claims**



1. A dc electromagnetic rotary machine comprising:

permanent magnet means for producing magnetic flux, said permanent magnet means having a generally circular hollow shape which has outer and inner cylindrical surface portions, said outer cylindrical surface portion being magnetized in one magnetic polarity and the inner cylindrical surface portion being magnetized in the other magnetic polarity opposite to the one polarity;

rotor shaft means for fixedly carrying said permanent magnet means thereon;

casing means including a magnetically permeable substance for rotatably supporting said rotor shaft means;

armature core means fixedly supported by said casing means so as to face substantially the one surface portion of said permanent magnet means for permeating the magnetic flux therethrough;

coil means supported by said armature core means for conducting current therethrough, a portion of said coil means being positioned in a gap formed between said armature core means and said permanent magnet means; and

magnetic-path forming means extending from said casing means toward said rotor shaft means for bridging the magnetic flux between said casing means and said permanent magnet means;

whereby the current flowing over said coil means causes the magnetic flux emanating from said permanent magnet means to be turned partially.

4,564,779

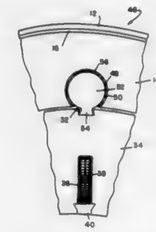
DYNAMOELECTRIC MACHINE STATOR USING CYLINDRICAL KEYBARS

Vincent G. Terry, Jr., Beverly, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Sep. 14, 1984, Ser. No. 650,392

Int. Cl.⁴ H02K *1/12*

U.S. Cl. 310—258 **2 Claims**



1. Apparatus for a stator of a dynamoelectric machine comprising;

a plurality of parallel annular web plates;

a plurality of circular holes equally chordally spaced apart in an inner edge of each of said annular web plates, an axis of said circular holes being parallel to an axis of said stator;

a perimeter of each of said circular holes being broken at an inner perimeter of its respective annular web plate to form an opening;

corresponding ones of said circular holes in each of said annular web plates being axially aligned to form a plurality of sets of axially aligned circular holes;

a plurality of keybars equal in number to said plurality of circular holes;

each of said keybars including a cylindrical portion and a dovetail portion;

said cylindrical portion being accurately fittable into one of said sets of axially aligned circular holes;

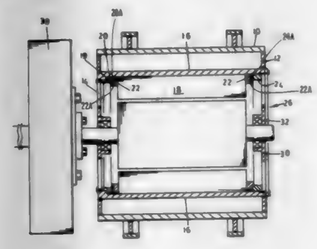
said dovetail portion of each of said keybars being radially extendable through said opening toward a center of said stator; and

at least one weld bead at an interface between each of said circular holes and its keybar cylindrical portion whereby said keybars are rigidly affixed to said annular web plates.

4,564,780
ELECTRICAL MACHINE HAVING A QUICKLY RELEASABLE STATOR

Gert Nel, Transvaal, South Africa, assignor to Eastway Holdings Limited, Middlesex, England

Filed Mar. 13, 1984, Ser. No. 589,002
Claims priority, application South Africa, Mar. 14, 1983, 83/1722
Int. Cl.[4] H02K *15/02, 15/16*
U.S. Cl. 310—258 8 Claims

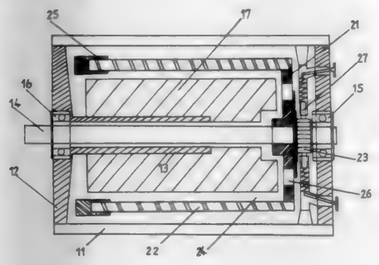


1. An electrical machine comprising a casing, a rotor mounted within the casing, and a stator disposed coaxially around the rotor, the stator being axially slidable into and from said casing, annularly arranged chamfered contact surface means on axial ends of the stator and facing in opposite directions, annularly arranged chamfered locating surface means disposed within the casing in axially spaced relationship and arranged to engage and sandwich the contact surface means therebetween, and an end plate securable to an end of the casing for axially clamping said chamfered contact and locating surface means together, said end-plate being releasable to allow unclamping of said chamfered contact and locating surface means to enable the stator to be removed axially from the casing.

4,564,781
ELECTRICAL BELL TYPE MOTOR

Richard E. Arnegger, Rietlirain, 8713 Uerikon, Switzerland

Continuation-in-part of Ser. No. 402,837, Jul. 29, 1982, abandoned. This application Jun. 26, 1984, Ser. No. 624,839
Claims priority, application Switzerland, Aug. 7, 1981, 5088/81
Int. Cl.[4] H02K *1/22*
U.S. Cl. 310—261 3 Claims

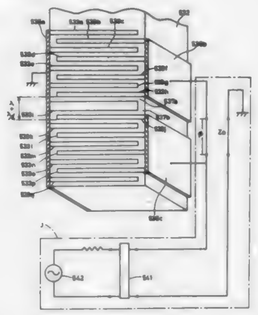


1. Electrical bell type motor for driving a surgical hand tool, with a stator comprising a magnet having the shape of a circular cylinder and a rotor, which comprises a wire coil of lacquered wire forming a hollow circular cylinder, and a rotor carrier plate carrying the wire coil and being fixed to a rotatable shaft, in which the wire coil with one of its ends is firmly mounted onto the rotor carrier plate and the other end is self-supporting, wherein the rotor carrier plate consists of a very thin disc of antimagnetic stainless steel and in which the rotor carrier plate together with the wire coil exposed at least twice to a temperature between 130° and 170° C. in dry condition and at least twice at a temperature between 130° and 160° C. in a wet surrounding, preferably in steam and a ring shaped cover of U-shaped cross-section is arranged over the other end of the wire coil which cover is made of antimagnetic stainless steel.

4,564,782
CERAMIC FILTER USING MULTIPLE THIN PIEZOELECTRIC LAYERS

Toshio Ogawa, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 29, 1984, Ser. No. 645,301
Claims priority, application Japan, Sep. 2, 1983, 58-162423; Sep. 9, 1983, 58-167201; Sep. 16, 1983, 58-171831; Sep. 27, 1983, 58-179676; Sep. 29, 1983, 58-182473; Dec. 7, 1983, 58-232163; Jan. 9, 1984, 59-2362; Jan. 17, 1984, 59-6854; Mar. 26, 1984, 59-43595; Mar. 28, 1984, 59-61710
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—359 23 Claims

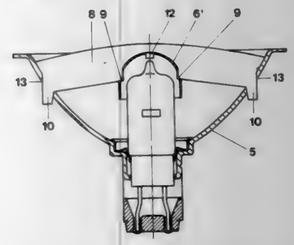


1. A ceramic filter comprising:
a multi-layered piezoelectric ceramic body including a plurality of stacked ceramic sheets, said ceramic body having a thickness extending through said plurality of stacked sheets and first and second opposite ends separated along said thickness, said ceramic being polarized in one direction along a direction corresponding to said thickness;
bulk wave eliminating means for eliminating bulk waves which produce spurious vibrations other than utilizable bulk waves located at, at least one of said first and second ends of said ceramic;
an input electrode group including a plurality of internal input electrodes, at least one electrode being formed on each sheet of a selected group of said sheets lying adjacent said first end of said ceramic body, adjacent ones of said input electrodes overlapping each other along said thickness of said ceramic body;
an output electrode group including a plurality of internal output electrodes, at least one electrode being formed on each sheet of a selected group of said sheets lying adjacent said second end of said ceramic body, adjacent ones of said output electrodes overlapping each other along said thickness of said ceramic body, said input and output groups overlapping each other along said thickness and being spaced a predetermined distance apart, alternate internal electrodes which follow one another in each said input and output electrode groups being led out to respective first and second lateral sides of said piezoelectric ceramic;
a first pair of external electrodes having first and second external contacts for contacting, respectively, said input internal electrodes which are led out at said first and second lateral sides, and a second pair of external electrodes having first and second external contacts for contacting, respectively, said output internal electrodes which are led out at said first and second sides; and
means for applying a voltage to at least one of said input electrodes and producing an output at said output electrode group in response to vibrations which propagate from said input group to said output group.

4,564,783
HALOGEN INCANDESCENT LAMP-AND-REFLECTOR UNIT

Rudolf Krieg, Munich, and Friedrich Ziegler, Wolfratshausen, both of Fed. Rep. of Germany, assignors to Patent-Treuhand Gesellschaft für Elektrische Glühlampen GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,422
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1982, 8219740[U]
Int. Cl.[4] H01K *1/26*
U.S. Cl. 313—113 4 Claims

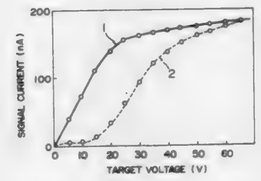


1. Halogen incandescent lamp and reflector unit having
a generally cup-shaped metal reflector (5) having a base and a rim at the open end thereof;
a halogen incandescent lamp bulb (4) secured and mounted in the reflector through the base of reflector;
and a shielding cap (6') covering the tip of the bulb to prevent direct radiation from the lamp, the improvement comprising
means for reliably and permanently holding the shielding cap in position with respect to the bulb (4) and the reflector (5) even upon application of twisting force and, selectively, of a pushing force about the lamp axis and, selectively, towards the lamp base applied to the shielding cap, said means consisting of
a holding strip (8) to which the cap (6') is secured, the holding strip being formed with a central cut-out having the outer shape of the cap (6'), the cap fitting into the cut-out and being engaged by the region of the strip (8) surrounding the central cut-out,
said holding strip being in form of a flat sheet-metal element extending transversely of the reflector in form of a bridge, from a first end portion of the reflector to a diametrically located second end portion of the reflector to span said reflector,
said holding strip (8) being positioned in a plane parallel to the axis of the reflector;
the holding strip being formed with flaps (10) adjacent its end portions;
the reflector being formed with slits (13) adjacent the rim thereof matching said flaps, said flaps (10) of the holding strip being secured in said slits by twist deformation of the flaps after having been introduced through the slits of the reflector;
the cap (6') is formed with at least two slits (11, 11') in the region of engagement with the strip (8); and
at least a first and second projection (11, 11') is formed on the strip (8), extending from the strip, matching respective slits (11, 11') in the cap (6') and fitting through respective ones of said slits in the cap, at least a first one of the projections (12) securing the cap (6') in position by deformation of said at least first one projection after having been introduced through the respective slit (11), and a second projection (9) fitting through a matching other one of the slits (11') and retaining the cap in the cut-out of the strip (8) in non-rotatable and secure engagement against said central cut-out.

4,564,784
REDUCED DEGRADATION, HIGH RESOLUTION IMAGE PICKUP TUBE

Sachio Ishioka, Tokyo; Yoshinori Imamura, Kanagawa; Tadaaki Hirai, Koganei; Saburo Nobutoki, and Akio Maruyama, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,477
Claims priority, application Japan, Nov. 26, 1982, 57-206150
Int. Cl.[4] H01J *29/06, 29/56, 31/38*
U.S. Cl. 313—384 20 Claims

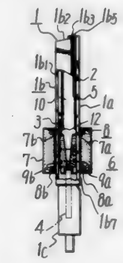


1. An image pickup tube comprising a target composed of a light-transmissible plate, a transparent electrode provided on said light-transmissible plate, and a photoconductor made of hydrogen-containing amorphous silicon provided on said transparent electrode; an electron beam generator; and a mesh electrode near the target, at least the surface of said mesh electrode being made of at least one member selected from the group consisting of beryllium, boron, carbon, magnesium, aluminum and silicon.

4,564,785
ENVELOPE STRUCTURE FOR FLAT CATHODE RAY TUBE

Hiroki Sato, Chiba; Takehisa Natori, Fujisawa, and Takao Nakano, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 322,269, Nov. 17, 1981, abandoned. This application May 2, 1984, Ser. No. 604,611
Claims priority, application Japan, Nov. 26, 1980, 55-168938
Int. Cl.[4] H01J *29/86*
U.S. Cl. 313—422 5 Claims



1. A flat type cathode ray tube, comprising, a flat envelope formed of a flat panel and a dish-shaped funnel, said glass

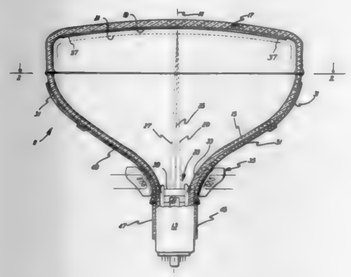
dish-shaped funnel formed with a flange portion about its periphery, a first deflection system composed of a back electrode and a phosphor screen which are both located within said envelope in opposing relation to each other, a neck portion coupled to said envelope, said neck portion extending in the surface direction of said flat envelope and having therein an electron gun, and a second deflection system formed of electro-static deflection plates which are so located that they oppose each other and mounted on opposite sides of a path of an electron beam emitted from said electron gun and mounted between said first deflection system and said electron gun, said flat envelope having a projecting portion which extends from the outer edge of said flange portion and said projecting portion being thinner than the body of said flange portion, and being the same material as said funnel and said projecting portion having surfaces which are offset from the surfaces of said flange portion which is sealed to said panel, wherein when said projecting portion is cut work stresses are not set up in said flange.

4,564,786

EXTERNAL NECK CHARGE DISSIPATION MEANS FOR AN IN-LINE COLOR CATHODE RAY TUBE

Steven A. Baum, Seneca Falls; Anthony V. Gallaro, Auburn; Frederick A. Hovey, Geneva; Charles H. Rehkopf, and William J. Sember, both of Seneca Falls, all of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Mar. 19, 1984, Ser. No. 591,079
Int. Cl.⁴ H01J *29/88*
U.S. Cl. 313—479 **6 Claims**



1. An improvement in an in-line color cathode ray tube having an envelope formed of an intergration of a forwardly oriented viewing panel portion, an intermediate funnel portion, and a rearward neck portion, a cathodoluminescent screen of a plurality of phosphor elements disposed on the interior surface of the viewing panel, an aperture mask positioned adjacent the screen, an in-line plural beam electron gun assembly, said assembly embodying three electron-generating cathodes and a plurality of electrodes, including a beam forming electrode, an initial accelerating electrode, a final focusing electrode and a final accelerating electrode, each of said electrodes having a center and two side apertures, said gun assembly positioned in said neck portion in a manner to project said beams to pass through the mask and converge upon the screen, an external electrically conductive coating disposed on said funnel portion, and a deflection yoke oriented to surround the envelope at substantially the transition area between the funnel and neck portions, to provide magnetic fields for electron beam deflection,

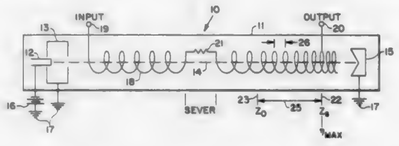
said improvement being external neck charge dissipation means comprising: at least one longitudinal stripe of conductive material disposed on the exterior surface of said neck portion over substantially the entire narrow side of the gun assembly; and electrical connective means joining said neck charge dissipation means with the external conductive coating; the electrical connective means comprising a single conductive strip located on the side of the tube corresponding to the low voltage side of the yoke, and having an electrical resistance of about 10^6 to 10^{10} ohms/-centimeter.

4,564,787

LINEARIZED TRAVELING WAVE AMPLIFIER WITH HARD LIMITER CHARACTERISTICS

Henry G. Kosmahl, Olmsted Falls, Ohio, assignor to The United States of America as respresented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 492,522, May 9, 1983, abandoned. This application Mar. 20, 1985, Ser. No. 714,051
Int. Cl.⁴ H01J *25/34*
U.S. Cl. 315—3.6 **7 Claims**



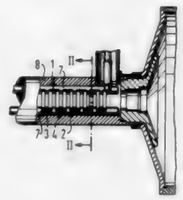
1. In a traveling wave tube (TWT) having a long axis, an output point Zs, an input point, a slow wave structure (SWS), comprised of repeating structural elements disposed along said long axis at least from said input to said output and including at least one sever between said input and said output, the improvement comprising a gradual reduction of the axial spacing of said repeating structural elements at an exponential rate from a point Z_o on the SWS at which efficiency is about 0.1% to said output point Z_s whereby the linearity and efficiency of the TWT are greatly increased by the dynamic velocity taper resulting from the gradual decrease of axial spacing of said repeating structural elements.

4,564,788

DELAY LINE FOR HIGH-PERFORMANCE TRAVELING-WAVE TUBES, IN THE FORM OF A TWO PART-TUNGSTEN AND MOLYBDENUM-RING RIBBON CONDUCTOR

Wolf Wiehler, Neubiberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,143
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1982, 3228529
Int. Cl.⁴ H01J *25/34*
U.S. Cl. 315—3.6 **6 Claims**



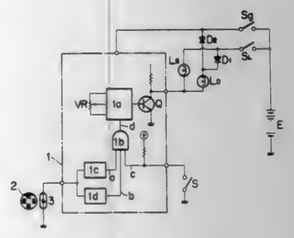
1. In a traveling-wave tube delay line for high-performance tubes having a massive vacuum-tight copper vacuum enclosure enclosing the delay line, the improvement comprising the delay line being disposed between an electron beam gun assembly and an electron beam collector, a plurality of support rods of a dielectric material extending parallel with the delay line for supporting the delay line, the delay line having two parts, the first part being adjacent the gun assembly end which is highly thermally stressed and consists essentially of tungsten and the second part being spaced away from the first gun assembly end and which is less thermally stressed and consists esentially of molybdenum.

4,564,789

DIMMER FOR USE WITH VEHICLE

Sadao Kokubu, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Jan. 26, 1984, Ser. No. 574,254
Claims priority, application Japan, Jan. 31, 1983, 58-12983
Int. Cl.⁴ B60Q *1/26*; B62D *45/00*
U.S. Cl. 315—79 **10 Claims**



1. A dimmer for use with a vehicle comprising

sensing means for sensing a vehicle speed to generate a first signal corresponding thereto;

vehicle speed detecting means for receiving said first signal and detecting a substantial vehicle speed which is within a predetermined range to generate a second signal;

circuit means for controlling a light source in accordance with said second signal from said vehicle speed detecting means; and

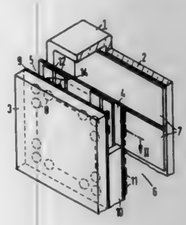
a logic circuit for producing an output to operate said circuit means.

4,564,790

FLAT ELECTRON BEAM TUBE HAVING A GAS DISCHARGE AS ELECTRON SOURCE

Werner Veith, Heidelberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,308
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222850
Int. Cl.⁴ H04N *3/16*; H05B *37/00*
U.S. Cl. 315—169.4 **7 Claims**



1. Flat electron beam tube comprising:

(a) a gas-filled enclosure defined by two mutually parallel plates, namely a front plate and a rear plate disposed one behind the other in viewing direction;

(b) said enclosure having an interior space subdivided by a control plate extending parallel to the planes of said front and said rear plates, into a front chamber defining a post-acceleration space, and a rear chamber defining a gas discharge space;

(c) said rear plate carrying at least one cathode on an inner side thereof, said cathode being a gas discharge cathode;

(d) said front plate carrying, on an inner side thereof, a luminescent layer excitable by electrons, and a post-acceleration anode;

(e) said control plate being formed with a plurality of regularly arranged electron inlet openings on a side thereof facing towards said gas discharge space;

(f) said control plate carrying on said side thereof facing towards said gas discharge space, a family of mutually parallel strip-shaped row conductors, via which an introduction of electrons into said electron inlet openings is controllable by an application of given voltages;

(g) said control plate being formed with a plurality of regularly arranged electron outlet openings on a side thereof facing towards said post-acceleration space;

(h) said control plate carrying on said side thereof facing towards said post-acceleration space, a family of mutually parallel, strip-shaped column conductors, extending perpendicularly to said row conductors and via which a discharge of electrons out of said electron outlet openings is controllable by an application of given voltages;

(i) said control plate being formed with through-outputs connecting said electron outlet openings with said electron inlet openings so as to form passages for electrons from said gas discharge space;

(j) said row conductors being connected to a first voltage source which, when one of said row conductors is addressed, delivers a more positive potential relative to the potential of said gas discharge cathode in a manner that an electron-supplying gas discharge burns between the gas discharge cathode and the addressed row conductors;

(k) said column conductors being connected to a second voltage source which, during the time wherein a given row conductor is addressed, supplies corresponding signal voltages;

(l) said post-acceleration anode being connected to a third voltage source applying a positive potential to said post-acceleration anode which is so high that the electrons traveling from said gas discharge into said post-acceleration space are accelerated to several kV and finally strike said luminescent layer;

(m) mutually associated electron inlet openings and electron outlet openings being disposed in non-overlapping relationship in a direction perpendicular to the plane of said front and said rear plates; and

(n) said second voltage source applying a potential to said column conductors which is always lower than that of said row conductor being then addressed.

4,564,791

OPERATORS FOR SLIDING GATES

Joseph L. Brickner, 3046 Skywood, Orange, Calif. 92665

Filed Sep. 16, 1983, Ser. No. 532,905
Int. Cl.⁴ H04Q *7/02*; H02P *1/44*
U.S. Cl. 318—16 **3 Claims**

1. A gate operator, comprising:

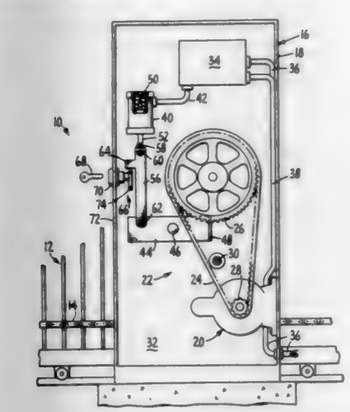
a gate drive motor;

a shaft speed reducer comprising a gear coupled to said motor;

a detent for engaging the teeth of said gear and thus preventing rotation of said gear and movement of said gate;

solenoid means for withdrawing said detent from said teeth against the urging of a return spring;

solenoid energizing means for energizing said solenoid when said motor is energized; and



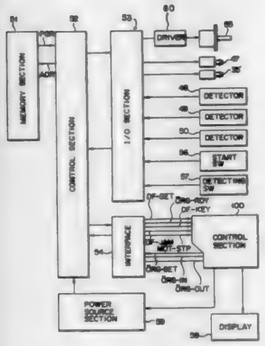
cam means for selectively withdrawing said detent from said teeth against the urging of said return spring.

4,564,792

DOCUMENT FEEDER

Yukihiro Fukushi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 20, 1983, Ser. No. 563,443
Claims priority, application Japan, Dec. 22, 1982, 57-225223
Int. Cl.⁴ H02K *29/02*
U.S. Cl. 318—254 **10 Claims**



1. A document feeder comprising:

a brushless motor including a stator provided with plural slots into which plural wingings are provided, and a rotor provided with a permanent magnet;

document conveying means which is driven by said brushless motor, to convey documents;

rotation detecting means, disposed on said brushless motor, to generate at least one signal which accurately corresponds to the amount of rotation of said brushless motor;

drive means for driving said brushless motor in response to output signals of said rotation detecting means; and

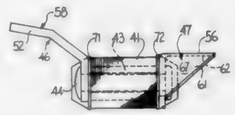
control means for determining the amount of movement of the document from the output signals of said rotation detecting means and determining the stop timing of said brushless motor after said document has been moved a predetermined distance.

4,564,793

BRUSHLESS DC MOTOR WITH IMPROVED STARTING

James Reffelt, Shokan, N.Y., assignor to Rotron, Incorporated, Woodstock, N.Y.

Filed Sep. 28, 1983, Ser. No. 536,885
Int. Cl.⁴ H02K *37/00*
U.S. Cl. 318—254 **12 Claims**



1. A DC motor comprising:

a rotor with an annular permanent magnet defining magnetic segments oppositely polarized in the radial outward direction, wherein said segments are arranged circumferentially about the magnet;

a stator having electromagnet structure outside said annular magnet, said structure including coil means for establishing magnetic fields of opposite polarities to attract the oppositely polarized segments of and for applying continuous rotational torque to the annular magnet;

position detecting means for detecting the position of the rotor relative to the stator and for commutating electrical current to the coil means to repeatedly produce said opposite polarity fields and attract said segments in dependence on said relative positioning;

the electromagnet structure including a pair of pole pieces in flux conducting relation to the coil means;

a first of said pole pieces having a position with a face thereof facing an outer circumferential surface of the permanent magnet across a first air gap defined between the face and the permanent magnet; and

a second of said pole pieces having an edge surface thereof facing generally towards the outer circumferential surface across a second air gap defined between the edge surface and the permanent magnet;

the first pole piece that faces the permanent magnet outer face circumference being broader in the axial direction than the edge of the second pole piece that faces generally towards the outer circumferential surface.

4,564,794

PHASE LOCKED LOOP AND A MOTOR CONTROL SERVO

Richard S. Kilen, Longmont, and Larry E. Rittenhouse, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1985, Ser. No. 737,003
Int. Cl.⁴ H02P *5/16;* **G05B** *5/00*
U.S. Cl. 318—314 **13 Claims**

1. A phase lock loop, comprising:

a high frequency clock (**21**),

a counter (**200**) driven by said clock,

a low frequency source (**22**) of a repeating input pulse (TACH),

a first data latch (**26**) controlled by said input pulse and operative to receive the numerical content of said counter upon the occurrence of each of said input pulses,

a reference number (REF) whose magnitude is indicative of the number of high frequency clock pulses which should occur between each pulse of said low frequency source,

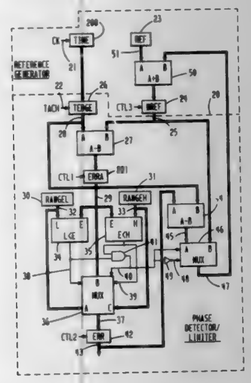
a second data latch (**24**) initially containing said reference number,

digital phase detector means (**27**) receiving as input the content of said first and second data latches, and providing an output signal (ERRA) indicative of the numeric difference which exists between these two inputs,

range defining means operable to generate a high magnitude number (RANGEH) defining an upper limit of numeric difference, and a low magnitude number (RANGEL) defining a lower limit of numeric difference,

testing means (**34, 36 and 35**) receiving said high and low limit numbers and the numeric difference output of said phase detector means,

said testing means generating an output number which is directly related to said numeric difference when said difference lies between the upper and lower limits which are defined by said high and low magnitude numbers, respectively,



and generating an output number which is directly related to the upper and lower limits, respectively, when said numeric difference is above or below the limits defined by said high and low magnitude numbers, respectively, and

reset means (**46** and **50**) responsive to said testing means determining that said numeric difference is above or below the limits defined by said high and low magnitude numbers, and operable in response thereto to reset the number content of said second data latch in a manner intended to bring said numeric difference within the range defined by said upper and lower limits upon the occurrence of a subsequent input pulse.

4,564,795

MOTOR SPEED CONTROL SYSTEM

Christopher W. Parkes, San Francisco, and Robert C. Franklin, Los Gatos, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 332,578, Dec. 21, 1981. This application Jan. 20, 1984, Ser. No. 572,134
Int. Cl.⁴ H12P *5/16;* **H02P** *5/36*
U.S. Cl. 318—314 **18 Claims**

1. In a motor speed control system having a first signal generating device for producing a digital feedback signal having a frequency indicative of the actual speed of the motor, and a second signal generating device for producing a digital reference signal having a frequency indicative of the desired speed of the motor, the improvement comprising:

(a) a phase comparator having first and second inputs and an output, one of said first or second inputs receiving one of said feedback signal or said reference signal and the other of said inputs receiving the other of said signals,

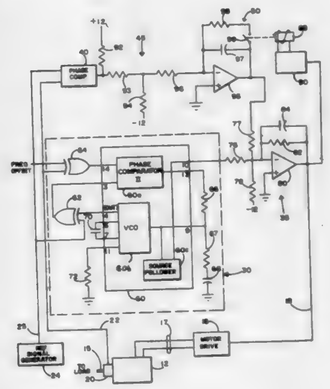
(b) a voltage controlled oscillator having an input and an output,

(c) means including low pass filter for connecting the output of the phase comparator to the input of the voltage controlled oscillator,

(d) means for connecting the first input of the phase comparator to receive said one of the feedback and reference signals,

(e) first digital signal combining means for combining the signal at the output of the voltage controlled oscillator with said other of the feedback and reference signals, said signal combining means having an output connected to the second input of the phase comparator,

(f) summing amplifier means having an input and an output, said input receiving an output signal from said low pass filter,



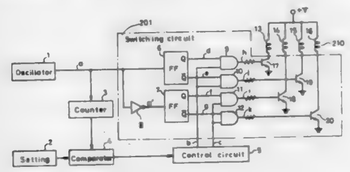
(g) whereby the signal at the output of the low pass filter comprises a speed difference signal that varies in accordance with the difference between the actual and desired speed of the motor and is substantially independent of the phase angle between the feedback and reference signals and said speed difference signal is linearly proportioned by said summing amplifier means to provide a speed control signal.

4,564,796

DRIVING CIRCUIT FOR A STEPPING MOTOR

Tsunemi Yoshino, Nara, and Akira Takashima, Osaka, both of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Jan. 31, 1984, Ser. No. 575,685
Claims priority, application Japan, Feb. 2, 1983, 58-16751
Int. Cl.⁴ H02P *8/00*
U.S. Cl. 318—696 **4 Claims**



1. A driving circuit for a stepping motor including a stator having plural magnetic pole pieces, each of said pole pieces including an excitation coil, said circuit comprising:

setting means for inputting a value including a desired rotational angle of a stepping motor,

means for producing a start signal,

oscillating means for producing a pulse train having a predetermined period,

counting means for counting pulses of said pulse train,

comparing means for comparing the count of said counting means with the value inputted by said setting means and

for issuing a stop signal when said count and said inputted value become equal to one other,

control means for producing a first control signal beginning when said start signal producing means produces said start signal and ending when said comparing means produces said stop signal and for producing a second control signal beginning when said start signal producing means produces said start signal and ending a predetermined time after said first control signal ends, and

switching means comprising a plurality of switching devices connected to respective excitation coils of said stepping motor, for operatively selectively exciting selected ones of said magnetic pole pieces in response to said first and second control signals and said pulse train, said switching means for applying excitation current to said excitation coils in a two-phase mode of operation of said stepping motor for the duration of said first control signal, and for applying excitation current to said excitation coils in a single phase mode of operation of said stepping motor from a first point of time when said first control signal ends to a second point of time when said second control signal ends, and for ceasing applying said excitation current after said second point of time.

4,564,797

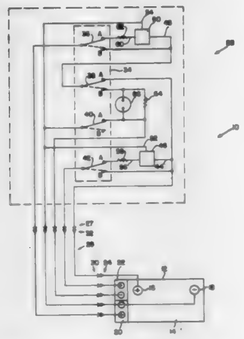
VEHICLE STORAGE BATTERY SYSTEM

Bruce I. Binkley, King County, Wash., assignor to Energy Exchange Systems, Seattle, Wash.

Continuation-in-part of Ser. No. 580,618, Feb. 16, 1984. This application Apr. 19, 1984, Ser. No. 602,139

Int. Cl.⁴ H02J *7/00, 7/14*

U.S. Cl. 320—2 **16 Claims**



1. A vehicle storage battery system, comprising:

a storage battery having three integrally manufactured separate storage battery portions, including a main battery portion having a capacity sufficient for starting the engine of a vehicle under normal circumstances, a first standby battery portion and a second standby battery portion, said first and second standby battery portions when connected in series having a combined nominal voltage which is greater than the voltage of said main battery portion, said nominal voltage of said first and second standby battery portions each being less than the nominal voltage of said main battery portion, said first and second standby battery portions having a rated capacity smaller than said main battery portion but sufficient to transfer enough charge to said main battery portion when in a discharged state to start the engine of the vehicle;

a battery control having a first circuit connecting said first and second standby battery portions in series for charging said main battery portion when in a discharged state, said first circuit including means for restricting a charging current flow from said standby battery portions to said main battery portion to a predetermined safe level, and a second circuit connecting said first and second standby battery portions in parallel for recharging said standby battery portions from said main battery portion, said second circuit including means for restricting a recharging current flow to said standby battery portions to a predetermined safe level; and

switch means for switching between said first and second circuits.

4,564,798

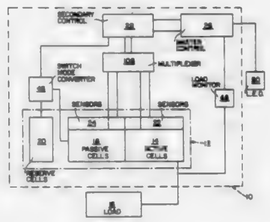
BATTERY PERFORMANCE CONTROL

James E. Young, Newton, Mass., assignor to Escutcheon Associates, Boston, Mass.

Filed Oct. 6, 1982, Ser. No. 433,049

Int. Cl.⁴ H02J *7/00*

U.S. Cl. 320—6 **83 Claims**



1. A system for controlling the operation under load of a battery including a plurality of cell-units, said system comprising:

a plurality of sensors adapted for connection to cell-units of said battery and arranged to sense the values of selected physical operating parameters of selected ones of said cell units;

switches for selectively connecting each of said cell-units to one of a source of power and a load, said cell-units connected to said load comprising an active partition and said cell-units not connected to said load comprising a passive partition; and,

a control attached to said sensors and said switches, said control being arranged to receive from said sensors data representative of sensed values of said selected physical operating parameters of selected ones of said cell-units and to switch cell-units from said active partition to said passive partition in response to said data and including means for

(i) storing data representative of predetermined acceptable values of said selected physical operating parameters,

(ii) comparing said data representative of predetermined acceptable values with said data representative of sensed values of said selected ones of said cell-units, and

(iii) causing said switches to disconnect a cell-unit in said active partition from said load and switch said cell-unit into said passive partition when the difference between said data representative of sensed values of said cell-unit and said data representative of said predetermined acceptable values is greater than a predetermined acceptable difference,

said control being arranged to receive data representative of the sensed values of at least two of the temperature, vapor pressure, capacity, pH, current and voltage of a cell-unit of said battery and to switch said cell-unit when a conjoint difference of said two differs from a predetermined standard by more than a predetermined amount.

4,564,799

TWO-BATTERY POWER SUPPLY SYSTEM FOR VEHICLES

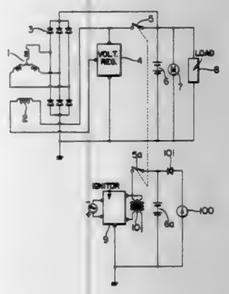
Yoshiyuki Iwaki, Himeji; Akio Matsumoto, and Mitsuyoshi Yokota, both of Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 18, 1983, Ser. No. 495,585

Claims priority, application Japan, May 25, 1982, 57-90132; May 25, 1982, 57-90133; May 25, 1982, 57-90134

Int. Cl.⁴ H02J *7/00, 7/14*

U.S. Cl. 320—6 **5 Claims**



1. In a two-battery power supply system for vehicles having a generator including an armature coil for generating three-phase alternating current, a field coil associated with the armature coil, a rectifier for converting an A. C. output of the armature coil into a direct current, and a voltage regulator for setting the generated voltage of the armature coil at a constant value by controlling a current flowing through the field coil, a first battery connected across output terminals of the generator, a starting motor and an electric load connected in parallel with the first battery, and an ignition device, the improvement comprising: a second battery connected to said ignition device and providing a power source to said ignition device isolated from said first battery, and means including a power source other than said generator for charging said second battery to provide a stable voltage to said ignition device independent of the voltage of said first battery.

4,564,800

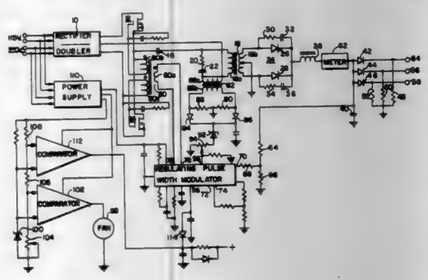
BATTERY CHARGER

Ojars Jurjans, Clementon, N.J., assignor to Jetronic Industries, Inc., Philadelphia, Pa.

Filed Jun. 1, 1984, Ser. No. 616,236

Int. Cl.⁴ H02J *7/04*

U.S. Cl. 320—36 **7 Claims**



1. A battery charger comprising:

means for developing a d-c voltage from an a-c line voltage;

switching means, including a first transformer and a pair of field effect transistors connected in a half-bridge configuration, for chopping said d-c voltage to produce a pair of identical time displaced pulse trains having a variable duty cycle and a frequency substantially higher than the frequency of said a-c line voltage, a first secondary winding of said first transformer connected between the gate and source of one of said field effect transistors and a second secondary winding of said first transformer connected between the gate and source of the other of said field effect transistors;

a step-down transformer for converting said pulse trains from high-voltage low-current pulse trains to low-voltage high-current pulse trains;

rectifying means responsive to said lowvoltage high-current pulse trains for developing an output d-c voltage and a d-c charging current;

output means for coupling said d-c charging current to a battery which is to be charged;

means for supplying an output voltage reference signal representative of a predetermined output volage;

means for supplying an overload voltage reference signal representative of an excessive overload caused by a battery which is to be charged;

and control means connected to a primary winding of said first transformer and (1) responsive to said output voltage and said output voltage reference signal for controlling said transistors to vary said duty cycle of said pulse trains to reduce differences between said output voltage and said predetermined output voltage, and (2) responsive to a sampling signal representative of current flow through a primary winding of said step-down transformer and said overload reference signal for controlling said transistors to reduce said duty cycle of said pulse trains to a predetermined minimum when said current flow through said primary winding of said step-down transformer rises in response to an overload which exceeds said excessive overload represented by said overload reference signal, said control means including a third transformer having a primary winding connected in series with said primary winding of said step-down transformer and a secondary winding for developing said sampling signal representative of current flow through said primary winding of said step-down transformer.

4,564,801

SEMICONDUCTOR MOUNTED ON A YOKE IN HEAT TRANSFER RELATIONSHIP

David Kirby, Emmaus, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.

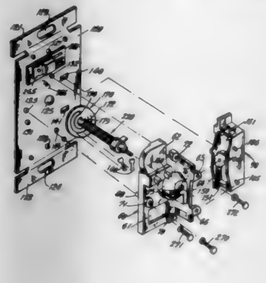
Division of Ser. No. 525,129, Aug. 22, 1983, Pat. No. 4,520,306. This application Apr. 29, 1985, Ser. No. 728,338

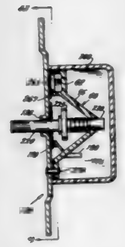
Int. Cl.⁴ H05B *39/04*

U.S. Cl. 323—324 **7 Claims**

1. A voltage control switch having a generally flat conductive yoke plate, a power semiconductor device having main power terminals and a control terminal and having an electrically active conductive heat sink, an insulation housing having an integral cavity for receiving said power semiconductor device with the surface of said heat sink facing outwardly of said housing, a thin electrically insulating member disposed on said yoke and disposed between and electrically insulating said yoke and said heat sink surface, and at least one conductive fastener connected to said yoke and to said insulation housing

for fixing said housing to said yoke and for pressing said power semiconductor device into firm engagement with said thin





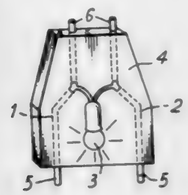
insulating member and into good thermal contact with said yoke.

4,564,802

TEST DEVICE FOR FUSES AND BATTERIES

George G. Collins, P.O. Box 1396, Medina, Tex. 78055

Filed Jul. 15, 1983, Ser. No. 514,103
Int. Cl.[4] G01R *31/00*
U.S. Cl. 324—51 4 Claims



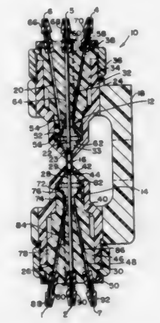
1. A test device comprising a translucent body, an electric bulb in said body adapted to be visible from outside said body upon illumination, and first and second pairs of terminals of electrically conductive material connected to said bulb and projecting at least slightly outwardly of said body, said first pair of terminals spaced apart from 9 to 13 mm, said second pair of terminals spaced apart from 22 to 28 mm, said second pair of terminals projecting from a selected portion of said body opposite to said first pair of terminals.

4,564,803

METHOD AND APPARATUS FOR REMOVING FOREIGN MATTER FROM A FLOW CELL OF A PARTICLE STUDY DEVICE

Mark Loren, Miami Beach, and Raul I. Pedroso, Miami, both of Fla., assignors to Coulter Corporation, Hialeah, Fla.

Filed Aug. 29, 1983, Ser. No. 527,455
Int. Cl.[4] G01N *27/00*
U.S. Cl. 324—71.1 34 Claims



1. A method of removing gas bubbles from a flow cell of a particle study device, said flow cell comprising: at least one chamber, said chamber having a first and a second orifice; a particle introduction means disposed within said chamber, said particle introduction means having an outlet; an aperture means having an aperture, said aperture means being connected to said chamber; a flow path located between said outlet and said aperture; particles in suspension being capable of passing through said aperture and through said flow path for particle study; said method comprising:

injecting a particle free liquid through said first orifice of said chamber, to form a turbulent flow of particle free liquid within said chamber in and near said flow path, and

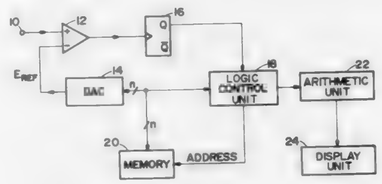
exhausting said turbulent flow of particle free liquid through said second orifice of said chamber, at a point near said flow path.

4,564,804

METHOD AND APPARATUS FOR AUTOMATICALLY DETECTING SIGNAL LEVELS

William G. Wilke, Beaverton, and Michael G. Reiney, Tigard, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 8, 1981, Ser. No. 271,496
Int. Cl.[4] G01R *19/16, 19/00*
U.S. Cl. 324—103 P 15 Claims



1. A method for automatically detecting peak values of an applied unknown electrical signal, comprising:

generating multiple-bit digital signals;

converting said digital signals to analog values thereby to generate a plurality of reference voltage levels;

comparing said reference voltage levels with said unknown applied signals and generating detection signals in response to matches of instantaneous values of said unknown applied signals and said reference voltage levels, wherein said reference voltage levels are held for a predetermined time interval if no said matches occur;

storing said detection signals in storage register means; and

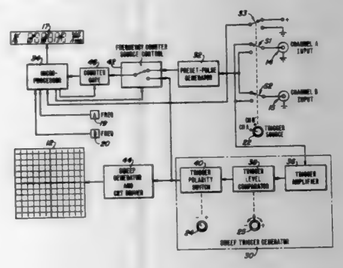
changing said digital signals one bit at a time in order from most significant bit to least bit responsive to the contents of said storage register means thereby to produce a digital signal which corresponds to the detected peak value of said unknown electrical signal.

4,564,805

OSCILLOSCOPE WITH INTEGRATED FREQUENCY COUNTER AND METHOD OF MEASURING FREQUENCY

Robert A. Winter, Sioux Falls, S. Dak., assignor to Sencore, Inc., Sioux Falls, S. Dak.

Continuation of Ser. No. 391,002, Jun. 23, 1982, abandoned.
This application Aug. 29, 1984, Ser. No. 645,307
Int. Cl.[4] G01R *13/22*
U.S. Cl. 324—121 R 5 Claims



5. A method of measuring the frequency of a cyclical recurring portion of the waveform of an input signal, comprising the steps of

applying said input signal to a first input of a trigger pulse generator having adjustable slope and polarity controls,

synchronizing the display on an oscilloscope with said trigger pulses generated by said trigger pulse generator,

adjusting said controls while observing the waveform of said input signal on said oscilloscope to select the portion of said input signal in synchronism with which said generator generates said trigger pulses,

applying said trigger pulses to a frequency counter to measure the frequency of said trigger pulses, and displaying a digital representation of the frequency

at which said trigger pulses occur.

4,564,806

TAUT BAND INSTRUMENT HAVING ACCURATE TAUT BAND POSITIONING MEANS

Hideo Kaise, Ueda, Japan, assignor to Kaise Denki Kabushiki Kaisha, Naganoken, Japan

Filed Nov. 30, 1982, Ser. No. 445,504
Claims priority, application Japan, Apr. 23, 1982, 57-69288; Apr. 23, 1982, 57-69289; Jun. 15, 1982, 57-102686
Int. Cl.[4] G01R *1/08, 5/02*
U.S. Cl. 324—154 PB 2 Claims

1. A taut band instrument, comprising:

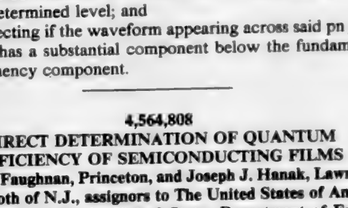
a moving means including a moving coil mounted on a frame means,

a first boss means for supporting an upper portion of said moving coil and having a center hole therein forming an inner wall of said first boss means;

a second boss means for supporting a lower portion of said moving coil and having a center hole therein forming an inner wall of said second boss means;

first and second taut bands for hanging said moving means and being positioned in said center holes of said first and second boss means, respectively; and

at least one of said boss means including a first channel at the bottom thereof for holding said moving means, a second channel being in communication with said first channel



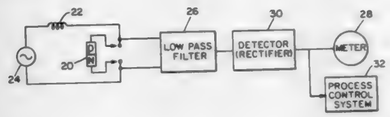
whereby one end of said taut band is fixed within said second channel, and a projection formed in a portion of said inner wall of said boss means projecting into said center hole, said taut band being accurately positioned within said center hole of said boss means by being positioned in contact with said projection.

4,564,807

METHOD OF JUDGING CARRIER LIFETIME IN SEMICONDUCTOR DEVICES

Hiroyuki Ikezi, San Diego, and Richard L. Freeman, Del Mar, both of Calif., assignors to GA Technologies Inc., San Diego, Calif.

Filed Mar. 27, 1984, Ser. No. 593,801
Int. Cl.[4] G01R *31/26*
U.S. Cl. 324—158 D 10 Claims



9. A method for judging carrier lifetime in a pn junction of a semiconductor device comprising the steps of:

(a) determining the capacitance of a reversely biased pn junction in a semiconductor which is representative of semiconductors in a group of semiconductors to be tested;

(b) coupling an oscillator to the series combination of an inductor and a pn junction of the device to be tested;

(c) causing said oscillator to apply a voltage the frequency of which is slightly above the resonant frequency of said series combination and which has an amplitude above a predetermined level; and

(d) detecting if the waveform appearing across said pn junction has a substantial component below the fundamental frequency component.

4,564,808

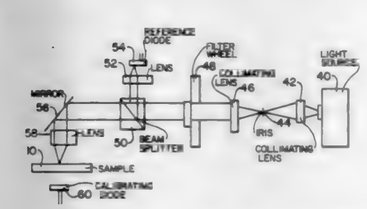
DIRECT DETERMINATION OF QUANTUM EFFICIENCY OF SEMICONDUCTING FILMS

Brian W. Faughnan, Princeton, and Joseph J. Hanak, Lawrenceville, both of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 11, 1983, Ser. No. 474,384
Int. Cl.[4] G01R *31/26*
U.S. Cl. 324—158 R 11 Claims

1. A method for determining the quantum efficiency QE(λ) of a single layer semiconductor sample of substantially a single conductive type, have first and second opposed surfaces, wherein the method is independent of built-in photovoltage, comprising the steps of:

forming, with a first at least partially transparent electrode, a Schottky barrier with at least one of said first and second surfaces of said semiconductor sample;
forming with a second electrode, an electrical connection with the other of said first and said second opposed surfaces of said semiconductor sample;
connecting between said first and second electrodes an external source of bias voltage;
further connecting between said first and said second electrodes, a means for measuring a sample photocurrent $J_s(\lambda)$ in said semiconductor sample;
positioning adjacent said semiconductor sample, a calibrated photocurrent generator having known values of quantum efficiency $QE_c(\lambda)$ for each corresponding calibrated photocurrent $J_c(\lambda)$ generated in said calibrated photocurrent generator in response to illumination thereof by radiant energy having a wavelength λ;



illuminating both said semiconductor sample through said first electrode and said calibrated photocurrent generator under identical light conditions with the same radiant energy, so as to generate photocurrents in said semiconductor sample and said calibrated photocurrent generator;
inducing a voltage across said semiconductor sample with said external source of bias voltage so as to collect said sample photocurrent at said first and second electrodes;
measuring said generated sample photocurrent $J_s(\lambda)$;
measuring said calibrated photocurrent $J_c(\lambda)$;
determining quantum efficiency of the sample, $QE_s(\lambda)$, according to the following relationship:

$$QE_s(\lambda) = \frac{J_s(\lambda)}{J_c(\lambda)} \cdot QE_c(\lambda)$$

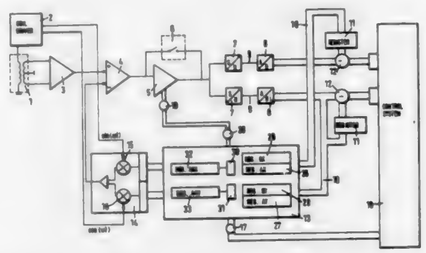
4,564,809

EDDY CURRENT TEST METHOD WITH DEGREE OF AMPLIFICATION SELECTED IN ACCORDANCE WITH A COMPENSATION SIGNAL

Gerhard Hüschelrath, Laufach-Frohnhofen; Klaus Abend, Bü dingen, and Ursula Orthen, Hanau, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Filed Jun. 22, 1982, Ser. No. 390,964
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125732
Int. Cl.⁴ G01N *27/90*; G01R *33/12*
U.S. Cl. 324—225 **4 Claims**

1. In a workpiece testing system wherein a coil generating an alternating magnetic field is moved with respect to a workpiece so as to induce eddy currents therein which eddy currents produce a secondary field which induces a potential in said coil or in a tracer coil, a method for testing said workpiece comprising the steps of:
deriving a reference signal from said secondary field by positioning the coil above a place on said workpiece that is substantially defect free;
superimposing on said reference signal an error correcting signal to cancel any unbalance that may exist due to interfering signals associated with measuring equipment;
generating, in response to said superimposed signal, a compensating signal;
testing the workpiece by moving said coil relative thereto and providing a testing signal derived from said secondary field;



superimposing said compensation signal on said testing signal; and
amplifying said superimposed signals with an amplifier, the degree of amplification of said amplifier being selected in accordance with the level of said superimposed signals to amplify within the dynamic range of the amplifier.

4,564,810

ALUMINUM CLADDING THICKNESS MEASUREMENT PROBE AND INSTRUMENT HAVING AN AUTOMATIC CALIBRATION AND READOUT CIRCUIT COUPLED TO A DIFFERENTIAL AMPLIFIER CIRCUIT

Glenn A. Geithman, Renton, and Albert W. Chau, Redmond, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 307,037, Sep. 30, 1981. This application Sep. 8, 1983, Ser. No. 530,447
Int. Cl.⁴ G01B *7/10*; G01R *33/12, 35/00*; G01N *27/72*
U.S. Cl. 324—230 **2 Claims**



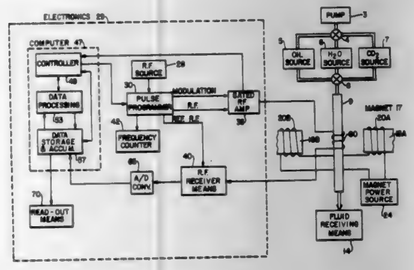
1. A cladding thickness measuring signal processing circuit comprising in combination:
a power supply circuit coupled to a voltage regulator circuit;
a low distortion, frequency stable 1.26 MHz oscillator circuit having amplitude feedback for providing amplitude stability;
a power splitter circuit coupled between said voltage regulator circuit and said low distortion, frequency stable oscillator circuit;
a bridge circuit including a test probe input terminal;
a buffer and driver circuit coupled between said low distortion, frequency stable oscillator circuit and said bridge circuit;
a differential amplifier circuit;
a detector circuit having peak detectors with thermo-tracking, said detector circuit coupled between said differential amplifier circuit and said bridge circuit; and,
an automatic calibration and readout circuit coupled to said differential amplifier circuit.

4,564,811

RF CORE ANALYZING MEANS AND METHOD

Robert N. Walker, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,430
Int. Cl.⁴ G01R *33/08*
U.S. Cl. 324—307 **13 Claims**



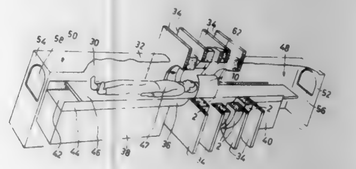
1. A core analyzer comprising:
test cell means for containing a core of earthen material, said core having a length suitable for monitoring of fluid moving through the core;
means for providing at least two fluids to the test cell means in such a manner that a first fluid fills the core in the test cell means and a second fluid displaces at least a portion of the first fluid, and
means for using nuclear magnetic resonance to monitor the saturation of the core with the first fluid and to monitor the displacing movement of the second fluid.

4,564,812

NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY APPARATUS INCLUDING A FARADAY CAGE

Pieter Van Dijk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,807
Claims priority, application Netherlands, Sep. 20, 1982, 8203621
Int. Cl.⁴ G01R *33/08*
U.S. Cl. 324—309 **16 Claims**



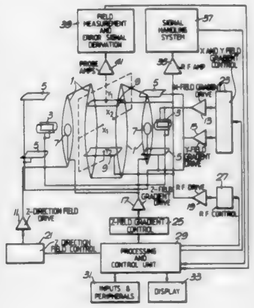
1. A nuclear magnetic resonance tomography apparatus comprising
first coil means for generating a steady main magnetic field and a quasi-steady gradient field, said first coil means being arranged around an examination space for an object to be examined,
second coil means including a coil circuit for generating an RF magnetic field, said second coil means being located within said first coil means,
measurement means for detecting nuclear magnetic resonance signals generated by said object, and
Faraday cage means for electromagnetically shielding said examination space, said Faraday cage means increasing the Q factor of said coil circuit, and said Faraday cage means being arranged between said first coil means and said second coil means,
wherein said Faraday cage means consist mainly of a metal gauze cylinder arranged at least substantially against the inner side of said first coil means,
wherein said Faraday cage means includes an extension at least at one axial end of said first and second coil means,
wherein said extension extending beyond said first and second coil means in the axial direction has a substantially larger transverse dimension than a portion situated within said first and second coils means,
wherein said Faraday cage means consists mainly of a metal gauze having an optical transmission of at least approximately 50%,
wherein said Faraday cage means at least completely surrounds said examination space for a displaceable portion of an object carrier, and
wherein said second coil means is provided on the inner side of the coil circuit with comb-shaped short-circuits for electrical fields generated by current-carrying wires of said second coil means.

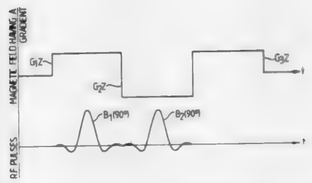
4,564,813

NUCLEAR MAGNETIC RESONANCE METHOD AND APPARATUS

Ian R. Young, Sunbury-on-Thames, and David R. Bailes, London, both of England, assignors to Picker International, Ltd., Wembley, England

Filed Oct. 27, 1983, Ser. No. 545,964
Claims priority, application United Kingdom, Nov. 10, 1982, 8232144
Int. Cl.⁴ G01R *33/22*
U.S. Cl. 324—311 **9 Claims**





1. A method of obtaining a representation of the spatial distribution of a quantity relating to nuclear magnetic resonance in a selected slice of a larger body, wherein rotation of the spins of a chosen nucleus within the selected slice, about an

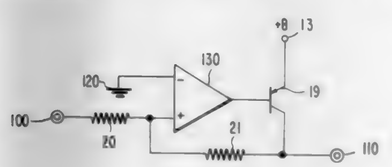
axis perpendicular to the equilibrium axis of magnetic alignment of the spins, is effected through an angle appreciably greater than 90° by applying in sequence two r.f. pulses, each accompanied by a magnetic field oriented in a direction parallel to said equilibrium axis and having a gradient in a direction orthogonal to the plane of said slice, each r.f. pulse being at the Larmor frequency for said nuclei in said slice in the presence of the associated field gradient, and each r.f. pulse being effective to rotate said spins by not greater than 90°, said pulses together being sufficient to rotate the spins through said appreciably greater than 90° angle, and the gradients of said magnetic fields being in opposite directions.

4,564,814

FULL-WAVE RECTIFIER USING AN OPERATIONAL AMPLIFIER

Masami Miura, and Takeshi Kuwajima, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,173
Claims priority, application Japan, Oct. 20, 1981, 56-167635
Int. Cl.⁴ H03K *5/00*
U.S. Cl. 328—26 **16 Claims**



1. A full-wave rectifier, comprising:
an input terminal;
a reference terminal held at a reference voltage;
a voltage terminal held at a voltage which is higher in absolute value than said reference voltage;
an amplifier having an inverting input connected to said reference terminal, a non-inverting input and an output;
a first resistor inserted between said input terminal and said non-inverting input of said amplifier;
a transistor having a base coupled to said output of said amplifier, and also having an emitter coupled to said voltage terminal and a collector;
a second resistor having one end coupled to said non-inverting input of said amplifier and the other end coupled to said collector of said transistor; and
an output terminal coupled to said other end of said second resistor.

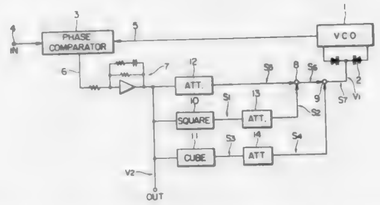
4,564,815

FM DEMODULATOR PLL WITH COMPENSATION FOR NONLINEAR VARACTOR CHARACTERISTICS

Michinori Naito, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1984, Ser. No. 580,160
Claims priority, application Japan, Feb. 28, 1983, 58-30828
Int. Cl.⁴ H03D *3/18, 3/00;* **H03L** *7/06;* **H04B** *1/16*
U.S. Cl. 329—50 **5 Claims**

1. An FM demodulator phase locked loop (PLL) comprising:
a voltage controlled oscillator (VCO) for generating a signal of an oscillating frequency depending upon a control voltage;
a phase comparator for comparing the phase and the frequency of an input FM signal with the VCO frequency signal and generating an error signal which is related to the phase and the frequency difference between the compared signals;
a low-pass filter for attenuating the high frequency components of the error signal at the output of the phase comparator;
a circuit for producing harmonic distortion components from the output signal from the low-pass filter; and



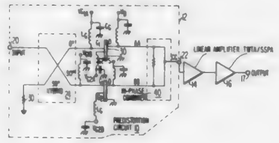
a circuit for combining the produced harmonic distortion components with the output signal of the low-pass filter so as to obtain non-distorted FM demodulated signal.

4,564,816

PREDISTORTION CIRCUIT

Mahesh Kumar, Dayton, and James C. Whartenby, Trenton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 9, 1984, Ser. No. 608,415
Int. Cl.⁴ H03F *1/32*
U.S. Cl. 330—149 **11 Claims**



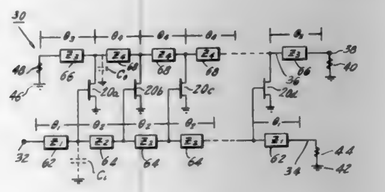
1. A predistortion circuit for predistorting a signal applied to a following power amplifier exhibiting phase and amplitude nonlinearities as a function of input power, said circuit comprising in combination:
an input terminal coupled to receive a signal to be amplified and an output terminal coupled to the input of said power amplifier;
means for power dividing a signal applied to the circuit input terminal and for providing a 90° phase shift of one divided signal relative to the other;
first and second active nonlinear means each adapted for receiving an input signal from a different one of the outputs of said power divider and each adapted for producing an output signal; and
means coupled to receive the output signals from the nonlinear means for combining in phase the signals produced by the active nonlinear means;
said active nonlinear means each adapted for receiving a bias voltage for controlling the amount of distortion produced by the predistortion circuit whereby the predistortion circuit predistorts the signal in a manner complementary to the distortion produced by the following power amplifier.

4,564,817

MONOLITHIC IMPEDANCE MATCHED CASCADE AMPLIFIER

Russell A. Gilson, Ocean, and Thomas F. Burke, Toms River, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 1, 1984, Ser. No. 616,091
Int. Cl.⁴ H03F *3/60*
U.S. Cl. 330—286 **8 Claims**



1. A monolithic amplifier comprising:
a semiconductor substrate having an upper surface and a conductive base layer;
an integrated amplifier circuit disposed along the upper surface of the substrate, the amplifier circuit including input means for receiving a signal to be amplified from a signal source at one end, a plurality of successive amplifying stages including input and output stages at opposite ends for amplifying the signal received, and output means for providing the amplified signal to a load at the opposite end, each amplifier stage including a field effect transistor having a respective source, drain and gate on the surface of the substrate, and an underlying channel below said respective source, drain and gate, said gate controlling the conductivity of the respective channel between said source and drain, the respective gate being the input element of each stage connected to the input means, and the respective drain being the output element connected to the output means, said input and output means including a pair of spaced linear parallel conductive strips along opposite sides of said upper surface providing a pair of traveling wave input and output transmission lines having transverse connections to respective gates and drains of each successive stage;
an input terminating impedance means connected between the end of said input transmission line opposite said signal source and said conductive base layer; and
an output terminating impedance means connected between the end of said output transmission line opposite said load and said conductive base layer, said input and output terminating impedance means being matched to the respective characteristic impedance of the input and output transmission lines to prevent reflections.

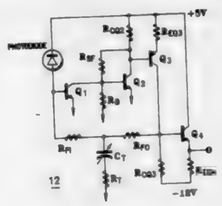
4,564,818

TRANSIMPEDANCE AMPLIFIER HAVING AN IMPROVED GAIN/BANDWIDTH PRODUCT

Timothy R. Jones, Phoenix, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Aug. 24, 1984, Ser. No. 644,087
Int. Cl.⁴ H03F *3/68*
U.S. Cl. 330—311 **3 Claims**

1. An improved transimpedance amplifier for changing an input signal to an output signal comprising:
input, intermediate and output current switching devices having a respective control electrode and first and second current carrying electrodes thereof;
a current generating device for providing said input signal to said transimpedance amplifier, said current generating device having first and second leads thereof respective coupled to a supply voltage terminal and said control electrode of said input current switching device;
first direct current feedback means coupling said first current carrying electrodes of said intermediate and input current switching devices having their respective second current carrying electrodes coupled to a reference voltage terminal, said first current carrying electrode of said input current switching device being connected to said control electrode of said intermediate current switching device;
second direct current feedback means coupling said first current carrying electrode of said output current switching device to said control electrode of said input current switching device, said second current carrying electrode of said output current switching device being coupled to



said supply voltage terminal and said control electrode thereof being connected to said first current carrying electrode of said intermediate switching device whereby said output signal may be taken at said first current carrying electrode of said output current switching device; and
an additional current switching device having a control electrode and first and second current carrying electrodes thereof, said control electrode thereof being connected to said first current carrying electrode of said output current switching device and said first current carrying electrode thereof being coupled to said supply voltage terminal whereby said output signal may be taken at said second current carrying electrode of said additional current switching device.

4,564,819

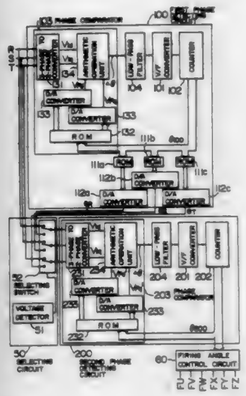
PHASE DETECTING APPARATUS

Syunichi Hirose, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 20, 1984, Ser. No. 673,340
Claims priority, application Japan, Nov. 25, 1983, 58-221650
Int. Cl.⁴ H03L *7/06;* **H03B** *27/00;* **H02H** *7/125;* **H02M** *7/155, 7/04*
U.S. Cl. 331—2 **15 Claims**

1. A phase detecting apparatus for detecting a phase of an AC voltage, comprising:
a first circuit comprising a phase-locked loop, receiving said AC voltage under detection, and producing an AC voltage signal which is in phase with said AC voltage under detection except until expiration of the response time of said phase-locked loop after any abrupt change in the phase of said AC voltage under detection;
a second circuit comprising a phase-locked loop having a response time which is shorter than the response time of the phase-locked loop of said first circuit; and
selecting means normally applying said AC voltage signal produced by said first circuit to said second circuit, and applying said AC voltage under detection or an AC voltage signal obtained by phase-number conversion from said AC voltage under detection to said second circuit until a

predetermined time has expired after rising of said AC voltage under detection to a predetermined level,



said second circuit producing a digital signal indicative of the phase of said AC voltage under detection.

4,564,820

BLOCKING OSCILLATOR CONVERTER WITH CONTROLLING LOGIC SYSTEM

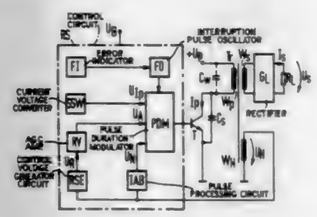
Günther Peruth, and Michael Lenz, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 24, 1984, Ser. No. 653,541

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1983, 3340138

Int. Cl.⁴ H02M *3/335;* **H02H** *7/122*

U.S. Cl. 331—62 **9 Claims**



1. A blocking oscillator converter with controlling logic system for supplying an electrical apparatus, comprising:

a transformer whose primary winding is connected to a d.c. source and in series with a control path of a switching transistor;

a secondary winding of the transformer for connection to the electrical apparatus;

a control electrode of the switching transistor being controlled by an output of a switching control circuit;

said switching control circuit having modulation means for controlling the switching transistor;

an oscillator means emitting in its active state periodic interruption pulses to the modulation means, said modulation means blocking normal control of the switching transistor through each of said periodic interruption pulses;

said oscillator means identifying a potential danger to the converter through an input it receives related to operating parameters of the converter; and

said oscillator means in the case of normal behavior of said parameters not influencing the switching transistor, and given an active state in which the potential danger is identified, the interruption pulses emitted by the oscillator to the modulation means, as well as a frequency of said interruption pulses, are matched to a time behavior of the control circuit in such a fashion that after each interruption pulse a reactivation of switching transistor control by the control circuit occurs in accordance with normal control circuit operation.

4,564,821

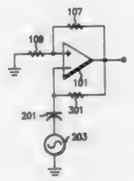
OFFSET CANCELLING AC LEVEL DETECTOR USING AN OSCILLATOR

Elwood C. Reichart, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 1, 1984, Ser. No. 655,796

Int. Cl.⁴ G01R *19/165;* **H03K** *3/023*

U.S. Cl. 331—74 **12 Claims**



9. A method of detecting a small-signal alternating current (AC) signal comprising the steps of:

generating an output signal having a first frequency;

accepting the AC signal having a frequency other than said first frequency of said output signal;

changing said output signal to a second frequency when the AC signal has a magnitude greater than a predetermined magnitude; and

detecting said output signal frequency change, thereby indicating presence of the AC signal greater than said predetermined magnitude.

4,564,822

TV TUNER OSCILLATOR WITH FEEDBACK FOR MORE LOW FREQUENCY POWER

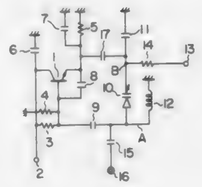
Takeshi Saitoh, Tokyo, and Hiroshi Hatashita, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 13, 1983, Ser. No. 541,440

Claims priority, application Japan, Oct. 13, 1982, 57-178403

Int. Cl.⁴ H03B *5/12;* **H03C** *3/20;* **H03H** *5/12;* **H03J** *3/20*

U.S. Cl. 331—117 R **3 Claims**



1. An oscillator circuit for use in a local oscillator of a tuner, which is responsive to a tuning voltage to change its oscillation frequency, said oscillator circuit comprising:

a transistor;

a first capacitor connected between the emitter of the transistor and a common potential;

a second capacitor connected between the base and emitter of the transistor;

a tank circuit including a tuning diode, a coil and a third capacitor, whith the third capacitor and the coil connected to the common potential and with the tuning diode connected in series between the third capacitor and the coil;

a fourth capacitor connected between a junction of said tuning diode and coil and the base of said transistor; and

a fifth capacitor connected between a junction of said tuning diode and said third capacitor and the emitter of said transistor.

4,564,823

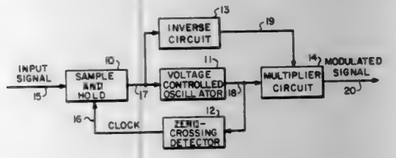
FRACTIONAL-CYCLE TIME/AMPLITUDE MODULATION

John P. Stahler, San Diego, Calif., assignor to Robot Research, Inc., San Diego, Calif.

Filed Sep. 24, 1984, Ser. No. 653,150

Int. Cl.⁴ H03C *5/00;* **H03D** *5/00*

U.S. Cl. 332—17 **20 Claims**



1. A modulation system wherein a carrier signal is modulated by an input signal having a variable amplitude, comprising

means for sampling the amplitude of the input signal every predetermined fractional cycle of the modulated signal; and

means for modulating the carrier signal in response to the sampled amplitude of the input signal to provide a modulated signal of which each said predetermined fractional cycle has an amplitude and a duration that are inversely proportional to each other and related to the sampled amplitude of the input signal.

4,564,824

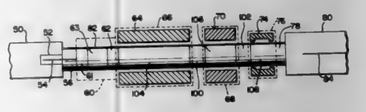
ADJUSTABLE-PHASE-POWER DIVIDER APPARATUS

Charles R. Boyd, Jr., Arroyo Grande, Calif., assignor to Microwave Applications Group, Santa Maria, Calif.

Filed Mar. 30, 1984, Ser. No. 595,437

Int. Cl.⁴ H01P *5/12, 1/17*

U.S. Cl. 333—137 **21 Claims**



1. A waveguide transmission line adjustable-phase power divider comprising:

(a) a first quarter-wave plate;

(b) a variable phase section coupled to said first quarter-wave plate;

(c) a second rotatable quarter-wave plate coupled to said variable phase section; and

(d) a septum polarizer coupled to said second rotatable quarter-wave plate.

4,564,825

PIEZOELECTRIC FILTER

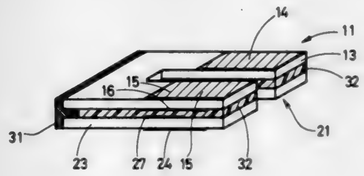
Hiroyuki Takahashi, Takaoka, and Takashi Yamamoto, Ishikawa, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jul. 25, 1984, Ser. No. 634,128

Claims priority, application Japan, Aug. 15, 1983, 58-148968

Int. Cl.⁴ H03H *9/56, 9/58*

U.S. Cl. 333—191 **6 Claims**



1. A piezoelectric filter of the energy-trapped type utilizing thickness shear vibration mode, comprising:

(A) first and second resonator units, each resonator unit including:

(1) a piezoelectric plate having a slit formed therein;

(2) a pair of front electrodes disposed on a front surface of the piezoelectric plate with the slit being located between the front electrodes; and

(3) a pair of back electrodes disposed at the back surface of the piezoelectric plate so as to at least partially overlap the pair of front electrodes; the pair of the front electrodes of the second resonator unit being electrically connected;

(B) means for positioning and spacing the first and second resonator units relative to one another so that the back electrodes of the first resonator unit face the back electrodes of the second resonator unit and such that the resonator units are at least partially mechanically coupled to one another;

(C) a terminal disposed on at least one of the piezoelectric plates, the terminal being electrically connected to the back electrodes of the first and second resonator units; and

(D) the pair of front electrodes of the first resonator unit defining an input electrode and an output electrode, respectively.

4,564,826

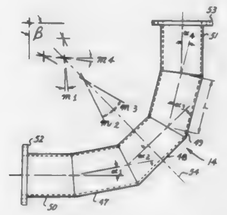
MULTIPLE MITERED CIRCULAR WAVEGUIDE BEND

Hans J. Wiesenfarth, Montclair, and Geza Dienes, Claremont, both of Calif., assignors to Andrew Corporation, Chicago, Ill.

Filed Apr. 6, 1984, Ser. No. 597,480

Int. Cl.⁴ H01P *1/02*

U.S. Cl. 333—249 **8 Claims**



4. An antenna feed systems of the kind for coupling electromagnetic energy at a predetermined guide wavelength from a transmitter at substantially ground level to an antenna substantially above ground level and mounted on a tower horizontally displaced from the transmitter, said antenna feed system comprising a substantially horizontal first waveguide extending

from the transmitter to the base of the tower, a substantially vertical second circular waveguide depending from the antenna to the base of the tower, and a waveguide bend joining the first and second waveguides at the base of the tower,

wherein the improvement comprises, said first waveguide is a circular waveguide, said waveguide bend is a multiple mitered circular waveguide bend for providing a low VSWR connection between the first and second circular waveguides, said first and second circular waveguides each having a respective longitudinal axis, said axes intersecting at approximately a right angle, said waveguide bend comprising an odd number n of mitered circular waveguide sections, said odd number n being at least three, each of said mitered sections having a length that is an odd multiple of a quarter of said guide wavelength and each mitered section being mitered at both of its ends, a first one of said mitered sections having a first one of its ends connected to an end of said first circular waveguide and said first mitered section having a longitudinal axis intersecting the longitudinal axis of said first circular waveguide at an angle of α_1, for each integer i between one and n the ith one of said mitered sections having a first one of its ends connected to the second one of the ends of the $(i-1)$th mitered section and said ith one of said mitered sections having a longitudinal axis intersecting the longitudinal axis of the $(i-1)$th mitered section at an angle α_i, the nth one of said mitered sections having a first one of its ends connected to the second one of the ends of the $(n-1)$th mitered section and said nth one of said mitered sections having a longitudinal axis intersecting the longitudinal axis of the $(n-1)$th mitered section at an angle α_n, said second circular waveguide having an end connected to the second end of the nth mitered section and the longitudinal axis of said second circular waveguide intersecting the longitudinal axis of said nth mitered section at an angle α_{n+1}, and wherein the respective ratios $\alpha_2/\alpha_1, \ldots, \alpha_{(i+1)}/\alpha_i \ldots, \alpha_{(n+1)}/\alpha_n$ of the angles $\alpha_1, \ldots, \alpha_i \ldots, \alpha_{(n+1)}$ are approximately equal to the respective ratios $C_2/C_1, \ldots, C_{(i+1)}/C_{(i)}, \ldots, C_{(n+1)}/C_n$ of the binomial coefficients $C_1, \ldots, C_i \ldots, C_{(n+1)}$ of the expansion of $(a+b)^n$, where a and b are algebraic variables, so that $C_1=1$, $C_2=n$, $C_3=n(n-1)/2, \ldots, C_n=n$ and $C_{(n+1)}=1$.

4,564,827

PROGRAMMABLE CONTROL FOR A SWITCHING CHRONOMETER

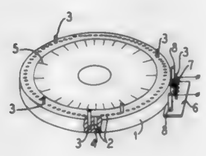
Gerd Kammerer, St. Georgen, and Friedrich X. Thoma, Haslach i. K., both of Fed. Rep. of Germany, assignors to Dieter Graesslin Feinwerktechnik, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,095

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310935

Int. Cl.⁴ H01H *51/34*

U.S. Cl. 335—92 **12 Claims**



1. A switching timer programmable control means, comprising:

a movable program carrier;

a magnetic field sensor comprising a ferromagnetically alloyed Wiegand effect wire disposed on the program carrier;

a coil in proximity of the program carrier and the carrier being movable so as to permit the wire to be moved to a proximity of the coil during timer operation;

a permanent magnet adjacent the coil whose magnetic field influences a core polarity of the wire when it is in a proximity thereof such that the coil emits voltage pulses given such polarity changes in the wire for control of an electrical switch; and

means on the program carrier for permitting free movement of the wire to a desired program position in accordance with a desired switching program.

4,564,828

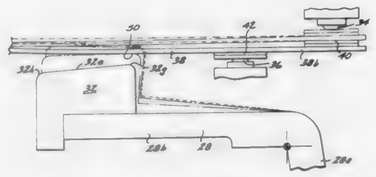
ELECTROMAGNETIC RELAY

Ronnie D. Lowe, Anaheim, Calif., assignor to American Zettler, Inc., Irvine, Calif.

Filed May 14, 1984, Ser. No. 609,613

Int. Cl.⁴ H01H *67/02*

U.S. Cl. 335—128 **12 Claims**



1. In an electromagnetic relay having an electromagnetic motor, an armature moveable in response to energization and deenergization of said motor, and contact means including a stationary contact and a moveable contact carried by a moveable contact arm, the combination of

a force-transmitting member fixed relative to said armature of movement therewith relative to said contact arm,

said force-transmitting member comprising means to provide at least two sequentially operable mechanical advantages in urging said moveable contact into engagement with said stationary contact.

4,564,829

RAILWAY SIGNALING RELAY

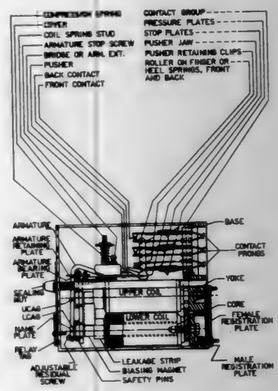
Cornelius J. Illenberg; Ronald W. Dinger, both of Rochester; David A. Kunde, Pittsford, and Anthony V. Lucarelli, Rochester, all of N.Y., assignors to General Signal Corp., Rochester, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,244

Int. Cl.⁴ H01H *51/08*

U.S. Cl. 335—135 **10 Claims**

1. In a railway signalling relay having contacts provided by a plurality of contact springs some of which are moveable and others of which are front and back contacts, said front contacts being disposed between stop plates and pressure plates, said moveable contacts being connected to a pusher which is connected to an armature, a magnetic structure including at least one coil for said armature attracting said armature through an air gap when said relay in energized by current applied to said coil to raise said pusher and moveable contacts against downward spring and gravity bias, the improvement for providing said relay with high percentage release characteristics which comprises said stop plates of said front contacts being connected thereto to apply trapped pressure thereto when said relay is deenergized for biasing said front contacts in a downward direction, said stop plates of said back contacts being connected thereto to apply trapped pressure to bias said back contacts in an upward direction when said relay is energized.



4,564,830

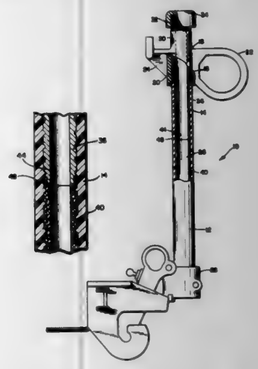
WOUND-IN SLEEVE FUSE CUTOUT TUBE CONSTRUCTION

Dean C. Warner, Portville, and James R. Marek, Olean, both of N.Y., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jul. 23, 1984, Ser. No. 633,627

Int. Cl.⁴ H01H *85/14*

U.S. Cl. 337—246 **8 Claims**



1. A fuse cutout tube construction, comprising:

an outer tubular covering component;

a bone fiber liner component disposed internally within said outer tubular covering component having a substantially continuous first spiral groove defined along generally the entire length of its external periphery;

a sleeve insert component disposed internally within said outer tubular covering component having a substantially continuous second spiral groove defined along generally the entire length of its external periphery;

a rabbet joint defined between said bone fiber liner and said sleeve insert components; and

said outer tubular covering component being contiguously formed about said bone fiber liner and sleeve insert components within said first and second spiral grooves in a fashion essentially minimizing plastic deformation and separation of the components during high and low fault interrupting conditions.

4,564,831

ANALOG TO DIGITAL CONVERTERS FOR CONVERTING A PLURALITY OF DIFFERENT INPUT SIGNALS

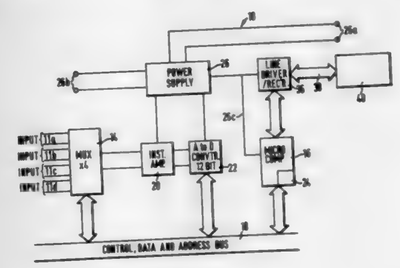
Desmond Wheable, and Michael J. Attwood, both of Basingstoke, England, assignors to Transamerica Delaval Inc., Lawrenceville, N.J.

Filed Jun. 16, 1983, Ser. No. 505,078

Claims priority, application United Kingdom, Jul. 2, 1982, 8219200

Int. Cl.⁴ H03K *13/17*

U.S. Cl. 340—347 AD **5 Claims**



1. Analog to digital converter apparatus for converting analog input signals coupled to a plurality C of inputs to digital representations thereof, comprising a fast analog to digital converter having an input and an output, means arranged sequentially to couple the C inputs to the analog to digital converter at a rate such that each input is coupled to the converter N times in a period M of an a.c. series mode signal and at equal time intervals of M/N, averaging means having an input coupled to the output of the analog to digital converter for averaging the N digital values of each input to provide at the end of a conversion period C digital signals representative of the mean magnitude of the C input signals respectively during a period M.

4,564,832

MEMBRANE KEYBOARD HAVING KEY CLOSURE RETENTION

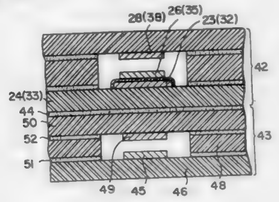
Kazuo Inoue, Toride, Japan, assignor to Nippon Mektron, Ltd., Japan

Filed Mar. 31, 1983, Ser. No. 480,915

Claims priority, application Japan, Mar. 31, 1982, 57-53157

Int. Cl.⁴ G08C *9/00*

U.S. Cl. 340—365 R **13 Claims**



1. A keyboard comprising:

a first circuit sheet;

at least one first movable contact element on said first circuit sheet, said first contact element of said first sheet being electroconductive and having magnetic properties;

a second circuit sheet, said second circuit sheet having at

least one second contact element on a first side of said second circuit sheet facing said first circuit sheet, said second contact element being electroconductive and having magnetic properties;

said first and second contact elements being aligned and normally being electrically disconnected, and being adapted to be brought into electrical contact by movement of said first contact element toward said second contact element;

electrical circuit means on said first side of said second circuit sheet and defining a coil for the generation of a magnetic field in alignment with said first and second contact elements to retain said first and second contact elements in physical and electrical contact;

insulation means over said electrical circuit means, said second contact element being supported on said insulation means;

retention termination means being associated with said circuit means defining a coil for terminating the generation of the magnetic field; and

membrane switch means attached to said second circuit sheet on said second side thereof, said membrance switch means including;

a first sub-switch sheet adhesively fixed to the second side of said second circuit sheet;

said first sub-switch sheet having at least one electrically conductive movable contact element thereon;

a second sub-switch sheet having at least one electrically conductive fixed contact element thereon corresponding to and aligned with the movable contact element on said first sub-switch and with said circuit means defining a coil; and

a spacer sheet separating and adhesively bonded to said first and second sub-switch sheets.

4,564,833

DOZING WARNING SYSTEM FOR A VEHICLE

Yasutoshi Seko, Yokohama, and Takayuki Yanagishima, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

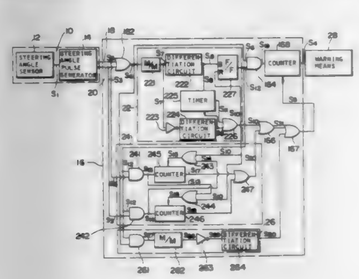
PCT No. PCT/JP81/00263, § 371 Date May 7, 1982, § 102(e) Date May 7, 1982, PCT Pub. No. WO82/01167, PCT Pub. Date Apr. 15, 1982

PCT Filed Oct. 5, 1981, Ser. No. 377,206

Claims priority, application Japan, Oct. 6, 1980, 55-139660

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—576 **15 Claims**



1. A doze warning system for an automotive vehicle comprising:

a steering angle detecting means for producing steering angle pulses at every predetermined angular variation of the steering, said steering angle pulses providing an indication of direction of the steering angle variation;

a dozing detecting circuit including

a first reset circuit means for counting up the steering angle pulses produced by the steering operation in the same direction and producing a curve signal when the counted value within a predetermined first period of time, measured from a time point of receiving the first steering angle pulse, reaches a first value;

a second reset circuit means for producing a pulse interval signal when an interval between occurrences of the steering angle pulses is longer than a predetermined second period of time;

a counter section means for counting said steering angle pulses and for producing a warning signal when a count of the steering angle pulses within the predetermined first period, reaches a second value, said counter section means resetting the count in response to said curve signal or said pulse interval signal; and

a warning section for producing a warning when the warning signal is inputted.

4,564,834

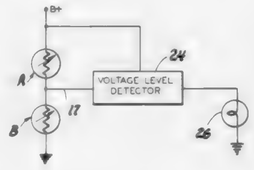
THERMAL LIQUID LEVEL DETECTOR

Robert E. Steele, Cortland, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 11, 1983, Ser. No. 540,654

Int. Cl.⁴ G01F *23/00*; H01H *35/18*

U.S. Cl. 340—622 **6 Claims**



1. A liquid level detector for monitoring the presence of liquid in a container at a set level when the detector is energized comprising,

first and second PTC resistors each of which are self-heating upon application of a current and having a switch point effecting a substantial resistance increase at a unique temperature above the maximum temperature of the liquid, at least the first of the PTC resistors being positioned at the said set level and the second being positioned at the set level or in the air above the liquid, the first PTC resistor having a heat loss rate in air that is less than that of the second, and a heat loss rate in liquid that is greater than that of the second, so that when heating current is applied to the resistors, one will reach the switch point before the other depending on the liquid level, and

a circuit including the PTC resistors in series and a voltage source for applying a current to the resistors and providing a voltage signal indicative of liquid level whereby the voltage signal assumes a high or low value depending on which of the resistors first switches to a high resistance.

4,564,835

FIELD-COUPLED POINTING DEVICE

Satish K. Dhawan, 36 Anita St., New Haven, Conn. 06511

Filed Dec. 13, 1982, Ser. No. 449,238

Int. Cl.⁴ G09G *3/00*

U.S. Cl. 340—710 **22 Claims**

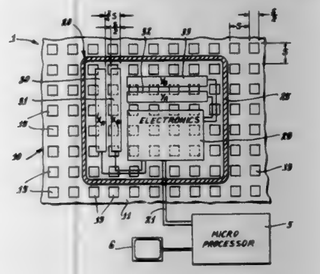
1. A pointing device comprising:

(A) a mouse table having a substantially flat base with a plurality of electrical field-sensitive pixels deployed thereon in a regular, repetitive pattern having an x-axis and a y-axis, including non-pixel areas separating pixels in the x-axis and non-pixel areas separating pixels in the y-axis;

(B) a mouse including a housing adapted for movement on the mouse tablet, the housing having mounted therein

(1) first and second x-axis coupling elements, each of the x-axis coupling elements being adapted for establishing electrical field coupling with the pixels which is position dependent with respect to pixels in the x-axis, the first and second x-axis coupling elements being spaced apart in the x-axis such that field coupling established by the first x-axis coupling element is out-of-phase with field coupling established by the second x-axis coupling element, and

(2) first and second y-axis coupling elements, each of the y-axis coupling elements being adapted for establishing electrical field coupling with the pixels which is position dependent with respect to pixels in the y-axis, the first and second y-axis coupling elements being spaced



apart in the y-axis such that field coupling established by the first y-axis coupling element is out-of-phase with the field coupling established by the second y-axis coupling element;

(C) circuit means connected with said coupling elements for causing said coupling elements to establish electrical field coupling with said pixels, said circuit means having operating parameters which vary according to the position of the coupling elements with respect to the pixels; and

(D) means detecting variations in the operating parameters of the circuit means and means for determining mouse motion and the direction of mouse motion on the mouse tablet based on said variations in said operating parameters.

4,564,836

MINIATURE SHUTTER TYPE DISPLAY DEVICE WITH MULTIPLEXING CAPABILITY

Raymond Vuilleumier, Fontainemelon, and Paul-Charles Weiss, Neuchatel, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Filed Jun. 25, 1982, Ser. No. 392,073

Claims priority, application Switzerland, Jul. 2, 1981, 4360/81

Int. Cl.⁴ G09G *3/34*

U.S. Cl. 340—783 **17 Claims**

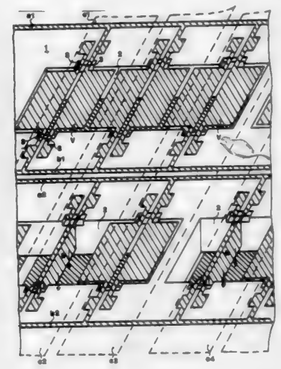
1. A miniature display device comprising a carrier having cavities therein and shutters which are fastened to the carrier by resilient attachment means at opposite edges of said shutters, said shutters closing said cavities in their rest condition and capable of rotating through a substantial angle under the effect of an electrical field to open the cavities; said device additionally comprising:

at least one pair of shutters per cavity, each shutter of a pair being fastened to said carrier by two resilient attachment means which are disposed on respective sides of the shutter and in alignment with the side adjacent to the other shutter of said pair;

first electrodes which are disposed on said shutters;

second electrodes which are disposed on a bottom of said cavity;

means for applying a control voltage between two said first and second electrodes to cause at least one pair of said shutters to rotate to an activated condition substantially parallel to each other and substantially perpendicular to the bottom of the corresponding cavity; and



means for subsequently applying a holding voltage between the electrodes of the said activated two shutters of each said pair of shutters for holding the said two shutters in the activated condition in the absence of said control voltage.

4,564,837

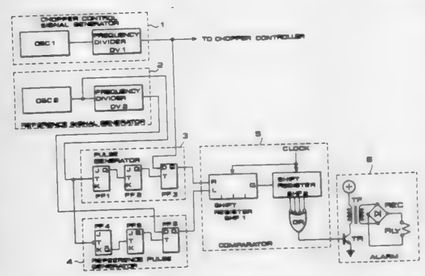
CIRCUIT FOR MONITORING THE FREQUENCY OF SIGNAL FOR CONTROLLING CHOPPERS OF ELECTRIC CARS

Toshiaki Awano, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1983, Ser. No. 455,127

Int. Cl.⁴ H04Q *9/00*; H03K *7/06*; G08B *21/00*

U.S. Cl. 340—825.3 **4 Claims**



1. A circuit for monitoring the frequency of signal for controlling choppers of electric cars, comprising:

means for generating a reference frequency signal which has a frequency which is an integer number of times that of said chopper control signal;

means for generating a compare pulse signal responsive to the logical product between said reference frequency signal and said chopper control signal;

means which divides the frequency of said reference frequency signal to generate a reference pulse signal of a nominal frequency for producing said chopper control signal;

means which compares the phase between said compare pulse signal and said reference pulse signal to produce an error signal of a predetermined logic level when the phase difference between the two pulse signals becomes greater than a predetermined value;

said comparator means comprising a first shift register having a plurality of stages which introduces one logic level

that is shifted in one direction responsive to said compare pulse signal, and which introduces another logic level that is shifted in another direction responsive to said reference pulse signal, and gate means which produces the error signal when the output of the shift register continuously remains in a predetermined logic level for a predetermined period of time; and

means for producing an alarm responsive to said error signal generated by said comparator means.

4,564,838

DATA COMMUNICATION NETWORK AND METHOD OF COMMUNICATION

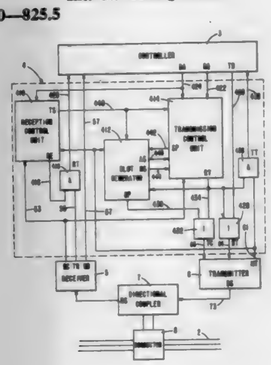
Gerardus F. Boulogne, Nieuwegein, and Bernardus P. J. van Berkel, Apeldoorn, both of Netherlands, assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 27, 1982, Ser. No. 437,071

Claims priority, application United Kingdom, Mar. 29, 1982, 8209200

Int. Cl.⁴ H04Q *00/00*

U.S. Cl. 340—825.5 **11 Claims**



1. A data communication network comprising:

a plurality of data stations;

a common data channel connecting said data stations;

each one of said data stations having a transmitter and a receiver, wherein each said data station includes channel contention means coupled to the associated said transmitter and receiver for initiating transmission request signals in a sequence of consecutive time periods in each of which a said data station either transmits or does not transmit a transmission request signal according to a predetermined code assigned to that said data station;

said channel contention means further including contention resolving means for determining during said sequence whether another one of said data stations is transmitting a said transmission request signal while a first one of said data stations is not transmitting such a said transmission request signal; and

said contention resolving means including means for aborting a contention for said common data channel by said first one of said data stations when said contention resolving means determines that any other one of said data stations is transmitting;

said channel contention means for each said data station including means for generating transmission request signals according to said predetermined code which is cyclic and unique to the associated said data station, and also including means for commencing a succeeding channel contention at a point in the associated cycle of said predetermined code determined by the point in said cycle at which a previous contention for said common data channel ceased.

4,564,839

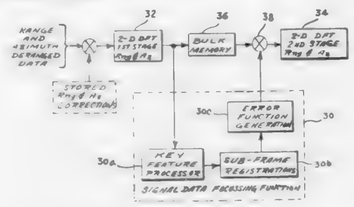
FEATURE REFERENCED ERROR CORRECTION APPARATUS

Norman F. Powell, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 14, 1982, Ser. No. 417,928

Int. Cl.⁴ G01S *13/90*

U.S. Cl. 343—5 CM **4 Claims**



1. A feature referenced error correction apparatus comprising in combination:

a first and second stage processing means to process signal data from a synthetic aperture radar, said first stage processing means receiving said signal data from said synthetic aperture radar, said second stage processing means operatively connected to said first stage processing means to recevie the output signal therefrom, and

means for preprocessing said signal data from said first stage processing means, said signal data comprising multiple images of a given frame from said synthetic aperture, said multiple images establishing positional shift errors in said signal data, said preprocessing means operatively connected to the output of said first stage processing means to receive the output signal therefrom, said preprocessing means measuring the errors in said signal data from said first stage processing means, said preprocessing means providing an error correction signal in response to the measured error in said signal data, said preprocessing means applying said error correction signal to said second stage processing means.

4,564,840

RADIONAVIGATION SYSTEM HAVING MEANS FOR CONCEALING DISTANCE AND/OR BEARING INFORMATION CONVEYED THEREBY

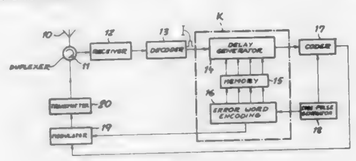
Jacques D. Brissé, Longchêe, Bullion, 78830 Bonnelles, and Jean-Pierre J. Chevalier, Saint Laurent la Gâtine, 78210 Nogent le Roi, both of France

Filed Feb. 13, 1978, Ser. No. 879,271

Claims priority, application France, Feb. 16, 1977, 77 04378

Int. Cl.⁴ G01S *9/56, 13/74*

U.S. Cl. 343—6.5 LC **10 Claims**



1. In a radionavigation system wherein a ground station includes transmission means responsive to interrogation pulses from passing aircraft for emitting outgoing signals enabling evaluating means aboard said aircraft to derive positional information from the timing thereof,

the improvement wherein said ground station comprises error-generating means for introducing an artificial delay into the emission of said outgoing signals to falsify the positional information conveyed thereby, said transmission means receiving from said error-generating means a binary message representing the magnitude of said artificial delay in coded form for communication to on-board equipment of interrogating aircraft, the on-board equipment of privileged aircraft including error-eliminating means for extracting said magnitude from said binary message and controlling said evaluating means to correct the falsified positional information derived from said outgoing signals.

4,564,841

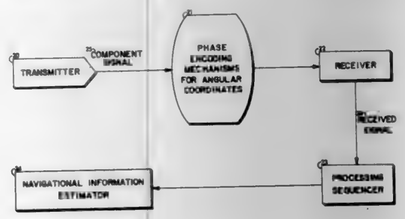
NAVIGATIONAL SYSTEMS USING PHASE ENCODED ANGULAR COORDINATES

Norman S. Neidell, 10497 Town & Country Way Suite 300, Houston, Tex. 77024

Continuation of Ser. No. 225,410, Jan. 15, 1981, abandoned, which is a continuation-in-part of Ser. No. 76,695, Sep. 18, 1979, Pat. No. 4,315,263, which is a continuation of Ser. No. 925,903, Jul. 19, 1978, which is a continuation-in-part of Ser. No. 691,674, Jun. 1, 1976, Pat. No. 4,114,153, which is a continuation of Ser. No. 483,202, Jul. 26, 1974, abandoned. This application Mar. 22, 1985, Ser. No. 715,052

Int. Cl.⁴ G01S *1/08*

U.S. Cl. 343—386 **28 Claims**



1. A method of ascertaining navigational information for at least one mobile platform in terms of at least one angular coordinate by transmitting from at least one transmitter and receiving with at least one receiver at least one signal having a band of contiguous frequencies with no frequency missing over a defined frequency bandwidth, comprising the steps of:

changing the shape of the signal by encoding a distinction in phase over plural ones of the band of contiguous frequencies in accordance with at least one angular coordinate of navigational information, while propagating the signal from the transmitter to the receiver;

receiving the propagated signal,

measuring the phase of the received signal, and

decoding the angular coordinate from the encoded distinction in phase.

4,564,842

SINGLY FED CIRCULARLY POLARIZED MICROSTRIP ANTENNA

Yasuo Suzuki, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 28, 1984, Ser. No. 584,385

Claims priority, application Japan, Mar. 4, 1983, 58-35376

Int. Cl.⁴ H01Q *1/38*

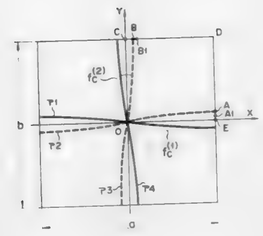
U.S. Cl. 343—700 MS **8 Claims**

1. A singly fed circularly polarized microstrip antenna comprising:

a dielectric substrate;

a conducting ground layer coated on one side of said dielectric substrate; and

a conducting patch radiator coated on the other side of said dielectric substrate, the radiator having a feed point (x_c, y_c) which is a solution of the following equation



$$\frac{\psi^{(\nu+1)}(x_c, y_c)}{\psi^{(\nu)}(x_c, y_c)} = \pm \frac{E_0^{(\nu)}(0, \omega_c) \cdot x}{E_0^{(\nu+1)}(0, \omega_c) \cdot y} \times \left(\omega_c C - \frac{1}{\omega_c L^{(\nu+1)}} \right) \quad (+: RHCP, -: LHCP)$$

where

ν, $\nu+1$ represent two orthogonal modes contributing a circularly polarized wave;

$\psi^{(\nu)}$ represents an eigenfunction with respect to a ν-th mode determined by the dimensions of the radiator and which is a function with respect to the position (x, y);

$E_0^{(\nu)}(0, \omega_c)$ represents an electric field in a direction $\theta = 0°$ with respect to the ν-th mode;

C represents a capacitance component of an equivalent circuit parameter for a microstrip antenna;

$L^{(\nu)}$ represents an inductance component of an equivalent circuit parameter for a microstrip antenna; and

ω_c is an exciting frequency which is a $(\mu+1)$-th solution of the following interative equation:

$$\omega_{\mu+1} = \sqrt{\frac{[\{(\omega^{(\nu)})^2 + (\omega^{(\nu+1)})^2\} - U^2(\omega_\mu)] \pm \sqrt{D(\omega_\mu)}}{2}}$$

where $D(\omega) = [\{\omega^{(\nu)} - \omega^{(\nu+1)}\}^2 - U^2(\omega)] \times [\{\omega^{(\nu)} + \omega^{(\nu+1)}\}^2 - U^2(\omega)]$,

$$U(\omega) = \frac{\sqrt{g^{(\nu)}(\omega) \cdot g^{(\nu+1)}(\omega)}}{C},$$

$g^{(\nu)}(\omega)$: a conductance component of an equivalent circuit parameter for a microstrip antenna, which is a function with respect to ω.

4,564,843

ANTENNA WITH P.I.N. DIODE SWITCHED TUNING INDUCTORS

Charles E. Cooper, "Shannon", The Green, Cookham Dean, Berkshire, United Kingdom

Filed Dec. 1, 1981, Ser. No. 326,426

Claims priority, application United Kingdom, Jun. 18, 1981, 8118835

Int. Cl.⁴ H01Q *9/00*

U.S. Cl. 343—745 **8 Claims**

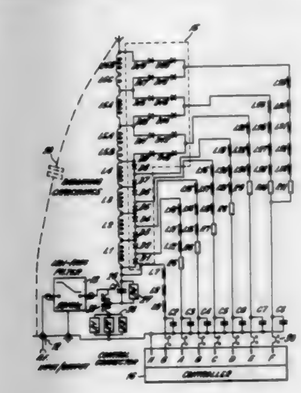
1. A radio antenna for frequency agile operation at a plurality of frequencies in a predetermined frequency band, comprising:

a capacitive radiating/receiving element;

a plurality of discrete tuning inductors coupled in series with said radiating/receiving element, said inductors having different inductances and having a short-circuiting switch,

each said short-circuiting switch including at least two P.I.N. diodes arranged for switchably short-circuiting at least a part of the respective inductor;

controller means coupled to said switches, for sequentially changing the tuning of the antenna by selectively applying



a forward bias to said diodes to be maintained conductive and a reverse bias to said diodes to be maintained non-conductive; and

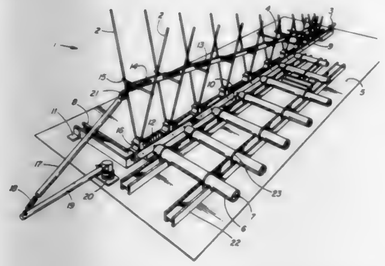
at least one of said inductors being divided into a plurality of parts having separate switches for each of said parts.

4,564,844

COLLAPSIBLE BROADBAND DIRECTIONAL ANTENNA

Cyril J. Bowering, 1481 Northdale St., Gloucester, Ontario, Canada K1B 4G6

Filed May 16, 1984, Ser. No. 610,809
Claims priority, application Canada, Sep. 1, 1983, 435855
Int. Cl.⁴ H01Q *11/10, 1/08*
U.S. Cl. 343—881 **16 Claims**



1. A compact collapsible broadband directional monopole antenna adapted to be electrically connected to and positioned over a ground plane, comprising:

a plurality of radiating elements each element being electrically connected to a feed line and mounted on said feed line by means of a mounting assembly;

phasing means provided by a number of phasing lines electrically connected to said feed line; and

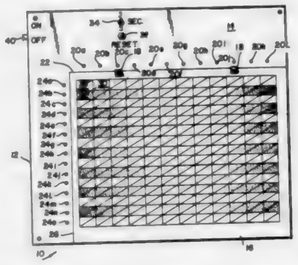
raising means being provided by a combination of joining means attached to individual radiating elements, said joining means being activatable by an antenna raiser attached at one end to said joining means and at the other end to a raising arm, said raising arm being pivotably attached to a base thereby to enable said elements to be raised sequentially with a relatively constant tension derived in response to a force applied to the raising arm.

4,564,845

DEVICE TO AID IN THE MANUAL RECORDATION OF DATA

Rosemary A. Lambie, 528 Rossmore Rd., Richmond, Va. 23225

Filed Jun. 28, 1984, Ser. No. 625,625
Int. Cl.⁴ G01D *9/00, 9/42*
U.S. Cl. 346—17 **10 Claims**



1. A device to aid an operator in the recordation of time-based data comprising:

a case body defining a surface upon which data indicia are scribable at plural predetermined locations;

timing means for generating a sequence of uniformly timed output signals; and

visual locating means operatively connected to said timing means and fixed to said case body to define said locations upon said surface, said visual locating means for receiving said uniformly timed output signals to visually identify one of said locations corresponding to a given time in response to said timing means generating a timed output signal indicative of said given time and for enabling an operator to visually locate said one location by virtue of said visual locating means so that data indicia for said given time is scribed at said one location,

said visual locating means comprising pairs of light-emitting elements corresponding to each of said locations, wherein said pairs of light-emitting elements are sequentially illuminated in response to receiving said uniformly timed output signals from said timing means, each said illiminated pair of light-emitting elements thereby visually identifying one of said locations corresponding to said given time.

4,564,846

DROP ON DEMAND DOT MATRIX PRINTING HEAD

Burton L. Siegal, Skokie, Ill., assignor to Kiwi Coders Corporation, Wheeling, Ill.

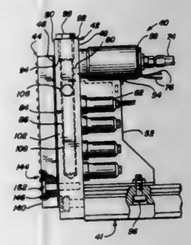
Filed Oct. 26, 1984, Ser. No. 665,030
Int. Cl.⁴ G01D *15/18*
U.S. Cl. 346—75 **18 Claims**

1. A drop-on-demand printer system printing characters in dot matrix format on a receptor moved in proximate printing relationship thereby, the system comprising:

A. a supply of ink, the ink being used to print individual dots of the dot matrix characters on said receptor;

B. controller means producing timed electrical signals that indicate formation of the dots of the dot matrix characters in timed relationship with movement of the receptor proximate the printer system;

C. a manifold plate formed of a rectangular solid body having four edge side surfaces and top and bottom side surfaces, the bottom side surface being adapted to face said receptor, the manifold plate carrying on its top side surface a plurality of dot valves arranged in four columns, each dot valve receiving one of said timed electrical signals, the manifold plate including two longitudinal bores therethrough aligned, respectively, below and between the first and second columns of said dot valves, and below and between the third and fourth columns of dot valves and further including a transverse bore fluid coupling together said two longitudinal bores, said longitudinal and transverse bores being sealed at the openings thereof to the edge side surfaces of the manifold plate, the manifold plate including normal bores fluid coupling each dot valve to its respectively aligned longitudinal bore, the manifold plate carrying on its top side surface an ink supply valve that is in fluid connection with the ink supply and the respective two longitudinal bores, the manifold plate including a plurality one for each dot valve, of spaced apart through outlet passages opening to said bottom side surface, each outlet passage opening being located in symmetrical relationship with another outlet passage opening located at 180 degrees of rotation in the plane of the bottom side surface, each outlet passage conducting ink from one dot valve to said bottom side surface;



D. a gasket of resilient material engaged against said manifold plate bottom side surface and having ways therethrough aligned with said manifold plate outlet passage openings;

E. a nozzle plate formed of a rectangular solid body having front and back side surfaces, the nozzle plate being fastened to said manifold plate with the gasket therebetween, the manifold plate bottom side surface and the nozzle plate back side surface being juxtaposed and the nozzle plate front side surface being adapted to face the receptor, the nozzle plate carrying a linear array of nozzles extending from said front side surface, the nozzle plate including a plurality, one for each nozzle, of nozzle passageways from said nozzles to said back side surface, and a plurality of grooves in said back side surface, each groove having one end in fluid connection with one nozzle passageway and another end aligned with one way of said gasket and one of said openings in said manifold plate bottom side surface, so that ink, passed by one of said dot valves in response to a timed electrical signal, passes through one outlet passageway to one groove, one nozzle passageway and one nozzle to the receptor.

4,564,847

IMAGE RECORDING ARRANGEMENT

Motohiko Hayashi, Ikoma; Toshiaki Karita, Sakurai; Matahira Kotani, Nara, and Hiromu Sasaki, Yamotokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 434,000, Oct. 13, 1982, Pat. No. 4,491,853.
This application May 9, 1984, Ser. No. 608,405
Claims priority, application Japan, Oct. 19, 1981, 56-167602; Oct. 19, 1981, 56-167603; Oct. 19, 1981, 56-167604; Oct. 19, 1981, 56-167605
Int. Cl.⁴ G01D *15/10*
U.S. Cl. 346—76 PH **10 Claims**

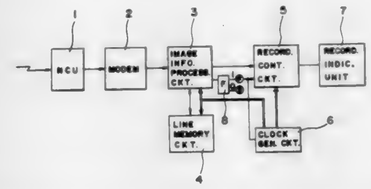
1. An image recording system comprising:

means for supplying information to be recorded;

recording head means for recording a predetermined number of bits along a record line, said recording head means including an array of colinearly aligned elements of a number one greater than needed to scan said predetermined number of bits, and an adjacent pair of elements at one end of said array having a single bit applied thereto;

means for feeding paper in a first direction aligned with said record line along a paper feed path; and

scan means for driving said recording head means transversely across said paper to scan said paper with each element of said recording head means in a single scan so as to scan a predetermined scan area of said paper having a predetermined scan width;



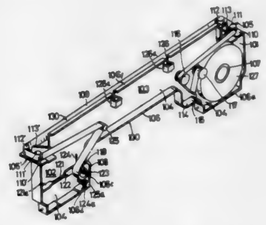
said means for feeding paper advancing said paper along said paper feed path a predetermined feed increment after each scan of said scan means to facilitate scanning of said paper by said recording head means in response to information supplied by said means for supplying said predetermined feed increment being slightly less than said predetermined scan width to ensure complete scanning of said paper the bit of said adjacent pair of elements at said one end overlapping the portion of an adjacent scan area.

4,564,848

PRINTER

Tadayuki Kuzumi, Kawasaki, Japan, assignor to Kyocera Corporation, Japan

Filed Mar. 29, 1984, Ser. No. 594,677
Claims priority, application Japan, Mar. 30, 1983, 58-52467; Mar. 30, 1983, 58-52469
Int. Cl.⁴ H05D *1/100*
U.S. Cl. 346—76 PH **9 Claims**



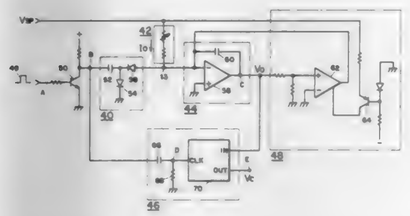
1. A printer which allows a plurality of heating elements disposed on a thermal head to selectively generate heat to thereby melt a transfer material coated on a printing tape and transfer said material onto a recording medium, said printer comprising: a printer body provided with a thermal head printing feed mechanism, a head restoration mechanism for restoring said head to the beginning of a print line, and a recording paper setting mechanism; a tape cassette comprising a supply reel for supplying said tape, a take-up reel for collecting said tape, and means for stretching said tape throughout the overall length of space provided for the movement of said head; means for mounting said cassette so that the axes of said reels are approximately orthogonal to the plane defined by said stretched portion of tape; and a tape take-up mechanism which winds up said tape so that the relative speed thereof to said head becomes substantially zero during the restoration process of said head.

4,564,849

COMPENSATION CIRCUIT FOR SYNCHRONIZING IMAGE MOTION WITH A MOVABLE RECORDING MEDIUM

Jerrold J. Rogers, Beaverton, and Judd L. Sirotiak, Tualatin, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 546,781, Oct. 27, 1983, abandoned.
This application Feb. 22, 1985, Ser. No. 704,899
Int. Cl.⁴ G01D *9/42, 15/24*
U.S. Cl. 346—110 R **8 Claims**



1. A compensation circuit for synchronizing image motion with a movable recording medium in a line scan type recording apparatus comprising:

a charge pump coupled to receive an electrical signal representative of an average velocity and short term velocity changes in a movable recording medium;

an integrator circuit coupled to the output of said charge pump; and

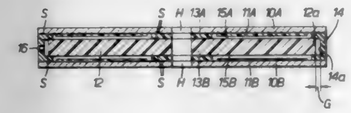
a current source interposed therebetween wherein said charge pump, in response to said electrical signal, draws a current from said integrator representative of said average velocity and short term velocity changes of said movable recording medium and wherein said current source produces a constant current that is coupled to said integrator and is representative of said average velocity of said movable recording medium such that an output electrical signal is produced by said integrator that is representative of short term velocity changes of said movable recording medium.

4,564,850

RADIATION-SENSITIVE RECORD DISC WITH IMPROVED INTERNAL STRUCTURE

Odawara Kazuharu, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 8, 1983, Ser. No. 550,028
Claims priority, application Japan, Nov. 10, 1982, 57-197103
Int. Cl.⁴ G01D *15/34*
U.S. Cl. 346—137 **7 Claims**



1. A radiation-sensitive record disc comprising:

a first disc member;

a second disc member coaxially positioned adjacent said first disc member to reinforce said first disc member;

first spacing means between said first and second disc members for fixedly connecting said disc members together to form an air space between said disc members;

a recording layer formed on one surface of said first or second disc members in the air space between said disc members; and

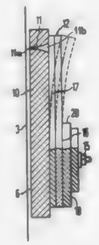
second spacing means radially displaced from said first spacing means and between said first and second disc members to form said air space, said second spacing means slidably contacting at least one of said first and second disc members for enabling said disc members to move relative to each other in a radial direction in response to expansion or contraction of at least one of said disc members.

4,564,851

RECORDING DEVICE FUNCTIONING WITH FLUID DROPLETS

Kenth Nilsson, Akersberga, and Jan Bolmgren, Vaellingby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 8, 1984, Ser. No. 578,088
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1983, 3306101
Int. Cl.⁴ G01D *15/18*
U.S. Cl. 346—140 R **14 Claims**



1. In a recording device functioning with fluid droplets for punctiform recording of analog curves of alphanumerical characters as well as images on a recording medium, said device having nozzles with intake openings and discharge openings disposed in a row for writing the individual points, a piezoelectric transducer for each intake opening, clamp means for positioning a transducer in front of each intake opening of the nozzle, each transducer having means for applying electrical voltage thereto so that when the electric voltage changes on the transducer, a writing fluid is ejected from the nozzle onto a recording medium disposed in front of the discharge openings of the nozzles, each of the individual transducers being formed by teeth of a comb-like piezoplate which is a bilaminar plate of a piezoceramic layer and a carrier layer, the improvements comprising the piezoceramic layer being provided with a reinforcing layer in the area of a comb spine shared by all of the teeth on a surface of the spine opposite the carrier layer, said reinforcing layer having an edge defining a length of an oscillatory part of each transducer.

4,564,852

PENS FOR LOW TORQUE CHART RECORDERS

Joseph Pelensky, Philadelphia, Pa.; James R. Hubbard, Moorestown, and John J. Scanlon, Mount Laurel, both of N.J., assignors to Graphic Controls Corporation, Buffalo, N.Y.

Continuation of Ser. No. 555,341, Nov. 28, 1983. This application Aug. 16, 1985, Ser. No. 767,053
Int. Cl.⁴ G01D *15/16*
U.S. Cl. 346—140 R **29 Claims**

1. A marker comprising:

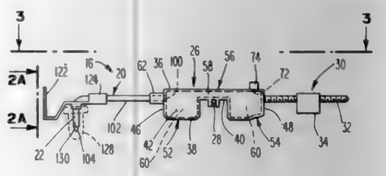
a bifurcated body having first and second ink reservoirs and a connector segment forming at least one ink passage between said reservoirs;

ink retaining material in each of said reservoirs;

means extending through said connector segment for conveying ink between said reservoirs and for maintaining equal levels of ink in said reservoirs;

a stylus tube extending in a first direction from a first end of said body for transmitting ink to a tip thereof; and

pivot means extending across said connector segment and



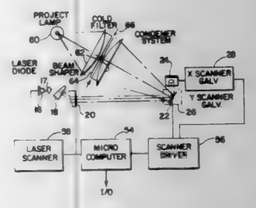
beyond the lateral sides thereof for engaging an associated pivot support on a yoke support outward of said lateral sides, said pivot means bisecting a centrally disposed line between said reservoirs.

4,564,853

ELECTRONIC IMAGE SENSING AND PRINTING APPARATUS

Richard G. Egan, Dover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 8, 1985, Ser. No. 699,564
Int. Cl.⁴ G01D *9/42*
U.S. Cl. 346—160 **13 Claims**



1. An electronic image printer of the type adapted to expose a photosensitive material with light derived from a source of incoherent light to print an image on the photosensitive material of a selected subject comprising:

laser means for providing a beam of coherent light;

means for modulating said coherent light beam in response to an electronic signal corresponding to the image of the subject selected for printing;

a laser addressed liquid crystal light valve;

light scanning means including at least one light reflective scanning surface for sweeping said modulated coherent light beam over the area of said liquid crystal light valve so as to address said liquid crystal light valve;

first optical means for focusing the light emanating from the source of incoherent light onto said light reflective scanning surface for projection by said light scanning means to uniformly illuminate the entire area of said liquid crystal light valve previously addressed by said beam of coherent light; and

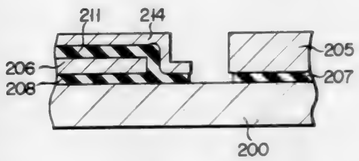
second optical means for directing the incoherent light transmitted through said liquid crystal light valve to expose the photosensitive material to the image of the subject selected for printing.

4,564,854

COMBINED MOS/MEMORY TRANSISTOR STRUCTURE

Mitsugi Ogura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 199,925, Oct. 23, 1980, abandoned.
This application Dec. 15, 1983, Ser. No. 562,033
Claims priority, application Japan, Oct. 29, 1979, 54-138655
Int. Cl.⁴ H01L *29/78, 27/04;* **G11C** *11/40*
U.S. Cl. 357—23.6 **4 Claims**



1. A semiconductor device which comprises:

a semiconductor substrate in which at least three elements are formed;

a first conductive substantially flat layer formed on the substrate to constitute a first element with a first insulation layer interposed between said first conductive layer and the substrate, said first conductive layer having a substantially uniform thickness and a side surface;

a second conductive substantially flat layer formed on the substrate to constitute a second element with a second insulation layer interposed between said second conductive layer and the substrate, said second conductive layer being thinner than said first conductive layer and having a side surface spaced from the side surface of said first conductive layer; and

a third conductive layer deposited over the second conductive layer to constitute a third element in a state superposed on said second conductive layer with a third insulation layer interposed between said second and third conductive layers, said third conductive layer having a side surface spaced from the side surface of said first conductive layer, the total thickness of said first insulation layer and said first conductive layer being substantially equal to the total thickness of said second insulation layer, said second conductive layer, said third insulation layer and said third conductive layer to position the top surfaces of said first and third conductive layers in the same horizontal plane, and with the side surface of said first conductive layer spaced from the side surfaces of said second and third conductive layers to provide a continuous vertically extending opening between said superposed second and third conductive layers and said first conductive layer.

4,564,855

HIGH CURRENT PNP TRANSISTOR FORMING PART OF AN INTEGRATED MONOLITHIC CIRCUIT

Francois Van Zanten, Paris, France, assignor to Thomson CSF, Paris, France

Filed Mar. 8, 1983, Ser. No. 473,672
Claims priority, application France, Mar. 12, 1982, 82 04216
Int. Cl.⁴ H01L *27/04*
U.S. Cl. 357—46 **4 Claims**

1. A semiconductor structure comprising:

(a) an N^+ substrate;

(b) a P layer covering said N^+ substrate;

(c) an N^- layer covering said P layer;

(d) means for defining a central zone and an annular zone, said defining means including non-intersecting innermost and outermost P^+ isolating walls passing through said N^- layer and at least partially penetrating into said P layer, said central zone being bounded by said innermost

P+ isolating wall, said annular zone being disposed between said innermost and outermost P+ isolating walls;

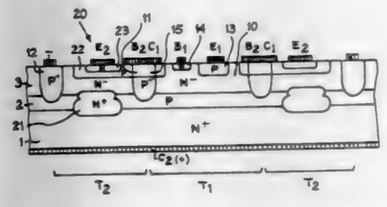
(e) a PNP transistor being disposed in said central zone and having:

(i) a P emitter zone formed in said central zone,

(ii) an N+ base zone formed in said central zone, and

(iii) said innermost P+ isolating wall providing a collector for said PNP transistor

(f) an NPN transistor controlled by said PNP transistor, disposed in said annular zone and including:



(i) a P base zone contacting said innermost P+ isolating wall,

(ii) an N emitter zone disposed on a portion of said P base zone, and

(iii) an N+ connecting zone contacting both said N+ substrate and said N− layer, said N+ connecting zone and said N+ substrate providing a collector for said NPN transistor, said N+ connecting zone being annular in structure to cause a central portion of said P layer to be isolated from portions of said P layer outside said annular N+ connecting zone.

4,564,856

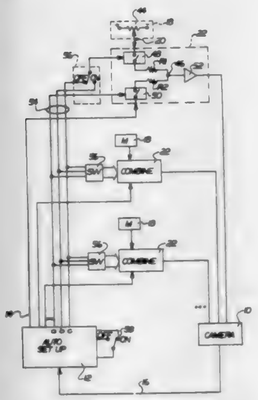
APPARATUS PROVIDING AUTOMATIC AND MANUAL CONTROL OF SETUP ADJUSTMENTS FOR TV CAMERAS

Gary M. Sanderson, and Charles M. White, both of Quincy, Ill., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 9, 1981, Ser. No. 252,474

Int. Cl.⁴ H04N *5/232*

U.S. Cl. 358—10 **18 Claims**



1. Apparatus for setting up a television camera in cooperation with a closed loop auto setup system which provides at least one setup control signal to the camera and, during an automatic setup operation, responds to at least one video signal provided by the camera to automatically adjust the level of the setup control signal, said apparatus comprising a manual control which permits manual variation of the level established by the auto setup system, and means for disabling the manual control during said automatic setup operation in such a manner that during said setup operation any setting of the manual control will not influence the level of the setup control signal.

4,564,857

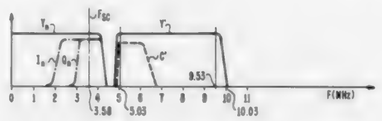
ASPECT RATIO IMPROVEMENT FOR COMPATIBLE HIGH-DEFINITION TELEVISION

Joseph L. LoCicero, Riverside; Melih Pazarci, Chicago, and Theodore S. Rzeszewski, Lombard, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 28, 1984, Ser. No. 584,526

Int. Cl.⁴ H04N *11/20, 11/06*

U.S. Cl. 358—11 **20 Claims**



1. A system for encoding high-definition luminance and chrominance information from a high-definition video source having low-frequency chrominance and luminance information and high-frequency luminance and chrominance information and extended aspect ratio luminance and chrominance information, said system comprises

means for encoding said low-frequency luminance and chrominance information into a first baseband signal;

means for encoding said high-frequency luminance and chrominance information into a second baseband signal;

means for filtering said extended aspect ratio luminance and chrominance information from said high-definition luminance and chrominance information;

means for gating said filtered extended aspect ratio luminance and chrominance information into said horizontal retrace interval of said second baseband signal; and

means for transmitting said first baseband signal and said second baseband signal including the gated extended aspect ratio luminance and chrominance information in said horizontal retrace interval thereof.

4,564,858

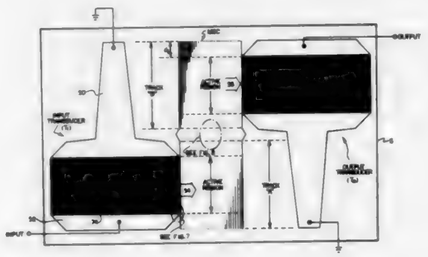
TELEVISION SAW/VSB FILTER INCORPORATING RECEIVER EQUALIZER

William A. Resch, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 363,819, Mar. 31, 1981, abandoned. This application Aug. 10, 1984, Ser. No. 640,209

Int. Cl.⁴ H04N *5/40;* **H03H** *9/44, 9/64*

U.S. Cl. 358—21 R **4 Claims**



1. A visual exciter for use in a TV broadcasting system comprising

means for receiving an unequalized and undelayed video signal to be broadcast,

IF modulator means for modulating an intermediate frequency (IF) carrier signal in accordance with said unequalized and undelayed video signal,

filtering means for filtering the modulated IF carrier signal provided by said modulator means, said filtering means comprising a SAW filter having an amplitude versus frequency characteristic selected to provide vestigial sideband filtering of said modulated IF carrier signal, and further having a time delay versus frequency characteristic selected to provide receiver equalization of said modulated IF carrier signal, and

frequency translating means responsive to the filtered and equalized signal provided by said filtering means for translating the frequency of said signal to a carrier frequency suitable for broadcasting.

4,564,859

METHOD AND AN APPARATUS FOR PRODUCING COLOR SEPARATIONS FOR SINGLE COLOR PRINTING

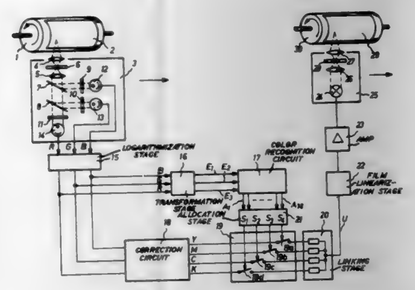
Hans-Georg Knop, Heikendorf; Michael Nowak, Kiel; Friedrich Redecker, Heikendorf, and Ralf Tiede, Klausdorf, all of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Oct. 19, 1983, Ser. No. 543,521

Claims priority, application European Pat. Off., Oct. 22, 1982, 82 109759.9; Dec. 24, 1982, 82 112002.9

Int. Cl.⁴ H04N *1/46;* **G03F** *3/08*

U.S. Cl. 358—75 **13 Claims**



8. An apparatus for producing color separations for single-color printing, comprising:

(a) an optoelectronic scanning means for scanning a master having a plurality of colors and for generating color signals;

(b) a color recognition means connected to the scanning means for producing color recognition signals from said color signals, said color recognition signals identifying the colors of said master during the scanning of said master;

(c) a correction means connected to the scanning means for generating corrected color separation signals from said color signals;

(d) circuit means connected to the correction means and to the color recognition means wherein corrected color separation signals are each controlled by at least one selected color recognition signal representing a selected color of said master and for forming a recording signal from at least two controlled corrected color separation signals; and

(e) a recording means connected to the circuit means and controlled by said recording signal for point-by-point and line-by-line recording of color separations for colors of said master.

4,564,860

METHOD AND SYSTEM OF MEASURING IMAGE AREA

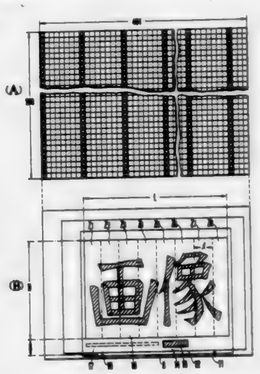
Toshio Ohta, Ibaragi, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 575,047

Claims priority, application Japan, Jan. 31, 1983, 58-13894

Int. Cl.⁴ H04N *7/18*

U.S. Cl. 358—107 **3 Claims**



1. In an image area measuring apparatus of the type wherein an image bearing surface of a lithographic printing plate is divided into a plurality of zones and photographed with a television camera to produce an analog image signal which is converted into a digital signal to obtain a measured value, the image area of each zone is calculated based on the measured value and a quantity of printing ink supplied at the time of printing to said lithographic printing plate is determined according to said image area, a method of measuring an image area of said lithographic printing plate, comprising the steps of:

forming a solid portion and a blank portion in a margin defining the image bearing surface of said lithographic printing plate, wherein said solid portion is formed in any part of a lateral lower portion of said margin, and said blank portion is formed in a left half of the lateral lower portion of said margin which corresponds to half of said image bearing surface, and wherein said solid and blank portions correspond to portions having 100% and 0% dot ratios, respectively;

defining a first average value of electrical signals obtained from said solid portion to be a first reference value for the 100% dot ratio, and a second average value of electrical signals obtained from said blank portion to be a second reference value for the 0% dot ratio; and

coverting electrical signals from said image bearing surface to area percentage data in accordance with the first and second reference values.

4,564,861

SUBTRACTION PROCESSING METHOD AND APPARATUS FOR RADIATION IMAGES

Kazuhiro Hishinuma, and Akihiro Ohga, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 23, 1983, Ser. No. 507,248

Claims priority, application Japan, Aug. 17, 1982, 57-142499

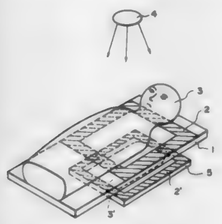
Int. Cl.⁴ H04N *5/32*

U.S. Cl. 358—111 **10 Claims**

1. A subtraction processing method for radiation images including the steps of recording two or more radiation images on separate stimulable phosphor sheets, at least a part of image information being different among said radiation images, scanning the respective stimulable phosphor sheets with stimulating rays to sequentially release the radiation energy stored in

the stimulable phosphor sheets as light emission, photoelectrically detecting the emitted light by a light detecting means to obtain digital image signals of the respective radiation images, and extracting an image of a specific structure contained in at least one of said radiation images by conducting a subtraction processing among said digital image signal,

the subtraction processing method for radiation images comprising:



(i) when each radiation image to be subtraction processed is recorded on each stimulable phosphor sheet, simultaneously recording a marker having a shape defining at least one edge portion of the radiation image area in a position fixed with respect to said radiation image, and

(ii) reading out image signals of said radiation image by using the detected signal of said edge portion defined by said marker as the synchronizing signal.

4,564,862

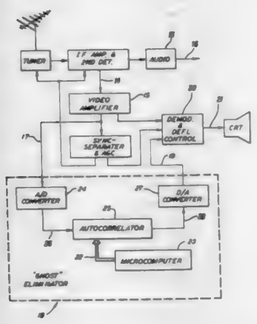
GHOST SIGNAL ELIMINATION CIRCUIT

Edwin Cohen, 5 Crestmont Rd., Binghamton, N.Y. 13905

Filed Aug. 9, 1982, Ser. No. 406,331

Int. Cl.⁴ H04N *5/21;* **H04B** *1/12*

U.S. Cl. 358—167 **1 Claim**



1. A ghost signal elimination circuit for eliminating an unwanted signal from a composite signal in which the unwanted signal is a replica of a wanted signal but is shifted in time from the wanted signal, comprising:

circuit means to receive said composite signal including the wanted signal and the unwanted replica signal;

autocorrelater circuit means connected to said circuit means to receive said wanted signal and said unwanted replica signal to compare the unwanted replica signal with the wanted signal according to the mathematical relationship:

$$C_{1,2} = \frac{1}{T_o} \int_{-T_o/2}^{+T_o/2} v_1(t) \cdot v_2(t + D)dt$$

where:

$C_{1,2}$ is the correlation between the wanted signal and the unwanted signal,

D is the time shift between the two signals,

T_o is the period of the two signals,

v_1 is the magnitude of the wanted signal,

v_2 is the magnitude of the unwanted signal;

said autocorrelator circuit means including means to perform the functions of time delay, multiplication and integration on said wanted signal and said unwanted signal, respectively, to generate a single output signal corresponding to said wanted signal, and

means connected to said autocorrelator circuit means for receiving said output signal for use with said ghost signal substantially eliminated.

4,564,863

METHOD AND DEVICE FOR ADJUSTING THE BLACK LEVEL OF A VIDEO SIGNAL

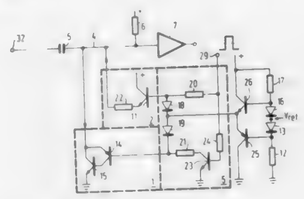
Pascal Chameroy, Puteaux, and Alain Decraemer, Garches, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,339

Claims priority, application France, Dec. 22, 1982, 82 21565

Int. Cl.⁴ H04N *5/18;* **H03L** *5/00;* **H03B** *1/04, 19/00*

U.S. Cl. 358—172 **4 Claims**



1. Device for adjusting the black level of a video signal which is transferred by a capacitor, the device being provided with a controllable voltage source connected to a conductor at an output of the capacitor which conducts said video signal, which voltage source is formed by a first part for delivering a current in a first direction, and by a second part for delivering a current in a second direction, in which one of the two parts has a weak internal impedance while the other part has a higher internal impedance, and in which a common control circuit simultaneously activates the two parts during the entire duration of a line flyback.

4,564,864

IMAGE FORMING APPARATUS

Katsuyoshi Maeshima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,431

Claims priority, application Japan, Nov. 4, 1981, 56-175716; Nov. 4, 1981, 56-175718

Int. Cl.⁴ H04N *1/32, 1/40*

U.S. Cl. 358—280 **13 Claims**

1. An image forming apparatus comprising:

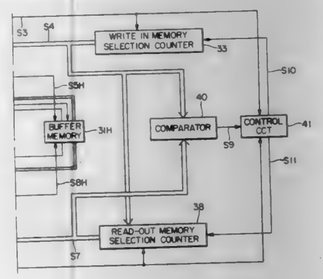
input means for sequentially entering image information, which information is organized in lines, on each line with a first timing;

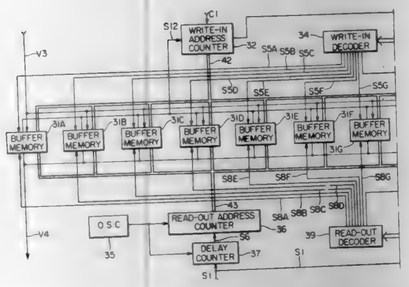
plural memory means each capable of storing a line of image information therein;

write-in means for sequentially selecting one by one said plural memory means, and writing in the image information entered from said input means into the selected memory means;

read-out means for sequentially selecting one by one said plural memory means, and reading out the image information on each line from the selected memory means with a second timing independent of the first timing, while the writing-in operation by said write-in means is carried out; and

recording means for performing image recording with the second timing in accordance with the image information read out from said memory means,





wherein said read-out means starts operation for selection of said memory means in accordance with the selection operation by said write-in means so as not to permit simultaneous selection of the same memory means by said write-in means and said read-out means.

4,564,865

PICTURE SCANNING AND RECORDING METHOD

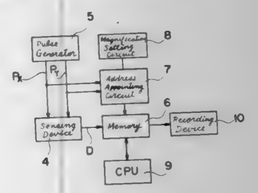
Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Filed May 10, 1983, Ser. No. 493,414

Claims priority, application Japan, May 24, 1982, 57-88355

Int. Cl.⁴ H04N *1/04*

U.S. Cl. 358—287 **2 Claims**



1. A method for recording at a predetermined magnification ratio a reproduction of a figure in an original picture from image signals corresponding to pictorial elements of the figure obtained by photoelectrically scanning the picture, comprising the steps of:

writing successive image signals into a memory device at successive designated addresses, each such designated address having a magnification unit group of addresses defining a matrix of addresses associated therewith;

for each such matrix whose designated address holds a non-blank signal, writing that non-blank signal into all addresses of the matrix, thereby forming a filled matrix;

for each such matrix whose designated address holds a blank image signal and has blank addresses located diagonally between addresses of adjacent filled matrices, writing into each such blank address the non-blank image signal of one of the adjacent filled matrices, thereby smoothing rugged contour lines of the figure whose image signals are stored in the memory device; and

sequentially reading image signals written into the memory device by the foregoing steps to operate a recording device, thereby recording the reproduction at the predetermined magnification ratio.

4,564,866

OPTICAL PRINTER

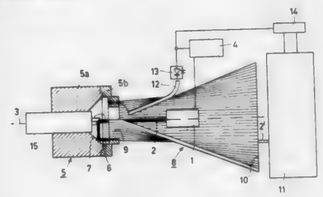
Albert Comberg, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 24, 1982, Ser. No. 444,414

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146872

Int. Cl.⁴ H04H *1/22*

U.S. Cl. 358—302 **6 Claims**



1. An optical printer, comprising an information-controlled light source radiating a light beam along an axis; rotatable mirror means for reflecting the beam from said axis through an angle in a radial plane passing through said axis, said means including means for continuously rotating the angular position of said radial plane; a circular-to-linear convertor consisting of an array of optical fibers, each of said fibers having a first and a second end, the respective second ends being arranged in a straight line; and a photosensitive record carrier disposed opposite said second ends for receiving light from respective ones of the fibers,

characterized in that said first ends of said fibers are arranged parallel to each other in a circular cylindrical pattern coaxially about said axis, each first end having a face which is perpendicular to said axis, and

said printer comprises a conical mirror arranged coaxially about said axis, arranged to reflect said light beam into a selected at least one of said end faces corresponding to the instantaneous angular position of the rotatable mirror means.

4,564,867

VIDEO DISC RECORDING AND REPRODUCING DEVICE FOR VIDEO DISCS HAVING RECOGNITION SIGNAL INDICATIVE OF CONTENT OF ASSOCIATED PROGRAM SIGNAL

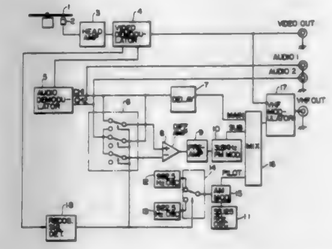
Tohru Nakajima, Saitama, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Jul. 23, 1981, Ser. No. 286,222

Claims priority, application Japan, Jul. 24, 1980, 55-104844[U]; Mar. 16, 1981, 56-36611[U]

Int. Cl.⁴ H04N *5/76*

U.S. Cl. 358—342 **5 Claims**



1. A video disc system, comprising; a video disc on which a video signal and two-channel audio signals are recorded in a multiplex mode, a recognition signal multiplexed with said video and audio signals, detecting means for detecting said recognition signal upon playing said video disc, said recognition signal identifying whether said audio signals are stereo program signals or split program signals recorded in a multiplex mode, signal reproduction means for reproducing said two-channel audio signals and video signal, respectively, selection means for selecting processing of said reproduced two-channel audio signals as (1) a pair of sum and difference signals or, (2) a pair of audio signals processed independently of each other, in response to said recognition signal detected by said detecting means.

4,564,868

VIDEO TAPE RECORDER HAVING IMPROVED AUDIO CHARACTERISTICS

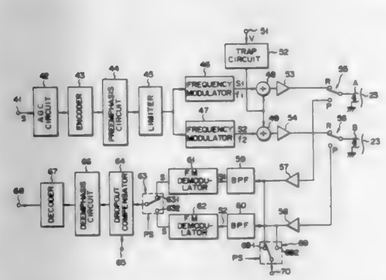
Yasunari Arafune, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 2, 1983, Ser. No. 463,300

Claims priority, application Japan, Feb. 4, 1982, 57-15516; Nov. 19, 1982, 57-202947

Int. Cl.⁴ H04N *5/782*

U.S. Cl. 360—19.1 **19 Claims**



1. A video tape recorder comprising:

first and second video heads adapted to helically scan a magnetic tape to record a sigal thereon or to reproduce a signal therefrom;

frequency modulating means for frequency-modulating an audio source signal in a recording mode to produce a first audio recording signal;

first frequency-converting means for frequency-converting the first audio recording signal in the recording mode to produce a second audio recording signal adapted to be recorded on said magnetic tape, and for frequency-converting a second audio playback signal reproduced from said magnetic tape in a playback mode to produce a first audio playback signal;

second frequency converting means for frequency-converting the first audio recording signal in the recording mode to produce a third audio recording signal to be recorded on said magnetic tape and for frequency-converting a third audio playback signal reproduced from said magnetic tape in the playback mode to produce a first audio playback signal;

FM demodulating means for FM-demodulating the first audio playback signals from said first and second frequency-converting means to reproduce an audio source signal;

switching means for supplying the second and third audio recording signals from said first and second video heads, in the recording mode, and for supplying the second and third audio playback signals reproduced by said first and second video heads to said first and second frequency converting means, respectively, in the playback mode; and

carrier generating means for generating first and second carrier signals for frequency conversion which are supplied to said first and second frequency converting means, respectively, the frequency of said first carrier signal being different from the frequency of said second carrier signal.

4,564,869

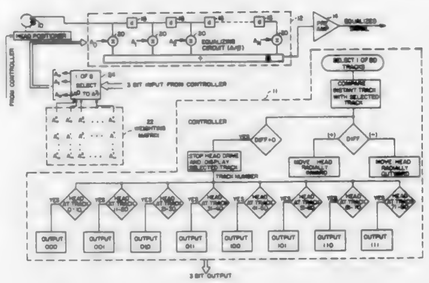
ZONED EQUALIZATION FOR A MAGNETIC DISC

Hans-Peter Baumeister, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1983, Ser. No. 553,894

Int. Cl.⁴ G11B *5/09, 5/45*

U.S. Cl. 360—46 **7 Claims**



1. Apparatus for use with a rotatable magnetic recording disc of the type disposed to have information magnetically recorded about the rotary axis of said disc, said apparatus comprising:

(a) means for rotating said magnetic disc about the rotary axis thereof,

(b) magnetic head means cooperative with said disc for Processing signals to or from said disc,

(c) means for positioning said magnetic head means from one radial position relative to the rotary axis of said disc to another radial position relative to said rotary axis,

(d) equalizer means for modifying said signals, and

(e) means cooperative with said means for positioning said magnetic head means for altering the operation of said equalizer means as a function of the radial distance of said head from the rotary axis of said disc,

said magnetic head means being a playback head, and said means for altering the operation of said equalizer means comprising:

(a) means for separating the radial positions of said head into zoned positions thereof, and

(b) means for incrementally altering the operation of said equalizer means in accordance with the zoned positions of said head,

said equalizer means being a transversal filter, and said apparatus further comprising:

(a) means for providing a plurality of groupings of weighting constants for said filter, and

(b) means for selectively applying said groupings of weighting constants to said filter respective of said zoned positions.

4,564,870

SIGNAL DETECTOR OF MAGNETIC DISK APPARATUS

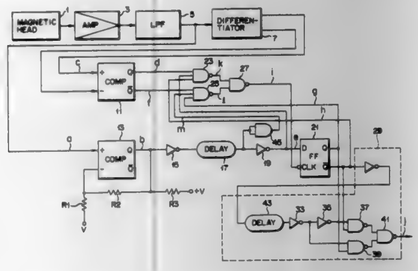
Shunji Kitamura, Hanno, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 23, 1983, Ser. No. 535,163

Claims priority, application Japan, Sep. 28, 1982, 57-168853

Int. Cl.⁴ G11B *5/09, 5/02*

U.S. Cl. 360—51 **9 Claims**



1. A signal detector for a magnetic disk apparatus having a magnetic head for reading/writing data and a differentiator circuit for differentiating an analog signal produced by said magnetic head, comprising:

zero crossing means, coupled to said differentiator circuit, for detecting the zero-crossing point of the output of said differentiator circuit;

peak detecting means, coupled to said differentiator circuit, for generating a signal representing the peaks of the output signal from said magnetic head;

gate enable signal generating means, coupled to said output from said magnetic head, for generating a signal enabling said zero crossing means to supply an output to said peak detecting means based on said output signal from said magnetic head; and

gate disable signal generating means for prohibiting the output from said zero crossing means from being supplied to said data generating means, based on the output from said gate enable signal generating means and the output from said gate disable signal generating means;

said peak detecting means being coupled to said zero detecting means, said gate enable signal generating means and said gate disable signal generating means.

4,564,871

AUTOMATIC RECORD-LOCKOUT MECHANISM

Claude E. Cybulski, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 27, 1983, Ser. No. 565,879

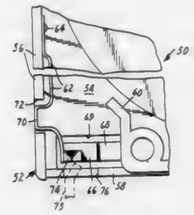
Int. Cl.⁴ G11B *15/04*

U.S. Cl. 360—60 **17 Claims**

1. Tape cassette comprising a housing having broad, parallel facewalls and connecting edgewalls, in one of which is formed a record-lockout opening, said housing incorporating an automatic record-lockout mechanism comprising

spring means, including a record-lockout tab pivotably mounted between said facewalls, for biasing said tab away from said record-lockout opening, and

means mounted between said facewalls for cocking said spring means with its record-lockout tab blocking said record-lockout opening,



said spring means including means actuatable by a tang projecting from a cassette deck for releasing said cocking means while retaining said record-lockout tab in the blocking position in the presence of the tang and allowing said tab to pivot to unblock the record-lockout opening when the cassette is removed from the deck and its tang.

4,564,872

MAGNETIC HEAD DRIVING UNIT

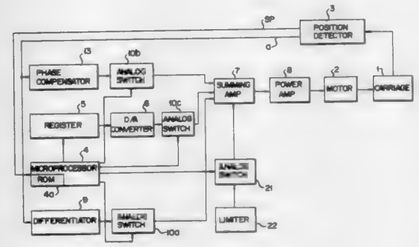
Yasuyuki Oda, and Kazuhiko Iwase, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 16, 1983, Ser. No. 523,775

Claims priority, application Japan, Aug. 26, 1982, 57-148216

Int. Cl.⁴ G11B *5/55*

U.S. Cl. 360—78 **3 Claims**



1. A magnetic head driving unit, comprising:

magnetic head means;

carriage means for implementing a seek operation of said magnetic head means;

motor means for driving said carriage means;

data processing means for determining whether the first seek operation is completed, which positions the head on a predetermined cylinder when the magnetic head driving unit is powered;

analog switch means operated by a control signal from said data processing means after the determination; and

driving current control means for restraining the driving current for the motor in a predetermined value at the first seek operation when said analog switch is ON, thereby restraining the maximum acceleration of said carriage means.

4,564,873

MAGNETIC RECORDING AND REPRODUCING APPARATUS

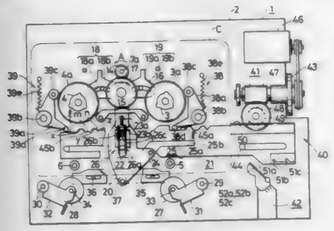
Koosuke Hashimoto, and Motoyuki Gotoh, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Sep. 30, 1982, Ser. No. 429,989

Claims priority, application Japan, Oct. 6, 1981, 56-160632; Oct. 7, 1981, 56-161734; Oct. 7, 1981, 56-161735; Oct. 7, 1981, 56-161736; Oct. 7, 1981, 56-161737; Oct. 7, 1981, 56-161738; Oct. 12, 1981, 56-162248

Int. Cl.⁴ G11B *5/008, 17/00*

U.S. Cl. 360—90 **12 Claims**



1. A magnetic recording and reproducing apparatus having a pair of magnetic tape reels and a magnetic tape, comprising:

a base plate;

a forward and reverse rotation driving mechanism having an output shaft rotating one of forward and reverse directions;

first and second reel gears each having a rotation shaft and each of said first and second reel gears for driving the pair of magnetic tape reels, said first and second reel gears being rotatably supported by the rotation shafts attached to the base plate at a predetermined distance from the base plate;

a pinion being disposed between said first and second reel gears and in rotatable contact with the output shaft for rotating in one of the forward and reverse directions, said pinion being rotated in association with the output shaft of the forward and reverse rotation driving mechanism;

an idler gear engaged with said pinion and being pivotable between two engage positions to selectively engage one of said first and second reel gears; and

a rack secured to said base plate, said rack being engaged with said idler gear at an approximately center position between the two engage positions, and said rack providing a feeding force to said idler gear through one of the forward and reverse direction rotations of said pinion.

4,564,874

CASSETTE RECORDER WITH FREELY PIVOTING EJECTION LEVER

Lucas W. M. Schijven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,936

Claims priority, application Netherlands, Aug. 17, 1981, 8103832

Int. Cl.⁴ G11B *15/68*

U.S. Cl. 360—96.1 **20 Claims**

1. A cassette recorder comprising:

a chassis,

a head support mounted on the chassis for movement with respect to the chassis, and a pressure roller and a magnetic head mounted on the support,

an ejection spring,

a cassette compartment for receiving a magnetic cassette,

an ejection lever pivotably mounted to said chassis, and arranged such that, upon insertion of a cassette into said compartment the lever is pivoted in an insertion direction to an end position so as to tension the ejection spring,

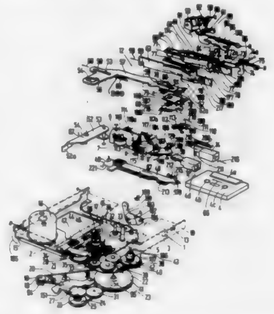
a capstan arranged for driving a magnetic tape in a cassette placed in the compartment, and drive means for driving the capstan and for transporting the tape past the magnetic head,

switching means for moving the head support toward the cassette,

means, responsive to pivoting of said lever in said insertion direction, for actuating said switching means to move the head support toward the cassette,

characterized by comprising an ejection member arranged to be movable with respect to said chassis in at least a first direction between a rest position and an actuated position,

means for connecting the ejection spring to the ejection member arranged such that the ejection spring is tensioned by movement of the member in said first direction,



latching means for latching the ejection member in an actuated position, and

means for coupling the ejection member to the ejection lever, at least during insertion of the cassette, arranged such that said ejection member is moved from the rest position to the actuated position in response to said pivoting of said lever in said insertion direction, and the ejection lever can be pivoted freely over at least a given distance, relative to the ejection member, when the ejection member is in the actuated position; and that, upon release of said latching means, said ejection member moves from the actuated position to the rest position under the influence of said ejection spring, the force of the tensioned ejection spring pivoting said ejection lever to eject an inserted cassette from the compartment.

4,564,875

CASSETTE LOADING DEVICE IN A CASSETTE TAPE RECORDER

Ryuji Ihara, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

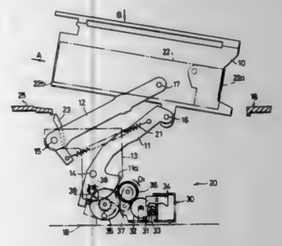
Filed May 20, 1982, Ser. No. 380,426

Claims priority, application Japan, May 29, 1981, 56-78524[U]; May 29, 1981, 56-78527[U]

Int. Cl.⁴ G11B *15/00, 17/00*

U.S. Cl. 360—96.6 **6 Claims**

1. A cassette loading device in a cassette tape recorder having a cassette housing adapted to receive and accommodate a cassette which is extractably inserted thereinto, said housing moving between a cassette extraction position and a cassette loading space, said cassette loading device comprising a pair of flanges mounted on a chassis, two pair of support arms having top ends which are pivotally connected to the cassette housing and bottom ends which are connected to said pair of flanges so that the cassette housing is supported and substantially vertically displaced between the cassette extraction position and the cassette loading space, and a cassette guiding member having a curved surface which is disposed to face said cassette loading space in order to guide the cassette into said cassette loading space, said curved surface having a pair of protruding and inclined guide ribs which function, during a cassette loading operation with the cassette in a state wherein it is not completely accommodated within the cassette housing, to guide



the rear part as viewed in the insertion direction of the cassette at an intermediate point during the entering of the cassette housing wherein upon completion of the cassette loading operation, the cassette guiding member does not contact the cassette into the cassette loading space to press the cassette fully and positively into the cassette housing.

4,564,876

ROTARY MAGNETIC HEAD DEVICE

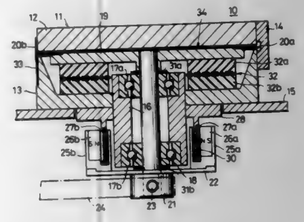
Toshinori Takahashi, Kawasaki; Hisanori Tsumiyama; Keigo Okano, both of Yokohama, and Yoshitaka Iwabuchi, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 23, 1982, Ser. No. 443,922

Claims priority, application Japan, Nov. 30, 1981, 56-192495

Int. Cl.⁴ G11B *5/52, 21/04, 21/18*

U.S. Cl. 360—107 **9 Claims**



1. A rotary magnetic head device comprising:

a rotary body having magnetic heads mounted thereon, said heads rotating while scanning over a traveling magnetic tape, said heads scanning over tracks formed obliquely with respect to the longitudinal direction of the tape to reproduce recorded signals;

bearing means for bearing said rotary body in a freely rotatable state and in a state freely displaceable in a direction parallel to an axis of rotation of said rotary body; and

displacing means for electromagnetically displacing said rotary body along a path parallel to the axis of rotation thereof so that said heads are displaced simultaneously to follow and scan over tracks on said tape.

4,564,877

MAGNETIC RECORDING/REPRODUCING SYSTEM WITH WIDE-GAPPED TRANSDUCER AND METHOD FOR USING SAME

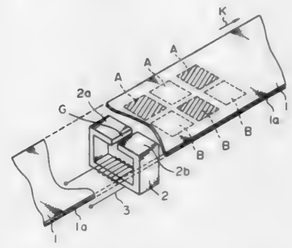
Joichiro Ezaki; Hiroshi Kanai, and Yoshimi Kitahara, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,682

Claims priority, application Japan, Apr. 28, 1982, 57-72211; Apr. 28, 1982, 57-72212; Apr. 28, 1982, 57-72213

Int. Cl.⁴ G11B *5/22, 5/30*

U.S. Cl. 360—114 **8 Claims**



1. A method of recording digital information on a magnetic recording medium comprising the steps of:

moving a magnetic head relative to the magnetic recording medium, the magnetic head being designed in the shape of a C-ring with a pair of confronting yokes, said yokes defining a gap therebetween having a longitudinal direction coinciding with the direction of said relative movement, said gap being wide enough so that magnetic flux generated in said C-ring by flowing current in a coil wound around the C-ring does not short-circuit said gap, but goes through the first yoke, a first region of the recording medium, a second region of said recording medium, and the second yoke of said head;

generating magnetic flux according to the respective shapes of the surfaces of the yokes of the magnetic head facing the magnetic recording medium; and

differentially magnetizing two regions of the magnetic recording medium to record a pair of two dimensional patterns thereon for each bit of information, the two regions being aligned transverse to the direction of said relative movement.

4,564,878

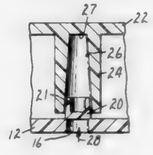
CASSETTE REMOVABLE PIECE

Mark W. Weavers, Little Canada; Charles D. Gebeke, White Bear Lake, both of Minn., and Ken'ichi Yamasaki, Tokyo, Japan, assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 7, 1984, Ser. No. 577,778

Int. Cl.⁴ G11B *23/02, 15/04*

U.S. Cl. 360—132 **9 Claims**



1. A recording cassette comprising a pair of shells, each having a broad wall, and a length of recording medium within the shells, said shells including a removable piece adapted to be

broken from one broad wall to form a hole that can be recognized by a hole-sensing mechanism of a deck adapted to receive the cassette and a chamber projecting from the other broad wall, said chamber having an inner surface defining an opening adjacent to and larger than said removable piece for receiving the removable piece, and a tapered interior having a portion smaller than the piece that will frictionally engage and permanently retain the removable piece when the removable piece is forced into the chamber.

4,564,879

ELECTRONIC POWER OVERLOAD PROTECTION CIRCUIT

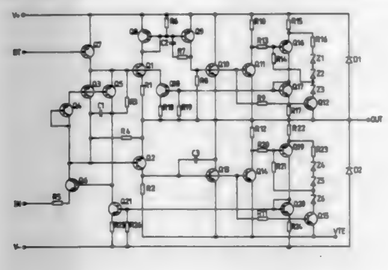
Luc A. Bienstman, Mechlin, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 8, 1983, Ser. No. 530,181

Claims priority, application Belgium, Sep. 20, 1982, 894437; European Pat. Off., Aug. 25, 1983, 83201226.4

Int. Cl.⁴ H02H *7/20*

U.S. Cl. 361—98 **16 Claims**



1. Electronic power overload protection circuit for limiting the output power of a signal amplifier, comprising means for sensing the output voltage of the amplifier; and means for limiting the output current of the amplifier in dependence on the output of said sensing means, when said output voltage is between a lower one and a higher one of two predetermined output voltage values, to a first threshold which gradually decreases substantially linearly with increasing output voltage at a first rate and, when said output voltage exceeds said higher one of said predetermined output voltage values, to a second threshold which gradually decreases substantially linearly with increasing output voltage at a second rate that is lower than said first rate.

4,564,880

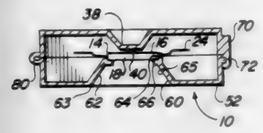
APPARATUS AND METHOD FOR PROTECTING INTEGRATED CIRCUITS

Allen E. Christ, Scottsdale, and Thomas A. Roche, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 14, 1984, Ser. No. 589,904

Int. Cl.⁴ H05F *1/02*

U.S. Cl. 361—212 **18 Claims**



1. A carrier having a closed mode for housing an integrated circuit having conductive leads attached to a rigid body, said carrier comprising:

(a) an enclosure having a top section and having a bottom section;

(b) means for electrically connecting said enclosure top and bottom sections together;

(c) means for maintaining said enclosure top and bottom sections in the closed mode; and

(d) means for holding the integrated circuit rigid body inside said enclosure between said top and bottom sections so that the conductive leads are unsupported by the carrier.

4,564,881

DEVICE FOR ELECTRICALLY MEASURING A LIQUID LEVEL

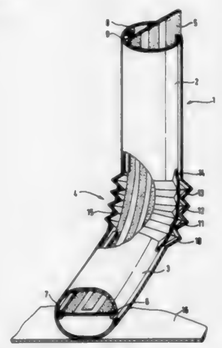
Bernhard Kant, Eschborn, and Hasko Jakobs, Hofheim, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 10, 1984, Ser. No. 659,472

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1983, 3339325

Int. Cl.⁴ H01G *5/36;* **G01F** *23/26*

U.S. Cl. 361—284 **9 Claims**



1. In a device for electrically measuring a level of a liquid contained within a container, the device having a conductive foil which is surrounded by a protective tube and which extends into the liquid, the foil being either a temperature-dependent electrically externally-heated resistance foil wherein the resistance can be determined by an evaluation circuit and wherein the resistance is dependent on the level of the liquid in the container or a capacitance foil bearing two conductors which form a capacitor wherein the capacitance can be determined by an evaluation circuit and wherein the capacitance is dependent on the level of the liquid in the container, in both cases the conductive foil being developed as a flat band and being held untwisted in the protective tube, by holding members which act on at least one of the longitudinal edges of the conductive foil, in such a manner that both of its surfaces can be washed over by the liquid, the improvement wherein:

the protective tube comprises two rigid tube sections;

joint means for connecting said two rigid tube sections to each other;

said joint means being movable transverse to the surface of the conductive foil;

said joint means urging the tube sections into a position in which they are aligned with other.

4,564,882

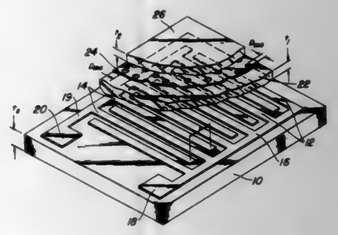
HUMIDITY SENSING ELEMENT

Ronald D. Baxter, and Paul J. Freud, both of Furlong, Pa., assignors to General Signal Corporation, Stamford, Conn.

Filed Aug. 16, 1984, Ser. No. 641,534

Int. Cl.⁴ H01G *5/20*

U.S. Cl. 361—286 **10 Claims**



1. A capacitance humidity sensing element comprising:

a non-conducting substrate;

at least two separate thin metal film electrodes deposited on said substrate;

a first thin dielectric film of a water absorbing material covering said electrodes and the supporting substrate, said material being such that its dielectric constant varies with the amount of water absorbed;

an electrically conductive water permeable mesh covering said first dielectric film, said mesh having openings which are substantially evenly distributed over its surface to provide its water permeable characteristic; and

a second thin film of water absorbing material covering said mesh.

4,564,883

CONTROL UNIT FOR A MOTOR VEHICLE WHICH CAN BE ACCOMMODATED IN A TRIM COMPONENT

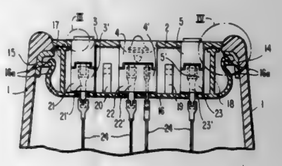
Wilhelm Bauer, Sindelfingen; Josef Berger, Wolfschlugen; Horst Dahm, Ostelsheim; Hans Klemm, Sindelfingen; Peter Schmid, Schorndorf; Horst Seidl, Boblingen, and Dietmar Walter, Winnenden, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 4, 1982, Ser. No. 439,021

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143888

Int. Cl.⁴ H02B *1/04*

U.S. Cl. 361—334 **5 Claims**



5. A control unit removably attached in an aperture to a trim component, the trim component having parallel guide means and installed inside a passenger compartment of a motor vehicle, the control unit having at least one switch and at least one base for receiving an electrical signal comprising:

a baseplate receiving said at least one base, the baseplate having clip means attaching the baseplate to the trim component in such a manner that the baseplate can be shifted in the plate defined by the outline of the baseplate,

a masking plate means forming a cover panel and engaging the baseplate for stabilizing the position of the baseplate positionally with respect to the trim component and wherein

the baseplate comprises at least one handhold.

4,564,884

ELECTRICAL APPARATUS WITH BASE PLATE

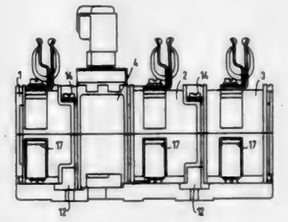
Wilfried Kliemt, Amberg, and Manfred Krones, Freihung, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 13, 1983, Ser. No. 503,799

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1982, 8218134[U]

Int. Cl.⁴ H02B *1/04*

U.S. Cl. 361—353 **4 Claims**



1. An electrical device of the type formed of a plurality of individual substantially plate-shaped multipolar switching components which are secured to a base plate, the base plate comprising at least first and second base plate portions disposed in a common first plane extending substantially perpendicularly to said multipolar switching components, said multipolar switching components being secured to only said first base plate portion, said base plate portions being separably joined to one another along a second plane extending perpendicularly to said multipolar switching components and said first plane, one of said base plate portions being provided with a plurality of integral projections disposed in said first plane, the other of said base plate portions being provided with a plurality of recesses, said projections extending into said recesses in an assembled state of said base plate portions, said second base plate portion taking the form of an electrical socket plate including an extension arranged at an angle with respect to said first base plate portion, said extension being provided with a plurality of socket formations along an edge parallel to and spaced from said first plane.

4,564,885

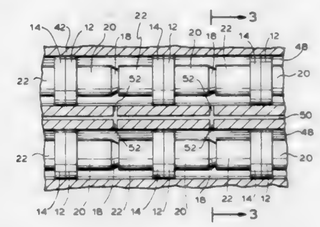
RECTIFIER WITH SLUG CONSTRUCTION AND MOLD FOR FABRICATING SAME

T. Michael McCann, Taipei, Taiwan, assignor to General Instrument Corporation, New York, N.Y.

Filed Sep. 10, 1984, Ser. No. 648,672

Int. Cl.⁴ H01G *9/16;* **H01L** *23/28, 3/00*

U.S. Cl. 361—436 **12 Claims**



1. A rectifier comprising a substantially cylindrical body

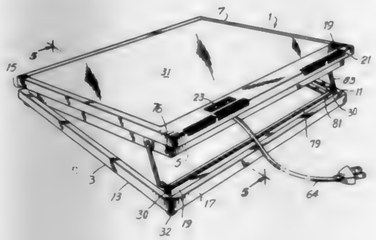
situated between first and second end parts to form a unit, said end parts extending radially beyond the surface of said body and defining therebetween a recess adapted to receive a molding compound applied by injecting the compound into the recess when the unit is situated within a substantially cylindrical cavity in a mold, the cavity having a diameter substantially equal to the diameters of said end parts and being substantially longer than said unit, the end parts cooperating with the cavity walls to substantially seal said recess from the remainder of the cavity, the compound being injected into the recess through an opening in said cavity wall aligned with the recess.

4,564,886

PORTABLE LIGHT BOX

Bernard Morcheles, Short Hills, N.J., assignor to Stacor Corporation, Newark, N.J.

Filed Oct. 7, 1982, Ser. No. 433,254
Int. Cl.⁴ G09F *13/04*; F21L *15/12*
U.S. Cl. 362—97 **10 Claims**



1. A portable light box comprising:
(a) a light tray;
(b) a light source arranged in said light tray;
(c) a cover hinged to said light tray for relative rotation of said cover about an axis, said cover being provided with an aperture;
(d) a diffuser arranged in said aperture;
(e) a base hinged to said light tray for relative rotation of said base about an axis; and
(f) bail means arranged to releasably engage said cover and said light tray, whereby said cover and light tray can be coupled, and arranged to rotate about an axis defined by said coupling, said bail means having first and second positions, wherein said bail means supports said cover and said light tray at a predetermined angle of inclination with respect to said base when said bail means is in said first position, and said bail means extends outside of said light box for use as a carrying handle when said bail means is in said second position and said cover is closed with respect to said base.

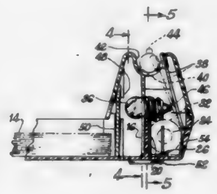
4,564,887

LIGHTED NOTEPAPER TRAY

Mike Kier, 9134 Dillon, La Mesa, Calif. 92041

Filed Jul. 25, 1983, Ser. No. 516,540
Int. Cl.⁴ F21V *33/00*
U.S. Cl. 362—99 **3 Claims**

1. A lighted notepaper holder comprising:
(a) a frame defining a notepaper tray;
(b) lighting means in said frame to illuminate paper in said tray;
(c) an open trough with outer regions defined by said frame;
(d) an electrical circuit for energizing said lighting means;
(e) a switch having a trigger biased into said trough which is displaced to open said circuit when a writing implement is placed in said trough, and closes said circuit when said implement is removed from said trough, said trigger also serving as a detent to removably hold a writing implement in place in said trough;
(f) said trigger being positioned to bear against an upper portion of a writing implement in said trough and having a downward component of force against said writing implement to act as a detent for same when in said trough;
(g) said circuit consisting of a single pair of conductive wires interconnecting a light bulb and two-terminal battery means and defining a switch therewith; and
(i) one of said wires being coiled at one end to define a socket for said light bulb and at the other end defining a contact for one terminal of said battery means; and,
(ii) the other of said wires having one end defining a contact for the other terminal of said battery means and the other end of said other wire being resilient and passing beyond, said being biased against, the terminal tip of said light bulb to define said on-off switch therewith, and terminating in said trigger such that movement of said trigger toward the outer regions of said trough as by inserting a pen in said trough opens said switch and de-energizes said bulb.



3. A lighted notepaper holder comprising:
(a) a frame defining a notepaper tray;
(b) said frame having a body, and a head end with a lower portion defining a battery compartment and a removable cap over said battery compartment;
(c) said cap housing illumination means powered by batteries in said battery compartment to illuminate paper in said tray;
(d) a removable translucent panel captured between said cap and lower portion of said head end defining said battery compartment, said panel being disposed between said lighting means and said notepaper tray to diffuse light from said lighting means onto said tray;
(e) the lower portion of said head end defining an upright panel having spaced cutaways therein and said removable cap has elongated depending detents which snap into engagement with said cutaways; and
(f) said head portion defining access openings adjacent said cutaway portions to enable said detents to be snapped out of engagement with said cutaways externally of said frame to release said cap to provide battery access.

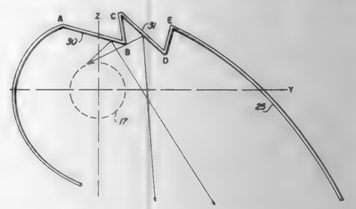
4,564,888

WALL-WASH LIGHTING FIXTURE

Ian Lewin, Scottsdale; Richard V. Heinisch, Phoenix, and Arnold L. Tanunliong, Tempe, all of Ariz., assignors to Linear Lighting Corp., Long Island, N.Y.

Filed Nov. 28, 1984, Ser. No. 675,955
Int. Cl.⁴ F21V *7/00*
U.S. Cl. 362—147 **12 Claims**

1. A lighting fixture for providing substantially uniform light distribution along a flat wall surface from an elongated lamp, including in combination:
a housing having an elongated light emitting opening of a predetermined length therein in a plane substantially perpendicular to the wall surface to be illuminated;
a reflector in said housing extending along said predetermined length of the opening therein and comprising first and second end sections separated by and interconnected to a central section;
means for mounting an elongated lamp in said housing between said reflector and the opening in said housing, whereby said reflector directs light reflected from said lamp mounted in said housing outwardly through the



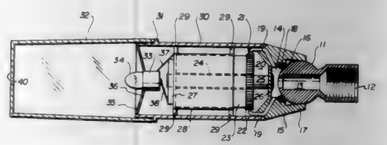
elongated opening in said housing toward the wall surface; and
wherein said central section of said reflector has portions thereof structured to direct a greater percentage of light from the lamp downwardly on the wall surface a greater distance than from said end sections.

4,564,889

HYDRO-LIGHT

Frank J. Bolson, Rte. #1, Box 86-#6, Cottonwood, Calif. 96022

Continuation of Ser. No. 356,780, Nov. 10, 1982, abandoned.
This application Jul. 10, 1984, Ser. No. 629,329
Int. Cl.⁴ F21V *31/00*
U.S. Cl. 362—192 **1 Claim**



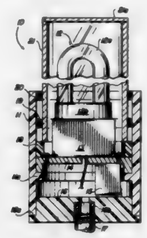
1. A hydro-light, comprising a main body having a substantially longitudinal axis and further having forward and rearward end portions, a pair of support webs within the body and constituting first and second support webs axially spaced relative to one another, an electrical generator including a stator mounted within the first and second support webs, the generator further including an armature within the stator, a vaned wheel in the main body rearwardly of the generator and arranged for driving the armature, means for accommodating water flow into the rearward end portion of the body, against the vaned wheel and axially of the body, and through the first and second support webs between the generator and the body, a third support web mounted substantially on the forward end portion of the body, the third support web including a reflector portion and having an opening therein for flow of water therethrough, a light bulb mounted in a socket on the reflector and connected to the generator, a substantially-cylindrical elongated lens cap mounted on the forward end portion of the body, and the lens cap having a substantially flat end wall provided with a plurality of apertures for flow of water therethrough, thereby providing a substantially fine spray illuminated by the light radiating from the bulb.

4,564,890

OUTDOOR LIGHTING FIXTURE USING U-SHAPED FLUORESCENT LAMP

David D. Poyer, 858 Roseway St., Naples, Fla. 33942

Filed Dec. 7, 1984, Ser. No. 679,551
Int. Cl.⁴ F21S *5/00*
U.S. Cl. 362—216 **4 Claims**



1. A fluorescent lighting fixture for outdoor use comprising:
a cylindrical housing made entirely of polyvinyl chloride and having an upper end, a lower end and generally concentric inner and outer walls,
said housing having an annular ring projecting from its inner wall,
a fluorescent lamp assembly consisting of a U-shaped fluorescent lamp, a socket for said lamp, a circular base supporting said socket having upper and lower edges and having an outer diameter slightly less than the diameter of the inner wall of said housing, and a 120 volt transformer mounted on said base,
the lower edge of said assembly's base being mounted on the annular ring of said housing,
a bushing made entirely of polyvinyl chloride affixed to the lower end of said housing and having an axial hole through said housing,
a retaining ring having an upper face and a lower face with an outer diameter slightly less than the diameter of the inner wall of said housing mounted within said housing and resting on the upper edge of the assembly's base.
a closed-ended tubular transparent diffuser having a diameter somewhat less than the diameter of the inner wall of said housing resting on the upper face of said retaining ring, and
a pair of flexible O-rings each having an outer diameter slightly larger than the diameter of the inner wall of the housing and an inner diameter slightly less than the diameter of the outerface of said tubular diffuser,
each of said O-rings encircling said tubular diffuser and located within said housing for removably securing said diffuser to said housing.

4,564,891

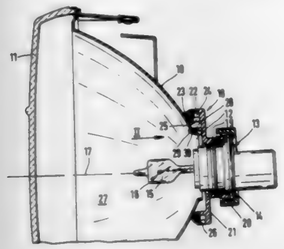
VEHICLE HEADLIGHT

Hans Daumüller, Bodelshausen, and Heinz Ruckwied, Wankheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 1, 1985, Ser. No. 718,425
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 8416804[U]
Int. Cl.⁴ F21V *29/00*
U.S. Cl. 362—294 **6 Claims**

1. A headlight for motor vehicles, comprising a reflector with a protective lens; a lamp holder; and a bulb supported in said reflector by said lamp holder, said lamp holder having an outer flange secured to a backside of the reflector, said lamp holder being formed of plastics and having at least three locking arms for locking the lamp holder on said reflector, said locking arms extending approximately parallel to an axis of the reflector, each locking arm including a hook facing toward

said axis, said reflector being formed with at least three slots, each slot receiving an assigned arm and defining on said reflector a bearing surface having an insertion portion and an arrest-



ing portion, said insertion portion being closer to said axis than said arresting portion, each hook being engaged behind the arresting portion of a respective bearing surface to thereby press the lamp holder against said reflector.

4,564,892

APPARATUS FOR PRODUCING TWO MUTUALLY DIVERGENT LIGHT BEAMS

John A. Oram, Leighton Buzzard, England, assignor to J & D Oram Limited, Leighton Buzzard, England

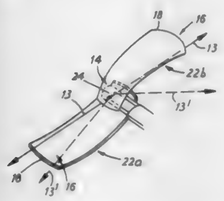
PCT No. PCT/GB83/00313, § 371 Date Jul. 31, 1984, § 102(e) Date Jul. 31, 1984, PCT Pub. No. WO84/02173, PCT Pub. Date Jun. 7, 1984

PCT Filed Dec. 1, 1983, Ser. No. 638,457

Claims priority, application United Kingdom, Dec. 1, 1982, 8234301

Int. Cl.⁴ F21V *7/02*

U.S. Cl. 362—297 **15 Claims**



1. A lamp unit for providing a patch of substantially shadow-free illumination at an image plane from a single light source, comprising two concave reflector portions each of which widens away from a respective beam-emission axis from a first end to a second end, at which second end is the beam-emitting aperture of the reflector portion, the two reflector portions confronting and overlapping each other at their first ends and having their beam-emission axes mutually divergent whereby a light source disposed between the overlapping regions of the reflector portions produces two mutually divergent beams, characterised in that each beam is convergent, and in that the lamp unit further comprises mirrors positioned to reflect respective ones of the beams to combine the beams at the image plane, lens systems arranged to focus the beams at the image plane, and a prism positioned in the path of one beam to redirect that beam so as to compensate for assymmetry between the beams and to bring the focused beams substantially into coincidence at the image plane.

4,564,893

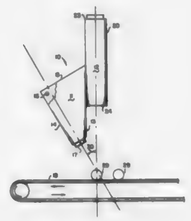
METHOD, APPARATUS AND PRODUCT FOR ILLUMINATING A SURFACE TO PROVIDE A DESIRED LIGHT INTENSITY AT DISCRETE POINTS ON SAID SURFACE

Nicholas M. Myrman, Rialto, Calif., assignor to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Oct. 7, 1983, Ser. No. 540,126

Int. Cl.⁴ F21V *5/00*

U.S. Cl. 362—311 **13 Claims**



1. The method of illuminating a surface to provide a desired light intensity comprising:

a. positioning a single light source at a distance from said surface;

b. positioning a light transparent material, intermediate said light source and said surface;

c. illuminating said surface through said light transparent material;

d. measuring the light intensity at discrete points along the illuminated surface by means of a light sensing device being capable of sensing light intensity at discrete points along said surface said light sensing device being electronically connected to an oscilliscope and wherein a light intensity curve corresponding to the intensity of light along said illuminated surface is produced on said oscilliscope; and

e. applying opaque materials to said light transparent material in response to said measurement to block out some of the light such that the desired intensity at each of said discrete points along said surface will be obtained and said light intensity curve on said oscilliscope is adjusted to the desired light intensity along said illuminated surface.

8. An apparatus for illuminating a surface with light of a desired intensity along the axis of said surface comprising a point light source at a distance from said surface and a light filter positioned intermediate said light source and said surface, said filter having opaque materials positioned thereon, said opaque materials having been selectively applied to a light transparent material to form said filter in response to measurement of light intensity at discrete points along said illuminated surface such that the desired intensity at each of said discrete points along said axis will be obtained, said opaque materials being opaque strips of equal width and being positioned on said light transparent material according to the formula:

$$d_n = \frac{W}{1 - \frac{T_n\,\%}{100}} + d_{n-1}$$

wherein d_n equals total distance of the center lines of said opaque strip to the center line of said filter; W equals the width of said opaque strips and $T_n\%$ equals the percent assigned light transmittance at such preselected points on said filter.

4,564,894

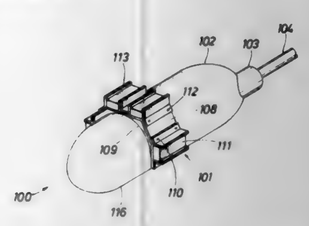
TROUBLE LIGHT FOR VEHICLES

Jorge Gonzalez, P.O. Box 3007, Laredo, Tex. 78044

Filed Dec. 12, 1984, Ser. No. 680,921

Int. Cl.⁴ F21V *27/00*

U.S. Cl. 362—398 **2 Claims**



1. A bracket member for attaching to a light reflector comprising a member having an upper surface, an inner surface, and a pair of lower edges, said bracket member being of non-ferromagnetic material and following substantially the contour of the reflector, said bracket member including a plurality of integral, flat, angular sections bent one with respect to the other and providing a corresponding plurality of flat upper surface sections on the bracket member, a heat shield strip of galvanized tin adapted to be interposed between the upper surface of the reflector and the inner surface of the bracket member and being of substantially the contour of the bracket member, the ends of the heat shield strip and the lower edges of the bracket member being adapted to be attached to the reflector, a plurality of permanent bar magnets of magnetized soft iron spaced about the upper surface of the bracket member along the flat sections thereof, and a corresponding plurality of ferromagnetic pairs of pole pieces for securing the magnets to the bracket member, each pair of pole pieces being associated with at least one of said magnets and being spaced, connected, and arranged about the upper surface of the bracket member along the flat sections thereof, each pole piece of each pair extending above the surface of the magnet associated therewith a distance approximately equal to the height of the magnet and also approximately equal to about one-half the width of the magnet thereby causing a reformation and intensification of the magnetic field in the area above the magnet and between the extensions of each of the pole piece pairs in order to increase the apparent strength of the magnets.

4,564,895

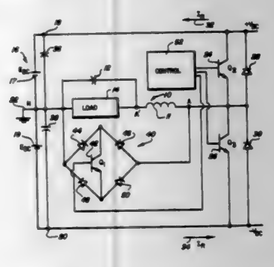
NEUTRALLY CLAMPED PWM HALF-BRIDGE INVERTER

Timothy F. Glennon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 12, 1983, Ser. No. 531,037

Int. Cl.⁴ H02M *7/797*

U.S. Cl. 363—41 **2 Claims**



1. In a pulse width modulated inverter having a DC source with positive and negative terminals and a neutral center tap,

first and second switches connected in series between said terminals and having a junction between the switches, and a filter connected from said junction to said neutral center tap, a load being connectable to the filter, the improvement comprising:

a bidirectional switch connected across said filter from said junction to said neutral center tap; and

means for controlling conduction of said first, second and bidirectional switches, the first and second switches conducting for alternate half cycles with a pulse width modulated on and off waveform, and said bidirectional switch conducting only when said first and second switches are both off to clamp said junction to said neutral center tap for current flow of either direction in the load.

4,564,896

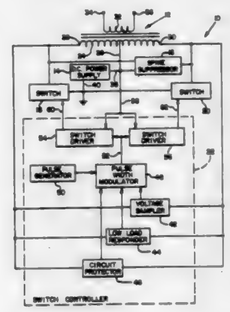
INVERTER WITH IMPROVED OPERATING EFFICIENCIES

Steven C. Akerson, Federal Way, Wash., assignor to Heart Interface Corporation, Federal Way, Wash.

Filed Jun. 29, 1984, Ser. No. 626,318

Int. Cl.⁴ H02H *7/122*

U.S. Cl. 363—56 **14 Claims**



1. An inverter circuit usable with a DC power supply having a pair of terminals comprising,

a transformer having a primary coil with a center tap and two end taps, and a secondary coil, said center tap being connectible to one of the power supply terminals,

switch means, including Darlington transistor means connected in parallel with discrete transistor means, each transistor means having collector, emitter and base terminals, responsive to a switch control signal, operatively connected to each primary end tap and connectible to the other power supply terminal for selectively alternately connecting each primary end tap to the other power supply terminal, wherein each switch means further includes current divider means operatively connected between the respective base terminals of said Darlington and discrete transistor means operative to apportion the switch control signal current flow between the two types of transistor means in such a manner that said discrete transistor means predominantly conducts during low level load current flow through the associated primary coil end tap and said Darlington transistor means predominantly conducts during high level load current flow, and

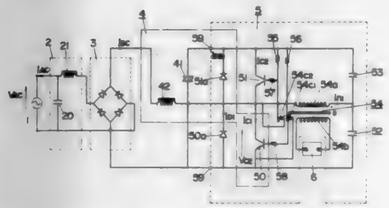
switch controller means responsive to a representation of the voltage on the secondary coil for generating the switch control signal for each switch means.

4,564,897

POWER SOURCE

Futoshi Okamoto, Hirakata, and Masataka Mitani, Tsuzuki, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 30, 1983, Ser. No. 566,986
Claims priority, application Japan, Jan. 14, 1983, 58-4983
Int. Cl.⁴ H02M *7/537*
U.S. Cl. 363—132 **4 Claims**



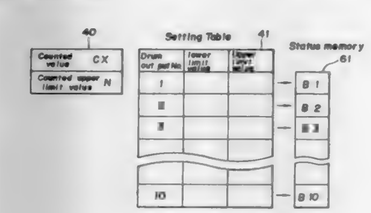
1. A power source comprising:
a full-wave rectifier to provide a pulsating dc voltage output from an input ac voltage;
a smoothing circuit for receiving the rectifier output to provide a dc voltage output with a reduced ripple;
an inverter including switching means for switching the dc voltage output from said smoothing circuit to provide a high frequency voltage to be applied to a load to be driven thereby;
said smoothing circuit comprising a smoothing capacitor, and charge storage means, comprising an inductor means and the switching means, said switching means being included in said inverter and said charge storage means, whereby when the switching means is switched on the inductor means is supplied from current flowing therein with electromagnetic energy which is in turn stored in the capacitor when said switching means is switched off, a resulting voltage developed across the capacitor being applied to input terminals of the inverter.

4,564,898

PROGRAMMABLE CONTROLLER HAVING A DRUM TYPE SEQUENCER FUNCTION SUBJECT TO PROGRAMMING

Satoshi Yano, Hirakata, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 23, 1983, Ser. No. 507,003
Claims priority, application Japan, Jun. 25, 1982, 57-109443; Oct. 22, 1982, 57-185471
Int. Cl.⁴ G06F *15/46;* **G05B** *11/01*
U.S. Cl. 364—140 **3 Claims**



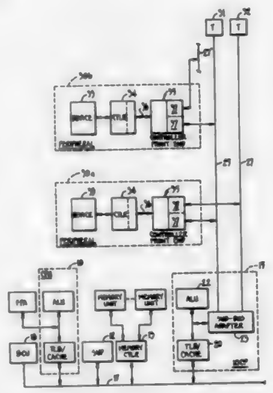
1. A programmable controller, including a memory for storing a user program, comprising:
counter means freely controlled by said user program;
a status memory which can be be freely read in a unit of at least one bit in accordance with said user program;
a set value table in which data showing numeric range is stored in an area corresponding to each bit of said status memory;
input means for writing data in said numerio range into said set value table;
comparison means which when a command related to said counter means in the user program is executed, successively compares a counted value of said counter means with data of each numeric range in said set value table to judge whether or not said counted value is within the stored numeric range; and
status update means for determining the logic of each bit of said status memory corresponding to data in each numeric range in accordance with the result of the judgement of said comparison means.

4,564,899

I/O CHANNEL BUS

Kenneth Holly, San Jose, and Gehrard J. Smith, Santa Clara, both of Calif., assignors to Elxsi, San Jose, Calif.

Filed Sep. 28, 1982, Ser. No. 426,045
Int. Cl.⁴ G06F *3/00*
U.S. Cl. 364—200 **23 Claims**



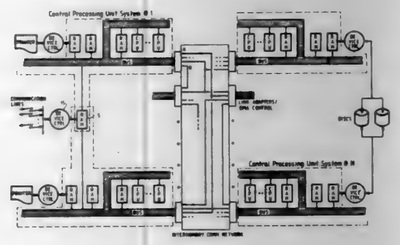
1. A data communication system comprising:
a plurality of up to N devices, each having an associated unit number;
a channel processor;
a data bus consisting of a first set of lines;
a tag bus consisting of a second set of lines, signals on which are capable of defining at least a plurality of n bus activity codes, each of which specifies a corresponding one of a plurality of n data transfer operations, with n less than N;
means, associated with said channel processor, for coupling said channel processor to said data bus and to said tag bus;
means, associated with each device, for coupling the associated device to said data bus and to said tag bus;
clock means for defining bus cycles of predetermined duration to effect synchronous operation of said channel processor and said devices with respect to signals appearing on said data bus and said tag bus;
means for communicating request signals from said devices to said channel processor;
a transfer channel register, associated with each device, capable assuming at least (n+1) states, with n of said states being attached states, signifying that the associated device is attached to a corresponding one of n logical transfer channels, each of which corresponds to one of the n data transfer operations, and at least one of said states being a detached state signifying that the associated device is not attached to any of the transfer channels;
attach/detach means for attaching a transfer channel to any given device in response to a request signal from the given device to said channel processor, and for detaching the transfer channel from a given device, including
means for setting the transfer channel register associated with the given device to one of the attached states to attach the transfer channel and to the detached state to detach the transfer channel; and
means for effecting at least a part of a desired data transfer operation between said channel processor and a device that is attached to one of the n transfer channels, including
means, associated with said channel processor, for placing the bus activity code that corresponds to the desired data transfer operation on said tag bus, and
means, associated with each device, responsive to the occurrence on said tag bus of an activity code corresponding to the data transfer operation, for determining whether there exists a correspondence between the data transfer operation and the state of the associated device's transfer channel register and for allowing the associated device to transfer data between the data bus and the associated device during a predetermined number of bus cycles following the determination that there exists such a correspondence.

4,564,900

MULTIPROCESSOR COMPUTER SYSTEM

Asbjorn Smitt, Vedbaek, Denmark, assignor to Christian Rovsing A/S, Ballerup, Denmark

Continuation of Ser. No. 303,514, Sep. 18, 1981, abandoned. This application Feb. 10, 1984, Ser. No. 579,435
Int. Cl.⁴ G06F *13/00*
U.S. Cl. 364—200 **30 Claims**



1. A multiprocessing computer system comprising:
(A) a plurality of central processing systems, each system including
(a) at least one central processing unit for processing data in response to instructions and having the capability to produce address source information,
(b) memory means for storing data,
(c) bus means for transferring data between said at least one central processing unit and said memory means,
(d) intermemory link adaptor means connected to said bus means for transporting data externally of said central processing system; and
(e) DMA means associated with said intermemory link adaptor means for producing address source information and for controlling transfers of data via said intermemory link adaptor means and said bus means to and from said memory means without intervention by said at least one central processor unit,
(B) at least a portion of said memory means defining a common memory having separate port means for connecting via respective bus means at least two of said plurality of central processing systems, said separate port means causing said common memory to be shared by the two central processing systems;
(C) at least part of said common memory being compartmentalized and divided into a number of separate memory compartments wherein each of said memory compartments is coupled to a respective data transfer port and to said respective bus means of at least two of said plurality of central processing systems;
(D) at least one peripheral device controller means associated with at least one of said plurality of central processing systems and being adapted for connection with a peripheral device, each said peripheral device controller means being connected to a preselected memory compartment of said common memory via the data transfer port associated with said preselected memory compartment, said peripheral device controller means having means for producing and means for responding to address source information and means for controlling the transfer data between said peripheral device and the preselected memory compartment of said common memory;
(E) an intermemory communication network comprising a plurality of intermemory link means for connection with said intermemory link adaptor means of said plurality of central processing systems and for transferring data among said memory means of respective ones of said plurality of central processing systems; and
(F) DMA interface controller means connected to said intermemory communication network via said intermemory link adaptor means, said DMA interface controller means for controlling access to said memory of each of said plurality of central processing systems via said DMA means, said DMA interface controller means multiplexing transfers of data over said intermemory communication network, said DMA interface controller means being further operative to effect logical connection of at least two intermemory link adaptor means of respective ones of said central processing systems to said intermemory communication network in response to said address source information and to multiplex transfers of data among said memory means of the respective central processing systems over said intermemory communication network without intervention by said associated central processing unit.

4,564,901

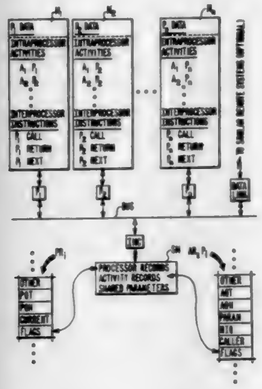
METHOD OF PERFORMING A SEQUENCE OF RELATED ACTIVITIES VIA MULTIPLE ASYNCHRONOUSLY INTERCOUPLED DIGITAL PROCESSORS

Christopher J. Tomlinson, Encinitas, and Howard H. Green, San Diego, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jul. 21, 1983, Ser. No. 515,852
Int. Cl.⁴ G06F *9/42, 9/46, 15/16*
U.S. Cl. 364—200 **10 Claims**

1. A method of performing a task as a sequence of called activities in multiple digital processors which operate asynchronously to each other; said method including the steps of:
executing a portion of a first activity of said sequence in a first processor, said portion including and ending with an INTERPROCESSOR CALL instruction;
suspending execution of the first activity in response to said INTERPROCESSOR CALL and signaling a second processor that a second activity has been called by the first activity;
completely executing the second activity in the second processor in response to said INTERPROCESSOR CALL and further executing an INTERPROCESSOR NEXT instruction which references a third activity in a third processor;
signaling the third processor in response to said INTERPROCESSOR NEXT instruction that said third activity has been called not by said second activity but by whatever activity happened to call the second activity; and

completely executing said third activity in said third processor and, upon completion thereof, signaling said third

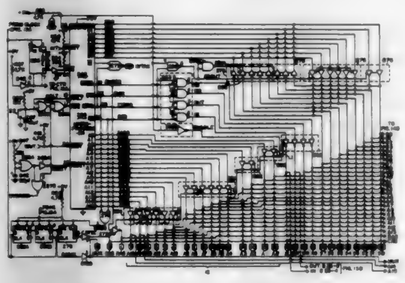


activity's apparent caller as indicated by said INTER-PROCESSOR NEXT instruction, to resume execution.

4,564,902
COMPUTER

Steven Leininger, Arlington, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Continuation of Ser. No. 466,207, Feb. 14, 1983, abandoned, which is a continuation of Ser. No. 168,427, Jul. 10, 1980, abandoned, which is a division of Ser. No. 926,957, Jul. 21, 1978, abandoned. This application Nov. 19, 1984, Ser. No. 672,892
Int. Cl.⁴ G06F *1/00*
U.S. Cl. 364—200 **1 Claim**



1. A computer system having a central processing unit comprising a microprocessor chip including an interrupt input, a reset input, and a halt output, means for storing instructions, a random access memory, keyboard means, and display means,

a manual reset switch comprising a momentary switch which when operated, interrupts the central processing unit, resetting said unit to a predetermined address and when released, enables operation of the central processing unit,

means coupling the reset switch to the interrupt input of the microprocessor chip,

a power-up reset circuit, coupled to the reset input, for resetting the microprocessor chip to a preselected address which is different than the predetermined address,

a power terminal,

said power-up reset circuit including a charging circuit and a logic gate connecting between the power terminal and the reset input of the microprocessor chip,

gate means responsive to both said power-up reset circuit and said manual reset switch for providing a system reset signal,

said means coupling the reset switch to the interrupt input of the microprocessor chip comprising a logic circuit including OR gate means having two inputs and an output,

a means connecting the reset switch to one input of the OR gate means,

means connecting the halt output to the other input of the OR gate means,

and means connecting the output of the OR gate means to said interrupt input,

said preselected address having a lower address than said predetermined address,

said charging circuit including a resistor and capacitor in series and with the logic gate having its input connected to the node between the resistor and capacitor,

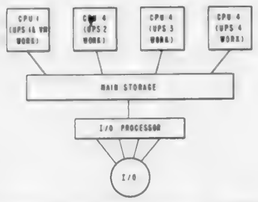
said logic circuit further including a charging means including a capacitor and resistor connected in series, one side of said momentary switch being coupled to the node between the capacitor and resistor, said switch open to permit the capacitor to be in a charged state and operated to a closed position to discharge the capacitor for resetting to said preselected address,

said halt output from the microprocessor chip having opposite bistable states and in which in accordance with one state, under a malfunction condition associated with the system, there is a disabling of said OR gate means so that operation of the reset switch is ineffective in resetting the microprocessor chip.

4,564,903
PARTITIONED MULTIPROCESSOR PROGRAMMING SYSTEM

Richard R. Guyette, San Jose, Calif.; Eddie T. Hall, Millbrook, N.Y.; Allan S. Meritt, Poughkeepsie, N.Y.; Stephen R. Newson, Woodstock, N.Y.; Casper A. Scalzi, Poughkeepsie, N.Y., and Glenn W. Sears, Jr., Ulster Park, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 5, 1983, Ser. No. 539,762
Int. Cl.⁴ G06F *15/16*
U.S. Cl. 364—300 **21 Claims**



1. A control method for a multiprocessor (MP) system having plural CPUs sharing a main storage (MS) and I/O processing means for connecting a plurality of I/O devices to MS, the control method enabling the MP to execute a uniprocessor programming system (UPS) simultaneously on plural CPUs in the MP, even though the UPS is designed to only execute on a uniprocessor (UP) system having the same or a different architecture than the MP, the MP control method comprising:

having plural copies of the UPS in the MS, each copy of the UPS containing an identical set of UPS addresses within a range from UPS address zero to a maximum UPS address determined by the number n of bit positions in each address programmed into the UPS, and n being the order of the highest-order bit position in any explicit UPS address,

locating a different UPS copy boundary for the UPS address zero of each of the plural copies of the UPS, the UPS copy boundaries being different multiples of 2^n bytes at different boundary MS absolute addresses,

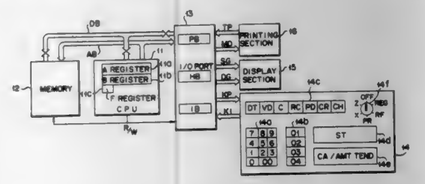
executing a plurality of UPS guests simultaneously on different CPUs in the MP under control of a MP control program executable in all CPUs of the MP as a system host, the UPS guests using UPS programs fetchable from the respective UPS copies in MS for execution on the CPUs in the MP,

providing shareability of the I/O devices for the plurality of UPS guests through a set of shared physical paths.

4,564,904
ELECTRONIC CASH REGISTER

Akira Kumagai, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 496,332, May 20, 1983, abandoned, which is a continuation of Ser. No. 184,387, Sep. 5, 1980, abandoned. This application Jan. 11, 1985, Ser. No. 690,817
Claims priority, application Japan, Sep. 10, 1979, 54-115888; Nov. 1, 1979, 54-141823
Int. Cl.⁴ G06F *15/21*
U.S. Cl. 364—405 **12 Claims**



1. In an electronic cash register having settlement operation functions, the improvement comprising the combination of:

input means including a data input key and a settlement designation key for designating a settlement operation;

central processing means coupled to said input means;

first memory means coupled to said central processing means and having a plurality of memory places for storing accumulated sales amounts based on given classifications when said data input key is operated, the contents of said first memory means being independently cleared after being read therefrom when said settlement designation key is operated;

second memory means coupled to said central processing means and having a plurality of memory places for storing data, which is accumulated for each of said classifications after being read from said first memory means, the number of said memory places of said second memory means being equal to that of the memory places of said first memory means;

printing means coupled to said central processing means for printing data read from said first memory means; and

start data storing means coupled to said central processing means for storing start data representing a start point of a settlement operation for said second memory means;

said central processing means including:

means for accumulating the contents of said first memory means into the contents of said second memory means for each classification responsive to operation of said settlement designation key for said first memory means and, at the same time, for causing printing out by said printing means of the contents of said first memory means as settlement data;

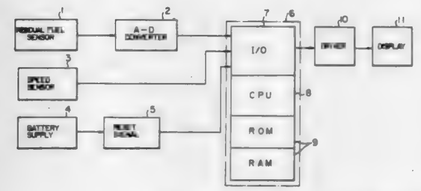
judging means for, when said settlement designation key is operated to designate said settlement operation for said first memory means, judging, based at least on the contents of said start data storing means, whether or not a start point of the settlement operation for said second memory means is reached; and

means responsive to said judging means for clearing, during a settlement operation, the contents of said second memory means, independent of clearing of said first memory means, upon completion of supplying the contents of said second memory means to said printing means when said judging means judges that the start point of a settlement operation has been reached.

4,564,905
TRIP COMPUTER FOR VEHICLES

Mitsuhiro Masuda; Shotaro Naito; Keiichi Tokuyama, and Shizuhisa Watanabe, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1983, Ser. No. 505,440
Claims priority, application Japan, Jun. 18, 1982, 57-103853
Int. Cl.⁴ G06F *15/50*
U.S. Cl. 364—424 **3 Claims**



2. A trip computer for displaying a possible travel distance of a vehicle on the basis of residual fuel quantity comprising:

a vehicle speed sensor for sensing the speed of a vehicle;

a residual fuel sensor for sensing the residual amount of fuel remaining in the fuel tank of a vehicle;

display means responsive to a display signal for displaying a possible travel distance of said vehicle;

a microcomputer system for receiving output signals from said sensors to generate said display signal for causing said display means to display the possible travel distance of said vehicle based on said sensed residual amount of fuel; and

a power supply sensor for generating an output signal upon sensing the connection of a power source to said microcomputer;

said microcomputer system including:

a read only memory (ROM) for storing a control program;

a random access memory (RAM) for temporarily storing necessary data;

a central processing unit (CPU) for using the data stored in said RAM to perform computational operations in accordance with said control program stored in said ROM; and

an input/output unit (I/O) electrically connected to said sensors for inputting the output signals from said sensors as converted data signals to said CPU and generating said display signal in accordance with an output signal from said CPU,

whereby said microcomputer system computes the possible travel distance of said vehicle by the steps of:

setting a predetermined initial gas mileage in said RAM in response to the output signal from said power supply sensor at the time of connection of said power source to said microcomputer system;

counting speed pulses from said vehicle speed sensor for computing a distance traveled by said vehicle and storing said computed distance in said RAM;

computing said possible travel distance in accordance with said gas mileage stored in said RAM and the output signal from said residual fuel sensor;

computing an amount of fuel consumed from the output of said residual fuel sensor; and

computing the gas mileage of said vehicle from said computed traveled distance and consumed fuel amount and replacing said set initial gas mileage in said RAM with said computed gas mileage only on the condition that said

computed traveled distance exceeds a predetermined value.

4,564,906

DEVICE FOR ALTERING GEAR-SHIFTING SEQUENCE IN RELATION TO VEHICLE LOAD

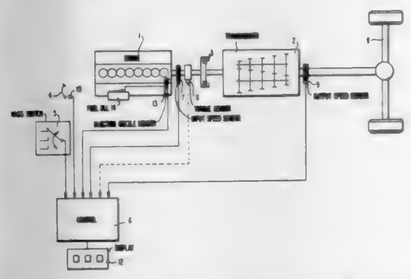
Wolfgang Stephan, Weinstadt, and Heinz Rieker, Waldenbuch, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 12, 1982, Ser. No. 338,862

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101056

Int. Cl.⁴ F16H *5/66;* **B60K** *41/08*

U.S. Cl. 364—424.1 **2 Claims**



1. In an engine-driven vehicle in which a transmission having graduated gear ratios couples the engine and a traction system thereof to drive the vehicle along a road, the improvement comprising:

a device for producing gear-shifting signals for use and effecting, manually or automatically, a gear change in the transmission, said device including:

sensing means for sensing operating parameters including engine and vehicle speed,

control means responsive to said sensing means for determining the time instance of producing said gear-shifting signals during operation of the vehicle, and

manual switch means operable by a driver of the vehicle for supplying a mass signal to said control means for altering the operation of said transmission to account for ascending and descending gradients of the road according to the mass of the vehicle, said mass signal being representative of vehicle load.

4,564,907

ELECTRONIC CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Yasunori Mouri, and Osamu Abe, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1982, Ser. No. 371,574

Claims priority, application Japan, Apr. 30, 1981, 56-66371

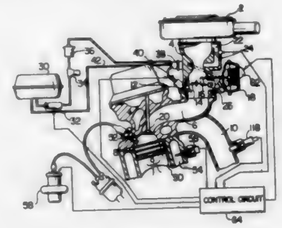
Int. Cl.⁴ G05B *15/02;* **F02M** *51/00*

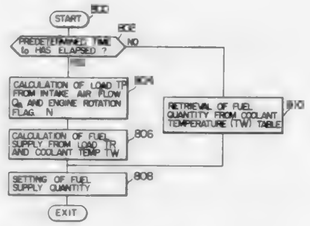
U.S. Cl. 364—431.10 **12 Claims**

7. In a method for controlling an internal combustion engine in which a quantity of intake air fed to engine cylinders is detected by processing an output signal produced by an air flow sensor incorporating a heat generating element and in which an optimal quantity of fuel corresponding to the detected intake air quantity is supplied to the internal combustion engine, wherein said air flow sensor will produce output signals which do not accurately correspond to the actual intake air quantity when said heat generating element has a temperature below a predetermined minimum operating temperature, a correction method comprising:

detecting that a predetermined time has elapsed from a time point at which a switch of said internal combustion engine is closed to electrically energize said heat generating element until a time point at which said heat generating element is heated to reach said predetermined minimum operating temperature; and

controlling the optimal quantity of fuel supplied to said internal combustion engine in dependence on another





control factor without making use of said output signal produced from said air flow sensor incorporating said heat generating element until it has been detected that said predetermined time has elapsed.

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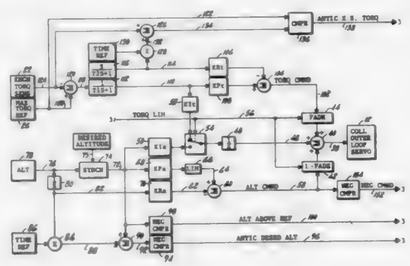
AUTOMATIC LIMITING OF HELICOPTER ENGINE TORQUE

Douglas H. Cleiford, Trumbull; Joseph P. Skonieczny, Madison, and Richard D. Murphy, Trumbull, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 28, 1983, Ser. No. 470,368

Int. Cl.⁴ G06F *15/50*

U.S. Cl. 364—433 **5 Claims**



1. A torque limiting altitude control system for a helicopter, comprising:

collective pitch servo means (**12**) for controlling the collective pitch of the helicopter main rotor blades in response to a collective command signal;

sensor means (**78**) for providing an actual altitude signal indicative of the current actual altitude;

reference means (**75**) for providing an altitude reference signal indicative of a currently desired altitude;

synchronizer means (**74**) for providing an altitude error signal indicative of the difference between said actual altitude signal and said altitude reference signal;

means (**60,66,68,70,80**) for providing an altitude command signal indicative of the difference between a function of said altitude error signal and a function of the rate of change of said actual altitude signal;

sensor means (**22**) for providing an actual torque signal indicative of the current actual engine torque;

reference means (**26**) for providing a torque reference signal indicative of the maximum design operating torque for the engine;

difference means (**120**) for providing a torque error signal indicative of the difference between said actual torque signal and said torque reference signal;

means (**104,106,108,112,116**) for providing a torque command signal indicative of the difference between a function of said torque error signal and a function of the rate of change of said actual torque signal;

means (**116,126,128,130,136**) for providing an excess torque signal indicative of an excessive engine torque condition;

logic means (**140**) for providing a torque limiting signal in response to the provision of said excess torque signal, and for discontinuing said torque limiting signal in response to said altitude command signal being negative;

means (**54**) for providing an integral collective signal in response to a function of said torque error signal in said presence of said torque limiting signal, and for providing said integral collective signal as a function of said altitude error signal in the absence of said torque limiting signal;

summing means (**40**) for providing said collective command signal as the sum of the integral collective signal and two other signals;

first fade means (**44**) for fading in said torque command signal as one of said two other signals to said summing means so as to reduce said collective command signal in response to the provision of said torque limiting signal, and for fading out said torque command signal as the one of said two other signals to said summing means so as to increase said collective command signal in response to the discontinuation of said torque limiting signal; and

second fade means (**42**) for fading out said altitude command signal as the other of said two other signals to said summing means so as to reduce said collective command signal in response to the provision of said torque limiting signal, and for fading in said altitude command signal as the other of said two other signals to said summing means so as to increase said collective command signal in response to the discontinuation of said torque limiting signal.

4,564,909

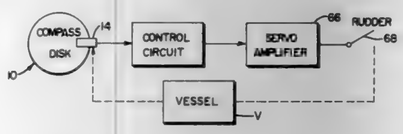
ERROR SENSING SYSTEM FOR VESSELS WITH ABSOLUTE ZERO REFERENCING

Melvin G. Kramer, Riverton, Wyo., assignor to The Brunton Company, Riverton, Wyo.

Filed Oct. 31, 1983, Ser. No. 547,028

Int. Cl.⁴ G05D *1/00*

U.S. Cl. 364—457 **15 Claims**



6. In an autopilot system for automatic steering of marine craft wherein an aperture plate is associated with a compass disk to sense the relative movement between said disk and said plate in response to changes in the heading of said craft with respect to North, the improvement comprising:

a first direction error track on said compass disk having opaque and transparent areas defining a zero reference area therebetween;

a second magnitude error track on said compass disk having a second zero reference position thereon aligned in predetermined relation to said first zero reference position, and light control means extending along said second track away from said second zero reference position;

said aperture plate having first and second light sensing means aligned with said first and second tracks, respectively, said first light sensing means generating a direction error signal in response to relative movement between said aperture plate and said disk, and said second light sensing means operative to generate a magnitude error signal in response to relative movement between said aperture plate and said disk; and

control circuit means operative in response to simultaneous generation of direction error and magnitude error signals by said light sensing means to produce a correctional signal to modify the heading of said vessel until said light sensing means return into alignment with said reference positions.

4,564,910

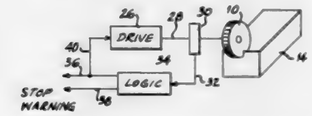
METHOD AND ALGORITHMS THEREFORE FOR MONITORING THE PERFORMANCE OF A TOOL AND MODIFYING THE FEED RATE THEREOF

Stanley K. Smith, and Donald J. Rozzi, both of Fenton, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 25, 1983, Ser. No. 488,322

Int. Cl.⁴ G06F *15/20;* **G06G** *7/48;* **G01N** *19/02*

U.S. Cl. 364—474 **30 Claims**



1. A method of monitoring the performance of a tool which moves relative to a workpiece through a cycle and controlling the feed rate between the tool and workpiece in response to the monitored performance of the tool comprising the steps of:

dividing said cycle into a plurality of increments:

4,564,911

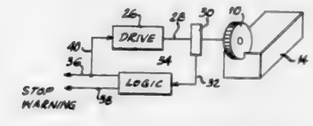
METHOD OF MONITORING A CUTTING TOOL BY RECOGNIZING A SENSED DEVIATION IN A MATHEMATICALLY SMOOTHED FUNCTION OF FORCE

Stanley K. Smith; Donald J. Rozzi, both of Fenton, Mich., and Alvin M. Sabroff, Mentor, Ohio, assignors to Easton Corporation, Cleveland, Ohio

Filed Apr. 25, 1983, Ser. No. 488,327

Int. Cl.⁴ G06F *15/20;* **G06G** *7/78;* **G01M** *19/02*

U.S. Cl. 364—474 **27 Claims**



1. A method of monitoring the performance of a tool which moves relative to a workpiece through a cycle comprising the steps of:

dividing said cycle into a plurality of increments;

sensing a function of the force applied to said tool during a plurality of said increments of said cycle;

mathematically smoothing said function of force sensed during said plurality of sensed increments of said cycle;

establishing a trend in the mathematically smoothed function of force for said plurality of sensed increments of said cycle;

determining whether the mathematically smoothed function of force for subsequently sensed increments of said cycle deviates substantially from the established trend in the mathematically smoothed function of force for previously sensed increments of said cycle; and

generating a first signal in response to sensing a substantial deviation in the mathematically smoothed function of force for subsequently sensed increments of said cycle from the established trend in the mathematically smoothed function of force for previously sensed increments of such cycle.

4,564,912

NUMERICAL CONTROL SYSTEM FOR DETERMINING TOOL WITHDRAWAL DIRECTION

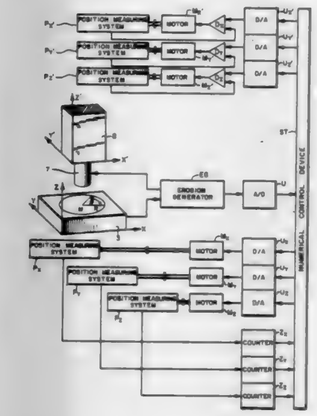
Ernst Schwefel, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Continuation of Ser. No. 471,439, Mar. 2, 1983, abandoned. This application Aug. 2, 1985, Ser. No. 762,801

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208389

Int. Cl.⁴ G06F *15/46*; G05B *19/18*; B23K *9/16*

U.S. Cl. 364—474 **13 Claims**



1. In a numerical control system for a processing machine; in which the processing machine comprises a tool, and means for holding a workpiece; and in which the control system comprises means for positioning one of the tool and the holding means with respect to the other of the tool and the holding means in at least two dimensions, and means for determining movements for the positioning means along a treatment path adapted to accomplish a desired treatment process at a treated surface of the workpiece; the improvement comprising:

first means for generating a separation signal indicative of a desired separation between the tool and the workpiece;

second means, included in the control system, for automatically determining in advance for each of a plurality of points along the path a respective withdrawal direction leading away from the treated surface of the workpiece, wherein at least some of the withdrawal directions are oriented nonparallel with respect to one another, wherein a plurality of said points are distributed along the length of the treatment path intermediate the ends of the treatment path, and wherein said plurality of points are arranged along the treatment path such that a respective one of the withdrawal directions is appropriate for each position of the tool with respect to the workpiece along the treatment path; and

third means, responsive to the separation signal and the direction determining means, for causing a selected one of the tool and the holding means to move along the respective previously determined withdrawal direction in response to the separation signal in order to protect the workpiece and the tool from excessively low separation between the tool and the workpiece during the treatment process.

4,564,913

FLEXIBLE TRANSFER MACHINE

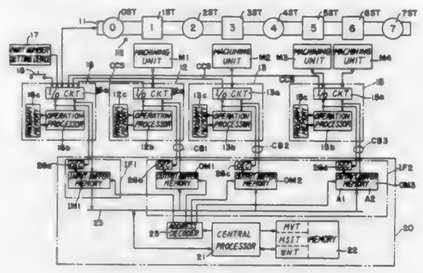
Toshihiko Yomogida, Kariya, and Tsuyoshi Yamashita, Nagoya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 16, 1984, Ser. No. 580,809

Claims priority, application Japan, Mar. 23, 1983, 58-48586

Int. Cl.⁴ G06F *15/46*; G05B *19/417*

U.S. Cl. 364—474 **5 Claims**



1. A transfer machine comprising:

a transfer line for simultaneously transferring a plurality of workpieces therealong through one transfer pitch whenever operated;

a plurality of machining stations constituting parts of said transfer line and capable of holding workpieces thereon during machining operations;

a plurality of machining units associated with said machining stations for machining workpieces held on said machining stations, respectively;

a plurality of machine controllers respectively associated with said machining units and each capable of controlling the operation of the associated one of said machining units in accordance with one of machining programs, each of said machine controllers including a program memory for storing said machining programs;

a transfer controller connected to said transfer line for operating the same each time all of the machining units complete machining cycles;

workpiece data input means for inputting data representing the part number of an unfinished workpiece loaded onto the transfer line; and

a program selection controller connected to said workpiece data input means, said transfer controller and said machine controllers and including:

first storage means for storing the kinds of machining cycles in which each of workpieces is scheduled to be machined respectively at said machining stations;

second storage means for storing part numbers of the workpieces respectively held on said machining stations;

data rewriting means operable synchronously with the operation of said transfer line and based upon said data from said workpiece data input means for enabling said second storage means to renew said part numbers of the workpieces respectively held on said machining stations;

program search means for searching said second storage means for the kinds of said workpieces being respectively held on said machining stations and for searching said first storage means for the kinds of said machining cycles which are respectively to be effected on said workpieces identified by said searched kinds of workpieces; and

program designation means responsive to said searched kinds of machining cycles for designating to each of said machining controllers one of said machining programs which corresponds to one of said searched kinds of machining cycles.

4,564,914

METHOD FOR MACHINING THREE DIMENSIONAL CONTOURS UTILIZING A NUMERICALLY CONTROLLED LATHE

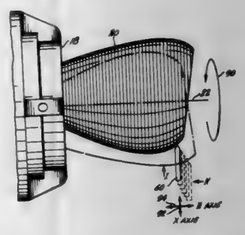
Douglas M. Ballough, Issaquah, and Howard L. Higginbotham, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

PCT No. PCT/US83/01160, § 371 Date Jul. 28, 1983, § 102(e) Date Jul. 28, 1983, PCT Pub. No. WO85/00067, PCT Pub. Date Feb. 14, 1985

PCT Filed Jul. 28, 1983, Ser. No. 523,197

Int. Cl.⁴ G05B *19/18*; G06F *15/46*

U.S. Cl. 364—475 **19 Claims**



1. A method for machining a workpiece comprising the steps of:

(a) providing a rotatable lathe spindle including means for mounting the workpiece thereto such that the workpiece may be rotated about a rotational axis;

(b) providing a cutting tool;

(c) positioning said cutting tool in response to control signals with respect to both a first axis perpendicular to the axis of rotation of the spindle mounted workpiece and a second axis parallel to the axis of rotation of the spindle mounted workpiece; and

(d) producing a predetermined set of control signals x, z, i and k for each predetermined segment of rotation of the workpiece, wherein each x control signal defines the position of the cutting tool in said first axis, each z control signal defines the position of the cutting tool in said second axis, each i control signal defines the distance traveled by the cutting tool in said first axis for each revolution of the workpiece and each k control signal defines the distance traveled by the cutting tool in said second axis for each revolution of the workpiece, said step (d) comprising the steps of:

(i) defining the desired machined shape of the workpiece in a Cartesian coordinate system using mutually orthogonal axes having corresponding coordinates X, Y and Z;

(ii) compensating said X, Y and Z coordinates for offsets produced by the cutting tool to produce coordinates x', y' and z;

(iii) converting said compensated x', y' coordinates to corresponding polar coordinates of radius R and angle θ;

(iv) defining a set of x coordinates, each x coordinate being predeterminedly related to one of said R coordinates;

(v) calculating a set of i coordinates, each i coordinate being a predetermined function of said R and θ coordinates;

(vi) calculating a set of k coordinates, each k coordinate being a predetermined function of said z and θ coordinates; and

(vii) producing said x, z, i and k control signals in response to said x, z, i and k coordinates, respectively.

4,564,915

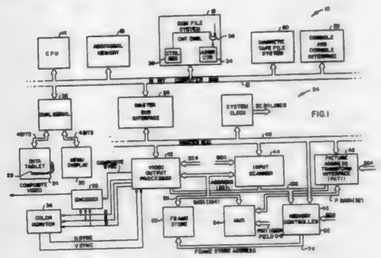
YIQ COMPUTER GRAPHICS SYSTEM

Lawrence J. Evans, Los Gatos; Junaid Sheikh, Fremont; Rodney D. Stock, Palo Alto, and Kenneth E. J. Turkowski, San Carlos, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 139,590, Apr. 11, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,373

Int. Cl.⁴ G06F *3/153*, *15/20*

U.S. Cl. 364—521 **37 Claims**



1. A video processing system for a computer graphics system comprising:

a frame store means storing video information for each pixel in a coordinate matrix of pixels for a visual display, the frame store means having a first component store storing intensity information for each pixel of the visual display with a given resolution and a second component store storing color defining information for two color components of the visual display which are defined at half as many pixels as are stored by the first component store, each stored pixel of color defining information for each of the two color components having the given resolution;

a memory controlling means coupled to receive visual display coordinate matrix information and address the frame store means in response thereto to produce selected read and write operations;

an interface circuit means coupled to transfer video information between a data processing system and addressed frame store means pixel storage locations, the interface circuit means being coupled to communicate data processing system produced coordinate matrix pixel address information to the memory controlling means and transfer video information with the frame store means at pixel locations identified thereby; and

a video output processing means coupled to provide coordinate matrix pixel address information to the memory controlling means in a sequence defining a raster scan video display and to receive color video display defining information from the frame store means in response thereto, the video output processing means including transformation circuitry for converting the video display defining information to at least one color output signal having a format that is acceptable by a video display device with the intensity of the color output signal being determined in response to data received from the first component store and the color content of the color output

signal being determined in response to data received from the second component store.

4,564,916

DIAGNOSING SPEED SENSOR DEFECT OF AN AUTOMOTIVE VEHICLE ELECTRONIC CONTROL SYSTEM

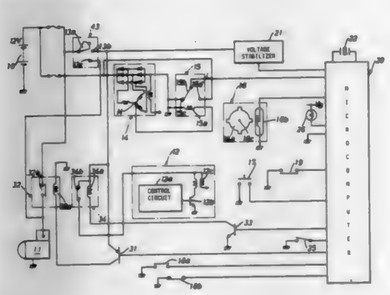
Shinichi Hori, Anjo; Yasuichi Ohnishi, Kariya; Masahiro Ueda, and Masahiko Noba, both of Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 27, 1982, Ser. No. 402,797

Claims priority, application Japan, Jul. 31, 1981, 56-121242

Int. Cl.⁴ G08B *21/00, 29/00;* **G06F** *11/32*

U.S. Cl. 364—551 **7 Claims**



1. A diagnosis apparatus for detecting defects or malfunctions of a speed sensor assembly for use in combination with an automotive vehicle electric control system for controlling an operational state of said vehicle of an automotive vehicle, wherein said speed sensor assembly produces a speed signal which, when the vehicle is moving, includes a series of speed pulses indicative of movement of the vehicle to be applied to said electric control system, said diagnosis apparatus comprising:

means for operating said electric control system, during normal vehicle operation, responsive to speed pulses from said speed sensor assembly, including storing a level of said speed pulse signal and controlling said operational state based on comparisons of successive levels of said speed pulse signal with the stored level;

means for producing a diagnosis signal upon actuation thereof by a vehicle operator;

means responsive to said diagnosis signal for memorizing an instantaneous level of said speed pulse signal, comparing, following a memorization of said instantaneous level, successive levels of said speed pulses with the memorized level, and producing a first output signal when the successive levels of said speed pulses are the same as the memorized level and for producing a second output signal when the successive levels of said speed pulses are different from the memorized level;

means for indicating a defect or malfunction of said speed sensor assembly in response to said first output signal and indicating normal operation of said speed sensor assembly in response to said second output signal.

7. A method for diagnosing defects or malfunctions of a speed sensor assembly used in combination with an electric control system for controlling an operational state of an automotive vehicle, wherein said speed sensor assembly produces a speed signal which, when the vehicle is moving, includes a series of speed pulses indicative of movement of the vehicle to be applied to said electric control system, comprising the steps of:

operating said electric control system, during normal vehicle operation, responsive to speed pulses from said speed sensor assembly, including storing a level of said speed pulse signal and controlling said operational based on comparisons of successive levels of said speed pulse signal with the stored level;

to diagnose a speed sensor assembly malfunction, producing an electric diagnosis signal in response to a manual operation of a vehicle operator;

memorizing, in response to the diagnosis signal, an instantaneous level of the speed pulse signal;

comparing, following a memorization of an instantaneous level, successive levels of said speed pulses with the memorized level;

producing a first output signal when the successive levels of said speed pulses are the same as the memorized level and for producing a second output signal when the successive levels of said speed pulses are different from the memorized level;

indicating a defect or malfunction of said speed sensor assembly in response to said first output signal and indicating normal operation of said speed sensor assembly in response to said second output signal.

4,564,917

SPEED DISPLAY DEVICE FOR AUTOMOTIVE VEHICLE

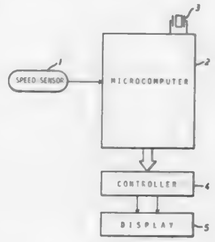
Motokazu Yamada, Nagoya; Hideyuki Hayakawa, Nishio; Tomonori Fukui, Kariya; Hajime Matsuhashi, Kariya; Yasuhiro Kaneko, Kariya; Motozo Ikeda, Kariya, and Tomihiko Nagata, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 21, 1983, Ser. No. 515,874

Claims priority, application Japan, Jul. 29, 1982, 57-132821

Int. Cl.⁴ G06F *3/14*

U.S. Cl. 364—565 **2 Claims**



1. A speed display device of the numerical display type for automotive vehicles, comprising speed detecting means for producing an electric speed signal indicative of the travel speed of the vehicle, and numberical display means responsive to said speed signal for providing a numerical display indicative of the travel speed of the vehicle,

wherein the improvement comprises:

memory means arranged to memorize a plurality of numerical display patterns for enlarging the size of said numerical display in accordance with rise of the speed level;

computer means responsive to said speed signal to select one of said memorized display patterns in accordance with the level of said speed signal and to produce an output signal indicative of a display data under said selected display pattern; and

means responsive to said output signal from said computer means for adjusting the size of said numerical display in dependence upon the value of said display data.

4,564,918

METHOD AND APPARATUS FOR MEASURING THE TIME DIFFERENCE BETWEEN TWO SAMPLING TIMES

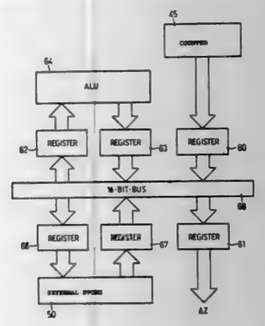
Guy W. W. McNally, Shere, England; Roger Lagadec, and Daniele P. C. Pelloni, both of Zurich, Switzerland, assignors to Willi Studer AG, Switzerland

Filed Jan. 21, 1983, Ser. No. 459,972

Claims priority, application Switzerland, Jan. 26, 1982, 476/82

Int. Cl.⁴ G04F *10/00*

U.S. Cl. 364—569 **22 Claims**



11. A method for measuring the time difference between pulse edges of a first and second signal, each composed of a sequence of pulses, comprising the steps of

providing a sequence of equally spaced clock pulses, said clock pulses having a frequency which is substantially higher than the frequency of the pulse edges of said first and second signal and which is derived from the frequency of the pulse edges of the first signal,

counting clock pulses between the arrivals of successive pulse edges of the second signal, said successive pulse edges defining a period,

averaging the number of clock pulses counted during a plurality of periods to give an actual mean value,

accumulating two successive actual means values, and

subtracting an overflow from the accumulated actual mean values.

4,564,919

CORRELATION CALCULATING APPARATUS

Ken Utagawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 17, 1982, Ser. No. 450,785

Claims priority, application Japan, Dec. 22, 1981, 56-206092; Dec. 26, 1981, 56-209552; Feb. 27, 1982, 57-31329; Apr. 17, 1982, 56-63231

Int. Cl.⁴ G06F *15/336*

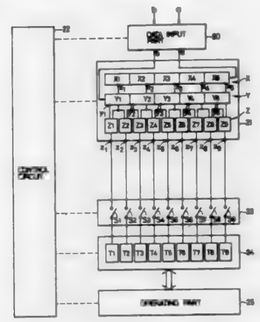
U.S. Cl. 364—728 **12 Claims**

1. An apparatus for determining correlation between first and second sets of data, wherein said first and second sets are respectively composed of plural data and have a corresponding relationship with each other, comprising:

(a) shift register means including a plurality of transfer stages to individually receive therein each said data, and transferring the data received in each of said transfer stages in succession to the subsequent transfer stage;

(b) input means for introducing each of the data in said first and second sets of data into said shift register means alternately relative to said first and second sets of data in synchronization with said transfer; and

(c) comparison means to mutually compare the data in a selected pair of transfer stages from among said plurality of transfer stages in shift register means, with none or an



even number of transfer stages being interposed between them.

4,564,920

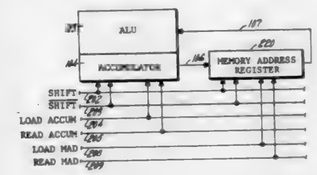
MULTIPLIER WITH HYBRID REGISTER

Willard S. Briggs, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 2, 1982, Ser. No. 446,104

Int. Cl.⁴ G06F *7/52*

U.S. Cl. 364—757 **2 Claims**



1. An integrated-circuit central processing unit of a microcomputer comprising:

an arithmetic logic unit containing multiplier circuitry to perform a multiplication algorithm;

an accumulator register for storing a first portion of the product of a multiplication operation,

an extension register for storing a second portion of the product of a multiplication operation, said extension register being connected to said accumulator register;

means for shifting binary data from said accumulator into said extension register;

means for shifting data within said extension register;

means for loading and reading data in parallel into and out of said extension register, characterized in that:

said extension register is replaced by a second register that performs a second function independent of said multiplication operation, in addition to shifting and storing said second portion of said product and performs said second function as a component of a CPU block external to said multiplier circuitry;

said means for shifting data is connected between said accumulator and said second register; and

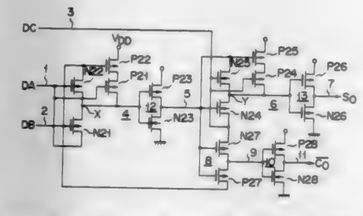
said central processing unit includes means for loading and reading data in parallel into and out of said second register independently of the multiplication operation during periods when a multiplication operation is not in process.

4,564,921

FULL ADDER

Kazuo Suganuma, Yokohama, Japan, assignor to Tokyo Shibaura Kenki Kabushiki Kaisha, Japan

Filed Jun. 1, 1983, Ser. No. 499,872
Claims priority, application Japan, Jun. 3, 1982, 57-95395
Int. Cl.⁴ G05F *7/50*
U.S. Cl. 364—784 **2 Claims**



1. A full adder coupled to first and second power source terminals, having as inputs first through third input signals, and producing a sum signal and a carry signal, said adder comprising:

(a) first exclusive OR processing means receiving as inputs said first and second input signals, said first exclusive OR processing means including

(i) a first MOS transistor of a first channel type having a gate and a current path, said gate receiving said first input signal,

(ii) a second MOS transistor of said first channel type having a gate and a current path, said gate of said second MOS transistor receiving said second input signal and said current paths of said first and second transistors being connected in series between said first and second input signals,

(iii) a third MOS transistor of a second channel type having a gate and a current path, said gate of said third MOS transistor receiving said second input signal,

(iv) a fourth MOS transistor of a second channel type having a gate and a current path, said gate of said fourth MOS transistor receiving said first input signal and said current path of said third and fourth MOS transistors being connected in series between said first power source terminal and the interconnection of said first and second MOS transistors, and

(v) a first inverter including fifth and sixth MOS transistors each having a gate connected to said interconnection of said first and second MOS transistors, and said fifth and sixth MOS transistors each having a current path which are connected in series between said first power source terminal and said second power source terminal;

(b) second exclusive OR processing means receiving as inputs said third input signal and a signal at the interconnection of said fifth and sixth MOS transistors for producing said sum signal corresponding to the logical sum of said first, second, and third input signals; and

(c) means for selecting one of said second and third input signals according to said signal appearing at said interconnection of said fifth and sixth MOS transistors, thereby to produce said carry signal.

4,564,922

POSTAGE METER WITH POWER-FAILURE RESISTANT MEMORY

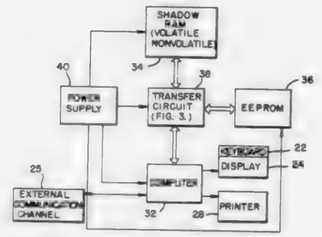
Arno Muller, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 14, 1983, Ser. No. 542,225
Int. Cl.⁴ G06F *13/00, 7/04*
U.S. Cl. 364—900 **5 Claims**

1. In a postage meter incorporating a computer for the computation of available postage and a non-volatile electronically-programmable READ-ONLY memory (EEPROM) for the processing of data, a security system comprising:

a shadow RAM formed as a composite memory unit including a first section of storage cells structured as a volatile random-access memory (RAM) coupled to said computer for use in computations performed by said microprocessor, said composite memory unit including a second memory section structured as a non-volatile array of storage cells arranged in correspondence with cells of the RAM, said composite memory unit further comprising means responsive to strobe signals for simultaneously transferring data between corresponding cells of said first and said second sections for permanent storage of data of said RAM during a power outage and includes means for initializing said RAM subsequent to a power outage;

means for entering data into said shadow RAM and said EEPROM;



a transfer circuit including a detector of input power, said transfer circuit including strobe means responsive to a signal of said detector for strobing said composite memory unit and said computer; and wherein said data is transferred from said volatile section to said non-volatile section at the beginning of a power outage upon a first said strobe signal, and, upon a second said strobe signal appearing at power restoration, the data is recalled from said non-volatile section within said shadow RAM; wherein said computer will write data to be preserved into the said EEPROM at the beginning of a power outage upon said first strobe signal, and, upon power restore to ON will read the data from the EEPROM into a further RAM contained in said computer and said computer compares said portion of data in said further RAM with the corresponding data being stored in said shadow RAM.

4,564,923

INTERCONNECTABLE ELECTRONIC GAME APPARATUS

Harumi Nakano, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1981, Ser. No. 315,232
Claims priority, application Japan, Jul. 20, 1981, 56-113274
Int. Cl.⁴ G06F *9/00*
U.S. Cl. 364—900 **1 Claim**

1. An electronic game apparatus, comprising:

a keyboard section for entering data;

memory means for storing a game program;

processing means for decoding continuously the game program stored in said memory means according to the data entered from said keyboard section to implement game control data;

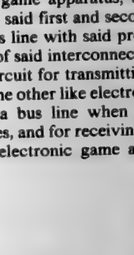
display means for displaying a condition representative of the game control data as implemented by said processing means;

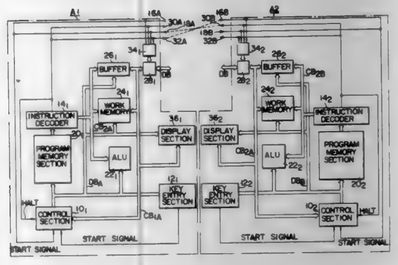
interconnect means connected to said processing means for interconnecting the electronic game apparatus with two or more other like electronic game apparatus;

said processing means being coupled to said interconnect means and operating to control operations in the other like electronic game apparatus;

said processing means including signal transmission control means for sending control signals to the other like electronic game apparatus through said interconnect means based on decoding a signal transmission command in the game control data stored in said memory means, and for releasing the other like electronic game apparatus from a standby mode and transmitting data to the other like electronic game apparatus through said interconnect means; and signal reception control means for releasing the like electrical game apparatus from a standby mode when a control signal is inputted from the other like electronic game apparatus through said interconnect means, and for writing into said memory means data transmitted from the other like electronic game apparatus through said interconnect means;

said interconnect means consisting of a first pair of signal lines coupled to said processing means so that one of said first pair sends a control signal to another like electronic game apparatus and the other signal line of said first pair





sends a control signal to still another like electronic game apparatus when said signal transmission control means decodes said signal transmission command, and a second pair of signal lines coupled to said processing means so that one of said second pair receives said control signal from said other like electronic game apparatus and the other signal line of said second pair receives said control signal from said still another like electronic game apparatus when said signal reception control means decodes a signal reception command; and

a data bus line for transmitting data to the other like electronic game apparatus and for inputting data from the other like electronic game apparatus; and a connection circuit for connecting said first and second pairs of signal lines and said data bus line with said processing means;

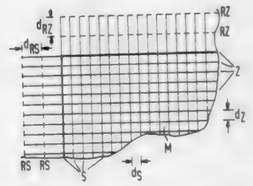
said connection circuit of said interconnect means including a data transmission circuit for transmitting data from said processing means to the other like electronic game apparatus through said data bus line when said transmission control means operates, and for receiving data transmitted from the other like electronic game apparatus through said data bus line when said reception control means operates.

4,564,924

MEMORY MODULE WITH EXTRA SPACING BETWEEN REDUNDANT ROWS AND COLUMNS

Hans Häusele, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,333
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221268
Int. Cl.⁴ G11C *29/00, 5/02*
U.S. Cl. 365—200 **10 Claims**



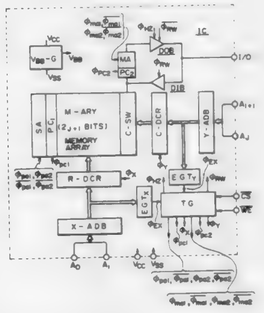
1. Integrated memory module, comprising at least one normally addressable cell array with edges and a matrix of memory cells disposed in rows, said rows being equally spaced apart by a given distance, and redundant memory cells disposed in rows at said edges of said normally addressable cell array for connection instead of defective rows of memory cells in said normally addressable cell array, each one of said rows of redundant memory cells being spaced apart from each other and from each one of said rows of memory cells of said normally addressable cell array by distances being greater than said given distance.

4,564,925

SEMICONDUCTOR MEMORY

Yoshiaki Onishi, deceased, late of Kokubunji, Japan; by Junko Onishi, administratrix, Nagoya, Japan; Hiroshi Kawamoto, Kodaira, and Tokumasa Yasui, Higashiyamato, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 23, 1983, Ser. No. 535,056
Claims priority, application Japan, Sep. 24, 1982, 57-164831
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—203 **9 Claims**



1. A semiconductor memory comprising:

a plurality of dynamic memory cells;

a first selector circuit which receives first address signals and which selects ones of said plurality of dynamic memory

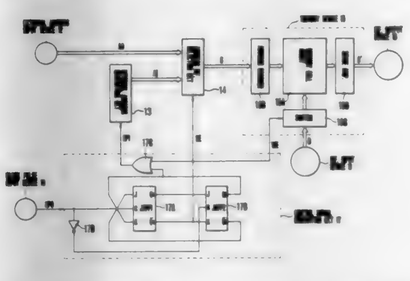
cells specified by the first address signals, and the time of which is controlled by a first timing signal;
a plurality of pairs of data lines connected to said dynamic memory cells so that each pair of data lines is respectively provided with a potential difference in accordance with the data read out from a selected dynamic memory cell;
a plurality of sense amplifiers each of which has a pair of input and output terminals that are coupled to a corresponding pair of data lines, the respective sense amplifiers having their operations controlled by second timing signals;
a first precharge circuit which is coupled to said plurality of pairs of data lines and operates so as to precharge said data lines at a potential intermediate between binary signals to be stored in the dynamic memory cells in accordance with a third timing signal;
a first detector circuit including means connected to receive said first address signals for detecting level changes in the first address signals; and
a timing generator circuit connected to receive the detection outputs of said first detector circuit, and including means for generating said third timing signal for operating said first precharge circuit, said first timing signal for operating said first selector circuit after stopping the operation of said first precharge circuit, and said second timing signals for operating said sense amplifiers.

4,564,926

INFORMATION MEMORY DEVICE WITH ADDRESS MULTIPLEXING

Tadanobu Nikaido; Norio Miyahara, and Kanji Tawara, all of Tokyo, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Japan

Filed Jun. 4, 1982, Ser. No. 385,163
Claims priority, application Japan, Jun. 9, 1981, 56-88375
Int. Cl.⁴ G11C *8/00, 7/00*
U.S. Cl. 365—230 **4 Claims**



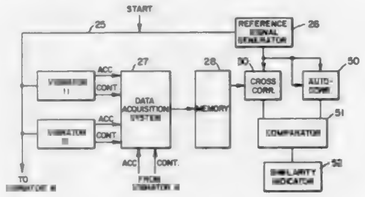
1. An integrated memory device for a time switch comprising:
an external address input device for receiving external addresses from an external address source;
an internal address generator for sequentially generating internal addresses in response to address clock pulses;
an address selector for selecting one or the other of said internal and external addresses in response to a select signal to transmit the address selected as a selected address;
memory circuit means having a plurality of bit locations for storing information received from an external information source at a bit location designated by said selected address in response to a write signal and for reading out the information stored at said bit location designated by said selected address in response to a read signal; and
a control signal generator responsive to clock pulses having a predetermined period T received from an external clock, said control signal generator having first means for alternately generating said read and write signals, second means for generating said select signal in synchronization with a respective one of said read and write signals, and third means for generating said address clock pulses having a period two times said predetermined period T.

4,564,927

METHOD AND APPARATUS FOR TESTING SEISMIC VIBRATORS

Richard L. Kolb, Altadena, Calif., assignor to Crocker National Bank, Los Angeles, Calif.

Filed Mar. 10, 1982, Ser. No. 356,875
Int. Cl.⁴ G01V *1/24, 1/36*
U.S. Cl. 367—42 **12 Claims**



4. A method of seismic exploration wherein a plurality of vibrator sources are employed simultaneously to generate vibratory input signals each having a characteristic which varies as a function of time and wherein said signals are reflected and refracted to detector stations from subsurface beds, in which said sources are tested for signal accuracy comprising the steps of:
a. generating at a first location a system vibratory reference signal having a pattern of known phase and frequency characteristics,
b. generating at a vibrator source a signal representative of the output of said source,
c. cross-correlating said system reference signal with said signal representative of the output of said source to generate a cross-correlation function having a peak value representative of phase coherence,
d. establishing from said reference signal a correlation function having a peak value representative of maximum coherence,
e. comparing the peak value of said cross-correlation function with the peak value of said correlation function to obtain an indication of accuracy of said signal representative of source output,
f. comparing the time of occurrence of the peak value of the cross-correlation function and the time of occurence of the peak value of the correlation function to obtain an indication of time alignment of said signal representative of the output of said source, and
g. utilizing in exploration those sources tested having outputs whose degree of accuracy and time alignment are substantially the same.

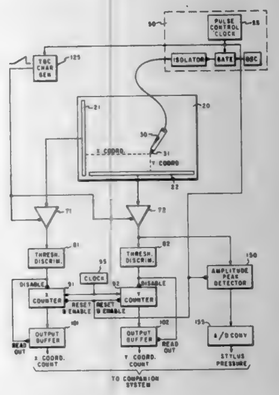
4,564,928

GRAPHICAL DATA APPARATUS

William E. Glenn, Ft. Lauderdale, and John W. Marcinka, Lighthouse Point, both of Fla., assignors to New York Institute of Technology, Old Westbury, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,253
Int. Cl.⁴ G06K *11/06;* **G08C** *21/00*
U.S. Cl. 367—117 **38 Claims**

1. Apparatus for position determination in a data space, comprising:
a generally flat tablet formed of a solid acoustically-conductive material;
a movable element adapted to be manually movable over the tablet surface, said element having a tapered tip which contacts the surface of said tablet, said movable element having an acoustic transducer coupled to said tip;
fixed acoustic transducer means coupled to said tablet;
means for energizing compressional mode ultrasound energy to propagate in either direction between the transducer of said element and said fixed transducer means, the midrange frequency of the energy being such that the wavelength of said compressional mode energy is about four times the thickness of said tablet; and
means for determining the time of propagation of said acoustic energy travelling, in either direction, between the transducer of said element and said fixed transducer means.

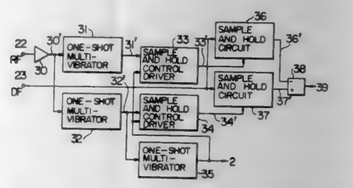


4,564,929

INFORMATION RECORDING AND REPRODUCING APPARATUS WITH TRACKING CONTROL BY SAMPLING

Seiji Yonezawa, Hachioji; Tatsuo Horikoshi, Toyokawa; Toshiaki Tsuyoshi, Kokubunji, and Wasao Takasugi, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 23, 1982, Ser. No. 443,871
Claims priority, application Japan, Nov. 25, 1981, 56-187870; Aug. 16, 1982, 57-141121
Int. Cl.⁴ G11B *7/08*
U.S. Cl. 369—44 **14 Claims**



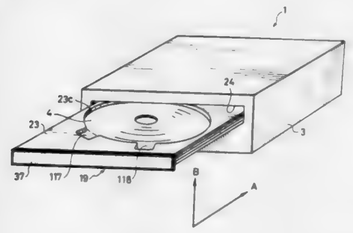
9. An information recording and reproducing apparatus comprising:
an optical disc having pre-pits previously formed on a record medium in such a manner as to permit optical detection, said pre-pits forming a track in the rotation direction of said optical disc;
means for applying a light beam onto said optical disc through an optical system;
photo detecting means including a photoreceptive member for receiving said light beam reflected by said optical disc, said photoreceptive member being divided into four detection elements each disposed in the first to fourth quadrants defined by an origin coinciding with the light axis of said optical system, an axis in parallel with said track, and an axis perpendicular to said track;
first means for producing a difference signal representing the difference between a signal which is the sum of the output signal from the detection element in said first quadrant and the output signal from the detection element in said third quadrant and a signal which is the sum of the output signal from the detection element in said second quadrant and the output signal from the detection element in said fourth quadrant;
second means coupled to said first means, for sampling the level of said difference signal at the edges of said pre-pits;
third means for producing sampling pulse signals for controlling the sampling operation of said second means on the basis of the output signals of said photoreceptive member;
fourth means for generating a gate signal indicative of an area for recording information by using the output signals of said photoreceptive member within a time period during which said light beam is applied onto said area between one of said pre-pits and the succeeding pre-pit;
fifth means provided between said second and third means and further coupled to said fourth means, said fifth means being constructed so that the sampling pulse signals of said third means are not supplied to said second means within a time period during which said gate signal of said fourth means is generated;
sixth means for producing a tracking signal on the basis of the output of said second means, said tracking signal being used to track said pre-pits along said track;
seventh means coupled to said sixth means, for controlling, in response to said tracking signal the application position of said light beam so as to track said pre-pits along the track; and
eighth means for modulating said light beam by predetermined information within a time period during which said light beam is applied onto said area for recording information.

4,564,930

DISC CARRYING SYSTEM

Tadashi Funabashi; Junji Takahashi, and Kyoichi Kato, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,196
Claims priority, application Japan, Jul. 20, 1982, 57-109771[U]; Jul. 20, 1982, 57-109772[U]
Int. Cl.⁴ G11B *1/00, 17/04, 25/04*
U.S. Cl. 369—75.2 **9 Claims**



1. A disc carrying system to be mounted in a housing of a front loading disc player for supporting a disc in an initial position and for moving said disc through an opening in said housing in a first predetermined direction and in a second predetermined direction perpendicular thereto, thereby carrying it to a final position located at a distance from the initial position, said system comprising:
(a) a tray which is slidably mounted for movement in said

first predetermined direction through a path defined by a pair of laterally spaced rails facing each other and which positions said disc to said final position;

(b) a plate formed on an end of said tray functioning as a lid for the aperture in said housing when said tray is enclosed in said housing;

(c) a disc-supporting container carried by said tray and which can protrude to the outside of said housing together with said tray and which supports the disc in cooperation with said tray;

(d) at least a pair of cam members carried by said tray and disposed on both sides of said tray, each of which cam members has a cam slot having edges which engage with engaging members carried by said container, said cam members being mounted for movement in said first predetermined direction with respect to said tray; and

(e) drive means for driving said cam members in said first predetermined direction, said cam slots being formed so as to move said container in said second predetermined direction perpendicular to said first predetermined direction with respect to said tray in association with the movement of said cam members by said drive means in said first predetermined direction.

4,564,931

OPTICAL RECORDING AND REPRODUCING HEAD

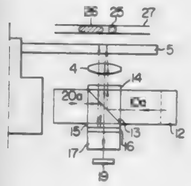
Shunji O'Hara, Higashiosaka; Tomio Yoshida, Katano; Isao Satoh, Neyagawa, and Kenji Koishi, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jul. 13, 1983, Ser. No. 513,247

Claims priority, application Japan, Jul. 15, 1982, 57-123807; Jul. 15, 1982, 57-123809

Int. Cl.⁴ G11B *7/12*

U.S. Cl. 369—110 **8 Claims**



1. An optical recording and reproducing head comprising:

a first light source emitting a first light beam having a first wavelength;

a second light source emitting a second light beam having a second wavelength different from said first wavelength;

a polarization beam splitter on which said first and second light beams are made incident from a first and second surfaces thereof different from each other;

a condenser lens adapted to condense on a recording medium the light emerging from a third surface of said polarization beam splitter different in direction from said first and second surfaces, as well as to lead the light reflected from said recording medium to the third surface of said polarization beam splitter;

a first quarter wave plate disposed between said condenser lens and the third surface of said polarization beam splitter;

a first filter that receives the light emerging from a fourth surface of said polarization beam splitter and transmits light having said first wavelength but reflects light having said second wavelength;

a second quarter wave plate disposed between the fourth surface of said polarization beam splitter and said first filter; and

a photodetector that receives the light passed through said first filter;

wherein said first and second light beams are condensed on positions on said recording medium close to each other, respectively, and substantially one of said first and second light beams reflected from said recording medium is led to said photo- detector.

4,564,932

METHOD OF FABRICATION OF A PROTECTED OPTICAL DISK AND A DISK OBTAINED BY SAID METHOD

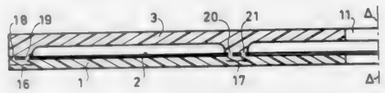
Francois Langé, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 26, 1983, Ser. No. 488,710

Claims priority, application France, Apr. 27, 1982, 82 07251

Int. Cl.⁴ G11B *7/26*

U.S. Cl. 369—286 **8 Claims**



1. A protected optical disk comprising a protective casing of thermoplastic material, annular optically recordable structure enclosed in said casing; said casing being made of at least first and a second disk shaped member delimiting an annular chamber and assembled to each other with welded circular joints; said first disk shaped member having an annular recess in confronting relationship with said recordable structure and two ring shaped raised portions respectively inwardly and outwardly bounding said annular recess; said second disk shaped member mating said raised portions; said welded circular joints extending between said second disk shaped member and said ring shaped raised portions for sealing said casing; at least first and second of said welded circular joints being spaced and concentrically arranged on one side of the inner and outer sides of said annular recess; one of said disk shaped members having an inner flat face supporting said recordable structure; the radial spacing of said first and second welded circular joints lying in a range from 0.4 to 6 millimeters.

4,564,933

SUPERVISION OF DIGITAL TRANSMISSION SYSTEMS

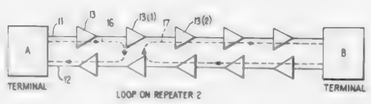
Ian J. Hirst, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 26, 1983, Ser. No. 526,728

Claims priority, application United Kingdom, Sep. 15, 1982, 8226315

Int. Cl.⁴ H04J *1/16, 3/14;* **H04B** *3/46*

U.S. Cl. 370—15 **15 Claims**



1. A method of supervising a digital transmission system having two terminals interconnected by separate unidirectional paths, and at least one repeater interposed in and between said paths, comprising sending a loop-back signal for a loop-back condition from one of the terminals via one of the paths to the repeater and via the repeater and the other path back to the one terminal, sending a digital multi-bit test signal from the other terminal via the other path to the repeater, and controlling the mix of the bits of the test signal to change the loop-back condition in the repeater in such manner as to determine the test signal level in the repeater which caused the change.

4,564,934

ADAPTIVE ECHO CANCELLER WITH AGC FOR TRANSMISSION SYSTEMS

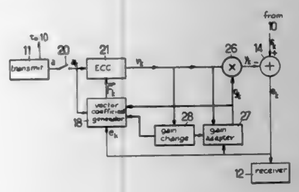
Odile Macchi, Orsay, France, assignor to Centre National de la Recherche, Paris, France

Filed Dec. 1, 1982, Ser. No. 446,062

Claims priority, application France, Dec. 3, 1981, 81 22671

Int. Cl.⁴ H04B *3/20*

U.S. Cl. 370—32 **9 Claims**



1. Echo canceller for cancelling an echo of an echo path in a full duplex communication system between two remote stations, said echo canceller comprising:

an adaptive digital filter, located at one of said stations, for receiving data sent from one of said stations to the echo path, said adaptive digital filter including a plurality of variable tap coefficients and being arranged to deliver a filtered signal representative of a said echo of said echo path;

automatic gain control means for receiving said filtered signal and for generating an estimated value of said echo;

subtraction means for receiving said estimated echo value and a signal from the other one of said stations through said echo path and for subtracting said estimated echo value from a composite signal includng said signal from the other one of said stations and noise due to said echo path;

and means for delivering the value of the gain of said automatic gain control means to said filter as an input signal thereto.

4,564,935

TROPOSPHERIC SCATTER COMMUNICATION SYSTEM HAVING ANGLE DIVERSITY

Philip D. Kaplan, Nashua, N.H., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 10, 1984, Ser. No. 569,644

Int. Cl.⁴ H04B *7/08*

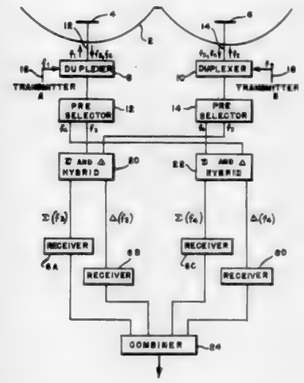
U.S. Cl. 370—38 **4 Claims**

4. A tropospheric scatter communication system having diverse angle signal transmission paths comprising:

a reflector type antenna having a pair of feed elements of substantially identical geometry and signal response characteristics and whose phase centers are displaced in the azimuthal plane;

a hybrid unit having a pair of inputs coupled to respective ones of said pair of feed elements, a signal sum output and a signal difference output;

and means coupled to the signal sum output and the signal difference output of said hybrid unit for selecting the signal of greatest amplitude at said signal sum output and said signal difference output.



4,564,936

TIME DIVISION SWITCHING NETWORK

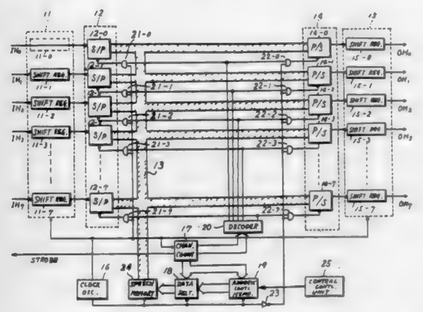
Kenichi Takahashi, Kawasaki, Japan, assignor to Nitsuko Limited, Kawasaki, Japan

Filed Jun. 6, 1984, Ser. No. 618,411

Claims priority, application Japan, Jun. 6, 1983, 58-100627

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—58 **7 Claims**



1. A time division switching network for interchanging time slots on a plurality of (N) highways, each highway transmitting a time division multiplex signal, each one frame of the time division multiplex signal having a predetermined number (n) of time slots assigned to n channels respectively, and each time slot having a plurality of (m) data bits with predetermined time intervals, which comprises:

N input highways receiving incoming time division multiplex signals;

N output highways transmitting the time division multiplex signals as exchanged;

clock pulse generator means generating clock pulses in phase with the data bits;

N buffer memory means connected to N input highways and storing data in the time slots inputted thereto;

a first random access memory having a plurality of addresses, the number of the addresses being equal to a product of the predetermined number (n) of the time slots in one frame and the number (N) of the input highways;

first means for writing one time slot data stored in said N buffer memory means into respective addresses in said first random access memory in response to the clock pulses;

second means for reading out the data stored in respective addresses in said first random access memory onto respective ones of said N output highways in response to every time interval between adjacent clock pulses;

a second random access memory storing address data of said first random access memory to be accessed by said second means;

third means for matching time slots on said N output highways; and

a central control unit for writing said address data into said second random access memory.

4,564,937

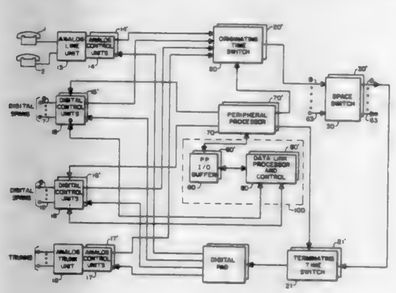
REMOTE DATA LINK ADDRESS SEQUENCER AND A MEMORY ARRANGEMENT FOR ACCESSING AND STORING DIGITAL DATA

Thomas J. Perry, Phoenix, and Muhammad Khera, Glendale, both of Ariz., assignors to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Dec. 22, 1983, Ser. No. 564,136

Int. Cl.⁴ H04J *1/10, 3/08, 3/16;* **H04Q** *11/00*

U.S. Cl. 370—58 **9 Claims**



1. An address sequencer and memory arrangement used in a remote data link controller for transferring data in the form of message bytes to a plurality of digital data links, said remote data link controller including a link processor complex for controlling said remote data link controller, a message byte formatter for assembling data words into message bytes and at least one data link input buffer and at least one data link output buffer connected to said plurality of digital data links, said address sequencer and memory arrangement comprising:

memory means including a plurality of memory location areas, each memory location area associated with one of said plurality of digital data links, said memory means arranged to be connected to said data link input buffer or alternatively to said message byte formatter wherein, said memory means receives and stores in each memory location a message byte from said message byte formatter; and

counter means connected to said memory means arranged to have a preset count loaded into said counter means responsive to a start pulse from said link processor complex whereby, said counter means increments and outputs to said memory means addresses which sequentially access each of said memory location areas and said data link input buffer writes a message byte in each memory location area from a respective one of said plurality of digital data links and alternatively, each of said memory locations is sequentially accessed thereby transferring each message byte stored in said memory means to said data link output buffer for the transmission of each message byte over a respective one of said plurality of digital data links.

4,564,938

DIGITAL ELECTRONIC SWITCHING SYSTEMS

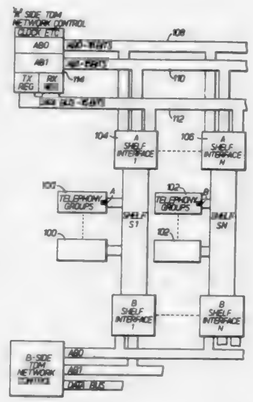
Gordon P. Boot, Cotgrave, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Sep. 14, 1983, Ser. No. 532,095

Claims priority, application United Kingdom, Sep. 15, 1982, 8226237

Int. Cl.⁴ H04Q *11/00*

U.S. Cl. 370—85 **5 Claims**



1. A digital electronic switching system comprising:

(A) a plurality of first and second electronic apparatus;

(B) a plurality of third and fourth electronic apparatus;

(C) respective first data highways interconnecting said first and said second electronic apparatus to said third and fourth electronic apparatus; and

(D) a time division multiplex highway interconnecting said third and said fourth electronic apparatus; said time division multiplex highway including:

(i) a first and second address bus, and

(ii) a parallel data bus divided into two parallel buses for bi-directional data transfer between said third and said fourth electronic apparatus in a single time slot period of said time division multiplex highway;

in which said first and said second address buses are connected to

(E) a first and second address memory;

said third and said fourth electronic apparatus including:

(i) address decoding means responsive to addressing from said first and said second address memories via said first and said second address buses in a first time slot of said time division multiplex highway to identify particular ones of said first and said second electronic apparatus to be actuated;

(ii) means to cause said particular ones of said first and said second electronic apparatus to cause data held therein to be transferred via said first highway to said third and said fourth electronic apparatus in a second time slot of said time division multiplex highway;

(iii) means to cause output of the data so transferred in the second time slot to said parallel data bus in a third time slot of the time division multiplexed highway; and

(iv) means to cause transfer via the first highway of the data received in the third time slot to the first and second electronic apparatus in a fourth time slot of the time division multiplex highway; said address decoding means adapted to respond to

addressing during said second, third and fourth time slots and said parallel data bus adapted to carry data during said first, second and fourth time slots.

4,564,939

HANDSFREE TELEPHONE

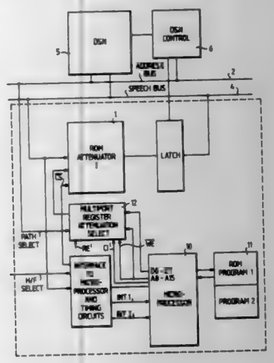
Bjorn N. Hansen, Haverhill, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,611

Claims priority, application United Kingdom, Mar. 15, 1983, 8307143

Int. Cl.⁴ H04J *3/02*

U.S. Cl. 370—85 **2 Claims**



1. A digital handsfree telephone subscriber terminal circuit for transmitting and receiving digital time division multiplex speech in a plurality of channels comprising:

means for monitoring the speech signal condition of transmited and received speech at said terminal;

means for increasing the attenuation in either the transmitted or received speech direction in response to an indication from said monitoring means that speech is not present in said direction;

means for comparing monitored speech signals in the received and transmitted directions with a preset threshold level; and

digital processor means for causing said means for increasing the attenuation to adjust the attenuation, and including means for causing said monitoring means to monitor less than a full number of samples of said transmitted and received speech, such that only one out of N samples are monitored singly and successively for each of said plurality of speech channels.

4,564,940

BROAD BAND NETWORK SYSTEM

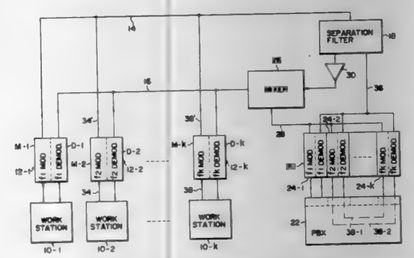
Haruki Yahata, Fujisawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 22, 1983, Ser. No. 564,179

Claims priority, application Japan, Dec. 28, 1982, 57-227401

Int. Cl.⁴ H04Q *11/04;* **H04J** *7/02*

U.S. Cl. 370—124 **25 Claims**



1. A signal multiplex transmission system comprising:

(a) plurality of terminal units including a plurality of first terminal units for processing information signals to generate first information signals which are multiplexed to be transmitted as first multiplexed information signals in a first frequency band and a plurality of second terminal units for processing information signals to generate second information signals which are multiplexed to be transmitted as second multiplexed information signals in a second frequency band;

(b) branch exchange means for allowing signal transmission between said first terminal units;

(c) signal separation means for receiving the first and second multiplexed information signals, for separating the first multiplexed information signals from the second multiplexed information signals, and for transmitting the first multiplexed information signals to said branch exchange means and outputting the second multiplexed information signals; and

mixer means, connected to said branch exchange means and said signal separation means, for receiving the first multiplexed information from said first terminal units through said branch exchange means and the second multiplexed information signals from said signal separation means, and for mixing the first and second multiplexed information signals to supply a composite signal to said first and second terminal units.

4,564,941

ERROR DETECTION SYSTEM

Richard N. Woolley, Mountain View, Calif.; Neal Glover, Broomfield, Colo., and Richard Williams, San Jose, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 8, 1983, Ser. No. 559,210

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—2 **36 Claims**



1. A method for storing and recovering data in a data processing system, said data being organized into a plurality (N) of sequential bytes, such that an error in a byte is propagated throughout each subsequent byte, comprising the steps of:

performing an exclusive-OR operation between each byte (i) and the previous byte (i−1) in order to obtain a resultant value (R_i);

storing each of said resultant values R_i in a storage device;

reading said resultant values R_i from said storage device;

recovering said data bytes from said resultant values by performing an exclusive-OR operation between each value R_i and the previously recovered data byte (i−1), such that:

$$\text{byte} = [R_i \oplus \text{byte}_{i-1}]_{i=1}^{i=N}$$

where:

"N" = number of bytes in said data, and

"⊕" denotes an exclusive-OR operation;

whereby an error in a byte is propagated throughout subse-

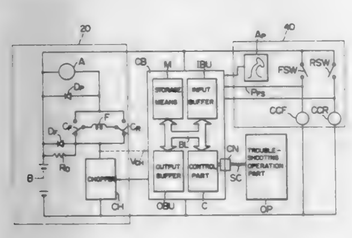
quent bytes, thereby increasing the detectability of said error.

4,564,942

TROUBLE SHOOTING SYSTEM FOR ELECTRIC VEHICLE

Michimasa Horiuchi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1983, Ser. No. 476,267
Claims priority, application Japan, Mar. 19, 1982, 57-42665
Int. Cl.⁴ G06F *11/22*
U.S. Cl. 371—20 **14 Claims**



1. A trouble shooting system for an electric vehicle, said electric vehicle being provided with a driving part, a driving operation part and a control device, said driving part including a power source, an electric motor and means for controlling electric power supplied from said power source to said electric motor in response to said driving operation part for driving said electric vehicle, and said control device including a microprocessor connected to receive a command from said driving operation part for supplying a control signal to said driving part and storage means for storing therein a drive control program to be executed by said microprocessor for generating said control signal, said trouble shooting system comprising:

storage means provided in said control device for storing therein a plurality of trouble shooting programs to be executed by said microprocessor for effecting trouble shooting for various parts of said electric vehicle; and

a trouble-shooting operation part releasably coupled to said control device and including command generating means responsive to manual operation for generating and supplying a command to said microprocessor in said control device to cause said microprocessor to read out and execute a selected one of said trouble shooting programs and means responsive to said microprocessor for displaying the identification of a trouble-shooting program which is being processed.

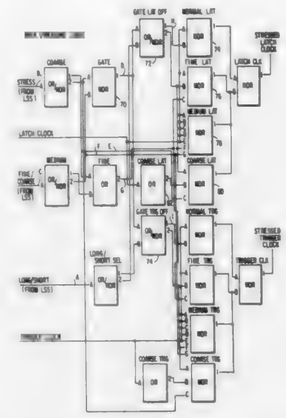
4,564,943

SYSTEM PATH STRESSING

John C. Collins, and John J. DeFazio, both of Poughkeepsie, N.Y., assignors to International Business Machines, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,802
Int. Cl.⁴ G01R *31/28*
U.S. Cl. 371—28 **13 Claims**

1. In a data processing system having at least a first device providing output data to a data path in response to a first clock signal, and a second device storing input data from said dath path in response to a second clock signal, a system clock control apparatus for providing said first and second clock signals to said first and second devices, said system clock control apparatus comprising path stressing means for varying the timing relationships between said first and second clock signals, said path stressing means comprising delay means for



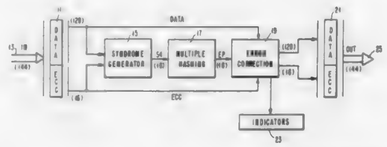
selectively delaying either one of said first and second clock signals with respect to the other.

4,564,944

ERROR CORRECTING SCHEME

Richard F. Arnold, Palo Alto, Calif.; John Cocke, Bedford, N.Y.; Don Coppersmith, Ossining, N.Y.; Adrian E. Seigler, and Gary E. Strait, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,212
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—37 **13 Claims**



1. A method for generating error position indications for use with an error detection and correction scheme in which error syndromes are produced, characterized by hashing each error syndrome by a plurality of hashing functions, using the respective hash outputs to address a plurality of lookup tables, and logically combining the table outputs to generate an error pointer.

4,564,945

ERROR-CORRECTION CODE FOR DIGITAL DATA ON VIDEO DISC

Neal Glover, Broomfield; Kermit Clausen, Boulder; Chris Mayne, Boulder, and Randy Glissmann, Boulder, all of Colo., assignors to Reference Technology, Inc., Boulder, Colo.

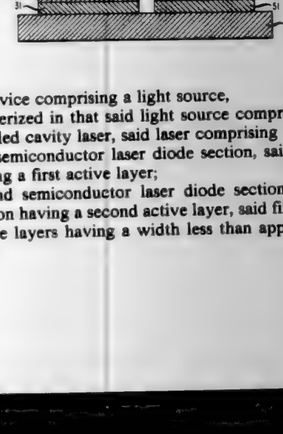
Filed Jun. 20, 1983, Ser. No. 505,210
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—38 **86 Claims**

1. A memory for storing digital data, said memory being encoded with a two-dimensional data array having error-correction code therein, said data array comprising data intervals of multi-bit binary words, said words being written in rows and columns of sequential multi-bit binary words filling less than all of the data intervals of said array;

said memory for storing digital data including at least one data interval therein for at least one auxiliary check byte computed across said data array;

said memory for storing digital data further having a two-dimensional data array including at least first and second row-correcting columns having means for correcting errors across rows of data;

said memory for storing digital data further having a two-dimensional data array including at least first and second column-correcting rows having means for correcting errors acros columns of data;



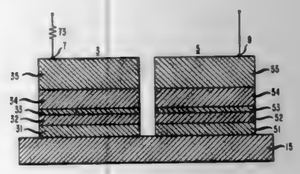
said memory readable along said two dieminsions so that each row-correcting column and each column-correcting row including coded information for the location and correction of at least one error in a column and/or one error in a row whereby upon data regeneration by said columns and rows, said regenerated data can be used in the calculation of auxiliary check syndromes to indicate whether data has been accurately regenerated.

4,564,946

OPTICAL COMMUNICATIONS SYSTEM USING FREQUENCY SHIFT KEYING

Nils A. Olsson, Berkeley Heights, and Won-Tien Tsang, New Providence, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 25, 1983, Ser. No. 469,800
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—20 **6 Claims**



1. A device comprising a light source,

characterized in that said light source comprises a cleaved coupled cavity laser, said laser comprising

a first semiconductor laser diode section, said first section having a first active layer;

a second semiconductor laser diode section, said second section having a second active layer, said first and second active layers having a width less than approximately 20 μm;

said first and second sections being optically coupled in both directions through spaced cleaved surfaces;

means for adjusting the refractive index of said first and second sections relative to each other;

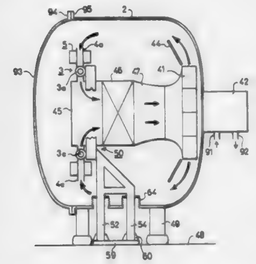
and means for selecting one desired output frequency from a group of at least two output frequencies.

4,564,947

HIGH-POWER LASERS

Jacob Daniel, Holon, Israel, assignor to Metalworking Lasers International Ltd., Neve Sharett, Israel

Filed Sep. 30, 1982, Ser. No. 431,252
Int. Cl.⁴ H01S *3/22*
U.S. Cl. 372—58 **10 Claims**



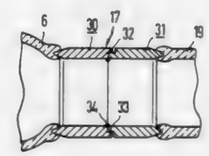
1. A high-power flowing-gas laser comprising: an outer housing having a sealed wall capable of withstanding an internal pressure different from atmosphere; an optical system including a folded laser channel constituted of a plurality of legs disposed in a polygon configuration; an impeller for producing a flow of gas through said folded laser channels; a gas flow channel for each laser channel leg, each of said gas flow channels including an inlet end for receiving gas from the impeller, and an outlet end formed with a pair of aligned laser openings for accommodating the laser beam of the respective laser channel leg; and a partition wall extending across the interior of the housing between the outlet end of the impeller and the inlet ends of said gas flow channels for substantially conforming the gas flow from the impeller first through the inlet ends of the gas flow channels, and then through the outlet ends thereof, whereby there is no significant gas flow through the laser openings at the outlet ends of the gas flow channels.

4,564,948

GAS LASER TUBE

Hans Golser, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,609
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311726
Int. Cl.⁴ H01S *3/03*
U.S. Cl. 372—61 **15 Claims**



1. A gas laser tube with a vacuum envelope, comprising: a tubular section formed of an electrically insulating material

with a coefficient of thermal expansion χ_1; an end section formed of an electrically insulating material with a coefficient of thermal expansion χ_2, such that

$$\left|\frac{H_1 - H_2}{H_i}\right| \geq 0.2,$$

wherein i=1, 2; and a transition element connecting said tubular section to said end section;

said transition element including a first metallic section in the form of a first metal ring adjacent said tubular section and a second metallic section in the form of a second metal ring, said first and second metallic sections having different respective coefficients of thermal expansion χ_3 and χ_4; said first metallic section being thermally matched to said tubular section such that

$$\left|\frac{H_1 - H_3}{H_m}\right| < 0.2,$$

wherein m=1, 3; said second metallic section being thermally matched to said end section such that

$$\left|\frac{H_2 - H_4}{H_n}\right| < 0.2,$$

wherein n=2, 4; said first and second metallic sections having end surfaces with mutually supplementary steps formed therein being disposed inside each other; said first and second metallic sections having inner wall surfaces being joined together;

said metal rings having ends facing each other, said mutually complimentary steps including outer and inner ridges in the form of a respective sharp increase of the inner wall surface area of one of said metal rings at said end thereof, and a respective sharp reduction of the diameter of the outer periphery of the other of said metal rings; and

in said transition element; the ratio of the inner diameter to the total length thereof is between 0.5:1 and 1.5:1; the ratio of the length of one of said metal rings to the length of the other is between 0.7:1 and 1.3:1; and the ratio of the wall thickness to the total length is between 0.06:1 and 0.15:1.

4,564,949

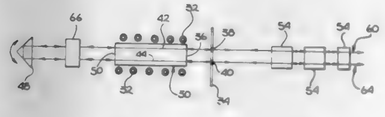
FOLDED CAVITY LASER FOR HOLOGRAPHY

James D. Trolinger, Costa Mesa, Calif., assignor to Spectron Development Laboratories, Costa Mesa, Calif.

Continuation of Ser. No. 499,497, Dec. 13, 1982, abandoned. This application Apr. 26, 1985, Ser. No. 726,959

Int. Cl.⁴ H01S *3/081*

U.S. Cl. 372—93 **5 Claims**



1. An improved folded cavity laser, comprising:

lasing means having front and rear optical surfaces disposed in an optical cavity for generating at least two parallel beams of laser radiation, each beam being equally spaced from the axis of said lasing means;

said optical cavity comprising mirror means for reflecting said laser radiation, and a retro-reflecting roof prism capable of rotation about the axis of said lasing means, said mirror means and said roof prism aligned with the axis of the lasing means, and said roof prism being large enough to receive substantially all of the radiation from said lasing means;

pumping means coupled to said lasing means for providing energy to said lasinng means to generate said laser radiation;

said retro-reflecting roof prism arranged such that said laser beams received from said laser cavity are reflected back to said laser cavity on at least two paths, said paths being equally spaced about the axis of said lasing means;

a transverse mode selector disposed between and in optical alignment with both said front optical surface and said mirror means;

said transverse mode selector arranged in said optical cavity to produce at least two folded cavities within said lasing means which, together with said retro-reflecting prism, generate at least two spatially separated, mutually coherent, in-phase and co-existing laser beams in said lasing means and said optical cavity;

said mirror means including inner and outer reflecting surfaces, said inner reflecting surface virtually all incident laser radiation back to said lasing means, and said outer reflecting surface only partially reflecting said laser radiation back to said front optical surface and permitting the remainder of said laser radiation to pass therethrough,

whereby multiple, mutually coherent laser beams are generated by said lasing means.

4,564,950

GUARD ARRANGEMENT FOR A BOTTOM ELECTRODE OF A DIRECT-CURRENT ARC FURNACE

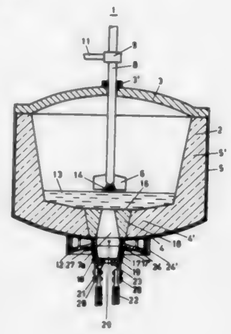
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 24, 1984, Ser. No. 633,983

Claims priority, application Switzerland, Jul. 28, 1983, 4133/83

Int. Cl.⁴ H05B *7/20*

U.S. Cl. 373—108 **3 Claims**



1. A direct-current electric arc furnace for melting metals, comprising:

a furnace vessel having a bottom;

at least a pair of electrodes, including a bottom electrode mounted in the bottom of said vessel,

means for cooling said bottom electrode; and

a shielding roof provided as a guard against molten metal which may penetrate through the bottom of said vessel, said shielding roof mounted between the bottom of the furnace vessel and the cooling means.

4,564,951

COOLING ARRANGEMENT OF A BOTTOM ELECTRODE FOR A DIRECT-CURRENT ARC FURNACE

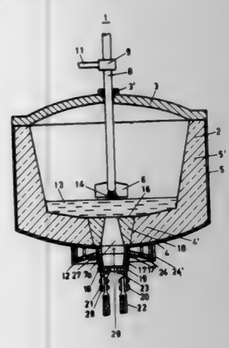
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 24, 1984, Ser. No. 633,987

Claims priority, application Switzerland, Jul. 28, 1983, 4136/83

Int. Cl.⁴ H05B *7/20*

U.S. Cl. 373—108 **6 Claims**



1. A direct-current arc furnace for melting metal, comprising:

a furnace vessel having a bottom;

at least a pair of electrodes, including a bottom electrode mounted in the bottom of said vessel, said bottom electrode having an end part projecting from the furnace vessel;

a connecting piece mounted exterior of said vessel bottom for holding at least a portion of said end part of the a bottom electrode below the vessel bottom, said connecting piece having an interior cavity extending in the direction of the vessel bottom to define contact surfaces substantially enveloping and fittingly, detachably contacting said portion of said end part of said bottom electrode; and

means for cooling said connecting piece;

wherein said connecting piece serves as a cooling contact sleeve for said end part of said bottom electrode.

4,564,952

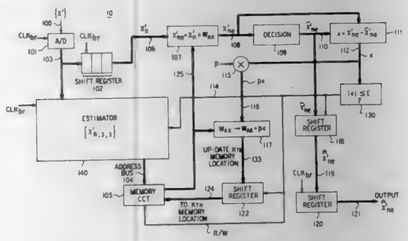
COMPENSATION OF FILTER SYMBOL INTERFERENCE BY ADAPTIVE ESTIMATION OF RECEIVED SYMBOL SEQUENCES

Peter D. Karabinis, Atkinson, and Thomas L. Osborne, Sandown, both of N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 8, 1983, Ser. No. 559,473

Int. Cl.⁴ H04B *3/04, 1/10*

U.S. Cl. 375—14 **26 Claims**



14. A method of compensating for distortion in received digital symbol values wherein each received symbol value represents one of a plurality of transmitted symbol values, said method comprising the steps of

altering a received symbol value by a preselected amount, said amount being in response to an estimate of the transmitted symbol values represented by said received symbol value and N other received symbol values, where N is an integer greater than zero;

comparing said altered symbol value to a closest one of said plurality of transmitted symbol values to determine any difference therebetween; and

outputting said closest one of said plurality of transmitted symbol values in lieu of said received symbol value if said difference meets a preselected criterion.

4,564,953

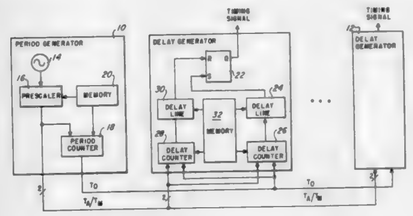
PROGRAMMABLE TIMING SYSTEM

Paul M. Werking, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 28, 1983, Ser. No. 479,373

Int. Cl.⁴ H03K *23/66, 5/13, 5/04*

U.S. Cl. 377—52 **3 Claims**



1. A timing system comprising:

a clock for generating clock signals;

first counting means connected to receive and count said clock signals for providing first output signals at predetermined counts, comprising a first set of logic gates each clocked by said clock signals and wherein a modulus of said first counting means corresponds to which gates are enabled;

means connected to said first counting means for varying the modulus of said first counting means comprising, a second set of logic gates, each gate in said second set being coupled to an enabling input of one of said first set of logic gates, wherein each gate in said second set is enabled by one or more modulus select signals so that said first output signals are delayed by a number of clock signal counts equal to a selected modulus;

second counting means connected to receive said first output signals for counting said first output signals and providing second output signals at predetermined counts; and

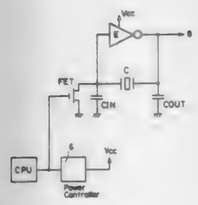
at least one programmable delay means each connected to the outputs of said first and second counting means for providing a timing signal of a preselected duration upon the occurrence of each of said first and second output signals.

4,564,954

NOISE REDUCTION CIRCUIT OF SYNTHETIC SPEECH GENERATING APPARATUS

Hiroshi Nittaya, and Kosuke Nishimura, both of Yamatokoriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 5, 1983, Ser. No. 455,769
Claims priority, application Japan, Jan. 8, 1982, 57-2027
Int. Cl.[4] G10L *1/00*
U.S. Cl. 381—51 5 Claims



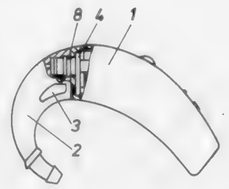
1. A synthetic speech generating apparatus comprising:
synthetic speech generator means including at least a speech synthesizer, a power amplifier, a logic circuit, and an oscillator for providing a fundamental clock signal;
power supply means;
interruption means for interrupting power to said speech generator means when speech generation is not being performed; and
means for stopping said logic circuit by controlling and stopping the fundamental clock oscillator of said speech synthesizer before the logic circuit malfunctions due to a drop in power supply voltage when power to the synthetic speech generator means is interrupted.

4,564,955

COUPLING FOR USE IN THE SECURING OF A HOOK-SHAPED SOUND PART ON A BEHIND-THE-EAR HEARING AID

Leon Birch, Stenlose, and Jorgen Hartmann, Glostrup, both of Denmark, assignors to Danavox A/S, Copenhagen, Denmark

Filed Oct. 19, 1983, Ser. No. 543,291
Claims priority, application Denmark, Nov. 5, 1982, 4920/82
Int. Cl.[4] H04R *25/00*
U.S. Cl. 381—69 6 Claims



1. A two part coupling for use in a behind-the-ear hearing aid, said hearing aid having a hook-shaped part for conducting sound and a hearing aid body, said coupling comprising:
a coupling aperture disposed in said hookshaped part with a projecting wall partially extending into said coupling aperture;
a coupling link having a substantially cylindrical plug-shaped part and having a longitudinal axis, said coupling link being mounted on said hearing aid body for conducting sound therefrom, a section of said plug-shaped part having a portion with an arcuate cross-section transverse to said longitudinal axis, said portion including a partly annular groove therein parallel to said cross-section and further including a flat portion having a substantially flat surface transverse to said longitudinal axis, said plug-shaped part engaging with said coupling aperture,
wherein said two part coupling includes a free position in which said hook-shaped portion and said hearing aid body can be separated and assembled, and a coupling position in which said hook-shaped portion is coupled to said hearing aid body and to which said hook-shaped portion can be turned in relation to said hearing aid body.

DESIGNS

JANUARY 14, 1986

282,116

SWIMWEAR

Jacquelyn A. B. Myles, 1427 Newton Ave., Dayton, Ohio 45406

Continuation-in-part of Ser. No. 347,912, May 4, 1982, Pat. No. 275,810, which is a continuation-in-part of Ser. No. 86,477, Oct. 19, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 431,648
Term of patent 14 years
U.S. Cl. D2—37

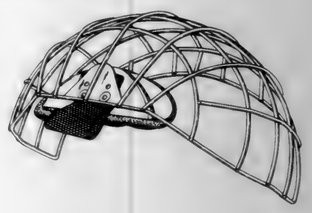


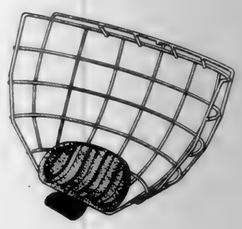
282,117

FACE PROTECTING MASK

Jan Grönborg, Huddinge, and Lars Persson, Åkersberga, both of Sweden, assignors to Svensk Sportutveckling AB, Stockholm, Sweden

Filed Jul. 26, 1983, Ser. No. 517,451
Claims priority, application Sweden, Jan. 28, 1983, 83-0246
Term of patent 14 years
U.S. Cl. D2—233



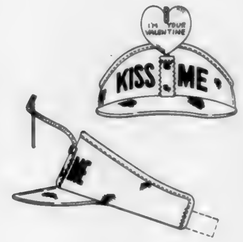


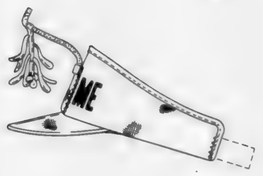
282,118

COMBINED VISOR AND NOVELTY HANG TAG

Frank Mengwasser, 1141 Hobbs Mill, St. Louis, Mo. 63011

Filed Mar. 3, 1983, Ser. No. 471,874
Term of patent 14 years
U.S. Cl. D2—247





282,119

HIGH HEELED CALF LENGTH SNEAKER

Norma Kamali, 6 W. 56th St., New York, N.Y. 10019

Filed Apr. 7, 1983, Ser. No. 482,853
Term of patent 14 years
U.S. Cl. D2—275



282,120
HIGH HEELED LOW TOP SNEAKER
Norma Kamali, 6 W. 56th St., New York, N.Y. 10019
Filed Apr. 7, 1983, Ser. No. 482,851
Term of patent 14 years
U.S. Cl. D2—285



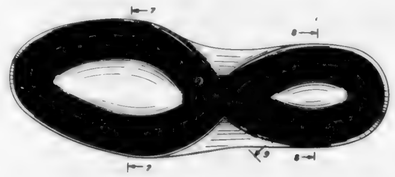
282,121
HIGH HEELED ANKEL TOP SNEAKER
Norma Kamali, 6 W. 56th St., New York, N.Y. 10019
Filed Apr. 7, 1983, Ser. No. 482,854
Term of patent 14 years
U.S. Cl. D2—285



282,122
SHOE HEEL GUARD
Michael S. Beck, Lake Worth, Fla., assignor to Security Comfort Co. Inc., Lake Worth, Fla.
Filed Apr. 13, 1983, Ser. No. 484,667
Term of patent 14 years
U.S. Cl. D2—314



282,123
SHOE OUTSOLE
Howard Davis, New York, N.Y., assignor to 8 Track Shoe Corporation, White Plains, N.Y.
Filed Nov. 18, 1982, Ser. No. 442,835
The portion of the term of this patent subsequent to Dec. 28, 1996, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—320



282,124
GLOVE WITH ILLUMINABLE FINGER
Guy R. Billings, 119 W. Madison Ave., Bastrop, La. 71220
Filed May 9, 1983, Ser. No. 492,786
Term of patent 14 years
U.S. Cl. D2—365



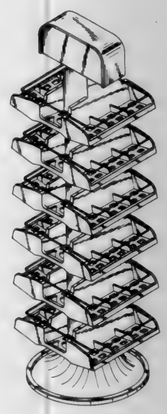
282,125
BASEBALL FAN
Patrick R. Alonzo, 2361 W. Birchwood Ave., Milwaukee, Wis. 53221
Filed Nov. 17, 1983, Ser. No. 552,703
Term of patent 14 years
U.S. Cl. D3—3



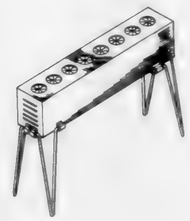
282,126
SEAT WITH ADJUSTABLE HEADREST
Hans Hopfer, Paris, France, assignor to Alex Synn AG, Cham, Switzerland
Filed Jun. 28, 1983, Ser. No. 508,538
Claims priority, application The Hague, Dec. 29, 1982, DM/002 093
Term of patent 14 years
U.S. Cl. D6—367

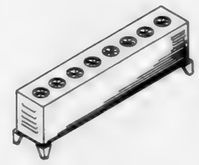


282,127
DISPLAY STAND FOR BOOKS OR THE LIKE
Peter J. Weiller, Armonk, N.Y., assignor to Thomson-Leeds Company, Inc., New York, N.Y.
Filed Aug. 10, 1983, Ser. No. 522,460
Term of patent 14 years
U.S. Cl. D6—411

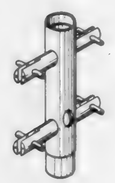


282,128
REFRIGERATED CONTAINER FOR ALCOHOLIC BEVERAGES AND MIXERS OR THE LIKE
Benjamin H. Bell, 1807 Meadowdale Ave., Atlanta, Ga. 30306; Gregory T. Maloof, 2626 Valmar Dr., Doraville, Ga. 30340, and Charles W. Reeve, 105 Saddlebrook Dr., Peachtree City, Ga. 30269
Filed Sep. 6, 1983, Ser. No. 529,289
Term of patent 14 years
U.S. Cl. D6—469

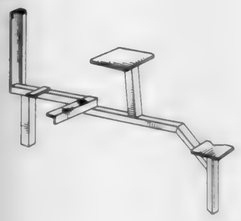




282,129
UPRIGHT MEMBER FOR THE MODULAR ASSEMBLY OF AN EXHIBITION STALL
Harry Glück, Vienna, Austria, assignor to Ellesse International S.p.A., Ellera Umbra, Italy
Division of Ser. No. 434,356, Oct. 14, 1982. This application Dec. 28, 1984, Ser. No. 687,259
Term of patent 14 years
U.S. Cl. D6—491



282,130
SUPPORT FRAME FOR A COMBINED SEAT AND TABLE UNIT
Scott D. Crowe, 45 Jody La., Camarillo, Calif. 93010
Filed Mar. 14, 1983, Ser. No. 474,786
Term of patent 14 years
U.S. Cl. D6—491



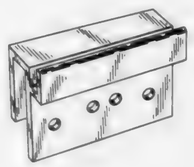
282,131
CHAIR FRAME
Mike T. Claman, 1766 Hickory Blvd. SW., Lenoir, N.C. 28645
Filed Aug. 25, 1983, Ser. No. 526,269
Term of patent 14 years
U.S. Cl. D6—500



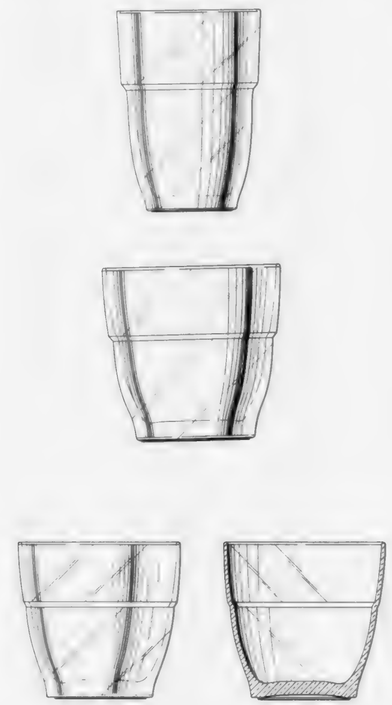
282,132
SHELF OR SIMILAR ARTICLE
Dean K. Santner, P.O. Box 88185, Emeryville, Calif. 94662
Filed Apr. 18, 1983, Ser. No. 485,663
Term of patent 14 years
U.S. Cl. D6—511



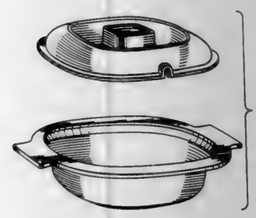
282,133
DECORATOR ROD PULLEY HOUSING
Ivan A. Smith, Cheltenham, Australia, assignor to Village Nominees Pty. Ltd., Windsor, Australia
Filed Feb. 7, 1983, Ser. No. 464,793
Claims priority, application Australia, Aug. 5, 1982, 1175/82
Term of patent 14 years
U.S. Cl. D6—580

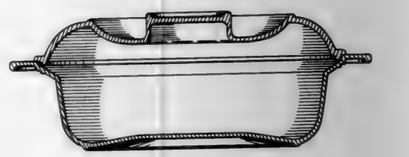


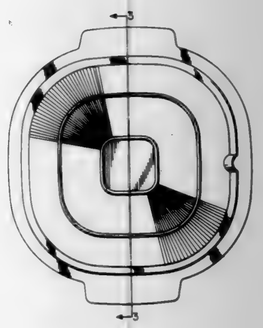
282,134
TUMBLER OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510 Arques, France
Filed Aug. 16, 1983, Ser. No. 523,579
Term of patent 14 years
U.S. Cl. D7—15



282,135
COVERED CASSEROLE
Donald R. McClelland, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 6, 1982, Ser. No. 395,656
Term of patent 14 years
U.S. Cl. D7—18



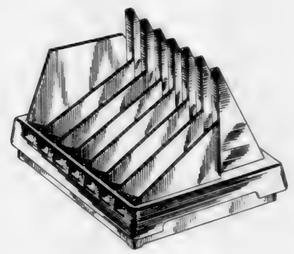




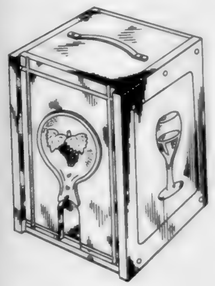
282,136
TEXAS MEAT PRESS
Geraldine J. Skermetta, 7914 Village Oak, San Antonio, Tex. 78233
Filed Jun. 15, 1983, Ser. No. 504,467
Term of patent 14 years
U.S. Cl. D7—43



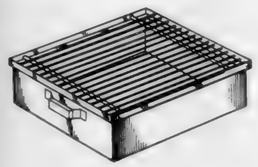
282,137
STORAGE RACK
James E. Williams, Stamford, and Edward R. Kozlowski, Southport, both of Conn., assignors to Cuisinarts, Inc., Greenwich, Conn.
Filed May 13, 1983, Ser. No. 494,512
Term of patent 14 years
U.S. Cl. D7—73



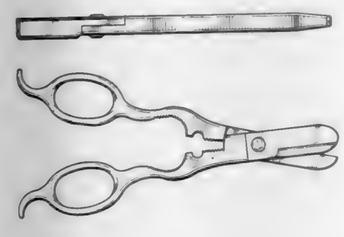
282,138
WINE COOLER
Donald A. Gullikson, 6766 Olive Branch, San Jose, Calif. 95120
Filed Oct. 25, 1982, Ser. No. 436,449
Term of patent 14 years
U.S. Cl. D7—300



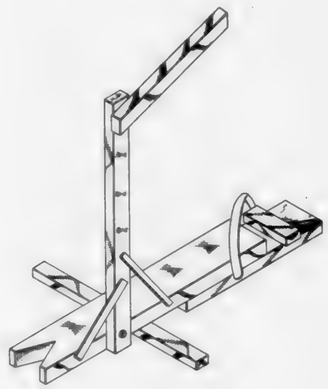
282,139
COMBINED OVEN BARBEQUE AND WATER, SEASONING AND DRIP PAN
Eugene Radford, 981 W. Tennyson, Apt. 201, Hayward, Calif. 94545
Filed Mar. 28, 1983, Ser. No. 479,685
Term of patent 14 years
U.S. Cl. D7—360



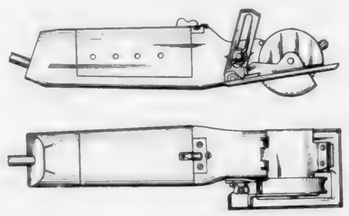
282,140
HARVESTING SHEARS
Harutyun G. Nalbandyan, and Nikolaes A. Nalbandyan, both of 4421 Melbourne Ave., Apt. 5, Los Angeles, Calif. 90027
Filed Jun. 20, 1983, Ser. No. 506,113
Term of patent 14 years
U.S. Cl. D8—5



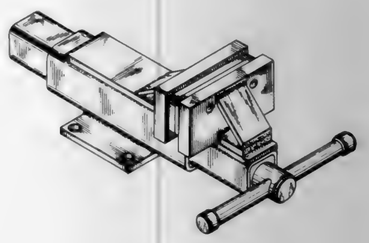
282,141
FULCRUMED TOOL FOR A SHOVEL OR SIMILAR ARTICLE
Eugene L. Hayman, Jr., 317 W. Oak, Deer Park, Tex. 77536
Filed Apr. 14, 1983, Ser. No. 484,779
Term of patent 14 years
U.S. Cl. D8—10



282,142
SAW
John Siravo, 20 Colfax Ave., Staten Island, N.Y. 10306
Filed Jul. 7, 1983, Ser. No. 511,558
Term of patent 14 years
U.S. Cl. D8—66



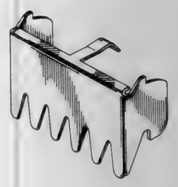
282,143
VISE
Carl S. Tarquinio, 1048 Chelsea Ave., Santa Monica, Calif. 90403
Filed Aug. 23, 1982, Ser. No. 410,418
Term of patent 14 years
U.S. Cl. D8—74



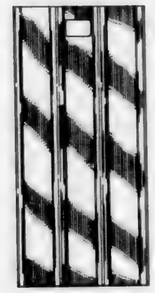
282,144
BRACE FOR MOTOR BOAT DRIVE UNIT
Paul G. Speelman, 319 Old St. Rd., Clarksville, Ohio 45133
Filed Jul. 14, 1983, Ser. No. 513,704
Term of patent years
U.S. Cl. D8—349



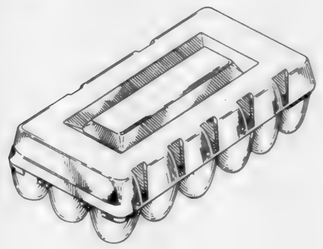
282,145
DISPLAY FRAME HANGER
Mark T. Cole, West Groton, and Charles F. Sherman, Townsend, both of Mass., assignors to Nielsen Moulding Design Corp., Townsend, Mass.
Filed May 31, 1983, Ser. No. 499,329
Term of patent 14 years
U.S. Cl. D8—373



282,146
CAN CARRIER
Ronald C. Wallin, and Wesley A. Wallin, both of 132 Federal Rd., Danbury, Conn. 06810
Filed Jul. 14, 1983, Ser. No. 513,757
Term of patent 14 years
U.S. Cl. D9—344



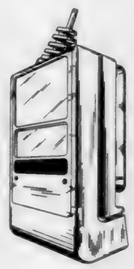
282,147
EGG CARTON
Raj K. Mangla, East Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Apr. 28, 1983, Ser. No. 489,617
Term of patent 14 years
U.S. Cl. D9—345



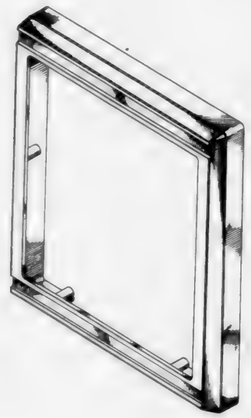
282,148
BOTTLE
Reijiro Yoshimura, New York, N.Y., assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed Jul. 13, 1983, Ser. No. 513,171
Claims priority, application Japan, Mar. 11, 1983, 58-10064
Term of patent 14 years
U.S. Cl. D9—378



282,149
AUDIO DOSIMETER FOR DETECTING NOISE LEVEL
David A. White, Folcroft, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 8, 1983, Ser. No. 483,435
Term of patent 14 years
U.S. Cl. D10—46



282,150
INSTRUMENT CASE MOLDING
Warren L. Atkins, Anaheim, Calif., assignor to International Telephone & Telegraph Corp., New York, N.Y.
Filed Apr. 11, 1983, Ser. No. 484,056
Term of patent 14 years
U.S. Cl. D10—103



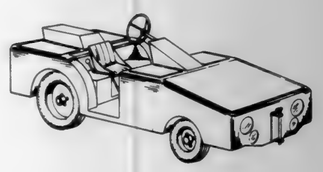
282,151
NECK PENDANT
Helen F. Mills, 20440 Anza Ave. #323, Torrance, Calif. 90503
Filed Apr. 30, 1984, Ser. No. 605,130
Term of patent 14 years
U.S. Cl. D11—81



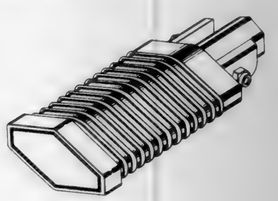
282,152
FLOWER VASE OR SIMILAR ARTICLE
Walter M. Mendenhall, 512 Lillian Dr., Madeira Beach, Fla. 33708
Filed Aug. 5, 1982, Ser. No. 405,421
Term of patent 14 years
U.S. Cl. D11—154



282,153
TOWING VEHICLE
Robert H. Wallace, and Jerry R. Gravitt, both of Cumming, Ga., assignors to Tri-Tractor Manufacturing Co., Inc., Cumming, Ga.
Filed Apr. 1, 1983, Ser. No. 481,303
Term of patent 14 years
U.S. Cl. D12—14



282,154
MOTORCYCLE FOOTREST
Tyrone A. Cruze, and Nace J. Panzica, both of San Jose, Calif., assignors to Custom Chrome, Morgan Hill, Calif.
Filed Apr. 20, 1984, Ser. No. 602,551
Term of patent 14 years
U.S. Cl. D12—114



282,155
VEHICLE LUGGAGE CARRIER
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Filed May 12, 1983, Ser. No. 493,945
Term of patent 14 years
U.S. Cl. D12—157



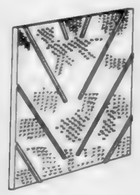
282,156
AIRCRAFT THROTTLE HANDLE
Anthony W. Le Vier, LaCanada-Flintridge, Calif., assignor to R.P.O.M.C.T. Limited Partnership, Englewood, Colo.
Filed May 19, 1983, Ser. No. 496,189
Term of patent 14 years
U.S. Cl. D12—174



282,157
FRONT SPOILER
Hans Kerschbaum, Oberdachstetten, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Fed. Rep. of Germany
Filed Jul. 16, 1982, Ser. No. 398,936
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1982, MR 12822
Term of patent 14 years
U.S. Cl. D12—181



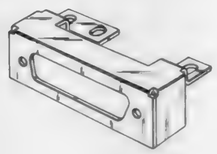
282,158
MUD FLAP OR THE LIKE
Bert H. Wright, 33 Victor St., Beaumaris, Victoria, Australia
Filed Oct. 4, 1983, Ser. No. 538,873
Claims priority, application Australia, Jul. 13, 1983, 4370/83
Term of patent 14 years
U.S. Cl. D12—185



282,159
WHEEL
Richard A. Schell, Utica, and John R. Schinella, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 22, 1983, Ser. No. 525,019
The portion of the term of this patent subsequent to Aug. 21, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—211



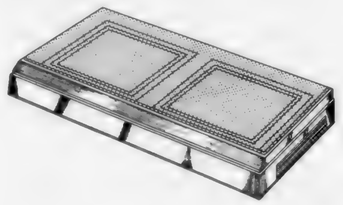
282,160
CONNECTOR MOUNTING DEVICE FOR EXTENDING I/O CONNECTIONS TO A PERSONAL COMPUTER
Frederick E. Berry, El Toro, and Ralph G. Tobelmann, Irvine, both of Calif., assignors to Emulex Corporation, Costa Mesa, Calif.
Filed Apr. 15, 1983, Ser. No. 485,450
Term of patent 14 years
U.S. Cl. D13—24



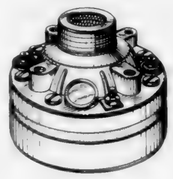
282,161
INSULATED IGNITION SWITCH COVER
George F. Barrows, II, and Niels P. Barrows, both of 2909 E. Voltaire, Phoenix, Ariz. 85032
Filed Jun. 27, 1983, Ser. No. 508,112
Term of patent 14 years
U.S. Cl. D13—32



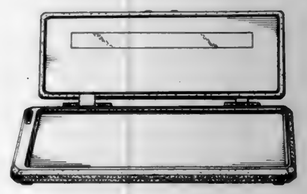
282,162
LOUDSPEAKER
Gary E. Grimes, Watertown, Conn., assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 27, 1983, Ser. No. 507,895
Claims priority, application Benelux, Jan. 4, 1983, 57465-02
Term of patent 14 years
U.S. Cl. D14—33



282,163
SPEAKER DRIVER
Frederick L. Seebinger, Kinnelon, N.J., assignor to Atlas Sound Division Of American Trading & Production Corp., Parsippany, N.J.
Filed Nov. 14, 1983, Ser. No. 551,786
Term of patent 14 years
U.S. Cl. D14—37

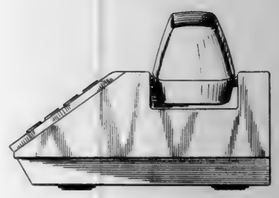


282,164
PORTABLE TELEX TERMINAL CASE OR THE LIKE
Hugo K. Krop, Amsterdam, Netherlands, assignor to Text Lite B.V., Amsterdam, Netherlands
Filed Oct. 17, 1983, Ser. No. 542,352
Claims priority, application Benelux, Apr. 19, 1983, 57803-2
Term of patent 14 years
U.S. Cl. D14—52

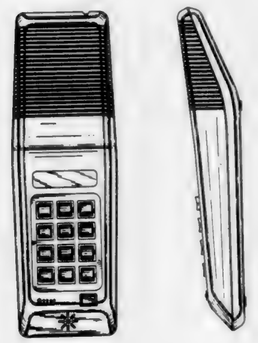


282,165
TELEPHONE SET
Wilbert C. Brown, Fairfield, Conn., assignor to TIE/Communications, Inc., Shelton, Conn.
Filed Jun. 18, 1983, Ser. No. 514,841
Term of patent 14 years
U.S. Cl. D14—53





282,166
HAND FREE PHONE
John S. K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jul. 5, 1983, Ser. No. 510,836
Claims priority, application United Kingdom, Jan. 4, 1983, 1,010,594
Term of patent 14 years
U.S. Cl. D14—53

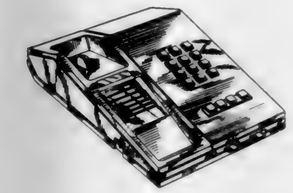


282,167
BASE FOR A TELEPHONE SET
Wilbert C. Brown, Fairfield, Conn., assignor to TIE/Communications, Inc., Shelton, Conn.
Filed Jul. 18, 1983, Ser. No. 514,836
Term of patent 14 years
U.S. Cl. D14—62



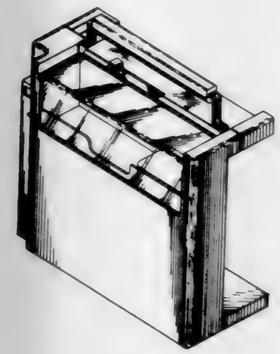


282,168
BASE FOR A TELEPHONE SET
Wilbert C. Brown, Fairfield, Conn., assignor to TIE/Communications, Inc., Shelton, Conn.
Filed Jul. 18, 1983, Ser. No. 514,840
Term of patent 14 years
U.S. Cl. D14—62

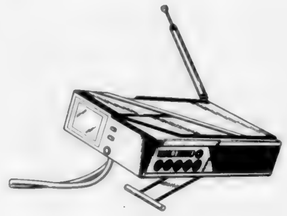




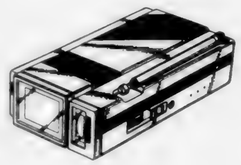
282,169
PORTABLE HOUSING FOR A MOBILE TELEPHONE, RADIO TRANSCEIVER AND BATTERY PACK
Kenneth W. Larson, Elmhurst, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 17, 1982, Ser. No. 450,605
Term of patent 14 years
U.S. Cl. D14—65



282,170
TELEVISION RECEIVER
Hiroyuki Tsubaki, Osaka; Yoshiaki Kawata, Hyogo; Yutaka Itoh, and Toyoyuki Uematsu, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 29, 1983, Ser. No. 537,238
Claims priority, application Japan, Mar. 30, 1983, 58-13071
Term of patent 14 years
U.S. Cl. D14—80



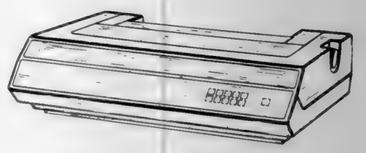
282,171
TELEVISION RECEIVER
Toyoyuki Uematsu, Osaka; Yoshiaki Kawata, Hyogo; Yoshinori Harada, and Hiroyuki Tsubaki, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 7, 1983, Ser. No. 539,899
Claims priority, application Japan, Apr. 13, 1983, 58-15594
Term of patent 14 years
U.S. Cl. D14—80



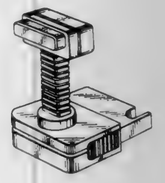
282,172
UHF ANTENNA
Reiya Mabuchi, Yokohama, Japan, assignor to Suntron Electronics Co., Ltd., Yokohama, Japan
Filed Sep. 8, 1983, Ser. No. 530,222
Term of patent 14 years
U.S. Cl. D14—86



282,173
CABINET FOR AN INPUT-OUTPUT DEVICE
Gregory F. Fossella, Osterville, Mass.; John M. Karalevicz, Waynesboro, Va.; Werner H. Mailer, Waynesboro, Va., and Charles E. Milliser, Waynesboro, Va., assignors to Genicom Corporation, Waynesboro, Va.
Filed Sep. 2, 1983, Ser. No. 528,950
Term of patent 14 years
U.S. Cl. D14—100



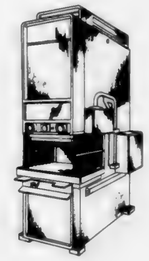
282,174
DATA TRANSMITTING OPTICAL COUPLER
Nobuo Kikuchi, Tokyo, and Hideo Fushimoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 18, 1983, Ser. No. 486,224
Claims priority, application Japan, Oct. 20, 1982, 57-47795
Term of patent 14 years
U.S. Cl. D14—114



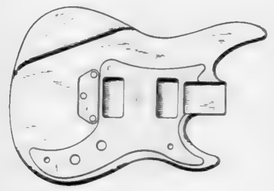
282,175
HUB FOR FLEXIBLE LAWN MOWER BLADES
Robert E. Whitman, 1-2143 Sherwood, Swanton, Ohio 43558
Filed Jun. 23, 1983, Ser. No. 507,019
Term of patent 14 years
U.S. Cl. D15—17



282,176
HYDRAULIC PRESS
Miroslav Uroshevich, Cincinnati, Ohio, assignor to Cincinnati Incorporated, Harrison, Ohio
Filed May 5, 1983, Ser. No. 491,912
The portion of the term of this patent subsequent to Sep. 3, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—123



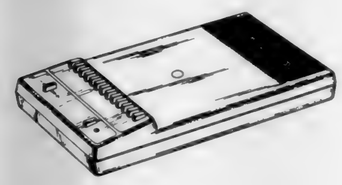
282,177
GUITAR BODY OR SIMILAR ARTICLE
Hartley D. Peavey, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.
Filed Oct. 7, 1983, Ser. No. 539,987
Term of patent 14 years
U.S. Cl. D17—20



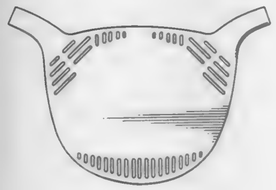
282,178
TYPEWRITER
Taro Kasagi, Tokyo, Japan, assignor to Silver Seiko Limited, Japan
Filed Dec. 29, 1983, Ser. No. 566,738
Claims priority, application Japan, Jun. 30, 1983, 58-28004
Term of patent 14 years
U.S. Cl. D18—1



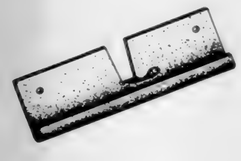
282,179
COMBINED TELEPHONE INDEX AND AMPLIFIER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jan. 19, 1983, Ser. No. 459,215
Claims priority, application United Kingdom, Sep. 22, 1982, 1008830
Term of patent 14 years
U.S. Cl. D19—76



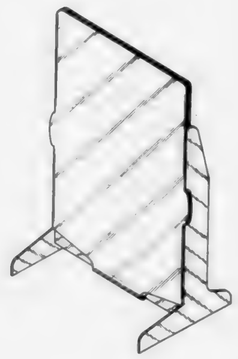
282,180
VENTED NUMBER PLATE
Robert B. Haro, Carlsbad, Calif., assignor to Haro Designs Inc., Carlsbad, Calif.
Filed Jul. 19, 1982, Ser. No. 399,353
Term of patent 14 years
U.S. Cl. D20—13



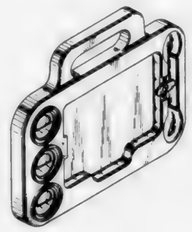
282,181
TRAY CLIP
Richard G. Hamilton, Westfield, Mass., assignor to Colonial Art Company, Inc., Westfield, Mass.
Filed Jan. 17, 1983, Ser. No. 458,351
Term of patent 14 years
U.S. Cl. D20—43



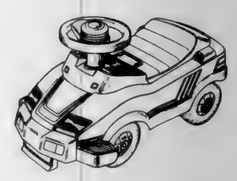
282,182
SIGN CARD HOLDER
Richard M. Liptak, Parma Heights, Ohio, assignor to Integral Design, Inc., Valley View, Ohio
Filed Aug. 18, 1983, Ser. No. 524,389
Term of patent 14 years
U.S. Cl. D20—43



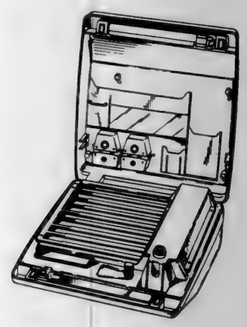
282,183
PAINTING TOY
Masami Shirnishi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jul. 25, 1983, Ser. No. 516,930
Term of patent 14 years
U.S. Cl. D21—59



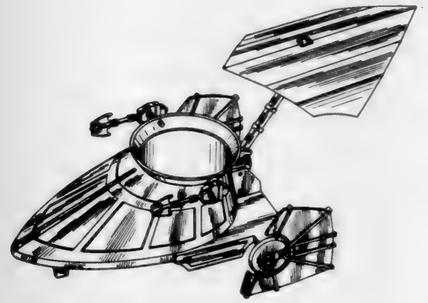
282,184
TOY VEHICLE
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Susumu Matsumoto, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Japan
Filed Nov. 18, 1983, Ser. No. 553,441
Claims priority, application Japan, Jun. 10, 1983, 58-25033
Term of patent 14 years
U.S. Cl. D21—78



282,185
COMBINED PRINTING TOY AND CASE THEREFORE
John A. Chambers, Bingham, and Alan Collison, Rainworth, both of England, assignors to Dobson Park Industries Limited, Nottingham, England
Filed Jul. 16, 1982, Ser. No. 399,882
Claims priority, application United Kingdom, Jan. 29, 1982, 1004852
Term of patent 14 years
U.S. Cl. D21—127



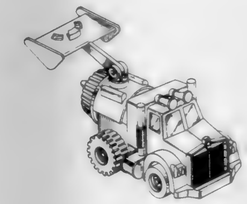
282,186
TOY VEHICLE
Mark D. Boudreaux, Cincinnati, Ohio, assignor to CPC Products Corp., Minneapolis, Minn.
Filed Nov. 21, 1983, Ser. No. 553,908
Term of patent 14 years
U.S. Cl. D21—128



282,187
RIDING TOY
Joel C. Cunard, and William H. Ziegler, Jr., both of Bedford, Pa., assignors to Hedstrom Corporation, Bedford, Pa.
Filed Nov. 25, 1983, Ser. No. 555,292
Term of patent 14 years
U.S. Cl. D21—134



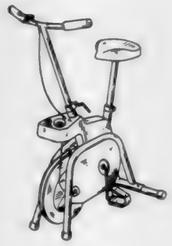
282,188
TOY TRUCK
Masumi Terui, Matsudo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Jun. 27, 1983, Ser. No. 508,489
Claims priority, application Japan, Dec. 29, 1983, 57-201733[U]
Term of patent 14 years
U.S. Cl. D21—140



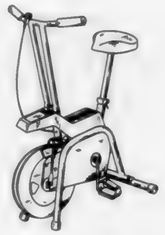
282,189
TOY BEAR FIGURE WITH BACKPACK
David M. Williams, New York, N.Y.; Richard A. Chase; John J. Fisher, III, both of Baltimore, Md., and Lois E. Kelly, Brooklyn, N.N.Y., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Jul. 27, 1983, Ser. No. 517,602
Term of patent 14 years
U.S. Cl. D21—159



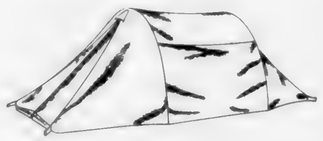
282,190
EXERCYCLE
Stanley Bell, 11 Knoll Rd., Port Washington, N.Y. 11050, and Gordon R. Perry, 121 W. 3rd St., New York, N.Y. 10012
Filed Aug. 9, 1983, Ser. No. 521,789
Term of patent 14 years
U.S. Cl. D21—194



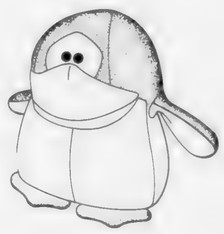
282,191
EXERCYCLE
Stanley Bell, 11 Knoll St., Port Washington, N.Y. 11050, and Gordon R. Perry, 121 W. 3rd St., New York, N.Y. 10012
Filed Aug. 9, 1983, Ser. No. 521,790
Term of patent 14 years
U.S. Cl. D21—194



282,192
TENT
Louis Grenier, 134 Laurier St. West, Montreal, Canada
Filed Jul. 13, 1983, Ser. No. 513,442
Term of patent 14 years
U.S. Cl. D21—253



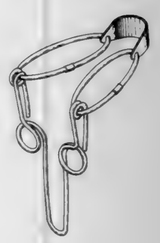
282,193
STUFFED TOY FIGURE
Keiji Sasaki, No. 10-42, Kami-Osaki 3-chome, Shinagawa-ku, Tokyo, Japan
Filed Sep. 20, 1983, Ser. No. 533,965
Term of patent 14 years
U.S. Cl. D21—160



282,194
SKI
Rudolf Ferch, Salzburg, Austria, assignor to Kastle Gesellschaft m.b.H., Hohenems, Austria
Filed Apr. 6, 1983, Ser. No. 482,703
Claims priority, application Austria, Oct. 15, 1982, 26629/414/1982
Term of patent 14 years
U.S. Cl. D21—229



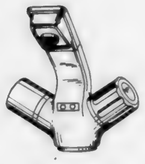
282,195
HAND HELD SLINGSHOT OR SIMILAR ARTICLE
Florentino Garcia, 1501 E. Beech St., Yakima, Wash. 98901
Filed Sep. 22, 1983, Ser. No. 534,605
Term of patent 14 years
U.S. Cl. D22—4



282,196
BROMINE DISPENSER FOR HOT TUBS
Arthur Jost, 687 Rte. 112, Patchogue, N.Y. 11772
Filed Feb. 7, 1983, Ser. No. 464,387
Term of patent 14 years
U.S. Cl. D23—3



282,197
FAUCET OR SIMILAR ARTICLE
Lee-Ping Hu, Hsintien, Taiwan, assignor to Jim Wu, Taipei, Taiwan
Filed Mar. 9, 1983, Ser. No. 473,738
Term of patent 14 years
U.S. Cl. D23—25



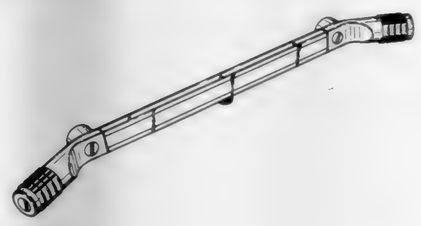
282,198
SHOWER HEAD
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed Jul. 25, 1983, Ser. No. 517,242
Term of patent 14 years
U.S. Cl. D23—35



282,199
SHOWER HEAD
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed Jul. 25, 1983, Ser. No. 517,243
Term of patent 14 years
U.S. Cl. D23—35



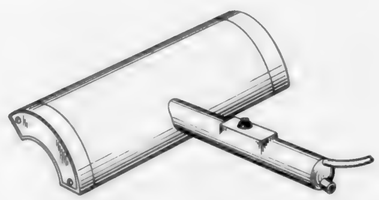
282,200
WALL SHOWER
Andreas Haug, Altensteig, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co., Fed. Rep. of Germany
Filed Sep. 19, 1983, Ser. No. 533,807
Term of patent 14 years
U.S. Cl. D23—57



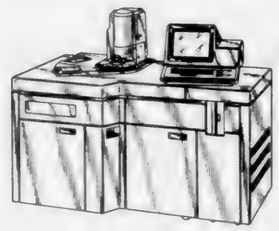
282,201
PEDESTAL LAVATORY
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Aug. 25, 1983, Ser. No. 526,451
Term of patent 14 years
U.S. Cl. D23—61



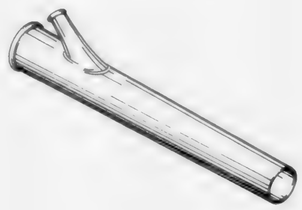
282,202
PORTABLE HEATER DEVICE
Russell R. Ellersick, 7925 Twin Oaks Dr., Citrus Heights, Calif. 95610
Filed Apr. 18, 1983, Ser. No. 485,862
Term of patent 14 years
U.S. Cl. D23—77



282,203
CHEMICAL ANALYZER
Bruce A. Leonard, Rochester, and Lawrence E. Hood, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 29, 1983, Ser. No. 509,090
Term of patent 14 years
U.S. Cl. D24—1.1



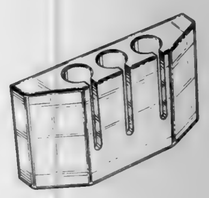
282,204
SPECULUM
Gregory C. Holt, P.O. Box 1611, Hamilton, Mont. 59840
Filed Apr. 5, 1982, Ser. No. 365,406
Term of patent 14 years
U.S. Cl. D24—18



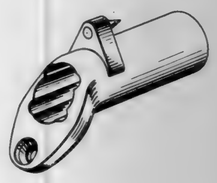
282,205
SURGICAL RASP
John A. Davison, and Robert J. Kellar, both of San Jose, Calif., assignors to Adler Instrument Company, Norcross, Ga.
Filed Aug. 30, 1983, Ser. No. 527,939
Term of patent 14 years
U.S. Cl. D24—26



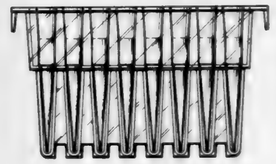
282,206
AMPOULE HOLDER
Stephen R. Roy, 106 Ustick St., Caldwell, Id. 83605, and Harry G. Schumacher, 287 Spring St., Ventura, Calif. 93001
Filed Jan. 24, 1983, Ser. No. 445,188
Term of patent 14 years
U.S. Cl. D24—31



282,207
MEDICAL HOLEPLATE
Ragnar Kalen, Golfvagen 26, 181 31 Danderyd, Sweden
Filed Aug. 29, 1983, Ser. No. 527,274
Claims priority, application Sweden, Mar. 17, 1983, 83-0771
Term of patent 14 years
U.S. Cl. D24—33

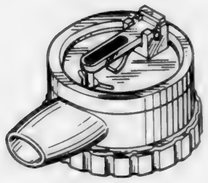


282,208
PIPETTER TIP CARTRIDGE
Alan Lowry, Canton, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.
Filed Feb. 7, 1983, Ser. No. 464,614
Term of patent 14 years
U.S. Cl. D24—55



282,209
INHALER
Robert E. Newell, Pinner, and Robert A. Fitzsimmons, Barnard Castle, both of England, assignors to Glaxo Group Limited, London, England
Filed Dec. 23, 1983, Ser. No. 564,932
Claims priority, application United Kingdom, Jun. 29, 1983, 1013826
Term of patent 14 years
U.S. Cl. D24—62

282,210
SELF-POWERED DROGUE LIGHT
Jerome Brillo, and Harry H. Dooley, both of Tucson, Ariz., assignors to TLS Systems, Inc., Tucson, Ariz.
Filed Apr. 15, 1983, Ser. No. 485,429
Term of patent 14 years
U.S. Cl. D26—28



282,211

FLUOROSCENT LANTERN

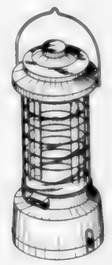
Chuen Tang, Cheung Hing Industrial Bldg., 6th & 7th Floors, 23 Tai Yip St., Kwun Tong, Kowloon, Hong Kong

Filed Feb. 18, 1983, Ser. No. 467,632

Claims priority, application United Kingdom, Oct. 11, 1982, 1009192

Term of patent 14 years

U.S. Cl. D26—42



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TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF JANUARY, 1986

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Abe, Osamu: *See—*
Mouri, Yasunori; and Abe, Osamu, 4,564,907, Cl. 364-431.100.

Abe, Rumiko: *See—*
Terashima, Shiro; Kimura, Yoshikazu; Suzuki, Michiyo; Matsumoto, Teruyo; and Abe, Rumiko, 4,564,674, Cl. 536-6.400.

Abe, Seiichi: *See—*
Watanabe, Hajime; Tanaka, Yoshio; and Abe, Seiichi, 4,564,462, Cl. 252-134.000.

Abel Pumpen GmbH: *See—*
Stahlkopf, Friedrich R. R., 4,564,340, Cl. 417-388.000.

Abend, Klaus: *See—*
Huschelrath, Gerhard; Abend, Klaus; and Orthen, Ursula, 4,564,809, Cl. 324-225.000.

Abramson, Noel W.: *See—*
Marchand, Paul A.; and Abramson, Noel W., 4,564,005, Cl. 128-66.000.

Abu Aktiebolag: *See—*
Moosberg, Borje S.; and Karlsson, Jarding U., 4,564,158, Cl. 242-220.000.

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Moon, Edward E., 4,564,100, Cl. 198-341.000.

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Billingsley, Robert H.; Reed, George; and Schlobohm, Arnold, 4,563,957, Cl. 105-418.000.

Achtenberg, Irving; and Fleck, Otto W. Method of reinforcing concrete block foundation walls. 4,563,852, Cl. 52-743.000.

Ackerman, Galen R. Flush-mounted round bale mover for truck beds. 4,564,325, Cl. 414-24.500.

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Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., to AMP Incorporated. Electrical connector transfer nest. 4,563,810, Cl. 29-749.000.

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Advanced Imaging Systems Ltd.: *See—*
Hallman, Robert W.; Langlais, Eugene L.; and Warner, Patrick G., 4,564,589, Cl. 430-524.000.

Aeroquip Corporation: *See—*
Fournier, Paul J. E., 4,563,795, Cl. 24-19.000.

Aerospace Corporation, The: *See—*
Janousek, Bruce K.; and Carscallen, Richard C., 4,564,425, Cl. 204-34.500.

Affonso, Octavio F.: *See—*
Koch, Rudolf K.; and Affonso, Octavio F., 4,564,045, Cl. 137-625.430.

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Stavlo, Lars G., 4,564,109, Cl. 206-597.000.

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Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai G.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, A.; Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

Agee, John M.; and King, Francis C., to Agee, John M. Hand holding apparatus for hand surgery. 4,564,180, Cl. 269-75.000.

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Hofmann, Wilfried; Lusch, Herbert; Rauffer, Walter; Zieran, Eberhard; and Sylla, Jurgen, 4,564,276, Cl. 353-55.000.
Nagel, Erich, 4,564,101, Cl. 198-346.200.
Pertzsch, Albert; Liepold, August; Brunner, Hubert; and Zeroni, Ludwig, 4,564,120, Cl. 220-337.000.

Agfa-Gevaert, N.V.: *See—*
Uytterhoeven, Herman J.; De Winter, Walter F.; and Marien, August M., 4,564,574, Cl. 430-115.000.

Ahmed, Bashir M., to Amchem Products Inc. Autodeposition coating with reduced cleaner exudate. 4,564,536, Cl. 427-327.000.

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Carroll, Raymond; and Ahn, Byong-Ho, 4,563,909, Cl. 74-5.500.

Aimono, Yuji: *See—*
Nishigaki, Hisashi; and Aimono, Yuji, 4,564,646, Cl. 522-13.000.

Air Refiner, Inc.: *See—*
Bibber, John W., 4,564,465, Cl. 252-389.00R.

Aisan Kogyo Kabushiki Kaisha: *See—*
Kitamura, Sunao, 4,564,481, Cl. 261-39.00A.
Takada, Shigetaka; Makimura, Toshiro; and Matsubara, Mamoru, 4,564,145, Cl. 239-585.000.

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Ajinomoto Co., Inc.: *See—*
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.

Akahane, Atsushi: *See—*
Ueda, Ikuo; Nagano, Masanobu; and Akahane, Atsushi, 4,564,621, Cl. 514-357.000.

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Shimizu, Tetsuo; and Akamatsu, Masafumi, 4,564,652, Cl. 524-805.000.

Akatsuka, Takao; Nakano, Jiro; Ishibashi, Takao; and Kawaguchi, Masao, to Toyota Jidosha Kabushiki Kaisha. Engine air/fuel ratio control method and system selectively providing feedback control or open loop control according to oxygen sensor heating condition. 4,563,991, Cl. 123-440.000.

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Sakai, Hiroyuki; Takemoto, Toyoki; Kawakita, Kenji; Fujita, Tsutomu; and Akiyama, Atsuko, 4,563,807, Cl. 29-591.000.

Akiyama, Hiroshi. Catheter. 4,564,361, Cl. 604-265.000.

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Tashiro, Korefumi; and Akiyama, Hiroyuki, 4,564,774, Cl. 307-479.000.

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Yagi, Misao; and Akutagawa, Susumu, 4,564,708, Cl. 568-14.000.

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Gerlach, Klaus; and Kessler, Erich, 4,564,488, Cl. 264-41.000.
Schmitz, Franz J.; Wollbeck, Rudi; and Klein, Wolfgang, 4,564,373, Cl. 55-16.000.
Wieringa, Johannes H.; and van der Vlugt, Frans A., 4,564,698, Cl. 560-109.000.

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Schnetz, Rainer, 4,564,176, Cl. 267-64.110.

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Paludetto, Ferdinando, 4,564,217, Cl. 280-804.000.

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Alley, Stephen W.: *See—*
Alley, Lynn D.; Alley, Stephen W.; Sadlier, William K.; and Burton, Richard A., 4,564,751, Cl. 235-146.000.

Allied Corporation: *See—*
Hochberg, Arie; and Mason, Charles D., 4,564,650, Cl. 524-288.000.
Lang, Donald D., 4,564,723, Cl. 174-36.000.
Parks, Kevin B., 4,563,912, Cl. 74-493.000.
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Cassat, Robert; and Alliot-Lugaz, Maurice, 4,564,424, Cl. 204-20.000.

Allo, Vincent F.; and Stafford, Donald C., to Chicago Bridge & Iron Company. Falling film heat exchanger with member to distribute liquid on external surfaces of tubes. 4,564,064, Cl. 165-118.000.

Alphatime Ltd. Co., Inc.: *See—*
Revici, Emanuel, 4,564,634, Cl. 514-558.000.

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Altech Industries, Inc.: *See—*
Long, Charles E., 4,563,851, Cl. 52-656.000.

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Spindeler, Heinrich; Wackerbarth, Folkard; Kuhlmann, Horst; Dohle, Helmut; and Althaus, Horst, 4,564,420, Cl. 202-139.000.

Aluminum Company of America: *See—*
Eckert, Charles E., 4,563,895, Cl. 73-61.00R.

ALZA Corporation: *See—*
Zaffaroni, Alejandro; and Wong, Patrick S. L., 4,564,364, Cl. 604-897.000.

Ambo, Tsugio: *See—*
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Amchem Products Inc.: *See—*
Ahmed, Bashir M., 4,564,536, Cl. 427-327.000.

American Can Company: *See—*
Bressan, Renato J.; Halasz, Andrew; and Maccherone, Lawrence S., 4,563,887, Cl. 72-84.000.

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American Manufacturing Company, Inc.: *See—*
Stanton, Robert L., 4,563,869, Cl. 57-211.000.

American Standard Inc.: *See—*
Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, 4,564,445, Cl. 210-167.000.
Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, 4,564,454, Cl. 210-668.000.
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.

American Zettler, Inc.: *See—*
Lowe, Ronnie D., 4,564,828, Cl. 335-128.000.

AMP Incorporated: *See—*
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,563,810, Cl. 29-749.000.

Ampex Corporation: *See—*
Evans, Lawrence J.; Sheikh, Junaid; Stock, Rodney D.; and Turkowski, Kenneth E. J., 4,564,915, Cl. 364-521.000.

Anaheim Foundry Company: *See—*
Sills, Andy B.; and Sills, Cecil M., 4,564,220, Cl. 285-236.000.

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Tokunaga, Toshimichi; Kanai, Seita; and Anan, Yoshiaki, 4,564,214, Cl. 280-707.000.

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Anderson, Andrew W., deceased, 4,564,104, Cl. 198-422.000.

Anderson, Terrence J.: *See—*
Coughlan, Raymond T.; and Anderson, Terrence J., 4,564,010, Cl. 128-156.000.

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Andreev, Andrei D.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

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Andrew Corporation: *See—*
Wiesenfarth, Hans J.; and Dienes, Geza, 4,564,826, Cl. 333-249.000.

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Mikuski, John J., 4,564,554, Cl. 428-311.900.

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Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, 4,564,659, Cl. 525-328.200.

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Oshida, Yoshitada; Makihara, Hiroshi; and Aoki, Nobuhiko, 4,564,296, Cl. 356-381.000.

Aoki, Yoshinobu: *See—*
Shibata, Masatoshi; Uchiyama, Soichi; and Aoki, Yoshinobu, 4,564,643, Cl. 518-717.000.

Apple Computer, Inc.: *See—*
Woolley, Richard N.; Glover, Neal; and Williams, Richard, 4,564,941, Cl. 371-2.000.

Arafune, Yasunari, to Tokyo Shibaura Denki Kabushiki Kaisha. Video tape recorder having improved audio characteristics. 4,564,868, Cl. 360-19.100.

Arai, Makoto: *See—*
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, 4,564,560, Cl. 428-411.100.

Arakawa, Tatsumi; Ozaki, Masaru; and Ikeda, Yukihiro, to Director-General of Agency of Industrial Science and Technology. Process for preparation of polyvinylene sulfide. 4,564,668, Cl. 528-388.000.

Araki, Masakatsu, to Matsushita Electric Works, Ltd. Hair curler. 4,564,032, Cl. 132-33.00R.

Aries Electronics, Inc.: *See—*
Sinclair, William Y., 4,564,253, Cl. 339-97.00C.

Arikawa, Junichi: *See—*
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,564,140, Cl. 232-57.500.

Arimoto, Akira: *See—*
Tatsuno, Kimio; and Arimoto, Akira, 4,564,268, Cl. 350-409.000.

Arnegger, Richard E. Electrical bell type motor. 4,564,781, Cl. 310-261.000.

Arnold, Lewis R., to Bigheart Pipe Line Corporation. Gauger's aid for use in sampling bottom sediment conditions in oil storage tanks. 4,563,896, Cl. 73-290.00R.

Arnold, Richard F.; Cocke, John; Coppersmith, Don; Seigler, Adrian E.; and Strait, Gary E., to International Business Machines Corporation. Error correcting scheme. 4,564,944, Cl. 371-37.000.

Arrow Specialty Company: *See—*
Geary, William C.; Mirsaiidi, Mohammad V.; Redfern, Timothy; and Wolfe, David W., 4,563,987, Cl. 123-179.00B.

Arvai, Laslzo: *See—*
Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laslzo, 4,564,706, Cl. 564-376.000.

Arzouman, Harry H., to Safe-T-Jack, Inc. Method of using a hydraulic power unit to control a mechanical jack. 4,564,172, Cl. 254-1.000.

Asaba, Tsutomu: *See—*
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Komoto, Shinsuke, 4,564,264, Cl. 350-255.000.

Asahi, Satoshi: *See—*
Hayashi, Hiroshi; Matono, Koichi; Asahi, Satoshi; and Uoi, Michitake, 4,564,647, Cl. 523-211.000.

Asberg, Sture L., to SKF Nova AB. Hub bearing unit. 4,564,243, Cl. 301-124.00R.

Ashland Oil, Inc.: *See—*
Reiter, Stephen E., 4,564,699, Cl. 560-214.000.

AT&T Bell Laboratories: *See—*
Karabinis, Peter D.; and Osborne, Thomas L., 4,564,952, Cl. 375-14.000.
LoCicero, Joseph L.; Pazarci, Melih; and Rzeszewski, Theodore S., 4,564,857, Cl. 358-11.000.
Olsson, Nils A.; and Tsang, Won-Tien, 4,564,946, Cl. 372-20.000.

AT&T Technologies, Inc.: *See—*
Cranston, Benjamin H., 4,563,811, Cl. 29-827.000.
Kasprzyk, Marlon Z., 4,564,110, Cl. 209-544.000.
Wong, Ching-Ping, 4,564,562, Cl. 428-447.000.

Ateliere des Charmilles, S.A.: *See—*
Bonga, Benno I., 4,563,800, Cl. 29-26.00A.

Atherton, Peter W.; and Spector, George. Tree push. 4,564,173, Cl. 254-133.00R.

Atkin, Norman M. Arm wrestling machine. 4,564,191, Cl. 272-67.000.

Atlas Copco Aktiebolag: *See—*
Henriksson, Stig R., 4,563,938, Cl. 91-25.000.

Atochem (Societe Anonyme Styled): *See—*
Coplot, Daniel; and Picon, Georges, 4,564,453, Cl. 210-614.000.

Attwood, Michael J.: *See—*
Wheable, Deamond; and Attwood, Michael J., 4,564,831, Cl. 340-347.0AD.

Aucoin, Raymond U. Fish holding device. 4,563,833, Cl. 43-54.100.

Aupac Co., Ltd.: *See—*
Yoshida, Makoto, 4,564,778, Cl. 310-177.000.

Austin, Frederick D.; and Watson, Peter, to British Petroleum Company p.l.c., The. Process for depositing a silica coating on a metal surface. 4,564,537, Cl. 427-376.400.

Australian Transcenders International Pty. Ltd.: *See—*
Pagett, Jeffery M., 4,564,080, Cl. 180-8.200.

Auto Id Inc.: *See—*
Cafferty, Terrance, 4,563,948, Cl. 101-128.000.

Autoflug GmbH: *See—*
Baden, Hans; Kuhnemann, Klaus; Sedlmayr, Gerhard; Straszewski, Klaus; and Zeumer, Monika, 4,564,219, Cl. 280-808.000.

Avery International Corporation: *See—*
Chang, Man-Chium; Mao, Chung-Ling; and Vargas, Richard R., 4,564,664, Cl. 524-826.000.

Awano, Toshiaki, to Mitsubishi Denki Kabushiki Kaisha. Circuit for monitoring the frequency of signal for controlling choppers of electric cars. 4,564,837, Cl. 340-825.300.

Azbukin, Valery D.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

B. E. M. Wientjes B.V.: *See—*
Dijkhuizen, Okko K., 4,563,782, Cl. 4-542.000.

B. F. Goodrich Company, The: *See—*
Worcester, Winthrop S., 4,564,542, Cl. 428-58.000.

Baacke, Michael; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Process for the production of coarse particle mordenite. 4,564,512, Cl. 423-328.000.

Baba, Kenji: *See—*
Hiraoka, Masakatsu; Tsumura, Kazushi; Baba, Kenji; Nogita, Shunsuke; and Mori, Shunji, 4,564,444, Cl. 210-96.100.

Baba, Masayoshi: *See—*
Hamane, Masumi; Onda, Takanori; and Baba, Masayoshi, 4,564,081, Cl. 180-229.000.

Babbitt, Richard W.: *See—*
Stern, Richard A.; and Babbitt, Richard W., 4,564,000, Cl. 125-13.00R.

Babcock Wire Equipment Limited: *See—*
Vaughan, Anthony J., 4,564,347, Cl. 425-79.000.

Bacon, Jeffery E.; Craig, James E.; and Pedersen, Mark K., to Robbins & Craig Welding & Mfg. Co. Continuous contact plating apparatus. 4,564,430, Cl. 204-206.000.

Baden, Hans; Kuhnemann, Klaus; Sedlmayr, Gerhard; Straszewski, Klaus; and Zeumer, Monika, to Autoflug GmbH. Apparatus for adjusting the height of the upper fitting for the shoulder belt in a safety belt system. 4,564,219, Cl. 280-808.000.

Baglione, Richard A. Super-heat monitoring and control device for air conditioning refrigeration systems. 4,563,878, Cl. 62-115.000.

Bagnall, Brian G.; and Gyurik, Robert J., to SmithKline Beckman Corporation. Delayed action assembly. 4,564,363, Cl. 604-891.000.

Bailes, David R.: *See—*
Young, Ian R.; and Bailes, David R., 4,564,813, Cl. 324-311.000.

Baker Oil Tools, Inc.: *See—*
Underdown, David R.; and Glaze, O. Howard, 4,564,459, Cl. 252-8.55R.

Bald, Wilfried; Rommen, Hans; and Stoy, Erich, to SMS Schloemann-Siemag AG. Six-high roll stand with braced and removable working rolls. 4,563,888, Cl. 72-243.000.

Ballough, Douglas M.; and Higginbotham, Howard L., to Boeing Company, The. Method for machining three dimensional contours utilizing a numerically controlled lathe. 4,564,914, Cl. 364-475.000.

Banerjee, Indrajit: *See—*
Schuller, Ivan K.; Ketterson, John B.; and Banerjee, Indrajit, 4,564,564, Cl. 428-662.000.

Banks, Ridgway M. Linear output nitinol engine. 4,563,876, Cl. 60-527.000.

Bantien, Jurgen, to Hauni-Werke Korber & Co. KG. Apparatus for manipulating empty and filled trays for cigarettes or the like between making and processing machines. 4,564,329, Cl. 414-403.000.

Baranchikov, Vladimir M.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Barberis, Dario, to WABCO Westinghouse Compagnia Freni S.p.A. Parking brake control apparatus. 4,564,245, Cl. 303-15.000.

Barda, Henry J., to Ethyl Corporation. Flame retardant for polyurethanes. 4,564,468, Cl. 252-609.000.

Barillec, Christian; Janvier, Dominique; and Bonneton, Marc. Method of packing collected objects and packing station therefor. 4,563,861, Cl. 53-453.000.

Barlow, Richard A.; and Logan, Eugene T. Pizza pan. 4,563,946, Cl. 99-450.000.

Barmag Barmer Maschinenfabrik AG: *See—*
Dammann, Peter, 4,563,799, Cl. 28-272.000.

Barnett, Barry R. M., to TRW United-Carr Limited. Retaining clip. 4,564,163, Cl. 248-71.000.

Barresi, Anthony J.; and Nelson, Leonard, to RCA Corporation. Chip carrier soldering tool. 4,564,135, Cl. 228-6.200.

Barzano', Piero, to IMS S.p.A. Device for joining together in a registered and/or abutting manner the ends of two paper or cardboard webs which unwind from two different wheels positioned on a reel star unit of two or more positions. 4,564,149, Cl. 242-58.100.

BASF Aktiengesellschaft: *See—*
Mueller, Herbert, 4,564,671, Cl. 528-416.000.
Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, 4,564,641, Cl. 514-650.000.

Bauer, Klaus: *See—*
Liebl, Rainer; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; and Bieringer, Hermann, 4,564,382, Cl. 71-88.000.

Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, to Daimler-Benz Aktiengesellschaft. Control unit for a motor vehicle which can be accommodated in a trim component. 4,564,883, Cl. 361-334.000.

Baugh, Benton F., to Smith International, Inc. Emergency release for subsea tool. 4,564,068, Cl. 166-123.000.

Baum, Steven A.; Gallaro, Anthony V.; Hovey, Frederick A.; Rehkopf, Charles H.; and Sember, William J., to North American Philips Consumer Electronics Corp. External neck charge dissipation means for an in-line color cathode ray tube. 4,564,786, Cl. 313-479.000.

Baumeister, Hans-Peter, to Eastman Kodak Company. Zoned equalization for a magnetic disc. 4,564,869, Cl. 360-46.000.

Baun, Kenneth W., to Charlton Associates. Method and apparatus for disc position centering. 4,563,824, Cl. 33-568.000.

Baxter, Ronald D.; and Freud, Paul J., to General Signal Corporation. Humidity sensing element. 4,564,882, Cl. 361-286.000.

Bayer Aktiengesellschaft: *See—*
Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, 4,564,513, Cl. 423-415.00A.
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, 4,564,669, Cl. 528-173.000.
Dickore, Karlfried; Engels, Hans D.; Kratzer, Hans; and Merz, Walter, 4,564,704, Cl. 562-577.000.
Elbert, Alfred; Behrenz, Wolfgang; and Krehan, Ingomar, 4,564,631, Cl. 514-521.000.
Habich, Dieter, 4,564,473, Cl. 260-245.400.
Klauke, Erich; and Kuhle, Engelbert, 4,564,478, Cl. 260-455.00R.
Nonn, Konrad; Wolf, Karlheinz; Haas, Johannes; and Paulat, Volker, 4,564,632, Cl. 514-522.000.
Rolf, Meinhard; Neeff, Rutger; Muller, Walter; and Hederich, Volker, 4,564,680, Cl. 546-155.000.
Salzburg, Herbert; Hajek, Manfred; and Meyborg, Holger, 4,564,645, Cl. 521-159.000.
Serini, Volker; Lindner, Christian; Peters, Horst; and Nising, Wolfgang, 4,564,654, Cl. 525-67.000.
Streissle, Gert; Plempel, Manfred; Paessens, Arnold; Holmwood, Graham; and Buchel, Karl H., 4,564,622, Cl. 514-383.000.

Bayerische Motoren Werke AG: *See—*
Weishaupt, Walter, 4,563,988, Cl. 123-196.00S.

BBC Brown, Boveri & Company Limited: *See—*
Buhler, Karl, 4,564,950, Cl. 373-108.000.
Buhler, Karl, 4,564,951, Cl. 373-108.000.

Bean, Ronnie A.: *See—*
Cain, C. Dean, Jr.; and Bean, Ronnie A., 4,563,830, Cl. 43-4.500.

Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, to Bayer Aktiengesellschaft. Process for the production of carbon monoxide. 4,564,513, Cl. 423-415.00A.

Becherer, Johannes: *See—*
Kussmaul, Ulrich; Becherer, Johannes; Handte, Reinhard; and Muller, Rolf, 4,564,682, Cl. 548-169.000.

Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, to Buckau-Walther Aktiengesellschaft. Method for removing nitrogen oxides from waste gases. 4,564,510, Cl. 423-235.000.

Becker, Karl-Heinz: *See—*
Hergt, Peter; Nicklas, Alexander; and Becker, Karl-Heinz, 4,564,334, Cl. 415-199.300.

Becker, Lorenz: *See—*
Kunde, Klaus; Grimm, Helmut; and Becker, Lorenz, 4,563,884, Cl. 66-93.000.

Beckman Instruments, Inc.: *See—*
Parkes, Christopher W.; and Franklin, Robert C., 4,564,795, Cl. 318-314.000.

Beeke, Herbert: *See—*
Kohnlechner, Rainer; Beeke, Herbert; and Suckow, Hans, 4,563,903, Cl. 73-727.000.

Beeland, William D., to Lummus Industries, Inc. Self-cleaning roller gin. 4,563,794, Cl. 19-48.00R.

Beer, Michael: *See—*
Dorsch, Heinz; and Beer, Michael, 4,563,985, Cl. 123-90.310.

Beghelli, Benito: *See—*
Pellegrini, Antonio; and Beghelli, Benito, 4,564,553, Cl. 428-296.000.

Begley, William J., to Eastman Kodak Company. Naphthoquinone redox dye-releasers. 4,564,577, Cl. 430-223.000.

Behrenz, Wolfgang: *See—*
Elbert, Alfred; Behrenz, Wolfgang; and Krehan, Ingomar, 4,564,631, Cl. 514-521.000.

Belich, Daniel E. Beverage dispensing system and tap. 4,564,128, Cl. 222-135.000.

Bell, David D.; and Dobson, Gary A., to Harris Graphics Corporation. Apparatus for determining image areas from films and plates. 4,564,290, Cl. 356-73.000.

Bennett, Larry P., to Lambda Corporation. Method and apparatus for making a continuous length of tubing having foamed plastic walls. 4,564,487, Cl. 264-40.700.

Bennett, Raymond E.: *See—*
Stull, Dean P.; and Bennett, Raymond E., 4,563,973, Cl. 116-218.000.

Benteler, Hubertus; and Olszewski, Egon, to Benteler-Werke AG. Method and apparatus for the production of exhaust pipes for automotive vehicles. 4,563,802, Cl. 29-157.00R.

Benteler-Werke AG: *See*—
Benteler, Hubertus; and Olszewski, Egon, 4,563,802, Cl. 29-157.00R.

Berbalk, Hermann, to Oerlikon-Boehringer GmbH. Swirl apparatus. 4,564,323, Cl. 409-200.000.

Beresik, Gayland S.: *See*—
Fecik, Michael T.; Cannon, Gary V.; and Beresik, Gayland S., 4,564,380, Cl. 65-163.000.

Beresniewicz, Aleksander, to Du Pont de Nemours, E. I., and Company. Tertiary perfluoroalkoxides as surfactants in PTFE dispersion polymerization. 4,564,661, Cl. 526-212.000.

Berfield, Robert C., to Shop-Vac Corporation. Hose end holder. 4,563,789, Cl. 15-323.000.

Berger, Josef: *See*—
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.

Bergling, Jan K. A.; and Widenback, Ralph H., to TRIO-LENG Pac System AB. Method and apparatus for stretch film wrapping of goods aggregates. 4,563,857, Cl. 53-399.000.

Berkey, Harley: *See*—
Shrock, Fred J.; and Berkey, Harley, 4,563,784, Cl. 5-37.00R.

Bernard, Walter; and Langner, Klaus, to Bodenseewerk Geratetechnik GmbH. Ring resonator and method of forming. 4,564,271, Cl. 350-622.000.

Berol Kemi AB: *See*—
Skold, Rolf O.; von Dahn, Lars-Gosta; and Sterky, Anna K., 4,564,461, Cl. 252-32.500.

Bertelsen, John C. Filter apparatus for high speed printers. 4,563,943, Cl. 98-115.100.

Bertram, Klaus D.: *See*—
Kluting, Bernd; and Bertram, Klaus D., 4,564,236, Cl. 297-344.000.

Bessire, Robert W.: *See*—
Lancaster, Eldon R.; Guest, Manual T.; and Bessire, Robert W., 4,564,732, Cl. 200-307.000.

Best, Steven A., to Exxon Research & Engineering Co. Polymerization catalyst, production and use. 4,564,606, Cl. 502-117.000.

Best, Walter, to Thomas Josef Heimbach GmbH & Co. Wet-pressing belt for paper machines. 4,564,551, Cl. 428-222.000.

Bethell, Michael R.; Gaines, Michael G.; Mowat, James F., Jr.; Wheeler, Roger D.; and Woidke, Richard P., to Monroe Auto Equipment Company. Gas pressurized shock absorber assembly. 4,564,138, Cl. 228-176.000.

Betz Laboratories, Inc.: *See*—
Harpel, William L.; Purnell, Deborah L.; and Pilny, Richard J., 4,564,464, Cl. 252-181.000.

Beyer, Joachim: *See*—
Beyer, Walter; and Beyer, Joachim, 4,563,961, Cl. 112-222.000.

Beyer, Walter; and Beyer, Joachim, to Zimmerman, Jos. Tufting needle. 4,563,961, Cl. 112-222.000.

Bianchi, Edward A.: *See*—
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,563,810, Cl. 29-749.000.

Bibber, John W., to Air Refiner, Inc. Corrosion inhibition additive for fluid conditioning. 4,564,465, Cl. 252-389.00R.

Bienstman, Luc A., to International Standard Electric Corporation. Electronic power overload protection circuit. 4,564,879, Cl. 361-98.000.

Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, to Hoechst Aktiengesellschaft. Increase of carbohydrate accumulation in plants by means of substituted derivatives of phenoxyalkanoic acids and cyclohexanediones. 4,564,381, Cl. 71-88.000.

Bieringer, Hermann: *See*—
Liebl, Rainer; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; and Bieringer, Hermann, 4,564,382, Cl. 71-88.000.

Bigheart Pipe Line Corporation: *See*—
Arnold, Lewis R., 4,563,896, Cl. 73-290.00R.

Biller, Victor; and Faessler, Adelmar, to Figgie International Inc. Rotatable valve assembly. 4,564,044, Cl. 137-625.240.

Billeter, Henry R., deceased (by Billeter, Lucille, administratrix), to Sloan Valve Company. Combined reservoir and pipe hanger for railroad brakes. 4,564,246, Cl. 303-85.000.

Billeter, Lucille, administratrix: *See*—
Billeter, Henry R., deceased, 4,564,246, Cl. 303-85.000.

Billiet, Colin T., to Domnick Hunter Filters Limited. Filter element and method of making a filter element. 4,564,376, Cl. 55-486.000.

Billingsley, Robert H.; Reed, George; and Schlobohm, Arnold, to ACF Industries, Incorporated. Car bottom-to-side sill connection. 4,563,957, Cl. 105-418.000.

Binkley, Bruce I., to Energy Exchange Systems. Vehicle storage battery system. 4,564,797, Cl. 320-2.000.

Binks, Chester J., to Solar-Kist Corporation. Method of and means for combination design transfer and application of heat reactivatable adhesive. 4,564,406, Cl. 156-63.000.

Biomass International Inc.: *See*—
Neves, Alan M., 4,564,595, Cl. 435-163.000.

Biorkman, Ake: *See*—
Sikander, Ake; Biorkman, Ake; and Jonsson, Gunther, 4,564,174, Cl. 266-149.000.

BIP Chemical Limited: *See*—
Taylor, David, 4,564,667, Cl. 528-256.000.

Birch, Leon; and Hartmann, Jorgen, to Danavox A/S. Coupling for use in the securing of a hook-shaped sound part on a behind-the-ear hearing aid. 4,564,955, Cl. 381-69.000.

Birley, Stuart S.; and Roper, Philip E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Fusion welding of aluminum alloys. 4,564,743, Cl. 219-137.00R.

Biskup, Ulrich: *See*—
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, 4,564,669, Cl. 528-173.000.

Bitsch, Kurt: *See*—
Heitzenroder, Hans F.; Wachter, Ernst; and Bitsch, Kurt, 4,564,107, Cl. 206-315.900.

Bjorlund, John. Post, such as a roadside marking post, a traffic sign post or a lamp post. 4,564,309, Cl. 404-10.000.

Black Clawson Company, The: *See*—
Bliss, Terry L., 4,564,443, Cl. 209-211.000.

Black, Daniel N., III: *See*—
Thelen, Edmund; Black, Daniel N., III; and Kiley, Thomas L., 4,564,310, Cl. 404-31.000.

Blaich, Michael, to Karl Mengele & Sohne GmbH & Co. Optoelectronic method and apparatus for measuring the bending angle of materials. 4,564,765, Cl. 250-561.000.

Blaske, Paul S.; Zimmerman, Larry D.; Calderon, Arthur; and Longworth, Leroy L., to Magnetic Peripherals, Inc. Process for fabricating negative pressure sliders. 4,564,585, Cl. 430-313.000.

Bleasdale, Stephen F., to Ofshred Limited. Paper shredding machine. 4,564,146, Cl. 241-236.000.

Bliss, Terry L., to Black Clawson Company, The. Reverse centrifugal cleaning of paper making stock. 4,564,443, Cl. 209-211.000.

Blohm & Voss AG: *See*—
Poppe, Horst, 4,563,972, Cl. 114-293.000.

Blower, Andrew W.: *See*—
Young, David M.; and Blower, Andrew W., 4,564,360, Cl. 604-183.000.

Blumle, Martin, to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG. Paper converting machine vacuum cylinder. 4,564,418, Cl. 162-368.000.

Boardman, Peter W., to Deere & Company. Conveyor system for shear discharge. 4,563,926, Cl. 83-107.000.

Bocchini, William R.: *See*—
Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, 4,564,445, Cl. 210-167.000.
Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, 4,564,454, Cl. 210-668.000.
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.

Bodenseewerk Geratetechnik GmbH: *See*—
Bernard, Walter; and Langner, Klaus, 4,564,271, Cl. 350-622.000.

Boeing Company, The: *See*—
Ballough, Douglas M.; and Higginbotham, Howard L., 4,564,914, Cl. 364-475.000.
Geithman, Glenn A.; and Chau, Albert W., 4,564,810, Cl. 324-230.000.
Ritter, James D., 4,564,543, Cl. 428-58.000.
Vermilye, Michael L., 4,564,160, Cl. 244-110.00B.

Boesen, Connie J. Stadium coat. 4,563,776, Cl. 2-85.000.

Bogossian, Armen: *See*—
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.

Bohorquez, Luis A.: *See*—
Cleary, Michael M.; and Bohorquez, Luis A., 4,563,936, Cl. 89-11.000.

Bokon, William S. Mower means. 4,563,867, Cl. 56-249.000.

Bolmgren, Jan: *See*—
Nilsson, Kenth; and Bolmgren, Jan, 4,564,851, Cl. 346-140.00R.

Bolson, Frank J. Hydro-light. 4,564,889, Cl. 362-192.000.

Boltze, Karl-Heinz; Davies, Margaret A.; Junge, Bodo; Schuurman, Teunis; and Traber, Jorg, to Troponwerke GmbH & Co. Pyridoindole derivatives, compositions and use. 4,564,613, Cl. 514-222.000.

Bondarev, Boris I.: *See*—
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Bonga, Benno I., to Ateliere des Charmilles, S.A. Electrode tool storage magazine. 4,563,800, Cl. 29-26.00A.

Bonneton, Marc: *See*—
Barillec, Christian; Janvier, Dominique; and Bonneton, Marc, 4,563,861, Cl. 53-453.000.

Booher, Howard. Flat bed trailer structure. 4,564,233, Cl. 296-182.000.

Boot, Gordon P., to Plessey Overseas Limited. Digital electronic switching systems. 4,564,938, Cl. 370-85.000.

Borel, Georg, to Hermann Wangner GmbH & Co. KG. Double-layer fabric for paper machine screen. 4,564,052, Cl. 139-425.00A.

Borg-Warner Corporation: *See*—
Harnish, James R., 4,563,877, Cl. 62-80.000.

Borovikova, Stella I.: *See*—
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Bott, David C.; and White, Donald, to British Petroleum Company, p.l.c., The. Polyacetylene production. 4,564,492, Cl. 264-154.000.

Bottenbruch, Ludwig: *See*—
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, 4,564,669, Cl. 528-173.000.

Boulogne, Gerardus F.; and van Berkel, Bernardus P. J., to NCR Corporation. Data communication network and method of communication. 4,564,838, Cl. 340-825.500.

Bower, Lewis R. B., to Fletcher Sutcliffe Wild Limited. Control valve. 4,564,047, Cl. 137-627.500.

Bowering, Cyril J. Collapsible broadband directional antenna. 4,564,844, Cl. 343-881.000.

Boyd, Charles R., Jr., to Microwave Applications Group. Adjustable-phase-power divider apparatus. 4,564,824, Cl. 333-137.000.

Bozick, Thomas J. Shooting bench. 4,563,829, Cl. 42-94.000.

BP Chemicals Limited: *See*—
Collomb-Ceccarini, Joelle; and Crouzet, Pierre, 4,564,605, Cl. 502-110.000.

Brader, Kurt: *See*—
Grether, Paul; Brader, Kurt; and Keller, Bruno, 4,563,843, Cl. 52-172.000.

Braestrup, Claus T.: *See*—
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.

Brandli, Eugene: *See*—
Woodruff, Keith; and Brandli, Eugene, 4,563,836, Cl. 43-131.000.

Breithaupt, Jorg-Ulrich: *See*—
Geisler, Gottfried; and Breithaupt, Jorg-Ulrich, 4,563,904, Cl. 73-861.120.

Bressan, Renato J.; Halasz, Andrew; and Maccherone, Lawrence S., to American Can Company. Controlled spin flow forming. 4,563,887, Cl. 72-84.000.

Breuer, Hans-Werner, to Crown Obrist AG. Closure cap for a container. 4,564,112, Cl. 215-246.000.

Brickner, Joseph L. Operators for sliding gates. 4,564,791, Cl. 318-16.000.

Brieger, Emmet F.: *See*—
Vann, Roy R.; and Brieger, Emmet F., 4,564,076, Cl. 175-4.520.

Briggs, John R.; O'Connor, George L.; and Robson, John H., to Union Carbide Corporation. Preparation of monoalkylene glycols in two stages. 4,564,715, Cl. 568-867.000.

Briggs, Jonathan, to Syntex (U.S.A.) Inc. Limited volume method for particle counting. 4,564,598, Cl. 436-501.000.

Briggs, Willard S., to Mostek Corporation. Multiplier with hybrid register. 4,564,920, Cl. 364-757.000.

Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, to American Standard Inc. Self-contained sewage waste disposal system. 4,564,445, Cl. 210-167.000.

Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, to American Standard Inc. Self-contained sewage waste disposal system. 4,564,454, Cl. 210-668.000.

Brinkhoff, Carl H., to Mine Safety Appliances Company. Universal ear plug. 4,564,009, Cl. 128-152.000.

Brisse, Jacques D.; and Chevalier, Jean-Pierre J. Radionavigation system having means for concealing distance and/or bearing information conveyed thereby. 4,564,840, Cl. 343-6.5LC.

British Aerospace Public Limited Co.: *See*—
Goddard-Watts, Mark, 4,563,812, Cl. 29-857.000.

British Petroleum Company p.l.c., The: *See*—
Austin, Frederick D.; and Watson, Peter, 4,564,537, Cl. 427-376.400.
Bott, David C.; and White, Donald, 4,564,492, Cl. 264-154.000.
Callaghan, Ian C.; Fink, Hans-Ferdi; Gould, Clive M.; Koerner, Gotz; Patzke, Hans-Jurgen; and Weitemeyer, Christian, 4,564,665, Cl. 528-21.000.

Brochman, Wilfred R., to Minnesota Mining and Manufacturing Company. Tape closure for a can end. 4,564,121, Cl. 220-359.000.

Brooks, Darrell: *See*—
Maurice, David M.; and Brooks, Darrell, 4,564,016, Cl. 128-645.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Ueno, Hideo, 4,564,301, Cl. 400-63.000.
Ueno, Hideo, 4,564,304, Cl. 400-279.000.

Brouwer, Gerald A.; and DeVries, Charles R., to Lear Siegler, Inc. Tilted spiral article diverter. 4,564,105, Cl. 198-457.000.

Brown, Boveri & Cie AG: *See*—
Weddigen, Gerd; Huber, Robert; Schmidt, Birgit; and Schneider, Hartmut, 4,564,466, Cl. 525-505.000.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Hasenauer, Dieter; and Hug, Kuno, 4,564,568, Cl. 429-104.000.

Brown, Geoffrey D., to Union Carbide Corporation. Extruder assembly for extruding water-curable silane modified polymers. 4,564,349, Cl. 425-207.000.

Bruel, Michel; and Michaud, Jean-Francois, to Commissariat a l'Energie Atomique. Process and apparatus for varying the deflection of the path of a charged particle beam. 4,564,763, Cl. 250-396.0ML.

Brunn, Hartmut: *See*—
Siebeneiker, Gunter; Brunn, Hartmut; and Steiger, Uwe, 4,563,931, Cl. 84-1.160.

Brunner, Hubert: *See*—
Pertzsch, Albert; Liepold, August; Brunner, Hubert; and Zeroni, Ludwig, 4,564,120, Cl. 220-337.000.

Brunswick Mining and Smelting Corporation Limited: *See*—
Ghatas, Nassef E.; and Peacey, John G., 4,564,387, Cl. 75-0.50A.

Brunswick, Robert; and Hancock, Warren J., to Fisher & Paykel Limited. Speed equalizing means and/or laundry machines incorporating the same. 4,563,786, Cl. 8-159.000.

Brunton Company, The: *See*—
Kramer, Melvin G., 4,564,909, Cl. 364-457.000.

Buchel, Karl H.: *See*—
Streissle, Gert; Plempel, Manfred; Paessens, Arnold; Holmwood, Graham; and Buchel, Karl H., 4,564,622, Cl. 514-383.000.

Bucher, Peter, to Heinrich Bucher, Firma. Container for cooling a cooled commodity. 4,563,881, Cl. 62-457.000.

Buckau-Walther Aktiengesellschaft: *See*—
Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, 4,564,510, Cl. 423-235.000.

Buckwald, Robert A.; Cabib, Dario; and Weiser, Kurt, to C.I. Ltd. Method and apparatus for the enhanced detection of a component of a material. 4,564,761, Cl. 250-341.000.

Buckwalter, Brian L.: *See*—
LaHann, Thomas R.; and Buckwalter, Brian L., 4,564,633, Cl. 514-538.000.

Bucsko, Richard B.; and Holland, Paul E., to Carlin Foods Corporation. Acidified vegetables for pastries. 4,564,527, Cl. 426-335.000.

Buffalo Beton Ltd.: *See*—
Driedger, Klaus U., 4,563,844, Cl. 52-192.000.

Buhler, Karl, to BBC Brown, Boveri & Company Limited. Guard arrangement for a bottom electrode of a direct-current arc furnace. 4,564,950, Cl. 373-108.000.

Buhler, Karl, to BBC Brown, Boveri & Company Limited. Cooling arrangement of a bottom electrode for a direct-current arc furnace. 4,564,951, Cl. 373-108.000.

Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., to Standard Oil Company, The. Apparatus for the enhanced separation of impurities from coal. 4,564,369, Cl. 44-2.000.

Burkard, Edward A.; and Segada, James J., to National Gypsum Company. Fire-resistant gypsum board. 4,564,544, Cl. 428-70.000.

Burke, Thomas F.: *See*—
Gilson, Russell A.; and Burke, Thomas F., 4,564,817, Cl. 330-286.000.

Burke, Victor B.; and Burkholder, Charles R., to F.M.P. Enterprise, Inc. Automatic layout machine for tire tread patterns. 4,564,737, Cl. 219-121.0LH.

Burkert, Joachim, to Industriewerk Nachf. Seifert & Co. KG. Apparatus for the lifting of coils, spools and the like. 4,564,231, Cl. 294-96.000.

Burkholder, Charles R.: *See*—
Burke, Victor B.; and Burkholder, Charles R., 4,564,737, Cl. 219-121.0LH.

Burleson, James C. Method and apparatus for disposal of a broad spectrum of waste featuring oxidation of waste. 4,564,458, Cl. 210-747.000.

Burlington Industries, Inc.: *See*—
Gamblin, Rodger L., 4,564,565, Cl. 428-680.000.

Burnhill, Michael S. Vaginal device. 4,564,362, Cl. 604-286.000.

Burrington, George C., to Parker-Hannifin Corporation. Hose coupling. 4,564,223, Cl. 285-256.000.

Burroughs Corporation: *See*—
LaBudde, Edward V.; Niven, Jeffrey E.; Hsieh, Der-Chang; Parker, Roger C.; and Johnson, Robert Jeffery, 4,564,757, Cl. 250-239.000.
Tomlinson, Christopher J.; and Green, Howard H., 4,564,901, Cl. 364-200.000.

Burstell, Helmut: *See*—
Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, 4,564,381, Cl. 71-88.000.

Burton, George W., to Johnsen & Jorgensen (Plastics) Ltd. Dispensing container. 4,564,124, Cl. 221-263.000.

Burton, Richard A.: *See*—
Alley, Lynn D.; Alley, Stephen W.; Sadlier, William K.; and Burton, Richard A., 4,564,751, Cl. 235-146.000.

Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N. Electrode for electrolysis of solutions of electrolytes. 4,564,434, Cl. 204-290.00F.

Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, to Ruhrchemie Aktiengesellschaft. Process for the manufacture of unsaturated hydrocarbons. 4,564,642, Cl. 518-717.000.

Bussmann, Egon, to Siemens Aktiengesellschaft. Preventing lateral oxide growth by first forming nitride layer followed by a composite masking layer. 4,564,394, Cl. 148-1.500.

Buzzanca, Giovanni; Ronchetti, Camillo; Uberti, Franco; and Anzani, Renato, to CISE-Centro Informazioni Studi Esperienze S.p.A. Apparatus for measuring the degree of sensitization of metal articles. 4,564,436, Cl. 204-400.000.

C.I. Ltd.: *See*—
Buckwald, Robert A.; Cabib, Dario; and Weiser, Kurt, 4,564,761, Cl. 250-341.000.

C. Reichert Optische Werke AG: *See*—
Sitte, Hellmuth, 4,563,883, Cl. 62-514.00R.

Cabib, Dario: *See*—
Buckwald, Robert A.; Cabib, Dario; and Weiser, Kurt, 4,564,761, Cl. 250-341.000.

Cadbury Schweppes, PLC: *See—*
Jeans, Edward L., 4,564,483, Cl. 261-64.00B.

Cafferty, Terrance, to Auto Id Inc. Stencil apparatus for use with abrasive particle sprayer for marking items such as automobile parts. 4,563,948, Cl. 101-128.000.

Cain, C. Dean, Jr.; and Bean, Ronnie A., to French, Tommy, a part interest. Process and apparatus for harvesting soft shell crayfish. 4,563,830, Cl. 43-4.500.

Cairo, John A., Jr.; and Jahn, Christopher A., to L'eau Claire Systems, Inc. Upflow gas eductor induced air floatation separator. 4,564,457, Cl. 210-704.000.

Calderon, Arthur: *See—*
Blaske, Paul S.; Zimmerman, Larry D.; Calderon, Arthur; and Longworth, Leroy L., 4,564,585, Cl. 430-313.000.

Caldwell, Albert G.: *See—*
Copp, Frederick C.; Caldwell, Albert G.; and Collard, David, 4,564,684, Cl. 548-362.000.

California Institute of Technology: *See—*
Johnson, William L.; and Schwarz, Ricardo B., 4,564,396, Cl. 148-4.000.

Callaghan, Ian C.; Fink, Hans-Ferdi; Gould, Clive M.; Koerner, Gotz; Patzke, Hans-Jurgen; and Weitemeyer, Christian, to British Petroleum Company p.l.c., The. Oil gas separation. 4,564,665, Cl. 528-21.000.

Calvert, Alan H.: *See—*
Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., 4,564,616, Cl. 514-260.000.

Calvert, Rodney K., to Mead Corporation, The. Packaging machine. 4,563,853, Cl. 53-48.000.

Cameca: *See—*
Slodzian, Georges; Chaintreau, Marcel; and Dennebouy, Roger, 4,564,758, Cl. 250-309.000.

Campbell, Curtis B., to Chevron Research Company. Quaternary deposit control additives. 4,564,372, Cl. 44-71.000.

Camtech, Inc.: *See—*
Mathias, Richard A., 4,563,906, Cl. 73-862.580.

Canada, Her Majesty the Queen in right of, as represented by the Province of Nova Scotia: *See—*
Drebot, Michael A., 4,563,832, Cl. 43-44.990.

Canada, Robert O.: *See—*
Grossman, Leonard N.; Landry, James D.; Masaitis, William; Canada, Robert O.; and McKenzie, Gerald W., 4,564,498, Cl. 376-245.000.

Cannon, Gary V.: *See—*
Fecik, Michael T.; Cannon, Gary V.; and Beresik, Gayland S., 4,564,380, Cl. 65-163.000.

Canon Kabushiki Kaisha: *See—*
Isohata, Junji, 4,563,820, Cl. 33-180.00R.
Kushida, Naoki; and Kusumoto, Tomoko, 4,564,534, Cl. 427-256.000.
Maeshima, Katsuyoshi, 4,564,864, Cl. 358-280.000.
Nakamura, Shunji; Kan, Fumitaka; Egami, Hidemi; Hosoi, Atsushi; Tajima, Hatsuo; and Nakahata, Kimio, 4,563,978, Cl. 118-658.000.
Nishimoto, Yoshifumi, 4,564,267, Cl. 350-379.000.
Suzuki, Koji; Kuroda, Kouki; and Nagahira, Jyoji, 4,564,287, Cl. 355-14.00D.
Tsutsui, Shinji, 4,564,284, Cl. 355-30.000.

Carbonetti, Italo. Ankle appliance for playing football. 4,564,196, Cl. 273-67.00B.

Carlin Foods Corporation: *See—*
Bucsko, Richard B.; and Holland, Paul E., 4,564,527, Cl. 426-335.000.

Carlson, Richard A.: *See—*
Watson, Francis L.; Angalet, Stevan A.; and Carlson, Richard A., 4,564,529, Cl. 426-570.000.

Carnegie-Mellon University: *See—*
Okada, Tokuji; and Kanade, Takeo, 4,563,954, Cl. 104-138.00G.

Carroll, Raymond; and Ahn, Byong-Ho, to Charles Stark Draper Laboratory, Inc., The. System for electronically tuning and suppressing 2N rectification torques in a dynamically tuned free rotor gyroscope. 4,563,909, Cl. 74-5.500.

Carscallen, Richard C.: *See—*
Janousek, Bruce K.; and Carscallen, Richard C., 4,564,425, Cl. 204-34.500.

Carver, George P. Retractable boat keel. 4,563,971, Cl. 114-132.000.

Case, Anthony R. Cross-country ski. 4,564,210, Cl. 280-604.000.

Casio Computer Co., Ltd.: *See—*
Kumagai, Akira, 4,564,904, Cl. 364-405.000.
Nakano, Harumi, 4,564,923, Cl. 364-900.000.
Sunada, Takuya, 4,563,932, Cl. 84-1.220.

Cassat, Robert; and Alliot-Lugaz, Maurice, to Rhone-Poulenc Recherches. Metallization of electrically insulating polymeric film substrates. 4,564,424, Cl. 204-20.000.

Cassella Aktiengesellschaft: *See—*
Kussmaul, Ulrich; Becherer, Johannes; Handte, Reinhard; and Muller, Rolf, 4,564,682, Cl. 548-169.000.

Caterpillar Tractor Co.: *See—*
Shookman, Dennis R.; and Hendrickson, Vergil P., 4,564,205, Cl. 280-166.000.

Cawse, John L.: *See—*
Still, Richard H.; Cawse, John L.; and Stanford, John L., 4,564,718, Cl. 585-350.000.

Cawthorne, Roland: *See—*
Clitheros, Derek P.; Livingstone, David A.; Roberts, David B.; and Cawthorne, Roland, 4,564,410, Cl. 156-356.000.

Central Glass Company, Limited: *See—*
Katsuhara, Yutaka; Nakamichi, Toshihiro; Kawai, Toshikazu; and Nakazora, Toru, 4,564,716, Cl. 568-842.000.

Centre Electronique Horloger S.A.: *See—*
Vuilleumier, Raymond; and Weiss, Paul-Charles, 4,564,836, Cl. 340-783.000.

Centre National de la Recherche: *See—*
Macchi, Odile, 4,564,934, Cl. 370-32.000.

Centre National de la Recherche Scientifique: *See—*
Simoneau, Raynald; and Chincholle, Lucien, 4,564,422, Cl. 204-1.00T.

Centre National de la Recherche Scientifique (CNRS): *See—*
Durand, Georges E. A.; Martinot-Lagarde, Philippe; and Dozov, Ivan, 4,564,266, Cl. 350-340.000.

Chaintreau, Marcel: *See—*
Slodzian, Georges; Chaintreau, Marcel; and Dennebouy, Roger, 4,564,758, Cl. 250-309.000.

Chameroy, Pascal; and Decraemer, Alain, to U.S. Philips Corporation. Method and device for adjusting the black level of a video signal. 4,564,863, Cl. 358-172.000.

Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Catalysts over AlF_3 activated high silica zeolites. 4,564,719, Cl. 585-640.000.

Chang, Man-Chium; Mao, Chung-Ling; and Vargas, Richard R., to Avery International Corporation. Emulsion-acrylic pressure-sensitive adhesives formed in two step polymerization. 4,564,664, Cl. 524-826.000.

Chapman, David M.: *See—*
Orlandino, Michael J.; and Chapman, David M., 4,564,212, Cl. 280-642.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Carroll, Raymond; and Ahn, Byong-Ho, 4,563,909, Cl. 74-5.500.

Charlton Associates: *See—*
Baun, Kenneth W., 4,563,824, Cl. 33-568.000.

Charych, Arthur, to TII Industries, Inc. Uninterruptible switching power supply system. 4,564,767, Cl. 307-66.000.

Chau, Albert W.: *See—*
Geithman, Glenn A.; and Chau, Albert W., 4,564,810, Cl. 324-230.000.

Chauvigne, Michel, to Societe Industrielle de Bellevaux Sibel. Programmer control device. 4,563,911, Cl. 74-125.000.

Chazov, Evgeny I.: *See—*
Maximenko, Alexandr V.; Tischenko, Elena G.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I., 4,564,596, Cl. 435-177.000.

Chekouras, Carl J. Spring-loaded tillage implement. 4,564,075, Cl. 172-572.000.

Cherepok, Gennady V.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Chevalier, Jean-Pierre J.: *See—*
Brisse, Jacques D.; and Chevalier, Jean-Pierre J., 4,564,840, Cl. 343-6.5LC.

Chevron Research Company: *See—*
Campbell, Curtis B., 4,564,372, Cl. 44-71.000.
Kuehler, Christopher W.; and Dahlberg, Arthur J., 4,564,439, Cl. 208-59.000.
Offermann, Paul F., 4,564,747, Cl. 219-482.000.

Chicago Bridge & Iron Company: *See—*
Allo, Vincent F.; and Stafford, Donald C., 4,564,064, Cl. 165-118.000.

Childers Corporation: *See—*
Childers, Roger K.; and Trumbo, Andrew L., 4,564,037, Cl. 133-3.00A.

Childers, Roger K.; and Trumbo, Andrew L., to Childers Corporation. Coin-queueing head for high-speed coin-sorting and counting apparatus. 4,564,037, Cl. 133-3.00A.

Chin, Albert K.: *See—*
Fogarty, Thomas J.; and Chin, Albert K., 4,564,014, Cl. 128-344.000.

Chincholle, Lucien: *See—*
Simoneau, Raynald; and Chincholle, Lucien, 4,564,422, Cl. 204-1.00T.

Ching, Tien-Fu; and Chou, Lung-Chiao. Ellipsograph capable of drawing dotted line. 4,563,819, Cl. 33-30.400.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laszlo, 4,564,706, Cl. 564-376.000.

Chisso Corporation: *See—*
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

Chiyoda Tsusho K.K.: *See—*
Ishii, Hidesaburo, 4,564,221, Cl. 285-239.000.

Cholet, Jacques: *See—*
Layotte, Pierre-Claude; Cholet, Jacques; Grolet, Pierre; and Huin, Roland, 4,564,083, Cl. 181-114.000.

Chou, Lung-Chiao: *See—*
Ching, Tien-Fu; and Chou, Lung-Chiao, 4,563,819, Cl. 33-30.400.

Christ, Allen E.; and Roche, Thomas A., to Motorola, Inc. Apparatus and method for protecting integrated circuits. 4,564,880, Cl. 361-212.000.

Christian Rovsing A/S: *See—*
Smitt, Asbjorn, 4,564,900, Cl. 364-200.000.

Christl, Wilfried: *See—*
Weining, Hans-Karl; Kienle, Juergen; and Christl, Wilfried, 4,563,998, Cl. 123-568.000.

Church, Kenneth: *See—*
Davies, Lawrence W.; Martin, Jeff; Sumerak, Joseph E.; and Church, Kenneth, 4,564,540, Cl. 428-34.000.

Ciba-Geigy Corporation: *See—*
Finter, Jurgen; and Fischer, Walter, 4,564,578, Cl. 430-270.000.
Kunz, Walter; Eckhardt, Wolfgang; and Hubele, Adolf, 4,564,629, Cl. 514-472.000.
Spencer, Alwyn, 4,564,479, Cl. 260-465.00H.

Cipelletti, Alberto, to Firm Alberto Cipelletti. Ice-cream machine for family use. 4,563,880, Cl. 62-234.000.

CISE-Centro Informazioni Studi Esperienze S.p.A.: *See—*
Buzzanca, Giovanni; Ronchetti, Camillo; Uberti, Franco; and Anzani, Renato, 4,564,436, Cl. 204-400.000.

CLAAS OHG: *See—*
Ackermann, Gustav; Clostermeyer, Gerhard; and Muller, Werner, 4,563,854, Cl. 53-118.000.
Clostermeyer, Gerhard, 4,563,868, Cl. 56-341.000.
Dammann, Johannes, 4,564,025, Cl. 130-27.00R.

Clark, Barry A., to Commonwealth of Australia, The. Visibility gauge. 4,564,274, Cl. 351-233.000.

Clark, Paul M., to Whirlpool Corporation. Hose attachment structure for upright vacuum cleaner. 4,563,790, Cl. 15-337.000.

Clarke, Frederick G. E., Jr.; King, Anthony R.; and Majewski, Anthony, to R. R. Donnelley & Sons Company. Apparatus for gathering printed signatures for saddle stitching. 4,564,186, Cl. 270-54.000.

Clausen, Kermit: *See—*
Glover, Neal; Clausen, Kermit; Mayne, Chris; and Glissmann, Randy, 4,564,945, Cl. 371-38.000.

Clauson, Melvil B.: *See—*
Touhsaent, Robert E.; Wagner, John R., Jr.; and Clauson, Melvil B., 4,564,558, Cl. 428-349.000.
Wagner, John R., Jr.; and Clauson, Melvil B., 4,564,559, Cl. 428-349.000.

Cleary, Michael M.; and Bohorquez, Luis A., to Hughes Helicopters, Inc. Weapon with next round select feed system. 4,563,936, Cl. 89-11.000.

Cleer, Clarence W., Jr. Hydronic system with circulators connected to a header. 4,564,142, Cl. 237-8.00R.

Clelford, Douglas H.; Skonieczny, Joseph P.; and Murphy, Richard D., to United Technologies Corporation. Automatic limiting of helicopter engine torque. 4,564,908, Cl. 364-433.000.

Clements Industries, Inc.: *See—*
Kusters, Willy, 4,563,856, Cl. 53-138.00A.

Clerici, Mario: *See—*
Neri, Carlo; Giroldini, Villiam; Rinaldi, Antonio; Traversoni, Mario; and Clerici, Mario, 4,564,691, Cl. 549-462.000.

Clitheros, Derek P.; Livingstone, David A.; Roberts, David B.; and Cawthorne, Roland, to General Motors Corporation. Adhesive application apparatus. 4,564,410, Cl. 156-356.000.

Clostermeyer, Gerhard, to Claas Ohg. Large baling press for agricultural products. 4,563,868, Cl. 56-341.000.

Clostermeyer, Gerhard: *See—*
Ackermann, Gustav; Clostermeyer, Gerhard; and Muller, Werner, 4,563,854, Cl. 53-118.000.

Coburn Optical Industries, Inc.: *See—*
Tusinski, Joseph, 4,563,916, Cl. 74-829.000.

Cochet, Andre ; Droussent, Roger; and Jurado, Marcel, to Commissariat a l'Energie. Process for storing flexible contaminated materials. 4,564,469, Cl. 252-626.000.

Cocke, John: *See—*
Arnold, Richard F.; Cocke, John; Coppersmith, Don; Seigler, Adrian E.; and Strait, Gary E., 4,564,944, Cl. 371-37.000.

Cohen, Edwin. Ghost signal elimination circuit. 4,564,862, Cl. 358-167.000.

Cohen, Joseph D., to Performance Pool Products, Ltd. Apparatus for cleaning a swimming pool strainer. 4,564,451, Cl. 210-411.000.

Coissard, Pierre; Richard, Joseph; and Morin, Francois. Method for the manufacture of a display screen based on thin-film transistors and capacitors. 4,563,806, Cl. 29-571.000.

Coker, Geoffrey G.: *See—*
Findlay, John W. A.; and Coker, Geoffrey G., 4,564,685, Cl. 548-578.000.

Cole, Harold E., to Goldberg, James R. Molded safety closure device. 4,564,114, Cl. 215-256.000.

Coleman, James P.; and McMackins, Dudley E., to Monsanto Company. Product separation from electrolyte salts maintained in molten state. 4,564,689, Cl. 549-326.000.

Collard, David: *See—*
Copp, Frederick C.; Caldwell, Albert G.; and Collard, David, 4,564,684, Cl. 548-362.000.

College, Neil F.: *See—*
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,563,810, Cl. 29-749.000.

Collins, George G. Test device for fuses and batteries. 4,564,802, Cl. 324-51.000.

Collins, John C.; and DeFazio, John J., to International Business Machines. System path stressing. 4,564,943, Cl. 371-28.000.

Collomb-Ceccarini, Joelle; and Crouzet, Pierre, to BP Chemicals Limited. Catalyst and process for polymerizing olefins. 4,564,605, Cl. 502-110.000.

Comberg, Albert, to U.S. Philips Corporation. Optical printer. 4,564,866, Cl. 358-302.000.

Cominco Ltd.: *See—*
Fairweather, Michael J.; Rockandel, Michael A.; Sadan, Abraham; and Swinkels, Godefridus M., 4,564,508, Cl. 423-189.000.

Commissariat a l'Energie: *See—*
Cochet, Andre ; Droussent, Roger; and Jurado, Marcel, 4,564,469, Cl. 252-626.000.

Commissariat a l'Energie Atomique: *See—*
Bruel, Michel; and Michaud, Jean-Francois, 4,564,763, Cl. 250-396.0ML.
Fillot, Alain; Gallet, Jean; Paltrier, Sylvain; and Schaub, Bernard, 4,564,415, Cl. 156-604.000.

Commonwealth of Australia, The: *See—*
Clark, Barry A., 4,564,274, Cl. 351-233.000.
Iwanicki, Walter; and Duane, Brian, 4,564,003, Cl. 126-427.000.

Compagnie Francaise de Raffinage: *See—*
Loutaty, Roben; and Haquet, Yvon, 4,564,328, Cl. 414-301.000.

Comus International, Inc.: *See—*
Romano, Robert P., 4,564,728, Cl. 179-175.30R.

Coneglio, August F. Writing board. 4,564,091, Cl. 190-11.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Doring, Heinrich, 4,564,056, Cl. 152-427.000.

Continental White Cap, Inc.: *See—*
Mendler, Leo R., 4,564,113, Cl. 215-252.000.

Cookson, Richard C.: *See—*
Scopes, David I. C.; Newton, Roger F.; and Cookson, Richard C., 4,564,618, Cl. 514-274.000.

Coombs, Richard R. H.; and El-Saba, Mekki M., to National Research Development Corp. Orthopaedic external fixation devices. 4,564,007, Cl. 128-92.00A.

Cooper, Charles E. Antenna with P.I.N. diode switched tuning inductors. 4,564,843, Cl. 343-745.000.

Cooper, Glenn D., deceased (by Cooper, Rose H., executrix); and Kinson, Philip L., to General Electric Company. Preparation of graft copolymers of polyphenylene ether and rubber, optionally including poly(alkenyl aromatic). 4,564,656, Cl. 525-152.000.

Cooper Industries: *See—*
Smerz, Frank G., 4,564,257, Cl. 339-145.00R.

Cooper Industries, Inc.: *See—*
Warner, Dean C.; and Marek, James R., 4,564,830, Cl. 337-246.000.

Cooper, Rose H., executrix: *See—*
Cooper, Glenn D., deceased; and Kinson, Philip L., 4,564,656, Cl. 525-152.000.

Coplot, Daniel; and Picon, Georges, to Atochem (Societe Anonyme Styled). Method and apparatus for the detection of toxic substances in waste water feeding a biological treatment plant. 4,564,453, Cl. 210-614.000.

Copp, Frederick C.; Caldwell, Albert G.; and Collard, David. 3-Amino-1-phenyl-2-pyrazolines. 4,564,684, Cl. 548-362.000.

Coppersmith, Don: *See—*
Arnold, Richard F.; Cocke, John; Coppersmith, Don; Seigler, Adrian E.; and Strait, Gary E., 4,564,944, Cl. 371-37.000.

Corbett, Peter R. Multi-purpose garden tool. 4,564,072, Cl. 172-13.000.

Cordis Corporation: *See—*
Hess, Stanley R., 4,564,023, Cl. 128-785.000.

Cornelison, James J.: *See—*
Johnson, Edgar G., Jr.; Cornelison, James J.; and Mackovjak, Paul V., 4,563,907, Cl. 73-864.160.

Cornell, David D.: *See—*
Lentz, Carl M.; Overton, James R.; and Cornell, David D., 4,564,701, Cl. 562-406.000.

Cornwell, Tomy W.: *See—*
Niswander, Robert L.; and Cornwell, Tomy W., 4,564,313, Cl. 405-125.000.

Costa, Jorge; and Reichel, Wolfgang, to Hermes Precisa International S.A. Sheet feed device for a printer or typewriter. 4,564,187, Cl. 271-9.000.

Coughlan, Raymond T.; and Anderson, Terrence J., to Daubert Coated Products Inc. Pressure sensitive adhesive film for medical use. 4,564,010, Cl. 128-156.000.

Coulter Corporation: *See—*
Loren, Mark; and Pedroso, Raul I., 4,564,803, Cl. 324-71.100.

Courcy, Stephen E.: *See—*
Sherman, Jeffrey D.; and Courcy, Stephen E., 4,564,770, Cl. 307-311.000.

CPC International Inc.: *See—*
Feldmann, John; Koebernick, Hubert; Richter, Klaus; and Woelk, Hans-Ulrich, 4,564,692, Cl. 549-464.000.

Craft, Charles E.; Winter, Lester; and Pote, Robert Hawley, to Delta Data Systems Corporation. Rotary tilt base for video terminal. 4,564,166, Cl. 248-349.000.

Craig, James E.: *See—*
Bacon, Jeffery E.; Craig, James E.; and Pedersen, Mark K., 4,564,430, Cl. 204-206.000.

Cranston, Benjamin H., to AT&T Technologies, Inc. Method of making a dual-in-line package. 4,563,811, Cl. 29-827.000.

Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., to Pfizer Inc. Antiinflammatory methods. 4,564,614, Cl. 514-222.000.

Craze, David A.: *See—*
Russ, Calvin W.; and Craze, David A., 4,564,207, Cl. 280-402.000.

Cripps, Milo: *See—*
Roberts, William E.; and Cripps, Milo, 4,564,326, Cl. 414-131.000.
Crocker National Bank: *See—*
Kolb, Richard L., 4,564,927, Cl. 367-42.000.
Crouzet, Pierre: *See—*
Collomb-Ceccarini, Joelle; and Crouzet, Pierre, 4,564,605, Cl. 502-110.000.
Crown Obrist AG: *See—*
Breuer, Hans-Werner, 4,564,112, Cl. 215-246.000.
Crucible Materials Corporation: *See—*
Narasimhan, Kalatur S. V. L.; and Preusch, Charles D., 4,564,400, Cl. 148-103.000.
Strichman, George A.; Dulis, Edward J.; Narasimhan, Kalatur S. V. L.; and Lizzi, Thomas, 4,564,401, Cl. 148-104.000.
Crumbach, Richard; Schilde, Heinz-Josef; and Tiedemann, Helmut, to Saint-Gobain Vitrage. Process and device for covering a lens preform with a protective sheet. 4,564,408, Cl. 156-212.000.
Curcuri, Thomas J.: *See—*
Kozlowski, Chester P.; and Curcuri, Thomas J., 4,563,975, Cl. 118-320.000.
Curtis, John R.; and Renwick, John D., to Sericol Group Limited. Process of preparing screen stencil using diazo photosensitive compositions with acidic p-H indicator. 4,564,581, Cl. 430-308.000.
Cutler, Cassius C.: *See—*
Newton, Steven A.; Shaw, Herbert J.; and Cutler, Cassius C., 4,564,293, Cl. 356-350.000.
Cutler, Orvid R., Jr.: *See—*
Fieder, Donald W.; Stanton, Joseph J.; Fisher, Christopher E.; and Cutler, Orvid R., Jr., 4,564,666, Cl. 522-33.000.
Cybulski, Claude E., to Minnesota Mining and Manufacturing Company. Videocassette wear button. 4,564,156, Cl. 242-197.000.
Cybulski, Claude E., to Minnesota Mining and Manufacturing Company. Automatic record-lockout mechanism. 4,564,871, Cl. 360-60.000.
Czwalinna, Hans: *See—*
Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, 4,564,513, Cl. 423-415.00A.
Dahlberg, Arthur J.: *See—*
Kuehler, Christopher W.; and Dahlberg, Arthur J., 4,564,439, Cl. 208-59.000.
Dahm, Horst: *See—*
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.
Daikin Industries, Ltd.: *See—*
Shimizu, Tetsuo; and Akamatsu, Masafumi, 4,564,652, Cl. 524-805.000.
Daikin Kogyo Co., Ltd.: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, 4,564,717, Cl. 568-843.000.
Daiku, Yoshiharu: *See—*
Sugimoto, Hachiro; Nakamura, Takaharu; Hamazo, Sachiyuki; and Daiku, Yoshiharu, 4,564,617, Cl. 514-265.000.
Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf, 4,564,060, Cl. 165-98.000.
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.
Grimm, Hermann; Konig, Volkmar; and Karioth, Gernot, 4,563,942, Cl. 98-2.160.
Stephan, Wolfgang; and Rieker, Heinz, 4,564,906, Cl. 364-424.100.
Weining, Hans-Karl; Kienle, Juergen; and Christl, Wilfried, 4,563,998, Cl. 123-568.000.
Dainippon Screen Mfg. Co., Ltd.: *See—*
Yamada, Mitsuhiko, 4,564,865, Cl. 358-287.000.
Daisenberger, Georg, to Siemens Aktiengesellschaft. Telecommunications system, particularly a telephone exchange system, having overload protected sequential logic systems. 4,564,725, Cl. 179-8.00A.
Damiano, Ralph R.; Rogers, Wilfred R.; and Whitney, Charles A., to Wiremold Company, The. Flat cable transition connector. 4,564,256, Cl. 339-99.00R.
Dammann, Johannes, to Claas OHG. Self-propelled harvester thresher. 4,564,025, Cl. 130-27.00R.
Dammann, Peter, to Barmag Barmer Maschinenfabrik AG. Air jet nozzle for treatment of yarns. 4,563,799, Cl. 28-272.000.
Danavox A/S: *See—*
Birch, Leon; and Hartmann, Jorgen, 4,564,955, Cl. 381-69.000.
Danfoss A/S: *See—*
Melamed, Anna, 4,564,769, Cl. 307-300.000.
Soendergaard, Joergen, 4,563,941, Cl. 92-134.000.
Daniel, Jacob, to Metalworking Lasers International Ltd. High-power lasers. 4,564,947, Cl. 372-58.000.
Danilkin, Viktor A.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.
Danley, Thomas J.; and Rey, Charles A., to Intersonics Incorporated. Subwoofer speaker system. 4,564,727, Cl. 179-116.000.
Danuvia Kozponti Szerszam-es Keszulekgyar: *See—*
Kalmanczhelyi, Gabor, 4,564,038, Cl. 137-101.000.
Kalmanczhelyi, Gabor, 4,564,039, Cl. 137-101.000.
D'Aoust, Brian G. Total dissolved gas pressure measuring device. 4,563,892, Cl. 73-19.000.
Dathe, Ingo: *See—*
Zimmer, Herbert; Dathe, Ingo; Hoffmann, Reinhard; Hora, Petr; and Wortmann, Franz X., 4,564,337, Cl. 416-223.00R.
Daubert Coated Products Inc.: *See—*
Coughlan, Raymond T.; and Anderson, Terrence J., 4,564,010, Cl. 128-156.000.
Daumuller, Hans; and Ruckwied, Heinz, to Robert Bosch GmbH. Vehicle headlight. 4,564,891, Cl. 362-294.000.
Davies, Lawrence W.; Martin, Jeff; Sumerak, Joseph E.; and Church, Kenneth. Pultruded fibreglass spacer for sealed window units. 4,564,540, Cl. 428-34.000.
Davies, Margaret A.: *See—*
Boltze, Karl-Heinz; Davies, Margaret A.; Junge, Bodo; Schuurman, Teunis; and Traber, Jorg, 4,564,613, Cl. 514-222.000.
Dawson, Fred. Exercise apparatus. 4,564,194, Cl. 272-123.000.
Decraemer, Alain: *See—*
Chameroy, Pascal; and Decraemer, Alain, 4,564,863, Cl. 358-172.000.
Deere & Company: *See—*
Boardman, Peter W., 4,563,926, Cl. 83-107.000.
Deering, Roland F., to Union Oil Company of California. Process for retorting oil shale with fluidized retorting of shale fines. 4,564,437, Cl. 208-11.00R.
DeFazio, John J.: *See—*
Collins, John C.; and DeFazio, John J., 4,564,943, Cl. 371-28.000.
De Fusco, Albert A.: *See—*
Martin, Eugene C.; and De Fusco, Albert A., 4,564,663, Cl. 526-262.000.
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., to American Standard Inc. Self-contained sewage waste disposal system. 4,564,446, Cl. 210-167.000.
Degussa Aktiengesellschaft: *See—*
Baacke, Michael; and Kleinschmit, Peter, 4,564,512, Cl. 423-328.000.
Drauz, Karlheinz; Kleemann, Axel; and Wirthwein, Rolf, 4,564,514, Cl. 423-589.000.
Dehydro Corporation: *See—*
Piper, Louis H.; White, J. David; and Hartman, Ronald H., 4,564,450, Cl. 210-293.000.
Del Rosso, Victor, to Hi-Speed Checkweigher Co., Inc. Powered conveying and weighing machine. 4,564,077, Cl. 177-145.000.
Delta Data Systems Corporation: *See—*
Craft, Charles E.; Winter, Lester; and Pote, Robert Hawley, 4,564,166, Cl. 248-349.000.
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, to Wisconsin Alumni Research Foundation. 23,23-Difluoro-25-hydroxy-vitamin D_3 and process for preparing same. 4,564,474, Cl. 260-397.200.
Dennebouy, Roger: *See—*
Slodzian, Georges; Chaintreau, Marcel; and Dennebouy, Roger, 4,564,758, Cl. 250-309.000.
Dentalwerk Buroos Gesellschaft m.b.H.: *See—*
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Dentonaut Lab, Ltd.: *See—*
Traiger, Harry A.; and Traiger, Mark A., 4,564,355, Cl. 433-215.000.
Depiereux, Wolf-Rudiger. Method of electrochemically roughening aluminium surfaces in the manufacture of offset printing plates. 4,564,429, Cl. 204-129.750.
Deschenes, Maurice, to Geant Entrepeneur Electrique Ltee. Pre-cast heating panel. 4,564,745, Cl. 219-213.000.
Desmond, Michael J.; and Pesa, Frederick A., to Standard Oil Company (Ohio), The. Synthesis of molecular sieving metallosilicates using heteropolymetallates. 4,564,511, Cl. 423-277.000.
DeSoto, Inc.: *See—*
Fieder, Donald W.; Stanton, Joseph J.; Fisher, Christopher E.; and Cutler, Orvid R., Jr., 4,564,666, Cl. 522-33.000.
Deutsche Babcock Aktiengesellschaft: *See—*
Schulze, Gerd, 4,564,300, Cl. 384-581.000.
DeVries, Charles R.: *See—*
Brouwer, Gerald A.; and DeVries, Charles R., 4,564,105, Cl. 198-457.000.
De Winter, Walter F.: *See—*
Uytterhoeven, Herman J.; De Winter, Walter F.; and Marien, August M., 4,564,574, Cl. 430-115.000.
Dexide, Inc.: *See—*
Garabedian, Michael E.; and Morgan, Glenn E., Sr., 4,564,127, Cl. 222-96.000.
Dhawan, Satish K. Field-coupled pointing device. 4,564,835, Cl. 340-710.000.
Diamond Crystal Salt Company: *See—*
Heiss, John F.; and Leverenz, Melvin E., 4,564,367, Cl. 23-295.00S.
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, to Bayer Aktiengesellschaft. Thermotropic aromatic polyesters having a high tenacity and an improved melt viscosity, and mouldings, filaments, fibres and films thereof. 4,564,669, Cl. 528-173.000.
Dickore, Karlfried; Engels, Hans D.; Kratzer, Hans; and Merz, Walter, to Bayer Aktiengesellschaft. Production of 3,3-dimethyl-2-oxobutyric acid salt. 4,564,704, Cl. 562-577.000.
Dickson, Joseph F., to Litton Industrial Products, Inc. Cut-off style, roll thread flat dies. 4,563,890, Cl. 72-469.000.

Didier-Werke AG: *See—*
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,564,485, Cl. 264-30.000.
Dienes, Geza: *See—*
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Diesel Kiki Co., Ltd.: *See—*
Aoki, Hachiro, 4,563,997, Cl. 123-559.000.
Dieter Graesslin Feinwerktechnik: *See—*
Kammerer, Gerd; and Thoma, Friedrich X., 4,564,827, Cl. 335-92.000.
Dijkhuizen, Okko K., to B. E. M. Wientjes B.V. Hydropneumatic massage bath. 4,563,782, Cl. 4-542.000.
Dimoff, John. Valve removing tool. 4,563,803, Cl. 29-213.00R.
Dinger, Ronald W.: *See—*
Ilienberg, Cornelius J.; Dinger, Ronald W.; Kunde, David A.; and Lucarelli, Anthony V., 4,564,829, Cl. 335-135.000.
Director-General of Agency of Industrial Science and Technology: *See—*
Arakawa, Tatsumi; Ozaki, Masaru; and Ikeda, Yukihiro, 4,564,668, Cl. 528-388.000.
Dirks, Arthur: *See—*
Schommler, Manfred; and Dirks, Arthur, 4,563,930, Cl. 83-862.000.
Dirmeyer, Josef; Odemar, Norbert; and Winzer, Gerhard, to Siemens Aktiengesellschaft. Optical waveguide branching unit and method of making same. 4,564,260, Cl. 350-96.160.
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and by Silaeva, Anna A., administrator. Method for continuous casting of light-alloy ingots. 4,564,059, Cl. 164-478.000.
Dobson, Gary A.: *See—*
Bell, David D.; and Dobson, Gary A., 4,564,290, Cl. 356-73.000.
Dr. C. Otto & Comp. GmbH: *See—*
Koddenberg, Theo; and Hegemann, Franz-Josef, 4,564,421, Cl. 202-254.000.
Spindeler, Heinrich; Wackerbarth, Folkard; Kuhlmann, Horst; Dohle, Helmut; and Althaus, Horst, 4,564,420, Cl. 202-139.000.
Spindeler, Heinz; Wackerbarth, Folkard; and Halbherr, Gerd, 4,564,419, Cl. 202-123.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Dorsch, Heinz; and Beer, Michael, 4,563,985, Cl. 123-90.310.
Ziegler, Gerhard; Gregotsch, Karl; and von Sivers, Rolf, 4,563,984, Cl. 123-52.00M.
Dr. Ing. Rudolf Hell GmbH: *See—*
Knop, Hans-Georg; Nowak, Michael; Redecker, Friedrich; and Tiede, Ralf, 4,564,859, Cl. 358-75.000.
Dr. Johannes Heidenhain GmbH: *See—*
Ernst, Alfons, 4,564,294, Cl. 356-374.000.
Schwefel, Ernst, 4,564,912, Cl. 364-474.000.
Doherty, Alfred E., Jr., to Explosive Research Ltd. System and method for increasing wall thickness on end of pipe on which thread is to be fabricated. 4,564,226, Cl. 285-334.000.
Doherty, Charles F.; and Johnson, Robert E., to Pyrotector, Inc. Smoke detector. 4,564,762, Cl. 250-381.000.
Dohle, Helmut: *See—*
Spindeler, Heinrich; Wackerbarth, Folkard; Kuhlmann, Horst; Dohle, Helmut; and Althaus, Horst, 4,564,420, Cl. 202-139.000.
Doleer Electronics, Inc.: *See—*
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Dominion Tool & Die Co.: *See—*
Kozlowski, Chester P.; and Curcuri, Thomas J., 4,563,975, Cl. 118-320.000.
Domnick Hunter Filters Limited: *See—*
Billiet, Colin T., 4,564,376, Cl. 55-486.000.
Donahoo, Lloyd E. Arm support apparatus. 4,564,008, Cl. 128-94.000.
Dorer, Casper J., Jr.; and Hayashi, Katsumi. Hydrocarbyl-substituted carboxylic acylating agent derivative containing combinations, and fuels containing same. 4,564,460, Cl. 252-73.000.
Doring, Heinrich, to Continental Gummi-Werke Aktiengesellschaft. Valve for wheels for tubeless bicycle tires. 4,564,056, Cl. 152-427.000.
Dornier Gesellschaft mit beschrankter Haftung: *See—*
Zimmer, Herbert; Dathe, Ingo; Hoffmann, Reinhard; Hora, Petr; and Wortmann, Franz X., 4,564,337, Cl. 416-223.00R.
Dorsch, Heinz; and Beer, Michael, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Cam shaft drive of an internal combustion engine. 4,563,985, Cl. 123-90.310.
Doseq Dutch Oil Spill Eq v.o.f.: *See—*
Kampers, Gerrit, 4,564,449, Cl. 210-242.300.
Doteuchi, Masami: *See—*
Hirai, Kentario; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,564,623, Cl. 514-408.000.
Douglas, George H.: *See—*
Studt, William L.; Riley, Richard L.; and Douglas, George H., 4,564,640, Cl. 514-598.000.
Dow Chemical Company, The: *See—*
Harris, William I., 4,564,644, Cl. 521-28.000.
Tollar, James E., 4,564,063, Cl. 165-109.100.
Dow Corning Corporation: *See—*
Homan, Gary R., 4,564,456, Cl. 210-698.000.
Dowzall, Martin E.: *See—*
Houssian, Vazgen; and Dowzall, Martin E., 4,564,414, Cl. 156-541.000.
Dozov, Ivan: *See—*
Durand, Georges E. A.; Martinot-Lagarde, Philippe; and Dozov, Ivan, 4,564,266, Cl. 350-340.000.
Draf Industries, Inc.: *See—*
Alesi, Thomas W., 4,563,804, Cl. 29-229.000.
Dragerwerk AG: *See—*
Siegmann, Klaus; and Schmidt, Martin, 4,564,021, Cl. 128-716.000.
Drauz, Karlheinz; Kleemann, Axel; and Wirthwein, Rolf, to Degussa Aktiengesellschaft. Process for the production of water-free organic hydrogen peroxide solution. 4,564,514, Cl. 423-589.000.
Drebot, Michael A., to Canada, Her Majesty the Queen in right of, as represented by the Province of Nova Scotia. Bait container. 4,563,832, Cl. 43-44.990.
Drew, John A., to John Drew (London) Limited. Production of insoles. 4,563,787, Cl. 12-142.00N.
DRI STEEM Humidifier Company: *See—*
Morton, Bernard W.; and Olseth, Bruce K., 4,564,746, Cl. 219-276.000.
Driedger, Klaus U., to Buffalo Beton Ltd. Grain elevator. 4,563,844, Cl. 52-192.000.
Droussent, Roger: *See—*
Cochet, Andre ; Droussent, Roger; and Jurado, Marcel, 4,564,469, Cl. 252-626.000.
Druzhinin, Ernest A.: *See—*
Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.
Duane, Brian: *See—*
Iwanicki, Walter; and Duane, Brian, 4,564,003, Cl. 126-427.000.
Dufrenne, Gerald, to Unitek Corporation. Direct current pulse welder. 4,564,735, Cl. 219-110.000.
Dugan, William P., to General Dynamics Pomona Division. Permanent mandrel for making bumped tapes and methods of forming. 4,564,423, Cl. 204-12.000.
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Strichman, George A.; Dulis, Edward J.; Narasimhan, Kalatur S. V. L.; and Lizzi, Thomas, 4,564,401, Cl. 148-104.000.
Dunlop Aktiengesellschaft: *See—*
Heitzenroder, Hans F.; Wachter, Ernst; and Bitsch, Kurt, 4,564,107, Cl. 206-315.900.
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Matsushita, Ken; Ikeda, Hiroki; and Sugiyama, Yoshihide, 4,563,947, Cl. 101-122.000.
Duplo Seiki Corporation: *See—*
Matsushita, Ken; Ikeda, Hiroki; and Sugiyama, Yoshihide, 4,563,947, Cl. 101-122.000.
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Beresniewicz, Aleksander, 4,564,661, Cl. 526-212.000.
Frazer, August H.; and Harris, John F., Jr., 4,564,705, Cl. 564-337.000.
Goldberg, Israel; and Stieglitz, Barry, 4,564,594, Cl. 435-139.000.
Huybrechts, Jozef T.; and Vleminckx, Victor R., 4,564,648, Cl. 523-423.000.
Levitt, George, 4,564,384, Cl. 71-92.000.
Lore, Albert L.; and Raynolds, Stuart, 4,564,561, Cl. 428-422.000.
van Alst, Wilhelmus B. T., 4,564,254, Cl. 339-99.00R.
Durand, Georges E. A.; Martinot-Lagarde, Philippe; and Dozov, Ivan, to Centre National de la Recherche Scientifique (CNRS). Electro-optical devices using liquid crystals having a twist in a plane perpendicular to substrates. 4,564,266, Cl. 350-340.000.
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Hofmann, Hans-Joachim, 4,564,374, Cl. 55-57.000.
Durrant, John T., to Garden Way Incorporated. Non-incremental clutch adjustment arrangement. 4,564,358, Cl. 474-101.000.
E. R. Squibb & Sons, Inc.: *See—*
Heyer, Robert E.; and Tannenbaum, Michael A., 4,564,118, Cl. 220-8.000.
Eager Weaver (Proprietary) Limited: *See—*
Allihn, Rudiger O. M., 4,564,049, Cl. 139-33.000.
Eastman Kodak Company: *See—*
Baumeister, Hans-Peter, 4,564,869, Cl. 360-46.000.
Begley, William J., 4,564,577, Cl. 430-223.000.
Greisch, Danny L., 4,564,503, Cl. 422-104.000.
Lentz, Carl M.; Overton, James R.; and Cornell, David D., 4,564,701, Cl. 562-406.000.
Sitzler, Klaus; and Steisslinger, Kurt, 4,564,279, Cl. 354-214.000.
Eastman, Lester F.: *See—*
Shealy, James R.; and Eastman, Lester F., 4,564,509, Cl. 423-210.500.
Easton Corporation: *See—*
Smith, Stanley K.; Rozsi, Donald J.; and Sabroff, Alvin M., 4,564,911, Cl. 364-474.000.
Eastway Holdings Limited: *See—*
Nel, Gert, 4,564,780, Cl. 310-258.000.
Eaton Corporation: *See—*
Kimmons, D. L.; and Russell, Daniel, 4,564,346, Cl. 418-206.000.
Mueller, Robert S., 4,564,345, Cl. 418-206.000.
Smith, Stanley K.; and Rozsi, Donald J., 4,564,910, Cl. 364-474.000.
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Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kurachi, Yukio; and Koike, Masami, 4,564,232, Cl. 296-146.000.
Eckert, Charles E., to Aluminum Company of America. Apparatus and method for ultrasonic detection of inclusions in molten metals. 4,563,895, Cl. 73-61.00R.

Eckhardt, Wolfgang: *See—*
Kunz, Walter; Eckhardt, Wolfgang; and Hubele, Adolf, 4,564,629, Cl. 514-472.000.

Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laszlo, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Process for the preparation of propargyl amines. 4,564,706, Cl. 564-376.000.

Edo Corporation: *See—*
Lender, Robert J., 4,563,808, Cl. 29-596.000.

Edwards, Robert C.: *See—*
Udovich, Carl A.; and Edwards, Robert C., 4,564,688, Cl. 549-259.000.

Edwards, William B.: *See—*
Hamlin, Thomas J.; and Edwards, William B., 4,564,185, Cl. 270-53.000.

Egami, Hidemi: *See—*
Nakamura, Shunji; Kan, Fumitaka; Egami, Hidemi; Hosoi, Atsushi; Tajima, Hatsuo; and Nakahata, Kimio, 4,563,978, Cl. 118-658.000.

Egan, Richard G., to Polaroid Corporation. Electronic image sensing and printing apparatus. 4,564,853, Cl. 346-160.000.

Egri, Laszlo, to Tamag Basel AG. Smokable, coherent sheet and method for its manufacture. 4,564,031, Cl. 131-353.000.

Ehrenkranz, Joel R. Body liquid temperature measuring device. 4,564,299, Cl. 374-157.000.

Ehrl, Winfried; Reng, Alwin; and Quack, Jochen M., to Hoechst Aktiengesellschaft. Hair shampoos and body cleansing agents having a content of alkylsulfatobetaines. 4,564,520, Cl. 424-70.000.

Ehrlich, Hans W.: *See—*
Fremaux, Jacques M.; and Ehrlich, Hans W., 4,564,404, Cl. 149-21.000.

Eiji, Kishida; Hideo, Kobayashi; and Hidekazu, Kano, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply control system for engine carburetors. 4,563,990, Cl. 123-438.000.

Eisai Co., Ltd.: *See—*
Sugimoto, Hachiro; Nakamura, Takaharu; Hamazo, Sachiyuki; and Daiku, Yoshiharu, 4,564,617, Cl. 514-265.000.

Ekman, Kjell R. Pressure-reduction device for pressurized coupling members. 4,564,042, Cl. 137-614.050.

Elbert, Alfred; Behrenz, Wolfgang; and Krehan, Ingomar, to Bayer Aktiengesellschaft. Baits for combating vermin. 4,564,631, Cl. 514-521.000.

Electro Materials Corp. of America: *See—*
Martin, F. Wayne; Shahbazi, Samson; and Schoonejongen, Ronald J., 4,564,563, Cl. 428-546.000.

ELEKTRONIKBAU Krippner & Kletzmaier Gesellschaft m.b.H. & Co.: *See—*
Kletzmaier, Karl; and Krippner, Gunther, 4,563,886, Cl. 70-118.000.

Elektroschmelzwerk Kempten GmbH: *See—*
Kriegesmann, Jochen; Hunold, Klaus; Lipp, Alfred; Reinmuth, Klaus; and Schwetz, Karl A., 4,564,601, Cl. 501-88.000.

Elliott, Douglas C.; Sealock, L. John, Jr.; and Hallen, Richard T., to Gas Research Institute. Ammonia-based catalyst for water-gas shift reaction. 4,564,516, Cl. 423-655.000.

Elliott, Guy R. B. Reductive decontamination of magnesium fluoride. 4,564,507, Cl. 423-5.000.

Elliott Turbomachinery Co., Inc.: *See—*
Heckel, Bruce G., 4,564,084, Cl. 184-6.110.

Ellis, Paul E., Jr.: *See—*
Hsu, Chao-Yang; and Ellis, Paul E., Jr., 4,564,711, Cl. 568-454.000.

El-Saba, Mekki M.: *See—*
Coombs, Richard R. H.; and El-Saba, Mekki M., 4,564,007, Cl. 128-92.00A.

El-Sayed, Aziz: *See—*
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, 4,564,669, Cl. 528-173.000.

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Holly, Kenneth; and Smith, Gehrard J., 4,564,899, Cl. 364-200.000.

Endo, Fumihiro: *See—*
Ishikawa, Toshio; Endo, Fumihiro; Yamagiwa, Tokio; and Kamata, Yuzuru, 4,564,721, Cl. 174-10.000.

Energy Exchange Systems: *See—*
Binkley, Bruce L., 4,564,797, Cl. 320-2.000.

Engels, Hans D.: *See—*
Dickore, Karlfried; Engels, Hans D.; Kratzer, Hans; and Merz, Walter, 4,564,704, Cl. 562-577.000.

Enichimica Secondaria S.p.A.: *See—*
Neri, Carlo; Giroldini, Villiam; Rinaldi, Antonio; Traversoni, Mario; and Clerici, Mario, 4,564,691, Cl. 549-462.000.

Enkel Corporation: *See—*
Keene, John F.; Kuller, Bengt L.; and Kemmeter, Robert G., 4,564,150, Cl. 242-58.100.

Enokido, Shunji; Kodani, Hideyuki; and Ohta, Hajime, to Fujitsu Limited. Apparatus for storing felt pens for an electronic board. 4,564,078, Cl. 178-18.000.

Enomoto, Hiroshi: *See—*
Tahata, Michio; Okamoto, Masao; and Enomoto, Hiroshi, 4,564,482, Cl. 261-44.00B.

Ensign-Bickford Industries, Inc.: *See—*
Pallanck, Robert G., 4,564,405, Cl. 149-21.000.
Tietje, Andreas, 4,564,759, Cl. 250-324.000.

Ermeto Armaturen GmbH: *See—*
Kohnlechner, Rainer, 4,563,902, Cl. 73-708.000.
Kohnlechner, Rainer; Beeke, Herbert; and Suckow, Hans, 4,563,903, Cl. 73-727.000.

Ernst, Alfons, to Dr. Johannes Heidenhain GmbH. Encapsulated photoelectric measuring system. 4,564,294, Cl. 356-374.000.

Erpel, Alfred C.: *See—*
Rosenberg, Michael J.; and Erpel, Alfred C., 4,564,303, Cl. 400-208.000.

ESAB Aktiebolag: *See—*
Karlsson, Rolf L., 4,564,742, Cl. 219-130.100.

Escher Wyss GmbH: *See—*
Wuhrer, Wolfgang, 4,563,940, Cl. 92-106.000.

Eschmann, Heinz, to Windmoller & Holscher. Apparatus for filling sacks. 4,563,864, Cl. 53-570.000.

Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, to Didier-Werke AG. Process for producing a plastic composition which can be processed into a fire-resistant material. 4,564,485, Cl. 264-30.000.

Escutcheon Associates: *See—*
Young, James E., 4,564,798, Cl. 320-6.000.

Eskin, Georgy I.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Ess GmbH Skibindungen: *See—*
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Esselte Pendaflex Corporation: *See—*
Houssian, Vazgen; and Dowzall, Martin E., 4,564,414, Cl. 156-541.000.

Essex Group, Inc.: *See—*
Pali, Christopher, 4,564,151, Cl. 242-68.300.

Esslinger, James J. BB Loader. 4,564,125, Cl. 221-288.000.

Estes, Jeffrey M., to Sciaky Bros., Inc. Method for alignment of an electron beam to the adjacent faces of segments of rock drill bits. 4,564,738, Cl. 219-121.0ED.

Estreicher, Herbert, to Shell Oil Company. Use of 4-(hydroxyiminomethyl)cinnoline and congeners thereof for controlling the growth of unwanted plants. 4,564,383, Cl. 71-92.000.

Ethicon, Inc.: *See—*
Lilenfeld, Robert; Popadiuk, Nicholas M.; Steinheuser, Peter; and Menezes, Edgar, 4,564,013, Cl. 128-335.500.

Ethyl Corporation: *See—*
Barda, Henry J., 4,564,468, Cl. 252-609.000.
Sutker, Burton J., 4,564,697, Cl. 560-83.000.

Eulenburg, Jurgen, to Josef Wischerath GmbH & Co., KG. Dispenser for paste-like products. 4,564,130, Cl. 222-207.000.

Evans, Lawrence J.; Sheikh, Junaid; Stock, Rodney D.; and Turkowski, Kenneth E. J., to Ampex Corporation. YIQ Computer graphics system. 4,564,915, Cl. 364-521.000.

EX-CELL Home Fashions: *See—*
Samelson, Samuel, 4,563,785, Cl. 5-472.000.

Excalibur Locks, Inc.: *See—*
Madden, Roy H., 4,563,885, Cl. 70-97.000.

Excellon Industries: *See—*
Roberts, William E.; and Cripps, Milo, 4,564,326, Cl. 414-131.000.

Explosive Research Ltd.: *See—*
Doherty, Alfred E., Jr., 4,564,226, Cl. 285-334.000.

Exxon Production Research Co.: *See—*
Rubinstein, Ian; and Woodford, Raymond B., 4,564,069, Cl. 166-288.000.

Exxon Research & Engineering Co.: *See—*
Best, Steven A., 4,564,606, Cl. 502-117.000.
Rauline, Alain J., 4,564,467, Cl. 252-573.000.

Eyerly, Robert M.: *See—*
Roche, Karen M.; and Eyerly, Robert M., 4,563,778, Cl. 623-22.000.

Ezaki, Joichiro; Kanai, Hiroshi; and Kitahara, Yoshimi, to TDK Corporation. Magnetic recording/reproducing system with wide-gapped transducer and method for using same. 4,564,877, Cl. 360-114.000.

F.M.P. Enterprise, Inc.: *See—*
Burke, Victor B.; and Burkholder, Charles R., 4,564,737, Cl. 219-121.0LH.

Fabian, Peter: *See—*
Werdecker, Waltraud; and Fabian, Peter, 4,564,433, Cl. 204-254.000.

Faessler, Adelmar: *See—*
Biller, Victor; and Faessler, Adelmar, 4,564,044, Cl. 137-625.240.

Fairweather, Michael J.; Rockandel, Michael A.; Sadan, Abraham; and Swinkels, Godefridus M., to Cominco Ltd. Process for the recovery of sodium carbonate from salt mixtures. 4,564,508, Cl. 423-189.000.

Falckenberg, Richard; and Grabmaier, Josef, to Siemens Aktiengesellschaft. Apparatus for manufacturing large-surface, band-shaped silicon for solar cells. 4,563,979, Cl. 118-694.000.

Falckenberg, Richard: *See—*
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Fanuc Ltd.: *See—*
Komiya, Hidetsugu; and Inoue, Michiya, 4,564,768, Cl. 307-140.000.

Farber, Ernst-Ove, to Peters, Claudius. Silo for storing solidifying loose material, especially flue dust. 4,564,317, Cl. 406-56.000.

Fast, Jacob. Cover strip for display shelf. 4,564,548, Cl. 428-121.000.

Faughnan, Brian W.; and Hanak, Joseph J., to United States of America, Energy. Direct determination of quantum efficiency of semiconducting films. 4,564,808, Cl. 324-158.00R.

Favorite Manufacturing, Inc.: *See—*
Martin, Eugene G.; and Martin, Harold C., 4,563,791, Cl. 17-11.000.

Featherstone, John L.: *See—*
Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., 4,564,298, Cl. 366-167.000.

Febco Inc.: *See—*
Lackey, Darrell D., 4,564,095, Cl. 192-59.000.

Fecik, Michael T.; Cannon, Gary V.; and Beresik, Gayland S., to PPG Industries, Inc. Antibacklash conveyor drive mechanism. 4,564,380, Cl. 65-163.000.

Feldmann, John; Koebernick, Hubert; Richter, Klaus; and Woelk, Hans-Ulrich, to CPC International Inc. Process for recovering pure crystalline monoanhydrohexitols and dianhydrohexitols. 4,564,692, Cl. 549-464.000.

Festo KG: *See—*
Trittler, Karl, 4,564,043, Cl. 137-624.180.

Fickert, Werner: *See—*
Orth, Winfried; Pastorek, Emmerich; and Fickert, Werner, 4,564,700, Cl. 562-405.000.

Fieder, Donald W.; Stanton, Joseph J.; Fisher, Christopher E.; and Cutler, Orvid R., Jr., to DeSoto, Inc. Urethane acrylates based on polyepichlorohydrin polyether diols and optical fiber coatings based thereon. 4,564,666, Cl. 522-33.000.

Figgie International Inc.: *See—*
Biller, Victor; and Faessler, Adelmar, 4,564,044, Cl. 137-625.240.

Fillot, Alain; Gallet, Jean; Paltrier, Sylvain; and Schaub, Bernard, to Commissariat a l'Energie Atomique. Process for producing ternary or quaternary semiconductor compounds. 4,564,415, Cl. 156-604.000.

Findlay, John W. A.; and Coker, Geoffrey G. Diphenylmethane compounds. 4,564,685, Cl. 548-578.000.

Fink, Hans-Ferdi: *See—*
Callaghan, Ian C.; Fink, Hans-Ferdi; Gould, Clive M.; Koerner, Gotz; Patzke, Hans-Jurgen; and Weitemeyer, Christian, 4,564,665, Cl. 528-21.000.

Fink, Howard F.: *See—*
Allen, R. Daniel; and Fink, Howard F., 4,564,164, Cl. 248-118.000.

Finter, Jurgen; and Fischer, Walter, to Ciba-Geigy Corporation. Novel thioxanthones substituted by alpha-aminoalkyl groups. 4,564,578, Cl. 430-270.000.

Firestone, Raymond A., to Merck & Co., Inc. Allylsulfoxide enzyme inhibitors. 4,564,635, Cl. 514-562.000.

Firestone Tire & Rubber Company, The: *See—*
Leonard, Daniel J., 4,564,177, Cl. 267-64.240.

Firm Alberto Cipelletti: *See—*
Cipelletti, Alberto, 4,563,880, Cl. 62-234.000.

Firth, Francis G. Vibratory treatment of moving surfaces. 4,564,297, Cl. 366-108.000.

Fischer, Heinz J.: *See—*
Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, 4,564,510, Cl. 423-235.000.

Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary printing machine with paper guide. 4,563,950, Cl. 101-178.000.

Fischer & Porter Company: *See—*
Geisler, Gottfried; and Breithaupt, Jorg-Ulrich, 4,563,904, Cl. 73-861.120.

Fischer, Walter: *See—*
Finter, Jurgen; and Fischer, Walter, 4,564,578, Cl. 430-270.000.

Fisher, Christopher E.: *See—*
Fieder, Donald W.; Stanton, Joseph J.; Fisher, Christopher E.; and Cutler, Orvid R., Jr., 4,564,666, Cl. 522-33.000.

Fisher & Paykel Limited: *See—*
Brunswick, Robert; and Hancock, Warren J., 4,563,786, Cl. 8-159.000.

Fisher, Ronald D.: *See—*
Kingsley, Bertis N.; and Fisher, Ronald D., 4,564,209, Cl. 280-468.000.

Fisons plc: *See—*
Young, David M.; and Blower, Andrew W., 4,564,360, Cl. 604-183.000.

Fleck, Otto W.: *See—*
Achtenberg, Irving; and Fleck, Otto W., 4,563,852, Cl. 52-743.000.

Fletcher Sutcliffe Wild Limited: *See—*
Bower, Lewis R. B., 4,564,047, Cl. 137-627.500.

Flohrs, Peter, to Robert Bosch GmbH. Integrated Darlington transistor combination including auxiliary transistor and Zener diode. 4,564,771, Cl. 307-315.000.

Flynn, George C.; Salem, Eli; and Kunin, Robert, to Graver Company, The. Three component resin system and method for purifying aqueous solutions. 4,564,455, Cl. 210-675.000.

Foell, Helmut; Grabmaier, Josef; and Falckenberg, Richard, to Siemens Aktiengesellschaft. Device for manufacturing large-surface, tape-shaped silicon bodies for solar cells. 4,563,976, Cl. 118-401.000.

Fogarty, Thomas J.; and Chin, Albert K., to Fogarty, Thomas J. Variable length dilatation catheter apparatus and method. 4,564,014, Cl. 128-344.000.

Folienwalzwerk Bruder Teich Aktiengasellschaft: *See—*
Prohaska, Helmut, 4,564,116, Cl. 215-256.000.

Ford Motor Company: *See—*
Runkle, Franklin D.; and Tennenhouse, Gerald J., 4,563,924, Cl. 82-1.00C.

Form, Ernst: *See—*
Rauth, Erich; and Form, Ernst, 4,564,061, Cl. 165-104.330.

Forschungsgesellschaft fur Energietechnik und Verbrennungsmotoren mbH: *See—*
Pischinger, Franz; and Sollner, Robert, 4,563,982, Cl. 123-1.00A.

Fortenberry, Charles K. Cam lock knife structure. 4,563,813, Cl. 30-161.000.

Fournier, Paul J. E., to Aeroquip Corporation. Conduit clamp. 4,563,795, Cl. 24-19.000.

Fox, Karl M.: *See—*
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,564,369, Cl. 44-2.000.

Fox, Wayne D.; and Gheer, Barry J., to Xerox Corporation. Blade cleaner apparatus for removing toner from a charge-retentive surface. 4,564,283, Cl. 355-15.000.

Franklin, Robert C.: *See—*
Parkes, Christopher W.; and Franklin, Robert C., 4,564,795, Cl. 318-314.000.

Franz Muller GmbH & Co.: *See—*
Vroomen, Albert, 4,563,798, Cl. 26-10.00C.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH: *See—*
Theurer, Josef, 4,563,953, Cl. 104-12.000.

Frazer, August H.; and Harris, John F., Jr., to Du Pont de Nemours, E. I., and Company. Bis(aminoneopentyl) aromatics. 4,564,705, Cl. 564-337.000.

Fredericks, Edward C.; and Kotecha, Harish N., to International Business Machines Corporation. Photoresist lift-off process for fabricating semiconductor devices. 4,564,584, Cl. 430-312.000.

Freeman, Richard L.: *See—*
Ikezi, Hiroyuki; and Freeman, Richard L., 4,564,807, Cl. 324-158.00D.

Freitag, Dieter: *See—*
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, 4,564,669, Cl. 528-173.000.

Fremaux, Jacques M.; and Ehrlich, Hans W., to Societe Anonyme d'Explosifs et de Produits Chimiques. Inert paste of the nitrate-fuel type, explosive product obtained therefrom by the incorporation of air and processes of manufacture thereof. 4,564,404, Cl. 149-21.000.

French, Tommy: *See—*
Cain, C. Dean, Jr.; and Bean, Ronnie A., 4,563,830, Cl. 43-4.500.

Frenzl, Otto. Appliance for practicing aquatic sports. 4,564,190, Cl. 272-17.000.

Fresenius AG: *See—*
Weber, Wolfram; Neumann, Hans-Jurgen; Meisberger, Artur; and Mathieu, Bernd, 4,564,342, Cl. 417-477.000.

Freud, Paul J.: *See—*
Baxter, Ronald D.; and Freud, Paul J., 4,564,882, Cl. 361-286.000.

Freudewald, Joachim E.: *See—*
Virgilio, Joseph A.; and Freudewald, Joachim E., 4,564,714, Cl. 568-776.000.

Freyssinet International (STUP): *See—*
Guinard, Pierre, 4,563,850, Cl. 52-396.000.

Friedman, Allen. Garment with built-in interior support structure. 4,564,015, Cl. 128-455.000.

Frito-Lay, Inc.: *See—*
Tate, Warren L., 4,563,944, Cl. 99-355.000.

Frohning, Carl D.: *See—*
Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, 4,564,642, Cl. 518-717.000.

Froidh, Arne: *See—*
Widlund, Leif U. R.; Nedestam, Stefan; and Froidh, Arne, 4,564,108, Cl. 206-438.000.

Frye, Sally Z. Helicopter rescue basket. 4,564,161, Cl. 244-137.00P.

Fuchs Systemtechnik GmbH: *See—*
Minarik, Ferdinand; and Paletzki, Hans-Joachim, 4,563,958, Cl. 110-219.000.

Fudenberg, Herman H.; and Tsang, Kwong Y. Method for evaluating parameters related to the therapeutic and/or prophylactic treatment of solid neoplasms in humans. 4,564,517, Cl. 424-9.000.

Fuji Photo Film Co., Ltd.: *See—*
Aoki, Kozo; Ono, Michio; and Nakazyo, Kiyoshi, 4,564,586, Cl. 430-505.000.
Hishinuma, Kazuhiro; and Ohga, Akihiro, 4,564,861, Cl. 358-111.000.
Noguchi, Masaru; Horikawa, Kazuo; and Ohga, Akihiro, 4,564,760, Cl. 250-327.200.
Ohmura, Hiroshi, 4,564,278, Cl. 354-195.120.
Oishi, Kengo; and Suzuki, Osamu, 4,564,157, Cl. 242-199.000.

Fuji Seiko Limited: *See—*
Kondo, Kunio; Haga, Katutoshi; and Takeuchi, Tokunari, 4,564,321, Cl. 407-36.000.

Fujii, Tsunenori: *See—*
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.

Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kurachi, Yukio; and Koike, Masami, to Honda Giken Kogyo Kabushiki Kaisha. Automobile door. 4,564,232, Cl. 296-146.000.

Fujino, Yoshiharu; Kawai, Hajime; Nakai, Yasushi; and Tsunemitsu, Katsuhiko, to Yamada Chemical Co., Ltd. Chromogenic compounds. 4,564,679, Cl. 546-116.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Ueda, Ikuo; Nagano, Masanobu; and Akahane, Atsushi, 4,564,621, Cl. 514-357.000.

Fujishita, Toshio: *See—*
Hirai, Kentario; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,564,623, Cl. 514-408.000.

Fujita, Hiroshi: *See—*
Mori, Hirotaro; and Fujita, Hiroshi, 4,564,395, Cl. 148-4.000.

Fujita, Takashi: *See—*
Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; and Fujita, Takashi, 4,564,549, Cl. 428-141.000.

Fujita, Tsutomu: *See—*
Sakai, Hiroyuki; Takemoto, Toyoki; Kawakita, Kenji; Fujita, Tsutomu; and Akiyama, Atsuko, 4,563,807, Cl. 29-591.000.

Fujitsu Limited: *See—*
Enokido, Shunji; Kodani, Hideyuki; and Ohta, Hajime, 4,564,078, Cl. 178-18.000.
Fukuda, Yuji, 4,564,280, Cl. 354-317.000.
Miwa, Hirohide, 4,564,019, Cl. 128-660.000.
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, 4,564,773, Cl. 307-445.000.
Yasuda, Hiroshi; Kawashima, Kenichi; Miyazaki, Takayuki; and Kobayashi, Koichi, 4,564,764, Cl. 250-491.100.

Fujiwara, Koji, to Kabushiki Kaisha Takuma. Step type stoker with oscillation mechanism. 4,563,959, Cl. 110-281.000.

Fukuda, Yuji, to Fujitsu Limited. Method and apparatus for developing resist film including a movable nozzle arm. 4,564,280, Cl. 354-317.000.

Fukui, Tomonori: *See—*
Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.

Fukuiri, Masaru: *See—*
Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, 4,563,917, Cl. 74-866.000.

Fukushi, Yukihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Document feeder. 4,564,792, Cl. 318-254.000.

Fulberth, Werner: *See—*
Muschaweck, Roman; Fulberth, Werner; and Sickmuller, Alfred, 4,564,625, Cl. 514-429.000.

Fullerform, Inc.: *See—*
Gallagher, Roger W., 4,564,314, Cl. 405-155.000.

Funabashi, Tadashi; Takahashi, Junji; and Kato, Kyoichi, to Pioneer Electronic Corporation. Disc carrying system. 4,564,930, Cl. 369-75.200.

Furst, Leander; Holzer, Walter; and Kastening, Bertel, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Ammoniated etching solution and process for its regeneration utilizing ammonium chloride addition. 4,564,428, Cl. 204-107.000.

Furuta, Isao: *See—*
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, 4,564,573, Cl. 430-109.000.

GA Technologies Inc.: *See—*
Ikezi, Hiroyuki; and Freeman, Richard L., 4,564,807, Cl. 324-158.00D.

Gaafar, Hassan A.; and Grimwood, Brian G., to Research Corporation. Toxoplasmosis factor and production of same. 4,564,592, Cl. 435-68.000.

Gaddis, Paul G.: *See—*
Ringlee, David R.; and Gaddis, Paul G., 4,563,929, Cl. 83-840.000.

Gaines, Michael G.: *See—*
Bethell, Michael R.; Gaines, Michael G.; Mowat, James F., Jr.; Wheeler, Roger D.; and Woidke, Richard P., 4,564,138, Cl. 228-176.000.

Gaines, William P. Valve closure means. 4,564,170, Cl. 251-88.000.

Gallagher, Roger W., to Fullerform, Inc. Self-propelled continuous concrete pipe-laying machine. 4,564,314, Cl. 405-155.000.

Gallaro, Anthony V.: *See—*
Baum, Steven A.; Gallaro, Anthony V.; Hovey, Frederick A.; Rehkopf, Charles H.; and Sember, William J., 4,564,786, Cl. 313-479.000.

Gallet, Jean: *See—*
Fillot, Alain; Gallet, Jean; Paltrier, Sylvain; and Schaub, Bernard, 4,564,415, Cl. 156-604.000.

Gamblin, Rodger L., to Burlington Industries, Inc. Method of making low contact resistance metallic coatings and electrical contacts so produced. 4,564,565, Cl. 428-680.000.

Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, to Robert Bosch GmbH. Bench. 4,564,181, Cl. 269-88.000.

Ganz, Rudolf: *See—*
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,564,485, Cl. 264-30.000.

Garabedian, Michael E.; and Morgan, Glenn E., Sr., to Dexide, Inc. Dispenser with pump for dispensing liquid from a collapsible bag. 4,564,127, Cl. 222-96.000.

Garden Way Incorporated: *See—*
Durrant, John T., 4,564,358, Cl. 474-101.000.

Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., to General Motors Corporation. Preloaded electrical connector. 4,564,258, Cl. 339-220.00R.

Garrison, Kevin S.: *See—*
Winer, Richard A.; and Garrison, Kevin S., 4,564,365, Cl. 623-27.000.

Gartner, Karl, to Yoshida Kogyo K.K. Section for building. 4,563,848, Cl. 52-235.000.

Garwood, William E.; Starr, William C.; and Walker, John W., to Mobil Oil Corporation. Viscosity index improvement in dewaxed lube basestock by partial desulfurization in hydrotreat bed. 4,564,440, Cl. 208-87.000.

Gas Research Institute: *See—*
Elliott, Douglas C.; Sealock, L. John, Jr.; and Hallen, Richard T., 4,564,516, Cl. 423-655.000.

Gaylord Bros., Inc.: *See—*
Holzer, Joseph C., 4,564,411, Cl. 156-387.000.

Gazzarrini, Vinicio, to Solis s.r.l. Apparatus and method for rapid loading of pantyhose onto a stocking finishing medium. 4,564,133, Cl. 223-39.000.

Geant Entrepeneur Electrique Ltee: *See—*
Deschenes, Maurice, 4,564,745, Cl. 219-213.000.

Geary, William C.; Mirsaiidi, Mohammad V.; Redfern, Timothy; and Wolfe, David W., to Arrow Specialty Company. Automatic engine control system. 4,563,987, Cl. 123-179.00B.

Gebeke, Charles D.: *See—*
Weavers, Mark W.; Gebeke, Charles D.; and Yamasaki, Ken'ichi, 4,564,878, Cl. 360-132.000.

Gebr. Happich GmbH: *See—*
Kaiser, Klaus-Peter; and Viertel, Lothar, 4,564,234, Cl. 296-97.00H.

Gedzun, Sergei E.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

Geisler, Gottfried; and Breithaupt, Jorg-Ulrich, to Fischer & Porter Company. Excitation circuit for electromagnetic flowmeter. 4,563,904, Cl. 73-861.120.

Geithman, Glenn A.; and Chau, Albert W., to Boeing Company, The. Aluminum cladding thickness measurement probe and instrument having an automatic calibration and readout circuit coupled to a differential amplifier circuit. 4,564,810, Cl. 324-230.000.

General Dynamics Pomona Division: *See—*
Dugan, William P., 4,564,423, Cl. 204-12.000.

General Electric Company: *See—*
Cooper, Glenn D., deceased; and Kinson, Philip L., 4,564,656, Cl. 525-152.000.
Glover, Gary H., 4,564,017, Cl. 128-653.000.
Grossman, Leonard N.; Landry, James D.; Masaitis, William; Canada, Robert O.; and McKenzie, Gerald W., 4,564,498, Cl. 376-245.000.
Jones, Marshall G.; and Richardson, Donald C., 4,564,736, Cl. 219-121.00L.
Liu, Ping Y., 4,564,655, Cl. 525-92.000.
Liu, Ping Y., 4,564,658, Cl. 525-177.000.
Mills, Kenneth R., 4,564,729, Cl. 179-81.00C.
Terry, Vincent G., Jr., 4,564,779, Cl. 310-258.000.

General Engineering Radcliffe 1979 Ltd.: *See—*
Smart, Gerald, deceased, 4,564,353, Cl. 425-446.000.

General Foods Corporation: *See—*
Watson, Francis L.; Angalet, Stevan A.; and Carlson, Richard A., 4,564,529, Cl. 426-570.000.

General Instrument Corporation: *See—*
McCann, T. Michael, 4,564,885, Cl. 361-436.000.

General Motors Corporation: *See—*
Clitheros, Derek P.; Livingstone, David A.; Roberts, David B.; and Cawthorne, Roland, 4,564,410, Cl. 156-356.000.
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., 4,564,258, Cl. 339-220.00R.
Hartz, James F.; and Latshaw, Harry E., 4,563,913, Cl. 74-606.00R.
Koestecki, Raymond J., 4,564,491, Cl. 264-108.000.
Steele, Robert E., 4,564,834, Cl. 340-622.000.

General Signal Corporation: *See—*
Baxter, Ronald D.; and Freud, Paul J., 4,564,882, Cl. 361-286.000.
Illenberg, Cornelius J.; Dinger, Ronald W.; Kunde, David A.; and Lucarelli, Anthony V., 4,564,829, Cl. 335-135.000.

Geo-Centers, Inc.: *See—*
Spillman, William B., Jr., 4,564,289, Cl. 356-33.000.

GEO Vann, Inc.: *See—*
Vann, Roy R.; and Brieger, Emmet F., 4,564,076, Cl. 175-4.520.

Gerard, Jean-Louis, to Societe Anonyme D.B.A. Friction-element assembly equipped with an anti-noise spring for a disc brake. 4,564,089, Cl. 188-73.380.

Gerlach, Klaus; and Kessler, Erich, to Akzo NV. Methods for the preparation of porous fibers and membranes. 4,564,488, Cl. 264-41.000.

Gerling, Norbert: *See—*
Kahny, Peter; and Gerling, Norbert, 4,564,136, Cl. 228-6.100.

Gfeller, Karl: *See—*
Koch, Hans-Carl; Koch, Carl; and Gfeller, Karl, 4,564,277, Cl. 354-160.000.

Ghatas, Nassef E.; and Peacey, John G., to Brunswick Mining and Smelting Corporation Limited. Wet zinc dust atomization and distribution. 4,564,387, Cl. 75-0.50A.

Gheer, Barry J.: *See—*
Fox, Wayne D.; and Gheer, Barry J., 4,564,283, Cl. 355-15.000.

Ghilardi, Giuliano, to Societa Pneumatici Pirelli S.p.A. Molding profile of tire carcasses. 4,564,055, Cl. 152-450.000.

Gibney, James W. Fishing float. 4,563,831, Cl. 43-44.910.

Giesen, Walter: *See—*
Altenschopfer, Theodor; Giesen, Walter; Schumann, Klaus; and Streschnak, Benno, 4,564,535, Cl. 427-285.000.

Gilson, Russell A.; and Burke, Thomas F., to United States of America, Army. Monolithic impedance matched cascade amplifier. 4,564,817, Cl. 330-286.000.

Giroldini, Villiam: *See—*
Neri, Carlo; Giroldini, Villiam; Rinaldi, Antonio; Traversoni, Mario; and Clerici, Mario, 4,564,691, Cl. 549-462.000.

Givaudan Corporation: *See—*
Virgilio, Joseph A.; and Freudewald, Joachim E., 4,564,714, Cl. 568-776.000.

Glaxo Group Limited: *See—*
Scopes, David I. C.; Newton, Roger F.; and Cookson, Richard C., 4,564,618, Cl. 514-274.000.

Glaze, O. Howard: *See—*
Underdown, David R.; and Glaze, O. Howard, 4,564,459, Cl. 252-8.55R.

Glenn, William E.; and Marcinka, John W., to New York Institute of Technology. Graphical data apparatus. 4,564,928, Cl. 367-117.000.

Glennon, Timothy F., to Sundstrand Corporation. Neutrally clamped PWM half-bridge inverter. 4,564,895, Cl. 363-41.000.

Glissmann, Randy: *See—*
Glover, Neal; Clausen, Kermit; Mayne, Chris; and Glissmann, Randy, 4,564,945, Cl. 371-38.000.

Glover, Gary H., to General Electric Company. Method and apparatus for respiration monitoring with an NMR scanner. 4,564,017, Cl. 128-653.000.

Glover, Neal; Clausen, Kermit; Mayne, Chris; and Glissmann, Randy, to Reference Technology, Inc. Error-correction code for digital data on video disc. 4,564,945, Cl. 371-38.000.

Glover, Neal: *See—*
Woolley, Richard N.; Glover, Neal; and Williams, Richard, 4,564,941, Cl. 371-2.000.

Goddard-Watts, Mark, to British Aerospace Public Limited Co. Filament laying apparatus and a method of fabricating a harness. 4,563,812, Cl. 29-857.000.

Goi, Kowichi: *See—*
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,564,140, Cl. 232-57.500.

Goldberg, Israel; and Stieglitz, Barry, to Du Pont de Nemours, E. I., and Company. Fermentation process for production of carboxylic acids. 4,564,594, Cl. 435-139.000.

Goldberg, James R.: *See—*
Cole, Harold E., 4,564,114, Cl. 215-256.000.

Goldman, Leon. Laser optic device and method. 4,564,011, Cl. 128-303.100.

Goldstein, David, to United States of America, Navy. Applying pressure while article cools. 4,564,501, Cl. 419-25.000.

Goldstein, Leonard H.: *See—*
Montgomery, Douglas J.; Goldstein, Leonard H.; and Stumbo, Ernest, 4,564,141, Cl. 236-20.00R.

Golser, Hans, to Siemens Aktiengesellschaft. Gas laser tube. 4,564,948, Cl. 372-61.000.

Gonzalez, Jorge. Trouble light for vehicles. 4,564,894, Cl. 362-398.000.

Gordon, Arnold Z., to Gould, Inc. Seal for reactive metal anode. 4,564,570, Cl. 429-212.000.

Goris, Heinrich: *See—*
Holz, Joachim; Meier, Wolfgang; Ogorek, Kurt; Goris, Heinrich; and Schwarting, Karl H., 4,564,241, Cl. 299-43.000.

Gorman, Jeremy W. Perforate bearing plate for turbulators in heat exchangers. 4,564,066, Cl. 165-158.000.

Gorog, Sander: *See—*
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.

Goshokubo, Kenichi: *See—*
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

Goto, Masuo: *See—*
Shintani, Tsuneo; Kojima, Soichi; and Goto, Masuo, 4,564,493, Cl. 264-209.100.

Gotoh, Motoyuki: *See—*
Hashimoto, Koosuke; and Gotoh, Motoyuki, 4,564,873, Cl. 360-90.000.

Gould, Clive M.: *See—*
Callaghan, Ian C.; Fink, Hans-Ferdi; Gould, Clive M.; Koerner, Gotz; Patzke, Hans-Jurgen; and Weitemeyer, Christian, 4,564,665, Cl. 528-21.000.

Gould, Inc.: *See—*
Gordon, Arnold Z., 4,564,570, Cl. 429-212.000.

Grabmaier, Josef: *See—*
Falckenberg, Richard; and Grabmaier, Josef, 4,563,979, Cl. 118-694.000.
Foell, Helmut; Grabmaier, Josef; and Falckenberg, Richard, 4,563,976, Cl. 118-401.000.

Grant, Edward L.; Stops, Earl E.; and Saltz, Edward, to Hallmark Cards, Inc. Attaching device. 4,564,165, Cl. 248-343.000.

Granzow, Robert H.; Placke, Dale L.; McMorrow, Harold L.; and Nagy, Charles S., to NCR Corporation. Presenter mechanism for use in a sheet dispenser. 4,564,122, Cl. 221-12.000.

Graphic Controls Corporation: *See—*
Pelensky, Joseph; Hubbard, James R.; and Scanlon, John J., 4,564,852, Cl. 346-140.00R.

Grass, Alfred. Pull-out guide for drawers. 4,564,248, Cl. 308-3.800.

Graver Company, The: *See—*
Flynn, George C.; Salem, Eli; and Kunin, Robert, 4,564,455, Cl. 210-675.000.

Green, Howard H.: *See—*
Tomlinson, Christopher J.; and Green, Howard H., 4,564,901, Cl. 364-200.000.

Gregory, Edward F. Ignition article and composition for the rapid ignition of coal or charcoal fires. 4,564,370, Cl. 44-38.000.

Gregory, Lee W., to Marvel Specialty Company. Acoustical shield assembly and mating thread preguide unit. 4,563,965, Cl. 112-302.000.

Gregotsch, Karl: *See—*
Ziegler, Gerhard; Gregotsch, Karl; and von Sivers, Rolf, 4,563,984, Cl. 123-52.00M.

Greisch, Danny L., to Eastman Kodak Company. Mount for fragile test element. 4,564,503, Cl. 422-104.000.

Grether, Paul; Brader, Kurt; and Keller, Bruno, to Sulzer Brothers Limited. Heat insulation window. 4,563,843, Cl. 52-172.000.

Grimm, Helmut: *See—*
Kunde, Klaus; Grimm, Helmut; and Becker, Lorenz, 4,563,884, Cl. 66-93.000.

Grimm, Hermann; Konig, Volkmar; and Karioth, Gernot, to Daimler-Benz Aktiengesellschaft. Equipment part covered by a casing and having a fan. 4,563,942, Cl. 98-2.160.

Grimm, Thomas H., to Mattel, Inc. Track intersection for toy trains. 4,564,162, Cl. 246-432.000.

Grimwood, Brian G.: *See—*
Gaafar, Hassan A.; and Grimwood, Brian G., 4,564,592, Cl. 435-68.000.

Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., to Union Oil Company of California. Hydrofoil injection nozzle. 4,564,298, Cl. 366-167.000.

Grolet, Pierre: *See—*
Layotte, Pierre-Claude; Cholet, Jacques; Grolet, Pierre; and Huin, Roland, 4,564,083, Cl. 181-114.000.

Grossman, Leonard N.; Landry, James D.; Masaitis, William; Canada, Robert O.; and McKenzie, Gerald W., to General Electric Company. System for the analysis of nuclear fuel rods. 4,564,498, Cl. 376-245.000.

Groteke, Daniel E.; and Kearney, Avery L., to Metcast Associates, Inc. Molten metal transfer crucible with external filter. 4,564,175, Cl. 266-227.000.

Gruver, Gary A.; and Kunz, Harold R., to United Technologies Corporation. Circulating electrolyte electrochemical cell having gas depolarized cathode with hydrophobic barrier layer. 4,564,427, Cl. 204-98.000.

GTE Automatic Electric Incorporated: *See—*
Perry, Thomas J.; and Khera, Muhammad; I., 4,564,937, Cl. 370-58.000.

Guest, Manual T.: *See—*
Lancaster, Eldon R.; Guest, Manual T.; and Bessire, Robert W., 4,564,732, Cl. 200-307.000.

Guinard, Pierre, to Freyssinet International (STUP). Devices for assembling together the slabs of concrete constituting highways. 4,563,850, Cl. 52-396.000.

Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, to Kernforschungsanlage Julich GmbH. Method of making porous silicon carbide bodies. 4,564,496, Cl. 264-44.000.

Gupta, Debabrata; and Yarwood, John C., to Olin Corporation. Decarburizing a metal or metal alloy melt. 4,564,390, Cl. 75-51.700.

Gupton, John, to Respiratory Care, Inc. Variable temperature heating control system for inhalation therapy apparatus. 4,564,748, Cl. 219-497.000.

Gustav Wiegard Maschinenfabrik: *See—*
Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; van Bonn, Hans; Holter, Karl; and Wiegard, Gustav, 4,564,058, Cl. 164-72.000.

Gustavsson, Bengt. Fluid transfer system. 4,564,054, Cl. 141-329.000.

Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., to International Business Machines Corporation. Partitioned multiprocessor programming system. 4,564,903, Cl. 364-300.000.

Gyarmati, Erno : *See—*
Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,564,496, Cl. 264-44.000.

Gyurik, Robert J.: *See—*
Bagnall, Brian G.; and Gyurik, Robert J., 4,564,363, Cl. 604-891.000.

H. B. Fuller Company: *See—*
Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., 4,564,649, Cl. 524-13.000.

Haarasilta, Asko, to Vaasanmylly Oy. Fodder and process for production thereof. 4,564,524, Cl. 426-74.000.

Haas, Johannes: *See—*
Nonn, Konrad; Wolf, Karlheinz; Haas, Johannes; and Paulat, Volker, 4,564,632, Cl. 514-522.000.

Haas, Max, to Inventio AG. Double panel sliding door, especially for elevators. 4,564,087, Cl. 187-56.000.

Habich, Dieter, to Bayer Aktiengesellschaft. 6-Unsubstituted-7-oxo-4-oxa-diazabicyclo(3.2.0)hept-2-ene derivatives. 4,564,473, Cl. 260-245.400.

Haga, Katutoshi: *See—*
Kondo, Kunio; Haga, Katutoshi; and Takeuchi, Tokunari, 4,564,321, Cl. 407-36.000.

Hagen, Wilhelm: *See—*
Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, 4,564,513, Cl. 423-415.00A.

Haist, Edward A. Restraint apparatus for cargo box doors. 4,564,230, Cl. 292-218.000.

Hajdu, Istvan: *See—*
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.

Hajek, Manfred: *See—*
Salzburg, Herbert; Hajek, Manfred; and Meyborg, Holger, 4,564,645, Cl. 521-159.000.

Hajos, Gyorgy: *See—*
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.

Halasz, Andrew: *See—*
Bressan, Renato J.; Halasz, Andrew; and Maccherone, Lawrence S., 4,563,887, Cl. 72-84.000.

Halbherr, Gerd: *See—*
Spindeler, Heinz; Wackerbarth, Folkard; and Halbherr, Gerd, 4,564,419, Cl. 202-123.000.

Haliova, Maurice, to New York Institute of Technology. Apparatus and method for projection moire topography. 4,564,295, Cl. 356-376.000.

Hall, Eddie T.: *See—*
Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., 4,564,903, Cl. 364-300.000.

Hallen, Richard T.: *See—*
Elliott, Douglas C.; Sealock, L. John, Jr.; and Hallen, Richard T., 4,564,516, Cl. 423-655.000.

Hallman, Robert W.; Langlais, Eugene L.; and Warner, Patrick G., to Advanced Imaging Systems Ltd. Image-forming composite with film. 4,564,589, Cl. 430-524.000.

Hallmark Cards, Inc.: *See—*
Grant, Edward L.; Stops, Earl E.; and Saltz, Edward, 4,564,165, Cl. 248-343.000.

Hama, Hiroaki; Imanishi, Masami; and Tanaka, Naoki, to Mitsubishi Denki Kabushiki Kaisha. Heat pump with capillary tube-type expansion device. 4,563,879, Cl. 62-160.000.

Hamane, Masumi; Onda, Takanori; and Baba, Masayoshi, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle cooling system. 4,564,081, Cl. 180-229.000.

Hamazo, Sachiyuki: *See—*
Sugimoto, Hachiro; Nakamura, Takaharu; Hamazo, Sachiyuki; and Daiku, Yoshiharu, 4,564,617, Cl. 514-265.000.

Hamlin, Thomas J.; and Edwards, William B., to Xerox Corporation. Copying apparatus with finisher having stapler and adhesive binder stations. 4,564,185, Cl. 270-53.000.

Hanak, Joseph J.: *See—*
Faughnan, Brian W.; and Hanak, Joseph J., 4,564,808, Cl. 324-158.00R.

Hancock, Warren J.: *See—*
Brunswick, Robert; and Hancock, Warren J., 4,563,786, Cl. 8-159.000.

Handte, Reinhard: *See—*
Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, 4,564,381, Cl. 71-88.000.
Kussmaul, Ulrich; Becherer, Johannes; Handte, Reinhard; and Muller, Rolf, 4,564,682, Cl. 548-169.000.
Liebl, Rainer; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; and Bieringer, Hermann, 4,564,382, Cl. 71-88.000.

Hannah, Joseph R., to Mavie Limited. Method and apparatus for sealing a discontinuity in a tubular assembly. 4,564,201, Cl. 277-1.000.

Hansen, Bjorn N., to International Standard Electric Corporation. Handsfree telephone. 4,564,939, Cl. 370-85.000.

Hansen, William D.; and Mix, Raymond F., to ITT Corporation. Leadless chip carrier adapter. 4,564,251, Cl. 339-17.0CF.

Hanyu, Susumu, to Janome Sewing Machine Co., Ltd. Method of forming stop stitches in a computerized sewing machine. 4,563,963, Cl. 112-266.100.

Haquet, Yvon: *See—*
Loutaty, Roben; and Haquet, Yvon, 4,564,328, Cl. 414-301.000.

Harada, Kunio; Yamaguchi, Sumio; Kanda, Hiroshi; Ishikawa, Isao; and Ohji, Yuzuru, to Hitachi, Ltd. Acoustic microscope. 4,563,900, Cl. 73-644.000.

Harmsen, Siegfried; Papst, Georg F.; and Wrobel, Gunter, to Papst-Motoren GmbH & Co. KG. Axial flow fan. 4,564,335, Cl. 415-213.00C.

Harnish, James R., to Borg-Warner Corporation. Control system and method for defrosting the outdoor coil of a heat pump. 4,563,877, Cl. 62-80.000.

Harpel, William L.; Purnell, Deborah L.; and Pilny, Richard J., to Betz Laboratories, Inc. Hectorite based paint spray booth detackifying slurries and methods of use thereof. 4,564,464, Cl. 252-181.000.

Harrap, Kenneth R.: *See—*
Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., 4,564,616, Cl. 514-260.000.

Harris Corporation: *See—*
Resch, William A., 4,564,858, Cl. 358-21.00R.
Sanderson, Gary M.; and White, Charles M., 4,564,856, Cl. 358-10.000.

Harris Graphics Corporation: *See—*
Bell, David D.; and Dobson, Gary A., 4,564,290, Cl. 356-73.000.
Noll, Harry C., Jr., 4,564,189, Cl. 271-201.000.

Harris, John F., Jr.: *See—*
Frazer, August H.; and Harris, John F., Jr., 4,564,705, Cl. 564-337.000.

Harris, William L., to Dow Chemical Company, The. Ion exchange resins prepared by sequential monomer addition. 4,564,644, Cl. 521-28.000.

Hart, Milburn L.; and Hart, Robert J., to Resource Engineering & Manufacturing Company. Internal grit blast weld joint cleaner. 4,563,841, Cl. 51-411.000.

Hart, Robert J.: *See—*
Hart, Milburn L.; and Hart, Robert J., 4,563,841, Cl. 51-411.000.

Hartig, Alfred, to Ruhrtal-Elektrizitatsgesellschaft Hartig GmbH & Co. Scissor-type disconnect switch with contact elements having wear-resistant armatures. 4,564,731, Cl. 200-269.000.

Hartman, Ronald H.: *See—*
Piper, Louis H.; White, J. David; and Hartman, Ronald H., 4,564,450, Cl. 210-293.000.

Hartmann, Jorgen: *See—*
Birch, Leon; and Hartmann, Jorgen, 4,564,955, Cl. 381-69.000.

Hartz, James F.; and Latshaw, Harry E., to General Motors Corporation. Side-by-side engine and transmission assembly. 4,563,913, Cl. 74-606.00R.

Hasegawa, Junzo; Kawabata, Susumu; Mimura, Nobuharu; and Kitano, Masao, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Driving gear of rotor type open end fine spinning machine. 4,563,874, Cl. 57-406.000.

Hasenauer, Dieter; and Hug, Kuno, to Brown, Boveri & Cie Aktiengesellschaft. Electrochemical storage cell. 4,564,568, Cl. 429-104.000.

Hashimoto, Koosuke; and Gotoh, Motoyuki, to Mitsubishi Denki Kabushiki Kaisha. Magnetic recording and reproducing apparatus. 4,564,873, Cl. 360-90.000.

Hashimoto, Shunichi: *See—*
Konishi, Hiroyuki; Hashimoto, Shunichi; and Oshio, Hiromichi, 4,564,386, Cl. 71-103.000.

Hashimoto, Susumu: *See—*
Tateishi, Hiroshi; and Hashimoto, Susumu, 4,564,399, Cl. 148-31.550.

Hashimoto, Teruo: *See—*
Nakazawa, Junichi; Hashimoto, Teruo; Kaneko, Masanao; and Miyaoka, Takeo, 4,564,676, Cl. 544-21.000.

Hasty, William E., to W F Products Corporation. Universal flashing for roof vent pipes. 4,563,847, Cl. 52-219.000.

Hatano, Michiharu: *See—*
Yamaoka, Hideyuki; Hatano, Michiharu; Miyazaki, Tomio; Shimoda, Teruhisa; and Oki, Koji, 4,564,389, Cl. 75-38.000.

Hatashita, Hiroshi: *See—*
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Hatazawa, Kikuo, to Hitachi, Ltd. Control device for printer which has function of format data printing. 4,564,302, Cl. 400-76.000.

Hatsutta, Susumu; and Kosaka, Takayuki, to Tachikawa Spring Co., Ltd. Lumbar support device. 4,564,235, Cl. 297-284.000.

Hattori, Shintaroo: *See—*
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.

Hauni-Werke Korber & Co. KG: *See—*
Bantien, Jurgen, 4,564,329, Cl. 414-403.000.
Heitmann, Uwe, 4,564,027, Cl. 131-84.300.
Heitmann, Uwe, 4,564,028, Cl. 131-84.400.
Hinzmann, Alfred; Preisner, Peter M.; and Shu, Timour T., 4,564,029, Cl. 131-94.000.
Wahle, Gunter; Ludszeweit, Dieter; and Heitmann, Uwe, 4,564,026, Cl. 131-84.300.

Hauschildt, Klaus-Robert: *See—*
Markert, Helmut; Rogler, Wolfgang; Kretzschman, Klaus; and Hauschildt, Klaus-Robert, 4,564,651, Cl. 524-589.000.

Hausele, Hans, to Siemens Aktiengesellschaft. Memory module with extra spacing between redundant rows and columns. 4,564,924, Cl. 365-200.000.

Hayafuji, Yoshinari; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, to Sony Corporation Research Center. Single-crystal semiconductor devices and method for making them. 4,564,403, Cl. 148-171.000.

Hayakawa, Hideyuki: *See—*
Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.

Hayama, Kazuhide: *See—*
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, 4,564,560, Cl. 428-411.100.

Hayashi, Hiroshi; Matono, Koichi; Asahi, Satoshi; and Uoi, Michitake, to Idemitsu Kosan Company Limited. Process for the production of polyethylene compositions. 4,564,647, Cl. 523-211.000.

Hayashi, Katsumi: *See—*
Dorer, Casper J., Jr.; and Hayashi, Katsumi, 4,564,460, Cl. 252-73.000.

Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, to Sharp Kabushiki Kaisha. Image recording arrangement. 4,564,847, Cl. 346-76.0PH.

Hayashi, Yoshimasa; and Itoh, Yoji, to Nissan Motor Co., Ltd. Intercooler arrangement for supercharged internal combustion engine. 4,563,983, Cl. 123-41.210.

Hazue, Masaaki: *See—*
Ueda, Nobuo; Kondo, Susumu; and Hazue, Masaaki, 4,564,472, Cl. 260-113.000.

Heart Interface Corporation: *See—*
Akerson, Steven C., 4,564,896, Cl. 363-56.000.

Heckel, Bruce G., to Elliott Turbomachinery Co., Inc. Method and apparatus for controlling the temperature of oil in an overhead tank. 4,564,084, Cl. 184-6.110.

Hederich, Volker: *See—*
Rolf, Meinhard; Neeff, Rutger; Muller, Walter; and Hederich, Volker, 4,564,680, Cl. 546-155.000.

Hegemann, Franz-Josef: *See—*
Koddenberg, Theo; and Hegemann, Franz-Josef, 4,564,421, Cl. 202-254.000.

Hehl, Karl. Machine base for injection molding machine. 4,564,348, Cl. 425-151.000.

Heidelberger Druckmaschinen AG: *See—*
Muller, Hans, 4,564,183, Cl. 270-21.100.

Heinisch, Richard V.: *See—*
Lewin, Ian; Heinisch, Richard V.; and Tanunliong, Arnold L., 4,564,888, Cl. 362-147.000.

Heinrich Bucher, Firma: *See—*
Bucher, Peter, 4,563,881, Cl. 62-457.000.

Heinzerling, Walter C., to Infusionstechnik Clinico GmbH & Co. Flow regulator for setting and maintaining a constant flow of blood, blood-substitute, or similar liquid. 4,564,171, Cl. 251-209.000.

Heiss, John F.; and Leverenz, Melvin E., to Diamond Crystal Salt Company. Solar salt crystallizer and process for producing salt. 4,564,367, Cl. 23-295.00S.

Heitmann, Uwe, to Hauni-Werke Korber & Co. KG. Apparatus for building a continuous tobacco stream. 4,564,027, Cl. 131-84.300.

Heitmann, Uwe, to Hauni-Werke Korber & Co. KG. Apparatus for making a tobacco filler. 4,564,028, Cl. 131-84.400.

Heitmann, Uwe: *See—*
Wahle, Gunter; Ludszeweit, Dieter; and Heitmann, Uwe, 4,564,026, Cl. 131-84.300.

Heitzenroder, Hans F.; Wachter, Ernst; and Bitsch, Kurt, to Dunlop Aktiengesellschaft. Container for the pressure tight packaging of articles, in particular tennis balls. 4,564,107, Cl. 206-315.900.

Heltzel, James. Safety system for disabling a firearm. 4,563,827, Cl. 42-70.00R.

Henderson, Norman L.: *See—*
Urban, Joseph J.; and Henderson, Norman L., 4,564,129, Cl. 222-207.000.

Henderson, Timothy M., to KMS Fusion, Inc. Glass-surface microcarrier for anchorage-dependent cell cultivation. 4,564,532, Cl. 427-2.000.

Hendrickson, Vergil P.: *See—*
Shookman, Dennis R.; and Hendrickson, Vergil P., 4,564,205, Cl. 280-166.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Altenschopfer, Theodor; Giesen, Walter; Schumann, Klaus; and Streschnak, Benno, 4,564,535, Cl. 427-285.000.

Henning, Timothy P.; and Topa, Robert D., to International Business Machines Corporation. Process for the deposition of palladium-nickel alloy. 4,564,426, Cl. 204-44.600.

Henriksson, Stig R., to Atlas Copco Aktiebolag. Pressure fluid operated percussive tool. 4,563,938, Cl. 91-25.000.

Heraeus Elektroden GmbH: *See—*
Werdecker, Waltraud; and Fabian, Peter, 4,564,433, Cl. 204-254.000.

Herbert, James F., to Metal Closures Limited. Bottle closure. 4,564,117, Cl. 215-329.000.

Hergt, Peter; Nicklas, Alexander; and Becker, Karl-Heinz, to Klein, Schanzlin & Becker Aktiengesellschaft. Guide wheel for multistage centrifugal pumps. 4,564,334, Cl. 415-199.300.

Herman, David E.: *See—*
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,564,369, Cl. 44-2.000.

Hermann nee Voros, Judit: *See—*
Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laslzo, 4,564,706, Cl. 564-376.000.

Hermann Wangner GmbH & Co. KG: *See—*
Borel, Georg, 4,564,052, Cl. 139-425.00A.

Hermes Precisa International S.A.: *See—*
Costa, Jorge; and Reichel, Wolfgang, 4,564,187, Cl. 271-9.000.

Herriage, A. A. Apparatus for storing and transporting wire on reels and for dispensing wire from the reels. 4,564,152, Cl. 242-86.500.

Hess, Stanley R., to Cordis Corporation. Retention skirt for pacing electrode assembly. 4,564,023, Cl. 128-785.000.

Hewlett-Packard Company: *See—*
Karrer, Henry E., 4,563,894, Cl. 73-24.000.

Heyer, Robert E.; and Tannenbaum, Michael A., to E. R. Squibb & Sons, Inc. Adjustable slide tray. 4,564,118, Cl. 220-8.000.

Hi-Speed Checkweigher Co., Inc.: *See—*
Del Rosso, Victor, 4,564,077, Cl. 177-145.000.

Hi-Tek Corporation: *See—*
Lancaster, Eldon R.; Guest, Manual T.; and Bessire, Robert W., 4,564,732, Cl. 200-307.000.

Hidekazu, Kano: *See—*
Eiji, Kishida; Hideo, Kobayashi; and Hidekazu, Kano, 4,563,990, Cl. 123-438.000.

Hideo, Kobayashi: *See—*
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Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, to Mazda Motor Corporation. Two stage kickdown control system for a motor vehicle automatic transmission. 4,563,917, Cl. 74-866.000.

Higginbotham, Howard L.: *See—*
Ballough, Douglas M.; and Higginbotham, Howard L., 4,564,914, Cl. 364-475.000.

Hill, Geoffrey E.; and Woffinden, Duard S., to Hill, Geoffrey E. Automatic balloon launching system. 4,564,159, Cl. 244-98.000.

Hilti Aktiengesellschaft: *See—*
Leibhard, Erich, 4,564,324, Cl. 411-3.000.

Himeno, Kiyoshi: *See—*
Niwa, Toshio; Himeno, Kiyoshi; and Maeda, Shuichi, 4,564,673, Cl. 534-794.000.

Himmelstein, Sydney, to S. Himmelstein and Company. Shaft torquemeter. 4,563,905, Cl. 73-862.360.

Hinuma, Shuji: *See—*
Tsukamoto, Kyozo; Hinuma, Shuji; and Onda, Haruo, 4,564,593, Cl. 435-91.000.

Hinzmann, Alfred; Preisner, Peter M.; and Shu, Timour T., to Hauni-Werke Korber & Co. KG. Method and apparatus for assembling plain cigarettes with filter rod. 4,564,029, Cl. 131-94.000.

Hirai, Kentario; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, to Shionogi & Co., Ltd. Aminoalkylbenzene derivatives. 4,564,623, Cl. 514-408.000.

Hirai, Tadaaki: *See—*
Ishioka, Sachio; Imamura, Yoshinori; Hirai, Tadaaki; Nobutoki, Saburo; and Maruyama, Akio, 4,564,784, Cl. 313-384.000.

Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, to Hitachi, Ltd.; and Kanto Chemical Co., Inc. Colorless liquid crystalline compounds. 4,564,694, Cl. 560-1.000.

Hirano, Hideo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method for starting the operation of a loom. 4,564,050, Cl. 139-97.000.

Hiraoka, Masakatsu; Tsumura, Kazushi; Baba, Kenji; Nogita, Shunsuke; and Mori, Shunji, to Hitachi, Ltd. Filamentous microorganism detector and an apparatus with the detector for controlling the process using microorganisms. 4,564,444, Cl. 210-96.100.

Hirose, Syunichi, to Kabushiki Kaisha Toshiba. Phase detecting apparatus. 4,564,819, Cl. 331-2.000.

Hirst, Ian J., to International Standard Electric Corporation. Supervision of digital transmission systems. 4,564,933, Cl. 370-15.000.

Hishinuma, Kazuhiro; and Ohga, Akihiro, to Fuji Photo Film Co., Ltd. Subtraction processing method and apparatus for radiation images. 4,564,861, Cl. 358-111.000.

Hitachi Chemical Company, Ltd.: *See—*
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Harada, Kunio; Yamaguchi, Sumio; Kanda, Hiroshi; Ishikawa, Isao; and Ohji, Yuzuru, 4,563,900, Cl. 73-644.000.
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Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.
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Honda, Takashi; Minato, Akira; Izumiya, Masakiyo; Kashimura, Eizi; and Ohsumi, Katsumi, 4,564,499, Cl. 376-305.000.
Horiuchi, Michimasa, 4,564,942, Cl. 371-20.000.
Ishikawa, Toshio; Endo, Fumihiro; Yamagiwa, Tokio; and Kamata, Yuzuru, 4,564,721, Cl. 174-10.000.
Ishioka, Sachio; Imamura, Yoshinori; Hirai, Tadaaki; Nobutoki, Saburo; and Maruyama, Akio, 4,564,784, Cl. 313-384.000.
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Kojima, Tosaku; Matsumoto, Kunio; and Suzuki, Yoshihisa, 4,564,261, Cl. 350-96.240.
Kunugi, Yoshifumi; Sugimoto, Shigeo; Minakawa, Kisaburo; and Machizawa, Kenzi, 4,563,882, Cl. 62-476.000.
Masuda, Mitsuhiro; Naito, Shotaro; Tokuyama, Keiichi; and Watanabe, Shizuhisa, 4,564,905, Cl. 364-424.000.
Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Miyamoto, Shoji; and Ihara, Hirokazu, 4,564,102, Cl. 198-341.000.
Morishita, Hajime; Miura, Kiyoshi; Sasaya, Osamu; and Nonogaki, Saburo, 4,564,572, Cl. 430-28.000.
Mouri, Yasunori; and Abe, Osamu, 4,564,907, Cl. 364-431.100.
Okikawa, Susumu, 4,564,734, Cl. 219-56.220.
Onishi, Yoshiaki, deceased; Onishi, Junko, administratrix; Kawamoto, Hiroshi; and Yasui, Tokumasa, 4,564,925, Cl. 365-203.000.
Oshida, Yoshitada; Makihara, Hiroshi; and Aoki, Nobuhiko, 4,564,296, Cl. 356-381.000.
Saitoh, Takeshi; and Hatashita, Hiroshi, 4,564,822, Cl. 331-117.00R.
Sato, Tadashi; Takahashi, Genji; and Inui, Yoshiaki, 4,564,754, Cl. 250-225.000.
Senoo, Masaharu; Noma, Keizi; Saruta, Akira; Yoshizaki, Masanori; Teshirogi, Koichi; and Yaegashi, Kouei, 4,564,777, Cl. 310-156.000.
Shimada, Tamotsu; Shinbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, 4,564,012, Cl. 128-303.100.
Tashiro, Korefumi; and Akiyama, Hiroyuki, 4,564,774, Cl. 307-479.000.
Tatsuno, Kimio; and Arimoto, Akira, 4,564,268, Cl. 350-409.000.
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, 4,564,776, Cl. 310-70.00R.
Yamauchi, Teruo; and Oyama, Yoshishige, 4,563,993, Cl. 123-478.000.
Yonezawa, Seiji; Horikoshi, Tatsuo; Tsuyoshi, Toshiaki; and Takasugi, Wasao, 4,564,929, Cl. 369-44.000.

Ho, Chih Y., to McNeilab, Inc. Aryl fatty acid leukotriene synthesis inhibitors. 4,564,476, Cl. 260-404.000.

Hochberg, Arie; and Mason, Charles D., to Allied Corporation. Flame retardant amine terminated polyamide composition. 4,564,650, Cl. 524-288.000.

Hoechst Aktiengesellschaft: *See—*
Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, 4,564,381, Cl. 71-88.000.
Ehrl, Winfried; Reng, Alwin; and Quack, Jochen M., 4,564,520, Cl. 424-70.000.
Kuckertz, Herbert; and Schaeffer, Georg, 4,564,712, Cl. 568-635.000.
Liebl, Rainer; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; and Bieringer, Hermann, 4,564,382, Cl. 71-88.000.
Muschaweck, Roman; Fulberth, Werner; and Sickmuller, Alfred, 4,564,625, Cl. 514-429.000.
Schlafer, Ludwig, 4,564,672, Cl. 534-629.000.
Stahler, Gerhard; Knauf, Werner; Sachse, Burkhard; and Waltersdorfer, Anna, 4,564,611, Cl. 514-99.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Urban, Joseph J.; and Henderson, Norman L., 4,564,129, Cl. 222-207.000.

Hoffelner, Volkwin. Device for cutting through automobile belts with a knife. 4,563,815, Cl. 30-296.00A.

Hoffmann, Reinhard: *See—*
Zimmer, Herbert; Dathe, Ingo; Hoffmann, Reinhard; Hora, Petr; and Wortmann, Franz X., 4,564,337, Cl. 416-223.00R.

Hoffmann, Rudolf: *See—*
Schoen, Josef; and Hoffmann, Rudolf, 4,564,417, Cl. 156-633.000.

Hofmann, Hans-Joachim, to Durr-Dental GmbH & Co. KG. Device for incorporation in dental suction apparatuses for separation of liquid and solid components. 4,564,374, Cl. 55-57.000.

Hofmann, Hans P.: *See—*
Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, 4,564,641, Cl. 514-650.000.

Hofmann, Wilfried; Lusch, Herbert; Rauffer, Walter; Zieran, Eberhard; and Sylla, Jurgen, to Agfa-Gevaert Aktiengesellschaft. Microfilm sensing device with a projection lamp and cold-light mirror. 4,564,276, Cl. 353-55.000.

Hogan, Robert J.: *See—*
Kukes, Simon G.; Sughrue, Edward L., II; and Hogan, Robert J., 4,564,441, Cl. 208-108.000.

Hogan, Stephen J., to United States of America, Energy. Pure silver ohmic contacts to N- and P- type gallium arsenide materials. 4,564,720, Cl. 136-256.000.

Hokazono, Akio; and Sugimoto, Tatsuyoshi, to Nihon Nohyaku Co., Ltd. Feed composition. 4,564,627, Cl. 514-430.000.

Holl, Roland: *See—*
Mathes, Josef; and Holl, Roland, 4,563,951, Cl. 101-216.000.

Holland, Paul E.: *See—*
Bucsko, Richard B.; and Holland, Paul E., 4,564,527, Cl. 426-335.000.

Hollenstein, Helmut: *See—*
Rock, Erich; and Hollenstein, Helmut, 4,564,306, Cl. 403-14.000.

Hollingsworth, Ashley J. Articulated support arm apparatus. 4,564,179, Cl. 269-71.000.

Holly, Kenneth; and Smith, Gehrard J., to Elxsi. I/O Channel bus. 4,564,899, Cl. 364-200.000.

Holmes, George; and Keyser, Frank, to Vigil, Thomas R. Plastic extruder assembly. 4,564,350, Cl. 425-313.000.

Holmwood, Graham: *See—*
Streissle, Gert; Plempel, Manfred; Paessens, Arnold; Holmwood, Graham; and Buchel, Karl H., 4,564,622, Cl. 514-383.000.

Holter, Karl: *See—*
Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; van Bonn, Hans; Holter, Karl; and Wiegard, Gustav, 4,564,058, Cl. 164-72.000.

Holz, Joachim; Meier, Wolfgang; Ogorek, Kurt; Goris, Heinrich; and Schwarting, Karl H., to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Power supply arrangement for pulled mining machines. 4,564,241, Cl. 299-43.000.

Holzer, Joseph C., to Gaylord Bros., Inc. Apparatus for producing labels. 4,564,411, Cl. 156-387.000.

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Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, 4,564,573, Cl. 430-109.000.

Javor, Andras: *See—*
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.

Jeans, Edward L., to Cadbury Schweppes, PLC. Method and apparatus for batch carbonating. 4,564,483, Cl. 261-64.00B.

Jenkins, James H. Assist handle. 4,563,783, Cl. 4-576.000.

Jerlich, Werner J.; Kaiserfeld, Hans; and Kugler, Alfred, to Vereinigte Edelstahlwerke Aktiengesellschaft. Chromium containing alloy for fabricating pressing tools, pressing plates formed from such alloy and method of fabrication thereof. 4,564,566, Cl. 428-687.000.

Jessup, Terry D.; and Hudson, Albert B., to Loew's Theatres, Inc. Cigarette filter assembly. 4,564,030, Cl. 131-336.000.

Jetronic Industries, Inc.: *See—*
Jurjans, Ojars, 4,564,800, Cl. 320-36.000.

Job, Clarence A. Bird house trap. 4,563,835, Cl. 43-69.000.

John Drew (London) Limited: *See—*
Drew, John A., 4,563,787, Cl. 12-142.00N.

Johnsen & Jorgensen (Plastics) Ltd.: *See—*
Burton, George W., 4,564,124, Cl. 221-263.000.

Johnson, Edgar G., Jr.; Cornelison, James J.; and Mackovjak, Paul V., to Micromedic Systems Inc. Direct reading automatic pipette. 4,563,907, Cl. 73-864.160.

Johnson, Mark, to International Business Machines Corporation. Proximity sensor with a light-emitting diode which simultaneously emits and detects light. 4,564,756, Cl. 250-231.0SE.

Johnson, Robert E.: *See—*
Doherty, Charles F.; and Johnson, Robert E., 4,564,762, Cl. 250-381.000.

Johnson, Robert Jeffery: *See—*
LaBudde, Edward V.; Niven, Jeffrey E.; Hsieh, Der-Chang; Parker, Roger C.; and Johnson, Robert Jeffery, 4,564,757, Cl. 250-239.000.

Johnson, William L.; and Schwarz, Ricardo B., to California Institute of Technology. Formation of amorphous materials. 4,564,396, Cl. 148-4.000.

Jones, Marshall G.; and Richardson, Donald C., to General Electric Company. Industrial hand held laser tool and laser system. 4,564,736, Cl. 219-121.00L.

Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., to National Research Development Corporation. Anti-cancer quinazoline derivatives. 4,564,616, Cl. 514-260.000.

Jones, Timothy R., to Motorola Inc. Transimpedance amplifier having an improved gain/bandwidth product. 4,564,818, Cl. 330-311.000.

Jones, W. Gregory, to Kimberly-Clark Corporation. Easily releasable mat holder. 4,564,546, Cl. 428-81.000.

Jonsson, Gunther: *See—*
Sikander, Ake; Biorkman, Ake; and Jonsson, Gunther, 4,564,174, Cl. 266-149.000.

Jordan, Alfons: *See—*
Krude, Werner; and Jordan, Alfons, 4,564,242, Cl. 301-6.0CF.

Josef Wischerath GmbH & Co., KG: *See—*
Eulenburg, Jurgen, 4,564,130, Cl. 222-207.000.

Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Hollenstein, Helmut, 4,564,306, Cl. 403-14.000.

Junge, Bodo: *See—*
Boltze, Karl-Heinz; Davies, Margaret A.; Junge, Bodo; Schuurman, Teunis; and Traber, Jorg, 4,564,613, Cl. 514-222.000.

Junyshev, Viktor K.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Jurado, Marcel: *See—*
Cochet, Andre ; Droussent, Roger; and Jurado, Marcel, 4,564,469, Cl. 252-626.000.

Jurjans, Ojars, to Jetronic Industries, Inc. Battery charger. 4,564,800, Cl. 320-36.000.

Kabayama, Yoshiaki, to Kabushiki Kaisha Daikin Seisakusho. Clutch disc. 4,564,097, Cl. 192-106.100.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Kabayama, Yoshiaki, 4,564,097, Cl. 192-106.100.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Sashiki, Takashi; and Sakaeda, Keiko, 4,564,103, Cl. 198-358.000.

Kabushiki Kaisha Miyano Tekkosho: *See—*
Miyazaki, Hiroo; Shirai, Teruo; and Ogawa, Tsutomu, 4,563,910, Cl. 74-820.000.

Kabushiki Kaisha Takuma: *See—*
Fujiwara, Koji, 4,563,959, Cl. 110-281.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Kokubu, Sadao, 4,564,789, Cl. 315-79.000.

Kabushiki Kaisha Toshiba: *See—*
Hirose, Syunichi, 4,564,819, Cl. 331-2.000.
Nakamura, Kenichi, 4,563,899, Cl. 73-626.000.
Nakayama, Yasunobu; Sato, Yasuji; and Shibata, Shinichi, 4,564,724, Cl. 179-2.00A.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Hirano, Hideo, 4,564,050, Cl. 139-97.000.
Tooka, Takuzo, 4,563,873, Cl. 57-264.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Mimura, Nobuharu; and Kitano, Masao, 4,563,874, Cl. 57-406.000.

Kabushiki Kaisha Tsuji: *See—*
Tsuji, Tadashi, 4,564,539, Cl. 428-33.000.

Kabushiki Kaisha Yamagataya Nori Ten: *See—*
Takashima, Shuji, 4,564,526, Cl. 426-262.000.

Kadowaki, Takashi: *See—*
Sasaki, Masao; Nishijima, Toyoki; Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, 4,564,590, Cl. 430-551.000.

Kahny-Maschinenbau GmbH: *See—*
Kahny, Peter; and Gerling, Norbert, 4,564,136, Cl. 228-6.100.

Kahny, Peter; and Gerling, Norbert, to Kahny-Maschinenbau GmbH. Apparatus for the automatic soldering-on of hard metal teeth. 4,564,136, Cl. 228-6.100.

Kaise Denki Kabushiki Kaisha: *See—*
Kaise, Hideo, 4,564,806, Cl. 324-154.0PB.

Kaise, Hideo, to Kaise Denki Kabushiki Kaisha. Taut band instrument having accurate taut band positioning means. 4,564,806, Cl. 324-154.0PB.

Kaiser, Klaus-Peter; and Viertel, Lothar, to Gebr. Happich GmbH. Cover for mirror for sun visor, particularly for automobiles. 4,564,234, Cl. 296-97.00H.

Kaiserfeld, Hans: *See—*
Jerlich, Werner J.; Kaiserfeld, Hans; and Kugler, Alfred, 4,564,566, Cl. 428-687.000.

Kalama Chemical, Inc.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,564,681, Cl. 546-345.000.

Kalb, Barrett F.: *See—*
Lee, James M., 4,564,071, Cl. 168-19.000.

Kalmanczhelyi, Gabor, to Danuvia Kozponti Szerszam-es Keszulekgyar. Hydraulic flow divider/integrator with regulating slide valves with single control edge for two or more consumers. 4,564,038, Cl. 137-101.000.

Kalmanczhelyi, Gabor, to Danuvia Kozponti Szerszam-Es Keszulekgyar. Hydraulic differential locking device with adjustable sensitivity. 4,564,039, Cl. 137-101.000.

Kamata, Kazumasa; Ueda, Kazuo; and Kitai, Kiyokazu, to Mitsubishi Rayon Co., Ltd. Impact modifier and thermoplastic resin composition using the same. 4,564,653, Cl. 525-67.000.

Kamata, Yuzuru: *See—*
Ishikawa, Toshio; Endo, Fumihiro; Yamagiwa, Tokio; and Kamata, Yuzuru, 4,564,721, Cl. 174-10.000.

Kamelmacher, Eduard. Aeration system and method. 4,564,480, Cl. 261-36.00R.

Kammerer, Gerd; and Thoma, Friedrich X., to Dieter Graesslin Feinwerktechnik. Programmable control for a switching chronometer. 4,564,827, Cl. 335-92.000.

Kampers, Gerrit, to Doseq Dutch Oil Spill Eq v.o.f. Device for separating two liquids of different density. 4,564,449, Cl. 210-242.300.

Kan, Fumitaka: *See—*
Nakamura, Shunji; Kan, Fumitaka; Egami, Hidemi; Hosoi, Atsushi; Tajima, Hatsuo; and Nakahata, Kimio, 4,563,978, Cl. 118-658.000.

Kanade, Takeo: *See—*
Okada, Tokuji; and Kanade, Takeo, 4,563,954, Cl. 104-138.00G.

Kanai, Hiroshi: *See—*
Ezaki, Joichiro; Kanai, Hiroshi; and Kitahara, Yoshimi, 4,564,877, Cl. 360-114.000.

Kanai, Seita: *See—*
Tokunaga, Toshimichi; Kanai, Seita; and Anan, Yoshiaki, 4,564,214, Cl. 280-707.000.

Kanamaru, Hisanobu: *See—*
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, 4,564,776, Cl. 310-70.00R.

Kanda, Hiroshi; Katakura, Kageyoshi; and Ishikawa, Isao, to Hitachi, Ltd. Acoustic microscope. 4,563,898, Cl. 73-606.000.

Kanda, Hiroshi: *See—*
Harada, Kunio; Yamaguchi, Sumio; Kanda, Hiroshi; Ishikawa, Isao; and Ohji, Yuzuru, 4,563,900, Cl. 73-644.000.

Kaneda, Sadayoshi: *See—*
Ichimura, Kunihiro; Yamaoka, Tsuguo; Kaneda, Sadayoshi; and Shibuya, Toru, 4,564,580, Cl. 430-281.000.

Kaneko, Masanao: *See—*
Nakazawa, Junichi; Hashimoto, Teruo; Kaneko, Masanao; and Miyaoka, Takeo, 4,564,676, Cl. 544-21.000.

Kaneko, Yasuhiro: *See—*
Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.

Kanno, Fuchio: *See—*
Yasuda, Wataru; Sakamoto, Koji; and Kanno, Fuchio, 4,564,285, Cl. 355-3.0DD.

Kanno, Yoshinori: *See—*
Nagai, Hiroshi; and Kanno, Yoshinori, 4,564,432, Cl. 204-237.000.

Kant, Bernhard; and Jakobs, Hasko, to VDO Adolf Schindling AG. Device for electrically measuring a liquid level. 4,564,881, Cl. 361-284.000.

Kanto Chemical Co., Inc.: *See—*
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.

Kantor, Martin L., to USV Pharmaceutical Corp. Preparation of N-amino compounds. 4,564,677, Cl. 544-164.000.

Kaplan, Jean P., to Synthelabo. Diphenylazomethines and pharmaceutical compositions containing them. 4,564,636, Cl. 514-567.000.

Kaplan, Philip D., to United States of America, Air Force. Tropospheric scatter communication system having angle diversity. 4,564,935, Cl. 370-38.000.

Karabinis, Peter D.; and Osborne, Thomas L., to AT&T Bell Laboratories. Compensation of filter symbol interference by adaptive estimation of received symbol sequences. 4,564,952, Cl. 375-14.000.

Karioth, Gernot: *See—*
Grimm, Hermann; Konig, Volkmar; and Karioth, Gernot, 4,563,942, Cl. 98-2.160.

Karita, Toshiaki: *See—*
Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, 4,564,847, Cl. 346-76.0PH.

Karklys, Joseph, to Whirlpool Corporation. Current limiting control circuit for induction range. 4,564,733, Cl. 219-10.770.

Karl Mengele & Sohne: *See—*
Wistuba, Eberhard; Nusser, Martin; and Lenzer, Xaver, 4,563,866, Cl. 56-228.000.

Karl Mengele & Sohne GmbH & Co.: *See—*
Blaich, Michael, 4,564,765, Cl. 250-561.000.

Karlsson, Jarding U.: *See—*
Moosberg, Borje S.; and Karlsson, Jarding U., 4,564,158, Cl. 242-220.000.

Karlsson, Rolf L., to ESAB Aktiebolag. Source of power for arc welding. 4,564,742, Cl. 219-130.100.

Karol, Frederick J.: *See—*
Williams, Gary H.; and Karol, Frederick J., 4,564,660, Cl. 526-106.000.

Karr-Ake, Wendell. Robot. 4,564,331, Cl. 414-730.000.

Karrer, Henry E., to Hewlett-Packard Company. Paramagnetic oxygen sensor. 4,563,894, Cl. 73-24.000.

Kasai, Shoji: *See—*
Maebayashi, Jiro; and Kasai, Shoji, 4,564,213, Cl. 280-690.000.

Kashimura, Eizi: *See—*
Honda, Takashi; Minato, Akira; Izumiya, Masakiyo; Kashimura, Eizi; and Ohsumi, Katsumi, 4,564,499, Cl. 376-305.000.

Kasprzyk, Marlon Z., to AT&T Technologies, Inc. Apparatus for positioning gravity fed components in an electrical test facility. 4,564,110, Cl. 209-544.000.

Kastening, Bertel: *See—*
Furst, Leander; Holzer, Walter; and Kastening, Bertel, 4,564,428, Cl. 204-107.000.

Kasuya, Takahira: *See—*
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, 4,564,573, Cl. 430-109.000.

Katakura, Kageyoshi: *See—*
Kanda, Hiroshi; Katakura, Kageyoshi; and Ishikawa, Isao, 4,563,898, Cl. 73-606.000.

Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, to Sumitomo Chemical Company, Limited. Chelate resin and process for producing the same. 4,564,659, Cl. 525-328.200.

Kato, Kyoichi: *See—*
Funabashi, Tadashi; Takahashi, Junji; and Kato, Kyoichi, 4,564,930, Cl. 369-75.200.

Kato, Shinichi; Tamura, Takeshi; Ambo, Tsugio; and Shimazawa, Katsuji, to Nissan Motor Co., Ltd.; Japan Electronic Control Systems Co., Ltd.; and Shinagawa Jidosha Densen Co., Ltd. Electrical connector assembly. 4,564,252, Cl. 339-91.00R.

Kato, Yoshiharu: *See—*
Nakazawa, Yasuyuki; and Kato, Yoshiharu, 4,564,602, Cl. 501-137.000.

Katori, Tatsuhiko: *See—*
Matsuda, Hideaki; Tatezaki, Ryohta; Mizuno, Hiroyuki; and Katori, Tatsuhiko, 4,564,615, Cl. 514-231.000.

Katsuhara, Yutaka; Nakamichi, Toshihiro; Kawai, Toshikazu; and Nakazora, Toru, to Central Glass Company, Limited. Preparation of 1,1,1,3,3,3-hexafluoropropane-2-ol by hydrogenolysis of hexafluoroacetone hydrate. 4,564,716, Cl. 568-842.000.

Kaufman, R. Gilbert, to Standard Oil Company (Indiana). Optimized photovoltaic effect. 4,564,398, Cl. 148-6.310.

Kawabata, Susumu: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Mimura, Nobuharu; and Kitano, Masao, 4,563,874, Cl. 57-406.000.

Kawaguchi, Masao: *See—*
Akatsuka, Takao; Nakano, Jiro; Ishibashi, Takao; and Kawaguchi, Masao, 4,563,991, Cl. 123-440.000.

Kawai, Hajime: *See—*
Fujino, Yoshiharu; Kawai, Hajime; Nakai, Yasushi; and Tsunemitsu, Katsuhiko, 4,564,679, Cl. 546-116.000.

Kawai, Osamu, to NSK-Warner K. K. Safety belt buckle. 4,563,797, Cl. 24-641.000.

Kawai, Toshikazu: *See—*
Katsuhara, Yutaka; Nakamichi, Toshihiro; Kawai, Toshikazu; and Nakazora, Toru, 4,564,716, Cl. 568-842.000.

Kawakita, Kenji: *See—*
Sakai, Hiroyuki; Takemoto, Toyoki; Kawakita, Kenji; Fujita, Tsutomu; and Akiyama, Atsuko, 4,563,807, Cl. 29-591.000.

Kawamoto, Hideyuki: *See—*
Ohhashi, Tateo; Kawamoto, Hideyuki; and Murakami, Yutaka, 4,564,392, Cl. 75-128.00V.

Kawamoto, Hiroshi: *See—*
Onishi, Yoshiaki, deceased; Onishi, Junko, administratrix; Kawamoto, Hiroshi; and Yasui, Tokumasa, 4,564,925, Cl. 365-203.000.

Kawasaki, Mikio: *See—*
Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; and Yoshizawa, Tomomi, 4,564,588, Cl. 430-509.000.

Kawashima, Kenichi: *See—*
Yasuda, Hiroshi; Kawashima, Kenichi; Miyazaki, Takayuki; and Kobayashi, Koichi, 4,564,764, Cl. 250-491.100.

Kazuharu, Odawara, to Tokyo Shibaura Denki Kabushiki Kaisha. Radiation-sensitive record disc with improved internal structure. 4,564,850, Cl. 346-137.000.

KB Cold Isostatic Press Systems CIPS: *See—*
Pettersson, Ola, 4,564,352, Cl. 425-405.00H.

Keady, Richard J., to Westinghouse Electric Corp. Oil pot for reactor coolant pump motor and apparatus for controlling the oil level therein. 4,564,500, Cl. 376-463.000.

Kearnan, James E., to Stauffer Chemical Company. Dispersible sulfur product and its process of manufacture. 4,564,670, Cl. 528-389.000.

Kearney, Avery L.: *See—*
Groteke, Daniel E.; and Kearney, Avery L., 4,564,175, Cl. 266-227.000.

Keef, Sherron M.: *See—*
Sawyer, Willard C.; Sawyer, Edith M.; Keef, Sherron M.; and Sawyer, John W., 4,564,368, Cl. 44-1.00D.

Keely, Stanley L.: *See—*
Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., 4,564,614, Cl. 514-222.000.

Keene, John F.; Kuller, Bengt L.; and Kemmeter, Robert G., to Enkel Corporation. Apparatus for continuously supplying a web of sheet material. 4,564,150, Cl. 242-58.100.

Kehr, Wolfgang: *See—*
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.

Keiper Recaro GmbH & Co.: *See—*
Kluting, Bernd; and Bertram, Klaus D., 4,564,236, Cl. 297-344.000.

Keizer, Jon. Capo-tremolo-slide attachment for guitars. 4,563,934, Cl. 84-313.000.

Keller, Bruno: *See—*
Grether, Paul; Brader, Kurt; and Keller, Bruno, 4,563,843, Cl. 52-172.000.

Kelman, Charles D. Corneal implant and method of making the same. 4,563,779, Cl. 623-5.000.

Kemmeter, Robert G.: *See—*
Keene, John F.; Kuller, Bengt L.; and Kemmeter, Robert G., 4,564,150, Cl. 242-58.100.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Furst, Leander; Holzer, Walter; and Kastening, Bertel, 4,564,428, Cl. 204-107.000.
Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,564,496, Cl. 264-44.000.

Kershaw Manufacturing Company, Inc.: *See—*
Whitaker, John B., Jr., 4,563,826, Cl. 37-97.000.

Kessler, Erich: *See—*
Gerlach, Klaus; and Kessler, Erich, 4,564,488, Cl. 264-41.000.

Ketterson, John B.: *See—*
Schuller, Ivan K.; Ketterson, John B.; and Banerjee, Indrajit, 4,564,564, Cl. 428-662.000.

Kettlestrings, John S., to Kettlestrings, John S.; and Maass, A. Edward. Retainer with coacting legs. 4,563,796, Cl. 24-563.000.

Keyser, Frank: *See—*
Holmes, George; and Keyser, Frank, 4,564,350, Cl. 425-313.000.

Khera, Muhammad; I.: *See—*
Perry, Thomas J.; and Khera, Muhammad; I., 4,564,937, Cl. 370-58.000.

Khodakov, Pavel E.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Kienle, Juergen: *See—*
Weining, Hans-Karl; Kienle, Juergen; and Christl, Wilfried, 4,563,998, Cl. 123-568.000.

Kier, Mike. Lighted notepaper tray. 4,564,887, Cl. 362-99.000.

Kikkawa, Shinichi: *See—*
Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, 4,564,288, Cl. 355-57.000.

Kikui, Hitoshi: *See—*
Okumura, Takuzo; Yanase, Masataka; and Kikui, Hitoshi, 4,564,545, Cl. 428-76.000.

Kilen, Richard S.; and Rittenhouse, Larry E., to International Business Machines Corporation. Phase locked loop and a motor control servo. 4,564,794, Cl. 318-314.000.

Kiley, Thomas L.: *See—*
Thelen, Edmund; Black, Daniel N., III; and Kiley, Thomas L., 4,564,310, Cl. 404-31.000.

Kim, Chung C. Dynamically illuminated guitar. 4,563,933, Cl. 84-267.000.

Kimberly-Clark Corporation: *See—*
Jones, W. Gregory, 4,564,546, Cl. 428-81.000.

Kimmons, D. L.; and Russell, Daniel, to Eaton Corporation. Supercharger with hourglass outlet port. 4,564,346, Cl. 418-206.000.

Kimura, Tadashi: *See—*
Nakamura, Toshiyuki; Inaba, Tsutomu; and Kimura, Tadashi, 4,564,339, Cl. 417-366.000.
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, 4,564,343, Cl. 418-55.000.

Kimura, Yoshikazu: *See—*
Terashima, Shiro; Kimura, Yoshikazu; Suzuki, Michiyo; Matsumoto, Teruyo; and Abe, Rumiko, 4,564,674, Cl. 536-6.400.

Kin, Lai, to Windmere Corporation. Hair curling system. 4,564,033, Cl. 132-39.000.

King, Anthony R.: *See—*
Clarke, Frederick G. E., Jr.; King, Anthony R.; and Majewski, Anthony, 4,564,186, Cl. 270-54.000.

King, Francis C.: *See—*
Agee, John M.; and King, Francis C., 4,564,180, Cl. 269-75.000.

Kingsley, Bertis N.; and Fisher, Ronald D. Trailer hitch assembly. 4,564,209, Cl. 280-468.000.

Kingston, John C. Transport seat for conveying disabled travellers through a stairwell opening of a passenger carrying vehicle. 4,564,086, Cl. 187-12.000.

Kinoshita, Hidefumi: *See—*
Kurabayashi, Katsuhiko; Kinoshita, Hidefumi; Saito, Hitoshi; and Takahashi, Toshio, 4,564,675, Cl. 536-18.100.

Kinsley, Robert J., to Vogel Tool & Die. Tube cut-off apparatus. 4,563,927, Cl. 83-319.000.

Kinson, Philip L.: *See—*
Cooper, Glenn D., deceased; and Kinson, Philip L., 4,564,656, Cl. 525-152.000.

Kinyon, John P.; and Spector, George. Creeper ramp rack. 4,564,216, Cl. 280-770.000.

Kirby, David, to Lutron Electronics Co., Inc. Semiconductor mounted on a yoke in heat transfer relationship. 4,564,801, Cl. 323-324.000.

Kirma, Safa, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Strain relief device for an electrical plug connector. 4,564,255, Cl. 339-103.00R.

Kiselev, Igor V.: *See—*
Alexandrov, Adolf M.; Tsimbler, Jury A.; Iljukhin, Vitaly G.; Yashin, Jury A.; and Kiselev, Igor V., 4,564,318, Cl. 406-192.000.

Kitahara, Yoshimi: *See—*
Ezaki, Joichiro; Kanai, Hiroshi; and Kitahara, Yoshimi, 4,564,877, Cl. 360-114.000.

Kitai, Kiyokazu: *See—*
Kamata, Kazumasa; Ueda, Kazuo; and Kitai, Kiyokazu, 4,564,653, Cl. 525-67.000.

Kitamura, Shunji, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal detector of magnetic disk apparatus. 4,564,870, Cl. 360-51.000.

Kitamura, Sunao, to Aisan Kogyo Kabushiki Kaisha. Apparatus for starting and warming up an internal combustion engine. 4,564,481, Cl. 261-39.00A.

Kitamura, Teruo: *See—*
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.

Kitano, Masao: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Mimura, Nobuharu; and Kitano, Masao, 4,563,874, Cl. 57-406.000.

Kiwi Coders Corporation: *See—*
Siegal, Burton L., 4,564,846, Cl. 346-75.000.

Klauke, Erich; and Kuhle, Engelbert, to Bayer Aktiengesellschaft. Fluorinated thiocarbonic acid ester-fluorides. 4,564,478, Cl. 260-455.00R.

Kleemann, Axel: *See—*
Drauz, Karlheinz; Kleemann, Axel; and Wirthwein, Rolf, 4,564,514, Cl. 423-589.000.

Klein, Klaus; and Schmitt, Reinhard, to Siemens Aktiengesellschaft. Ejection and grounding system for rack-mounted plug-in modules. 4,564,250, Cl. 339-14.00R.

Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
Hergt, Peter; Nicklas, Alexander; and Becker, Karl-Heinz, 4,564,334, Cl. 415-199.300.
Schill, Jurgen; Rupp, Werner; Schaff, Werner; and Urban, Jorg, 4,563,801, Cl. 29-156.80B.

Klein, Wolfgang: *See—*
Schmitz, Franz J.; Wollbeck, Rudi; and Klein, Wolfgang, 4,564,373, Cl. 55-16.000.

Kleinschmit, Peter: *See—*
Baacke, Michael; and Kleinschmit, Peter, 4,564,512, Cl. 423-328.000.

Klemm, Hans: *See—*
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.

Kletzmaier, Karl; and Krippner, Gunther, to ELEKTRONIKBAU Krippner & Kletzmaier Gesellschaft m.b.H. & Co. Locking arrangement for securing doors. 4,563,886, Cl. 70-118.000.

Kliemt, Wilfried; and Krones, Manfred, to Siemens Aktiengesellschaft. Electrical apparatus with base plate. 4,564,884, Cl. 361-353.000.

Kliklok Corporation: *See—*
McElvy, Howell T., 4,563,862, Cl. 53-552.000.

Klingler, Otto; and Linder, Kurt, to Mauser-Werke Oberndorf GmbH. Measuring head of a multi-cord measuring machine. 4,563,823, Cl. 33-558.000.

Kluting, Bernd; and Bertram, Klaus D., to Keiper Recaro GmbH & Co. Seat, particularly a power vehicle seat. 4,564,236, Cl. 297-344.000.

Kluy, Werner: *See—*
Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, 4,564,642, Cl. 518-717.000.

KMS Fusion, Inc.: *See—*
Henderson, Timothy M., 4,564,532, Cl. 427-2.000.

Knauf, Werner: *See—*
Stahler, Gerhard; Knauf, Werner; Sachse, Burkhard; and Waltersdorfer, Anna, 4,564,611, Cl. 514-99.000.

Knoop, Franz-Josef. Roller-bearing-mounted telescopic track for drawers or the like. 4,564,247, Cl. 308-3.800.

Knop, Hans-Georg; Nowak, Michael; Redecker, Friedrich; and Tiede, Ralf, to Dr. Ing. Rudolf Hell GmbH. Method and an apparatus for producing color separations for single color printing. 4,564,859, Cl. 358-75.000.

Knorr Shokuhin Kabushiki Kaisha: *See—*
Ohgami, Tadashi; Naitoh, Zenjiro; Saotome, Haruo; Takekoshi, Kenji; and Saitoh, Kimio, 4,564,531, Cl. 426-589.000.

Koala Technologies Corporation: *See—*
Moore, Cecil A.; and Langford, Gordon B., 4,564,079, Cl. 178-18.000.

Kobayashi, Fumiaki; and Ito, Yoshiyasu, to Toyota Jidosha Kabushiki Kaisha. Diesel fuel injection pump with electronically controlled fuel spilling and cutoff and recirculation venting of split fuel. 4,563,992, Cl. 123-458.000.

Kobayashi, Koichi: *See—*
Yasuda, Hiroshi; Kawashima, Kenichi; Miyazaki, Takayuki; and Kobayashi, Koichi, 4,564,764, Cl. 250-491.100.

Kobayashi, Minoru. Top drying nozzle device for vehicle washing apparatus. 4,563,788, Cl. 15-312.00R.

Kobayashi, Yoshiro: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,564,474, Cl. 260-397.200.

Kobuke, Yoshiaki: *See—*
Tabushi, Iwao; and Kobuke, Yoshiaki, 4,564,690, Cl. 549-352.000.

Kocatas, Babur M., to Monsanto Company. Fiber bed separator. 4,564,377, Cl. 55-488.000.

Koch, Carl: *See—*
Koch, Hans-Carl; Koch, Carl; and Gfeller, Karl, 4,564,277, Cl. 354-160.000.

Koch, Hans-Carl; Koch, Carl; and Gfeller, Karl, to Sinar AG Schaffhausen. Apparatus for a photographic camera with lens and film carriers which can be reset in relation to one another. 4,564,277, Cl. 354-160.000.

Koch, Rudolf K.; and Affonso, Octavio F. Reversing valve construction and method of making the same. 4,564,045, Cl. 137-625.430.

Kocher, Helmut: *See—*
Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, 4,564,381, Cl. 71-88.000.

Kodani, Hideyuki: *See—*
Enokido, Shunji; Kodani, Hideyuki; and Ohta, Hajime, 4,564,078, Cl. 178-18.000.

Koddenberg, Theo; and Hegemann, Franz-Josef, to Dr. C. Otto & Comp. GmbH. Ascension pipe for coke ovens. 4,564,421, Cl. 202-254.000.

Koebernick, Hubert: *See—*
Feldmann, John; Koebernick, Hubert; Richter, Klaus; and Woelk, Hans-Ulrich, 4,564,692, Cl. 549-464.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Schmitt, Gunter K., 4,564,470, Cl. 270-21.100.

Koerner, Gotz: *See—*
Callaghan, Ian C.; Fink, Hans-Ferdi; Gould, Clive M.; Koerner, Gotz; Patzke, Hans-Jurgen; and Weitemeyer, Christian, 4,564,665, Cl. 528-21.000.

Koestecki, Raymond J., to General Motors Corporation. Preparing glass flake reinforced reaction injection molded polymers. 4,564,491, Cl. 264-108.000.

Kogure, Osamu: *See—*
Morita, Masao; Tanaka, Akinobu; Imamura, Saburo; Tamamura, Toshiaki; and Kogure, Osamu, 4,564,579, Cl. 430-270.000.

Kogyo Gijutsuin: *See—*
Ichimura, Kunihiro; Yamaoka, Tsuguo; Kaneda, Sadayoshi; and Shibuya, Toru, 4,564,580, Cl. 430-281.000.

Kohlen, Karl-Heinz, to W. Schlafhorst & Co. Apparatus for making tension-proof joint for endless-fiber threads. 4,564,228, Cl. 289-2.000.

Kohmura, Shigeru: *See—*
Tsuge, Mitsuo; Kohmura, Shigeru; Sugiyama, Keiichi; Saitoh, Hisao; and Saitoh, Shigenori, 4,564,119, Cl. 220-270.000.

Kohnlechner, Rainer, to Ermeto Armaturen GmbH. Pressure and temperature sensor. 4,563,902, Cl. 73-708.000.

Kohnlechner, Rainer; Beeke, Herbert; and Suckow, Hans, to Ermeto Armaturen GmbH. Pressure sensor. 4,563,903, Cl. 73-727.000.

Koike, Masami: *See—*
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kurachi, Yukio; and Koike, Masami, 4,564,232, Cl. 296-146.000.

Koishi, Kenji: *See—*
O'Hara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, 4,564,931, Cl. 369-110.000.

Kojima, Soichi: *See—*
Shintani, Tsuneo; Kojima, Soichi; and Goto, Masuo, 4,564,493, Cl. 264-209.100.

Kojima, Tosaku; Matsumoto, Kunio; and Suzuki, Yoshihisa, to Hitachi, Ltd. Bundle of optical fibers. 4,564,261, Cl. 350-96.240.

Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, to Laurel Bank Machine Co., Ltd. Stacker supporting device in automatic money depositing and disbursing machine. 4,564,140, Cl. 232-57.500.

Kokubu, Sadao, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Dimmer for use with vehicle. 4,564,789, Cl. 315-79.000.

Kolb, Richard L., to Crocker National Bank. Method and apparatus for testing seismic vibrators. 4,564,927, Cl. 367-42.000.

Komiya, Hidetsugu; and Inoue, Michiya, to Fanuc Ltd. Contactless relay. 4,564,768, Cl. 307-140.000.

Kommanditbolaget Aldolf: *See—*
Adolfsson, Bengt O., 4,564,126, Cl. 222-61.000.

Komori Printing Machinery Co., Ltd.: *See—*
Ohta, Toshio, 4,564,860, Cl. 358-107.000.

Komoto, Shinsuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Floating lens extending mechanism. 4,564,264, Cl. 350-255.000.

Kondo, Kunio; Haga, Katutoshi; and Takeuchi, Tokunari, to Fuji Seiko Limited. End-milling cutter with drilling capability. 4,564,321, Cl. 407-36.000.

Kondo, Susumu: *See—*
Ueda, Nobuo; Kondo, Susumu; and Hazue, Masaaki, 4,564,472, Cl. 260-113.000.

Konig, Christian: *See—*
Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, 4,564,513, Cl. 423-415.00A.

Konig, Volkmar: *See—*
Grimm, Hermann; Konig, Volkmar; and Karioth, Gernot, 4,563,942, Cl. 98-2.160.

Koninklijke Emballage Industrie Van Leer B.V.: *See—*
Visser, Berend L., 4,563,859, Cl. 53-450.000.

Konishi, Hiroyuki; Hashimoto, Shunichi; and Oshio, Hiromichi, to Sumitomo Chemical Company, Limited. Trifluoromethanesulfonanilides, and their production and use. 4,564,386, Cl. 71-103.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, 4,564,573, Cl. 430-109.000.
Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; and Yoshizawa, Tomomi, 4,564,588, Cl. 430-509.000.
Sasaki, Masao; Nishijima, Toyoki; Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, 4,564,590, Cl. 430-551.000.
Tanaka, Shigeo; and Onodera, Kaoru, 4,564,591, Cl. 430-567.000.
Watanabe, Yoshikazu; and Ito, Kenji, 4,564,587, Cl. 430-505.000.

Konrath, Karl; and Weiss, Otmar, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,563,996, Cl. 123-502.000.

Korus, Thomas J., to Lindsay Manufacturing Company. Coupling device. 4,564,224, Cl. 285-272.000.

Kosaka, Takayuki: *See—*
Hatsutta, Susumu; and Kosaka, Takayuki, 4,564,235, Cl. 297-284.000.

Koshidaka, Yukio: *See—*
Ota, Akiho; and Koshidaka, Yukio, 4,564,497, Cl. 264-521.000.

Kosmahl, Henry G., to United States of America, National Aeronautics and Space Administration. Linearized traveling wave amplifier with hard limiter characteristics. 4,564,787, Cl. 315-3.600.

Kotani, Matahira: *See—*
Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, 4,564,847, Cl. 346-76.0PH.

Kotecha, Harish N.: *See—*
Fredericks, Edward C.; and Kotecha, Harish N., 4,564,584, Cl. 430-312.000.

Koto, Kaoru: *See—*
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.

Kotobuki Seiyaku Company, Limited: *See—*
Tomiyama, Tsuyoshi, 4,564,678, Cl. 544-367.000.

Koyama, Yuichiro; Nakazawa, Hiroshi; Yamashita, Toshiaki; and Moriyama, Hitoshi, to Pennwalt Corporation. Process for the production of dialkyl-trisulfides. 4,564,709, Cl. 568-26.000.

Kozlowski, Chester P.; and Curcuri, Thomas J., to Dominion Tool & Die Co. Tire soaping apparatus for tire mounting. 4,563,975, Cl. 118-320.000.

Kramer, Dean C., to Martinson Manufacturing Company, Inc. Quick disconnect coupling device. 4,564,041, Cl. 137-565.000.

Kramer, Melvin G., to Brunton Company, The. Error sensing system for vessels with absolute zero referencing. 4,564,909, Cl. 364-457.000.

Kramer, Roy L. Group tether apparatus. 4,563,981, Cl. 119-96.000.

Krass, Dennis K., to PPG Industries, Inc. Herbicidally active substituted diphenyl ether oxime derivatives. 4,564,385, Cl. 71-98.000.

Kratzer, Hans: *See*—
Dickore, Karlfried; Engels, Hans D.; Kratzer, Hans; and Merz, Walter, 4,564,704, Cl. 562-577.000.

Krehan, Ingomar: *See*—
Elbert, Alfred; Behrenz, Wolfgang; and Krehan, Ingomar, 4,564,631, Cl. 514-521.000.

Kreiskott, Horst: *See*—
Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, 4,564,641, Cl. 514-650.000.

Kreth, Julis; Schreiber, Alfons; and Steinko, Willi, to Mike & Kremmel Limited. Can openers. 4,563,818, Cl. 30-417.000.

Kretzschman, Klaus: *See*—
Markert, Helmut; Rogler, Wolfgang; Kretzschman, Klaus; and Hauschildt, Klaus-Robert, 4,564,651, Cl. 524-589.000.

Kreuels, Klaus: *See*—
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,564,485, Cl. 264-30.000.

Kreutner, William; and Siegel, Marvin I., to Schering Corporation. Methods of inducing bronchodilation. 4,564,626, Cl. 514-430.000.

Kreutz, Hermann: *See*—
Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,564,496, Cl. 264-44.000.

Krieg, Rudolf; and Ziegler, Friedrich, to Patent-Treuhand Gesellschaft fur Elektrische Gluhlampen GmbH. Halogen incandescent lamp-and-reflector unit. 4,564,783, Cl. 313-113.000.

Kriegeskorte, Arndt, to Kriegeskorte & Co., GmbH. Detonator mechanism for cartridges, particularly for cartridges used in manual weapons. 4,563,828, Cl. 42-84.000.

Kriegeskorte & Co., GmbH: *See*—
Kriegeskorte, Arndt, 4,563,828, Cl. 42-84.000.

Kriegesmann, Jochen; Hunold, Klaus; Lipp, Alfred; Reinmuth, Klaus; and Schwetz, Karl A., to Elektroschmelzwerk Kempten GmbH. Shaped polycrystalline silicon carbide articles and isostatic hot-pressing process. 4,564,601, Cl. 501-88.000.

Krippner, Gunther: *See*—
Kletzmaier, Karl; and Krippner, Gunther, 4,563,886, Cl. 70-118.000.

Kromberg & Schubert: *See*—
Siebeneiker, Gunter; Brunn, Hartmut; and Steiger, Uwe, 4,563,931, Cl. 84-1.160.

Krones, Manfred: *See*—
Klieml, Wilfried; and Krones, Manfred, 4,564,884, Cl. 361-353.000.

Krude, Werner; and Jordan, Alfons, to Uni-Cardan Aktiengesellschaft. Wheel hub assembly. 4,564,242, Cl. 301-6.0CF.

Kubasov, Vladimir L.: *See*—
Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.

Kubo, Masashige: *See*—
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.

Kubota Ltd.: *See*—
Nakano, Keiichi, 4,563,986, Cl. 123-90.380.

Kucera, Gene H.; Smith, James L.; and Sim, James W., to United States of America, Energy. Electronically conductive ceramics for high temperature oxidizing environments. 4,564,567, Cl. 429-41.000.

Kuckertz, Herbert; and Schaeffer, Georg, to Hoechst Aktiengesellschaft. Process for the preparation of diphenyl ethers. 4,564,712, Cl. 568-635.000.

Kudler, Paul S., to Majestic Rides Mfg. Co., Inc. Trailer stabilizer. 4,564,208, Cl. 280-423.00B.

Kuehler, Christopher W.; and Dahlberg, Arthur J., to Chevron Research Company. Two-stage, close-coupled thermal catalytic hydroconversion process. 4,564,439, Cl. 208-59.000.

Kugler, Alfred: *See*—
Jerlich, Werner J.; Kaiserfeld, Hans; and Kugler, Alfred, 4,564,566, Cl. 428-687.000.

Kuhl, Adolf, to Orell Fussli Graphische Betriebe AG. Planar card made of a thermoplastic material having visually recognizable safety markings and method of manufacturing such card. 4,564,409, Cl. 156-219.000.

Kuhl, Walter H.: *See*—
Van Aller, Gerardus; and Kuhl, Walter H., 4,564,753, Cl. 250-213.0VT.

Kuhle, Engelbert: *See*—
Klauke, Erich; and Kuhle, Engelbert, 4,564,478, Cl. 260-455.00R.

Kuhlmann, Horst: *See*—
Spindeler, Heinrich; Wackerbarth, Folkard; Kuhlmann, Horst; Dohle, Helmut; and Althaus, Horst, 4,564,420, Cl. 202-139.000.

Kuhnemann, Klaus: *See*—
Baden, Hans; Kuhnemann, Klaus; Sedlmayr, Gerhard; Straszewski, Klaus; and Zeumer, Monika, 4,564,219, Cl. 280-808.000.

Kuisl, Max, to Licentia Patent-Verwaltungs-GmbH. Method for producing a preform for light waveguides. 4,564,378, Cl. 65-3.120.

Kukes, Simon G.; Sughrue, Edward L., II; and Hogan, Robert J., to Phillips Petroleum Company. Hydrofining process for hydrocarbon-containing feed streams. 4,564,441, Cl. 208-108.000.

Kuller, Bengt L.: *See*—
Keene, John F.; Kuller, Bengt L.; and Kemmeter, Robert G., 4,564,150, Cl. 242-58.100.

Kumagai, Akira, to Casio Computer Co., Ltd. Electronic cash register. 4,564,904, Cl. 364-405.000.

Kumagai, Naotake; and Tatemoto, Minoru, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Electronically controlled suspension system. 4,564,215, Cl. 280-707.000.

Kumar, Mahesh; and Whartenby, James C., to RCA Corporation. Predistortion circuit. 4,564,816, Cl. 330-149.000.

Kume, Ryoichi: *See*—
Morishige, Norio; and Kume, Ryoichi, 4,564,402, Cl. 148-127.000.

Kunde, David A.: *See*—
Illenberg, Cornelius J.; Dinger, Ronald W.; Kunde, David A.; and Lucarelli, Anthony V., 4,564,829, Cl. 335-135.000.

Kunde, Klaus; Grimm, Helmut; and Becker, Lorenz, to Sulzer Morat GmbH. Circular knitting machine for the production of goods with enmeshed fibers. 4,563,884, Cl. 66-93.000.

Kunin, Robert: *See*—
Flynn, George C.; Salem, Eli; and Kunin, Robert, 4,564,455, Cl. 210-675.000.

Kunkle, Gerald E.; and Matesa, Joseph M., to PPG Industries, Inc. Method for ablating liquefaction of materials. 4,564,379, Cl. 65-135.000.

Kunugi, Yoshifumi; Sugimoto, Shigeo; Minakawa, Kisaburo; and Machizawa, Kenzi, to Hitachi, Ltd. Air cooling type absorption cooler. 4,563,882, Cl. 62-476.000.

Kunz, Harold R.: *See*—
Gruver, Gary A.; and Kunz, Harold R., 4,564,427, Cl. 204-98.000.

Kunz, Walter; Eckhardt, Wolfgang; and Hubele, Adolf, to Ciba-Geigy Corporation. Fungicidal compositions. 4,564,629, Cl. 514-472.000.

Kurabayashi, Katsuhiko; Kinoshita, Hidefumi; Saito, Hitoshi; and Takahashi, Toshio, to Nippon Kayaku Kabushiki Kaisha. Process for producing 4'-demethyl-epipodophyllotoxin-β-D-ethylidene-glucoside and acyl-derivative thereof. 4,564,675, Cl. 536-18.100.

Kurachi, Yukio: *See*—
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kurachi, Yukio; and Koike, Masami, 4,564,232, Cl. 296-146.000.

Kuraray Co., Ltd.: *See*—
Takigawa, Tetsuo; Ibata, Koichi; Okada, Masafumi; Mizuno, Masao; and Nishida, Takashi, 4,564,477, Cl. 260-405.500.

Kuroda, Kouki: *See*—
Suzuki, Koji; Kuroda, Kouki; and Nagahira, Jyoji, 4,564,287, Cl. 355-14.00D.

Kuroda, Takao; and Horii, Kenju, to Matsushita Electric Industrial Co., Ltd. Method for driving solid state image pickup device. 4,564,766, Cl. 250-578.000.

Kuroiwa, Junji: *See*—
Yoshino, Hisakazu; Takasu, Masayuki; and Kuroiwa, Junji, 4,564,291, Cl. 356-125.000.

Kuroiwa, Katsumasa; Nakatsuyama, Shuichi; and Nagasawa, Takeshi, to Nitto Boseki Co., Ltd. Process for producing arginyl-p-nitroanilide. 4,564,695, Cl. 560-13.000.

Kurosaki Refractories Co., Ltd.: *See*—
Shintani, Tsuneo; Kojima, Soichi; and Goto, Masuo, 4,564,493, Cl. 264-209.100.

Kurosaki Rozai Co., Ltd.: *See*—
Shintani, Tsuneo; Kojima, Soichi; and Goto, Masuo, 4,564,493, Cl. 264-209.100.

Kushida, Naoki; and Kusumoto, Tomoko, to Canon Kabushiki Kaisha. Heat-sensitive transfer material and heat-sensitive transfer recording method. 4,564,534, Cl. 427-256.000.

Kussmaul, Ulrich; Becherer, Johannes; Handte, Reinhard; and Muller, Rolf, to Cassella Aktiengesellschaft. Process for the preparation of heterocyclic phenyl ethers. 4,564,682, Cl. 548-169.000.

Kusters, Willy, to Clements Industries, Inc. Bag closing apparatus using closure tags. 4,563,856, Cl. 53-138.00A.

Kusumoto, Tomoko: *See*—
Kushida, Naoki; and Kusumoto, Tomoko, 4,564,534, Cl. 427-256.000.

Kuwajima, Takeshi: *See*—
Miura, Masami; and Kuwajima, Takeshi, 4,564,814, Cl. 328-26.000.

Kuzumi, Tadayuki, to Kyocera Corporation. Printer. 4,564,848, Cl. 346-76.0PH.

Kwik, Tommy S. O. Apparatus for use in playing a ball game. 4,564,198, Cl. 273-176.00F.

Kyocera Corporation: *See*—
Kuzumi, Tadayuki, 4,564,848, Cl. 346-76.0PH.

Kyoho Machine Works, Ltd.: *See*—
Takahashi, Mikio; and Nakayama, Motoichi, 4,564,088, Cl. 188-67.000.

L. & C. Steinmuller GmbH: *See*—
Premel, Ulrich, 4,564,067, Cl. 165-163.000.

La Bellignite: *See*—
Imbert, Jean P., 4,564,115, Cl. 215-256.000.

Laakso, Oliver A. Stationary diffuser. 4,564,144, Cl. 239-222.130.

Labows, John N.: *See*—
Tanyolac, Necmi; and Labows, John N., 4,563,893, Cl. 73-23.000.

LaBrash, Robert A.: *See*—
Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., 4,564,649, Cl. 524-13.000.

LaBudde, Edward V.; Niven, Jeffrey E.; Hsieh, Der-Chang; Parker, Roger C.; and Johnson, Robert Jeffery, to Burroughs Corporation. Mirror position sensor for improved track selection in optical data disk system. 4,564,757, Cl. 250-239.000.

Lackey, Darrell D., to Febco Inc. Friction-less hydraulic clutch device. 4,564,095, Cl. 192-59.000.

Laclede Professional Products, Inc.: *See*—
Pellico, Michael A.; and Montgomery, Robert E., 4,564,519, Cl. 424-48.000.

Lagadec, Roger: *See*—
McNally, Guy W. W.; Lagadec, Roger; and Pelloni, Daniele P. C., 4,564,918, Cl. 364-569.000.

LaHann, Thomas R.; and Buckwalter, Brian L., to Procter & Gamble Company, The. Compositions and methods useful for producing analgesia. 4,564,633, Cl. 514-538.000.

Lambda Corporation: *See*—
Bennett, Larry P., 4,564,487, Cl. 264-40.700.

Lambert, Gerard L.; McKittrick, Michael T.; Rich, Hubert A.; and Saffer, Gary M., to Mattel, Inc. Portable toy racing set. 4,564,197, Cl. 273-86.00D.

Lambie, Rosemary A. Device to aid in the manual recordation of data. 4,564,845, Cl. 346-17.000.

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Lipp, Alfred: *See*—
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Jagger, Vivienne D., 4,563,816, Cl. 30-343.000.

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Dickson, Joseph F., 4,563,890, Cl. 72-469.000.

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Long, Charles E., to Altech Industries, Inc. Bracing for studwalls. 4,563,851, Cl. 52-656.000.

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Loren, Mark; and Pedroso, Raul I., to Coulter Corporation. Method and apparatus for removing foreign matter from a flow cell of a particle study device. 4,564,803, Cl. 324-71.100.

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Mathes, Josef; and Holl, Roland, 4,563,951, Cl. 101-216.000.

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Maeda, Tsuneo, to Nippon Aluminium Mfg. Co., Ltd., The; and Nippon Alumi Tsurmuraru Corp. Co., The. Vessel for use with high-frequency induction heater. 4,564,001, Cl. 126-390.000.

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Blaske, Paul S.; Zimmerman, Larry D.; Calderon, Arthur; and Longworth, Leroy L., 4,564,585, Cl. 430-313.000.

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Martin, Jeff: *See*—
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Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.

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Masaitis, William: *See*—
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Kunkle, Gerald E.; and Matesa, Joseph M., 4,564,379, Cl. 65-135.000.

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Mathias, Richard A., to Camtech, Inc. Load measurement apparatus including miniature instrumented hydrostatic cell. 4,563,906, Cl. 73-862.580.

Mathieu, Bernd: *See*—
Weber, Wolfram; Neumann, Hans-Jurgen; Meisberger, Artur; and Mathieu, Bernd, 4,564,342, Cl. 417-477.000.

Matono, Koichi: *See*—
Hayashi, Hiroshi; Matono, Koichi; Asahi, Satoshi; and Uoi, Michitake, 4,564,647, Cl. 523-211.000.

Matsubara, Mamoru: *See*—
Takada, Shigetaka; Makimura, Toshiro; and Matsubara, Mamoru, 4,564,145, Cl. 239-585.000.

Matsuda, Hideaki; Tatezaki, Ryohta; Mizuno, Hiroyuki; and Katori, Tatsuhiko, to SS Pharmaceutical Co., Ltd. Immunoactivator. 4,564,615, Cl. 514-231.000.

Matsuda, Masaaki: *See*—
Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, 4,564,659, Cl. 525-328.200.

Matsuhashi, Hajime: *See*—
Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.

Matsumoto, Akio: *See*—
Iwaki, Yoshiyuki; Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,564,799, Cl. 320-6.000.

Matsumoto, Kazuhisa: *See*—
Ohno, Kiyotaka; Nagase, Hiroshi; Ishikawa, Mamoru; Matsumoto, Kazuhisa; and Nishio, Shintaro, 4,564,620, Cl. 514-337.000.

Matsumoto, Kunio: *See*—
Kojima, Tosaku; Matsumoto, Kunio; and Suzuki, Yoshihisa, 4,564,261, Cl. 350-96.240.

Matsumoto, Teruyo: *See*—
Terashima, Shiro; Kimura, Yoshikazu; Suzuki, Michiyo; Matsumoto, Teruyo; and Abe, Rumiko, 4,564,674, Cl. 536-6.400.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kuroda, Takao; and Horii, Kenju, 4,564,766, Cl. 250-578.000.
O'Hara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, 4,564,931, Cl. 369-110.000.
Sakai, Hiroyuki; Takemoto, Toyoki; Kawakita, Kenji; Fujita, Tsutomu; and Akiyama, Atsuko, 4,563,807, Cl. 29-591.000.
Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; and Fujita, Takashi, 4,564,549, Cl. 428-141.000.

Matsushita Electric Works, Ltd.: *See*—
Araki, Masakatsu, 4,564,032, Cl. 132-33.00R.
Okamoto, Futoshi; and Mitani, Masataka, 4,564,897, Cl. 363-132.000.

Matsushita, Ken; Ikeda, Hiroki; and Sugiyama, Yoshihide, to Duplo Seiki Corporation; and Duplo Manufacturing Corporation. Ink detecting device for rotary printer. 4,563,947, Cl. 101-122.000.

Matsutani, Shigeru: *See*—
Hirai, Kentario; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,564,623, Cl. 514-408.000.

Mattel, Inc.: *See*—
Grimm, Thomas H., 4,564,162, Cl. 246-432.000.
Lambert, Gerard L.; McKittrick, Michael T.; Rich, Hubert A.; and Saffer, Gary M., 4,564,197, Cl. 273-86.00D.

Mattelin, Antoon, to Siemens Aktiengesellschaft. Apparatus for labeling parts with a laser. 4,564,739, Cl. 219-121.0LH.

Matveev, Alexandr I.: *See*—
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Maurice, David M.; and Brooks, Darrell, to Leland Stanford Junior University, The Board of Trustees of the. Apparatus for introducing ionized drugs into the posterior segment of the eye and method. 4,564,016, Cl. 128-645.000.

Mauser-Werke Oberndorf GmbH: *See*—
Klingler, Otto; and Linder, Kurt, 4,563,823, Cl. 33-558.000.

Mavie Limited: *See*—
Hannah, Joseph R., 4,564,201, Cl. 277-1.000.

Maximenko, Alexandr V.; Tischenko, Elena G.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I. Urokinase derivatives covalently bound to fibrinogen. 4,564,596, Cl. 435-177.000.

Mayne, Chris: *See*—
Glover, Neal; Clausen, Kermit; Mayne, Chris; and Glissmann, Randy, 4,564,945, Cl. 371-38.000.

Mazanko, Anatoly F.: *See*—
Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.

Mazda Motor Corporation: *See*—
Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, 4,563,917, Cl. 74-866.000.
Maebayashi, Jiro; and Kasai, Shoji, 4,564,213, Cl. 280-690.000.
Tokunaga, Toshimichi; Kanai, Seita; and Anan, Yoshiaki, 4,564,214, Cl. 280-707.000.

Mazzorana, Alfred B., to Societe de Paris et du Rhone, S.A. Device for rotatably driving a cooling fan of an electric rotating machine. 4,564,775, Cl. 310-62.000.

McCann, T. Michael, to General Instrument Corporation. Rectifier with slug construction and mold for fabricating same. 4,564,885, Cl. 361-436.000.

McClure, Robert H.; Peach, Robert W.; and Peach, John R. Tennis ball support device. 4,564,195, Cl. 273-29.00A.

McDonald, Douglas A., to Rotopack Tools Pty. Limited. Impact tool. 4,563,923, Cl. 81-466.000.

McDonnell Douglas Corporation: *See*—
Stone, Kenneth W., 4,564,275, Cl. 353-3.000.

McDougall, Edward E., to Racecourse Co-Operative Sugar Association Ltd. Recirculation heat exchanger and apparatus including same. 4,564,062, Cl. 165-108.000.

McElvy, Howell T., to Kliklok Corporation. Package forming apparatus with combined holding and stripper mechanism. 4,563,862, Cl. 53-552.000.

McGarry, Phillip E.: *See*—
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,564,369, Cl. 44-2.000.

McKechnie, Ronald M. K.; and Swart, Renier P. Skip filling apparatus and method. 4,564,330, Cl. 414-612.000.
McKenzie, Gerald W.: *See—*
Grossman, Leonard N.; Landry, James D.; Masaitis, William; Canada, Robert O.; and McKenzie, Gerald W., 4,564,498, Cl. 376-245.000.
McKittrick, Michael T.: *See—*
Lambert, Gerard L.; McKittrick, Michael T.; Rich, Hubert A.; and Saffer, Gary M., 4,564,197, Cl. 273-86.00D.
McMackins, Dudley E.: *See—*
Coleman, James P.; and McMackins, Dudley E., 4,564,689, Cl. 549-326.000.
McMorrow, Harold L.: *See—*
Granzow, Robert H.; Placke, Dale L.; McMorrow, Harold L.; and Nagy, Charles S., 4,564,122, Cl. 221-12.000.
McNair, John R., to Westvaco Corporation. Single sheet feeding mechanism. 4,564,188, Cl. 271-103.000.
McNally, Guy W. W.; Lagadec, Roger; and Pelloni, Daniele P. C., to Willi Studer AG. Method and apparatus for measuring the time difference between two sampling times. 4,564,918, Cl. 364-569.000.
McNeilab, Inc.: *See—*
Ho, Chih Y., 4,564,476, Cl. 260-404.000.
Mead Corporation, The: *See—*
Calvert, Rodney K., 4,563,853, Cl. 53-48.000.
Suttles, James M., 4,564,111, Cl. 211-189.000.
Meier, Wolfgang: *See—*
Holz, Joachim; Meier, Wolfgang; Ogorek, Kurt; Goris, Heinrich; and Schwarting, Karl H., 4,564,241, Cl. 299-43.000.
Meisberger, Artur: *See—*
Weber, Wolfram; Neumann, Hans-Jurgen; Meisberger, Artur; and Mathieu, Bernd, 4,564,342, Cl. 417-477.000.
Melamed, Anna, to Danfoss A/S. Saturation control of a switching transistor. 4,564,769, Cl. 307-300.000.
Melnik, Gary A.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.
Melocik, Grant C.; and Wible, John E., to Towmotor Corporation. Controlling arrangement. 4,564,085, Cl. 187-9.00R.
Mendler, Leo R., to Continental White Cap, Inc. Injection molded plastic closure. 4,564,113, Cl. 215-252.000.
Menezes, Edgar: *See—*
Lilenfeld, Robert; Popadiuk, Nicholas M.; Steinheuser, Peter; and Menezes, Edgar, 4,564,013, Cl. 128-335.500.
Merak S.p.A.: *See—*
Pellegrini, Antonio; and Beghelli, Benito, 4,564,553, Cl. 428-296.000.
Merck & Co., Inc.: *See—*
Firestone, Raymond A., 4,564,635, Cl. 514-562.000.
Meritt, Allan S.: *See—*
Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., 4,564,903, Cl. 364-300.000.
Merva, John J.: *See—*
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., 4,564,258, Cl. 339-220.00R.
Merz, Walter: *See—*
Dickore, Karlfried; Engels, Hans D.; Kratzer, Hans; and Merz, Walter, 4,564,704, Cl. 562-577.000.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Kirma, Safa, 4,564,255, Cl. 339-103.00R.
Metal Closures Limited: *See—*
Herbert, James F., 4,564,117, Cl. 215-329.000.
Metalworking Lasers International Ltd.: *See—*
Daniel, Jacob, 4,564,947, Cl. 372-58.000.
Metcast Associates, Inc.: *See—*
Groteke, Daniel E.; and Kearney, Avery L., 4,564,175, Cl. 266-227.000.
Meyborg, Holger: *See—*
Salzburg, Herbert; Hajek, Manfred; and Meyborg, Holger, 4,564,645, Cl. 521-159.000.
Miale, Joseph N.: *See—*
Chang, Clarence D.; and Miale, Joseph N., 4,564,719, Cl. 585-640.000.
Michaud, Jean-Francois: *See—*
Bruel, Michel; and Michaud, Jean-Francois, 4,564,763, Cl. 250-396.0ML.
Michel, Alfred: *See—*
Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, 4,564,641, Cl. 514-650.000.
Micromedic Systems Inc.: *See—*
Johnson, Edgar G., Jr.; Cornelison, James J.; and Mackovjak, Paul V., 4,563,907, Cl. 73-864.160.
Micropore International Limited: *See—*
Hughes, John T., 4,564,547, Cl. 428-117.000.
Microwave Applications Group: *See—*
Boyd, Charles R., Jr., 4,564,824, Cl. 333-137.000.
Miehlich, Dieter. Ball separating device for ball throwing machines, especially for squash balls or tennis balls. 4,563,999, Cl. 124-50.000.
Mike & Kremmel Limited: *See—*
Kreth, Julis; Schreiber, Alfons; and Steinko, Willi, 4,563,818, Cl. 30-417.000.
Miki, Yukio, to Minolta Camera Kabuskiki Kaisha. Optical unit. 4,564,265, Cl. 350-255.000.
Mikuski, John J., to Anthony Industries, Inc. Composite sheathing. 4,564,554, Cl. 428-311.900.
Mildenberger, Hilmar: *See—*
Liebl, Rainer; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; and Bieringer, Hermann, 4,564,382, Cl. 71-88.000.
Millard, Alan A.: *See—*
Wang, Sophia; and Millard, Alan A., 4,564,438, Cl. 208-33.000.
Miller, Moshe, to Industries Development Corporation (International Services). Continuously variable transmission with auxiliary drive. 4,563,914, Cl. 74-687.000.
Mills, Kenneth R., to General Electric Company. Telephone illumination circuit. 4,564,729, Cl. 179-81.00C.
Milwaukee Faucets (Div. of Universal-Rundle Corporation): *See—*
Rudelick, John, 4,564,040, Cl. 137-454.600.
Mimura, Nobuharu: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Mimura, Nobuharu; and Kitano, Masao, 4,563,874, Cl. 57-406.000.
Minakawa, Kisaburo: *See—*
Kunugi, Yoshifumi; Sugimoto, Shigeo; Minakawa, Kisaburo; and Machizawa, Kenzi, 4,563,882, Cl. 62-476.000.
Minarik, Ferdinand; and Paletzki, Hans-Joachim, to Fuchs Systemtechnik GmbH. Furnace charge preheater. 4,563,958, Cl. 110-219.000.
Minato, Akira: *See—*
Honda, Takashi; Minato, Akira; Izumiya, Masakiyo; Kashimura, Eizi; and Ohsumi, Katsumi, 4,564,499, Cl. 376-305.000.
Mine Safety Appliances Company: *See—*
Brinkhoff, Carl H., 4,564,009, Cl. 128-152.000.
Minnesota Mining and Manufacturing Company: *See—*
Albin, Loren D., 4,564,662, Cl. 526-247.000.
Brochman, Wilfred R., 4,564,121, Cl. 220-359.000.
Cybulski, Claude E., 4,564,156, Cl. 242-197.000.
Cybulski, Claude E., 4,564,871, Cl. 360-60.000.
Huppert, James C., 4,563,839, Cl. 51-334.000.
Lange, Roger W., 4,564,556, Cl. 428-325.000.
Patel, Kalyanji U., 4,564,366, Cl. 8-94.10R.
Roche, Karen M.; and Eyerly, Robert M., 4,563,778, Cl. 623-22.000.
Weavers, Mark W.; Gebeke, Charles D.; and Yamasaki, Ken'ichi, 4,564,878, Cl. 360-132.000.
Minolta Camera Kabuskiki Kaisha: *See—*
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Mirsaiidi, Mohammad V.: *See—*
Geary, William C.; Mirsaiidi, Mohammad V.; Redfern, Timothy; and Wolfe, David W., 4,563,987, Cl. 123-179.00B.
Mitani, Masataka: *See—*
Okamoto, Futoshi; and Mitani, Masataka, 4,564,897, Cl. 363-132.000.
Mitchell, Cheryl R.; Mitchell, Pat R.; and Mitchell, William A. Confection products. 4,564,525, Cl. 426-104.000.
Mitchell, Pat R.: *See—*
Mitchell, Cheryl R.; Mitchell, Pat R.; and Mitchell, William A., 4,564,525, Cl. 426-104.000.
Mitchell, William A.: *See—*
Mitchell, Cheryl R.; Mitchell, Pat R.; and Mitchell, William A., 4,564,525, Cl. 426-104.000.
Mitono, Yoshiharu: *See—*
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Mitsubishi Chemical Industries Limited: *See—*
Tabushi, Iwao; and Kobuke, Yoshiaki, 4,564,690, Cl. 549-352.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Awano, Toshiaki, 4,564,837, Cl. 340-825.300.
Hama, Hiroaki; Imanishi, Masami; and Tanaka, Naoki, 4,563,879, Cl. 62-160.000.
Hashimoto, Koosuke; and Gotoh, Motoyuki, 4,564,873, Cl. 360-90.000.
Iwaki, Yoshiyuki; Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,564,799, Cl. 320-6.000.
Nakamura, Toshiyuki; Inaba, Tsutomu; and Kimura, Tadashi, 4,564,339, Cl. 417-366.000.
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, 4,564,343, Cl. 418-55.000.
Uozumi, Akira, 4,564,099, Cl. 198-323.000.
Yasuoka, Hirotoshi, 4,564,741, Cl. 219-125.100.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Kumagai, Naotake; and Tatemoto, Minoru, 4,564,215, Cl. 280-707.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Mitsubishi Petrochemical Co., Ltd.: *See—*
Imanari, Makoto; Iwane, Hiroshi; and Sugawara, Takahiro, 4,564,713, Cl. 568-730.000.
Mitsubishi Rayon Co., Ltd.: *See—*
Kamata, Kazumasa; Ueda, Kazuo; and Kitai, Kiyokazu, 4,564,653, Cl. 525-67.000.
Mitsubishi Yuka Fine Chemicals Co., Ltd.: *See—*
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, 4,564,560, Cl. 428-411.100.
Miura, Kiyoshi: *See—*
Morishita, Hajime; Miura, Kiyoshi; Sasaya, Osamu; and Nonogaki, Saburo, 4,564,572, Cl. 430-28.000.

Miura, Masami; and Kuwajima, Takeshi, to Nippon Electric Co., Ltd. Full-wave rectifier using an operational amplifier. 4,564,814, Cl. 328-26.000.
Miwa, Hirohide, to Fujitsu Limited. Method for measuring characteristics of living tissues by ultrasonic waves. 4,564,019, Cl. 128-660.000.
Mix, Raymond F.: *See—*
Hansen, William D.; and Mix, Raymond F., 4,564,251, Cl. 339-17.0CF.
Miyahara, Norio: *See—*
Nikaido, Tadanobu; Miyahara, Norio; and Tawara, Kanji, 4,564,926, Cl. 365-230.000.
Miyake, Shinichi: *See—*
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Miyamoto, Shoji: *See—*
Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Miyamoto, Shoji; and Ihara, Hirokazu, 4,564,102, Cl. 198-341.000.
Miyano, Kazuyoshi, to Inoue-Japax Research Incorporated. TW-electroerosion machines with double-floating nozzle assemblies. 4,564,431, Cl. 204-224.00M.
Miyano, Seiji; Sumoto, Kunihiro; Morita, Minoru; and Sato, Fumio, to Suntory Ltd. 8-(Substituted N-phenylcarboxamidomethyl) pyrrolizidines and use thereof as antiarrhythmics. 4,564,624, Cl. 514-413.000.
Miyaoka, Takeo: *See—*
Nakazawa, Junichi; Hashimoto, Teruo; Kaneko, Masanao; and Miyaoka, Takeo, 4,564,676, Cl. 544-21.000.
Miyazaki, Hiroo; Shirai, Teruo; and Ogawa, Tsutomu, to Kabushiki Kaisha Miyano Tekkosho. Positive-locking indexing system for high-speed operation. 4,563,910, Cl. 74-820.000.
Miyazaki, Shu, to Sumitomo Metal Mining Co., Ltd. Method for making carrier tape. 4,564,582, Cl. 430-311.000.
Miyazaki, Takayuki: *See—*
Yasuda, Hiroshi; Kawashima, Kenichi; Miyazaki, Takayuki; and Kobayashi, Koichi, 4,564,764, Cl. 250-491.100.
Miyazaki, Tomio: *See—*
Yamaoka, Hideyuki; Hatano, Michiharu; Miyazaki, Tomio; Shimoda, Teruhisa; and Oki, Koji, 4,564,389, Cl. 75-38.000.
Miyazaki, Yoshifumi: *See—*
Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, 4,564,288, Cl. 355-57.000.
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Mizuno, Masao: *See—*
Takigawa, Tetsuo; Ibata, Koichi; Okada, Masafumi; Mizuno, Masao; and Nishida, Takashi, 4,564,477, Cl. 260-405.500.
Mobil Oil Corporation: *See—*
Chang, Clarence D.; and Miale, Joseph N., 4,564,719, Cl. 585-640.000.
Garwood, William E.; Starr, William C.; and Walker, John W., 4,564,440, Cl. 208-87.000.
Touhsaent, Robert E.; Wagner, John R., Jr.; and Clauson, Melvil B., 4,564,558, Cl. 428-349.000.
Wagner, John R., Jr.; and Clauson, Melvil B., 4,564,559, Cl. 428-349.000.
Mogi, Shinobu: *See—*
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Molnlycke AB: *See—*
Widlund, Leif U. R.; Nedestam, Stefan; and Froidh, Arne, 4,564,108, Cl. 206-438.000.
Momose, Yutaka, to Aisin Seiki Kabushiki Kaisha. Seal for piston rod of Stirling engine. 4,564,202, Cl. 277-3.000.
Monitrol, Inc.: *See—*
Price, Robert G., 4,563,974, Cl. 118-66.000.
Monroe Auto Equipment Company: *See—*
Bethell, Michael R.; Gaines, Michael G.; Mowat, James F., Jr.; Wheeler, Roger D.; and Woidke, Richard P., 4,564,138, Cl. 228-176.000.
Monsanto Company: *See—*
Coleman, James P.; and McMackins, Dudley E., 4,564,689, Cl. 549-326.000.
Kocatas, Babur M., 4,564,377, Cl. 55-488.000.
Montgomery, Douglas J.; Goldstein, Leonard H.; and Stumbo, Ernest, to Doleer Electronics, Inc. Apparatus and method for domestic hot water control. 4,564,141, Cl. 236-20.00R.
Montgomery, Robert E.: *See—*
Pellico, Michael A.; and Montgomery, Robert E., 4,564,519, Cl. 424-48.000.
Moon, Edward E., to Acco Babcock Inc. Carrier conveyor system. 4,564,100, Cl. 198-341.000.
Moore, Arthur I. W., to Production Engineering Research Assoc. Apparatus for monitoring tool life. 4,563,897, Cl. 73-587.000.
Moore, Cecil A.; and Langford, Gordon B., to Koala Technologies Corporation. Digitizer pad. 4,564,079, Cl. 178-18.000.
Moorehead, Eric L.: *See—*
Robinson, Paul R.; and Moorehead, Eric L., 4,564,603, Cl. 502-60.000.
Moosberg, Borje S.; and Karlsson, Jarding U., to Abu Aktiebolag. Fishing reel clutch release mechanism. 4,564,158, Cl. 242-220.000.
Morcheles, Bernard, to Stacor Corporation. Portable light box. 4,564,886, Cl. 362-97.000.
Morgan, Glenn E., Sr.: *See—*
Garabedian, Michael E.; and Morgan, Glenn E., Sr., 4,564,127, Cl. 222-96.000.
Mori, Hirotaro; and Fujita, Hiroshi, to Osaka University. Method for producing amorphous metals. 4,564,395, Cl. 148-4.000.
Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Miyamoto, Shoji; and Ihara, Hirokazu, to Hitachi, Ltd. Method and apparatus for transportation of materials. 4,564,102, Cl. 198-341.000.
Mori, Shunji: *See—*
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Morin, Francois: *See—*
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Morinaga, Masaru; and Mogi, Shinobu, to NSK-Warner K.K. Retractor. 4,564,153, Cl. 242-107.000.
Morishige, Norio; and Kume, Ryoichi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method for preventing disbonding of weld-cladding. 4,564,402, Cl. 148-127.000.
Morishita, Hajime; Miura, Kiyoshi; Sasaya, Osamu; and Nonogaki, Saburo, to Hitachi, Ltd. Process for forming pattern. 4,564,572, Cl. 430-28.000.
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, to Konishiroku Photo Industry Co., Ltd.; and Japan Synthetic Rubber Co., Ltd. Electrostatic image forming toner. 4,564,573, Cl. 430-109.000.
Morita, Masao; Tanaka, Akinobu; Imamura, Saburo; Tamamura, Toshiaki; and Kogure, Osamu, to Nippon Telegraph & Telephone Public Corporation. Pattern forming material of a siloxane polymer. 4,564,579, Cl. 430-270.000.
Morita, Minoru: *See—*
Miyano, Seiji; Sumoto, Kunihiro; Morita, Minoru; and Sato, Fumio, 4,564,624, Cl. 514-413.000.
Moriyama, Hitoshi: *See—*
Koyama, Yuichiro; Nakazawa, Hiroshi; Yamashita, Toshiaki; and Moriyama, Hitoshi, 4,564,709, Cl. 568-26.000.
Morton, Bernard W.; and Olseth, Bruce K., to DRI STEEM Humidifier Company. Steam humidifier cabinet construction. 4,564,746, Cl. 219-276.000.
Mostek Corporation: *See—*
Briggs, Willard S., 4,564,920, Cl. 364-757.000.
Motorola, Inc.: *See—*
Christ, Allen E.; and Roche, Thomas A., 4,564,880, Cl. 361-212.000.
Jones, Timothy R., 4,564,818, Cl. 330-311.000.
Reichart, Elwood C., 4,564,821, Cl. 331-74.000.
Mouri, Yasunori; and Abe, Osamu, to Hitachi, Ltd. Electronic control apparatus for internal combustion engine. 4,564,907, Cl. 364-431.100.
Mowat, James F., Jr.: *See—*
Bethell, Michael R.; Gaines, Michael G.; Mowat, James F., Jr.; Wheeler, Roger D.; and Woidke, Richard P., 4,564,138, Cl. 228-176.000.
Mueller, Herbert, to BASF Aktiengesellschaft. Continuous preparation of polyoxybutylene polyoxyalkylene glycols. 4,564,671, Cl. 528-416.000.
Mueller, Robert S., to Eaton Corporation. Supercharger with reduced noise. 4,564,345, Cl. 418-206.000.
Mukoh, Akio: *See—*
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.
Muller, Arno, to Pitney Bowes Inc. Postage meter with power-failure resistant memory. 4,564,922, Cl. 364-900.000.
Muller, Hans, to Heidelberger Druckmaschinen AG. Folding apparatus for a web-fed rotary printing machine. 4,564,183, Cl. 270-21.100.
Muller, Rolf: *See—*
Kussmaul, Ulrich; Becherer, Johannes; Handte, Reinhard; and Muller, Rolf, 4,564,682, Cl. 548-169.000.
Muller, Walter: *See—*
Rolf, Meinhard; Neeff, Rutger; Muller, Walter; and Hederich, Volker, 4,564,680, Cl. 546-155.000.
Muller, Werner: *See—*
Ackermann, Gustav; Clostermeyer, Gerhard; and Muller, Werner, 4,563,854, Cl. 53-118.000.
Mullich, Richard O.; and Rotondi, Anthony J., to TRE Corporation. Latch assembly having selectable backset distance. 4,564,229, Cl. 292-169.130.
Munday, William A.: *See—*
LaRue, Gayle M.; and Munday, William A., 4,564,351, Cl. 425-383.000.
Munk, Evelyn; and Munk, Michael. Humidification apparatus. 4,564,375, Cl. 55-259.000.
Munk, Michael: *See—*
Munk, Evelyn; and Munk, Michael, 4,564,375, Cl. 55-259.000.
Munoz Saiz, Manuel. System for utilizing the energy of waves. 4,564,312, Cl. 405-76.000.
Munzer, Rudolf: *See—*
Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,564,496, Cl. 264-44.000.
Murakami Screen Kabushiki Kaisha: *See—*
Ichimura, Kunihiro; Yamaoka, Tsuguo; Kaneda, Sadayoshi; and Shibuya, Toru, 4,564,580, Cl. 430-281.000.
Murakami, Tamotsu, to Shizuoka Kogyo Company, Ltd. Sheet splicer. 4,564,413, Cl. 156-504.000.

Murakami, Yutaka: *See—*
Ohhashi, Tateo; Kawamoto, Hideyuki; and Murakami, Yutaka, 4,564,392, Cl. 75-128.00V.

Murata Kikai Kabushiki Kaisha: *See—*
Noshi, Shinji, 4,564,123, Cl. 221-11.000.

Murata Manufacturing Co., Ltd.: *See—*
Nakazawa, Yasuyuki; and Kato, Yoshiharu, 4,564,602, Cl. 501-137.000.
Ogawa, Toshio, 4,564,782, Cl. 310-359.000.
Takahashi, Hiroyuki; and Yamamoto, Takashi, 4,564,825, Cl. 333-191.000.

Murck, James W. Flanged duct joint utilizing snap-in corner pieces. 4,564,227, Cl. 285-364.000.

Murphy, Richard D.: *See—*
Clelford, Douglas H.; Skonieczny, Joseph P.; and Murphy, Richard D., 4,564,908, Cl. 364-433.000.

Murray, Peter; and Slinn, David, to Shieldalloy Corporation. Introducing one or more metals into a melt comprising aluminum. 4,564,393, Cl. 75-256.000.

Muschaweck, Roman; Fulberth, Werner; and Sickmuller, Alfred, to Hoechst Aktiengesellschaft. Binary compositions of penbutolol and furosemide or piretanide. 4,564,625, Cl. 514-429.000.

Muskulus, Willi. Bound-stators or rotors for electrical machines. 4,563,962, Cl. 112-262.100.

Myrman, Nicholas M., to Sunkist Growers, Inc. Method, apparatus and product for illuminating a surface to provide a desired light intensity at discrete points on said surface. 4,564,893, Cl. 362-311.000.

Nagahira, Jyoji: *See—*
Suzuki, Koji; Kuroda, Kouki; and Nagahira, Jyoji, 4,564,287, Cl. 355-14.00D.

Nagai, Hiroshi; and Kanno, Yoshinori, to Nanao Kogyo Co., Ltd. Apparatus for recovering metals dissolved in a solution. 4,564,432, Cl. 204-237.000.

Nagami, Kazuyoshi: *See—*
Tanaka, Tatsuyoshi; Nagami, Kazuyoshi; Tamada, Shigeharu; and Nakagawa, Kazuyuki, 4,564,619, Cl. 514-312.000.

Nagano, Masanobu: *See—*
Ueda, Ikuo; Nagano, Masanobu; and Akahane, Atsushi, 4,564,621, Cl. 514-357.000.

Nagasawa, Takeshi: *See—*
Kuroiwa, Katsumasa; Nakatsuyama, Shuichi; and Nagasawa, Takeshi, 4,564,695, Cl. 560-13.000.

Nagase, Hiroshi; and Sato, Yasuo, to Takeda Chemical Industries, Ltd. N-(2,6-Difluorobenzoyl-N-'-(2-fluoro-4-halophenyl)urea. 4,564,639, Cl. 514-594.000.

Nagase, Hiroshi: *See—*
Ohno, Kiyotaka; Nagase, Hiroshi; Ishikawa, Mamoru; Matsumoto, Kazuhisa; and Nishio, Shintaro, 4,564,620, Cl. 514-337.000.

Nagata, Kunio: *See—*
Tomizu, Motoyuki; and Nagata, Kunio, 4,564,730, Cl. 200-16.00B.

Nagata, Tomihiko: *See—*
Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.

Nagel, Erich, to Agfa-Gevaert Aktiengesellschaft. Apparatus for transporting developed disc films in copying machines. 4,564,101, Cl. 198-346.200.

Nagy, Charles S.: *See—*
Granzow, Robert H.; Placke, Dale L.; McMorrow, Harold L.; and Nagy, Charles S., 4,564,122, Cl. 221-12.000.

Nagy, Lajos: *See—*
Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laszo, 4,564,706, Cl. 564-376.000.

Naito, Michinori, to Trio Kabushiki Kaisha. FM Demodulator PLL with compensation for nonlinear varactor characteristics. 4,564,815, Cl. 329-50.000.

Naito, Shotaro: *See—*
Masuda, Mitsuhiro; Naito, Shotaro; Tokuyama, Keiichi; and Watanabe, Shizuhisa, 4,564,905, Cl. 364-424.000.

Naitoh, Zenjiro: *See—*
Ohgami, Tadashi; Naitoh, Zenjiro; Saotome, Haruo; Takekoshi, Kenji; and Saitoh, Kimio, 4,564,531, Cl. 426-589.000.

Nakagawa, Kazuyuki: *See—*
Tanaka, Tatsuyoshi; Nagami, Kazuyoshi; Tamada, Shigeharu; and Nakagawa, Kazuyuki, 4,564,619, Cl. 514-312.000.

Nakahata, Kimio: *See—*
Nakamura, Shunji; Kan, Fumitaka; Egami, Hidemi; Hosoi, Atsushi; Tajima, Hatsuo; and Nakahata, Kimio, 4,563,978, Cl. 118-658.000.

Nakai, Yasushi: *See—*
Fujino, Yoshiharu; Kawai, Hajime; Nakai, Yasushi; and Tsunemitsu, Katsuhiko, 4,564,679, Cl. 546-116.000.

Nakajima, Tohru, to Universal Pioneer Corporation. Video disc recording and reproducing device for video discs having recognition signal indicative of content of associated program signal. 4,564,867, Cl. 358-342.000.

Nakamichi, Toshihiro: *See—*
Katsuhara, Yutaka; Nakamichi, Toshihiro; Kawai, Toshikazu; and Nakazora, Toru, 4,564,716, Cl. 568-842.000.

Nakamura, Kenichi, to Kabushiki Kaisha Toshiba. Ultrasonic imaging apparatus using transducer control. 4,563,899, Cl. 73-626.000.

Nakamura, Shunji; Kan, Fumitaka; Egami, Hidemi; Hosoi, Atsushi; Tajima, Hatsuo; and Nakahata, Kimio, to Canon Kabushiki Kaisha. Developing apparatus. 4,563,978, Cl. 118-658.000.

Nakamura, Takaharu: *See—*
Sugimoto, Hachiro; Nakamura, Takaharu; Hamazo, Sachiyuki; and Daiku, Yoshiharu, 4,564,617, Cl. 514-265.000.

Nakamura, Toshiyuki; Inaba, Tsutomu; and Kimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Scroll compressor. 4,564,339, Cl. 417-366.000.

Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Scroll compressor having improved sealing. 4,564,343, Cl. 418-55.000.

Nakamura, Yasuo, to Sanden Corporation. Method of making a clutch rotor for an electromagnetic clutch. 4,564,137, Cl. 228-173.600.

Nakanishi, Michio: *See—*
Masaichiro, Masui, 4,564,475, Cl. 260-398.500.

Nakano, Harumi, to Casio Computer Co., Ltd. Interconnectable electronic game apparatus. 4,564,923, Cl. 364-900.000.

Nakano, Jiro: *See—*
Akatsuka, Takao; Nakano, Jiro; Ishibashi, Takao; and Kawaguchi, Masao, 4,563,991, Cl. 123-440.000.

Nakano, Keiichi, to Kubota Ltd. Splash lubricated over head valve engine. 4,563,986, Cl. 123-90.380.

Nakano, Takao: *See—*
Sato, Hiroki; Natori, Takehisa; and Nakano, Takao, 4,564,785, Cl. 313-422.000.

Nakatsuyama, Shuichi: *See—*
Kuroiwa, Katsumasa; Nakatsuyama, Shuichi; and Nagasawa, Takeshi, 4,564,695, Cl. 560-13.000.

Nakayama, Motoichi: *See—*
Takahashi, Mikio; and Nakayama, Motoichi, 4,564,088, Cl. 188-67.000.

Nakayama, Yasunobu; Sato, Yasuji; and Shibata, Shinichi, to Kabushiki Kaisha Toshiba. Terminal interface connecting terminal unit having central office line interface to key telephone system. 4,564,724, Cl. 179-2.00A.

Nakazawa, Hiroshi: *See—*
Koyama, Yuichiro; Nakazawa, Hiroshi; Yamashita, Toshiaki; and Moriyama, Hitoshi, 4,564,709, Cl. 568-26.000.

Nakazawa, Junichi; Hashimoto, Teruo; Kaneko, Masanao; and Miyaoka, Takeo, to Sankyo Company Limited. Process for preparing cephalosporin derivatives. 4,564,676, Cl. 544-21.000.

Nakazawa, Yasuyuki; and Kato, Yoshiharu, to Murata Manufacturing Co., Ltd. High permittivity ceramic composition. 4,564,602, Cl. 501-137.000.

Nakazora, Toru: *See—*
Katsuhara, Yutaka; Nakamichi, Toshihiro; Kawai, Toshikazu; and Nakazora, Toru, 4,564,716, Cl. 568-842.000.

Nakazyo, Kiyoshi: *See—*
Aoki, Kozo; Ono, Michio; and Nakazyo, Kiyoshi, 4,564,586, Cl. 430-505.000.

Nalco Chemical Company: *See—*
Wang, Sophia; and Millard, Alan A., 4,564,438, Cl. 208-33.000.

Nally, Robert B.: *See—*
Lepic, Daniel A.; and Nally, Robert B., 4,564,752, Cl. 235-437.000.

Nanao Kogyo Co., Ltd.: *See—*
Nagai, Hiroshi; and Kanno, Yoshinori, 4,564,432, Cl. 204-237.000.

Naoumidis, Aristides: *See—*
Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,564,496, Cl. 264-44.000.

Narasimhan, Kalatur S. V. L.; and Preusch, Charles D., to Crucible Materials Corporation. Method of improving magnets. 4,564,400, Cl. 148-103.000.

Narasimhan, Kalatur S. V. L.: *See—*
Strichman, George A.; Dulis, Edward J.; Narasimhan, Kalatur S. V. L.; and Lizzi, Thomas, 4,564,401, Cl. 148-104.000.

NAT Shipping Bagging Services Limited: *See—*
Van Der Wal, Jan; and Nederpel, Gerardus L., 4,563,858, Cl. 53-418.000.

National Gypsum Company: *See—*
Burkard, Edward A.; and Segada, James J., 4,564,544, Cl. 428-70.000.

National Research Development Corp.: *See—*
Coombs, Richard R. H.; and El-Saba, Mekki M., 4,564,007, Cl. 128-92.00A.
Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., 4,564,616, Cl. 514-260.000.

Natori, Takehisa: *See—*
Sato, Hiroki; Natori, Takehisa; and Nakano, Takao, 4,564,785, Cl. 313-422.000.

Natsuume, Tadao: *See—*
Ueda, Tsunehisa; and Natsuume, Tadao, 4,564,371, Cl. 44-51.000.

Nause, Earl E.: *See—*
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.

Nava & C. S.p.A.: *See—*
Tesser, Igino, 4,563,825, Cl. 36-131.000.

NCR Canada Ltd - NCR Canada Ltee: *See—*
Lepic, Daniel A.; and Nally, Robert B., 4,564,752, Cl. 235-437.000.

NCR Corporation: *See—*
Boulogne, Gerardus F.; and van Berkel, Bernardus P. J., 4,564,838, Cl. 340-825.500.
Granzow, Robert H.; Placke, Dale L.; McMorrow, Harold L.; and Nagy, Charles S., 4,564,122, Cl. 221-12.000.

Nederpel, Gerardus L.: *See—*
Van Der Wal, Jan; and Nederpel, Gerardus L., 4,563,858, Cl. 53-418.000.

Nedestam, Stefan: *See—*
Widlund, Leif U. R.; Nedestam, Stefan; and Froidh, Arne, 4,564,108, Cl. 206-438.000.

Neefe, Charles W. Production of soft lenses having reduced spherical aberrations. 4,564,484, Cl. 264-2.600.

Neeff, Rutger: *See—*
Rolf, Meinhard; Neeff, Rutger; Muller, Walter; and Hederich, Volker, 4,564,680, Cl. 546-155.000.

Neidell, Norman S. Navigational systems using phase encoded angular coordinates. 4,564,841, Cl. 343-386.000.

Nel, Gert, to Eastway Holdings Limited. Electrical machine having a quickly releasable stator. 4,564,780, Cl. 310-258.000.

Nelipa, Ljudmila N.: *See—*
Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.

Nellis, Walter E.: *See—*
Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., 4,564,298, Cl. 366-167.000.

Nelson, Leonard: *See—*
Barresi, Anthony J.; and Nelson, Leonard, 4,564,135, Cl. 228-6.200.

Nelson Research & Development Co.: *See—*
Horn, Alan S., 4,564,628, Cl. 514-438.000.

Neri, Carlo; Giroldini, Villiam; Rinaldi, Antonio; Traversoni, Mario; and Clerici, Mario, to Enichimica Secondaria S.p.A. Process for preparing substituted 2,3-dihydrobenzofuran. 4,564,691, Cl. 549-462.000.

Nestec S. A.: *See—*
Hugelshofer, Alison, 4,564,530, Cl. 426-575.000.

Nestor, Charles R.: *See—*
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., 4,564,258, Cl. 339-220.00R.

Neumann, Hans-Jurgen: *See—*
Weber, Wolfram; Neumann, Hans-Jurgen; Meisberger, Artur; and Mathieu, Bernd, 4,564,342, Cl. 417-477.000.

Neumann, Kurt, to Peters, Claudius. Disengageable rotary clutch. 4,564,096, Cl. 192-67.00R.

Neves, Alan M., to Biomass International Inc. Alcohol manufacturing process. 4,564,595, Cl. 435-163.000.

New York Institute of Technology: *See—*
Glenn, William E.; and Marcinka, John W., 4,564,928, Cl. 367-117.000.
Halioua, Maurice, 4,564,295, Cl. 356-376.000.

Newson, Stephen R.: *See—*
Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., 4,564,903, Cl. 364-300.000.

Newton, Roger F.: *See—*
Scopes, David I. C.; Newton, Roger F.; and Cookson, Richard C., 4,564,618, Cl. 514-274.000.

Newton, Steven A.; Shaw, Herbert J.; and Cutler, Cassius C., to Leland Stanford Junior University, Board of Trustees of the. Fiber optic loop interferometer and method with coincident backscatter elimination. 4,564,293, Cl. 356-350.000.

Nickel, Hubertus: *See—*
Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,564,496, Cl. 264-44.000.

Nicklas, Alexander: *See—*
Hergt, Peter; Nicklas, Alexander; and Becker, Karl-Heinz, 4,564,334, Cl. 415-199.300.

Nicolon Corporation: *See—*
Scales, John M., 4,564,311, Cl. 405-20.000.

Niedecker, Herbert. Process of manufacturing tubular wrappers from a continuous web of plastic material sheeting. 4,563,792, Cl. 17-33.000.

Nihon Medi-Physics Co., Ltd.: *See—*
Ueda, Nobuo; Kondo, Susumu; and Hazue, Masaaki, 4,564,472, Cl. 260-113.000.

Nihon Nohyaku Co., Ltd.: *See—*
Hokazono, Akio; and Sugimoto, Tatsuyoshi, 4,564,627, Cl. 514-430.000.

Nihon Tokushu Boyaku Seizo K.K.: *See—*
Yamada, Yasuo; Saito, Junichi; Tamura, Tatsuo; and Sakawa, Shinji, 4,564,638, Cl. 514-585.000.

Nijhof, Berend J.: *See—*
Welzen, Jozef T. A. M.; Stijntjes, Theodorus G. W.; van der Meer, Aant B. D.; Lobel, Rudolf O. M.; and Nijhof, Berend J., 4,564,489, Cl. 264-58.000.

Nikaido, Tadanobu; Miyahara, Norio; and Tawara, Kanji, to Nippon Telegraph & Telephone Public Corporation. Information memory device with address multiplexing. 4,564,926, Cl. 365-230.000.

Nilsson, Kenth; and Bolmgren, Jan, to Siemens Aktiengesellschaft. Recording device functioning with fluid droplets. 4,564,851, Cl. 346-140.00R.

Nilsson, Torsten; and Jakobsen, Kjell M., to PLM AB. Method of producing a container. 4,564,495, Cl. 264-291.000.

Nippon Alumi Tsurmuraru Corp. Co., The: *See—*
Maeda, Tsuneo, 4,564,001, Cl. 126-390.000.

Nippon Aluminium Mfg. Co., Ltd., The: *See—*
Maeda, Tsuneo, 4,564,001, Cl. 126-390.000.

Nippon Electric Co., Ltd.: *See—*
Miura, Masami; and Kuwajima, Takeshi, 4,564,814, Cl. 328-26.000.

Nippon Kayaku Kabushiki Kaisha: *See—*
Kurabayashi, Katsuhiko; Kinoshita, Hidefumi; Saito, Hitoshi; and Takahashi, Toshio, 4,564,675, Cl. 536-18.100.

Nippon Kogaku K.K.: *See—*
Takemae, Mikio; Watanabe, Sakuji; and Okubo, Yuji, 4,564,281, Cl. 354-442.000.
Uehara, Makoto, 4,564,269, Cl. 350-432.000.
Utagawa, Ken, 4,564,919, Cl. 364-728.000.

Nippon Light Metal Co., Ltd.: *See—*
Tsuge, Mitsuo; Kohmura, Shigeru; Sugiyama, Keiichi; Saitoh, Hisao; and Saitoh, Shigenori, 4,564,119, Cl. 220-270.000.

Nippon Mektron, Ltd.: *See—*
Inoue, Kazuo, 4,564,832, Cl. 340-365.00R.

Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, 4,564,344, Cl. 418-173.000.

Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See—*
Yoneda, Tadahiro; and Ueshima, Michio, 4,564,607, Cl. 502-209.000.

Nippon Telegraph & Telephone Public Corporation: *See—*
Morita, Masao; Tanaka, Akinobu; Imamura, Saburo; Tamamura, Toshiaki; and Kogure, Osamu, 4,564,579, Cl. 430-270.000.
Nikaido, Tadanobu; Miyahara, Norio; and Tawara, Kanji, 4,564,926, Cl. 365-230.000.

Nippon Zeon Co Ltd: *See—*
Ueda, Tsunehisa; and Natsuume, Tadao, 4,564,371, Cl. 44-51.000.

Nippon Zeon Co., Ltd.: *See—*
Yamamoto, Haruhisa; and Akiyama, Shinichi, 4,564,703, Cl. 562-534.000.

Nippondenso Co., Ltd.: *See—*
Hori, Shinichi; Ohnishi, Yasuichi; Ueda, Masahiro; and Noba, Masahiko, 4,564,916, Cl. 364-551.000.
Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.

Nishida, Takashi: *See—*
Takigawa, Tetsuo; Ibata, Koichi; Okada, Masafumi; Mizuno, Masao; and Nishida, Takashi, 4,564,477, Cl. 260-405.500.

Nishigaki, Hisashi; and Aimono, Yuji, to Hitachi Chemical Company, Ltd. Light- and thermosetting resin composition and insulated electrical machinery and appliances using the same. 4,564,646, Cl. 522-13.000.

Nishijima, Toyoki: *See—*
Sasaki, Masao; Nishijima, Toyoki; Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, 4,564,590, Cl. 430-551.000.

Nishikawa, Kohei: *See—*
Sugihara, Hirosada; Nishikawa, Kohei; and Ito, Katsumi, 4,564,612, Cl. 514-211.000.

Nishikubo, Toshihiko; and Shimizu, Kazuo, to Sanyo Kokusaku Pulp Co., Ltd. Rapidly curable acrylic adhesive compositions for bonding polypropylene. 4,564,657, Cl. 525-158.000.

Nishimoto, Yoshifumi, to Canon Kabushiki Kaisha. Variable-focal-length lens. 4,564,267, Cl. 350-379.000.

Nishimura, Kosuke: *See—*
Nittaya, Hiroshi; and Nishimura, Kosuke, 4,564,954, Cl. 381-51.000.

Nishio, Shintaro: *See—*
Ohno, Kiyotaka; Nagase, Hiroshi; Ishikawa, Mamoru; Matsumoto, Kazuhisa; and Nishio, Shintaro, 4,564,620, Cl. 514-337.000.

Nising, Wolfgang: *See—*
Serini, Volker; Lindner, Christian; Peters, Horst; and Nising, Wolfgang, 4,564,654, Cl. 525-67.000.

Nissan Motor Co., Ltd.: *See—*
Hayashi, Yoshimasa; and Itoh, Yoji, 4,563,983, Cl. 123-41.210.
Kato, Shinichi; Tamura, Takeshi; Ambo, Tsugio; and Shimazawa, Katsuji, 4,564,252, Cl. 339-91.00R.
Seko, Yasutoshi; and Yanagishima, Takayuki, 4,564,833, Cl. 340-576.000.
Sugano, Kazuhiko, 4,563,918, Cl. 74-869.000.
Takehara, Shin; and Tabata, Toshiyuki, 4,564,082, Cl. 180-312.000.
Tanaka, Toshiaki, 4,564,341, Cl. 417-462.000.

Niswander, Robert L.; and Cornwell, Tomy W., to Hyway Concrete Pipe Company. Rectilinear culvert structure. 4,564,313, Cl. 405-125.000.

Nitsuko Limited: *See—*
Ibata, Kazuo, 4,564,726, Cl. 179-99.00M.
Takahashi, Kenichi, 4,564,936, Cl. 370-58.000.

Nittaya, Hiroshi; and Nishimura, Kosuke, to Sharp Kabushiki Kaisha. Noise reduction circuit of synthetic speech generating apparatus. 4,564,954, Cl. 381-51.000.

Nitto Boseki Co., Ltd.: *See—*
Kuroiwa, Katsumasa; Nakatsuyama, Shuichi; and Nagasawa, Takeshi, 4,564,695, Cl. 560-13.000.

Niven, Jeffrey E.: *See—*
LaBudde, Edward V.; Niven, Jeffrey E.; Hsieh, Der-Chang; Parker, Roger C.; and Johnson, Robert Jeffery, 4,564,757, Cl. 250-239.000.

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Nobutoki, Saburo: *See—*
Ishioka, Sachio; Imamura, Yoshinori; Hirai, Tadaaki; Nobutoki, Saburo; and Maruyama, Akio, 4,564,784, Cl. 313-384.000.

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Hiraoka, Masakatsu; Tsumura, Kazushi; Baba, Kenji; Nogita, Shunsuke; and Mori, Shunji, 4,564,444, Cl. 210-96.100.

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Noll, Harry C., Jr., to Harris Graphics Corporation. Articulating sheet material conveyor. 4,564,189, Cl. 271-201.000.

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Senoo, Masaharu; Noma, Keizi; Saruta, Akira; Yoshizaki, Masanori; Teshirogi, Koichi; and Yaegashi, Kouei, 4,564,777, Cl. 310-156.000.

Nonaka, Yuji: *See—*
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.

Nonn, Konrad; Wolf, Karlheinz; Hass, Johannes; and Paulat, Volker, to Bayer Aktiengesellschaft. Insecticidal and acaricidal agents and their use. 4,564,632, Cl. 514-522.000.

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Morishita, Hajime; Miura, Kiyoshi; Sasaya, Osamu; and Nonogaki, Saburo, 4,564,572, Cl. 430-28.000.

Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, to Sanyo Electric Co., Ltd. Electrostatic recording apparatus. 4,564,288, Cl. 355-57.000.

Nordin, Jerry K. G., to Telkefonaktiebolaget LM Ericsson. Contacting device for protecting electronic components against electromagnetic radiation. 4,564,722, Cl. 174-35.0GC.

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Link, William T., 4,564,020, Cl. 128-677.000.

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Northeast Semiconductor Inc.: *See—*
Shealy, James R.; and Eastman, Lester F., 4,564,509, Cl. 423-210.500.

Norton, Charles J., to Marathon Oil Company. Hydrocarbon recovery process using an in situ silicate/polymer gel. 4,564,070, Cl. 166-295.000.

Noshi, Shinji, to Murata Kikai Kabushiki Kaisha. Magazine driving device in paper tube releasing apparatus. 4,564,123, Cl. 221-11.000.

Nowak, Michael: *See—*
Knop, Hans-Georg; Nowak, Michael; Redecker, Friedrich; and Tiede, Ralf, 4,564,859, Cl. 358-75.000.

NRC Corporation: *See—*
Saigo, Kazuhide; and Suzuki, Masayoshi, 4,564,576, Cl. 430-197.000.

NSK-Warner K. K.: *See—*
Kawai, Osamu, 4,563,797, Cl. 24-641.000.
Tsukamoto, Masahiro, 4,564,155, Cl. 242-107.40A.

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Morinaga, Masaru; and Mogi, Shinobu, 4,564,153, Cl. 242-107.000.
Yokote, Yoshihiro; and Yamamoto, Kazuo, 4,564,218, Cl. 280-804.000.

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Huschelrath, Gerhard; Abend, Klaus; and Orthen, Ursula, 4,564,809, Cl. 324-225.000.

Nusser, Martin: *See—*
Wistuba, Eberhard; Nusser, Martin; and Lenzer, Xaver, 4,563,866, Cl. 56-228.000.

N.V. Weefautomaten Picanol: *See—*
van Bogaert, Philippe, 4,564,053, Cl. 139-449.000.

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Iida, Kozo; and Obayashi, Yoshiaki, 4,564,604, Cl. 502-64.000.

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Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, 4,564,659, Cl. 525-328.200.

O'Connor, George L.: *See—*
Briggs, John R.; O'Connor, George L.; and Robson, John H., 4,564,715, Cl. 568-867.000.

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Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; and Fujita, Takashi, 4,564,549, Cl. 428-141.000.

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Dirmeyer, Josef; Odemar, Norbert; and Winzer, Gerhard, 4,564,260, Cl. 350-96.160.

Odenthal, Heinz, to Andreas Kufferath GmbH & Co. KG. Multiple ply dewatering screen particularly for a web forming part of a paper making machine. 4,564,051, Cl. 139-425.00A.

Odintsova, Ljudmila G.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

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Berbalk, Hermann, 4,564,323, Cl. 409-200.000.

Offermann, Paul F., to Chevron Research Company. Methods and apparatus for detecting abnormalities in proximity effect heat-tracing circuits. 4,564,747, Cl. 219-482.000.

Ofshred Limited: *See—*
Bleasdale, Stephen F., 4,564,146, Cl. 241-236.000.

Ogasawara, Nobuhiko: *See—*
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, 4,564,776, Cl. 310-70.00R.

Ogata, Kazumi, to Senju Pharmaceutical Co., Ltd. Phosphoric acid diesters or their salts and process for producing the same. 4,564,686, Cl. 549-220.000.

Ogawa, Toshio, to Murata Manufacturing Co., Ltd. Ceramic filter using multiple thin piezoelectric layers. 4,564,782, Cl. 310-359.000.

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Miyazaki, Hiroo; Shirai, Teruo; and Ogawa, Tsutomu, 4,563,910, Cl. 74-820.000.

Ogorek, Kurt: *See—*
Holz, Joachim; Meier, Wolfgang; Ogorek, Kurt; Goris, Heinrich; and Schwarting, Karl H., 4,564,241, Cl. 299-43.000.

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O'Hara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, to Matsushita Electric Industrial Co. Ltd. Optical recording and reproducing head. 4,564,931, Cl. 369-110.000.

Ohga, Akihiro: *See—*
Hishinuma, Kazuhiro; and Ohga, Akihiro, 4,564,861, Cl. 358-111.000.
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Ohgami, Tadashi; Naitoh, Zenjiro; Saotome, Haruo; Takekoshi, Kenji; and Saitoh, Kimio, to Knorr Shokuhin Kabushiki Kaisha. Process for production of processed sweet corn. 4,564,531, Cl. 426-589.000.

Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, to Chisso Corporation. Thermoset acrylic resin composition for coating metallic materials and stainless steel coated with the composition. 4,564,557, Cl. 428-333.000.

Ohhashi, Tateo; Kawamoto, Hideyuki; and Murakami, Yutaka, to Japan Steel Works Ltd., The. Heat resistant martensitic stainless steel containing 12 percent chromium. 4,564,392, Cl. 75-128.00V.

Ohji, Yuzuru: *See—*
Harada, Kunio; Yamaguchi, Sumio; Kanda, Hiroshi; Ishikawa, Isao; and Ohji, Yuzuru, 4,563,900, Cl. 73-644.000.

Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, to Daikin Kogyo Co., Ltd. Fluorine-containing olefin. 4,564,717, Cl. 568-843.000.

Ohmura, Hiroshi, to Fuji Photo Film Co., Ltd. Exposure control device for camera. 4,564,278, Cl. 354-195.120.

Ohnishi, Yasuichi: *See—*
Hori, Shinichi; Ohnishi, Yasuichi; Ueda, Masahiro; and Noba, Masahiko, 4,564,916, Cl. 364-551.000.

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Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

Ohsumi, Katsumi: *See—*
Honda, Takashi; Minato, Akira; Izumiya, Masakiyo; Kashimura, Eizi; and Ohsumi, Katsumi, 4,564,499, Cl. 376-305.000.

Ohta, Hajime: *See—*
Enokido, Shunji; Kodani, Hideyuki; and Ohta, Hajime, 4,564,078, Cl. 178-18.000.

Ohta, Toshio, to Komori Printing Machinery Co., Ltd. Method and system of measuring image area. 4,564,860, Cl. 358-107.000.

Ohtsuka, Hiroshi: *See—*
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

Oishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic recording tape cassette. 4,564,157, Cl. 242-199.000.

Okabe, Yoshiaki: *See—*
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.

Okada, Masafumi: *See—*
Takigawa, Tetsuo; Ibata, Koichi; Okada, Masafumi; Mizuno, Masao; and Nishida, Takashi, 4,564,477, Cl. 260-405.500.

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Okada, Yukio: *See—*
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

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Tahata, Michio; Okamoto, Masao; and Enomoto, Hiroshi, 4,564,482, Cl. 261-44.00B.

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Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.

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Yamaoka, Hideyuki; Hatano, Michiharu; Miyazaki, Tomio; Shimoda, Teruhisa; and Oki, Koji, 4,564,389, Cl. 75-38.000.

Okikawa, Susumu, to Hitachi, Ltd. Wire bonder. 4,564,734, Cl. 219-56.220.

Okorokov, Georgy N.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

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Olin Corporation: *See—*
Gupta, Debabrata; and Yarwood, John C., 4,564,390, Cl. 75-51.700.

Olsen, Pal B. Device for combination of data. 4,564,750, Cl. 235-89.00R.

Olseth, Bruce K.: *See—*
Morton, Bernard W.; and Olseth, Bruce K., 4,564,746, Cl. 219-276.000.

Olsson, Nils A.; and Tsang, Won-Tien, to AT&T Bell Laboratories. Optical communications system using frequency shift keying. 4,564,946, Cl. 372-20.000.

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Benteler, Hubertus; and Olszewski, Egon, 4,563,802, Cl. 29-157.00R.

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Iba, Youich; and Inaba, Kouji, 4,564,273, Cl. 351-209.000.

O'Meara, James R., Jr. Device for treating fluids with magnetic lines of force. 4,564,448, Cl. 210-222.000.

Omet, Reinhard, to Phoenix Artmaturen-Werke Bregel GmbH. Refractometer. 4,564,292, Cl. 356-133.000.

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Tomizu, Motoyuki; and Nagata, Kunio, 4,564,730, Cl. 200-16.00B.
Yano, Satoshi, 4,564,898, Cl. 364-140.000.

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Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; and Yoshizawa, Tomomi, 4,564,588, Cl. 430-509.000.

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Aoki, Kozo; Ono, Michio; and Nakazyo, Kiyoshi, 4,564,586, Cl. 430-505.000.

Ono, Yoshihiko, to Tokiwa Seiki Industrial Company, Limited. Ultraprecision grinding machine. 4,563,837, Cl. 51-34.00R.

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Sasaki, Masao; Nishijima, Toyoki; Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, 4,564,590, Cl. 430-551.000.
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Oram, John A., to J & D Oram Limited. Apparatus for producing two mutually divergent light beams. 4,564,892, Cl. 362-297.000.

Orban, Otto: *See—*
Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laslzo, 4,564,706, Cl. 564-376.000.

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Kuhl, Adolf, 4,564,409, Cl. 156-219.000.

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Tsuruta, Orihiro, 4,564,407, Cl. 156-147.000.

Orii, Masaru, to Yugengaisha Kyodogiken. Apparatus for transferring a blank. 4,564,332, Cl. 414-759.000.

Orimo, Masayuki: *See—*
Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Miyamoto, Shoji; and Ihara, Hirokazu, 4,564,102, Cl. 198-341.000.

Orlandino, Michael J.; and Chapman, David M. Baby stroller and frame structure therefor. 4,564,212, Cl. 280-642.000.

Orth, Winfried; Pastorek, Emmerich; and Fickert, Werner, to Rutgerswerke Aktiengesellschaft. Process for the preparation of fluorene-9-carboxylic acid. 4,564,700, Cl. 562-405.000.

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Huschelrath, Gerhard; Abend, Klaus; and Orthen, Ursula, 4,564,809, Cl. 324-225.000.

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Mori, Hirotaro; and Fujita, Hiroshi, 4,564,395, Cl. 148-4.000.

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Karabinis, Peter D.; and Osborne, Thomas L., 4,564,952, Cl. 375-14.000.

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Konishi, Hiroyuki; Hashimoto, Shunichi; and Oshio, Hiromichi, 4,564,386, Cl. 71-103.000.

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Tanaka, Tatsuyoshi; Nagami, Kazuyoshi; Tamada, Shigeharu; and Nakagawa, Kazuyuki, 4,564,619, Cl. 514-312.000.

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Lentz, Carl M.; Overton, James R.; and Cornell, David D., 4,564,701, Cl. 562-406.000.

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Yamauchi, Teruo; and Oyama, Yoshishige, 4,563,993, Cl. 123-478.000.

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Adiletta, Joseph G., 4,564,552, Cl. 428-246.000.

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McClure, Robert H.; Peach, Robert W.; and Peach, John R., 4,564,195, Cl. 273-29.00A.

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McClure, Robert H.; Peach, Robert W.; and Peach, John R., 4,564,195, Cl. 273-29.00A.

Pechal, Frank. Battery terminal connector. 4,564,569, Cl. 429-121.000.

Pedersen, Mark K.: *See—*
Bacon, Jeffery E.; Craig, James E.; and Pedersen, Mark K., 4,564,430, Cl. 204-206.000.

Pedroso, Raul I.: *See—*
Loren, Mark; and Pedroso, Raul I., 4,564,803, Cl. 324-71.100.

Pelensky, Joseph; Hubbard, James R.; and Scanlon, John J., to Graphic Controls Corporation. Pens for low torque chart recorders. 4,564,852, Cl. 346-140.00R.

Pellegrini, Antonio; and Beghelli, Benito, to Merak S.p.A. Manufactured articles, including fabrics comprising thermally bonded polyolefinic fibers. 4,564,553, Cl. 428-296.000.

Pellico, Michael A.; and Montgomery, Robert E., to Laclede Professional Products, Inc. Di-enzymatic chewable dentifrice. 4,564,519, Cl. 424-48.000.

Pelloni, Daniele P. C.: *See—*
McNally, Guy W. W.; Lagadec, Roger; and Pelloni, Daniele P. C., 4,564,918, Cl. 364-569.000.

Pennwalt Corporation: *See—*
Koyama, Yuichiro; Nakazawa, Hiroshi; Yamashita, Toshiaki; and Moriyama, Hitoshi, 4,564,709, Cl. 568-26.000.

Performance Pool Products, Ltd.: *See—*
Cohen, Joseph D., 4,564,451, Cl. 210-411.000.

Perreault, Stanley E.; and Wood, Robert L., to International Business Machines Corporation. Tailoring of novolak and diazoquinone positive resists by acylation of novolak. 4,564,575, Cl. 430-165.000.

Perry, Thomas J.; and Khera, Muhammad; I., to GTE Automatic Electric Incorporated. Remote data link address sequencer and a memory arrangement for accessing and storing digital data. 4,564,937, Cl. 370-58.000.

Pertzsch, Albert; Liepold, August; Brunner, Hubert; and Zeroni, Ludwig, to Agfa-Gevaert Aktiengesellschaft. Magnetic tape cassette. 4,564,120, Cl. 220-337.000.

Peruth, Gunther; and Lenz, Michael, to Siemens Aktiengesellschaft. Blocking oscillator converter with controlling logic system. 4,564,820, Cl. 331-62.000.

Pesa, Frederick A.: *See—*
Desmond, Michael J.; and Pesa, Frederick A., 4,564,511, Cl. 423-277.000.

Peter, Cornelius, to Robert Bosch GmbH. Regulation system for an internal combustion engine. 4,563,989, Cl. 123-339.000.

Peters, Claudius: *See—*
Farber, Ernst-Ove, 4,564,317, Cl. 406-56.000.
Neumann, Kurt, 4,564,096, Cl. 192-67.00R.

Peters, Horst: *See—*
Serini, Volker; Lindner, Christian; Peters, Horst; and Nising, Wolfgang, 4,564,654, Cl. 525-67.000.

Petrolite Corporation: *See—*
Oude Alink, Bernardus A., 4,564,707, Cl. 564-413.000.

Pettersson, Ola, to KB Cold Isostatic Press Systems CIPS. Apparatus for compensating axial strain in an isostatic press. 4,564,352, Cl. 425-405.00H.

Pfaff Industriemaschinen GmbH: *See—*
Albrecht, Ernst, 4,563,960, Cl. 112-121.150.

Pfankuch, Claus K. Method and apparatus for enveloping articles with a plastic foil or the like. 4,563,860, Cl. 53-450.000.

Pfizer Inc.: *See—*
Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., 4,564,614, Cl. 514-222.000.

Phillips Petroleum Company: *See—*
Kukes, Simon G.; Sughrue, Edward L., II; and Hogan, Robert J., 4,564,441, Cl. 208-108.000.
Shay, Lucas K., 4,564,523, Cl. 426-60.000.
Skraba, Frank W., 4,564,502, Cl. 422-140.000.
Steger, Barry N., 4,564,710, Cl. 568-62.000.

Phoenix Artmaturen-Werke Bregel GmbH: *See—*
Omet, Reinhard, 4,564,292, Cl. 356-133.000.

Picker International, Ltd.: *See—*
Young, Ian R.; and Bailes, David R., 4,564,813, Cl. 324-311.000.

Picon, Georges: *See—*
Coplot, Daniel; and Picon, Georges, 4,564,453, Cl. 210-614.000.

Pierce, William C., to Pitts Industries, Inc. Two speed, two pulley compressor drive clutch. 4,564,092, Cl. 192-48.200.

Pilny, Richard J.: *See—*
Harpel, William L.; Purnell, Deborah L.; and Pilny, Richard J., 4,564,464, Cl. 252-181.000.

Pioneer Electronic Corporation: *See—*
Funabashi, Tadashi; Takahashi, Junji; and Kato, Kyoichi, 4,564,930, Cl. 369-75.200.

Piper, Louis H.; White, J. David; and Hartman, Ronald H., to Dehydro Corporation. Rigid filter elements, related apparatus and methods. 4,564,450, Cl. 210-293.000.

Pischinger, Franz; and Sollner, Robert, to Forschungsgesellschaft fur Energietechnik und Verbrennungsmotoren mbH. Method and apparatus for introduction of a fluid medium into working space of an internal combustion engine. 4,563,982, Cl. 123-1.00A.

Pitney Bowes Inc.: *See—*
Muller, Arno, 4,564,922, Cl. 364-900.000.

Pitts Industries, Inc.: *See—*
Pierce, William C., 4,564,092, Cl. 192-48.200.

Placke, Dale L.: *See—*
Granzow, Robert H.; Placke, Dale L.; McMorrow, Harold L.; and Nagy, Charles S., 4,564,122, Cl. 221-12.000.

Plempel, Manfred: *See—*
Streissle, Gert; Plempel, Manfred; Paessens, Arnold; Holmwood, Graham; and Buchel, Karl H., 4,564,622, Cl. 514-383.000.

Pleschiutschnigg, Fritz-Peter: *See—*
Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; van Bonn, Hans; Holter, Karl; and Wiegard, Gustav, 4,564,058, Cl. 164-72.000.

Plessey Incorporated: *See—*
Shube, Eugene E., 4,563,908, Cl. 74-2.000.

Plessey Overseas Limited: *See—*
Boot, Gordon P., 4,564,938, Cl. 370-85.000.

PLM AB: *See—*
Nilsson, Torsten; and Jakobsen, Kjell M., 4,564,495, Cl. 264-291.000.

Plyler, Robert G.: *See—*
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., 4,564,258, Cl. 339-220.00R.

Polaroid Corporation: *See—*
Egan, Richard G., 4,564,853, Cl. 346-160.000.

Pollack, Simcha Z. Automated bathroom. 4,563,780, Cl. 4-192.000.

Pomagalski S.A.: *See—*
Tarassoff, Serge, 4,563,955, Cl. 104-168.000.

Pomeranz, Mark L. Reclosable condom. 4,564,006, Cl. 128-79.000.

Popadiuk, Nicholas M.: *See—*
Lilenfeld, Robert; Popadiuk, Nicholas M.; Steinheuser, Peter; and Menezes, Edgar, 4,564,013, Cl. 128-335.500.

Poppe, Horst, to Blohm & Voss AG. Anchoring arrangement for floating structures. 4,563,972, Cl. 114-293.000.

Pote, Robert Hawley: *See—*
Craft, Charles E.; Winter, Lester; and Pote, Robert Hawley, 4,564,166, Cl. 248-349.000.

Powell, Norman F., to United States of America, Air Force. Feature referenced error correction apparatus. 4,564,839, Cl. 343-5.0CM.

Poyer, David D. Outdoor lighting fixture using U-shaped fluorescent lamp. 4,564,890, Cl. 362-216.000.

Pozdeev, Nikolai P.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

PPG Industries, Inc.: *See—*
Fecik, Michael T.; Cannon, Gary V.; and Beresik, Gayland S., 4,564,380, Cl. 65-163.000.
Krass, Dennis K., 4,564,385, Cl. 71-98.000.
Kunkle, Gerald E.; and Matesa, Joseph M., 4,564,379, Cl. 65-135.000.

Precision Mechanique Labinal: *See—*
Vandame, Bertrand, 4,564,259, Cl. 339-258.00R.

Preisner, Peter M.: *See—*
Hinzmann, Alfred; Preisner, Peter M.; and Shu, Timour T., 4,564,029, Cl. 131-94.000.

Premel, Ulrich, to L. & C. Steinmuller GmbH. Waste-heat tank. 4,564,067, Cl. 165-163.000.

Preusch, Charles D.: *See—*
Narasimhan, Kalatur S. V. L.; and Preusch, Charles D., 4,564,400, Cl. 148-103.000.

Price, Robert G., to Monitrol, Inc. Apparatus for the application of solder to workpieces. 4,563,974, Cl. 118-66.000.

Princen, Henricus M.: *See—*
Secemski, Isaac I.; Lander, Lynn H.; and Princen, Henricus M., 4,564,463, Cl. 252-174.170.

Procter & Gamble Company, The: *See—*
LaHann, Thomas R.; and Buckwalter, Brian L., 4,564,633, Cl. 514-538.000.

Production Engineering Research Assoc.: *See—*
Moore, Arthur I. W., 4,563,897, Cl. 73-587.000.

Prohaska, Helmut, to Folienwalzwerk Bruder Teich Aktiengasellschaft. Closure cap for beverage containers. 4,564,116, Cl. 215-256.000.

Purnell, Deborah L.: *See—*
Harpel, William L.; Purnell, Deborah L.; and Pilny, Richard J., 4,564,464, Cl. 252-181.000.

Pyrotector, Inc.: *See—*
Doherty, Charles F.; and Johnson, Robert E., 4,564,762, Cl. 250-381.000.

Quack, Jochen M.: *See—*
Ehrl, Winfried; Reng, Alwin; and Quack, Jochen M., 4,564,520, Cl. 424-70.000.

R. R. Donnelley & Sons Company: *See—*
Clarke, Frederick G. E., Jr.; King, Anthony R.; and Majewski, Anthony, 4,564,186, Cl. 270-54.000.

Racecourse Co-Operative Sugar Association Ltd.: *See—*
McDougall, Edward E., 4,564,062, Cl. 165-108.000.

Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., to Schering Aktiengesellschaft. Substituted 5H-pyrimido[5,4-b]indoles. 4,564,610, Cl. 514-80.000.

Ramanarayanan, Madhava P.: *See—*
Ali, Majid; and Ramanarayanan, Madhava P., 4,564,600, Cl. 436-513.000.

Ramirez, Ernest R.: *See—*
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.

Rauffer, Walter: *See—*
Hofmann, Wilfried; Lusch, Herbert; Rauffer, Walter; Zieran, Eberhard; and Sylla, Jurgen, 4,564,276, Cl. 353-55.000.

Rauline, Alain J., to Exxon Research and Engineering Co. Oil composition. 4,564,467, Cl. 252-573.000.

Rauth, Erich; and Form, Ernst, to ANT Nachrichtentechnik GmbH. Cooling system for communications devices with high power losses. 4,564,061, Cl. 165-104.330.

Raynolds, Stuart: *See—*
Lore, Albert L.; and Raynolds, Stuart, 4,564,561, Cl. 428-422.000.

RCA Corporation: *See—*
Barresi, Anthony J.; and Nelson, Leonard, 4,564,135, Cl. 228-6.200.
Kumar, Mahesh; and Whartenby, James C., 4,564,816, Cl. 330-149.000.
Sherman, Jeffrey D.; and Courcy, Stephen E., 4,564,770, Cl. 307-311.000.

Redecker, Friedrich: *See—*
Knop, Hans-Georg; Nowak, Michael; Redecker, Friedrich; and Tiede, Ralf, 4,564,859, Cl. 358-75.000.

Redfern, Timothy: *See—*
Geary, William C.; Mirsaiidi, Mohammad V.; Redfern, Timothy; and Wolfe, David W., 4,563,987, Cl. 123-179.00B.

Reed, George: *See—*
Billingsley, Robert H.; Reed, George; and Schlobohm, Arnold, 4,563,957, Cl. 105-418.000.

Reeder, Conrad M., to Littelfuse, Inc. Fuse with centered fuse filament and method of making the same. 4,563,809, Cl. 29-623.000.

Reference Technology, Inc.: *See—*
Glover, Neal; Clausen, Kermit; Mayne, Chris; and Glissmann, Randy, 4,564,945, Cl. 371-38.000.

Reffelt, James, to Rotron, Incorporated. Brushless DC motor with improved starting. 4,564,793, Cl. 318-254.000.

Rehkopf, Charles H.: *See—*
Baum, Steven A.; Gallaro, Anthony V.; Hovey, Frederick A.; Rehkopf, Charles H.; and Sember, William J., 4,564,786, Cl. 313-479.000.

Reichart, Elwood C., to Motorola, Inc. Offset cancelling AC level detector using an oscillator. 4,564,821, Cl. 331-74.000.

Reichel, Wolfgang: *See—*
Costa, Jorge; and Reichel, Wolfgang, 4,564,187, Cl. 271-9.000.

Reil, Wilhelm, to Tetra Pak Developpement S.A. Packaging means for filling materials which are capable of flow, having a re-closable opening means. 4,564,139, Cl. 229-5.500.

Reimann, George A., to United States of America, Energy. Method for the recovery of silver from silver zeolite. 4,564,391, Cl. 75-63.000.

Reinartz, Hans-Dieter; and Steffes, Helmut, to ITT Industries, Inc. Pressure control device. 4,564,244, Cl. 303-6.00C.

Reiney, Michael G.: *See—*
Wilke, William G.; and Reiney, Michael G., 4,564,804, Cl. 324-103.00P.

Reinmuth, Klaus: *See—*
Kriegesmann, Jochen; Hunold, Klaus; Lipp, Alfred; Reinmuth, Klaus; and Schwetz, Karl A., 4,564,601, Cl. 501-88.000.

Reiter, Stephen E., to Ashland Oil, Inc. Oxydehydrogenation process. 4,564,699, Cl. 560-214.000.

Rekewitz, Rudolf; and Wambach, Hermann, to Siemens Aktiengesellschaft. Transport device for margin-perforated fanfold paper and for continuous roll paper. 4,564,305, Cl. 400-605.000.

Reng, Alwin: *See—*
Ehrl, Winfried; Reng, Alwin; and Quack, Jochen M., 4,564,520, Cl. 424-70.000.

Renwick, John D.: *See—*
Curtis, John R.; and Renwick, John D., 4,564,581, Cl. 430-308.000.

Resch, William A., to Harris Corporation. Television SAW/VSB filter incorporating receiver equalizer. 4,564,858, Cl. 358-21.00R.

Research Association for Petroleum Alternatives Development: *See—*
Shibata, Masatoshi; Uchiyama, Soichi; and Aoki, Yoshinobu, 4,564,643, Cl. 518-717.000.

Research Association Of Synthetic Dyestuffs: *See—*
Niwa, Toshio; Himeno, Kiyoshi; and Maeda, Shuichi, 4,564,673, Cl. 534-794.000.

Research Corporation: *See—*
Gaafar, Hassan A.; and Grimwood, Brian G., 4,564,592, Cl. 435-68.000.
Lerner, Ethan A.; and Lerner, Michael R., 4,564,597, Cl. 435-7.000.

Research Triangle Institute: *See—*
Seltzman, Herbert H.; and Hsieh, Yung-Ao, 4,564,528, Cl. 426-548.000.

Resource Engineering & Manufacturing Company: *See—*
Hart, Milburn L.; and Hart, Robert J., 4,563,841, Cl. 51-411.000.

Respiratory Care, Inc.: *See—*
Gupton, John, 4,564,748, Cl. 219-497.000.

Reuss, George D.: *See—*
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,563,810, Cl. 29-749.000.

Revici, Emanuel, to Alphatime Ltd. Co., Inc. Selenium compounds having antineoplastic activity, process for the preparation thereof and pharmaceutical compositions therefrom. 4,564,634, Cl. 514-558.000.

Rey, Charles A.: *See—*
Danley, Thomas J.; and Rey, Charles A., 4,564,727, Cl. 179-116.000.

Rhone-Poulenc Recherches: *See—*
Cassat, Robert; and Alliot-Lugaz, Maurice, 4,564,424, Cl. 204-20.000.

Rich, Hubert A.: *See—*
Lambert, Gerard L.; McKittrick, Michael T.; Rich, Hubert A.; and Saffer, Gary M., 4,564,197, Cl. 273-86.00D.

Richard, Joseph: *See—*
Coissard, Pierre; Richard, Joseph; and Morin, Francois, 4,563,806, Cl. 29-571.000.

Richardson, Donald C.: *See—*
Jones, Marshall G.; and Richardson, Donald C., 4,564,736, Cl. 219-121.00L.

Richter Gedeon Vegyeszeti Gyar Rt: *See—*
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.

Richter, Klaus: *See—*
Feldmann, John; Koebernick, Hubert; Richter, Klaus; and Woelk, Hans-Ulrich, 4,564,692, Cl. 549-464.000.

Ricoh Company, Ltd.: *See—*
Ishima, Kazumi, 4,564,749, Cl. 219-497.000.
Yasuda, Wataru; Sakamoto, Koji; and Kanno, Fuchio, 4,564,285, Cl. 355-3.0DD.

Riederer, Manfred, to Wacker-Chemie GmbH. Process for stabilizing organopolysiloxanes. 4,564,693, Cl. 556-401.000.

Rieker, Heinz: *See—*
Stephan, Wolfgang; and Rieker, Heinz, 4,564,906, Cl. 364-424.100.

Riley, Richard L.: *See—*
Studt, William L.; Riley, Richard L.; and Douglas, George H., 4,564,640, Cl. 514-598.000.

Rinaldi, Antonio: *See—*
Neri, Carlo; Giroldini, William; Rinaldi, Antonio; Traversoni, Mario; and Clerici, Mario, 4,564,691, Cl. 549-462.000.

Rinck, Jean C.; Lecomte, Alain M.; and Scherrer, Alain, to Manufacture de Machines du Haut Rhin, "Manurhin" . Machine for the double treatment of workpieces while they are continually moving and recycled upon a operating drum, particularly the successive varnishing of bodies of revolution. 4,563,935, Cl. 86-17.000.

Ringlee, David R.; and Gaddis, Paul G., to Weyerhaeuser Company. Field repairable circular saw. 4,563,929, Cl. 83-840.000.

Rinnooy Kan, Edmond A. Eyeglasses with interchangeable parts. 4,564,272, Cl. 351-153.000.

Ristvedt-Johnson, Inc.: *See—*
Ristvedt, Victor G., 4,564,036, Cl. 133-3.00A.

Ristvedt, Victor G., to Ristvedt-Johnson, Inc. Coin sorting system with controllable stop. 4,564,036, Cl. 133-3.00A.

Rittenhouse, Larry E.: *See—*
Kilen, Richard S.; and Rittenhouse, Larry E., 4,564,794, Cl. 318-314.000.

Ritter, J. Alan: *See—*
Hutchison, Stephen; Ritter, J. Alan; and Virkus, Mark, 4,564,018, Cl. 128-660.000.

Ritter, James D., to Boeing Company, The. Multiple lap-joint for thermoplastic laminates. 4,564,543, Cl. 428-58.000.

Robbins & Craig Welding & Mfg. Co.: *See—*
Bacon, Jeffery E.; Craig, James E.; and Pedersen, Mark K., 4,564,430, Cl. 204-206.000.

Robert Bosch GmbH: *See—*
Daumuller, Hans; and Ruckwied, Heinz, 4,564,891, Cl. 362-294.000.
Flohrs, Peter, 4,564,771, Cl. 307-315.000.
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.
Konrath, Karl; and Weiss, Otmar, 4,563,996, Cl. 123-502.000.
Locher, Johannes; and Schmidt, Wolfgang, 4,563,995, Cl. 123-494.000.
Lungu, Corneliu, 4,564,046, Cl. 137-625.650.
Peter, Cornelius, 4,563,989, Cl. 123-339.000.

Roberts, David B.: *See—*
Clitheros, Derek P.; Livingstone, David A.; Roberts, David B.; and Cawthorne, Roland, 4,564,410, Cl. 156-356.000.

Roberts, Wf. Dual purpose closure for heat exchanges. 4,564,065, Cl. 165-158.000.

Roberts, William E.; and Cripps, Milo, to Excellon Industries. Feed arrangement for pick-and-place machine. 4,564,326, Cl. 414-131.000.
Robinson, Paul R.; and Moorehead, Eric L., to Union Oil Company of California. Oxidative-dehydrogenation catalyst and process. 4,564,603, Cl. 502-60.000.
Robot Research, Inc.: *See—*
Stahler, John P., 4,564,823, Cl. 332-17.000.
Robson, John H.: *See—*
Briggs, John R.; O'Connor, George L.; and Robson, John H., 4,564,715, Cl. 568-867.000.
Roche, Karen M.; and Eyerly, Robert M., to Minnesota Mining and Manufacturing Company. Prosthetic acetabular cup. 4,563,778, Cl. 623-22.000.
Roche, Thomas A.: *See—*
Christ, Allen E.; and Roche, Thomas A., 4,564,880, Cl. 361-212.000.
Rock, Erich; and Hollenstein, Helmut, to Julius Blum Gesellschaft m.b.H. Furniture fitting. 4,564,306, Cl. 403-14.000.
Rockandel, Michael A.: *See—*
Fairweather, Michael J.; Rockandel, Michael A.; Sadan, Abraham; and Swinkels, Godefridus M., 4,564,508, Cl. 423-189.000.
Rocke, Dennis, to Shelleden Products Limited. Pharmaceutical preparations and compositions. 4,564,522, Cl. 424-195.100.
Rogers, Jerrold J.; and Sirotiak, Judd L., to Tektronix, Inc. Compensation circuit for synchronizing image motion with a movable recording medium. 4,564,849, Cl. 346-110.00R.
Rogers, Wilfred R.: *See—*
Damiano, Ralph R.; Rogers, Wilfred R.; and Whitney, Charles A., 4,564,256, Cl. 339-99.00R.
Rogge, Dieter, to Windmoller & Holscher. Printing press. 4,563,949, Cl. 101-174.000.
Rogler, Wolfgang: *See—*
Markert, Helmut; Rogler, Wolfgang; Kretzschman, Klaus; and Hauschildt, Klaus-Robert, 4,564,651, Cl. 524-589.000.
Rohner, Joachim, to W. Schlafhorst & Co. Winding machine. 4,564,147, Cl. 242-35.50A.
Rolf, Meinhard; Neeff, Rutger; Muller, Walter; and Hederich, Volker, to Bayer Aktiengesellschaft. Isoindolazines. 4,564,680, Cl. 546-155.000.
Romano, Robert P., to Comus International, Inc. Apparatus for testing a telephone line. 4,564,728, Cl. 179-175.30R.
Rommen, Hans: *See—*
Bald, Wilfried; Rommen, Hans; and Stoy, Erich, 4,563,888, Cl. 72-243.000.
Ronchetti, Camillo: *See—*
Buzzanca, Giovanni; Ronchetti, Camillo; Uberti, Franco; and Anzani, Renato, 4,564,436, Cl. 204-400.000.
Roper, Philip E.: *See—*
Birley, Stuart S.; and Roper, Philip E., 4,564,743, Cl. 219-137.00R.
Roseliep, Robert E. Form broach assembly. 4,564,320, Cl. 407-15.000.
Rosenbaum, Joseph G. Ophthamological method for testing tear flow and composition for use in same. 4,564,518, Cl. 424-9.000.
Rosenberg, Michael J.; and Erpel, Alfred C., to Rosenberg, Michael J. Nontiltable, straight line path ribbon cartridge shifting means for multicolor ribbon including MICR ink. 4,564,303, Cl. 400-208.000.
Rosenfeld, John G.; Watts, Clark; and York, Donald H. Method and apparatus for intracranial pressure estimation. 4,564,022, Cl. 128-748.000.
Rosenstatter, Otto, to Dentalwerk Buroos Gesellschaft m.b.H. Angle piece for dental purposes. 4,564,354, Cl. 433-133.000.
Rosser, Paul J.: *See—*
Scovell, Peter D.; Rosser, Paul J.; and Tomkins, Gary J., 4,563,805, Cl. 29-571.000.
Rotondi, Anthony J.: *See—*
Mullich, Richard O.; and Rotondi, Anthony J., 4,564,229, Cl. 292-169.130.
Rotopack Tools Pty. Limited: *See—*
McDonald, Douglas A., 4,563,923, Cl. 81-466.000.
Rotron, Incorporated: *See—*
Reffelt, James, 4,564,793, Cl. 318-254.000.
Rozanc, Richard C. Method for anchoring a bolt in a rock-like structure. 4,564,315, Cl. 405-261.000.
Rozsi, Donald J.: *See—*
Smith, Stanley K.; and Rozsi, Donald J., 4,564,910, Cl. 364-474.000.
Smith, Stanley K.; Rozsi, Donald J.; and Sabroff, Alvin M., 4,564,911, Cl. 364-474.000.
Rubinstein, Ian; and Woodford, Raymond B., to Exxon Production Research Co. In-place wellbore consolidation in petroleum reservoirs using sulfur-oil polymers. 4,564,069, Cl. 166-288.000.
Ruckwied, Heinz: *See—*
Daumuller, Hans; and Ruckwied, Heinz, 4,564,891, Cl. 362-294.000.
Rudelick, John, to Milwaukee Faucets (Div. of Universal-Rundle Corporation). Faucet and liquid supply tube therefor. 4,564,040, Cl. 137-454.600.
Ruhland, Dieter. Autotransfusion apparatus. 4,564,359, Cl. 604-4.000.
Ruhrchemie Aktiengesellschaft: *See—*
Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, 4,564,642, Cl. 518-717.000.
Ruhrtal-Elektrizitatsgesellschaft Hartig GmbH & Co.: *See—*
Hartig, Alfred, 4,564,731, Cl. 200-269.000.
Rumpel, Peter, to Siemens Aktiengesellschaft. Pasting station for a fast printer. 4,564,184, Cl. 270-39.000.
Runkle, Franklin D.; and Tennenhouse, Gerald J., to Ford Motor Company. Method and apparatus for increasing wear life of ceramic tools. 4,563,924, Cl. 82-1.00C.
Rupp, Werner: *See—*
Schill, Jurgen; Rupp, Werner; Schaff, Werner; and Urban, Jorg, 4,563,801, Cl. 29-156.80B.
Russ, Calvin W.; and Craze, David A. Hydraulic wheel lift system for tow vehicles. 4,564,207, Cl. 280-402.000.
Russell, Daniel: *See—*
Kimmons, D. L.; and Russell, Daniel, 4,564,346, Cl. 418-206.000.
Rutgerswerke Aktiengesellschaft: *See—*
Orth, Winfried; Pastorek, Emmerich; and Fickert, Werner, 4,564,700, Cl. 562-405.000.
Ryan, Austin T. Agricultural implement. 4,564,074, Cl. 172-265.000.
Ryan, Robert M. Fresh salmon-cleaning machine. 4,563,793, Cl. 17-58.000.
Rzeszewski, Theodore S.: *See—*
LoCicero, Joseph L.; Pazarci, Melih; and Rzeszewski, Theodore S., 4,564,857, Cl. 358-11.000.
S. Himmelstein and Company: *See—*
Himmelstein, Sydney, 4,563,905, Cl. 73-862.360.
Sabroff, Alvin M.: *See—*
Smith, Stanley K.; Rozsi, Donald J.; and Sabroff, Alvin M., 4,564,911, Cl. 364-474.000.
Sachse, Burkhard: *See—*
Stahler, Gerhard; Knauf, Werner; Sachse, Burkhard; and Walters-dorfer, Anna, 4,564,611, Cl. 514-99.000.
SADACEM: *See—*
Mangal, Michel, 4,563,849, Cl. 52-235.000.
Sadan, Abraham: *See—*
Fairweather, Michael J.; Rockandel, Michael A.; Sadan, Abraham; and Swinkels, Godefridus M., 4,564,508, Cl. 423-189.000.
Sadlier, William K.: *See—*
Alley, Lynn D.; Alley, Stephen W.; Sadlier, William K.; and Burton, Richard A., 4,564,751, Cl. 235-146.000.
Safe-T-Jack, Inc.: *See—*
Arzouman, Harry H., 4,564,172, Cl. 254-1.000.
Saffer, Gary M.: *See—*
Lambert, Gerard L.; McKittrick, Michael T.; Rich, Hubert A.; and Saffer, Gary M., 4,564,197, Cl. 273-86.00D.
Sagami Chem. Rsch. Cntr.: *See—*
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.
Sagami Chemical Research Center: *See—*
Terashima, Shiro; Kimura, Yoshikazu; Suzuki, Michiyo; Matsumoto, Teruyo; and Abe, Rumiko, 4,564,674, Cl. 536-6.400.
Saigo, Kazuhide; and Suzuki, Masayoshi, to NRC Corporation. Resist material comprising polymer of allylsilyl compound and pattern forming method using the resist material. 4,564,576, Cl. 430-197.000.
Saint-Gobain Vitrage: *See—*
Crumbach, Richard; Schilde, Heinz-Josef; and Tiedemann, Helmut, 4,564,408, Cl. 156-212.000.
Saito, Hitoshi: *See—*
Kurabayashi, Katsuhiko; Kinoshita, Hidefumi; Saito, Hitoshi; and Takahashi, Toshio, 4,564,675, Cl. 536-18.100.
Saito, Junichi: *See—*
Yamada, Yasuo; Saito, Junichi; Tamura, Tatsuo; and Sakawa, Shinji, 4,564,638, Cl. 514-585.000.
Saitoh, Hisao: *See—*
Tsuge, Mitsuo; Kohmura, Shigeru; Sugiyama, Keiichi; Saitoh, Hisao; and Saitoh, Shigenori, 4,564,119, Cl. 220-270.000.
Saitoh, Kimio: *See—*
Ohgami, Tadashi; Naitoh, Zenjiro; Saotome, Haruo; Takekoshi, Kenji; and Saitoh, Kimio, 4,564,531, Cl. 426-589.000.
Saitoh, Shigenori: *See—*
Tsuge, Mitsuo; Kohmura, Shigeru; Sugiyama, Keiichi; Saitoh, Hisao; and Saitoh, Shigenori, 4,564,119, Cl. 220-270.000.
Saitoh, Takeshi; and Hatashita, Hiroshi, to Hitachi, Ltd. TV Tuner oscillator with feedback for more low frequency power. 4,564,822, Cl. 331-117.00R.
Sakaeda, Keiko: *See—*
Sashiki, Takashi; and Sakaeda, Keiko, 4,564,103, Cl. 198-358.000.
Sakai, Hiroyuki; Takemoto, Toyoki; Kawakita, Kenji; Fujita, Tsutomu; and Akiyama, Atsuko, to Matsushita Electric Industrial Co., Ltd. Method for making semiconductor device utilizing molecular beam epitaxy to form the emitter layers. 4,563,807, Cl. 29-591.000.
Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, to Nippon Piston Ring Co., Ltd. Rotary compressor having rotary sleeve for rotation with vanes. 4,564,344, Cl. 418-173.000.
Sakamoto, Akira: *See—*
Taira, Kazuo; Sakamoto, Akira; Yamada, Muneki; Aizawa, Masanori; and Ueno, Hiroshi, 4,564,541, Cl. 428-35.000.
Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; and Yoshizawa, Tomomi, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material for radiography. 4,564,588, Cl. 430-509.000.
Sakamoto, Koji: *See—*
Yasuda, Wataru; Sakamoto, Koji; and Kanno, Fuchio, 4,564,285, Cl. 355-3.0DD.
Sakawa, Shinji: *See—*
Yamada, Yasuo; Saito, Junichi; Tamura, Tatsuo; and Sakawa, Shinji, 4,564,638, Cl. 514-585.000.
Salem, Eli: *See—*
Flynn, George C.; Salem, Eli; and Kunin, Robert, 4,564,455, Cl. 210-675.000.
Salomonsson, Krister. Blade guide for saw blades. 4,563,928, Cl. 83-821.000.

Saltz, Edward: *See—*
Grant, Edward L.; Stops, Earl E.; and Saltz, Edward, 4,564,165, Cl. 248-343.000.
Salzburg, Herbert; Hajek, Manfred; and Meyborg, Holger, to Bayer Aktiengesellschaft. Process for the production of dianhydrohexitol mixtures and the production of polymers from such mixtures. 4,564,645, Cl. 521-159.000.
Samelson, Samuel, to EX-CELL Home Fashions. Cushion with simulated button tuft and method for manufacturing same. 4,563,785, Cl. 5-472.000.
Sampatacos, Evan P., to Hughes Helicopters, Inc. Low drag, bearingless rotor head for helicopters. 4,564,336, Cl. 416-141.000.
Sanden Corporation: *See—*
Nakamura, Yasuo, 4,564,137, Cl. 228-173.600.
Sanderson, Gary M.; and White, Charles M., to Harris Corporation. Apparatus providing automatic and manual control of setup adjustments for TV cameras. 4,564,856, Cl. 358-10.000.
Sankyo Company Limited: *See—*
Nakazawa, Junichi; Hashimoto, Teruo; Kaneko, Masanao; and Miyaoka, Takeo, 4,564,676, Cl. 544-21.000.
Sano, Yasuro, to Janome Sewing Machine Co., Ltd. Switching mechanism for electronically controlled sewing machine. 4,563,966, Cl. 112-455.000.
Sanyo Electric Co., Ltd.: *See—*
Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, 4,564,288, Cl. 355-57.000.
Sanyo Kokusaku Pulp Co., Ltd.: *See—*
Nishikubo, Toshihiko; and Shimizu, Kazuo, 4,564,657, Cl. 525-158.000.
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, 4,564,560, Cl. 428-411.100.
Saotome, Haruo: *See—*
Ohgami, Tadashi; Naitoh, Zenjiro; Saotome, Haruo; Takekoshi, Kenji; and Saitoh, Kimio, 4,564,531, Cl. 426-589.000.
Saputo, Lorraine E.; and Saputo, Vincent J. Water treatment dispensing system. 4,564,506, Cl. 422-266.000.
Saputo, Vincent J.: *See—*
Saputo, Lorraine E.; and Saputo, Vincent J., 4,564,506, Cl. 422-266.000.
Saruta, Akira: *See—*
Senoo, Masaharu; Noma, Keizi; Saruta, Akira; Yoshizaki, Masanori; Teshirogi, Koichi; and Yaegashi, Kouei, 4,564,777, Cl. 310-156.000.
Sasaki, Hiromu: *See—*
Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, 4,564,847, Cl. 346-76.0PH.
Sasaki, Katsusuke: *See—*
Ide, Katsuyuki; Yamada, Masatoshi; and Sasaki, Katsusuke, 4,564,073, Cl. 172-120.000.
Sasaki, Masao; Nishijima, Toyoki; Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,564,590, Cl. 430-551.000.
Sasaki, Takayuki: *See—*
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, 4,564,560, Cl. 428-411.100.
Sasaya, Osamu: *See—*
Morishita, Hajime; Miura, Kiyoshi; Sasaya, Osamu; and Nonogaki, Saburo, 4,564,572, Cl. 430-28.000.
Sashiki, Takashi; and Sakaeda, Keiko, to Kabushiki Kaisha Ishida Koki Seisakusho. Method and apparatus for conveying linear articles. 4,564,103, Cl. 198-358.000.
Sato, Fumio: *See—*
Miyano, Seiji; Sumoto, Kunihiro; Morita, Minoru; and Sato, Fumio, 4,564,624, Cl. 514-413.000.
Sato, Hiroki; Natori, Takehisa; and Nakano, Takao, to Sony Corporation. Envelope structure for flat cathode ray tube. 4,564,785, Cl. 313-422.000.
Sato, Hiroko: *See—*
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.
Sato, Mikio: *See—*
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.
Sato, Tadashi; Takahashi, Genji; and Inui, Yoshiaki, to Hitachi, Ltd. Method and apparatus for optically measuring a current. 4,564,754, Cl. 250-225.000.
Sato, Yasuji: *See—*
Nakayama, Yasunobu; Sato, Yasuji; and Shibata, Shinichi, 4,564,724, Cl. 179-2.00A.
Sato, Yasuo: *See—*
Nagase, Hiroshi; and Sato, Yasuo, 4,564,639, Cl. 514-594.000.
Satoh, Isao: *See—*
O'Hara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, 4,564,931, Cl. 369-110.000.
Saunders Archery Co.: *See—*
Saunders, Charles A., 4,563,821, Cl. 33-265.000.
Saunders, Charles A., to Saunders Archery Co. Peep sight for compound bow. 4,563,821, Cl. 33-265.000.
Sawada, Akashi: *See—*
Hayafuji, Yoshinari; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,564,403, Cl. 148-171.000.
Sawyer, Edith M.: *See—*
Sawyer, Willard C.; Sawyer, Edith M.; Keef, Sherron M.; and Sawyer, John W., 4,564,368, Cl. 44-1.00D.
Sawyer, John W.: *See—*
Sawyer, Willard C.; Sawyer, Edith M.; Keef, Sherron M.; and Sawyer, John W., 4,564,368, Cl. 44-1.00D.
Sawyer, Willard C.; Sawyer, Edith M.; Keef, Sherron M.; and Sawyer, John W. Method and apparatus for use in drying biomass particles. 4,564,368, Cl. 44-1.00D.
Scales, John M., to Nicolon Corporation. Protective jacket for use in revetment structures. 4,564,311, Cl. 405-20.000.
Scalzi, Casper A.: *See—*
Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., 4,564,903, Cl. 364-300.000.
Scandia Packaging Machinery Co.: *See—*
Anderson, Andrew W., deceased, 4,564,104, Cl. 198-422.000.
Scanlon, John J.: *See—*
Pelensky, Joseph; Hubbard, James R.; and Scanlon, John J., 4,564,852, Cl. 346-140.00R.
Schaal, Gunter: *See—*
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.
Schachar, Ronald A. Method for maintaining corneal shape after radial keratotomy. 4,564,637, Cl. 514-573.000.
Schaedler, Charles C.: *See—*
Loring, Wolson J.; and Schaedler, Charles C., 4,564,200, Cl. 273-332.000.
Schaeffer, Georg: *See—*
Kuckertz, Herbert; and Schaeffer, Georg, 4,564,712, Cl. 568-635.000.
Schaff, Werner: *See—*
Schill, Jurgen; Rupp, Werner; Schaff, Werner; and Urban, Jorg, 4,563,801, Cl. 29-156.80B.
Schaub, Bernard: *See—*
Fillot, Alain; Gallet, Jean; Paltrier, Sylvain; and Schaub, Bernard, 4,564,415, Cl. 156-604.000.
Schering Aktiengesellschaft: *See—*
Rahtz, Dieter; Huth, Andreas; Schmiechen, Raiph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.
Schering Corporation: *See—*
Kreutner, William; and Siegel, Marvin I., 4,564,626, Cl. 514-430.000.
Scherrer, Alain: *See—*
Rinck, Jean C.; Lecomte, Alain M.; and Scherrer, Alain, 4,563,935, Cl. 86-17.000.
Schijven, Lucas W. M., to U.S. Philips Corporation. Cassette recorder with freely pivoting ejection lever. 4,564,874, Cl. 360-96.100.
Schilde, Heinz-Josef: *See—*
Crumbach, Richard; Schilde, Heinz-Josef; and Tiedemann, Helmut, 4,564,408, Cl. 156-212.000.
Schill, Jurgen; Rupp, Werner; Schaff, Werner; and Urban, Jorg, to Klein, Schanzlin & Becker Aktiengesellschaft. Method of reinforcing the edges of impeller vanes or the like. 4,563,801, Cl. 29-156.80B.
Schlafer, Ludwig, to Hoechst Aktiengesellschaft. Water-soluble monoazo and disazo compounds containing a fibre-reactive 2-alkoxy-5-chloro-aniline diazo component and copper complexes thereof, useful as dyestuffs. 4,564,672, Cl. 534-629.000.
Schlobohm, Arnold: *See—*
Billingsley, Robert H.; Reed, George; and Schlobohm, Arnold, 4,563,957, Cl. 105-418.000.
Schmid, Peter: *See—*
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.
Schmidt, Birgit: *See—*
Weddigen, Gerd; Huber, Robert; Schmidt, Birgit; and Schneider, Hartmut, 4,564,466, Cl. 525-505.000.
Schmidt, Manfred: *See—*
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, 4,564,669, Cl. 528-173.000.
Schmidt, Martin: *See—*
Siegmann, Klaus; and Schmidt, Martin, 4,564,021, Cl. 128-716.000.
Schmidt, Wolfgang: *See—*
Locher, Johannes; and Schmidt, Wolfgang, 4,563,995, Cl. 123-494.000.
Schmiechen, Ralph: *See—*
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.
Schmit, Joseph L.: *See—*
Nohava, Thomas E.; and Schmit, Joseph L., 4,564,494, Cl. 264-275.000.
Schmitt, Gunter K., to Koenig & Bauer Aktiengesellschaft. Folder assembly. 4,564,470, Cl. 270-21.100.
Schmitt, Reinhard: *See—*
Klein, Klaus; and Schmitt, Reinhard, 4,564,250, Cl. 339-14.00R.
Schmitz, Franz J.; Wollbeck, Rudi; and Klein, Wolfgang, to Akzo N.V. Method for bubble-free gas feed. 4,564,373, Cl. 55-16.000.
Schneider, Hartmut: *See—*
Weddigen, Gerd; Huber, Robert; Schmidt, Birgit; and Schneider, Hartmut, 4,564,466, Cl. 525-505.000.

Schneider, Helmut: *See—*
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.

Schneider, Herbert H.: *See—*
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.

Schnetz, Rainer, to Albert Schnetz, Firma. Hydraulic dashpot. 4,564,176, Cl. 267-64.110.

Schoen, Josef; and Hoffmann, Rudolf, to Siemens Aktiengesellschaft. Method of manufacturing an optical coupling device. 4,564,417, Cl. 156-633.000.

Scholle Corporation: *See—*
Lloyd-Davies, William T., 4,564,132, Cl. 222-522.000.

Scholtz, Martin P. Fireplace fan. 4,564,538, Cl. 428-12.000.

Schommler, Manfred; and Dirks, Arthur, to Werner H. K. Peters Maschinenfabrik GmbH. Machine for longitudinally cutting and grooving a length of material, especially corrugated board. 4,563,930, Cl. 83-862.000.

Schoonejongen, Ronald J.: *See—*
Martin, F. Wayne; Shahbazi, Samson; and Schoonejongen, Ronald J., 4,564,563, Cl. 428-546.000.

Schramm, Heribert: *See—*
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.

Schreiber, Alfons: *See—*
Kreth, Julis; Schreiber, Alfons; and Steinko, Willi, 4,563,818, Cl. 30-417.000.

Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; van Bonn, Hans; Holter, Karl; and Wiegard, Gustav, to Mannesmann AG; and Gustav Wiegard Maschinenfabrik. Controlling the feeding of casting powder. 4,564,058, Cl. 164-72.000.

Schuller, Ivan K.; Ketterson, John B.; and Banerjee, Indrajit, to United States of America, Energy. Superconducting magnet wire. 4,564,564, Cl. 428-662.000.

Schulte, Wolfgang: *See—*
Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, 4,564,510, Cl. 423-235.000.

Schulze, Ernst-Friedrich: *See—*
Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, 4,564,381, Cl. 71-88.000.

Schulze, Gerd, to Deutsche Babcock Aktiengesellschaft. Bearing support stand. 4,564,300, Cl. 384-581.000.

Schumann, Klaus: *See—*
Altenschopfer, Theodor; Giesen, Walter; Schumann, Klaus; and Streschnak, Benno, 4,564,535, Cl. 427-285.000.

Schuurman, Teunis: *See—*
Boltze, Karl-Heinz; Davies, Margaret A.; Junge, Bodo; Schuurman, Teunis; and Traber, Jorg, 4,564,613, Cl. 514-222.000.

Schwarting, Karl H.: *See—*
Holz, Joachim; Meier, Wolfgang; Ogorek, Kurt; Goris, Heinrich; and Schwarting, Karl H., 4,564,241, Cl. 299-43.000.

Schwarz, Ricardo B.: *See—*
Johnson, William L.; and Schwarz, Ricardo B., 4,564,396, Cl. 148-4.000.

Schwarze, Rigobert. Pipe bending machine. 4,563,891, Cl. 72-149.000.

Schwefel, Ernst, to Dr. Johannes Heidenhain GmbH. Numerical control system for determining tool withdrawal direction. 4,564,912, Cl. 364-474.000.

Schwetz, Karl A.: *See—*
Kriegesmann, Jochen; Hunold, Klaus; Lipp, Alfred; Reinmuth, Klaus; and Schwetz, Karl A., 4,564,601, Cl. 501-88.000.

Sciaky Bros., Inc.: *See—*
Estes, Jeffrey M., 4,564,738, Cl. 219-121.0ED.

Scopes, David I. C.; Newton, Roger F.; and Cookson, Richard C., to Glaxo Group Limited. 5-Halovinyl-2'-deoxyuridine derivatives. 4,564,618, Cl. 514-274.000.

Scovell, Peter D.; Rosser, Paul J.; and Tomkins, Gary J., to Standard Telephones and Cables, PLC. Manufacture of MOSFET with metal silicide contact. 4,563,805, Cl. 29-571.000.

Sealock, L. John, Jr.: *See—*
Elliott, Douglas C.; Sealock, L. John, Jr.; and Hallen, Richard T., 4,564,516, Cl. 423-655.000.

Sears, Glenn W., Jr.: *See—*
Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., 4,564,903, Cl. 364-300.000.

Secemski, Isaac I.; Lander, Lynn H.; and Princen, Henricus M., to Lever Brothers Company. Liquid laundry detergents with improved soil release properties. 4,564,463, Cl. 252-174.170.

Sedlmayr, Gerhard: *See—*
Baden, Hans; Kuhnemann, Klaus; Sedlmayr, Gerhard; Straszewski, Klaus; and Zeumer, Monika, 4,564,219, Cl. 280-808.000.

Segada, James J.: *See—*
Burkard, Edward A.; and Segada, James J., 4,564,544, Cl. 428-70.000.

Seibert, Charles. Pallet storage rack. 4,564,134, Cl. 224-42.410.

Seibold, James R.: *See—*
Janoff, Andrew S.; Ostro, Marc J.; Weiner, Allan L.; Weissmann, Gerald; and Seibold, James R., 4,564,599, Cl. 436-507.000.

Seidel, Eberhard: *See—*
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.

Seidelmann, Dieter: *See—*
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.

Seidl, Horst: *See—*
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.

Seiffert, Raymond C.: *See—*
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., 4,564,258, Cl. 339-220.00R.

Seigler, Adrian E.: *See—*
Arnold, Richard F.; Cocke, John; Coppersmith, Don; Seigler, Adrian E.; and Strait, Gary E., 4,564,944, Cl. 371-37.000.

Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, to BASF Aktiengesellschaft. Substituted 1-oxo-2-phenyl-2-(2-alkylaminoethyl)-1,2,3,4-tetrahydronaphthalenes, their preparation and their use. 4,564,641, Cl. 514-650.000.

Sekimoto, Hiroshi: *See—*
Masaichiro, Masui, 4,564,475, Cl. 260-398.500.

Seko, Yasutoshi; and Yanagishima, Takayuki, to Nissan Motor Company, Limited. Dozing warning system for a vehicle. 4,564,833, Cl. 340-576.000.

Sellars, William H. Can opener for flip top cans. 4,563,919, Cl. 81-3.550.

Seltzman, Herbert H.; and Hsieh, Yung-Ao, to Research Triangle Institute. Aminomalonyl alanine compounds and use as dietary sweeteners. 4,564,528, Cl. 426-548.000.

Sember, William J.: *See—*
Baum, Steven A.; Gallaro, Anthony V.; Hovey, Frederick A.; Rehkopf, Charles H.; and Sember, William J., 4,564,786, Cl. 313-479.000.

Semiconductor Energy Laboratory Co., Ltd.: *See—*
Yamazaki, Shunpei, 4,564,533, Cl. 427-39.000.

Sencore, Inc.: *See—*
Winter, Robert A., 4,564,805, Cl. 324-121.00R.

Senju Pharmaceutical Co., Ltd.: *See—*
Ogata, Kazumi, 4,564,686, Cl. 549-220.000.

Senoo, Masaharu; Noma, Keizi; Saruta, Akira; Yoshizaki, Masanori; Teshirogi, Koichi; and Yaegashi, Kouei, to Hitachi, Ltd. Reinforced permanent magnet rotor with cast zinc. 4,564,777, Cl. 310-156.000.

Sericol Group Limited: *See—*
Curtis, John R.; and Renwick, John D., 4,564,581, Cl. 430-308.000.

Serini, Volker; Lindner, Christian; Peters, Horst; and Nising, Wolfgang, to Bayer Aktiengesellschaft. Process for the preparation and/or further processing of polymer blends. 4,564,654, Cl. 525-67.000.

Sermatech International Incorporated: *See—*
Hornberger, Dennis A., 4,564,555, Cl. 428-312.800.

Sethi, Amar J.: *See—*
Yong, Raymond N.; and Sethi, Amar J., 4,564,004, Cl. 127-33.000.

Shahbazi, Samson: *See—*
Martin, F. Wayne; Shahbazi, Samson; and Schoonejongen, Ronald J., 4,564,563, Cl. 428-546.000.

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Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, 4,564,847, Cl. 346-76.0PH.
Nittaya, Hiroshi; and Nishimura, Kosuke, 4,564,954, Cl. 381-51.000.

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Newton, Steven A.; Shaw, Herbert J.; and Cutler, Cassius C., 4,564,293, Cl. 356-350.000.

Shay, Lucas K., to Phillips Petroleum Company. Functional protein products. 4,564,523, Cl. 426-60.000.

Shealy, James R.; and Eastman, Lester F., to Northeast Semiconductor Inc. Method and apparatus for improved gettering for reactant gases. 4,564,509, Cl. 423-210.500.

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Evans, Lawrence J.; Sheikh, Junaid; Stock, Rodney D.; and Turkowski, Kenneth E. J., 4,564,915, Cl. 364-521.000.

Shell Oil Company: *See—*
Estreicher, Herbert, 4,564,383, Cl. 71-92.000.

Shelleden Products Limited: *See—*
Rocke, Dennis, 4,564,522, Cl. 424-195.100.

Shenoy, Vittal U., to Xerox Corporation. Corona charging device. 4,564,282, Cl. 355-3.0CH.

Sherman, Jeffrey D.; and Courcy, Stephen E., to RCA Corporation. Solid state relay with fast turnoff. 4,564,770, Cl. 307-311.000.

Shibata, Akikazu: *See—*
Hayafuji, Yoshinari; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,564,403, Cl. 148-171.000.

Shibata, Masatoshi; Uchiyama, Soichi; and Aoki, Yoshinobu, to Research Association for Petroleum Alternatives Development. Process for the production of mixed alcohols. 4,564,643, Cl. 518-717.000.

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Nakayama, Yasunobu; Sato, Yasuji; and Shibata, Shinichi, 4,564,724, Cl. 179-2.00A.

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Ichimura, Kunihiro; Yamaoka, Tsuguo; Kaneda, Sadayoshi; and Shibuya, Toru, 4,564,580, Cl. 430-281.000.

Shieldalloy Corporation: *See—*
Murray, Peter; and Slinn, David, 4,564,393, Cl. 75-256.000.

Shilcock, John, to Waddingtons Limited. Lifting device with tongue flaps. 4,564,106, Cl. 206-165.000.

Shimada, Tamotsu; Shinbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, to Hitachi, Ltd. Laser surgical equipment. 4,564,012, Cl. 128-303.100.

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Kato, Shinichi; Tamura, Takeshi; Ambo, Tsugio; and Shimazawa, Katsuji, 4,564,252, Cl. 339-91.00R.

Shimizu, Kazuo: *See—*
Nishikubo, Toshihiko; and Shimizu, Kazuo, 4,564,657, Cl. 525-158.000.

Shimizu, Tetsuo; and Akamatsu, Masafumi, to Daikin Industries, Ltd. Process for preparing aqueous dispersion of polytetrafluoroethylene. 4,564,652, Cl. 524-805.000.

Shimizu, Yoshiki: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, 4,564,717, Cl. 568-843.000.

Shimoda, Teruhisa: *See—*
Yamaoka, Hideyuki; Hatano, Michiharu; Miyazaki, Tomio; Shimoda, Teruhisa; and Oki, Koji, 4,564,389, Cl. 75-38.000.

Shinagawa Jidosha Densen Co., Ltd.: *See—*
Kato, Shinichi; Tamura, Takeshi; Ambo, Tsugio; and Shimazawa, Katsuji, 4,564,252, Cl. 339-91.00R.

Shinbo, Chiaki: *See—*
Shimada, Tamotsu; Shinbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, 4,564,012, Cl. 128-303.100.

Shinohara, Koichi: *See—*
Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; and Fujita, Takashi, 4,564,549, Cl. 428-141.000.

Shintani, Tsuneo; Kojima, Soichi; and Goto, Masuo, to Kurosaki Refractories Co., Ltd.; and Kurosaki Rozai Co., Ltd. Method of manufacturing a casting nozzle brick. 4,564,493, Cl. 264-209.100.

Shionogi & Co., Ltd.: *See—*
Hirai, Kentario; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,564,623, Cl. 514-408.000.

Shirai, Teruo: *See—*
Miyazaki, Hiroo; Shirai, Teruo; and Ogawa, Tsutomu, 4,563,910, Cl. 74-820.000.

Shiraki, Kenhachi: *See—*
Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, 4,564,288, Cl. 355-57.000.

Shizuoka Kogyo Company, Ltd.: *See—*
Murakami, Tamotsu, 4,564,413, Cl. 156-504.000.

Shookman, Dennis R.; and Hendrickson, Vergil P., to Caterpillar Tractor Co. Flexible step assembly. 4,564,205, Cl. 280-166.000.

Shop-Vac Corporation: *See—*
Berfield, Robert C., 4,563,789, Cl. 15-323.000.

Shrock, Fred: *See—*
Shrock, Fred J.; and Berkey, Harley, 4,563,784, Cl. 5-37.00R.

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Shu, Timour T.: *See—*
Hinzmann, Alfred; Preisner, Peter M.; and Shu, Timour T., 4,564,029, Cl. 131-94.000.

Shube, Eugene E., to Plessey Incorporated. High speed, dual operated electromechanical actuator. 4,563,908, Cl. 74-2.000.

Shvetsov, Petr N.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Sickmuller, Alfred: *See—*
Muschaweck, Roman; Fulberth, Werner; and Sickmuller, Alfred, 4,564,625, Cl. 514-429.000.

Siebeneiker, Gunter; Brunn, Hartmut; and Steiger, Uwe, to Kromberg & Schubert. System for scanning mechanical vibrations. 4,563,931, Cl. 84-1.160.

Siegal, Burton L., to Kiwi Coders Corporation. Drop on demand dot matrix printing head. 4,564,846, Cl. 346-75.000.

Siegel, Marvin I.: *See—*
Kreutner, William; and Siegel, Marvin I., 4,564,626, Cl. 514-430.000.

Siegmann, Klaus; and Schmidt, Martin, to Dragerwerk AG. Mouthpiece for a breath-alcohol measuring device. 4,564,021, Cl. 128-716.000.

Siegrist, Ronald, to Vickers, Incorporated. Hydrostatic or pneumatic drive and method of operating same. 4,563,939, Cl. 91-275.000.

Siemens Aktiengesellschaft: *See—*
Bussmann, Egon, 4,564,394, Cl. 148-1.500.
Daisenberger, Georg, 4,564,725, Cl. 179-8.00A.
Dirmeyer, Josef; Odemar, Norbert; and Winzer, Gerhard, 4,564,260, Cl. 350-96.160.
Falckenberg, Richard; and Grabmaier, Josef, 4,563,979, Cl. 118-694.000.
Foell, Helmut; Grabmaier, Josef; and Falckenberg, Richard, 4,563,976, Cl. 118-401.000.
Golser, Hans, 4,564,948, Cl. 372-61.000.
Hausele, Hans, 4,564,924, Cl. 365-200.000.
Klein, Klaus; and Schmitt, Reinhard, 4,564,250, Cl. 339-14.00R.
Kliemt, Wilfried; and Krones, Manfred, 4,564,884, Cl. 361-353.000.
Markert, Helmut; Rogler, Wolfgang; Kretzschman, Klaus; and Hauschildt, Klaus-Robert, 4,564,651, Cl. 524-589.000.
Mattelin, Antoon, 4,564,739, Cl. 219-121.0LH.
Nilsson, Kenth; and Bolmgren, Jan, 4,564,851, Cl. 346-140.00R.
Peruth, Gunther; and Lenz, Michael, 4,564,820, Cl. 331-62.000.
Rekewitz, Rudolf; and Wambach, Hermann, 4,564,305, Cl. 400-605.000.
Rumpel, Peter, 4,564,184, Cl. 270-39.000.
Schoen, Josef; and Hoffmann, Rudolf, 4,564,417, Cl. 156-633.000.
Veith, Werner, 4,564,790, Cl. 315-169.400.
Wiechert, Edelbert; and Lehmann, Herbert, 4,563,956, Cl. 105-29.00R.
Wiehler, Wolf, 4,564,788, Cl. 315-3.600.
Winzer, Gerhard; and Mahlein, Hans, 4,564,755, Cl. 250-227.000.

Sikander, Ake; Biorkman, Ake; and Jonsson, Gunther, to Lumalampan Aktiebolag. Device for the recovery of mercury. 4,564,174, Cl. 266-149.000.

Silaeva, Anna A., administrator: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Silaeva, Petr N., deceased: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Sills, Andy B.; and Sills, Cecil M., to Anaheim Foundry Company. Elastic gasket pipe coupling for pressurized plumbing systems. 4,564,220, Cl. 285-236.000.

Sills, Cecil M.: *See—*
Sills, Andy B.; and Sills, Cecil M., 4,564,220, Cl. 285-236.000.

Sim, James W.: *See—*
Kucera, Gene H.; Smith, James L.; and Sim, James W., 4,564,567, Cl. 429-41.000.

Simoneau, Raynald; and Chincholle, Lucien, to Hydro-Quebec; and Centre National de la Recherche Scientifique. Method and apparatus for detection of erosive cavitation in an aqueous solution. 4,564,422, Cl. 204-1.00T.

Simonson, John L.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,564,681, Cl. 546-345.000.

Sinar AG Schaffhausen: *See—*
Koch, Hans-Carl; Koch, Carl; and Gfeller, Karl, 4,564,277, Cl. 354-160.000.

Sinclair, William Y., to Aries Electronics, Inc. Crimp-on connector for flat cable. 4,564,253, Cl. 339-97.00C.

Singh, Gurnam, to International Telephone & Telegraph Corp. Transducer. 4,563,901, Cl. 73-706.000.

Sirotiak, Judd L.: *See—*
Rogers, Jerrold J.; and Sirotiak, Judd L., 4,564,849, Cl. 346-110.00R.

Sitte, Hellmuth, to C. Reichert Optische Werke AG. Specimen immersing device. 4,563,883, Cl. 62-514.00R.

Sitzler, Klaus; and Steisslinger, Kurt, to Eastman Kodak Company. Photographic camera. 4,564,279, Cl. 354-214.000.

Sjodin, Gunnar O. M., to Husqvarna Aktiebolag. Sewing machine drive control. 4,563,964, Cl. 112-275.000.

SKF Nova AB: *See—*
Asberg, Sture L., 4,564,243, Cl. 301-124.00R.

Skold, Rolf O.; von Dahn, Lars-Gosta; and Sterky, Anna K., to Berol Kemi AB. Method for the mechanical working of cast iron and an aqueous concentrate to be used in the method. 4,564,461, Cl. 252-32.500.

Skonieczny, Joseph P.: *See—*
Clelford, Douglas H.; Skonieczny, Joseph P.; and Murphy, Richard D., 4,564,908, Cl. 364-433.000.

Skraba, Frank W., to Phillips Petroleum Company. Apparatus for mixing of fluidized solids and fluids. 4,564,502, Cl. 422-140.000.

Slinn, David: *See—*
Murray, Peter; and Slinn, David, 4,564,393, Cl. 75-256.000.

Sloan Valve Company: *See—*
Billeter, Henry R., deceased, 4,564,246, Cl. 303-85.000.

Slodzian, Georges; Chaintreau, Marcel; and Dennebouy, Roger, to Cameca. Process and device for the ionic analysis of an insulating sample. 4,564,758, Cl. 250-309.000.

Smart, Doris M., administratrix: *See—*
Smart, Gerald, deceased, 4,564,353, Cl. 425-446.000.

Smart, Gerald, deceased (by Smart, Doris M., administratrix), to General Engineering Radcliffe 1979 Ltd. Continuous vulcanization and/or cross-linking apparatus. 4,564,353, Cl. 425-446.000.

Smerz, Frank G., to Cooper Industries. Lamp adapter for screw terminal lamps. 4,564,257, Cl. 339-145.00R.

Smirnov, Vladimir N.: *See—*
Maximenko, Alexandr V.; Tischenko, Elena G.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I., 4,564,596, Cl. 435-177.000.

Smith, Gehrard J.: *See—*
Holly, Kenneth; and Smith, Gehrard J., 4,564,899, Cl. 364-200.000.

Smith International, Inc.: *See—*
Baugh, Benton F., 4,564,068, Cl. 166-123.000.
Smith, James H. Tool box mounting assembly. 4,564,167, Cl. 248-552.000.
Smith, James L.: *See—*
Kucera, Gene H.; Smith, James L.; and Sim, James W., 4,564,567, Cl. 429-41.000.
Smith, Lewis W.; and Warburton, Eric T., to Innopac Inc. Apparatus for packaging an edible liquid. 4,563,855, Cl. 53-128.000.
Smith, Stanley K.; and Rozsi, Donald J., to Eaton Corporation. Method and algorithms therefore for monitoring the performance of a tool and modifying the feed rate thereof. 4,564,910, Cl. 364-474.000.
Smith, Stanley K.; Rozsi, Donald J.; and Sabroff, Alvin M., to Easton Corporation. Method of monitoring a cutting tool by recognizing a sensed deviation in a mathematically smoothed function of force. 4,564,911, Cl. 364-474.000.
SmithKline Beckman Corporation: *See—*
Bagnall, Brian G.; and Gyurik, Robert J., 4,564,363, Cl. 604-891.000.
Smitt, Asbjorn, to Christian Rovsing A/S. Multiprocessor computer system. 4,564,900, Cl. 364-200.000.
SMS Hasenclever Maschinenfabrik GmbH: *See—*
Landwehr, Hubert, 4,563,889, Cl. 72-454.000.
SMS Schloemann-Siemag AG: *See—*
Bald, Wilfried; Rommen, Hans; and Stoy, Erich, 4,563,888, Cl. 72-243.000.
Societa Pneumatici Pirelli S.p.A.: *See—*
Ghilardi, Giuliano, 4,564,055, Cl. 152-450.000.
Societe Anonyme D.B.A.: *See—*
Gerard, Jean-Louis, 4,564,089, Cl. 188-73.380.
Societe Anonyme d'Explosifs et de Produits Chimiques: *See—*
Fremaux, Jacques M.; and Ehrlich, Hans W., 4,564,404, Cl. 149-21.000.
Societe de Paris et du Rhone, S.A.: *See—*
Mazzorana, Alfred B., 4,564,775, Cl. 310-62.000.
Societe Industrielle de Bellevaux Sibel: *See—*
Chauvigne, Michel, 4,563,911, Cl. 74-125.000.
Soendergaard, Joergen, to Danfoss A/S. Hydraulic actuator for control of valves. 4,563,941, Cl. 92-134.000.
Solar-Kist Corporation: *See—*
Binks, Chester J., 4,564,406, Cl. 156-63.000.
Solis s.r.l.: *See—*
Gazzarrini, Vinicio, 4,564,133, Cl. 223-39.000.
Sollner, Robert: *See—*
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Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laslzo, 4,564,706, Cl. 564-376.000.
Sony Corporation: *See—*
Sato, Hiroki; Natori, Takehisa; and Nakano, Takao, 4,564,785, Cl. 313-422.000.
Sony Corporation Research Center: *See—*
Hayafuji, Yoshinari; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,564,403, Cl. 148-171.000.
Sorber, Kenneth H., to Sorco Corporation. Apparatus for producing an acid compound. 4,564,504, Cl. 422-189.000.
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Sorber, Kenneth H., 4,564,504, Cl. 422-189.000.
Spaargaren, Robert, to Allied Corporation. Self-centering brake assembly incorporating a brake drum and automatic adjusting mechanism. 4,564,090, Cl. 188-331.000.
Spasskaya, Evdokia K.: *See—*
Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.
Spector, George: *See—*
Atherton, Peter W.; and Spector, George, 4,564,173, Cl. 254-133.00R.
Kinyon, John P.; and Spector, George, 4,564,216, Cl. 280-770.000.
Spectro Industries, Inc.: *See—*
Wolpert, George H., Jr., 4,564,238, Cl. 297-430.000.
Spectron Development Laboratories: *See—*
Trolinger, James D., 4,564,949, Cl. 372-93.000.
Spencer, Alwyn, to Ciba-Geigy Corporation. Process for the Pd-catalyzed arylation of olefins with aryl halides. 4,564,479, Cl. 260-465.00H.
Spencer, Donald R. Container for fishing tackle. 4,563,834, Cl. 43-57.100.
Spengler, Walter. Electrostatic coating plant. 4,563,977, Cl. 118-623.000.
Spetsialnoe Konstruktorskoe Bjuro "Transprogress": *See—*
Alexandrov, Adolf M.; Tsimbler, Jury A.; Iljukhin, Vitaly G.; Yashin, Jury A.; and Kiselev, Igor V., 4,564,318, Cl. 406-192.000.
Spillman, William B., Jr., to Geo-Centers, Inc. Single mode optical fiber polarimetric stress sensor having optical common mode rejection. 4,564,289, Cl. 356-33.000.
Spindeler, Heinrich; Wackerbarth, Folkard; Kuhlmann, Horst; Dohle, Helmut; and Althaus, Horst, to Dr. C. Otto & Comp. GmbH. Coke oven battery. 4,564,420, Cl. 202-139.000.
Spindeler, Heinz; Wackerbarth, Folkard; and Halbherr, Gerd, to Dr. C. Otto & Comp. G.m.b.H. Nozzle plate construction for underjet coke ovens. 4,564,419, Cl. 202-123.000.
SS Pharmaceutical Co., Ltd.: *See—*
Matsuda, Hideaki; Tatezaki, Ryohta; Mizuno, Hiroyuki; and Katori, Tatsuhiko, 4,564,615, Cl. 514-231.000.
Stacor Corporation: *See—*
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Stafford, Donald C.: *See—*
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Stahlecker, Fritz; and Stahlecker, Hans, to Stahlecker, Hans; and Stahlecker, Fritz. Yarn piecing method and apparatus. 4,563,871, Cl. 57-263.000.
Stahlecker, Fritz, to Stahlecker, Fritz; and Stahlecker, Hans. Start spinning arrangement for an open end friction spinning machine. 4,563,872, Cl. 57-263.000.
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Stahlecker, Fritz; and Stahlecker, Hans, 4,563,871, Cl. 57-263.000.
Stahlecker, Fritz, 4,563,872, Cl. 57-263.000.
Stahler, Gerhard; Knauf, Werner; Sachse, Burkhard; and Walterstorfer, Anna, to Hoechst Aktiengesellschaft. (Di)thio-phosphoric and -phosphonic acid derivatives, and their use in plant protection. 4,564,611, Cl. 514-99.000.
Stahler, John P., to Robot Research, Inc. Fractional-cycle time/amplitude modulation. 4,564,823, Cl. 332-17.000.
Stahlkopf, Friedrich R. R., to Abel Pumpen GmbH. Device for regulating the pressure and feed volume of a diaphragm pump. 4,564,340, Cl. 417-388.000.
Standard Oil Company, The: *See—*
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Standard Oil Company (Indiana): *See—*
Kaufman, R. Gilbert, 4,564,398, Cl. 148-6.310.
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Standard Oil Company (Ohio), The: *See—*
Desmond, Michael J.; and Pesa, Frederick A., 4,564,511, Cl. 423-277.000.
Standard Telephones and Cables, PLC: *See—*
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Stanford, John L.: *See—*
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Stanton, Joseph J.: *See—*
Fieder, Donald W.; Stanton, Joseph J.; Fisher, Christopher E.; and Cutler, Orvid R., Jr., 4,564,666, Cl. 522-33.000.
Stanton, Robert L., to American Manufacturing Company, Inc. Rope with reduced lash-back construction. 4,563,869, Cl. 57-211.000.
Stapley, Keith D. Drill scope. 4,564,322, Cl. 408-16.000.
Star Farm Machinery Mfg. Co., Ltd.: *See—*
Ide, Katsuyuki; Yamada, Masatoshi; and Sasaki, Katsusuke, 4,564,073, Cl. 172-120.000.
Starr, William C.: *See—*
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Stauffer Chemical Company: *See—*
Kearnan, James E., 4,564,670, Cl. 528-389.000.
Telschow, Jeffrey E., 4,564,687, Cl. 549-240.000.
Stavlo, Lars G., to AGA, A.B. Method and apparatus for transporting pressurized gas cylinders. 4,564,109, Cl. 206-597.000.
Steele, Robert E., to General Motors Corporation. Thermal liquid level detector. 4,564,834, Cl. 340-622.000.
Steffe, Harlan E. Log holder. 4,564,178, Cl. 269-17.000.
Steffes, Helmut: *See—*
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Steger, Barry N., to Phillips Petroleum Company. Process for making mercapto alcohols. 4,564,710, Cl. 568-62.000.
Steifensand, Friedrich M. Seat arrangement. 4,564,237, Cl. 297-423.000.
Steiger, Uwe: *See—*
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Stein Associates, Inc.: *See—*
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Stein, Hermann: *See—*
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,564,485, Cl. 264-30.000.
Steinheuser, Peter: *See—*
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Steinko, Willi: *See—*
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Steisslinger, Kurt: *See—*
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Stephan, Wolfgang; and Rieker, Heinz, to Daimler-Benz Aktiengesellschaft. Device for altering gear-shifting sequence in relation to vehicle load. 4,564,906, Cl. 364-424.100.
Sterky, Anna K.: *See—*
Skold, Rolf O.; von Dahn, Lars-Gosta; and Sterky, Anna K., 4,564,461, Cl. 252-32.500.
Stern, Richard A.; and Babbitt, Richard W., to United States of America, Army. Precision cutting of millimeter wave ferrite materials. 4,564,000, Cl. 125-13.00R.
Stewart, Lester. Exercising device for lifting weights. 4,564,193, Cl. 272-118.000.

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Goldberg, Israel; and Stieglitz, Barry, 4,564,594, Cl. 435-139.000.
Stijntjes, Theodorus G. W.: *See—*
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Baden, Hans; Kuhnemann, Klaus; Sedlmayr, Gerhard; Straszewski, Klaus; and Zeumer, Monika, 4,564,219, Cl. 280-808.000.
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Imanari, Makoto; Iwane, Hiroshi; and Sugawara, Takahiro, 4,564,713, Cl. 568-730.000.
Sughrue, Edward L., II: *See—*
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Sullivan, Patrick F.; and Wakefield, Russell R. Spray-suppressant mud flap. 4,564,204, Cl. 280-154.50R.
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Mandrin, Charles, 4,564,515, Cl. 423-648.00A.
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Kunde, Klaus; Grimm, Helmut; and Becker, Lorenz, 4,563,884, Cl. 66-93.000.
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Sumitomo Electric Industries, Ltd.: *See—*
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Yamaoka, Hideyuki; Hatano, Michiharu; Miyazaki, Tomio; Shimoda, Teruhisa; and Oki, Koji, 4,564,389, Cl. 75-38.000.
Sumitomo Metal Mining Co., Ltd.: *See—*
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Sun Refining And Marketing Company: *See—*
Hsu, Chao-Yang; and Ellis, Paul E., Jr., 4,564,711, Cl. 568-454.000.
Sunada, Takuya, to Casio Computer Co., Ltd. Waveform data read signal generating apparatus. 4,563,932, Cl. 84-1.220.
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Yong, Raymond N.; and Sethi, Amar J., 4,564,004, Cl. 127-33.000.
Sundstrand Corporation: *See—*
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Sutker, Burton J., to Ethyl Corporation. Halogenated polyol-ester neutralization agent. 4,564,697, Cl. 560-83.000.
Suttles, James M., to Mead Corporation, The. Post-panel connection for sheet metal furniture. 4,564,111, Cl. 211-189.000.
Suzuki, Kenji: *See—*
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.
Suzuki, Koji; Kuroda, Kouki; and Nagahira, Jyoji, to Canon Kabushiki Kaisha. Image formation apparatus including means for detecting and controlling image formation condition. 4,564,287, Cl. 355-14.00D.
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Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; and Fujita, Takashi, to Matsushita Electric Industrial Co., Ltd. Magnetic recording media and process for fabricating the same. 4,564,549, Cl. 428-141.000.
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Svajgl, Donald E. Temporary support for gutters. 4,564,182, Cl. 269-102.000.
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Tabushi, Iwao; and Kobuke, Yoshiaki, to Mitsubishi Chemical Industries Limited. Macrocyclic compounds. 4,564,690, Cl. 549-352.000.
Tachikawa Spring Co., Ltd.: *See—*
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Tahata, Michio; Okamoto, Masao; and Enomoto, Hiroshi, to Honda Giken Kogyo Kabushiki. Variable venturi type carburetor. 4,564,482, Cl. 261-44.00B.
Taira, Kazuo; Sakamoto, Akira; Yamada, Muneki; Aizawa, Masanori; and Ueno, Hiroshi, to Toyo Seikan Kaisha, Ltd. Plastic laminate structure and vessel. 4,564,541, Cl. 428-35.000.
Tajima, Hatsuo: *See—*
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Takada, Juichiro. Safety belt retractor. 4,564,154, Cl. 242-107.40B.
Takada, Shigetaka; Makimura, Toshiro; and Matsubara, Mamoru, to Aisan Kogyo Kabushiki Kaisha. Electromagnetic fuel injector. 4,564,145, Cl. 239-585.000.
Takada, Shun: *See—*
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Takahashi, Hiroyuki; and Yamamoto, Takashi, to Murata Manufacturing Co., Ltd. Piezoelectric filter. 4,564,825, Cl. 333-191.000.
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Takahashi, Kenichi, to Nitsuko Limited. Time division switching network. 4,564,936, Cl. 370-58.000.
Takahashi, Mikio; and Nakayama, Motoichi, to Kyoho Machine Works, Ltd. Axial braking device. 4,564,088, Cl. 188-67.000.
Takahashi, Toshinori; Tsumiyama, Hisanori; Okano, Keigo; and Iwabuchi, Yoshitaka, to Victor Company of Japan, Ltd. Rotary magnetic head device. 4,564,876, Cl. 360-107.000.
Takahashi, Toshio: *See—*
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Takashima, Shuji, to Kabushiki Kaisha Yamagataya Nori Ten. Method for manufacturing processed foodstuffs from algae as materials. 4,564,526, Cl. 426-262.000.
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Takeda Chemical Industries, Ltd.: *See—*
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Takehara, Shin; and Tabata, Toshiyuki, to Nissan Motor Co., Ltd. Structure for supporting a power unit for a vehicle. 4,564,082, Cl. 180-312.000.
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Takekoshi, Kenji: *See—*
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Takemae, Mikio; Watanabe, Sakuji; and Okubo, Yuji, to Nippon Kogaku K.K. Signal selector for automatic exposure apparatus of camera. 4,564,281, Cl. 354-442.000.
Takemoto, Toyoki: *See—*
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Takigawa, Tetsuo; Ibata, Koichi; Okada, Masafumi; Mizuno, Masao; and Nishida, Takashi, to Kuraray Co., Ltd. Polyprenyl compounds and method of producing the same. 4,564,477, Cl. 260-405.500.
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Tamamura, Toshiaki: *See—*
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Tamura, Toshinari; Iwamoto, Hidenori; Yoshida, Makoto; and Yamamoto, Minoru, to Yamanouchi Pharmaceutical Co., Ltd. 4-Substituted-2-azetidinone compound, process of producing the compounds, and medicaments containing the compounds. 4,564,609, Cl. 514-18.000.
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Tanaka, Naoki: *See—*
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Tanaka, Shigeo; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic material. 4,564,591, Cl. 430-567.000.
Tanaka, Tatsuyoshi; Nagami, Kazuyoshi; Tamada, Shigeharu; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivative. 4,564,619, Cl. 514-312.000.
Tanaka, Toshiaki, to Nissan Motor Company, Limited. Fuel injection pump for an internal combustion engine. 4,564,341, Cl. 417-462.000.
Tanaka, Yoko: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,564,474, Cl. 260-397.200.
Tanaka, Yoshio: *See—*
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Tandy Corporation: *See—*
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Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, to Sanyo-Kokusaku Pulp Co., Ltd.; and Mitsubishi Yuka Fine Chemicals Co., Ltd. Recording sheets for water base ink and process for making the same. 4,564,560, Cl. 428-411.100.
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, to Fujitsu Limited. Semiconductor gate array device having an improved interconnection structure. 4,564,773, Cl. 307-445.000.
Tannenbaum, Michael A.: *See—*
Heyer, Robert E.; and Tannenbaum, Michael A., 4,564,118, Cl. 220-8.000.
Tanunliong, Arnold L.: *See—*
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Tanyolac, Necmi; and Labows, John N., to Tanyolac, Necmi. Methods and apparatus for detection and identification of volatile materials and odors. 4,563,893, Cl. 73-23.000.
Tarassoff, Serge, to Pomagalski S.A. Chairlift or gondola lift including friction drive wheels. 4,563,955, Cl. 104-168.000.
Tashiro, Korefumi; and Akiyama, Hiroyuki, to Hitachi, Ltd. Binary logic device having input and output alternating signals. 4,564,774, Cl. 307-479.000.
Tate, Warren L., to Frito-Lay, Inc. Product orienting conveyor. 4,563,944, Cl. 99-355.000.
Tateishi, Hiroshi; and Hashimoto, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Amorphous alloy for magnetic head and magnetic head with an amorphous alloy. 4,564,399, Cl. 148-31.550.
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Tatezaki, Ryohta: *See—*
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Tatsuno, Kimio; and Arimoto, Akira, to Hitachi Ltd. Optical system for semiconductor laser. 4,564,268, Cl. 350-409.000.
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Tayco Developments, Inc.: *See—*
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Taylor, David, to BIP Chemical Limited. Urea-formaldehyde resin manufacture. 4,564,667, Cl. 528-256.000.
Taylor, Lawrence H. Solar energy collecting system. 4,564,002, Cl. 126-417.000.
Taylor, Paul H., to Tayco Developments, Inc. Pressure accumulator with composite helical spring. 4,564,048, Cl. 138-31.000.
Taylor, Vernon W. Multiple lead threading. 4,564,225, Cl. 285-333.000.

TDK Corporation: *See—*
Ezaki, Joichiro; Kanai, Hiroshi; and Kitahara, Yoshimi, 4,564,877, Cl. 360-114.000.
Tektronix, Inc.: *See—*
Rogers, Jerrold J.; and Sirotiak, Judd L., 4,564,849, Cl. 346-110.00R.
Wilke, William G.; and Reiney, Michael G., 4,564,804, Cl. 324-103.00P.
Telkefonaktiebolaget LM Ericsson: *See—*
Nordin, Jerry K. G., 4,564,722, Cl. 174-35.0GC.
Telschow, Jeffrey E., to Stauffer Chemical Company. Process for preparing substituted phthalic anhydrides. 4,564,687, Cl. 549-240.000.
Tennenhouse, Gerald J.: *See—*
Runkle, Franklin D.; and Tennenhouse, Gerald J., 4,563,924, Cl. 82-1.00C.
Terashima, Shiro; Kimura, Yoshikazu; Suzuki, Michiyo; Matsumoto, Teruyo; and Abe, Rumiko, to Sagami Chemical Research Center. Process for an anthracycline derivative, and an anthracyclinone derivative useful for the process. 4,564,674, Cl. 536-6.400.
Terry, Vincent G., Jr., to General Electric Company. Dynamoelectric machine stator using cylindrical keybars. 4,564,779, Cl. 310-258.000.
Teschendorf, Hans-Jurgen: *See—*
Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, 4,564,641, Cl. 514-650.000.
Teshirogi, Koichi: *See—*
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Tesser, Igino, to Nava & C. S.p.A. Boot particularly for sportswear. 4,563,825, Cl. 36-131.000.
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Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.
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Texaco Inc.: *See—*
Walker, Robert N., 4,564,811, Cl. 324-307.000.
Texas Instruments Incorporated: *See—*
Werking, Paul M., 4,564,953, Cl. 377-52.000.
Thelen, Edmund; Black, Daniel N., III; and Kiley, Thomas L. Resilient paving composition for playfields sports fields and recreation areas. 4,564,310, Cl. 404-31.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH. Tamping head with limiting stop for tool reciprocation. 4,563,953, Cl. 104-12.000.
Thiebaut, Bernard A., to Inmont Corporation. Lithographic water based fountain solution concentrates. 4,563,952, Cl. 101-451.000.
Thieme, Gerd. Lounger or reclining chair made from a floatable plastic body. 4,564,240, Cl. 297-457.000.
Thirion de Briel, Jacques, to Valeo. Pulley assembly. 4,564,357, Cl. 474-14.000.
Thoma, Friedrich X.: *See—*
Kammerer, Gerd; and Thoma, Friedrich X., 4,564,827, Cl. 335-92.000.
Thomas Josef Heimbach GmbH & Co.: *See—*
Best, Walter, 4,564,551, Cl. 428-222.000.
Thompson, Edward, to Hortico Limited. Marking device for use with an animal marking harness. 4,563,980, Cl. 119-1.000.
Thomson-CSF: *See—*
Lange , Francois, 4,564,932, Cl. 369-286.000.
Van Zanten, Francois, 4,564,855, Cl. 357-46.000.
Tibbals, Edward C., Jr., to Loeffler, William R. Wobble type axial speed reducer apparatus. 4,563,915, Cl. 74-800.000.
Tiede, Ralf: *See—*
Knop, Hans-Georg; Nowak, Michael; Redecker, Friedrich; and Tiede, Ralf, 4,564,859, Cl. 358-75.000.
Tiedemann, Helmut: *See—*
Crumbach, Richard; Schilde, Heinz-Josef; and Tiedemann, Helmut, 4,564,408, Cl. 156-212.000.
Tiedemann, Wolfgang, to VICO Kemisk Tekniska Fabrik AB. Purification apparatus. 4,564,447, Cl. 210-220.000.
Tiemann, Eckhard: *See—*
Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, 4,564,513, Cl. 423-415.00A.
Tietje, Andreas, to Ensign-Bickford Industries, Inc. Corona discharge device. 4,564,759, Cl. 250-324.000.
TII Industries, Inc.: *See—*
Charych, Arthur, 4,564,767, Cl. 307-66.000.
Timby, Ernest A.; Walsh, Rodney H.; and Wood, Robert S., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Fuel supply apparatus. 4,564,333, Cl. 415-86.000.
Tischenko, Elena G.: *See—*
Maximenko, Alexandr V.; Tischenko, Elena G.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I., 4,564,596, Cl. 435-177.000.
Tkalich, Vasily A.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.
Tkotz, Gunter: *See—*
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,564,485, Cl. 264-30.000.
Tokiwa Seiki Industrial Company, Limited: *See—*
Ono, Yoshihiko, 4,563,837, Cl. 51-34.00R.
Tokunaga, Toshimichi; Kanai, Seita; and Anan, Yoshiaki, to Mazda Motor Corporation. Suspension system for motor vehicle having variable suspension characteristics. 4,564,214, Cl. 280-707.000.
Tokuyama, Keiichi: *See—*
Masuda, Mitsuhiro; Naito, Shotaro; Tokuyama, Keiichi; and Watanabe, Shizuhisa, 4,564,905, Cl. 364-424.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Yoshino, Hisakazu; Takasu, Masayuki; and Kuroiwa, Junji, 4,564,291, Cl. 356-125.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Arafune, Yasunari, 4,564,868, Cl. 360-19.100.
Fukushi, Yukihiro, 4,564,792, Cl. 318-254.000.
Homma, Kazumoto; and Watanabe, Masaharu, 4,564,416, Cl. 156-617.0SP.
Kazuharu, Odawara, 4,564,850, Cl. 346-137.000.
Kitamura, Shunji, 4,564,870, Cl. 360-51.000.
Maeguchi, Kenji, 4,564,583, Cl. 430-312.000.
Oda, Yasuyuki; and Iwase, Kazuhiko, 4,564,872, Cl. 360-78.000.
Ogura, Mitsugi, 4,564,854, Cl. 357-23.600.
Suzuki, Yasuo, 4,564,842, Cl. 343-700.0MS.
Tateishi, Hiroshi; and Hashimoto, Susumu, 4,564,399, Cl. 148-31.550.
Yahata, Haruki, 4,564,940, Cl. 370-124.000.
Tokyo Shibaura Kenki Kabushiki Kaisha: *See—*
Suganuma, Kazuo, 4,564,921, Cl. 364-784.000.
Tollar, James E., to Dow Chemical Company, The. Annular heat exchanger. 4,564,063, Cl. 165-109.100.
Tomihashi, Nobuyuki: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, 4,564,717, Cl. 568-843.000.
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, to Hitachi, Ltd. Magneto device for generating signals. 4,564,776, Cl. 310-70.00R.
Tomiyama, Tsuyoshi, to Kotobuki Seiyaku Company, Limited. Substituted aminothiazoles and method of manufacturing the same. 4,564,678, Cl. 544-367.000.
Tomizu, Motoyuki; and Nagata, Kunio, to Omron Tateisi Electronics Co. Electrical switch. 4,564,730, Cl. 200-16.00B.
Tomkins, Gary J.: *See—*
Scovell, Peter D.; Rosser, Paul J.; and Tomkins, Gary J., 4,563,805, Cl. 29-571.000.
Tomlinson, Christopher J.; and Green, Howard H., to Burroughs Corporation. Method of performing a sequence of related activities via multiple asynchronously intercoupled digital processors. 4,564,901, Cl. 364-200.000.
Tomono, Makoto: *See—*
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, 4,564,573, Cl. 430-109.000.
Tooka, Takuzo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for controlling production in a spinning machine. 4,563,873, Cl. 57-264.000.
Topa, Robert D.: *See—*
Henning, Timothy P.; and Topa, Robert D., 4,564,426, Cl. 204-44.600.
Toray Industries, Inc.: *See—*
Ohno, Kiyotaka; Nagase, Hiroshi; Ishikawa, Mamoru; Matsumoto, Kazuhisa; and Nishio, Shintaro, 4,564,620, Cl. 514-337.000.
Torchilin, Vladimir P.: *See—*
Maximenko, Alexandr V.; Tischenko, Elena G.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I., 4,564,596, Cl. 435-177.000.
Torley, Jozsef: *See—*
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.
Toshiba Ceramics Co., Ltd.: *See—*
Homma, Kazumoto; and Watanabe, Masaharu, 4,564,416, Cl. 156-617.0SP.
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, to Richter Gedeon Vegyeszeti Gyar Rt. Carbamyloxybenzhydrol derivatives and pharmaceutical compositions containing them. 4,564,630, Cl. 514-478.000.
Touhsaent, Robert E.; Wagner, John R., Jr.; and Clauson, Melvil B., to Mobil Oil Corporation. Oriented multi-layer heat sealable film. 4,564,558, Cl. 428-349.000.
Touze, Francois. Hot-blast nozzles, particularly for blast furnaces. 4,564,143, Cl. 239-132.300.
Towmotor Corporation: *See—*
Melocik, Grant C.; and Wible, John E., 4,564,085, Cl. 187-9.00R.
Toyo Kogyo Co., Ltd.: *See—*
Ihara, Kazunori, 4,564,608, Cl. 502-355.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Taira, Kazuo; Sakamoto, Akira; Yamada, Muneki; Aizawa, Masanori; and Ueno, Hiroshi, 4,564,541, Cl. 428-35.000.

Toyo Soda Mfg. Co., Ltd.: *See—*
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.

Toyoda Koki Kabushiki Kaisha: *See—*
Yomogida, Toshihiko; and Yamashita, Tsuyoshi, 4,564,913, Cl. 364-474.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Akatsuka, Takao; Nakano, Jiro; Ishibashi, Takao; and Kawaguchi, Masao, 4,563,991, Cl. 123-440.000.
Hori, Shinichi; Ohnishi, Yasuichi; Ueda, Masahiro; and Noba, Masahiko, 4,564,916, Cl. 364-551.000.
Ikuta, Yasuhiro; and Takami, Toshihiro, 4,564,168, Cl. 248-638.000.
Kobayashi, Fumiaki; and Ito, Yoshiyasu, 4,563,992, Cl. 123-458.000.
Ujihashi, Michiaki, 4,563,994, Cl. 123-491.000.

Traber, Jorg: *See—*
Boltze, Karl-Heinz; Davies, Margaret A.; Junge, Bodo; Schuurman, Teunis; and Traber, Jorg, 4,564,613, Cl. 514-222.000.

Traiger, Harry A.; and Traiger, Mark A., to Dentonaut Lab, Ltd. Method and apparatus for the non-invasive examination of the tooth-jaw structure of a patient to determine the characteristics of unerupted teeth and to control nutritional intake pursuant thereto. 4,564,355, Cl. 433-215.000.

Traiger, Mark A.: *See—*
Traiger, Harry A.; and Traiger, Mark A., 4,564,355, Cl. 433-215.000.

Transamerica Delaval Inc.: *See—*
Wheable, Desmond; and Attwood, Michael J., 4,564,831, Cl. 340-347.0AD.

Traut, Martin: *See—*
Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, 4,564,641, Cl. 514-650.000.

Traversoni, Mario: *See—*
Neri, Carlo; Giroldini, Villiam; Rinaldi, Antonio; Traversoni, Mario; and Clerici, Mario, 4,564,691, Cl. 549-462.000.

TRE Corporation: *See—*
Mullich, Richard O.; and Rotondi, Anthony J., 4,564,229, Cl. 292-169.130.

Trichell, John; and Wheeler, Ronald M. Disposable clipper head. 4,563,814, Cl. 30-225.000.

Trio Kabushiki Kaisha: *See—*
Naito, Michinori, 4,564,815, Cl. 329-50.000.

TRIO-LENG Pac System AB: *See—*
Bergling, Jan K. A.; and Widenback, Ralph H., 4,563,857, Cl. 53-399.000.

Trittler, Karl, to J. Hengstler KG.; and Festo KG. Stepping valve. 4,564,043, Cl. 137-624.180.

Trolinger, James D., to Spectron Development Laboratories. Folded cavity laser for holography. 4,564,949, Cl. 372-93.000.

Troponwerke GmbH & Co.: *See—*
Boltze, Karl-Heinz; Davies, Margaret A.; Junge, Bodo; Schuurman, Teunis; and Traber, Jorg, 4,564,613, Cl. 514-222.000.

Trumbo, Andrew L.: *See—*
Childers, Roger K.; and Trumbo, Andrew L., 4,564,037, Cl. 133-3.00A.

TRW Ehrenreich GmbH & Co. K.G.: *See—*
Ito, Eiichi, 4,564,307, Cl. 403-140.000.

TRW United-Carr Limited: *See—*
Barnett, Barry R. M., 4,564,163, Cl. 248-71.000.

Tsang, Kwong Y.: *See—*
Fudenberg, Herman H.; and Tsang, Kwong Y., 4,564,517, Cl. 424-9.000.

Tsang, Won-Tien: *See—*
Olsson, Nils A.; and Tsang, Won-Tien, 4,564,946, Cl. 372-20.000.

Tschudin-Mahrer, Rolf, to Irbit Research & Consulting A.G. Foam sealing tape. 4,564,550, Cl. 428-159.000.

Tsimbler, Jury A.: *See—*
Alexandrov, Adolf M.; Tsimbler, Jury A.; Iljukhin, Vitaly G.; Yashin, Jury A.; and Kiselev, Igor V., 4,564,318, Cl. 406-192.000.

Tsuge, Mitsuo; Kohmura, Shigeru; Sugiyama, Keiichi; Saitoh, Hisao; and Saitoh, Shigenori, to Nippon Light Metal Co., Ltd. Aluminum can end. 4,564,119, Cl. 220-270.000.

Tsuji, Tadashi, to Kabushiki Kaisha Tsuji. Metal mesh network. 4,564,539, Cl. 428-33.000.

Tsukamoto, Kyozo; Hinuma, Shuji; and Onda, Haruo, to Takeda Chemical Industries, Ltd. Mesenger RNA, production and use thereof. 4,564,593, Cl. 435-91.000.

Tsukamoto, Masahiro, to NSK-Warner K. K. Emergency locking type retractor provided with a take-up force locking mechanism. 4,564,155, Cl. 242-107.40A.

Tsumiyama, Hisanori: *See—*
Takahashi, Toshinori; Tsumiyama, Hisanori; Okano, Keigo; and Iwabuchi, Yoshitaka, 4,564,876, Cl. 360-107.000.

Tsumura, Kazushi: *See—*
Hiraoka, Masakatsu; Tsumura, Kazushi; Baba, Kenji; Nogita, Shunsuke; and Mori, Shunji, 4,564,444, Cl. 210-96.100.

Tsunemitsu, Katsuhiko: *See—*
Fujino, Yoshiharu; Kawai, Hajime; Nakai, Yasushi; and Tsunemitsu, Katsuhiko, 4,564,679, Cl. 546-116.000.

Tsuneyoshi, Minoru: *See—*
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, 4,564,573, Cl. 430-109.000.

Tsuruta, Orihiro, to Orihiro Co., Ltd. Manufacturing method and manufacturing equipment for plastic air cell cushioning material. 4,564,407, Cl. 156-147.000.

Tsutsui, Shinji, to Canon Kabushiki Kaisha. Semiconductor exposure apparatus. 4,564,284, Cl. 355-30.000.

Tsuyoshi, Toshiaki: *See—*
Yonezawa, Seiji; Horikoshi, Tatsuo; Tsuyoshi, Toshiaki; and Takasugi, Wasao, 4,564,929, Cl. 369-44.000.

Tulin, Nikolai A.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

Turkowski, Kenneth E. J.: *See—*
Evans, Lawrence J.; Sheikh, Junaid; Stock, Rodney D.; and Turkowski, Kenneth E. J., 4,564,915, Cl. 364-521.000.

Turner, Donald H.: *See—*
Loker, Ernest B.; and Turner, Donald H., 4,564,222, Cl. 285-243.000.

Turner, Tomie L. Toothpick holder. 4,564,035, Cl. 132-90.000.

Tusinski, Joseph, to Coburn Optical Industries, Inc. Dynamically variable oscillating adjustment assembly. 4,563,916, Cl. 74-829.000.

Uberti, Franco: *See—*
Buzzanca, Giovanni; Ronchetti, Camillo; Uberti, Franco; and Anzani, Renato, 4,564,436, Cl. 204-400.000.

Uchiyama, Soichi: *See—*
Shibata, Masatoshi; Uchiyama, Soichi; and Aoki, Yoshinobu, 4,564,643, Cl. 518-717.000.

Udovich, Carl A.; and Edwards, Robert C., to Standard Oil Company (Indiana). Process for the production of maleic anhydride by the oxidation of butane. 4,564,688, Cl. 549-259.000.

Ueba, Yoshinobu; and Miyake, Shinichi, to Sumitomo Electric Industries, Ltd. Process for producing plastic optical fiber. 4,564,263, Cl. 350-96.340.

Ueda, Ikuo; Nagano, Masanobu; and Akahane, Atsushi, to Fujisawa Pharmaceutical Co., Ltd. α-Aryl-α-pyridylalkanoic acid derivatives, process for preparation thereof and pharmaceutical composition comprising the same. 4,564,621, Cl. 514-357.000.

Ueda, Kazuo: *See—*
Kamata, Kazumasa; Ueda, Kazuo; and Kitai, Kiyokazu, 4,564,653, Cl. 525-67.000.

Ueda, Masahiro: *See—*
Hori, Shinichi; Ohnishi, Yasuichi; Ueda, Masahiro; and Noba, Masahiko, 4,564,916, Cl. 364-551.000.

Ueda, Nobuo; Kondo, Susumu; and Hazue, Masaaki, to Nihon Medi-Physics Co., Ltd. 3-Aminomethylene-2,4-pentanedione bis(thiosemicarbazone) derivatives, and their production and use. 4,564,472, Cl. 260-113.000.

Ueda, Tsunehisa; and Natsuume, Tadao, to Nippon Zeon Co Ltd. Dispersant for aqueous slurry of coal. 4,564,371, Cl. 44-51.000.

Uehara, Makoto, to Nippon Kogaku K.K. Projection lens. 4,564,269, Cl. 350-432.000.

Ueno, Hideo, to Brother Kogyo Kabushiki Kaisha. Typewriter with text memory. 4,564,301, Cl. 400-63.000.

Ueno, Hideo, to Brother Kogyo Kabushiki Kaisha. Typewriter with resetting function for margin position and tab position. 4,564,304, Cl. 400-279.000.

Ueno, Hiroshi: *See—*
Taira, Kazuo; Sakamoto, Akira; Yamada, Muneki; Aizawa, Masanori; and Ueno, Hiroshi, 4,564,541, Cl. 428-35.000.

Ueshima, Michio: *See—*
Yoneda, Tadahiro; and Ueshima, Michio, 4,564,607, Cl. 502-209.000.

Uhl, Robert J.: *See—*
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.

Ujihashi, Michiaki, to Toyota Jidosha Kabushiki Kaisha. Fuel injection control apparatus. 4,563,994, Cl. 123-491.000.

Underdown, David R.; and Glaze, O. Howard, to Baker Oil Tools, Inc. Proppant charge and method. 4,564,459, Cl. 252-8.55R.

Uni-Cardan Aktiengesellschaft: *See—*
Krude, Werner; and Jordan, Alfons, 4,564,242, Cl. 301-6.0CF.

Union Carbide Corporation: *See—*
Briggs, John R.; O'Connor, George L.; and Robson, John H., 4,564,715, Cl. 568-867.000.
Brown, Geoffrey D., 4,564,349, Cl. 425-207.000.
Williams, Gary H.; and Karol, Frederick J., 4,564,660, Cl. 526-106.000.

Union Oil Company of California: *See—*
Deering, Roland F., 4,564,437, Cl. 208-11.00R.
Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., 4,564,298, Cl. 366-167.000.
Robinson, Paul R.; and Moorehead, Eric L., 4,564,603, Cl. 502-60.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Birley, Stuart S.; and Roper, Philip E., 4,564,743, Cl. 219-137.00R.
Timby, Ernest A.; Walsh, Rodney H.; and Wood, Robert S., 4,564,333, Cl. 415-86.000.

United States of America
Air Force: *See—*
Kaplan, Philip D., 4,564,935, Cl. 370-38.000.

Powell, Norman F., 4,564,839, Cl. 343-5.0CM.

Army: *See—*
Gilson, Russell A.; and Burke, Thomas F., 4,564,817, Cl. 330-286.000.
Stern, Richard A.; and Babbitt, Richard W., 4,564,000, Cl. 125-13.00R.
Winfree, Clarence H., 4,564,356, Cl. 434-29.000.

Energy: *See—*
Adams, Johnnie E.; and Jamieson, Donald R., 4,564,683, Cl. 548-521.000.
Faughnan, Brian W.; and Hanak, Joseph J., 4,564,808, Cl. 324-158.00R.
Hogan, Stephen J., 4,564,720, Cl. 136-256.000.
Kucera, Gene H.; Smith, James L.; and Sim, James W., 4,564,567, Cl. 429-41.000.
Reimann, George A., 4,564,391, Cl. 75-63.000.
Schuller, Ivan K.; Ketterson, John B.; and Banerjee, Indrajit, 4,564,564, Cl. 428-662.000.

National Aeronautics and Space Administration: *See—*
Kosmahl, Henry G., 4,564,787, Cl. 315-3.600.

Navy: *See—*
Goldstein, David, 4,564,501, Cl. 419-25.000.
Martin, Eugene C.; and De Fusco, Albert A., 4,564,663, Cl. 526-262.000.

U.S. Philips Corporation: *See—*
Chameroy, Pascal; and Decraemer, Alain, 4,564,863, Cl. 358-172.000.
Comberg, Albert, 4,564,866, Cl. 358-302.000.
Schijven, Lucas W. M., 4,564,874, Cl. 360-96.100.
Van Aller, Gerardus; and Kuhl, Walter H., 4,564,753, Cl. 250-213.0VT.
Van Dijk, Pieter, 4,564,812, Cl. 324-309.000.
Welzen, Jozef T. A. M.; Stijntjes, Theodorus G. W.; van der Meer, Aant B. D.; Lobel, Rudolf O. M.; and Nijhof, Berend J., 4,564,489, Cl. 264-58.000.

United States Steel Corporation: *See—*
Lucht, Wilbert A., 4,563,870, Cl. 57-223.000.

United Technologies Corporation: *See—*
Clelford, Douglas H.; Skonieczny, Joseph P.; and Murphy, Richard D., 4,564,908, Cl. 364-433.000.
Gruver, Gary A.; and Kunz, Harold R., 4,564,427, Cl. 204-98.000.

Unitek Corporation: *See—*
Dufrenne, Gerald, 4,564,735, Cl. 219-110.000.

Universal Pioneer Corporation: *See—*
Nakajima, Tohru, 4,564,867, Cl. 358-342.000.

University of Manchester Institute of Science and Technology, The: *See—*
Still, Richard H.; Cawse, John L.; and Stanford, John L., 4,564,718, Cl. 585-350.000.

Uoi, Michitake: *See—*
Hayashi, Hiroshi; Matono, Koichi; Asahi, Satoshi; and Uoi, Michitake, 4,564,647, Cl. 523-211.000.

Uozumi, Akira, to Mitsubishi Denki Kabushiki Kaisha. Safety device for a passenger conveyor. 4,564,099, Cl. 198-323.000.

Urakami, Fukashi. Cleaning particle impinging device and air blast cleaning apparatus using said device. 4,563,840, Cl. 51-410.000.

Urban, Jorg: *See—*
Schill, Jurgen; Rupp, Werner; Schaff, Werner; and Urban, Jorg, 4,563,801, Cl. 29-156.80B.

Urban, Joseph J.; and Henderson, Norman L., to Hoechst-Roussel Pharmaceuticals Inc. Dosage dispensing unit. 4,564,129, Cl. 222-207.000.

Usui, Setsuo: *See—*
Hayafuji, Yoshinari; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,564,403, Cl. 148-171.000.

USV Pharmaceutical Corp.: *See—*
Kantor, Martin L., 4,564,677, Cl. 544-164.000.

Utagawa, Ken, to Nippon Kogaku K.K. Correlation calculating apparatus. 4,564,919, Cl. 364-728.000.

Uytterhoeven, Herman J.; De Winter, Walter F.; and Maricn, August M., to Agfa-Gevaert, N.V. Liquid developer for development of electrostatic images. 4,564,574, Cl. 430-115.000.

Vaasanmylly Oy: *See—*
Haarasilta, Asko, 4,564,524, Cl. 426-74.000.

Valentin, Jean P., to L'Etat Francais represented by Delegation Generale. Integrated infrared thermostat resonator. 4,564,744, Cl. 219-210.000.

Valeo: *See—*
Thirion de Briel, Jacques, 4,564,357, Cl. 474-14.000.

Vallomy, John A., to Intersteel Technology, Inc. Method for continuous steelmaking. 4,564,388, Cl. 75-12.000.

Van Aller, Gerardus; and Kuhl, Walter H., to U.S. Philips Corporation. Radiation detector. 4,564,753, Cl. 250-213.0VT.

van Alst, Wilhelmus B. T., to Du Pont de Nemours, E. I., and Company. IDC Latching terminal. 4,564,254, Cl. 339-99.00R.

van Berkel, Bernardus P. J.: *See—*
Boulogne, Gerardus F.; and van Berkel, Bernardus P. J., 4,564,838, Cl. 340-825.500.

van Bogaert, Philippe, to N.V. Weefautomaten Picanol. Weft gripper drive for looms. 4,564,053, Cl. 139-449.000.

van Bonn, Hans: *See—*
Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; van Bonn, Hans; Holter, Karl; and Wiegard, Gustav, 4,564,058, Cl. 164-72.000.

Vandame, Bertrand, to Precision Mechanique Labinal. Electrical contact element. 4,564,259, Cl. 339-258.00R.

Vander Giessen, Michael J.: *See—*
Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., 4,564,649, Cl. 524-13.000.

van der Meer, Aant B. D.: *See—*
Welzen, Jozef T. A. M.; Stijntjes, Theodorus G. W.; van der Meer, Aant B. D.; Lobel, Rudolf O. M.; and Nijhof, Berend J., 4,564,489, Cl. 264-58.000.

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Vargas, Richard R.: *See—*
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Wickersham, Charles E., 4,564,435, Cl. 204-298.000.

Vaughan, Anthony J., to Babcock Wire Equipment Limited. Continuous extrusion apparatus. 4,564,347, Cl. 425-79.000.

VDO Adolf Schindling AG: *See—*
Kant, Bernhard; and Jakobs, Hasko, 4,564,881, Cl. 361-284.000.

Vedernikov, Gennady G.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

Veith, Werner, to Siemens Aktiengesellschaft. Flat electron beam tube having a gas discharge as electron source. 4,564,790, Cl. 315-169.400.

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Jerlich, Werner J.; Kaiserfeld, Hans; and Kugler, Alfred, 4,564,566, Cl. 428-687.000.

Vermilye, Michael L., to Boeing Company, The. Thrust reverser blocke: door assembly. 4,564,160, Cl. 244-110.00B.

Vickers, Incorporated: *See—*
Siegrist, Ronald, 4,563,939, Cl. 91-275.000.

VICO Kemisk Tekniska Fabrik AB: *See—*
Tiedemann, Wolfgang, 4,564,447, Cl. 210-220.000.

Victor Company of Japan, Ltd.: *See—*
Ihara, Ryuji, 4,564,875, Cl. 360-96.600.
Takahashi, Toshinori; Tsumiyama, Hisanori; Okano, Keigo; and Iwabuchi, Yoshitaka, 4,564,876, Cl. 360-107.000.

Viertel, Lothar: *See—*
Kaiser, Klaus-Peter; and Viertel, Lothar, 4,564,234, Cl. 296-97.00H.

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Holmes, George; and Keyser, Frank, 4,564,350, Cl. 425-313.000.

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Virkus, Mark: *See—*
Hutchison, Stephen; Ritter, J. Alan; and Virkus, Mark, 4,564,018, Cl. 128-660.000.

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Vogel Tool & Die: *See—*
Kinsley, Robert J., 4,563,927, Cl. 83-319.000.

von Dahn, Lars-Gosta: *See—*
Skold, Rolf O.; von Dahn, Lars-Gosta; and Sterky, Anna K., 4,564,461, Cl. 252-32.500.

von Sivers, Rolf: *See—*
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W F Products Corporation: *See—*
Hasty, William E., 4,563,847, Cl. 52-219.000.

W. Schlafhorst & Co.: *See—*
Kohlen, Karl-Heinz, 4,564,228, Cl. 289-2.000.
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WABCO Westinghouse Compagnia Freni S.p.A.: *See—*
Barberis, Dario, 4,564,245, Cl. 303-15.000.

Wachter, Ernst: *See—*
Heitzenroder, Hans F.; Wachter, Ernst; and Bitsch, Kurt, 4,564,107, Cl. 206-315.900.

Wacker-Chemie GmbH: *See—*
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Wackerbarth, Folkard: *See—*
Spindeler, Heinrich; Wackerbarth, Folkard; Kuhlmann, Horst; Dohle, Helmut; and Althaus, Horst, 4,564,420, Cl. 202-139.000.
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Waddingtons Limited: *See—*
Shilcock, John, 4,564,106, Cl. 206-165.000.

Wagner, John R., Jr.; and Clauson, Melvil B., to Mobil Oil Corporation. Oriented multi-layer heat sealable film. 4,564,559, Cl. 428-349.000.

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Wakefield, Russell R.: *See—*
Sullivan, Patrick F.; and Wakefield, Russell R., 4,564,204, Cl. 280-154.50R.

Waki, Kouichirou: *See—*
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Wakui, Takeo: *See—*
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

Walker, John G. Sail with retractable air directing element. 4,563,970, Cl. 114-103.000.

Walker, John W.: *See—*
Garwood, William E.; Starr, William C.; and Walker, John W., 4,564,440, Cl. 208-87.000.

Walker, Robert N., to Texaco Inc. RF Core analyzing means and method. 4,564,811, Cl. 324-307.000.

Wallace, John. Compact pliers with large, adjustable jaw span. 4,563,921, Cl. 81-373.000.

Walsh, Rodney H.: *See—*
Timby, Ernest A.; Walsh, Rodney H.; and Wood, Robert S., 4,564,333, Cl. 415-86.000.

Walter, Dietmar: *See—*
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.

Waltersdorfer, Anna: *See—*
Stahler, Gerhard; Knauf, Werner; Sachse, Burkhard; and Waltersdorfer, Anna, 4,564,611, Cl. 514-99.000.

Wambach, Hermann: *See—*
Rekewitz, Rudolf; and Wambach, Hermann, 4,564,305, Cl. 400-605.000.

Wang, Sophia; and Millard, Alan A., to Nalco Chemical Company. Styrene-dialkyl maleate copolymers as dewaxing agents. 4,564,438, Cl. 208-33.000.

Warburton, Eric T.: *See—*
Smith, Lewis W.; and Warburton, Eric T., 4,563,855, Cl. 53-128.000.

Warner, Dean C.; and Marek, James R., to Cooper Industries, Inc. Wound-in sleeve fuse cutout tube construction. 4,564,830, Cl. 337-246.000.

Warner, Patrick G.: *See—*
Hallman, Robert W.; Langlais, Eugene L.; and Warner, Patrick G., 4,564,589, Cl. 430-524.000.

Watanabe, Hajime; Tanaka, Yoshio; and Abe, Seiichi, to Takasago Perfumery Co., Ltd.; and Sunstar K.K. Menthol soap. 4,564,462, Cl. 252-134.000.

Watanabe, Masaharu: *See—*
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Watanabe, Shizuhisa: *See—*
Masuda, Mitsuhiro; Naito, Shotaro; Tokuyama, Keiichi; and Watanabe, Shizuhisa, 4,564,905, Cl. 364-424.000.

Watanabe, Yoshikazu; and Ito, Kenji, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic material comprising multi-silver halide emulsion layers having same color sensitiveness but different in sensitivities. 4,564,587, Cl. 430-505.000.

Watson, Francis L.; Angalet, Stevan A.; and Carlson, Richard A., to General Foods Corporation. Dry mix for whipped toppings. 4,564,529, Cl. 426-570.000.

Watson, Peter: *See—*
Austin, Frederick D.; and Watson, Peter, 4,564,537, Cl. 427-376.400.

Watts, Clark: *See—*
Rosenfeld, John G.; Watts, Clark; and York, Donald H., 4,564,022, Cl. 128-748.000.

Wawrzynek, Joseph. Boat with improved hull. 4,563,968, Cl. 114-56.000.

Weavers, Mark W.; Gebeke, Charles D.; and Yamasaki, Ken'ichi, to Minnesota Mining and Manufacturing Company. Cassette removable piece. 4,564,878, Cl. 360-132.000.

Webb, Dale P., to Webb Manufacturing, Inc. Molded window assembly. 4,563,846, Cl. 52-208.000.

Webb Manufacturing, Inc.: *See—*
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Weber, Wolfram; Neumann, Hans-Jurgen; Meisberger, Artur; and Mathieu, Bernd, to Fresenius AG. Peristaltically operating roller pump and pump rotor therefor. 4,564,342, Cl. 417-477.000.

Weddigen, Gerd; Huber, Robert; Schmidt, Birgit; and Schneider, Hartmut, to Brown, Boveri & Cie AG. Method for the manufacture of a polymer. 4,564,466, Cl. 525-505.000.

Weiner, Allan L.: *See—*
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Weining, Hans-Karl; Kienle, Juergen; and Christl, Wilfried, to Daimler-Benz Aktiengesellschaft. Control arrangement for an internal combustion engine. 4,563,998, Cl. 123-568.000.

Weiser, Kurt: *See—*
Buckwald, Robert A.; Cabib, Dario; and Weiser, Kurt, 4,564,761, Cl. 250-341.000.

Weishaupt, Walter, to Bayerische Motoren Werke AG. Apparatus for determining the filling quantity of lubricating oils in drive installations. 4,563,988, Cl. 123-196.00S.

Weiss, Eugen: *See—*
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Weiss, Otmar: *See—*
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Weiss, Paul-Charles: *See—*
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Weissmann, Gerald: *See—*
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Weitemeyer, Christian: *See—*
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Welzen, Jozef T. A. M.; Stijntjes, Theodorus G. W.; van der Meer, Aant B. D.; Lobel, Rudolf O. M.; and Nijhof, Berend J., to U.S. Philips Corporation. Method and holder for the manufacture of annular cores. 4,564,489, Cl. 264-58.000.

Wennerberg, Arnold N., to Standard Oil Company (Indiana). Hydrogenation reactions. 4,564,702, Cl. 562-493.000.

Wentworth, Michael B. Toilet paper dispensing system. 4,564,148, Cl. 242-55.300.

Werdecker, Waltraud; and Fabian, Peter, to Heraeus Elektroden GmbH. Bipolar electrode. 4,564,433, Cl. 204-254.000.

Werking, Paul M., to Texas Instruments Incorporated. Programmable timing system. 4,564,953, Cl. 377-52.000.

Werner H. K. Peters Maschinenfabrik GmbH: *See—*
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West Electric Company, Ltd.: *See—*
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Westcott, Douglas W.: *See—*
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Westvaco Corporation: *See—*
McNair, John R., 4,564,188, Cl. 271-103.000.

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Ringlee, David R.; and Gaddis, Paul G., 4,563,929, Cl. 83-840.000.

Whartenby, James C.: *See—*
Kumar, Mahesh; and Whartenby, James C., 4,564,816, Cl. 330-149.000.

Wheable, Desmond; and Attwood, Michael J., to Transamerica Delaval Inc. Analog to digital converters for converting a plurality of different input signals. 4,564,831, Cl. 340-347.0AD.

Wheeler, Daryl. Torque transmitting device. 4,563,922, Cl. 81-441.000.

Wheeler, Roger D.: *See—*
Bethell, Michael R.; Gaines, Michael G.; Mowat, James F., Jr.; Wheeler, Roger D.; and Woidke, Richard P., 4,564,138, Cl. 228-176.000.

Wheeler, Ronald M.: *See—*
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Wherry, Mark S., to Owens-Corning Fiberglas Corporation. Curing fibrous mineral material. 4,564,486, Cl. 264-39.000.

Whirlpool Corporation: *See—*
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Karklys, Joseph, 4,564,733, Cl. 219-10.770.

Whitaker, John B., Jr., to Kershaw Manufacturing Company, Inc. Apparatus for removing ballast from beneath a railroad track. 4,563,826, Cl. 37-97.000.

White, Bernard C., to Magnum Research, Inc. Gas actuated pistol. 4,563,937, Cl. 89-185.000.

White, Charles M.: *See—*
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White, Donald: *See—*
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Melocik, Grant C.; and Wible, John E., 4,564,085, Cl. 187-9.00R.

Wickersham, Charles E., to Varian Associates, Inc. Target assembly for sputtering magnetic material. 4,564,435, Cl. 204-298.000.

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Widlund, Leif U. R.; Nedestam, Stefan; and Froidh, Arne, to Molnlycke AB. Package for sanitary napkins. 4,564,108, Cl. 206-438.000.

Wiechert, Edelbert; and Lehmann, Herbert, to Siemens Aktiengesellschaft. Travelling mechanism of a transport car running on profile rail track. 4,563,956, Cl. 105-29.00R.

Wiegard, Gustav: *See—*
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Wiehler, Wolf, to Siemens Aktiengesellschaft. Delay line for high-performance traveling-wave tubes, in the form of a two part-tungsten and molybdenum-ring ribbon conductor. 4,564,788, Cl. 315-3.600.

Wieringa, Johannes H.; and van der Vlugt, Frans A., to Akzo N.V. Biologically-active tricyclic amines. 4,564,698, Cl. 560-109.000.

Wiesenfarth, Hans J.; and Dienes, Geza, to Andrew Corporation. Multiple mitered circular waveguide bend. 4,564,826, Cl. 333-249.000.

Wilcockson, Brian: *See—*
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Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, 4,564,454, Cl. 210-668.000.
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.

Wilke, William G.; and Reiney, Michael G., to Tektronix, Inc. Method and apparatus for automatically detecting signal levels. 4,564,804, Cl. 324-103.00P.

Willi Studer AG: *See—*
McNally, Guy W. W.; Lagadec, Roger; and Pelloni, Daniele P. C., 4,564,918, Cl. 364-569.000.

William H. Rorer, Inc.: *See—*
Studt, William L.; Riley, Richard L.; and Douglas, George H., 4,564,640, Cl. 514-598.000.

Williams, Gary H.; and Karol, Frederick J., to Union Carbide Corporation. Use of alkylaluminum compounds and hydroxyl-containing compounds to initiate polymerization of ethylene with chromium oxide catalysts. 4,564,660, Cl. 526-106.000.

Williams, Richard: *See—*
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Wilson, Ronald E. Transport aid for A-frame stepladder. 4,564,203, Cl. 280-47.320.

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Windmoller & Holscher: *See—*
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Winer, Richard A.; and Garrison, Kevin S. Quick change mechanism for a limb prosthesis. 4,564,365, Cl. 623-27.000.

Winfree, Clarence H., to United States of America, Army. Laboratory turret shaker. 4,564,356, Cl. 434-29.000.

Winkelmann, Wolfgang, to Maschinenbau Grieshaber GmbH & Co. Apparatus comprising a machining tool for machining rollers. 4,563,838, Cl. 51-58.000.

Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG: *See—*
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Winter, Lester: *See—*
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Winter, Robert A., to Sencore, Inc. Oscilloscope with integrated frequency counter and method of measuring frequency. 4,564,805, Cl. 324-121.00R.

Winzer, Gerhard; and Mahlein, Hans, to Siemens Aktiengesellschaft. Transmission and reception device for a fiber-optical sensor system. 4,564,755, Cl. 250-227.000.

Winzer, Gerhard: *See—*
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Wiremold Company, The: *See—*
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Wirthwein, Rolf: *See—*
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Wisconsin Alumni Research Foundation: *See—*
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Wistuba, Eberhard; Nusser, Martin; and Lenzer, Xaver, to Karl Mengele & Sohne. Multi-row corn cutter forage harvester and/or picker forage harvester. 4,563,866, Cl. 56-228.000.

WM Regler AB: *See—*
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Woelk, Hans-Ulrich: *See—*
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Wohler, Wilson H., Jr. Electro-ejaculator probe. 4,564,024, Cl. 128-788.000.

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Wolf, Karlheinz: *See—*
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Wollbeck, Rudi: *See—*
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Wolpert, George H., Jr., to Spectro Industries, Inc. Leg-rests for modified wheel-chair. 4,564,238, Cl. 297-430.000.

Wong, Ching-Ping, to AT&T Technologies, Inc. Silicone encapsulated devices. 4,564,562, Cl. 428-447.000.

Wong, Patrick S. L.: *See—*
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Woodruff, Keith; and Brandli, Eugene, to American Cyanamid Co. Insect feeding station. 4,563,836, Cl. 43-131.000.

Woolley, Richard N.; Glover, Neal; and Williams, Richard, to Apple Computer, Inc. Error detection system. 4,564,941, Cl. 371-2.000.

Worcester, Winthrop S., to B. F. Goodrich Company, The. Belt and method of splicing the same. 4,564,542, Cl. 428-58.000.

Wortmann, Franz X.: *See—*
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Wuhrer, Wolfgang, to Escher Wyss GmbH. Oil infeed device for an adjustable pitch propeller. 4,563,940, Cl. 92-106.000.

Xerox Corporation: *See—*
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Hamlin, Thomas J.; and Edwards, William B., 4,564,185, Cl. 270-53.000.
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Yaegashi, Kouei: *See—*
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Yagi, Misao; and Akutagawa, Susumu, to Takasago Perfumery Co., Ltd. Optical resolution of the racemic modification of 2,2'-bis(diphenylphosphino)-1,1'-binaphthyldioxide. 4,564,708, Cl. 568-14.000.

Yahata, Haruki, to Tokyo Shibaura Denki Kabushiki Kaisha. Broad band network system. 4,564,940, Cl. 370-124.000.

Yamada Chemical Co., Ltd.: *See—*
Fujino, Yoshiharu; Kawai, Hajime; Nakai, Yasushi; and Tsunemitsu, Katsuhiko, 4,564,679, Cl. 546-116.000.

Yamada, Masatoshi: *See—*
Ide, Katsuyuki; Yamada, Masatoshi; and Sasaki, Katsusuke, 4,564,073, Cl. 172-120.000.

Yamada, Mitsuhiko, to Dainippon Screen Mfg. Co., Ltd. Picture scanning and recording method. 4,564,865, Cl. 358-287.000.

Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsushashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, to Nippondenso Co., Ltd. Speed display device for automotive vehicle. 4,564,917, Cl. 364-565.000.

Yamada, Muneki: *See—*
Taira, Kazuo; Sakamoto, Akira; Yamada, Muneki; Aizawa, Masanori; and Ueno, Hiroshi, 4,564,541, Cl. 428-35.000.

Yamada, Yasuo; Saito, Junichi; Tamura, Tatsuo; and Sakawa, Shinji, to Nihon Tokushu Boyaku Seizo K.K. Fungicidal novel N-benzyl-N-(2-norbornyl)-ureas. 4,564,638, Cl. 514-585.000.

Yamagiwa, Tokio: *See—*
Ishikawa, Toshio; Endo, Fumihiro; Yamagiwa, Tokio; and Kamata, Yuzuru, 4,564,721, Cl. 174-10.000.

Yamaguchi, Sumio: *See—*
Harada, Kunio; Yamaguchi, Sumio; Kanda, Hiroshi; Ishikawa, Isao; and Ohji, Yuzuru, 4,563,900, Cl. 73-644.000.

Yamakawa, Goichi: *See—*
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, 4,564,573, Cl. 430-109.000.

Yamamoto, Haruhisa; and Akiyama, Shinichi, to Nippon Zeon Co., Ltd. Process for preparing methacrylic acid. 4,564,703, Cl. 562-534.000.

Yamamoto, Kazuo: *See—*
Yokote, Yoshihiro; and Yamamoto, Kazuo, 4,564,218, Cl. 280-804.000.

Yamamoto, Minoru: *See—*
Tamura, Toshinari; Iwamoto, Hidenori; Yoshida, Makoto; and Yamamoto, Minoru, 4,564,609, Cl. 514-18.000.

Yamamoto, Takashi: *See*—
Takahashi, Hiroyuki; and Yamamoto, Takashi, 4,564,825, Cl. 333-191.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Tamura, Toshinari; Iwamoto, Hidenori; Yoshida, Makoto; and Yamamoto, Minoru, 4,564,609, Cl. 514-18.000.

Yamaoka, Hideyuki; Hatano, Michiharu; Miyazaki, Tomio; Shimoda, Teruhisa; and Oki, Koji, to Sumitomo Metal Industries, Ltd. Process for coal-gasification and making pig iron. 4,564,389, Cl. 75-38.000.

Yamaoka, Tsuguo: *See*—
Ichimura, Kunihiro; Yamaoka, Tsuguo; Kaneda, Sadayoshi; and Shibuya, Toru, 4,564,580, Cl. 430-281.000.

Yamasaki, Ken'ichi: *See*—
Weavers, Mark W.; Gebeke, Charles D.; and Yamasaki, Ken'ichi, 4,564,878, Cl. 360-132.000.

Yamashita, Akira: *See*—
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, 4,564,560, Cl. 428-411.100.

Yamashita, Toshiaki: *See*—
Koyama, Yuichiro; Nakazawa, Hiroshi; Yamashita, Toshiaki; and Moriyama, Hitoshi, 4,564,709, Cl. 568-26.000.

Yamashita, Tsuyoshi: *See*—
Yomogida, Toshihiko; and Yamashita, Tsuyoshi, 4,564,913, Cl. 364-474.000.

Yamauchi, Teruo; and Oyama, Yoshishige, to Hitachi, Ltd. Fuel feeding apparatus. 4,563,993, Cl. 123-478.000.

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Method for depositing silicon carbide non-single crystal semiconductor films. 4,564,533, Cl. 427-39.000.

Yanagishima, Takayuki: *See*—
Seko, Yasutoshi; and Yanagishima, Takayuki, 4,564,833, Cl. 340-576.000.

Yanase, Masataka: *See*—
Okumura, Takuzo; Yanase, Masataka; and Kikui, Hitoshi, 4,564,545, Cl. 428-76.000.

Yano, Satoshi, to Omron Tateisi Electronics Co. Programmable controller having a drum type sequencer function subject to programming. 4,564,898, Cl. 364-140.000.

Yarwood, John C.: *See*—
Gupta, Debabrata; and Yarwood, John C., 4,564,390, Cl. 75-51.700.

Yashin, Jury A.: *See*—
Alexandrov, Adolf M.; Tsimbler, Jury A.; Iljukhin, Vitaly G.; Yashin, Jury A.; and Kiselev, Igor V., 4,564,318, Cl. 406-192.000.

Yasuda, Hiroshi; Kawashima, Kenichi; Miyazaki, Takayuki; and Kobayashi, Koichi, to Fujitsu Limited. Wafer having chips for determining the position of the wafer by means of electron beams. 4,564,764, Cl. 250-491.100.

Yasuda, Wataru; Sakamoto, Koji; and Kanno, Fuchio, to Ricoh Company, Ltd. Developing device having dispersed floating electrodes in a dielectric layer. 4,564,285, Cl. 355-3.0DD.

Yasui, Tokumasa: *See*—
Onishi, Yoshiaki, deceased; Onishi, Junko, administratrix; Kawamoto, Hiroshi; and Yasui, Tokumasa, 4,564,925, Cl. 365-203.000.

Yasuoka, Hirotoshi, to Mitsubishi Denki Kabushiki Kaisha. Articulation mechanism of an arc welding robot. 4,564,741, Cl. 219-125.100.

Yokokura, Hisao: *See*—
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.

Yokota, Mitsuyoshi: *See*—
Iwaki, Yoshiyuki; Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,564,799, Cl. 320-6.000.

Yokote, Yoshihiro; and Yamamoto, Kazuo, to NSK-Warner K.K. Automatic seat belt driving device. 4,564,218, Cl. 280-804.000.

Yomogida, Toshihiko; and Yamashita, Tsuyoshi, to Toyoda Koki Kabushiki Kaisha. Flexible transfer machine. 4,564,913, Cl. 364-474.000.

Yoneda, Tadahiro; and Ueshima, Michio, to Nippon Shokubai Kagaku Kogyo Co. Ltd. Heteropolyacid-type catalyst composition containing whiskers. 4,564,607, Cl. 502-209.000.

Yonezawa, Seiji; Horikoshi, Tatsuo; Tsuyoshi, Toshiaki; and Takasugi, Wasao, to Hitachi, Ltd. Information recording and reproducing apparatus with tracking control by sampling. 4,564,929, Cl. 369-44.000.

Yong, Raymond N.; and Sethi, Amar J., to Suncor, Inc. Hydrolyzed cassava starch flocculants. 4,564,004, Cl. 127-33.000.

York, Donald H.: *See*—
Rosenfeld, John G.; Watts, Clark; and York, Donald H., 4,564,022, Cl. 128-748.000.

Yoshida Kogyo K.K.: *See*—
Gartner, Karl, 4,563,848, Cl. 52-235.000.

Yoshida, Makoto, to Aupac Co., Ltd. DC Brushless electromagnetic rotary machine. 4,564,778, Cl. 310-177.000.

Yoshida, Makoto: *See*—
Tamura, Toshinari; Iwamoto, Hidenori; Yoshida, Makoto; and Yamamoto, Minoru, 4,564,609, Cl. 514-18.000.

Yoshida, Masahiro: *See*—
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.

Yoshida, Tomio: *See*—
O'Hara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, 4,564,931, Cl. 369-110.000.

Yoshino, Hisakazu; Takasu, Masayuki; and Kuroiwa, Junji, to Tokyo Kogaku Kikai Kabushiki Kaisha. Projection type lensmeter. 4,564,291, Cl. 356-125.000.

Yoshino Kogyosho Co., Ltd.: *See*—
Ota, Akiho; and Koshidaka, Yukio, 4,564,497, Cl. 264-521.000.

Yoshino, Tsunemi; and Takashima, Akira, to West Electric Company, Ltd. Driving circuit for a stepping motor. 4,564,796, Cl. 318-696.000.

Yoshizaki, Masanori: *See*—
Senoo, Masaharu; Noma, Keizi; Saruta, Akira; Yoshizaki, Masanori; Teshirogi, Koichi; and Yaegashi, Kouei, 4,564,777, Cl. 310-156.000.

Yoshizawa, Tomomi: *See*—
Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; and Yoshizawa, Tomomi, 4,564,588, Cl. 430-509.000.

Young, David M.; and Blower, Andrew W., to Fisons plc. Adjustable dose injection pistol. 4,564,360, Cl. 604-183.000.

Young, Ian R.; and Bailes, David R., to Picker International, Ltd. Nuclear magnetic resonance method and apparatus. 4,564,813, Cl. 324-311.000.

Young, James E., to Escutcheon Associates. Battery performance control. 4,564,798, Cl. 320-6.000.

Yugengaisha Kyodogiken: *See*—
Orii, Masaru, 4,564,332, Cl. 414-759.000.

Yukitomo, Kazuo: *See*—
Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, 4,563,917, Cl. 74-866.000.

Zabarilo, Oleg S.: *See*—
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

Zaffaroni, Alejandro; and Wong, Patrick S. L., to ALZA Corporation. Active agent dispenser. 4,564,364, Cl. 604-897.000.

Zahnradfabrik Friedrichshafen, AG.: *See*—
Ilg, Rudolf, 4,564,338, Cl. 417-310.000.

Zeroni, Ludwig: *See*—
Pertzsch, Albert; Liepold, August; Brunner, Hubert; and Zeroni, Ludwig, 4,564,120, Cl. 220-337.000.

Zeumer, Monika: *See*—
Baden, Hans; Kuhnemann, Klaus; Sedlmayr, Gerhard; Straszewski, Klaus; and Zeumer, Monika, 4,564,219, Cl. 280-808.000.

Ziegler, Friedrich: *See*—
Krieg, Rudolf; and Ziegler, Friedrich, 4,564,783, Cl. 313-113.000.

Ziegler, Gerhard; Gregotsch, Karl; and von Sivers, Rolf, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Suction pipe apparatus for an internal-combustion engine. 4,563,984, Cl. 123-52.00M.

Ziegler, Jeffrey L.: *See*—
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., 4,564,258, Cl. 339-220.00R.

Zieran, Eberhard: *See*—
Hofmann, Wilfried; Lusch, Herbert; Rauffer, Walter; Zieran, Eberhard; and Sylla, Jurgen, 4,564,276, Cl. 353-55.000.

Zilly, Gunter: *See*—
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.

Zimmer, Herbert; Dathe, Ingo; Hoffmann, Reinhard; Hora, Petr; and Wortmann, Franz X., to Dornier Gesellschaft mit besehrankter Haftung. Aircraft propeller. 4,564,337, Cl. 416-223.00R.

Zimmerman, Jos.: *See*—
Beyer, Walter; and Beyer, Joachim, 4,563,961, Cl. 112-222.000.

Zimmerman, Larry D.: *See*—
Blaske, Paul S.; Zimmerman, Larry D.; Calderon, Arthur; and Longworth, Leroy L., 4,564,585, Cl. 430-313.000.

Zrostlik, Francis L., to Iowa Mold Tooling Company, Inc. Bead loosening tool. 4,564,057, Cl. 157-1.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF JANUARY, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aktieselskabet Niro Atomizer: *See*—
Nielsen, Kaj, Re. 32,064, Cl. 239-224.000.

Baxter Travenol Laboratories, Inc.: *See*—
Ralston, Philip G., Jr.; Miller, Joe A.; and Cammarata, Frank, III, Re. 32,065, Cl. 604-408.000.

Cammarata, Frank, III: *See*—
Ralston, Philip G., Jr.; Miller, Joe A.; and Cammarata, Frank, III, Re. 32,065, Cl. 604-408.000.

Miller, Joe A.: *See*—
Ralston, Philip G., Jr.; Miller, Joe A.; and Cammarata, Frank, III, Re. 32,065, Cl. 604-408.000.

Nielsen, Kaj, to Aktieselskabet Niro Atomizer. Atomizer wheel for the atomization of suspensions of hard-wearing materials. Re. 32,064, Cl. 239-224.000.

Ralston, Philip G., Jr.; Miller, Joe A.; and Cammarata, Frank, III, to Baxter Travenol Laboratories, Inc. Molded collapsible solution container. Re. 32,065, Cl. 604-408.000.

Samodovitz, Arthur J. Multiple field acoustic focusser. Re. 32,062, Cl. 73-642.000.

Schultz, Gregory K. Motorcycle safety-release back rest. Re. 32,063, Cl. 180-268.000.

LIST OF DESIGN PATENTEES

Adler Instrument Company: *See*—
Davison, John A.; and Kellar, Robert J., 282,205, Cl. D24-26.000.

Alex Synn AG: *See*—
Hopfer, Hans, 282,126, Cl. D6-367.000.

Alonzo, Patrick R. Baseball fan. 282,125, 1-14-86, Cl. D3-3.000.

Atkins, Warren L., to International Telephone & Telegraph Corp. Instrument case molding. 282,150, 1-14-86, Cl. D10-103.000.

Atlas Sound Division Of American Trading & Production Corp.: *See*—
Seebinger, Frederick L., 282,163, Cl. D14-37.000.

Barrows, George F., II; and Barrows, Niela P. Insulated ignition switch cover. 282,161, 1-14-86, Cl. D13-32.000.

Barrows, Niela P.: *See*—
Barrows, George F., II; and Barrows, Niela P., 282,161, Cl. D13-32.000.

Bayerische Motoren Werke A.G.: *See*—
Kerschbaum, Hans, 282,157, Cl. D12-181.000.

Beck, Michael S., to Security Comfort Co. Inc. Shoe heel guard. 282,122, 1-14-86, Cl. D2-314.000.

Bell, Benjamin H.; Maloof, Gregory T.; and Reeve, Charles W. Refrigerated container for alcoholic beverages and mixers or the like. 282,128, 1-14-86, Cl. D6-469.000.

Bell, Stanley; and Perry, Gordon R. Exercycle. 282,190, 1-14-86, Cl. D21-194.000.

Bell, Stanley; and Perry, Gordon R. Exercycle. 282,191, 1-14-86, Cl. D21-194.000.

Berry, Frederick E.; and Tobelmann, Ralph G., to Emulex Corporation. Connector mounting device for extending I/O connections to a personal computer. 282,160, 1-14-86, Cl. D13-24.000.

Billings, Guy R. Glove with illuminable finger. 282,124, 1-14-86, Cl. D2-365.000.

Bott, John A. Vehicle luggage carrier. 282,155, 1-14-86, Cl. D12-157.000.

Boudreaux, Mark D., to CPC Products Corp. Toy vehicle. 282,186, 1-14-86, Cl. D21-128.000.

Brillo, Jerome; and Dooley, Harry H., to TLS Systems, Inc. Self-powered drogue light. 282,210, 1-14-86, Cl. D26-28.000.

Brown, Wilbert C., to TIE/Communications, Inc. Telephone set. 282,165, 1-14-86, Cl. D14-53.000.

Brown, Wilbert C., to TIE/Communications, Inc. Base for a telephone set. 282,167, 1-14-86, Cl. D14-62.000.

Brown, Wilbert C., to TIE/Communications, Inc. Base for a telephone set. 282,168, 1-14-86, Cl. D14-62.000.

Canon Kabushiki Kaisha: *See*—
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Chambers, John A.; and Collison, Alan, to Dobson Park Industries Limited. Combined printing toy and case therefore. 282,185, 1-14-86, Cl. D21-127.000.

Chase, Richard A.: *See*—
Williams, David M.; Chase, Richard A.; Fisher, John J., III; and Kelly, Lois E., 282,189, Cl. D21-159.000.

Cincinnati Incorporated: *See*—
Uroshevich, Miroslav, 282,176, Cl. D15-123.000.

Claman, Mike T. Chair frame. 282,131, 1-14-86, Cl. D6-500.000.

Cole, Mark T.; and Sherman, Charles F., to Nielsen Moulding Design Corp. Display frame hanger. 282,145, 1-14-86, Cl. D8-373.000.

Collison, Alan: *See*—
Chambers, John A.; and Collison, Alan, 282,185, Cl. D21-127.000.

Colonial Art Company, Inc.: *See*—
Hamilton, Richard G., 282,181, Cl. D20-43.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 282,184, Cl. D21-78.000.

CPC Products Corp.: *See*—
Boudreaux, Mark D., 282,186, Cl. D21-128.000.

Crowe, Scott D. Support frame for a combined seat and table unit. 282,130, 1-14-86, Cl. D6-491.000.

Cruze, Tyrone A.; and Panzica, Nace J., to Custom Chrome. Motorcycle footrest. 282,154, 1-14-86, Cl. D12-114.000.

Cuisinarts, Inc.: *See*—
Williams, James E.; and Kozlowski, Edward R., 282,137, Cl. D7-73.000.

Cunard, Joel C.; and Ziegler, William H., Jr., to Hedstrom Corporation. Riding toy. 282,187, 1-14-86, Cl. D21-134.000.

Custom Chrome: *See*—
Cruze, Tyrone A.; and Panzica, Nace J., 282,154, Cl. D12-114.000.

Data Packaging Corporation: *See*—
Lowry, Alan, 282,208, Cl. D24-55.000.

Davis, Howard, to 8 Track Shoe Corporation. Shoe outsole. 282,123, 1-14-86, Cl. D2-320.000.

Davison, John A.; and Kellar, Robert J., to Adler Instrument Company. Surgical rasp. 282,205, 1-14-86, Cl. D24-26.000.

Dobson Park Industries Limited: *See*—
Chambers, John A.; and Collison, Alan, 282,185, Cl. D21-127.000.

Doman, Donald W., to Kohler Co. Pedestal lavatory. 282,201, 1-14-86, Cl. D23-61.000.

Dooley, Harry H.: *See*—
Brillo, Jerome; and Dooley, Harry H., 282,210, Cl. D26-28.000.

Du Pont de Nemours, E. I., and Company: *See*—
White, David A., 282,149, Cl. D10-46.000.

Durand, Jean-Jacques. Tumbler or similar article. 282,134, 1-14-86, Cl. D7-15.000.

Eastman Kodak Company: *See*—
Leonard, Bruce A.; and Hood, Lawrence E., 282,203, Cl. D24-1.100.

8 Track Shoe Corporation: *See*—
Davis, Howard, 282,123, Cl. D2-320.000.

Ellersick, Russell R. Portable heater device. 282,202, 1-14-86, Cl. D23-77.000.

Ellesse International S.p.A.: *See*—
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Emulex Corporation: *See*—
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Ferch, Rudolf, to Kastle Gesellschaft m.b.H. Ski. 282,194, 1-14-86, Cl. D21-229.000.

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Fitzsimmons, Robert A.: *See*—
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Fossella, Gregory F.; Karalevicz, John M.; Mailer, Werner H.; and Milliser, Charles E., to Genicom Corporation. Cabinet for an input-output device. 282,173, 1-14-86, Cl. D14-100.000.

Fushimoto, Hideo: *See*—
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Garcia, Florentino. Hand held slingshot or similar article. 282,195, 1-14-86, Cl. D22-4.000.

General Motors Corporation: *See—*
Schell, Richard A.; and Schinella, John R., 282,159, Cl. D12-211.000.
Genicom Corporation: *See—*
Fossella, Gregory F.; Karalevicz, John M.; Mailer, Werner H.; and Milliser, Charles E., 282,173, Cl. D14-100.000.
Glaxo Group Limited: *See—*
Newell, Robert E.; and Fitzsimmons, Robert A., 282,209, Cl. D24-62.000.
Gluck, Harry, to Ellesse International S.p.A. Upright member for the modular assembly of an exhibition stall. 282,129, 1-14-86, Cl. D6-491.000.
Gravitt, Jerry R.: *See—*
Wallace, Robert H.; and Gravitt, Jerry R., 282,153, Cl. D12-14.000.
Grenier, Louis. Tent. 282,192, 1-14-86, Cl. D21-253.000.
Grimes, Gary E., to U.S. Philips Corporation. Loudspeaker. 282,162, 1-14-86, Cl. D14-33.000.
Gronborg, Jan; and Persson, Lars, to Svensk Sportutveckling AB. Face protecting mask. 282,117, 1-14-86, Cl. D2-233.000.
Gullikson, Donald A. Wine cooler. 282,138, 1-14-86, Cl. D7-300.000.
Hamilton, Richard G., to Colonial Art Company, Inc. Tray clip. 282,181, 1-14-86, Cl. D20-43.000.
Hans Grohe GmbH & Co.: *See—*
Haug, Andreas, 282,200, Cl. D23-57.000.
Harada, Yoshinori: *See—*
Uematsu, Toyoyuki; Kawata, Yoshiaki; Harada, Yoshinori; and Tsubaki, Hiroyuki, 282,171, Cl. D14-80.000.
Haro Designs Inc.: *See—*
Haro, Robert B., 282,180, Cl. D20-13.000.
Haro, Robert B., to Haro Designs Inc. Vented number plate. 282,180, 1-14-86, Cl. D20-13.000.
Haug, Andreas, to Hans Grohe GmbH & Co. Wall shower. 282,200, 1-14-86, Cl. D23-57.000.
Hayman, Eugene L., Jr. Fulcrumed tool for a shovel or similar article. 282,141, 1-14-86, Cl. D8-10.000.
Hedstrom Corporation: *See—*
Cunard, Joel C.; and Ziegler, William H., Jr., 282,187, Cl. D21-134.000.
Holt, Gregory C. Speculum. 282,204, 1-14-86, Cl. D24-18.000.
Hood, Lawrence E.: *See—*
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Integral Design, Inc.: *See—*
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International Telephone & Telegraph Corp.: *See—*
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Ishii, Yoshiyasu: *See—*
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Itoh, Yutaka: *See—*
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John Manufacturing Limited: *See—*
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Johnson & Johnson Baby Products Company: *See—*
Williams, David M.; Chase, Richard A.; Fisher, John J., III; and Kelly, Lois E., 282,189, Cl. D21-159.000.
Jost, Arthur. Bromine dispenser for hot tubs. 282,196, 1-14-86, Cl. D23-3.000.
Kalen, Ragnar. Medical holeplate. 282,207, 1-14-86, Cl. D24-33.000.
Kamali, Norma. High heeled calf length sneaker. 282,119, 1-14-86, Cl. D2-275.000.
Kamali, Norma. High heeled low top sneaker. 282,120, 1-14-86, Cl. D2-285.000.
Kamali, Norma. High heeled ankel top sneaker. 282,121, 1-14-86, Cl. D2-285.000.
Karalevicz, John M.: *See—*
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Kasagi, Taro, to Silver Seiko Limited. Typewriter. 282,178, 1-14-86, Cl. D18-1.000.
Kastle Gesellschaft m.b.H.: *See—*
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Kawata, Yoshiaki: *See—*
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Kellar, Robert J.: *See—*
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Kelly, Lois E.: *See—*
Williams, David M.; Chase, Richard A.; Fisher, John J., III; and Kelly, Lois E., 282,189, Cl. D21-159.000.
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January 21, 1986 Volume 1062 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *PCT Gazette* on Oct. 24, 1985 and in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Feb. 9, 1986	750.00
if paid on or after Feb. 9, 1986	830.00
International fees	
Basic fee (first 30 pages):	
if paid before Jan. 1, 1986	280.00
if paid on or after Jan. 1, 1986	325.00
Basic Supplemental fee (for each page over 30):	
if paid before Jan. 1, 1986	6.00
if paid on or after Jan. 1, 1986	6.00
Designation fee for the first 10 national or regional offices:	
if paid before Jan. 1, 1986	70.00
if paid on or after Jan. 1, 1986	80.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Dec. 17, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 18, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,368,544 through 4,369,525
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patent listed below has expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENT WHICH EXPIRED NOV. 3, 1985 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,298,873	06/222,104	11/03/81

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

D. 271,049, Re. S.N. 568,752, Filed Jan. 6, 1984, Cl. D28/007, APPLICATOR CONTAINER, Doris Du Cret, Owner of Record: *Bristol-Myers Co., New York, N.Y.,* Attorney or Agent: Prabodh I. Almaula, et al., Ex. Gp.: 292

4,417,669, Re. S.N. 796,293, Filed Nov. 8, 1985, Cl. 221/026, MULTIPLE BAG DISPENSER, Henry L. Knowles, Owner of Record: *Inventor,* Attorney or Agent: Thomas G. Watkins, III, et al., Ex. Gp.: 311

4,424,250, Re. S.N. 800,180, Filed Nov. 20, 1985, Cl. 428/198, CARPET FACED TEXTILE PANEL, Ronald W. Adams, et al., Owner of Record: *Gates Farmed-Fibre Products, Inc., Auburn, Me.,* Attorney or Agent: Frank P. Grassler, et al., Ex. Gp.: 154

4,455,651, Re. S.N. 795,868, Filed Nov. 7, 1985, Cl. 370/104, SATELLITE COMMUNICATIONS SYSTEM AND APPARATUS, Paul Baran, Owner of Record: *Equatorial Communications Co., Mountain View, Calif.,* Attorney or Agent: Thomas A. Gallagher, et al., Ex. Gp.: 263

4,490,721, Re. S.N. 785,304, Filed Oct. 7, 1985, Cl. 343/368, MONOLITHIC MICROWAVE INTEGRATED CIRCUIT WITH INTEGRAL ARRAY ANTENNA, Ronald J. Stockton, et al., Owner of Record: *Ball Corp., Muncie, Ind.,* Attorney or Agent: Gilbert E. Alberding, Ex. Gp.: 222

4,492,920, Re. S.N. 793,579, Filed Oct. 31, 1985, Cl. 324/146, ELECTRIC INDICATOR WITH RETURN-TO-ZERO FEATURE AND COMPENSATING COIL TO CANCEL THE RETURN-TO-ZERO FEATURE DURING MEASUREMENT, Arthur L. Reenstra, Owner of Record: *Beede Electrical Instrument Co., Inc., New Hope, Pa.,* Attorney or Agent: Stanley M. Schurgin, et al., Ex. Gp.: 267

4,533,584, Re. S.N. 799,841, Filed Nov. 19, 1985, Cl. 428/116, MULTI-CHANNEL BODY, Yukihisa Takeuchi, et al., Owner of Record: *NGK Insulators, Ltd., Nagoya City, Japan,* Attorney or Agent: Roger W. Parkhurst, et al., Ex. Gp.: 154

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Erratum

The notice of adverse decision in interference, appearing in the *Official Gazette* of Nov. 19, 1985, to wit:

In Interference No. 100,881, involving Patent No. 4,149,079, D. Ben-Zeev and D. Inbar, METHOD OF AND MEANS FOR SCANNING A BODY TO ENABLE A CROSS-SECTION THEREOF TO BE RECONSTRUCTED, final judgment adverse to the patentees was rendered Aug. 28, 1984, as to claims 6, 7, 9, 14 and 21.

is rescinded as to claims 14 & 21. The Interference was dissolved as to claims 14 & 21. Consequently claims 14 & 21 of the Dan Ben-Zeev, et al., patent are not cancelled.

NANNIE B. HENRY,
Dec. 13, 1985. *Deputy Clerk, Board of Patent Appeals and Interferences.*

PATENT NOTICES

Certificates of Correction for the Week of Jan. 21, 1986

D. 281,269	4,504,159	4,527,240	4,543,494
4,347,352	4,506,004	4,528,533	4,543,870
4,357,351	4,507,044	4,528,603	4,544,276
4,362,809	4,507,391	4,528,609	4,544,399
4,369,857	4,510,051	4,529,073	4,544,505
4,379,088	4,510,224	4,529,207	4,544,698
4,379,710	4,510,510	4,530,113	4,545,074
4,420,632	4,511,173	4,530,192	4,545,203
4,450,539	4,513,432	4,530,490	4,545,499
4,451,404	4,514,534	4,530,877	4,545,580
4,458,174	4,514,972	4,532,530	4,545,610
4,466,526	4,514,973	4,534,091	4,546,566
4,466,918	4,514,974	4,534,259	4,546,859
4,477,665	4,514,975	4,534,579	4,547,259
4,481,274	4,515,117	4,536,187	4,547,647
4,481,744	4,517,008	4,538,015	4,547,981
4,482,751	4,517,393	4,538,378	4,548,213
4,483,449	4,518,228	4,539,390	4,548,372
4,485,472	4,519,080	4,539,413	4,548,452
4,486,495	4,519,412	4,539,422	4,548,652
4,489,008	4,519,813	4,540,340	4,549,021
4,489,124	4,520,399	4,540,419	4,549,051
4,489,348	4,520,410	4,540,516	4,549,212
4,491,293	4,521,925	4,540,684	4,549,617
4,494,726	4,522,106	4,540,714	4,549,759
4,495,264	4,522,664	4,542,071	4,549,787
4,495,568	4,524,356	4,542,436	4,549,854
4,497,561	4,524,827	4,542,727	4,551,398
4,501,040	4,525,306	4,542,911	4,552,258
4,501,808	4,525,789	4,542,950	4,553,911
4,503,910	4,526,114	4,543,099	
4,504,007	4,527,020	4,543,320	

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	Boston Public Library	(617) 536-5400 Ext. 265
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	Detroit Public Library	(313) 833-1450
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
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	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 7, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-14-84
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-14-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-11-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-30-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-19-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during October 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,413,656 to 3,419,906, inclusive
Plant Patents ..... Numbers 2,847 to 2,855 inclusive

REEXAMINATIONS

JANUARY 21, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,854,664 (444th)

SPRINKLER SYSTEMS

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

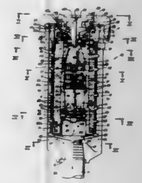
Reexamination Request No. 90/000,542, Apr. 9, 1984.

Reexamination Certificate for Patent No. 3,854,664, issued Dec. 17, 1974, Ser. No. 405,690, Oct. 11, 1973.

Continuation of Ser. No. 346,445, Mar. 30, 1973, abandoned.

Int. Cl.[4] B05B *3/16*

U.S. Cl. 239—206



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11 & 17–20** is confirmed.

Claim **13** is determined to be patentable as amended.

Claim **16**, dependent on an amended claim, is determined to be patentable.

Claims **12**, **14** and **15** were not reexamined.

1. In a sprinkler system having fluid under pressure flowing therethrough, and a sprinkler head operatively connected to said system having a nozzle for dispersing said fluid therefrom, the improvement which comprises:

impeller means associated with said head operatively engaging said nozzle for rotating said nozzle in response to said fluid passing through said system, said impeller means including transmission means for transmitting movement of said impeller to said nozzle, said transmission means being sealed off from engagement by said fluid at one end by an expandable diaphragm separating said transmission means from said fluid and closed-off in a fluid-tight manner at the other end and a lubricating medium completely filling the sealed-off portion of said transmission means, said lubricating medium being free to selectively contract or expand thereby displacing said diaphragm in response to varying ambient conditions encountered by said sprinkler head.

* * * * *

Attention is directed to the decisions of The Toro Company v. The Nelson Company, 213 USPQ 207 (C.D. Ill, 1981) and The Toro Company v. The Nelson Company, 223 USPQ 636 (C.D. Ill, 1984).

B1 4,161,004 (445th)

HEAD POSITIONING MECHANISM FOR RECORDING/PLAYBACK MACHINE

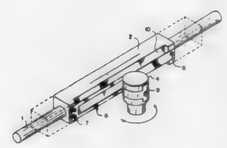
Warren L. Dalziel, Monte Sereno, Calif., assignor to Shugart Associates, Sunnyvale, Calif.

Reexamination Request No. 90/000,530, Mar. 19, 1984.

Reexamination Certificate for Patent No. 4,161,004, issued Jul. 10, 1979, Ser. No. 784,905, Apr. 5, 1977.

Int. Cl.[4] G11B *5/56*

U.S. Cl. 360—106



AS A RESULT OF REEXAMINATION: IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–21** is confirmed.

New claim **22** is added and determined to be patentable.

1. A positioning mechanism for a read/write head of a recording/playback machine of the type utilizing discs upon which information is magnetically stored, said positioning mechanism comprising:

a rotary drive motor having an armature shaft;

a capstan affixed to the armature shaft of said rotary drive motor for rotation therewith when the motor is actuated;

a carriage means adapted to carry a magnetic read/write head;

a guide means connected to said carriage means to define a path of movement therefor, said path being parallel to a line generally tangent to said capstan;

a flexible, nonstretchable band means having opposite ends, said band means being wound about said capstan and fixed thereto with the opposite end portions of said band extending from said capstan substantially along said line tangent; and

attachment means for attaching respective ends of said band means to spaced-apart locations on said carriage means, said attachment means including resilient means for attaching one end of said band to said carriage and for applying a biasing force thereto which tends to maintain a predetermined tension in said band whereby upon an incremental angular rotation of said armature shaft, one end portion of said band is wound off of said capstan and the opposite end portion of said band is simultaneously wound onto said capstan, thereby causing said carriage means to move along said path.

B1 4,470,385 (446th)

IGNITION DISTRIBUTOR

John F. Bark, and Terry A. Spidel, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Reexamination Request No. 90/000,727, Feb. 25, 1985.
Reexamination Certificate for Patent No. 4,470,385, issued Sep. 11, 1984, Ser. No. 419,829, Sep. 20, 1982.
Int. Cl.⁴ F02D *7/02*
U.S. Cl. 123—146.5 B



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **3** is confirmed.

Claims **1** and **2** are cancelled.

New claim **4** is added and determined to be patentable.

4. An ignition distributor for an internal combustion engine comprising, a base member, a shaft journaled for rotation in said base member carrying a rotor which is driven thereby, a distributor cap secured to said base member having an input terminal and a plurality of circumferentially spaced output terminals, said rotor carrying conductive means electrically connected to said input terminal and having a portion thereof moving past said cap output terminals when said rotor is rotated, a plate member secured to said shaft for rotation therewith having a radially extending slot, a bore formed in an internal wall of said base member, and a locking pin one end of which is press-fitted into said bore for securing one said end of said pin to said base member, said locking pin extending toward the interior of said cap with a portion of the opposite end thereof being positioned within said slot when said shaft and attached plate member are assembled to said base member whereby the distributor shaft and rotor are locked from rotation relative to the cap and base member, said slot, said rotor and cap being so oriented that said conductive means of said rotor is substantially aligned with an output terminal of said cap when said pin is positioned in said slot, said locking pin being formed of a breakable material which breaks when said distributor shaft is driven by an engine to thereby permit free rotation of said shaft and rotor.

REISSUES

JANUARY 21, 1986

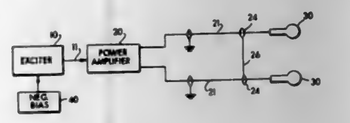
Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,066

METHOD FOR TREATING BENIGN AND MALIGNANT TUMORS UTILIZING RADIO FREQUENCY, ELECTROMAGNETIC RADIATION

Harry H. Leveen, 321 Confederate Cir., Charleston, S.C.

Original No. 3,991,770, dated Nov. 16, 1976, Ser. No. 643,661, Dec. 23, 1975. Continuation-in-part of Ser. No. 595,094, Jul. 11, 1975, abandoned, which is a continuation-in-part of Ser. No. 436,102, Jan. 24, 1974, abandoned. Application for reissue Jun. 30, 1982, Ser. No. 393,772
Int. Cl.⁴ A61N *1/40*
U.S. Cl. 128—804 **8 Claims**



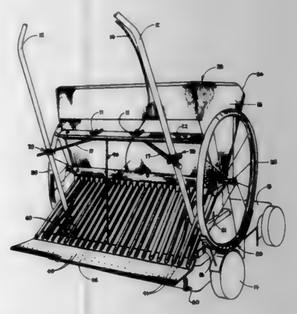
5. A method of treating a naturally occurring tumor in a human which comprises placing a portion of the body of the human in which the tumor is located in a radio frequency electromagnetic field ranging from 100 kilohertz to 200 megahertz, heating the tumor tissue and adjacent normal tissue in said portion of said body by absorption of energy from said radio frequency electromagnetic field for a period of time and with intensity sufficient to heat said tumor tissue at least 6° C. above the temperature of the adjacent normal tissue to cause necrosis of said tumor tissue, but insufficient to heat said adjacent normal tissue above 40° C. to cause significant damage to the adjacent normal tissue.

Re. 32,067

UNIVERSAL LAWN SPREADER ATTACHMENT FOR LAWN MOWERS

Edward P. Emory, P.O. Box 5907, Lake Charles, La. 70606

Original No. 4,327,541, dated May 4, 1982, Ser. No. 120,928, Feb. 12, 1980. Application for reissue Sep. 30, 1982, Ser. No. 428,531
Int. Cl.⁴ A01D *19/00*
U.S. Cl. 56—16.8 **12 Claims**



2. A spreader attachment, for wheeled lawnmowers with a rearwardly extending handle for manipulation of the lawnmower by the user, for dispensing fertilizer and the like on the ground in association with the lawnmower comprising:

hopper means, including associated flow control means for controlling the flow of fertilizer from said hopper means to the ground, for mounting on top of the lawnmower in front of and above the lawnmower handle and for holding the fertilizer prior to dispensing the fertilizer to the ground;

mounting connector means attachable to said hopper means for mounting said hopper means on and connecting it to the lawnmower for transport across the ground in association with thelawnmower;

drive wheel means connected to said flow control means for engaging at least one wheel of the lawnmower as a source of motive power and for rotationally driving said flow control means in response to the movement of the engaged lawnmower wheel; and

fertilizer distribution means connectable to said hopper means for extending down from said hopper means at the back of the lawnmower and at least in part in the central, back area of the lawnmower down to an area adjacent the ground level and behind the lawnmower housing, said fertilizer distribution means comprising

a plurality of laterally spaced, discrete, separate, downwardly extending channel means, at least the side end ones of which are flexible but capable of being self-supporting in their rigidity, for extending down, at least in the area of the lawnmower where the lawnmower handle extends and adjacent to the lawnmower housing, for distributing the fertilizer from the hopper to the ground through the spaced channel means, said channel means comprising separate, straight, flexible but capable of being self-supporting, elongated tubes disposed down and rearwardly in at least general parallal array; and

laterally extending, elongated **[**splash**]** *attachment* element means connected to and extending laterally across the bottom end portions of said tubes for **[**further**]** *the positioning of said tubes for* distributing the fertilizer from the ends of said tubes out to the ground and for holding said tubes in position at their lower ends.

Re. 32,068

DISTILLATIVE SEPARATION EMPLOYING BOTTOM ADDITIVES

James M. Ryan, Weston, and John V. O'Brien, Shrewsbury, both of Mass., assignors to Koch Process Systems, Inc., Westboro, Mass.

Original No. 4,428,759, dated Jan. 31, 1984, Ser. No. 458,047, Jan. 14, 1983. Application for reissue Feb. 22, 1985, Ser. No. 704,180
Int. Cl.⁴ F25J *3/04*
U.S. Cl. 62—17 **31 Claims**

1. In a method for the distillative separation, in a distillative column containing vapor-liquid contact devices, of a hydrocarbon-containing feed stream, which method comprises:

(a) introducing the feed stream into a distillative column operating under defined conditions of pressure, temperature and feed composition;

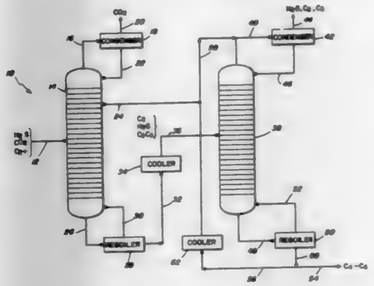
(b) withdrawing an overhead product stream encircled in at least one component to be removed from the feed stream;

(c) condensing at least a portion of the overhead product stream in a condenser and recycling a portion of the condensed overhead stream to the top portion of the said distillative column;

(d) recovering a bottom product stream with defined specifications enriched with at least one defined component of the feed stream for which recovery is sought; and

(e) reboiling at least a portion of the withdrawn bottom product stream and recycling a portion of the bottom stream to the bottom portion of the column, the improve-

ment which comprises introducing from about 1 to 30 mols per 100 mols of feed stream of a recycled liquid bottom product stream comprising [C_3–C_6] alkanes *having at least three carbon atoms* into an overhead condenser zone of the distillation column, the liquid bottom product stream introduced into the condenser zone concurrently and admixed with the overhead product stream in the condenser zone, the overhead product stream not being subject to substantial contamination by the recycled bottom product stream in the condenser zone, and the



amount of the recycled bottom product stream sufficient, to provide adjusting of the operation condition of the distillation zone to effect a saving in the distillation column operating energy by:

(a) increasing the temperature of the condenser zone of the distillation column by about 10° F. or more; or

(b) decreasing the temperature of the bottom of the distillation column by about 5° F. or more; or

(c) reducing the distillation column operating pressure by about 20 psi or more.

Re. 32,069

DEVICE FOR DETECTING A KEY SWITCH OPERATION

Norio Tomisawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,148,017, dated Apr. 3, 1979, Ser. No. 712,815, Aug. 9, 1976. Application for reissue Sep. 17, 1979, Ser. No. 76,319

Claims priority, application Japan, Aug. 15, 1975, 50-99151; Aug. 15, 1975, 50-99152; Aug. 20, 1975, 50-100877

Int. Cl.⁴ G10H *1/00*; G08C *9/00*

U.S. Cl. 84—1.01 **12 Claims**

11. A device for detecting a key switch operation comprising:

a key switch matrix circuit including a plurality of key switches arranged electrically in rows and columns each connected via a unidirectional element between row conductors and column conductors, said rows representing respective blocks of the key switches;

first means for detecting simultaneously all blocks in which key switches in operation exist;

second means for simultaneously detecting all columns in a single one of said detected blocks on which the key switches in operation are disposed, said column detecting being carried out for one block after another, for each of the separate blocks detected by said first means;

control means for causing said second means to implement the column detection for one block at a time with respect to each of the blocks detected by said first means;

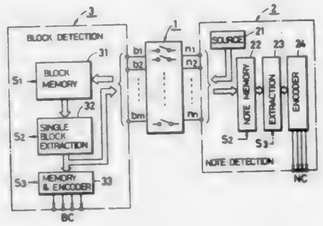
first capacitance means provided between each row conductor and ground;

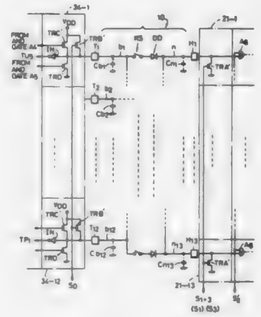
first voltage applying means connected to said first capacitance means to apply thereto a first level voltage which would forward bias said unidirectional elements for a first predetermined period as preparation for the block detection;

second capacitance means provided between each column conductor and ground;

second voltage applying means connected to said column conductors to apply thereto a second level voltage which would forward bias said unidirectional elements for a second predetermined period so that the voltage of such row conductor that is connected to key switches in operation is changed from said first level voltage to said second level voltage, and this change being detected by said first means;

said second level voltage being applied also to said second capacitance means for this second predetermined period as preparation for the note detection, said first means being arranged to apply said first level voltage to the row conductors of the detected blocks one at a time for a third predetermined period so that the voltage of such column conductor that is connected to a key switch in operation is changed from said second level voltage to said first level voltage, and this change being detected by said seond means;





each of said key switches in operation being identified by a combination key code designating the single detected block and the column on whch said key switch in operation is disposed.

12. An electronic musical instrument comprising a key code generator which is composed of means for sequentially scanning with a first clock a plurality of blocks into which a plurality of key switches having contacts to be closed are divided, a priority selector for selectively outputting with a second clock closure information of each block sequentially in accordance with predetermined priority, means for inhibiting the first clock with an operation signal of the priority selector during its operation to temporarily stop the block scanning and means for converting the output from the priority selector and information of the block scanning to key data of a binary code and means for detecting completion of one scanning to output a variable frame signal of one frame time determined by the number of blocks and the number of closed key switches the converting means operating during each time frame.

Re. 32,070

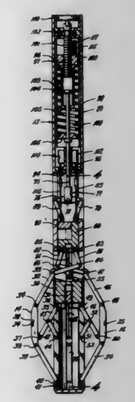
BOREHOLE APPARATUS FOR INVESTIGATING SUBSURFACE EARTH FORMATIONS INCLUDING A PLURALITY OF PAD MEMBERS AND MEANS FOR REGULATING THE BEARING PRESSURE THEREOF

André M. Vezin, Viroflay, France, assignor to Schlumberger Technology Corp., Houston, Tex.

Original No. 3,423,671, dated Jan. 21, 1969, Ser. No. 219,619, Aug. 27, 1962. Application for reissue Jan. 30, 1978, Ser. No. 873,348

Int. Cl.⁴ G01V *3/24, 3/18*

U.S. Cl. 324—347 **25 Claims**



22. In apparatus for investigating earth formations traversed by a borehole, the combination comprising:

an elongated support member having a longitudinal axis and adapted for longitudinal movement through a borehole;

a plurality of wall-engaging members having wall-engaging faces and arranged with a first pair of the wall-engaging members individually disposed on laterally -opposite sides of the support member along a first given line in a lateral plane and a second pair of the wall-engaging members individually disposed on laterally-opposite sides of the support member along a second given line at right angles to the first given line and in the same lateral plane;

a plurality of sliding members movably mounted on the support member for providing longitudinal movement of the sliding members with respect to the support member;

a plurality of primary arm members disposed in two pairs, each primary arm member being individually pivotally coupled to one of the sliding members and to one of the wall-engaging members for enabling movement of the wall-engaging members away from the support member without relative longitudinal movement;

a plurality of linkage means disposed in two pairs, each linkage means being individually pivotally coupled to the support member at a first pivot point providing a fixed reference in the lateral plane and to one of the wall-engaging members at a second pivot point in the same lateral plane, and including an arm member pivotally coupled between the second pivot point and a third pivot point in longitudinal alignment with the first pivot point, the first, second and third pivot points defining a right triangle having such arm member as its hypotenuse, and a linkage member pivotally connected between such arm member and the first pivot point as the median of the hypotenuse for preventing longitudinal movement of the wall-engaging members with respect to the support member while the arm members cooperate to keep the faces of the wall-engaging members substantially parallel to the longitudinal axis of the support member; and

means for applying separate driving forces to the different pairs of respectively coupled arm members, linkage means and wall-engaging members for enabling unequal lateral extension of the different pairs of wall-engaging members.

Re. 32,071

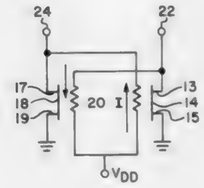
RESISTIVE GATE FET FLIP-FLOP STORAGE CELL

Claude L. Bertin, South Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,158,239, dated Jun. 12, 1979, Ser. No. 862,476, Dec. 20, 1977. Application for reissue Feb. 25, 1981, Ser. No. 238,382

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—182 **11 Claims**



11. A binary switching circuit, comprising:

an insulated gate field effect transistor device having its source/-drain path connected between a first binary potential and an output node and having a gate electrode;

a load device connected between said output node and a second binary potential;

said gate electrode composed of a resistive material having a first side connected to said second binary potential and a second side connected to a binary signal source selectively inputting either said first binary potential or said second binary potential thereto;

said first binary potential applied to said second side causing a current to flow through said resistive material reducing the potential of portions of said resistive material between said first and second sides to be a magnitude between said first and said second binary potentials, thereby reducing the conductivity of said source/drain path resulting in a first output signal potential at said output node;

said second binary potential applied to said second side causing substantially no current to flow through said resistive material, maintaining the potential of said gate at said second binary potential, thereby increasing the conductivity of said source/drain path resulting in a second output potential at said output node;

whereby said binary signals applied to said second side of said gate produce a binary output signal at said output node.

PLANT PATENTS

GRANTED JANUARY 21, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,637

MINIATURE ROSE PLANT-JEAN KENNEALLY

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Jun. 6, 1984, Ser. No. 617,991

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant named 'Jean Kenneally' of hardy, dwarf, vigorous growth, attractive appearance, substantially as illustrated and described, characterized by its blooms of rich Apricot with deeper tones of Mars Orange on the under side of the central petals, this variety being easily asexually reproduced from cuttings, with flowers borne usually one to a stem, but occasionally in sprays of 3 to 5 or more.

5,638

ROSE PLANT JACAIM

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Apr. 4, 1984, Ser. No. 596,828

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright plant, photosensitive pigments aging from near white to dark red, and little to no fragrance.

5,639

ROSE PLANT JACANGE 74-3563

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Apr. 4, 1984, Ser. No. 596,827

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its upright plant whose foliage is resistant to rose powdery mildew, stems which bear both large and small prickles, and whose blooms are orange (R.H.S. 33A) and lacking in fragrance.

5,640

ROSE PLANT JACHSE

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Apr. 4, 1984, Ser. No. 596,829

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its upright plant, mildew resistant foliage, flower color of yellow to light orange, and little or no fragrance.

5,641

PEACH TREE-'JUNE CREST'

Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Nov. 14, 1983, Ser. No. 432,664

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, as shown and described, of large size, upright, vigorous growth and a regular productive bearer of large, yellow flesh, early maturing, clingstone fruit with a high degree of red skin color and the firm flesh being of good eating and shipping quality.

5,642

AVOCADO TREE

Royce D. Stauffer, 234 Toro Canyon Rd., Carpinteria, Calif. 93013

Filed Jul. 24, 1984, Ser. No. 633,973

Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—44 **1 Claim**

1. A new and distinct variety of avocado tree as herein disclosed, characterized by vigorous growth, both alone and with a Hass top, and an unusual ability to survive under adverse soil conditions as shown by its origin and subsequent tests.

5,643

LILY PLANT: UNIQUE

Gerardus C. Van der Salm, Rte. 1, Box 422, Woodland, Wash. 98674

Filed Nov. 14, 1983, Ser. No. 551,272

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its vigorous growth and a flower with a deep greyed-orange central region, generally white petals with a diffused greyed-orange perimeter and a more concentrated greyed-orange tip region.

5,644

LILY PLANT: MALTA

Gerardus C. Van der Salm, Rte. 1, Box 422, Woodland, Wash. 98674

Filed Nov. 14, 1983, Ser. No. 551,274

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its vigorous growth and the pink color of its flowers.

PATENTS

GRANTED JAN. 21, 1986

ERRATA

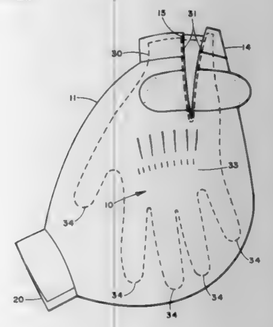
For CLASS	See PATENT NO.
029–025	4,564,980
033–432	4,565,016
112–121	4,565,140
522–112	4,565,614
355–113	4,565,985

PATENTS

GRANTED JANUARY 21, 1986

GENERAL AND MECHANICAL

4,564,956
GOLF GLOVE WITH RAIN SHIELD
Dominick DiBuono, 12 Richmond Hill Rd., Greenwich, Conn. 06830
Filed Jan. 23, 1984, Ser. No. 573,282
Int. Cl.[4] A41D *13/08*
U.S. Cl. 2—16 **3 Claims**



1. A combination covering and glove for use in the rain and comprising:

an inner glove having a wrist band, a palm section attached to the wrist band, and a plurality of finger sleeves attached to the palm section; an outer covering surrounding said inner glove and having an upper wrist surrounding end sewingly fixed to the periphery of the said wrist band and a lower end with an opening for receiving the handle of an athletic club, said inner glove including an elongated slit longitudinally extending through the wrist band, and said outer covering including a slit longitudinally extending from the upper wrist surrounding end, the edges of the slit of the outer covering being connected to edges of the slit in the inner glove; and wherein said outer covering has an elongated slot on the lateral side thereof which is adjacent to the palm portion of said inner glove; said slot extending toward and in the same direction as the central axis of the said opening for the athletic club, whereby the user may pass a second ungloved hand through said slot to grasp said club in cooperation with a hand in the inner glove.

4,564,957
BABY BOTTLE SECURITY GARMENT
Ruth Scharf, 301 E. 48th St., New York, N.Y. 10017
Filed May 25, 1984, Ser. No. 614,212
Int. Cl.[4] A41B *13/10;* **A41D** *11/00*
U.S. Cl. 2—75 **28 Claims**



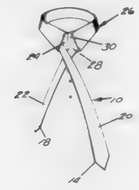
1. A baby bottle security garment comprising, in combination:

garment means for covering at least part of the chest area of an infant;

sleeve means for removably receiving and securing therein a baby bottle; and

strap means for securing said sleeve means to said garment means so that said sleeve means hangs from said garment and is normally positioned proximate the chest area of an infant wearing the garment when the chest area of the infant is in an upright position, wherein the strap means includes at least one strap for connecting the garment means to the sleeve means.

4,564,958
NECKTIE
Robert F. Woodward, 1642 Avon Pl., NW., Washington, D.C. 20007
Filed Mar. 23, 1983, Ser. No. 478,082
Int. Cl.[4] A41D *25/02*
U.S. Cl. 2—150 **1 Claim**

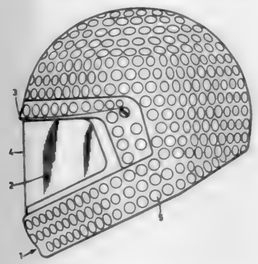


1. A four-in-hand necktie permanently provided on its backside with a single tactile indicator located at a predetermined standard distance of about 12 inches from the midlength of the necktie toward the extremity of the end which underlies the other end when the necktie is tied, such indicator being adapted to be located in substantially flush alignment with the collar button of a collared garment when said necktie is draped over the neckband thereof to assure that said ends will be substantially even when the necktie is tied, whereby such indicators can be applied by a manufacturer to a series of neckties and be effective in use with all such ties.

4,564,959
CRASH HELMET
Christian Zahn, Brunswick, Fed. Rep. of Germany, assignor to Schuberth-Werk GmbH & Co. KG, Brunswick, Fed. Rep. of Germany
Filed Jun. 1, 1984, Ser. No. 616,134
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1983, 3320301
Int. Cl.[4] A42B *3/00*
U.S. Cl. 2—411 **20 Claims**

1. A crash helmet for cyclists, comprising a substantially spherical, impact and shock resistant, synthetic resin cap part, which defines a generally smooth and closed aerodynamically-shaped external surface, wherein the external surface of the cap part comprises a plurality of topographical surface irregularities arranged adjacently to each other, and wherein the irregularities are shaped and spaced so as to create turbulent air flow

substantially near the surface of the cap part, for reducing the pressure differential between the front and rear of the helmet



caused by high speed air flow over the helmet, while keeping the air resistance to a minimum.

4,564,960

DEVICE FOR FIXING A BELT OF GOGGLES

Takashi Nishiyama, 22-4, Ehara-cho, 1-chome, Nakano-ku, Tokyo, Japan

Filed Feb. 28, 1984, Ser. No. 584,408
Int. Cl.[4] A61F 9/02
U.S. Cl. 2—452 3 Claims





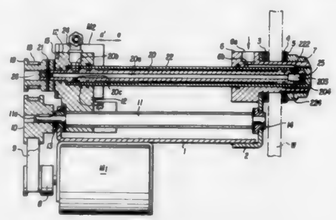
1. A face mask or goggles structure having a body portion for fitting over a wearer's eyes and a strap attached to opposite ends of the body portion for surrounding the wearer's head, the improvement comprising a strap attachment assembly at least at one end of the body portion, said assembly including a web member formed at said end of the body portion, a slit in the web member, an end portion of the strap being passed through the slit from an inner surface of the web member, a generally flat planar strap-securing fitting unattached to the body portion of the structure, the fitting including a crossbar having a length greater than that of the slit, fulcruming means extending from opposite ends of the crossbar on one side thereof, and finger grip means extending from opposite ends of the crossbar on the other side thereof, the end portion of the strap being looped over the crossbar on an outer surface of the web member and being passed back through the slit whereby the fitting is forced against the outer surface of the web member by tension applied to the strap and wherein the length of the strap may be adjusted by lifting the finger grip means of the fitting away from the outer surface of the web member causing the fulcruming means to turn with respect to the outer surface of the web member so as to raise the crossbar and allow the strap to move lengthwise relative thereof.

4,564,961

APPLIANCE FOR WASHING PARTS OF HUMAN BODY

Kenichi Kaneko, Kariya; Yuji Hirashiba, and Shinji Kawai, both of Toyota, all of Japan, assignors to Aisin Seiki Co., Ltd., Kariya, Japan

Filed Mar. 20, 1984, Ser. No. 591,493
Claims priority, application Japan, Mar. 29, 1983, 58-53027; Mar. 29, 1983, 58-45379[U]; Mar. 29, 1983, 58-45380[U]
Int. Cl.[4] E03D 9/08
U.S. Cl. 4—443 7 Claims



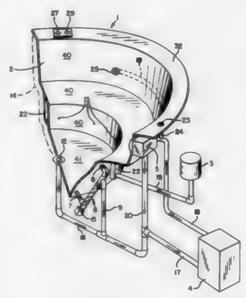
1. An appliance for washing the lower parts of the human body, comprising:
a toilet bowel;
nozzle means having an outer nozzle provided with first holes and an inner nozzle provided with second holes, the inner nozzle being disposed within the outer nozzle; and
rotating means for rotating the inner nozzle wherein the rotating means further comprises a stepper motor.

4,564,962

ENERGY EFFICIENT THERMOSYPHONING SPA HEATER SYSTEM

Kenneth B. Castleberry, 2833 NW. 12th Ave., Albany, Oreg. 97321, and Norman L. McDonald, 4316 Riverside Rd. South, Salem, Oreg. 97306

Continuation of Ser. No. 497,693, May 24, 1983, abandoned.
This application Jun. 6, 1985, Ser. No. 741,726
Int. Cl.[4] A61H 33/02
U.S. Cl. 4—543 4 Claims



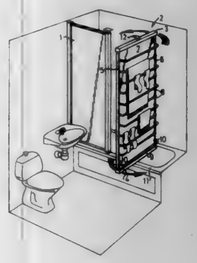
1. A spa comprising:
(a) A spa shell having at least one continuous connected spa shell side surface and a spa bottom;
(b) an air blower attached to said spa shell by means of an air pipe interconnected to an air manifold from which a plurality of bubble inlets communicate through said spa shell;
(c) a thermosyphoning unit where a heating pipe with a heating element within said heating pipe is attached to said side surface of said spa shell by means of a cold inlet pipe and a hot outlet pipe located above said cold inlet pipe wherein a plane passing through said cold inlet pipe and being perpendicular to said spa bottom will not pass through said hot outlet pipe;
(d) a one-speed pump circulating fluid from said spa shell by means of at least four inlets, namely, a drain, a skimmer, along with said cold inlet pipe and said hot outlet pipe of said thermosyphoning unit which communicate through said spa shell where said thermosyphoning unit, said drain by a drain pipe, and said skimmer by a skimmer pipe interconnect to said pump by means of a suction pipe and, further, where said pump provides fluid and air to a spa shell by means of a pump pipe to a plurality of water jets where an air inlet provides air to said pump pipe by means of air inlet pipe which communicates with the atmosphere through an air inlet.

4,564,963

DRYING DEVICE FOR SHOWER SPACE

Nils R. Bergmark, Ringvägen 14, S-930 47 Byske, Sweden

PCT No. PCT/SE84/00037, § 371 Date Oct. 5, 1984, § 102(e) Date Oct. 5, 1984, PCT Pub. No. WO84/03030, PCT Pub. Date Aug. 16, 1984
PCT Filed Feb. 7, 1984, Ser. No. 666,625
Claims priority, application Sweden, Feb. 10, 1983, 8300715
Int. Cl.[4] A47K 3/22
U.S. Cl. 4—597 7 Claims



1. A wall section in the form of a splash-proof water repellent screen wall for a shower space, said wall section being provided on one side with hanging means for drying laundry, characterized in that the wall section is formed of a screen rotatable at least substantially 180° about a vertical axis at its center such that said hanging means is positioned outside said shower space when the shower space is in use and such that the hanging means is positioned within the shower space to obsure the drying laundry from view when the hanging means is to be used as a drying rack; and that the hanging means comprise a plurality of hanger bars disposed at different levels, for articles, such as clothing, to be dried.

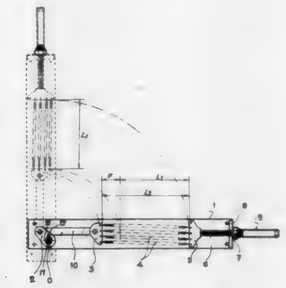
4,564,964

RETAINING ELEMENT FOR SWINGING WEIGHTS

José Pardo Herrera, Saragossa, Spain, assignor to Industrias Hidraulicas Pardo S.A., Spain

Filed Jul. 1, 1983, Ser. No. 510,398
Int. Cl.[4] A47C 17/40
U.S. Cl. 5—164 R 6 Claims

1. A retaining element for a swinging weight, comprising a covering secured to the swinging weight; a shaft of rotation to which the covering is pivotally attached for the covering to pivot around the shaft between two angularly spaced apart positions;
first and second spaced apart support parts, which are spaced a distance apart from each other along the covering; a plurality of stretchable elements stretched between and attached on the support parts and being normally biased to pull the support parts together;
an arm fixed to the shaft of rotation and fixed thereto against rotation as the covering pivots; the first of the support parts being pivotally connected to the arm at a location spaced from the shaft of rotation; the arm extending in a direction that oblique to the direction between the support parts, whereby as the covering pivots between its extreme positions while the arm remains stationary, the arm pulls



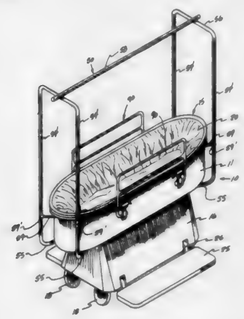
the first support part to which it is attached selectively away from the other of the parts when the covering pivots in one direction and permits the first part to move toward the other part when the covering pivots in the other direction, respectively stretching and permitting return of the stretchable elements.

4,564,965

FLUIDIZED PATIENT SUPPORT SYSTEM

Vernon L. Goodwin, Charlotte, N.C., assignor to Support Systems International, Inc., Charleston, S.C.

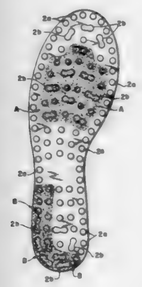
Filed Jan. 17, 1984, Ser. No. 571,557
Int. Cl.[4] A47C 27/08, 31/02, 21/08; A61G 7/06
U.S. Cl. 5—453 32 Claims



1. An improved patient support system comprising:
(a) an open ended container means having a bottom wall and side walls;
(b) a support means for said container means;
(c) a perforated plate received within said container means; said plate defining a plurality of mounting openings therein;
(d) a plurality of spacer means received within said container and being located between said perforated plate and said bottom wall of said container means, whereby a plenum chamber is defined between said plate and said bottom wall; spacer means being located beneath each mounting opening in said plate and secured to said plate thereat;
(e) a fluid diffuser means received atop said perforated plate and secured thereto, said diffuser means being generally uniformly pervious to passage of fluid under pressure therethrough;

(f) sealing means received between the outer periphery of said diffuser means and an inside of said sidewalls of said container means;
(g) a mass of granular material received within said container atop said diffuser means;
(h) flexible sheet means located atop said granular material and being removably secured completely around edges of same at an upper end of said side walls, said sheet means being pervious to passage of fluid therethrough while being impervious to the passage of granular material; and
(i) means to generate fluid pressure in said plenum chamber adequate to diffuse through said diffuser means and fluidize said granular material sufficient to support a patient thereon.

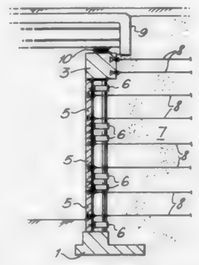
4,564,966
CONSTRUCTION FOR AN ATHLETIC SHOE AND PROCESS OF MAKING
York Chen, Taipei, Taiwan, assignor to Contax Sports, Inc., Burlingame, Calif.
Filed Dec. 30, 1983, Ser. No. 567,075
Int. Cl.[4] A43B *13/22, 13/04*
U.S. Cl. 12—146 B **15 Claims**



1. A process for producing a lower for footwear, such as a sole for an athletic shoe, comprising the steps of:
premolding and partly curing a portion of the lower of a relatively wear-resistant material;
disposing said premolded partly cured portion in a master mold including a form of the lower at a location with respect to the remaining portions of the lower that is normally subjected to a greater degree of wear;
partly surrounding said premolded portion with a material of less wear resistance in a master mold to form the remaining portion of the lower; and
completing curing so as to mold all of the portions into a composite lower of integral construction with an area of its undersurface of at least one relatively wear-resistant portion at a location normally subjected to a greater degree of wear and use.

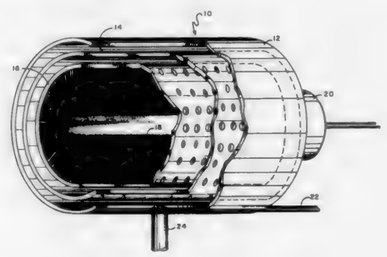
4,564,967
BRIDGE ABUTMENT
Henri Vidal, Boulevard Maillot, Neuilly-sur-Seine, France
Filed Dec. 6, 1983, Ser. No. 558,915
Claims priority, application United Kingdom, Dec. 6, 1982, 8234688
Int. Cl.[4] E01D *19/02*
U.S. Cl. 14—75 **19 Claims**

1. A stabilized earth bridge abutment comprising a compacted earth mass containing reinforcing members therein to frictionally stabilise the mass, there being provided, in said mass and close to a substantially vertical surface thereof, support means which bears the vertical load of the deck of the



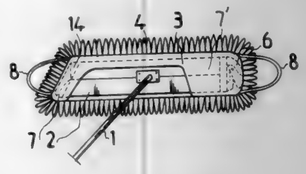
bridge while substantially all horizontal forces are absorbed by the stabilised earth mass.

4,564,968
HAND-CLEANING DEVICE
Elizabeth Buckley, 401 Morrissey Blvd., Dorchester, Mass. 02125
Filed Dec. 17, 1984, Ser. No. 682,550
Int. Cl.[4] A47K *7/04*
U.S. Cl. 15—21 R **3 Claims**



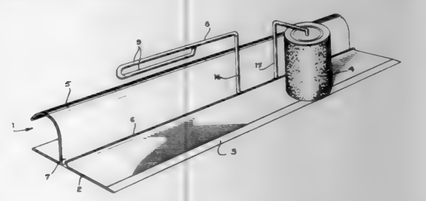
1. A hand-washing device, comprising:
an outer drum;
a stationary drum having a plurality of perforations defined therearound positioned concentrically within said outer drum;
a movable drum having a plurality of perforations defined therearound positioned concentrically within said perforated stationary drum;
means to rotate said movable drum;
water entry means adapted to enter water into said outer drum,
and, once entered in said outer drum, to pass through the perforations in said stationary drum and then through the perforations in said movable drum;
brush members concentrically positioned around the inside of said movable drum adapted to receive water through the perforations in said movable drum to wash a hand inserted into said movable drum while it is rotating; and
drain means to remove said water which has passed through said device.

4,564,969
MEANS FOR CLEANING FLOOR
Ahti Heinonen, SF-25470, Kisko, Finland
Filed May 3, 1984, Ser. No. 606,614
Claims priority, application Finland, May 17, 1983, 831734
Int. Cl.[4] A47L *13/24*
U.S. Cl. 15—147 A **2 Claims**



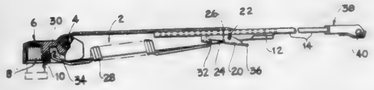
1. A means for cleaning a floor comprising:
a shaft (1);
an elongated frame (2) pivotally mounted on one end of said shaft, said frame having a pair of ends (5, 14), said frame being provided at at least one end (5) with a clamping means (6) which can be moved with respect to said frame toward and away from said frame, said clamping means comprising an end part (10) having first and second ends (9, 12), said first end (9) being pivotally mounted to said frame and, a spring (11) operatively associated with said frame and end part (10) to urge the second end (12) of said end part (10) away from said frame; and
an elongated cleaning part (3) detachably affixed to said frame, said cleaning part having a pocket (7, 7') at each end thereof with a mouth and a bottom, the mouths of said pockets opening toward the center of said cleaning part and toward each other, said bottoms being opposite said mouths and adjacent the ends of said cleaning part,
said frame being insertable into said pockets of said cleaning part by moving said second end (12) of said end part (10) toward said frame, said clamping means retaining said cleaning part on said frame when said second end of said end part (10) is moved away from said frame in said pocket by said spring (11).

4,564,970
DEVICE FOR CARRYING OUT A PAINT TOUCH UP IN A CORNER
Germain Latraverse, R.R. 3, 160 Reid St. BM 26, Drummondville (Quebec), Canada (J2B 7T4)
Filed Sep. 10, 1984, Ser. No. 648,978
Claims priority, application Canada, Jul. 3, 1984, 457977
Int. Cl.[4] B05C *17/02, 21/00*
U.S. Cl. 15—230.11 **11 Claims**



1. A device for carrying out a paint touch up, or a touch up of another coating applied in liquid state, in a corner formed by the intersection of two substantially planar surfaces disposed substantially at right angle with respect to each other, comprising:
a shielding part for masking a portion of a first of said two surfaces, which portion of the first surface being adjacent said corner, said shielding part including (a) a linear edge adapted to be positioned in said corner, (b) a first side facing said portion of the first surface, (c) a second side opposite to said first side, and (d) a linear groove formed on the second side of the shielding part and parallel to said linear edge;
a paint roller; and
means for handling said paint roller, said handling means including a rod having a first end on which the paint roller is mounted, said rod being bent to define a linear rod portion which is positioned into said linear groove of the shielding part in order to guide the paint roller while painting a portion of the second of said two surfaces or applying said other coating on said portion of the second surface, which portion of the second surface being adjacent said corner and contiguous to said portion of the first surface;
whereby, in operation, said portion of the second surface can be easily painted or coated with said other coating as the paint roller is guided through said linear groove and said linear rod portion, and that without smearing with paint or with said other coating the first surface having said portion thereof masked by the shielding part to thereby carry out said touch up.

4,564,971
WIPER EQUIPMENT
Peter C. Pethers, Winkfield; Ivan A. Duck, Chalfont St. Giles, and Malcolm A. Carter, Ashford, all of England, assignors to Trico Products Corporation, Buffalo, N.Y.
Filed Aug. 6, 1984, Ser. No. 638,079
Int. Cl.[4] B60S *1/36*
U.S. Cl. 15—250.35 **6 Claims**

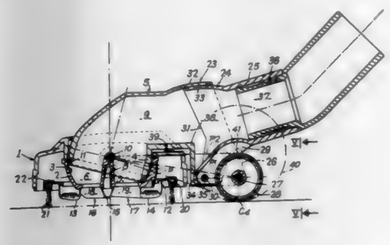


1. A wiper arm comprising an inner retainer portion pivotable about a transverse axis on an arm head, an outer bar portion having an inner end telescopically engaging the distal end portion of said retainer portion detachably secured thereto in one position and in another position rotated through a half turn about its longitudinal center line, and having an outer end arm termination means for enabling connection to be made to a wiper blade, the bar portion being formed with at least one bend in a plane substantially parallel to the transverse axis so that the longitudinal center line of the outer end of the bar portion is not aligned with the longitudinal center line of the inner end of the bar portion; which includes cooperating latch means and keeper means on said outer bar portion for detachably and removably retaining the inner end of said outer bar portion in operative connection with said retainer portion in a position wherein said outer end of said bar portion extends at one fixed angular attitude and in another position rotated through a half turn about the longitudinal center line of the inner end wherein said outer end of the bar portion extends in another equal fixed angular attitude in an opposite direction.

4,564,972
ROLLER OR SKID TYPE VACUUM CLEANER NOZZLE ATTACHMENT
Michel Varin, Crepy-en-Valois, France, assignor to Etablissements Georges Olivier, Paris, France
Filed May 15, 1984, Ser. No. 610,398
Claims priority, application France, May 17, 1983, 83 08156
Int. Cl.[4] A47L *9/06*
U.S. Cl. 15—359 **11 Claims**

1. A vacuum cleaner nozzle attachment comprising a casing containing a fixed sole having at least one suction opening and a moving, brush-holding plate, a rocking nozzle pivotably mounted abut a shaft in the casing such that said nozzle's

internal conduit opens onto a center duct terminating at the sole and embracing the suction opening or openings in the latter, a sleeve wherein is rotatably fitted a suction tube and which is pivotably supported by the rocking nozzle, the internal conduits of said sleeve and said tube being connected in an



airtight manner with the conduit of said nozzle, and a floor bearing part supported by the rocking nozzle at the rear of the casing, wherein said sleeve is pivotably fitted to the rocking nozzle about a shaft located between the pivot axis of said nozzle about the casing and the center line of the floor-contacting surface of the bearing part.

4,564,973

DOOR CLOSING DEVICE HAVING AN ADJUSTABLE LENGTH ARM

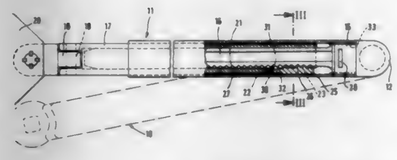
Herbert Kordes, Ennepetal, Fed. Rep. of Germany, assignor to Dorma-Baubeschlag GmbH & Co. KG., Ennepetal, Fed. Rep. of Germany

Filed Oct. 24, 1983, Ser. No. 545,732

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239062

Int. Cl.[4] E05F *1/00*

U.S. Cl. 16—71 **6 Claims**



1. A door closing device for connecting a lock shaft of a door upper lock with a door wing or door frame, comprising a main arm and an adjusting arm pivotally connected to each other said adjusting arm including an outer receiving bar and an inner adjusting bar adjustably connected to said outer bar, each other, bar and said inner bar being telescopically displaceable one relative to another, a releasable locking member for connecting said outer bar and said inner bar in any desired locked position, and a securing member for securing said inner and outer bars in said locked position, said inner bar being formed with a first toothing extending lengthwise thereof, said outer bar being formed with a cutout and having two side walls, at least one of said side walls being formed with a second toothing extending lengthwise in the region of said cutout, said first toothing corresponding to said second toothing and disposed next to the same, said locking member being disposed in said cutout and having a third toothing engageable with said first and second toothing.

4,564,974

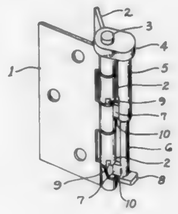
SECURITY HINGE

John F. McGrail, Suite C-197, 7701 Warner Ave., Huntington Beach, Calif. 92647, and Roger F. Kershaw, 14691 Canterbury Ave., Tustin, Calif. 92680

Filed Apr. 3, 1984, Ser. No. 596,395

Int. Cl.[4] E05D *11/10*

U.S. Cl. 16—353 **2 Claims**



1. A security hinge having two leaves each for attachment to a door and a door jamb, respectively, said two leaves having at least one knuckle through which a hinge pin may be inserted to permit rotation of the leaves about the hinge pin, the improvement comprising:

a lock pin guide attached to one end of the hinge pin containing a sleeve portion disposed in a parallel orientation to the axis of the hinge pin and laterally spaced therefrom;

a lock pin disposed within the sleeve portion of said lock pin guide and mounted for axial movement relative to said sleeve portion, said lock pin having at least one protrusion adapted to engage complementary formed vertical slots formed in said knuckles, each said protrusion being of a length such that said protrusion may be inserted in the slot formed in a first knuckle when said lock pin is in a first axial position, and may be partially contained in the slot of the first knuckle and partially contained in the slot of the second knuckle adjacent the first knuckle when the lock pin is in a second axial position, thereby preventing relative rotation of the first and second knuckles; and

means for retaining said lock pin in the second axial position.

4,564,975

HINGE HARDWARE ELEMENT FOR DOORS AND WINDOWS OF BUILDING AND FURNITURE

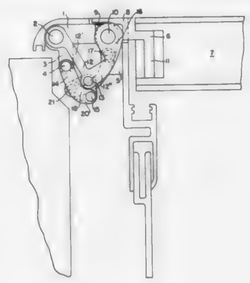
Reinhold O. Kuffner, Karlsruhe, Fed. Rep. of Germany, assignor to Kuffner Innenausbau, Karlsruhe, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 477,909

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 3210721

Int. Cl.[4] E05D *15/32*

U.S. Cl. 16—370 **10 Claims**



1. A hinge hardware element for building and furniture

doors and windows, which after opening 90 degrees to 180 degrees leaves the inside cross-section of the door or window opening entirely clear, having a fastening part attached to the jamb and a bearing-surface part attached to the door, which parts are connected with one another by way of a lever mechanism, said lever mechanism including in combination:

(a) first 4-bar link mechanism having a first base attached to the jamb; first and second spaced-apart parallel shafts extending from said base; a bell crank lever having a first arm pivoted at one end on said first shaft; a second lever member; a coupler; third and fourth shafts parallel to said first and second shafts, said third shaft pivotally interconnecting said coupler and the other end of said arm of said bell crank lever at the apex thereof, said fourth shaft interconnecting one end of said second lever member with said coupler, the other end of said second lever member being pivotally mounted on said second shaft; and

(b) a second 4-bar link mechanism having a first part for attachment to the end face of a door panel; a second base extending from said first part; fifth and sixth spaced-apart shafts mounted on said second base and extending parallel to said first and second shafts; a second arm of said bell crank lever pivotally mounted at one end on said fifth shaft, the other end of such second arm of said bell crank lever being in common with the other end of the first arm of said bell crank lever at the apex thereof; a swing arm member pivotally mounted at one end on said sixth shaft; a seventh shaft pivotally interconnecting the other end of said swing arm member and said coupler; wherein said bell crank lever interconnects said first and second 4-bar link mechanisms; wherein said third, fourth, and seventh shafts are arranged on said coupler in the corners of a triangle; and wherein said lever mechanism, in the closed state of the door, is mounted in a recess in the jamb or the end face of the door with the interrelationship of the various levers and pivots being such that such parts of said lever mechanism emerge only at right angles to the door opening of the jamb.

4,564,976

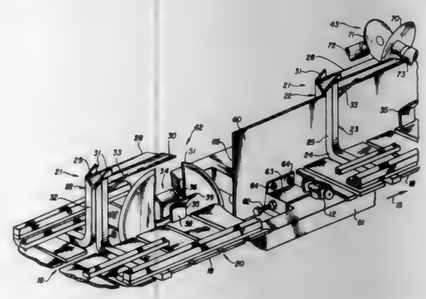
APPARATUS FOR PROCESSING POULTRY BREASTS

Jeffrey A. Beech, Tucker, and John N. Penprase, Marietta, both of Ga., assignors to Pritchard Sales Company, Inc., Atlanta, Ga.

Filed Apr. 9, 1984, Ser. No. 598,182

Int. Cl.[4] A22C *21/100*

U.S. Cl. 17—11 **2 Claims**



1. An apparatus for successively severing poultry carcasses longitudinally into halves comprising conveyor means including a pair of conveyors mounted in spaced, side-by-side relationship for movement in unison along parallel paths that straddle an upright plane and which pass in sequence through a carcass loading station, a breast cutting station, a back cutting station and a delivery station, a rotary breast cutting disc positioned at said breast cutting station and protruding upwardly between said pair of conveyors and located in said upright plane, said conveyor means further including a plurality of poultry carcass mandrels mounted at intervals along and extending upwardly from said conveyors, said mandrels each being bifurcated and straddling said plane and movable over said rotary breast cutting disc, back cutting means positioned at said back cutting station over the path of movement of said mandrels, and a separator plate positioned in an upright attitude and protruding upwardly between said conveyors in said upright plane, said separator plate extending from adjacent said breast cutting disc to a position beyond said back cutting means, whereby poultry carcasses are mounted at the loading station on the mandrels by positioning the previously eviscerated body cavity of a carcass about a mandrel with the back of the carcass resting on the mandrel and the breast of the carcass suspended below the mandrel, the mandrels carry the carcasses through the breast cutting station where the cutting disc cuts upwardly through the breasts of the carcasses, the cut through the breasts of the carcasses move about the separator plate and the separator plate maintains the breast halves separate as the carcasses move on the mandrels from the breast cutting station to the back cutting station where the back cutting means cuts downwardly through the backs of the carcasses as the separator plate maintains the breast halves separate, and the carcass halves are separately discharged at the delivery station.

4,564,977

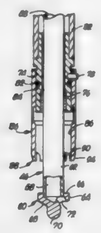
POULTRY VENT REMOVAL MACHINE

Donald J. Scheier, Kansas City, Mo., and Jack L. Hathorn, Springdale, Ark., assignors to Simon-Johnson, Inc., Kansas City, Kans.

Filed Sep. 15, 1983, Ser. No. 532,575

Int. Cl.[4] A22C *21/06*

U.S. Cl. 17—11 **11 Claims**



1. In a machine for severing the vent from a poultry carcass or the like, the improvement comprising:

an elongated probe adapted for entering the vent and intestine of a carcass to be processed;

a generally cylindrical cutter coaxially receiving said probe and having cutting means adjacent one end extremity;

means for rotating said cutter relative to the probe about the common axis of the probe and cutter;

means for relatively telescoping said probe and the cutter such that the probe is alternately projected outwardly from said cutter beyond said cutting means and withdrawn into the cutter to a retracted position relative to the cutting means; and

means for controlling said relative telescopic and rotary movements of the probe and cutter such that the probe enters the intestine when the probe is in its projected position, the probe pulls the end portion of the intestine into the cutter during relative retraction of the probe, and the cutter thereupon rotates while the probe is in its retracted position whereby to sever the skin surrounding the vent from the remainder of the carcass,

said probe having an enlargement at the intestine-engaging end thereof provided with a radially outermost, longitudinally extending surface disposed in closely spaced, mutually opposed relationship with the proximal inner surface of the cutter when the probe is in its retracted position,

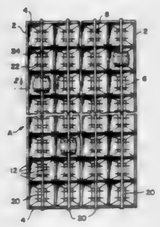
said surfaces extending in substantial parallelism with one another and being operable to forcibly grip the intestine therebetween and thereby retain the same on the probe during rotation and severance by the cutter.

4,564,978

CRAB BODY SUPPORTING MEANS FOR A VIBRATORY TYPE MACHINE FOR REMOVING EDIBLE MEAT

Theodore S. Reinke, Kennett Square, Pa., assignor to Sea Savory, Inc., Wingate, Md.

Filed Apr. 27, 1984, Ser. No. 604,971
Int. Cl.⁴ A22C *29/00*
U.S. Cl. 17—71 **3 Claims**



1. A core box for supporting prepared crab bodies in a machine for removing the crab meat by vibration, the core box having an upper surface and a bottom surface containing a plurality of discharge openings each of which is defined by the lower edges of downwardly converging walls the facing surfaces of which above each opening being spaced sufficiently to support a full size prepared crab body after being cooked, the carapace, claws and flippers removed, and the visceral cavity cleaned,

and means for modifying the core box to permit partial crab bodies to be supported on the converging walls above each opening, comprising

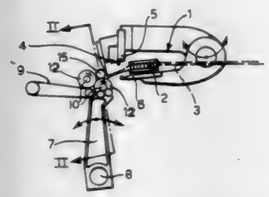
a rod supported on the upper surface of the core box and extending across the center of at least one opening in the bottom surface of the core box, and having at least one pair of pins extending from each side of the rod with the ends of the pins resting on the converging surfaces of the walls above the opening whereby the pins and converging wall surfaces form a support for a partial crab body.

4,564,979

COMBING MACHINE FOR TEXTILE FIBRES

Carlo Ramasco, Sesto Calende, Italy, assignor to Sant' Andrea Novara Officine Meccaniche e Fonderie, Novara, Italy

Filed Jun. 8, 1984, Ser. No. 618,860
Claims priority, application Italy, Jun. 9, 1983, 53444/83[U]
Int. Cl.⁴ D01G *19/00*
U.S. Cl. 19—215 **1 Claim**



1. A combing machine for textile fibres, comprising:

means for combing a sliver of fibres;

a pivotable carriage;

contra-rotating tearing rollers mounted on the carriage;

respective contra-rotating shafts on which said support tearing rollers are mounted said shafts being rotatably supported at their ends by the pivotable carriage, said rollers being effective to tear successive tufts from the sliver of fibres as the tufts are combed, and partially to superimpose the torn tufts on each other so as to form a continuous combed web,

wherein the improvements consist in

support means on the pivotable carriage for rotatably supporting each support shaft for the tearing rollers intermediate the ends of said shaft, and

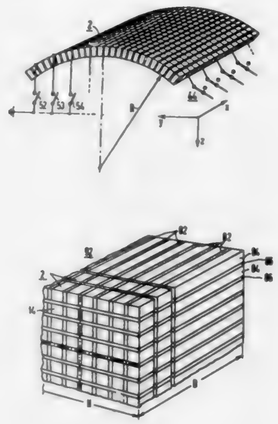
each support shaft carries two said tearing rollers disposed on opposite sides of said support means cooperating with a corresponding pair of said tearing rollers mounted on opposite sides of said support means on a respective said contra-rotating support shaft.

4,564,980

ULTRASONIC TRANSDUCER SYSTEM AND MANUFACTURING METHOD

Heinrich Diepers, Höchstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 267,583, May 27, 1981, Pat. No. 4,437,033.
This application Feb. 17, 1983, Ser. No. 467,240
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021449
Int. Cl.⁴ H04R *17/00*
U.S. Cl. 29—25.35 **1 Claim**



1. A method for manufacturing an ultrasonic transducer arrangement comprising a plurality of acoustically separate transducer elements, the method comprising the steps of:

stacking a plurality of plates of ultrasonic oscillator material on one another;

interposing a layer of filler material between adjacent ones of the stacked plates, said filler material having an acoustic impedance which is substantially different from an acoustic impedance of said ultrasonic oscillator material;

bonding said filler material to adjacent ones of said stacked plates;

forming a plurality of first plate-shaped bodies by creating a plurality of cuts in a direction perpendicular to a stacking plane of said stack;

stacking said formed first plate-shaped bodies on one another;

interposing a thin intermediate layer of filler material between adjacent ones of the stacked first formed bodies, said filler material having an acoustic impedance which is substantially different from said acoustic impedance of said ultrasonic oscillator material of said plates;

bonding said filler material to adjacent ones of said stacked first formed bodies;

forming at least one second plate-shaped body comprising said plurality of acoustically separate transducer elements by cutting said stacked first bodies in a direction perpendicular to a stacking plane of said stack of first formed bodies, said second plate-shaped body having first and second flat sides formed by cutting said stacked first bodies, said flat sides comprising end faces of said acoustically separate transducer elements;

metallizing the end faces of said acoustically separate transducer elements which lie in said first and second flat sides; and

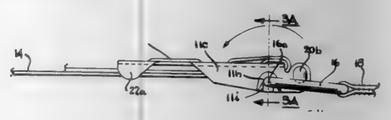
connecting conductor means to adjacently arranged metallized end faces of said acoustically separate transducer elements in rows along a first direction of one of said flat sides and in columns along a second direction of the other of said flat sides perpendicular to the first direction to form ultrasonic oscillators comprising rectangular shaped groups of said transducer elements in said transducer arrangement.

4,564,981

BUCKLE-STRAP TIEDOWN ASSEMBLY

Howard T. Knox, Simi, Calif., assignor to ANCRA Corporation, El Segundo, Calif.

Filed Jun. 25, 1984, Ser. No. 624,409
Int. Cl.⁴ A44B *11/12, 21/00*
U.S. Cl. 24—68 CD **4 Claims**



1. A buckle assembly for tightening and securing a pair of straps or the like around a load to be retained in place comprising:

a frame member having a generally elongated flat central piece and a pair of opposing legs which extend normally from opposite edges of said central piece, said legs having oppositely positioned apertures formed therein towards one end thereof and detents or protrusions extending outwardly from said legs at a position therealong between said apertures and said one end thereof, and

a resilient generally U-shaped bale member having turned in end portions, said end portions being fitting into the apertures of the frame legs to pivotally support the bale member thereon,

one of said straps being fixedly retained on the bale member, the other of said straps being retained on the central piece of the frame member for adjustment relative thereto,

the frame member being moveable between a "tension" position with the bale on one side of said detents and a "release" position with the bale on the other side of said detents.

4,564,982

CLASP FOR A BRACELET OR THE LIKE

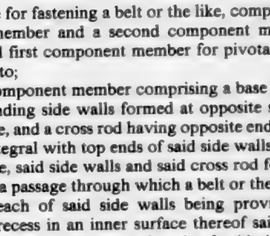
Jean Paolini, La Chaux-de-Fonds, Switzerland, assignor to Fabrique Ebel SA, Switzerland

Filed Jul. 18, 1984, Ser. No. 632,032
Claims priority, application Switzerland, Feb. 23, 1984, 891/84
Int. Cl.⁴ A44B *21/00*
U.S. Cl. 24—71 J **5 Claims**

1. A clasp for a bracelet or the like comprising:

(a) first and second arms, each arm having two ends, the arms being hinged to each other at a pair of corresponding ends for pivotal movement between open and closed positions;

(b) a buckle carried by the unhinged other end of the first arm, the buckle being configured to receive a first strap therethrough and adjustably fix one end of the first strap therein, whereby the free end of the first strap extends from the buckle;



(c) means carried by the unhinged other end of the second arm for securing a second strap thereto; and

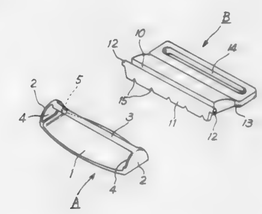
(d) the second arm including an opening through which the free end of the first strap may be received and concealed under the second strap when the first and second arms are disposed in the closed position.

4,564,983

DEVICE FOR FASTENING A BELT OR THE LIKE

Koji Saito, Tokyo, Japan, assignor to Kohshoh Limited, Kyoto, Japan

Filed Feb. 3, 1984, Ser. No. 576,946
Claims priority, application Japan, Feb. 4, 1983, 58-15086[U]; Apr. 8, 1983, 58-61945
Int. Cl.⁴ A44B *19/00*
U.S. Cl. 24—170 **6 Claims**



1. A device for fastening a belt or the like, comprising a first component member and a second component member connected to said first component member for pivotal movement relative thereto;

said first component member comprising a base plate, a pair of upstanding side walls formed at opposite sides of said base plate, and a cross rod having opposite ends connected to the integral with top ends of said side walls so that said base plate, said side walls and said cross rod form a frame defining a passage through which a belt or the like is to be passed, each of said side walls being provided with a bearing recess in an inner surface thereof said recess extending from a periphery of each of said side walls inwardly thereof;

said second component member comprising a body portion and a fastening portion extending angularly from one end of said body portion, said body portion being provided at said one end with a pair of pintles axially aligned and laterally outwardly projecting in opposite directions from the opposite lateral sides of said body portion and in an

upper surface of said body portion with a bearing groove extending adjacent said one end of said body portion and in parallel with a common axis of said aligned pintles, and said body portion being further provided at an opposite end with a slot for attachment of a belt to said second component member;

said first and second component members, when assembled, having each of said pintles engaged in a corresponding one of said recesses and said cross rod engaged in said bearing groove of said body portion upper surface so that said second component member is pivotable about said cross rod between a substantially upright or open position in which said belt can freely pass through said passage of said first component member and a substantially flat or closed position in which said fastening portion of said second component member fastens said belt to said first component member.

4,564,984

POSITIONING CONE FOR CONTAINERS

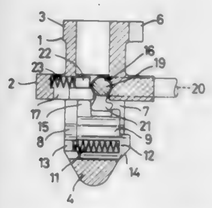
Hiroyuki Takaguchi, Nagasaki, Japan, assignor to Taiyo Seiki Iron Works Co., Ltd., Osaka, Japan

Filed Aug. 10, 1983, Ser. No. 521,918

Claims priority, application Japan, May 23, 1983, 58-78530[U]

Int. Cl.⁴ B65D *21/02*

U.S. Cl. 24—287 **4 Claims**



1. A cone for positioning containers, comprising:

a body having a first flange and a second flange and being divided by said flanges into an upper shank and a lower shank whereby the upper shank is engaged within an aperture in an upper cargo container and the lower shank is engageable within an aperture in a lower cargo container for relative positioning of the containers, said lower shank having a conical surface on its bottom and also having a hole extending laterally therethrough;

a latch slidably supported in the hole, said latch having a first position retracted in the hole, and a second position protruding from the hole whereby the lower shank is operatively secured within the aperture in the lower cargo container;

a spring means, positioned inside the hole between the latch and the lower shank, for urging the latch into the second position;

lever means, pivotably supported in the body, for moving the latch from the second position to the first position;

first lug means, connected to the lever means, for securely keeping the latch in the first position;

second lug means, connected to the latch, for engaging with the first lug means; and

handgrip means, connected to the lever means and extending outside of the body, for turning the lever means.

4,564,985

FELT FOR PAPER MANUFACTURE AND METHOD FOR PRODUCING THE SAME

Takeo Tanabe, Kounosu, Japan, assignor to Nippon Felt Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1982, Ser. No. 433,419

Claims priority, application Japan, Oct. 8, 1981, 56-160765

Int. Cl.⁴ D06C *3/00*

U.S. Cl. 28—142 **7 Claims**



1. A method for producing a felt for paper manufacture, which comprises subjecting at least two endless non-compressible fabrics having at least one of a single weave or double combination weave structure to stretching and setting so that the endless non-compressible fabrics are thermally set under such a tension as will keep a substantially equal length in the fabrics, piling the fabrics in the annular form to form a ground fabric, placing a lap on said ground fabric, and needling the lap placed on the ground fabric while travelling the ground fabric under such a tension that all the layers are kept strained, whereby the lap is combined with the surface of the ground fabric and the endless non-compressible fabrics are also combined with each other.

4,564,986

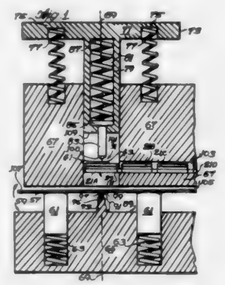
APPARATUS FOR SECUREMENT OF CLINCH NUT TO CARRIER MATERIAL

Francis C. Peterson, St. Charles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 25, 1982, Ser. No. 436,560

Int. Cl.⁴ B23P *11/00*; **F16B** *39/282*

U.S. Cl. 29—33 K **1 Claim**



1. An apparatus for securing a nut to carrier material comprising: a first punch, a housing for retractably carrying said first punch outwardly from one end of said housing, a nut guide with a pair of intersecting passageways for receiving nuts, said housing being slideably disposed within one of said passageways, a second punch, and a base carrying said second punch, second spring means for urging said nut guide toward said carrier material, and spring loaded carrier support means holding said carrier material in an initial position adjacent said second punch.

4,564,987

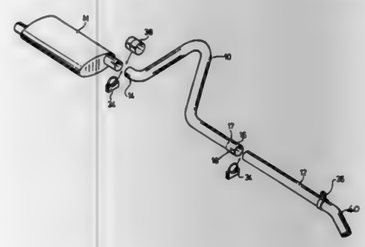
METHOD FOR MANUFACTURING A TAIL-PIPE REPLACEMENT KIT

Peter Roberts, Mississauga, Canada, assignor to Thrush Incorporated, Rexdale, Canada

Division of Ser. No. 371,230, Apr. 23, 1980, Pat. No. 4,441,579. This application Apr. 5, 1984, Ser. No. 597,101

Int. Cl.⁴ B21D *39/00*

U.S. Cl. 29—157 R **13 Claims**



1. A method for manufacturing a tail-pipe kit suitable for attachment to a muffler and for use with a plurality of vehicles, comprising the steps of:

(a) identifying a plurality of vehicles having overlapping spatial envelopes in at least the rear axle section of the plurality of vehicles;

(b) forming a tubular arched section of a first length with an inlet end for connection to the muffler, an intermediate portion having an arch conforming to the overlapping spatial envelopes and an outlet end; and

(c) forming a tubular spout section separate from said tubular arched section and having an inlet end and an outlet end, the inlet end being connectible in gas flow relationship with the outlet end of the tubular arched section,

wherein said separate tubular spout section has an axial length which is substantially equal to the first length and at least equal to the longest spout section of said plurality of vehicles.

4,564,988

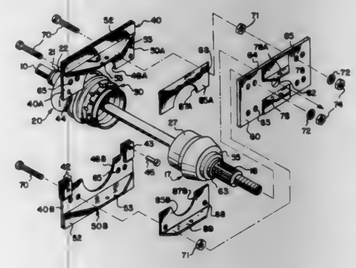
APPARATUS FOR FITTING A BOOT TO A UNIVERSAL JOINT

Lutro Norrod, 3137 Hobart Ave., Kettering, Ohio 45429

Filed Sep. 17, 1984, Ser. No. 651,132

Int. Cl.⁴ B23P *19/02*

U.S. Cl. 29—235 **4 Claims**



1. A tool for press fitting a circular end of a flexible boot onto a cylindrical surface on the inner end of the outer race of a constant velocity joint using an endless band clamp which has a major portion with an inner diameter greater than the circumference of the cylindrical surface and being less than the outer diameter of the end of the boot, the clamp being fitted to the circular end of the boot,

said tool comprising

a multi-part main plate member having at least two parts which cooperate to define a circular aperture of a diameter less than the outer diameter and greater than the inner diameter of the major portion of the band clamp and also greater than the outer diameter of the end of the boot,

means for releasably retaining said parts of said main plate member together whereby said parts can be separated to set main plate member around the end of the boot and then joined,

means for pressing said main plate member coaxially and uniformly along the cylindrical surface of the outer race to force the band clamp and the end of the boot fitted thereto onto said surface and simultaneously to compress the end of the boot into tight sealing engagement with the surface of the outer race,

said means for pressing including a secondary plate member having a central opening therethrough locateable on the outer race and means cooperating therewith supporting said main plate member in position with said aperture surrounding the band clamp and spaced from adjacent parts of the boot, and means for moving said main plate member and the outer race toward each other.

4. A tool for press fitting a circular end of a flexible boot onto a cylindrical surface on the inner end of the outer race of a constant velocity joint using an endless band clamp having a major portion of U-shape in cross-section and being greater in diameter than the circumference of the surface and less than the outer diameter of the end of the boot, said major portion embracing a rib on the end of the boot, and the clamp having an integral tip dimensioned to be press fit onto the surface,

said tool comprising

a main multi-part plate member having a circular aperture of a diameter less than the outer diameter and greater than the inner diameter of the major portion of the band clamp and also greater than the outer diameter of the end of the boot,

means locateable coaxially around said outer race opposite the cylindrical surface for supporting and locating said main plate member on the inner end of the outer race coaxially therewith and in position fitted around the end of the boot with a clearance and engaging a side of the band clamp, and

means for pressing said main plate member coaxially and uniformly along the cylindrical surface of the outer race while moving said main plate member and said supporting and locating means toward each other to force the band clamp and the end of the boot fitted thereto onto said surface, and to compress the end of the boot into tight sealing engagement with the surface of the outer race, without pinching the boot between the plate member and the surface.

4,564,989

DEVICE FOR INSERTING AND REMOVING TUBES FROM STOPPERS

Franklin Sogandares, Dallas, Tex., assignor to Southern Methodist University, Dallas, Tex.

Filed Aug. 20, 1980, Ser. No. 179,749

Int. Cl.⁴ B23P *19/02*

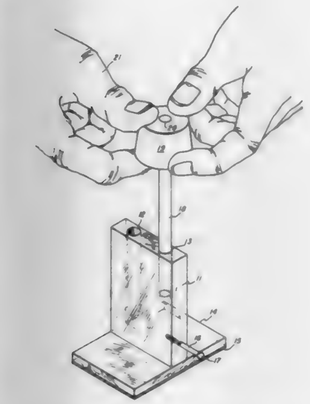
U.S. Cl. 29—235 **3 Claims**

1. A device for inserting a tube into an opening through a resilient stopper, comprising:

(1) a body member having a hole therein shaped to accommodate insertion of said tube; said hole having a diameter somewhat larger than the tube diameter, and a depth substantially less than the length of said tube; whereby the tube, when inserted therein, extends therefrom a distance equal to or greater than the desired insertion distance into or through said stopper;

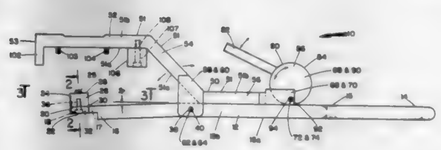
(2) means for stabilizing said body member on a supporting

surface, so that it cannot readily tip over or slide during use; and



(3) means for assisting in the removal of said tube from said stopper, comprising a rigid member in combination with said body and base, extending outwardly therefrom, and having a diameter substantially equal to that of said tube.

4,564,990
LEVER WRENCH FOR SNAP FIT VALVES
Richard A. Rible, 251 Morris Ave., Brick Town, N.J. 08723
Filed Feb. 16, 1984, Ser. No. 580,845
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—267 **1 Claim**



1. A lever wrench for the assembly and disassembly of snap-fit valves which comprises

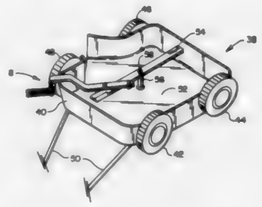
a first lever arm, substantially linear in shape, said first lever arm having a handle and a contact end, said contact end obliquely angled from said handle end;

a cylindrical punch pin having a planer upper surface and an aligning tooth centrally positioned thereon removably secured to said contact end of said first lever arm;

a second lever arm rotatably mounted to said first lever arm and including a first leg and a second leg, said first leg including a pair of rectangular depending contact points positioned at the outer end and the inner end of said first leg, said rectangular depending contact points in alignment with said first lever arm and said punch pin for cooperation with said first lever arm and said punch pin for the disassembly of said snap-fit valve, and a pair of depending concave contact points positioned between said depending rectangular contact points on said first leg of said second lever arm for cooperation with said punch pin for the assembly of said snap-fit valve;

a third lever arm rotatably secured to said second leg of said second lever arm and comprised of a handle secured to a disc whereby rotation of said third lever arm causes said first lever arm to rotate with respect to said second lever arm thereby to cause said punch pin to cooperate with said contact points to affect the assembly and disassembly of the snap-fit valve.

4,564,991
TOOL FOR HOLDING A BLADE FOR INSTALLATION AND REMOVAL THEREOF
Harold E. Taylor, 4196 Riverside Dr., Columbus, Ohio 43220
Filed Oct. 22, 1984, Ser. No. 663,355
Int. Cl.⁴ B23P *19/00, 19/04;* **B23Q** *3/00*
U.S. Cl. 29—426.5 **6 Claims**



1. A tool for holding a lawnmower blade for installation and removal thereof, which comprises an elongate lever having a handle at one end, a blade engaging section about the other end, and a channel therebetween for accommodating the housing of a lawnmower, said blade engaging section comprising a pair of spaced-apart, adjustably mounted stop pins for preventing rotational movement of the lawnmower blade placed therebetween, said stop pins having inwardly-facing retaining heads spaced-apart from said elongate lever for preventing the lawnmower blade from slipping off said stop pins.

6. A method for holding a lawnmower blade for installation or removal of said lawnmower blade from a lawnmower, which comprises holding the lawnmower blade in a blade engaging section of a tool which comprises an elongate lever having a handle at one end, said blade engaging section about the other end, and a channel therebetween for accommodating the housing of the lawnmower, said blade engaging section comprising a pair of spaced-apart, adjustably mounted stop pins for preventing rotational movement of the lawnmower blade placed therebetween, said stop pins having inwardly-facing retaining heads for preventing the lawnmower blade from slipping off said stop pins; and

tightening or loosening a retaining nut for installation or removal, respectively, of said lawnmower blade from said lawnmower.

4,564,992
METHOD FOR PRODUCING HELIX STRUCTURES FOR USE IN FORMING HELIX BELTS
Johannes Lefferts, LM-Enschede, Netherlands, assignor to Siteg Siebtechnik GmbH, Fed. Rep. of Germany
Filed Jul. 13, 1983, Ser. No. 513,279
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1982, 3228033
Int. Cl.⁴ B23P *11/00*
U.S. Cl. 29—429 **6 Claims**

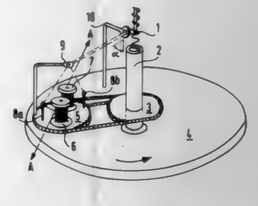
1. A method for introducing filler material into a helix structure for producing a filled helix of great length, the method comprising:

advancing the helix in a direction along the longitudinal axis of said helix;

introducing filler material into the helix between the windings of the helix at the point at which the helix and filler material converge;

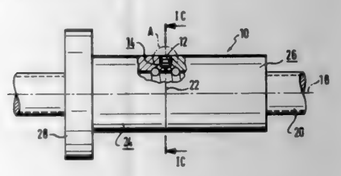
orbiting the helix and the filler material about one another at a position preceding the point at which the helix and filler material converge, while the helix is kept from rotating about its longitudinal axis; and

adjusting the advancing motion of the helix and the speed at which the filler material and the helix orbit about one



another so that the helix is advanced by one winding of the helix during each orbit of the filler material and the helix about one another.

4,564,993
DOUBLE NUT AND METHOD OF FORMING THE DOUBLE NUT
Günter Blaurock, Niederwerrn; Ernst Albert, Sand/Main; Werner Blaurock, Niederwerrn; Benno Peichl, Bergrheinfeld; Klaus Reichert, Bad Kissingen-Garitz; Hans-Georg Stender, Hambach, and Rudolf Schlereth, Frauenroth, all of Fed. Rep. of Germany, assignors to Deutsche Star Kugelhalter GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Mar. 1, 1983, Ser. No. 471,193
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207566
Int. Cl.⁴ B23P *11/00*
U.S. Cl. 29—434 **10 Claims**



1. Method of forming a preloaded double-ball nut running on a threaded spindle, said double nut comprising a pair of individual ball nuts running on balls on said threaded spindle, the method including:

(a) mounting said pair of individual nuts on said balls on said threaded spindle;

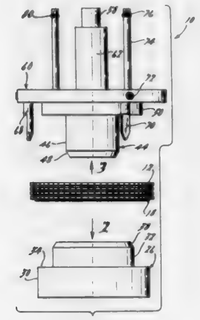
(b) rotating one of said individual nuts relative to the other such that a desired preload is obtained, said preload pressing said individual nuts together, said individual nuts being in mutual contact in a contact plane;

(c) drilling a radially extending recess in the contact plane said recess extending in both of said preloaded individual nuts;

(d) inserting a locking member into said recess whereby said locking member secures said individual nuts under said preload and against rotation of one of said individual nuts relative to the other.

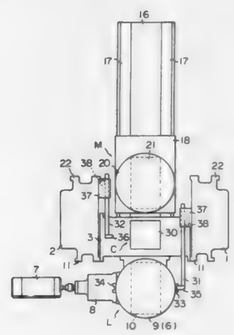
4,564,994
MULTIPLE PLATE CLUTCH ORIENTING FIXTURE AND METHOD OF USING
John J. Marx, Warren, Mich., assignor to Fraser Automation, Sterling Heights, Mich.
Filed Oct. 21, 1983, Ser. No. 544,081
Int. Cl.⁴ B23Q *3/00*
U.S. Cl. 29—468 **3 Claims**

1. A fixture for orienting clutch plates having radially projecting teeth, said clutch plates forming part of a multiple plate clutch or brake assembly comprising: a base member forming first and second diameter portions, said first diameter portion substantially larger than the second diameter portion and forming a shoulder portion therebetween, said base member having a central bore, said first diameter portion having axially extending cutout portions extending to said shoulder, a mandrel having an annular body portion slidably fitting within said base member central bore, a flange attached to said body portion and a central post, said flange forming a pair of opposing bores located at a radially intermediate position, a fixture plate member having a sleeve slidable on said mandrel center post, said



fixture plate member carrying a plurality of clutch plate engaging posts and two or more bores, said clutch plate engaging posts forming pointed ends and being positioned radially to engage said clutch plates teeth for effecting axial alignment of said teeth of a stack of said clutch plates when said fixture plate assembly is driven toward said base, and two or more plate emgaging posts fitting within said fixture plate bores, said plate engaging posts having means for engaging said clutch plates, said plate engaging posts being slidable and rotatable within said flange bores for bringing said pins selectively into engagement with said clutch plates.

4,564,995
COMPOSITE MACHINE TOOL
Hiroshi Kase, Takatsuki, Japan, assignor to O-M Limited, Osaka, Japan
Continuation of Ser. No. 466,869, Feb. 16, 1983, abandoned. This application Mar. 20, 1985, Ser. No. 714,055
Claims priority, application Japan, Feb. 26, 1982, 57-30832
Int. Cl.⁴ B23Q *39/02*
U.S. Cl. 29—563 **2 Claims**



1. A composite machine tool comprising:

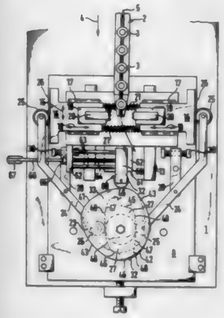
a pair of vertical columns disposed at a predetermined distance from each other;
a stay disposed between lower ends of said vertical columns and connected therebetween;
an independently operable lathe having a rotary table and a movable cutting tool, provided on front sides of said vertical columns;
a first cross rail vertically movable along the front surfaces of said vertical columns and provided with a tool post for the lathe;
an independently operable machining center type machine tool having an indexing table and cutting tools, provided on the rear sides of said vertical columns;
a second cross rail vertically movable along the rear surfaces of said vertical columns and provided with a tool post for the machining center type machine tool; and
a pallet transfer apparatus disposed between the lathe and machining center type machine tool and between the vertical columns for conveying a succession of pallets with workpieces thereon, said transfer apparatus comprising:
an intermediate table fixedly mounted on said stay, actuating bars horizontally disposed between said intermediate table and inside surfaces of said vertical columns, and movable along the longitudinal axis of the composite machine tool;
upper surfaces of the rotary table, intermediate table, and indexing table being located at substantially the same level;
turnable hook members provided on the front ends of said acutating bars, said hook members being adopted to be engaged or disengaged from socket members fixed to opposite sides of said pallet; and
drive means for driving said bars back and forth,
wherein engagement between said hook members and socket members on each pallet and succeeding movement of said actuating bars after the machining by the lathe for the workpiece on the pallet is finished, causing the pallet and the workpiece thereon to be conveyed from the rotary table of the lathe to the intermediate table between said columns, and thereafter from the interemdiate table to the indexing table of the machining center machine tool.

4,564,996

APPARATUS FOR WORKING ON LEADS OF ELECTRONIC COMPONENTS

Thomas Weresch, Greschbachstr. 19, D-7500 Karlsruhe 41, Fed. Rep. of Germany

Filed Jul. 21, 1982, Ser. No. 400,409
The portion of the term of this patent subsequent to Feb. 1, 2000, has been disclaimed.
Int. Cl.⁴ B21F *1/00*
U.S. Cl. 29—566.3 **17 Claims**



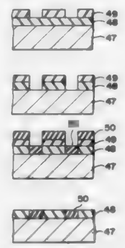
1. An apparatus for working on leads of components, the apparatus comprising a component supply means, at least one tool group including at least two tools, a first drive means for moving said tool group toward and away from said component supply means, a second drive means for moving said at least two tools towards and away from each other, and limiting means for at least decreasing an amount of movement of said tool group toward and away from said component supply means.

4,564,997

SEMICONDUCTOR DEVICE AND MANUFACTURING PROCESS THEREOF

Seitaro Matsuo; Susumu Muramoto, both of Hachioji; Kohei Ehara, Kodaira, and Manabu Itsumi, Hoya, all of Japan, assignors to Nippon-Telegraph and Telephone Public Corporation, Japan

Filed Apr. 16, 1982, Ser. No. 369,235
Claims priority, application Japan, Apr. 21, 1981, 56-61066; Apr. 21, 1981, 56-61067; Apr. 21, 1981, 56-61068; Apr. 21, 1981, 56-61069
Int. Cl.⁴ H01L *21/76, 21/302*
U.S. Cl. 29—576 W **6 Claims**



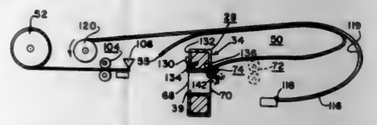
1. A semiconductor device manufacturing process comprising the steps of:
forming a resist pattern on the surface of a semiconductor substrate;
cutting a groove in an exposed area of the semiconductor substrate which is not covered with the resist pattern, through a dry etching technique with directionality using the resist pattern as a mask;
converting a first gas into a plasma under an electron cyclotron resonance condition, by using microwaves, in a divergent magnetic field the intensity of which diminishes toward a specimen table in a specimen chamber, and in a plasma generating chamber, leading the plasma-converted first gas along the magnetic field into the specimen chamber adjacent the plasma generating chamber, converting a second gas introduced into the specimen chamber into a plasma by the plasma-converted first gas and applying the plasma-converted first and second gases along the magnetic field to the semiconductor substrate on the specimen table in a direct direction substantially perpendicular thereto, thereby to form a high-density insulating film of excellent directionality in the groove and on the resist pattern to a thickness substantially equal to the depth of the groove, without heating the semiconductor substrate from the outside; and
removing the resist pattern and the insulating film formed thereon to thereby obtain a structure in which only the groove is filled with the insulating film.

4,564,998

COIL WINDING METHODS AND APPARATUS

Dale O. Perschka, Nicholson, Ga., and Stuart L. Rieben, Mt. Lebanon Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 19, 1984, Ser. No. 662,653
Int. Cl.⁴ H01F *41/12*
U.S. Cl. 29—605 **8 Claims**



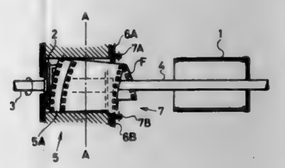
5. A method of winding an electrical conductor through the window and about the leg of the magnetic core for making a core-coil assembly, comprising the steps of:
providing an electrical conductor having a lead end,
directing the lead end of the conductor through the window of the magnetic core from an entrance to an exit side thereof,
advancing the conductor via a single set of drive rolls to provide a desired conductor length,
shearing the conductor to said desired length to provide a tail end,
securing the tail end of the conductor to the magnetic core,
pressing the conductor tightly against the magnetic core with a single set of ironing rolls, adjacent to the exit side of the window,
operating said single set of drive rolls to tension said conductor,
and wrapping the conductor tightly against the magnetic core with said single set of ironing rolls, from the exit to the entrance side, while the conductor is being tensioned by said single set of drive rolls.

4,564,999

FILM HANDLING MECHANISM

Kaoru Uchiyama, and Koji Ichikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 28, 1984, Ser. No. 625,757
Claims priority, application Japan, Jul. 29, 1983, 58-139693
Int. Cl.⁴ B23P *19/04*; B65H *75/02*
U.S. Cl. 29—806 **6 Claims**



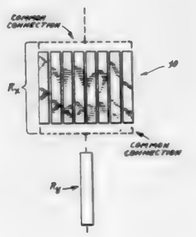
1. A film handling mechanism for receiving a film and a spool removed from a cartridge and forwarding said film to a following film processing station, comprising:
a film receiver for receiving said film removed from said film cartridge, said film receiver having first and second sides and receiving said film from said first side thereof, said film receiver having an inside diameter;
film guide members provided on said first side of said film receiver and movable between a first position in which said film guide members form a film receiving opening having a diameter substantially equal to said inside diameter of said film receiver when said film receiver is receiving a film and a second position for holding said spool of said film at one end after said film has been received by said film receiver; and
means for moving said film guide members between said first and second positions.

4,565,000

MATCHING OF RESISTOR SENSITIVITIES TO PROCESS-INDUCED VARIATIONS IN RESISTOR WIDTHS

Adrian P. Brokaw, Burlington, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Sep. 24, 1982, Ser. No. 423,255
Int. Cl.⁴ H05B *3/00*
U.S. Cl. 29—611 **6 Claims**



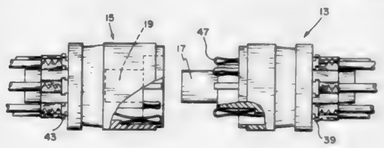
1. In the art of making integrated-circuit chips having resistors thereon, a method of controlling the resistance ratio between a first resistor and a second resistor on the integrated-circuit chip, wherein said first resistor if formed as a single element would have a sensitivity of resistance change due to changes in width which is substantially less than the corresponding sensitivity of said second resistor, said resistance ratio being controlled by matching the sensitivity of said first resistor to changes in resistance due to changes in width to the corresponding sensitivity of said second resistor by a process comprising the step of:
dividing said first resistor into a plurality of parallel-connected sections having a total width providing the same resistance as said single element but an increased number of side edges relative to said single element, the increase in number of said edges being proportional to the ratio of said sensitivities of said second resistor and said single element resistor, such that the composite sensitivity of said parallel-connected resistor sections is increased relative to said single element and made at least substantially equal to said sensitivity of said second resistor.

4,565,001

METHOD OF MAKING CRIMP CONNECT TERMINALS

Roy A. Patton, 204 W. Howard Ave., Visalia, Calif. 93277

Filed May 18, 1984, Ser. No. 612,032
Int. Cl.⁴ H01R *43/04*
U.S. Cl. 29—866 **3 Claims**



1. The method of providing a plurality of terminals from an elongated strip of terminal stock material and connecting those terminals to respective insulated lead wires preparatory to disposing the terminals in a multiconductor connector assembly comprising the steps of:

blank forming terminal silhouettes in the stock material without severing individual terminals from the strip, the blank formed terminal silhouettes being elongated in a direction transverse to the elongation of the strip, and having first free end portions for selective sliding connection with other terminals in the connector assembly and second interconnected end portions for crimping connection to respective lead wires;

shaping the second end portions into a "U" configuration to receive lead wires;

crimp connecting respective lead wires and corresponding terminals;

separating crimp connected terminals one from another, and

disposing the crimp connected terminals and corresponding lead wires in connector assemblies,

perforating the terminal second end portions prior to the step of shaping to form pointed projections for piercing wire insulation and making electrical connection with lead wires during the step of crimp connecting.

2. The method of providing a plurality of terminals from an elongated strip of terminal stock material and connecting those terminals to respective insulated lead wires preparatory to disposing the terminals in a multiconductor connector assembly comprising the steps of:

blank forming terminal silhouettes in the stock material without severing individual terminals from the strip, the blank formed terminal silhouettes being elongated in a direction transverse to the elongation of the strip, and having first free end portions for selective sliding connection with other terminals in the connector assembly and second interconnected end portions for crimping connection to respective lead wires;

shaping the second end portions into a "U" configuration to receive lead wires;

crimp connecting respective lead wires and corresponding terminals;

separating crimp connected terminals one from another; and

disposing the crimp connected terminals and corresponding lead wires in connector assemblies,

selectively precipitation hardening the terminal first end portions to enhance the resilience thereof while maintaining the second end portions more malleable.

4,565,002

METHOD OF FORMING A SEPARATOR FOR A CYLINDRICAL BATTERY

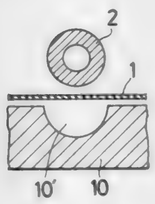
Setsuo Matsuo; Noboru Nakanome, both of Sumoto, and Koji Nishishita, Hyogo, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 12, 1984, Ser. No. 588,543

Claims priority, application Japan, Mar. 16, 1983, 58-43918; Jun. 16, 1983, 58-108590; Jul. 6, 1983, 58-123905; Jul. 8, 1983, 58-106964[U]

Int. Cl.⁴ H01M *6/00*

U.S. Cl. 29—623.4 **5 Claims**



1. A method for forming a separator for a cylindrical battery having a cylindrical electrode comprising the steps of:

disposing a belt-shaped separator having at least one layer on a metal mold having a circular groove therein, said separator having a length longer than a length of said electrode;

disposing said electrode over said groove;

pushing said electrode into said groove to contact a first portion of said electrode to a first portion of said separator;

pressing remaining portions of said separator not contacting said electrode to remaining portions of said electrode not contacted by said first portion of said separator to contact said remaining portions of said electrode against said remaining portions of said separator so that regions of said remaining portion of said separator are overlapping; and

welding said overlapping regions of said separator at the region of overlap.

4,565,003

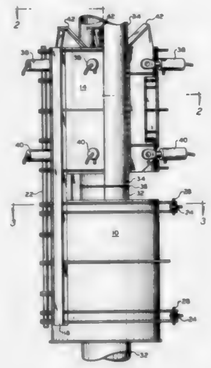
PIPE ALIGNMENT APPARATUS

Malcolm L. McLeod, Stavanger, Norway, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 11, 1984, Ser. No. 569,813

Int. Cl.⁴ B23K *37/04*

U.S. Cl. 29—281.1 **19 Claims**



1. Apparatus for aligning two separate sections of pipe comprising:

(a) elongated cage means comprising, a pair of generally semi-circular sections hinged together on one side thereof;

(b) at least one closure means on the opposite side of said semi-circular sections, having a complementary portion thereof mounted on each of said semi-circular sections, adapted to latch said semi-circular sections together;

(c) a first half of said cage means being adapted to rigidly clamp said cage means about a first of said two sections of pipe when said cage means is closed and latched;

(d) at least three pairs of piston means mounted on a second half of said cage means, the piston means of each of said pairs of piston means being spaced from one another on a line parallel to the axis of said second half of said cage means, each pair of said pairs of said piston means being mounted at spaced points about said second half of said cage means, all of said piston means of said pairs of piston means having operable piston rods extending radially into the interior of said second half of said cage means and all of said piston means of said pairs of piston means being independently operable; and

(e) at least three elongated shoe means, longitudinally coupled to said cage means at spaced points about the interior of said second half of said cage means, each of said shoe means also being coupled to the free ends of said piston rods of a pair of said piston means and said coupling of said shoe means to said cage means and said piston rods being adapted to tilt the axis of said shoe means relative to the axis of said second half of said cage means and move said shoe means radially toward and away from the axis of said cage means when at least one of said pair of piston means is operated;

(f) said shoe means being adapted to bear against the second section of said sections of pipe when said cage means is closed and latched.

4,565,004

STAINED GLASS WINDOW CONSTRUCTING TOOL

Peter G. Heinz, 22754 Ventura Blvd., Woodland Hills, Calif. 91364

Continuation of Ser. No. 333,643, Dec. 23, 1981, abandoned. This application Mar. 22, 1984, Ser. No. 592,735

Int. Cl.⁴ B26B *3/00*

U.S. Cl. 30—314 **10 Claims**



1. A tool for cutting lead came or the like comprising a short straight handle member having a first and second end and a blade member attached at one end to the first end of said handle member, said handle member and said blade member being oriented in the same direction parallel to a line through the center of said handle, said blade member having a convex cutting edge on its end opposite to said handle member, said convex cutting edge comprising a curved portion forming a sharply rounded corner and relatively straight portions on each side of said corner, one said relatively straight portion at the end of said blade member facing generally away from said handle member and oriented in a direction generally perpendicular to said line through the center of said-handle and the other said straight portion facing generally away from said line through the center of said handle and oriented in a direction generally parallel to said line through the center of said handle, the line through the center of said handle member intersecting said cutting edge near near the sharply rounded corner, the second end of said handle member for grasping in the palm of the hand of the user, with the fingers of the user extending generally along said handle member, so that a force is exerted by the arm and hand in a direction along said handle member and blade member in order to cut a portion of lead came placed against said cutting edge near the sharply rounded corner.

4,565,005

RIGHT-ANGLE INDEX DEVICE

Masayasu Naka, Saitama, Japan, assignor to Kyowa Kentetsu Kabushiki Kaisha, Japan

Filed Jun. 7, 1984, Ser. No. 618,138

Claims priority, application Japan, Dec. 22, 1983, 58-198306[U]

Int. Cl.⁴ G01B *3/10*

U.S. Cl. 33—1 G **8 Claims**

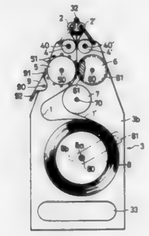
1. A right-angle index device comprising, in combination:

(A) a flat elongated casing having a longitudinal axis, a first end defining an exit end, and a second end;

(B) a take-up wheel disposed in said casing at the second end thereof;

(C) a ratchet wheel having a plurality of teeth around the circumference thereof, and an idler wheel having a circumferential groove, said ratchet and idler wheels being symmetrically disposed about said longitudinal axis near said first end with said teeth engaging said groove, the axes of rotation of all said wheels being parallel to each other and perpendicular to said longitudinal axis;

(D) two unextensible tapes superimposed upon each other and having one end fixed to said take-up wheel, whereby both of said tapes are wound simultaneously on said take-up wheel, said superimposed tapes simultaneously passing



from said take-up wheel between said ratchet and idler wheels, and then out through said exit end of said casing; and

(E) pawl means selectively engageable with said ratchet wheel to permit unimpeded withdrawal of said tapes and selective rewinding thereof.

4,565,006

TEMPLATE FOR USE IN GARMENT MANUFACTURE

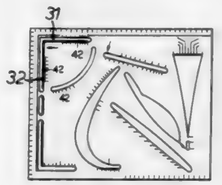
Anastasia Vouyouka, 8, Amorgou St., Thessalonika, Greece

Filed Nov. 23, 1984, Ser. No. 674,320

Claims priority, application United Kingdom, Nov. 25, 1983, 8331529

Int. Cl.⁴ A41H *1/00*

U.S. Cl. 33—11 **12 Claims**



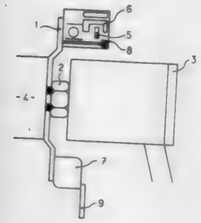
1. A template for marking a pattern for the manufacture of a garment to fit any individual having any particular range of size measurements, said template comprising a flat plate, a series of apertures formed in said flat plate, at least some of said apertures having contours conforming in shape to a desired pattern, said template further comprising scales marked on at least some of said apertures, said scales representing different sizes, said scales including at least one scale for use in connection with the difference between a chest width and a bust width of a person which said garment is intended to fit, said scale being for use in marking shoulder and waist darts on said pattern and being so calibrated in relation to said difference between said chest width and said bust width that said darts result in said pattern being an accurate fit in three dimensions.

4,565,007

PROCESS AND APPARATUS FOR MEASURING THE COILED/UNCOILED LENGTH OF WINDING GEAR CABLE

Olivier Issenmann, Lamorlaye, France, assignor to Geoservices S. A., Le Blanc Mesnil, France

Filed Sep. 26, 1983, Ser. No. 535,756
Claims priority, application France, Sep. 27, 1982, 82 16187
Int. Cl.⁴ G01B *5/04*
U.S. Cl. 33—127 **9 Claims**



5. An apparatus for measuring the uncoiled length of a cable wound on the drum of a winding gear comprising in combination, a measuring sensor furnishing for each turn of the drum, in one sense of rotation or the other, a series of periodic signals furnishing together with each of the following or preceding signal, an algebraic value corresponding with a fixed length of cable reeled off or reeled on by the drum, an electronic processing circuit for receiving the signals emitted by the said sensor for processing them in order to calculate the length of cable effectively reeled off the drum or reeled onto the latter between the first and the last signal received and for displaying the said value after having previously modified it, if necessary, as a function of the value furnished by a second incremental type displacement sensor used in complement when the gear is subject to variations in its level.

4,565,008

RELATIVE-DISTANCE PICKUP

Hans-Adolf Stölben, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

Filed Mar. 19, 1984, Ser. No. 590,688
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310788
Int. Cl.⁴ G01B *7/02*
U.S. Cl. 33—172 E **3 Claims**



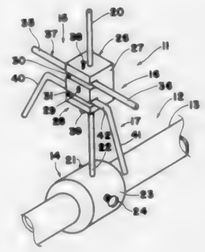
1. Relative-distance pickup, comprising a measuring device including: a housing, a feeler tip disposed in said housing and movable in longitudinal direction of said housing, an indicating device connected to said feeler tip for registering relative motion of said feeler tip with respect to said housing, said feeler tip being subdivided forming first and second feeler tip parts, a remote control drive moving said first and second parts relative to each other between first and second end positions for adjustment of said indicating device, a permanent magnet coupling said first and second parts with each other in said first end position, and a stop holding said first and second parts adjacent each other in said second end position.

4,565,009

SIGHTING APPARATUS

Wade T. Porter, Box 1091, Worland, Wyo. 82401

Filed Dec. 18, 1984, Ser. No. 683,050
Int. Cl.⁴ F41G *1/00*
U.S. Cl. 33—233 **16 Claims**



1. Sighting apparatus including a support portion, a connecting portion, a leveling portion and an aligning portion; said support portion including securing means disposed adjacent one end thereof, said support portion being affixable through said securing means to a member to be sighted, said securing means including a mounting ring member and locking means therefor, said support portion extending generally radially from said ring member; said connecting portion including connector means adjacent said securing means; said leveling portion including linear sections extending in opposite directions from said support portion, said linear sections being disposed in a single plane; said aligning portion including aiming sections, one of said aiming sections being located on each side of said support portion, a part of each aiming section being spaced from a corresponding part of the other aiming section a distance substantially equal to spacing between a user's eyes; whereby mounting said sighting apparaus through said securing means on a member to be sighted and focusing on a target along said member with both eyes open creates a double image including a pair of adjacent sighting apparatus in which the aiming sections overlap at a common point alighed with said target.

4,565,010

ELECTRONIC SIGNALING LEVEL

Robert D. Herman, 4720 S. Greenwood, Chicago, Ill. 60615

Filed May 31, 1983, Ser. No. 499,345
Int. Cl.⁴ G01C *9/06*
U.S. Cl. 33—366 **19 Claims**

1. An angular orientation detector for detecting an angular orientation of an object with respect to the earth's gravitational center, said detector comprising, in combination:

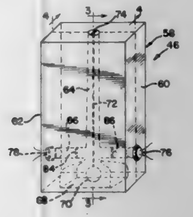
a housing having a vertically extending chamber, said chamber having a top portion;

means for emitting a beam of radiation, said beam emitting means being positioned for emitting a beam of radiation defining one beam path extending through a portion of said chamber;

means for receiving a beam of radiation, said beam receiving means being positioned for receiving a beam of radiation emitted along said beam path by said beam emitting means;

plumb means freely suspended from said top portion of said chamber for being swingable across said chamber for coming to rest in a position for blocking said beam path when said detector is at a preselected angular orientation for substantially preventing said beam receiving means from receiving radiation from said beam emitting means; and

electrically actuated means for emittiing a signal, said signal means being actuated in response to a substantial absence of radiation being received by said beam receiving means upon said plumb means blocking said beam path whereby said signal means indicates said detector is at said preselected angular orientation.

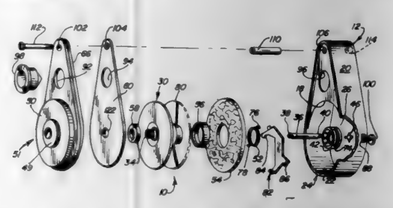


4,565,011

AUTOMATICALLY RETRACTABLE CHALK LINE ASSEMBLY

Kim Karger, 4034 S. Joliet Ave., Lyons, Ill. 60534

Filed Jul. 30, 1984, Ser. No. 636,115
Int. Cl.⁴ B44D *3/38*
U.S. Cl. 33—414 **7 Claims**



1. A chalk line assembly in combination with an automatically retractable assembly, comprising:

a housing having a bottom;

a separator wall spaced from said bottom and defining a powdered chalk compartment, said separator wall having an opening defining an entry into the interior of said chalk compartment, said retractable assembly having a gear plate spaced from sid separator wall and defining a gear compartment for housing a gear arrangement, said gear plate having an opening defining an entry into the interior of said gear compartment;

a spool assembly including a spool disposed in said chalk compartment, shaft means coupled between said retractable assembly and said bottom for rotatably supporting said spool means, brake means associated with said shaft means for controlling the rotational movement of said spool;

a lever connectably secured to said brake means and having an arm extending exteriorly of the housing for releasing brake action imposed by said brake means on said spool, said means for shielding said gear arrangement and said brake means for the powdered chalk, said entries being coaxially aligned and defining an access into the interior of said chalk compartment for the introduction of said powdered chalk;

a removable plug for closing both of said entries;

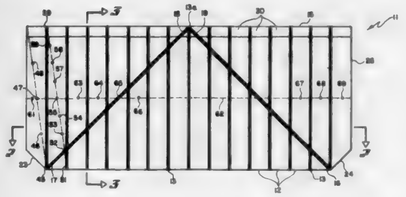
a chalk line wound on said spool and extending exteriorly through a hole in a narrowed portion of said housing, chalk wiping means compressed about said chalk line for limiting the amount of chalk adhering to the chalk line, said retractable assembly having a spring which is wound as the chalk line is pulled out of the housing, means associated with said retractable assembly for preventing overwinding of said spring, and means for securing said retractable assembly and said separator wall to said housing.

4,565,012

MARKING AND MEASURING INSTRUMENT

Peter R. Bilodeau, 25 Fernbrook Rd., Northboro, Mass. 01532, and Theodore W. Bilodeau, 535 Sudbury Rd., Concord, Mass. 01742

Filed Aug. 6, 1984, Ser. No. 638,033
Int. Cl.⁴ B43L *7/06*
U.S. Cl. 33—458 **12 Claims**



1. A line marking instrument for marking off lines and distances comprising:

(a) a series of elongated portions each having a width dimension, length dimension and thickness dimension sequentially disposed in side by side relationship with respect to their length dimensions, said width dimension being substantially less than said length dimension and said thickness dimension being less than said width dimension, each said elongated portion having at its extreme ends oppositely disposed first and second end portions, each terminating in a line marking edge;

(b) first hinge means interconnecting adjacent portions at their length dimension whereby said portions are pivotally interconnected, said first hinge means defining first straight grooves between and extending the length of adjacent elongated portions, all of said first end portions being serially disposed one to another and all of said second end portions being serially disposed one to another, the line marking edges of said first end portions substantially defining a first straight elongated line marking edge and the line marking edges of said second end portions substantially defining a second straight elongated line marking edge; and

(c) at least one second hinge means defining a second straight elongated groove disposed at an angle to and passing through predetermined consecutive ones of said first grooves.

4,565,013

GAUGE FOR MEASURING CLEARANCE IN THE BODY SIDE BEARINGS OF RAIL CARS

Wayne D. Medlock, 4942 Saddlerock Way, Sacramento, Calif. 95841

Filed Dec. 24, 1984, Ser. No. 685,868
Int. Cl.⁴ G01B *5/00, 5/14*
U.S. Cl. 33—517 **8 Claims**

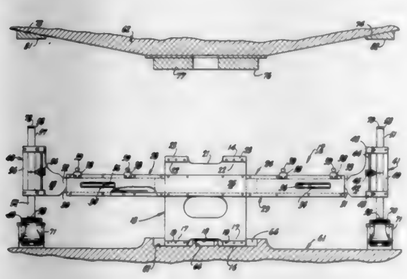
1. Gauge for measuring clearance in the body side bearings of rail cars having a body center plate rotatably supported on

the center plate bowl of a truck bolster including a pair of side bearing rollers positioned in closely spaced relation below the respective body side bearings for supporting engagement therewith as the car body tilts from side to side, said gauge comprising:

a. a vertical frame having a lower end shaped for face to face engagement with the upward facing surface of the center plate bowl when the car body is separated from the truck bolster, and an upper end shaped for face to face engagement with the downward facing conjugate surface of the body center plate;

b. a horizontal cross beam mounted on said frame and terminating at opposite ends located in the vicinity of the respective side bearing rollers when said lower end of said frame is in engagement with the upward facing surface of the center plate bowl and said frame is oriented so that said cross beam is in parallel relation to the longitudinal axis of the truck bolster;

c. a pair of graduated blades each translatably mounted on a respective end of said cross beam for vertical movement between a first location in which the bottoms of said blades are in engagement with the top surfaces of the respective subjacent rollers when said lower end of said frame is in down position in engagement with the center plate bowl, and a second location with the tops of said



blades in engagement with the bottom surfaces of the respective superjacent body side bearings when said upper end of said frame is in up position in engagement with the body center plate.

6. Gauge for a rail car truck bolster having a center plate bowl and a pair of side bearing rollers, said gauge comprising:

a. an upright frame having a lower portion shaped for face to face engagement with the upward facing surface of the center plate bowl;

b. a cross beam mounted on said frame and extending in opposite directions therefrom to terminate at opposite ends located in the vicinity of the respective side bearing rollers when said lower portion of said frame is in engagement with the upward facing surface of the center plate bowl and said frame is oriented so that said cross beam is in parallel relation to the longitudinal axis of the truck bolster;

c. a pair of graduated blades each translatably mounted on said opposite ends of said cross beam for movement toward and away from the subjacent one of said side bearing rollers; and,

d. indicia on said blades and on an adjacent portion of said ends of said cross beam for indicating the extent of variation from the normal difference in elevation between the side bearing rollers and the upward facing surface of the center plate bowl of a truck bolster of a specific size.

4,565,014

PROCESS FOR DRYING AMINOGUANIDINE BICARBONATE

David F. Doonan, Guilford, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed May 24, 1984, Ser. No. 613,698
Int. Cl.[4] F26B *3/02*
U.S. Cl. 34—36 10 Claims

1. A process for drying a wet cake of aminoguanidine bicarbonate comprising

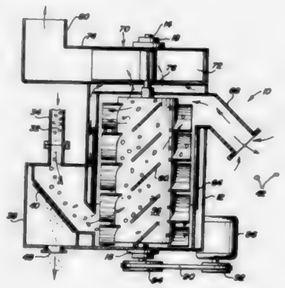
subjecting said wet cake of aminoguanidine bicarbonate to drying temperatures from about 35° C. to about 95° C. under a carbon dioxide-containing atmosphere for a sufficient amount of time to form a dried aminoguanidine bicarbonate product which is substantially free of moisture.

4,565,015

CENTRIFUGAL PELLET DRYER

Raymond E. Hundley, III, Eagle Rock, Va., assignor to Gala Industries, Inc., Eagle Rock, Va.

Filed Jul. 27, 1983, Ser. No. 517,679
Int. Cl.[4] F26B *11/12*
U.S. Cl. 34—182 6 Claims



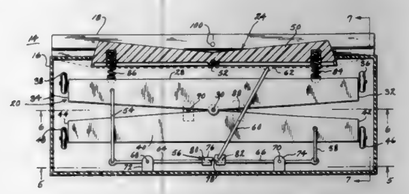
1. In a centrifugal pellet dryer of the type comprising a housing with a slurry inlet, a water discharge adjacent the bottom thereof for discharging most of the water from the slurry, a pellet discharge adjacent the top thereof, a peripheral screen interiorly of the housing in spaced relation thereto, a rotor with inclined blades positioned within the screen for conveying pellets upwardly and centrifugally discharging the pellets against the screen for further separation of water therefrom for discharge from the bottom of the housing and for discharge of pellets from the pellet discharge adjacent the top of the housing, means driving the rotor, that improvement comprising a fan supported above the housing and having an intake communicated with the top portion of the interior thereof, said fan including an air discharge for inducing countercurrent airflow into the pellet discharge at the upper end of the housing for more efficiently drying pellets as they exit from the housing, said pellet discharge comprising a downwardly inclined chute with an open lower end to admit air, said fan including an impeller disposed in a fan casing, said rotor being supported by a shaft having an upper end extending into the fan casing with the impeller being mounted on the shaft for rotation therewith, a single motor drivingly connected to said shaft for driving said rotor and impeller, said slurry inlet including means separating the pellets and water and discharging water to the water discharge and discharging wet pellets into the interior of the screen adjacent the bottom thereof, said screen having an outlet adjacent the top thereof in communication with the pellet discharge chute, said housing having an opening in the top portion thereof communicating with the fan casing for enabling air to flow inwardly through the chute into the housing and into the fan casing with the dry air entering the chute coming into contact with the pellets to remove additional moisture therefrom.

4,565,016

PERSPECTIVE DRAFTING INSTRUMENT

Ronald T. Horbinski, 3159 N. Humboldt Blvd., Milwaukee, Wis. 53212

Filed Jul. 6, 1984, Ser. No. 628,390
Int. Cl.[4] B43L *13/14*
U.S. Cl. 33—432 12 Claims



1. A drafting instrument for drawing perspective lines without physically pre-establishing and marking a vanishing point comprising:

a carriage;

a drawing blade on said carriage providing an edge for drawing said lines;

roller means pivotally mounted to said carriage and supporting said carriage for movement along a drawing surface; and

control means for adjustably pivoting said roller means such that each point along said drawing blade scribes an arc about a common point as said carriage moves, said drawing blade defining substantially parallel lines in perspective radiating substantially from said common point as a vanishing point as said carriage moves;

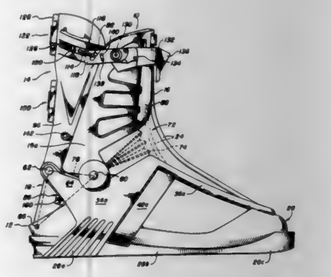
wherein said roller means comprises axle means pivotably mounted to said carriage and having wheel means rotatably secured thereto, said axle means and said wheel means having different pivot axes, and wherein said control means comprises means for adjustably setting the degree of pivoting of said axle means to selectively set the radius of said arc and the distance of said vanishing point.

4,565,017

SKI BOOT

Marco T. Ottieri, Manchester, Mass., assignor to Ottieri Enterprises, Boston, Mass.

Continuation of Ser. No. 655,905, Sep. 28, 1984. This application Oct. 26, 1984, Ser. No. 664,991
Int. Cl.[4] A43B *5/04*
U.S. Cl. 36—117 21 Claims



1. A ski boot having

a base element providing sole, toe and instep portions, and the sole portion having heel, arch and ball sections,

a forward first shin cuff element mounted to said base element for supportingly engaging the shin region of a wearer,

a rear second heel element mounted to said base element for supportingly engaging the back of the heel region of a wearer,

a rear third calf cuff element mounted to said base element for supportingly engaging the calf region of a wearer,

said first, second and third cuff elements being movable between closed positions for providing said supporting engagements and open positions for allowing a wearer to step in and alternatively out of the ski boot,

and further having the improvement comprising

A. first hinge connection means mountingly joining said first shin cuff element to said base element at a first distance above said sole portion, and located along the length of said base element above the forward end of the sole heel section,

B. second hinge connection means mountingly joining said second heel element to said base element at a second distance above said sole portion significantly shorter than said first distance and located along the length of said base element above the rear of the sole heel section, and

C. third hinge conection means mountingly joining said third cuff element to said base element at a third distance greater than said first distance and located along the length of said base element between said first and second hinge connections,

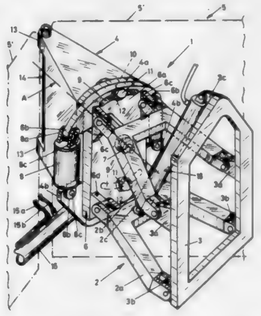
so that said first, second and third hinge connection means define, in vertical side view, the corners of a triangle disposed above the sole heel section.

4,565,018

PLOW FRAME FOR A FRONT-MOUNTED SNOWPLOW

Anders Oya, Fiane, Norway, assignor to Stiansen & Oya A/S, Fiane, Norway

Filed Jan. 16, 1985, Ser. No. 692,101
Claims priority, application Norway, Jan. 19, 1984, 840199
Int. Cl.[4] E01H *5/06*
U.S. Cl. 37—232 6 Claims



1. A plow frame for a front-mounted snowplow, for example of the twin shovel blade type which can be set in crosswise, diagonal or V-configurations, which via a linkage system with a coupling frame is detachably secured to a coupling frame on a vehicle, said plow frame having a front member to which the shovel blade is fastened and a rear member to which the linkage system is fastened, said two members being mutually pivotable about an axis disposed in the direction of movement of the plow, characterized in that the members have facing slide plates joined together by a pivot bolt which constitutes said axis of rotation, and each of the slide plates has a pair of opposing projections at the upper and lower portions thereof, respec-

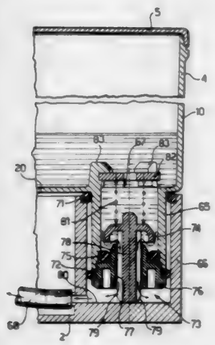
tively, wherein damper members are provided between said upper and lower projections.

4,565,019

STEAM IRON STAND WITH PIVOTABLE WATER RESERVOIR

Alfredo Cavalli, Via Galileo Galilei, 9, Pessano Con Bornago (Milan), Italy

Filed Oct. 22, 1984, Ser. No. 663,212
Claims priority, application Italy, Oct. 24, 1983, 23333/83[U]; Mar. 23, 1984, 21338/84[U]; Mar. 23, 1984, 21339/84[U]
Int. Cl.⁴ D06F *75/40*
U.S. Cl. 38—77.6 **17 Claims**



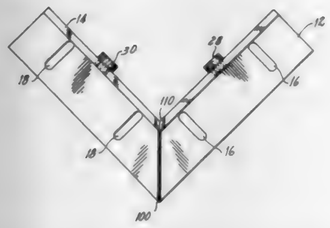
1. A steam iron assembly for domestic use comprising a base for an iron and a water reservoir in liquid communication with the iron via a pivotable coupling, characterised in that the reservoir (4) is mounted on the base (2) by the pivot coupling (7), (12) having a vertical axis of rotation, and that the pivot coupling comprises a vertical shaft (7) rigidly held by the base (2) and a vertical cylindrical seat (12) rigidly associated with the reservoir (4) and removably and rotatably coupled to the shaft (7).

4,565,020

FABRIC STRETCHING DEVICE

Dulce Beatriz, and Leonardo Beatriz, both of Dade County, Fla.

Continuation-in-part of Ser. No. 263,782, May 14, 1981, abandoned. This application Sep. 27, 1983, Ser. No. 535,665
Int. Cl.⁴ D06C *3/08*
U.S. Cl. 38—102.5 **3 Claims**



1. A stretching device for independently stretching fabric or canvas mounted on a stretcher frame in two directions, perpendicular to each other, comprising:

A. a first L-shaped rigid and flat support member for engaging adjacent structural members of said frame forming a corner joint and having apertures for fastening means connectable through said apertures to the adjacent engaged structural frame member for rigidly securing said first support member in place with respect to said adjacent engaged frame member;

B. a second rigid support member having an L-shape cross-section integrally built on the inner edge of said first support member and extending perpendicularly from it so that said second support member engages the inner walls of the adjacnet members engaged by said first support member, whereby said first and second support members comprise a pair of right angle channels that intersect at a corner joint;

C. a beveled groove located at said corner at said corner joint and extending from the outside corner of said first support member to the inside corner of said second support member and of such a depth therethrough whereby that when the two legs of said first support member are joined together thereby closing the groove therebetween, the bottom surfaces of said leg portions are inclined at an angle of slightly less than 180 degrees so that when said fastening means are tightened the surfaces of said structural frame members adjacent to the canvas are caused to separate from it;

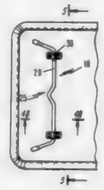
D. and tensioning means mountable in said second support member for engaging the adjacent frame member for movement in a direction parallel to its corresponding elongated aperture, whereby said device may be placed on a corner joint of said frame and each structural member may be separately tensioned by loosening its corresponding apertures, activating said tensioning means and thereafter tightening said fastening means to fix the position of the frame members.

4,565,021

PORTABLE IRONING BOARD

John W. Kay, Frankfort; Dale A. Shaffer, Lebanon, and Maurice H. Basquin, Lebanon, all of Ind., assignors to Harmeson Manufacturing Company, Inc., Frankfort, Ind.

Filed Aug. 6, 1984, Ser. No. 637,835
Int. Cl.⁴ D06F *81/02*
U.S. Cl. 38—137 **11 Claims**



1. A folding table, comprising:

(a) a table top;

(b) a first pair of coplanar legs connected respectively to opposite ends of a first cross rod and a second pair of coplanar legs connected respectively to opposite ends of a second cross rod, each first and second cross rod including an offset or crook portion formed intermediate opposite ends thereof, each offset portion lying in a plane offset with respect to the associated pair of legs; and

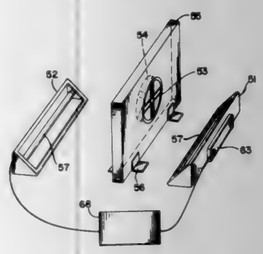
(c) means for pivotally connecting the first and second pairs of legs to an underside of the table at spaced locations from each other, said connecting means enabling each first and second pair of legs to pivot (1) away from the table into a predetermined setup position established by flush contact of the offset portion with the table underside so that the legs support the table above a support surface, and (2) towards the table into a foldup position wherein the legs are in flush contact with the table underside and extend towards the associated end of the table and the offset portion is disposed in a plane offset from the plane of the legs and the underside each offset portion thereby defining with the table underside an opening inclined away from the table in the foldup position, said opening being engageable with a mounting hook to store the table on a wall between periods of use whereby support forces generated by the weight of the table acting upon the mounting hook through the offset portion supported thereby tends to urge the legs into tight contact with the table underside.

4,565,022

METHOD AND APPARATUS FOR ANIMATING ILLUMINATED SIGNS AND DISPLAYS

William L. Chapin, 2410 W. Palm Ave., Orange, Calif. 92668

Filed Sep. 27, 1982, Ser. No. 423,991
Int. Cl.⁴ G09F *13/00*
U.S. Cl. 40—442 **23 Claims**



1. An article of manufacture comprising

(a) a first visibly transparent sheet,

(b) a first scene-view visibly fluorescent to ultraviolet radiation in the approximate wavelength range of 3000 Å to 4000 Å affixed to one side of said first sheet,

(c) at least one alternate visibly transparent sheet, and

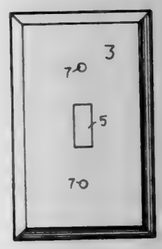
(d) an alternate scene-view visibly fluorescent to ultraviolet radiation in the approximate wavelength range of 3000 Å to 4000 Å affixed to one side of each said alternate sheet, said alternate scene view being oriented in proper relation to said first scene view, whereby when said first and alternate visibly transparent sheets are positioned on opposite sides of a visibly transparent, ultraviolet absorbing means and sequentially illuminated with ultraviolet radiation, a visual sensation of apparent motion between said first and alternate scene-views is produced.

4,565,023

INDICIA DISPLAY MEANS

G. Ross Carlisle, 391 Main St., Newfield, N.Y. 14867

Filed Sep. 6, 1983, Ser. No. 529,527
Int. Cl.⁴ G09F *7/00*
U.S. Cl. 40—486 **2 Claims**



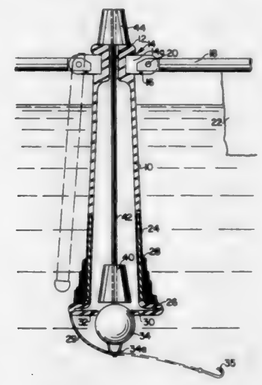
1. Indicia display means for identification of an associated utility circuit or the like comprising: an indicia-bearing member having a plurality of visible indicia thereon, the indicia being capable of identifying a plurality of utility circuits or the like, and a mask member proportioned and arranged to be superimposed on said indicia-bearing member, said mask member having areas which, when selectively perforated by a user, expose one or more of said indicia on the indicia-bearing member to view, said mask member having visible indicia on the reverse side thereof, corresponding to the indicia carried by said indicia-bearing member but located in mirror-image relation with respect to the location of the indicia on said indicia-bearing member, whereby the associated utility circuit or the like is selectively displayed from the plurality of possible utility circuits represented by the indicia.

4,565,024

ICE FISHING DEVICE

Leslie R. Maerz, P.O. Box 1612, Stony Plain, Alberta T0E 2G0, Canada

Filed Oct. 24, 1983, Ser. No. 544,852
Claims priority, application Canada, Dec. 30, 1982, 418761
Int. Cl.⁴ A01K *97/12*
U.S. Cl. 43—17 **15 Claims**



1. An ice fishing device comprising:

a hollow body with means for suspending said body in an ice fishing hole with at least a portion of said body below water level, said body having an opening at the bottom and the top into an interior space within the body,

a bouyant, movable closure for said bottom opening capable of normally preventing ingress of water into said space when said body portion is submerged,

means vertically movable, by means of buoyancy, within said space in response to entry of water through said bottom opening, said vertically movable means being connected through the top opening to indicating means visible above the ice fishing hole at least when there is water in said interior space at a level similar to that outside the body, and

a fishing line held axially coiled about said body near the bottom thereof substantially centrically combined with said bottom opening so as to be pulled easily therefrom without the necessity of body rotation, said line being operatively connected to said bottom closure to cause displacement thereof when the line is pulled by a fish, thus allowing water to enter the previously empty interior space of said body, thereby causing the vertically movable means to rise due to its buoyancy so that the indicating means signals that the line has been pulled by a fish.

4,565,025

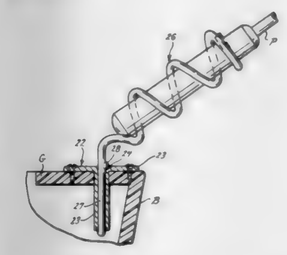
FISHING POLE MOUNT

William L. Behrle, 385 Grand Terrace Ct., Fenton, Mo. 63026

Continuation-in-part of Ser. No. 481,839, Apr. 4, 1983. This application Dec. 8, 1983, Ser. No. 559,299

Int. Cl.⁴ A01K *97/10*

U.S. Cl. 43—21.2 **1 Claim**



1. An arrangement for holding fishing poles and the like comprising: a holder for a pole that provides an elongated opening to receive and surround the handle of the pole, the holder having a shank extending therefrom, and a fitting to be secured to a boat or the like and to receive and secure the holder thereto, the fitting comprising a flat plate and a projecting tube secured to the under side of the plate and extending downwardly therefrom, the plate having a hole through it aligned with the opening through the tube, the angle of the tube to the plate and the angle of the shank to the axis of the holder being such as to dispose the holder and a pole therein at an angle to the plate, the arrangement being such that the shank of the holder can be removably inserted into the tube through the hole and be held there with its axis projecting upwardly and outwardly, the fitting being substantially flat to the upper surface upon which it is mounted so that when the holder is removed therefrom, there is no substantial obstruction produced by the fitting, the holder comprising a helical coil at a fixed acute angle with the shank, and said shank depending therefrom just sufficiently far to stabilize the holder when holding a pole onto the boat, and a lug and notch arrangement for interengagement between the shank and the plate to limit descent of the shank into the socket and to limit rotation of the shank in bracket, the lug being a single nub-like element formed integrally with the material of the shank extending laterally from one side of said shank, and a single notch being formed in the plate adjacent the upper surface thereof and extending downwardly thereinto only so far as to receive the lug and thereby to limit the descent of the shank into the socket.

4,565,026

REMOTE RELEASE DEEP TROLLING SYSTEM

August E. Bohme, 5759 Larson Pl., West Vancouver, British Columbia, Canada (V7W 1S5)

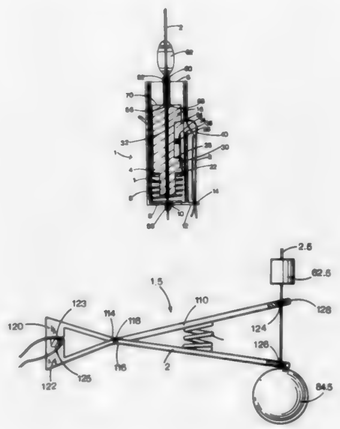
Filed Sep. 15, 1983, Ser. No. 532,370

Int. Cl.⁴ A01K *91/00*

U.S. Cl. 43—43.12 **9 Claims**

4. A device as claimed in claim 1, wherein the pin is hingedly connected to the second member in a manner to permit the free end to swing out through the aperture when the release means is struck.

9. A fishing line connecting device having means for connecting the device to a first line or cable for use below the surface of a body of water; means for releasably connecting the device to a second line; release means for releasing the second line when the release means is struck; a pair of elongated members pivotally connected together; and means resiliently biasing the members so a first two adjacent ends of the members are together and a second two adjacent ends are apart, the means for connecting to the first line or cable comprising apertures through the members near the second ends, the means for releasably connecting comprising the first two ends



of the members and the release means comprising one of the second ends.

4,565,027

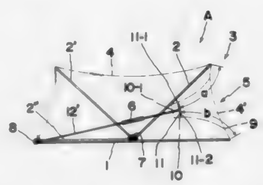
BASKET FOR CATCHING FISH AND THE LIKE

Megumi Sato, 423 Ohaza Nanatsuie, Yanagawa-shi, Fukuoka, Japan

Filed Nov. 7, 1984, Ser. No. 668,949

Int. Cl.⁴ A01K *69/08*

U.S. Cl. 43—102 **1 Claim**



1. A basket for catching fish and the like comprising: a basket member composed of a substantially circular base frame, substantially semi-circular right and left supporting rings disposed at diametrically opposite positions of said circular base frame, a three-member frame composed of a plurality of semi-circular movable frame members both ends of which are supported by said supporting rings such as to be rotatable forwardly and backwardly around said supporting rings and at least two of which are rotatably disposed at positions above and equally distant from said circular base frame, and a net portion which is stretched around the outer peripheral surface of said three-member frame; an opening for fish and the like provided on a side surface of said basket member; an entrance portion made of a net portion which is extendingly connected to the inner periphery of said opening and which is tapered such as to become narrower and narrower from the inner periphery of said entrance portion toward the inside of said basket member; an inner entrance frame disposed at the inner end of said entrance portion for defining said inner end of said entrance portion; an exit checking portion made of a net portion which is extendingly connected from said inner end to the inside of said entrance portion such that the end of said exit checking portion remains in a free state by cutting said net portion which incorporates said exit checking portion; and a hook for allowing said basket to be freely unfolded and folded and for retaining at least one movable frame member on said circular base frame.

4,565,028

CHRISTMAS TREE STAND

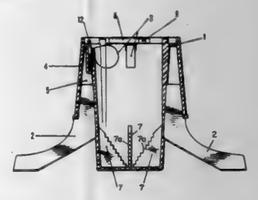
Gerhard Stephan, Ottawa, Canada, assignor to AVA Tech International Ltd., Ottawa, Canada

Filed Apr. 18, 1984, Ser. No. 601,640

Claims priority, application Canada, Apr. 25, 1983, 426618; Jan. 17, 1984, 445421

Int. Cl.⁴ A47G *7/00*

U.S. Cl. 47—39 **10 Claims**



1. A stand for trees or poles comprising a cylindrical container supported by a plurality of legs;

said container comprising a body having a unitary bottom, side wall, and an open top;

said wall having a plurality of pockets opening in the same direction as said top and being formed therein near the upper interior thereof;

a plurality of springs each having a straight portion forming a downwardly directed end inserted within a respective pocket; and a closed loop extending into said body; and

a plurality of ribs integrally formed with said bottom and side wall of said body near the bottom interior thereof, said ribs having an edge conically inclined outwardly from the bottom toward the top and being stepped to securely engage a tree inserted in said body, said loops and said ribs cooperating to maintain said tree vertical.

4,565,029

TRAFFIC RESPONSIVE CONTROL SYSTEM FOR AUTOMATIC SWINGING DOOR

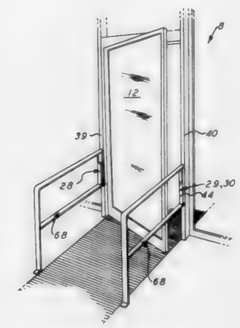
Henning N. Kornbrekke, Burlington; David M. Cirkot, Ansonia, and Anthony R. Ranaudo, Naugatuck, all of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Nov. 28, 1983, Ser. No. 555,565

Int. Cl.⁴ E05F *15/20*

U.S. Cl. 49—25 **27 Claims**

1. In an automatic door installation having a swinging door, a power operator for swinging the door between a closed position thereof closing a doorway opening and an open position thereof on a swing side of the doorway, and a traffic responsive control system comprising radiant energy emitter and receiver means for sensing traffic along a path of travel through the doorway opening, and door control means operated by the traffic sensing means to automatically open the door for traffic to pass along said path of travel through the doorway opening, the improvement wherein the traffic sensing means comprises at least one multiple emitter sensor having a bank of a plurality of radiant energy emitters for emitting radiant energy beams having axes angularly spaced along the said traffic path of travel and collectively providing an emitted energy coverage area intersecting the said traffic path of travel and radiant energy receiver means mounted adjacent the bank of emitters for receiving reflected radiant energy emitted from the bank of emitters, the said one multiple emitter sensor being a swing side sensor mounted adjacent one side of the doorway opening to provide a said coverage area on the swing side of the doorway which intersects the path of travel of the swinging door as it is swung between its said closed and open positions, and wherein the traffic responsive control system further



comprises door position responsive means for selectively deactivating and reactivating the emitters of the said swing side sensor to avoid sensing the door as it swung between its said closed and open positions.

4,565,030

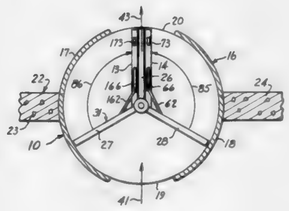
EMERGENCY EXIT SYSTEMS FOR REVOLVING DOORS

William A. LaSance, Altadena, Calif., assignor to Dynametric, Inc., Pasadena, Calif.

Filed Dec. 27, 1983, Ser. No. 566,030

Int. Cl.⁴ E05D *15/02*

U.S. Cl. 49—44 **24 Claims**



1. A method for providing an emergency exit for people through a revolving door having leaves angularly spaced from each other in an operating condition and rotatable in an enclosure having opposed inside and outside openings relative to a building wall, comprising the steps of:

continuously imposing on said leaves a bias tending to fold said leaves toward each other;

releasably retaining said rotatable leaves angularly spaced from each other against said bias in said operating condition;

releasing said angularly spaced leaves in response to an emergency condition; and

providing an emergency exit through said openings by employing said bias to fold said released leaves toward each other.

4,565,031

RAIL ARRANGEMENT FOR FLUSH SLIDING DOOR PANELS

Kenshiko Sakamoto, Tokyo, Japan, assignor to Sugatsune Industrial Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 574,881

Claims priority, application Japan, Feb. 2, 1983, 58-15903; Dec. 31, 1983, 58-251425

Int. Cl.⁴ E05D *15/20*

U.S. Cl. 49—130 4 Claims



1. A double panel door arrangement wherein the two panels will be disposed with their inner edges flush up against one another when the door is closed and one panel will be superposed over the other when the door is open, said arrangement comprising in combination:

(a) an elongated frame (1) defining a plane and a frame inner and outer side, with upper and lower wall portions (1*a*, 1*b*), a defined travel path (2, 3) with stop ends disposed longitudinally across said frame, said travel path having a linear portion (2*a*) and outer end sections;

(b) inwardly bent oblique equal path portions (2*b*, 2*c*, 3*b*, 3*c*) at said end sections, travel path switching portions (6, 7) in the vicinity of the ends of said linear portion (2*a*), a slidable base plate (18) holding said switching portions (6, 7) first and second route portions (19, 20) over said base plate (18), said route portions (19, 20) being selectively slidable over said base plate;

(c) equally sized rectangular panels (4, 5) with inner edges which are to abutt each other in the door closed position, said panels being disposed to slide along said travel path; and,

(d) one and another runner means (14, 15) affixed to said panels to travel said travel path and engage said route portions (19, 20), one runner means being at said stop ends at the door closed position and engaged with said oblique path portion as a fulcrum, the other runner means engaging said switching position (6, 7) route portion so as to move one panel obliquely when opening the door and then guiding said panel to be superposed alongside the other panel when the door is opened.

4,565,032

EDGE GUARD

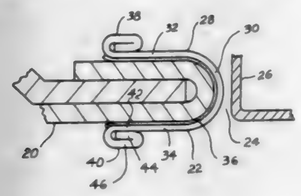
Robert Adell, Sunnyvale, Tex., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Filed Jun. 6, 1984, Ser. No. 617,766

The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.

Int. Cl.⁴ B60J *5/00*

U.S. Cl. 49—462 7 Claims



1. In combination with the trailing edge of a swinging metal closure on a vehicle, which trailing edge in closed position of the swinging metal closure, is separated from an adjacent panel of the vehicle by a gap, an edge guard fitting onto the trailing edge comprising a metal strip formed into a channel having an interior and an exterior and comprising a base and inner outer legs extending from said base for applying a self-retention force against opposite side of the trailing edge, insulating means disposed between said channel and the trailing edge at least along the force-applying points of the legs for insulating the metal of the edge guard channel from that of the trailing edge, and beads integral with and at the distal ends of said legs, at least one of said beads comprising a double thickness fold of the metal strip folded back onto the corresponding leg so that three thicknesses of metal result at the force-applying point of that leg, wherein the combined thicknesses of said strip and of said insulating means at said base are less than the thickness of said gap, and in which said double thickness fold comprises an outer thickness portion and an inner thickness portion of said strip, said inner thickness portion being contiguous with a lengthwise edge of the metal strip, and in which said insulating means lines the entire interior of said channel but terminates at the distal ends of said legs so as to leave the exterior of the channel uncovered by any insulating means.

4,565,033

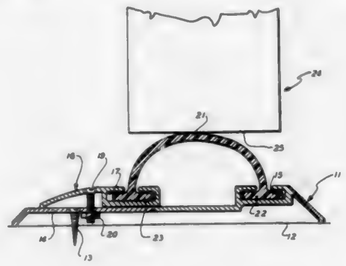
THRESHOLD HAVING A VERTICALLY ADJUSTABLE FLEXIBLE WEATHERSTRIP

Lionel Tinfow, 24 Oak Pl., North Caldwell, N.J. 07006

Filed May 9, 1984, Ser. No. 608,352

Int. Cl.⁴ E06B *1/70*

U.S. Cl. 49—468 1 Claim



1. A threshold having a vertically adjustable, flexible weatherstrip comprising:

(a) a unitary base member having an upper surface, spaced apart first and second edges engagable to a supporting surface beneath a door and a pair of spaced apart ends,

(b) the base member having an uninterrupted, upwardly opening channel formed integrally on its upper surface extending from end to end thereof, and generally adjacent to and parallel with one of the edges, the channel being upwardly open uninterruptedly from end to end of the base member, the said opening being dimensioned more narrow than the channel in a direction normal to the said edges;

(c) unitary weatherstrip adjustment means adjustably movably mounted on the upper surface of and extending uninterruptedly from end to end of the base member and positioned generally adjacent to the edge thereof opposite the first said channel, the said adjustment means having both an upper surface and an edge engagable to the upper surface of the base member,

(d) the weatherstrip adjustment means having an uninterrupted, upwardly opening channel formed integrally on the upper surface thereof generally opposite to and extending from end to end thereof and parallel with the said edge thereof, the upward opening to the channel on the weatherstrip adjustment means extending uninterruptedly along the entire length of the edge, being open at both ends and dimensioned more narrow than its communicating channel in a direction normal to the edge of the adjustment means,

(e) a flexible generally upwardly convex weatherstrip detachably mounted to the base member and the adjustment means having a first edge with a crossectional configuration conforming to the crossectional configuration of the channel on the upper surface of the base member and a second edge with a crossectional configuration conforming to the crossectional configuration of the channel on the upper surface of the adjustable means,

(f) the first and second edges on the weatherstrip being slidably mounted in the channel on the base member and the channel on the adjustment means respectively, the weatherstrip extending through the upward openings of each said channel uninterruptedly from end to end of the threshold,

(g) retaining means extending between the base member and the adjustment means, the adjustment means being movable in a direction toward and from the channel formed on the base means and being fixedly positionable by the retaining means at a range of distances from said channel sufficient to alter upwardly and downwardly the apex of the upwardly convex weatherstrip.

4,565,034

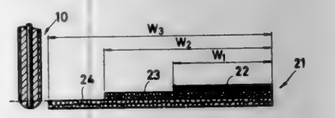
GRINDING AND/OR CUTTING ENDLESS BELT

Shinji Sekiya, Tokyo, Japan, assignor to Disco Abrasive Systems, Ltd., Tokyo, Japan

Filed Jan. 3, 1984, Ser. No. 567,682

Int. Cl.⁴ B24D *11/00*

U.S. Cl. 51—401 3 Claims



1. An endless belt made of grindstone comprising a plurality of layers of electrodeposited abrasive grains and being provided with no base material for supporting said layers, the grindstone consists of a plurality of parts, each of which comprises a plurality of layers of electrodeposited abrasive grains and the grain sizes of which are different from one another, wherein said parts of said grindstone are laminated stepwise with one another so that the width of the upper part is smaller than that of the lower part and the lower part is partially exposed out of at least one side end portion of the upper part.

4,565,035

IMPELLER EVEN DISCHARGE APPARATUS

James H. Carpenter, Jr., and Ronald L. Mullins, both of Hagerstown, Md., assignors to Keanecott Corporation, Cleveland, Ohio

Filed Apr. 19, 1984, Ser. No. 600,731

Int. Cl.⁴ B24C *5/06*

U.S. Cl. 51—434 7 Claims

1. A throwing wheel assembly for throwing impact blast media at high speed, comprising:

a rotor, the rotor being rotatable about a longitudinal axis;

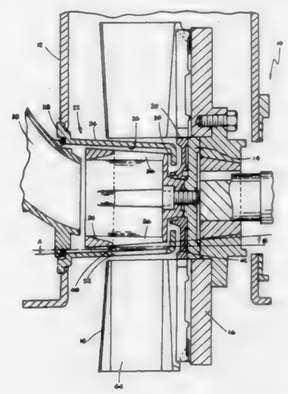
a plurality of radially extending vanes connected to the rotor for rotation therewith, the vanes each having a radially innermost portion spaced a predetermined distance from the longitudinal axis of the rotor so as to define an opening centered around said longitudinal axis;

a generally frusto-conical impeller connected to the rotor for rotation therewith, the impeller being disposed within the opening defined by the vanes and centered about said longitudinal axis, the impeller being adapted to receive impact blast media therein, the impeller including a circumferentially extending outer wall having a radially extending opening through which impact blast media can be directed;

a generally frusto-conical casing concentrically disposed within the opening defined by the vanes and about the impeller, the casing including a circumferentially extending inner wall in proximity with the outer wall of the impeller, the inner wall having a radially extending opening through which impact blast media received from the impeller can be directed onto the vanes;

a feed spout attached to said housing in spaced relation to said impeller; and

the outer wall of the impeller and the inner wall of the casing being disposed in a non-parallel relationship, the outer wall of the impeller and the inner wall of the casing being positioned closest to each other adjacent said feed support.



4,565,036

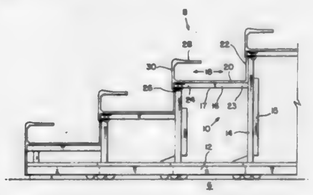
FRONT-SUPPORTED TELESCOPING SEATING STRUCTURE

Hugh M. Lyman, Jr., P.O. Box 38, Enumclaw, Wash. 98022

Filed Feb. 6, 1984, Ser. No. 577,060

Int. Cl.⁴ F04H *3/12*

U.S. Cl. 52—9 20 Claims



1. A telescoping seating structure having a plurality of rows, capable of horizontal movement across a floor surface between a rearward retracted position for storage against a rear wall, with a plurality of rows superposed vertically above each other, and a forward extended position for seating use, with the rows arranged stepwise downward from the rear wall, wherein each row comprises:

two or more row assemblies, each having a carriage assembly supportable on a floor surface by a plurality of wheels and capable of horizontal movement across the floor surface, a substantially vertical post rigidly attached to the carriage assembly and extending upwardly to a predetermined height above the floor surface, and a cantilevered

arm rigidly attached to the vertical post a preset distance below the top of the vertical post and extending forward a preset distance from the vertical post;

a seating assembly attached to the cantilevered arm and spanning laterally between the row assemblies having a substantially vertical rear riser positioned above a fixed end of the cantilevered arm and extending from an upper surface of the cantilevered arm to a point just below the upper end of the vertical post, a horizontal tread panel engaging the upper surface of the cantilevered arm and extending forwardly from the fixed end of the cantilevered arm to a free end of the cantilevered arm, a substantially vertical front riser adjacent to the free forward end of the cantilevered arm and extending vertically from a point below a lower surface of the cantilevered arm to a point at a preset distance above the upper surface of the cantilevered arm, and a substantially horizontal bleacher-type seat rigidly connected to the front riser and extending rearwardly from the front riser toward the rear riser; and

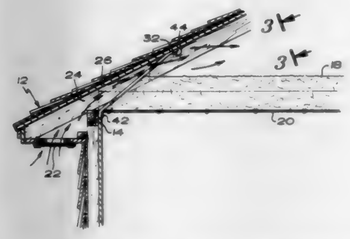
a front support extending below both the lower surface of the cantilevered arm and a lower edge of the front riser, to a position to engage an upper surface of the seat of an adjacent row below for supporting the seat, front riser, tread panel and cantilevered arm when the structure is in the retracted position with the rows superposed vertically above each other.

4,565,037

INSULATION HOLD-DOWN DEVICE

Robert W. DeSchane, 331 - 4th Ave. SW., Perham, Minn. 56573

Filed Aug. 6, 1984, Ser. No. 638,263
Int. Cl.⁴ E04B *7/18, 7/02*
U.S. Cl. 52—95 **4 Claims**



1. An insulation hold-down device in combination with a structure comprising a plurality of spaced apart joists, insulation located between said joists, a bearing plate and a roof panel, said hold-down device comprising:

an elongate insulation hold-down panel positioned between and substantially parallel to a pair of said joists and having first and second ends, said hold-down panel having a width dimension substantially narrower than the spacing between adjacent joists,

a first attachment flange integral with said first end and extending at an angle with respect to said panel,

a second attachment flange integral with said second end and extending at an angle with respect to said panel,

means engaging said first flange and attaching the latter to said bearing plate, and

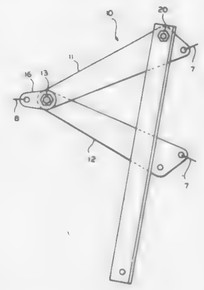
means engaging said second flange for attaching the latter to said roof panel whereby said hold-down panel depresses said insulation located between a pair of joists to form an air passage adjacent said roof panel.

4,565,038

YOKE FOR USE WITH GUYED STRUCTURES

Arnold M. Milbright, Red Wing, and Peter A. Hampe, Theilman, both of Minn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,825
Int. Cl.⁴ E04H *12/20;* **E04B** *1/00*
U.S. Cl. 52—146 **14 Claims**



1. A guy yoke for use in a guyed structure to terminate two support guys coupled to said structure and to transfer loads exerted on said support guys to anchor means, said guy yoke comprising:

a first arm;

a second arm;

first means for pivotally coupling one end of said first arm to one end of said second arm, said first means being coupleable to said anchor means;

a spreader arm;

a first shear pin coupling one end of said spreader arm to the other end of said first arm;

a second shear pin coupling the other end of said spreader arm to the other end of said first arm;

second means adapted for coupling said other end of said first arm to a first support guy;

third means adapted for coupling said other end of said second arm to a second support guy;

said spreader arm maintaining said first and second arms in a first predetermined relative position when forces exerted on said yoke by said first and second support guys are below a predetermined force;

at least one of said shear pins being sheared when said forces exceed said predetermined force whereby said spreader arm no longer maintains said first and second arms in said first relative position and said first and second arms assume a second position relative to each other.

4,565,039

FLOOR STRUCTURE FOR REDUCING VIBRATION

Sadao Oguro, Chofu; Yukio Sakagami, Mitaka, and Takayuki Ando, Yokosuka, all of Japan, assignors to Ohbayashi-Gumi, Ltd., Osaka and Tokico Ltd., Kanagawa, both of, Japan

Filed Mar. 7, 1984, Ser. No. 587,000
Int. Cl.⁴ E02D *27/34;* **E04H** *9/02*
U.S. Cl. 52—167 **7 Claims**

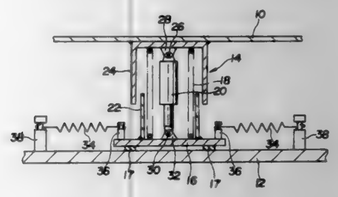
1. A floor structure for reducing vibration, said structure comprising:

a panel for mounting a load thereon and positioned over a base floor;

a plurality of shock absorbers disposed between said panel and said base floor and elastically supporting said panel;

each said shock absorber comprising a base plate mounted on said base floor in such a manner that said base plate is slidable in the horizontal direction with respect to said base floor, a longitudinal spring fitted between said panel and said base plate, and a damper having a first end swingably connected to said base plate and a second end swingably connected to said panel; and

at least one of said shock absorbers being provided with a plurality of horizontal springs maintaining said one of said shock absorbers at a predetermined position with respect to said base floor when no vibration occurs, each said horizontal spring having a first end secured to said base plate and a second end secured to said base floor.

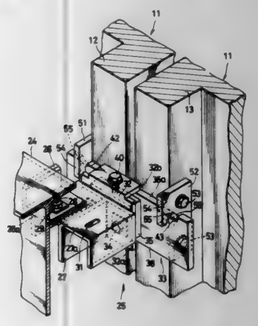


4,565,040

UNIT CURTAIN WALL

Hiromitsu Kaminaga, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 600,162
Claims priority, application Japan, Apr. 14, 1983, 58-54781[U]
Int. Cl.⁴ E04H *1/00*
U.S. Cl. 52—235 **8 Claims**



1. A unit curtain wall comprising:

(a) a plurality of curtain wall units;

(b) a pair of first and second engagement portions disposed on horizontally adjacent vertical edges of each pair of adjacent curtain wall units; and

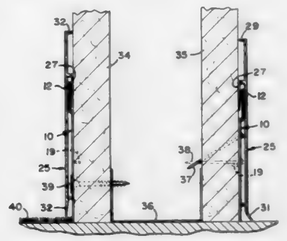
(c) a fastener adapted to be adjustably mounted on a building frame and supporting said pair of adjacent curtain wall units, said fastener having a pair of first and second slots receiving said first and second engagement portions, respectively, said first slot having a width small enough to prevent said one engagement portion from moving horizontally parallel to said curtain wall units, said second slot having a width large enough to allow said second engagement portion to move horizontally parallel to said curtain wall units, whereby one of said pair of adjacent curtain wall units is postionally movable with respect to said fastener in a direction horizontally parallel to said curtain wall units.

4,565,041

MOVABLE PARTITION BASE ATTACHMENT

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed May 9, 1983, Ser. No. 492,894
Int. Cl.⁴ E04B *1/00*
U.S. Cl. 52—288 **8 Claims**



1. A base trim and attachment assembly for mounting at a lower base of a wall panel, comprising,

a base attachment clip formed of sheet metal having a body portion, an offset margin substantially parallel to said body portion, an integral barb extending laterally from said body portion and adapted to penetrate the surface of said wall panel, and an elongate aperture of uniform width throughout provided in the body portion of said base attachment clip to receive a nail to be engaged in said wall panel at an acute angle,

the body portion of said attachment being provided with longitudinal stiffening ribs each having an upper end and a lower end, the lower end of said longitudinal stiffening ribs being cut to provide detents, and

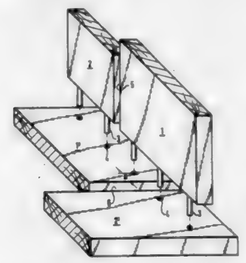
a base trim member having a body portion and a flange offset from said body portion defining a pocket received in the offset margin of said base attachment clip for retaining said base trim in mounted position on said wall panel, said base trim being provided with a lower rib engaging the cut ends of said longitudinal stiffening ribs and to be detained thereby, said base trim being readily demountable from said base attachment clip.

4,565,042

PLUG CONNECTION FOR BOARDS ABUTTING AT AN ANGLE

Florian von Poschinger-Camphausen, Froschhausen 33, 8110 Murnau/Obb., Fed. Rep. of Germany

Filed Jan. 16, 1984, Ser. No. 571,200
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1983, 3301301; Mar. 22, 1983, 3310370
Int. Cl.⁴ E04C *1/14*
U.S. Cl. 52—585 **8 Claims**



1. Boards connected at an angle, preferably a right-angle, to

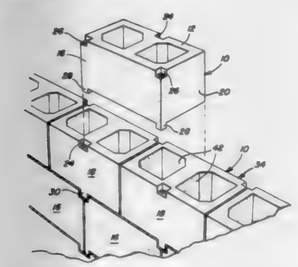
each other and of which boards at least one is provided with spaced holes on a line across its face and at least one other board is provided in a planar edge with holes aligned with the holes of the first-mentioned board, and connecting pins being frictionally held in the holes of said boards, characterised in that in the planes defined by the boards at an angle to at least one of the other boards of different width and substantially the same total width are arranged so that the boards in one plane cover the gap between the boards in the other plane, the narrower boards being provided with at least two holes and the wider boards being provided with at least three holes and the spacing of the holes in all of the boards being equal and the spacing (a) of the outer holes from the nearest board edges in lines drawn through the holes being less than half the spacing of the holes from each other.

4,565,043

BUILDING BLOCK WITH REINFORCEMENT AND/OR POSITIONING LUGS AND RECESSES

Joseph A. Mazzarese, 6263 SW. 44th St., South Miami, Fla. 33155

Filed Sep. 2, 1983, Ser. No. 528,852
Int. Cl.⁴ E04C *1/10*
U.S. Cl. 52—593 **15 Claims**



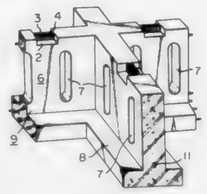
1. A plurality of building blocks for compact interfitted stacking in vertically aligned relation during storage and transport and also for interfitted engagement between adjacent courses of blocks when forming a wall incorporating lengthwise staggered adjacent courses of blocks, each of said blocks including rectangular top and bottom parallel faces, parallel front and rear side surfaces and opposite end surfaces, said bottom and top faces including coacting outwardly projecting and opening projections and recesses, respectively, said top face recesses in each of said blocks including a single central recess opening upwardly through the longitudinal mid-portion of the longitudinal edge of the block top face adjoining one side surface of said block and also opening horizontally outwardly of the longitudinally mid-portion of the upper marginal edge of said one side surface and a single pair of end recesses opening upwardly through the terminal end portions of the longitudinal edge of said top face adjoining the other side surface of said block and also opening horizontally outwardly of the adjacent terminal ends of the upper edges of the corresponding side and end surfaces of said blocks, said bottom face projections, on each block, including a single central projection projecting downwardly from the longitudinal mid-portion of the longitudinal edge of the bottom face adjoining said one side surface of said block and a single pair of end projections projecting downwardly from the terminal end portions of the longitudinal edge of said bottom face adjoining the other side surface of said block, said recesses and projections of said blocks being positioned for interfitting engagement with the projections and recesses of vertical adjacent blocks when said blocks are vertically stacked in substantially full vertically registered positions and said front surfaces of said blocks face in the same direction and also for interfitting engagement with the projections and recesses of adjacent blocks when said blocks are disposed in a horizontal course of blocks vertically sandwiched between stacked courses of similar end aligned blocks and adjacent courses of blocks are lengthwise staggered relative to each other and the front surfaces of the blocks of adjacent courses face in opposite directions.

4,565,044

METHOD OF FORMING BUILDING FOUNDATION WITH VENTS

Susumu Takahara, 1217, Ijiri 3-chome, Minami-ku, Fukuoka-shi, Fukuoka-ken, Japan

Division of Ser. No. 313,194, Oct. 20, 1981, abandoned. This application Mar. 12, 1984, Ser. No. 587,851
Claims priority, application Japan, Feb. 27, 1981, 56-27579[U]
Int. Cl.⁴ E04B *1/16, 1/70*
U.S. Cl. 52—741 **8 Claims**



1. A method for forming a wooden building foundation assembly including a concrete foundation provided on the top with a plurality of ventilation areas in spaced relationship along the length of the foundation and a wooden sill built on the concrete foundation, comprising the steps of placing concrete into a foundation mold to form the concrete foundation, forming pairs of opposing recesses on the top of the concrete foundation on the opposite sides of the foundation while the concrete is in a partially solidified condition with the two opposing recesses in each pair being positioned spaced from each other, forming an intermediate perforated communication wall between the opposing recesses of each pair during said step of forming pairs of opposing recesses, and building the wooden sill on the concrete foundation after solidification of the concrete.

4,565,045

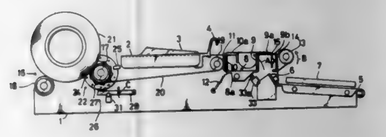
WRAPPING DEVICE

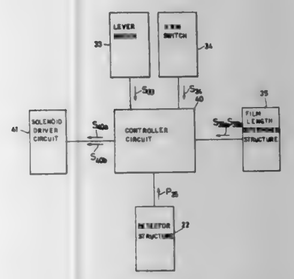
Shigeru Ikemoto, 36-banchi Honmaeda-cho, Nakagawa-ku, Japan

Filed Mar. 7, 1983, Ser. No. 473,111
Claims priority, application Japan, Mar. 11, 1982, 57-38811; Mar. 31, 1982, 57-54392; Oct. 8, 1982, 57-177974
Int. Cl.⁴ B65B *57/02*
U.S. Cl. 53—64 **4 Claims**

1. A wrapping device comprising
(a) a frame having a pair of rollers for rotatably supporting a film roll and a spaced film withdrawal roller rotatably carried therein for withdrawing film from the roll;
(b) a top cover member forming the top surface of said frame and on which a product can be partially wrapped with film as the film is withdrawn from the film roll;
(c) an elongated rocking bar rockably mounted on said frame, a portion of said rocking bar being biased by the film to press against the film withdrawal roller with the film sandwiched therebetween, the rocking bar being pivoted by the film from an initial position to a switch activating position;
(d) a press roller pivotally mounted on the frame in position to receive the partially wrapped product, the press roller being pivotally moved upon contact by the product;
(e) a means operatively connected to one of said pair of rollers for detecting the length of withdrawn film and to produce a detector signal in accordance therewith;

(f) a control circuit means operatively connected to said means for detecting the length of withdrawn film for receiving the detector signal and comparing it with a predetermined value, said control circuit means being adapted to produce a primary or secondary lock signal when the detector signal corresponds with the predetermined value, said control circuit means being further adapted to compare the detector signal with the secondary predetermined value after comparing the detector signal with the primary predetermined value and producing the primary lock signal;
(g) a locking means operatively connected to said roller of





said pair of rollers for receiving said primary or secondary lock signal to lock one of said rollers to prevent the film from being further withdrawn;
(h) a first lever switch adjacent to and actuated by the rocking bar when the rocking bar is pivoted to its said switch activating position, the first lever switch being actuated to release the locking means from the influence of the primary lock signal; and
(i) a second lever switch adjacent to and actuated by said press roller when the press roller is pivotally moved by the product, the second lever switch being actuated to release the locking means from the influence of the secondary lock signal.

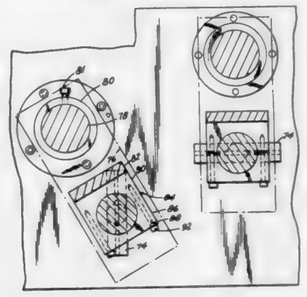
4,565,046

APPARATUS FOR MANUFACTURING POCKETED COIL SPRINGS

Walter Stumpf, Dunwoody, Ga., assignor to Simmons U.S.A. Corporation, Atlanta, Ga.

Filed Dec. 24, 1984, Ser. No. 685,573
Int. Cl.⁴ B29C *65/08, 65/18;* **B65B** *9/08*
U.S. Cl. 53—114 **7 Claims**

1. An apparatus for making a series of pocketed coil springs comprising:
means defining a guide path for receiving a fabric strip for longitudinal movement therealong;
drive means for advancing a fabric strip intermittently along said guide path;
inserter means adjacent said guide path for depositing a compressed coil spring between plies of a fabric strip;
first weld head means operatively associated with said guide path means for thermally welding said plies together along a weld line extending in the longitudinal direction;
second weld head means operatively associated with said guide path means for thermally welding said plies together along a weld line extending transversely of a longitudinally moving strip;
the improvement comprising means for rotating one of said weld head means about a first axis, means for rotating said



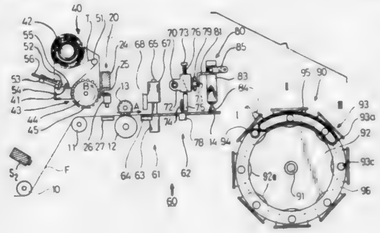
one of said weld head means about a second axis parallel to and located a selected distance from said first axis, whereby the distance between said first and second weld head means can be varied while their orientation with respect to said guide path means remains the same.

4,565,047

APPARATUS FOR PACKAGING FOLDED HOSIERY

Masao Nishikawa, Katsuragi, and Seiichi Saibe, Kashihara, both of Japan, assignors to Monarch Knitting Machinery Corporation, Glendale, N.Y. and Takatori Machinery Mfg. Co., Ltd., Osaka, Japan

Filed Sep. 12, 1983, Ser. No. 531,342
Claims priority, application Japan, Sep. 18, 1982, 57-162734
Int. Cl.⁴ B65B *9/08, 25/20*
U.S. Cl. 53—137 **13 Claims**



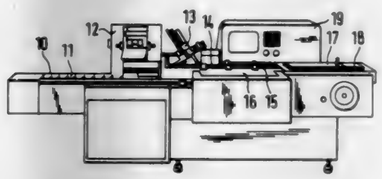
1. Apparatus for packaging folded hosiery in a pouch, said apparatus comprising pouch forming means to automatically form pouches and pouch closing flaps of a lengthwise extending sheet of plastic film of indefinite length doubled back on itself along a lengthwise extending off center fold line to provide a pair of doubled film layers of the film extending from the fold line and to provide a single layer flap of the film in lateral extension of one of the doubled film layers, means for applying one face of a double-faced adhesive tape to the other of the doubled film layers, means for automatically inserting folded hosiery into the so formed pouches with the double-faced adhesive tape applied to said other of the doubled film layers, and means for thereafter closing the pouches with the flaps so that the flaps are adhesively attached to the other face of the double-faced adhesive tape.

4,565,048

CONVERTIBLE-FORMAT PACKAGING MACHINE

Günther Lade, Winnenden-Birkmannsweiler, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 16, 1985, Ser. No. 691,771
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410685
Int. Cl.⁴ B65B *59/00*
U.S. Cl. 53—201 **8 Claims**



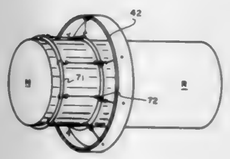
1. A packaging machine having devices which are adjustable in accordance with a format for delivering the products to be packaged and for transporting, shaping and handling the packaging material, further including a plurality of conversion points in said devices for adjusting the components thereof in accordance with the size and shape of the products and packaging material, and a control unit in which adjustment values for individual conversion points for a given format are stored and can be data processed in accordance with a program, characterized in that one of a plurality of code carriers arranged to identify the particular conversion point is associated with each of said individual conversion points, a movable code reader connected with said control unit connectable to at least one of said code carriers, and further that said control unit generates an adjustment signal only when said movable code reader agrees with the code which is coupled with the adjustment value made available at that time by said control unit.

4,565,049

METHOD AND APPARATUS FOR WRAPPING PAPER ROLLS

John DeLigt, and Willem A. Nikkel, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 970,221, Dec. 18, 1978, Pat. No. 4,505,090.
This application Oct. 18, 1984, Ser. No. 662,137
Int. Cl.⁴ B65B *47/00*
U.S. Cl. 53—415 **3 Claims**



1. A method of protectively wrapping a cylindrical article having a substantially circular end face and cylindrical surface about a cylindrical axis of revolution by capping said end face with a header wrapping sheet having a central covering area coextensive with said end face and a flange area about and radially beyond the periphery of said central area, said method comprising the steps of:

A. Aligning said header wrapping sheet parallel-planar with and adjacent to said article end face;

B. Coaxially aligning said article and header wrapping sheet with a radially tensioned planar element comprising a plurality of concentric resilient bands connected radially in a common plane by cable means each band of said plurality having a respective spring rate for applying substantially the same constrictive force as other bands in said plurality to said cylindrical surface when expanded thereabout;

C. Coaxially drawing said planar element against said header sheet and end face;

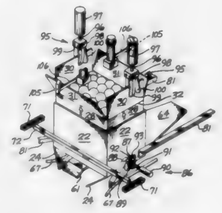
D. Constrictively girdling said header wrapping sheet flange area against said cylindrical surface with at least one resilient band drawn from the concentric plurality in said planar element.

4,565,050

CASE CLOSING APPARATUS

Charles R. Norris, Vista, Calif., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Nov. 30, 1984, Ser. No. 676,768
Int. Cl.⁴ B65B *7/20*
U.S. Cl. 53—491 **8 Claims**



1. A method of closing and forming a telescoped container filled with a product,

said telescoped container having inner and outer telescoped members,

said inner member having side panels and closure panels extending upwardly from said side panels,

said closure panels being joined to said side panels by score lines located below the level of said product, comprising,

supporting said telescoped container,

grasping a pair of said closure panels and raising said inner member upwardly until said score lines are above said product,

closing the remaining closure panels of said inner member,

releasing said pair of closure panels,

closing said pair of closure panels,

securing said pair of closure panels and remaining closure panels together,

vibrating said telescoped container while forcing said inner member into said outer member.

4. Apparatus for closing and forming a telescoped container filled with a product,

said telescoped container having inner and outer telescoped members,

said inner member having side panels and closure panels extending upwardly from said side panels,

said closure panels being joined to said side panels by score lines located below the level of said product, comprising

means for supporting said telescoped container,

means for grasping a pair of said closure panels and raising said inner container upwardly until said score lines are above said product,

means for closing the remaining closure panels of said inner member,

means for releasing said pair of closure panels,

means for closing said pair of closure panels,

means for securing said pair of closure panels and remaining closure panels together,

means for vibrating said telescoped container, and

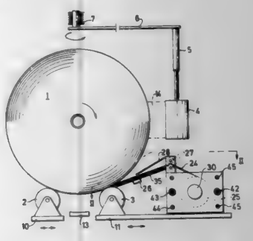
means for forcing said inner member into said outer member.

4,565,051

METHOD AND APPARATUS FOR WRAPPING CYLINDRICAL ARTICLES

Karl J. Back, Hargs Säteri, S-194 90 Upplands-Väsby, Sweden

Filed Oct. 29, 1982, Ser. No. 437,521
Claims priority, application Sweden, Nov. 3, 1981, 8106503
Int. Cl.⁴ B65B *11/04, 11/58, 13/02*
U.S. Cl. 53—441 **8 Claims**



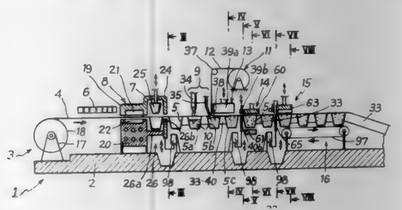
1. A method of wrapping a cylindrical article at a wrapping station, including rotating the article about an axis of the article and winding a stretch film round the article substantially in the axis plane of the article, the improvement comprising; placing a web-like wrapping material against a surface of the cylindrical article for rolling out the wrapping material against the cylindrical article by rotation of the cylindrical article and by simultaneously winding the stretch film over the material web on the cyclindrical article; interrupting winding of the stretch film at a predetermined position; continuing rotation of the article so that the stretch film is laterally reversed; and, winding the film in the opposite winding direction.

4,565,052

PROCESS AND INSTALLATION FOR PACKAGING A PRODUCT

Jean-Claude Hautemont, Gif-sur-Yvette, France, assignor to Societe a Responsabilite Limitee dite, Les Ulis, France

Filed Jun. 7, 1983, Ser. No. 502,013
Claims priority, application France, Jun. 14, 1982, 82 10353
Int. Cl.⁴ B65B *3/02, 3/06*
U.S. Cl. 53—453 **13 Claims**



1. A process for packaging a product comprising the steps of:

longitudinally advancing a thermoplastic base web downstream, step by step, through a plurality of work stations;

heating successive zones of the base web to soften the base web;

forming a row of receptacles in each successive zone of the base web in a forming station having a mobile transverse part;

filling a row of receptacles with a product through openings in the receptacles;

covering the openings of filled receptacles with a covering web;

sealing the covering web to the base web in a sealing station including a lower sealing support having a mobile transverse part;

cutting out the filled and sealed receptacles from the base and covering webs in a cutting station including a lower cutting tool having a mobile transverse part;

supporting the receptacles and corresponding zones of the base web between the different work stations by support and guide rails extending parallel to the direction of advance of the base web and the receptacles;

lowering the mobile parts of the forming station, the sealing station, and the cutting station to clear the path of advance of the receptacles;

using sections of the support and guide rails in the sealing station as fixed parts of the lower sealing support; and

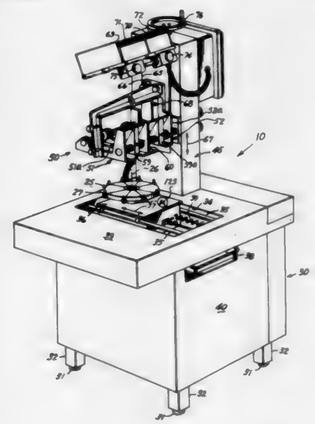
using other sections of the support and guide rails in the cutting station as fixed parts of the lower cutting tool, and to support the cut-out receptacles.

4,565,053

PASTRY PROCESSOR TO DIVIDE PASTRIES AND INSERT SEPARATORS

Ronald O. Browne, 2420 Calle Galacia, Santa Barbara, Calif. 93103, and William E. Hertzberg, Santa Barbara, Calif., assignors to Ronald O. Browne, Santa Barbara, Calif.

Filed Mar. 29, 1984, Ser. No. 594,695
Int. Cl.⁴ B65B *63/00*
U.S. Cl. 53—516 **15 Claims**



1. A pastry processor for forming a separation in a pastry body, and inserting a separator in said separation, comprising: a base frame; a rotary turntable mounted to said base frame adapted to rotate around a vertical axis as a center, said turntable being adapted to support a pastry for rotation therewith; a head column mounted to said base frame; a vertically extending blade track on said head column; a blade carrier mounted in said blade track for vertical movement toward and away from said turntable so as to enter and form a separation in a pastry body atop the turntable; a blade mounted to said blade carrier having an edge adapted to part the pastry body; support means for supporting a separator, said support means having a slot to pass said blade, and a support surface at each side of said slot, said surfaces receiving the separator that bridges the slot, said support means being mounted to said head column, and said blade carrier being reciprocable so as to move the blade so that said edge is selectively at an upper elevation above said slot, and at a lower elevation below said slot adjacent to said turntable; motive means adapted to drive said blade carrier selectively upwardly and downwardly to move said edge to and between said elevations; sensing means operatively linked to said blade carrier to sense proximity of said blade edge to

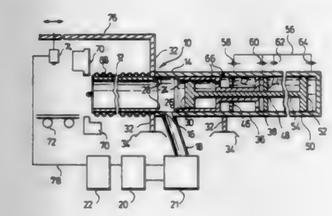
said lower elevation; and control means responsive to said sensing means to cause said motive means to stop driving said blade toward said turntable; said sensing means comprising a depending member contactable with limit means that is vertically fixed relative to said turntable to strike said limit means and be displaced thereby relative to said blade, whereby to actuate said control means.

4,565,054

MEAT PACKAGING APPARATUS

Ludwig Piereder, Squire Ct., R.R. #1, Waterloo, Ontario, Canada (N2J 4G8)

Filed Oct. 6, 1983, Ser. No. 539,575
Int. Cl.⁴ A22C *7/00*; **B65B** *3/18*
U.S. Cl. 53—517 **11 Claims**



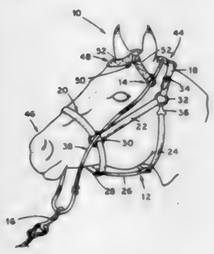
1. Meat packaging apparatus comprising:
a horn having a forward portion and a rearward portion;
a ram normally contained within said rearward horn portion for reciprocal movement along said horn;
motor means operatively connected to said ram;
a conduit connecting to intermediate portions of said horn for carrying a supply of meat thereto;
cutting means comprising a tubular knife mounted within rearward horn portion for severing meat located at the juncture of said conduit and said horn, said tubular knife serving as a cylinder for said ram when said ram is in a retracted position, and
motor means operatively connected to said cutting means.

4,565,055

HALTER SAVER

Roy G. Simpson, Cookeville, Tenn., assignor to Adams Plastics, Inc., Cookeville, Tenn.

Filed Sep. 19, 1984, Ser. No. 652,217
Int. Cl.⁴ B68B *1/02*
U.S. Cl. 54—24 **6 Claims**



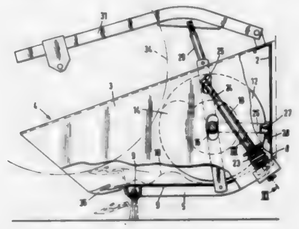
1. A halter saver for use with a halter and halter lead, the halter having cheek rings and a poll strap comprising:
a headpiece for extending over the horse's head having a midsection and two cheek portions, said midsection passing over the poll of the horse and said cheek portions extending downwardly and forwardly along the horse's cheeks through the cheek rings of the halter and being joined together beneath the horse's nose with said headpiece encircling the head of the horse so the halter lead may be attached to said headpiece;
a brow piece for placement over the brow of the horse extending between and being slidably connected to said cheek portions of said headpiece; and
a connector piece for extending over the head of the horse between the ears and having a first end connected to a central area of said brow piece and a second end for connecting to the poll strap of the halter, said connector piece being slidably attached to the midsection of said headpiece at a location on said connector piece intermediate said first and second ends;
whereby the poll strap of the halter is maintained at the poll of the horse and said headpiece is free to slide with respect to said connector piece, brow piece, and halter and is operable to apply pressure at the poll of the horse when tension is applied to the halter lead.

4,565,056

SELF-PROPELLED HARVESTER THRESHER

Franz Heidjann, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Jul. 27, 1983, Ser. No. 517,923
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3227975
Int. Cl.⁴ A01D *47/00*
U.S. Cl. 56—14.4 **17 Claims**



1. A self-propelled harvester thresher, comprising a liftable and lowerable front inclined transporting channel as considered in a travelling direction; a cutting table connected with said transporting channel and having a rear wall mounted on the latter; and working means including a cutter bar, a drawing roller having a plurality of pins, and a winch liftably and lowerably connected with said rear wall, said cutting table having a bottom composed of a plurality of arms which are turnably supported on said rear wall and arranged at a distance from one another, said plurality of arms including two outer arms which are liftable and lowerable independently of one another, each of said outer arms having a carrying arm which carries said roller and has a bearing point on said carrying arm, located substantially beneath said pins of the drawing roller.

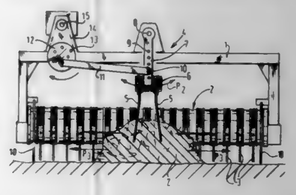
4,565,057

DEVICE FOR PICKING UP CROP FROM THE FIELD

Hermanus H. Vissers, Nieuw-Vennep, and Jan Wondergem, Rijsenhout, both of Netherlands, assignors to Multinorm B.V., Nieuw-Vennep, Netherlands

Continuation of Ser. No. 276,046, Jun. 22, 1981, abandoned.
This application Aug. 22, 1983, Ser. No. 524,700
Claims priority, application Netherlands, Jul. 1, 1980, 8003794
Int. Cl.⁴ A01D *78/04*
U.S. Cl. 56—364 **12 Claims**

1. A device for picking up crop piled in windrows, comprising a frame movable across a field, means for picking up crops, said means being elongate to extend on either side beyond a windrow and carried by and extending transversely of said frame with respect to the direction of movement thereof, and a driven means disposed in front of said means for picking up crops at a height above and out of contact with the ground for knocking down a windrow and spreading the crop in such



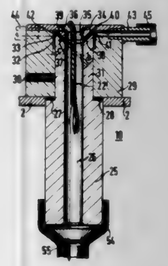
windrow in a transverse direction substantially parallel to and in uniform distribution across the width of said means for picking up crops, said driven means travelling back and forth along a transverse path parallel to said means for picking up crops.

4,565,058

MAKE-READY UNIT FOR MAKING A THREAD END READY

Joachim Rohner; Reinhard Mauries, and Heinz Zumfeld, all of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 710,101
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1984, 3408668
Int. Cl.⁴ B65H *69/06*; **D01H** *15/00*; **D02J** *1/08*
U.S. Cl. 57—22 **9 Claims**



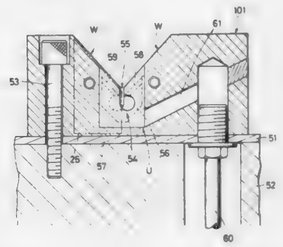
1. Make-ready unit for making a thread end ready preparatory to connecting it with another thread end in a thread splicing device, the make-ready unit having a thread splicing device, the make-ready unit having a thread channel formed in a hollow body and traversible by a gas flow produced by injected gas, the thread channel being open at both ends for receiving the thread end transitorily therein, comprising a pressure-gas guiding device formed as a first ring channel surrounding the hollow body and having at least one pressure-gas supply location, the thread channel being formed with a thread inlet end through which the thread end is received and having a funnel-shaped flaring portion at said thread inlet end extending from a main cylindrical part of the thread channel, and a likewise funnel-shaped cover formed with a central opening and covering said funnel-shaped flaring portion of the thread channel in such manner that a second ring channel defined by conical surfaces extends from said first ring channel to said main cylindrical part of the thread channel.

4,565,059

SPLICING DEVICE FOR SPUN YARNS

Hiroshi Mima, Joyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed May 16, 1984, Ser. No. 611,102
Claims priority, application Japan, May 17, 1983, 58-86049
Int. Cl.⁴ D01H *15/00*
U.S. Cl. 57—22 **9 Claims**



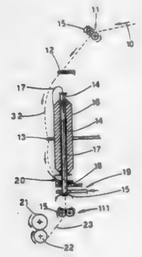
1. A yarn splicing device wherein extremities of ends of two yarns which are inserted in overlapping and oppositely directed relationship in a yarn splicing chamber are acted upon by a whirling fluid flow to splice the two yarns to each other, characterized in that said yarn splicing chamber is substantially divided in an axial direction thereof into two yarn splicing holes which have center axes displaced from each other.

4,565,060

DEVICE TO CARRY OUT DOUBLING-TWISTING OPERATIONS AND TWISTED YARN OBTAINED WITH SAID DEVICE

Dovilio Gordini, Zoagli, Italy, assignor to Officine Savio S.p.A., Pordenone, Italy

Continuation of Ser. No. 489,075, Apr. 27, 1983, abandoned.
This application Feb. 27, 1985, Ser. No. 705,855
Int. Cl.⁴ D01H *7/90*, *7/88*
U.S. Cl. 57—58.3 **5 Claims**



1. Device for doubling-twisting material selected from rovings, threads, carded yarns having short fibers, carded yarns having very short fibers, fibers of a staple length for wool and fibers of a staple length for cotton comprising:
means to limit a balloon of the material;
a hollow spindle;
a bobbin which holds a supporting thread surrounding said hollow spindle within which the supporting thread is made to pass, the bobbin being situated substantially axially to and within the balloon;
an axle for the spindle defining an inlet hole for entry of said material leaving the balloons, the inlet hole being located below the bobbin, rotating means for said axle and friction means positioned over the top of said spindle to control the passage of the supporting thread into said spindle.

4,565,061

STRING FOR RACKETS

Enoch J. Durbin, 246 Western Way, Princeton, N.J. 08540

Filed Dec. 12, 1983, Ser. No. 560,400

Int. Cl.⁴ D02G *3/40, 3/38, 3/44*

U.S. Cl. 57—234 **10 Claims**

1. A string wherein said string is characterized by both a break stress which is greater than 20,000 psi and an elastic modulus which is less than twice the break stress, said string comprising a composite made of a plurality of individual fibers, the axis of said individual fibers making a substantial angle to the axis of symmetry of said string, said individual fibers wrapped around a central resilient core, the core and individual fibers being bound together into a string.

4,565,062

THREAD AND YARN END RETRIEVAL NOZZLE

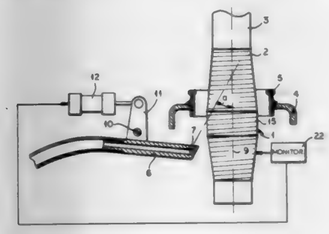
Helmut Nickolay, Göppingen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Apr. 30, 1984, Ser. No. 605,580

Claims priority, application Fed. Rep. of Germany, May 3, 1983, 3316108

Int. Cl.⁴ D01H *13/00, 15/00;* **B65H** *54/22*

U.S. Cl. 57—305 **12 Claims**



1. In a textile machine for forming a yarn package, a suction hood at one end of said yarn package for capturing a loose yarn end and a nozzle from which a jet of air flows directed against said yarn package for releasing a yarn end for capture by said hood, the improvement which comprises:

means for pivotally mounting said nozzle for tilting movements about an axis transverse to an axis of said yarn package, which means is capable of selectively varying the angle at which a jet of air is trained by said nozzle against said yarn package during the course of building the yarn package.

4,565,063

METHOD AND APPARATUS FOR FALSE TWIST SPINNING

Herbert Stalder, Kollbrun, and Emil Briner, Winterthur, both of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Jun. 25, 1984, Ser. No. 624,224

Claims priority, application Switzerland, Jul. 1, 1983, 3633/83

Int. Cl.⁴ D01H *5/28*

U.S. Cl. 57—328 **32 Claims**

1. In a method of false twist spinning comprising the steps of:

drafting a fiber sliver to a desired yarn count in a drafting mechanism having a delivery roller pair and delivering the drafted fiber sliver from the delivery roller pair of the drafting mechanism;

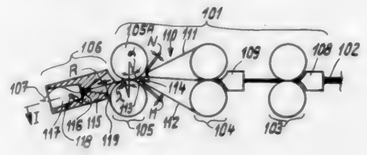
sucking the delivered drafted fiber sliver in a substantially spiral fashion into a converging passage and thereafter taking up such sucked-up drafted fiber sliver by a false twist member;

twisting a part of the drafted fiber sliver to form a false-twisted rotating yarn core with the formation of a spinning triangle by means of the false twist member; the improvement which comprises the steps of;

delivering the drafted fiber sliver from the delivery rollers with a width such that only a part of the width of the drafted fiber sliver is entrained by the spinning triangle and twisted to the false-twisted rotating yarn core; and

sucking up and guiding by means of a suction air stream edge fibers which are not entrained by the spinning triangle in such a manner that, as viewed in the direction of travel of the yarn core, the front end of a fiber of the edge fibers and which fiber has a length corresponding to the average length of the processed fibers is entrained by the rotating yarn core while assuring that this fiber only leaves a nip line of the delivery roller pair after it has been twisted about the yarn core and after it has been entrained in the spinning triangle, whereby the rear end of the fiber is bound into the yarn core.

14. In an apparatus for false twist spinning with a drafting mechanism containing a delivery roller pair and delivering a drafted fiber sliver to a suction passage through which flows a suction air stream and with a false twist member arranged after the suction passage, the suction passage converging towards its



narrowest position in a direction towards the false twist member, the improvement which comprises:

means provided for the drafting mechanism, before said delivery roller pair delivering the fiber sliver to the suction passage, for guiding the fiber sliver in the drafting mechanism in such a manner that the drafted fiber sliver delivered by the delivery roller pair has a width which is greater than the width of a spinning triangle of a yarn core rotated by means of the false twist member;

the spacing between a nip line formed by the delivery roller pair and the narrowest position of the suction passage is not larger than 75% of the average fiber length of the fibers contained in the fiber sliver; and

the suction passage has a converging form such that free front fiber ends of the drafted fiber sliver, which are delivered by the delivery roller pair and which are guided in the suction air stream of the suction passage and are not bound into the rotating yarn core produced by the false twist member, are guided towards the rotating yarn core shortly before the narrowest position of the suction passage such that they are thereby entrained by the rotating yarn core in the region of the spacing between said nip line and said narrowest position of the suction passage.

4,565,064

PROCESS AND APPARATUS FOR PREPARING FASCIATED SPUN YARNS

Takeru Iwasaki, Ichinomiya; Kenji Sasaki, Komaki, and Hiroshi Enomoto, Aichi, all of Japan, assignors to Howa Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 17, 1984, Ser. No. 641,844

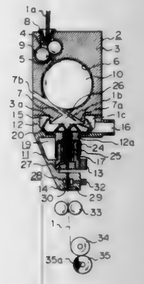
Claims priority, application Japan, Aug. 19, 1983, 58-152163; Sep. 13, 1983, 58-170164; Sep. 13, 1983, 58-170165

Int. Cl.⁴ D01H *1/135, 7/882, 7/90*

U.S. Cl. 57—404 **11 Claims**

1. A process for manufacturing a fasciated spun yarn, which comprises feeding separate single fibers formed by opening and drafting a continuous staple fiber bundle into a rotor, collecting and holding the single fibers on a fiber-collecting portion on the rotor and taking out the collected fibers through a center piece by delivery rollers while strongly false-twisting the collecting fibers in the same direction as that of true twists given by the rotor into a twisted yarn by false-twisting apparatus arranged between the rotor and the delivery rollers, wherein the separated single fibers are supplied to a travelling plane for the twisted yarn between the fiber-collecting portion of the rotor and the center piece to entangle some of the single fibers with the twisted yarn in the strongly false-twisted state, and the entangled single fibers are entwined around the periphery of the twisted yarn by subsequent release of the false twists of the twisted yarn.

6. An apparatus for manufacturing a fasciated spun yarn, which comprises opening means for opening and drafting a continuous staple fiber bundle into separate single fibers, a rotating rotor having a hollow rotor shaft providing a yarn



passage and a fiber-collecting surface, a guide member for guiding the separated single fibers from the opening means into the rotating rotor and a pneumatic false-twisting nozzle arranged downstream of the hollow rotor shaft of the rotating rotor coaxially therewith and having a yarn passing aperture extended on the axis thereof, wherein the pneumatic false-twisting nozzle is constructed so that jet air stream from the pneumatic false-twisting nozzle is discharged from the yarn inlet side of the yarn passing aperture, jet apertures opened in such a direction as forming a vortex swirling in a reverse direction to the rotation direction of the rotor formed on the pneumatic false twisting nozzle, a space formed between the bottom face of the rotating rotor and an annular plane defined by a generating line connecting the fiber-collecting portion of the rotating rotor and the apex of the yarn passage of the hollow rotor shaft, and a guide outlet of the guide member arranged between the fiber-collecting portion of the rotor and the apex of the yarn passage of the hollow rotor shaft.

4,565,065

EXHAUST-GAS PARTICLE TREATING DEVICE FOR INTERNAL-COMBUSTION ENGINE

Hideyuki Kimura, and Hitoshi Tomita, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,236

Claims priority, application Japan, Apr. 7, 1983, 58-61265

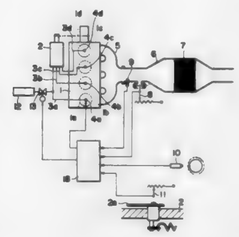
Int. Cl.⁴ F01N *3/02*

U.S. Cl. 60—285 **11 Claims**

1. In an exhaust gas particle treating device for an internal combustion engine having fuel injection nozzles and fuel supplying pipes connected thereto and in which a filter for collection of exhaust gas particles is provided in the exhaust gas system thereof, and the filter is regenerated by burning the exhaust gas particles collected in the filter, the improvement comprising:

a needle valve lift limiting mechanism in at least one of the fuel injection nozzles;

a pressurized fuel accumulating means connected to the injection pipe connected to said one fuel injection nozzle; and



an electromagnetically operated switching valve connected between said fuel accumulating means and the injection pipe.

4,565,066

DIE-CASTING MOLD FOR A BRAKE MASTER CYLINDER HOUSING AND A DIE-CAST BRAKE MASTER CYLINDER HOUSING MANUFACTURED WITH THIS MOLD

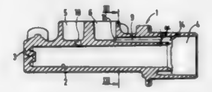
ITT Industries, Inc., 02, New York, N.Y.; Rolf Weiler, Frankfurt-Sindlingen, and Klaus Bergelin, Wermelskirchen, both of Fed. Rep. of Germany

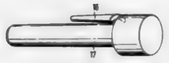
Filed Jun. 1, 1983, Ser. No. 500,065

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224168

Int. Cl.⁴ F15B *15/08*

U.S. Cl. 60—533 **14 Claims**





1. A one-piece die-cast brake master cylinder housing, said housing having a longitudinal axis and said housing comprising:

a master cylinder piston bore disposed coaxially of said longitudinal axis of said housing; and a compensating bore in a wall of said housing, said compensating bore having a longitudinal axis spaced from and parallel to said longitudinal axis of said housing, said compensating bore having one end thereof terminating in a compensating reservoir port disposed transversely relative to said longitudinal axis of said housing and externally of the piston bore and its other end terminating in a sealing chamber formed as an extension at one longitudinal end of said piston bore, said compensating bore being of continuous conical construction, the narrowest area of said compensating bore being adjacent said compensating reservoir port, and a cross section of said compensating bore perpendicular to said longitudinal axis of said compensating bore being substantially reinform.

4,565,067

BRAKE SYSTEM FOR VEHICLES

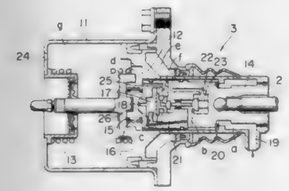
Masanori Tani; Shin'ichi Eto; Takeshi Funakoshi; Susumu Nishikawa, and Kiyoteru Hashikura, all of Aichi, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 26, 1983, Ser. No. 536,270

Claims priority, application Japan, Sep. 30, 1982, 57-147170[U]; Dec. 29, 1982, 57-198485[U]; Feb. 18, 1983, 58-21517[U]; Feb. 18, 1983, 58-21518[U]; Apr. 25, 1983, 58-72714; Apr. 27, 1983, 58-74817; Jun. 1, 1983, 58-81768[U]; Jun. 1, 1983, 58-81769[U]; Jun. 1, 1983, 58-81772[U]; Jun. 15, 1983, 58-90394[U]

Int. Cl.⁴ F15B *7/00, 9/10;* **B60T** *8/18, 13/00*

U.S. Cl. 60—545 **9 Claims**



1. A brake system for a vehicle comprising:

booster means including a housing, a power piston disposed slidably in said housing for defining within said housing a first chamber communicating with atmosphere and a second chamber, a regulator disposed slidably in said power piston, flow shut-off means communicating with a gas pressure source and opened and closed by movement of said regulator relative to said power piston, flow restriction means provided between said first chamber and said gas pressure source for restricting flow of gas in response to movement of said regulator, a pilot pressure chamber disposed upstream of said flow restriction means, movable means moved by the internal pressure of said pilot pressure chamber thereby permitting communication between said second chamber and said gas pressure source, and a reaction spring disposed between said power piston and said regulator;

a master cylinder connected to said power piston of said booster means to supply braking hydraulic fluid at controlled pressure to front and rear brakes; and

a brake pedal actuating said regulator;

said gas pressure source being a unit supplying air under pressure, said pilot pressure chamber being defined in said regulator for communication with said flow shut-off means, said flow restriction means including a nozzle formed in said regulator for communication with said pilot pressure chamber and a surface formed on said power piston opposite to said nozzle in said first chamber so that the distance between it and said nozzle is variable with the movement of said regulator relative to said power piston, said movable means including first valve means including a diaphragm member forming a wall of said pilot pressure chamber so as to be movable in response to the internal pressure of said pilot pressure chamber and defining a discharge passage permitting communication between said first chamber and said second chamber, and second valve means arranged for normally interrupting communication between said flow shut-off means and said second chamber but being opened in response to the movement of said diaphragm member due to build-up of the internal pressure of said pilot pressure chamber.

4,565,068

TURBOCHARGER

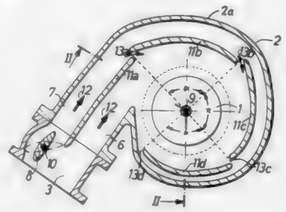
Wilfried Schneider, Glashütten, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Jan. 24, 1984, Ser. No. 573,498

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1983, 3302186

Int. Cl.⁴ F02B *37/00*

U.S. Cl. 60—602 **6 Claims**



1. An exhaust-driven turbo-supercharger for an internal combustion engine, comprising a turbine wheel and a turbine casing surrounding said wheel, said casing having an inflow opening and an outflow opening for the flow of exhaust gases of the engine, said casing having at the inflow side thereof means substantially concentric with the axis of the turbine wheel defining a radially internal spiral path and a radially external spiral path, said paths having inlets opening into said inflow opening of the exhaust-driven turbo-supercharger, a control element for varying the cross-section of said inlet of said radially external path, said means comprising a common partition wall rigidly mounted to said casing, said wall extending about the entire circumferential area of said turbine wheel, the flow cross-section of said radially external path decreasing in the direction of flow of the exhaust, said partition wall in the direction of exhaust flow having a plurality of orifice areas located one behind the other for interconnecting the flow between said internal and external paths, and said orifice areas being spaced apart an equal angular distance from one another in the exhaust flow direction relative to said turbine wheel axis.

4,565,069

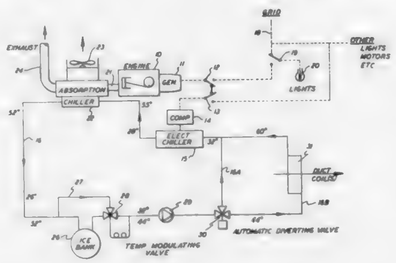
METHOD OF CYCLIC AIR CONDITIONING WITH COGENERATION OF ICE

Calvin D. MacCracken, 150 Van Brunt St., Englewood, N.J. 07631

Filed Nov. 5, 1984, Ser. No. 668,321

Int. Cl.⁴ F25D *25/00;* **F25B** *27/00*

U.S. Cl. 62—66 **16 Claims**



1. A method of air conditioning a building having alternating periods of high and low cooling loads which comprises

(a) during both high and low cooling load operation the steps of

i. driving an electric generator by means of a fuel-fired engine, and

ii. powering a heat-operated chiller with waste heat from said fuel-fired engine;

(b) during low cooling load operation the step of

i. freezing ice by means of said heatoperated chiller in combination if needed with an electric chiller powered by one of said generator and grid power; and

(c) during high cooling load operation the step of

i. cooling the building by the melting of said ice in combination with the heat-operated chiller and if needed in further combination with said electric chiller powered by one of said generator and grid power.

4,565,070

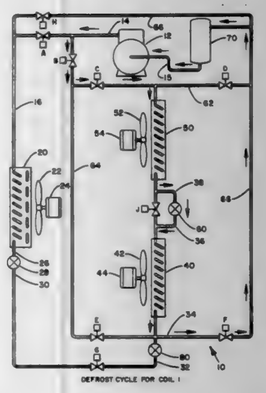
APPARATUS AND METHOD FOR DEFROSTING A HEAT EXCHANGER IN A REFRIGERATION CIRCUIT

Glendon A. Raymond, Fulton, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 1, 1983, Ser. No. 499,958

Int. Cl.⁴ F25B *41/00*

U.S. Cl. 62—81 **13 Claims**



1. A refrigeration circuit including a compressor and an indoor heat exchanger which comprises:

a first outdoor heat exchanger;

a second outdoor heat exchanger;

conduit means including valve means connecting the compressor in a heating mode of operation to direct hot gaseous refrigerant to the indoor heat exchanger and to receive refrigerant from both the indoor and outdoor heat exchangers when it is desirable to supply heat energy to the indoor heat exchanger and in the defrost mode of operation connecting the compressor to discharge hot gaseous refrigerant to either the first or the second outdoor heat exchangers and receiving gaseous refrigerant from the other of said first or second outdoor heat exchangers; and

interconnecting means connecting the first outdoor heat exchanger to the second outdoor heat exchanger including means to allow refrigerant to flow between the first and second outdoor heat exchangers without undergoing a significant pressure drop and restrictor means for creating a pressure drop as refrigerant flows between the first and second outdoor heat exchangers, said means allowing the refrigerant to pass without significant pressure drop when in the heating mode of operation and said means causing the refrigerant to flow through the restrictor means creating a pressure drop when in the defrost mode of operation.

4,565,071

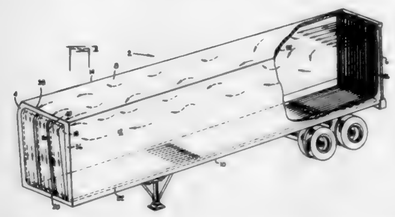
METHOD AND APPARATUS FOR PROVIDING HEATING OR COOLING FOR A VEHICLE

Jerry W. Bartling, Boulder, and James F. Hofstetter, Westminster, both of Colo., assignors to Timpte Industries, Denver, Colo.

Filed Feb. 23, 1984, Ser. No. 582,959

Int. Cl.⁴ F25D *17/06*

U.S. Cl. 62—89 **16 Claims**



1. A method for providing heating or cooling for a vehicle comprising:

providing the vehicle with conditioning means for providing air at a desired temperature, said means having an inlet and an outlet;

providing means adjacent to the top of said vehicle and in fluid communication with said inlet and the interior of said vehicle;

inducing substantially all of the air to be conditioned to flow through said means adjacent to the top of said vehicle into said inlet of said conditioning means from said interior of said vehicle;

passing said air through said conditioning means to produce conditioned air;

discharging substantially all of said conditioned air from said outlet of said conditioning means into a passageway adjacent to the bottom of said vehicle and extending from said outlet to a location adjacent to one end of said vehicle;

forming a passageway in a door adjacent to said one end of said vehicle;

flowing said substantially all of said conditioned air out of said passageway adjacent to said bottom of said vehicle and into said passageway formed in said door adjacent to said one end of said vehicle;

flowing said conditioned air in a vertical direction through said passageway formed in said door adjacent to said one end of said vehicle and discharging said conditioned air in a location adjacent to said top of said vehicle; and

inducing said discharged conditioned air located adjacent to said top of said vehicle to flow through normal convection paths from said one end of said vehicle to said inlet of said conditioning means.

4,565,072

AIR-CONDITIONING AND REFRIGERATING SYSTEM

Kenichi Fujiwara, Kariya; Eiichi Hasada, Okazaki, and Hikaru Sugi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 23, 1984, Ser. No. 643,382

Claims priority, application Japan, Aug. 25, 1983, 58-155899

Int. Cl.⁴ F25B *41/00*

U.S. Cl. 62—196.2 **4 Claims**

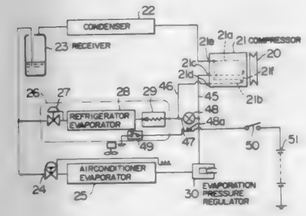
1. An air-conditioning and refrigerating system including:

a swash plate axial piston refrigerant compressor provided with a main suction port, an auxiliary suction port and a discharge port through which the refrigerant is discharged in compressed gas phase, said compressor comprising a housing defining therein a plurality of axial bores, double-headed pistons axially slidably received in said axial bores, respectively, each piston having opposite heads cooperating with the inner peripheral surface of an

associated bore to define two cylinders, said housing further defining therein a central shaft hole and a swash plate chamber, a shaft rotatably extending through said shaft hole and a swash plate in said swash plate chamber fixed to said shaft for rotation therewith and drivingly connected to said pistons, at least one of the cylinders being communicated with said auxiliary suction port and the rest of the cylinders being communicated with said main suction port, said main suction port being further communicated with said swash plate chamber, said one cylinder being provided with a communication passage for communicating said one cylinder with said swash plate chamber in the final stage of a suction stroke of the piston head in said one cylinder whereby the air-conditioning refrigerant in said swash plate chamber flows therefrom into said one cylinder before the refigerating refrigerant sucked into said one cylinder is compressed therein;

a condenser having an intake side operatively connected to said discharge port of said compressor and adapted to condense the gas-phase refrigerant into liquid-phase refrigerant;

an air-conditioning circuit including a first pressure reducing means operative to expand the liquid-phase refrigerant into atomized air-conditioning refrigerant and an air-conditioner evaporator operative to evaporate the atomized refrigerant at a first evaporation pressure so that air surrounding said evaporator is cooled;



a refrigerating circuit disposed in parallel relationship to said air-conditioning circuit and including a second pressure reducing means operative to expand the liquid-phase refrigerant into atomized refrigerating refrigerant, a refrigerator evaporator operative to evaporate the atomized refrigerating refrigerant at a second evaporation pressure lower than said first evaporation pressure so that said refrigerator evaporator functions for the purpose of refrigeration;

an air-conditioning refrigerant return passage connecting said air-conditioning evaporator to said main suction port of said compressor; and

a refrigerating refrigerant return passage connecting said refrigerator evaporator to said auxiliary suction port of said compressor;

said compressor being constructed such that the evaporated refrigerating refrigerant returned to said auxiliary suction port is mixed in said compressor with the evaporated air-conditioning refrigerant returned to said main suction port before said refrigerating refrigerant is compressed in said compressor to a predetermined pressure level.

4,565,073

FREEZING FRAME FOR A PLASMA CONTAINER

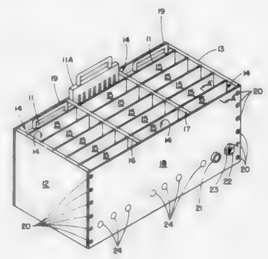
Ardis Lavender, Chappaqua, N.Y., assignor to Armour Pharmaceutical Co., Tarrytown, N.Y.

Filed Feb. 7, 1985, Ser. No. 699,035
Int. Cl.⁴ F25D *17/02*
U.S. Cl. 62—373 **25 Claims**

1. A freezing frame for suspending and molding a plurality of liquid filled flexible bags within a freezing compartment, said freezing frame comprising:

(a) a parallelpiped frame having a first and a second side wall with a plurality of compartments defined there between, each of said compartments having a planar constraining wall extending between said first and second side walls

(b) a plurality of slideable freezing plates, with at least one plate mounted within each compartment,



(c) cam means defined between the walls of the compartment and the slideable plate for guiding each of said plates downwardly and laterally against said planar wall,

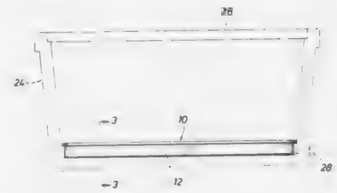
whereby a flexible bag having a fluid to be frozen may be inserted within each compartment and flattened for quick freezing between said planar wall and its associated freezing plate.

4,565,074

ICE TRAY FOR USE WITH A PORTABLE ICE CHEST

Marshall M. Morgan, 8210 Brae Acres, Houston, Tex. 77074

Continuation-in-part of Ser. No. 340,100, Jan. 18, 1982, Pat. No. 4,424,687. This application Dec. 2, 1983, Ser. No. 557,487
Int. Cl.⁴ F25D *3/08*
U.S. Cl. 62—457 **3 Claims**



1. In combination:

(a) a portable ice chest having a horizontally extending bottom, front and back side walls extending upwardly from the bottom, and end walls extending upwardly from the bottom between the front and back side walls, the front, back and end walls supporting a removable lid thereon and defining a generally rectangularly shaped portable ice chest, the ice chest receiving and holding a supply of ice for cooling; and

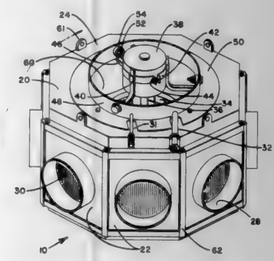
(b) a single piece removable tray nested in place and received interiorly of the portable ice chest wherein said tray is surrounded by the ice chest walls, said tray comprising a generally rectangular planar surface including a pair of integrally formed lengthwise legs there beneath which support said planar surface at an elevated position within the portable ice chest, said legs being inwardly spaced from the lengthwise edges of said rectangular planar surface and extending parallel thereto, said legs being spaced from each other enabling said tray to support weight thereon without tilting, and said planar surface being spaced from the surrounding ice chest walls defining a gap therebetween permitting melting ice to spill over the edge of said planar surface to the bottom of the ice chest.

4,565,075

POLYGON FAN COIL CABINET AND METHOD OF ASSEMBLY

Alan S. Drucker, Dewitt; King H. Kwok, Liverpool, and Charles E. Whipple, Brewerton, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 8, 1984, Ser. No. 618,657
Int. Cl.⁴ F25B *39/04*
U.S. Cl. 62—507 **10 Claims**



1. An apparatus for enclosing and supporting an indoor fan coil having a generally cylindrical heat exchanger with a blower located within the cylindrical heat exchanger, the apparatus comprising:

a fan coil supporting member having a bottom wall defined by a surface with at least one condensate drain outlet for allowing condensate to drain from said supporting member;

a plurality of side members removably secured at one end to said fan coil supporting member and having an inner peripheral surface spaced from the outer vertical surface of the cylindrical heat exchanger, at least one of said side members having an aperture therethrough defining an outlet opening;

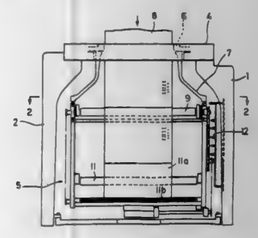
a top member removably secured to the other end of said side member to form an enclosure for the indoor fan coil, said top member having an aperture therethrough concentric with the cylindrical heat exchanger through which to draw air into the enclosure by way of the blower and to discharge said air outwardly through the cylindrical heat exchanger to said outlet openings.

4,565,076

SAFETY DEVICE FOR CIRCULAR KNITTING MACHINES

Koji Tsuchiya, Hyogo, Japan, assignor to Precision Fukuhara Works, Ltd., Kobe, Japan

Filed Oct. 15, 1984, Ser. No. 661,102
Claims priority, application Japan, Nov. 4, 1983, 58-171759
Int. Cl.⁴ D04B *15/88, 35/10*
U.S. Cl. 66—151 **6 Claims**



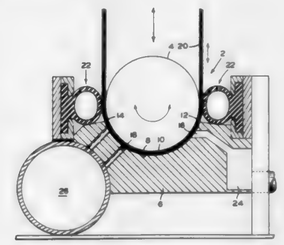
1. A safety device for use in combination with a conventional circular knitting machine of the type having driven rotary take-up rollers to engage with and to advance the fabric being knit by the machine, the machine also having a rotary shaft upon which the so-advanced fabric is secured to and is rolled up upon, the machine also having means to drive the take up rollers and to secure the fabric to the rotary shaft, the safety device operating in combination with the machine in such manner as to automatically stop the machine in the event of failure of the means to drive the take-up rollers with a resultant failure to advance the fabric, the safety device also operating in combination with the machine in such manner as to automatically stop the machine in the event of failure to secure the fabric to the rotary shaft.

4,565,077

LIQUID TREATING APPARATUS

Michael F. Brennan, Leola, and Harold L. Kauffman, Lititz, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Nov. 16, 1981, Ser. No. 321,915
Int. Cl.⁴ D06F *3/22*
U.S. Cl. 68—158 **1 Claim**



1. A fluid treating apparatus for sheet material comprising:

(a) a narrow arcuate passageway,

(1) said passageway being slightly wider than the width of the sheet of material to be treated and being no more than three times the height of the material being treated,

(2) directly adjacent one end of said passageway there being an inlet means and directly adjacent the opposite end of said passageway there being an outlet means, both said inlet and outlet means being spaced a short distance from the ends of the passageway and being on the same side of the passageway,

(3) both ends of said passageway being open to admit the sheet of material for treating and to exit the same sheet of material after treatment,

(b) means providing fluid to the inlet means to place fluid within the passageway so that the fluid will move along one side of the sheet of material as it passes through the passageway, said liquid being removed from the passageway at the outlet means near the opposite end of the passageway just prior to the time the sheet of material exits the passageway, a vacuum source is positioned adjacent the outlet means within the passageway to remove the liquid from the passageway,

(c) the open ends of the passageway forming the entrance and exit from the passageway are air tight because of an inflatable seal pressing against one side of the sheet of material and sealing that one side of the sheet of material while pressing the opposite side of the sheet of material against a solid surface, and

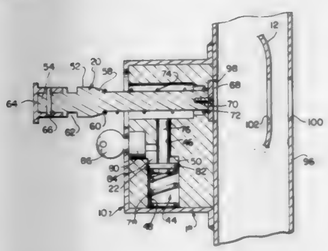
(d) said passageway being an arcuate passageway with one wall of the passageway formed by a rotatable material contacting roll means and the opposite wall of the passageway being formed by a surface spaced from the rotatable roll, said wall formed by the roll and said surface spaced therefrom being parallel and spaced apart the height of the passageway, said surface having said inlet and outlet means with the inlet and outlet means being in the arcuate passageway.

4,565,078

LOCK ASSEMBLY

Martin D. Solomon, 26 Margret Ave., Lawrence, N.Y. 11559

Filed Mar. 4, 1983, Ser. No. 472,037
Int. Cl.⁴ E05B *65/08*
U.S. Cl. 70—95 **25 Claims**



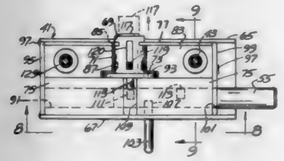
1. A lock assembly for a roll-up door which slides in two, oppositely directed tracks, comprising;
- a housing having means for securing said housing to one of the tracks;
- a locking bolt slidably mounted in said housing for axial movement between locking and unlocked positions, said bolt having a radially projecting shoulder or on outer surface thereof between inner and outer ends of said bolt and a flange extending radially from said inner end, said flange being removably coupled to said bolt;
- spring means, engaging said housing and said bolt, for biasing said bolt toward said unlocked position; and
- lug means movably mounted in said housing between a first position engaging said bolt shoulder for retaining said bolt in said locking position, and a second position disengaged from said bolt shoulder for releasing said bolt for axial movement in said housing.

4,565,079

DEADBOLT GATE LOCK

Robert J. Smith, Detroit, Mich., assignor to Smith Locks, Inc., Detroit, Mich.

Filed Jun. 13, 1983, Ser. No. 503,516
Int. Cl.⁴ E05B *65/06*
U.S. Cl. 70—134 **3 Claims**



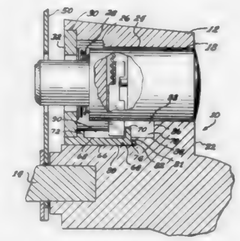
1. In a deadbolt gate lock having an elongated casing, a manually reciprocal deadbolt guidably mounted within said casting and projectable therefrom to a lock position, an actuator pin connected to said deadbolt and extending outwardly through an elongated slot in said casing, and a push button plunger lock mounted within said casing and having a spring bolt retainingly engageable with said deadbolt for securing said deadbolt in projected position;
- the improvement comprising a pair of spaced aligned spacer blocks snugly nested and retained within said casing, having aligned bores guidably receiving said deadbolt, said blocks retainingly engaging said plunger lock;
- said push button plunger lock including a cylindrical case and a transverse anchor flange at one end;
- said spacer blocks having formed within their inner edges opposed elongated slots retainingly receiving said flange;
- said spacer blocks at their inner ends being cut away so as to cooperatively receive and operatively engage opposite sides of said cylindrical case;
- said spacer blocks having outwardly opening clearance slots along their length cooperatively receiving said actuator pin;
- said casing having top, bottom, side and end walls;
- each of said spacer blocks having an elongated base of rectangular cross-section engageable with said side and bottom walls and one end wall;
- a central upright elongated web along the top of said base engageable with one end wall;
- and a top transverse flange upon and along said web engageable with said side and top walls and one end wall.

4,565,080

LATCH WITH REMOVABLE LOCK

Herbert Kincaid, Libertyville, and Michael L. Wray, Hanover Park, both of Ill., assignors to The Eastern Company, Naugatuck, Conn.

Filed Dec. 5, 1983, Ser. No. 557,850
Int. Cl.⁴ E05B *13/10*
U.S. Cl. 70—215 **5 Claims**



1. In a locking device having a barrel axially movable between a locking position and an unlocking position, said barrel having a key-operated bolt reciprocable between an extended position and a retracted position, the improvement comprising:
- an insert receivable within a chamber in the device, said chamber having a shoulder separating two steps therein, said insert abutting said chambe shoulder with a tongue received within a groove in the chamber shoulder and including a partition defining first and second pockets on either side thereof to receive the bolt when in its extended positions to maintain the barrel in either its locking position or unlocking position respectively, whereby said bolt in its retracted position is clear of said partition.

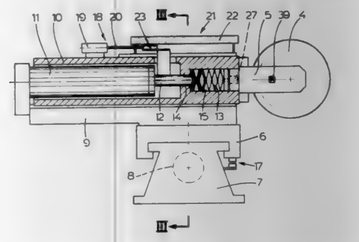
4,565,081

FORMING MACHINE

Johan Massee, Mercuriushof 8, 3951 EP Maarn, Netherlands

Filed May 2, 1984, Ser. No. 606,159
Claims priority, application Netherlands, May 11, 1983, 8301678
Int. Cl.⁴ B21D *22/16, 22/18*
U.S. Cl. 72—19 **11 Claims**

1. Forming machine comprising a rotatingly drivable gripping device for gripping a forming tool and a material plate to be formed, a movable lower slide, a first driving means for moving the lower slide, a first detector for determining the position of said lower slide with respect to a first reference, a movable upper slide mounted on the lower slide, a second driving means for moving the upper slide, a forming roller, a holder mounting said forming roller and supported on the upper slide, a second detector for determining the position of said upper slide, with respect to a second reference, a control unit controlling the movement of the forming roller by actuating both said driving means, said control unit being connected to said detectors, wherein a memory is connected to the control unit for storing position values of said slides, the control unit being provided to control the movement of the forming roller in dependence on the position values stored in said memory, wherein the forming roller is coupled to the second driving means through a spring means with a given spring characteristic; and a third detector for determining the compression of said spring means, said third detector being connected to the control unit, wherein the control unit operates the second driving means to withdraw the upper slide when a preselected spring compression is exceeded as detected by said third detector.

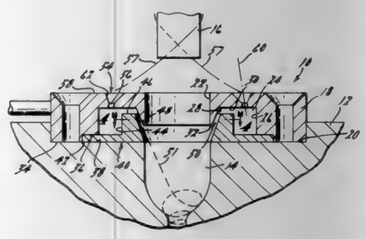


4,565,082

SPRAY APPARATUS FOR METAL FORMING MACHINES

Allan B. Heath, and Richard C. Gossman, both of Port Huron, Mich., assignors to Acheson Industries, Inc., Port Huron, Mich.

Division of Ser. No. 404,480, Aug. 6, 1982, Pat. No. 4,452,578. This application Sep. 19, 1983, Ser. No. 533,760
Int. Cl.⁴ B21J *3/00;* **B21D** *37/18;* **B05B** *1/34;* **C03B** *4/02*
U.S. Cl. 72—45 **17 Claims**



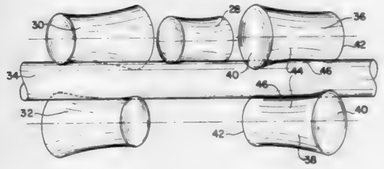
1. A lubricant spraying apparatus for applying a fluid lubricant to the working surfaces of a forming machine, said working surfaces comprising in part the surfaces of a die cavity and in part the surfaces of an overlying forming tool, said spraying apparatus comprising:
- a main housing defining a cavity opening on one side of said housing;
- an insert member receivable within said cavity, said insert member having first surface cooperating with said housing cavity to define a manifold chamber and second surfaces, also cooperating with said housing cavity to define nozzle means opening outwardly from said manifold chamber;
- inlet passage means in said housing for conducting a supply of lubricant mixture to said manifold chamber, said inlet opening generally tangentially into said chamber so as to impart a circular flow to said lubricant within said manifold chamber; and
- a plurality of circumferentially spaced second nozzles in said housing and opening outwardly from said manifold chamber in a direction away from said cavity, said second nozzles being operative to apply said lubricant to said surface of said overlying forming tool;
- said housing being adapted to be positioned with respect to said die cavity so that said nozzle means will direct the circularly flowing lubricant in a helical flowpath into said cavity.

4,565,083

STRAIGHTENING ROLLS

E. Gordon Thompson, State College, Pa., assignor to Sutton Engineering Company, Pittsburgh, Pa.

Filed Apr. 14, 1983, Ser. No. 484,914
Int. Cl.⁴ B21D *3/04*
U.S. Cl. 72—98 **8 Claims**



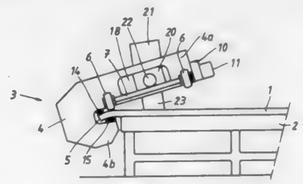
1. In a roll type straightener for straightening an elongated cylindrical workpiece wherein spaced support means are provided for supporting the workpiece at axially spaced locations for advancing the workpiece axially through the straightener while a transverse load is applied to the workpiece by a deforming means axially intermediate the support means, each said support means comprising:
- a pair of rotary support rolls each adapted to engage such a workpiece to support such a transverse load; each of said rolls including a generally concave surface of revolution which is adapted to engage such a cylindrical workpiece in line contact therewith throughout a given axial extent of the workpiece and which includes a minimum diameter throat portion that is offset axially from the axial midpoint of said surface of revolution; and said rolls being located with respect to each other such that the lines of contact thereof with such a workpiece are substantially mutually coextensive with respect to the axial extent of such workpiece and the respective said throat portions of said rolls are offset from each other along the axial extent of such workpiece.

4,565,084

METHOD AND A TOOL FOR BENDING THE EDGE OF THICK SHEET METAL

Finn Jonsson, Ystad, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Nov. 10, 1983, Ser. No. 550,467
Claims priority, application Sweden, Nov. 12, 1982, 8206438
Int. Cl.⁴ B21J *13/00*
U.S. Cl. 72—387 **10 Claims**



1. A bending tool for bending an edge portion of a deform-

able sheet when the deformable sheet is positioned on a support such that the edge portion to be bent projects away from the support, said bending tool comprising:

a generally J-shaped yoke which includes a long leg portion, a short leg portion and an interconnecting base portion, the long leg portion, the interconnecting base portion and the short leg portion providing a recess therebetween, an imaginary central plane extending through said long leg portion in its elongated dimension,

a first sheet-engaging bar connected to said long leg portion to extend generally perpendicularly with respect to said imaginary central plane and into said recess, said first sheet-engaging bar having an operating surface facing away from said long leg portion,

a second sheet-engaging bar connected to said short leg portion so as to extend into said recess, said second sheet-engaging bar having an operating surface facing away from said short leg portion, said first sheet-engaging bar being located in said recess closer to said connecting base portion than said second sheet-engaging bar, the operating surfaces of said first and second sheet-engaging bars being spaced apart a sufficient distance to enable the edge portion of the deformable sheet, which is generally aligned with said imaginary central plane, to fit therebetween,

an extensible force-generating member attached to said long leg portion at a location further from said connecting base portion than said second sheet-engaging bar, said extensible force-generating member being capable, when said bending tool is positioned to operate on a deformable sheet and an edge portion of the deformable sheet is positioned between the operating surfaces of said first and second sheet-engaging bars, of applying a force to the deformable sheet to cause said generally J-shaped yoke to tilt around the edge portion of the deformable sheet and enable said first and second sheet-engaging bars to bend the edge portion of the deformable sheet therebetween.

7. A method of curving an edge portion of a deformable sheet, which method comprises

placing the sheet on a support so that said edge portion thereof projects beyond the support,

locating a J-shaped yoke having an opening defined between one longer and one shorter leg on the projecting edge portion of the sheet in such a way that said edge portion is located within said opening, and extending an extensible drive device connected to the longer leg and pressed against the sheet so that the yoke is tilted relative to the support and the said edge portion is curved as the yoke tilts.

4,565,085

METHOD OF AND APPARATUS FOR MEASURING THE DEGREE OF GAS CHARGE IN A LIQUID SYNTHETIC RESIN COMPONENT

Ivica Grgic, Munich, and Wolfgang Söchtig, Germering, both of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 610,244

Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317486; Oct. 4, 1983, 3336037

Int. Cl.⁴ G01N *9/26, 7/00*

U.S. Cl. 73—19 **5 Claims**

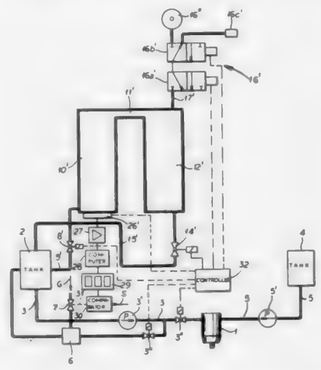
1. In an apparatus for the determination of a parameter representing the gas content of a gas-charged liquid synthetic resin component such as a synthetic resin component utilized in the production of foamed synthetic resins, wherein a sample of the gas charged liquid component is introduced into an upright measuring vessel, is caused to overflow at an overflow to the tip of said vessel, and the hydrostatic pressure of the resulting column of the gas charged liquid component is measured and, from the measurement of the hydrostatic pressure, the parameter is determined, the improvement which comprises:

a closed overflow vessel connected to said overflow of said measuring vessel;

a feed line provided with an intake valve connected with said measuring vessel for delivering said gas charged liquid component to a measuring vessel from said tank;

a discharge valve connecting said overflow vessel to a point below said overflow with said tank for returning overflow liquid component to said tank, said overflow vessel having a port to an upper portion thereof;

a switching valve connected to said port and having a first position connecting said port to a source of pressurized



gas for driving overflow liquid component from said overflow vessel to said tank, a second position for venting said vessels to the atmosphere to apply atmospheric pressure to the top of said column, and a third position wherein said port is blocked; and

means for operating said valves in a predetermined relationship to effect flushing of said liquid component through said measuring vessel, discharge of overflow liquid component from said overflow vessel, and equilibrating the top of said column with atmospheric pressure solely by an operation of said valves.

4,565,086

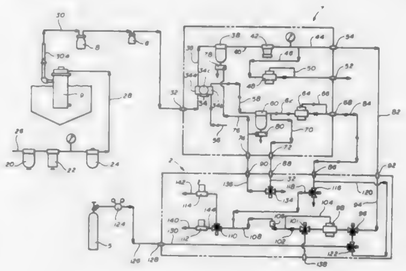
METHOD AND APPARATUS FOR DETECTING ENTRAINED GASES IN FLUIDS

Raymond T. Orr, Jr., Norman, Okla., assignor to Baker Drilling Equipment Company, Orange, Calif.

Filed Jan. 20, 1984, Ser. No. 572,436

Int. Cl.⁴ G01N *25/20*

U.S. Cl. 73—23 **23 Claims**



1. An apparatus for detecting the presence of a gas entrained

in an aqueous fluid circulated through a subterranean well bore, comprising:

a gas gathering means for gathering gas liberated from the circulating fluid for delivery to a sample gas flow line;

a sample flow controller in said flow line comprising means for establishing a constant rate of sample gas flow; means for regulating the relative humidity of the constant rate sample gas flow to a fixed value less than 100%;

sensor means for detecting the presence of gas in a gas sample flow;

means for directing the fixed relative humidity, constant rate sample gas flow to the sensor means;

a dilution flow line communicating with the gas flow line between the sample flow controller and the sensor means for reducing the concentration of the gas supplied to the sensor means and including valve means selectively communicating said dilution flow line with the gas flow line; and

control means in communication with said sensor means and said valve means for establishing communication between the sample gas flow line and the dilution flow line when the concentration of gas in the circulating fluid exceeds a predetermined concentration, whereby the concentration of gas thereafter exposed to the sensor means is less than the predetermined concentration.

4,565,087

METHOD AND APPARATUS FOR RECOGNITION OF KNOCKING IN AN INTERNAL COMBUSTION ENGINE

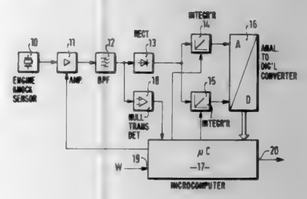
Eckart Damson, Stuttgart; Martin Klenk, Backnang; Winfried Moser, Ludwigsburg, and Heinz Möller, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 23, 1984, Ser. No. 613,152

Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319458

Int. Cl.⁴ G01L *23/22*

U.S. Cl. 73—35 **27 Claims**



1. Method of recognizing engine-knock in an internal combustion engine by analysis of electrical signals of a sensor responsive to oscillatory phenomena originating in the combustion chamber of at least one engine cylinder, comprising the steps of:

amplifying said electrical signals;

band-pass-filtering said electrical signals;

deriving from said electrical signals a sequence of function values respectively relating to successive intervals, each of a duration not exceeding a single cycle period of oscillation of said electrical signals each function value of said sequence corresponding to a single oscillation cycle;

comparing said sequence of function values with a reference sequence of reference values, in which sequence successive reference values differ from each other, each of said reference values being used for comparison with only one of said function values and

producing a knock-recognition signal when said sequence of function values does not differ by more than a predetermined difference from said reference sequence of reference function values.

4,565,088

PROCESS AND APPARATUS FOR THE DETECTION OF CHANGES OF COMPOSITION IN A MEDIUM WITH THE AID OF ULTRASOUND

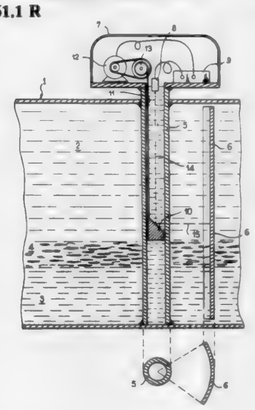
Michel Crambes, Villette de Vienne, France, assignor to Elf France, France

Filed Jan. 30, 1984, Ser. No. 574,971

Claims priority, application France, Jan. 31, 1983, 83 01427

Int. Cl.⁴ G01N *29/02*

U.S. Cl. 73—61.1 R **11 Claims**



1. Process for detecting and locating a change of composition in a medium by means of ultrasound which comprises:

positioning a medium tight tube in the medium, the tube having a mirror which reflects ultrasonic waves along the longitudinal axis of the tube perpendicularly to said axis, said mirror being displaceable to a plurality of points along said axis;

positioning a reflector screen which surrounds a portion of the tube to reflect ultrasonic waves perpendicular to said axis of the tube back to the mirror in said medium a distance of 100 to 400 mm from the tube;

transmitting ultrasonic waves along said axis;

displacing said mirror in said tube to a plurality of said points; and

determining the ultrasonic speed of the medium between the tube and the reflector screen at said plurality of points along said axis.

4,565,089

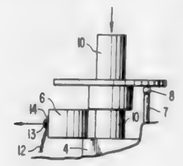
CONSISTOMETER

Henry Arciszewski, Franklin Lakes; Linda A. Porzio, North Haledon, both of N.J., and Bin Y. Chiang, Little Neck, N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 18, 1984, Ser. No. 621,961

Int. Cl.⁴ G01N *3/48*

U.S. Cl. 78—82 **26 Claims**



1. A consistometer for measuring the consistency of a deformable sample, comprising:

a support having a means for guiding;

a movable mass adapted to be guided in a downward direction under the force of gravity by said means for guiding;

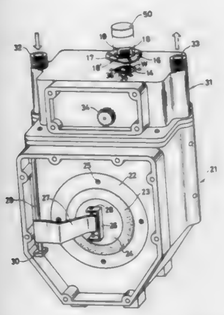
a means for indicating displacement having a displaceable arm contacting a portion of said movable mass;
and a removable spacer element to suppot said movable mass in a predetermned spaced relation to said support, said removable spacer element being selectively disengageable from said support so as to release said movable mass;
whereby disengagement of said removable spacer element from said support causes said movable mass to drop vertically under the force of gravity against a deformable specimen placed thereunder, so that said means for indicating can indicate depth of penetration into the deformable specimen by said movable mass;
said support including a vertical post supporting a horizontal arm in spaced relation from a base, whereby the specimen can rest upon said base beneath said movable mass for testing;
said means for guiding including an aperture formed in said horizontal arm which extends completely therethrough, said movable mass being adapted to be received within said aperture, whereby said movable mass remains substantially vertically oriented during testing;
said movable mass including a rod having a diameter adapted to be received within said aperture;
said rod having a means for contacting a portion of said displaceable arm attached thereto;
whereby downward movement of said movable mass causes said means for contacting to urge said displaceable arm of said means for indicating displacement such that displacement of said movable mass is indicated by said means for indicating displacement;
said means for contacting including generally horizontally extending body which is attached to a portion of said rod;
said horizontally extending body being attached to said rod at a location above said horizontal arm;
said movable mass comprising an elongated article;
said removable spacer element has an indentation therein adapted to abut said elongated article;
said removable spacer element having a lower surface adapted to slidably rest upon an upper surface of said horizontal arm;
said removable spacer element having an upper surface adapted to slidably support a horizontally extending portion of said movable mass;
whereby said removable spacer element stably supports said movable mass in spaced relation to said horizontal arm.

4,565,090

DETECTION DEVICE FOR DETECTING AND INDICATING OPERATION OF A GAS METER

Motohiro Gotanda, No. 1802-10, Nakabyo, Abiko City, Chiba Prefecture, Japan

Filed Oct. 17, 1983, Ser. No. 542,538
Int. Cl.⁴ G01F *3/20*
U.S. Cl. 73—198 **3 Claims**



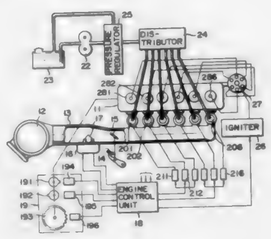
1. In a gas meter comprising a housing provided with a gas inlet and a gas outlet and made of non-magnetic material, a driver section provided with a rotary member which rotates according to the amount of gas flow, and a meter driven by the driver section for indicating the amount of gas flow, a device for detecting whether or not gas is being used in a room or inside a housing, said device comprising a first pair of link arms for transmitting the movement of at least one flow responsive diaphragm and a second pair of link arms for operating at least one changeover valve, said pairs of link arms being swingably attached to a rotary plate, cylindrical magnet attached to a point where the first pair of link arms is swingably attached to the rotary plate; sensor means, comprising a plurality of reed switches disposed in a cylindrical arrangement having a vertical axis, for detecting the rotation of the magnet, said reed switches being disposed on the roof of the housing in a configuration corresponding to the path of rotation of the magnet, and a display means driven by output of the sensor means for indicating that a small amount of gas is being used.

4,565,091

APPARATUS FOR MEASURING THE QUANTITY OF AIRFLOW PASSING THROUGH AN INTAKE PASSAGE OF AN ENGINE

Katsunori Ito, Aichi; Susumu Akiyama, Kariya; Tiaki Mizuno, Toyota; Toshitaka Yamada, and Tomoaki Abe, both of Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 16, 1985, Ser. No. 723,894
Claims priority, application Japan, Apr. 20, 1984, 59-79642; Apr. 25, 1984, 59-83339
Int. Cl.⁴ G01M *15/00*
U.S. Cl. 73—118 **13 Claims**



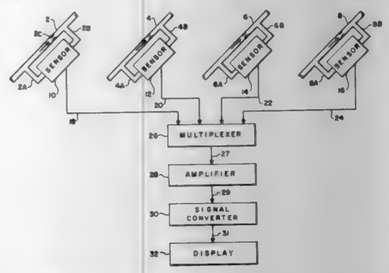
1. An apparatus for measuring the quantity of airflow passing through an intake passage of an engine, comprising:
means for producing a supply electric power;
means disposed in the intake passage and adapted to generate heat while the supply electric power is being applied thereto, thereby measuring the quantity of airflow and burning off dust thereon;
means for producing a first signal indicative of the commencement of the measurement of the airflow quantity;
means for producing a second signal indicative of burning off dust;
means for limiting the duration of the second signal to a predetermined time interval equivalent to the maximum allowable duration for burning off dust;
means for comparing the temperature of the generating means with a reference temperature, said comparing means being adapted to produce a third signal indicative of the heat generating means reaching a predetermined temperature when the difference between the temperature of the heat generating means and the reference temperature reaches a predetermined value; and
means for applying the supply electric power to the heat generating means during the time interval for the second signal independently of the third signal.

4,565,092

FLOW SENSOR WITH ADJUSTABLE SENSITIVITY

Arlon D. Kompelien, South Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 25, 1984, Ser. No. 654,577
Int. Cl.⁴ G01F *1/46*
U.S. Cl. 73—202 **20 Claims**



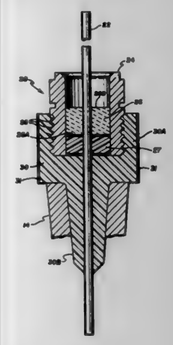
1. A flow sensor comprising
a hollow cylindrical container means having an internal compartment,
a first fluid port on said container means communicating with said compartment,
a second fluid port on said container means diametrically opposite to said first port and communicating with said compartment,
differential pressure transducer means located in said compartment and responsive to a differential pressure between said first and second ports to produce an output signal representative of said differential pressure and,
means for selectively rotating said container means on a fixed axis of rotation, said means for rotating including a substantially cylindrical housing having an axis parallel to said axis of rotation of said container means to form an annulus therewith.

4,565,093

METHOD FOR FACILITATING HERMETICITY LEAKAGE TESTING OF AN ELECTRICAL FEEDTHROUGH

Edsel O. Jurva, Anoka, and Richard L. Goodin, Blaine, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 308,308, Oct. 5, 1981, Pat. No. 4,460,664.
This application Mar. 5, 1984, Ser. No. 586,220
Int. Cl.⁴ G01M *3/20*
U.S. Cl. 73—40.7 **12 Claims**



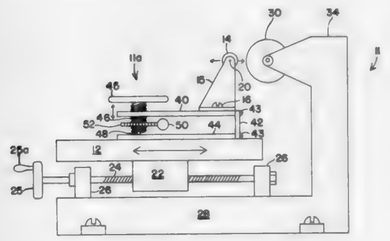
1. A method of manufacturing and testing an electrical feedthrough comprising these steps:
forming an electrically insulating seal between a conductive lead and a metal ferrule through which the lead extends;
positioning gas retaining material body means adjacent to the interior surface of said seal;
molding a plastic body over a portion of the exterior surface of the ferrule, the body means and the pin;
forcing gas through the exposed surface of said seal and into the gas retaining material body means; and
observing the leakage of any gas from said gas retaining material body means through the exposed surface of said seal.

4,565,094

APPARATUS FOR PRECISION PLACEMENT AND PARAMETER MEASUREMENT

Richard D. Sedgewick, 100 Horne St., Dover, N.H. 03820

Filed May 24, 1984, Ser. No. 613,423
Int. Cl.⁴ G01D *11/30*
U.S. Cl. 73—432 R **21 Claims**



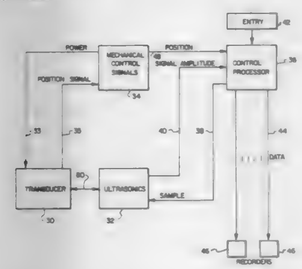
1. Apparatus for precise placement of an object or measurement of a parameter comprising:
a base plate;
a first tilt plate in parallel spaced apart relationship relative to the base plate;
a first hinge plate rigidly secured to respective edges of the base plate and first tilt plate on one side of the respective base plate and first tilt plate, said hinge plate constructed and arranged of rigid elastic material for controlled elastic bending and recovery under applied bending moment stress;
first spreader means operatively coupled to the base plate and first tilt plate on the side of the base plate and first tilt plate opposite the hinge plate, and first spreader actuator means for actuating the spreader means and imparting tilting motion to the first tile plate relative to the base plate by varying the spacing of the first tilt plate relative to the base plate at the side of the first tilt plate and base plate opposite the first hinge plate thereby imparting bending moment stress to the first hinge plate, said first hinge plate constraining the tilting motion on a first tilting axis;
a second tilt plate in parallel spaced apart relationship relative to the first tile plate;
a second hinge plate rigidly secured to respective edges of the first and second tilt plates on one side thereof, said second hinge plate constructed and arranged of rigid elastic material for controlled elastic bending and recovery under applied bending moment stress;
second spreader means operatively coupled to the first and second tilt plates at the side of the first and second tilt plates opposite the second hinge plate, and second spreader actuator means for actuating the second spreader means and imparting tilting motion to the second tilt plate relative to the first tilt plate by varying the spacing of the first and second tilt plates at the side of the first and second tilt plates opposite the second hinge plate thereby imparting bending moment stress to the second hinge plate, said second hinge plate constraining the tilting motion on a second tilting axis;

whereby an object may be coupled to the second tilt plate for precision placement or for parameter measurement indication upon actuation of the respective spreader means.

4,565,095
SOUND TRANSDUCER APPARATUS SYSTEM AND METHOD

Glenn M. Light, and William R. Van der Veer, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed May 2, 1984, Ser. No. 606,276
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—621 19 Claims

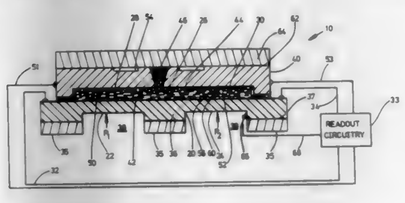


1. A sound transducer apparatus comprising:
sounding means for generation of directional sound energy and for receiving sound energy;
a rotational movable mount means connected to said sounding means for varying the angular direction of sound energy while maintaining a costant distance above a test material surface; and
position detection means for determining the direction of generated sound energy.

4,565,096
PRESSURE TRANSDUCER

Thomas A. Knecht, Minnetonka, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Dec. 9, 1983, Ser. No. 559,897
Int. Cl.[4] G01L *9/12*
U.S. Cl. 73—718 10 Claims

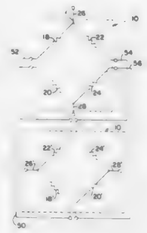


1. A transducer having a first sensing diaphragm and a second sensing diaphram each configured such that a first pressure (Pl) is applied to the first diaphragm and a second pressure (P2) is applied to the second diaphragm, and wherein both diaphragms are formed on a diaphragm wafer and means defining an enclosed common fluid cavity fluidly open to each diaphragm responsive to such pressure, said cavity being filled with a substantially non-compressible fluid such that deflection of the diaphragms is representative of the pressure differential (P1—P2), the first and second diaphragms being formed on the one substantially flat face of the diaphragm wafer.

4,565,097
METHOD AND APPARATUS FOR TRANSDUCER ERROR CANCELLATION

John Dimeff, San Jose, Calif., assignor to Mark Telephone Products, Inc., Santa Clara, Calif.

Filed May 9, 1984, Ser. No. 608,607
Int. Cl.[4] G01L *1/18*
U.S. Cl. 73—765 15 Claims

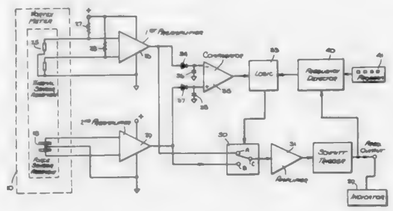


1. A transducer unit substantially free of undesirable circuit effects of the type which change the operation of the transducer comprising:
first and second transducers of essentially the same construction and matched undesirable circuit effects and each having a number of circuit elements intercoupled to one another to define a signal input and a signal output, a first one of the circuit elements being coupled to a second one of the circuit elements so that a change in a first property of the first circuit element due to said undesirable circuit effects will result in a change in said first property of the second element in an opposite sense.

4,565,098
HYBRID SENSING SYSTEM FOR VORTEX FLOWMETER

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Sep. 10, 1984, Ser. No. 648,933
Int. Cl.[4] G01F *1/32*
U.S. Cl. 73—861.22 9 Claims



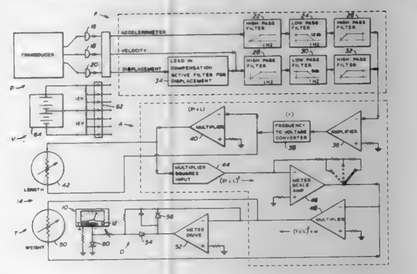
1. In a vortex type meter for measuring the flow rate of a fluid passing through a flow tube by generating fluidic oscillations whose frequency depends on flow rate; a hybrid sensing system which renders the meter operative throughout a wide range encompassing a low and high frequency range, said system comprising:
A a thermal sensor exposed to the fluidic oscillations and having a frequency response characteristic which yields a relatively high amplitude signal only in the low frequency range;
B a force sensor exposed to the fluidic oscillations and having a frequency response characteristic which yields a relatively high amplitude signal only in the high frequency range;

C a trigger to generate output pulses at a frequency determined by that of the signal applied thereto; and
D means to compare the relative amplitudes of said sensors and to select the signal from the sensor having the higher amplitude at the prevailing meter frequency for application to said trigger to provide output pulses whose frequency is indicative of the flow rate.

4,565,099
METHOD AND APPARATUS FOR DETERMINING TENSION IN A CABLE

William S. Arnold, Houston, Tex., assignor to Smiser Industries, Inc., Houston, Tex.

Filed Sep. 4, 1984, Ser. No. 646,802
Int. Cl.[4] G01L *5/10*
U.S. Cl. 73—862.41 13 Claims

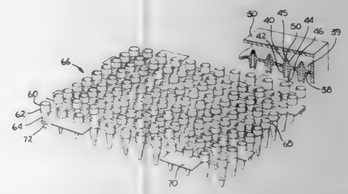


11. A method for measuring tension in a cable or like object comprising the steps of:
sensing vibrations occurring in the object;
generating a sensor signal indicative of the sensed vibrations;
normalizing the sensor signal to the lowest frequency component of the sensor signal within the bandwidth of the apparatus;
deriving a tension value corresponding to the tension in the object under observation from the normalized sensor signal.

4,565,100
PIPETTE DEVICE

Don W. Malinoff, Granada Hills, Calif., assignor to Culture-Tek, Granada Hills, Calif.

Continuation-in-part of Ser. No. 307,745, Oct. 2, 1981, Pat. No. 4,468,974. This application May 3, 1983, Ser. No. 491,305
Int. Cl.[4] B01L *3/02*
U.S. Cl. 73—863.32 13 Claims

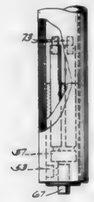


1. A pipette sampler system for removing a plurality of liquid samples from a multi-well tray, comprising:
a housing having a main body portion and a plurality of elongated, outwardly extending collector conduits with a first portion of each conduit configured to be inserted into an associated pipette tip, and a second portion extending into the main body of said housing, said first and second portions having co-axial openings for fluid flow, said opening for fluid flow in said first portion being larger than said opening for fluid flow in said second portion;
a patterned array of tubular pipette tips removably joined to and in flow communication with said array of collector conduits; and
means for forming a vacuum in said housing whereby a predetermined quantity of liquid flows into said pipette tips and said collector conduits.

4,565,101
MOLTEN METAL PIN SAMPLER

Joseph J. Boron, Medina, Ohio, assignor to Midwest Instrument Co., Inc., Hartland, Wis.

Filed Oct. 19, 1983, Ser. No. 543,412
Int. Cl.[4] G01N *1/18*
U.S. Cl. 73—864.57 2 Claims



1. A molten metal sampler for pin samples which is adaptable for both a side entry filling mode or an end filling mode comprises two opposed mold halves, said mold halves being formed from thermosetting foundry sand, each of said mold halves including integrally formed recesses including wall means defining a pair of spaced axially extending recesses, wall means defining a portion of a mixing chamber at the ends of said recesses, with said mixing chamber having an inlet and outlet with said outlet communicating with said pair of axially extending recesses, a wall means defining a longitudinally extending passage communicating with said mixing chamber, inlet and end wall means closing the remote end of said longitudinal passage, and wall means defining a transverse fill passage communicating with said longitudinal recess at a point intermediate the ends of said longitudinally extending passage, a fused quartz fill tube in said longitudinal passage in sealing fit blocking entry of molten metal through said transverse fill passage when said sampler is used in said end filling mode, said mold halves when assembled providing two parallel spaced apertures and fused quartz pin sample molds positively positioned within said apertures and said remote end of said longitudinal passage being removable to enable communication of said passage through the end of said sampler for the end filling mode.

4,565,102
PTO-DRIVING OF DOUBLE-CLUTCH-INCORPORATED TYPE TRANSMISSION

Masayoshi Miyahara, Sakai, and Masao Takagi, Hashimoto, both of Japan, assignors to Kubota, Ltd., Japan

Continuation of Ser. No. 416,703, Sep. 10, 1982. This application May 6, 1985, Ser. No. 731,330
Claims priority, application Japan, Sep. 11, 1981, 56-135622[U]
Int. Cl.[4] F16H *37/00, 3/38*
U.S. Cl. 74—15.4 4 Claims

1. PTO-drive for double-clutch type transmission comprising a double clutch apparatus including:
a running-travel clutch and a PTO clutch having a PTO transmission shaft, said running-travel and PTO clutches disposed in operative juxtaposition relative to one another;
a running-travel main shaft drivable from th running-travel clutch;
a PTO main shaft drivable from the PTO clutch, said run-

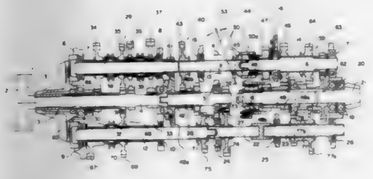
ning-travel shaft being concentrically disposed within said PTO main shaft;

travel-transmission shaft means for transmitting engine power from said running-travel main shaft;

main speed-change means operatively associated with said running-travel main shaft for operatively interconnecting said running-travel main shaft and said travel-transmission shaft means to change running travel speeds, wherein

said running-travel main shaft, said main speed-change means and said travel-transmission shaft means together establish a travel drive line;

first and second gear means for being respectively driven by the PTO main shaft and the running-travel main shaft; and



coupling means movable between a first position for selectively coupling said PTO transmission shaft to said PTO main shaft through said first gear means, and a second position for selectively coupling said PTO transmission shaft to said running-travel main shaft through said second gear means, wherein said running-travel main shaft, said second gear means and said PTO transmission shaft together define a PTO drive line when said coupling means is moved to said second position such that

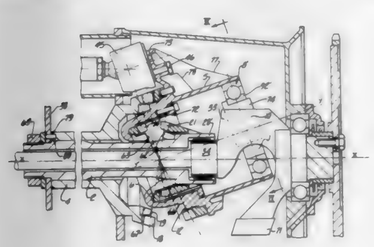
operation of said main speed change means to effect speed change through said travel drive line does not affect PTO drive speed through said PTO drive line.

4,565,103

CONNECTING ROD BEARINGS FOR A VOLUMETRIC PISTON CHAMBER MACHINE

Maurice Brille, 27 rue Parmentier, Nanterre, Hauts de Seine, France

Filed May 10, 1982, Ser. No. 376,349
Claims priority, application France, May 11, 1981, 8109801
Int. Cl.⁴ F16H *23/00*
U.S. Cl. 74—60 **22 Claims**



1. A power transmission device for converting reciprocating motion of a plurality of connecting rods each reciprocably disposed within a housing with its respective reciprocation axis parallel to a common central axis and spaced a predetermined distance from said central axis, said plurality of connecting rods reciprocating in a predetermined sequential order about said central axis, said power transmission device comprising:

a power transmission body disposed adjacent to said plurality of connecting rods and pivotally interconnected with each of said plurality of connecting rods such as to wobble about said central axis as said plurality of connecting rods sequentially reciprocate;

a central passageway through said power transmission body, said central passageway having a first portion defining a first opening and a second portion defining a second opening opposite said first opening;

axle shaft means mounted to said housing about said central axis, said axle shaft means having a portion extending through said first opening in said power transmission body;

first outer gear means fixedly disposed on an outer portion of said power transmission body;

second outer gear means interconnected with said axle shaft means, said second outer gear means engaging a portion of said first outer gear means such that said first outer gear means is rotated about said central axis as said power transmission body is wobbled therearound;

first inner gear means fixedly disposed within said first opening of said central passageway and said power transmission body;

second inner gear means disposed within said central passageway of said power transmission body adjacent said first inner gear means and interconnected with said extending portion of said axle shaft means, said second inner gear means engaging a portion of said first inner gear means diametrically opposed to the engaged portions of said first and second outer gear means such that said first inner gear means is rotated about said central axis as said power transmission body is wobbled therearound;

crank means having a first end with a first journal portion rotatably mounted to said housing, said first journal portion having a central axis coaxial with said central axis of said power transmission device, a second end terminating in a second journal portion, said second journal portion having a central axis coaxial with said central axis and further being mounted within said power transmission body between said first and second opening, said second journal portion further being rotatably interconnected with said extending portion of said axle shaft means extending through said first opening in said power transmission body such as to rotate about said central axis, an intermediate portion disposed between said first and second journal portions;

said intermediate portion comprising yoke means fitted thereto, said yoke means constraining said intermediate portion for motion relative to said intermediate portion to permit longitudinal motion of said intermediate portion relative to said yoke means and to permit radial motion of said intermediate portion towards and away from said central axis, said yoke means being rotatably mounted to said power transmission body thereby minimizing the load transmitted between said power transmission body and said crank means; and

means for mounting said first journal portion, second journal portion and said intermediate portion respectively to said housing, axle shaft means and power transmission body.

4,565,104

LINEAR ACTUATOR FOR LARGE-ANGLE MOTIONS

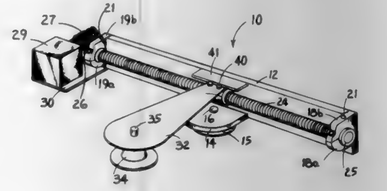
Thomas A. Akin, Smyrna, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Sep. 20, 1982, Ser. No. 420,033
Int. Cl.⁴ F16H *27/02, 29/02, 29/20, 21/45*
U.S. Cl. 74—89.15 **10 Claims**

1. A linear actuator for rotating a load comprising:

a frame defining a linear path of travel, said frame being pivoted intermediate the ends of said path about a frame pivot axis intersecting said path and normal thereto, said frame pivot axis dividing said path into a first path segment extending on one side of said frame pivot axis and a second path segment extending on the opposite side of said frame pivot;

load support means for supporting said load for pivotal motion about a load pivot axis parallel to and spaced apart from said frame pivot axis, said load support means including a drive arm extending to a drive point along said path of travel, said drive point and said frame pivot axis being equidistant from said load pivot axis; and



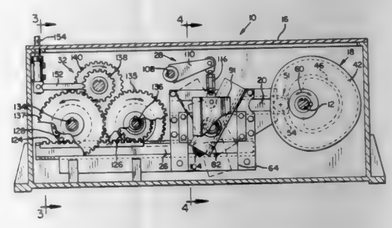
means for driving said drive point of said drive arm along said path of travel from a first location in said first path segment through said frame pivot axis to a second location in said second path segment.

4,565,105

POWER TRANSMISSION APPARATUS

Walter O. Peterson, 875 Classic Pl., Eugene, Oreg. 97401

Filed Sep. 23, 1983, Ser. No. 534,978
Int. Cl.⁴ F16H *29/08*
U.S. Cl. 74—119 **9 Claims**



1. A power transmission apparatus comprising:

lever support means;

lever means having first and second end portions;

fulcrum means for pivoting said lever means to said lever support means at a fixed pivot location intermediate the first and second end portions of said lever means;

drive rod means adapted to be driven in reciprocation, said drive rod means having one end portion slidably and pivotally coupled to the first end portion of said lever means for sliding and pivoting relative to said lever means as said drive rod means reciprocates;

drive rod guide means for guiding the motion of said drive rod means so as to impart oscillating movement to said lever means as said drive rod means reciprocates;

output rod means having one end portion slidably and pivotally coupled to the second end portion of said lever means;

drive adjustment means for selectively shifting said lever support means to vary the distance from the pivot location to said one end portion of said drive rod means relative to the distance from the pivot location to said one end portion of said output rod means;

output rod guide means for guiding the movement of said output rod means so as to reciprocate in response to oscillating movement of said lever means whenever there is a non-zero distance from said pivot location to said one end portion of said output rod means; and whereby

shifting of said lever support means varies the distance through which said output rod means reciprocates in response to reciprocation of said drive rod means;

said lever means including first and second spaced apart lever portions, said lever portions each having first and second side walls with the second side walls being positioned adjacent to one another, said lever portions each having a longitudinally extending, outwardly opening, slot;

means for supporting said drive rod means to position said one end portion thereof between said lever portions;

means for supporting said output rod means to position said one end portion thereof between said lever portions; said one end portion of said drive rod means including first coupling means slidably positioned within the slots of said lever portions and pivoted relative to said lever portions to slidably and pivotally couple said one end portion of said drive shaft means to said lever portions; and

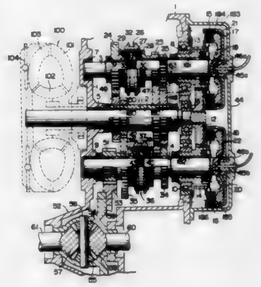
said one end portion of said output rod means including second coupling means slidably positioned within the slots of said lever portions and pivoted relative to said lever portions to slidably and pivotally couple said one end portion of said output rod means to said lever portions.

4,565,106

GEAR TRANSMISSION MECHANISM WITH MULTIPLE LAYSHAFTS

Masaharu Sumiyoshi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisin-Warner Limited, Anjo, both of, Japan

Filed Aug. 20, 1982, Ser. No. 409,831
Claims priority, application Japan, Dec. 1, 1981, 56-193997
Int. Cl.⁴ F16H *3/08*
U.S. Cl. 74—359 **6 Claims**



1. A gear transmission for an automotive vehicle, comprising:

a first shaft which serves as a power input shaft;

a second shaft arranged so as to be spaced sidewards from and in parallel with said first shaft;

a third shaft arranged so as to be spaced sidewards from and in parallel with said first and second shafts;

a fourth shaft in tubular form arranged over said first shaft to be coaxial therewith;

a first subtransmission system which comprises a plurality of first gears and a first clutch and which selectively transmits rotational power between said first and second shafts;

a second subtransmission system which comprises a plurality of second gears and a second clutch and which selectively transmits rotational power between said first and third shafts;

a third subtransmission system which comprises a plurality of third gears and a first synchronizer and which selectively transmits rotational power between said second and fourth shafts;

a fourth subtransmission system which comprises a plurality of fourth gears and a second synchronizer and which selectively transmits rotational power between said third and fourth shafts;

a power output member which rotates about an axis arranged as spaced sidewards from and in parallel with said first and fourth shafts; and

a gear train which transmits rotational power between said fourth shaft and said power output member.

4,565,107

BALL THROUGH-PASSAGE FOR THE GEARSHIFTING LEVER OF A MOTOR VEHICLE

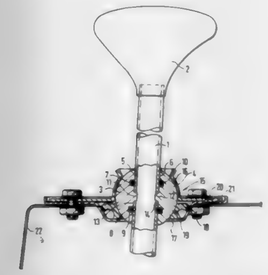
Robert Müller, Weissach Konstrukteur, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche A.G., Fed. Rep. of Germany

Filed Feb. 2, 1984, Ser. No. 576,401

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 3305422

Int. Cl.⁴ G05G *9/12*; F16C *11/08*

U.S. Cl. 74—473 P **10 Claims**



1. A ball through-passage for a gearshifting lever of a motor vehicle, comprising a spherically shaped fixed bearing housing, two ball halves split along a cylindrical gearshifting lever and abutting at the gearshifting lever by way of cylindrical recesses, the ball-shaped surfaces of said ball halves abutting at the spherically shaped fixed bearing housing, two O-rings inserted between the ball halves and the gearshifting lever which are retained in annular grooves, and form-locking detent means for securing the two ball halves against axial displacement on the gearshifting lever.

4,565,108

GEARSHIFT APPARATUS FOR AN AUTOMOBILE

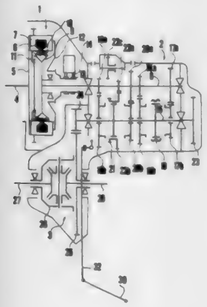
Fujio Makita, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1983, Ser. No. 524,947

Claims priority, application Japan, Sep. 1, 1982, 57-153042

Int. Cl.⁴ B60K *20/00*

U.S. Cl. 74—475 **7 Claims**



1. A gearshift apparatus for an automobile with an electromagnetic clutch and a transmission operatively connected to the clutch and having four forward-gear trains and an output shaft, comprising:

a first synchronizing means for selectively engaging a second speed gear train and a fourth speed gear train, respectively, with the output shaft of said transmission, said second speed gear train having a gear ratio producing a sufficient torque to start said automobile on an ordinary road;

a second synchronizing means for selectively engaging a first speed gear train and a third speed gear train, respectively, with said output shaft, the first speed gear having a gear ratio producing a sufficient torque to start the automobile on an uphill and at heavy road, respectively,

means comprising a shift lever for operating said first synchronizing means and said second synchronizing means, respectively;

said shaft lever being mounted so as to be rotated to a first plane for operating said first synchronizing means and rotated to a second plane for operating said second synchronizing means;

means for holding said shift lever in said first and second planes, respectively, for enabling operating said first synchronizing means and for enabling operating said second synchronizing means, respectively by said shift lever and;

a gear select means including a select lever selectively operatively engagable with one of said synchronizing means by rotation of said shift lever to respective of said planes, and an actuating rod operatively connecting said shift lever with said select lever for operating one of said first and second synchronizing devices respectively by movement of said shift lever.

4,565,109

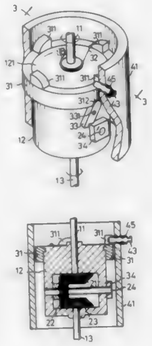
INSTANTANEOUS DIRECTION CHANGING ROTATION MECHANISM

Chi-Chour Tsay, No. 31, Sung Shu, Jen-Shan Li, Ta-Hsi Chen, Tao-Yuan Hsien, Taiwan

Filed Dec. 27, 1983, Ser. No. 565,713

Int. Cl.⁴ F16H *5/06, 5/76*

U.S. Cl. 74—780 **6 Claims**



1. A direction changing rotation mechanism comprising:

a rotation means comprising a driving shaft and a driven shaft with coincident central lines and a casing of gear between the driving shaft and driven shaft for transmission of power from the driving shaft via the casing of gear to drive the driven shaft for rotation in the same direction;

a direction changing train of gear within the casing of gear with negative train value for transmission of power from the driving shaft to drive the driven shaft for rotation in reverse direction;

a clutch means comprising a movable ring attached to the circumference of the casing of gear which can generate angular displacement against the casing of gear, a return spring for the movable ring, a brake block extended from the train of gear to the circumference of the casing of gear and a brake element on the casing of gear to control the brake block in order to control the driving shaft to transmit via either the casing of gear or the train of gear; and a sensor means comprising a sensor element and a stop element fixed to an external shell which, by reaction of the sensor element contacting another object, a force is applied to the stop element for displacement in order to control the rotation of the movable ring and then to alter the engagement condition between the brake block and brake element of the clutch means for controling the direction of rotation of the driven shaft indirectly.

4,565,110

HYDRAULIC APPARATUS FOR A CONTINUOUSLY VARIABLE TRANSMISSION

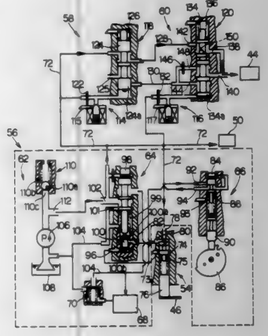
Hiroshi Ito, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Feb. 17, 1984, Ser. No. 581,051

Claims priority, application Japan, Feb. 26, 1983, 58-031298

Int. Cl.⁴ B60K *41/16*

U.S. Cl. 74—868 **22 Claims**



12. A hydraulic apparatus for a continuously variable transmission for motor vehicles having a driving pulley with a fixed member and a movable member, the movable member being actuated by a hydraulic cylinder to form a V-shaped opening therebetween, a driven pulley with another fixed member and another movable member, said another movable member being similarly actuated by another hydraulic cylinder to form another V-shaped opening therebetween, and a belt member spanning said pulleys, comprising:

a hydraulic fluid reservoir containing hydraulic fluid;

a hydraulic fluid pump for pumping the hydraulic fluid from the reservoir;

ratio selecting valve means for changing the speed ratio between the driving pulley and the driven pulley; and

change speed control valve means for controlling the speed of changing speed ratios between the driving pulley and the driven pulley, the change speed control means comprising;

a valve having a first and a second land;

a first inlet passage supplied with the hydraulic fluid from the hydraulic fluid pump;

a second inlet passage supplied with the hydraulic fluid from the hydraulic fluid pump, the hydraulic fluid being exerted on the second land;

a controlling means connected with the second inlet passage, the controlling means supplying the hydraulic fluid to the second land or draining the hydraulic fluid in the second inlet passage;

an outlet passage connected with the cylinder of the driving pulley, the outlet passage draining the fluid of the cylinder of the driving pulley therethrough when the hydraulic fluid is not supplied to the second land, or being disconnected with the first inlet passage when the hydraulic fluid is not supplied to the second land; and

a first biasing means for biasing the first land in the direction to communicate the first inlet passage with the outlet passage.

4,565,111

DEVICE FOR ROTATING AND AXIALLY MOVING A BOLT

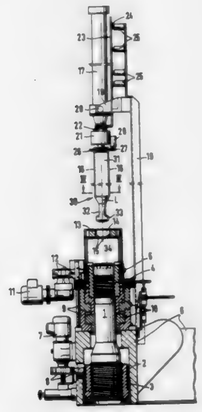
Karl-Heinz Ecker, Erkelenz, and Erhard Hoffmann, Hückelhoven, both of Fed. Rep. of Germany, assignors to Wirth Maschinen-und Bohrgerate-Fabrick GmbH, Erkelenz, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,639

Claims priority, application Fed. Rep. of Germany, May 25, 1983, 3318941

Int. Cl.⁴ B25B *13/50*

U.S. Cl. 81—53.2 **18 Claims**



1. In a device for rotating and axially moving a heavy screw bolt of the type which cannot be actuated manually wherein an axially displaceable coupling device is engageable with an accessible end part of the bolt, the improvement comprising:

a coupling device receiving chamber in the accessible end part of the bolt;

a shaft part on the coupling device having a longitudinal axis aligned with said chamber;

a head adjacent the end of said shaft insertable into said chamber;

at least one projection on said head projecting transversely to said longitudinal axis;

at least one axial abutment in said chamber operatively engageable axially with said head;

at least one first tangential abutment in said chamber extending over substantially the entire length of the chamber; and

at least one second tangential abutment extending over only part of the length of said chamber in the region through which said head enters said chamber;

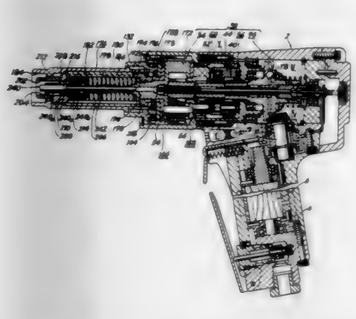
said tangential abutments being engageable with said projection and being spaced with respect to each other to allow said projection of said head to be introduced between said abutments.

4,565,112

BOLT TIGHTENING APPARATUS HAVING BOLT TIP DISCHARGING DEVICE

Masahiro Fujita, Sennan, and Yukio Uemura, Yokohama, both of Japan, assignors to Maeda Metal Industries, Ltd., Osaka and Nissan Motor Co., Ltd., Kanagawa, both of, Japan

Filed Jun. 25, 1984, Ser. No. 624,177
Claims priority, application Japan, Jun. 25, 1983, 58-98297[U]
Int. Cl.⁴ B25B *17/00*
U.S. Cl. 81—56 **3 Claims**



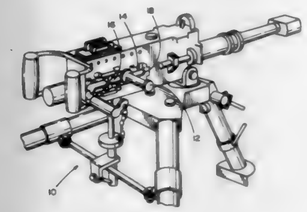
1. A bolt tightening apparatus comprising an epicyclic train including an internal gear and a planet gear support frame, an outer socket coupled to the internal gear, an inner socket coupled to the support frame, the two sockets being adapted to have fitted therein a nut and a tip at the front end of a bolt to shear the bolt tip by the reaction of rotation acting on the two sockets, and an ejector pin disposed in the inner socket for knocking out the bolt tip remaining in the inner socket, the outer socket and the inner socket being removably in engagement with the epicyclic train, the ejector pin having a rear end projecting from the rear end of the inner socket and extending into the support frame when in a retracted position, the epicyclic train being formed with a stepped axial bore extending therethrough in alignment with the ejector pin, a clamp shaft being axially slidably disposed in the axial bore and having a pin bore coaxial therewith and a clamp portion, the clamp portion being engageable with the stepped portion of the epicyclic train defining the axial bore to clamp the ejector pin when the ejector pin is inserted into the pin bore, the clamp shaft being coupled to a lever for retracting the clamp shaft to release the ejector pin from the clamp portion.

4,565,113

AUTOMATIC WEAPON CHARGING HANDLE AND BOLT LATCH

Ernst Bunning, Durham, N.H., assignor to Maremont Corporation, Carol Stream, Ill.

Filed Mar. 26, 1984, Ser. No. 593,481
Int. Cl.⁴ F41D *11/00*; **F41F** *19/16*
U.S. Cl. 89—1.4 **6 Claims**



1. An automatic weapon comprising:

a bolt receiver including a charging handle slot and a first latch member;

a bolt mechanism received by the bolt receiver; and

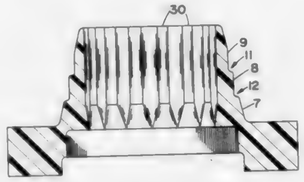
a combination charging handle and bolt latch (hereinafter "the charging handle") having a spindle attached to the bolt mechanism through the charging handle slot, a grip including a second latch member, the grip being on the spindle, and bias means for biasing the grip normally away from the bolt receiver, the handle being latchable by movement of the grip toward the bolt receiver against the bias of the bias means, to place the latch members in a bolt latching condition, and the handle being unlatchable by slight movement of the grip which releases the latch members from each other and permits the bias means to swiftly return the grip away from the bolt receiver and in which the length of the weapon defines a longitudinal direction along the length and transverse directions perpendicular to the longitudinal direction, the charging handle slot extending longitudinally, the spindle and grip extending transversely, and the first latch member on the bolt receiver being longitudinally forward of the second latch member in the bolt latching condition, the handle being unlatchable by slight longitudinally rearward movement of the grip.

4,565,114

CARTRIDGE STRIP MAGAZINE FOR POWDER-ACTUATED TOOLS

Bruce E. Burdick, Godfrey, Ill.; John A. Rodden, Florissant, Mo.; Robert G. Brown, Wood River, and Rodney N. Barnard, Jerseyville, both of Ill., assignors to Olin Corporation, Stamford, Conn.

Filed Dec. 8, 1982, Ser. No. 447,923
Int. Cl.⁴ F42D *39/08*
U.S. Cl. 89—35.01 **3 Claims**



1. A plastic cartridge magazine particularly for the use with an explosive charge driven setting tool having a cartridge chamber wall defining a conical cartridge chamber at the barrel breech of the tool, said magazine comprising a plastic magazine band having at least one opening therethrough for receiving the base of a cartridge, an externally stepped tubular projection on one side of said band extending around the opening and defining with the opening a cartridge receiving chamber extending through the band to the opposite side thereof, and defining both a plurality of spaced plastic sealing rings for sealing contact with said chamber and a shock absorption cavity between said plurality of rings.

4,565,115

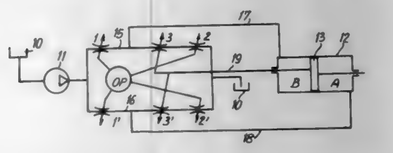
HYDRAULIC DISTRIBUTOR FOR ASSISTANCE POWER MOTOR WITH RETURN TO REST POSITION

Juan S. Bacardit, Barcelona, Spain, assignor to Bendiberica S.A., Barcelona, Spain

Filed Aug. 2, 1982, Ser. No. 404,118
Claims priority, application Spain, Aug. 4, 1981, 505159
Int. Cl.⁴ F15B *9/10*
U.S. Cl. 91—375 A **9 Claims**

1. A combination hydraulic distributor and double-action hydraulic assistance motor, the hydraulic distributor comprising a primary member connected to an input control device

and displaceable in relation to a second member connected to an output device operatively coupled to the double action hydraulic assistance motor having a piston, said primary and secondary members defining mutually two parallel pressure fluid flow circuits between a source of pressure and a reservoir, working conduits each leading to an associated chamber of said hydraulic assistance motor and being connected to an intermediate portion of a respective parallel pressure fluid flow circuit between first and second modulable valve means serially arranged in each said parallel pressure fluid flow circuit, the first and second valve means actuated by movement of said primary member relative to said secondary member from a rest position of the members so as to connect alternatively the working conduits to one of said source of pressure and said reservoir, characterized in that the hydraulic distributor includes modulable return valve means in each said parallel



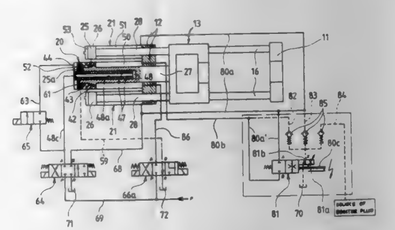
pressure fluid flow circuit and disposed between the connection of said working conduit and said second valve means, the return valve means each mechanically coupled to said piston of said hydraulic assistance motor and actuated responsive to actuation of said hydraulic assistance motor from a rest position which actuation effects displacement of the piston of said hydraulic assistance motor, to create a restriction in an associated return circuit portion, toward said reservoir, of the chamber in relief condition of said hydraulic assistance motor, there being provided a pressure increase in said chamber in relief condition to enable effective return movement of the piston toward its rest position when the primary member is returned to its respective rest position and said hydraulic assistance motor is in a configuration different from its rest position, and each said return valve means being defined by a common slide valve member and including a pair of axially spaced annular openings cooperating with said slide valve member.

4,565,116

HYDRAULIC SPEED CONTROLS FOR DIE CLOSING UNIT OF INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Oct. 14, 1983, Ser. No. 541,797
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1982, 3238111
Int. Cl.⁴ F15B *13/06*
U.S. Cl. 91—519 **12 Claims**



1. A hydraulic actuator assembly adapted for use in a die closing unit of an injection molding machine as a rapid-travel drive for die opening and closing movements and as a source of elevated die closing pressure, which die closing unit includes a stationary cylinder head plate and a movable die carrier member guided for die opening and closing movements along the center axis of the die closing unit, whereby, in the die closing travel, said member moves away from the cylinder head plate in an axially forward direction; the hydraulic actuator assembly comprising in combination:

a power cylinder extending rearwardly from the cylinder head plate, in alignment with the center axis of the die closing unit, the bore of the power cylinder being axially delimited by the cylinder head plate and a rear cylinder cover and enclosing a power piston seated on a piston rod which extends sealingly through the cylinder head plate and is connected to the movable die carrier member, the power piston dividing the interior space of the power cylinder into a high-pressure space on the rear side of the piston and a cross-sectionally smaller low-pressure space on the forward side of the piston;

a closable power piston bypass in the form of at least one bypass channel in the power piston connecting said high-pressure and low-pressure spaces, and hydraulically operated valve means for opening and closing the power piston bypass, so that, when the piston moves rearwardly in a die opening movement and the bypass is open, a volume of fluid corresponding to the difference between the effective areas of two pressure spaces is displaced out of the power cylinder;

hydraulic cylinder means for imparting to the movable die carrier member a forwardly directed force producing a closing travel;

means for supplying pressurized fluid to the high-pressure space of the power piston, when the power piston bypass is closed, so as to create an elevated die closing pressure against the movable die carrier member in the closed position of the die closing unit;

at least one opening travel cylinder in parallel alignment with the power cylinder, the opening travel cylinder having a cylinder bore and a matching travel piston seated on a piston rod which is connected to the piston rod of the power cylinder to move in unison with the latter, the travel piston dividing the interior space of the opening travel cylinder into a pressureless space on the rear side of the piston and an opening travel pressure space on its forward side, and the total effective area of opening travel pressure space being larger than said difference between the effective areas of the power cylinder pressure spaces by a net opening travel area; and

a flow connection between the low-pressure space of the power cylinder and the pressure space of the opening travel cylinder, or cylinders, respectively, so arranged that, when the pistons move rearwardly in a die opening movement, with the power piston bypass open, fluid corresponding to said difference in power cylinder pressure spaces passes from the latter into the opening travel pressure space, and an opening travel is obtained, when pressurized fluid corresponding to said net opening travel area is supplied to said connected pressure spaces and, conversely, a die closing movement causes a volume of fluid to pass from the opening travel pressure space into the low-pressure space of the power cylinder and a volume of fluid corresponding to said net opening travel area to exit from said connected pressure spaces into a fluid return line; and wherein

the net opening travel area by which the effective area of the opening travel pressure space exceeds the difference between the effective areas of said power cylinder pressure spaces is a fraction of said difference, and the volume of pressurized fluid which is required to produce an opening travel of the movable die carrier member is, correspondingly, a fraction of the volume of fluid which simultaneously passes through said flow connection between the low-pressure space of the power cylinder and the opening travel pressure space; and

said flow connection includes a continuously adjustable throttle valve adapted to control the speed of opening

travel and closing travel by determining the flow rate at which it allows fluid to pass through said flow connection.

4,565,117

AXIAL PISTON MOTORS HAVING A FRICTION BRAKE

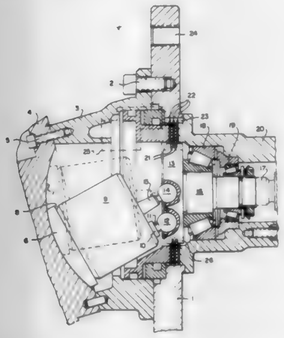
Franz Forster, Muhlbach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 2, 1981, Ser. No. 279,948

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028774

Int. Cl.⁴ F15B *15/26*

U.S. Cl. 92—20 **7 Claims**



1. In an axial piston motor having a cylindrical drum carrying at least one cylinder passage parallel to the axis of the drum, a reciprocable piston in each cylinder passage, connecting rod means on one end of each said piston, a driving flange on a drive shaft enclosed within a motor housing surrounding said drum, said flange being operatively connected to said drum by way of the connecting rod means whereby rotation of the driving flange corresponds with the reciprocation of the at least one piston, the improvement comprising brake means between the housing and driving flange acting on the periphery of the driving flange.

4,565,118

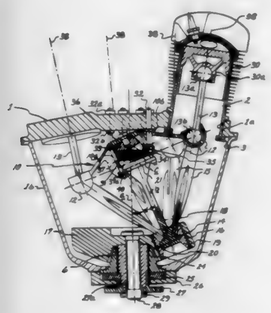
AXIAL CYLINDER MACHINE

Georges H. Girodin, Houilles, France, assignor to S.A. Heuliez DEA, Cerizay, France

Filed Apr. 6, 1984, Ser. No. 597,542

Int. Cl.⁴ F01B *3/00*

U.S. Cl. 92—68 **7 Claims**



1. An axial cylinder machine having, in combination, a housing, a shaft journaled in one end of said housing to turn about an axis extending longitudinally of the housing, a plurality of cylinders mounted on the other end of said housing and equally spaced angularly about said axis, a plurality of pistons, one for each of said cylinders and each sliding in the associated cylinder, a plurality of rods, one connected to each of said pistons and each projecting into said housing, a spider member disposed in said housing and having a centerline inclined to said axis and intersecting the axis at a center point, a plurality of swivel connections, one for each of said rods and each connecting the associated rod to said member, said swivel connections being radially spaced from said centerline and equally spaced angularly around the centerline, a main swivel connection supporting said member in said housing to swivel about said center point, a crank fast on said shaft and projecting radially outwardly from the axis, a post rigid with said member and extending along said centerline toward said crank, and a bearing rotatably supporting an end portion of said post in said crank whereby said end portion revolves about said axis as said member swivels about said center point and as said pistons reciprocate in said cylinders, said main swivel connection comprising a first part rigidly mounted on said housing and having a first swivel surface facing axially away from said shaft, said first swivel surface being a conical surface having its apex at said center point and its axis being coincident with the axis of said shaft, and a second part rigid with said member having a second swivel surface, said second swivel surface being a conical surface having its apex at said center point and its axis being coincident with said centerline, said conical surfaces engaging each other along radially extending lines such that said second swivel surface opposes said first swivel surface and engages the latter to swivel on the first swivel surface as said end portion of said post revolves about said axis.

4,565,119

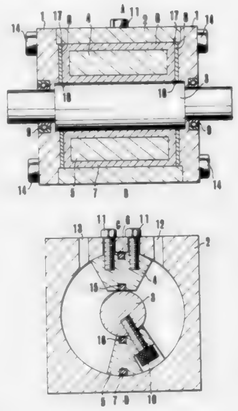
VANE-TYPE ROTARY ACTUATOR

Yasuo Higuchi, Aichi, Japan, assignor to Kabushiki Kaisha Japanlicensor, Japan

Continuation of Ser. No. 389,928, Jun. 18, 1982, abandoned. This application Jun. 20, 1984, Ser. No. 622,659

Int. Cl.⁴ F01C *9/00*

U.S. Cl. 92—125 **2 Claims**



1. A vane-type rotary actuator comprising:
a cylindrical housing defining a cylindrical space having an axial direction and a radial direction, said housing defining an axially extending cylindrical metal wall extending around said cylindrical space and a pair of spaced apart radially extending radial metal walls on opposite ends of said cylindrical space;
a shaft having an outer axially extending metal shaft surface, said shaft rotatably mounted to said cylindrical housing extending through a center of said cylindrical space, said cylindrical metal wall and said outer metal shaft surface defining an annular vane space therebetween, said pair of radial metal walls extending between said cylindrical metal wall and said metal outer shaft surface and bounding opposite ends of said annular vane space;
a pair of radially extending seal plates each engaged over a respective one of said radial metal walls, each seal plate being made of elastic material and being radially elastically compressed in position by said cylindrical metal wall, each seal plate having an outer cylindrical surface compressedly engaged against said cylindrical metal wall and an inner cylindrical surface defining a hole through said seal plate and compressedly engaged against said outer metal shaft surface, said seal plates having radial planar walls facing said cylindrical space and against which said fixed packing and said slidable packing bear, said seal plates being each made of a material chose from the group consisting of nylon, UHMW polyethylene, poly-urethane rubber, a complex of poly-urethane rubber and fluoro-resin, and a complex of metal and synthetic rubber;
a fixed vane connected to said fixed cylindrical housing an extending into said vane space;
a fixed packing connected to said fixed vane having an axially extending portion engaged against said outer metal shaft surface and a pair of radially extending portions connected to said axially extending portion each bearing against one of said seal plates;
a movable vane connected to said shaft and extending into said vane space;
a slidable packing connected to said movable vane having an axially extending portion bearing against said cylindrical metal wall and a pair of radially extending portions connected to said axially extending portion and each bearing against one of said seal plates;
said fixed packing including a second axially extending portion bearing against said cylindrical metal wall and connected to said pair of radially extending portions of said fixed packing to form a closed packing around said fixed vane, said slidable packing including a second axially extending portion bearing against said outer metal shaft surface and connected to said pair of radially extending portions of said slidable packing to form a closed packing around said movable vane.

4,565,120

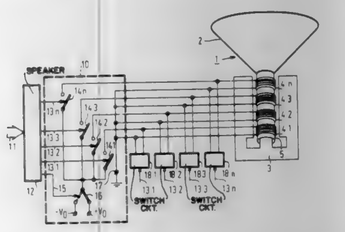
SAFETY RESTRAINT FOR BRAKE ACTUATORS

Kevin J. Gray, and Bruce D. Sibley, both of Lawrence, Kans., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Mar. 20, 1985, Ser. No. 713,884

Int. Cl.⁴ F01B *7/00*

U.S. Cl. 92—130 R **9 Claims**



1. A safety restraint for a fluid operated brake actuator having a housing including first and second portions interconnected at outwardly extending flanges defined on each portion, clamping means engaging the flanges and drawing the flanges toward each other, and a compression spring within the housing exerting a biasing force in an axial direction tending to separate the housing portions, the improvement comprising, at least one of the housing portion flanges having an undercut portion extending away from the other housing portion and in the direction of the spring axial force, at least two safety restraint members mounted upon one of the housing portions substantially equally circumferentially spaced thereon and each having a notch defined therein by opposed, spaced, first and second surfaces, the spacing between said surfaces being greater than the spacing between the flanges when fully clamped by the clamping means, said restraint members' notches being inserted over the clamped flanges wherein said first and second surfaces are each in alignment with a flange in the spring force axial direction, said first surface being engagable by said undercut portion of the one flange and of a complementary configuration whereby during release of the clamping means forces exerted on said first surface by said undercut portion in said axial direction force said restraint members inwardly to maintain alignment of said notch second surface with its aligned flange.

4,565,121

APPARATUS FOR USE IN PREPARING INFUSIONS

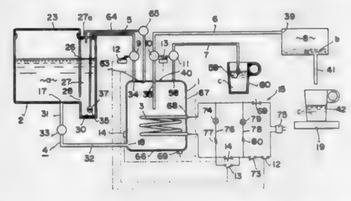
Yoshio Ohya; Junichi Sano, both of Kamo, and Koichi Tamaki, Niigata, all of Japan, assignors to Toshiba Heating Appliances Co., Ltd., Niigata, Japan

Filed Nov. 26, 1984, Ser. No. 674,753

Claims priority, application Japan, Nov. 29, 1983, 58-224778; Dec. 29, 1983, 58-248186[U]; Jan. 9, 1984, 59-1212[U]; Feb. 17, 1984, 59-22218[U]; Jun. 20, 1984, 59-92787[U]; Jun. 20, 1984, 59-92788[U]; Oct. 12, 1984, 59-214645

Int. Cl.⁴ H47J *31/00*

U.S. Cl. 99—281 **10 Claims**



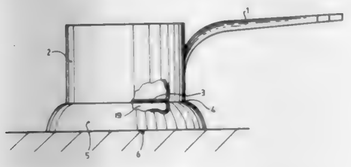
1. An apparatus for use in preparing infusions, said apparatus comprising
a water tank,
a sealed container having a top,
a heating means including a heating element inside said sealed container,
a first conduit means connecting said sealed container and said water tank,
an infuser means having an inlet and an outlet,
a second conduit means connecting said container and said inlet,
a third conduit means for conveying steam from said container through said top,
a first valve means for controlling the movement of liquid through said second conduit means,
a second valve means for controlling the movement of liquid through said third conduit means,
a first control switch connected in series with said heating element, said first control switch being adapted to operate said first and second valves,
an air vent valve for controlling the removal of steam from said container through a fourth conduit means,
a second control switch connected in series with said first control switch and with said air vent valve, and
a thermostat adapted to control the temperature inside said container, said thermostat being connected in parallel with said second conotrol switch.

4,565,122

COOKING UTENSIL HAVING CHAMBER BENEATH PERFORATED COOKING SURFACE

Jean P. Feuillalay, Anneville Ambourville Duclair (Seine Maritime), France

Filed Dec. 9, 1983, Ser. No. 559,960
Int. Cl.[4] A47J *37/00, 29/06*
U.S. Cl. 99—447 1 Claim



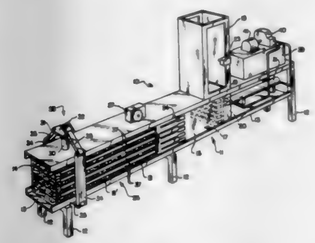
1. A cooking utensil comprising
(i) a plate having a substantially flat cooking surface
(ii) means forming a wall surrounding the cooking surface and extending upwardly therefrom,
(iii) means forming a collar extending downwardly from the periphery of the cooking surface, the collar forming a chamber beneath the cooking surface for enabling positive pressure to be established in the chamber by the confinement of hot gases,
(iv) the cooking surface having many small holes therethrough which open into the chamber beneath the cooking surface and which cooperate with the collar to form a chimney, the small holes being distributed over the area of the cooking surface, and the diameters of those holes being in the 1.5 to 3 mm range.

4,565,123

TENSION CONTROL FOR BALING MACHINE

Gerald W. Sanders, 650 Beckley Ave., Marion, Ohio 43302

Filed May 10, 1984, Ser. No. 609,029
Int. Cl.[4] B30B *15/26*
U.S. Cl. 100—43 10 Claims



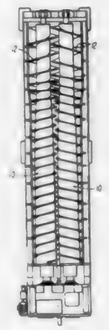
1. In combination with a baling machine having a baling chamber with a discharge outlet, a throat portion adjacent to the discharge outlet of the baling chamber into which compacted bales are forced, a reciprocal baling head movable within the baling chamber to compact material charged into the chamber against the rear surface of a previously compacted bale, a first fluid cylinder for reciprocating the baling head, tension means associated with the throat portion of the baling machine adapted to hold the previously compacted bale in position in the discharge outlet of the baling chamber until a predetermined force is applied to the bale, the tension means being operated by a second fluid cylinder connected to the throat portion, there being a supply of pressurized fluid connected to the first and second cylinders, and first valve means between the fluid supply and the first cylinder to control the reciproation of the baling head, the improvement comprising:
a pressure switch connected to the fluid supply, the switch being operable to actuate when the pressure of the fluid supply to the first valve means exceeds a predetermined level;
a second valve between the second fluid cylinder and the fluid supply, the second valve being operatively connected to the pressure switch to actuate when the pressure of fluid supply exceeds a predetermined level to retract the tension means, until the pressure of the fluid supply returns below the predetermined level; and
a pressure reducing valve between the fluid supply and the second valve so that reduced intermediate supply fluid is supplied to the second fluid cylinder through the second valve.

4,565,124

SCREW PRESSES

Thomas Stautland, Loddefjord, and Steinar F. Jacobsen, Knarrevik, both of Norway, assignors to Stord Bartz A/S, Bergen, Norway

Filed Nov. 2, 1983, Ser. No. 548,080
Claims priority, application Norway, Nov. 10, 1982, 823739
Int. Cl.[4] B30B *9/16*
U.S. Cl. 100—117 10 Claims



1. Screw press for dehydrating fluid-containing materials which comprises housing means having a sieve surface, a pair of horizontally disposed screw means mounted in side-by-side relation for rotation within said housing means, each said screw means comprising a rigid main stem portion disposed radially inwards of a rigid sieve-forming surface portion and reinforcing ribs disposed between said stem and surface portions, each said screw means having screw threads secured directly to said surface portion, said stem portion and said surface portion defining therebetween a space forming drainage duct means for draining fluid from said seive-forming surface portion.

4,565,125

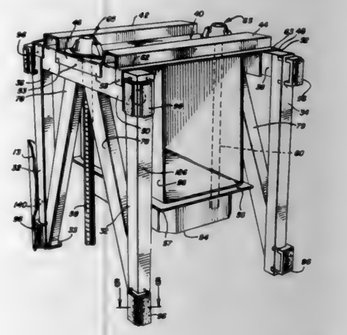
RAM AND FRAMELESS CABINET ASSEMBLY FOR COMPACTOR

Aman U. Khan, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 14, 1984, Ser. No. 620,760
Int. Cl.[4] B30B *15/04*
U.S. Cl. 100—214 20 Claims

1. In a refuse compacting apparatus having an exposed sheet metal wall having an inside surface, an inner refuse receptacle, a vertically reciprocable ram assembly having a plurality of vertically extending legs, and means for forcibly driving the ram assembly along a preselected path to effect refuse compaction in the receptacle, the improvement comprising:
a plurality of pressure equalizing pads, each said equalizing pad having a substantially flat surface; and

mounting means for floatingly mounting said pressure equalizing pads to said vertically extending legs,
said mounting means allowing repositioning of the equalizing pads relative to the legs so that the flat surface of each of a plurality of the pressure equalizing pads facially engages said inside surface of the exposed sheet metal wall in



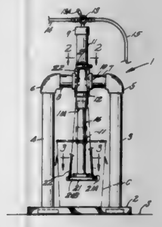
the event that the ram assembly deviates from said preselected path during a compaction operation,
said pressure equalizing pads being arranged to cause transverse forces produced by the ram to be distributed over said inside surface suitably so that said inside surface can serve as the sole guide means for the ram assembly without damage to the sheet metal wall.

4,565,126

TRASH COMPACTOR

William D. McBee, 2100 Hayden Bridge Rd., Springfield, Oreg. 97477

Filed Feb. 22, 1984, Ser. No. 582,285
Int. Cl.[4] B30B *15/04*
U.S. Cl. 100—214 4 Claims



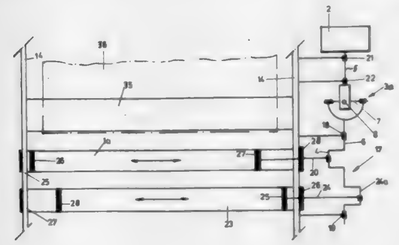
1. A free-standing compactor for compacting trash deposited in an upright open waste receptacle, said compactor comprising,
a base for placement on a ground surface and on which the receptacle may be placed,
a support structure in place on said base, and
a cylinder assembly carried by said support structure and including a pressure responsive cylinder having a piston having a compaction member at its external extremity, cylinder mounting means in place on the support structure, valve means for communication with a source of fluid pressure and with the cylinder interior, said valve means including a cylinder exhaust position for venting fluid from the cylinder, elongate elastomeric members located exteriorly of said cylinder and piston and acting on said piston to raise same to a static position in the absence of cylinder pressure, clamping means detachably securing said elongate elastomeric members in place on said cylinder and additionally serving to hold the cylinder in an elevated operable position.

4,565,127

MECHANISM FOR RECIPROCATING A LINE PRINTER SHUTTLE

Josef Pichler, Ebreichsdorf; Karl Puchegger, Föhrenau, and Bruno Starek, Vienna, all of Austria, assignors to Mannesmann Tally GmbH, Vienna, Austria

Filed Jul. 18, 1983, Ser. No. 514,948
Claims priority, application European Pat. Off., Jul. 8, 1983, 82 106117.3
Int. Cl.[4] B41J *3/00*
U.S. Cl. 101—93.04 11 Claims



1. Apparatus for reciprocating a line printer shuttle along a linear path comprising:
a rotational drive operating at a constant speed and having an output shaft rotating accordingly at a constant angular speed;
a transmission having an input with an input axis and being coupled to the output shaft and providing a rotational output about an output axis arranged obliquely to the input axis, the transmission modifying the constant rotational speed to cyclically vary the speed of the rotational output; and
linkage means including a crank connected to the rotational output of the transmission for translating the motion of the rotational output of the transmission into a linear reciprocating motion, said modification of the rotational output of the transmission being such that the reciprocating motion has at least one constant speed section in between respective two sequential reversals.

4,565,128

ROTARY WHEEL PRINTER

Naoki Moriyama, Tamayama; Hiroshi Koike, and Osamu Hatakeyama, both of Morioka, all of Japan, assignors to Alps Electric Co., Ltd., Japan

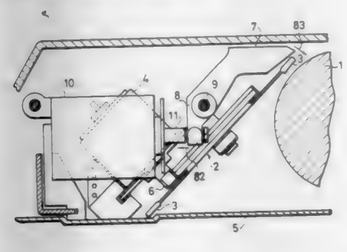
Filed Jul. 2, 1984, Ser. No. 626,734
Claims priority, application Japan, Jun. 30, 1983, 58-100072[U]; Jun. 30, 1983, 58-100073[U]; Jul. 1, 1983, 58-101039[U]; Jul. 2, 1983, 58-102059[U]
Int. Cl.[4] B41J *1/22*
U.S. Cl. 101—93.19 1 Claim

1. A rotary wheel printer comprising:
(a) a rotatable platen adapted to receive a paper sheet wound partially therearound;
(b) a carriage movable along said platen;
(c) a type wheel mounted on said carriage in confronting relation to said platen and having a plurality of type fonts, said type wheel being inclined with respect to the horizontal plane;
(d) first drive means mounted on said carriage and inclined with respect to the horizontal plane for driving said type wheel to rotate about its own axis to bring a selected font into a printing position;
(e) hammer means mounted on said carriage for pressing the

type font held in said printing position one at a time against said platen;

(f) second drive means including a solenoid mounted on said carriage for driving said hammer means, said hammer means having a hammer lever interconnecting said hammer means and said solenoid and including an engagement portion at one end thereof, said solenoid having a drive shaft including a smaller-diameter neck portion sandwiched by said engagement portion;

(g) a ribbon cassette mounted on said carriage and accomodating an ink ribbon, said ribbon cassette having means including forward arm portions having slanted surfaces inclined at the same angle as said type wheel for extending the ribbon thereacross;



(h) ribbon feeder means for successively feeding said ink ribbon accomodated in said ribbon cassette in one direction; and

(i) third drive means mounted on said carriage for driving said ribbon feeder means,

wherein said engagement portion comprises a pair of annular portions confronting each other with a clearance gap defined therebetween and having free ends, respectively, said smaller-diameter neck portion of said drive shaft being inserted in said clearance gap and sandwiched between said annular portions, said annular portions having other peripheral surfaces resiliently held against end surfaces of said smaller-diameter neck portion.

4,565,129

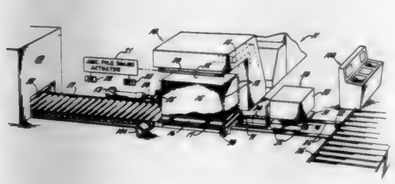
DEVICE FOR THE AUTOMATIC PILE CHANGE AT THE DELIVERY OF A PRINTING

Claus Simeth, Muhlheim, and Janko Despot, Offenbach am Main, both of Fed. Rep. of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Fed. Rep. of Germany

Continuation of Ser. No. 954,581, Oct. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 889,651, Mar. 24, 1978, abandoned. This application Sep. 30, 1980, Ser. No. 192,246

Int. Cl.⁴ B41F *13/64*; **B65H** *29/04*

U.S. Cl. 101—240 **1 Claim**



1. In a printing press delivery mechanism the combination comprising a first conveyor for delivering sheets from a press for discharge seriatim onto a pile in a piling space, a pile board in the form of a skid in the piling space for accumulating the pile, a second horizontally extending conveyor at substantially floor level a short distance from the piling space for receiving the skid when it is full, a horizontally extending track extending substantially at floor level between the piling space and the second conveyor and arranged substantially at right angles to the latter, a wheeled carriage on the track, a lift fork on the carriage, powered rotating means supporting the fork on the carriage for swinging movement through substantially 180 degrees from a loading position in which the fork faces the piling space and an unloading position in which the fork faces the second conveyor, powered lifting means for raising and lowering the fork with respect to the carriage, powered driving means for reciprocating the carriage along the track, programmed control means including limit switches for energizing the powered means in sequence for a cycle of skid removal in which the fork is (a) shifted from an initial position by the carriage into the pile space to engage the skid, (b) raised so the skid clears the floor, (c) rotated 180 degrees with the skid so that it points in the direction of the second conveyor, (d) shifted by the carriage to a position in which the skid is over the second conveyor, (e) lowered to lower the skid onto the second conveyor for transfer out of the delivery area, and (f) returned to the initial position, a skid magazine for empty skids, means including a third conveyor horizontally extending from the magazine to the piling space for feeding an empty skid from the magazine to the piling space substantially at floor level, means actuated incident to the arrival of the empty skid for locating the same in a sheet receivingposition in the piling space, means initiated by the control means for actuating the feeding means so that an empty skid is fed from the magazine into receiving position synchronized with the removal of the full skid therefrom, and means responsive to the filling up of the empty skid for triggering the control means for a successive cycle of skid removal.

4,565,130

APPARATUS FOR PRODUCING STACKS OF PRINTED PRODUCTS PROVIDED WITH A COVER SHEET

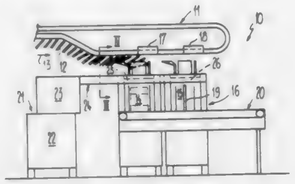
Willy Leu, Pfäffikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Nov. 19, 1984, Ser. No. 673,021

Claims priority, application Switzerland, Nov. 30, 1983, 6395/83

Int. Cl.⁴ B41F *13/64*

U.S. Cl. 101—240 **10 Claims**



1. An apparatus for producing stacks of printed products provided with cover sheets, comprising:

delivery conveyor for supplying said printed products;

a stacker arranged in cooperating relationship with respect to said delivery conveyor and having at least two stacking wells individually supplied from above with the printed products;

deposition means for depositing one cover sheet on each stack produced;

a device for readying individual printed cover sheets;

said deposition means including a cover sheet conveyor arranged subsequent to said device for readying cover sheets;

said cover sheet conveyor being provided with a controllable discharge outlet for each stacking well of said at least two stacking wells; and

each said controllable discharge outlet opening into a therewith associated one of said at least two stacking wells.

4,565,131

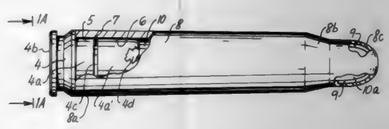
CARTRIDGE ASSEMBLY

Delmer B. Buchner, 16 Dubois Rd., Warren, N.J. 07060

Filed Sep. 17, 1984, Ser. No. 651,299

Int. Cl.⁴ F42B *5/22, 5/30*

U.S. Cl. 102—444 **5 Claims**



1. A cartridge article comprising in combination: a cartridge-base comprising polycarbonate in an amount in a range of about 65% by weight to about 90% by weight and polyethylene in an amount in a range of from about 15% by weight to about 30% by weight admixed and compressed as a unit, shaped as a cartridge-base, said unit including polytetrafluoroethylene in an amount ranging from about 1% to about 10% by weight admixed with said polycarbonate and said polyethylene and compressed therewith as a part of the cartridge-base.

4,565,132

FORM-LOCKING MEANS, MATERIAL FOR FORMING SAME AND PROCESS FOR ARRANGING THE FORM-LOCKING MEANS IN THE PERIPHERAL REGION OF A PROJECTILE MADE OUT OF THE HEAVY METAL SINTER ALLOY

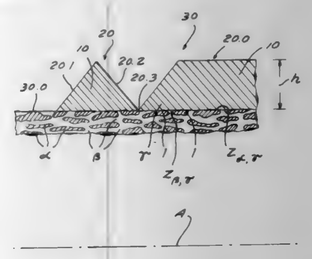
Ulrich Theis, Mülheim, Fed. Rep. of Germany, assignor to Rheinmetall GmbH., Duesseldorf, Fed. Rep. of Germany

Filed Aug. 10, 1981, Ser. No. 291,825

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030072

Int. Cl.⁴ F42B *11/00, 13/16*

U.S. Cl. 102—517 **4 Claims**



1. Form-locking means in a peripheral surface region **30** of a subcaliber projectile for form-locking the projectile to a sabot, said surface region consists of a material in the form of an n-phase sinter alloy, said alloy having a high density due to having a high content of at least one heavy metal, where $n \geqq 2$, said n-phase sinter alloy of said form-locking means forming in said peripheral surface region **30** of the projectile at least one further alloy phase including a predetermined amount of a light metal.

4,565,133

CLAMP ARRANGEMENT FOR TRACK LIFTING AND ALIGNING DEVICE

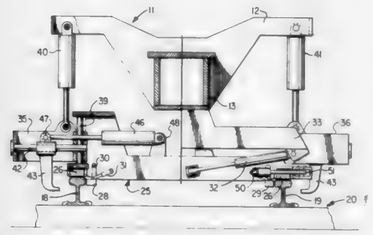
Roy J. Moore, Columbia, S.C., assignor to Canron Corp., West Columbia, S.C.

Filed May 9, 1983, Ser. No. 492,876

Int. Cl.⁴ E01B *27/17*

U.S. Cl. 104—7 B **9 Claims**

1. A railroad track lifting and aligning device mounted for track travel on a longitudinally extending main frame of a track working machine and comprising a track aligning sub-frame extending transversely of said main frame; wheels on said sub-frame for engaging the rails of the track; rail contacting means on said sub-frame for engaging the inside of each of the rails of the track; vertically extending guide-rod means on said sub-frame; a track lifting rail hook guide member for each of the rails of the track mounted for vertical movement on and relative to, said sub-frame at each end thereof on said vertically extending guide-rod means on said sub-frame; a rail hook, for



externally engaging a rail of the track, in each of said guide members; means for adjusting the position of a rail hook in its guide member, longitudinally of said sub-frame; track aligning jack means for moving said sub-frame laterally of said main frame; and track lifting jack means connected to each of said guide members to move each member, with its hook, vertically of said sub-frame along said guide-rod means to adjust the vertical position of said hook relative to said sub-frame and to lift said track vertically.

4,565,134

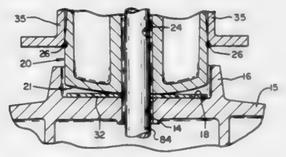
CYLINDRICAL SURFACE RAILCAR CENTER PLATE

Philip Groelz, 15828 S. Thayer Rd., Oregon City, Oreg. 97045

Filed Mar. 28, 1984, Ser. No. 594,920

Int. Cl.⁴ B61F *5/16*

U.S. Cl. 105—199 C **2 Claims**



1. In a center plate structure for a railway car, a truck bolster having a center plate bowl facing upwardly, the bowl having an outer circular rim and a flat bearing surface within the rim, the car body having a center plate with a lower bearing surface having a cylindrical portion which is convex and cylindrical which bears, in rocking fashion, upon the center bowl surface, the axis of the cylindrical surface being aligned generally parallel with the longitudinal axis of the car, the radius of the cylindrical curvature being greater than the vertical distance between the center plate and the center of gravity of the car body (either when loaded or unloaded) and being either constant, as in a circular cylinder, or varying, as in a generally ellipsoid cylinder.

4,565,135

CENTER SILL, FOR ACCOMMODATING THE COUPLING FACILITIES OF A RAILROAD CAR

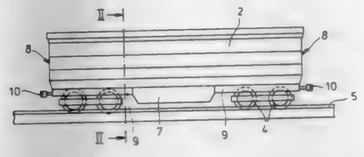
Jürg Zehnder, Uitikon, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 4, 1983, Ser. No. 481,760

Claims priority, application Switzerland, Apr. 15, 1982, 2279/82

Int. Cl.⁴ B61F *1/00, 1/08*

U.S. Cl. 105—420 **5 Claims**



1. A center sill of a railcar for accommodating coupling facilities comprising two substantially Z-shaped hollow sections arranged in mirror image to each other, said substantially Z-shaped hollow sections each having an upper section strip and a lower section strip joined by a connecting member wherein said two substantially Z-shaped hollow sections are joined together at their upper section strips, each of the connecting members of said substantially Z-shaped hollow sections have a pair of substantially parallel spaced apart longitudinal struts being connected by a plurality of transverse struts which define with said longitudinal struts a plurality of hollow chambers wherein said center sill at the ends close to the end of the railcar is provided with a recess of length **1** and height **h** which receives a reinforcing shaped part wherein said recess runs along the lower side of the first transverse strut of said plurality of transverse struts next to the upper section strip of said substantially Z-shaped hollow sections, then substantially perpendicular across at least one of said plurality of hollow sections, then along the upper side of the lower section strip of said substantially Z-shaped hollow sections and then substantially perpendicular across at least one of said plurality of hollow sections such that the recess runs in a transverse direction over the entire profile of the center sill.

4,565,136

FLUIDIZED BED COMBUSTION FURNACE

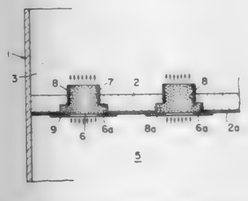
Masahiro Nakamura, Yokosuka, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Continuation of Ser. No. 585,342, Feb. 29, 1984, abandoned. This application Apr. 19, 1985, Ser. No. 724,795

Claims priority, application Japan, Mar. 1, 1983, 58-33085

Int. Cl.⁴ F23G *5/30*

U.S. Cl. 110—245 **10 Claims**



1. In a fluidized bed combustion furnace having an air dispersion plate at a lower part thereof, the improvement wherein the air dispersion plate is provided with a large number of air injection nozzles uniformly distributed therethroughout at intervals, the air injection nozzles being made of a porous refractory material which has good air permeability, high heat resistance, and high wear resistance and being so constructed and supported in the air dispersion plate that the total quantity of fluidizing air injected and dispersed through the air dispersion plate must pass through the air injection nozzles, said air dispersion plate being formed with uniformly distributed countersunk through holes each having a downwardly directed shoulder formed integrally with the air injection nozzle, and each air injection nozzle being provided with a bottom flange, and wherein each nozzle is fitted in one of the countersunk holes with the bottom flange thereof abutting on the shoulder and means being provided to hold the nozzle in the countersunk hole.

4,565,137

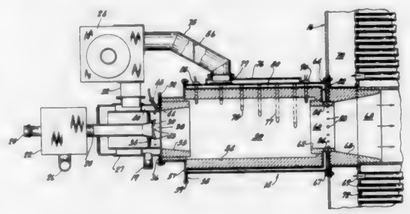
BIO-MASS SUSPENSION BURNER

Richard C. Wright, Mequon, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Continuation of Ser. No. 521,255, Aug. 8, 1983, abandoned. This application Jan. 7, 1985, Ser. No. 689,459

Int. Cl.⁴ F23D *1/02*

U.S. Cl. 110—264 **8 Claims**



1. A burner for a combination mixture of particles of solid bio-mass fuel and air comprising:

means for providing a primary air stream;

means for entraining said solid fuel particles in said primary air stream;

a generally cylindrical, elongate combustor means having a first end and a second end;

means for injecting said primary air stream and entrained fuel particles through said first end of said elongate combustor means, said combustor means having an exit at the second end thereof;

means for providing a secondary air stream and means for injecting said secondary air stream through said first end of said combustor means in surrounding relation to said primary air stream and entrained solid fuel particles; said injecting means for said primary and said secondary air streams including diffuser means to impart a swirl to the air and solid fuel particles entering said combustor means;

means for providing a tertiary air stream and means for injecting said tertiary air stream into said combustor means at a plurality of locations along the length thereof; and

means for providing a quartiary air stream and means at the exit of said combustor means for injecting said quartiary air stream outwardly of said combustor means and into the combustion mixture leaving said combustor means through said exit.

4,565,138

THERMAL DECOMPOSITION FURNACE OF WASTE TIRES

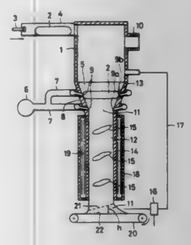
Yoshihiko Ueda, Chiba; Ikuo Saito, Tokyo; Kazumasa Sakae, Yachiyo, and Tetuo Oogiri, Tokyo, all of Japan, assignors to Onoda Cement Co., Ltd., Japan

Continuation of Ser. No. 557,332, Dec. 2, 1983, abandoned. This application Jan. 7, 1985, Ser. No. 689,461

Claims priority, application Japan, Aug. 25, 1982, 57-147199

Int. Cl.⁴ F23G *15/00*

U.S. Cl. 110—346 **1 Claim**



1. A method for thermally decomposing waste tires including the steps of:

providing upper and lower bed sections communicating with each other and forming a vertical decomposition chamber;

filling the upper and lower sections with a granular refractory material to form a vertical column of such material;

fluidizing the granular material in the upper section by injecting air at two vertically spaced levels into the upper section, directing the air tangentially into the upper level of the upper section, and directing the air injected into the lower level toward the center of the upper section;

maintaining a condition capable of the thermal decomposition of tires in the upper section;

introducing uncommuniuted tires one at a time into the upper section;

restricting the rate of descent of the tires through the column of granular material and abrading any decomposition products from the unburnable parts of the tires by means of the granular material as the tire descends through the column, said restricting step including controlling the rate of descent of the tires through the upper section by progressively restricting in a downward direction the cross-sectional size of the upper section;

discharging the granular material and the unburnable materials of the tires through the bottom of the lower section onto a laterally moving conveyor, causing the granular material to flow onto the conveyor by progressively increasing the spacing from the conveyor of the lower end of the lower section in the direction of movement of the conveyor;

separating the unburnable materials from the granular material; and

recycling the withdrawn granular material into the upper section.

4,565,139

METHOD AND APPARATUS FOR OBTAINING ENERGY

Warnie L. Sage, Littleton, and Thomas E. Stringfellow, Aurora, both of Colo., assignors to Stearns Catalytic World Corp., Denver, Colo.

Filed Sep. 12, 1984, Ser. No. 649,558

Int. Cl.⁴ F23D *1/00*

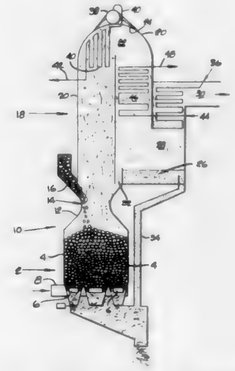
U.S. Cl. 110—347 **19 Claims**

1. A process for obtaining energy from a low BTU, low volatile content, low carbon and high ash fuel using a first combustor having an exit end and a second combustor having an entrance end, comprising:

providing quantities of a low BTU, low volatile content, low carbon and high ash fuel having various particle sizes;

forming a passageway between the first combustor and the second combustor by connecting the exit end of the first combustor and the entrance end of the second combustor together;

introducing the quantities of fuel into said passageway;



moving a gaseous stream through said passageway at a velocity sufficient to separate the quantities of fuel into finer particles and coarser particles;

combusting the coarser particles in the first combustor to generate heat;

combusting the finer particles in the second combustor to generate heat; and

using the generated heat to provide useful energy.

4,565,140

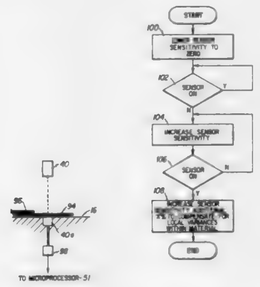
METHOD AND APPARATUS FOR AUTOMATICALLY ADJUSTING THE SENSITIVITY OF EDGE SENSORS IN A SEMI-AUTOMATIC SEWING MACHINE

Charles R. Martell; Donald D. Isett, both of Dallas, and Stephen S. Treadwell, Richardson, all of Tex., assignors to Microdynamics, Inc., Dallas, Tex.

Filed Feb. 6, 1984, Ser. No. 577,579

Int. Cl.⁴ D05B *19/00*

U.S. Cl. 112—121.11 **9 Claims**



1. In a sewing machine having a reciprocable needle for stitching seams in material advanced in a feed direction, seam length control apparatus comprising:

means having variable sensitivity for detecting a material discontinuity in advance of a seam;

means for controlling an operation of the sewing machine in response to detection of said material discontinuity by said detecting means; and

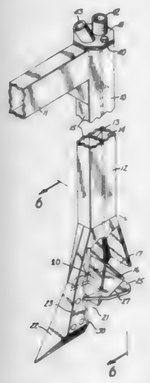
means for automatically adjusting the sensitivity of said detecting means to compensate for variances in the material being sewn.

4,565,141

SEEDING APPARATUS WITH FERTILIZER APPLICATOR

Ivyl D. Kopecky, Ypsilanti, N. Dak., assignor to Haybuster Manufacturing, Inc., Jamestown, N. Dak.

Filed Dec. 19, 1983, Ser. No. 563,198
Int. Cl.⁴ A01C *23/02, 5/00*
U.S. Cl. 111—7 **9 Claims**



1. A planting apparatus comprising:

a tubular shank member having a pair of passageways therethrough extending from an upper end to lower discharge ports in each of said passageways, the port from a first of said passageways opening at a lower level, when the shank is in working position than the port from the second of said passageways;

a furrow opening point mounted on the lower end of said shank member and preceding the passageways in the normal direction of travel of said shank member when in a working position;

the first passageway being immediately to the trailing side of said furrow opening point and its discharge port opening above the lower edge of the furrow opening point, and

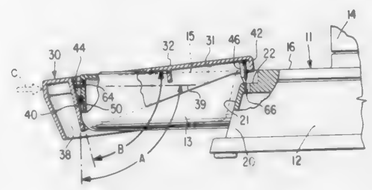
a sealer plate mounted on said shank member in position above the discharge port from the first of said passageways, to the rear of said furrow opening point and said first passageway, and below the discharge port of said second passageway, said sealer plate extending laterally outwardly on both sides of said shank member and tapering outwardly from the shank in rearward direction to be substantially wider at the rear than at the front to form rear wing members, the wing members being bent downwardly at the rear portions of the sealer plate along bend lines that extend from the outer edges of the sealer plate inwardly toward the shank in rearward direction so the wing members converge in rearward direction so that when the shank member is in working position the sealer plate is below the surface of the ground and the wing members pack dirt into a furrow opened by said furrow opening point prior to the passage along the furrow of the discharge port of said second passageway.

4,565,142

SEWING MACHINE BED EXTENSION

Leo E. McGann, Cranford, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 10, 1985, Ser. No. 743,124
Int. Cl.⁴ D05B *73/10*
U.S. Cl. 112—260 **5 Claims**



1. A bed extension for a sewing machine having a frame including a supporting base, a cantilevered cylinder bed extending from said base and formed with a planar work supporting surface, and spaced angularly related bed extension locating surfaces;

said bed extension including a planar work supporting surface, and integral angularly related segments adapted when positioned abutting in contiguous relation with said locating surfaces on said sewing machine frame to position the working supporting surface of said bed extension coplanar with said cylinder bed work supporting surface;

the angular relation between said bed extension segments being formed less than the angular relation between said locating surfaces on said sewing machine frame so that deformation of said bed extension segments and development of internal stresses therebetween is required in order to position said segments in contiguous relation with said locating surfaces on said sewing machine frame;

said bed extension segments being biased against said locating surfaces of said sewing machine frame by said internal stresses;

each complemental set of sewing machine frame locating surface and bed extension segment being formed one with a substantially perpendicular aperture and the other with a substantially perpendicular projection arranged for engagement with said aperture to lock said bed extension on said sewing machine frame when said bed extension segments are positioned in contiguous relation with said sewing machine frame locating surfaces.

4,565,143

METHOD OF AUTOMATICALLY ADJUSTING THREAD TENSION IN A SEWING MACHINE

Susumu Hanyu; Kenji Kato, and Kazumasa Hara, all of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1984, Ser. No. 573,565
Claims priority, application Japan, Feb. 1, 1983, 58-13687
Int. Cl.⁴ D05B *47/04*
U.S. Cl. 112—262.1 **4 Claims**

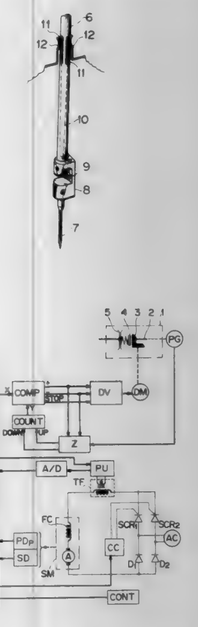
1. A method for automatically adjusting tension of a thread passing to a needle in a sewing machine having a drive motor operatively connected to a needle bar carrying a needle which is vertically reciprocated to penetrate a fabric to be sewn, thread tension means operated in ony way to increase tension of the thread and operated in the other way to decrease tension of the thread extended to said needle, and a microcomputer including a read only memory for storing a plurality of thread tension control data each being specific to fabrics of different thicknesses and different hardnesses, and a random access memory for temporarily storing variable load signals, the method comprising the steps of:

(a) detecting changes of a load applied to said needle bar when the needle penetrates the fabric;

(b) converting the detected changes of the load into a data representing a property of said fabric;

(c) storing said fabric property-representing data in said random access memory;

(d) reading out from said read only memory a new thread



tension control data which corresponds to said fabric property representing data; and

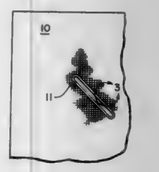
(e) comparing said read out new thread tension control data with a data representing a present value of tension applied to said thread and causing the thread tension means to be operated in said one or other way in dependence upon the value of said new thread tension control data until said value of said new thread tension control data is reached.

4,565,144

TOWEL SUPPORT

John D. Ricci, 6942 Well Springs Rd., No. 9-H, Midvale, Utah 84047

Filed Dec. 1, 1983, Ser. No. 557,054
Int. Cl.⁴ A41F *1/02*
U.S. Cl. 112—437 **4 Claims**



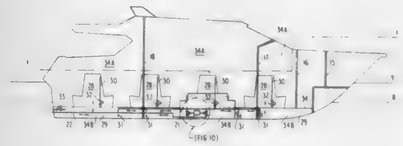
1. A towel support for maintaining a towel from a hanger device comprising, a slot cut on a bias to the towel weave through vertically adjacent knots of said towel weave at an angle in a range of angles of from thirty to sixty degrees (30° to 60°) to the vertical of said towel weave, an end of said slot closest to a towel corner is spaced apart from the towel sides proximate to said corner a minimum of two (2) inches from and at right angles to each said side.

4,565,145

MARINE OBSERVATORY CRAFT

Phillip L. Mayall, 19 Garden Grove, Carrara, Queensland, Australia, and Edward M. Whitten, 105 Tarawara Ave., Mudgeeraba, Queensland, Australia

Filed May 2, 1984, Ser. No. 606,102
Int. Cl.⁴ B63B *1/12*
U.S. Cl. 114—61 **6 Claims**



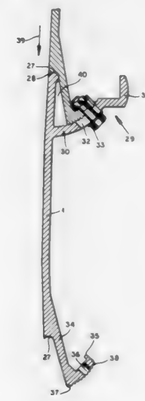
1. A marine observatory craft for viewing underwater locations comprising a pair of parallel spaced apart planing type hulls, viewing means located in each hull, at least one transverse bulkhead dividing each hull into a plurality of separate internal compartments which are sealed from each other, at least one ballast tank disposed in each internal compartment and defining a seat located adjacent said viewing means, a control cabin superstructure interconnecting said hulls and located above each of said plurality of internal compartments in direct open communication therewith, and means for selectively flooding and emptying said ballast tanks whereby said craft may be disposed in an observing mode in which the viewing means is located below the water line and a travelling mode wherein the viewing means is located above the water line respectively.

4,565,146

BOAT HULL AND METHOD OF MAKING SAME

Jaroslav Koser, Braunau-Ranshofen, and Theodor Eder, Perchtoldsdorf, both of Austria, assignors to Austria Metall AG, Vienna, Austria

Filed Oct. 13, 1981, Ser. No. 311,014
Claims priority, application Austria, Oct. 13, 1980, 5074/80
Int. Cl.⁴ B63B *3/00, 5/24*
U.S. Cl. 114—79 R **5 Claims**



1. A ship hull comprising:

a plurality of transverse and generally parallel ribs;

a plurality of side-by-side plank-forming and generally parallel elongated profiles each having two generally parallel longitudinal edges abutting the edges of the adjacent profiles of nonplanar three-dimensional shape, one of the edges being formed with an inwardly extending flange engaging the ribs, whereby the flanges stiffen the profiles, one of each of the longitudinal edges of each profile being formed with an outwardly rounded seat and the other of each of the longitudinal edges of each profile being formed with a complementary rounded edge, the flange extending inwardly from adjacent the rounded edge and having a curved portion having a center of curvature at the respective rounded edge, each of the other edges having an attachment flange enageable with the curved portion;

means including fasteners extending through the flanges and into the transverse ribs for securing the profiles to the transverse ribs; and

means forming watertight joints between the abutting longitudinal edge of the profiles; and

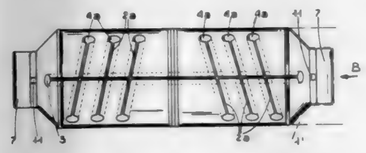
means including screw fasteners engaged between the abutting longitudinal edges for securing same together and compressing the respective joints, the screw fasteners being bolts engageable between the attachment flanges and the curved portions for securing the profiles together at any of a multiplicity of relative positions angularly offset about the center.

4,565,147

MUTUAL AND MULTI-RESTRAINED FIXING FENDER

Vanes Bortolotti, Via Balzani, 12-40069 Zola Predosa (Bologna), Italy

Filed May 7, 1984, Ser. No. 607,537
Claims priority, application Italy, Dec. 23, 1983, 5137/83[U]
Int. Cl.⁴ B63B *59/02*
U.S. Cl. 114—219 **5 Claims**



1. An impact-resistant fender for protecting the exposed surface of a manufactured article from abrasion, said fender element comprising:

(a) at least one tubular element formed from a resilient, impact-resisting material, having a longitudinal axis;

(b) at least one groove formed within said tubular element having a circular interior portion and a slot portion communicating with the surface of said element and being aligned as a chord of the tubular element;

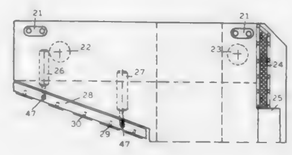
(c) at least one second groove formed within said tubular element having a circular interior portion and a slot portion communicating with the surface of said element and being aligned parallel to the longitudinal axis of said tubular element along the plane of a diameter of said tubular element.

4,565,148

SHUNTER AND METHOD FOR DIRECTING THE LONGITUDINAL AXIS OF A SHIP

Rudi W. Verhoosel, K1. Jonkvrouwstr 42, 4515 EK., Yzendyke, Netherlands

Filed Nov. 29, 1982, Ser. No. 445,077
Claims priority, application Netherlands, Dec. 13, 1981, 8105603
Int. Cl.⁴ B63B *21/56*
U.S. Cl. 114—242 **6 Claims**



1. A shunter for use in maneuvering a ship particularly in entering and passing relatively narrow passageways, such as a lock of a canal, comprising:

a shunter having a deck and being capable of exerting substantial propulsion forces so as to maneuver a ship, and having a stern of substantially U-shape to fit about the bow or stern of said ship with a pair of legs having on the inner sides thereof at least one suction head; said suction heads being mounted to said pair of legs on said inner sides substantially below said deck adjacent the water line and being movable and adjustable by hydraulic cylinders so that said suction heads are adapted to be brought into contact with said bow or stern of said ship; and vacuum means connected to said suction heads; and said suction heads being adapted to be rigidly affixed, although only temporarily, to said ship by means of a vacuum in a location substantially near to the horizontal plane of the propulsion force of said shunter craft so as to be near where directional forces of said shunter craft are exerted; and said shunter craft and said ship in effect forming a single unit when affixed together, and said ship being adapted to be maneuvered into a desired position by propulsion means provided on said shunter craft exerting forces particularly in a direction perpendicular to the longitudinal axis of said ship.

4,565,149

SEMI-SUBMERGIBLE SPHERICAL RESIDENTIAL STRUCTURE

Richard Clasky, 2307 Panorama Dr., North Vancouver, British Columbia, and Wilfred Vogl, West Vancouver, both of Canada, assignors to Richard Clasky, Vancouver, Canada

Division of Ser. No. 357,181, Mar. 11, 1982, abandoned. This application May 15, 1985, Ser. No. 734,146
Int. Cl.⁴ F24V *3/02*
U.S. Cl. 114—264 **5 Claims**

1. A method of fabricating a spherical residential structure comprising:

(a) fabricating a lower spherical half shell and sponson around the maximum girth of the half shell on a submergible support;

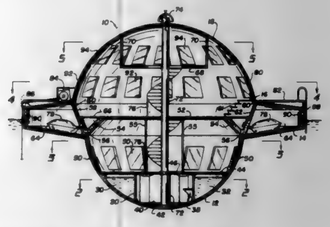
(b) erecting a plurality of room-forming walls to the bottom of said lower half shell;

(c) installing machinery and equipment in said rooms;

(d) forming a lower floor on the top of said walls;

(e) forming a main floor integral with an annular skirt extending downwardly and outwardly from the outer periphery of said floor to an upper edge of said lower half shell and integral with an upwardly and outwardly inclined sponson wall extending from the outer periphery of said skirt to an upper inner edge of said sponson;

(f) erecting an upper spherical half shell over said lower half shell such that a lower edge of said upper half shelf an inner upper edge of said sponson; and



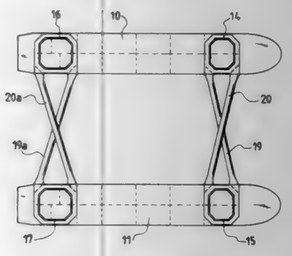
(g) lowering said submergible support in a body of water to float said structure.

4,565,150

OFFSHORE VESSEL

Hadar Lidén, Västra Frölunda, Sweden, assignor to Gotaverken Arendal AB, Sweden

Filed Dec. 6, 1983, Ser. No. 558,508
Claims priority, application Sweden, Dec. 7, 1982, 8206978
Int. Cl.⁴ B63B *35/44*
U.S. Cl. 114—265 **2 Claims**



1. In an offshore vessel of the kind having two parallel pontoons and an operating platform carried by said pontoons by means of at least two pairs of vertical columns, the improvement that columns to opposite sides of a longitudinal middle plane through the vessel, and located in the same transverse plane, are interconnected by means of a pair of transverse braces, crossing each other as seen in a horizontal plane, running close to each other without any interconnection.

4,565,151

APPARATUS FOR INDICATING A RANGE POSITION FOR AN AUTOMATIC TRANSMISSION INSTALLED IN A VEHICLE

Shunichi Buma, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

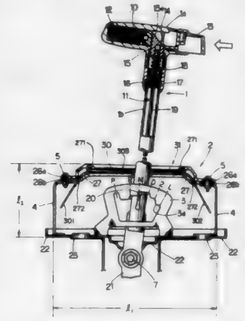
Filed May 24, 1984, Ser. No. 613,330
Claims priority, application Japan, Jun. 8, 1983, 58-088293[U]
Int. Cl.⁴ G01D *5/02*
U.S. Cl. 116—28.1 **4 Claims**

1. An apparatus for indicating a range position for an automatic transmission having a manual control lever to be movably operated by a vehicle operator to obtain a selected range position, said apparatus comprising:

a case fixed to a vehicle floor and having an upper plate with an elongated slot through which said control lever extends, first and second ends of said elongated slot defining a range of movement of said manual control lever, said upper plate having an elongated window adjacent said elongated slot, a pair of first apertures each being located adjacent an end of said slot, a corresponding pair of second apertures each being located adjacent a corresponding one of said first apertures, and a pair of corner portions each disposed in a passage between corresponding apertures of said first and second pairs of apertures;

a control position scale fixed within said elongated window, said control position scale having a series of apertures corresponding to range positions; and

a range position indicating means inserted within said slot and slidably moved by operation of said manual control



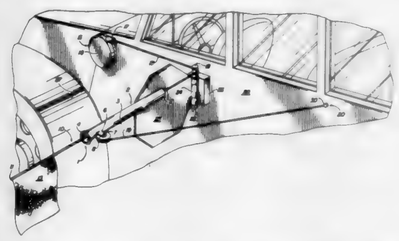
lever for indicating the selected range position in one aperture of said series of apertures in the control position scale, the range position indicating means having a relatively thick intermediate portion adjacent said manual control lever and relatively thin end portions, the end portions slidably disposed within the passages defined by said pairs of first and second apertures and extending over said corner portions to bend said end portions away from said upper plate, the intermediate portion being disposed in a plane generally parallel to said upper plate.

4,565,152

SAFETY FLAG

Charles O. Bennett, P.O. Box 712, Benton, La. 71006

Filed Dec. 19, 1983, Ser. No. 562,749
Int. Cl.⁴ G09F *17/00*
U.S. Cl. 116—50 **19 Claims**



1. A safety flag for a vehicle provided with a stop arm mechanism having a hinge and capable of opening into an open configuration and closing into a closed configuration on the hinge with respect to the vehicle, comprising:

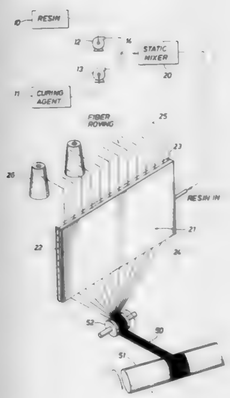
(a) receiving means having a first end carried by the stop arm mechanism;

(b) an opening provided in the wall of said receiving means and guide pulley means rotatably provided on said receiving means;

(c) a flag rod having one end inserted in the opposite end of said receiving means from said first end and a flag attached to the opposite end of said flag rod;

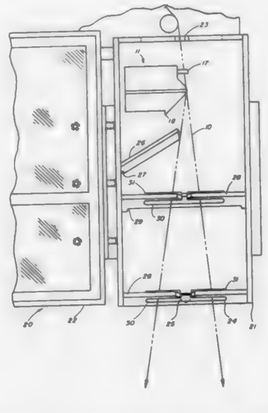
(d) bushing means carried by the stop arm and a cable mount attached to the vehicle in spaced relationship with respect to said bushing means;
(e) recoil pulley means spaced from said cable mount and said bushing means, said recoil pulley means secured to the vehicle; and
(f) cable means retractably wound in said recoil pulley means and one end of said cable means extending from said recoil pulley means around said bushing means, into said receiving means, through said opening and around said guide pulley means, said one end provided in fixed attachment to said cable mount, and said one end of said flag rod attached to said cable means, whereby opening of the stop arm mechanism to the open configuration extends a segment of said cable means from said recoil pulley means and causes said opposite end of said flag rod and said flag to project from said opposite end of said receiving means and closing of the stop arm mechanism to the closed configuration causes said segment of said cable means to retract into said pulley means and said opposite end of said flag rod and said flag to retract into said opposite end of said receiving means.

4,565,153
APPARATUS FOR IMPREGNATION OF REINFORCING FIBERS
Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Jan. 16, 1984, Ser. No. 571,259
Int. Cl.⁴ B05C *3/02*
U.S. Cl. 118—405 **9 Claims**



1. An apparatus for impregnating reinforcing fibers with mixed resin and curing agent comprising:
a first source of resin and a second source of curing agent;
means coupled to said sources for supplying desired amounts of said resin and curing agent under pressure to a common point;
a mixing device having an inlet and discharge, the inlet of said mixing device being connected directly to said common point;
an enclosed chamber, said chamber being formed from a pair of box-shaped members joined at their edges to form said chamber, said box-shaped members having a length and width that is substantially greater than their depth, said chamber having inlets and outlets formed on opposite sides of said chamber for the reinforcing fibers, a resin inlet formed in another side of said chamber, the discharge of said mixing device being directly coupled to said resin inlet in said chamber whereby said reinforcing fibers may be passed through said chamber and coated with resin; and
an adjustable orifice disposed on the outlet of said chamber to remove excess resin from said reinforcing fibers.

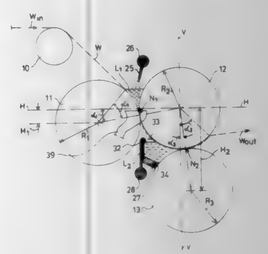
4,565,154
PROCESS AND APPARATUS FOR APPLYING AND CONFINING FINISH
Phillip L. Mullins, Matoaca, Va.; James G. Neal, Raleigh, N.C., and Jeffrey T. Perkins, Richmond, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.
Division of Ser. No. 497,530, May 24, 1983, Pat. No. 4,544,579, which is a continuation-in-part of Ser. No. 303,330, Sep. 18, 1981, abandoned. This application Jun. 27, 1985, Ser. No. 749,327
Int. Cl.⁴ B05C *3/00*
U.S. Cl. 118—410 **18 Claims**



1. Apparatus for applying finish to yarn, comprising:
an applicator body, provided with a duct which supplies finish to applicator face, the face comprising the delivery area of the duct and the surface area of two primary arcs, one of the primary arcs being located on either side of the duct and curving in the general direction of yarn travel, the central angle subtended by each of the primary arcs ranging from about 2 to 9 degrees, the edge of each of the primary arcs remote from the duct terminating in a secondary arc which subtends a central angle ranging from about 30 to 60 degrees and having a radius length shorter than that of either of the primary arcs and curving in the direction of yarn travel.

15. Apparatus for confining a spray of finish issuing from a traveling yarn and a finish application device during and subsequent to application of the finish, comprising:
a. a housing to substantially enclose the finish application device and having openings therein for the yarn entrance and exit and for the take-off of excess finish;
b. a plate mounted beneath the finish application device and oriented with respect to the housing such that any finish overflow and drips from the finish application device coming into contact therewith feed by gravity away from the traveling yarn to the take-off opening; and
c. at least one baffle disposed between the plate and the take-off opening and oriented with respect to the housing such that any finish overflow and spray coming into contact therewith feed by gravity away from the traveling yarn to the take-off opening, the baffle(s) having a slot therein for passage of the yarn and a raised lip around the slot.

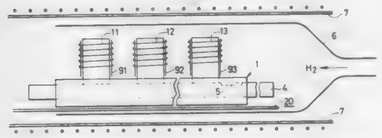
4,565,155
SIZE PRESS
Erkki Koski, Jyväskylä, Finland, assignor to Valmet Oy, Finland
PCT No. PCT/FI82/00049, § 371 Date May 26, 1983, § 102(e) Date May 26, 1983, PCT Pub. No. WO83/01636, PCT Pub. Date May 11, 1983
PCT Filed Oct. 25, 1982, Ser. No. 504,040
Claims priority, application Finland, Oct. 27, 1981, 813356
Int. Cl.⁴ B05C *3/132*
U.S. Cl. 118—412 **11 Claims**



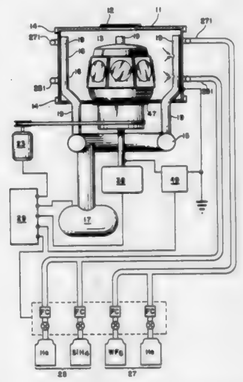
1. A size press, which comprises three coating rolls (**11**, **12**, **13**), which form two press nips (N_1, N_2) as pairs with each other, the paper web (W) to be treated being passed through the said press nips so that both sides of the web (W) are treated in the said nips (N_1, N_2), characterized in that the vertically uppermost roll (**12**) of the size press constitutes the centre roll of the size press, in connection with which centre roll the two coating nips (N_1, N_2) are formed so that the first coating nip (N_1) is placed at a short angular distance (α_1) underneath the horizontal plane (H—H) placed through the axis of the said centre roll (**12**), that the second coating nip (N_2) is formed by the third coating roll (**13**), which is placed substantially in the vertical plane (V—V) placed through the centre point of the centre roll (**12**), or at a small angle α_2) after the said plane, and that, as preceding the first nip (N_1), size-feed devices **25**, **26** have been provided at the centre-roll (**12**) side of the run of the web (W), which size-feed device **25**, **26** feed a first size pool (L_1) or layer into the substantially vertical pit between the centre roll (**12**) and the web (W), as well as that, preceding the second nip (N_2), a second set of size-feed device **27**, **28**) has been provided in the substantially horizontal pit formed by the centre roll (**12**) and by the third coating roll (**13**), the said second size-feed devices (**27**, **28**) forming the second size pool (L_2) or layer at the opposite side of the web (W), as compared with the said first size pool (L_1) or layer, the said devices being arranged as jointly operative so that, while the sizing is performed, the web (W) is supported by a roll face.

4,565,156
APPARATUS FOR PERFORMING SOLUTION GROWTH RELYING ON TEMPERATURE DIFFERENCE TECHNIQUE
Jun-ichi Nishizawa, and Yasuo Okuno, both of Sendai, Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan
Filed Feb. 28, 1983, Ser. No. 470,541
Claims priority, application Japan, Mar. 1, 1982, 57-32750
Int. Cl.⁴ H01L *21/208*
U.S. Cl. 118—412 **10 Claims**

1. An apparatus for performing an epitaxial growth of a compound semiconductor from solution using a temperature difference technique, comprising:
reactor means having external furnace means;
boat means housed in said reactor means;
at least one reservoir means for containing a melt and carried on said boat means within said reactor means;
electrical insulation means disposed around said reservoir;
heating means provided within said reactor means directly disposed around said insulation means to heat said melt; and
a plurality of quartz cooling tubes provided at the bottom of said boat means within said reactor means for conveying a coolant gas for developing a uniform vertical temperature difference in said melt mainly by thermal exchange between said heating means and cooling tubes while effectively suppressing thermal fluctuation in the melt from said furnace means.



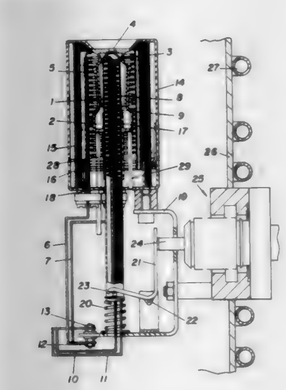
4,565,157
METHOD AND APPARATUS FOR DEPOSITION OF TUNGSTEN SILICIDES
Daniel L. Brors, Los Altos Hills; James A. Fair, Mountain View, and Kenneth A. Monnig, Palo Alto, all of Calif., assignors to Genus, Inc., Mountain View, Calif.
Filed Mar. 29, 1983, Ser. No. 480,030
Int. Cl.⁴ C23C *11/08*
U.S. Cl. 118—719 **25 Claims**



1. A device for chemical vapor deposition of tungsten silicide comprising:
a vacuum housing for containing reactant gas and a substrate;
mixing chamber means for uniformly mixing tungsten hexafluoride and silane to form said reactant gas, said mixing chamber means connected directly to said housing to allow introduction of said reactant gas into said housing, said mixing chamber means constructed of a first material having a high thermal conductivity and in thermal contact with said housing and not being actively heated so that said mixing chamber means can follow temperature excursions of said housing by said thermal contact;
heating means in proximity to said substrate for heating said substrate to a first temperature to cause chemical vapor deposition onto said substrate of a second material formed from said reactant gas;
first cooling means for actively maintaining said housing at a second lower temperature to substantially avoid chemical vapor deposition onto said housing of said second material formed from said reactant gas, said first cooling means for

extracting thermal energy from said housing while said second material is being deposited on said substrate; and evacuation means for creating a good vacuum in said vacuum housing, said vacuum at times being as low as 10 mT.

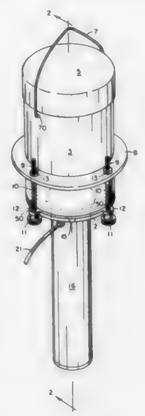
4,565,158
EVAPORATOR CELL FOR VACUUM DEPOSITION ON SUBSTRATES
Jürgen Koprio, Triesen, Liechtenstein, assignor to Balzers AG, Fed. Rep. of Germany
Filed Jul. 30, 1984, Ser. No. 635,906
Claims priority, application Switzerland, Sep. 5, 1983, 14848/83
Int. Cl.[4] C23C *3/12*
U.S. Cl. 118—726 **8 Claims**



1. An evaporator cell for applying a thin layer of evaporative material on a substrate by vacuum deposition, comprising a cell housing having one end with a vapor escape aperture and an opposite end with a plug accommodating opening, a plug extending in the opening and having a closed end which is positionable adjacent the vapor escape aperture, and means for moving said plug to vary the spacing between said closed end of said plug and said aperture for regulating the amount of vapor which is to escape, said closed end of said plug having a larger diameter than that of said aperture.

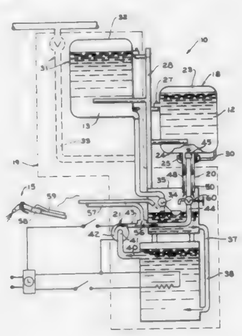
4,565,159
ANIMAL FEEDER
John W. Sweeney, Boerne, Tex., assignor to Sweeney Enterprises, Inc., Boerne, Tex.
Filed Aug. 10, 1984, Ser. No. 640,026
Int. Cl.[4] A01K *61/02, 5/00*
U.S. Cl. 119—53 **14 Claims**

5. An animal feeder comprising:
a circular base plate with a plurality of flanges positioned about the perimeter of said circular base plate operable to accept the passage of screws therethrough;
vibrating means connected to the bottom side of said circular base plate;
cylindrical flexible wall means of less diameter than said circular base plate with flanges positioned about the perimeter and extending outwardly therefrom and aligned with said flanges of said base plate;
a plurality of adjusting screw means connecting said wall flanges to said base plate flanges to maintain said flexible wall means in spaced relation to said base plate and operable to transmit vibrations of said base plate to said flexible wall means and thereby induce flexing in said cylindrical flexible wall means to impart a swirling motion to material



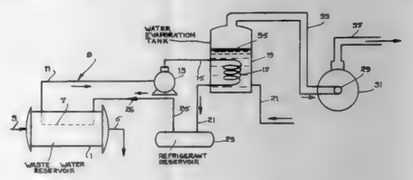
being vibrated out of the opening between said circular base plate and said flexible wall means.

4,565,160
LIVESTOCK TREATMENT SYSTEM
Melvin J. Cook, HCOI, Box 231, Mesa, Wash. 99343
Filed Mar. 30, 1984, Ser. No. 595,252
Int. Cl.[4] A01K *13/00*
U.S. Cl. 119—159 **16 Claims**



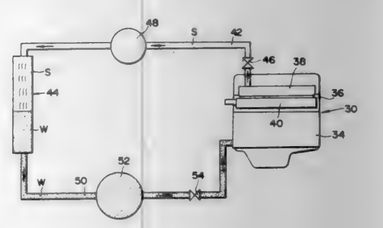
1. A livestock treatment system for producing and selectively discharging a liquified mixture of carrier liquid such as water and a material such as salve or molasses held in a material holding container, said material being flowable when heated, said system comprising:
bracket means for releasably supporting the material holding container;
an elongated drain tube extending between a bottom end and an open top end, the top end being situated adjacent the bracket means and adapted to extend into the material holding container supported on the bracket means, to receive and drain material therefrom;
a mixing tank connected to the drain tube to receive material through the bottom end thereof;
carrier liquid delivery means for supplying carrier liquid to the mixing tank;
circulating means for cycling carrier liquid and said material through a circuit including the mixing tank;
heating means in said circuit for heating the carrier liquid passing through the circuit to a temperature sufficient to reduce the material to a flowable state;
jet means connected to the circulating means with a nozzle adjacent the drain tube top end, for spraying a jet of heated carrier liquid against material within the container releasably supported on the bracket means so material within the container directly adjacent the nozzle will be engaged by the heated carrier liquid and will be reduced to a flowable state by the heated carrier liquid and will flow with the carrier liquid as a liquified mixture through the drain tube to the mixing tank; and
wherein the circulating means includes an applicator means for selective operation to discharge the liquified mixture.

4,565,161
STEAM GENERATION
Andre Choquette, Ste-Thérèse, Canada, assignor to Uraken Canada Limited, St-Eustache, Canada
Filed Apr. 8, 1985, Ser. No. 721,154
Int. Cl.[4] F22B *1/02*
U.S. Cl. 122—32 **9 Claims**



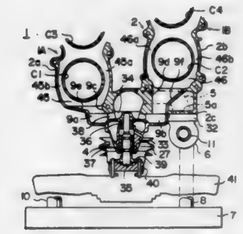
1. Method of generating steam comprising:
providing a closed evaporation tank;
feeding water into said tank to form a pool having an evaporation level;
withdrawing heat from a heat source and heating said pool water therewith to a temperature below the boiling temperature, at a working pressure, of said pool water;
lowering the pressure, in said tank, over said level of said water pool, to cause evaporation of said pool water into vapor at a pressure lower than the working pressure, and
mechanically pressurizing said vapor to turn it into pressurized steam.

4,565,162
COOLING SYSTEM OF AN INTERNAL COMBUSTION ENGINE
Nakanobu Seki, Yokohama; Yoshimasa Hayashi, Kamakura, and Masakazu Uemura, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Feb. 24, 1982, Ser. No. 351,748
Claims priority, application Japan, Feb. 27, 1981, 56-28849
Int. Cl.[4] F01P *3/22*
U.S. Cl. 123—41.08 **15 Claims**



1. In a heat engine,
a cooling arrangement comprising:
a coolant jacket associated with said engine, said coolant jacket containing a coolant;
a heat exchanger in fluid communication with said coolant jacket;
a compressor interposed between said coolant jacket and said heat exchanger for compressing fluid induced from said coolant jacket and discharging said compressed fluid under pressure into said heat exchanger; and
means for transmitting the fluid from said heat exchanger to an inlet of said coolant jacket.

4,565,163
V-TYPE ENGINE
Haruyoshi Ishimi, and Koji Asanomi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Apr. 19, 1984, Ser. No. 601,959
Claims priority, application Japan, Apr. 21, 1983, 58-70657; Mar. 26, 1984, 59-57717
Int. Cl.[4] F02B *67/00*; F01P *5/12*; F02B *75/22*
U.S. Cl. 123—41.44 **15 Claims**



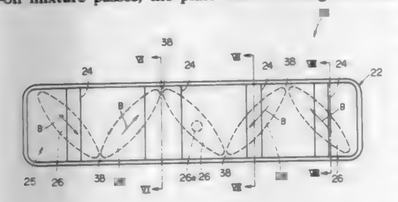
1. A V-type engine having a crankshaft with an axis comprising a cylinder block having first and second cylinder banks, each cylinder bank having an outer side face and being provided with a row of a plurality of cylinders extending between front and rear end faces of the cylinder block in the axial direction of the crankshaft, the row of the cylinders in the first cylinder bank starting from a location near the front end face of the cylinder block and the row of the cylinders in the second cylinder bank starting from a location spaced apart from the front end face of the cylinder block, wherein the improvement comprises that a water pump of an engine cooling system is mounted on the front end face of the cylinder block substantially at the center between the first and second cylinder banks, and a coolant inlet-passage to the water pump is formed in the cylinder block between the front end face of the cylinder block at the second cylinder bank and the foremost cylinder in the second cylinder bank, the water pump having a pump chamber in which an impeller is rotated, said coolant inlet-passage being communicated with the pump chamber at one end and with a discharge conduit of a radiator at the other end, and said pump chamber being communicated with water jackets formed in the first and second cylinder banks, respectively, by way of first and second coolant feed passages.

4,565,164
INTERNAL COMBUSTION ENGINE CYLINDER-HEAD COVER
Masayuki Satoh, Toyota, and Yoshisada Wada, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan
Filed Jan. 10, 1985, Ser. No. 690,180
Claims priority, application Japan, Jan. 30, 1984, 59-14735
Int. Cl.[4] F01M *13/04*
U.S. Cl. 123—41.86 **4 Claims**

1. A cylinder-head cover for use in an internal combustion engine, through which a blowby gas is suctioned into an intake passage, comprising:
a housing secured to a cylinder head, the housing having a

plurality of extension portions which extend in lateral direction thereof, an inlet port for introducing a blowby gas-oil mixture into the housing, and an outlet port for emitting the blowby gas into the intake passage; and

a plate means provided within the housing, the plate means forming a cylinder-head passage between its outer surface and an inner surface of the housing, in which the blowby gas-oil mixture passes, the plate means having its outer



surface on which a groove is formed such a way as the square of the cross-section of the cylinder-head passage is repeatedly large and small, whereby when a blowby gas-oil mixture passes through a cylinder-head cover, the oil and contaminants contained in the blowby gas-oil mixture drops on the outer surface of the plate means at the place where the square of the cross-section of the cylinder-head passage is large, and thereby the oil and contaminants are separated from the blowby gas-oil mixture.

4,565,165

INTERNAL COMBUSTION ENGINE

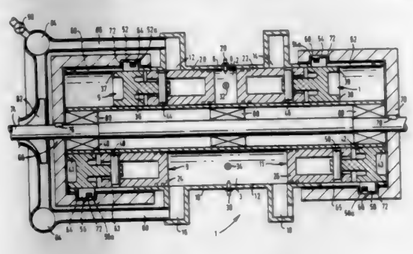
John P. S. Papanicolaou, Nissos Agia Trias, Eretria, Chalkidos, Greece

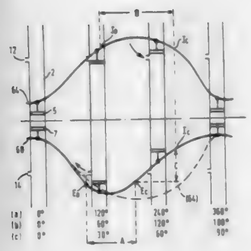
Filed Jul. 23, 1984, Ser. No. 633,199

Claims priority, application United Kingdom, Feb. 17, 1984, 8404159

Int. Cl.⁴ F02B *75/26*

U.S. Cl. 123—51 BA **30 Claims**





1. In an internal combustion engine operable using a cycle having expansion, exhaust, intake and compression phases, which engine comprises at least one pair of opposed pistons which reciprocate in cylinder portions which are in fluid communication with each other via a common combustion chamber, the pistons being coupled to respective cam elements engaged with a common output shaft for converting the reciprocating motion of the pistons into rotational motion, and the cylinder portions having intake and exhaust ports in the cylinder walls arranged such that each intake port is engaged by one piston and each exhaust port is engaged by the respective opposed piston; the improvement comprising that the cam elements are provided with different cam profiles profiled at least along those cam portions proceeding the closing of the intake port to cause the respective pistons to uncover the respective exhaust and inlet ports in a timed sequence such that an exhaust stroke length formed between the opposed pistons when the exhaust port is initially opened, is longer than an intake stroke length formed between the opposed pistons when the inlet port is closed, at which time the exhaust port engaging piston has moved from the exhaust port by an amount of at least 10% of a distance from the exhaust port to the center of the common combustion chamber at ignition to produce a sufficient increase in effective volume of the expansion phase with respect to the intake phase to give hyper-expansion.

4,565,166

INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

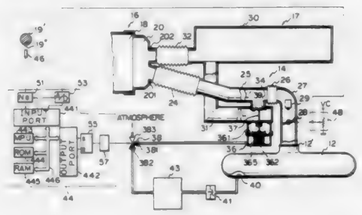
Keiso Takeda, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 10, 1984, Ser. No. 629,336

Claims priority, application Japan, Oct. 11, 1983, 58-188532

Int. Cl.⁴ F02B *27/02*

U.S. Cl. 123—52 M **12 Claims**



1. An intake system, for an internal combustion engine, comprising:

an air cleaner having a housing, an inlet at one side of the housing, first and second outlets at an opposite side of the housing, and an enlarged chamber inside the housing in direct communication with said outlets;

a main intake passageway connecting the first outlet of the air cleaner to the engine;

a throttle valve arranged in the main intake passageway;

a second intake passageway having a chamber of a predetermined volume, said second intake passageway having a first end connected to the second outlet of said air cleaner such that said second intake passageway is in fluidal communication with the enlarged chamber of said air cleaner, and having a second end spaced from said first end and connected to said main intake passageway at a position upstream of said throttle valve;

sensor means for detecting operating conditions of said engine; and

control means, responsive to the sensed operating conditions of the engine, for opening and shutting fluidal communication between said second end of said second intake passageway and said main intake passageway, the predetermined volume of the second intake passageway chamber being such that the main intake passageway has a first resonance open end located at the first outlet of the air cleaner when communication is shut between the second end of the second intake passageway and the main intake passageway and a second resonance open end located at the connection between the second end of the second intake passageway and the main intake passageway when communication therebetween is open, whereby switching between two desired effective intake pipe lengths is attained according to varying operating conditions of the engine;

wherein said control means comprises:

valve means located where said main intake passageway is connected to the second end of said second intake passageway;

actuator means connected to said valve means for selectively operating said valve means; and

circuit means responsive to signals from said sensor means for providing electrical signals to said actuator means; and

wherein said circuit means comprises:

means for storing, in accordance with a multiplicity of operating conditions, data indicating whether said valve means should be open or shut;

means for calculating preset values of operating conditions at which the effective intake pipe length should be changed;

means for deciding at each detected operating condition, by using the calculated value for said condition, whether or not the valve means should be open;

means for operating said actuator means for causing said valve means to be opened when the decision is "yes"; and

means for operating said actuator means for causing said valve means to be shut when the decision is "no".

4,565,167

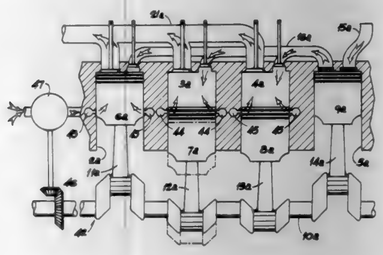
INTERNAL COMBUSTION ENGINE

Clyde C. Bryant, 1920 Forrest Ave., East Point, Ga. 30344

Continuation-in-part of Ser. No. 327,922, Dec. 8, 1981, abandoned, which is a continuation-in-part of Ser. No. 230,752, Feb. 2, 1981, abandoned. This application May 21, 1984, Ser. No. 612,660

Int. Cl.⁴ F02B *33/22*

U.S. Cl. 123—70 R **20 Claims**



2. A method of deriving mechanical work from combustion gas in an internal combustion engine having a two stroke power chamber in which the combustion gas is ignited and expanded, a compressor chamber in which an air charge is compressed and a piston operable in each chamber, comprising the steps of compressing an air charge in the compressor chamber, transferring the compressed air charge to the power chamber with the total combustion chamber volume of the power chamber being no greater than the volume of the charge transferred from the compressor chamber at the time of transfer such that there is no appreciable pressure drop during transfer, causing a predetermined quantity of fuel to be mixed with the air charge to produce a combustible mixture, causing the mixture to be ignited at substantially maximum pressure within the power chamber and expanding the combustion gas against the piston substantially beyond its initial volume.

7. A reciprocating internal combustion engine comprising a compressor chamber for compressing an air charge, a power chamber in which the combustion gas is ignited and expanded, a piston operable in each chamber and connected to a common crankshaft by connecting link means for rotating the crankshaft in response to reciprocation of each piston, a transfer duct communicating the compressor chamber with the power chamber through which duct the compressed charge is transferred to enter the power chamber, an intake valve controlling admission of air to said compressor chamber for compression, a transfer valve controlling admission of the compressed charge to said transfer duct, an intake valve controlling admission of the compressed air charge from the transfer duct to said power chamber, and an exhaust valve controlling discharge of the exhaust gases from the power chamber, said valves being timed to operate such that the air charge is maintained within the transfer duct and introduced into the power chamber without any appreciable drop in charge pressure so that ignition can commence at substantially maximum compression, means being provided for causing fuel to be mixed with the air charge to produce the combustible gas, and wherein said compressor chamber and the combustion chamber of said power chamber are sized with respect to the displaced volume of said power chamber with the total combustion chamber volume of the power chamber being no greater than the volume of the charge transferred from the compressor chamber at the time of transfer such that the exploded combustion gas can be expanded substantially beyond its initial volume when transferred to the power chamber.

4,565,168

VALVE CONTROL DEVICE, PARTICULARLY FOR VALVES OF INTERNAL COMBUSTION ENGINES

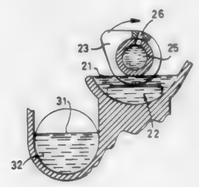
Jean-Pierre Rivere, Paris, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 26, 1984, Ser. No. 574,158

Claims priority, application France, Feb. 3, 1983, 8301676

Int. Cl.⁴ F01L *1/46*

U.S. Cl. 123—90.34 **7 Claims**



1. A valve control device for an overhead camshaft engine having a cylinder head including at least one rotatable cam on a camshaft and at least one valve, said valve control device comprising:

valve drive means extending between one said cam and one said valve for transferring rotational movement of said cam into reciprocal movement of said valve in an opening direction;

return spring means associated with each said valve for biasing said valve in a closing direction;

an isolated and independent bath of high viscosity lubricating oil in said cylinder head, wherein said valve drive means includes a sliding surface slidingly contacting each said cam, each said sliding surface being immersed in said bath; and

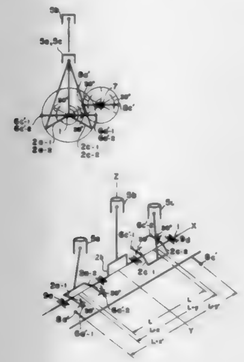
means for circulating said oil only within said cylinder head, whereby said high viscosity lubricating oil in said isolated and independent bath in said cylinder head does not communicate with oil outside of said bath.

4,565,169

BALANCER STRUCTURE FOR THREE-CYLINDER ENGINES

Tsunehiko Suzuki, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 412,660
Claims priority, application Japan, Aug. 31, 1981, 56-136882
Int. Cl.⁴ F16F *15/00*
U.S. Cl. 123—192 B **11 Claims**



1. A balancer structure of a three-cylinder in-line engine having three cylinders, the latter comprising first and third cylinders and a second cylinder between said first and third cylinders, a crankshaft having crank arms disposed at angles of 120° with respect to each other and operatively connected to a piston assembly within each of said cylinders, respectively, consisting of

a single countershaft adjacent and parallel to and rotated at the same speed as the crankshaft but in the opposite direction,

means comprising counterweights securely mounted on said crankshaft at positions thereof corresponding to the first and third cylinders for balancing of a part of inertia forces of reciprocating masses and the entire inertia forces of rotating masses;

each of said counterweights being disposed more than 90° from the crank arm for the corresponding cylinder and perpendicular to the crank arm of the second cylinder;

at least two balancers securely mounted on said countershaft at both ends thereof for balancing the remainder of the inertia forces of reciprocating masses and of couple of inertia of the crankshaft about axes perpendicular to the crankshaft.

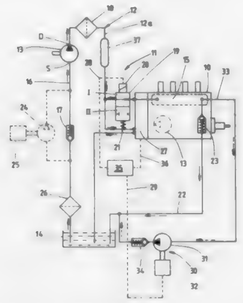
4,565,170

CONTROL DEVICE FOR SHUTTING OFF AN INTERNAL COMBUSTION ENGINE

Hermann Grieshaber, Stuttgart; Albrecht Sieber, Ludwigsburg; Peter Schneier, Leonberg, and Helmut Steimer, Denkendorf, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 21, 1983, Ser. No. 563,916
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 3304335
Int. Cl.⁴ F02M *63/02*
U.S. Cl. 123—359 **7 Claims**

1. A control device for shutting off an internal combustion engine, in particular a Diesel engine, comprising a fuel feed pump connected to a suction line connected to a fuel supply tank which during normal operation aspirates fuel from said fuel supply tank and pumps the fuel via a feed line embodied as a section of a supply line to a suction chamber of an injection pump, an overflow line connected to said suction chamber of said injection pump and to said fuel supply tank, a first check valve located in said overflow line between said suction chamber and said fuel supply tank, an electromagnetic shutoff control valve inserted into the feed line, said control valve being reversible from an operating position (I) which allows fuel to pass through said control valve in the feeding direction to a blocking operating position (II) in which fuel flowing from a compression side (D) of the feed pump to the suction chamber of the injection pump is blocked, an aspiration line connected to said suction chamber at one end and to said overflow line at its other end, an electric fuel pump inserted into said aspiration



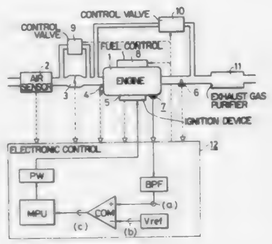
line with its suction side connected toward said suction chamber of the injection pump, a second check valve in said aspiration line between said electric pump and said supply tank, with a compression side of said electric pump connected to one side of said second check valve with the opposite side of said second check valve connected downstream of said first check valve to said overflow line which leads back to the fuel tank, which electric fuel pump during aspiration operation with the control valve simultaneously located in the shutoff position (II) aspirates fuel from said suction chamber to stop said engine.

4,565,171

KNOCK CONTROLLER FOR AN INTERNAL COMBUSTION ENGINE

Noboru Sugiura, and Seiji Suda, both of Mito, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 22, 1983, Ser. No. 506,870
Claims priority, application Japan, Jul. 5, 1982, 57-115379
Int. Cl.⁴ F02P *5/14*
U.S. Cl. 123—425 **9 Claims**



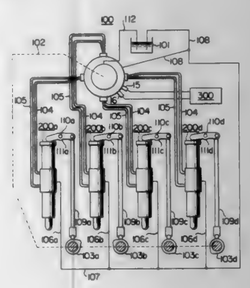
1. A knock controller for controlling the ignition timing for a multiple cylinder internal combustion engine, comprising: sensor means for sensing operating conditions of the engine, said sensor means including a single knock sensor for sensing knocking developed in the cylinders of the engine and providing an output indicative thereof; ignition means for generating an ignition pulse and for producing sparks for each of the cylinders of the engine; and electronic control means for producing an ignition timing control signal to said ignition means for controlling the ignition timing in accordance with the intensity of detected knocking, said electronic control means identifying each of the plural cylinders of the engine in accordance with the operation of the engine, detecting the intensity of knocking developed in each of the identified plural cylinders according to the output of said knock sensor and different predetermined knock detection levels for the respective cylinders and providing an output indicative thereof, and determining the ignition timing for each of the identified plural cylinders according to the output of the detected knocking intensity for the identified cylinder, whereby the different predetermined knock detection levels for the respective cylinders are predetermined in accordance with at least the mounting position of the single knock sensor with respect to the respective cylinders thereby enabling mounting of the single knock sensor at any position on the engine and ensuring appropriate detection of knocking in each of the cylinders.

4,565,172

HIGH-PRESSURE FUEL INJECTION SYSTEM FOR DIESEL ENGINE

Yoshikazu Hoshi, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 28, 1984, Ser. No. 645,168
Claims priority, application Japan, Sep. 2, 1983, 58-160443
Int. Cl.⁴ F02M *57/02*
U.S. Cl. 123—446 **3 Claims**



1. A high-pressure fuel injection system for a diesel engine comprising:

(a) a plurality of main pumps for injecting fuel each located at one of cylinders of the engine and formed with a fuel injecting port, each said main pump for injecting fuel being formed with a first injected fuel space filled with fuel to be injected, a discharge valve located in a path connecting said first injected fuel space with said fuel injecting port, said discharge valve being opened when the fuel to be injected reaches a predetermined pressure level, a first injection timing fuel space fluidly connected with said first injected fuel space through a movable shuttle and filled with injection timing fuel, and a plunger varying the volume of said first injection timing fuel space;

(b) a metering and distributing pump formed with injection fuel outputs and injection timing fuel outlets corresponding in number to the cylinders of the engine for discharging fuel in timed relation to the rotation of the engine, said metering and distributing pump being formed with a second injected fuel space filled with the fuel to be injected and brought into communication with said injected fuel outlets in timed relation to the rotation of the engine, and a second injection timing fuel space filled with injection timing fuel fluidly communicated with said second injected fuel space through a movable free piston and communicated with said injection timing fuel outlets in timed relation to the rotation of the engine and equipped with pump means for compressing the fuel in said second injection timing fuel space in timed relation to the rotation of the engine;

(c) a plurality of fuel metering valves for metering fuel flowing into said second injected fuel space and second injection timing fuel space respectively;

(d) a plurality of pipes for fluidly connecting said first injected fuel space and first injection timing fuel space of each said main pump for injecting fuel with said injected fuel outlets and injection timing fuel outlets of said metering and distributing pump respectively; and

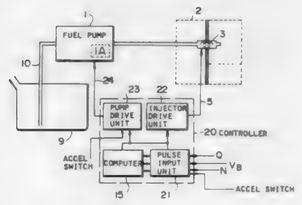
(e) a rocker arm mechanism for driving the plunger of each said main pump for injecting fuel in timed relation to the rotation of the engine.

4,565,173

METHOD AND SYSTEM FOR CONTROLLING FUEL TO BE SUPPLIED FROM FUEL PUMP TO ENGINE

Katsunori Oshiage, Yokosuka, and Akio Hosaka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 21, 1981, Ser. No. 333,011
Claims priority, application Japan, Dec. 26, 1980, 55-184107
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—458 **2 Claims**



1. A controller for controlling fuel supplied by a fuel pump driven by a fuel pump motor to a fuel injection valve of an engine, comprising:

(a) a plurality of sensors for detecting engine operating conditions and for generating sensor signals corresponding thereto;

(b) an input unit responsive to the sensor signals for providing digital output signals corresponding thereto;

(c) a microcomputer connected to said input unit for receiving said digital output signals, said microcomputer being operable to calculate a basic fuel injection time period during which said fuel injection valve injects fuel into the engine and a basic motor-drive duty cycle for driving the fuel pump motor to supply fuel from the fuel pump to the fuel injection valve in accordance with the digital output signals;

(d) an injector drive unit connected to said microcomputer for outputting a pulse signal to the fuel injection valve, said pulse signal having a pulse width corresponding to the basic fuel injection time period calculated by said microcomputer; and

(e) a pump drive unit connected to said microcomputer for outputting a pulse signal to said fuel pump motor having a duty cycle corresponding to the basic motor-drive duty cycle calculated by said microcomputer;

wherein said basic fuel injection time period and said basic motor drive duty cycle correspond such that the amount of fuel pumped from the fuel pump matches the amount of fuel injected by the injector; and

wherein said microcomputer generates clock pulses and said pump drive unit comprises:

(1) a first counter for counting the number of said clock pulses inputted thereto;

(2) a first register connected to said microcomputer for

storing a first data calculated by said microcomputer, said first data being representative of the period of said pulse signal from the pump drive unit;

(3) a first comparator for comparing the number of clock pulses counted by said first counter with the first data stored in said first register and for outputting a set signal when the counted number is equal to the first data stored in said first register;

(4) a second counter for counting the number of clock pulses inputted thereto;

(5) a second register connected to said microcomputer for storing the basic motor-drive duty cycle calculated by said microcomputer;

(6) a second comparator connected to said second counter and second register for comparing the number of clock pulses of said second counter with the basic motor-drive duty cycle stored in said second register and for outputting a reset signal when the counted number of clock pulses reaches the basic motor-drive duty cycle stored in said second register;

(7) a flip flop for outputting said pulse signal of said pump drive unit, the flip flop output being set to a first level when said first comparator outputs the set signal thereto and being reset to a second level when said second comparator outputs the reset signal thereto; and

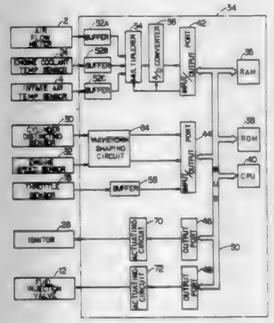
(8) an AND circuit for outputting the clock pulses to said second counter only while the flip-flop output is at said first level.

4,565,174

FUEL INJECTION CONTROL APPARATUS

Makoto Suzuki, Mishima, and Kenichi Nomura, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Nov. 2, 1984, Ser. No. 667,746
Claims priority, application Japan, Dec. 26, 1983, 58-250331
Int. Cl.⁴ F02B *3/02*
U.S. Cl. 123—478 **4 Claims**



1. A fuel injection control apparatus for use of an engine, comprising:

a first means for detecting an amount of an intake air which is suctioned into the engine;

a second means for detecting an engine speed;

a third means for determining whether the detected engine speed is in a low engine speed zone whose speed is less than a first predetermined engine speed, whether the detected engine speed is in a high engine speed zone whose speed is greater than a second predetermined engine speed which is set to be greater than the first predetermined engine speed, or whether the detected engine speed is in an intermediate engine speed zone whose speed is between the first and second predetermined engine speeds;

a fourth means for setting a minimum amount of an injected fuel according to the engine speed zone determined by the third means, the fourth means setting a first value when the third means detects that the detected engine speed is in the low engine speed zone, and a second value whose value is less than the first value when the third means detects that the detected engine speed is in the high engine speed zone, further the fourth means maintaining the first value in the intermediate engine speed zone when the engine speed increases from the low engine speed zone and the second value in the intermediate engine speed zone when the engine speed drops from the high engine speed zone;

a fifth means for determining an amount of an injected fuel according to the amount of the intake air and the engine speed detected by the first and second means respectively, the fifth means determining the minimum amount of the injected fuel set by the fourth means as a final minimum amount of the injected fuel when the determined amount of the injected fuel is less than the minimum amount set by the fourth means, further the fifth means determining the determined amount of the injected fuel as a final amount of an injected fuel when the determined amount of the injected fuel is greater than the minimum amount set by the fourth means; and

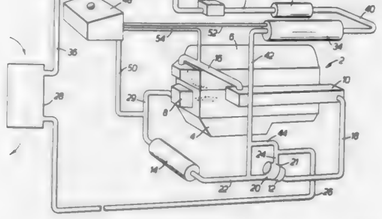
a sixth means for injecting the amount of fuel calculated by the fifth means.

4,565,175

ENGINE COOLING SYSTEM

George C. Kaye, Broadstone, England, assignor to Sabre Engines Limited, Dorset, England

Filed May 18, 1984, Ser. No. 611,893
Claims priority, application United Kingdom, May 19, 1983, 8313907
Int. Cl.⁴ F00M *31/00*
U.S. Cl. 123—542 **2 Claims**



1. A cooling system for a diesel engine havng charge air cooling, said system comprising:

a first cooling circuit including the cylinder block of said engine;

a second cooling circuit including a charge air cooler;

each said circuit employing a common liquid coolant;

a single heat exchanger for cooling liquid coolant passed therethrough;

means for connecting said first circuit, said second circuit and said heat exchanger in series, with said second circuit downstream of said heat exchanger and upstream of said first circuit, said connecting means being temperature controlled in such manner that the two circuits operate independently until the temperature of the coolant in the first circuit reaches a given value; and

the connecting means including a temperature-responsive valve in the first circuit, which valve has an inlet and a first outlet connected the first circuit and a second outlet connected to the inlet of the heat exchanger and is arranged to deliver at least a part of the coolant of the first circuit to the heat exchanger when the given temperature is reached, the flow of the liquid coolant in the second circuit not passing through the temperature responsive valve, and the temperature responsive valve being the only liquid coolant control valve positioned in the system for controlling flow between the first and second circuits

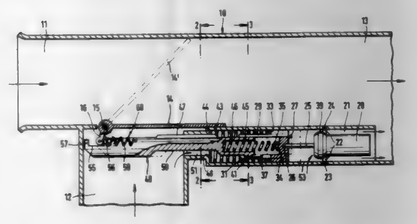
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4,565,176

DEVICE FOR CONTROLLING THE INTAKE AIR TEMPERATURE OF A MIXTURE-COMPRESSING INTERNAL COMBUSTION ENGINE

Herbert Alf, Ludwigsburg; Rudolf Leipelt, Oberstenfeld; Rolf Füsser, Ingersheim, and Helmut Spannbauer, Ludwigsburg-Ossweil, all of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Sep. 10, 1984, Ser. No. 648,935
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1983, 3332737; Mar. 9, 1984, 3408609
Int. Cl.⁴ F02M *31/00*
U.S. Cl. 123—556 **20 Claims**



1. In an air intake system supplying combustion air to an internal combustion engine which compresses and burns a mixture of fuel and combustion air obtained either by means of a carburetor or through the injection of fuel into the air intake system, in such a system, a device for controlling the intake air temperature comprising:

a raw air duct including a cold air intake duct with an inlet for raw air of ambient temperature, a transversely oriented warm air intake duct connected to a source of preheated raw air and joining the cold air intake duct in a duct junction, and a raw air mixing duct downstream of the duct junction;

a flow proportioning valve arranged in the area of the duct junction, the flow proportioning valve being movable between two end positions, in a first one of which said valve closes off the warm air intake duct while opening the cold air intake duct, and in the second one of which said valve closes off the cold air intake duct while opening the warm air intake duct, the valve being movable to intermediate positions in which both intake ducts are partially open for the admission to the raw air mixing duct of both cold raw air and preheated raw air, in proportions determined by the valve position;

a thermostat chamber defined by chamber walls which are solidary with the raw air duct, the thermostat chamber having a calibrated warm air branch inlet for the supply of a branch flow of preheated raw air from the warm air intake duct to the thermostat chamber, a calibrated cold air branch inlet for the supply of a branch flow of ambient raw air from the outside to the thermostat chamber, and an outlet through which said branch flows rejoin the flow of combustion air which is supplied to the internal combustion engine by the air intake system;

a wax thermostat arranged in the thermostat chamber downstream of the calibrated branch inlets for preheated raw air and ambient raw air and upstream of said outlet, the thermostat and the walls of the thermostat chamber forming a flow gap for the passage of said branch flows, the cross section of said flow gap being a fraction of the smallest flow cross section of the raw air mixing duct; and

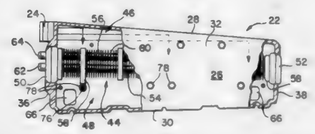
drive means for connecting the wax thermostat to the flow proportioning valve in such a way that an expansion of the wax thermostat in response to an increase in its temperature produces a displacement of the flow proportioning valve in the direction of said first valve end position and a contraction of the wax thermostat in response to a decrease in its temperature produces a displacement of the flow proportioning valve in the direction of said second valve end position.

4,565,177

UNITIZED CROSS TIE AFTERCOOLER ASSEMBLY

Leslie A. Roettgen, Columbus, and Kenneth W. Israel, Hope, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Sep. 9, 1983, Ser. No. 530,651
Int. Cl.⁴ F02B *29/04*
U.S. Cl. 123—563 **4 Claims**



1. An aftercooler assembly for an internal combustion engine designed to receive compressed charge air at or below a predetermined upper pressure limit for exchange with a fluid coolant comprising:

(a) a housing defining an elongated chamber including:

(1) a wrapper fabricated from sheet material and being incapable of resisting said upper pressure limit of charge air pressure by itself, said wrapper including opposed spaced side-walls, and

(2) an end wall at each of opposite ends of said wrapper;

(b) an elogated aftercooler core means positioned in said chamber for causing the engine charge air to flow in heat exchange relationship with the fluid coolant; and

(c) a plurality of cross tie assemblies extending across the entire distance separating said first and second sidewalls and including spacer means of a length less than or equal to the width of the core means and

(d) a cross tie securing means extending entirely through said housing, said spacer means and securing means cooperating in a manner drawing said first and second sidewalls into compressive engagement with said core means to form a unitized assembly capable of withstanding the upper limit of charge air pressure.

4,565,178

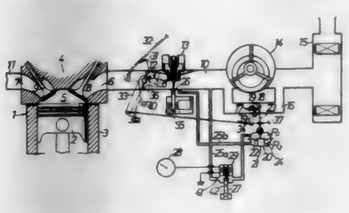
SUPERCHARGER CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hidenobu Nagase, and Takayuki Hirayama, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,832
Claims priority, application Japan, Jan. 24, 1983, 58-9643
Int. Cl.⁴ F02B *37/12*
U.S. Cl. 123—564 **6 Claims**

1. The supercharger control system for an internal combustion engine having a throttle valve with a throttle operating lever, an engine air inlet passage, a venturi-type carburetor, comprising, a supercharger located in the engine air inlet passage upstream of the throttle valve, said supercharger being driven by the engine, a bypass within the engine inlet passage around said supercharger, a control valve with a control lever attached thereto located within said bypass to control air flow therethrough, a diaphragm device, a first side of said diaphragm device being in communication with the engine inlet passage at the exit of said supercharger, a second side of said diaphragm being in communication with the venturi carbure-

tor, a valve control linkage being constructed and arranged to open said control valve with increased vacuum in said first side of said diaphragm, spring means biasing said diaphragm to open said control valve, an activation lever with a stopper protrustion therefrom, said activation lever being pivotally mounted about the throttle valve, a first stop pin in the intake passage wall, a second stop pin on the throttle operating lever to selectively engage said activation lever, a regulation lever



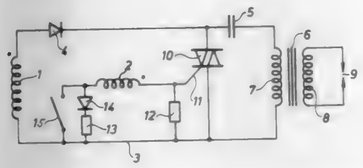
pivotally mounted about said control valve, a third stop pin on said control lever to selectively engage said regulating lever, an activation linkage connecting said activation lever and said regulating lever so as to create reciprocating motion therebetween, and spring means biasing both said regulating lever against said third stop pin when said control valve is in the fully open position and said stopper protrusion against said first stop pin.

4,565,179

APPARATUS IN MAGNETO IGNITION SYSTEMS FOR PROVIDING TIME-SEPARATED SEQUENCES FOR CHARGING AND TRIGGERING IN CO-PHASED CHARGING AND TRIGGERING VOLTAGE SEQUENCES, INCLUDING INHIBITION OF THE IGNITION SEQUENCE IN SUCH APPARATUS

Jan G. Nytomt; Lars-Olof Ottosson, and Nils A. Agren, all of Åmål, Switzerland, assignors to Aktiebolaget Svenska Elektromagneter, Åmål, Sweden

Filed Jul. 7, 1983, Ser. No. 511,642
Int. Cl.⁴ F02P *3/06*
U.S. Cl. 123—599 **2 Claims**



1. In a flywheel magneto system, the combination comprising:

(a) a charging circuit connected through a storage capacitor to an ignition transformer;

(b) a triac connected across said capacitor for discharging it through said transformer, and having a control terminal;

(c) a control circuit co-phased with said charging circuit and having a rectifier connected to said control terminal, the polarity of said rectifier being such that said rectifier comprises a means for enabling a voltage build-up in said control circuit after the charging interval for said storage capacitor to trigger said triac;

(d) a selectively open or closed short-circuiting switch connected across said rectifier in said control circuit, whereby said closed short-circuiting switch provides a control voltage on said control terminal of said triac to put it in an on-state during the initial portion of the capacitor charging interval to terminate charging before ignition triggering voltage is reached, thus terminating ignition;

(e) each of said charging and control circuits having an induction winding;

(f) a common conductor connected to (1) one pole of said triac, (2) the primary winding of said ignition transformer, (3) the cathode of said rectifier, (4) said charging induction winding, and (5) one side of said short-circuiting switch;

(g) said control induction winding connecting said control terminal of said triac to the anode of said rectifier; and

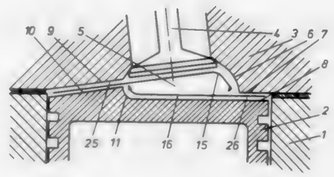
(h) the other side of said short-circuiting switch being connected to the connection of the anode of said rectifier to said control induction winding.

4,565,180

CONTACTLESS IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES

Masao Iwata, Yokosuka, Japan, assignor to Oppama Kogyo Kabushiki Kaisha, Yokosuka, Japan

Filed Apr. 5, 1984, Ser. No. 597,173
Claims priority, application Japan, May 17, 1983, 58-73333[U]
Int. Cl.⁴ F02P *5/08*
U.S. Cl. 123—602 **3 Claims**



1. A contactless ignition device for internal combustion engines comprising an exciter coil and pulser coil each inducing a voltage by rotation of an internal combustion engine, a first condenser charged with the positive induced voltage of said exciter coil, a second condenser charged with the negative induced voltage of said exciter coil, an ignition coil receiving the discharged voltage of said first condenser and feeding a higher voltage to a spark plug, an full wave rectifier having its input connected to said pulser coil through a Zener diode for determining the number of angle advancing revolutions of the engine, a first switching element made conductive by receiving the output voltage of said full wave rectifier and enabling the discharge of said second condenser and a second switching element made conductive by receiving the discharged voltage of said second condenser and enabling the discharge of said first condenser.

4,565,181

INTERNAL COMBUSTION ENGINE WITH ONE OR MORE COMPRESSION CAPS BETWEEN PISTON AND CYLINDER HEAD AND DEFLECTION MEANS IN THE COMBUSTION CHAMBER THROUGH WHICH ROTARY FLOW IS INDUCED IN THE CHARGE

Paul August, C/ Capellades 1, Barcelona 6, Spain (6)

Continuation of Ser. No. 855,690, Nov. 29, 1977, abandoned. This application Jan. 10, 1980, Ser. No. 110,935
Int. Cl.⁴ F02B *23/00*
U.S. Cl. 123—601 **4 Claims**

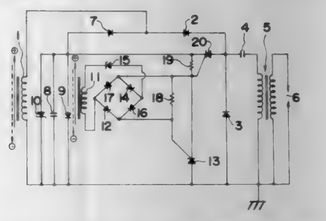
1. An internal combustion engine cylinder construction for providing a vertically oriented rotational swirl of a gas fuel charge in a combustion chamber immediately before ignition thereof, comprising:

(a) an engine cylinder having a reciprocable piston disposed therein and closed at its upper end by a cylinder head having side-by-side intake and exhaust valves,

(b) a recessed, oval-shaped combustion cavity disposed between the head of the engine and the top of the piston, and having a flat upper surface including the intake and exhaust valve surfaces and the area between them, and a flat opposing bottom surface on the top of the piston defined by a left and right sidewall and having substantially semicircular ends aligned with the outer circular periphery of the valves and connected by opposite sidewalls,

(c) two opposed compression gap zones disposed between the head and the upper surface of the piston, one compression zone disposed on each side of the combustion cavity and adjacent one of said left and right sidewalls and connecting with the interior of the combustion cavity when the piston at the upper end of its travel approaches the cylinder head so as to force the charge into the combustion chamber in opposite opposed directions immediately prior to the piston reaching the top of the cylinder,

(d) the piston having a first upwardly extending ridge which forms one of said left and right sidewalls of the combustion chamber, and the head having a second corresponding downwardly extending ridge forming the other of said left and right sidewalls,



(e) one compression gap zone opening into the combustion chamber adjacent and in line with the piston surface, and which acts to force the incoming charge around the second downwardly extending ridge on the head and across the flat bottom surface on the piston in a stream to the opposed first upwardly extending ridge on the piston which is on the opposite side of the combustion chamber, where it is deflected upwardly along that first ridge away from the piston surface,

(f) the other compression gap zone opening into the combustion chamber adjacent and in line with the closed valve surfaces and which acts to force the incoming charge around the first upwardly extending ridge on the piston and across the valve surfaces to the second downwardly extending ridge on the head which is on the opposite side of the combustion chamber, where it is deflected downwardly along that second ridge and away from the valve surfaces, and

(g) the opposed flows from the compression gap zones flowing clear of each other over their adjacent flat surfaces thereby imparting an overall rotational swirl of the charge in the combustion chamber as the piston approaches the top of the cylinder.

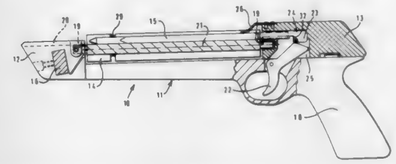
4,565,182

CROSSBOW WITH ROTATABLE MAGAZINE HAVING OPEN-SIDED CHANNELS

Bernard T. Barnett, Ryton, Nr. Shifnal, England, assignor to B & P Barnett Limited, West Midlands, England

Filed Aug. 12, 1983, Ser. No. 522,584
Claims priority, application United Kingdom, Dec. 21, 1982, 8236256
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—25 **1 Claim**

1. In a crossbow comprising an elongated stock with a fore-end portion and a rear-end portion and a prod mounted on and extending outwardly from the fore-end portion of the stock, a magazine for holding a plurality of bolts mounted on the stock between the rear-end portion and the fore-end portion, wherein the improvement comprises said magazine being movable relative to the stock abut an axis of rotation parallel to the longitudinal extent of the stock for presenting the bolts in succession to a firing position on the stock, wherein the magazine comprises arms which extend away from the axis and along the length of the magazine, wherein the magazine de-



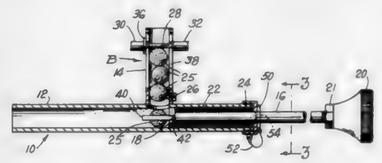
fines a plurality of open-sided channels for receiving respective bolts, which channels are spaced apart about the axis of rotation and each of which channels is defined between a respective pair of said arms, and wherein the magazine comprises holding means operative while in a holding position for releasably holding a bolt in a respective one of said channels.

4,565,183

SPRING TYPE BALL PROJECTING DEVICE

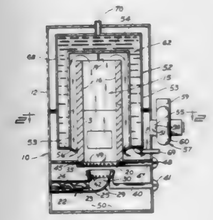
Samuel C. Smith, 210 Hartman Road, Newton Centre, Mass. 02159

Filed Sep. 29, 1982, Ser. No. 428,250
Int. Cl.⁴ F41B *7/00*
U.S. Cl. 124—26 **8 Claims**



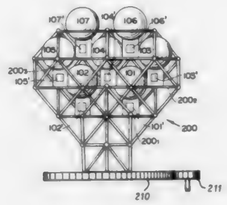
1. A quick-release transportable pocket-sized, rapid fire nonlethal projectile launcher comprising a firing cylinder for receiving and launching projectiles and a spring-actuated plunger moving slidably within the cylinder, an enlarged diameter or shoulder at an end of the plunger to counter the force of a compression spring, spring leaf finger means at opposing sides of the shoulder of the plunger embracingly positioned for restricting movement of a projectile nested in the cylinder, orthogonal to and interconnected with the cylinder, a magazine means for storing spare projectiles until ready to be transferred to the firing cylinder between the firing cylinder and the magazine, a spring loaded adjustable ball retainer means at the base of the magazine, to control the release of stored projectiles, for reversible manual or gravity feed, moving slidably within a slot in the magazine, a protruding rod feeder means to release projectiles by forcing the stored projectiles past the plunger one-at-a-time, a gravity-release pin cocking means, attached by a chain to the cylinder, to retain the plunger in a withdrawn position and place the projectile launcher in readiness for launching a projectile, which pin falls out upon pulling back the plunger, and a clip means for fastening the projectile launcher in a pocket of clothing of the user.

4,565,184
COMBUSTIBLE PARTICULATE FUEL HEATER
Bruce H. Collins, 11426 Gravelly Lake Dr., Tacoma, Wash. 98499, and Heinrich J. W. Jurgens, 30919 Meridian East, Graham, Wash. 98338
Filed May 17, 1984, Ser. No. 611,349
Int. Cl.⁴ F24B *9/00*; F24H *9/18*; F23K *3/14*
U.S. Cl. 126—368 **13 Claims**



1. A combustible particulate fired heater, comprising:
a combustion chamber defined by upright side walls extending between open top and bottom ends;
an enclosure surrounding the combustion chamber;
a retort within the combustion chamber adjacent the bottom end thereof and having a lower particulate receiving end and an upper open end;
feed conveyor means leading through the enclosure to the retort for delivering metered quantities of combustible particulates to the lower particulate receiving end of the retort;
primary combustion air supply means having a primary combustion air supply manifold extending at least partially about the upper open end of the retort;
primary air control means on the primary air supply means for selectively allowing entry of combustion air from outside the enclosure into the retort;
secondary combustion air supply means including a secondary air supply manifold within the combustion chamber above the primary combustion air supply manifold;
secondary air control means independent of the primary air control means for selectively allowing entry of secondary air from outside the enclosure to an area within the combustion chamber above the retort;
an exhaust duct opening into the enclosure; and
vacuum means connected to the exhaust duct for producing a pressure differential between the area confined by the enclosure and the ambient atmosphere such that ambient air is drawn through at least one of the combustion air supply means to induce a high level of gasification and to support combustion at the retort and for drawing combustion exhaust gases out through the exhaust duct;
wherein the primary combustion air supply manifold is integral with the retort at the upper end thereof;
wherein the primary air supply manifold extends about the periphery of the upper open end of the retort and includes a primary air discharge opening formed therein facing inwardly across the upper retort end; and
wherein the primary air supply manifold includes spaced horizontal top and bottom peripheral edges and wherein the primary air discharge opening is situated toward the bottom peripheral edge.

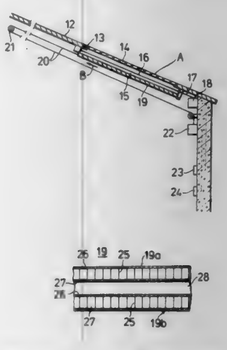
4,565,185
FOUNDATION FOR MOUNTING SOLAR RAY COLLECTING DEVICES
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan
Filed May 16, 1984, Ser. No. 610,712
Claims priority, application Japan, Aug. 3, 1983, 58-142052
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—417 **3 Claims**



1. A support foundation comprising a support structure means operable to move to follow the sun, said support structure means having structural step parts forming a plurality of steps disposed at different elevations, said support structure further comprising an underlying structure supporting said structural step parts, said underlying structure being generally centrally disposed relative to said structural step parts so as to provide a generally balanced load on said underlying structure, each of said steps having at least one base, a solar ray collector mounted on each of said bases, each of said solar ray collectors having a light-receiving surface, each of said base having an equilateral polygonal configuration, said bases in adjacent steps being vertically spaced from one another at a distance at least as great as the vertical height of said light-receiving surface so as to preclude having the shadow of a solar ray collector projecting on a rearwardly disposed solar ray collector, said bases on said one step being horizontally positioned between the bases on the next higher step so as to provide for alternately staggered solar ray collectors on successive steps, said light-receiving surface comprising a lens, said solar ray collector further comprising an optical conductor cable having a light-receiving edge, each of said solar ray collectors having an access door facing to the rear away from the sun to provide access for positioning said light-receiving edge of said optical conductor cable at the focus of said lens, said structural step parts extending from said base so as to free the rearwardly facing area of said base to provide for access to said door to thereby permit adjustment of said solar ray collector from the rear of the support structure away from the sun as said solar ray collector continues to unobstructedly receive solar rays from the sun.

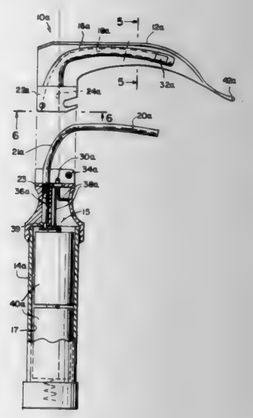
4,565,186
PASSIVE-TYPE SOLAR DEVICE
Junzo Takata; Michio Jinushi, and Mitsuo Hashizume, all of Kanagawa, Japan, assignors to Takenaka Komuten Co., Ltd., Osaka and Nankoso Ltd., Kanagawa, both of, Japan
Filed Oct. 3, 1984, Ser. No. 657,362
Claims priority, application Japan, Oct. 4, 1983, 58-185621; Oct. 4, 1983, 58-153875
Int. Cl.⁴ E04D *13/18*
U.S. Cl. 126—428 **12 Claims**

1. A passive-type solar device comprising a heat transmissible transparent plate disposed for exposure to sunlight, a reflecting film curtain presented spacedly beneath said plate and being substantially coextensive therewith, means for effecting disposition of said reflecting film curtain between aligned or transparent plate-closing position and withdrawn or transparent plate-open condition, a light transmissible, heat-insulating board provided spacedly beneath and in alignment with said transparent plate wherein said heat-insulating board comprises at least two honeycomb material sections of predetermined thickness, transparent plates sandwiching each honeycomb material section, said sections being spaced-apart for creating an air layer of predetermined thickness, and means integrating



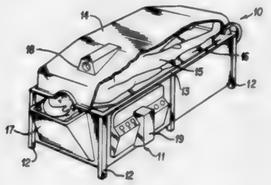
said sections together with the intervening air layer into a unitary board, and means for effecting movement of said board between alignment with said transparent plate and withdrawn or non-transparent plate aligned condition.

4,565,187
LARYNGOSCOPE
David J. Soloway, 22 Alice Ave., Merrick, N.Y. 11566
Filed Sep. 4, 1984, Ser. No. 647,242
Int. Cl.⁴ A61B *1/06*
U.S. Cl. 128—11 **13 Claims**



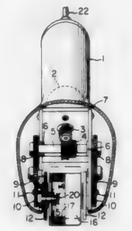
1. A laryngoscope which comprises:
(a) a handle having a hook-on fitting and a hollow chamber therein;
(b) means for illuminating carried within said hollow chamber of said handle;
(c) a flexible light emitting tube affixed to said handle adjacent said hook-on fitting; and
(d) a plastic disposable blade having a hook-on fitting and a hollow sleeve, said blade is removably attached to said handle with said light emitting tube entering said hollow sleeve so that a larynx can be illuminated and said blade will obviate dental trauma.

4,565,188
VIBRATORY SAUNA
Laurie S. Hardie, 8 View Ave., Surfers Paradise, Queensland, Australia, assignor to Laurie Stanley Hardie, Surfers Paradise and Leonard John Coleman, Paradise Waters, both of, Australia
Filed Nov. 15, 1983, Ser. No. 551,958
Claims priority, application Australia, Nov. 23, 1982, PF6935
Int. Cl.⁴ A61A *21/00*
U.S. Cl. 128—24.2 **15 Claims**



1. A vibratory sauna comprising:
a housing having a closure member associated therewith and comprising a base and continuous side wall;
a support member oriented in a substantially horizontal plane for supporting a patient in a supine position;
head support means located adjacent the housing and outwardly of said closure member to form a longitudinal extension of the support member;
resilient mounting means for supporting said support member;
vibration means for vibrating said support member;
a member in said housing located below said support member and containing heating means and airflow generation means, and said chamber further comprising a plurality of chambers, means in said chamber for providing longitudinal flow of heated air in a continuous loop manner, whereby heated air may be caused to flow in and out of said chamber at opposite ends thereof, and to flow above said support member to contact a person lying thereon while said support member is adapted to be simultaneously vibrated; and said heated air being returned to said chamber to form a closed circulation loop of heated air throughout said housing.

4,565,189
BEAUTY TREATMENT DEVICE
Kenichi Mabuchi, Matsudo, Japan, assignor to Bio Mabuchi Co. Ltd., Japan
Filed Sep. 24, 1982, Ser. No. 423,157
Claims priority, application Japan, Oct. 8, 1981, 56-160653
Int. Cl.⁴ A61H *7/00*
U.S. Cl. 128—49 **10 Claims**



1. A beauty treatment device, comprising a device body, a drive unit in said body, a roller support rotatably mounted in said body about a support axis, a patter having a shaft rotatably mounted on said roller support about a shaft axis, said shaft axis being offset from said support axis so that said shaft is eccentri-

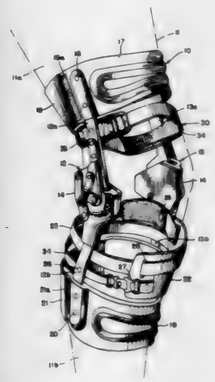
cally mounted on said roller support for eccentric rotation relative to said roller support, said patter having an outer periphery with a diameter which is driven through an eccentric path, a bearing rotatably mounted in said device body for rotation about said support axis, means connecting said drive unit to said roller support for rotating said roller support, and a spacer wheel rotatably mounted on said bearing and being of a diameter at most smaller than the diameter of said outer periphery of said patter so as to engage against the skin and position the device so that rotation of said patter causes said patter to pat the skin.

4,565,190

KNEE ORTHOSIS WITH SWIVEL-ACTION SUPRACONDULAR CUFF

Robert E. Pirmantgen; John S. Adamski, and Mark F. Devens, all of Chicago, Ill., assignors to Northwestern University, Evanston, Ill.

Filed Jul. 13, 1984, Ser. No. 630,649
Int. Cl.⁴ A61F *3/00*
U.S. Cl. 128—80 C **11 Claims**



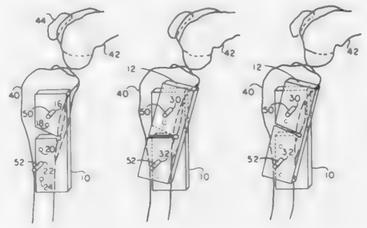
1. A knee orthosis comprising a pair of hinge assemblies adapted to be disposed on opposite sides of a wearer's knee; each hinge assembly including an upper sidebar adapted to extend upwardly alongside the wearer's upper leg and a lower sidebar adapted to extend downwardly alongside the wearer's lower leg; said hinge assembly having constantly changing instantaneous axes of rotation as said upper and lower sidebars are moved between extension and flexion; lower suspension means for securing said lower sidebars along opposite sides of a wearer's lower leg; and upper suspension means for securing said upper sidebars along opposite sides of a wearer's upper leg; said upper suspension means comprising (a) a proximal cuff connected to the proximal ends of said upper sidebars and adapted to extend about a wearer's thigh and (b) a supracondular femoral cuff connected to said upper sidebars distal to said proximal cuff; said supracondular femoral cuff including a flexible, semi-rigid member of generally U-shaped configuration having a pair of arm portions adapted to engage the anterior and posterior surfaces of the upper leg just above the knee and an integral intermediate portion disposed between said arm portions; means connecting said intermediate portion to one of said sidebars for limited universal pivotal movement in relation thereto; and flexible strap means joining the ends of said arm portions to the other of said upper sidebars.

4,565,191

APPARATUS AND METHOD FOR PERFORMING CUNEIFORM OSTEOTOMY

D. Barclay Slocum, 241 Spy Glass Dr., Eugene, Oreg. 97401

Filed Jan. 12, 1984, Ser. No. 570,458
Int. Cl.⁴ A61F *5/04*
U.S. Cl. 128—92 H **13 Claims**



1. An apparatus for performing cuneiform osteotomy comprising:

a jig having first and second faces which terminate in edges and which define a recess extending therethrough and intersecting an edge thereof, said jig further defining a pair of jig bores extending therethrough in a direction substantially perpendicular to said first jig face, one of each of said jig bores being disposed to each side of said recess, said jig bores each being adapted to properly position a drill bit extending therethrough and into the bone against which said second jig face is to be disposed and to which the osteotomy is being performed; and

an osteotomy guide having first and second substantially parallel faces which complement said first jig face and which terminate in edges, said guide defining a pair of guide bores extending therethrough in a direction substantially perpendicular to said guide faces, said guide bores being spaced from each other a distance equal to the spacing of said jig bores so that each of said guide bores is adapted to receive one of the drill bits to permit relative alignment of said jig and said guide with respect to each other and to the bone, said guide further defining a slot extending therethrough across less than the entire width of said guide and intersecting an edge thereof, said slot extending at an oblique angle with respect to a line drawn between said guide bores, whereby said guide may be mounted to said jig with either of said guide faces disposed against said first jig face permitting said guide slot to be disposed in a first and then a second angular position with respect to the bone to facilitate cutting the bone in first and second cuts to cut a bone wedge of an angle alpha which is equal to the difference between said first and second angular positions of said slot.

4,565,192

DEVICE FOR CUTTING A PATELLA AND METHOD THEREFOR

James A. Shapiro, 1460 N. Sandburg Ter., Chicago, Ill. 60610

Filed Apr. 12, 1984, Ser. No. 599,640
Int. Cl.⁴ A61F *5/04*
U.S. Cl. 128—92 H **27 Claims**

1. A device for attachment to an everted patella for providing a horizontally level cutting surface for an oscillating saw used to cut off cartilage of the articular surface of the patella and a layer of bone of desired thickness for subsequent insertion into the patella of a prosthesis, said device comprising:

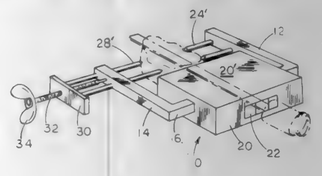
a first attaching means for removable attachment to a portion of a patella;

a first leg extension having a first end mounting said first attaching means, and a second end remote from said first end;

a second attaching means for removable attachment to another portion of a patella different from that portion to which the first attaching means is attached;

a second leg extension having a first end mounting said second attaching means and a second end remote from said first end; said first and second attaching means being mounted to their respective leg extensions such that they are spaced from each other to define therebetween a space in which is received a patella for attachment to said first and second attaching means;

a cutting support surface means fixedly connected to said second ends of said first and second leg extensions to thereby space said cutting support surface means from said first ends of said leg extensions and, therefore, to space said cutting support surface means from said first and second attaching means, said cutting support surface means defining a guide surface upon which is supportable an oscillating saw used to cut a patella in a cutting plane parallel to said cutting support surface means;



and a placement aid means mountable over said cutting support surface means for allowing the attachment of said first and second attaching means to a patella a desired distance below the articular surface of the patella, said placement aid means having an projecting positioning surface portion that at one end thereof is supportable by the articular surface of the everted patella, and means connected to the other end of said projecting surface portion for spacing said projecting surface portion from said cutting support surface means, whereby after attachment of said first and second attaching means to the everted patella after the distance from the articular surface thereto has been determined by said placement aid means, said placement aid means is removed to expose a cutting surface for an oscillating saw which cutting surface is positioned below the articular surface a desired distance to cut off the desired amount of cartilage and bone.

4,565,193

PRONGED PLATE FOR RESETTING FRACTURED BONES

Elke Streli, Stelzhamerstrasse 2, A-4020 Linz, Austria

Filed Sep. 12, 1983, Ser. No. 531,905
Claims priority, application Austria, Sep. 13, 1982, 3413/82
Int. Cl.⁴ A61F *5/04*
U.S. Cl. 128—92 D **13 Claims**



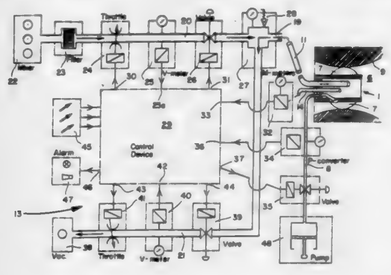
1. A pronged article for fixing bone parts in position together at a bone fracture in the region of an articulation, comprising an elongated plate having a longitudinal axis and adapted to lie along one of said bone parts, said plate being transverse to a longitudinal plane including said axis and having a plurality of prongs projecting transversely from one end of the plate, said plate having a plurality of apertures formed therein for receiving plate fixating means for securing said plate to said one of said bone parts, said plate being characterised by the improvement wherein the axes of said prongs, when extended to intersect said longitudinal plane, each include angles of between 10° and 30° with said longitudinal plane.

4,565,194

TRACHEAL TUBE FOR ARTIFICIAL RESPIRATION

Hilko Weerda, Bad Krozingen; Gerhard Meuret, and Peter Pedersen, both of Freiburg, all of Fed. Rep. of Germany, assignors to Dragerwerk AG, Fed. Rep. of Germany

Filed Oct. 3, 1983, Ser. No. 538,416
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204110
Int. Cl.⁴ A61M *16/00*
U.S. Cl. 128—204.23 **13 Claims**



1. A respirator for giving artificial respiration to a patient, particularly in endolaryngeal surgery, comprising a tracheal tube having an open distal end and a closed proximal end, a balloon cuff surrounding the tracheal tube adjacent its distal end which is to be introduced, to an inflating cannula connected to said cuff, and a respiration tube extending into said tracheal tube through its proximal end and which terminates in the tracheal tube adjacent the distal end for injection ventilation, said distal end being sealed about said respiration tube, a pressure measuring cannula (14) extending into the interior (5) of the tracheal tube (2), said tracheal tube being sealed about said pressure measuring cannula, and a control device connected to said respiration tube and said pressure measuring cannula and including means for producing an excess pressure during the inspiration phase and an underpressure during the expiration phase in said respiration tube of said tracheal tube, when fixed in said trachea, in response to intratracheal pressure being measurable through the pressure measuring cannula and evaluatable for purposes of controlling the respirator.

4,565,195

GLOVE

Joel H. Eisenberg, 53A Blackhawk La., Stratford, Conn. 06497

Continuation of Ser. No. 219,481, Dec. 23, 1980, Pat. No. 4,445,507. This application Apr. 27, 1984, Ser. No. 604,506
Int. Cl.⁴ A61F *13/00*; A41D *19/00*
U.S. Cl. 128—133 **8 Claims**

1. A glove for preventing injury to the thumb's ulnar collateral ligament comprising:

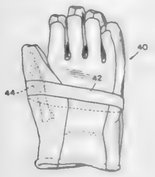
a hand covering having a thumb portion,

said thumb portion having a retaining means disposed at least in part on the radial side of said thumb portion,

said retaining means comprising a ribbon,

said ribbon being generally inelastic in the radial direction, and when the wearer's thumb is in place in said

thumb portion of said glove, said ribbon is disposed to extend over the thumb's metacarpal phalangeal joint so as to generally immobilize the adjacent bones with



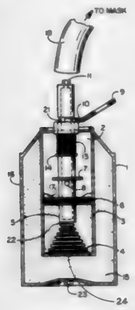
respect to the joint in the radial direction whereby radial movement of the thumb which might injure the ulnar collateral ligament of the thumb is prevented.

4,565,196

DISPOSABLE SMOKE MASK AND APPARATUS

Phillip J. Melby, and James J. Koch, both of Mason City, Iowa, assignors to Melco Co Inc., Mason City, Iowa

Filed Nov. 5, 1984, Ser. No. 668,387
Int. Cl.[4] A62B *9/02*
U.S. Cl. 128—205.24 **1 Claim**



1. Disposable smoke mask and apparatus comprising a smoke mask and canister of breathable gas wherein the improvement comprises:

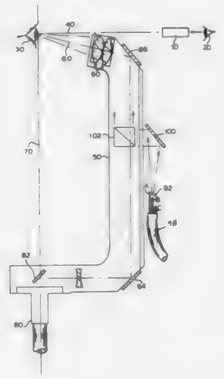
a. a canister of breathable gas including an inner chamber;
b. plunger unit tube mounted in said canister;
c. said plunger unit tube held in position to seal said breathable gas in said canister, by means of a compressed spring and a snap ring fitting in a groove in said plunger unit tube;
d. seal ring rigidly fastened in a gas tight manner on said plunger unit tube;
e. lock ring fastened in a gas tight manner to said canister inner chamber, and wherein the inside diameter of said ring is sloped downward;
f. locking collar fastened in a gas tight manner to said plunger unit tube;
g. an aperture leading from said inner chamber;
h. an aperture in plunger unit tube located between said seal ring and said locking collar;
i. an aperture in top of plunger unit tube;
j. a hose end connected to said aperture in top of said plunger unit tube;
k. opposite end of said hose connected to said face mask;
l. said face mask including an elastic band.

4,565,197

LASER OPHTHALMIC SURGICAL SYSTEM

Richard T. Daly, Huntington, N.Y., assignor to Lasers For Medicine, Del.

Filed Nov. 22, 1983, Ser. No. 554,478
Int. Cl.[4] A61F *5/06;* **G02B** *27/00;* **A61B** *17/36;* **A61N** *5/06*
U.S. Cl. 128—303.1 **10 Claims**



1. A method of providing an aiming beam into an eye for focusing a laser on a tissue of the eye comprising focusing onto eye tissue a plurality of images which are longitudinally spaced and parallel to an axis of projection whereby as the focal plane of the aiming beam moves along said axis each image becomes sharply visible when said image becomes substantially coplanar with said tissue.

2. An apparatus for performing microsurgery in an eye comprising:

means for viewing the interior of the eye along a first axis;
means for focusing a laser beam along a second axis into the eye to perform microsurgery; and
means for projecting a slit image with a fiducial feature into the eye along a third axis; and,
means for focusing an aiming beam into said eye, said aiming beam comprising several images projected in parallel along said second axis each image having a longitudinally displaced focal plane relative to the fiducial feature of the slit image.

4,565,198

METHOD FOR ALTERING THE CURVATURE OF THE CORNEA

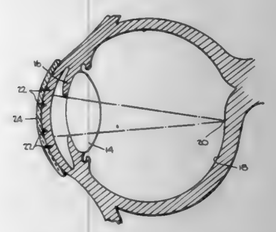
Erich A. Koeniger, Metairie, La., assignor to Barnes-Hind, Inc., Sunnyvale, Calif.

Filed Dec. 27, 1983, Ser. No. 566,105
Int. Cl.[4] A61F *17/32;* **A61B** *17/32*
U.S. Cl. 128—305 **2 Claims**

1. A method for altering the radius of curvature of a cornea comprising the steps of

a, measuring the corneal curvature with a keratometer;
b, calculating the correction factor necessary to obtain proper focusing;
c, making sufficient incisions into the cornea to allow reduction of its curvature as determined by the correction factor calculated in step b;
d, placing a rigid gas permeable contact lens, having a radius of curvature, on the eye, said radius having been determined by using the correction factor calculated in step b;
e, applying light pressure on the contact lens by bandaging

technique or surgical suturing so that the cornea will conform to the shape of the lens;



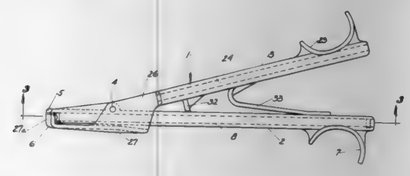
f, allowing the cornea to heal under the applied pressure; and
g, after healing, removing the contact lens from the eye.

4,565,199

LIGATOR

Carl T. Becht, Cincinnati, Ohio, assignor to Senmed, Inc., Cincinnati, Ohio

Filed Apr. 22, 1980, Ser. No. 142,675
Int. Cl.[4] A61B *17/12*
U.S. Cl. 128—325 **8 Claims**



1. A surgical ligator to locate and clamp a substantially inverted U-shaped clip about a tubular body member to close off the tubular member, said ligator comprising first and second handle elements pivoted together in pliers-like fashion and terminating at their forward ends in clamping jaw portions, said first and second handle elements and their clamping jaw portions being pivotable between a normal open position and a closed clip-clamping position, means in association with said handle elements to bias said handle elements and their clamping jaw portions to said normal open position, said first handle elements having a longitudinal cavity formed therein comprising a magazine for a row of clips arranged in edge-to-edge relationship, said row of clips being located within said magazine and extending longitudinally of said first handle element, said clamping jaw portion of at least one of said handle elements having a locator stop for the forwardmost clip of said row to properly position said forwardmost clip for use, and means in said magazine independent of tool actuation energy to constantly urge and advance said row of clips to position said forwardmost clip of said row against said locator stop.

4,565,200

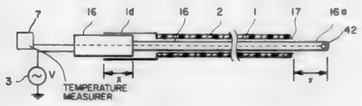
UNIVERSAL LESION AND RECORDING ELECTRODE SYSTEM

Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Continuation of Ser. No. 190,300, Sep. 24, 1980, abandoned. This application May 4, 1982, Ser. No. 374,806
Int. Cl.[4] A61B *17/39*
U.S. Cl. 128—642 **4 Claims**

1. A universal radio frequency heat lesion electrode kit adapted to provide a surgeon with the ability to vary the dimensions and the orientation of heat lesions made within the body with only a single entrance tract into the body, said kit comprising:

(a) an entrance cannula having a hub on its proximal end and a straight elongated shaft that is adapted to be inserted into the living body such that the distal end of said cannula shaft which is the distal end of said cannula can be brought into proximity to target tissue within the living body which is to be destroyed by a heat lesion, said entrance cannula having a through-opening which extends from said proximal end to the distal end of said cannula shaft, the through-opening having a portion which is a straight through-opening such that a straight shaft may be passed completely through it and emerge from said distal end, and said cannula shaft being covered with an insulating material such that at most only a small portion of its surface at said distal end of said shaft is uninsulated;
(b) a straight lesion electrode which is adapted to be inserted into said entrance cannula, the straight lesion electrode having a hub on its proximal end and a straight elongated shaft that is adapted to be inserted through the through-opening of said entrance cannula so that the straight distal tip of said straight lesion electrode can emerge from the through-opening at said distal end of said entrance cannula, at least a portion of the surface of said straight distal tip being metal and uninsulated, said straight metal distal tip being electrically connected to connection means on said hub of said straight lesion electrode, whereby an external source of radio frequency voltage may be connected to the connection means so as to raise said straight metal distal tip to a radio frequency voltage, said straight lesion electrode and said entrance cannula being so adapted that when said straight lesion electrode is inserted into said through-opening of said entrance cannula then said straight distal tip will extend beyond said distal end of said entrance cannula in a straight direction which is parallel to the direction of said cannula shaft, and the



amount of said exposed metal surface of said straight distal tip beyond said distal end of said cannula can be varied in accordance with the relative positions of said straight electrode hub and said cannula hub;
(c) an off-axis lesion electrode which is adapted to be inserted into said through-opening of said entrance cannula, the off-axis lesion electrode having a hub on its proximal end and an elongated shaft portion that is adapted to be inserted through said through-opening of said entrance cannula so that the distal tip portion of said off-axis lesion electrode can emerge from said through-opening at the distal end of said entrance cannula, the distal tip of said off-axis lesion electrode being so adapted that when it emerges from said through-opening at said cannula distal end then it can emerge beyond said cannula distal end in a direction which is off the axis of said cannula shaft, at least a portion of the surface of said distal tip of said off-axis lesion electrode being metal and uninsulated, the metal portion of said off-axis lesion electrode tip being electrically connected to connection means on said hub of said off-axis lesion electrode, whereby an external source of radio frequency voltage may be connected to the off-axis electrode connection means so as to raise said metal portion of said off-axis lesion electrode tip to a radio frequency voltage, said off-axis lesion electrode and said entrance cannula being so adapted that when said off-axis lesion electrode is inserted into said through-opening of said entrance cannula then said distal tip of said off-axis lesion electrode will extend out of said through-opening in the distal end of said entrance cannula in a direction which is off the axis of said cannula shaft, and the direction of and the degree of extension of said metal uninsulated portion

of said distal tip of said off-axis lesion electrode relative to said distal end of said entrance cannula can be varied in accordance with the relative orientations and positions of said off-axis electrode hub and said cannula hub; and, said off-axis lesion electrode having thermal sensing means for monitoring the temperature of said metal uninsulated portion of said distal tip whereby, when in use, said entrance cannula can be inserted into the living body such that said distal end of said entrance cannula is in proximity to tissue which is to be destroyed by radio frequency heating, and, without any subsequent withdrawal or relocation of said entrance cannula, there are provided the surgical options of:

(1) making an axially symmetric heating of tissue located adjacent to said through-opening in said distal end of said cannula by inserting said straight lesion electrode into said cannula so as to have said straight distal tip extend beyond said cannula distal end into the tissue to be heated and applying said radio frequency voltage to said metal portion of said straight distal tip, thereby causing tissue adjacent to said straight distal tip to be heated, the size of the region of tissue to be heated in the direction of said straight distal tip being chosen by the amount that said straight distal tip is extended beyond said distal end of said cannula; and,

(2) making an off-axis heating of tissue located adjacent to said through-opening in said distal end of said cannula by inserting said straight off-axis lesion electrode into said cannula so as to have said off-axis distal tip extend out of said cannula distal end into the tissue to be heated and applying said radio frequency voltage to said metal portion of said off-axis lesion electrode tip, thereby causing tissue adjacent to said off-axis lesion electrode tip to be heated, the size of and the orientation of the region of tissue to be heated off of the direction of the axis of said entrance cannula shaft being chosen by the amount that said off-axis electrode tip is extended from said distal end of said cannula and by the direction in which said off-axis electrode is extended from said distal end of said cannula as determined by the relative position and orientation of said hubs of said cannula and said off-axis electrode and, the temperature of the region surrounding the distal tip can be monitored.

4,565,201

SIGNAL PROCESSING APPARATUS AND HIGH RESOLUTION ELECTROCARDIOGRAPH EQUIPMENT INCLUDING SAME

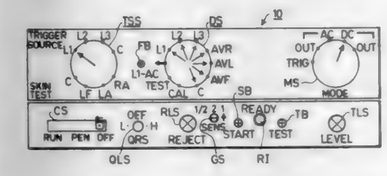
Yoram Lass, Tel Aviv, Israel, assignor to Fidelity Medical (Israel) Ltd., Tel Aviv, Israel

Filed Feb. 3, 1983, Ser. No. 463,480

Claims priority, application Israel, Jan. 11, 1983, 67660

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—696 **17 Claims**



1. Signal processing apparatus particularly useful in electrocardiograph equipment for processing ECG signals detected by electrodes placed against the subject's body, comprising:

(A) data amplifier means including:

(1) a first amplifier receiving the detected ECG signals from the electrodes and producing first amplified ECG data signals according to the gain of said first amplifier, and

(2) a second amplifier, having a substantially higher gain than said first amplifier, also receiving the detected ECG signals from the electrodes independently of said first amplifier and producing second amplified ECG data signals,

(B) signal averaging means;

(C) a control panel including manual selector means enabling the manual selection, for inputting into said signal averaging means and outputting to the electrocardiograph, either said first amplified ECG data signals from said first amplifier, or said second amplified ECG data signals from said second amplifier; and

(D) a triggering circuit having a third amplifier receiving the detected ECG signals from said electrodes independently of said data amplifier means, and producing trigger pulses therefrom; and means for feeding said trigger pulses to said signal averaging means for triggering same.

4,565,202

METHOD AND APPARATUS FOR FORMING PERFORATION IN BAR-SHAPE ARTICLES

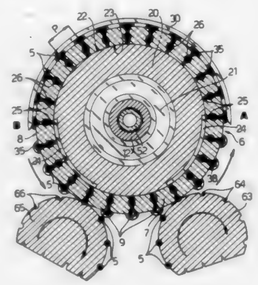
Enzo Seragnoli, and Riccardo Mattei, both of Bologna, Italy, assignors to G.D Societa' per Azioni, Bologna, Italy

Filed Apr. 12, 1983, Ser. No. 484,425

Claims priority, application Italy, May 3, 1982, 48326 A/82

Int. Cl.⁴ A24C *5/60;* **B23K** *27/00*

U.S. Cl. 131—281 **12 Claims**



1. A method for forming holes in bar-shaped articles, in particular cigarettes, comprising the steps of:

(a) causing said articles (5) to translate transversely of their axes along a predetermined path of advancement by means of a conveyor (6) on which said articles (5) are uniformly spaced with a spacing (P) which remains constant along the whole length of said path of advancement;

(b) coupling each said article (5) to said conveyor (6) by means of first retaining means (24) fixing said articles to said conveyor along at least an initial and a final portion of said path;

(c) engaging each said article, along at least an intermediate portion of said path, with second retaining means (29) comprising; for each said article (5), actuator means (28) which moves with said conveyor (6), is arranged at a fixed position relative thereto, and rotates relative to said conveyor (6) about the axis of the associated article to impart thereto a rotation about its axis together with said translation along said path; and

(d) forming about each said article, and during the advancement thereof along said intermediate portion of said path, at least one ring (2) of perforations (3) by means of at least one laser generator unit (56).

5. Apparatus for forming perforations in bar-shaped articles, in particular cigarettes, comprising a conveyor (6) to translate said articles (5) transversely of their axes and along a predetermined path of advancement; a plurality of seats (9) spaced along said conveyor (6) with a spacing (P) which remains constant along the whole length of said path, each said seat (9) accommodating, in use, a respective said article (5); first retaining means (24) arranged at said seats (9) to fix each said article (5) to said conveyor (6) and within the respective said seat (9) along at least an initial and a final portion of said path; second retaining means (29) operable to engage each said article (5) along an intermediate portion of said path to hold such said article (5) within said respective seat (9), said second retaining means (29) comprising, for each said article (5), first actuator means (28) connected to said conveyor (6) for movement therewith and aligned with a respective said seat (9), each said first actuator means (28) being rotatable about the axis of the associated article (5) to impart thereto a rotation about its axis relative to the respective seat (9) together with said translation along said path; and at least a laser generator unit (59) to form, about each said article (5), at least one ring (2) of perforations (3) during advancement of said article (5) along said intermediate portion of said path.

4,565,203

APPARATUS FOR CONVEYING CIGARETTE-FILLED TRAYS TO A CIGARETTE-PACKAGING MACHINE

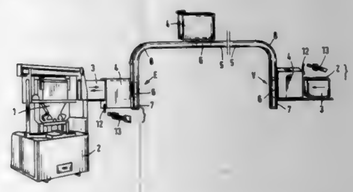
Iain G. H. Stewart, Wuppertal; Hans P. Pitz, and Alfred Brinker, both of Gevelsberg, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Fr. Niepmann GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Nov. 10, 1983, Ser. No. 550,766

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 3241558

Int. Cl.⁴ A24C *5/354, 5/356*

U.S. Cl. 131—283 **9 Claims**



1. An apparatus for conveying cigarette-filled, open-topped trays from at least one tray-filling device to the hopper of at least one cigarette-packaging machine, and for returning the emptied trays to said tray-filling devices; said apparatus comprises:

a dispatch station associated with said tray-filling devices;

a receiving station associated with said cigarette-packaging machines;

a container-conveying system, which is disposed between said dispatch station and said receiving station, and which includes an essentially U-shaped guide rail system and a plurality of electrically driven travel mechanisms which respectively travel in said guide rail system; and

a plurality of receiving containers, with each of said travel mechanisms carrying one of said receiving containers, each of which, in turn, receives at least one of said trays; said U-shaped guide rail system conveys said travel mechanisms, and hence said receiving containers, from said dispatch station to said receiving station, whereby as a result of said U-shape of said guide rail system, filled trays are received by said receiving containers at said dispatch station in a normal position, with said open tops thereof directed upwardly, and are ready for withdrawal from said receiving containers at said receiving station in a position which is rotated by 180° from said normal position, and in which said open tops of said trays are directed downwardly.

4,565,204

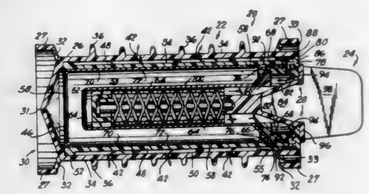
VAPOR GENERATING HAIR ROLLER

Jorgen Skovdal, Trumbull, Conn., assignor to Clairol Incorporated, New York, N.Y.

Continuation of Ser. No. 461,811, Jan. 28, 1983, Pat. No. 4,520,832. This application Mar. 28, 1985, Ser. No. 716,901

Int. Cl.⁴ A45D *2/02*

U.S. Cl. 132—39 **5 Claims**



1. A method for treating a tress of hair comprising the steps of:

wrapping a tress of hair around a roller having perforations in its outer surface and an internal portion heated to a vapor generating temperature;

inserting a removable, refillable liquid containing material within said roller at least proximate to said heated internal portion so as to generate vapor; and

dispensing said vapor through said perforations into the tress of hair.

4,565,205

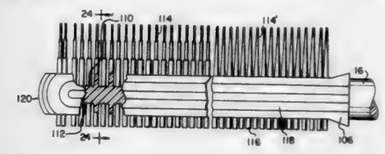
MOLDED MASCARA APPLICATOR

Charles H. Taylor, West Springfield, Mass., assignor to Super Brush Co., Inc., Chicopee, Mass.

Filed Mar. 18, 1983, Ser. No. 476,473

Int. Cl.⁴ A45D *40/26*

U.S. Cl. 132—88.7 **5 Claims**



1. A mascara applicator comprising

an elongated plastic base having a planar top surface, a bottom surface, a longitudinal axis, a rearward end and a forward end;

a plurality of filament-like, plastic integral brush elements extending upwardly from the base top surface, the brush elements being positioned in rows arranged in parallel spaced relationship from the longitudinal axis;

the brush elements being integrally formed with the base and being integrally fabricated of the same plastic material as the material of the base to form a unitary structure,

the brush elements being between about 0.010 and 0.018 inches in their largest cross sectional dimension,

the brush elements each comprising a base and a tip, the brush elements being generally elongated in configuration and decreasing in their largest cross sectional dimension from their bases to their tips,

a plurality of short plastic tines extending integrally downwardly from the bottom surface, the tines being randomly positioned on the bottom surface; and

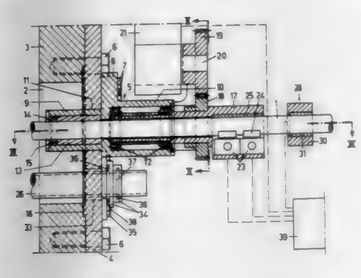
an elongated wand extending rearwardly from the rearward end of the base, the wand being of suitable length to facilitate the application of mascara.

4,565,206

APPARATUS FOR CLEANING A STEAM GENERATOR BY MEANS OF A HIGH-PRESSURE LANCE

Johannes Booij, Rhoon, Netherlands, assignor to Innus Industrial Nuclear Services S.A., Geneva, Switzerland

Filed May 11, 1984, Ser. No. 609,112
Claims priority, application Belgium, Aug. 26, 1983, 2/60192
Int. Cl.[4] F23J *3/02*
U.S. Cl. 134—112 **12 Claims**



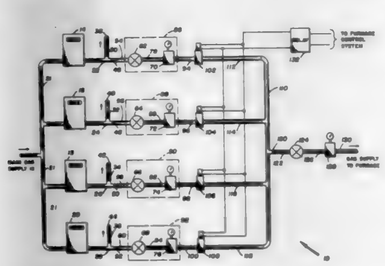
1. An apparatus for cleaning a steam generator by means of a high-pressure lance, which apparatus comprises:
- a base which is to be secured over an opening in the wall of the steam generator to be cleaned, and which is provided with a lance passageway wherein said lance is rotatable and axially shiftable;
- a first engageable and disengageable friction coupling mounted on the lance;
- means for shifting axially to-and-fro said first coupling;
- a second engageable and disengageable friction coupling mounted on the lance;
- means for rotating said second coupling; and
- a control mechanism for controlling the couplings so that when the one coupling is engaged, the other one is disengaged.

4,565,207

METHOD FOR PROPORTIONING FUEL USAGE BY A FLUID FUELED APPARATUS

Donnell Sherrod, 327 Allendale St., Baltimore, Md. 21229

Division of Ser. No. 291,515, Aug. 10, 1981, Pat. No. 4,478,246.
This application Oct. 11, 1984, Ser. No. 659,635
Int. Cl.[4] F17D *1/04*
U.S. Cl. 137—1 **2 Claims**



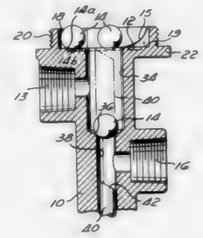
1. A method of apportioning gas usage between a plurality of separate dwelling units all utilizing a common gas fueled appliance, each of said dwelling units having associated therewith an individual gas supply, said method comprising the steps of:
- determining the quantity of heat necessary to maintain each dwelling unit at a preselected temperature;
- calculating the proportion of the quantity of heat needed to maintain each dwelling unit at a preselected temperature to the total quantity of heat needed to heat all said dwelling units;
- tapping each of said individual gas supplies in the same proportion as said calculated proportion corresponding to said dwelling unit associated therewith;
- combining together each of said gas supplies after proportioning as recited in said last step; and
- supplying said combined gas supplies to said common gas fueled appliance.

4,565,208

SEISMIC SHUT-OFF VALVE

David E. Ritchie, 6166 Palo Alto Dr., Anaheim Hills, Calif. 92807, and Edward E. Seay, 881 Nordica, Anaheim, Calif. 92806

Filed May 4, 1984, Ser. No. 607,156
Int. Cl.[4] F16K *17/36*
U.S. Cl. 137—38 **23 Claims**



1. A seismic actuated shut-off valve having inlet and outlet apertures communicating with opposite sides of a valve seat, comprising:
- a track located above the valve seat;
- at least one ball riding on the track;
- an obstruction causing a ball to leave the track when a seismic disturbance causes a ball to contact the obstruction with sufficient energy, the ball falling onto the valve seat to shut-off fluid flow through the valve, said obstruction comprising an inclined surface extending over the track, the obstruction having a height which decreases across the width of the track in a direction towards an aperture in communication with the valve seat.

4,565,209

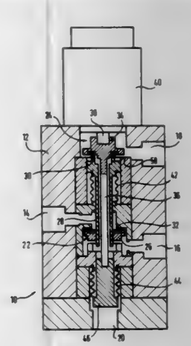
PRESSURE REGULATING VALVE WITH FEEDBACK CONTROL

Erich Ruchser, Kernen, and Helmut Ott, Stuttgart, both of Fed. Rep. of Germany, assignors to Herion-Werke KG, Fed. Rep. of Germany

Filed Feb. 9, 1984, Ser. No. 578,661
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1983, 3305092
Int. Cl.[4] G05D *16/10*
U.S. Cl. 137—116.3 **8 Claims**

1. A pressure regulating valve for pneumatic and hydraulic pressure media comprising a housing having a primary connection, a secondary connection and a relief connection, a switch valve between the primary connection and the secondary connection, a relief valve between the secondary connection and the relief connection comprising a valve disc biased in one direction by a control magnet, and coupled by a push-rod to a control piston, and a control connection for controlling the operation of the pressure regulating valve in response to an external variable, said control piston disposed in the control connection adapted to be acted upon by the external variable

and said switch valve includes a valve piston having a hollow bore therein, and said push-rod extends through said hollow



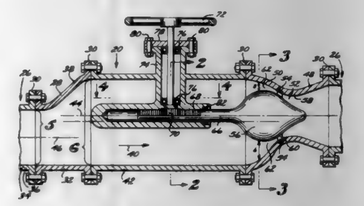
bore between said control piston and said valve disc of said relief valve.

4,565,210

THROTTLING AND SHUT-OFF VALVE FOR SLURRY PIPELINES AND THE LIKE

Otto R. Heine, Poway, and Peter M. Riede, La Jolla, both of Calif., assignors to R&H Technology, Inc., Minneapolis, Minn.

Filed Sep. 11, 1984, Ser. No. 649,513
Int. Cl.[4] F16K *1/12*
U.S. Cl. 137—219 **16 Claims**



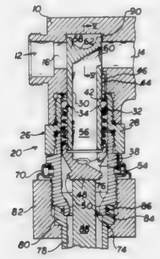
1. A valve system particularly adapted for controlling the flow of a fluid entraining solid particulate material of the type which has a gravity induced concentration gradient in a substantially horizontally moving flow, the valve system comprising:
- a conduit for the fluid having an upstream end and a downstream end;
- first means for serially connecting the upstream end of the conduit to a pipeline wherein the fluid flows;
- second means for serially connecting the downstream end of the conduit to the pipeline, the conduit being normally disposed substantially horizontally when it is operatively connected to the pipeline by said first and second means, whereby a gravity induced concentration gradient of solid particulate material normally develops in the flow, an upstream non-throttled portion of the conduit having a cross-sectional area available for fluid flow which is significantly larger than the cross-sectional area of the pipeline, and the longitudinal center line of the conduit being upwardly displaced relative to the center line of the upstream section of the pipeline and the bottom wall of the conduit being substantially level with the bottom wall of the pipeline;
- a valve seat incorporated in the conduit;
- valve means disposed in the conduit, adapted and configured for being axially displaced in the conduit, for sealingly engaging the valve seat in a closed position of the valve means, the valve means and the walls of the conduit jointly comprising means for forming an opening upstream of the valve seat between the valve means and the walls of the conduit, the opening being smaller in the upper cross-sectional area of the conduit than in a lower cross-sectional area, whereby the portion of the fluid having greater concentration of entrained solid particulate material passes through a larger opening than the portion of the fluid having lesser concentration of solid particulate material.

4,565,211

HYDRAULIC MANIFOLD WITH AUTOMATIC FLOW CONTROL

Raymond E. Denney, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Jan. 23, 1984, Ser. No. 572,814
Int. Cl.[4] F16K *43/00*
U.S. Cl. 137—321 **4 Claims**



1. An automatic manifold access and flow control fitting comprising, in combination, a body having a fixed flow passage defined therethrough, a fixed fitting passage defined in said body transversely disposed to and intersecting said flow passage, an inlet port defined in said fitting passage spaced from said flow passage, an elongated tubular valve element axially displaceable within said fitting passage between a fitting sealing position sealing said inlet port at said inlet port and a flow passage blocking position wherein said valve element is located within said flow passage and blocks said flow passage against flow therethrough, a seat defined on said valve element, a seating surface defined in said fitting passage adjacent said inlet port engagable by said valve element seat at said valve element fitting sealing position to seal said inlet port, a bypass passage defined within said valve element having a first port in communication with said inlet port and a second port in communication with said flow passage when said valve element is in said blocking position, conduit attachment means defined upon said body at said inlet port, an abutment defined on said valve element adjacent said inlet port engagable with a conduit to be selectively connected to said inlet port which automatically displaces said valve element from said sealing position to said blocking position, and spring means biasing said valve element toward said sealing position.

4,565,212

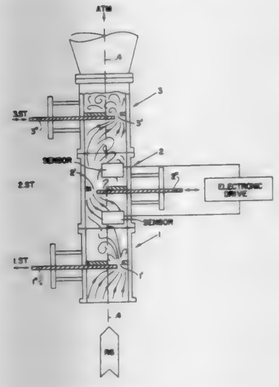
DEVICE FOR THE STEP-WISE PRESSURE RELEASE ON THE EXPANSION OF, IN PARTICULAR HOT, GASES

Walter Klein, Brunn am Gebirge, and Herbert Rhemann, Vienna, both of Austria, assignors to OMV Aktiengesellschaft, Austria

Filed Oct. 17, 1983, Ser. No. 542,337
Claims priority, application Austria, Nov. 15, 1982, 4143/82
Int. Cl.[4] F16K *31/12, 31/36*
U.S. Cl. 137—486 **6 Claims**

1. A device for step-wise release of pressurized gases copris-

ing means for controlling flow of gases at variable pressure and volume from a source to atmosphere as a function of accumulated volume and/or pressure of gases, said means including a flow conduit defined at least in part by a plurality of gate valves in series and terminating at a discharge port for discharge to atmosphere, each of said valves including a housing having a transversely movable valve member, said conduit



including an expansion space for expansion of gases between successive valve members, successive valve members and their associated orifices being on diametrically opposite sides of said conduit so that successive orifices are eccentric with respect to the longitudinal axis of said conduit, and means for adjusting the gate valves as a function of the accumulated volume stream.

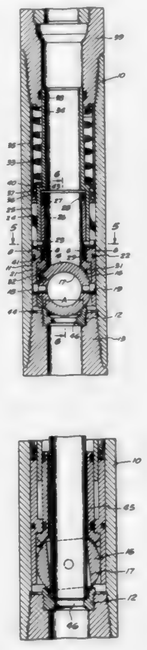
4,565,213

BALL VALVE DEVICE WITH HOLD-OPEN TUBE

Bernhardt F. Giebeler, San Bernardino, Calif., assignor to Bernhardt & Frederick Co., Inc., San Bernardino, Calif.

Continuation-in-part of Ser. No. 201,426, Oct. 28, 1980, Pat. No. 4,377,179. This application Sep. 29, 1982, Ser. No. 426,936
The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.
Int. Cl.[4] F16K *31/122*
U.S. Cl. 137—494 3 Claims

1. A ball valve device comprising, in combination: a stationary tubular housing having an axial bore, a stationary seat member secured to the housing and having a seating surface at the upper end of an axial passage, a ball valve having a central opening, means mounting said ball valve in the housing to turn between an open position in which its central opening is aligned with said housing bore and with the passage in the seat, and a closed position in which said ball valve closes against said seating surface, means for turning said ball valve between open position and closed position, a hold-open tube having a cylindrical outer surface without external projections, said hold-open tube being movable by gravity into said housing and through the central opening in the ball valve to maintain said



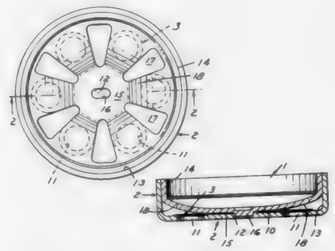
ball valve in open position, and an abutment below said ball valve on which said hold-open tube comes to rest.

4,565,214

FLAPPER CHECK VALVE ASSEMBLY

Oscar D. Parman, Rochester, Mich., assignor to Dover Corporation, Troy, Mich.

Filed Jun. 4, 1984, Ser. No. 616,959
Int. Cl.[4] F16K *15/14*
U.S. Cl. 137—512.15 12 Claims



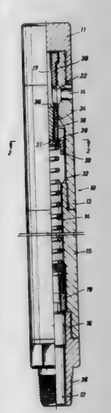
1. Cylindrical housing with flat multi-port integral end closure, flat multi-leaf flapper valve, and cylindrical flapper valve backer closely fitting within said cylindrical housing with convex backup segments and intermediate ports for retaining said multi-leaf flapper valve in one-way sealing orientation with the multiple ports of said housing, said backer being provided with a flat central portion adapted to engage said flat flapper valve with interengaging means to retain relative proper sealing orientation with said multi-ported housing.

4,565,215

CHEMICAL INJECTION VALVE

Leslie L. Cummings, deceased, late of Houston, Tex., and by Mildred Cummings, executrix, 4018 West Alabama, Houston, Tex. 77027

Continuation of Ser. No. 366,361, Apr. 7, 1982, abandoned, which is a continuation of Ser. No. 169,634, Jul. 16, 1980, abandoned. This application May 21, 1984, Ser. No. 612,999
Int. Cl.[4] F16K *15/00*
U.S. Cl. 137—538 5 Claims



1. A valve for use in injecting fluid from an annulus about a tubing string into the bore of the tubing string, wherein the tubing string includes a mandrel having means to one side of the bore for receiving the valve, said valve comprising

an elongate single wall housing which is essentially tubular from end to end having,

inlet means to interior of the housing at one end thereof, outlet means from the interior of the housing at the other end thereof, and

means cooperable with the mandrel, where so received, to open the inlet means to the annulus and the outlet means to the bore of the tubing,

a sleeve fixedly mounted within the housing near its one end,

means sealing between the sleeve and inner surface of the housing,

ports in the sleeve having outer ends connecting with a substantially unobstructed annular space between the sleeve and the inner surface of the housing which opens to an open chamber within the inner surface of the housing leading to the outlet means,

an impervious metering member fitting snugly within the sleeve for reciprocation between positions opening and closing the inner end of the ports, and

the one end of the housing being closed to form a variable volume chamber with the metering member, the inlet means comprising ports in the housing and the sleeve for connecting the annulus with the chamber

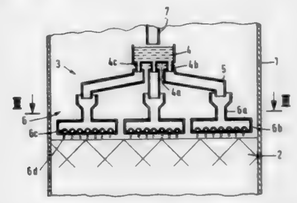
a coil spring within the open chamber and fitting relatively closely within the inner surface of the housing for urging said metering member toward closing position.

4,565,216

DEVICE FOR GRAVIMETRIC DISTRIBUTION OF LIQUID FOR MASS AND HEAT TRANSFER COLUMNS

Werner Meier, Elgg, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Feb. 28, 1984, Ser. No. 584,509
Claims priority, application Switzerland, Mar. 1, 1983, 1111/83
Int. Cl.[4] F16L *41/00*
U.S. Cl. 137—561 A 8 Claims



1. A device for gravimetric distribution of liquid for mass and heat transfer columns, said device comprising

a container for receiving a supply of liquid, said container having a plurality of outlets for the liquid;

a plurality of individual distributors, each distributor being disposed below and communicating in vented manner with a respective outlet of said container to receive liquid therefrom; and

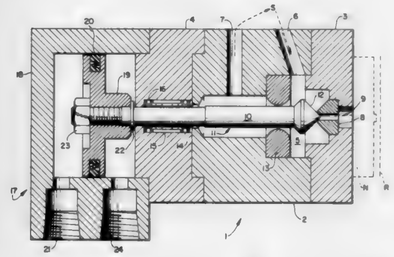
a plurality of metering devices, each metering device being disposed in a respective outlet of said container for metering an amount of liquid to said respective distributor in proportion to the cross-sectional area of said respective distributor to the total cross-sectional area of said distributors.

4,565,217

THREE-WAY POPPET VALVE, METHOD AND APPARATUS

Frederic S. McIntyre, Wellesley, Mass., assignor to Acumeter Laboratories, Inc., Marlborough, Mass.

Filed Jun. 30, 1983, Ser. No. 509,354
Int. Cl.[4] B29B *5/00*
U.S. Cl. 137—625.5 6 Claims



1. In a fluid applicator system including a source of fluid and an applicator, a three-way poppet valve having a housing provided with a longitudinally extending internal chamber; a fluid supply port in the housing connected to said source to allow fluid to enter the chamber at a first region thereof; a fluid return port in the housing connected to said source to return fluid thereto, said fluid return port being disposed to communicate with the chamber at a second region thereof; a first valve seat between the first and second regions and having a circular cross-section flow bore; a fluid exit port connected to said applicator and disposed to allow fluid to exit from the chamber

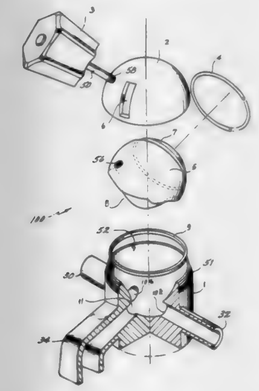
at a third region thereof and provided with a second valve seat between the first and third regions having a circular cross-section flow bore of diameter substantially smaller than the diameter of the flow bore of the first valve seat, said valve seats being aligned longitudinally of said chamber; valving gate means disposed to reciprocate in said chamber between the valve seats, said valving gate means comprising a piston having a shaft extending longitudinally in said chamber through the bore of said first valve seat with a piston head at one end of the shaft between said valve seats, said piston head having opposite tapered surfaces disposed to engage said valve seats alternately, the piston head surface engaging said second valve seat being a conical surface with a tip portion that enters the bore of said second valve seat, said conical surface contacting said second valve seat along a line-contact circle the diameter of which has a magnitude that is a minor portion of the magnitude of the diameter of the base of said conical surface, the piston head surface engaging said first valve seat contacting that valve seat along a line-contact circle the diameter of which is substantially larger than the diameter of the first-mentioned line-contact circle; and means connected to the opposite end of said shaft for switching the gate means alternately between said valve seats alternately to close off fluid flow to the return port and to direct fluid from the fluid supply port through the chamber to and through the exit port, and to close off the fluid flow through the exit port and to direct fluid from the fluid supply port through the chamber to and through the return port, the configuration of the piston shaft, piston head, and valve seats being predetermined to maintain substantially constant flow area from said supply port out of said chamber, thereby to maintain substantially constant pressure in said chamber regardless of the position of said piston head relative to said valve seats.

4,565,218

LIQUID MIXING VALVE WITH SINGLE HANDLE

Tai-Her Yang, 5-1 Tay Pyng St., Shi Hwu Jenn, Jang Huah Shiann, Taiwan

Continuation-in-part of Ser. No. 356,402, Mar. 9, 1982, Pat. No. 4,505,301. This application Jul. 18, 1983, Ser. No. 514,606
The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.
Int. Cl.⁴ F16K *11/087*
U.S. Cl. 137—625.41 **10 Claims**



1. A valve for mixing a first liquid with a second liquid, comprising:

a valve body having a wall shaped so as to define a spherical cavity therein, said wall including means for defining a first orifice therethrough for injecting a first liquid into said cavity, said wall further including means for defining a second orifice therethrough for injecting a second liquid into said cavity, said first and second liquids mixing in said cavity to form a mixture thereof, said wall further including means for defining a third orifice therethrough for discharging said mixture from said cavity;

a spherical guide body rotatably disposed in said spherical cavity, said guide body including means for defining a mixing cavity therein selectively communicating with a variable portion of the areas said first and second orifices and with said third orifice as said guide body rotates, said guide body further including means for defining a substantially annular slot therein;

a substantially annular seal disposed in said slot for selectively enclosing said first and second orifices to prevent liquid from escaping from said first orifice and said second orifice; and

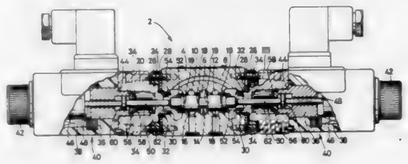
a handle, connected to said guide body, reciprocally movable along a rectilinear path and rotatable about an axis thereof, said guide body rotating in response to rotation of said handle to vary the ratio of said first and second liquids in said mixture by varying a ratio of the area of said first orifice communicating with said mixing cavity to the area of said second orifice communicating with said mixing cavity, rectilinear motion of said handle along said path rotating said guide body to change the rate said mixture discharges through said third orifice by simultaneously increasing the area of said first orifice communicating with said mixing cavity and the area of said second orifice communicating with said mixing cavity.

4,565,219

MULTIPLE-POSITION SOLENOID-OPERATED CONTROL VALVE

Mahito Kunogi, Nagoya, Japan, assignor to The Oilgear Japan Company, Aichi, Japan

Filed Sep. 1, 1983, Ser. No. 528,634
Claims priority, application Japan, Sep. 13, 1982, 57-159362; May 11, 1983, 58-82162
Int. Cl.⁴ F15B *13/044*
U.S. Cl. 137—625.65 **24 Claims**



1. A multiple-position solenoid-operated control valve, comprising:

a valve body having portions to define a plurality of ports;

a valving member fitted in said valve body axially slidably to change communicating conditions of said ports;

first biasing means for normally holding said valving member in a normal position thereof with a first biasing force;

a movable iron core axially movable in parallel to said valving member to move the same;

an electric circuit including a solenoid to apply to said movable iron core actuating forces of different magnitudes which increase in at least two steps including a first operating force to move said valving member from said normal position to a first operated position thereof against said first biasing force, and a second operating force greater than said first operating force;

a plunger normally held in an original position thereof and operatively connected to said movable iron core after a predetermined distance of movement of the latter by said first operating force against said first biasing force;

second biasing means for biasing said plunger with a second biasing force in a direction toward said movable iron core and holding the same at an original position thereof, said second biasing force being selected to be greater than a difference between said first operating force and said first biasing force and smaller than a difference between said second operating force and said first biasing force, said plunger being moved from said original position together with said movable iron core by said second operating force against a sum of said first and second biasing forces until said valving member has been moved to a second operated position thereof; and

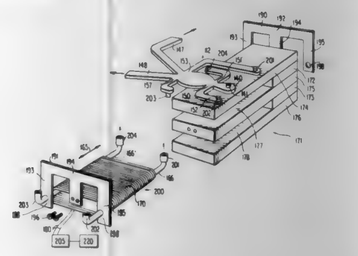
an adjusting mechanism for changing said original position of said plunger relative to said normal position of said valving member axially of said plunger and said valving member, said adjusting mechanism being operable to change said original position of said plunger without separating said movable iron core, said solenoid, said plunger and said second biasing means from said valve body.

4,565,220

LIQUID METERING AND FLUIDIC TRANSDUCER FOR ELECTRONIC COMPUTERS

Ronald D. Stouffer, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Columbia, Md.

Filed Feb. 28, 1983, Ser. No. 470,791
Int. Cl.⁴ F15C *01/04*
U.S. Cl. 137—835 **16 Claims**



1. In a liquid metering apparatus for a utilization system having computer means for producing electrical control signals for controlling the liquid flow to said utilization system, the improvement comprising,

bistable fluidic switch means, said bistable fluidic switch means having a diverging-converging reversing chamber in which the pressure is always greater than any downstream pressure, and a power nozzle supplying liquid under pressure from a liquid supply to said diverging-converging reversing chamber and then through a common outlet to at least a pair of output channels,

means for converting electronic control signals from said computer to fluid signals for controlling the switched state of said fluidic switch element,

a first output channel connected to said common outlet for delivering liquid to said utilization system when said bistable fluidic switch is in one of its bistable states,

a second output connected to said common outlet constituting a return to said liquid supply when said bistable fluidic switch is in the other of its bistable states, and

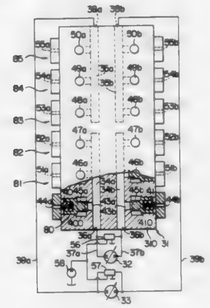
means controlled by said electronic control signals for controlling said means for converting to switch the states of said bistable fluidic switch element and control the amount of liquid flow to said first channel and said utilization system.

4,565,221

CONTROL VALVE ASSEMBLY

Kunihiko Yoshida; Eiki Izumi, both of Ibaraki, and Shuichi Ichiyama, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP83/00173, § 371 Date Feb. 2, 1984, § 102(e) Date Feb. 2, 1984, PCT Pub. No. WO83/04289, PCT Pub. Date Dec. 8, 1983
PCT Filed May 31, 1983, Ser. No. 582,575
Claims priority, application Japan, Jun. 2, 1982, 57-93022
Int. Cl.⁴ F15B *13/06, 13/09*
U.S. Cl. 137—885 **9 Claims**



1. A control valve assembly having a plurality of control valves each including a pair of logic valves, each of the logic valves having a pump port, a work port and a pilot port, said control valve assembly comprising:

a housing; and

a pair of hydraulic fluid passageways arranged in said housing so as to extend in side-by-side relationship with each other, one of the passageways being in communication with the pump ports of a first plurality of logic valves each constituting one of said pair of logic valves for providing one of a common hydraulic fluid supply conduit and a discharge conduit to said first plurality of logic valves, and the other of the passageways being in communication with the pump ports of a second plurality of logic valves each constituting the other of said pair of logic valves for providing the other of said common hydraulic fluid supply conduit and discharge conduit to said second plurality of logic valves;

each of said pair of logic valves which constitutes one of said control valves being arranged in said housing in such a manner that they are located in an opposed relationship to each other in a direction substantially perpendicular to a direction in which said hydraulic fluid passageways extend; and

the work ports of each of said pair of logic valves being oriented substantially in a direction substantially perpendicular to both the direction in which said hydraulic fluid passageways extend and the direction in which said pair of logic valves are arranged whereby all the work ports of said logic valves are opened in the same side of the housing.

4,565,222

INFLATABLE APPARATUS FOR USE IN PLUGGING A LARGE DIAMETER PIPE

Philip L. Lundman, 3631 Fredonia-Kohler Rd., Fredonia, Wis. 53021

Continuation of Ser. No. 522,206, Aug. 11, 1983, abandoned. This application May 3, 1985, Ser. No. 730,246
Int. Cl.⁴ F16L *55/12*
U.S. Cl. 138—93 **1 Claim**

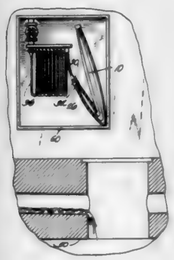
1. Apparatus for use in plugging a large diameter pipe for

preventing flow of water through the large diameter pipe, the apparatus comprising:

a locker adapted to house an elongated fire hose and an inflatable bag,

a hose having opposite ends, said hose being housed in said locker, one of said opposite ends being connected to a source of water pressure, and

an inflatable bag housed in said locker, said inflatable bag being adapted to be connected to the other of said opposite ends of said hose and being adapted to be removed from said locker and inserted into the large diameter pipe wherein said inflatable bag can be inflated in the large diameter pipe and maintained in an inflated state in the large diameter pipe so as to plug the large diameter pipe and form a water tight seal therein, the inflatable bag including opposite ends and a longitudinal axis, said inflatable bag being comprised of at least one large sheet of thin flexible fluid impermeable material, said large sheet of material including parallel edges, said edges being sealed together to form a fluid tight seam extending substantially parallel to said longitudinal axis, and said material forming a plurality of folds parallel to said longitudinal axis, and said inflatable bag being sufficiently flexible that when said inflatable bag is deflated, said inflatable bag can be freely folded in a direction transverse to said longitudinal



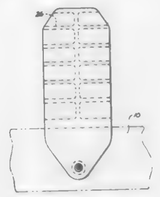
axis, said plurality of folds at one of said opposite ends of said inflatable bag being wrapped around said longitudinal axis in a spiral configuration when viewed in cross sections generally perpendicular to said longitudinal axis, and a first collar surrounding the flexible material forming said plurality of folds spirally wrapped around said longitudinal axis at said one of said opposite ends, and clampingly engaging said flexible material to form a fluid closure at said one of said opposite ends, means for providing a connection between the other of said opposite ends of said hose and said inflatable bag, said means for providing a connection including a coupling, said plurality of folds at the opposite end of said inflatable bag being wrapped around the longitudinal axis in a spiral coonfiguration when viewed in cross section generally perpendicular to said longitudinal axis, and a second collar surrounding said plurality of folds of material spirally wrapped around said longitudinal axis and forming said opposite end of said inflatable bag and clampingly engaging said flexible material forming said opposite end to form a fluid tight seal between said plurality of folds of flexible material and said coupling, and said elongated flexible bag having a diameter when said elongated flexible bag is inflated substantially larger than the diameter of said elongated flexible bag when said elongated flexible bag is deflated.

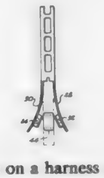
4,565,223

STABILIZED NOSE GUIDE

Wayne A. Hall, Taylors, S.C., assignor to Steel Heddle Mfg. Co., Greenville, S.C.

Filed Oct. 29, 1984, Ser. No. 666,236
Int. Cl.[4] D03C *9/06*
U.S. Cl. 139—91 2 Claims





1. A nose guide for use on a harness frame having top and bottom slats being joined by end braces to form a substantially rectangular frame, said nose guide having a pair of walls being joined at one end and being separated on the other end so that said separated ends can be slipped over a frame slat and secured to said frame slat by means of a fastener extending through said separated ends and said frame slat, the improvement comprising:

a cylindrical bore of a first diameter provided in said frame slat;

a first cylindrical post of a second diameter carried on an inner wall of one of said separated ends of said nose guide,

a second cylindrical post of said second diameter carried on an inner wall of the other separated end of said nose guide directly opposite said first cylindrical post so as to abut against said first cylindrical post when said separated ends of said nose guides are brought together with said first and second cylindrical post extending through said cylindrical bore in said frame slat,

a cylindrical stabilizing member having an inside diameter slightly greater than said second diameter to slip on said first and second cylindrical posts;

said cylindrical stabilizing member having an outer diameter slightly less than said first diameter so as to be inserted in said bore of said frame slat;

said cylindrical stabilizing member being carried on and encompassing said first and second post with opposed ends of said cylindrical stabilizing member abutting against said opposed inner walls of said separated ends of said frame slat, and

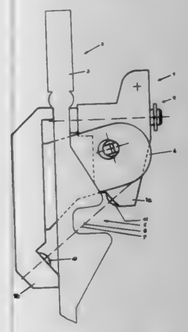
said fastener drawing said separated ends tightly together against said frame slat causing said cylindrical post to abut against each other with said ends of said cylindrical stabilizing member abutting against said inner walls of said separated ends of said nose guide producing a rigid connection between said nose guide and said frame slat.

4,565,224

APPARATUS FOR MONITORING WEFT THREAD IN A WEAVING MACHINE

Hans-Peter Keller, Wagen, Switzerland, assignor to Loepfe Brothers Limited, Wetzikon, Switzerland

Filed Oct. 31, 1983, Ser. No. 547,006
Claims priority, application Switzerland, Nov. 11, 1982, 6566/82
Int. Cl.[4] D03D *51/347*
U.S. Cl. 139—370.2 30 Claims



4. The apparatus as defined in claim 2, wherein:

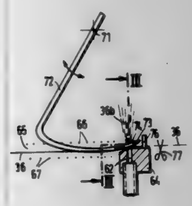
said transmitter and said receiver being arranged on a common side of the reed.

4,565,225

WEAVING MACHINE

Gotthilf Bertsch, Rüti, Switzerland, assignor to Maschinenfabrik Sulzer-Rüti AG, Rüti, Sweden

Filed Aug. 20, 1984, Ser. No. 642,542
Claims priority, application European Pat. Off., Sep. 1, 1983, 83810397.6
Int. Cl.[4] D03D *47/48*
U.S. Cl. 139—434 7 Claims



1. In a weaving machine, comprising:

a weft thread supply cone which remains outside a weaving shed during weft insertion;

weft threads being unwound from said weft thread supply cone during weft insertion;

a selvedge-tucking needle for tucking ends of the weft threads which lie outside the weaving shed into a subsequently formed weaving shed, the improvement which comprises:

an air nozzle for transferring said weft thread ends of said weft threads to said selvedge-tucking needle;

said selvedge-tucking needle having an outer free end; and

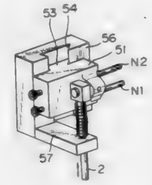
an eyelet arranged at said outer free end for inserting each said weft thread end.

4,565,226

METHOD AND APPARATUS FOR SHIFTING MAIN NOZZLES ON A FLUID-JET TYPE LOOM

Kanji Tsuji, Kanazawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 346,596, Feb. 8, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 655,520
Claims priority, application Japan, Feb. 9, 1981, 56-018383
Int. Cl.[4] D03D *47/30*
U.S. Cl. 139—435 5 Claims



1. Apparatus for shifting main nozzles on a fluid-jet loom on which different yarns are sequentially and alternately subjected to weft insertion along a weft direction, said loom incluidng a weft transportation channel which extends along said weft direction and which has an entrance end, said apparatus comprising:

a main nozzle holder arranged on said lathe and movable with respect to said weft transportation channel in a plane lying generally parallel to said weft direction, said main nozzle holder having front and rear ends, said rear end being coupled to a horizontal pivot extending in said weft direction;

a plurality of linear main nozzles mounted to said main nozzle holder is vertically juxtaposed arrangement in front of said entrance end of said weft transportation channel and extending in parallel to said weft direction;

a vertically extending shifter rod having an upper end privoted to said front end of said main nozzle holder and a lower end;

a first horizontal shaft extending in parallel to a rocking shaft of said loom and operationally coupled to a main shaft of said loom;

a cam secured on said first horizontal shaft;

a radially extending bracket secured to said rocking shaft;

a first bifurcated lever pivoted at its apex to said bracket, one arm of said first bifurcated lever being provided with a slide bottom having a curvature concentric with said rocking shaft, and another arm of said first bifurcated lever being pivoted to said lower end of said shifter rod;

a second horizontal shaft arranged in parallel to and between said first horizontal shaft and said rocking shaft; and

a second bifurcated lever pivoted at its apex to said second horizontal shaft, one end of said second bifurcated lever being provided with a cam follower kept in resilient pressure contact with said cam, and another end of said second bifurcated lever being provided with a roll in contact with said slide bottom on said first bifurcated lever.

4,565,227

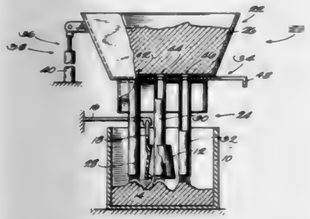
PROCESS AND APPARATUS FOR SURROUNDING FOAM PATTERN WITH SAND

Robert C. Shebuski, Hubertus, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 15, 1984, Ser. No. 621,117
Int. Cl.[4] B65B *1/04*
U.S. Cl. 141—1 8 Claims

1. A process for surrounding a mold pattern with sand, the mold pattern including an inner cavity having a bottom, said process comprising the steps of holding the mold pattern in a mold flask, and selectively depositing sand into the mold flask outside the mold pattern and inside the inner cavity of the mold

pattern such that, when the level of the sand outside the mold pattern is adjacent the level of the bottom of the inner cavity,



thereafter the levels of the sand inside the inner cavity and outside the mold pattern are maintained the same as the mold flask is filled with sand.

4,565,228

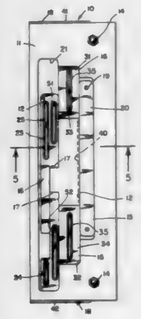
STRIKE TEMPLATE FOR A PORTABLE ROUTER

Felix C. Ponce, 978 S. Westmoreland Ave., Los Angeles, Calif. 90006

Continuation of Ser. No. 494,855, May 16, 1984. This application May 29, 1984, Ser. No. 614,688

Int. Cl.[4] **B27F** *5/00;* **B27M** *3/00*

U.S. Cl. 144—27 **4 Claims**



1. A strike template for use in combination with a hand-held router in order to guide the hand-held router in cutting an an opening for a strike on a door jamb, said strike template comprising:

a. a rectangular base having a substantially rectangular slot with an extended substantially rectangular tonguecavity;

b. a first rectangular groove on said top surface of said rectangular base disposed adjacent said rectangular slot;

c. a first L-shaped member and a second L-shaped member both of which are formed from a flat, rectangular bar and which are disposed within said rectangular groove and slidably and adjustably coupled to said top surface of said rectangular base in order to vary the width of the opening for the strike;

d. adjusting means mechanically coupled to said rectangular base, for adjusting the position of said first and second L-shaped members thereby varying the width of said rectangular slot,

e. a second rectangular groove and a third rectangular groove, which is oppositely disposed from said second rectangular groove, both of which are disposed on said top surface of said rectangular base adjacent said rectangular slot;

f. a first flat, rectangular member and a second flat, rectangular member both of which are disposed within said second and third rectangular grooves and slidably and adjustably coupled to said top surface of said rectangular base in order to vary the length of the strike;

g. adjusting means mechanically coupled to said rectangular base, for adjusting the position of said first and second flat, rectangular members in order to adjust the length of the strike in the side of the door jamb thereby varying the length of said rectangular slot;

d. tongue-cavity width varying means for varying the width of said rectangular tongue-cavity, mechanically coupled to said rectangular base; and

e. position varying means for varying the lateral position of said strike template on the door jamb, mechanically coupled to said rectangular base.

f. securing means for securing said rectangular base to the door jamb.

4,565,229

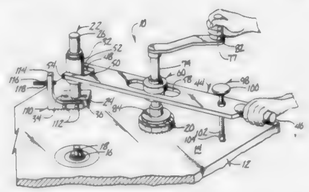
WORK PIECE HOLDING DEVICE

Charles R. Larson, 509 Pleasant St., Webster City, Iowa 50595

Filed Apr. 2, 1984, Ser. No. 595,708

Int. Cl.[4] **B27C** *5/00*

U.S. Cl. 144—154 **18 Claims**



1. A work piece holding device for use with a work table having a flat upper surface and a work station on said upper surface, a power work tool positioned adjacent said work station, said holding device comprising:

a pedestal adapted to be fixed to said work table;

an elongated arm member having first and second opposite ends;

universal hinge means connecting said first end of said arm member to said pedestal for pivotal movement about a horizontal axis and also for swinging movement about a vertical axis;

handle means on said second end of said arm member;

work piece holding means;

bearing means for rotatably mounting said holding means to said arm member at a point intermediate said first and second opposite ends thereof, said bearing means permitting rotation of said holding means with respect to said arm member about a rotational axis which is perpendicular to the longitudinal axis of said arm member;

crank means connected to said holding means for causing rotation of said holding means about said rotational axis and

a leg member mounted to said arm member adjacent said second end thereof, said leg member extending downwardly from said arm member and having a foot at its lower end for engaging said upper surface of said table.

4,565,230

MOVABLE CURTAIN SYSTEMS FOR GREENHOUSES AND COMPONENTS THEREFOR

Barend C. Van Rijn, 116 Pottruff Rd. South, Hamilton, Ontario, Canada (L8K 4A2), and Cordell G. Van Rijn, 745 Hwy. No. 8, Fruitland, Ontario, Canada (L0R 1L0)

Filed Oct. 3, 1983, Ser. No. 538,308

Int. Cl.[4] **A01G** *9/14;* **E06B** *3/30*

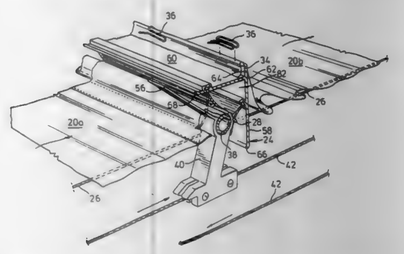
U.S. Cl. 160—84 R **14 Claims**

6. A self-supporting sealing member for a movable curtain system for greenhouses of the kind in which a curtain having a straight leading edge is opened and closed by longitudinal movement of the said straight leading edge transverse to its length, the curtain leading edge in the closed position of the curtain engaging the said sealing member, the sealing member comprising:

an elongated metal body of at least approximately L-shaped transverse cross-section having a first leg which in operation extends transverse to the direction of movement of the curtain, and having a second leg which in operation extends generally parallel to the direction of movement of the curtain;

the first leg extending beyond its junction with the second leg to provide a bead over which the adjacent fixed edge of a curtain can be folded and secured thereto; and

a first elongated flexible seal element extending lengthwise of the sealing member and protruding from the second leg



spaced from the first leg whereby upon engagement by the curtain leading edge it is deflected by the engagement towards the first leg, so as to be held in sealing engagement with the curtain leading edge by the resilience of the material of the seal element, and;

a second elongated flexible seal element also extending lengthwise of the sealing member and protruding from the first leg at a location spaced from the second leg free edge and from its junction with the second leg, whereby upon engagement of the curtain leading edge with the first seal element and deflection of the latter towards the first leg the curtain leading edge engages the second seal element for deflection thereof toward the first leg, so that the second seal element also is held in sealing engagement with the curtain leading edge by the resilience of its material.

4,565,231

ROLLER BLIND UNIT

Heinz E. Moessner, 1631 Eli Dr., Reno, Nev. 89511, and Hans P. Albrecht, Am Farrenberg 12 a, 8870 Günzburg-Reisensburg, Fed. Rep. of Germany

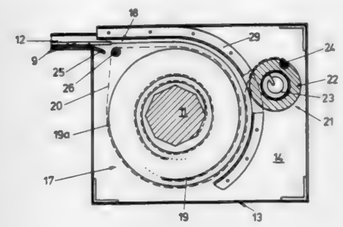
Continuation-in-part of Ser. No. 528,296, Aug. 31, 1983, abandoned. This application Jun. 28, 1984, Ser. No. 625,419

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 8226196[U]

Int. Cl.[4] **E06B** *9/08;* **E04F** *10/06*

U.S. Cl. 160—133 **17 Claims**

1. A roller blind unit for use in conjunction with an opening of a building, such opening having a degree of slope that is within a small angle to the horizontal, comprising a blind made up of articulated slats whose ends form sides of the blind, guide rails adapted to take up such sides of the blind at sides of said opening, such guide rails being so configured as to be alined with the form of the opening in the building and so configured as to cause a braking of the blind, a blind take-up shaft on which said blind is adapted to be wound and unwound in layers in a spiral coil, said guide rails ending at points spaced from said take-up shaft so as to define a path of said blind therebetween that is generally level, a blind driver element coiled up with said blind on said shaft between the coil layers of the blind and interleaved therewith, an innermost end of said driving element being attached to said shaft, a driver unit spaced radially from said shaft by a distance more than equal to the diameter of the said blind when fully coiled up on said shaft, said driver element having its innermost end attached to said shaft and its outermost end anchored on said driver unit, said driver



element being trained circumferentially round at least half of the outermost layer of said blind when coiled on said shaft starting at a gap defined by the coiled blind and a level part of said blind running out from said coil.

4,565,232

FOUNDRY SAND MOLDING APPARATUS

Edward D. Abraham, 6695 Farview Rd., Brecksville, Ohio 44140

Continuation of Ser. No. 176,981, Aug. 11, 1981, abandoned. This application Sep. 26, 1983, Ser. No. 535,932

Int. Cl.[4] **B22C** *15/30, 17/00*

U.S. Cl. 164—181 **8 Claims**

1. An apparatus comprising a cope molding means for molding a cope mold section, a drag molding means for molding a drag mold section, and a stripping means for removing said cope and drag mold sections from their respective flasks and for assembling said cope and drag mold sections, said cope molding means, said drag molding means and said stripping means each being laterally spaced from each other and arranged in a side-by-side relationship such that the centerlines of said cope molding, drag molding and stripping means lie in a common vertical plane, said drag molding means being located between said cope molding means and said stripping means, said cope and drag molding means substantially simultaneously molding said cope and drag mold sections, a cope flask holding means and a drag flask holding means for holding a cope flask and a drag flask respectively, and a support means for supporting said cope flask holding means and said drag flask holding means, respectively, and for moving said cope flask holding means laterally along a straight path and said drag flask holding means laterally and downwardly along an arcuate path from said cope molding means and said drag molding means, respectively, into vertical alignment at said stripping means to effect alignment of said cope and drag mold sections at said stripping means, said straight path and said arcuate path lying in said common vertical plane, and said support means effect-

ing inverting of said drag flask holding means while moving said drag flask holding means from said drag molding means to said stripping means.

4,565,233

METHOD AND APPARATUS FOR COMPACTING GRANULAR MOULDING MATERIALS

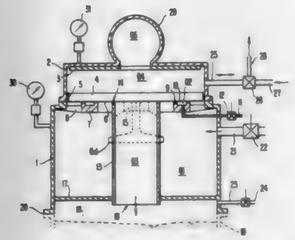
Kurt Fischer, and Hans Tanner, both of Schaffhausen, Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Sep. 27, 1983, Ser. No. 535,559

Claims priority, application Switzerland, Oct. 1, 1982, 5799/82

Int. Cl.⁴ B22C *15/00*

U.S. Cl. 164—37 **36 Claims**



1. A method of compacting granular material, especially granular foundry moulding material, using the thrust of a pressurized gas against the exposed upper surface of a mass of moulding material loosely poured around a pattern, comprising the steps of

establishing first, second and third volumetric spaces Q1, Q2 and Q3 all having openings facing in the same direction and having edges surrounding the openings, space Q3 additionally having a second opening facing toward the exposed surface,

providing a sealing organ having at least one sealing surface movable between a sealing position in which the sealing surface closes the openings of spaces Q1, Q2 and Q3 and a released position in which the organ is spaced from the openings,

establishing a pressurizable control space Q4 at least partially surrounding the organ and acting against a surface of the organ facing away from the sealing surface such that pressurized gas therein tends to urge the organ towards its sealing position, the surface area acted upon by the gas in space Q4 being greater than the surface area acted upon by the gas in space Q1,

supplying a gaseous medium to space Q4 until the space is pressurized to a predetermined pressure level to hold the sealing organ in its sealing position,

delivering a gaseous medium under pressure to space Q1 until that space is pressurized to a substantially equal or higher pressure level than space Q4, no greater than 19 bar, the higher level being less than that required to overcome the force of the gas in space Q4, and

abruptly decreasing the pressure in space Q4 to allow the force exerted by the gas in space Q1 to overcome the force exerted by the gas in space Q4, thereby abruptly moving the sealing organ away from the openings of spaces Q1, Q2 and Q3 and suddenly increasing the surface area of the sealing organ acted upon by the pressure of the gas in space Q1, thereby fully moving the sealing organ away from spaces Q1, Q2 and Q3 and allowing sudden expansion of the gas in space Q1 to pass through space Q3 and create a pressure thrust against the moulding material surface, thus compacting the material.

13. An apparatus for forming and guiding a gas pressure thrust for compacting granular moulding material, especially foundry moulding material, the material being loosely poured into a mould housing surrounding a pattern, the apparatus comprising the combination of a pressure housing having an interior volume Q1 and an outlet opening;

means for supplying gas under pressure to said pressure housing to a predetermined pressure level;

a control housing having an interior volume Q4;

means for supplying gas under pressure to said control housing to a preselected pressure level;

means defining at least one passageway extending from an inlet opening in a predetermined plane to an outlet opening facing said moulding material, said at least one passageway having an interior volume Q3, said inlet opening facing in the same direction as said outlet opening of said pressure housing;

seal means in said control housing for closing said outlet opening of said pressure housing and said inlet opening of said passageway, said seal means being movable between a closed position in which said openings are isolated from each other and a release position in which said openings are uncovered and in fluid communication with each other, the gas under pressure in said control housing urging said seal means toward said closed position, and the gas under pressure in said pressure housing urging said seal means toward said release position;

means defining an accelerator chamber having a volume Q2 and having an opening facing in the same direction as said outlet opening of said volume Q1 and said inlet opening of said volume Q3, said opening of said volume Q2 being closed by said seal means when said seal means is in said closed position, said means defining said chamber being effective to cover an accelerator surface portion of said seal means so that the surface area of said seal means acted upon by said gas in said volume Q1 is less than the surface area of said seal means acted on in the opposite direction by said gas in said volume Q4; and

vent means for selectively decreasing the pressure in said volume Q4,

whereby said volumes Q1 and Q4 can be pressurized to a substantially equal pressure level while holding said seal means in said closed position, after which the pressure in said volume Q4 can be abruptly decreased, permitting the force exerted by the gas in volume Q1 to move said seal means away from the volume Q2, suddenly enlarging the surface area acted upon by the gas in volume Q1 and reversing the force balance such that said seal means is abruptly moved to the release position, allowing the gas in volume Q1 to expand and pass rapidly through said at least one passageway to exert a sudden force on the exposed surface of said moulding material to thereby compact said material.

4,565,234

CASTING PROCESS AND INSTALLATION FOR A NON-FERROUS METAL IN THE MOLTEN STATE

Jean F. Rimbert, Igny, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

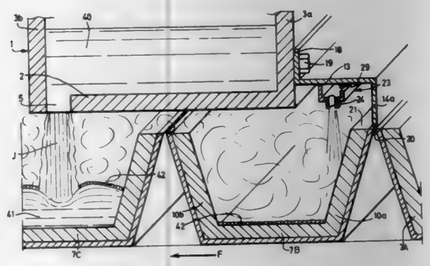
Filed Mar. 1, 1983, Ser. No. 471,010

Claims priority, application France, Mar. 8, 1982, 82 03817

Int. Cl.⁴ B22D *21/02*

U.S. Cl. 164—66.1 **13 Claims**

11. Process for gravity casting using a free jet of non-ferrous metal including zinc that can encounter the problem of a solid metal scum at the point of impact of the jet of cast metal coming from a storage reservoir of the molten metal to an ingot mold serving as a receiving vessel for the same, the process comprising positioning a set of ingot molds transversely side-by-side, passing said ingot molds serially under the molten metal storage tank, isolating at least two adjacent said ingot molds by covering the same by an isolating wall so as to form a zone isolated from the ambient air, wherein at least two adjacent ingot molds in the set are covered at any one time by the isolating wall, placing the ingot molds with the isolating wall directly below the molten metal storage reservoir so that there is a direct passage made between said storage reservoir and the ingot molds such that the molten metal casting jet passes through the isolated zone over its entire length, rendering said isolated zone inert by introducing into said zone an inert gas at a rate such that the atmosphere of an internal cavity



of each said ingot mold has an oxygen content no greater than a predetermined subnormal oxygen content, the ingot molds being rendered inert before passing under the molten metal jet, and maintaining the injection of said inert gas at a rate such that the atmosphere in the vicinity of said molten metal jet has an oxygen content less than said predetermined subnormal content.

4,565,235

APPARATUS FOR COMPACTING GRANULAR MOLDING MATERIALS BY PRESSURIZED GASEOUS MEDIUMS

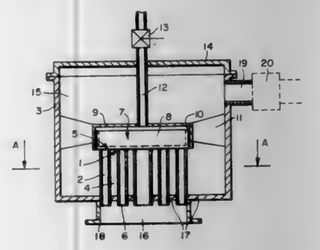
Kurt Fischer, and Hans Tanner, both of Schaffhausen, Switzerland, assignors to Georg Fischer Aktiengesellschaft, Switzerland

Filed Oct. 13, 1983, Ser. No. 541,573

Claims priority, application Switzerland, Oct. 15, 1982, 6014/82

Int. Cl.⁴ B22C *15/00*

U.S. Cl. 164—169 **20 Claims**



1. An apparatus for compacting granular molding material, particularly foundry molding sand, by a surge of pressure of a gaseous medium, comprising:

a pressure chamber having coupling means, mounted at an outlet of said pressure chamber, for forming a closed system with a molding unit in which molding material has been loosely poured;

a passage providing fluid communication between said pressure chamber and said outlet, said passage including a plurality of hollow members extending within said pressure chamber and separated from each other in said pressure chamber by spaces which are continuous, undivided extensions of said pressure chamber, each of said hollow members having a first open end within said pressure chamber and a second open end opening at said pressure chamber outlet;

a common packing element releasably covering and closing each of said first open ends to control flow of fluid pressure from said pressure chamber to the molding unit, said packing element having a first side engaging said hollow members and subjected to fluid pressure in said pressure chamber and having an opposite second side; and

pressure means for holding said packing element in opposition to forces applied to said packing element by said fluid pressure in said pressure chamber;

whereby, upon releasing said pressure means, said packing element will move quickly away from said hollow members by the forces applied by said fluid pressure in said pressure chamber permitting said fluid pressure in said pressure chamber to pass through said hollow members and be discharged through said pressure chamber outlet.

4,565,236

METHOD OF AND MOLD FOR CONTINUOUSLY CASTING STEEL BEAM BLANKS

Tamenori Masui; Hitoshi Ono, both of Sakai, and Toshihiko Ariyoshi, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 8, 1982, Ser. No. 347,023

Claims priority, application Japan, Feb. 10, 1981, 56-17544

Int. Cl.⁴ B22D *11/04*

U.S. Cl. 164—459 **9 Claims**



1. In a method for continuously casting a steel beam blank, in which:

a continuous casting mold is provided having a vertically opening cavity with a web part constructed and arranged to form the web of the blank, a plurality of flange parts constructed and arranged to form a plurality of flanges of the blank, and a plurality of concavely-curved fillet parts constructed and arranged to form respective transitional, concavely-curved fillet parts of the blank where an inside of a respective said flange adjoining a respective tip of that flange blends into a respective flanking surface of said web;

molten steel is poured into said mold to establish and maintain a meniscus of molten steel in the mold near an upper end of the mold;

steel is cooled in the mold as it moves downwards, sufficiently to form a perimetrically intact, sufficiently supporting shell about a beam blank strand as such strand continuously emerges from a lower end of the mold and is withdrawn therefrom at a substantially steady speed, during which downward movement in the mold, the solidifying shell tends to shrink in transverse cross-sectional area at least partly as a result of solidification and cooling,

an improvement aimed at preventing the formation of restrained longitudinal cracks in the beam blank shell at the concavely-curved fillet parts of mold, comprising:

in connection with providing said mold, providing said concavely-curved fillet parts to progressively increase in radius of curvature and thereby decrease in magnitude of curvature at each of a plurality of successively lower imaginary transverse cutting planes of said mold cavity disposed between said meniscus and said lower end in-

cluding at a plurality of levels where the steel is solidifying to form and increase the thickness of said shell, such progressive increase in radius of curvature being sufficient in magnitude and in progressiveness, taken together with any downward tapering of the flange parts and web part of the mold, to maintain strain which is formed due to tensile stress applied to regions of said solidified shell from inside of said flange parts to the web part of said mold, to a magnitude not exceeding the permissible upper strain limit for crack formation in the beam blank being cast.

2. A continuous casting mold for casting a steel beam blank, comprising:

a web part;

a plurality of curved fillet parts; and

a plurality of flange parts;

all these parts being arranged to define a mold cavity constructed and arranged for forming a strand;

said curved fillet parts being provided with a varying curvature which is successively decreased in a casting direction in accordance with an amount of free shrinkage of a solidified shell of the strand, thereby maintaining strain which is formed due to tensile stress applied to regions of a solidified shell of said strand, from inside of said flange parts to the web part of said mold, to a level not exceeding the permissible upper strain limit for crack formation in the steel beam blank being cast.

4,565,237

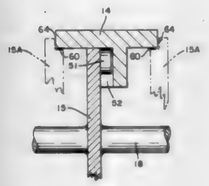
EXPANDABLE QUENCH SURFACE

Seymour Draizen, Old Bridge, and Henry J. Sossong, Randolph, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 562,944, Dec. 19, 1983, abandoned, which is a continuation of Ser. No. 244,430, Mar. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 67,256, Aug. 17, 1979, abandoned. This application Dec. 18, 1984, Ser. No. 682,497

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—463 **4 Claims**



1. Apparatus for continuously casting metallic filaments by directing a stream of molten alloy onto a rotating quench surface, comprising:

(a) a quench wheel having a drive disk mounted between two sealing side disks for rotation about a shaft and concentrically supporting a hoop-like quench surface near the center of the quench surface; and

(b) between the quench surface and the drive disk, at least three sliding-pin or sliding-key radial expansion joints for allowing unrestrained lateral and radial thermal growth of said quench surface while maintaining its concentricity in a fixed angular relationship with said drive disk.

4,565,238

METHOD OF STIRRING MOLTEN STEEL IN A CONTINUOUSLY CASTING MOLD AND AN APPARATUS THEREFOR

Shinji Kojima; Hisakazu Mizota, both of Okayama; Masanori Kodama, Kurashiki, and Yasuharu Miyazaki, Soja, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan and ASEA AB, Västerås, Sweden

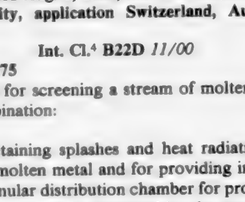
PCT No. PCT/JP82/00461, § 371 Date Aug. 4, 1983, § 102(e) Date Aug. 4, 1983, PCT Pub. No. WO83/02079, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 8, 1982, Ser. No. 522,170

Claims priority, application Japan, Dec. 11, 1981, 56-198359

Int. Cl.⁴ B22D *27/02*

U.S. Cl. 164—468 **2 Claims**



1. In a method of stirring molten steel in a continuously casting mold having a pair of short side walls and a pair of long side walls, which method includes stirring the molten steel in the mold by moving it in the form of a circulating flow in a horizontal direction along the walls of the mold, by means of an electromagnetic stirrer arranged on the walls of the mold, the improvement which comprises using a plurality of electromagnetic stirrers varying the magnetic field intensity of the electromagnetic stirrers depending upon the position of the molten steel in the mold, so as to accelerate or decelerate or maintain at a constant flow rate the circulating flow of molten steel in the mold along the flow direction, and adjusting the magnetic field intensity of the electromagnetic stirrers such that the circulating flow of the molten steel in the mold is accelerated in an upstream region of the mold along the flow direction near one of said pair of short side walls of the mold, and is decelerated in a downstream region of the mold along the flow direction near the other of said pair of short side walls of the mold, and is kept at a constant flow rate in the intermediate region of the mold along the flow direction between the upstream region and the downstream region thereof, thereby forming a smooth flow of the circulating molten steel flow in the mold.

4,565,239

APPARATUS FOR SCREENING A STREAM OF MOLTEN METAL

Ernst Meier, Wollerau, Switzerland, assignor to F.H.I. Finanz-, Handels und Investment AG, Zug, Switzerland

Filed Aug. 8, 1984, Ser. No. 639,372

Claims priority, application Switzerland, Aug. 12, 1983, 4415/83

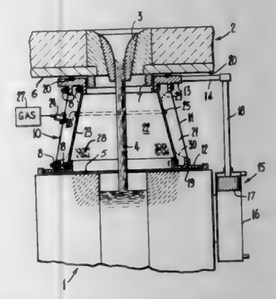
Int. Cl.⁴ B22D *11/00*

U.S. Cl. 164—475 **24 Claims**

1. Apparatus for screening a stream of molten metal, comprising in combination:

a bellows;

means for retaining splashes and heat radiating from said stream of molten metal and for providing inside said bellows an annular distribution chamber for protective gas to be blown into an area traversed by the stream of molten metal, including a flexible screening shroud of heat-resistant, gas-permeable material encompassing said area traversed by the stream of molten metal and being inwardly spaced from said bellows; and



means for gas-tightly interconnecting corresponding ends of said bellows and shroud.

4,565,240

METHOD AND APPARATUS FOR CONTINUOUS CASTING OF METAL SHEET

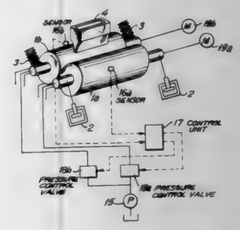
Kiyoshi Shibuya; Takahiro Kan; Yo Ito, all of Chiba; Hiroshi Shimanaka, Funabashi, and Yoshiaki Tanami, Yokohama, all of Japan, assignors to Kawasaki Seitetsu Kabushiki Kaisha, Hyogo and Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Continuation of Ser. No. 540,556, Oct. 11, 1983, abandoned. This application Jul. 25, 1985, Ser. No. 758,582

Claims priority, application Japan, Oct. 12, 1982, 57-178942

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—480 **1 Claim**



1. In a method of continuously casting metal sheet wherein molten metal is poured into a gap between a pair of casting rolls, the improvement comprising the steps of: providing each of said rolls having an inner cylindrical surface and an outer cylindrical surface with a negative crown; exerting pressure on the inner cylindrical surface of each of said rolls so that said outer cylindrical surface of each of said rolls is expanded radially outwardly to become a true cylindrical surface when the pouring of the molten metal is initiated; and decreasing the pressure exerted on the inner cylindrical surface of each of said rolls when the outer cylindrical surface of each of said rolls is heated by the molten metal as the pouring continues thereby contracting the outer cylindrical surface of each of said rolls so that the outer cylindrical surface of each of said rolls is maintained true without any heat crown.

4,565,241

PROCESS FOR PREPARING A SLURRY STRUCTURED METAL COMPOSITION

Kenneth P. Young, Ballwin, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,812

Int. Cl.⁴ B22D *27/02*

U.S. Cl. 164—499 **3 Claims**

1. A process for preparing a shaped metal part from a slurry structured metal composition comprising degenerate dendritic solid particles contained within a lower melting matrix composition, said process comprising,

preparing a slurry structured composition by vigorously agitating at a given shear rate the metal in molten form as it solidifies at a solidification rate such that, in the absence of agitation, a dendritic structure would be formed, the ratio of the shear rate to the solidification rate being maintained at a value ranging from 2×10^3 to 8×10^3,

completely solidifying the slurry structured composition,

reheating the slurry structured composition to a semi-solid slurry having a volume fraction liquid ranging from 0.05 to 0.80 and

shaping the reheated slurry to form a shaped metal part.

4,565,242

HEAT ACCUMULATING MATERIAL ENCLOSING CONTAINER AND HEAT ACCUMULATING APPARATUS

Naomichi Yano; Hajime Ito, and Shigeru Tanaka, all of Osaka, Japan, assignors to Kubota Ltd., Osaka, Japan

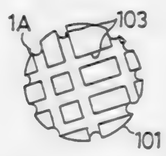
PCT No. PCT/JP82/00063, § 371 Date Sep. 10, 1982, § 102(e) Date Sep. 10, 1982

PCT Filed Mar. 8, 1982, Ser. No. 416,658

Claims priority, application Japan, Mar. 13, 1981, 56-36131; Aug. 24, 1981, 56-125525; Aug. 24, 1981, 56-133163

Int. Cl.⁴ F28D *21/00*

U.S. Cl. 165—10 **1 Claim**



1. A heat accumulating material capsule wherein a large number of heat transfer area enlarging portions are provided over the entire surface of a spherical body, while a latent heat accumulating material is combined within the main body, the heat transfer area enlarging portions comprising a plurality of first annular grooves parallel to each other and a plurality of second annular grooves parallel to each other crossing the first grooves.

4,565,243

HYBRID HEAT PIPE

Donald M. Ernst, Leola, and James L. Sanzi, Lancaster, both of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed Nov. 24, 1982, Ser. No. 444,448

Int. Cl.⁴ F28D *15/00*

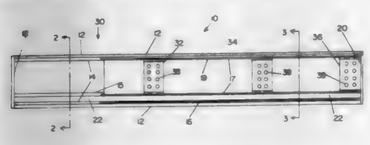
U.S. Cl. 165—104.26 **3 Claims**

1. A heat pipe comprising:

a completely enclosed casing of sufficiently thin and ductile material to permit bending of the casing at least once without rupture of the casing;

a first wick structure located within the active evaporator region of the heat pipe, made from sintered powder material and located in intimate contact with the inside surface of the casing;

a second wick structure, located within a region of the heat pipe other than the evaporator region, made from flexible screen material and located in intimate contact with the inside surface of the heat pipe, one end of which abuts the sintered material of the first wick structure at the point where the first and second wicks meet,



wherein the second wick is comprised of at least two separate screen layers, the outer layer being sintered to the inside surface of the casing and the next layer being located in intimate contact with the outer layer; and

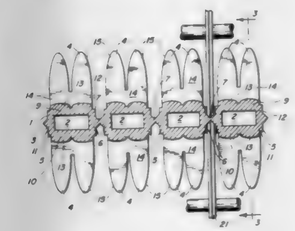
an appropriate heat transfer fluid.

4,565,244

TUBULAR ARTICLES OF MANUFACTURE AND METHOD OF MAKING SAME

Joseph M. O'Connor, Chicago, and Stephen F. Pasternak, Park Ridge, both of Ill., assignors to Peerless of America, Inc., Chicago, Ill.

Division of Ser. No. 890,539, Mar. 27, 1978, Pat. No. 4,203,311.
This application Aug. 2, 1979, Ser. No. 63,101
Int. Cl.[4] F28F *3/04, 1/16*
U.S. Cl. 165—181 **6 Claims**



1. A heat exchanger blank comprising

a. a one-piece body portion comprising

(1) a plurality of elongated tubular members disposed in side-by-side relation to each other,

b. each of said tubular members having a side wall,

c. said side walls of adjacent ones of said tubular members being connected together by portions of said body portion which are lesser in thickness, than the adjacent side walls and extend the length of said body portion.

4,565,245

COMPLETION FOR TAR SAND SUBSTRATE

Donald S. Mims, and Richard S. Allen, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 9, 1983, Ser. No. 492,867
Int. Cl.[4] E21B *43/24, 36/00*
U.S. Cl. 166—50 **1 Claim**

1. A well completion for producing viscous hydrocarbons from a substrate layer comprising unconsolidated sand particles in which said hydrocarbon is releasably retained, which completion includes;

an elongated well liner **17** disposed in a wellbore **15** formed within the substrate layer **13**, at least a portion of the well of said elongated well liner being perforated **18** and extending in a substantially horizontal disposition through said layer **13**,

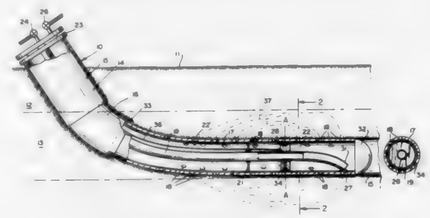
a well head **23** at one end of said elongated liner **17** and including;

fluid flow control valves **24** and **26**,

fluid barrier means **28** carried on said fluid conduit **19** and being controllably displaceable within said well liner **17** to divided the annular passages **22** and **22'** into injection and producing segments respectively at opposed sides of the barrier,

said barrier means **28** including;

a radially expandable element which is capable of being expandably actuated to engage the liner **17** inner wall,



barrier actuating means including a conduit **36** extending from the well head **23** to said radially expandable element, and means to selectively direct a stream of actuating fluid to said expandable element for urging the latter into the expanded condition and in engagement with the liner **17** wall,

said fluid conduit **19** being longitudinally adjustable within liner **17** to displace the fluid barrier means **28** to a desired location, and as said barrier means **28** operably engages fluid conduit **19** to be slidably adjusted therealong, and

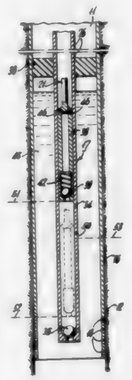
displacement means engaging barrier means **28** to slidably adjust the position of the latter longitudinally within liner **17**.

4,565,246

RECIPROCATING PUMP WITH PARTIAL FLOW REVERSAL

Terry L. Frazier, Paso Robles, Calif., and Jan D. Dozier, Huntsville, Ala., assignors to Texaco, Inc., White Plains, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,900
Int. Cl.[4] E21B *43/25*
U.S. Cl. 166—112 **10 Claims**

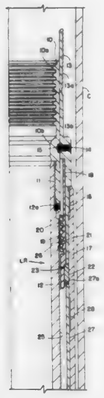


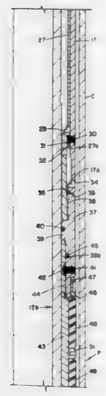
1. In a reciprocating type pump for lifting fluid from wells and the like subject to blockage by mobile fines, said pump having a pump barrel with a standing check valve at the bottom, a pump plunger with a traveling check valve at the bottom, and means for reciprocating said plunger in said barrel over a predetermined stroke distance having an upper limit of travel and a lower limit of travel, the improvement comprising a port in said barrel located above the middle of said stroke distance,

means associated with said plunger for closing said port during said stroke distance while said plunger is below said port, and

means for biasing said traveling check valve closed against back pressure less than a predetermined value whereby said fluid is pumped back to reverse flow and unblock said mobile fines during part of said stroke distance.

coupling means operatively connecting the first member of said operating means to said locking means for releasing





said operating means upon vertical, non-rotating movement of the first member of said operating means.

4,565,247

WIRELINE SET TUBING RETRIEVABLE SEAL BORE PACKER APPARATUS

William T. Tapp, Yorktown, and William M. Roberts, Deer Park, both of Tex., assignors to Elder, Inc., Yorktown, Tex.

Filed Feb. 3, 1984, Ser. No. 576,820
Int. Cl.[4] E21B *23/00, 23/06*
U.S. Cl. 166—123 **19 Claims**

10. A retrievable subsurface well conduit engaging apparatus comprising:

an elongated support means running into a well conduit to a selected depth;

engaging means mounted on said support means operable to releasably engage the inner wall of said well conduit to prevent vertical movement therein;

operating means having first and second members operatively connected to said engaging means, said operating means being connectible with an actuating device for selectively engaging and releasing said engaging means from the inner wall of said well conduit;

locking means positioned between the first member of said operating means and said support means operable to prevent vertical movement of said operating means when said engaging means engages the inner wall of said well conduit, said locking means being selectively shiftable to a position between the second member of said operating means and said support means; and

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4,565,248

METHOD FOR PRODUCING WATER SOLUBLE RESOLS AND USE THEREFOR

Clifford L. Spiro, Schenectady, and Edward J. Lamby, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 446,134, Dec. 2, 1982, Pat. No. 4,499,311.
This application Jul. 24, 1984, Ser. No. 633,750
Int. Cl.[4] E21B *43/22, 43/40*
U.S. Cl. 166—267 **27 Claims**

1. A method for recovering crude oil comprising:

(a) reacting the effluent stream of a process for producing bisphenol-A with an aldehyde in the presence of a compound for releasing hydroxide ions in water at a temperature not to exceed 100° C.;

(b) dissolving the product of step a in water;

(c) introducing the solution produced in step b into an oil well in order to emulsify at least a portion of the crude oil contained therein; and

(d) recovering the emulsion created in step c from the oil well.

4,565,249

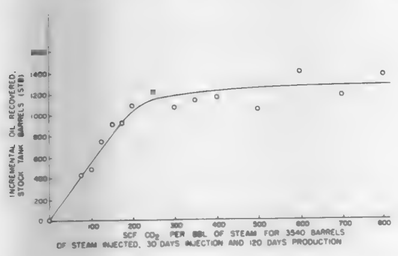
HEAVY OIL RECOVERY PROCESS USING CYCLIC CARBON DIOXIDE STEAM STIMULATION

Farrokh N. Pebdani, Coppell, and Winston R. Shu, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 561,407, Dec. 14, 1983, abandoned. This application Sep. 20, 1984, Ser. No. 652,541

Int. Cl.⁴ E21B *43/24*

U.S. Cl. 166—303 **8 Claims**



1. A method of recovering oil from a subterranean, viscous oil-containing formation penetrated by at least one well in fluid communication with a substantial portion of the formation, comprising:

(i) injecting a mixture of carbon dioxide and steam into the formation through the well, the ratio of carbon dioxide to steam being from 200 to 300 SCF carbon dioxide per barrel of steam (cold water equivalent); and

(ii) recovering fluids including oil from the formation through the well.

4,565,250

HORSE SHOE PAD

Kent A. Vasko, Hinckley, Ohio, assignor to Sorbo, Inc., Twinsburg, Ohio

Filed Aug. 3, 1983, Ser. No. 519,989

Int. Cl.⁴ A01L *7/02*

U.S. Cl. 168—12 **20 Claims**



1. A horse shoe pad comprising a shock absorbing layer of flexible polyurethane of essentially linear structure containing unsatisfied hydroxyl groups, having a compression set of less than 15%, and a recovery which is delayed after compression by at least 0.7 second, and stabilizing means for stabilizing a surface of said shock absorbing layer, said stabilizing means including a fabric layer bonded to one side of said shock absorbing layer.

4,565,251

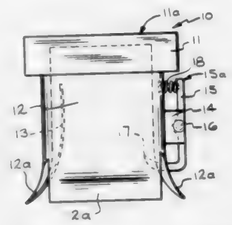
POST DRIVING DEVICE

Michael R. Cischke, D-19 Twyckingham Apt., 4634 S. Hagadorn, East Lansing, Mich. 48823

Filed Mar. 26, 1984, Ser. No. 593,715

Int. Cl.⁴ B23B *45/16*

U.S. Cl. 173—128 **7 Claims**



1. A driving device adapted to fit on an end and over sides of a post having a vertically oriented longitudinal axis defining the direction the post is to be driven which comprises:

(a) a body portion having an open end and a closed end adapted to loosely fit around the longitudinal axis adjacent the end of the post and along the sides of the post;

(b) a cap portion secured on the body portion at the closed end to provide a surface for impacting the device for post driving; and

(c) retaining means mounted on the body portion which clamps the driving device on the post along opposite sides of the post while driving and quickly releases the device after the post has been driven, the retaining means including a hook with a curve towards the cap and being moveably mounted on the outside of the body portion so as to be driveable into the post through an opening in the body portion to hold the device on the post while the post is being driven and a curved flat spring mounted along the axis inside the device so that the device slides onto and off of the post on the spring and so that the spring engages at least one side of the post which compresses the spring to reduce the curve of the spring.

4,565,252

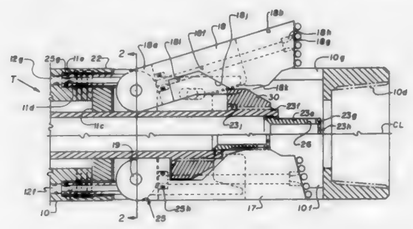
BOREHOLE OPERATING TOOL WITH FLUID CIRCULATION THROUGH ARMS

Thomas R. Campbell; William L. Cunningham, and Gregg S. Perkin, all of Kingwood, Tex., assignors to LOR, Inc., Houston, Tex.

Filed Mar. 8, 1984, Ser. No. 587,501

Int. Cl.⁴ E21B *10/32*

U.S. Cl. 175—269 **12 Claims**



1. Apparatus for performing operations in an oil well drilling borehole or other borehole, comprising:

an elongated generally cylindrical body having a main bore there through, said body having a plurality of lateral openings therein;

said body having a plurality of circumferentially spaced directional chambers which extend between said main bore and said plurality of lateral openings;

a plurality of expandable arms, each arm having a first end and a second, operating end having an operating surface or element thereon for engaging the side of a borehole and performing an operation thereon;

pivot means mounted with said body and with said first end of said expandable arms for mounting each of said plurality of expandable arms in one of said lateral body openings for movement between a closed position in which said arm is positioned in said lateral body opening and second, expanded operating position in which said operating end of said arm engages said borehole;

means for engaging said plurality of expandable arms and holding said expandable arms in an operating position;

each of said expandable arms having a bore therein, which bore extends from said first end of said expandable arm and terminates at said second operating end;

a rotary fluid transfer means for each expandable arm, each of said rotary fluid transfer means being mounted with said body in fluid communication with one of said circumferentially spaced directional chambers and with said first end of said expandable arm substantially surrounding said pivot means for directing fluid from said one directional chamber to said bore in said expandable arm for directing fluid outwardly of said expandable arm.

4,565,253

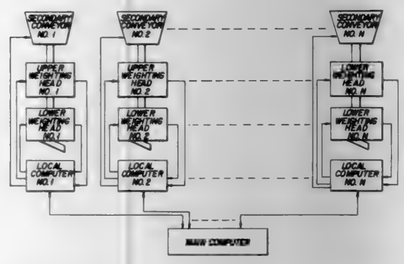
COMPUTERIZED COMBINATION WEIGHER WITH PRESET OPTIMUM WEIGHER DISCHARGE

James A. Berlebner, Sugarland, and Charles J. Reifel, Houston, both of Tex., assignors to Penta-Pak Inc., Houston, Tex.

Filed Feb. 3, 1984, Ser. No. 574,296

Int. Cl.⁴ G01G *19/00, 19/22, 13/02*

U.S. Cl. 177—1 **8 Claims**



1. A method of weighing product for packaging comprising the steps of providing a plurality of weighing stations comprising pairs of upper and lower weighing units, setting the weight on each of the upper weighing units of each weighing station at a different fraction of the desired package weight, delivering product to the upper weighing unit of each weighing station until the fractional weight of the desired package weight at which each upper weighing unit is set is reached, transferring the product from the upper weighing unit to the lower weighing unit in each weighing station for check weighing, and selecting that combination of weighing stations having fractional package weight most nearly equal to but not less than the desired final package weight for delivering of product to the open package presetting an optimal number of weighing stations delivering product to a single open package, comparing the optimal number with the actual number of weighing stations delivering product to the open package and, when the optimal number is less than the actual number, increasing the fractional weight at which each of the upper weighing units is set and, when the optimal number exceeds the actual number, decreasing the fractional weight at which each of the upper weighing units is set.

4,565,254

MEASURING APPARATUS

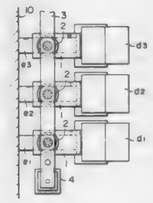
Yoshikazu Matsuura, Tokyo, Japan, assignor to Teraoka Seiko Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1983, Ser. No. 528,270

Claims priority, application Japan, Aug. 31, 1982, 57-152030; Aug. 31, 1982, 57-132531[U]; Jun. 30, 1983, 58-118727

Int. Cl.⁴ G01G *19/14, 19/22, 23/14*

U.S. Cl. 177—25 **21 Claims**



1. In a measuring apparatus including a distributing table for transferring and distributing product to be measured, a plurality of measuring hoppers arranged about a circumference of the distributing table for receiving therein the product on the distributing table, measuring means for measuring the transferred product in the hoppers, and computer means for selecting a plurality of measuring hoppers whose weight of product accommodated therein is substantially equal to a set weight to exhaust the measured product from the hoppers, the improvement comprising a span adjusting mechanism having at least one member engaging with a respective reference weight arranged in the proximity of a respective one of each of said measuring means to place or remove all said reference weights in unison onto or from said measuring means.

4,565,255

WEIGHING DEVICE WITH STRAIN GAGES

Michel Sarrazin, Rumilly, France, assignor to SEB S.A., Selongey, France

Filed Oct. 19, 1984, Ser. No. 662,794

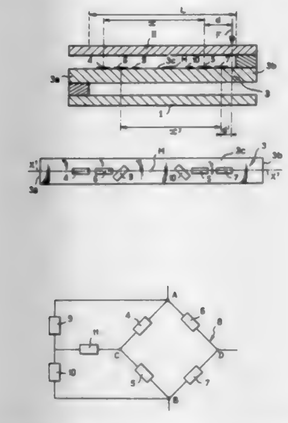
Claims priority, application France, Oct. 26, 1983, 83 17058

Int. Cl.⁴ G01G *3/14;* **G01L** *1/22*

U.S. Cl. 177—211 **6 Claims**

1. A weighing device comprising a base plate (**1**) and a platform (**2**) for carrying the load to be weighed, said platform being substantially parallel to said base plate, at least one metal bar (**3**) being placed between said base plate and said platform, the opposite ends (**3***a*, **3***b*) of said bar being rigidly fixed to said base plate (**1**) and to said platform (**2**) in order to permit flexural deformation of said bar under the action of the load applied on the platform, said bar being adapted to carry flexure-sensitive strain gages (**4**, **5**, **6**, **7**) connected electrically in a Wheatstone bridge circuit (**8**) and torsion-sensitive strain gages (**9**, **10**) connected to said bridge circuit in order to cancel the torsional stresses detected by the flexure-sensitive strain gages, the bar (**3**) being provided on one and the same flat face (**3***c*) with two pairs (**4**, **6**; **5**, **7**) of flexure-sensitive strain gages substantially aligned on the longitudinal axis (X—X') of the bar, wherein the gages of each pair (**4**, **6**; **5**, **7**) are connected in opposition in the Wheatstone bridge and wherein two torsion-sensitive strain gages (**9**, **10**) are coupled in series and connected respectively to the supply terminals (A, B) of the

Wheatstone bridge (8) and wherein an adjustable resistor (11) is connected in parallel between the two torsion-sensitive



gages (9, 10) and with one (C or D) of the terminals for measurement of the Wheatstone bridge signal.

4,565,256

UNIVERSAL BATTERY HOLDDOWN

Henry R. Valdez, Carson, Calif., assignor to Mr. Gasket Company, Cleveland, Ohio

Filed May 10, 1983, Ser. No. 493,325

Int. Cl.[4] B62D *25/00*

U.S. Cl. 180—68.5 **20 Claims**



17. An elastomeric holddown device for a battery comprising:

first and second spaced end brackets, said end brackets having means to receive battery retaining means and portions designed to abut the top and sides of said battery to retain the battery in place,

a center strap, said center strap extending between the end brackets, the ends of said center strap terminating at said brackets, said center strap tapering in cross-sectional area at its ends,

whereby the center strap may be flexed perpendicularly to its axis to place the brackets in abutment with the sides of the battery.

4,565,257

MULTI-MODE STEERING SYSTEM

Charles B. Hanson, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Feb. 8, 1984, Ser. No. 578,091

Int. Cl.[4] B62D *5/06*

U.S. Cl. 180—135 **12 Claims**

1. A material handling implement having a multi-mode steering system, comprising:

a steerable, articulable frame having a front portion and a rear portion, said frame including articulating means pivotally connecting said front and rear frame portions for movement with respect to each other;

a pair of rear wheels mounted on respective opposite sides of said rear frame portion;

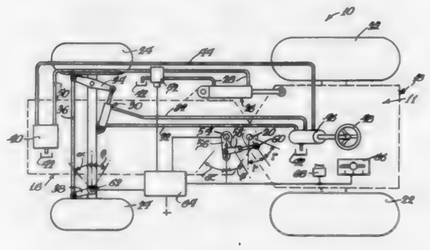
a pair of steerable front wheels mounted on respective opposite sides of said front frame portion, each of said front wheels being mounted for steering movement about a respective generally vertical axis through different first and second angles from a straight-ahead disposition with respect to said front frame portion;

steering linkage means operatively connecting said front wheels for steering said front wheels in unison;

first articulating hydraulic motor means operatively connected to and extending between said front and rear frame portions so that selective fluid pressurization of said first motor means articulates said frame;

second steering hydraulic motor means operatively connected with said steering linkage means so that selective fluid pressurization of said second motor means steers said front wheels;

first sensor means operatively connected with said front and rear frame portions for producing a first signal corresponding to the relative angular position of said front and rear frame portions, said first sensor means being operatively connected with said frame portions such that said first signal differs in value attendant to the same degree of articulation of said frame portions in opposite directions from a straight-ahead disposition;



second sensor means operatively connected with said steering linkage means for producing a second signal corresponding to the angular position of said front wheels, said second sensor means being operatively connected with said steering linkage means at one of said front wheels so that said second signal differs in value attendant to steering moving of said one front wheel through said first and second angles; and

steering control means operatively connected with said first and second sensor means for selectively coordinating operation of said first articulating motor means with operation of said second steering hydraulic motor means to provide a plurality of modes of steering control for said implement, whereby selective coordinated operation of said first articulating motor means attendant to operation of said second steering motor means results in equal, right-hand and left-hand angular articulation of said frame portions attendant to steering movement of said one front wheel through said differing first and second angles.

4,565,258

STEREO HEADSET SYSTEM FOR USE IN A WET ENVIRONMENT

Donald F. Butler, 2404 Nearcliff St., Torrance, Calif. 90505, and Mark E. Shelton, 2020 Gibraltar Rd., Landers, Calif. 92284

Filed Aug. 7, 1984, Ser. No. 638,396

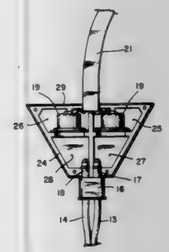
Int. Cl.[4] H04R *25/00*

U.S. Cl. 181—129 **1 Claim**

1. A stereo headset system for use with a stereo sound system and a stereo headset device of the stethoscope type having a pair of sound tubular mains and a coupling plug which is mechanically and acoustically coupled to the pair of sound tubular mains, said stereo headset system comprising:

a. an enclosure having a first chamber, a second chamber, a third chamber and a fourth chamber with said third and fourth chambers being mechanically and acoustically coupled to the coupling plug of the stereo headset device;

b. a first electro-acoustic transducer which is disposed in said first chamber of said enclosure and which is acoustically coupled to said third chamber of said enclosure;



c. a second electro-acoustic transducer which is disposed in said second chamber of said enclosure and which is acoustically coupled to said fourth chamber of said enclosure;

d. water-proofing means for water-proofing said first and second chambers of said enclosure; and

e. electro-coupling means for electrically coupling said first and second electro-acoustic transducers to the stereo sound system whereby said stereo headset system transmits sounds from the stereo sound system through the stereo headset device to an individual who is in a wet environment during both social and recreational periods.

4,565,259

CONNECTION BLOCK

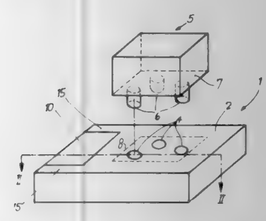
Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, Fed. Rep. of Germany

Filed Jun. 26, 1984, Ser. No. 624,605

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1983, 3326802

Int. Cl.[4] F01N *1/10*

U.S. Cl. 181—230 **8 Claims**



1. An adapter block for the connection of pneumatic structural elements, comprising a block body having a flat contact surface against which a flat surface of a pneumatic structural element is engageable, said block body having at least one port extending through said flat contact surface and an exhaust duct connected to said port, said block body having at least a portion made of structural foamed plastic defining an expansion chamber, said block body having at least one wall bounding said exhaust chamber, said expansion duct extending through said one wall and having a volume less than a volume of said expansion chamber, and a porous wall connected to said block body and closing said expansion chamber.

4,565,260

MECHANICAL LOCK JOINT FOR VEHICULAR EXHAUST SYSTEM MUFFLER AND THE LIKE

Wayne A. Scheidt, Wheaton, Ill., and Robert J. Paterick, Concord, Tenn., assignors to Maremont Corporation, Chicago, Ill.

Filed Oct. 2, 1984, Ser. No. 656,946

Int. Cl.[4] F01N *7/18*

U.S. Cl. 181—243 **6 Claims**



1. In a vehicular exhaust system muffler having a housing with a shell and end panels, and tubes through the end panels into the housing, a mechanical tube and end panel joint comprising:

an integral, annular, radially outwardly extending bead on a first tube of said tubes, a tube opening in a first end panel of the end panels, an integral, annular flange of said first end panel adjacent the tube opening, the flange extending along the first tube radially outward of the first tube and adjacent the bead, the first tube extending through the opening within the first flange, a plurality of integral, interlocking protrusions on the first tube and first flange;

a shoulder formed by the flange with the panel, the shoulder abutting the bead.

4,565,261

DETACHABLE GALLERY FOR USE ON BUILDINGS OR THE LIKE

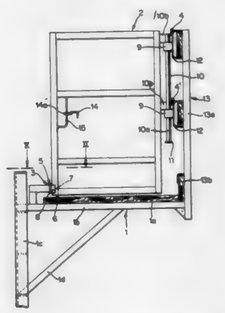
Josef Maier, Schwimmbadstr. 3, D-7611 Steinach, Fed. Rep. of Germany

Filed Mar. 22, 1984, Ser. No. 592,244

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1983, 3310317

Int. Cl.[4] E04G *3/00*

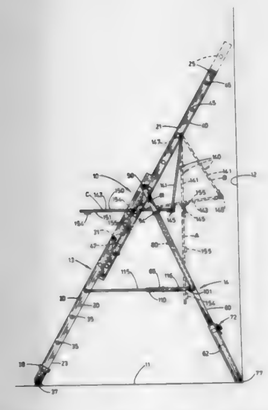
U.S. Cl. 182—113 **22 Claims**



1. A gallery for supporting personnel and/or materials at an elevated level, comprising a support; a gate; means for articulately connecting said gate to said support so that the gate is movable between at least one open position and a closed position as well as between a raised and lowered position, at least while the gate assumes or approaches said closed position; and blocking means provided on said support and located in the

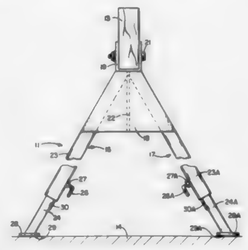
path of movement of said gate in a direction from said open position beyond said closed position, said gate being arranged to bypass said blocking means in said raised position.

4,565,262
LADDER APPARATUS
Donald E. Hawkins, Concord, Calif., assignor to Stanley E. Hawkins, Exeter, Calif., a part interest
Filed Jun. 29, 1984, Ser. No. 626,319
Int. Cl.[4] E06C *1/22, 7/16*
U.S. Cl. 182—116 **10 Claims**



1. A support apparatus for retaining a ladder in a stable upright attitude and being selectively adjustable to conform to the environment in which the ladder is to be supported, the support apparatus comprising a pair of leg members pivotally mounted on the ladder at spaced first points defining a first line reference substantially right-angularly related to the ladder, each leg member of said pair having a lower portion linearly adjustable to define a selected length for the leg member; a first pair of brace assemblies individually mounted on the leg members at predetermined pivot substantially equal distances from the first points of their respective leg members for substantially pivotal movement, each brace assembly of said first pair composed of components linearly adjustable relative to each other to define a selected length for the brace assembly and means borne by a distal end thereof for releasable attachment on the other of said leg members at a predetermined attachment point spaced from said first point of that leg member; and a second pair of brace assemblies individually mounted on the ladder at second points defining a second line of reference substantially parallel to the first line of reference and spaced therefrom for substantially pivotal movement, each brace assembly of said second pair composed of components linearly adjustable relative to each other to define a selected length for the brace assembly and means borne by a distal end thereof for individual releasable attachment on one of the leg members whereby the leg members are adapted for independent positioning in selected positions in conforming relation to said environment and in supporting relation to the ladder and the brace assemblies of said first and second pairs of brace assemblies are independently adjustable for said releasable attachment on the leg members to brace said leg members in the positions selected.

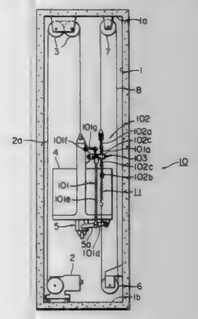
4,565,263
SAWHORSE WITH EXTENDIBLE AND CONTRACTIBLE LEG ASSEMBLIES
Ted J. Southworth, 2494 Oaklane, Chetek, Wis. 54728
Filed Jun. 10, 1985, Ser. No. 743,090
Int. Cl.[4] F16M *11/00*
U.S. Cl. 182—184 **20 Claims**



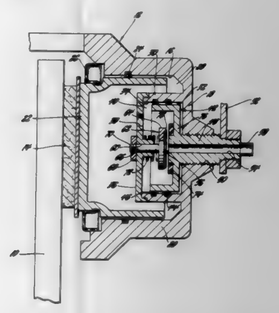
1. A sawhorse comprising: a cross beam having opposite ends, a first leg assembly secured to one end of the cross beam, and a second leg assembly secured to the other end of the cross beam, each of said leg assemblies having a pair of downwardly and outwardly directed legs having adjacent upper ends, a U-shaped holder secured to said upper ends, said cross beam being located in said holder, means securing the holder to the cross beam, each leg comprising a first tubular member having a longitudinal passage open at the lower end thereof and a second member telescoped into said passage of the first tubular member, foot means on the lower end of the second member adapted to engage a support surface, releasable lock means mounted on the first member engageable with the second member to hold the second member in an adjusted position thereby adjusting the elevation of the cross beam relative to the support surface, a stop bar secured to said first member, said stop bar having a first end extended into the passage and a second end projected downwardly away from the lower end of said first member, block means secured to said second member, said block means engageable with said first end of the stop bar to limit outward movement of the second member relative to the first member, said second end of the stop bar engageable with the foot means to limit inward movement of the second member relative to the first member.

4,565,264
ELEVATOR SYSTEM
Kazushi Kunii, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1982, Ser. No. 452,051
Claims priority, application Japan, Jan. 7, 1982, 57-1292
Int. Cl.[4] B66B *5/16*
U.S. Cl. 187—89 **20 Claims**

1. An elevator apparatus for bringing an elevator cage in an elevator shaft to an emergency stop when the speed of descent of the elevator cage exceeds a predetermined rate, comprising:
a governor wire rope;
a governor mounted to a lower portion of the elevator shaft, said governor wire rope being reeved over said governor, said governor having means operative in response to vertical movement of said governor wire rope for detecting the speed of the cage and for grasping the governor wire rope when an abnormal ascending or descending speed is detected;
a guide wheel rotatably mounted to an upper portion of the elevator shaft above the lower portion;
a safety device for being mounted on the cage, including means for bringing the cage to an emergency stop when the descending speed of the cage exceeds said predetermined rate;
means, including an actuation mechanism coupled to said safety device, for actuating said safety device to bring the cage to an emergency stop;
said governor wire rope having first and second free ends and being located in the elevator shaft reeved over said guide wheel and said governor, said rope being connected at said first free end to said actuation mechanism so as to move with the cage to operate said governor, said governor wire rope being adapted to be grasped by said governor to be stopped when said governor detects a speed in excess of said abnormal speed; and
a tensioning means, disposed between said second free end of said governor wire rope and said actuation mechanism, for connecting said second free end and said actuation mechanism together and for tensioning said governor wire rope.

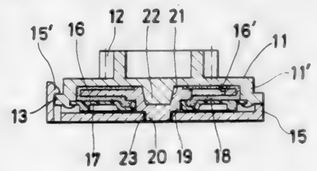


4,565,265
HYDRAULIC PARKING BRAKE
James M. Woolley, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 25, 1985, Ser. No. 695,198
Int. Cl.[4] F16D *55/26;* **B60T** *11/00*
U.S. Cl. 188—72.6 **2 Claims**



1. In a hydraulic pressure actuated wheel brake cylinder for disc brakes and the like, a hydraulic parking brake actuator comprising:
a housing having an actuating cylinder formed therein and having an end wall and a cylinder side wall;
a cup-shaped brake actuating piston reciprocably received in said cylinder and forming therewith a hydraulic pressure chamber in said cylinder and said piston;
a parking brake cylinder formed in said housing within said actuating cylinder and extending from said end wall and opening into said pressure chamber, a parking brake chamber being formed by said parking brake cylinder, said parking brake cylinder having a cap thereon separating said parking brake chamber from said pressure chamber and having an opening therein providing fluid communication between said chambers;
a parking brake piston reciprocably and rotatably received in said parking brake chamber and in sealing relation with said parking brake cylinder, said parking brake piston having a threaded shaft thereon and said end wall having a threaded opening therein through which said threaded shaft extends in threaded relation, a parking brake actuating lever secured to said shaft on the other side of said end wall from said parking brake chamber, said shaft and said parking brake piston having a passage formed therethrough with one end opening into said parking brake chamber and the other end having means for connecting a brake hose thereto to conduct hydraulic brake actuating fluid from and to a master cylinder to actuate and release the brake actuating piston for service braking;
an annular valve seat on said parking brake piston surrounding said passage one end;
a valve member reciprocably mounted on said cap and aligned for sealing engagement with said valve seat to selectively close said passage against fluid communication with said parking brake chamber, said valve member having spring means continuously urging it toward said valve seat and means limiting movement of said valve member toward said valve seat so that in the parking brake released position said valve is spaced from said valve seat to permit hydraulic fluid flow therepast;
said parking brake piston being actuated by rotational movement of said shaft and moved axially by action of the threads to engage said valve seat with said valve member to trap hydraulic fluid in said chambers and with further movement to pressurize hydraulic fluid in said chambers and move said actuating piston to actuate said brake in a parking brake mode, and being released by opposite rotational movement of said shaft to release the hydraulic fluid pressure in said chambers and reopen said valve seat relative to said valve member.

4,565,266
OIL TYPE DAMPER
Nobuaki Omata, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Apr. 30, 1984, Ser. No. 605,517
Int. Cl.[4] F16D *57/00*
U.S. Cl. 188—322.5 **3 Claims**



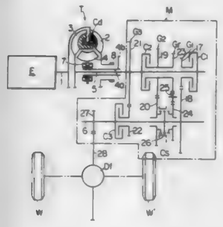
1. An oil type damper, comprising a blind cylindrical wall **15** formed integrally with a base having means **14** adapted to be secured to a given machine, a cap **11** set in place within said cylindrical wall **15** and retained rotatably therein, a seal disk **17** provided with a central hole, fixed integrally with said cap to cover the lower surface of said cap and adapted to form a housing in combination with said cap, and oil **18** filling the interior of said housing, said housing accommodating therein a stationary disk **16**, said stationary disk being provided with a shaft **20** adapted to restrain the rotation of said stationary disk relative to the rotation of said cap, and said shaft being extended outwardly through a central hole in said seal disk and non-rotatably connected to said base.

4,565,267

DIRECT-COUPLING CLUTCH CONTROL DEVICE FOR A TORQUE CONVERTER IN VEHICULAR AUTOMATIC TRANSMISSION

Masao Nishikawa, Tokyo, and Yoshimi Sakurai, Tanashi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1984, Ser. No. 596,472
Claims priority, application Japan, Apr. 6, 1983, 58-60363
Int. Cl.[4] B60K *41/28*; F16H *41/18*
U.S. Cl. 192—3.31 4 Claims



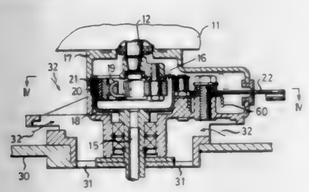
1. In a direct coupling clutch control device for a torque converter in vehicular automatic transmission comprising; a fluid-type torque converter having an output member; an auxiliary transmission coupled to said torque converter and capable of selecting any of a plurality of multi-staged transmission gear ratios; a hydraulic direct-coupling clutch disposed between said input and output members and operable to mechanically couple said members to each other; a gear shift control means adapted to select any one of said transmission gear ratios in an automatic or manual fashion switched as required having an automatic gear shift position and a manual gear shift position; and a control means for controlling operation of said direct-coupling clutch, said direct-coupling control device is characterized in that said control means has such a variable characteristic with which the vehicle speed for starting to actuate said direct-coupling clutch is shifted with oil pressure to the lower speed side in accordance with an automatic gear shift position of said gear shift control means and to the higher speed side in accordance with a manual gear shift position thereof.

4,565,268

CLUTCH BRAKE MECHANISM FOR LAWN MOWER

Masaru Yamamoto, Hyogo, and Tsuneyoshi Yuasa, Kakogawa, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Sep. 30, 1982, Ser. No. 431,419
Claims priority, application Japan, Oct. 6, 1981, 56-148974[U]
Int. Cl.[4] B60K *41/24*; F16D *67/02*
U.S. Cl. 192—0.049 1 Claim



1. A clutch brake mechanism for a lawn mower including an engine with an output shaft, a cover fixedly held relative to the engine, a driven shaft rotationally held by the cover and connected to the output shaft, cutter blades connected to the driven shaft, and an air impeller connected to the driven shaft above the cutter blades, comprising:

means for defining air passages situated in the center of the cover, said means rotationally supporting the driven shaft and having a plurality of air passages so that outer air is drawn into the inside of the cover by means of the air impeller for floating of the lawn mower,

a casing mounted between the means for defining air passages and the engine, the output shaft and the driven shaft extending into the casing,

a clutch situated in the casing and including a drum rotationally situated inside the casing and connected to the driven shaft, and at least two clutch shoes with a spring for urging the clutch shoes toward each other, said clutch shoes being connected to the output shaft of the engine so that when rotational speed of the output shaft increases, the clutch shoes move radially outwardly from the output shaft to contact the drum to thereby rotate the driven shaft,

brake means situated in the casing and having a brake band disposed outside the drum and an arm pivotally connected to the casing, one end of the brake band being attached to the casing and the other end being attached to the arm so that no matter how many times the brake means is actuated by means of the arm for controlling rotation of the drum, the brake means in the casing is always cooled by air flowing into the inside of the cover through the air passages to thereby efficiently prevent brake damages due to heat, and

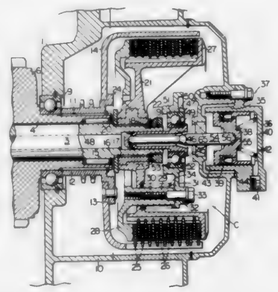
a control lever including a brake arm connected to the arm of the brake means and a throttle arm connected to the engine for controlling rotational speed of the engine, said brake arm and throttle arm being linked together so that when the brake is applied to the drum, the engine operates at a minimum speed to thereby disengage the clutch shoes from the drum and to stop rotation of the drive shaft, and when the brake is not applied to the drum, the engine operates at at least a regular speed to thereby transfer rotational force of the engine to the driven shaft through the clutch.

4,565,269

HYDRAULICALLY OPERATED FRICTION CLUTCH

Hiroshi Kawasaki, and Kazuoki Ukiana, both of Tokorozawa, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,823
Claims priority, application Japan, Feb. 15, 1983, 58-20291[U]
Int. Cl.[4] F16D *13/72, 13/74, 25/08*
U.S. Cl. 192—70.12 1 Claim



1. A friction clutch assembly operating in an oil bath comprising:

(a) an outer clutch member having a cylinder open at one end, partially closed at the other end and connectable at the partially closed end to a first tubular shaft;

(b) an inner cylindrical clutch member having a pressure receiving surface at one end thereof and being partially closed at the opposite end so as to engage a second tubular shaft concentric with and carried within said first shaft;

(c) a first friction means engaged with the inner surface of said outer member;

(d) a second friction means engaged with the outer surface of said inner member, and contactable with said first friction means;

(e) a pressure plate carried on said inner member and rotating axially with said inner member, having a pressing plate surface disposed at the end of said friction means opposite to the pressure receiving portion of said inner member;

(f) a plurality of springs engaging said inner member and said pressure plate so as to cause said pressure plate to be held against said friction means;

(g) a thrust bearing having an inner and an outer race, said outer race engaging a portion of said pressure plate;

(h) a pressure receiving member comprising a main body portion, a closed end portion projecting through said thrust bearing into a bore in said second shaft, and an open end portion for engagement in said inner race of said thrust bearing, wherein the inner surface of said closed end portion includes an hemispherical surface and the outer surface of said closed end portion has a diameter smaller than the diameter of said main body portion, said closed end portion including a plurality of passages extending therethrough;

(i) a push rod, having an end received into the hemispherical portion of said pressure receiving member, said push rod having an end formed into an hemisphere with a radius slightly smaller than that of the hemispherical portion of said pressure receiving member into which it is received, said push rod projecting through said open end of said pressure receiving member; and

(j) means for pushing said push rod against said pressure receiving means and engaging said push rod at the end opposite to that where said push rod engages said pressure receiving means,

wherein lubricating oil delivered through the center of said second tubular shaft passes through the space between said pressure receiving member and said bore in said second shaft, and further passes through said passages in said pressure-receiving member to provide an oil cushion between the end of said push rod and the hemispherical surface in said pressure-receiving member wherein the push rod is received.

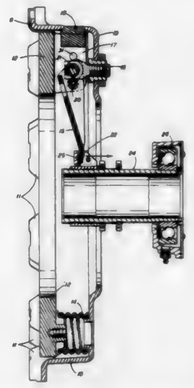
4,565,270

FRICTION CLUTCH CONVERTIBLE FOR EITHER PUSH-TYPE OR PULL-TYPE DISENGAGEMENT

John P. Yanko, Liverpool, N.Y., assignor to Lipe-Rollway Corporation, Syracuse, N.Y.

Filed Nov. 14, 1983, Ser. No. 454,890
Int. Cl.[4] F16D *13/50*
U.S. Cl. 192—70.13 5 Claims

1. In a friction clutch for connecting driving and driven shafts; a dished cover member; a pressure plate located in the cover member; means biasing the pressure plate into engagement with a friction disc when the clutch is engaged; and means for moving the pressure plate out of engagement with the friction disc to disengage the clutch; said last-named means including a release lever pivotally connected adjacent one end to the cover member, an outwardly projecting lug on the pressure plate located adjacent the release lever pivot connection, and release lever connection means at alternate locations in the pressure plate lug, the release lever being adapted to be pivotally connected to the lug at one of said locations so that movement of the free end of the lever operates to move the plate out of engagement with the friction disc, a connection between the lever and lug at the first of said alternate locations requiring movement of the free end of the lever toward the pressure plate to disengage the clutch and a connection between the lever and lug at the second of said alternate locations



requiring movement of the free end of the lever away from the pressure plate to disengage the clutch.

4,565,271

OPERATING MEMBER FOR CLUTCH DIAPHRAGM SPRING, AND PROCESS FOR MOUNTING IT THEREON

Philippe Lassiaz, Boulogne, France, assignor to Valeo, Paris, France

Filed Sep. 23, 1983, Ser. No. 535,071
Claims priority, application France, Sep. 23, 1982, 82 16045
Int. Cl.[4] F16D *13/44*
U.S. Cl. 192—89 B 15 Claims



1. An operating member to be attached to the ends of the fingers of a diaphragm of a clutch, said operating member comprising in the form of a single piece, an annular support collar which extends substantially radially and which by one of its faces, referred to as support face, is adapted to come to bear against the ends of the fingers of the diaphragm to which it is to be fitted, and further comprising at least two retaining shoulders which are adapted to secure it axially to the diaphragm, wherein said retaining shoulders are turned axially in the direction of the support face of said support collar.

4,565,272

SELF-ALIGNING TYPE CLUTCH RELEASE APPARATUS

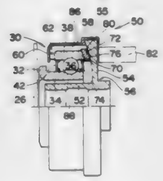
Takashi Miyahara, Yokohama, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 2, 1984, Ser. No. 576,403
Claims priority, application Japan, Feb. 12, 1983, 58-21843
Int. Cl.[4] F16D *23/14*
U.S. Cl. 192—98 9 Claims

1. In a self-aligning type clutch release bearing apparatus including clutch release bearing means for releasing a clutch,

bearing holding means mounted substantially coaxially with and slidable along a rotational axis of the clutch for holding and guiding said bearing means, the bearing holding means being drivable by clutch actuating means, and a self-aligning coupling interposed between said bearing means and said bearing holding means for effecting aligning movement of said bearing means relative to said rotational axis of the clutch, the improvement wherein said self-aligning coupling comprises:

an aligning auxiliary member disposed between said bearing means and said bearing holding means, said auxiliary member having first and second faces which mate respectively with a portion of said bearing holding means and a portion of said bearing means;



first means for rendering said auxiliary member capable of aligning movement in all directions about a first point relative to said bearing holding means;

second means for rendering said bearing means capable of aligning movement in all directions about a different point relative to said auxiliary member; and

biasing means for retaining said auxiliary member in frictional engagement with said bearing means and said bearing holding means and for damping aligning movement between said bearing holding means and said auxiliary member and between said auxiliary member and said bearing means.

4,565,273

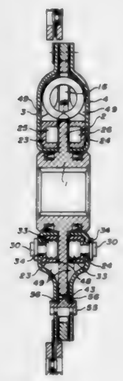
DAMPER DISK HAVING HYDRAULIC SHOCK ABSORBERS

Hiromi Tojima, and Kouji Kajitani, both of Hirakata, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Aug. 31, 1982, Ser. No. 413,251

Int. Cl.⁴ F16D *3/66, 3/80*

U.S. Cl. 192—106.2 **5 Claims**



1. A damper disc comprising:

a spline hub;

a radial flange formed at the hub;

a sealed case having two halves covering the flange and having a radially outer portion to which a torque is transmitted;

torsion springs disposed in openings in the flange and axially faced hollws in the case for connecting the flange and the case together; and

a piston cylinder mechanism disposed concentrically within the case and having a piston operable to move in accordance with relative torsion between the case and the flange, the case and a cylinder of the piston cylinder mechanism being filled with operating oil, and the cylinder being provided with only a narrow space through which the oil can be discharged and the cylinder being used exclusively as a hydraulic damper and having outer cylindrical walls separating said cylinder from said torsion springs, and said cylinder having an annular shape extending along a disc rotating direction and being arranged radially inside the torsion springs and between the case and the flange, an annular space in the cylinder is divided by partitions into several partially annular chambers in which the pistons are disposed respectively, the cylinder and partitions are fixed to one of the case and the flange, and the pistons in the cylinder are fixed to the other of the case and the flange.

4,565,274

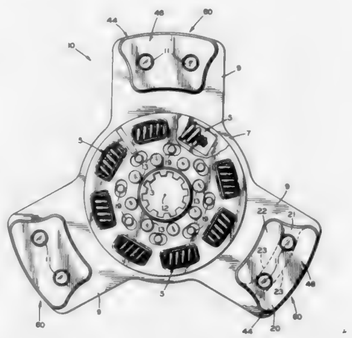
FRICTION CLUTCH ELEMENT

Mick G. Cameron, Auburn, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Mar. 30, 1983, Ser. No. 480,324

Int. Cl.⁴ F16D *69/00*

U.S. Cl. 192—107 R **7 Claims**



7. A rotatable driven friction disc assembly comprising a pair of friction elements disposed on opposing sides thereof, each of said friction elements being disposed for mounting thereto, said disc having a center of rotation, each said element comprising an arcuate friction facing having radially extending leading and trailing edges, said facing having a first circumferentially extending centerline which defines an arc extending between said leading and trailing edges, said facing further having a radially outer and a radially inner subportion, each subportion radially spaced from said centerline, wherein said centerline is interjacently positioned with respect to said subportions, each subportion being both circumferentially and radially symmetrical and having second and third, respectively, circumerentially extending centerlines parallel to said interjacently positioned first centerline, said second and third centerlines of said respective subportions defining spaced arcs, each arc being coterminous with said radially extending edges of said facing at a point where two lines extending radially from said center of rotation intersect respective extremities of said subportions, said arc being defined by said second and third centerlines of said subportions extending over a greater angle than said arc defined by said interjacent first centerline, said radially outer and inner subportions of said friction facings including convex radially extending leading and trailing edge portions, each of said edge portions positioned symmeterically about said centerline of one of said subportions, said friction facings further comprising concave radially extending leading and trailing edge portions positioned interjacent said respective convex edge portions, wherein said leading and trailing edges are continuously arcuate.

4,565,275

OPTOELECTRONIC COIN ENTRY SENSING SYSTEM FOR COIN OPERATED MACHINES

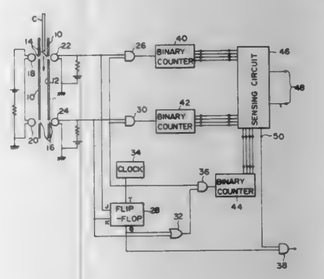
Takashi Hagiwara, Zama, Japan, assignor to Sigma Enterprises Incorporated, Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,192

Claims priority, application Japan, Dec. 15, 1982, 57-218328; Apr. 7, 1983, 58-59909

Int. Cl.⁴ G07F *3/02*

U.S. Cl. 194—97 R **6 Claims**



1. A coin entry sensing system for a coin operated machine, comprising:

(a) guide means defining a guideway for a deposited coin, the guide means having first and second pairs of opposed apertures spaced from each other in the longitudinal direction of the guideway;

(b) first and second light sources disposed exteriorly of the guide means;

(c) first and second photodetectors disposed exteriorly of the guide means and adapted to be normally irradiated respectively by the first and second light sources through the first and second pairs of apertures in the guide means, the deposited coin preventing the light sources from irradiating the photodetectors when traveling through the guideway past the apertures;

(d) a pulse generator for outputting clock pulses;

(e) first measuring means for measuring the period of time required for the coin to pass the first pair of apertures in the guide means, the first measuring means comprising first gate means coupled to the first photodetector and the pulse generator for selectively passing output pulses from the pulse generator and first counter means for counting the pulses that have passed the first gate means;

(f) second measuring means for measuring the period of time required for the coin to pass the second pair of apertures in the guide means, the second measuring means comprising second gate means coupled to the second photodetectors and a pulse generator for selectively passing out pulses from the pulse generator and second counter means for counting the pulses that have passed the second gate means;

(g) third measuring means responsive to both first and second photodetectors for measuring the period of time from the moment the coin starts passing the first pair of apertures to the moment the coin completes passing the second pair of apertures, the third measuring means comprising holding means for holding a signal output at the moment the coin starts passing the first pair of apertures until the moment the coin completes passing the second pair of apertures, third gate means coupled to the holding means and the post generator for selectively passing output pulses from the pulse generator, and third counter means for counting the pulses that pass the third gate means;

(h) sensing means responsive to the first, second and third measuring means for sensing whether the third measuring means for sensing whether the three measured periods of time are within predetermined limits respectively; and

(i) reverse motion detecting means responsive to the first and second photodetectors for detecting a reverse travel of the coin through the guideway.

4,565,276

AUTOWALK

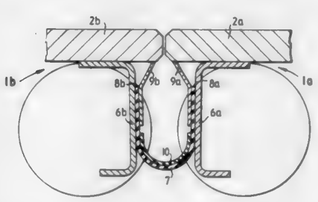
Bernd Dengs, Heiligenhaus, Fed. Rep. of Germany, and Neil Dyson, Bradford, Great Britain, assignors to O&K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Apr. 1, 1983, Ser. No. 481,282

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1982, 3213322

Int. Cl.⁴ B66B *9/12*

U.S. Cl. 198—321 **23 Claims**



1. An autowalk comprising

a plurality of individual step segments including step plates disposed with a gap between one another in a continuous arrangement defining an upper course adapted to carry people and a lower return travel course under said upper course, the step plates in the upper course being substantially at a comb mesh level in one horizontal plane,

an elastic bridge respectively arranged between every two adjacent of said step segments bridging said gaps between said step plates respectively,

each said bridge being below the comb mesh level when respective adjacent steps are in said upper course, said elastic bridge having means on said bridge and adjacent each lateral side thereof to prevent debris from spilling out sidewise, said bridge and said means forming a debris-catching pocket opening into said gap for catching the debris when it is in said upper course and said pocket being positioned so as to discharge the debris from said pocket at a predetermined position substantially where said upper course and said pocket turn upside down into said lower course.

4,565,277

DOUGH TRAY FOR A PRE-PROOFER

Johan Benier, Vught, Netherlands, assignor to Benier B.V., Netherlands

Filed Jul. 9, 1980, Ser. No. 166,920

Claims priority, application Netherlands, Jul. 13, 1979, 7905494

Int. Cl.⁴ B65G *47/42*

U.S. Cl. 198—365 **6 Claims**

1. A dough tray for a proofer comprising two head walls with means for coupling the dough tray to a transport means for transporting a plurality of dough trays through the proofer and a carrier frame means comprising at least two frame portions extending between the head walls for supporting at least

one endless strip of cloth, and an endless strip of cloth mounted on said carrier frame means including a part for receiving dough lumps sagging between said two frame portions of the



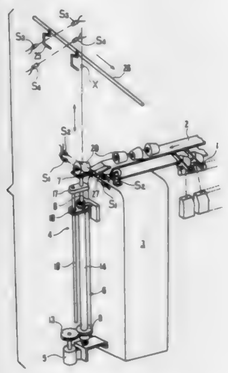
carrier frame means, the improvement wherein positive drive means are provided for selectively displacing the cloth over said carrier frame means for selectively rolling the dough lumps on said endless cloth.

4,565,278

METHOD OF TRANSFERRING YARN PACKAGES

Isao Asai, Toyota; Shigeru Muramatsu, Okazaki; Takayuki Morita, and Akira Tanaka, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 9, 1983, Ser. No. 492,682
Claims priority, application Japan, May 12, 1982, 57-078097
Int. Cl.⁴ B65G *47/24*
U.S. Cl. 198—400 **4 Claims**



1. A method of transferring sequentially aligned doffed yarn packages from a first movable conveyor mounted on and along the length of a yarn spinning machine onto a second movable conveyor, disposed at a skewed angle with respect to said first conveyor, for conveying the yarn packages away from said spinning machine on, and in the direction of movement of said second conveyor, each said yarn package having first and second ends and including a hollow cylindrical core extending therebetween, and said yarn packages on said first conveyor having their said ends randomly oriented in oppositely facing directions with their said cores aligned in the direction of movement of said first conveyor, comprising the steps of:

providing a means for identifying at least one of said ends of each of said sequentially aligned yarn packages for distinguishing the respective of said first ends from said second ends of said yarn packages;

moving said first conveyor to deposit one of said yarn packages onto a package turning means with said core of the package continuing to be so aligned and leaving said core free and clear, and then stopping said first conveyor movement;

sensing said end-identification means on said yarn package while on said package turning means to detect which of its said ends is facing said first conveyor;

actuating said package turning means responsive to said sensing to pivot and angularly displace said yarn package thereon towards a selected one of two opposite directions, depending upon which of its said two ends is facing said first conveyor, to face its said first end in one of said opposite directions;

removing said yarn package from said package turning means onto said second conveyor with its said first end facing in said one direction using the movement of said second conveyor to cause a hook thereof to enter and engage said package core;

again sensing said yarn package to detect its presence on said second conveyor;

and again moving said first conveyor responsive to the last said sensing to deposit the next sequential yarn package from said first conveyor onto said package turning means;

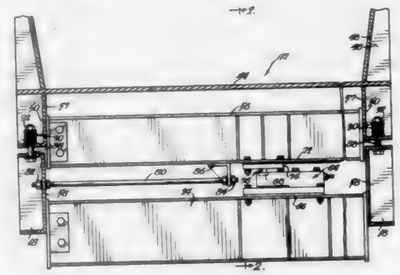
and repeating said steps sequentially with respect to each of said sequentially aligned yarn packages, whereby each of said packages is turned in one or the other of said two opposite directions, and all of said first ends of the sequentially transferred packages are oriented in said one direction on said second conveyor.

4,565,279

PRODUCT ACCUMULATING CONVEYOR APPARATUS AND METHOD

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Continuation of Ser. No. 272,909, Jun. 12, 1981, abandoned, and a continuation of Ser. No. 582,859, Feb. 24, 1984, abandoned.
This application Oct. 3, 1984, Ser. No. 657,050
Int. Cl.⁴ G01G *11/08*
U.S. Cl. 198—505 **5 Claims**



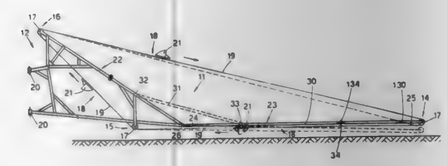
1. In a accumulating conveyor for conveying and cooling castings comprising a base, an elongated conveyor having a conveying surface, and drive means for vibrating said conveyor on said base for moving said castings along said conveying surface, the improvement comprising: an accumulating hopper defining a loading portion of said elongated conveyor, weight responsive means for weighing the castings fed to said accumulating hopper, said accumulating hopper being attached at one end portion to said conveyor in cantilever fashion and being supported at an inlet end portion on said weight responsive means, said weight responsive means starting and stopping said drive means for vibrating said conveyor, means extending transverse to the direction of conveyance of material on said conveyor and resiliently connecting the inlet end of the hopper to the conveyor to prevent side-to-side movement of the hopper during vibration, said drive means being activated upon the weight of the castings on said hopper reaching a predetermined amount for deflecting said accumulating hopper about said attached end portion an amount sufficient to be sensed by said weight responsive means for conveying the castings along the hopper and along the conveyor, and said drive means being deactivated upon the weight responsive means sensing the weight of the castings on said hopper falling below a predetermined amount whereby the accumulating hopper undeflects an amount sufficient to be sensed by said weight responsive means whereby the vibration of the conveyor is stopped.

4,565,280

BUCKET CONVEYOR

Luigi Zaccaron, Via dei Colli, 2, 33030 Moruzzo (UD), Italy

Filed Jun. 14, 1983, Ser. No. 504,175
Int. Cl.⁴ B65G *41/00*
U.S. Cl. 198—509 **4 Claims**



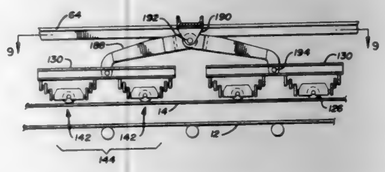
1. Bucket conveyor to load heaped aggregate materials from a plane on which the heap lies onto another higher plane, comprising a framework revolvably anchorable at one end along a vertical axis to an apparatus which receives aggregate, consisting of a substantially triangular metallic structure bearing two pairs of pulleys and of a metallic boom or extension which bears at a free end a pair of pulleys farthest from the zone of discharge of the buckets, said triangular structure and extension being connected together at one end with a hinge having its axis perpendicular to a plane which contains the framework, said hinge being positioned between said pulleys on said extension and on said triangular structure; a length of chain; junction links and buckets positioned on said chains around said pairs of pulleys, said chain forming a catenary between two pairs of pulleys further including screws wherein the height of the free end of the extension and of the pair of pulleys solidly fixed to that end above the ground can be adjusted with said screws to move the pair of pulleys lengthwise in relation to the extension.

4,565,281

PRESSURE DEVICE FOR CONVEYOR

James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 17, 1983, Ser. No. 524,059
Int. Cl.⁴ B65G *15/14*
U.S. Cl. 198—628 **4 Claims**



1. For use in a high angle conveying apparatus having a conveyor belt and a cover belt trained for movement in endless configurations through a lifting zone whereat said belts are moved into operative association with each other so that material on said conveyor belt will be held in contact therewith by said cover belt, improved pressure means for applying essentially fully equalized pressure to the back surface of said cover belt including:

(a) A plurality of modules of rollers,

(b) at least one row of rollers mounted within each of said modules, each row of rollers positioned to contact the back surface of the cover belt along a line transverse to the direction of movement of the cover belt, each said row of rollers comprising a plurality of freely rotatable individual rollers contacting the cover belt across the major extent of the line across the cover belt, with each roller being on an individually moveable axis of rotation to permit conformance of each roller to the cover belt independent of its adjacent roller,

(c) a plurality of support means each coupled at a first end to a single coaxial pivot point on a framing member of the conveying apparatus and at a second end to one of said modules, and

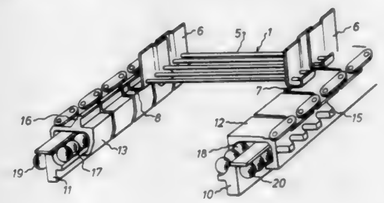
(d) resilient means to spring bias said plurality of support means with respect to each other toward the cover belt, whereby each said row of rollers is urged into contact with the back surface of the cover belt for applying essentially fully equalized pressure thereto.

4,565,282

STORING INSTALLATION FOR CARRYING A NUMBER OF PILED HELICALLY EXTENDING TURNS OF AN ENDLESS CONVEYOR BELT

Lennart Olsson, Nyhamnsläge, and Gerald Heber, Helsingborg, both of Sweden, assignors to Frigoscandia Contracting AB, Helsingborg, Sweden

Filed Nov. 22, 1983, Ser. No. 554,345
Claims priority, application Sweden, Nov. 26, 1982, 8206759
Int. Cl.⁴ B65G *21/18*
U.S. Cl. 198—778 **7 Claims**



1. Supporting installation for carrying a number of helically extending turns of an endless, sidewise collapsible conveyor belt, laid upon one another in a pile, where the various belt turns in the pile are supported by one another especially by means of spacing members arranged adjacent the belt edges, said installation comprising an endless conveyor unit which both carries and drives the pile of helically extending conveyor belt turns, wherein the conveyor unit comprises:

(A) two endless chains which are arranged under the belt pile and support the two edge portions of the belt throughout at least one complete revolution,

(B) a support under each of said endless chains and having an upwardly directed rolling race, and

(C) at least one endless rolling element series arranged between each chain and the rolling race of its support, and

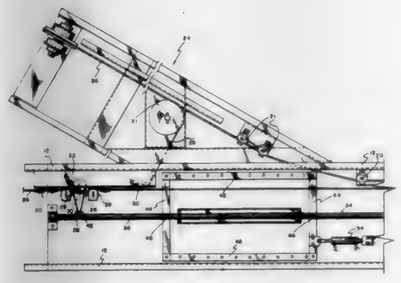
wherein each of said chains comprises links forming with its support a channel enclosing rolling elements in one of said rolling element series and extending at least through the support length of the belt.

4,565,283

MEANS AND PROCESS FOR EXTRACTING POWER FROM A PASSING CABLE

Fred S. Greenlee, III, Wichita, Kans., assignor to Great Plains Ventures, Wichita, Kans.

Filed Mar. 26, 1984, Ser. No. 593,680
Int. Cl.⁴ B65G *13/07*
U.S. Cl. 198—790 **11 Claims**



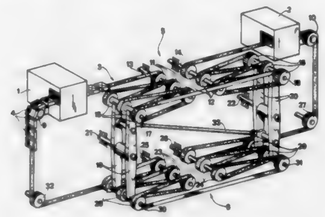
1. In an improved combination of a conveyor system and a transferring conveyor system having transferring roller means for transferring articles from the conveyor system to a branch conveyor system having a plurality of rotatable branch sheaves and the conveyor system being of the type having a plurality of carrier rollers rotatably connected to a pair of support members and a conveyor cable drive means mechanically communicating with the branch conveyor system and the conveyor system including a plurality of idle sheaves rotatably connected to said support members underneath the carrier rollers and an endless cable positioned over the plurality of idle sheaves and branch sheaves and engaged with the conveyor cable drive means, said improvement comprising at least two guide sheave means rotatably secured within the conveyor system in general proximity to each other and essentially in the same plane; at least one take-off sheave means rotatably positioned within the conveyor system between said two guide sheave means and essentially in the same plane of said guide sheave means such that when said endless cable movably passes between the two guide sheave means and the take-off sheave means, the take-off sheave means essentially detours the generally straight-line path of the endless cable to frictionally pinch the cable in order that rotational power is imparted to the take-off sheave; at least one drive sheave means concentrically integrally bound to the at least one take-off sheave such that the drive sheave means and the take-off sheave rotate in unison; a drive shaft means rotatably positioned within the conveyor system underneath said transferring conveyor system; at least one power take-off endless belt interengaging the at least one drive sheave means and the drive shaft means to transmit rotary power from the drive sheave means to the drive shaft means; and at least one accessory endless belt interconnecting at least one of the transferring roller means of the transferring conveyor system and the drive shaft means to transmit rotary power from the drive shaft means to the at least one transferring roller means of the transferring conveyor system.

4,565,284

APPARATUS FOR TRANSFERRING INDIVIDUAL OR BATCH FORMED PRODUCTS FROM A FIRST TO A SECOND MACHINE

Enzo Seragnoli, and Gastone Dall'Osso, both of Bologna, Italy, assignors to G.D. Societa per Azioni, Bologna, Italy

Filed Mar. 16, 1983, Ser. No. 475,743
Claims priority, application Italy, Apr. 13, 1982, 3396 A/82
Int. Cl.⁴ B65G *23/00*
U.S. Cl. 198—792 **4 Claims**



1. Apparatus for transferring individual or batch formed products from a first to a second machine comprising:

at least one continuous conveyor that issues from the first machine, enters the second machine, and issuing from this returns back to the first machine; said conveyor being connected, movement wise, to powering means that are independent of one another and are connected to the first and to the second machine, respectively, in order to carry in motion said conveyor, in the normal operating condition, at the same speed as the machines themselves; said conveyor having two sections of variable length, a first placed between the exit point of the first machine and the entry point of the second machine, and a second between the exit point of the second machine and the entry point of the first machine; said sections being partially wound, with a plurality of turns, respectively, onto first and second intermediate elements, the first intermediate elements situated between the exit point of the first machine and the entry point of the second machine, and the second intermediate elements between the exit point of the second machine and the entry point of the first machine; a first part of said first and second elements being mounted on fixed spindles supported by the frame of the apparatus, and a second part of said first and second elements being mounted on movable spindles parallel to said fixed ones, supported in such a way as to be able to approach or move away from said fixed spindles to suit the tension of said conveyor due to the slowing down or the temporary halting of one of the two machines; the movable spindles of said first and second elements being interconnected so that if said second part of said first elements approaches, to a given extent, the corresponding first part, the second part of said second elements moves away from the corresponding first part, to the same extent, and vice versa.

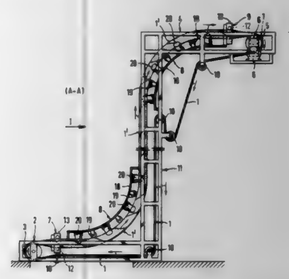
4,565,285

TUBE BELT CONVEYOR

Pauli A. T. Koistinen, Joensuu, Finland, assignor to Outokumpu Oy, Helsinki, Finland

Filed Dec. 15, 1983, Ser. No. 562,395
Claims priority, application Finland, Jan. 4, 1983, 830012
Int. Cl.⁴ B65G *15/08*
U.S. Cl. 198—819 **7 Claims**

1. A tube belt conveyor, comprising first and second drum members respectively defining a load end and a discharge end of a conveyor path, an endless flexible belt trained about said drum members, that portion of the belt that extends along the conveyor path having first and second major faces and being helically twisted so that said portion of the belt can be formed into a tube with said first major face inwards and an edge region of said portion of the belt overlapping said second major face and extending along a generally helical line through at least one complete revolution from said loading end to said discharge end, and the conveyor also comprising means for



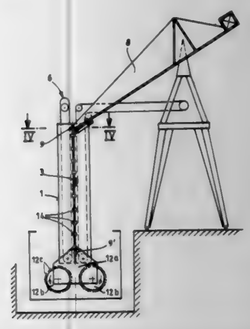
driving at least one of said drum members to rotate and drive the belt along the conveyor path in the direction from the loading end to the discharge end, and means at the loading end of the conveyor path for maintaining the twisted portion of the belt in tubular form.

4,565,286

SUPPORTING TUBE OF A STEEP-RISE CONVEYOR, ESPECIALLY A VERTICALLY ELEVATING CONVEYOR, OR A DOWN-FEED DEVICE

Gert Bechtloff, Hamburg, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 380,083, May 20, 1982, abandoned.
This application Dec. 7, 1984, Ser. No. 679,596
Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120056
Int. Cl.⁴ B65G *21/10*
U.S. Cl. 198—861.1 **8 Claims**



1. A supporting arrangement for bulk material handling and distribution comprising:

a hollow supporting tube having a body including side configuration and opposite open ends;

a conveyor mounted in said tube with at least a portion of said conveyor connected to said tube;

means forming a slit with edges along said side configuration of said tube and extending between said opposite open ends of said tube; and

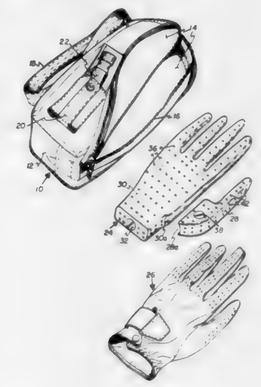
means to cause relative rotation of said ends of said tube relative to each other by displacing one of said edges of the slit substantially parallel to the other of said edges; said relative rotation of said tube ends causing relative rotation of said one conveyor portion relative to the remaining conveyor portion.

4,565,287

APPARATUS FOR PRESERVATION OF A LEATHER GLOVE

Hector Rede, 634 Cougar Loop NE., Albuquerque, N. Mex. 87122; Armand G. Winfield, and Barbara L. Winfield, both of Santa Fe, N. Mex., assignors to Hector Rede, Albuquerque, N. Mex.

Filed Jun. 11, 1984, Ser. No. 619,615
Int. Cl.⁴ B65D *81/26*
U.S. Cl. 206—213 **8 Claims**



1. An apparatus for preserving a leather glove, comprising a closable protective case having a porous inner lining suitable for impregnation with a leather emollient, and a hollow vapor-permeable hand-shaped form adapted to fit within a leather glove and contain a dehydrating agent, said hand-shaped form consisting of separable thumb and hand parts, each of said parts being hollow and permeable to water vapor, and wherein said case is sized to cooperably receive and enclose a glove containing said form, whereby during storage in said case moisture in a glove is extracted by action of said dehydrating agent in said hand-shaped form and said leather emollient is at the same time infused into said glove.

4,565,288

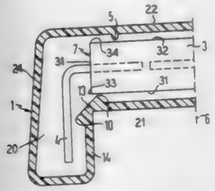
TUBULAR CONTAINER FOR THE ACCEPTANCE OF SEMICONDUCTOR COMPONENTS

Albert Walther, Holzkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 28, 1984, Ser. No. 625,540
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323589; Feb. 8, 1984, 3404467
Int. Cl.⁴ B65D *85/42, 65/18*
U.S. Cl. 206—328 **11 Claims**

1. A tubular container having at least one external wall with a pair of inner leg portions extending from a bight portion to form a hollow cavity with a U-shaped cross-section for loosely receiving and storing at least one component which has a housing with housing surfaces forming housing edges extending in the longitudinal direction of the container, said component being a dual-in-line component with terminals extending outward from the opposite end surfaces and being bent to provide a U-shaped configuration similar to the cross-section of the container, said container having means for protecting the component contained therein from electrostatic charging and discharging, said means including means to prevent fric-

tional engagement of the housing surfaces on an interior wall surface of the bight portion, said means for preventing including a longitudinally extending rail adjacent each corner of the bight portion and an inner leg portion, said rail extending into



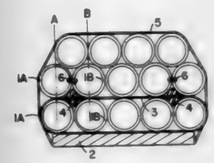
the cavity and having a glide edge facing the terminals to keep them from engaging the inner leg portion and a glide edge facing the housing of the component to prevent frictional engagement of the surface of the bight portion with the housing surface.

4,565,289

METHOD AND APPARATUS FOR LOADING TUBULAR OBJECTS

Pierre Lesueur, Vaux le Penil, France, assignor to Everitube, Courbevoie, France

Filed Nov. 30, 1984, Ser. No. 676,898
Claims priority, application France, Dec. 2, 1983, 83 19703
Int. Cl.⁴ B65D *85/20*
U.S. Cl. 206—443 **10 Claims**



1. A method for assembling a bundle of tubular pipes, comprising the steps of:

(a) laying a first bed of a number (p) of pipes (1) laterally across spaced support beams (2),

(b) banding (3) the first bed to the beams,

(c) placing key blocks (4) between at least two outermost pipes on each side of and atop the first bed,

(d) laying at least one intermediate bed of a number (p) of pipes on top of the first bed in vertical columns,

(e) clamping together adjacent ends of two outermost pipes on each side of the intermediate bed flanking the key blocks, and

(f) laying an upper bed of a number (p−1) of pipes on top of an uppermost intermediate bed in a staggered arrangement with each upper bed pipe resting between two columns of underlying pipes.

4,565,290

DISPLAY RACK

James L. Corrigan, Lancaster, and Gerard M. Schouten, Lititz, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed May 14, 1984, Ser. No. 609,998
Int. Cl.⁴ A47G *19/08*
U.S. Cl. 211—41 **4 Claims**

1. A flat display assembly comprising:

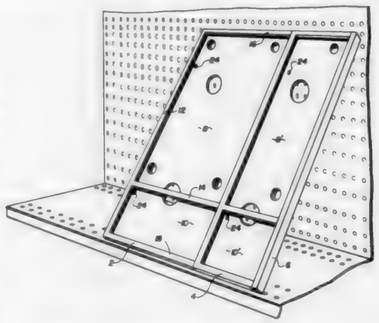
(a) a first part having at least two recessed display surfaces with each surface having three raised border means,

(b) a second part forming the fourth raised border means for each recessed display surface,

(c) said first and second part being made of a self-supporting material,

(d) said first part having two recessed areas, one area being large enough to hold a sample floor tile and the other area being substantially smaller to hold descriptive material on the floor tile,

(e) said first part having a raised border means on three sides thereof, and a raised border means extending across said first part parallel to the two raised border means, said last mentioned raised border means defining said two recessed areas, each having three raised sides formed by said raised border means,



(f) said first part, having a fourth side thereof that does not have a raised border means, having a tab means extending along the entire length of said fourth side and said tab means having there along means for receiving and holding said fourth raised border means in position, and

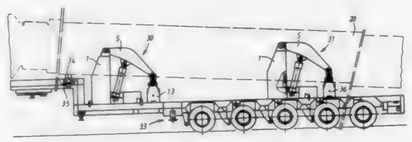
(g) said second part being a strip affixed to the tab means of the first part to form the fourth raised border means so that both recessed areas have raised sides completely thereabout.

4,565,291

HYDRAULIC LIFTING ASSEMBLY FOR MOUNTING A CRANE JIB

Prabhakar R. Khirwadkar, Siechenreuteweg 20, 8940 Memmingen, Fed. Rep. of Germany

Filed Apr. 27, 1983, Ser. No. 489,144
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1982, 3215635
Int. Cl.⁴ B66C *23/36*
U.S. Cl. 212—180 **8 Claims**



1. A hydraulic lifting assembly for direct mounting of a crane jib from a flat bed transport vehicle on which the crane jib is carried, the longitudinal axis of the crane jib and the bed of the transport vehicle both extending substantially horizontally in a direction from the front to the rear of said vehicle, said assembly comprising a front and a rear lifting provision on the bed of said transport vehicle spaced from each other in said longitudinal direction, each of said lifting provisions comprising:

left and right vertical base frames supported on the bed of said transport vehicle and spaced from each other transversely to said longitudinal axis;

left and right lift arms, one end of each lift arm being pivotally attached to the upper end of the corresponding base frame;

a rigid cross-frame;

means for pivotally coupling the opposite ends of said cross-frame to the free ends of said left and right lift arms, respectively, thereby pivotally coupling the free ends of said lift arms to each other; and

left and right hydraulically controlled lifting devices respectively connected between the corresponding base frames and lift arms and adapted to elevate the free ends of said lift arms to independently controllable elevations; and at least one of said lifting provisions further comprising a support table mounted on the cross-frame thereof for supporting the end of said crane jib at the corresponding end of said transport vehicle;

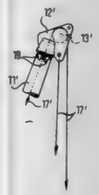
whereby said crane jib may be controllably tilted and elevated with respect to said transport vehicle and pivoted with respect to said longitudinal axis.

4,565,292

CARGO HANDLING APPARATUS WITH A CARGO BOOM WHICH CAN BE SWUNG IN A SWIVEL BEARING BETWEEN TWO KINGPOSTS

Heinz F. J. Spengel, Sr., Hamburg, Fed. Rep. of Germany, assignor to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

PCT No. PCT/EP81/00008, § 371 Date Sep. 21, 1981, § 102(e) Date Sep. 21, 1981, PCT Pub. No. WO81/02152, PCT Pub. Date Aug. 6, 1981
Continuation of Ser. No. 306,922, Sep. 21, 1981, abandoned. This PCT application Jan. 23, 1981, Ser. No. 700,332
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1980, 3002464
Int. Cl.⁴ B66C *23/06, 23/52*
U.S. Cl. 212—232 **3 Claims**



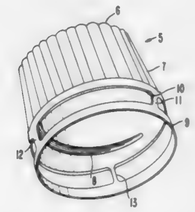
1. In a cargo handling apparatus comprising first and second kingposts arranged spaced apart from one another in a plane; a swivel bearing disposed between said kingposts; a cargo boom having upper and lower ends and pivotably mounted at its lower end on said swivel bearing; first and second span tackles extending between said upper end of said cargo boom and said first and second kingposts, said cargo boom being capable of being swung through said plane between said kingposts from a first working position on one side of said kingposts to a second working position on the other side of said kingposts; a main hoist carried by said cargo boom, said main hoist including main hoist fittings mounted on said cargo boom at its upper end; a first extension fixedly connected to the upper end of said cargo boom and projecting beyond said main hoist fittings and having a longitudinal axis and an upper end; a first auxiliary hoist carried by the upper end of said first extension, said first auxiliary hoist comprising a block fitting rotatable about said longitudinal axis of said first extension, an upper cargo block carried by said block fitting, a guide sheave and cable sheaves arranged on said upper cargo block eccentrically of said longitudinal axis, and a lower cargo block having a lower edge, said block fitting of said first auxiliary hoist being spaced from said main hoist fittings so that, in an approximately vertical position of said cargo boom and in a raised position of said auxiliary hoist said auxiliary hoist rotates about said first extension and said lower edge is free of said main hoist fittings: the improvement comprising: a second extension of said cargo boom, said second extension having upper and lower ends, the lower end of said second extension being fixedly connected to said block fitting of said first auxiliary hoist so as to be rotatable therewith about said axis; and a second auxiliary hoist carried by said upper end of said second extension, said second auxiliary hoist comprising a block fitting and upper and lower cargo blocks, said lower cargo block of said second auxiliary hoist having a lower edge; in a raised position of said lower cargo block of said second auxiliary hoist adjacent said upper cargo block of said second auxiliary hoist and in an approximately vertical position of said cargo boom, said lower edge of said lower cargo block of said second auxiliary hoist being free of the block fitting of said first auxiliary hoist, whereby said block fitting of said second auxiliary hoist is rotated with said block fitting of said first auxiliary hoist around said cargo boom when said cargo boom is swung through said plane from one of said working positions to the other said block fitting of said second auxiliary hoist being rotatably connected to said upper end of said second extension for restricted angular rotating movement around said second extension and stoppers mounted on said second extension to restrict said rotating movement.

4,565,293

CONTAINER CLOSURE

Thomas S. Jonas, Harefield, United Kingdom, assignor to National Plastics Limited, Colchester, England

Filed Jul. 12, 1984, Ser. No. 630,214
Claims priority, application United Kingdom, Jul. 19, 1983, 8319444
Int. Cl.⁴ B65D *41/34*
U.S. Cl. 215—246 **7 Claims**



1. A pilfer-proof closure for a container having a screw-threaded neck and an outwardly extending flange means below the screw-thread, said closure comprising:

(a) a closure body having an end wall and a side wall depending from said end wall and internally screw-threaded,

(b) an annular tamper-evident band of heat-shrinkable material attached to said side wall,

(c) a small number of spaced-apart bridge members attaching said tamper-evident band to said depending side wall,

(d) said bridge members being long enough to locate said tamper-evident band below said flange means on the container neck,

(e) said band, when heat-shrunk adopting a generally polygonal non-circular shape wherein the sides of the polygon extend between said bridge members and engage under the outwardly extending flange means on the container.

4,565,294

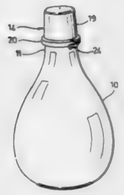
TAMPER EVIDENT CONTAINER SHROUD

Moe S. Smith, 320 Ridelle Ave., Suite 802, Toronto, Ontario, Canada (M6B 4B4)

Continuation-in-part of Ser. No. 583,244, Feb. 23, 1984, abandoned, which is a continuation-in-part of Ser. No. 504,211, Jun. 13, 1983, abandoned. This application Feb. 15, 1985, Ser. No. 704,971

Int. Cl.⁴ B65D *41/46*

U.S. Cl. 215—251 **19 Claims**



1. For use with a moulded plastic or glass container having a mouth with an outwardly protruding peripheral ridge and a closure for the mouth, a shroud moulded of ultra high-flow low-density polyethylene resin that can, upon heating, be pushed onto the container over the closure to encase the closure, the shroud having a cup-shaped body portion and a resilient rim portion of generally circular cross-section which can be pushed over the ridge of the container with the body portion free of contact with the closure located within the shroud, the shroud having a relatively weak portion between its body and its rim portions, the resistance of the weak portion to tearing being less than the resistance of the rim portion to being pulled, after cooling, back over the ridge of the container whereby access to the closure cannot be had without visibly tearing the weak portion of the shroud.

4,565,295

PLASTIC CONTAINER CLOSURE HAVING PILFERPROOF CHARACTERISTICS

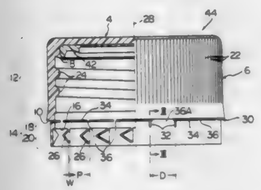
Fumio Mori, Yokohama; Junichi Itsubo, Hiratsuka; Isao Ichinose, Hiratsuka; Katsuake Tanaka, Hiratsuka; Osamu Ishii, Chigasaki, and Takashi Yazaki, Hiratsuka, all of Japan, assignors to Japan Crown Cork Co Ltd., Tokyo, Japan

Filed Dec. 14, 1984, Ser. No. 681,480

Claims priority, application Japan, Jul. 6, 1984, 59-138904

Int. Cl.⁴ B65D *41/34*

U.S. Cl. 215—252 **6 Claims**



1. A pilferproof plastic closure for a container including a mouth-neck portion having an external thread formed on its peripheral surface and an engaging jaw portion located beneath the external thread, said closure comprising a top panel wall and a cylindrical skirt wall extending downwardly from the peripheral edge of the top panel wall, said skirt wall having a circumferentially extending weakening line formed therein and being divided into a main portion above the circumferential weakening line and a pilferproof bottom portion beneath the circumferential weakening line, said main portion having formed on its inner surface an internal thread to be screwably fitted with the external thread of the mouth-neck portion of the container and said pilferproof bottom portion having formed on its inner surface a plurality of radially inwardly projecting and circumferentially spaced engaging flaps, wherein each of said flaps has a base edge; wherein an axial breaking line is formed in the pilferproof bottom portion extending downwardly from the upper end of the pilferproof bottom portion but being non-existent in at least a greater portion of the lower part of the pilferproof bottom portion, and at least a greater portion of the base edge of each of the engaging flaps is positioned in said lower part of the pilferproof bottom portion in which the axial breaking line does not exist.

4,565,296

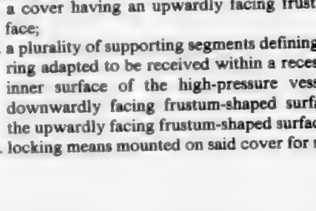
COOKING PANS

Yanta Lam, Kwun Tong, Hong Kong, assignor to Meyer Manufacturing Company Limited, Kowloon, Hong Kong

Filed Jul. 25, 1984, Ser. No. 634,347

Int. Cl.⁴ B65D *25/28*

U.S. Cl. 220—94 R **8 Claims**



1. A cooking pan having at least one handle comprising a bowl of a first metal, a handle at least the inner end of which is of a second metal which is a material not readily weldable to said first metal, an outwardly projecting stud adhered to said metal bowl, said stud having a transverse cross section which is non-circular and a longitudinal axis, a metal patch of a material readily weldable to said second metal, an opening through said patch of a shape and size to fit over said stud and be mechanically held non-rotatably relative said longitudinal axis of said stud, said patch being held in face to face contact with the bowl with the stud passing through said hole and the outer end of said stud riveted over to hold said patch in place in face to face contact with the bowl, and said inner end of said handle being joined to said patch by welding.

4,565,297

HIGH-PRESSURE VESSEL WITH INNER CLOSURE

Jorg-Peter Korner, Hagen, and Herbert Jekat, Trostberg, both of Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Continuation of Ser. No. 522,594, Aug. 12, 1983, abandoned. This application Feb. 1, 1985, Ser. No. 697,428

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1982, 3230457

Int. Cl.⁴ B65D *45/00, 53/02*

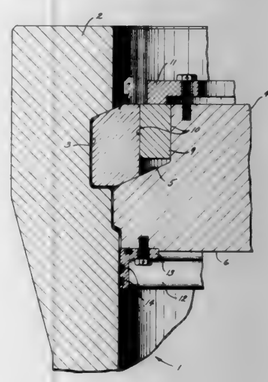
U.S. Cl. 220—254 **7 Claims**

1. A high-pressure vessel with an inner closure, the closure comprising:

a. a cover having an upwardly facing frustum-shaped surface;

b. a plurality of supporting segments defining a multiple part ring adapted to be received within a recess formed in the inner surface of the high-pressure vessel and having downwardly facing frustum-shaped surfaces contacting the upwardly facing frustum-shaped surface of said cover;

c. locking means mounted on said cover for maintaining said supporting segments within said recess formed in the inner surface of the high-pressure vessel; and



d. a seal disposed at the bottom of said cover for sealingly engaging the inner surface of the high-pressure vessel and the bottom of said cover.

4,565,298

SAFE OPENING CONTAINER LID

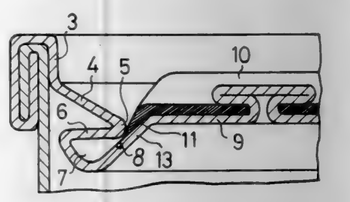
Keiji Taniuchi, 6-7, Nishi-Koujiya 2-Chome, Ota-ku, Tokyo 144, Japan

Filed Feb. 6, 1985, Ser. No. 698,704

Claims priority, application Japan, Mar. 30, 1984, 59-60993

Int. Cl.⁴ B65D *41/32*

U.S. Cl. 220—273 **7 Claims**



1. A safe opening container lid, comprising: a central plate portion (**9**; **27**) of a lid main body (**1**), a finger tab (**10**; **28**) fixed to the plate portion such that tip (**11**; **29**) of said tab is positioned at a tear line (**8**; **26**), said lid main body having formed thereon a lip bead (**3**; **21**) for engaging a rim of a container, an inclined portion (**4**; **22**) sloping obliquely downwardly inside said container, and a loop portion (**7**; **25**) bent outwardly from an innermost peripheral edge (**5**; **23**) of said inclined portion and returning back to a position slightly radially outside the innermost peripheral edge, said central plate portion continuing from an inner edge of said loop portion across said tear line and adapted to be separated therefrom by the rupture of said tear line.

4,565,299

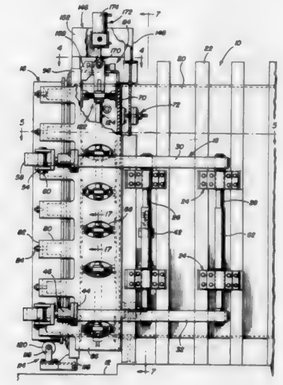
PRESSURE SEALING CLOSURE SYSTEM FOR RETORT VESSELS

Leroy C. Trumbo, and Robert L. Feasel, both of Memphis, Tenn., assignors to Trumbo Welding & Fabricating Company, Inc., Memphis, Tenn.

Filed Feb. 20, 1985, Ser. No. 703,499

Int. Cl.⁴ B65D *88/44*

U.S. Cl. 220—323 **22 Claims**



1. In combination with a vessel having an open end and a door adapted to be displaced between an open position and a closed position sealing the open end of the vessel, the improvement comprising means mounting the door on the vessel for pivotal displacement about a pivotal axis between said open and closed positions and linear displacement parallel to said pivotal axis between raised and lowered positions, locking means for clamping the door to the vessel only in the closed position thereof, power operated means connected to the door and to the locking means for effecting said linear displacement and clamping of the door to the vessel, and control means operatively connected to the power operated means for limiting said clamping of the door to the lowered position thereof.

4,565,300

DISPENSING MECHANISM FOR VENDING MACHINES OR THE LIKE

Yoshikazu Kokubun, and Osamu Anazawa, both of Gunma, Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Dec. 8, 1983, Ser. No. 559,234

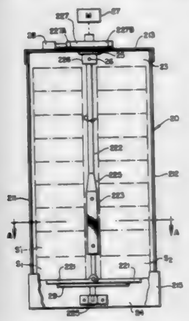
Claims priority, application Japan, Dec. 8, 1982, 57-215087

Int. Cl.⁴ B65G *59/06*; G07F *11/24*

U.S. Cl. 221—116 **8 Claims**

1. In an article dispenser for vending machines including an article storage area for holding articles in a stacked disposition, a rotatable shaft extending vertically within said storage area, said storage area having a bottom opening through which the articles are dispensed and a front opening through which articles can be loaded into said storage area to form first and second vertical rows on either side of said rotatable shaft, and a dispensing mechanism attached to a lower end portion of said rotatable shaft to dispense articles through said bottom opening of said storage area upon rotation of said rotatable shaft, the improvement comprising said dispensing mechanism including a pair of pivotable doors disposed in said bottom opening to block the passage of articles through said bottom opening, one of said doors being located below the first row of articles and the other of said doors being located below the second row of articles, each of said doors being pivotably supported by supporting shafts attached to the article dispenser, a control plate fixed on a lower end of said rotatable shaft for rotary motion with said rotatable shaft and for con-

tacting a lower surface of said pivotable doors to control the pivoting movement of each of said pivotable doors between an open and a closed position, said control plate being dimensioned to support both said pivotable doors in the closed position at a first rotary position and to allow one of said pivotable doors to pivot to the open position while supporting the other



of said pivotable doors in the closed position at a second rotary position spaced approximately ninety degrees from said first rotary position, and a holder member fixed on said rotatable shaft, said holder member having a holding portion to stop the dispensing of articles above the desired number when one of said doors pivots to its open position.

4,565,301

DEVICE FOR DISPENSING RADIOACTIVE GAS

Robert E. Hubbard, Pleasant Hill, and Robert C. Wedemeyer, Menlo Park, both of Calif., assignors to Medi-Physics, Inc., Emeryville, Calif.

Filed Jun. 10, 1982, Ser. No. 387,104
Int. Cl.⁴ A61B *6/00*
U.S. Cl. 222—5 **12 Claims**



1. A device for dispensing a radioactive gas contained in a sealed vial having a pierceable septum wherein the sealed vial is enclosed in a protective casing having an opening surrounding said septum, said device comprising

(a) a dispenser having a outlet for dispensing said radioactive gas from said device and an inlet for feeding a displacement gas into said device;

(b) first needle means protruding from said dispenser operably connected to said inlet, a second needle means protruding from said dispenser and operably connected to said outlet, both said needle means having end portions which protrude from said dispenser for piercing the septum of said vial and extending into the vial;

(c) displacement gas injection means, including a source for said displacement gas connected to said inlet;

(d) a spring means located in said dispenser;

(e) an elongated member protruding from said dispenser, said elongated member having an opening at one end and being movably activated in said dispenser by said spring means, said elongated member being positioned in said dispenser to surround said protruding ends of both of said needle means, said elongated member configurated to fit into said opening of the protective casing to engage the vial within said opening of the elongated member;

(f) means within the opening of said elongated member to engage the vial against the action of the spring means when both of the protruding ends of the needle means are positioned to pierce the septum and extend into the vial;

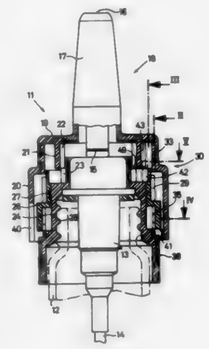
(g) releasable locking means for maintaining the vial within the dispenser positioned against the action of the spring means so that both said needle means pierce the septum and extend into the vial, said locking means being adapted upon release to allow the vial to disengage from the needles through the action of the spring means.

4,565,302

ACTUATABLE DOSING MECHANISM

Peter Pfeiffer, Gaienhofen, and Leo Maerte, Sipplingen, both of Fed. Rep. of Germany, assignors to Ing. Erich Pfeiffer GmbH & Co. KG, Fed. Rep. of Germany

Filed Jan. 13, 1984, Ser. No. 570,597
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302160
Int. Cl.⁴ B67D *5/26*
U.S. Cl. 222—38 **18 Claims**



1. An actuatable dosing mechanism with an actuating pusher for dispensing a quantity of a flowable substance from a container during each actuating stroke of the actuating pusher, the dosing mechanism comprising:

a counter for automatically counting the actuating strokes; and,

a locking device between the counter and the actuating pusher for disabling the actuating pusher to prevent further dispensing of the substance after a predetermined number of actuating strokes.

4,565,303

DEVICE FOR DISPENSING PASTE FROM A TUBE

John E. Gilbertson, 2200 Ashworth Rd., West Des Moines, Iowa 50265

Filed Nov. 1, 1984, Ser. No. 667,207
Int. Cl.⁴ B65D *35/28*
U.S. Cl. 222—103 **3 Claims**

1. A device for dispensing paste from a tube having a closed rearward end, an open forward end and a removable cap for closing said forward end, said device comprising:

a base member having a forward end, a rearward end, opposite sides, and a support surface for supporting said tube,

a removable cover member adapted to fit in covering relation over said tube and said base member and having a top wall, a rearward wall, a forward wall having an opening therein, and opposite side walls,

said top wall, rear wall, forward wall and side walls of said cover member forming a cavity for housing said tube with the forward end of said tube extending through said opening in said forward wall whereby application of force to said cover member collapses said tube such that paste is expelled therefrom, and

a pair of nodules extending outwardly from said sides of said



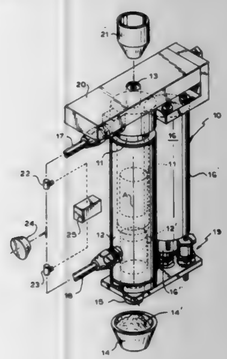
base member adjacent said rearward end thereof for slidably frictionally engaging said side walls of said cover member to provide a pivot point therebetween, said cover member being adapted to slide upon said nodules such that said pivot point moves closer to said top wall of said cover member as paste is expelled from said tube thereby minimizing the force required to expel paste from said tube and thereby collapsing said tube along the length thereof progressively from said rearward end to said forward end of said tube.

4,565,304

DOSING APPARATUS FOR VISCOUS LIQUID FOODSTUFF

Jean-Marc Dronet, Falaise, France, assignor to Plastimecanique, S.A., Falaise, France

Filed Apr. 18, 1983, Ser. No. 485,642
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1982, 3213996
Int. Cl.⁴ B67D *1/16, 5/40*; G01F *11/28*
U.S. Cl. 222—108 **3 Claims**



1. An apparatus for dosing a liquid or pasty food substance comprising:

an upper tube telescoping coaxially within a lower tub, one of said tubes being coaxially movable with respect to the other of said tubes;

the upper tube being connected to a hopper and the lower tube being provided with a nozzle;

a first valve situated on the upper tube at the end facing the hopper, and a second valve situated on the lower tube in the region of the nozzle, said valves being constructed of elastic bladders;

the elastic bladder of the first valve being inserted and fixed onto the wall of the upper tube and the bladder of the second valve being inserted and fixed onto the wall of the lower tube;

said bladders being inflatable by means of a controller such that each bladder may be inflated independently and in synchronism with the axial motion of one of said tubes with respect to the other, such that conveyance of the liquid or pasty food substance is blocked when a bladder is pressurized and such that the flow of food substance is uninhibited when the bladders are depressurized;

said bladders being annular, hollow and having inner peripheries that lie flush in the inner walls of the tubes when the bladders are depressurized; and

drive means for vertically reciprocating one of the tubes axially relative to the other, and

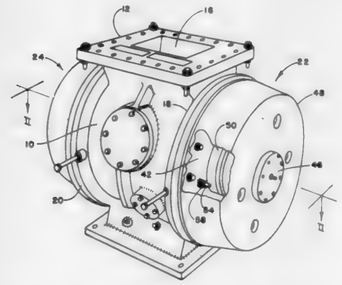
an annular nozzle bladder in the nozzle surrounding the passage, the control means being connected thereto to deflate same during movement apart of the two tubes to withdraw a drip back into the nozzle.

4,565,305

ROTARY VANE VALVE

John Fischer, Montgomery; Kenneth A. Heaton, Lewisburg, and John W. Pfeiffer, Hughesville, all of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 31, 1983, Ser. No. 499,783
Int. Cl.⁴ G01F *11/24*
U.S. Cl. 222—368 **4 Claims**



1. In a rotary vane valve comprising a generally cylindrical housing section with opposed side fluid inlet and outlet openings allowing transverse fluid flow through said cylindrical housing section; a pair of end bell sections enclosing the opposed terminal ends of the cylindrical housing section; a central, longitudinally axial shaft positioned within the cylindrical housing section and extending outwardly therefrom to be mounted in bearings contained in said end bell sections so as to be rotatable about its longitudinal axis; a pair of spaced, transversely oriented annular shroud members fixed at their inner edges to the shaft and extending radially outwardly therefrom so as to be spaced at their outlet peripheral edges from the cylindrical housing section and a plurality of longitudinally oriented vanes radially projecting from the shaft and being spaced from the cylindrical housing at their terminal ends, wherein the improvement comprises:

(a) at least one annular throttle plate having an inner edge and an outer peripheral edge and being spaced axially outwardly from one of the shrouds and positioned at its outer peripheral edge adjacent to the cylindrical housing section;

(b) means for introducing a purge gas at the inner edge of the annular throttle plate between said annular throttle plate and the shroud, such that said purge gas flows first radially outwardly between said annular throttle plate and said shroud and then axially inwardly between the outer peripheral edge of said shroud and the cylindrical housing section; and

(c) a wedge-shaped, annular sliding adjusting plate laterally abutting the throttle plate, and first and second generally opposed, radially oriented bolts bearing end wise against said adjusting plate to radially displace said plate by their oppositely directed radial motion and thus adjust the axial distance between the throttle plate and said adjacent shroud.

4,565,306

CREAM-STATE FLUID CONTAINER

Kenichi Nakanishi, Minami-ashigara; Hideo Ogita, Hachioji; Tadao Saito, Tokyo, and Riichi Ogawa, Matsudo, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1984, Ser. No. 568,120

Claims priority, application Japan, Jan. 18, 1983, 58-5841[U]

Int. Cl.⁴ B67D *5/40*

U.S. Cl. 222—383 **11 Claims**



1. A cream-state fluid container comprising:

a body capable of being reduced in interior volume by evacuating the interior thereof in negative pressure,

a head mounted at the top of said body and having a push-button and a filling port,

a pump unit internally mounted in said head and operated by the pushbutton of said head for discharging the content of said body to the filling port of said head,

said pump unit having a valve mechanism including a suction valve and a discharge valve in such a manner that a valve body is seated on a cylindrical valve seat formed in said head, a pressure chamber formed in a space from said valve mechanism at the position above said valve mechanism, and an elastic cap capable of being elastically deformed by depressing said cap by said pushbutton, said valve mechanism further comprising a dish-shaped lower base plate engaged fixedly with the peripheral wall of said head from the mimimum-diameter portion of said body, a cylindrical valve seat erected to communicated with said body at the rear part of the base plate, an upper base plate arranged in engagement with a frame and a plate member on the base plate in such a manner that the frame is engaged with the peripheral wall in said head and the plate member is perforated with a through hole formed corresponding to the valve seat of the base plate at the rear part thereof, and another cylindrical valve seat having a size of substantially ½ of the valve seat in the length in communication with the upper part thereof at the front part thereof and depending downwardly at the front part thereof for supporting the base of a valve body formed of a soft synthetic resin (or rubber) with the both base plates wherein the former base has two small cylinders aligned in parallel with each other and engaged with the outer peripheries of the both valve seats as well as both valves are respectively disposed on the both seats in the shape of cantilever at the end faces of the both seats and wherein a suction valve is formed at one side and a discharge valve is formed at the other, and a space formed between the base plates is formed to communicate as a discharge passage with the port.

4,565,307

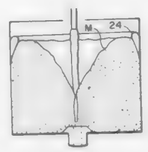
METHOD AND APPARATUS FOR CAUSING CAKING MATERIAL TO FLOW IN BINS

Timothy C. Bonerb, Orchard Park, N.Y., assignor to Vincent C. Bonerb, Boston, N.Y., a part interest

Filed Feb. 14, 1984, Ser. No. 580,155

Int. Cl.⁴ B65D *88/62*

U.S. Cl. 222—386.5 **6 Claims**



1. A material handling and storage bin for handling generally granular material which material has a tendency to cake and become nonfree-flowing, the bin being of the type having a top, side walls and a bottom with a discharge opening therein and a flexible pneumatically-operated, generally cup-shaped liner lining the bottom and side walls of the bin to force material into an angle of repose after it is discharged by gravity, the improvements for handling caking material comprising; an elongated, tubular, bag-shaped inflatable membrane suspended from the top of the bin above the discharge opening and having a length approximately as long as the depth of material to be filled in the bin, and means for selectively supplying pressure or vacuum to such tubular, bag-shaped membrane so that the bag-shaped membrane can be inflated prior to filling the bin, and evacuated after filling the bin and prior to initiating discharge through inflation of the pneumatically-operated liner therein.

4,565,308

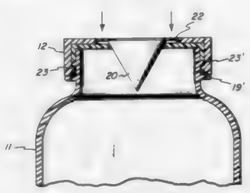
CHILD RESISTANT POWDER DISPENSER

Edward J. Yuhl, Jr., Union, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,499

Int. Cl.⁴ B65D *37/00*

U.S. Cl. 222—632 **18 Claims**



1. A dispenser of the squeeze bottle type for dispensing dry powders which comprises:

A. a flexible bottle having an open mouth, to the mouth opening of which is attached:

B. a dispenser closure unit, said closure unit comprising:

i. a conical valve depending within the open mouth of said bottle; and

ii. an integral one piece overcap attached to the mouth of said bottle, said overcap having a central opening therethrough, said overcap being provided with flexible tab retention means extending radially into said central opening for holding said conical valve in sealing engagement with the top opening of said dispenser and for permitting dispensing of the bottle contents from between said conical valve side wall and said central opening upon squeezing said bottle.

4,565,309

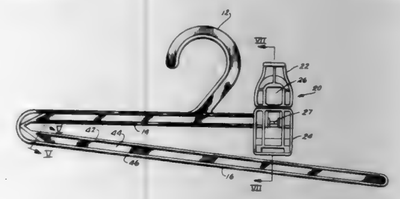
SHIPPING HANGER

John H. Batts, 2565 Frederick Dr., SE., East Grand Rapids, Mich. 49506, and Judd F. Garrison, 3199 E. Beltline, Grand Rapids, Mich. 49505, assignors to John Thomas Batts, Inc., Zeeland, Mich.

Filed Jun. 11, 1984, Ser. No. 619,289

Int. Cl.⁴ A47J *51/14*

U.S. Cl. 223—96 **10 Claims**



1. A garment hanger having an elongate body and means intermediate the ends of the body for supporting the hanger, said body having an upper bar and a lower bar, said bars being vertically superimposed, an integral hinge joining said bars at one end of the body, the hanger characterized in that the upper bar is substantially shorter than the lower bar and has front and rear faces, and a garment clamp is supported on the end of said upper bar intermediate the ends of the lower bar, said clamp having a pair of jaws embracing said lower bar for clamping a garment draped over said lower bar and between said jaws, one of said jaws being stationary and the other pivotal, said clamp being offset rearwardly with respect to said lower bar whereby said fixed jaw is vertical and extends below and generally parallel to said rear face of said lower bar.

5. A garment hanger having an elongate body and means intermediate the ends of the body for supporting the hanger, said body having an upper bar and a lower bar, said bars being vertically superimposed, an integral hinge joining said bars at one end of the body, the hanger characterized in that the upper bar is shorter than the lower bar, and a garment clamp is supported on said upper bar intermediate the ends of the lower bar, said clamp having a pair of jaws embracing said lower bar for clamping a garment draped over said lower bar and between said jaws; said hinge having a U-shaped spring element extending from the top of said upper bar to the bottom of said lower bar and being detached from both bars between its ends, a pair of substantially rigid struts of fixed length arranged in a V with its apex integral with said spring element substantially midway between said bars and dividing said spring element into upper and lower operative segments; the other ends of said struts being integral with the top and bottom of said upper and lower bars, respectively, whereby pivotal movement of said lower bar requires each of said spring element segments to be compressed and to deflect outwardly.

4,565,310

METHOD AND APPARATUS FOR CUTTING LIGHT WAVEGUIDES

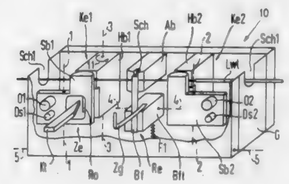
Dieter Krause, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,427

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1983, 3322127

Int. Cl.⁴ C03B *37/16*

U.S. Cl. 225—2 **13 Claims**



1. In a method for cutting a light waveguide by notching a stressed waveguide to start the cutting operation, said method comprising the steps of providing a pair of clamping devices, an anvil between the clamping devices, a notching device having a notching tool, and a tension device acting on one of the anvil and clamping devices to place the clamped waveguide in tension to form a stressed waveguide, clamping the waveguides in the clamping devices, actuating the tension device to place the clamped waveguides in contact with the anvil and in axial tension to form a stressed waveguide and actuating the notching device to notch the stressed waveguide to initiate the cutting operation, the improvements comprising in one step placing the clamping device in an open position, the tension device in a non-stressing position and the notching device in the retracted position, then positioning a waveguide between the jaws of the clamping device to extend across the anvil and then sequentially actuating the clamping devices to grip the waveguide, then actuating the tensioning device to axially stress the waveguide, finally actuating the notching device to notch the stressed waveguide to initiate the cutting operation, and then subsequent to the completion of the cutting operation separately releasing the waveguide from one of the clamping devices without releasing the other clamping device, the tensioning device and the notching device so that the waveguide in the one clamping device is removed without damaging the cut end face.

4,565,311

SYRINGE DISPOSAL DEVICE

Lawrence S. Pugliese, R.R. #1, Box 203B, and Jerry L. Eyster, R.R. #1, both of Pittsboro, Ind. 46167

Filed Mar. 12, 1984, Ser. No. 588,730

Int. Cl.⁴ B26F *3/00;* **B26D** *9/00*

U.S. Cl. 225—94 **12 Claims**

1. The syringe destroying machine comprising:

an enclosure;

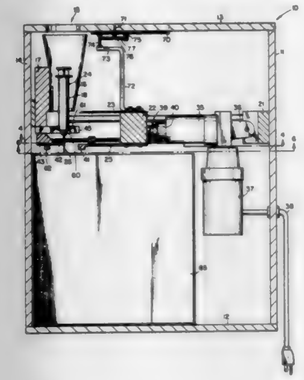
a holder in said enclosure sized to hold a syringe including a hollow main body and attached needle and positioned to locate said syringe entirely within said enclosure;

a carriage slidably mounted in said enclosure and moveable to and from said holder;

a knife mounted to said carriage and extending towards said holder;

electrically operated drive means connected to said carriage

and operable to move said knife towards said holder to cut said syringe; and,



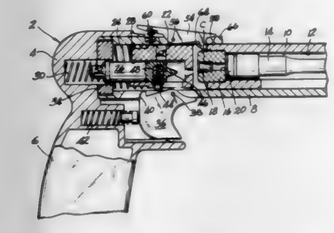
a sliding door mounted to said enclosure and connected to said carriage being moveable over said holder to retain said syringe within said holder while being cut.

4,565,312

POWDER ACTUATED TOOL WITH SAFETY

Brian E. Berry, Indianapolis, Ind., assignor to Uniset Corporation, Indianapolis, Ind.

Filed Feb. 19, 1985, Ser. No. 703,135
Int. Cl.⁴ B25C *1/14*
U.S. Cl. 227—8 **8 Claims**



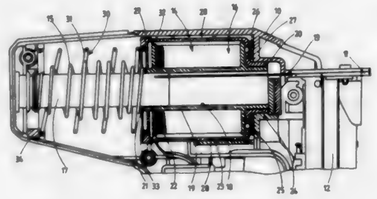
1. A powder actuated tool comprising:
(a) a housing comprising a pistol grip and a cradle portion;
(b) a firing mechanism mounted on said housing, said firing mechanism including a trigger disposed adjacent to said pistol grip, and a breech block reciprocally slidably mounted in said housing, said breech block being movable between a breechward cocked position and a muzzleward uncocked position.;
(c) a barrel reciprocally slidably mounted on said housing cradle, said barrel being movable between a breech open position and a breech closed position and return, and said barrel being movable through a cocking stroke to move said breech block to said cocked position to cock the tool for firing; and
(d) stop means mounted on said housing and movable between a blocking position lying in the path of movement of said barrel through said cocking stroke, and a clear position offset from the path of movement of said barrel through said cocking stroke, said stop means being offset from said trigger sufficiently to prevent concurrent one-handed actuation of said trigger and said stop means.

4,565,313

DRIVE-IN APPARATUS PARTICULARLY AN ELECTRIC TACKER FOR DRIVING IN FASTENERS

Manfred Buck, Nürtingen; Wolfgang Schmid, Filderstadt, and Karl Wanner, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 684,909
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1984, 3405906
Int. Cl.⁴ B25C *5/15*
U.S. Cl. 227—131 **11 Claims**



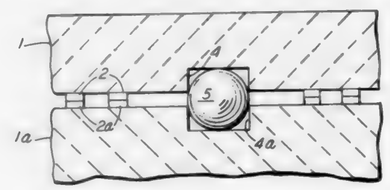
1. A drive-in apparatus for driving fasteners such as clips, nails, tacks, staples and the like into a workpiece, comprising a housing, an impact member guided in the housing for ejecting a fastener, a solenoid including an exciter coil movably arranged in the housing and being formed with a central opening, an armature arranged for reciprocating movement in the central opening and being connected with the impact member, and a biasing spring resting at one end thereof on the housing and engaging the exciter coil to bias the same into a rest position in the direction of forward movement of the armature.

4,565,314

REGISTRATION AND ASSEMBLY OF INTEGRATED CIRCUIT PACKAGES

Harry R. Scholz, Lower Macungie Township, Lehigh County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 9, 1983, Ser. No. 530,743
Int. Cl.⁴ H01L *21/98*
U.S. Cl. 228—180.2 **2 Claims**



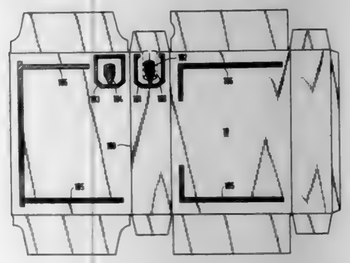
1. Method for aligning planar structures face-to-face comprising:
placing a first planar structure face down over a second face-up planar structure so the structures are situated face-to-face and moving one or both structures in one or more directions lying in the plane of the face until a desired alignment between the respective faces is achieved the invention comprising forming an indented region in the face of the first planar structure, forming an indented region in the face of the second planar structure, disposing an aligning ball in one of the indented regions, moving one or both structures until the aligning ball is recessed in both aforementioned indented regions, the invention characterized in that:
a. the alignment ball has a diameter chosen so that when the aligning ball is recessed in both indented regions a separation exists between the planar surfaces,
b. the alignment ball is formed of solder and the solder is melted to bring the separated surfaces together, and
c. at least one of the indented regions is composed of a material that is not wetted by the molten material of the aligning ball.

4,565,315

FOLDING BOX HAVING INSIDE LINING AND ALSO METHOD AND APPARATUS FOR THE PRODUCTION THEREOF

Heinz Wagner, Contwig, and Karl Schieler, Waldfischbach-Burgalben, both of Fed. Rep. of Germany, assignors to CP Schmidt-Verpackungswerk GmbH & Co., KG, Kaiserslautern, Fed. Rep. of Germany

Filed Jun. 21, 1984, Ser. No. 622,850
Int. Cl.⁴ B65D *17/00*
U.S. Cl. 229—17 R **5 Claims**



1. In combination, a folding box and an inside lining, said box having a prepunched opening area for extraction of contents, which area may be ripped open, said inside lining being formed with an impressed window opening area, the box's prepunched opening area and the inside lining's window area being adhered to each other, said inside lining being formed by a foil tube piece which is closed in the longitudinal direction of the tube, a first connection between said box and said inside lining along which said box and inside lining are sealed to each other, said first connection at least partially framing the window opening area and a further connection between said box and said inside lining along which said box and inside lining are sealed to each other, said further connection being specularly symmetrical to the first connection in regard to a folding line which develops on the foil tube piece when it is laid flat for impressing the window opening area, said further connection completely framing the area which corresponds to the window opening area.

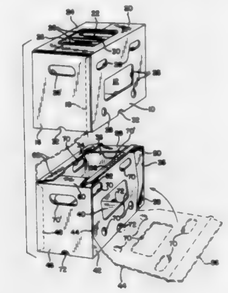
4,565,316

TWO-PIECE ASPARAGUS CARTON

Otto J. Jes, Long Beach, Calif., assignor to Willamette Industries, Inc., Portland, Oreg.

Filed Mar. 4, 1983, Ser. No. 472,036
Int. Cl.⁴ B65D *5/32*
U.S. Cl. 229—23 BT **12 Claims**

1. A corrugated carton for securely packing for shipment produce such as asparagus, comprising in combination:
(a) a lower box body including:
(1) a bottom, two opposed upstanding side walls, and a rear wall;
(2) a front panel hinged to the bottom of the box body and foldable to a position wherein it slopes inwardly from vertical and inwardly of the front edges of the side walls, extending from the bottom front corner of the box body to a point substantially at the top of the box body, spaced inwardly from the top front edges of the side walls, the front panel being dimensioned to substantially close the front of the carton between said side walls in said sloping position; and
(3) releasably engageable locking means on said front panel and side walls for releasably locking the front panel in its sloping position, said upstanding side walls,



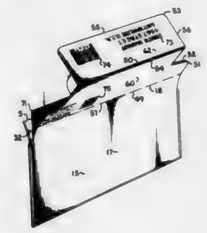
rear wall, front panel and locking means, which when locked in sloping position, define an open top for the lower box body, and
(b) an upper box cover having a top, two side walls, a front wall and a back wall, and being dimensioned to telescope over the lower box body, and covering said open top.

4,565,317

TWO-WAY ENVELOPE WITH INSIDE RETURN SEAL FLAP

Richard Kranz, Shawnee Mission, Kans., assignor to Tension Envelope Corporation, Kansas City, Mo.

Filed Sep. 21, 1983, Ser. No. 534,371
Int. Cl.⁴ B65D *27/06*
U.S. Cl. 229—73 **17 Claims**



1. A two-way envelope, which comprises:
(a) a front panel having:
(1) inner and outer surfaces; and
(2) upper, lower and side edges;
(b) a back panel having:
(1) inner and outer surfaces; and
(2) upper, lower and side edges;
(c) said back panel being integrally connected to said front panel and demarcated therefrom by a lower fold line extending along said front and back panel lower edges;
(d) an initial seal flap integrally connected to said front panel by an initial seal flap tear line extending along said front panel, said initial seal flap tear line at least in part being closely spaced to said back panel upper edge;
(e) a return flap having proximate, distal and side edges, said return flap being integrally connected to said back panel and demarcated therefrom by a return flap fold line extending along said back panel upper and said return flap proximate edges;
(f) a return flap extension having proximate, distal and side

edges, said return flap extension being integrally connected to said return flap and demarcated therefrom by an extension fold line extending along said return flap distal and said extension proximate edges, said return flap and said extension being folded with respect to each other and positioned within said envelope; and

(g) a pair of side flaps each being integrally connected to and demarcated from one of said front and back panels by a respective side flap fold line extending along a respective front or back panel side edge, each said side flap being secured to the other of said front and back panels over an area terminating below the upper edge of said other panel an amount sufficient to facilitate withdrawl of said folded return flap and extension.

4,565,318

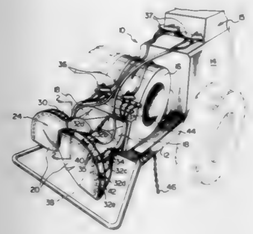
MULTI-LIQUID ELECTROSTATIC METHOD

Ion I. Inculet, London, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Continuation of Ser. No. 493,587, May 11, 1983, Pat. No. 4,518,118. This application May 7, 1985, Ser. No. 731,743

Int. Cl.⁴ B05D *1/04*; **B05B** *5/00*

U.S. Cl. 239—3 **16 Claims**



1. A method of electrostatic spraying chemicals over a large predetermined area comprising:

generating an atomized cloud of droplets having an electric charge wherein the droplets from different discrete layers of the cloud are formed from different liquids, whereby at least one of the layers is directed by at least one other of the layers toward the predetermined area.

4,565,319

FUEL INJECTION UNIT

James C. Potter, London, England, assignor to Lucas Industries public limited company, Birmingham, England

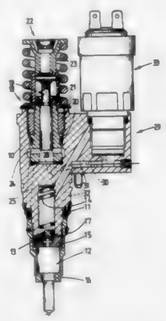
Filed Mar. 18, 1985, Ser. No. 712,644

Claims priority, application United Kingdom, Mar. 23, 1984, 8407579

Int. Cl.⁴ F02M *47/00*

U.S. Cl. 239—88 **4 Claims**

1. A fuel injection unit for supplying fuel to a combustion chamber of a compression ignition engine, comprising a body defining a stepped cylindrical portion, a nozzle head, a cap nut serving to secure the nozzle head to an end of the cylindrical portion of the body, said cap nut having a screw threaded skirt portion which is engaged with a screw thread on said cylindrical portion, said cylindrical portion, said nozzle head and said cap nut being located in use in a bore in the cylinder head of the associated engine, pump means located in the body to supply fuel at high pressure to the nozzle head, the wall of the bore having a fuel feed port formed therein, a supply port formed in the body for communication with said feed port whereby fuel can be supplied to said pump means, characterized in that the cylindrical portion of the body defines a step, the unit further including a ring member located about said cylindrical portion of the body, said ring member defining a



clearance with said step, said clearance defining a filtration gap with said step for fuel flowing to the supply port.

4,565,320

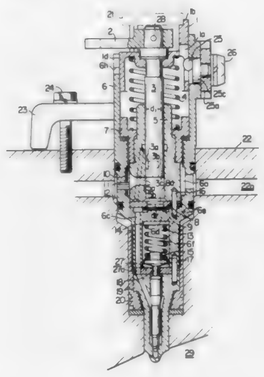
UNIT INJECTOR OF INTERNAL COMBUSTION ENGINE

Hiroyuki Taniguchi, Otsu, and Hiroaki Tsukahara, Kawanishi, both of Japan, assignors to Yanmar Diesel Engine Co. Ltd., Osaka, Japan

Filed Mar. 15, 1982, Ser. No. 357,879

Int. Cl.⁴ F02M *47/02*

U.S. Cl. 239—90 **13 Claims**



1. A fuel injector for internal combustion engines comprising a plunger adapted to be reciprocated for pressurizing a supplied fuel, a barrel for receiving said plunger with clearance fit for sliding movement of the latter, a nozzle valve adapted to inject the pressurized fuel into the engine, a check valve interposed between said plunger and said nozzle valve, and an injector body adapted to house said plunger, barrel, nozzle valve and check valve within one body, said injector body being formed substantially in a cylindrical shape having an upper bore and a lower bore which are separated by a partition and which are opened on the upper side and the lower side of said body, respectively, said upper bore being adapted to define a chamber for receiving a plunger spring and a bore portion for receiving said barrel with said plunger and said lower bore being adapted to define a nozzle spring chamber so that when assembled into the unit, a nozzle spring, a nozzle body and said nozzle valve are inserted into said lower bore from the lower side of said injector body and secured in place by means of a nozzle nut screwed to said injector body from the lower side thereof while said check valve, barrel with said plunger, and plunger spring are inserted into said upper bore from the upper side of said injector body and secured in place by means of a barrel holder screwed into an internally threaded portion formed in said upper bore.

4,565,321

VEHICLE FOR DEICING AIRCRAFT

Godtfred Vestergaard, 18, Niels Frederiksensvej, DK-4000 Roskilde, Kornerup, Denmark

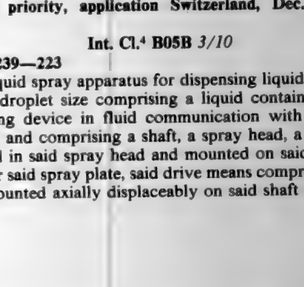
PCT No. PCT/DK82/00109, § 371 Date Dec. 16, 1983, § 102(e) Date Dec. 16, 1983, PCT Pub. No. WO83/02100, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 8, 1982, Ser. No. 537,376

Claims priority, application Denmark, Dec. 8, 1981, 5432/81

Int. Cl.⁴ B05B *9/00*

U.S. Cl. 239—172 **10 Claims**



1. A vehicle for deicing aircraft and of the type comprising a wheeled carriage (1) having a lifting device (4,5,6,7) which at its free end carries an operation platform, and having a spray device for spraying an aircraft with a deicing fluid, said spray device comprising a pump including a spray nozzle (40), the lifting device (4,5,6,7) being adapted for elevating and lowering so as to retain the center of gravity of the total mass of the equipment within the area determined by the wheels of the carriage, the operation platform including a closed protective cabin (3) pivotally supported on said lifting device (4,5,6,7), wherein the cabin (3) carries a longitudinally adjustable, lightweight boom (20) carrying at its free end the spray nozzle (40), said nozzle being pivotal about each of two axes extending perpendicular to each other and intersecting at a point located on the longitudinal axis of discharge from said nozzle in order to prevent displacement of the nozzle by reaction force generated by the spray discharged therefrom, said nozzle being supported for said pivotal movement about said axes by respective support means driven by respective activator means remotely controlled from said cabin.

4,565,322

LIQUID SPRAY APPARATUS FOR DISPENSING LIQUID DROPLETS OF CONSTANT DROPLET SIZE

Alfred Graber, Fischbach-Göslikon, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

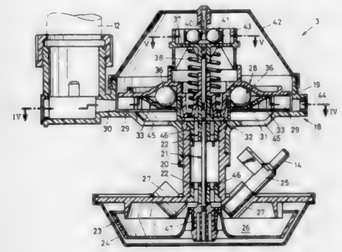
Filed Dec. 12, 1983, Ser. No. 560,653

Claims priority, application Switzerland, Dec. 21, 1982, 7468/82

Int. Cl.⁴ B05B *3/10*

U.S. Cl. 239—223 **10 Claims**

1. A liquid spray apparatus for dispensing liquid droplets of constant droplet size comprising a liquid container; a liquid distributing device in fluid communication with said liquid container and comprising a shaft, a spray head, a spray plate contained in said spray head and mounted on said saft, drive means for said spray plate, said drive means comprising a vane wheel mounted axially displaceably on said shaft adapted for being acted upon by a gas stream, said mounting of both said spray plate and said vane wheel on said shaft resulting in common rotation of the two, and means for regulating the speed of said spray plate comprising regulating elements being movable radially outwardly at increasing speed of said vane wheel and



under the influence of centrifugal forces, said vane wheel being coupled to said regulating elements and being displaced at least partially out of the range of said gas stream when said regulating elements move radially outwardly; a pressurized gas source for generating said gas stream and a nozzle directing said gas stream on to said vane wheel.

4,565,323

SPRINKLER SYSTEMS

Ronald R. Berkan, Sacramento, Calif., assignor to Action Pact, Inc., Sacramento, Calif.

Filed May 2, 1983, Ser. No. 490,325

Int. Cl.⁴ B05B *3/14*

U.S. Cl. 239—230 **12 Claims**

1. In a sprinkler head having a body, a sprinkler nozzle on the body through which water is ejected from the sprinkler head in a forward direction and an oscillating spring biased impact arm having a reaction member intercepting the water ejected by the nozzle, then biased to the rest position to impact the body and effect rotation of the body through a preselected arc by small angular increments, a retaining member fixedly mounted to said body retaining a helical spring between said retaining member and said impact arm for biasing the same, the improvement which comprises:

a boss on said arm, said spring being directly connected at one end to said retaining member and at the other end to said arm encircling said boss,

and a reaction member having a rearwardly facing arcuate deflector surface for diverting water issuing from the nozzle through a first angle of between about 105 and 119 degrees laterally and rearwardly from said forward direction, to a spoon section having a pair of vertically side by side forwardly facing arcuate concave elongated deflector channels separated by an upstanding horizontal vein for receiving diverted water from said rearwardly facing deflector surface and for splitting the diverted water into two parallel streams, said spoon section also having a portion disposed a substantialy distance rearwardly of said

rearwardly facing deflector surface for redirecting the parallel streams of water forwardly to a direction substantially parallel with said forward direction, whereby water issuing from the nozzle is substantially confined to the preselected arc through which the sprinkler is rotated, and wherein said sprinkler is operative at pressures of less than 15 p.s.i.

4,565,324

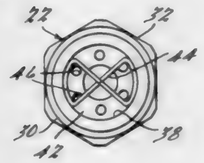
NOZZLE STRUCTURE FOR SOOTBLOWER

Edward Rebula, Bloomfield, Conn., and Alexander J. Kurasz, Columbus, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 1, 1983, Ser. No. 499,875

Int. Cl.⁴ F22B *37/52;* **B05B** *1/28;* **B08B** *3/02, 9/00*

U.S. Cl. 239—290 **20 Claims**



1. In a sootblower for cleaning heat exchange surfaces within a boiler by impingement of a jet of fluid blowing medium thereagainst including a lance tube disposed in communication with a source of pressurized blowing medium, the improvement comprising at least one nozzle mounted in the peripheral wall of said lance tube for discharging a composite stream of blowing medium therethrough, said nozzle comprising a tubular element formed with a first aperture extending substantially centrally therethrough defining an inlet throat disposed in communication with the interior of said lance tube and a discharge throat for discharging the blowing medium in a directionally oriented primary stream, said tubular element formed with a plurality of second apertures each having an inlet port disposed in communication with the pressurized blowing medium and a discharge port arranged in circumferentially and radially spaced relationship outwardly of said discharge throat for discharging a plurality of secondary streams of blowing medium in encircling radially spaced relationship around the primary stream at the point of discharge of each said secondary streams from each said discharge port, said secondary streams protecting the primary stream from dispersion due to currents within the boiler whereby the primary stream provides improved cleaning performance.

4,565,325

WATER COOLING APPARATUS FOR METAL SHEETS AND BELTS

Bernhard Ludwig, Ratingen, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 486,368, Apr. 19, 1983, abandoned. This application May 29, 1985, Ser. No. 738,897

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215248

Int. Cl.⁴ B05B *1/04*

U.S. Cl. 239—597 **7 Claims**

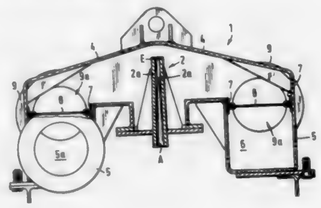
1. An apparatus for providing a coherent gravity fed water curtain to cool metal sheets moving in a substantially horizontal direction, comprising:

(a) a water holding box;

(b) said water holding box being provided with an inlet for attachment to a constant source of water;

(c) said water holding box being provided with a vertically extending slit-shaped nozzle extending across said substantially horizontal direction;

(d) said slit-shaped nozzle having a pair of longitudinal water containment walls extending both basically vertically in said water holding box and across said substantially horizontal direction, said slit-shaped nozzle also having a pair of side water containment walls, said slit-shaped nozzle ending with a top-located nozzle inlet and a bottom-located nozzle outlet; and



(e) said slit-shaped nozzle being provided with a net overall water pressure drop means between said nozzle inlet and said nozzle outlet such that the water pressure entering said nozzle inlet is greater, along said longitudinal water containment walls, than said water pressure leaving said nozzle outlet.

4,565,326

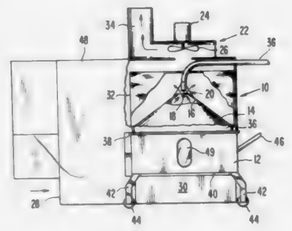
METHOD AND APPARATUS FOR REMOVING VENEER FROM REWORKED MEDICINE TABLETS

Willard D. Varley, Wilson, N.C., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 14, 1984, Ser. No. 681,528

Int. Cl.⁴ B02C *23/08;* **B07B** *4/08*

U.S. Cl. 241—24 **6 Claims**



1. An apparatus for removing veneer shards from reworked medicine tablets comprising:

(a) means for holding granulated material comprised of milled medicine tablets, some of said granulated material being comprised of medicinal granulation and some of said granulated material being comprised of lighter veneer shards;

(b) a separator cone having one or more walls which slope upward and inward defining an air flow outlet at the top of said separator cone, said separator cone being above said means for holding said granulated material, said means for holding granulated material being comprised of a fluid bed dryer dolly which is adapted to be placed into an upward flow of air beneath said separator cone;

(c) means for suspending said granulated material in an air suspension beneath said separator cone to cause said veneer coating shards to rise up said one or more walls;

(d) a vacuum inlet above, adjacent to and spaced from said air flow outlet, said vacuum inlet being connected to a vacuum and serving to ingest material which is lighter than said granulated medicinal granulation which is to be retained in the air suspension, whereby said veneer shards in said granulated material will be extracted from the remaining medicinal granulation in the air suspension.

4,565,327

APPARATUS FOR PIECE-CHOPPING WOOD

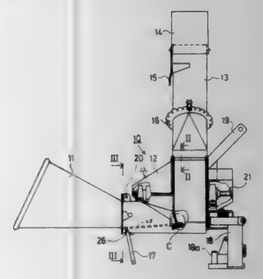
Pasi Kylmänen, Liminka, Finland, assignor to Kopo Konepohja Oy, Finland

Filed May 8, 1980, Ser. No. 148,060

Claims priority, application Finland, May 10, 1979, 791491

Int. Cl.⁴ B02B *1/00*

U.S. Cl. 241—56 **8 Claims**



1. Apparatus for piece-chopping wood comprising:

a housing for accommodating rotary blade apparatus therein;

a discharge tube having one end communicating with said housing and through which the chopped wood pieces are discharged from said apparatus;

a feed hopper having one end communicating with said housing and through which wood to be chopped is fed in a feed direction into said housing;

blade apparatus rotatably mounted within said housing, said blade apparatus including a helical, screw-like blade member having a conical outer configuration which increases in diameter in the direction in which the wood is fed into said housing, the axis of said helix comprising the axis of rotation of said blade apparatus extending in substantially the same direction as said feed direction in which wood to be chopped is fed into said housing from said feed hopper and wherein the outer edge of said helical blade member is shaped to function as a cutting blade;

a fluted guide surface provided in close cooperating relationship with said screw-like blade member such that wood to be chopped which is fed through said feed hopper is engaged by said blade member and against said fluted guide surface so that said guide surface simultaneously aids in the chopping and further feeding of the wood while preventing the latter from withdrawing from the housing; and

wherein said helical blade member defines an angle of inclination with a plane extending normal to the axis of rotation of said blade apparatus, said angle of inclination increasing in the direction in which the wood to be chopped is being fed.

4,565,328

SAND RECLAMATION SYSTEM WITH THERMAL PIPE RECLAIMER APPARATUS

Vagn Deve, East Washington, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 8, 1983, Ser. No. 521,495

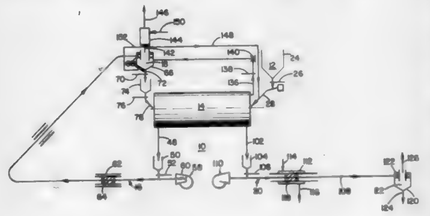
Int. Cl.⁴ B02C *19/12*

U.S. Cl. 241—65 **12 Claims**

1. A system for treating solid, granular and aggregate material thermally comprising:

(a) storage hopper means containing a supply of the material to be thermally treated;

(b) heat exchanger means including a first chamber means, a second chamber means and rotating means cooperatively associated with said first chamber means and said second chamber means for effecting the rotation thereof, said first chamber means having inlet means connected to said storage hopper means for receiving material therefrom and outlet means, said first chamber means being operative to retain the material therewithin while the material is being preheated during the course of the passage thereof in a first direction through said first chamber means, said second chamber means having reentry means and discharge means, said discharge means being operative to discharge material from said second chamber means, said second chamber means being operative to retain the material therewithin while the material undergoes cooling during the course of the passage thereof in a second direction through said second chamber means, said second chamber means being located in juxtaposed relation to



said first chamber means such that the preheating of the material during the passage thereof through said first chamber means and the cooling of the material during the passage thereof through said second chamber means is effected by a heat exchange between the material traversing said second chamber means in a second direction and the material traversing said first chamber means in a first direction; and

(c) thermal pipe means for thermally treating the material, said thermal pipe means having one end thereof connected to said outlet means of said first chamber means of said heat exchanger means for receiving material therefrom, said thermal pipe means including blower means and burner means operative to generate a hot gas flow through said thermal pipe means for subjecting the material to a predetermined temperature for a preestablished period of time in order to effect the thermal treatment thereof.

4,565,329

FOOD SLICER

Kohei Himi, Mie, Japan, assignor to Chubu Industries, Inc., Mie, Japan

Filed Jul. 16, 1984, Ser. No. 631,377

Claims priority, application Japan, Feb. 24, 1984, 59-33994; Apr. 27, 1984, 59-85847

Int. Cl.⁴ B02C *18/16*

U.S. Cl. 241—95 **5 Claims**

1. In a food slicer comprising:

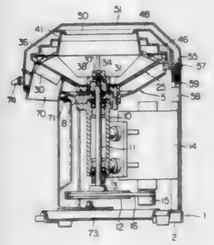
a cutting plate having a plate body mounted, at its rear surface, with a cutter having a cutting edge which passes through an opening formed in said plate body and projects beyond the surface thereof;

a transfer rotor mounted to an upper portion of a rotary shaft which passes through a central hole in said cutting plate to extend beyond said cutting plate and including a hopper secured to an upper portion of said transfer rotor; and

a drive member, disposed beneath said cutting plate, for rotating said rotary shaft,

the improvement wherein said cutting plate is removably mounted by a quick disconnect to a frame which is

mounted to posts standing uprightly on a base below said cutting plate,
said frame rotatably supports said rotary shaft;
said transfer rotor is removably secured to said rotary shaft;
a hood is mounted to said base, for surrounding a region in which said drive member is arranged beneath said frame; and
a discharge chute is mounted to said hood, which discharge chute passes through an opening formed in said frame to



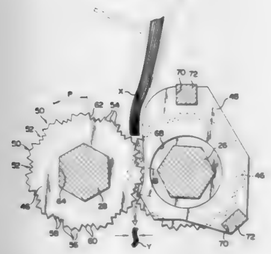
extend upwards and has an upper end abutting against a circumferential portion contiguous to said opening formed in said plate body of said cutting plate,
said frame takes the form of a closed plate except for said opening through which said discharge chute passes, thereby providing a leakage preventive plate for closing a top opening of said hood, and said frame is connected with a drain pipe which passes through said hood to extend downwardly.

4,565,330

SHREDDING APPARATUS

Hiroharu Katoh, Tokyo, Japan, assignor to Yoshin Giken Co., Ltd., Joetsu, Japan

Filed Nov. 29, 1983, Ser. No. 555,939
Claims priority, application Japan, Nov. 30, 1982, 57-181019[U]
Int. Cl.⁴ B02C *18/22*
U.S. Cl. 241—236 **13 Claims**



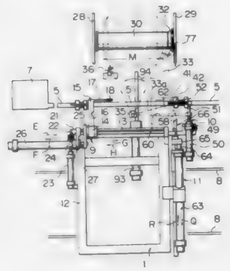
1. A shredding apparatus for cutting unnecessary sheets, comprising:
(a) a support;
(b) first and second rotary shafts extending in parallel and rotatably connected to the support so as to be rotated in opposite directions;
(c) a plurality of first cutting disks equidistantly mounted on the first rotary shaft and driven together with the first rotary shaft, and a plurality of second cutting disks equidistantly mounted on the second rotary shaft and driven together with the second rotary shaft, each of the cutting disks comprising:
(i) a plurality of large tooth portions equidistantly arranged on the outer circumferential surface of the associated cutting disk, wherein each large tooth portion comprises a plurality of large teeth, and wherein the tip of each large tooth is formed as a large axial blade;
(ii) a plurality of small tooth portions arranged on the outer circumferential surface of the associated cutting disk in the regions between the large tooth portions, wherein each small tooth portion comprises a plurality of small teeth; and
(iii) radial blades formed at the outer peripheral edges of the associated cutting disk, wherein the outer peripheral edges of the first and second cutting disks are in sliding contact, and wherein the sheets are taken up by the large and small tooth portions in accordance with rotation of the first and second cutting disks so as to be shredded in a first direction parallel to the taking-up direction of the sheets in cooperation with the outer peripheral edges of the first and second cutting disks which slide relative to each other;
(d) a plurality of first back plates fixed against rotation relative to the support and equidistantly spaced along but not fixedly attached to the second rotary shaft, wherein each of the first back plates is disposed between a pair of second cutting disks, and wherein the sheets are shredded in a second direction perpendicular to the first direction in accordance with the cooperation between the large axial blades of the first cutting disks and the associated first back plates; and
(e) a plurality of second back plates fixed against rotation relative to the support and equidistantly spaced along but not fixedly attached to the first rotary shaft, wherein each of the second back plates is disposed between a pair of first cutting disks, and wherein the sheets are shredded in a second direction perpendicular to the first direction in accordance with the cooperation between the large axial blades of the second cutting disks and the associated second back plates.

4,565,331

THREAD ANCHORING METHOD AND APPARATUS FOR USE IN WINDER

Susumu Matsubara; Shouetsu Nitta; Kiyoaki Hashiba, and Yuuichi Noguchi, all of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 1, 1984, Ser. No. 656,773
Claims priority, application Japan, Oct. 3, 1983, 53-184881
Int. Cl.⁴ B65H *54/02, 54/26*
U.S. Cl. 242—18 PW **14 Claims**



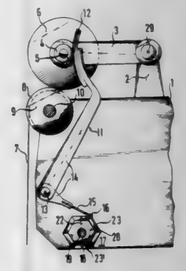
1. A thread anchoring method for anchoring thread to a winder comprising the steps of spanning a section of an indefinite length of thread supplied from a supply source in a predetermined direction by regulating the path of said thread extending from a stationary thread guide towards an empty bobbin in said winder, anchoring said thread section to an anchoring portion of a thread anchoring disc in said winder by arresting said thread section and protruding said thread section towards said thread anchoring disc, bringing said thread section extending between said thread guide and said anchoring portion on said disc into engagement with a traverse means and thereafter releasing said arresting of said thread section, characterized by the steps of offsetting said thread section extending from said thread guide to said bobbin to a position in which the thread section faces said thread anchoring disc at one end of said empty bobbin along and over a traverse guide of said traverse means, spanning said thread section vertically by regulating said path of thread from above and below, and anchoring said thread section to said anchoring disc by arresting said vertically spanned thread section at a point thereof, protruding said arrested thread section outwardly from said thread anchoring disc and displacing said thread section so that the thread section passes slantly from a position outward from the thread anchoring disc to said empty bobbin in horizontal plane.

4,565,332

METHOD AND DEVICE FOR AVOIDING THE FORMATION OF RIBBON WINDINGS WHEN WINDING CHEESES

Hermann Slaghuis; Rolf Mayer, both of Monchen-Gladbach; Heribert Kargel, Viersen, and Heinz G. Bender, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 20, 1984, Ser. No. 633,133
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326217
Int. Cl.⁴ B65H *54/38*
U.S. Cl. 242—18.1 **10 Claims**



1. Method of avoiding a formation of ribbon windings when winding a frictionally driven crosswound coil with a wild winding, which comprises directly applying a braking force to an element rotatingly connected with the crosswound coil and secured thereto against relative rotation therewith, increasing the braking force with increasing mass of the crosswound coil, and controlling the braking force so as to avoid synchronism between thread guidance rhythm in the drive cylinder and rate of rotation of the crosswound coil.

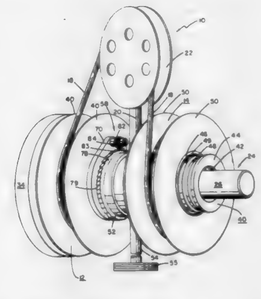
4,565,333

CABLE WINDER SYSTEM

Harry Menelan, St. Catharines, Canada, assignor to Fleet Industries, Fort Erie, Canada

Filed Jul. 11, 1984, Ser. No. 629,698
Int. Cl.⁴ B65H *51/20, 75/00*
U.S. Cl. 242—54 R **4 Claims**

1. In an apparatus for transferring cable between a driven rotatable spool and a fixed spool, where said driven rotatable spool is mounted on a stub shaft and said fixed spool is coaxially mounted with respect to said driven rotatable spool along a common axis, and where the axis of rotation of said driven rotatable spool is substantially co-extensive with said common axis, the transfer of cable being such that cable is transferred from said fixed spool to said driven rotatable spool when said driven rotatable spool is rotated in a first direction of rotation, and from said driven rotatable spool to said fixed spool when said driven rotatable spool is rotated in a second direction of rotation, the combination comprising:
(a) an arm secured to an axle which, in turn would be freely rotatably mounted on said stub shaft, said arm extending in a direction substantially perpendicular to said common axis for rotation around the axis of rotation of said driven spool axis;
(b) a planetary pulley mounted for free rotation at the outer end of said arm, the radial plane of said planetary pulley being substantially parallel to said common axis, said planetary pulley being mounted so as to accommodate cable as it is being transferred between said rotatable spool and said fixed spool;
(c) positive driving means for said arm to counteract said freely rotatably mounted axle including a drive ratchet secured to one face of said axle, and a driving pawl plate connected to a driving cone clutch which is operatively associated with said driven rotatable spool; and



(d) positive braking means for said arm to counteract said freely rotatably mounted axle including means secured to the other face of said axle, and adapted to be in driving contact with an actuatable cooperative member which is operatively associated with said fixed spool;
whereby,
(i) rotation of said rotatable spool in said first direction causes said positive driving means to be actuated, and causes said arm to rotate out of the influence of said positive braking means around said arm in the same direction of rotation as said rotatable spool at the same speed of rotation as that of said rotatable spool; and
(ii) rotation of said rotatable spool in said second direction causes said positive braking means to apply a braking force to the rotation of said axle, and causes said arm to be rotated out of the influence of said positive driving means, thereby to control cable tension.

4,565,334

ELECTROHYDRAULIC DRIVE FOR PROCESS LINE WINDERS, UNWINDERS AND OTHER EQUIPMENT

Robert C. Ruhl, Cleveland Heights, Ohio, assignor to Kennecott Corporation, Cleveland, Ohio

Continuation of Ser. No. 435,975, Oct. 22, 1982, abandoned.
This application Nov. 13, 1984, Ser. No. 670,668
Int. Cl.⁴ B65H *75/00, 59/00, 57/28*
U.S. Cl. 242—54 R **18 Claims**

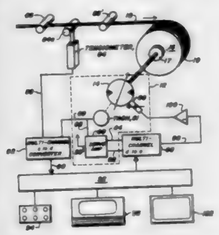
1. An electrohydraulic drive and control system for a rotating member that engages and controls the speed and tension in an indefinite length of material in a process line, comprising
a supply of hydraulic fluid at a constant supply pressure and variable flow rate, a bi-directional, variable displacement hydraulic motor connected to said rotating member and having an inlet and an outlet for said fluid,
a feed line and a return line that conduct said fluid between said supply and motor,

a variable pressure reducing valve connected in said feed line, said valve including a proportional actuator that produces an output flow of said fluid to said motor at a pressure less than said supply pressure,

first means connected in said return line for setting an adjustable fixed pressure in said return line,

a hydraulic regeneration circuit connected between said feed line and said return line and operable when said motor brakes,

a controller that generates (i) a speed limit control signal for limiting the speed of said motor and (ii) a pressure limit



control signal related to a maximum desired pressure in said feed line, and

an electronic control circuit that produces an output control signal for said proportional actuator, said circuit being responsive to (i) the speed of rotation of said motor (ii) said speed limit control signal and (iii) said pressure limit control signal, said speed limit control signal being an electrical signal proportional to the desired maximum speed of rotation of said motor and said pressure limit control signal being an electrical signal proportional to the desired maximum pressure in said feed line downstream of said variable pressure reducing valve.

4,565,335

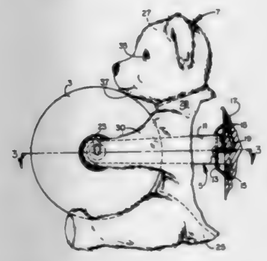
SIMULATED ANIMAL TOILET TISSUE HOLDER

Georgia A. Rankin, 3910 Hwy. 42-57, Sturgeon Bay, Wis. 54235

Filed Sep. 18, 1984, Ser. No. 648,675

Int. Cl.⁴ B65H *19/00*

U.S. Cl. 242—55.2 **10 Claims**



1. An aid for toilet training children comprising:

a flexible fabric formed into the shape of an animal having a head, a torso, a pair of generally forwardly extending front legs, and a pair of hind legs;

frame means for supporting the fabric to simulate the selected animal; said frame means including members inserted into parts of said fabric simulating one of said pairs of legs of the animal to support opposite ends of a roll of tissue paper between the legs in said one pair and the members therein; and

mounting means for mounting the frame means to a selected mounting surface.

4,565,336

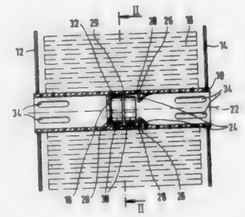
TAKE-UP SPOOL FOR A DEVICE FOR APPLYING AND CONVEYING A HOSE-SHAPED PROTECTIVE COVERING FOR A TOILET SEAT

Bela Hefty, Beckenried, and Arpad Hefty, Richenthal Schweiz, both of Switzerland, assignors to Hygolet AG, Hergiswil, Switzerland

Filed Oct. 3, 1984, Ser. No. 657,325

Int. Cl.⁴ B65H *16/06*

U.S. Cl. 242—55.55 **2 Claims**



1. A take-up spool for a protective covering for a toilet seat, said take-up spool being tubular and having a cavity into which disc-shaped tablets can be inserted which give off deodorizing and/or disinfecting agents to the surrounding air, a stop wall in the middle portion of the cavity, at least one elastic tongue protruding from the inner wall of the tubular spool spaced from the stop wall and defining thereby a tablet stopping position, said tongue being movable by a tablet during insertion thereof to a non-stopping position for passage of a tablet into the space between said stop wall and a said elastic tongue, and means defining a passage for enabling gas to pass from said cavity.

4,565,337

METHOD AND APPARATUS FOR FORMING A LAP

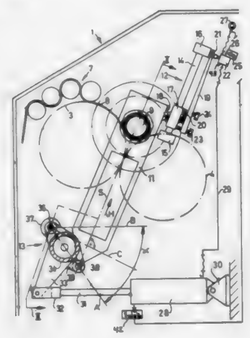
Giancarlo Mondini, Winterthur, and René Schmid, Niederneunforn, both of, Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Oct. 4, 1984, Ser. No. 657,613

Claims priority, application Switzerland, Oct. 12, 1983, 5561/83

Int. Cl.⁴ B65H *17/08*

U.S. Cl. 242—66 **6 Claims**



1. A method for forming a lap comprising the steps of:

rolling a lap bobbin or the lap formed thereon on two drivable and rotatable winding rollers carrying the bobbin or the lap;

pressing the bobbin or the lap with a predetermined force against the winding rollers;

controlling said force in such a manner that the contact pressure arising in contact surfaces of the bobbin or the lap on the winding rollers is controllable; and

controlling the force such that the contact pressure remains substantially constant; and

increasing the contact force with increasing build-up of the lap such that the contact pressure remains substantially constant at each layer of the formed lap.

4,565,338

EMERGENCY LOCKING SEAT BELT RETRACTOR WITH AUTOMATIC LOCKING MECHANISM

Juichiro Takada, 3-12-1 Shinmachi Setagayaku, Tokyo, Japan

Filed Mar. 6, 1985, Ser. No. 708,600

Claims priority, application Japan, Mar. 12, 1984, 59-045665

Int. Cl.⁴ A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 B **3 Claims**



1. A seat belt retractor comprising a belt reel rotatably mounted in a frame and resiliently urged to rotate in one direction to wind the belt into the reel, a ratchet wheel coupled to the belt reel for rotation therewith, a pawl supported on the frame for movement between a locking position in engagement with a tooth of the ratchet wheel in which rotation of the reel in the belt-unwinding direction is prevented and a non-locking position clear of the path of ratchet wheel teeth, means responsive to rotational acceleration of the belt reel above a selected level for moving the pawl to the locking position, and means responsive to a selected amount of rotation of the belt reel in the belt-unwinding direction for automatically urging the pawl resiliently to the locking position and responsive to a selected amount of rewinding of the belt reel for automatically urging the pawl resiliently to the non-locking position including a pivotable actuator engageable with the pawl in the locked and unlocked positions through a lost motion coupling, an over-center spring biasing the actuator toward said engagements while allowing lost motion, whereby the pawl can move between the locked and unlocked positions against the bias of the over-center spring, and a reduction mechanism coupled to the reel and including a rotatable output member having two circumferentially spaced-apart lugs, one of which engages and moves the actuator to one over-center position upon unwinding rotation of the belt reel and the other of which engages and moves the actuator to the other over-center position upon rotation of the belt in the belt-winding direction.

4,565,339

SYSTEM FOR GUIDING A MISSILE BY A FLAT LIGHT PENCIL BEAM

Jacques J. Lonnoy, Paris, and Roland Mousson, Soisy sur Seine, both of France, assignors to Societe Anonyme de Telecommunications, France

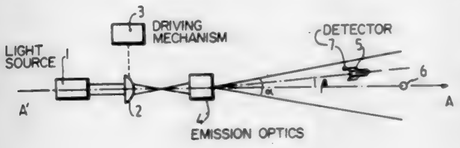
Filed Jan. 17, 1984, Ser. No. 571,583

Claims priority, application France, Jan. 20, 1983, 83 00838

Int. Cl.⁴ F41G *7/26*

U.S. Cl. 244—3.13 **2 Claims**

1. In a system for guiding a missile in a direction of sight, comprising a detector on said missile, said missile also having rudders, a source of emission producing a light beam whose axis corresponds to the direction of sight, means for analyzing the field of observation, adapted to convert the light beam emitted by the source into at least one flat, elongated pencil beam having a width ϵ and to drive the pencil beam in rotation at a speed ω, about an axis merged with the direction of sight (A'A), to be received by the detector in a time τ, said detector being operable to provide an output signal in response to receipt of said pencil beam, processing means on said missile for determining, from the output signal of the detector, at least one deviation coordinate of the missile with respect to the direction of sight, and operable to control the rudders of the missile in



order to control its path on the direction of sight, said processing means being adapted to determine the polar coordinates (τ,θ) of the missile with respect to a reference axis (Ox) having an origin (O) located on the axis (A'A) of the pencil beam, the metric coordinate ρ as a function of the speed of rotation ω, of the width ϵ and of the time of passage τ, and the angular coordinate θ as a function of time t taken by the pencil beam, during its rotation, to reach the missile, and two master clocks maintained in synchronism are respectively associated with the source of emission and with the detector of the missile.

4,565,340

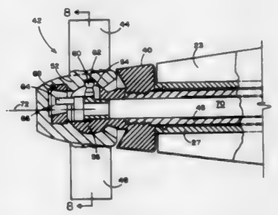
GUIDED PROJECTILE FLIGHT CONTROL FIN SYSTEM

William R. Bains, Lake Elsinore, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Aug. 15, 1984, Ser. No. 641,137

Int. Cl.⁴ F42B *13/30, 15/16, 15/14*

U.S. Cl. 244—3.28 **9 Claims**



1. A guided spinning projectile, comprising:

(a) a body;

(b) a nutatable guidance fin assembly mounted on the aft end of said body;

(c) control rod means for nutating said fin assembly; and

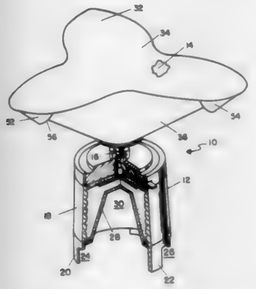
(d) de-spinning means for rotating said fin assembly and control rod means at a rate equal to the spin of the projectile but in the opposite direction.

4,565,341

INFLATABLE DECELERATOR

Alexey T. Zacharin, 14 Cherry La., Parsippany, N.J. 07054

Continuation of Ser. No. 305,010, Sep. 24, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 559,531
Int. Cl.⁴ B64D *17/80*
U.S. Cl. 244—113 **12 Claims**



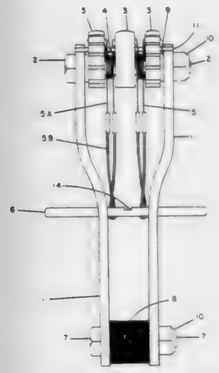
1. A combination deceleration and de-spin device for attachment to a sub-munition, comprising:
an inflatable starshape chamber having at least three radially extending lobes and having in its inflated state an essentially flat upper surface and a conical lower surface,
air inlet means on each of said lobes proximate the outermost ends thereof, and
air scoop means operatively related to each said air inlet means and including an upstanding hood around said inlet means and spaced-apart therefrom for capturing a portion of external airflow around said chamber and directing said portion into said inlet to inflate said chamber.

4,565,342

ANCHORING DEVICE FOR ROCK CLIMBING

Robert D. Grow, 2708 Green Bay Way, Sacramento, Calif. 95826

Filed Jul. 12, 1984, Ser. No. 630,369
Int. Cl.⁴ A47G *29/00*
U.S. Cl. 248—1 **4 Claims**



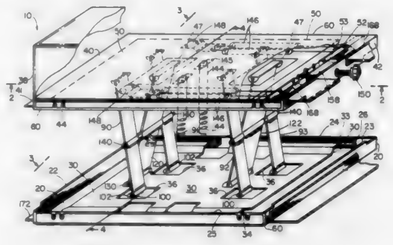
1. An anchoring device for climbing having: two longitudinal frame members; two or more convex cams mounted on a spindle that extends between like ends of the longitudinal frame members, with each cam adapted for pivotal movement in the direction opposite the movement of an adjacent cam or cams; an operating bar slidably mounted in slots in the longitudinal frame members said operating bar having its center or midpoint exposed between the two longitudinal frame members to allow easy access to the center of the operating bar and facilitate operation of the device, said operating bar being connected to each cam such that sliding the operating bar in the slots in the direction away from the cams will actuate movement of the cams from an extended to a retracted position against the urging of coil springs mounted on the spindle and connected to the cams; and a connection between the longitudinal frame members at the end furthest from the cams, said connection serving as an attachment point for a climbing rope and completing the frame; said frame having two parallel sections of unequal widths, the section at the end nearest the cams being wider, as width is measured by the distance between the two longitudinal frame members.

4,565,343

TERMINAL ELEVATING MECHANISM

Ralph J. Lake, Jr., Somerville; Nanjappa Bakthavachalam, Neshanic Station; Thomas A. Kachnowski, Flemington; Kevin S. Buist, New Brunswick, all of N.J.; David K. Walz, Stone Mountain, Ga.; Timothy R. Stern, Southfield, Mich., and Frank H. Stephens, Dunwoody, Ga., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 18, 1983, Ser. No. 524,403
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—346 **8 Claims**



6. An elevating support mechanism comprising
a rectangular base plate having left and right edges and front and rear edges,
an upstanding wall at each of said edges,
a first L-shaped bracket secured to each of said front and rear edges and extending inwardly to form a channel with the associated upstanding wall,
a first slotted guide member secured in each of said channels disposed along said front and rear edges of said base plate,
a second L-shaped bracket secured to all of said edges of said base plate and extending outwardly therefrom,
a lower rectangular slidable plate adjacent to and above said base plate and slidable with respect to said base plate,
said lower slidable plate having four rectangular apertures,
a rectangular upper plate having left and right edges and front and rear edges and adapted to support apparatus to be used by an operator,
a depending wall at each of said edges of said upper plate,
a first L-shaped bracket secured to the depending wall at each of said front and rear edges of said upper plate and extending inwardly to form a channel therewith,
a second slotted guide member secured in each of said channels disposed along said front and rear edges of said upper plate,
second L-shaped brackets secured to said edges of said upper plate and extending outwardly therefrom,
a bellows enclosing said mechanism and held in place on said L-shaped brackets,
an upper rectangular slidable plate adjustable to and beneath said upper plate and slidable with respect to said upper plate,

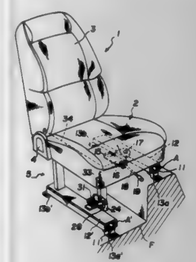
said upper slidable plate having two rectangular apertures,
four first lifter arms in the form of flat plates, each pivotably secured to one end to said base plate and pivotably secured at the other end to said upper slidable plate, said first lifter arms all sloping in the same direction with a negative slope from said base plate to said upper slidable plate,
two second lifter arms in the form of flat plates, each pivotably secured at one end to said upper plate and pivotably secured at the other end to said lower slidable plate, each of said second lifter arms sloping in the same direction with a positive slope,
each of said first and second lifter arms having a central axis about which the arm pivots,
each of said second lifter arms being aligned with two of said first lifter arms as an operating unit, with the central axes of all of the lifter arms in a unit being aligned and with a pivot pin seated in the ailgned central axes of the lifter arms of each unit, and
means for moving said upper slidable plate to cause said lifter arms to pivot about their central axes and thus raise or lower said upper plate and the apparatus supported thereby with respect to said base plate.

4,565,344

SEAT ADJUSTMENT DEVICE FOR A VEHICLE SEAT

Masahide Iwami, Akishima, Japan, assignor to Tachikawa Spring Co. Ltd., Japan

Filed Dec. 6, 1983, Ser. No. 558,532
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—429 **7 Claims**



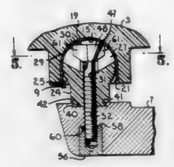
1. A seat adjustment device for seats used in vehicles of the type including a pair of rail assemblies, each rail assembly formed by slidably combining a fixed-side rail fixed to the floor of the vehicle and a movable-side rail mounted to the seat, said seat adjustment device comprising:
a stepped lock mechanism provided in one of said pair of rail assemblies,
a fine-pitched lock mechanism provided in the other of said pair of rail assemblies, and
connecting means for cooperatively connecting said stepped and fine-pitched lock mechanisms with each other, wherein
said fine-pitched lock mechanism includes (a) a lock plate having a toothed portion rigidly associated with said other rail assembly, (b) a link including a toothed body adapted to be intermeshed with said toothed portion of said lock plate, wherein said toothed portion of said lock plate and said toothed body are intermeshed with one another by means for providing a toggle action.

4,565,345

MIRROR ASSEMBLY

Arthur R. Templeman, Stillwell, Kans., assignor to Peterson Manufacturing Company, Grandview, Mo.

Continuation of Ser. No. 317,835, Nov. 3, 1981, Pat. No. 4,520,983. This application Mar. 7, 1985, Ser. No. 709,605
The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.
Int. Cl.⁴ A47G *1/24*
U.S. Cl. 248—481 **1 Claim**



1. A mirror assembly for use with a vehicle comprising:
(a) a mirror housing;
(b) a mirror retainably held in said housing;
(c) a support member adapted to be securely mounted to a vehicle; and
(d) a ball and socket arrangement connecting said housing and said support member, said ball and socket arrangement comprising:
(1) a socket extending into a first of said housing or support member and having an inner surface;
(2) a socket liner snugly mateable in said socket in contact with said socket inner surface; said socket liner including a neck and a concave expandable member receiving cavity extending inwardly of said neck; said expandable member receiving cavity being generally continuous and covering a majority of said socket when said socket liner is positioned within said socket;
(3) retention means to snugly hold said socket liner within said socket so as to interfere with removal of said socket liner from said socket;
(4) said retention means comprises a lug on a first of said socket liner or said socket and an aperture mateable with said lug on a second of said socket liner or said socket;
(5) an expandable member including a head and a shank; said expandable member head being slidably received in said socket through said neck when said expandable member is not expanded and frictionally contacting said socket liner when said expandable member is expanded so as to operably retain said head in said expandable member receiving cavity;
(6) connector means to connect said expandable member shank to a second of said housing or said support member; and
(7) biasing means to selectively urge said expandable member head into tight engagement with said socket liner.

4,565,346

ADJUSTABLE BRACKET MOUNT

Ivan J. Edwards, 1200 Holiday Pl., Bossier City, La. 71112

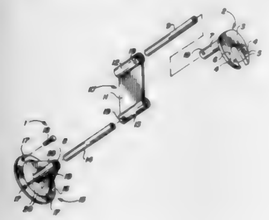
Filed Sep. 6, 1983, Ser. No. 529,484
Int. Cl.⁴ H01Q *1/00*
U.S. Cl. 248—558 **1 Claim**

1. In a satellite antenna having an antenna dish and a feed assembly, an adjustable bracket mount for supporting the feed assembly above the antenna dish, comprising:
(a) a base characterized by a base flange for mounting on the antenna dish, said base characterized by an elongated, hollow base receptacle secured to said base flange and

receptacle supports bracing said base receptacle to said base in spaced relationship;

(b) a round bottom support in telescoping cooperation with said base receptacle and a first allen screw threadably cooperating with said base and selectively engaging said bottom support for removably securing said bottom support to said base receptacle;

(c) an offset bracket having a round bottom support collar in telescoping cooperation with said bottom support above said base and a second allen screw threadably cooperating with said bottom support collar and selectively engaging said bottom support for removably securing said bottom support in said bottom support collar; a round top support collar spaced from said bottom support collar; and a flat web spacing said top support collar in a first horizontal plane located at the center transverse axis of said top



support collar and said bottom support collar in a second horizontal plane located at the center transverse axis of said bottom support collar;

(d) a round top support in telescoping cooperation with said top support collar and a third allen screw threadably cooperating with said top support collar and selectively engaging said top support for removably securing said top support in said top support collar; and

(e) a top bracket having a round to bracket collar in telescoping cooperating with said top support and a pair of elongated plate fingers extending in substantially parallel relationship with respect to each other from said top bracket, and a fourth allen screw threadibly cooperating with said top bracket collar and selectively engaging said top support for removably securing said top support in said top bracket collar.

4,565,347

MONOLITHIC PRECAST INVERT SYSTEM

Jack Ditcher, Langhorne, Pa., assignor to A-Lok Products, Inc., Tullytown, Pa.

Filed Jul. 19, 1983, Ser. No. 515,130
Int. Cl.⁴ B28B *7/30, 21/88*
U.S. Cl. 249—83 **11 Claims**

1. Apparatus for forming a manhole base comprising:

inner and outer mold members defining an interior volume having a cylindrical shape;

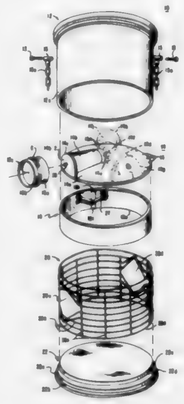
gasket retaining assemblies arranged between said mold members for retaining a gasket to be molded into the manhole base and for forming openings in said manhole base member;

an invert-forming member supported on said inner mold member and having an invert-forming surface;

said invert-forming member having a first elongated invert-forming section arranged on said invert-forming surface;

a second swingable elongated invert-forming section swingably mounted at a central point upon the invert-forming surface of said invert-forming member and having an inner end arranged a spaced distance from the adjacent end of said first invert-forming section;

hollow shell means having a substantially U-shaped cross-section and a shape conforming to the angle formed by the longitudinal axes of said first and second invert-forming sections and having an open bottom end removably positioned upon said invert-forming surface and within the gap region between the adjacent ends of said sections for filling said gap region to define a continuous invert of uniform cross-section along the length of said invert extending between the openings in said manhole base; and



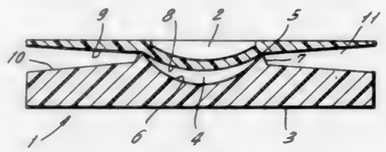
said invert-forming sections each having means for releasably mounting said gasket retainer assemblies thereto during the casting operation.

4,565,348

MOLD FOR MAKING CONTACT LENSES, THE MALE MOLD MEMBER BEING MORE FLEXIBLE THAN THE FEMALE MOLD MEMBER

Hans-Ole Larsen, Farum, Denmark, assignor to Mia-Lens Production A/S, Copenhagen, Denmark

Continuation-in-part of Ser. No. 360,167, Mar. 19, 1982, Pat. No. 4,495,313. This application Nov. 7, 1983, Ser. No. 549,702
Int. Cl.⁴ B29C *1/14;* **B29D** *31/00*
U.S. Cl. 249—122 **12 Claims**



1. A lens mold assembly comprising a female mold section having a concave optical surface terminating in a peripherally extending annular flange, the surface of said flange forming a sharp edge at the intersection with said concave optical surface;

a male mold section having a substantially spherical convex optical surface terminating in a peripherally extending annular flange;

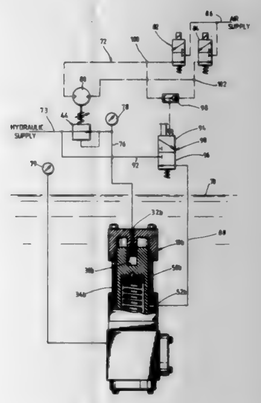
the maximum outside diameter of the convex surface of said male mold section being greater than the maximum inside diameter of the concave surface of said female mold section, the facing surfaces of said peripherally extending annular flanges of said female and male mold sections being spaced apart; and one of said female or male mold sections having relatively greater flexibility than the other section whereby compensation for shrinkage during polymerization of monomers within the mold cavity is afforded by said relatively more flexible mold section, said female mold section having a raised sharp-edged ring extending above said extending flange surface about a female mold cavity, the sharp edge of said ring being engagable with said spherical convex optical surface such that a portion of said spherical convex optical surface extends outwardly of a line of contact between said convex optical surface and the sharp edge of said ring.

4,565,349

FAIL SAFE HYDRAULIC PILOTED PRESSURE REDUCING AND REGULATING VALVE

Jerry B. Tomlin, Sugar Land, Tex., assignor to Koomey, Inc., Brookshire, Tex.

Filed Mar. 20, 1984, Ser. No. 591,369
Int. Cl.⁴ G05D *16/00*
U.S. Cl. 251—29 **7 Claims**



1. In a hydraulic pilot pressure reducing and regulating valve having a body and a control piston therein, the improvement of a fail safe means for holding the valve at the last selected operating pressure in the event of loss of control signals comprising,

a pilot piston in said body and adapted to be connected to hydraulic pilot pressure,

spring means between the pilot piston and the control piston whereby the valve is regulated in response to hydraulic pilot pressure,

a rod connected to the pilot piston,

a locking sleeve normally gripping the rod and releasably locking the rod and pilot piston against movement,

a hydraulic pressure port in communication with the space between the rod and the sleeve for releasing the rod from the sleeve upon application of pressure to said port,

said port and said pilot piston separately connected to a hydraulic supply and a control system, and

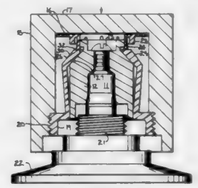
said control system including means for controlling the application of the hydraulic supply to said port and said piston, said means connecting the hydraulic supply to the port for releasing the locking sleeve when the hydraulic supply to the piston is changing, but venting the hydraulic supply to its port when hydraulic supply to the piston is static thereby allowing the locking sleeve to lock for maintaining the valve in its last selected operating pressure.

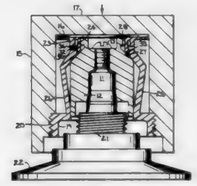
4,565,350

HANDLE ASSEMBLY

Roy J. Rozek, Plymouth, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Jan. 2, 1985, Ser. No. 688,342
Int. Cl.⁴ F16K *31/60*
U.S. Cl. 251—292 **19 Claims**





1. A handle assembly for attachment to a rotatable stem, comprising;

a stem adapter suitable to fit over the stem and be fixed axially relative thereto to rotate therewith;

a handle adapter mounted over said stem adapter for rotation therewith;

a handle mounted over said handle adapter;

said handle adapter being axially fixed relative to said handle;

a retaining member mounted between said handle and said handle adapter, said retaining member being inwardly resiliently biased towards said stem adapter; and

means for resilient camming engagement between said handle adapter, stem adapter and retaining member whereby the handle may be fixed against outward movement relative to the stem adapter and then unfixed against outward movement relative to the stem adapter by sequential inward movement of the handle to a locking position, followed by further inward movement of the handle to a releasing position, followed by outward movement of the handle to remove it from the stem adapter.

4,565,351

METHOD FOR INSTALLING CABLE USING AN INNER DUCT

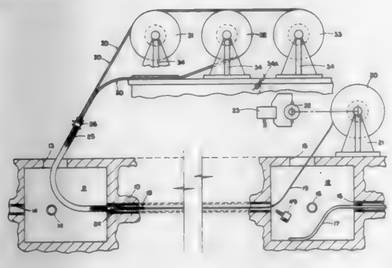
Allen C. Conti, Garfield Heights, and Armand R. Conti, Youngstown, both of Ohio, assignors to Arnco Corporation, Youngstown, Ohio

Filed Jun. 28, 1984, Ser. No. 625,657
Int. Cl.⁴ E21C *29/16*
U.S. Cl. 254—134.3 FT **20 Claims**

1. A method for installing a transmission cable in a selected length of a duct comprising the steps of:

selecting a length of an inner duct which can fit inside said duct, said inner duct having a wall surface with protrud-

ing ribs extending in the direction of the length of the inner duct,



installing the inner duct inside the duct to extend along the length thereof, and

installing a transmission cable in said inner duct.

4,565,352

WINCH DRIVE

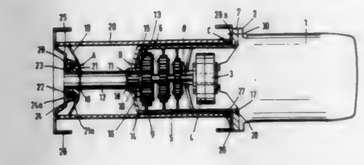
Heinz Hasselmann, Hagen-Emst; Volkmar Kunze, Wetter, and Harald Bitsch, Witten, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 538,951

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1982, 3240345

Int. Cl.⁴ B66D *1/22*; B66F *3/00*

U.S. Cl. 254—344 **10 Claims**



1. A winch drive including a winch drum, a planetary transmission gear in the drum having input and output shafts, and a motor having a drive shaft arranged at one axial end of the drum, the improvement comprising:

a stationary casing for the transmission gear projecting into the drum;

roller means in direct engagement with an end portion for journalling the drum directly on one end of said casing itself;

coupling means for connecting the drive shaft of the motor to the input shaft of the transmission gear inside said casing;

the output shaft of the planetary gear being oriented towards the respective other axial end of the drum(s);

a web plate disposed and secured to the drum adjacent its other end, and being spaced axially from the casing;

means for connecting the output shaft of the planetary gear to the web plate for providing rotation upon the drum, said output shaft traversing said web plate; and

bearing means disposed adjacent said web plate for journalling the exterior end of said output shaft beyond where it traverses said web plate, said bearing means holding the output shaft against axial displacement.

4,565,353

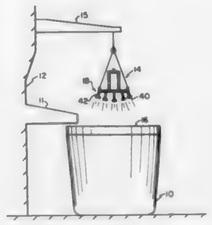
APPARATUS FOR SUPPRESSING FUME FROM A METAL POURING OPERATION

David M. Ball, Peters Township, Washington County, Pa.; Alton E. Sumsion, American Fork, and Zane S. Taylor, Orem, both of Utah, assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 533,897, Sep. 21, 1983, Pat. No. 4,486,230, which is a continuation of Ser. No. 286,395, Jul. 23, 1981, abandoned. This application Aug. 29, 1984, Ser. No. 645,366

Int. Cl.⁴ C21C *5/40*

U.S. Cl. 266—147 **6 Claims**



1. In combination with an open-ended vessel for receiving a stream of molten metal therein, apparatus for suppressing the generation of metal oxide fume within the interior of said vessel, said apparatus comprising:

(a) nozzle means operative to eject a mixture of inert gas and atomized water having its discharge disposed to direct said mixture into the interior of said vessel for blanketing the surface of the body of molten metal therein;

(b) first fluid conducting means connecting said nozzle means and extending between said nozzle means and a source of inert gas;

(c) second fluid conducting means extending between a source of water and communicating with the interior of said first fluid conducting means upstream from the connection of said nozzle means;

(d) said second fluid conducting means having its discharge end disposed within said first fluid conducting means with its axis inclined in the direction of the axis of said first fluid conducting means, whereby water discharged into said first fluid conducting means is atomized and intimately mixed with said inert gas prior to discharge from said nozzle means; and

(e) means for suspending said apparatus in operative relation to said vessel open end.

4,565,354

APPARATUS FOR PRODUCING PURIFIED REFRACTORY METAL FROM A CHLORIDE THEREOF

Hiroshi Ishizuka, 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

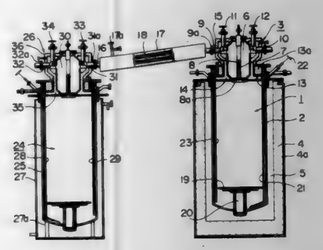
Filed May 18, 1983, Ser. No. 496,939

Claims priority, application Japan, May 31, 1982, 57-93698; Oct. 28, 1982, 57-189846

Int. Cl.⁴ C22B *4/08*

U.S. Cl. 266—171 **13 Claims**

1. An apparatus for producing purified refractory metal from a chloride thereof, comprising: a conversion/evaporation chamber defined by a first substantially cylindrical vessel means and a detachable top member arranged thereover, said top member in turn comprising therewithin an axial cell closed at the top and having an opening at the bottom, a cavity which is in an abutting relation with the cell and communicable with the vessel means so as to provide a path for vapor stream of magnesium and chloride thereof arising from the vessel means, said cavity at one end consisting of a flanged tubular outlet, a gas jacket which surrounds the cavity and the cell at least a lower portion thereof and which has an access to each gas source of elevated temperatures and room temperatures, a condensation surface substantially defined by the gas jacket and exposable to the vapor stream, a valve arranged in the cavity for regulation of the vapor stream through the outlet, a vertically movable chloride feeder tube with a closure flange secured therearound and movable together so as to close the opening of the cell, a furnace means which surrounds the vessel means, a condensation chamber which is in side-by-side relation with the conversion/evaporation chamber and defined



by a second substantially cylindrical vessel means and a second top member arranged detachably thereover, said top member having a cavity which is connected by a heatable duct to the outlet of the first said cavity and is open to the second said vessel means so as to form a continuous passage for the vapor stream, and a cooling means for such vessel means by passing water therearound, each of said vessel means consisting of a cylindrical member of a substantially common geometry and being fastened to respective top members with a fastening means compatible to each other.

4,565,355

FLUSHING ARRANGEMENT FOR A METALLURGICAL VESSEL

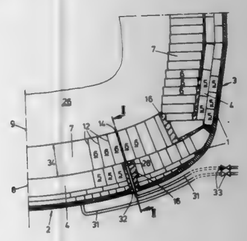
Walter Jilek, and Günter Poferl, both of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 27, 1984, Ser. No. 624,985

Claims priority, application Austria, Mar. 15, 1984, 865/84

Int. Cl.⁴ C21C *5/34*

U.S. Cl. 266—224 **12 Claims**



1. In a flushing arrangement for a metallurgical vessel having a metallic outer shell including a vessel bottom and vessel walls, said vessel bottom and vessel walls being lined with refractory bricks arranged in rows so as to constitute an outer lining and an inner lining provided on said outer lining, a distributor and a plurality of flushing channels departing from said distributor and guided through said inner lining, the improvement wherein said flushing arrangement comprises a metallic flushing plate disposed between neighboring refractory bricks of said inner lining and having a plurality of passage channels for flush gas, said distributor being arranged in said outer lining, said flushing plate extending directly into said distributor, and a supply duct passing through said metallic outer shell of said vessel to said distributor.

4,565,356

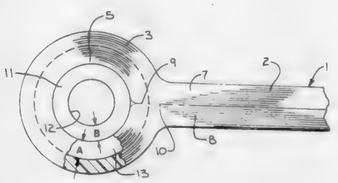
BUSHING CONSTRUCTION FOR A FIBER REINFORCED PLASTIC LEAF SPRING

Herbert W. Nickel, Germantown, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Oct. 13, 1983, Ser. No. 541,443

Int. Cl.⁴ F16F *1/18*

U.S. Cl. 267—54 R **9 Claims**



1. A fiber reinforced plastic leaf spring construction comprising, a curved central section and a pair of end sections connected to the respective ends of the central section, a tubular bushing disposed in each end section, said spring comprising a plurality of longitudinally extending substantially continuous strands of fibrous material impregnated with a cured thermosetting resin, said strands disposed in an upper run and a lower run in said central section and said strands extending around said bushings, said upper and lower runs being bonded together flatwise at a neutral axis and the strands of the central section joining the strands of the end sections at a neck area, each bushing including a tubular section having an opening to receive a connecting member, and at least one circumferentially extending rib extending radially outward from said tubular section, said rib disposed at the respective neck area and extending through an arc on either side of said neutral axis, said rib having a pair of spaced side walls and an outer surface, and said strands being disposed in contact with said side walls and extending over said outer surface, said rib increasing the surface area of contact between the strands of fibrous material and the bushing and providing an area of shear stress between the bushing and said strands, thereby aiding in preventing delamination of said spring along said neutral axis when the ends of the spring are subjected to load in service.

4,565,357

QUICK-ACTING CLAMPING DEVICES

Bernhard Stahl, Neunkirchen-Salchendorf, and Horst Böhm, Siegen, both of Fed. Rep. of Germany, assignors to Optima Spanntechnik GmbH, Siegen, Fed. Rep. of Germany

Filed Sep. 8, 1983, Ser. No. 530,206

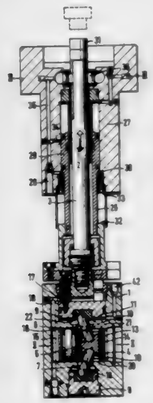
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1982, 3233940

Int. Cl.⁴ B23Q *3/08*

U.S. Cl. 269—32 **10 Claims**

1. In a quick-acting clamping device using a pressure fluid for moving the clamping device between released and locked positions thereof, comprising a first axially extending housing (1), a first piston (5) slidably mounted in said first housing for displacement therein transversely of the axial direction of said first housing, a pressure plate (9) located within said first housing in spaced relation from said first piston in the axial direction of said first housing and being displaceable in said first housing in the axial direction thereof, at least one pressure lever (6, 7) located within said first housing supported at one end thereof against said first piston and at the other end thereof against said pressure plate and said pressure lever being displaceable upon the displacement of said first piston between a first position where the clamping device is released and a second position where the clamping device is locked, a first pressure chamber within said first housing with said pressure lever located within said first pressure chamber, an axially

elongated clamping piece (3) having a first end and a second end with the first end located within said first housing and said clamping piece extending axially out of said first housing with the axes of said clamping piece and said first housing in parallel relation and with the second end of said clamping piece being spaced outwardly from said first housing, said clamping piece being axially displaceable between a released position and a locked position, a second piston (26) secured to said first housing and laterally enclosing at least an axially extending portion of said clamping piece between the first and second ends thereof, a second housing (27) laterally enclosing at least an axially extending part of said second piston and spaced in the axial direction of said second piston from said first housing, said second piston being axially displaceable relative to said second housing for axially displacing said clamping piece and said first housing, wherein the improvement comprises that said pressure plate (9) has a first surface facing toward said first piston and an oppositely directed second surface facing toward said second housing, said first piston having a first end surface and a second end surface extending transversely of the direction of displacement of said first piston, a second pressure chamber within said first housing with said first end surface of said first piston located within said second pressure chamber, a third pressure chamber within said first housing with said second end surface of said first piston located within said third



pressure chamber, said pressure plate being in fluid sealed contact with said first housing, said first surface of said pressure plate said pressure chamber and said first end of said first piston being in fluid communication, said second housing having a wall passage (34) therethrough, said second piston being displaceable between a first position when the clamping device is released and a second position where the clamping device is being locked and in its first position said second piston closes said wall passage and in the second position it is displaced out of the path of said wall passage, a rotary mechanism (36) located within said second housing and extending around said clamping piece, a first duct (35) connecting said wall passage to said rotary mechanism and affording flow of the pressure fluid to said rotary mechanism when said second piston is in the second position for rotatably displacing said clamping piece toward the locked position, a second duct in said second housing and in flow communication with said rotary mechanism and extending to said first housing where it is in fluid communication with said first surface of said pressure plate said first pressure chamber and said first end surface of said first piston within said second pressure chamber for directing the pressure fluid from said rotary mechanism to said pressure plate and said first piston after said clamping device has been displaced by said rotary mechanism, a third duct within said first housing providing fluid communication between said second surface of said pressure plate and said second end surface of said first piston located within said third pressure chamber so that in effecting the release of said clamping device initially said first piston is displaced into the first position, and duct means connecting said first housing with said rotary mechanism for flowing the pressure fluid to said rotary mechanism only after said first piston is displaced into the released first position.

4,565,358

PLATE POSITIONING APPARATUS

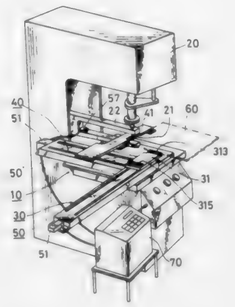
Kinji Hosoi, Machidashi; Hisao Kobayashi, Uenoharamachi; Hiroyuki Takeda, Yokohamashi, and Mitsuyoshi Hibino, Machidashi, all of Japan, assignors to Nihon Early Kabushiki Kaisha (Japan Early Co., Ltd.), Tokyo, Japan

Filed Mar. 4, 1983, Ser. No. 472,118

Claims priority, application Japan, Mar. 12, 1982, 57-33911[U]

Int. Cl.⁴ B23Q *3/18*

U.S. Cl. 269—60 **13 Claims**



1. A plate positioning apparatus, comprising:

(a) a first side base frame having a length extending in a first direction;

(b) a first side aligning member, having a side edge, and having a first front edge for contacting a first side of a plate-shaped workpiece, disposed on said first side frame for movement thereon in said first direction, in a plane;

(c) a second side base frame fixed with respect to said first side base frame and having a length extending in a second direction perpendicular to said first direction;

(d) a second side aligning member having a second front edge for contacting a second side of the workpiece, disposed on said second side base frame for movement thereon in said second direction in said plane, said second front edge opposing said side edge, such that said second front edge of said second side aligning member is contactable with said side edge of said first side aligning member;

(e) first drive means for driving said first side aligning member reciprocally along said first side base frame in said first direction;

(f) second drive means for driving said second side aligning member reciprocally along said second side base frame in said second direction toward and away from said first side base frame and said second side aligning member;

(g) means for controlling the driving of said first and second side aligning members by said first and second drive means;

(h) a protrusion having a movable retainer, movably mounted to said second side aligning member in said plane at said second front edge, and means for urging said protrusion forward of said second front edge toward said side edge of said first side aligning member so as to be supportingly engagable with the workpiece at the second side thereof when said first and second side aligning members are spaced from each other, and so as to engage said side edge when said second front edge is free of the workpiece

and said second side aligning member is driven by said second drive means toward said first aligning member; and

(i) means for receiving said protrusion and said retainer in said second side aligning member completely rearward of said second front edge when said protrusion is engaging said side edge and second side aligning member is driven by said second drive means into engagement at said second front edge with said side edge.

4,565,359

FOLDING APPARATUS FOR A WEB-FED ROTARY PRINTING PRESS

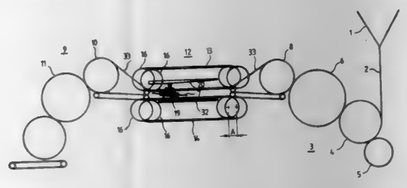
Eduard von Hein, Bern, Switzerland, assignor to Maschinenfabrik WIFAG, Switzerland

Filed Jul. 30, 1984, Ser. No. 636,318

Claims priority, application Sweden, Jul. 27, 1983, 8304156

Int. Cl.⁴ B41L *43/04*

U.S. Cl. 270—41 **7 Claims**



1. A device for producing an accurate second lengthwise fold on a printed copy delivered by a web-fed rotary press which includes first and second groups of spaced apart folding cylinders, comprising a conveying mechanism between said first and second groups of cylinders having at least one turning device forming a nip engageable with each printed copy and being turnable to turn each copy up to 90-about an axis which is perpendicular to a plane containing the copy as it is fed between said groups, said conveying mechanism includes first and second conveyor assemblies mounted one above the other, each of the conveyor assemblies comprising two spaced apart endless conveyor elements which are drivable in a slip-free manner and are trained around return pulleys and including at least one transom interconnecting said spaced apart endless conveyor elements, the return pulleys over which the conveyor elements are guided being offset in a conveying direction relatively and wherein said transoms being hinged to said conveyor elements in a manner such that during an entire cyclic travel they do not change their position relative to the horizontal, a transom of each conveyor assembly carrying said turning device between said conveyor assemblies.

4,565,360

SEPARABLE SINGLE-SHEET FEEDING APPARATUS FOR OFFICE MACHINES

Kurt Rünzi, Küsnachterstrasse 59, CH-8126 Zumikon, Switzerland

Filed Jan. 30, 1984, Ser. No. 575,183

Claims priority, application Switzerland, Nov. 15, 1983, 6129/83

Int. Cl.⁴ B65H *5/06*

U.S. Cl. 271—4 **11 Claims**

1. In combination with a printing-type office machine (3) such as a typewriter, word processor, computer output printer, or the like,

having a rotatable platen (42) and a platen gear (43) coupled to the platen and rotating therewith,

a single-sheet paper-feeding apparatus (1, 2) to feed single paper sheets, from a stack (5) to the office machine in accordance with selected rotation of the platen,

comprising, in accordance with the invention,

a sheet-guiding and separating unit (1) and an adapter frame (2) coupling the sheet-feeding unit (1) to the office machine (3);

said sheet guiding and separating unit (1) including a rotation transmitting connecting means (10);

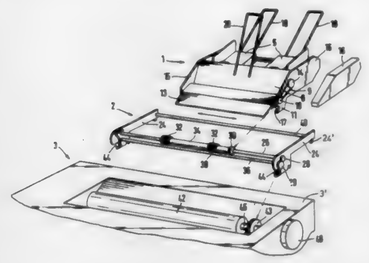
said adapter frame (2) including

a shaft (26) positioned essentially parallel to the platen (42) when assembled to the office machine;

a gear (29) rotatably positioned on the frame (2) and arranged for engagement with the platen gear (43);

a coupling pinion (28) secured to the shaft and in rotation-transmitting coupling with said gear (29);

a drive pinion (30) secured to the shaft and transmitting rotary movement in accordance with said coupling pinion (28) to the sheet-guiding and separating unit (1), said drive pinion (30) being located on said shaft for engagement with the connecting means (10) when the sheet guiding and separating unit (1) is coupled to said adapter frame (2);



means (24, 44, 50) for releasably engaging said adapter frame (2) with said office machine;

wherein the connecting means (10) of the sheet-guiding and separating unit are located in radial alignment for engagement with said drive pinion (30) for transmission of rotary movement from the platen via the platen gear (43), said gear (29), said coupling pinion (28) and said shaft (26), while permitting specific matching of a standard sheet-guiding and separating unit (1) to office machines (3) of different types, manufacturing origin, and dimension;

and wherein said apparatus (1, 2) further includes additional separating means (11, 17; 23) for separately and individually releasably coupling said sheet-guiding and separating unit (1) to the adapter frame at a position effecting said radial alignment of the coupling pinion on the adapter frame (2) and the rotation-transmitting means (10) on said sheet-guiding and separating unit (1).

4,565,361

BANK NOTE DISPENSER

Masaru Tanaka, Yokohama, and Hideo Abe, Tokyo, both of Japan, assignors to Fuji Giken Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 10, 1984, Ser. No. 598,792

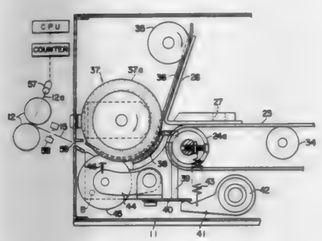
Claims priority, application Japan, Apr. 11, 1983, 58-62327

Int. Cl.⁴ B65H *7/08*

U.S. Cl. 271—10 **5 Claims**

1. A bank note dispenser for delivering a desirable number of bank notes from a bank note container mounted in a main body thereof comprising: feed rollers for delivering bank notes in the bank note container one at a time; a delivery roller for delivering each bank note delivered from the feed rollers into a bank note delivery passage; pull rollers for clamping the leading edge of each bank note delivered from the delivery roller and pulling each bank note therefrom; a control mechanism carried by a supporting shaft which rotatably carries the delivery roller for driving or stopping the delivery roller; sensor means disposed adjacent to the pull rollers for detecting the passage of each bank note; and an encoder carried by a shaft of one of

the pull rollers; the pulling velocity of the pull rollers being substantially equal to the delivery velocity of the delivery roller, the delivery roller being stopped through the control mechanism while the number of pulses generated from the encoder is started to be counted when the passage of a bank



note is detected by the sensor means, the delivery roller receiving a starting signal through the control mechanism when the number of the rotations of the pull rollers reaches a predetermined value to generate a predetermined number of pulses from the encoder.

4,565,362

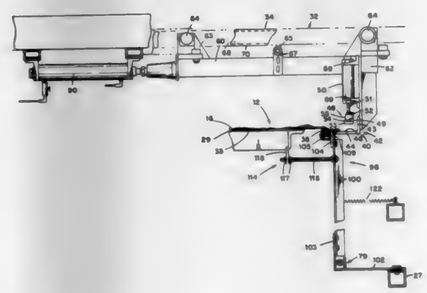
TRANSFER APPARATUS

Robert T. Wiley, Asheville, N.C., assignor to Tex-nology Systems, Inc., Arden, N.C.

Filed Dec. 14, 1984, Ser. No. 681,912

Int. Cl.[4] B65H *5/00*

U.S. Cl. 271—225 **5 Claims**



1. An apparatus for transferring a sheet of deformable material on a first conveyor to a second conveyor having a direction of movement at right angles to the first conveyor, said sheet having a side edge adjacent said second conveyor aligned with the direction of movement of said first conveyor, said apparatus comprising:

means for clamping said sheet along said side edge, said clamping means having an elongated support surface for supporting said sheet along substantially the entire length of said side edge and an elongated clamping bar which is movable toward and away from said support surface;

means for supporting said clamping means for movement above said second conveyor in a direction parallel to the direction of movement of said second conveyor between a clamping location adjacent said first conveyor and a release location spaced apart from said first conveyor;

an elongated, retractable support plate movable between a support position and a retracted position, said plate being positioned in said support position to underlie substantially the entire length of said side edge when said sheet is on said first conveyor, said support plate being movable transversely of said side edge from said support position to said retracted position where said side edge extends beyond said retractable support plate to permit said side edge to overlie said support surface of said clamping means when said clamping means is in said clamping location; and

said clamping means being operable to clamp said side edge between said clamping bar and said support surface of said clamping means when in the clamping location, and to release said sheet when said clamping means is in said release location, whereby said sheet is carried by said clamping means as said clamping means moves from said clamping location to said release location and is deposited on said second conveyor.

4,565,363

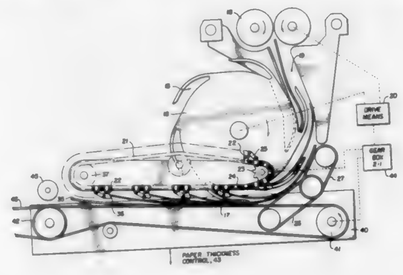
APPARATUS FOR ACCURATELY SPACING A SEQUENCE OF SHINGLED PAPER SHEET PRODUCTS ON A CONVEYOR

Hans G. Faltin, York, Pa., assignor to Custom-Bilt Machinery, Inc., York, Pa.

Filed May 9, 1984, Ser. No. 608,518

Int. Cl.[4] B65H *29/20*

U.S. Cl. 271—315 **8 Claims**



1. A system for locating a plurality of sheet paper products transferred successively from locations in peripherally located buckets of a rotary fan distributor onto a conveyor belt disposed substantially tangentially to the path of the buckets with the paper products located at precisely spaced locations on the belt in a shingled array, comprising in combination, a set of spaced stripper mechanisms carried by a rotary cyclic stripper belt array synchronously timed to place stripper elements in the path of said buckets to intercept each of the paper products carried in the buckets with the stripper elements travelling at a lower speed than that of the buckets thereby to strip the paper products out of the buckets for deposit on the conveyor belt for transport, stripper belt drive means for rotating the stripper belt about a circular path of predetermined radius disposed adjacent the path of the buckets at a position for intercepting the paper products with the stripper element by the passage of the stripper elements circumferentially about part of said circular path into the path of the buckets carrying the paper products, and stripper element structure comprising an interceptor arm disposed substantially perpendicular from the stripper belt before it enters the circular path supported by a linkage carried by the stripper belt connected to the interceptor arm that maintains the interceptor arm disposed in a posture when it travels about said circular path to insert the interceptor arm substantially perpendicular to the path of paper products carried by the buckets thereby to engage the leading edge of the paper products carried about the bucket path as each successive paper product is presented to strip it from the bucket for deposit on said conveyor belt.

4,565,364

IMPLEMENT FOR MAGIC TRICK FOR FALSELY CUTTING CARD OR THE LIKE

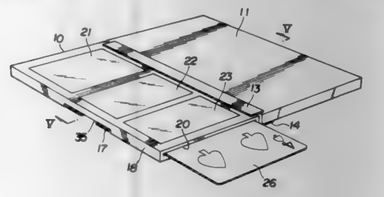
Hiroshi Kondo, Tokyo, Japan, assignor to Tenyo Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1984, Ser. No. 634,054

Claims priority, application Japan, Aug. 5, 1983, 58-121284[U]

Int. Cl.[4] A63J *21/00*

U.S. Cl. 272—8 N **6 Claims**



1. An implement for a magic trick for falsely cutting a card or the like, comprising:

a card having a front and a back, said front having first indicia thereon and said back having second indicia thereon;

a body comprising a first section and a second section, each said section being substantially rectangular and having a predetermined length and a predetermined width; said first and second sections being of substantially equal length and substantially equal width;

said first section comprising a transparent front wall, a first opaque wall, a second opaque wall and a pair of opposed side edge walls, said transparent front wall, said first opaque wall and said second opaque wall connected to said pair of opposed side edge walls so that said transparent front wall, said first opaque wall and said second opaque wall are arranged sequentially one above the other to form spaces therebetween, said transparent front wall, said first opaque wall, and said pair of opposed side edge walls defining a space receivable of said card, said transparent front wall being divided into a plurality of windows, each window having a predetermined length and extending across substantially the entire width of said first section; a first slit formed through one of said pair of opposed side edge walls, said first slit having a length substantially equal to the length of one of said plurality of windows and aligned with said one window, said first slit communicating with said space between said transparent front wall and said first opaque wall; a second slit formed through said one of said pair of opposed side edge walls, said second slit having a length substantially equal to the length of said first slit and aligned with said first slit, said second slit communicaticating with said space between said first opaque wall and said second opaque wall; a third slit formed through the other of said pair of opposed side edge walls, said third slit having a length substantially equal to the length of said second slit and aligned with said second slit, said third slit communicating with said space between said first opaque wall and said second opaque wall;

said second section comprising a front wall, an intermediate wall and a bottom wall and a pair of opposed side walls, said front wall, said intermediate wall and said bottom wall connected to said pair of opposed side walls so that said front wall, said intermediate wall and said bottom wall are arranged sequentially one above the other to form spaces therebetween, said first section and said second section disposed in alignment with one another and having said one of said pair of opposed side edge walls of said first section adjacent one of said pair of opposed side walls of said second section; said intermediate wall having an opening therein having a length substantially equal to the length of said one of said plurality of windows and aligned with said one window, said opening having a width substantially equal to the width of said second section; a fourth slit formed through said one of said pair of opposed side walls, said fourth slit having a length substantially equal to the length of said opening and aligned therewith, said fourth slit communicating with said opening at a position between said front and said intermediate walls; a fifth slit formed through said one of said pair of opposed side walls, said fifth slit having a length substantially equal to the length of said opening and aligned therewith, said fifth slit communicating with said opening at a position between said intermediate and said bottom walls; said fourth and fifth slits aligned with said first and second slits, respectively; and

a covering member, slidably received within said first through fifth slits, said covering member having a length substantially equal to the length of said one of said plurality of windows and a width substantially equal to three times the width of said one of said plurality of windows, said covering member comprising a first false display portion, a second false display portion and a connecting portion intermediate said first and second false display portions, said first portion, said second portion and said connecting portion being of substantially equal widths with said second portion folded back upon said connection portion, the free end of said first false display portion disposed proximate said third slit and the free end of said second false display portion proximate said first slit, whereby by pulling the free end of said first portion the second portion slides over that portion of a card displayed through said one of said plurality of windows.

4,565,365

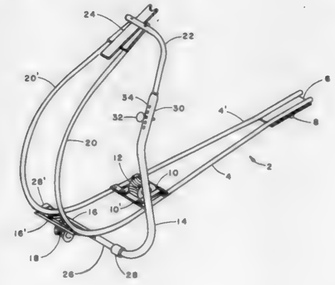
EXERCISE DEVICE

David J. Barkhurst, 3515 Road 92, Pasco, Wash. 99301

Filed May 5, 1983, Ser. No. 491,849

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—73 **5 Claims**



1. A stand for converting a bicycle into a stationary exercise device comprising:

an elongated horizontal frame of sufficient length to accommodate both the front and the rear wheels of a bicycle;

a support for the front wheel located at the front end of said frame; two rollers spaced longitudinally from each other and positioned such a distance from said support as to receive the rear wheel of said bicycle when the front wheel is on said support;

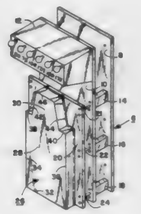
a single supporting strut extending upwardly from one side only of said frame adjacent said rollers to such a height as to reach the seat stem of said bicycle;

a latch secured to the upper end of said supporting strut constructed and arranged to releasably engage said seat stem;

said frame and strut being so constructed and arranged as to

impart lateral stability to said stand and a bicycle mounted thereon;
said frame being formed of at least two laterally spaced longitudinally extending tubular members;
said support for the front wheel being mounted between said tubular members at their front end and said rollers being journaled between said tubular members;
said tubular members curving upwardly at the rear end of said frame as flexible arcuate portions with a radius sufficient to pass around, rearwardly of, and over, the rear wheel of the bicycle to a point adjacent to the seat stem of the bicycle and connected to said latch;
said supporting strut being adjustable as to length, whereby said strut and said arcuate portions coooerate to permit adjustment of the height of said latch to accommodate bicycles of various sizes.

4,565,366
MARTIAL ARTS PRACTICE DEVICE
Thomas G. Struss, Box 321, R.D. 4, Coatesville, Pa. 19320
Filed Feb. 1, 1984, Ser. No. 576,021
Int. Cl.⁴ A63B *69/00*
U.S. Cl. 272—76 **10 Claims**



1. A device for use in practice of martial arts comprising:
a rear support;
a padded target having a strikable front surface defined by an outline at least one of the transverse dimensions of which exceeds approximately twelve inches;
means for mounting the target on the support and constraining the target to linear movement toward and away from the support;
resilient means connected between the target and the support for resisting movement of the target toward the support; and
means, actuable by movement of the target toward the support, for establishing at least three ranges of positions of the target and for indicating the maximum extent of movement of the target when struck, by indicating in which of said ranges the target is positioned at the point of its maximum degree of movement toward the support;
in which the means for mounting the target on the support comprises at least three piston and cylinder units, each being located exteriorly with respect to the outline of the strikable front surface of the target and in which an extension of an imaginary cylinder defined by the target outline upon said linear movement of the target falls substantially completely within a multi-sided figure formed by straight lines connecting the axes of said piston and cylinder units.

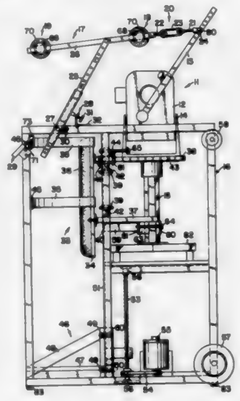
4,565,367
HAND HELD BODY ENGAGING EXERCISE DEVICE
Robert T. Kaiser, Elyria, Ohio, assignor to Spymark, Inc., Vista, Calif.
Continuation-in-part of Ser. No. 267,270, May 26, 1981, abandoned. This application Jul. 19, 1983, Ser. No. 515,306
Int. Cl.⁴ A63B *21/00*
U.S. Cl. 272—126 **16 Claims**

1. A hand-held exercise device adapted for individual use in a controlled environment and which enables an athlete to stimulate rigorous muscular and anatomical movements unique to various physical sports activities without the aid of external exercise machines, said device comprising:
an elongated, rigid, tubular member having a longitudinal axis, a length of at least 26 inches and a diamater no greater than approximately one and one-half inches, gripping means attached to one end of said tubular member for applying force to said tubular member during an exercise, an exercise grip means tethered to the opposite end of said tubular member so as to enable the tubular member to operate as a lever pivoting against the body of the individual when forces are applied to the ends of said tubular member;



an elastic cord having first and second ends, and an unstressed length of at least four inches, said first end being coupled to said opposite end of the tubular member and having elastic properties which permit at least 50% elongation of the cord beyond its unstressed length during exercising; and
said exercise grip means being attached to the second end of the cord and adapted in size and configuration for comfortable use at the hand or foot of the athlete for application of force by the athlete through the exercise device to various parts of the athlete's body.

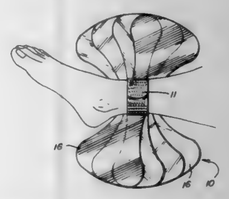
4,565,368
ISOKINETIC EXERCISE AND MONITORING MACHINE
Marlon Boettcher, LaCrescent, Minn., assignor to Gunderson Clinic, LaCrosse, Wis.
Filed Aug. 11, 1983, Ser. No. 522,634
Int. Cl.⁴ A63B *21/00*; G01L *5/02*
U.S. Cl. 272—129 **52 Claims**



43. An isokinetic exercise and monitoring machine adapted

to exercise and monitor an individual, the individual having a midsagittal plane, a lower body portion, an upper body portion and a coronal plane, the upper body being rotatable with respect to the lower body about a first axis located substantially in the coronal plane, said machine comprising:
(a) a support frame;
(b) first means for restraining the lower body portion, said first means operatively connected to said support frame;
(c) second means for restraining the upper body portion, said second means being pivotally connected to said support frame, allowing said second restraining means to pivot with respect to said support frame about a second axis, said second axis being substantially parallel to the first axis and the midsagittal plane intersecting said second restraining means at a midpoint of said second restraining means when the individual is restrained by said first and second restraining means;
(d) a dynamometer having a base and a lever arm, said lever arm being pivotally connected to said dynamometer base;
(e) first means for fixedly connecting said dynamometer base to said support frame; and
(f) second means for pivotally connecting said lever arm to said second restraining means, said second connecting means being operatively connected to said second restraining means substantially at said midpoint, whereby movement of the individual's upper body portion causes movement of said second restraining means about said second axis causing said lever arm to pivot on said dynamometer base.

4,565,369
AQUATIC EXERCISING DEVICE
Douglas H. Bedgood, P.O. Box 1820, Idyllwild, Calif. 92349
Filed Apr. 1, 1983, Ser. No. 481,207
Int. Cl.⁴ A63B *21/00*
U.S. Cl. 272—130 **12 Claims**



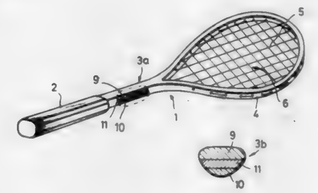
1. A variable resistance aquatic-exercising device for subjecting arms, legs and associated parts of a user's body to desired degrees of stress as the user moves his or her arms or legs through a body of water with the device associated therewith, said variable resistance aquatic exercising device comprising: a plurality of panel means for use in a body of water and for providing an area of contact for water to resist the movement of said device and the leg or arm associated with it, said plurality of panel means disposed in a stacked, generally fan shaped configuration with each of said plurality of panel means overlapping a portion of the adjacent panel means; attaching means for securing each of said panel means together and for adjusting the proportion of overlap of each of said panel means relative to an adjacent one of said panel means to vary the total surface area of said panel means by reducing or increasing the total area of contact of said plurality of panel means with water; and securing means attached to at least one of said panel means for securing said device to the arms or legs of a user.

4,565,370
FOOT HOLDING DEVICE FOR HANGING UPSIDE-DOWN
Tony Christianson, 120 8th St., Manhattan Beach, Calif. 90266
Continuation-in-part of Ser. No. 363,601, Mar. 30, 1981, abandoned. This application Oct. 12, 1982, Ser. No. 434,187
Int. Cl.⁴ A63B *23/02*
U.S. Cl. 272—145 **11 Claims**



1. A foot holding device for hanging upside-down comprising:
a single elongated, wide flexible web,
said web being looped so that the two ends thereof overlap with the obverse face of one end facing the reverse face of the other end, said foot being insertable through the resultant loop so that said single web substantially surrounds the ankle adjacent said foot, with said overlapping ends situated at one side of said foot and with the middle portion of said web situated at the opposite side of said foot,
a connector extending through said overlapping ends at said one side of said foot, and
holding means for removable attachment of said device to a structural member, said holding means being coupled to said connector and situated adjacent said overlapping ends at said one side of said foot, so that when said holding means is attached to a structural member, said web and hence said ankle and foot will be supported only on said one side thereof, and wherein said connector is a single connector extending through and connecting said overlapping ends.

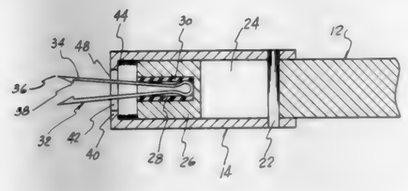
4,565,371
RACKET HAVING A HANDLE WITH DIFFERENT STRIKING CHARACTERISTICS ON OPPOSITE SIDES
Ulrich Pawlicki, Im Schellental 8, and Wolfgang Schüler, An der Kopfbuche 20, both of D-5024 Pulheim, Fed. Rep. of Germany
Filed Mar. 29, 1984, Ser. No. 594,535
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1983, 3312834
Int. Cl.⁴ A63B *49/08*
U.S. Cl. 273—73 J **1 Claim**



1. A tennis racket comprising a hand grip portion, a head carrying a plurality of strings which form a bilateral striking area, and an elongated handle portion extending between said hand grip portion and said head, said handle portion alone having a cross-sectional shape that is asymmetrical about a line extending perpendicular to the longitudinal axis of the racket and lying in a plane parallel to the plane formed by the striking area and composed of a plurality of superposed material layers, each with distinctive, differing elastic properties, said layers

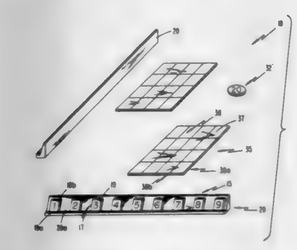
being superposed in the longitudinal direction of the striking area plane with each layer extending across a width of the handle portion, the combination of said asymmetrical shape and said material of different elastic properties on one side of the racket producing striking properties on that side which are different from the striking properties produced by the combination of said asymmetrical shape and said materials of different elastic properties on the opposite side of the racket.

4,565,372
PERSONAL DEFENSE DEVICE
August R. Werft, Venice, Fla., assignor to Allan J. Werft, Chagrin Falls, Ohio, a part interest
Continuation-in-part of Ser. No. 457,758, Jan. 13, 1983, Pat. No. 4,489,943. This application Aug. 31, 1984, Ser. No. 631,450
Int. Cl.⁴ F41B *15/06*
U.S. Cl. 273—84 R **32 Claims**



1. A hand held non-lethal personal defense device comprising an elongated handle, a piercing prong member projecting from one end of said handle, a tubular housing slidably disposed over said end of said handle and displaceable from a first position sheathing said piercing member to a second position wherein said piercing member projects from the end of said tubular housing, spring bias means urging said tubular housing to said first position, and means retaining said tubular housing slidably over said handle end, wherein said piercing member has a barb such as to remain attached to a soft material in which said piercing member is inserted and to detach itself from said material upon pulling said handle.

4,565,373
NUMERICAL GUESSING GAME
Bracha B. Ungar, 230 B Hilltop La., Annapolis, Md. 21403
Continuation-in-part of Ser. No. 400,234, Jul. 21, 1982, abandoned. This application Jun. 29, 1984, Ser. No. 626,220
Int. Cl.⁴ A63F *3/00*
U.S. Cl. 273—265 **3 Claims**

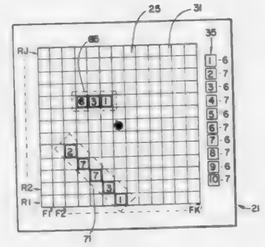


1. A mathematical game of skill and chance to be played by up to N players, where N is an integer greater than one, comprising:
(a) N sets of data base tiles, each of said data base tile sets including M tiles with numerical indicia numbered consecutively from 1 to M;
(b) (N−1) sets of feedback tiles, each of said feedback tile sets including K tiles with numerical indicia numbered consecutively from 0 to (K−1);
(c) a set of total number tiles including P tiles with numerical indicia numbered consecutively from Q to (P+Q−1);
(d) each of said tile sets having a distinctive visual characteristic identifying it uniquely from the other sets; and
(e) a playing board having: a central designated area having indicia corresponding with the total number tiles for receiving one of the total number tiles, and N player location areas;
each player location area including: a first designated area related to the M tiles of one of the sets of data base tiles and having a size, shape and indicia corresponding with the M tiles of one of the sets of data base tiles for receiving the M tiles of one of the sets of data base tiles, a second designated area related to J out of the M data base tiles in one of the sets of data base tiles and having a size, shape and indicia corresponding with the J tiles in one of the sets of data base tiles for receiving the J tiles in one of the sets of data base tiles, and a third designated area having indicia corresponding with the feedback tiles for receiving one of the feedback tiles in one of the sets of feedback tiles;

$$\text{where } P+Q=\sum_{M-J+1}^{M} n$$

said first, second and third areas including indicia rendering them distinctive from each other.

4,565,374
MATHEMATICAL BOARD GAME APPARATUS
Kyong H. Pak, 2802 Garden Lakes Blvd., Rome, Ga. 30161
Filed Jul. 11, 1983, Ser. No. 512,602
Int. Cl.⁴ A63F *3/00*
U.S. Cl. 273—272 **1 Claim**

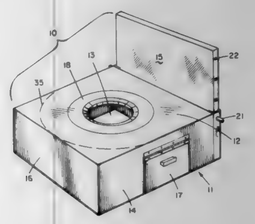


1. A method of playing a mathematical board game by a first player and second player comprising the steps of:
(a) providing a game board including indicia thereon defining a rectangular matrix of playing positions, said rectangular matrix being characterized by J ranks and K files; J and K being positive integers greater than 11;
(b) providing a first plurality of tile pieces, each of said tile pieces being inscribed with a single digit n, n including integer values between and including 1 through 10 such that for n=[1, 2, 3 . . . 10] seven tile pieces of said plurality of tile pieces bear indicia n for n=an even integer, and six tile pieces of said plurality of tile pieces bear indicia n for n=an odd integer, and providing a second like plurality of said tile pieces;
(c) providing said first player with five tile pieces of said first plurality of tile pieces;
(d) providing said second player with five tile pieces of said second like plurality of tile pieces;
(e) said first player and said second player alternately placing one of said tile pieces on one of said playing positions of said rectangular matrix and drawing a replacement tile from the player's respective plurality of tiles;
(f) providing a score for each particular one of said first player and second player equal to N, wherein

$$N=\sum_{k=1}^{k=m} n_k,\ m=[3,5], \text{ and Remainder } (N/10)=0;$$

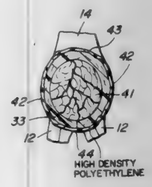
n_k being the value of indicia on each tile piece of a rank, file or diagonally contiguous sequence of said tile pieces, all placed on said rectangular matrix of said game board by said particular one of said players during a plurality of repetitions of step (e); and
(g) repeating steps (e) and (f) above until a total score for one of said first player or second player equals a predetermined number.

4,565,375
GAME APPARATUS
Donald W. Dresel, 10213 Overhill Dr., Santa Ana, Calif. 92705
Filed Feb. 21, 1985, Ser. No. 703,610
Int. Cl.⁴ A63B *67/06*
U.S. Cl. 273—401 **15 Claims**



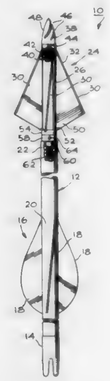
1. A game apparatus comprising,
a hollow receptacle including at least an upper surface,
an aperture through said upper surface,
said aperture including a beveled edge at said upper surface,
a bankboard at one end of said receptacle and extending above said upper surface, and
a least one object which can be tossed at said receptacle with the intention of passing said object through said aperture directly or after a carom off of said bankboard.

4,565,376
ANIMAL SIMULATING THREE DIMENSIONAL ARCHERY TARGET AND METHOD OF MANUFACTURE
Lionel Croll, 2468 Coral St., Philadelphia, Pa. 19125
Filed Mar. 28, 1985, Ser. No. 717,289
Int. Cl.⁴ F41J *3/00*
U.S. Cl. 273—408 **1 Claim**



1. An archery target comprising a form retaining wall fabricated of lengths of transversely gathered thermoplastic film wound to assume the desired shape, cover sheeting of thermoplastic material configured to cover the desired shape and heat sealed in position overlying said wall, said wall being hollow, and additional lengths of transversely gathered plastic film folded upon itself and occupying the hollow of said wall, said wall and additional lengths being fabricated of low density polyethylene film, said cover sheeting being fabricated of high density polyethylene film.

4,565,377
HUNTING ARROW AND BROADHEAD
Fernando V. Troncoso, Jr., and Vincent F. Troncoso, both of 14090-6100 Rd., Montrose, Colo. 81401
Filed Nov. 29, 1984, Ser. No. 676,268
Int. Cl.⁴ F41B *5/02*
U.S. Cl. 273—422 **12 Claims**



1. An improved hunting arrow, said arrow comprising, in combination:
a. an elongated arrow shaft;
b. stabilizing arrow fletching connected to the rear end of the shaft, said fletching comprising a plurality of spaced rear stabilizing vanes extending generally longitudinally and peripheral of said shaft, said rear vanes being disposed diagonally in a selected direction relative to the longitudinal axis of said shaft; and,
c. a broadhead connected to the front of said shaft, said broadhead comprising a longitudinally extending central core, a plurality of spaced sharp blades the bases of which are releasably received in slots in said core and which extend peripherally thereof, a point releasably screwed to the front end of said core and defining a blade front tip-receiving rear space, the front tips of said blades being releasably held in said rear space by said point, said core having a rear ring slideably received thereover, the rear end of each said blade having a ring-receiving notch, a portion of said blade rear end being releasably seated within said ring, the rear of said core terminating in a fitting secured thereto and having an annular shoulder against which said ring rests and which limits the rearward movement of said ring relative to said core, said fitting being releasably screwed to the front of said shaft, and a plurality of spaced front stabilizing vanes connected to said core, extending generally longitudinally and peripherally thereof and disposed diagonally in the same direction as said rear stabilizing vanes to increase rotation and accuracy of said arrow.

4,565,378

SHAFT SEAL WITH LIP LIFTING IN RESPONSE TO SHAFT ROTATION AND GAS PRESSURE

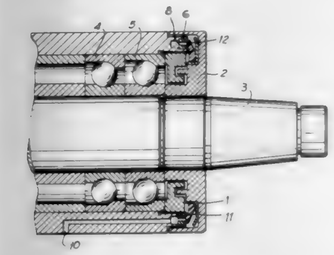
Heinz Wehrfritz, Kalchreuth, and Michael Brunke, Nuremberg, both of Fed. Rep. of Germany, assignors to GMN Georg Muller Nurnberg GmbH, Fed. Rep. of Germany

Filed Dec. 17, 1984, Ser. No. 682,375

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346073

Int. Cl.⁴ F16J *15/32, 15/34, 15/46*

U.S. Cl. 277—3 **9 Claims**



1. Apparatus for effecting a seal between a first rotary machine component and a second machine component comprising:

a sealing element coupled to said first machine component for rotation therewith, said sealing element including an elastic lip portion having a first sealing surface;

a sealing portion associated with said second machine component, said sealing portion having a second sealing surface adapted to form a seal with said first sealing surface;

said first sealing surface of said elastic lip portion forming a contact seal with said second sealing surface over a region of mutual engagement when said first machine component is stationary or rotating slowly with respect to said second machine component, said first sealing surface of said elastic lip portion tending to lift from said second sealing surface to form a non-contact seal upon a predeterminable increase in the rate at which said first machine component rotates with respect to said second machine component; and

means for introducing compressed gas into a region between said rotary elastic lip portion and said second sealing surface to form a gas cushion therebetween to facilitate lifting of said first sealing surface from said second sealing surface.

4,565,379

MAGNETIC FLUID SEAL

Heribert Ballhaus, Nuremberg, Fed. Rep. of Germany, assignor to GMN Georg Muller Nurnberg GmbH, Fed. Rep. of Germany

Filed Jan. 14, 1985, Ser. No. 691,436

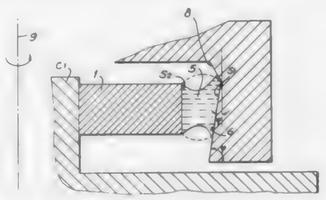
Claims priority, application Fed. Rep. of Germany, May 26, 1984, 3419812

Int. Cl.⁴ F16J *15/42*

U.S. Cl. 277—25 **5 Claims**

1. In apparatus including a rotatable outer rotor, said outer rotor being rotatable about an axis of rotation and having an inner surface defining a sealing gap with an outer periphery of a substantially disc-shaped magnet, magnetic liquid being situated in said sealing gap to form a sealing devvice, the improvement comprising:

said inner surface of said outer rotor is inclined so that in a cross-section through a plane containing the axis of rotation of the rotor, said inner surface forms a first angle with said axis of rotation, whereby said magnetic liquid is retained in said sealing gap by the reaction forces to centrifugal forces acting on said magnetic liquid in addition to the magnetic flux of said disc-shaped magnet.



4,565,380

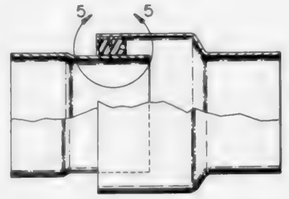
SEAL WITH TWO SEALING PORTIONS HAVING FLANGE RECEIVING OPENING THEREBETWEEN

Ira R. Newman, Sun Valley; Kenneth N. Minshull, Agoura, and Kenneth J. McGilp, Hesperia, all of Calif., assignors to Precision Tube Bending, Santa Fe Springs, Calif.

Filed Nov. 21, 1984, Ser. No. 673,581

Int. Cl.⁴ F16J *15/12*

U.S. Cl. 277—178 **12 Claims**



1. An integral ring-shaped seal adapted to be carried at the end of a connector housing and provide two spaced-apart sealing portions, said two spaced-apart sealing portions being connected by a web, and said two spaced-apart sealing portions together with said web providing therebetween an opening adapted to receive a flange located in proximity to the end of the connector housing, at least one of said two spaced-apart sealing portions having a cut-out axially disposed away from said opening to provide increased resiliency and wear resistance.

4,565,381

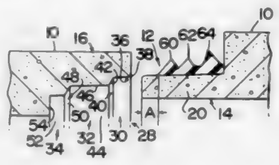
SELF ALIGNING CONCRETE PIPE WITH CONFIGURED JOINT

C. R. Joelson, 2501 Bayshore Rd., Nokomis, Fla. 33555

Filed Apr. 24, 1984, Ser. No. 603,343

Int. Cl.⁴ F16J *15/10*

U.S. Cl. 277—207 A **12 Claims**



1. A self aligning concrete pipe to improve the seal of the joint cooperatively formed between adjacent concrete pipes wherein each concrete pipe includes a male and female joint member formed on opposite ends thereof to operatively engage the corresponding joint member formed on the next adjacent concrete pine to form the joint therebetween, said male joint member including a tongue element of predetermined peripheral configuration extending outwardly from the concrete pipe, said female joint member including a groove element extending inwardly from the opposite end of the concrete pipe comprising an initial alignment stage and final seat recess stage, said initial alignment stage comprising an outer alignment recess including a horizontal and vertical alignment step having an inwardly inclined surface, said final seat recess stage comprising an inner seat recess such that as adjacent concrete pipes are assembled the outer end of said tongue element enters said outer alignment recess to horizontally and vertically align the adjacent concrete pipes by engaging said inwardly inclined plane of said horizontal and vertical alignment step permitting the tongue element to enter said inner seat recess to form the joint therebetween.

4,565,382

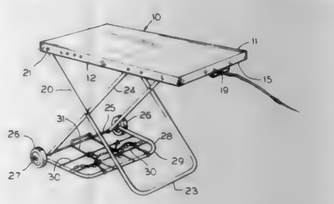
COMBINED PORTABLE TABLE AND HAND TRUCK

William S. Sherman, 132 Belle Ave., Highland Park, Ill. 60035

Filed Mar. 23, 1984, Ser. No. 592,593

Int. Cl.⁴ B62B *1/12*

U.S. Cl. 280—47.18 **16 Claims**



1. A portable table and hand truck comprising:

a planar table top having first and second ends and having side edges, and having depending portions extending from one surface of said table top at said side and end edges;

a first U-shaped member having a pair of legs and a bight portion therebetween for supporting said top, said U-shaped member being hingedly connected at the end portions of its legs to said depending portions extending from said one surface at the side edges thereof adjacent the first end of said table top, and being selectively erectable and collapsible with respect to the table top;

a second U-shaped member having a pair of legs and a bight portion therebetween for supporting said top, said second U-shaped member being hingedly connected to said first U-shaped member and selectively erectable and collapsible with said first U-shaped member with respect to said table top, the bight portion of the second U-shaped member being oriented towards said planar table top, said second U-shaped member being collapsible so as to reside in substantially the same plane adjacent the underside of said table top;

a plurality of stop means each positioned adjacent the said one surface of said table top and spaced from each other for selectively erecting said table top in a plurality of height differing positions by receiving the bight portion of said second U-shaped member in abutting relation with one of said plurality of stop means and said table top;

wheel supporting means mounted to an outer end portion of the legs of said second U-shaped member for rotatably supporting a pair of wheels thereon;

a pair of ground surface-engaging wheels rotatably supported by said wheel supporting means;

said table top having handle means secured to the depending portion extending from the second end of said top;

a load supporting rack hingedly connected to said wheel supporting means so as to be rotatable thereabout, said load supporting rack comprising a third U-shaped member having the end portions of its legs rotatably mounted to said wheel supporting means; and

load supporting rack retaining means mounted on said load supporting rack for retaining said rack in selected positions with respect to said table top;

wherein said portable table and hand truck is erectable as a table in a plurality of height differing and transportable positions with the said first and second U-shaped members erected, wherein said portable table and hand truck is erectable as a hand truck with the said load supporting rack erected and the said first and second U-shaped members collapsed, and wherein said portable table and truck is collapsible into a substantially flat condition for storage and for transportation with said load supporting rack and said first and second U-shaped members collapsed.

4,565,383

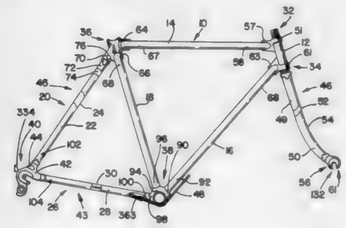
FRONT AND REAR WHEEL DROP OUTS FOR BICYCLE FRAMES

Timothy S. Isaac, Fall River, Wis., assignor to Trek Bicycle Corporation, Waterloo, Wis.

Filed Feb. 3, 1984, Ser. No. 576,571

Int. Cl.⁴ B62K *19/30*

U.S. Cl. 280—276 **8 Claims**



1. A bicycle wheel drop out bracket comprising:

a generally flat body defining opposed side walls that define opposed face surfacings of the body that are coextensive with and define a generally planar plate portion of said body,

said body in said plate portion thereof defining a drop out slot that extends from an open end thereof across the thickness of said body portion to define a bicycle wheel axle mounting way in said body that extends crosswise thereof,

said body plate portion defining a relatively narrow marginal edging that connects said side walls along the perimeter of said body plate portion,

said slot interrupting and extending across said edging to form said slot open end,

said body including a stub portion substantially aligned with and projecting away from said body planar plate portion,

said stub portion defining a socketed end portion forming an imperforate side wall structure in circumambient relation thereabout and that is in substantially squared relation with a substantially flat floor that extends crosswise of the plane of said body plate portion,

said stub portion side wall structure including a flange projecting outwardly of and generally parallel to said end portion and normally of said floor.

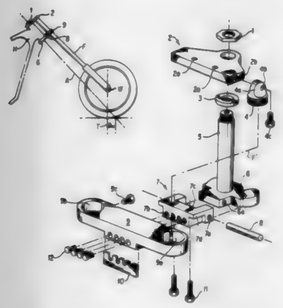
said vent passage extending through said body to said slot.

4,565,384

MOTORCYCLE FORK TREE

Torbjörn Dehnisch, Vittangigatan 31, S-162 20 Vällingby, Sweden

Filed Dec. 12, 1983, Ser. No. 560,181
Int. Cl.⁴ B62K *21/04*
U.S. Cl. 280—279 **7 Claims**



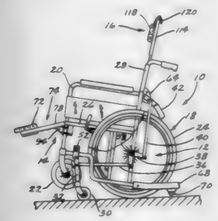
1. A fork tree assembly for a motorcycle, said fork tree assembly comprising:
- a steering axle rotatably mountable in a steering head of said motorcycle along a steering axis;
- a top tree piece fixed to a top end of said steering axle;
- a bottom inner tree piece fixed to a bottom end of said steering axle, said bottom inner piece having a first bore along a first axis transverse to said steering axis;
- a bottom intermediate tree piece pivotally mounted on said bottom inner piece about said first axis, said bottom intermediate piece having guide portions extending in a first direction orthogonal to said steering axis and first axis;
- a bottom outer tree piece to which fork tubes are securable, said bottom outer piece having a first portion shaped to correspond to said guide portions so that said guide portions can slidably engage said first portion along said first direction;
- and means for selectively securing said bottom intermediate and bottom outer tree pieces to one another relative to said first direction, whereby said bottom intermediate and bottom outer tree pieces are fixed to one another with selective adjustment in said first direction.

4,565,385

TILTABLE SUPPORTING WHEELCHAIR

Marvin A. Morford, 1815 Ashworth Rd., West Des Moines, Iowa 50265

Filed Jan. 16, 1984, Ser. No. 570,977
Int. Cl.⁴ B62B *11/00*
U.S. Cl. 280—289 WC **5 Claims**



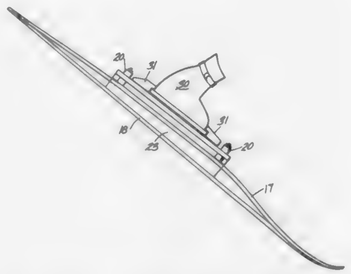
1. A tiltable supporting wheelchair mechanism mounted on a conventional wheelchair, the wheelchair having a frame with a seat, back support and two front spaced wheels and two rear spaced wheels, comprising:
- a tilting mechanism means for the controllable raising of the front of the wheelchair above the floor, said means having a pair of front support wheels and a cross frame structure, the cross frame structure being pivotally mounted at one end to the frame of the wheelchair and to the front support wheels at its opposite end and pivotally connected to a lever, the lever attached to the wheelchair and moveable to cause the pivotal movement of the cross frame from a retracted position to an extended position wherein in the extended position, the front of the wheelchair is lifted off the floor by the support wheels contacting the floor; rear supports, said supports connected to the frame of the wheelchair and extend rearwardly from the frame to contact the floor upon the operation of the tilting mechanism in raising the front of the wheelchair to its highest point above the floor;
- a leg support means for the selective supporting of an occupant's legs, the leg support means being mounted on the frame of the wheelchair and includes a leg pad mounted on a cross frame, the cross frame being pivotally mounted to the frame of the wheelchair and selectively pivotal between a vertical and horizontal position;
- a head rest, the head rest mounted to the wheelchair and includes a head support, the head support being secured to the back support of the wheelchair.

4,565,386

SKI

Lawrence Crainich, Stratford, Conn., assignor to Design Standards Corporation, Bridgeport, Conn.

Filed Feb. 1, 1984, Ser. No. 575,771
Int. Cl.⁴ A63C *5/04*
U.S. Cl. 280—602 **14 Claims**



1. A ski comprising an upper binding portion to which the ski boot of a skier is intended to be fastened, a lower sliding surface having forward, rearward and side edges, a generally centrally located longitudinal slot extending through said ski and terminating before said forward and rearward edges to form a partially slit ski with integral forward and rearward edges and side-by-side inside and outside sliding portions having mating surfaces at the cut faces wherein said cut faces are cut at an angle, and means to flex the inside sliding portion to partially overlap the inside and outside sliding portions when the skier is negotiating a turn on said inside sliding portion.

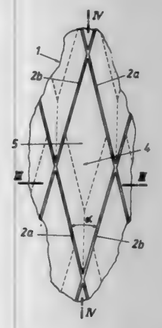
4,565,387

RUNNING-SURFACE COATING LAYER FOR SKIS

Werner Feichtlbauer, Antiesenhofen, Austria, assignor to Trak Incorporated, Wardhill, Mass.

Filed Oct. 29, 1984, Ser. No. 665,627
Int. Cl.⁴ A63C *5/00, 7/06, 7/00*
U.S. Cl. 280—604 **1 Claim**

1. In a ski having a front end, a rear end and an undersurface, said undersurface comprising a coating layer which coating layer includes a first side secured to the underside of the ski and a second side defining a running surface directed away from the underside of the ski, said second side being provided with a multiplicity of tongues which are aligned in the longitudinal direction of the ski and which constitute a climbing aid, each tongue terminating towards the rear end of the ski in a pointed end capable of being bent upwards, wherein the improvement comprises:
- the tongues are defined by two families of parallel cuts provided in the second side and directed inwardly from the running surface toward the first side but terminating



short of the latter, the two families of cuts intersecting each other on the second side of the running surface at an acute angle, the two families of cuts further being inclined in opposite directions at an acute angle to the second side of the running surface and at an angle to a plane normal to the second side of the running surface and imparting to each tongue a pair of rhomboidal side surfaces diverging with respect to each other from the tip of that tongue, each tongue thereby increasing in thickness from its tip in the direction of the front end of the ski as well as from each of its side edges in the direction of the other side edge.

4,565,388

STRUCTURE FOR CONNECTING A HANDLE TO THE PUSH RODS OF A BABY CARRIAGE

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Apr. 6, 1984, Ser. No. 597,727
Claims priority, application Japan, Apr. 8, 1983, 58-52838[U]
Int. Cl.⁴ B62B *7/06*
U.S. Cl. 280—644 **6 Claims**



1. In a structure for connecting a handle to push rods of a baby carriage for maintaining a predetermined distance between said push rods when the baby carriage is in the open state said distance being narrower when the baby carriage is in the closed state, said handle forming a push rod-connecting rod (2) which is foldable in at least one place in a middle portion (3) thereof for changing said distance between the push rods (1) by a folding action of said push rodconnecting rod, the improvement comprising, an upwardly open cylinder (6) at each upper end of each of said push rods (1), an elongated throughgoing hole (7) extending over a predetermined angular range through a lateral wall of said upwardly open cylinder, said push rod-connecting rod (2) having two end portions (4) inserted in said respective cylinder (6) whereby said end portion is capable of rotating around a longitudinal axis of said cylinder (6), each end portion (4) of said push rod-connecting rod (2) comprising a guide pin (5) extending through said elongated throughgoing hole (7) to project outwardly , a locking sleeve (10) surrounding said cylinder and movable relative to said cylinder (6) only in the direction of said longitudinal axis , said locking sleeve (10) comprising an elongated hole passage (11) having a vertically extending locking portion (12) and a guide portion (13) extending obliquely upwardly from a lower end to an upper end of said locking portion (12), said elongated hole passage (11) receiving said guide pin (5), a spring (15) interposed between said cylinder (6) and said locking sleeve (10) for constantly urging said locking sleeve (10) downwardly relative to said cylinder (6), an anchoring mechanism (9, 16) for temporarily anchoring said locking sleeve (10) to said cylinder (6) when said locking sleeve (10) is moved upwardly against the force of said spring (15) to an upper end position , whereby in an open state of the baby carriage, when said guide pin (5) is positioned at said upper end of said locking portion (12) of said elongated hole passage (11), the rotation of each end portion (4) of said push rod-connecting rod (2) relative to said cylinder (6) is inhibited for locking the baby carriage in its open state, in which said locking sleeve (10) is maintained in an upward position by said anchoring mechanism, and wherein, when said guide pin (5) is positioned at said lower end of said locking portion (12) of said elongated hole passage (11), each end portion (4) of said push rod-connecting rod (2) is rotatable relative to said cylinder (6) for closing said baby carriage, whereby said guide pin (5) passes through said guide portion (13) of said elongated hole passage (11) for moving said locking sleeve (10) downwardly while said guide pin (5) is contacting a lower side of said guide portion (13) thereby canceling the locking imposed by said anchoring mechanism (9, 16), and wherein, for opening said baby carriage, said guide pin (5) moves in said elongated hole passage (11) while contacting an upper side of said guide portion (13) of said elongated hole passage (11) until said guide pin approaches said locking portion (12), whereupon said spring (15) moves said locking sleeve (10) downwardly for positioning said guide pin (5) at the upper end of said locking portion (12) to thereby lock the baby carriage in the open state.

4,565,389

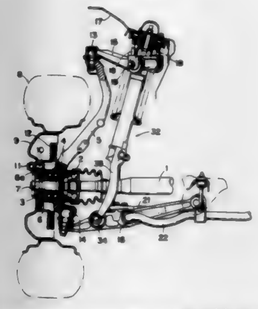
VEHICLE SUSPENSION SYSTEM

Yozo Kami, Saitama; Masaaki Minakawa, and Kanji Kubo, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Shibuya, Japan

Filed Nov. 23, 1983, Ser. No. 554,515
Claims priority, application Japan, Nov. 24, 1982, 57-177930[U]; Nov. 24, 1982, 57-177931[U]
Int. Cl.⁴ B60G *3/00*
U.S. Cl. 280—663 **13 Claims**

1. A vehicle suspension system comprising:
- (a) a wheel;
- (b) a knuckle arm supporting said wheel;
- (c) a vehicle body having a frame;
- (d) upper and lower arms connecting said knuckle arm to said frame, said lower arm having an attachment aperture defined therethrough substantially longitudinally of said vehicle body;
- (e) a radius rod and a stabilizer each having one end attached to said lower arm in the vicinity of the end of said lower arm connection to said knuckle arm; and

(f) one of said radius rod and said stabilizer being coupled to the surface of said lower arm, the other of said radius rod



and said stabilizer being inserted in said attachment aperture and coupled to said lower arm therein.

4,565,390

ROCKER ARM MOUNTING

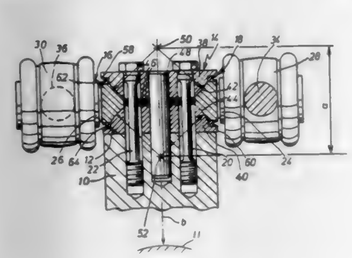
Josef Merkle, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 10, 1984, Ser. No. 639,330

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1983, 3328822

Int. Cl.⁴ B60G *11/14*

U.S. Cl. 280—726 **10 Claims**



1. A bearing assembly for interconnecting a fixed fixture pin means supportably connectible with a vehicle axle body and at least two guide rod means, each having one end connected to relatively fixed vehicle body parts, said bearing assembly comprising:

rocker arm means connected to the respective opposite ends of said guide rod means; and

at least two disc means surrounding said fixture pin means and defining a respective mutually oppositely facing clamping surface means engageable with the rocker arm means for holding same in position relative to said pin means.

4,565,391

DRIVING FORCE TRANSMITTING MEMBER FOR PASSIVE SEAT BELT

Osamu Kawai, Kanagawa, Japan, assignor to NSK-Warner K.K., Japan

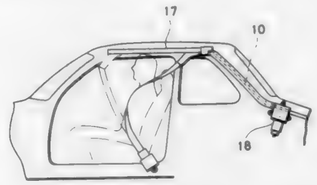
Filed Mar. 12, 1984, Ser. No. 588,395

Claims priority, application Japan, Mar. 17, 1983, 38837[U]

Int. Cl.⁴ B60R *21/10*

U.S. Cl. 280—804 **16 Claims**

1. In a tape-like driving force transmitting member suitable for use in a passive seat belt, a runner connected to the driving force transmitting member to guide a webbing automatically between a first position and a second position, and drive means adapted to drive the driving force transmitting member in the lengthwise direction thereof, the improvement which comprises that a plurality of notches is spacedly fomed respectively



along both side edges of the driving force transmitting member and the drive means includes a gear defining a plurality of teeth, which is brought into meshing engagement with the notches of the drive force transmitting member, with a predetermined interval in the circumferential direction thereof and another predetermined interval in the axial direction thereof.

4,565,392

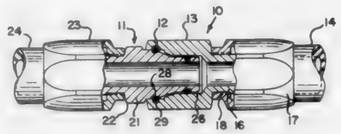
QUICK CONNECT COUPLING

Gerrard N. Vyse, Bedford, Tex., assignor to Stratoflex, Inc., Fort Worth, Tex.

Filed Jul. 9, 1984, Ser. No. 629,060

Int. Cl.⁴ F16L *55/00*

U.S. Cl. 285—23 **11 Claims**



1. A quick connect coupling comprising:

(a) an outer receptacle means having an internal opening and an annular outer groove formed in the inner surface of said opening;

(b) an inner insert means having an annular inner groove formed in the outer surface thereof;

(c) said receptacle means being adapted to be assembled with said insert means in a position where said insert means is in said opening and said inner and outer grooves are substantially radially aligned,

(d) a split ring positioned in said outer groove prior to said assembly and extending between said inner and outer grooves after said assembly; and

(e) a fluid at least partially filling said outer groove behind and around said ring, said fluid being sufficiently viscous to substantially hold said ring against movement in said outer groove prior to said assembly.

4,565,393

PIPE JOINT

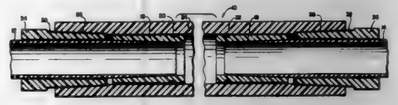
Gerald G. Greaves, Wichita Falls, Tex., assignor to Ameron Inc., Monterey Park, Calif.

Filed Nov. 5, 1982, Ser. No. 439,440

Int. Cl.⁴ F16L *17/02*

U.S. Cl. 285—107 **6 Claims**

5. In a plastic pipe joint comprising a sleeve member secured to the end of a pipe section, a tubular body member surrounding said sleeve member, and a seal member disposed intermediate the sleeve member and the body member, the seal member being in engagement with the outer surface of the sleeve member and the inner surface of the body member for providing a peripheral seal therebetween, the improvement wherein the sleeve member and the body member comprise wound fiber-reinforced thermosetting resin components, with the sleeve member including fibers having a different winding orientation



from the fibers of the body member for permitting the sleeve member to expand relative to the body member in response to increases in internal pipe pressure, so that the seal member is pressed into tighter engagement with said inner and outer surfaces to tighten said peripheral seal.

4,565,394

DUAL-WALL DRILL PIPE

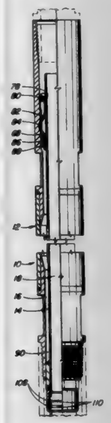
Floyd W. Becker, R.R. 9 Site 1, Box 15, Calgary, Alberta, Canada

Filed Sep. 10, 1982, Ser. No. 416,699

Claims priority, application Canada, Feb. 24, 1982, 396949

Int. Cl.⁴ F16L *39/00*

U.S. Cl. 285—141 **9 Claims**



1. A dual-wall drill pipe section for a drill string, formed from a plurality of serially connected drill pipe sections, for use in drilling in earth formations, said drill pipe section comprising, in combination:

an outer pipe member having an internally threaded box end, an externally threaded pin end, internal shoulder means extending inwardly from the bore of said outer pipe member, and recess means formed in said bore;

an inner pipe member adapted to be concentrically disposed within and telescopingly movable inwardly and outwardly of said outer pipe member, external shoulder means extending outwardly of the outer periphery of said inner pipe member and being engageable with said internal shoulder means for axially locating said inner pipe member within said outer pipe member and for supporting said inner pipe member in said outer pipe member when said section is in an upright position;

detent means associated with said inner and outer pipe members for releasably retaining said inner pipe member within said outer pipe member and permitting relative axial displacement of said pipe members upon application of predetermined opposed axial forces to said members,

said detent means including a plurality of generally V-shaped leaf springs, an end of one arm of each said spring being secured to the outer periphery of said inner pipe member, the end of the other arm of each said spring being abuttingly and slidingly engageable with the outer periphery of said inner pipe member and the apex of each said spring means being spaced from said periphery and frictionally engageable with said recess means; and

spacer means secured to each end of said periphery of said inner pipe member and being abuttingly engageable with said bore of said outer pipe member for maintaining concentricity between said inner and outer pipe members;

said spacer means including a plurality of angularly spaced longitudinally extending plates extending outwardly of said periphery and each having a longitudinal surface abuttingly engageable with said bore of said outer pipe.

4,565,395

EXTENSIBLE SWIVEL

Richard D. Rockwood, Marshfield, and Bernard J. Ruskin, Marblehead, both of Mass., assignors to Chapman Manufacturing Company, Inc., Avon, Mass.

Filed Apr. 2, 1984, Ser. No. 595,237

Int. Cl.⁴ F16L *27/00*; F16D *1/12*

U.S. Cl. 285—282 **20 Claims**



1. A swivel comprising:

(a) a spindle;

(b) a stop ring having an arcuate segment and secured about said spindle;

(c) a double-leg ring member having integral arcuate segments and mounted about said spindle in operative association with said stop ring;

(d) a stop bushing having an arcuate segment and a channel and mounted about said spindle in operative association with said double-leg ring member; and

(e) an end ring secured about said spindle to contain said stop bushing and said double-leg ring member about said spindle between it and said stop ring.

4,565,396

PNEUMATIC CONTACT LENS INSERTION DEVICE

John M. Larimer, 311 Lindsey La., Pittsburgh, Pa. 15239

Filed Mar. 11, 1985, Ser. No. 710,707

Int. Cl.⁴ A61F *9/00*

U.S. Cl. 294—1.2 **8 Claims**

1. A hand held mechanical device for pneumatically inserting contact lenses onto the surface of the eye with little or no

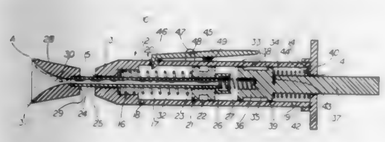
handling of the contact lenses by the fingers during the insertion, said device comprising;

a cylindrical main body being open in the rear and tapered at the front, with said tapered front having a hole adapted to receive freely therein a hollow sliding shaft, said hole extends axially into the inside chamber of the said main body, and said main body having an end cap adapted to fit thereon, with said end cap having an axially centered hole passing therethrough, and said main body having provided on it's outer surface a means of securing thereto a trigger assembly, and said main body having two vent holes with one said vent hole disposed forward and passing radially through the wall of the said main body, and said second vent hole being disposed rearward and passing radially through the wall of the said main body, and said main body having a square hole passing radially through the wall of the said main body and being disposed to fit therethrough a trigger tip;

a piston adapted to slide freely within the said main body and having a means for forming a partial gas seal between the said piston and the inside wall of the said main body, and said piston having a radial groove around it's girth providing a means of locking the said piston in a specified position within the said main body, and said piston having an axially centered hole through it's center so that a tubular shaft can slide freely therethrough;

a first coil spring disposed within the said main body forward of the said piston and providing a rearward biasing force to the said piston, and said first spring having a means of being retained axially centered within the said main body;

a cocking plunger disposed within the rear area of the said



main body and slideable therein, and said cocking plunger having a head with a means for forming a partial gas seal between the outside surface of the said cocking plunger head and the inside surface of the said main body, and said plunger having a stem extending outward and rearward through the said end cap hole;

a second coil spring disposed within the said main body forward of the said end cap and coiling around the said cocking plunger stem and ending rearward of the said cocking plunger head, and said second spring having a means of being anchored at both ends with the forward end anchored to the said cocking plunger and the rearward end anchored to the said end cap, said second coil spring providing a rearward biasing force to the said cocking plunger;

a hollow sliding shaft having a longitudinal passage for air flow therethrough, with said shaft disposed through the said hole in the front tapered end of the said main body, freely slideable therethrough and extending into the interior of the said main body through the said hole in the said piston into the area between the said piston and the said cocking plunger head, and said shaft is provided with a flange on the rearward end to limit the rearward travel of the said piston thereon, and with said flange having an inward and forward tapering lip to guide a buffer spring;

a third coil spring disposed within the said main body between the forward end of the said cocking plunger head and the rear flanged end of the said sliding shaft, providing a forward biasing force limiting the rearward travel of the said sliding shaft, and said third spring having a substantially weaker biasing force than the said first spring, and said third spring having a means of being anchored within and guided by a hole provided axially centered in the forward face of the said cocking plunger head;

a trigger mechanism externally mounted on the said main body disposed in such a position so as to be lockable internally with the said piston groove when the said piston is in it's forward most position and said first spring is fully compressed;

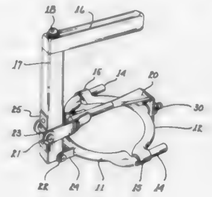
a soft rubber cup disposed at the forward end of the said sliding shaft providing a means of mounting and retaining thereon a contact lens, and said cup having an internal shape designed to disperse a charge of air flowing outward from the said passage of the said hollow sliding shaft;

4,565,397

HAND-GRIPPABLE CARRIER FOR TRANSPORTING CONTAINERS

Walter L. Keen, Rte. 1 - Box 80-27, Tolleson, Ariz. 85353

Filed Sep. 10, 1984, Ser. No. 649,269
Int. Cl.⁴ A47L *23/28;* **A47J** *45/00*
U.S. Cl. 294—34 **10 Claims**



1. A carrier for transporting a container comprising:

(a) first and second arcuate encircling means removably contacting a region of said container when drawn together, each of said encircling means having opposing ends;

(b) linear extension means mounted on the opposing ends of one of the encircling means;

(c) guide means mounted on the opposing ends of the other of the encircling means for slidably receiving the linear extension means therein, said guide means comprising a sleeve surrounding said linear extension means, said encircling means, extension means and guide means substantially residing within the same plane during relative movement of said first and second encircling means;

(d) a handle rotatably coupled to said first arcuate encircling means;

(e) a supporting means having first and second ends, said first end being rotatably coupled to said handle and extending outwardly therefrom; and

(f) means for coupling the second end of the supporting means and the second encircling means, the movement of said handle providing relative movement between said first and second encircling means for removably contacting a region of the container being transported.

4,565,398

MULTI-PURPOSE COMPOUND HAND TOOL

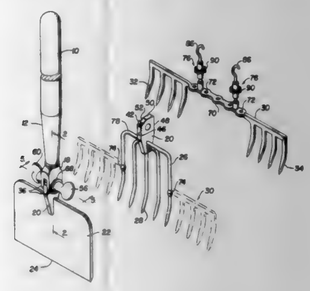
Charlemagne Poulin, 1432 Defense Hwy., Gambrills, Md. 21054

Filed Oct. 11, 1984, Ser. No. 659,888
Int. Cl.⁴ A01B *1/20;* **A01D** *11/06*
U.S. Cl. 294—52 **12 Claims**

1. A multi-purpose compound hand tool, comprising:

a handle terminating at one end in bifurcated coupling means including a substantially flat inner surface adjacent a pair of opposing end portions, said flat inner surface being perpendicular to the longitudinal axis of the handle and including a single dimple type of recess which is offset from said longitudinal axis,

a plurality of implements selectively attachable to said handle, each implement including a like connecting member having a solid body portion of a constant relatively thin thickness which fits between said pair of opposing end portions of said bifurcated coupling means, said body portion additionally having generally flat, mutually perpendicular top and side body surfaces separated by a relatively shorter intermediate generally flat inclined body surface, and defining an acute angle less than 45° with said top surface, said flat surfaces being selectively positioned to abut and be held in a fixed position against



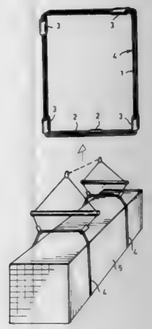
said flat inner surface of said bifurcated coupling means providing thereby adjustment of the angle of a particular said implement relative to the handle, and with said inclined body surface including a single nub type of projection engageable with said dimple type of recess in an inclined position of said implement on said handle and further having a height so as to freely fit beneath said flat inner surface of said bifurcated coupling means in both a vertical and horizontal position of said implement on said handle out of engagement with said dimple type of recess.

4,565,399

DISPOSABLE LIFTING LOOP AND METHOD OF LIFTING A CARGO LOAD THEREWITH

W. Charles Cranston, Kotka, Finland, assignor to Cranston Ky, Kotka, Finland

Continuation of Ser. No. 467,473, Feb. 17, 1983, abandoned, which is a continuation of Ser. No. 189,076, Sep. 22, 1980, abandoned. This application Aug. 1, 1984, Ser. No. 637,321
Claims priority, application Finland, Sep. 25, 1979, 792982
Int. Cl.⁴ B66C *1/18*
U.S. Cl. 294—74 **11 Claims**



1. A disposable lifting loop arrangement for use only once in lifting a load, after which it is disposed of an not reused, thereby generally reducing the time required for a loading operation, while also enhancing the safety of the load lifting operation, comprising: an endless steel wire loop (4) which is formed from a plurality of disposable prefabricated semi-rigid steel wire rings (1) bound together in a group by binding means at a plurality of spaced locations around the wire loop, each semi-rigid steel wire ring having a substantially circular cross-sectional shape, and the semi-rigid steel wire rings having a larger circumference that the circumference of the load, such that the loop can be easily placed around the load, and the rings being designed to be deformed to conform to the shape of the load, particularly the lower corners of the load to minimize damage thereto, while also being sufficiently rigid to retain a predetermined configuration of the loop such that the loop can extend beyond the load to facilitate the application thereto and the removal therefrom of a lifting mechanism, with the construction of the loop from the disposable steel wire rings allowing the loop to be formed on site for use with a variety of different size and shape loads because of the ability to select the number of steel wire rings forming the loop.

4,565,400

DOUBLE HAND FOR AN INDUSTRIAL ROBOT

Seiichiro Nakashima, Hino; Nobutoshi Torii, Hachioji, and Akihiro Terada, Hino, all of Japan, assignors to Fanuc Ltd., Tokyo, Japan

PCT No. PCT/JP83/00262, § 371 Date Apr. 10, 1984, § 102(e) Date Apr. 10, 1984, PCT Pub. No. WO84/00713, PCT Pub. Date Mar. 1, 1984
PCT Filed Aug. 11, 1983, Ser. No. 605,027
Claims priority, application Japan, Aug. 11, 1982, 57-138403
Int. Cl.⁴ B25J *15/00*
U.S. Cl. 294—88 **4 Claims**

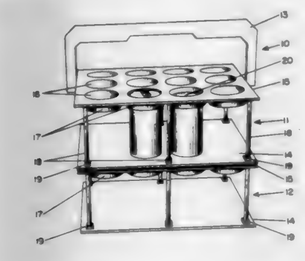
1. A double hand for an industrial robot, comprising a hand body; two sets of work clamping means and two sets of actuators for opening and closing the work clamping means respectively; said hand body having a rear end attachable to the free end of the robot wrist of an industrial robot, a front end and opposite sides extending between the front end and the rear end; each of said work clamping means having a pair of gripping fingers; said pairs of gripping fingers being supported pivotally at the respective roots thereof on said hand body near the opposite sides of said hand body, respectively, for turning motion; and each of said actuators being adapted so as to turn the associated pair of the gripping fingers about respective centers provided in the roots of said gripping fingers in opposite directions to extend said work clamping means and said fingers thereon from and retract said work clamping means and said fingers thereon into the opposite sides of said hand body.

4,565,401

CARRIER FOR EMPTY CONTAINERS

John A. Young, Jr., 372 Central Park West, New York, N.Y. 10025

Filed Jun. 18, 1984, Ser. No. 621,507
Int. Cl.⁴ B65D *6/40, 6/08*
U.S. Cl. 294—159 **1 Claim**



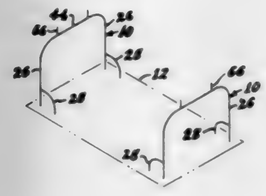
1. A carrier for empty containers, comprising: a first and second holder unit, each said holder unit including a flat tray member, a container positioning member having a plurality of openings to recieve the upper portions of containers positioned on said tray member, said positioning member having a projection surrounding each opening which extends in a direction toward said tray member to receive the upper portion of a container supported on said tray member, a plurality of support members affixed at opposite ends to said tray member and said positioning member to hold them in spaced relation, receptacle means formed at opposite ends of the lower surface of said positioning member; a handle having projections adapted to be received in said receptacle of one of said holder units; a plurality of fabric gripping elements mounted at selected locations on the top surface of said positioning member of said first holder unit; and a corresponding plurality of fabric gripping elements positioned at corresponding locations on the bottom surface of said tray member of said second holder unit so as to permit said first and said second holder units to be releasably joined in stacked relationship.

4,565,402

TRUCK BED SUPPORT FRAME UNIT

David B. Hopkins, R.R. 8, Box 90, Frankfort, Ind. 46041

Filed Oct. 27, 1983, Ser. No. 545,836
Int. Cl.⁴ B60P *3/00*
U.S. Cl. 296—3 **9 Claims**



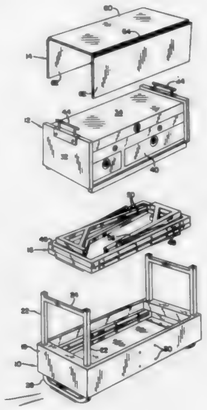
1. A support unit for a support frame means for an open-bed truck or van, such as for providing for the carrying of objects in a supported manner above the truck bed even though the truck may not be provided with stake pockets for supporting stake members which facilitate the elevated carry of such objects, the support frame means comprising one or more support units depending upon the amount and/or length of fore-and-aft support is desired, each support unit comprising:
a pair of mounting base means;
first connection means, for rigidly connecting each of the mounting base means to the truck bed, each respective one thereof adjacent a side of the truck bed;
a pair of support column means;
a pair of brace means;
second connection means, for rigidly connecting an associated one of the support column means and brace means to a respective one of the mounting base means;
third connection means for rigidly interconnecting one of the brace means to a respective one of the support column means at a position above its bottom;
fourth connection means, for rigidly interconnecting the two support column means at a high elevation thereof;
the said associated ones of the first connection means, the second connection means, and the third connection means, and the associated one of the brace means, co-operating to provide fore-and-aft stability to the support unit, the brace means extending in a generally fore-and-aft direction when assembled onto the mounting base means and the mounting base means is installed onto the truck bed;
and the said associated ones of each set of the first connection means, the second connection means, and the fourth connection means and the associated support column means co-operating to provide transverse stability to the support unit,
in a combination in which the portion of the second connection means which interconnects the support column means with the mounting base means includes a lug means upstanding from the mounting base means, and the adjacent portion of the support column means is a hollow tubular component which supportingly receives the lug means.

4,565,403

MARKSMAN'S COLLAPSIBLE, PORTABLE, SHOOTING BENCH AND TABLE ASSEMBLY

Robert R. Brown, 18865 Oak Tree Ave., Oregon City, Oreg. 97045

Filed Feb. 13, 1984, Ser. No. 579,309
Int. Cl.⁴ A47B *83/02, 3/14*
U.S. Cl. 297—3 **8 Claims**



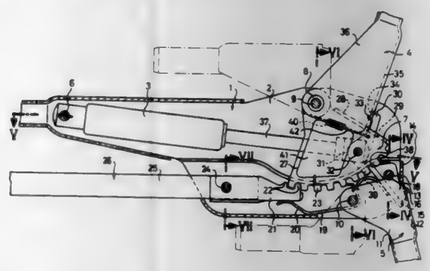
1. A collapsible, portable, bench assembly comprising:
(a) a bench provided with legs on each end extending downward from the underside thereof, said underside being open to provide a storage compartment between said legs, the bench being shiftable between an upright, use position and an inverted storage position,
(b) a cheat contoured and dimensioned for nesting in the compartment between the bench legs,
(c) a foldable table top adjustable between an opened out use position, and a folded, storage position, wherein it encloses the chest when the chest is nested in the compartment,
(d) a collapsible leg assembly adjustable between an extended use position and a collapsed storage position wherein the leg assembly is insertable in the bench compartment for storage,
(e) fastening means releasably fastening the table top in its opened out use position to the leg assembly in extended use position, and
(f) attaching means releasably attaching the bench in its upright use position to selected ones of the legs of the leg assembly in its extended use position.

4,565,404

HINGE

Joerg Rauschenberger, Gartenstrasse 8, 7144 Asperg, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,987
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3129089
Int. Cl.⁴ A47C *4/00;* **B60N** *1/02*
U.S. Cl. 297—19 **5 Claims**



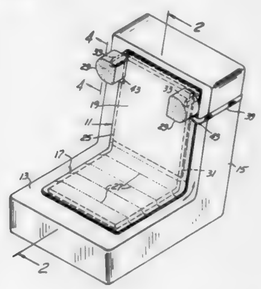
1. A hinge, particularly of an article for lying, sitting and the like, comprising
a hinge shell;
a hinge part supporting a rest member, said hinge part being turnable relative to said hinge shell between and arrestable in a plurality of positions;
a power element turning said hinge part in closing direction in forced manner and arresting said hinge part;
an intermediate element turnably mounted on said hinge shell and connected with said power element, said intermediate element cooperating with said hinge part so that it is coupled with said hinge part in one turning region of said hinge part between a substantially horizontal and a substantially vertical position of the rest member, and said hinge part is separately turnable in a remaining turning region;
a foot part lockable in an arrestable turning region and turnably supported on said hinge shell;
and a foot catch turnably mounted on said hinge shell and connected with said power element, said intermediate element
arranged to lock said foot part, said foot catch retaining said foot part in an arrestable turning region of said intermediate element and releasing the same in another position of the latter, said foot catch being controlled by said intermediate element.

4,565,405

SEAT MAT ASSEMBLY WITH HEADRESTS

Camille Mayer, 12315 Kilbourne, Detroit, Mich. 48213

Filed Jun. 8, 1984, Ser. No. 618,877
Int. Cl.⁴ A47C *7/02*
U.S. Cl. 297—230 **2 Claims**



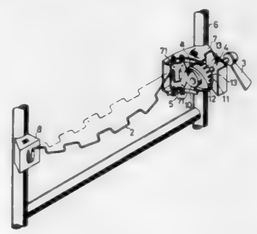
1. A seat and backrest mat mountable upon a seat having a backrest comprising elongated opposed top and bottom covers of a predetermined shape;
a layer of resilient material of the same shape interposed between the covers;
continuous securing means extending around the perimeters of and peripherally interconnecting said covers and resilient layer, defining a seat portion and a connected back portion;
an elongated stiffener liner sheet interposed between one of said covers and resilient layer of at least said back portion and along its opposite sides secured thereto by said securing means, said stiffener sheet having sufficient flexibility to permit selective folding and redefinition of the connected seat portion and back portion as the mat is slid along the seat and backrest to match the height of the person using the mat;
a pair of laterally spaced headrest supports secured to said stiffener sheet at its top and projecting forwardly therefrom;
and a pair of formed enlarged laterally spaced resilient headrests each having a central rearwardly opening aperture snugly receiving and fixedly supported and secured upon said headrest supports respectively.

4,565,406

LUMBAR SUPPORT DEVICE

Hiroshi Suzuki, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1985, Ser. No. 715,086
Claims priority, application Japan, Mar. 29, 1984, 59-63060
Int. Cl.⁴ A47C *7/46*
U.S. Cl. 297—284 **5 Claims**



1. A lumbar support device for adjusting the hardness of the lumbar support portion of a seat back by rotating a cam to

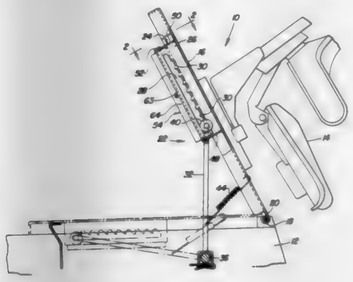
move one end of an elastic member extending the right and left sides of a back frame and thus varying the curvature of said elastic member, wherein said cam comprises a smaller cam portion with which said one end of said elastic member can be engaged and a larger cam portion engaged with said smaller cam portion and mounted to the same shaft therewith, and, in the side surface of said larger cam portion facing said smaller cam portion, there is provided a guide section having a concavo-convex curved surface with respect to the direction of said elastic member.

4,565,407

SEAT HOLDUP MECHANISM

Peter F. Brautigam, Kewaskum, Wis., assignor to Deere & Company, Moline, Ill.

Filed Dec. 9, 1983, Ser. No. 559,661
Int. Cl.[4] A47C *1/02*
U.S. Cl. 297—335 **3 Claims**



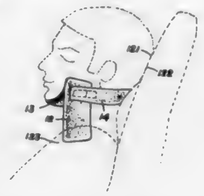
1. In a vehicle seat assembly including a support frame; a seat platform pivotally mounted to the support frame for movement about a transverse axis between a lowered operative position and a raised inoperative position and a seat holdup mechanism including a prop link extending between the support frame and seat platform for selectively holding the seat platform in its raised inoperative position, an improved seat holdup mechanism comprising: said prop link being mounted to said frame for vertical swinging movement about a second axis paralleling said first axis and having a transversely bent free end; a latch bracket secured to a bottom surface of said platform and including a depending elongate flange extending in crosswise relationship to said first axis; said flange having a guide slot provided therein and having an upper edge shaped to define a plurality of notches; said transversely bent end being received in said guide slot; biasing means normally urging said link end against said upper edge of said guide slot; said notches being shaped to permit the seat platform to be raised without interference by said link but for receiving said end upon release of the seat platform when it is in a lifted position; operator means mounted for selectively engaging and pushing said link end away from said upper edge to thereby release the prop link and permit the seat platform to be lowered; and said operator means comprising an angle plate extending parallel to said guide slot and having a leg engaged with said link end; said angle plate being mounted to the platform for pivoting about a third axis paralleling said guide slot; and a release rod being connected to the angle plate and being selectively operable for pivoting the plate against the link end for pushing the latter away from the upper edge of the guide slot.

4,565,408

PORTABLE HEAD SUPPORT FOR SLEEPING OR RESTING IN A SITTING POSITION

Maria Palley, 18 Dean St., Madison, N.J. 07940

Filed Nov. 9, 1983, Ser. No. 550,450
Int. Cl.[4] A47C *16/00, 7/36*
U.S. Cl. 297—393 **5 Claims**



1. A device for supporting the human head, comprising two elongate sheaths formed from flexible material and interconnected by a flexible chin supporting strap, a thin, elongate substantially rigid support plate received in each said sheath, and an additional flexible strap secured at each end to a respective elongate sheath to extend in a direction substantially normal to the elongate direction of each said sheath, whereby the device is positioned with the plates located on opposite sides of a user's neck and resting on the user's shoulder-collarbone area, the flexible chin supporting strap underlines and supports the chin of the user, and the additional flexible strap extends behind and embraces the neck to retain the device in chin supporting position.

4,565,409

BODY SUPPORT APPARATUS

Gary G. Hollonbeck, 181 E. Rte. 38, and Hugh E. Cooper, 1253 Tilton Park Dr., both of Rochelle, Ill. 61068

Filed Nov. 28, 1983, Ser. No. 555,385
Int. Cl.[4] A47C *7/54*
U.S. Cl. 297—411 **5 Claims**



1. Body support apparatus including a pair of supporting implements which in use are arranged vertically on opposite sides of a person to support the body weight of the person when in a seated position and thereby to relieve pressure on the spinal column of the person, each of said implements comprising

a base member having a planar underside defining a wide area of contact between the base member and the seat on which the person sits in close relation to the side of said person;

an upright assembly of adjustable height including an inner member and an outer member disposed in telescopic coaxial relation,

an armrest assembly fixed to the upper end of one of said telescoping members in crosswise relation to the axis of said upright assembly, with said armrest assembly including an elongated box-like member having a center portion adapted for attachment to one of said telescoping members and which in use is located beneath the arm pit of the user, and first and second extensions extending outwardly from said center portion and which in use are located beneath the front and rear portions of the arm of the user, and padding means carried on at least the upper portion of said block-like member, the upper surface of said center portion being recessed over substantially the entire extent thereof to define an area of maximum cushioning in the proximity of the middle of the arm pit and the extension absorbing the major portion of the force of the body weight applied to the implement in use; and

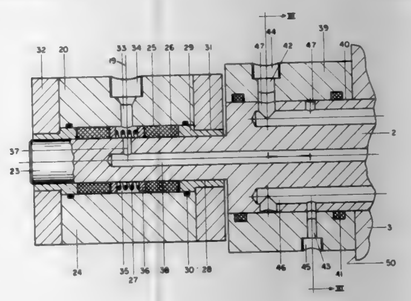
mounting means secured to said base and fixed to the lower end of the other one of said telescoping members, said mounting means comprised of a cylindrical-shaped resilient connecting member having upper and lower mounting members attached thereto in substantially vertical alignment with respect to the centerline of said connecting member, with said lower mounting member securing said mounting means to said base member and said upper mounting member securing said mounting means to said lower end of the other one of said telescoping members, with said resilient connecting member permitting universal movement of said upright assembly relative to said base member from its generally vertical orientation when the user moves from a generally erect position and causing said upright assembly to return automatically to its generally vertical orientation when the user returns to a generally erect position.

4,565,410

APPARATUS FOR CONTROLLING THE SUPPLY OF HIGH-PRESSURE LIQUID TO A CUTTER DRUM ASSEMBLY

Karl Hotger, Bochum, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH, Bochum, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 559,970
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3246991
Int. Cl.[4] E21F *5/02;* **E21C** *7/08*
U.S. Cl. 299—81 **4 Claims**



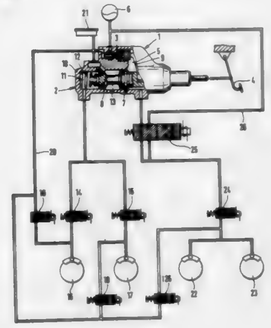
1. Apparatus for controlling the delivery of high-pressure liquid through a seal to a shearer drum mounted on a carrying arm of a shearer cutter for a longwall mining machine, said shearer drum having on its periphery nozzles for discharging high-pressure liquid onto a face area, said apparatus including a liquid circuit with liquid passageways extending through a shaft arranged centrally to extend through the shearer drum, said circuit further including valves in the interior of said shearer cutter for connecting the liquid passageways extending through said shaft to only those nozzles on the periphery of the drum which are opposite the working face, an arm for carrying the shearer drum through which said shaft extends together with the liquid passageways therein for delivery of high-pressure liquid through passageways therein for controlling said valves, a seal on an end portion of said shaft which projects from said carrying arm for feeding high-pressure liquid to the liquid passageways in said shaft, and means extending along a part of said shaft for controlling the actuation of said valves.

4,565,411

HYDRAULIC BRAKE SYSTEM WITH SLIP CONTROL

Wolfram Seiber, Darmstadt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 11, 1984, Ser. No. 629,696
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 3327401
Int. Cl.[4] B60T *8/10*
U.S. Cl. 303—110 **5 Claims**



1. A hydraulic brake system with slip control for automotive vehicles comprising:

a plurality of wheel brakes operating on a like plurality of wheels, at least one wheel being driven;

a pedal-operable braking pressure generator having a first piston defining a first chamber and a second piston defining a second chamber;

an unpressurized reservoir;

a pressure accumulator hydraulically connected to said first chamber by a brake valve;

a first brake system valve means normally connecting at least one of said brake wheels with said second chamber;

a second brake system valve means normally connecting said driven wheel brakes with said first chamber;

a third brake system valve means normally interrupting flow between said wheel brakes and said unpressurized reservoir;

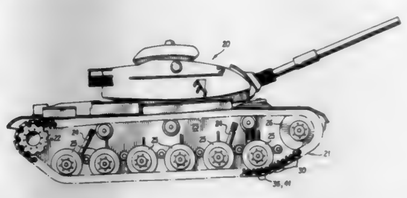
a fourth brake system valve means normally interrupting flow between said driven wheel brakes and said pressure accumulator; whereby said slip control closes at least one of said first and second brake system valve means in response to a first predetermined input control signal; and whereby said slip control closes at least one of said first and second valve means and opens said third valve means in response to a second predetermined input control signal; and whereby said slip control opens said fourth valve means in response to a third predetermined input control signal.

4,565,412

TRACK AND ROAD WHEEL ASSEMBLIES FOR TRACKED VEHICLES

Hubert Commiage, Springfield, Va.; John E. Cunningham, Orlando, Fla., and Howard R. White, Jr., Littleton, Colo., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 3, 1983, Ser. No. 519,959
Int. Cl.[4] B62D *55/12, 55/20*
U.S. Cl. 305—53 **17 Claims**



1. A track and road wheel assembly to help support and propel a tracked vehicle having a hull supported on an endless track subassembly by plural road wheel subassemblies, said assembly comprising:

A. an endless track subassembly comprising

a. a plurality of pivotally interconnected track shoes, each shoe having a body of composite material and including

(i) an outer generally non-metallic rigid body material formed around a more rigid, metallic inner body support member having spaced-apart link-receiving apertures at opposed lateral sides;

(ii) a generally planar bottom side portion having a tread surface for engaging the ground to help propel the vehicle, the body and tread surface being formed of the same non-metallic rigid material;

(iii) a transversely projecting medial body portion projecting upwardly away from the shoe's bottom side portion and constituting in part support means thereof and said link-receiving apertures extending through said medial body portion, and between which apertures there is a central groove transversely through an upper portion of said medial body portion for cooperative engagement by the road wheels;

b. connecting link means including plural connecting links and bushed retainer pin means for releasable interlocking relation through said link-receiving apertures in a manner facilitating supportive pivotal interconnection of a plurality of adjacently disposed track shoes into an endless flexible track; and

B. a plurality of road wheels each adapted to be operatively mounted respectively with a hull-attached road wheel support arm, said plural road wheels collectively adapted for cooperative working relation with said endless track subassembly via said road wheels, and said road wheels each having an outer peripheral rolling surface for complementally engaging said central grooves of passing track shoes of said endless track assembly.

4,565,413

PORTABLE DESK

Gary E. Wallace, Rte. 5, #25 Lazy S La., Chico, Calif. 95926

Filed Feb. 6, 1984, Ser. No. 577,586
Int. Cl.[4] A47B *53/00*
U.S. Cl. 312—184 **7 Claims**

1. A portable easily transportable desk suitable for use on the seat of an automobile, which desk comprises:

a bottom wall,

a front wall and a back wall, normal to said bottom wall, each connected to the bottom wall, and upstanding therefrom in a spaced relationship,

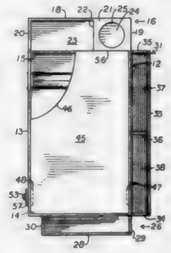
a pair of parallel side walls, interconnecting said front and rear walls, and said bottom wall, all of said walls together forming an enclosure that is open at the top;

a top surface planar member suitable as both a writing surface and as a closure for the open top,

said top surface planar member being pivotable and slideable with respect to said enclosure,

the pivoting means being at one end of the planar member and acting as a connecting means for connecting said planar member to said enclosure,

said top planar member being pivotally connected at one end of same to said enclosure, wherein said connecting means includes a pair of horizontally extending slots in said front and back walls, respectively, said slots being aligned and



lying in substantially the same horizontal plane, and roller means mounted on said top member engaging said horizontal slots, whereby said planar member may be pivoted from a flat position covering said enclosure, to a raised position with the non-connected end of said planar member away from the top opening of the enclosure, and

said top planar member may be slid on said slots horizontally away from one of said enclosure's side walls toward a user of the desk,

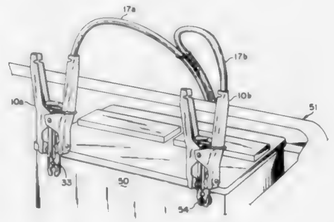
and wherein said top planar member includes a cut out portion adapted to accommodate the body of the user of said desk, when said top planar member is slid toward said user.

4,565,414

BATTERY CLAMP

Gerald H. French, St. Louis, Mo., assignor to Associated Equipment Corporation, St. Louis, Mo.

Filed Jun. 25, 1984, Ser. No. 624,216
Int. Cl.[4] H01R *27/00*
U.S. Cl. 339—32 R **19 Claims**



1. An improved battery clamp for use with top post and side terminal batteries in which a pair of opposed clamp portions are hingedly connected, and a biasing means operatively engages the opposed clamp portions and tends to bias the clamp to a closed position wherein the improvement comprises:

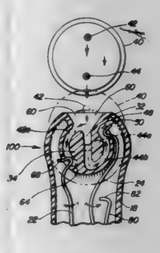
a side terminal connector carried by the clamp and selectively extensible beyond the clamp portions with the clamp portions selectively engaging the connector under the force of the biasing means for providing a battery side terminal engagement force to the connector.

4,565,415

SOCKET FOR FLUORESCENT LAMPS

Albert E. Feinberg, Chicago, Ill., assignor to Advance Transformer Co., Chicago, Ill.

Filed Aug. 26, 1983, Ser. No. 526,913
Int. Cl.[4] H01R *33/08*
U.S. Cl. 339—50 R **13 Claims**



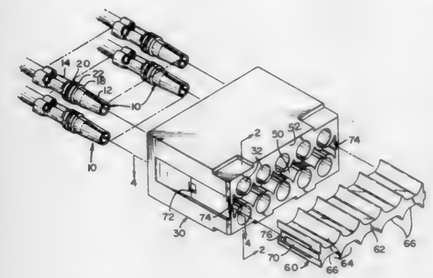
1. A socket for fluorescent lamps of the type which has a pair of parallel contact pins extending axially out of each of its ends, each pair of pins being equidistant from the lamp axis on diametrically opposite sides of said axis, said socket comprising a housing adapted to be mounted to an electrical fixture at one end of said housing and having structure for insulately mounting the pins of a lamp end adjacent the second end of said housing, the socket presenting a front surface to be disposed parallel to the lamp end, said pin-mounting structure comprising means forming a continuous S-shaped symmetrical pathway in said housing opening to said front surface and being formed of an intermediate linear channel and a pair of arcuate channels on opposite sides of said intermediate linear channel, a guide entrance formed in said housing opening to said intermediate linear channel below said front surface from the said second end of the said housing at the juncture of one of the arcuate channels with the intermediate linear channel and said intermediate linear channel adapted to receive the pair of pins of the lamp end in a translating movement of the lamp parallel to its axis, each of said arcuate channels having an entrance and a dead end, the ends of the intermediate linear channel communicating respectively only to the entrance ends of said arcuate channels respectively, said intermediate linear channel forming the sole linear path for both pins and said arcuate channels forming individual arcuate paths for each pin respectively, said arcuate channels being of substantially equal length, each arcuate channel extending over an arc with the respective dead end beyond 90° from the respective entrance, electrical contact means disposed solely immediately adjacent each dead end, equidistant and remote from each entrance of the arcuate channels, said socket having a pair of conductive members mounted to its said one end and capable of being coupled to external electrical circuitry, each conductive member extending within the housing and leading to a respective electrical contact, both pins requiring full engagement within said linear intermediate channel for simultaneous pin entry into both arcuate channels for rotation thereof respectively and translation to the dead ends of said arcuate channels, said lamp being rotatable only subsequent to full disposition of both pins within said intermediate linear channel and electrical contact being effected, subsequent to introduction of said pins into said arcuate channels, only when both pins are at or immediately adjacent the dead ends of the respective arcuate channels, remote from the entrance, and engaged with said electrical contact means whereby to prevent electric shock by inadvertent engagement of one of the pins with the electrical contact means while the lamp is held by the operator and prior to engagement of all pins with their respective electrical contacts and means for seating said pins at the dead ends of said arcuate channels.

4,565,416

LATCHING MEANS AND LOCKING MEANS FOR RETAINING TERMINALS IN A CONNECTOR

William J. Rudy, Annville, and Dennis E. Smith, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 11, 1984, Ser. No. 599,092
Int. Cl.[4] H01R *11/11*
U.S. Cl. 339—59 M **19 Claims**



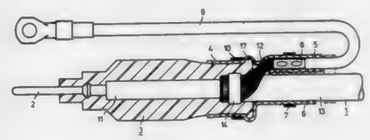
1. An electrical connector for contact terminals comprising a connector housing including one or more terminal-receiving cavities extending axially therethrough in axial communication with front and rear surfaces thereof, each said cavity having at least a forward section in which a contact portion of a said terminal is secured after insertion of said terminal therein, said forward section of each said cavity having a rigid semicircular wall portion and a resilient, expandable semicircular wall portion joined to said rigid wall portion longitudinally therealong, there being terminal-engaging latching means on each of said rigid and said expandable wall portions such that when a respective said terminal having cooperating latching means thereon is inserted and before said terminal-engaging latching means and said cooperating latching means engage in a latching condition, said expandable semicircular wall portion of said cavity is expanded radially outwardly by said terminal, and upon said terminal being latched in said cavity said expandable wall portion returns to its normal unexpanded condition.

4,565,417

SINGLE POLE PLUG CONNECTOR ARRANGED AT THE END OF A SINGLE CONDUCTOR SHIELDED ELECTRIC CABLE

Klaus Düssel, Mitwitz; Werner Orlowski, Erlangen; Gerhard Ott, and Hans Toczelowski, both of Neustadt, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 5, 1985, Ser. No. 708,449
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1984, 3408525
Int. Cl.[4] H01R *4/00*
U.S. Cl. 339—94 C **12 Claims**



1. In a single pole plug connector which is arranged at the end of a single conductor, shielded, plastic jacketed electric cable and in which a plug connector part is connected to a recessed end of the cable, the cable being surrounded by an insulator of elastomeric material which can be slipped over the

cable end and sealed to the cable end, the cable shield comprising individual wires which are brought out of a back opening of the insulator and connected to a connecting lead via a compression joint, the improvement comprising:

(a) the shield wires being folded within the insulator back onto the jacket of the recessed cable end;

(b) a sealing sleeve surrounding the folded back shield wires;

(c) the insulator resting elastically with its entire inside surface on the recessed cable end;

(d) a thin lubricating and sealing layer interposed between the recessed cable end and the insulator;

(e) at the transition from the insulator to the cable, an elastic cap resting against the insulator, forming an elastic seal, and having two finger-like extensions, one extending over the cable jacket and the other enclosing the connecting lead and forming an elastic seal therewith; and

(f) a hose clamp surrounding the cable and the connecting lead in the vicinity of the finger-like extensions.

4,565,418

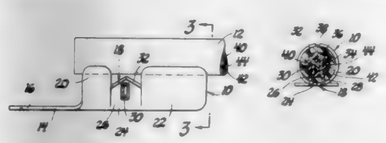
INSULATION DISPLACEMENT TERMINAL FOR NONMETALLIC CORE CABLE

Joseph H. Graeser, Jr., Cortland, and Rudolph A. Schlais, Jr., Warren, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 7, 1985, Ser. No. 689,441

Int. Cl.⁴ H01R *4/24*

U.S. Cl. 339—97 C **2 Claims**



1. An insulation displacement terminal for piercing the insulation of an insulated electrical cable and making contact with a nonmetallic conductive core of the cable comprising,

an insulation displacement portion having first and second crimp barrels spaced apart longitudinally and connected by an intermediate bridge,

first and second plates connected at opposite longitudinal sides of the bridge by respective bights so that the first and second plates are spaced apart and confront each other, and

a transversely elongated dimple in each plate which extends toward the dimple of the other plate to cooperatively form a core receiving slot, and

each of said plates having a sharp edge at the side opposite the bridge for penetrating and slicing through the insulation of an insulated cable forced down between the plates so that the nonmetallic conductive core enters the slot cooperatively formed by the elongated dimples.

4,565,419

THREADED LAMP ADAPTER SYSTEM WITH SPRING ADAPTER

George E. Johnson, Bronxville, and Walter Newman, Forest Hills, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Continuation-in-part of Ser. No. 420,202, Sep. 20, 1982, Pat. No. 4,429,942, which is a continuation of Ser. No. 211,620, Dec. 1, 1980, Pat. No. 4,360,243. This application Apr. 8, 1983, Ser. No. 483,347

Int. Cl.⁴ H01R *13/02*

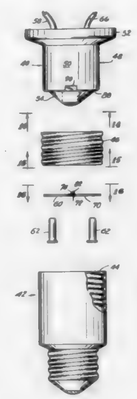
U.S. Cl. 339—154 L **7 Claims**

1. A connector for adapting a lamp to be threaded into a lighting fixture comprising:

a body adapted to receive first electrical conductor means connectable to an energizing terminal of said lamp,

a sleeve having threads at least on its exterior surface for connection to a threaded light socket and rotatably mounted on said body, said connector including retaining means for limiting axial movement between said body and said sleeve,

first resistance means on said body member, and second resistance means on said sleeve member, said first and second resistance means operating to increase the torque necessary to rotate said sleeve in a predetermined disposition relative to said body, said first electrical conducting means being connected to said retaining means, said retaining means being conductive and urged against said sleeve for maintaining electrical contact with said sleeve



said sleeve is rotated relative to said body, said first resistance means being formed on said retaining means, said second resistance means including at least one slot formed by said retaining means and at least one cavity formed by said body, said slot and said cavity being capable of coming into registry when said sleeve is rotated relative to said body, said retaining means including a resilient material and said first resistance means includes a resilient finger in registry with said cavity and capable of springing into engagement with said slot and said cavity when said retaining means is rotated relative to said sleeve and said slot and said cavity come into registry.

4,565,420

SOCKET AND BASE FOR PICTURE TUBES

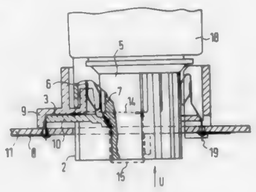
Otto Brunn, Wernau, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 19, 1983, Ser. No. 543,180

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239691

Int. Cl.⁴ H01R *13/53*

U.S. Cl. 339—193 P **7 Claims**



1. A high voltage socket and base assembly for a picture tube having longitudinally downwardly extending pins comprising:

a hollow base having an outer wall, said outer wall defining

a plurality of longitudinally extending channels for reception of said pins, one of said channels forming a silo, and a throughgoing open slot formed in a portion of said silo, said slot leading to said silo;

said socket having a single high-voltage lead for engagement with one of the pins of the picture tube, said high-voltage lead having a portion radially extending through said slot and into said silo, the radially extending portion of said high-voltage lead being enclosed by insulative portions of said socket;

said slot being sized to provide insertion of the radially extending lead enclosed by said insulative portion of said socket, and

said socket having a line conductor electrically connected to said high-voltage lead.

4,565,421

PLURAL-BEAM SCANNING APPARATUS

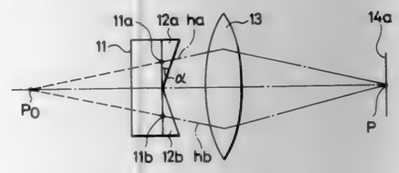
Kazuo Minoura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1983, Ser. No. 500,072

Claims priority, application Japan, Jun. 4, 1982, 57-95895

Int. Cl.⁴ G02B *27/17*

U.S. Cl. 350—6.8 **10 Claims**



1. A plural-beam scanning apparatus comprising:

a light source unit having a plurality of light-emitting portions each for emitting a light beam;

deflecting means having a reflecting surface for deflecting the light beams emitted from said light-emitting portions in at least one deflection-scan plane;

prism means for refracting the light beams emitted from said light-emitting portions so that the central light rays of all of the light beams emitted from the light-emitting portions of said light source unit are caused to pass through substantially the same point when viewed in a direction perpendicular to the deflection-scan plane; and

imaging means for rendering said same point and a point near said reflecting surface of said deflecting means optically conjugate.

4,565,422

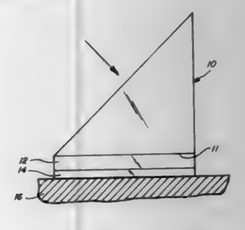
SURFACE PLASMON COUPLER

Robert J. Seymour, Wellesley Hills, Mass., and George I. Stegeman, Tucson, Ariz., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 30, 1983, Ser. No. 556,862

Int. Cl.⁴ G02B *5/04*

U.S. Cl. 350—96.19 **13 Claims**



1. A device for the efficient coupling of electromagnetic radiation into surface plasmon waves, particularly in the far-infrared or submillimeter spectral regions, said device comprising; a prism having multiple faces and constructed of a dielectric material which is substantially transparent in the selected spectral region, a first layer integrally formed on one face of the prism also of a material substantially transparent in the selected spectral region and having an index of refraction which is less than the index of refraction of the prism, and a second overcoat layer integrally formed on said first layer also of a material substantially transparent in the selected spectral region and having an index of refraction which is greater than the index of refraction of the first layer.

4,565,423

CONNECTING DEVICE FOR AN ENDOSCOPE

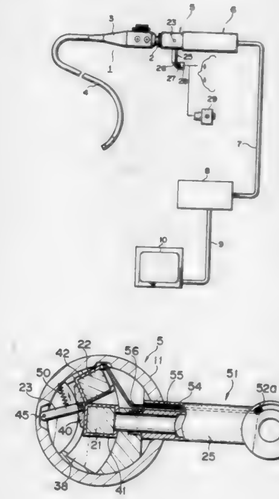
Yasuhiro Ueda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 463,673, Feb. 4, 1983, abandoned. This application Apr. 19, 1985, Ser. No. 724,939

Claims priority, application Japan, Feb. 8, 1982, 57-18595; Feb. 8, 1982, 57-18597

Int. Cl.⁴ G02B *27/14*

U.S. Cl. 350—171 **8 Claims**



1. A connecting apparatus for optically connecting an endoscope and a television camera and selectively optically connecting the endoscope to a still camera simultaneously with the optical connection between the endoscope and the television camera, comprising:

a connecting device which connects the endoscope and the television camera in a state aligned to a first optical axis and is capable of connecting the still camera to it, including: an eyepiece section having a second optical axis crossing said first optical axis to define an optical path intersection point; supporting means movable located adjacent to said optical path intersection point; first and second light splitting members mounted on said supporting means, and first light splitting member having a light splitting ratio different from the light splitting ratio of said second light splitting member so that the first light splitting member guides more light to the television camera than does the second light splitting member; and driving means for moving said supporting means to selectively bring each of

said first and second light splitting members to a position corresponding to the optical path intersection point and automatically moving said second light splitting member to said optical path intersection point when the still camera is mounted on said eyepiece section, said driving means including biasing means connected to said supporting means for urging said supporting means into a position with said first light splitting member located at said optical axis intersection point and moving means connected to said supporting means for overcoming the urging of said biasing means and moving said supporting means into a position with said second light splitting member located at said optical path intersection point, and moving means actuating means mounted on said eyepiece section for actuating said moving means when a still camera is mounted on said eyepiece and for deactuating said moving means when the still camera is removed from said eyepiece section so that said biasing means moves said first light splitting member back to said optical path intersection point;

an engaging member provided on the eyepiece of the endscope to be engaged with the mount portion of the still camera, said moving means actuating means being connected to said engaging member; and means on the still camera for engaging said engaging member.

4,565,424

ASYMMETRIC DICHROIC DYE MOLECULES HAVING POLY(ARYLAZO) LINKING GROUPS, A BIS-SUBSTITUTED ARYL THIAZYL END GROUP, AND ANOTHER END GROUP

William A. Huffman, Minneapolis, and James C. Novack, Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 216,010, Dec. 12, 1980, abandoned. This application Jan. 6, 1982, Ser. No. 337,493

Int. Cl.⁴ C09B *31/053, 31/18, 31/28, 31/30*

U.S. Cl. 350—349 **19 Claims**

1. A dichroic dyestuff having the formula

Q—A—Z

wherein:

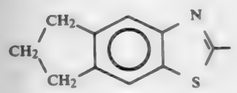
is a poly(arylazo) linking group wherein the aryl comprises 6 to 10 carbon atoms and has 4,4'-azo linkages;

Q is a bis-substituted aryl thiazyl substituent wherein the aryl comprises 6 to 10 carbon atoms;

and

Z is selected from the group consisting of naphthalene having an alkyl substituted amino in the 4 position, 2,3-dihydro-2,2'-substituted-permidine and julolidine groups.

4. The dichroic dyestuff of claim 1 wherein the bis-substituted aryl thiazyl group Q has the formula:



15. An improved "guest-host" type liquid crystal display device which is responsive to the absence or presence of an electric field, said device comprising a layer of a nematic liquid crystal composition and two conductive electrodes positioned, respectively, adjacent opposing surfaces of said layer, wherein the improvement comprises the presence of a dichroic dyestuff according to claim 1 in admixture with said liquid crystal composition.

4,565,425

LIQUID CRYSTALS

Martin Petrzilka, Kaiseraugst, and Martin Schadt, Seltisberg, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 5, 1984, Ser. No. 586,487

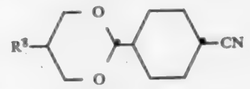
Claims priority, application Switzerland, Mar. 16, 1983, 1436/83; Jan. 19, 1984, 226/84

Int. Cl.⁴ G02K *1/13;* **C09K** *3/34;* **C07D** *319/06*

U.S. Cl. 350—350 R **5 Claims**

1. A compound of the formula:

LXXVIII



wherein R^8 is straight-chain C_1–C_{12} alkyl.

4,565,426

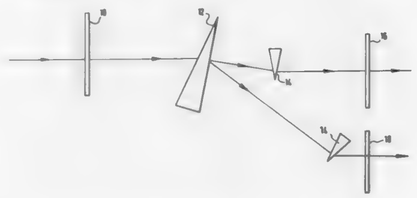
BEAM SPLITTER

Ralph A. W. Cullen, 84, Wimbourne Rd. West, Dorset, England (BH 212 DP)

Filed May 2, 1983, Ser. No. 490,718

Int. Cl.⁴ G02B *27/10*

U.S. Cl. 350—401 **5 Claims**



1. A beam splitter for use in high power multi-wavelength laser holography, comprising a bi-refringent prism through which the beam to be split is arranged to pass and operative to split the beam into two separate beams having mutually orthogonal polarization planes, said bi-refringent prism causing a predetermined degree of dispersion of said two separate beams, a half-wave plate arranged in the path of at least one of the separated beams to be realigned, and first and second additional prisms arranged in the paths of each of said two separate beams to compensate for said dispersion of the wavelength of the incident beam by said bi-refringent prism.

4,565,427

DEVICE FOR THE RAPID ADJUSTMENT OF MICROSCOPE STAGES

Albert Schilling, Aalen, and Wolfgang Schob, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Oct. 27, 1983, Ser. No. 546,201

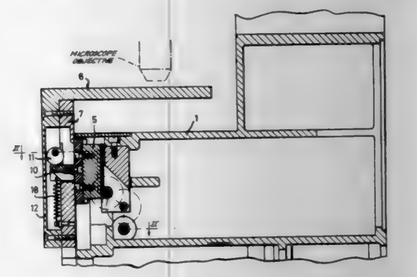
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1982, 3242523

Int. Cl.⁴ G02B *21/26*

U.S. Cl. 350—530 **10 Claims**

1. In a microscope stand having a vertical guide and a stage guided thereby, with stage-positioning rack-and-pinion coupling of the stage to a focusing drive in the stand, for selective elevational positioning of the stage, the improvement in which (a) an eccentric is journaled for selective rotation in the stage, (b) the rack of said coupling has vertically guided displaceability with respect to the stage, and (c) the eccentric and the rack coact to establish instantaneous relative elevation of the stage with respect to the rack.

4. In combination, a microscope stand, a stage in vertically guided relation to said stand, first stage-elevation adjustment mechanism comprising a rack in vertically guided relation with said stage and a pinion meshing with said rack and journaled



for rotation in said stand, and second stage-elevation adjustment mechanism comprising an eccentric journaled for rotation in said stage and in vertically reacting engagement with a part of said rack.

4,565,428

EYE SHIELD FOR A VIEWING DEVICE

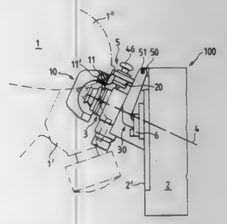
Klaus Arndt, Zürich, and Saverio Sanvido, Glattbrugg, both of Switzerland, assignors to Contraves AG, Zürich, Switzerland

Filed Jan. 13, 1984, Ser. No. 570,508

Claims priority, application Switzerland, Jan. 20, 1983, 310/83

Int. Cl.⁴ G02B *23/16*

U.S. Cl. 350—579 **5 Claims**



1. An eye shield for a viewing device having at least one ocular, comprising:

a flexural elastic headrest containing a forehead rest and two lateral portions;

a first mounting frame for attachment of said flexural elastic headrest to a housing of said viewing device;

two hinge bodies mounted in mutually spaced relationship on an external side of said headrest;

said first mounting frame being provided with hinge journals cooperating with said two hinge bodies;

said headrest being hingedly mounted by means of said two hinge bodies at said hinge journals of said first mounting frame such that in addition to the inherent flexural elasticity of said headrest there is obtained a hinge-like deformation of said headrest;

a second mounting frame cooperating with said first mounting frame;

a mounting bracket for securing said headrest, said first mounting frame and said second mounting frame as a unit to the housing of the viewing device; and

an actuator member arranged at said second mounting frame and displaceable into operable association with a switch of said viewing device by contact pressure exerted against said headrest by a user.

4,565,429

NON-METALLIC EYEGLASS FRAME WITH ADJUSTABLE NOSE PAD ARMS

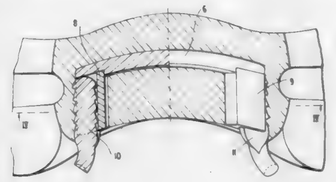
Anton Dietrich, Munich, Fed. Rep. of Germany, assignor to Optische Werke Rodenstock, Fed. Rep. of Germany

Filed Dec. 3, 1982, Ser. No. 446,504

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149178

Int. Cl.⁴ G02C *5/12*

U.S. Cl. 351—137 **13 Claims**



1. A non-metallic eyeglass frame having a nose bridge area and nose pads arranged on adjustable nose pad arms, a center piece substantially completely embedded within the nose bridge area of the frame in such a manner that the center piece is substantially devoid of any part projecting beyond the surface of the frame, and means for enabling secure anchoring of the nose pad arms in said center piece subsequent to the embedding of the center piece in the frame to allow adjustment of the nose pad arms without disengagement of the nose pad arms from the frame.

4,565,430

OVERHEAD PROJECTOR

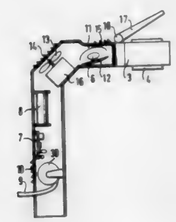
Peter H. Grunwald, Rheinstrabe 37-39, 6070 Langen, Fed. Rep. of Germany

Filed Sep. 2, 1983, Ser. No. 529,036

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232639; Oct. 28, 1982, 3239890; Nov. 12, 1982, 3241956; Apr. 15, 1983, 3313697; Apr. 15, 1983, 3313699; May 3, 1983, 3316032

Int. Cl.⁴ G03B *21/16*

U.S. Cl. 353—61 **28 Claims**



1. An overhead projector comprising a base, a hollow post extending up from said base and comprising a lower approximately vertical portion and an upper approximate horizontal portion, a projector head on said upper portion of said post and comprising an objective lens and a deflection mirror, a light source in said upper portion of said post adjacent said projector head, a power supply unit in a lower portion of said hollow post and supplying power for said light source, a motor driven ventilator in an intermediate portion of said hollow post between said power supply unit and said light source, said power supply unit supplying power also to said ventilator, an air outlet opening in said post adjacent said ventilator for discharge of air from said ventilator, a first air inlet in said lower portion of said post below said power supply unit for admitting air to cool said power supply unit and a second air inlet in said

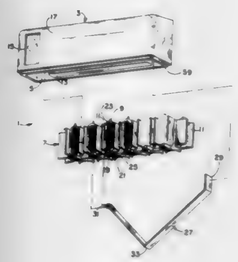
upper portion of said post adjacent said light source for admitting air to cool said light source, air from said first and second inlets being drawn over said power supply unit and said light source respectively by said ventilator and discharged through said outlet opening.

4,565,431

PHOTOGRAPHIC CAMERA AND FLASH ASSEMBLY

Charles J. Henley, Macedon, and Frederick W. Harvey, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 24, 1984, Ser. No. 686,106
Int. Cl.⁴ G03B *15/04*
U.S. Cl. 354—135 **18 Claims**



1. In a photoflash assembly of the type wherein (a) a plurality of flashlamps are movable sequentially to a firing position and (b) said assembly is adapted for attachment to a camera having a firing circuit for igniting a flashlamp in the firing position, the improvement comprising:

a flashlamp advancing member made of an electrically conductive material and disposed to form an integral part of the firing circuit in a camera when said photoflash assembly is attached to the camera;

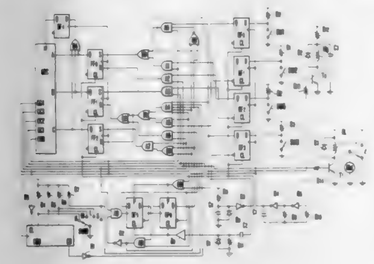
means supporting said advancing member for movement to establish an electrical connection with the respective flashlamps, one at a time, and to advance a flashlamp electrically connected with the advancing member to the firing position.

4,565,432

MOTOR DRIVEN CAMERA

Hidehiko Fukahori, Kanagawa; Masahisa Fujino, and Toshihiko Satoh, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1984, Ser. No. 636,400
Claims priority, application Japan, Aug. 5, 1983, 58-143515
Int. Cl.⁴ G03B *1/18*
U.S. Cl. 354—173.11 **20 Claims**



1. A motor driven camera comprising:

(a) film feeding means operable at a plurality of selected frame speed modes in response to driving power from an electric motor for advancing a film;

(b) frame speed mode selecting means for selecting the frame speed modes of said film feeding means;

(c) blank frame advancing switch means for producing a blank feeding start signal; and

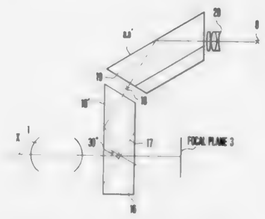
(d) blank frame advancing control means responsive to the blank feeding start signal for cancelling the frame speed mode selected by said frame speed mode selecting means and forcibly selecting the fastest speed mode from among the plurality of frame speed modes for operating said film feeding means to advance the film a number of blank frames.

4,565,433

VIEWFINDER FOR CAMERA

Masatake Kato, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Sep. 24, 1984, Ser. No. 654,101
Claims priority, application Japan, Sep. 29, 1983, 58-150804[U]
Int. Cl.⁴ G03B *3/00, 19/12*
U.S. Cl. 354—201 **7 Claims**



1. A viewfinder for a camera comprising:

(a) a photographic lens having an optical path;

(b) optical path splitting means for splitting said optical path on the image side of said photographic lens;

(c) light conducting means for conducting light by an even number of times reflections including the reflection by said optical path splitting means;

(d) light reflecting means receptive of the light emerged from said light conducting means and having roof type reflective surfaces, said light reflecting means having no crossing optical path; and

(e) an eyepiece receptive of the light emerged from said light reflecting means, the light emerged from said photographic lens forming an image between said optical path splitting means and said light reflecting means.

4,565,434

SIGNAL TRANSFERRING DEVICE FOR PHOTOGRAPHIC INSTRUMENT OR ACCESSORY

Hidehumi Notagashira, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1983, Ser. No. 458,972
Claims priority, application Japan, Feb. 15, 1982, 57-22412; Mar. 10, 1982, 57-37639
Int. Cl.⁴ G03B *17/00*
U.S. Cl. 354—286 **2 Claims**

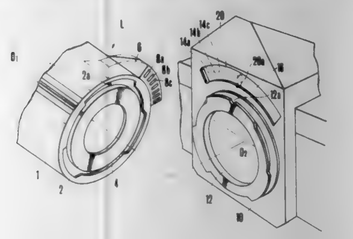
1. A signal transmitting device for transmitting electrical signals between a camera having an actuating member and an interchangeable lens assembly having an optical axis, comprising:

an interchangeable lens barrel having a base plate with holes,

coupling means for mounting said interchangeable lens barrel on a camera, said coupling means being coupled with complementary coupling means on the camera;

a plurality of electrical signal terminals arranged on the outside of said coupling means on a circle concentric with the optical axis, said electrical signal terminals being inserted into the holes formed in the base plate, first spring members for biasing said terminals so that ends of said terminals project out of said holes toward the camera; and

a protecting member on the lens barrel for protecting said electrical signal terminals, said protecting member being movable concentrically about the optical axis so as to cover ends of said electrical signal terminals, a second spring member for moving said protecting member, when said interchangeable lens barrel is dismounted from the camera, along said electrical signal terminals so as to



cover said electrical signal terminals, said protecting member being opened by the actuating member against the force of said second spring member when said interchangeable lens barrel is mounted on the camera, so that said electrical signal terminals transmit the electrical signals between the camera and the interchangeable lens assembly at a position when the coupling of said coupling means and said complementary coupling means is completed;

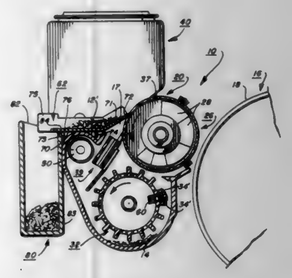
said electrical signal terminals applying pressure contact on a reverse side of said protecting member in response to said first spring members, and move slidingly over the reverse side when said protecting member is opened.

4,565,435

APPARATUS AND METHOD FOR REMOVING DEVELOPER FROM THE SUMP OF AN ELECTROSTATIC COPYING OR PRINTING MACHINE

Lawrence M. Hart, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1984, Ser. No. 624,441
Int. Cl.⁴ G03G *15/06*
U.S. Cl. 355—3 DD **6 Claims**



1. In an electrostatic type reproduction or printing apparatus having a photoconductive member on which latent electrostatic images are produced, and developing means for developing said images, said developing means including a developer housing having a lower sump for holding developer for developing said images, at least one magnetic brush developing roll for bringing developer into developing relation with said photoconductive member to develop said images, and a developer transfer wheel having a succession of paddles around the circumference thereof for carrying developer from said sump to said developing roll, the improvement comprising:

(a) magnet means on at least one of said paddles for attracting developer from said sump to said one paddle when the level of developer in said sump falls below the operating level of said paddles whereby to enable said developer transfer wheel to be used in clearing said sump of developer; and

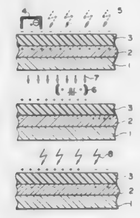
(b) developer pick off means disposable adjacent said developing roll to intercept and remove developer on said developing roll, said developer pick off means forming a path for conducting developer removed from said developing roll to a point external of said developer housing.

4,565,436

ELECTROPHOTOGRAPHIC COPYING PROCESS

Takao Okada; Akitoshi Toda, and Yoshiyuki Mimura, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1983, Ser. No. 549,314
Claims priority, application Japan, Nov. 27, 1982, 57-208311
Int. Cl.⁴ G03G *15/22*
U.S. Cl. 355—3 R **11 Claims**



1. An electrophotographic process which employs an electrophotographic photosensitive member of a basic construction in which a photoconductive layer and a transparent insulator layer are sequentially laminated on the surface of a conductive supporter, comprising the steps of:

providing a primary charge uniformly from the surface side of said transparent insulator layer of said photosensitive member;

performing a secondary corona charging during an imagewise exposure by applying a square wave voltage whose voltage-time integration value of a polarity reverse to said primary charge is greater than that of the same polarity as said primary charge; and

forming an electrostatic latent image on said transparent insulator layer by applying a uniform exposure.

4,565,437

HYBRID DEVELOPMENT SYSTEM

Anthony R. Lubinsky, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 9, 1983, Ser. No. 549,934
Int. Cl.⁴ G03G *15/09*
U.S. Cl. 355—3 DD **5 Claims**

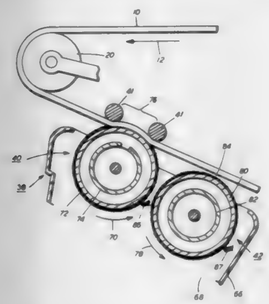
1. An electrophotographic printing machine of the type having an electrostatic latent image recorded on a flexible photoconductive member, wherein the improvement includes:

a first tubular member, positioned closely adjacent to the photoconductive member defining a first development zone therebetween, said first tubular member rotating at a first angular velocity for transporting a developer material comprising at least conductive carrier granules and magnetic toner particles into contact with the photoconduc-

tive member in the first development zone so as to optimize development of solid areas in the latent image;

a first magnetic member disposed interiorly of and spaced from siad first tubular member to attract the developer material thereto;

a second tubular member, spaced from said first tubular member and positioned closely adjacent to the photoconductive member defining a second development zone therebetween, said second tubular member rotating at a second angular velocity with the first angular velocity being greater than the second angular velocity for transporting the developer material into contact with the photoconductive member in the second development zone to



optimize development of lines in the latent image and to remove carrier granules adhering to the photoconductive member;

a second magnetic member disposed interiorly of and spaced from said first tubular member to attract the developer material thereto; and

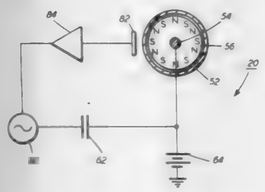
means for maintaining the photoconductive member, in the region of at least the first development zone, at a preselected tension of sufficient magnitude so that the developer material being transported into contact with the photoconductive member in at least the first development zone, deflects the photoconductive member about said first tubular member to form a wrapped first development zone.

4,565,438

DEVELOPMENT SYSTEM USING ELECTRICALLY FIELD DEPENDENT DEVELOPER MATERIAL

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 1, 1984, Ser. No. 575,967
Int. Cl.⁴ G03G *15/09*
U.S. Cl. 355—3 DD **14 Claims**



1. An apparatus for developing an image region recorded on a photoconductive surface with a developer material comprising at least carrier granules and toner particles and the developer material having the resistivity thereof varying continuously as a function of the electrical field applied thereto, including:

first means for transporting the developer material closely adjacent to the photoconductive surface so that the toner particles are attracted from the carrier granules to the image region forming a toner powder image thereon;

means for generating an alternating electrical field between said first transporting means and the photoconductive surface with the alternating field having an amplitude sufficient to change the resistivity of the developer material to a more conductive state; and

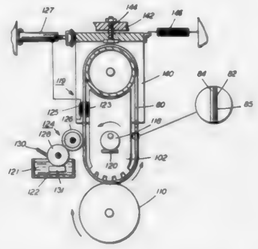
means for sensing the conductivity of the developer material and controlling the alternating electrical field generated by said generating means.

4,565,439

LOW MASS HEAT AND PRESSURE FUSER

Scott D. Reynolds, Endwell, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1984, Ser. No. 666,714
Int. Cl.⁴ G03G *15/20*
U.S. Cl. 355—3 FU **16 Claims**



1. Heat and pressure fuser apparatus for fixing toner images on substrates, said apparatus comprising:

belt structure adapted to contact toner images;

means including a non-rotating mandrel for supporting said belt structure;

means for effecting movement of said belt structure about said mandrel;

means cooperating with said non-rotating mandrel to exert pressure on said belt and toner images contacted by the belt structure; and

means for effecting movement of said non-rotating mandrel thereby causing it to be skewed relative to the axis of said cooperating means whereby proper tracking of said belt as it moves about said belt supporting structure is accomplished.

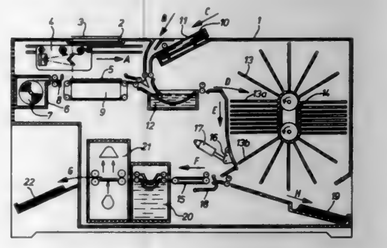
4,565,440

DEVICE FOR EXPOSING AND DEVELOPING A LIGHT-SENSITIVE MATERIAL

Hanns Bloechl, Unterhaching, and Guenther Schnall, Eching, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 23, 1984, Ser. No. 603,211
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315711
Int. Cl.⁴ G03B *27/52;* **G03D** *9/00*
U.S. Cl. 355—27 **5 Claims**

1. A device for exposing and developing light-sensitive material, comprising a housing; a film-exposing means and developing means for processing two-sheet material in accordance with a diffusion process to obtain a plurality of two-sheet copies, said film-exposing means and said developing means being positioned in said housing; a diffusion space formed in said housing for a full development of copies and having an entrance and an exit; copy-receiving means including at least one flat copy-receiving wall having a format corresponding to that of a copy being processed and receiving each copy from said developing means so that two sheets in each copy lie on said wall in contact with each other; and means for



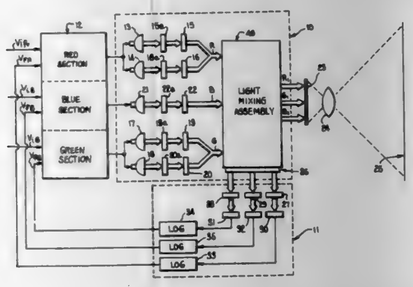
shifting said wall in a step-like manner from a filling position at the entrance of said diffusion space to a discharge position at the exit of said diffusion space.

4,565,441

LIGHT SOURCE FOR PHOTOGRAPHIC COLOR PRINTERS

William C. Evans, Rochester, N.Y., and Haven D. Noble, Mt. Pleasant, Iowa, assignors to Viva-Tech, Inc., Rochester, N.Y.

Filed Jan. 25, 1985, Ser. No. 695,105
Int. Cl.⁴ G03B *27/72*
U.S. Cl. 355—37 **13 Claims**



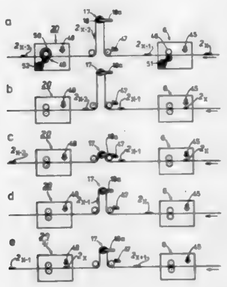
1. A light source for photographic printers comprising means for producing light of three primary colors, a mixing chamber having input and output ends into which said light is projected and from which mixed light is emitted for photographic illumination purposes, means for sensing the emitted light from said chamber, and electronic control means for detecting said light from said sensing means and processing said light together with control signals for said printer to control the intensity of each primary color produced by said producing means, said electronic control means comprising separate channels for each of said colors, each channel having phototransducer means for providing output signals related to the log of the intensity of a different primary color of light from said sensing means, and electronic control means having means for combining said printer control signals and phototransducer output signals and comparing said signals with a repetitive signal having a pre-determined nonlinear amplitude time characteristic for controlling the electrical power to said lamps and the current produced thereby.

4,565,442

METHOD OF AND APPARATUS FOR COPYING PHOTOGRAPHIC ORIGINALS

Gerhard Benker, Pullach, and Helmut Treiber, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 30, 1984, Ser. No. 666,366
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3339990
Int. Cl.⁴ G03B *27/74*
U.S. Cl. 355—68 **30 Claims**



1. A method of copying originals, particularly photographic originals, comprising the steps of:

(a) conveying a band having a succession of originals along a predetermined path, said band including a plurality of coherent strips each of which has a leading and a trailing end and contains at least one of said originals, and the trailing ends of said strips being connected to the leading ends of adjoining strips at respective junctions between said strips;

(b) measuring the densities of said originals in a first zone of said path;

(c) copying said originals in a second zone of said path downstream of said first zone, the copying step including controlling the exposures of said originals as a function of the density values obtained during the measuring step;

(d) accumulating said originals in a third zone of said path intermediate said first and second zones; and

(e) synchronizing the measuring and copying steps so that the density values obtained from a selected strip are employed for exposure control of the originals constituting part of said selected strip, the synchronizing step including

(i) arresting one of said junctions at a first location of said path upstream of said third zone so that the portion of said band upstream of said first location is prevented from advancing, said one junction being situated at one of the ends of said selected strip,

(ii) withdrawing originals from said third zone while arresting said one junction, said withdrawing being performed until the portion of said band between said first location and a second location downstream of said third zone has a preselected length,

(iii) releasing said one junction when the portion of said band between said first and second locations reaches said preselected length,

(iv) measuring the length of the portion of said band which advances by said second location, said length measurement being initiated upon release of said one junction and continuing at least until the measured length substantially equals said preselected length,

(v) sensing said band at said second location, and

(vi) assigning the density values obtained from said selected strip for exposure control of the originals thereof upon detecting said one junction at said second location

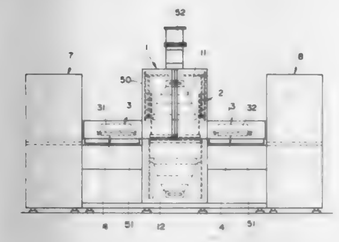
at such time as said measured length substantially equals said preselected length.

4,565,443

PRINTING APPARATUS

Yoshio Yazaki, Chofu, Japan, assignor to Orc Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1984, Ser. No. 656,924
Claims priority, application Japan, Feb. 13, 1984, 59-24616
Int. Cl.⁴ G03B *27/04*
U.S. Cl. 355—99 **3 Claims**



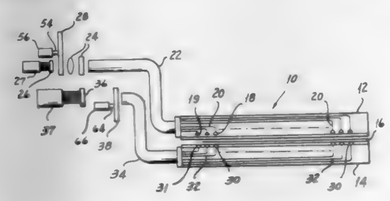
1. A printing apparatus employing a pallet that stores a desired number of works located in stacked relation and at least one mask associated with the works, the mask being located above the works, said printing apparatus comprising:
an exposure device having a lamp serving as a light source, a reflecting mirror, a printing frame, and a transparent plate;
an admitting device acting to hold the pallet in an access position and to hold the uppermost one of the mask and works stored in the pallet at a certain height;
a conveying device including a rail extending from the access position to a takeout position past an exposure position, an introducing back plate case reciprocating between the access position and the exposure position along the rail, and a takeout back plate case reciprocating between the exposure position and the takeout position along the rail; and
an attraction device including attraction plates each having a number of attraction pads mounted to the underside thereof for attracting and holding the works and mask, the attraction plates being mounted to their respective front surfaces of the back plate cases of the conveying device in such a way as to be vertically movable while keeping their horizontal posture.

4,565,444

ELECTRONICALLY SCANNED SPECTROMETER COLOR, BRIGHTNESS AND OPACITY MEASUREMENT AND CONTROL SYSTEM

John W. Mactaggart, Bolton, Canada, assignor to Sentrol Systems Ltd., Downsview, Canada

Filed Nov. 1, 1982, Ser. No. 438,004
Int. Cl.⁴ G01J *3/51*
U.S. Cl. 356—73 **20 Claims**



1. Apparatus for obtaining a profile measurement of the color spectrum of a moving web including in combination means for illuminating a plurality of regions of said web, a corresponding plurality of photodetectors having respective light-collecting surfaces, a circular variable bandpass filter, means for directing light emanating from said regions along respective paths onto said light-collecting surfaces, said paths intersecting said filter along a radius thereof, and means for rotating said filter to vary the wavelength transmitted to said photodetectors.

4,565,445

PROCESS AND APPARATUS FOR MEASURING THE EFFECTIVE DIAMETER OF THE GUIDED MODE IN A MONOMODE OPTICAL FIBRE

Francis Alard, "Christ" en Ploumilliau, La Rose des Vents, 22300 Lannion, and Luc B. Jeunhomme, 9 Square Monge, 78330 Fontenay le Fleury, both of France

Filed Oct. 12, 1982, Ser. No. 433,694
Claims priority, application France, Oct. 12, 1981, 81 19162
Int. Cl.⁴ G01N *21/84*
U.S. Cl. 356—73.1 **7 Claims**



1. A process for measuring the effective diameter $2w_o$ of the guided mode in a monomode optical fibre, at a wavelength λ, said optical fibre admitting an input face, wherein said process comprises the steps of;
directing onto said input face a beam of incoherent light of wavelength λ, incident on said input face in accordance with a cone of apex semiangle ϕ, through optical means making it possible to vary the apex semiangle ϕ, said beam having a cross-section on the input face, which is greater than that of the core of the optical fibre, having an intensity which has a symmetry of revolution about the axis of said cone and being such that the lighting power transferred by this beam in an infinitely small solid angle $d\Omega$ about a direction forming an angle θ with said axis is proportional to $\cos \theta d\Omega$, the optical fibre being disposed in accordance with said axis;
carrying out a plurality of measurements of the lighting power $P(\phi)$ transmitted by the optical fibre, each measurement being carried out with a different value for the apex semiangle ϕ determined by the optical means; and
determining the effective diameter $2w_o$ with the aid of said measurements and by the use of the following formula, in which P_∞ is a quantity independent of the apex semiangle ϕ:

$$P(\phi)=P_\infty[1-\exp(-2(\pi^2 w_o^2/\lambda^2)\sin^2\phi)].$$

4,565,446

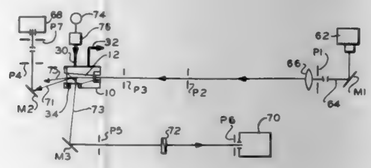
SCATTERING CELLS

Benjamin Chu, Setauket, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,115
Int. Cl.⁴ G01N *1/10*
U.S. Cl. 356—246 **18 Claims**

13. A method for measuring the scattering properties of a sample with a sample cell having a prismatic output window for refracting radiation and varying the angle between incident and transmitted radiation of the window as a function of the angle of incidence, said prismatic window being operable to refract incident radiation more strongly from a path near a predetermined plane to a given side thereof, comprising the steps of:

disposing said sample in said cell against said window;
directing radiation through said sample toward said output window;



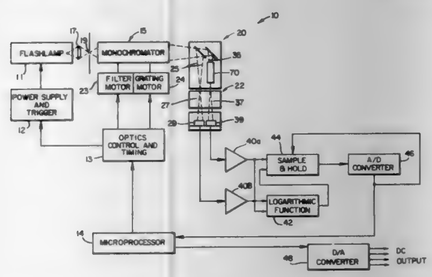
detecting radiation scattered through said sample and refracted by said prismatic output window in a predetermined solid angle of transmitted radiation refracted to said given side of said predetermined plane; and
urging said sample to flow past said window.

4,565,447

PHOTOMETRIC APPARATUS WITH MULTI-WAVELENGTH EXCITATION

Kenneth E. Nelson, N. Attleboro, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed Nov. 21, 1983, Ser. No. 553,736
Int. Cl.⁴ G01J *3/42*
U.S. Cl. 356—319 **15 Claims**



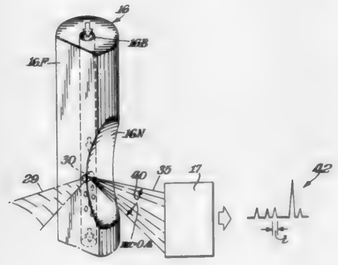
1. Apparatus for providing a source of optical energy to a fluid medium and for measuring the optical properties of a sample within said fluid medium comprising:
a source of radiation capable of producing a continuum of wavelengths over a predetermined range;
monochromator means having an input for receiving optical energy from said source and an output for producing a corresponding output wavelength interval within the spectral emission of said source;
motor means for continuously varying the wavelength setting of said monochromator means;
means for pulsing said source to produce flashes of radiation of output wavelength interval within said spectral emission for transmission to said fluid medium;
means for synchronizing said pulsing means with said motor means whereby said fluid medium is irradiated with optical energy corresponding to a particular wavelength interval within said spectral emission;
digital computer means having stored in memory a function representing the output energy intensity produced by said source of radiation over the entire continuum of wavelengths within said predetermined range versus the position of said motor means, said function including at least one uniquely discernible characteristic;
detector means receiving said flashes of radiation and producing electrical output signals corresponding to the actual output energy intensity from said source;
said computer means coupled to said pulsing means to produce a series of pulses of radiation to search for said at least one characteristic;
said computer means coupled to said detector means to receive said electrical output signals thereby determining the position of said motor means which corresponds to said at least one characteristic; and
means for automatically adjusting said function stored within said memory to correspond to the actual measured motor position of said at least one characteristic.

4,565,448

PARTICLE COUNTING APPARATUS

Scot D. Abbott, and Charles W. Robertson, Jr, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 11, 1983, Ser. No. 474,482
Int. Cl.⁴ G01N *15/02*
U.S. Cl. 356—336 **20 Claims**



1. A cuvette for use in a radiation scattering particle counting apparatus adapted to count particles entrained in a medium flowable through the cuvette, the cuvette being adapted to optically define and brightly illuminate a viewing zone on the interior thereof through which the particles entrained in the medium pass, the particles each having a radius that is small as compared to the wavelength of the incident radiation and an index of refraction that is close to the index of refraction of the medium such that the particles each have a sensitivity limit of detection S of at least 0.129, the cuvette being formed from a material transparent to focused radiation and exhibiting an index of refraction close to the index of refraction of the medium, the cuvette having a cylindrical bore extending therethrough the axis which is parallel to the direction of particle flow through the cuvette, the cuvette also having a cylindrical surface on the exterior thereof, the axis of the cylinder on which the surface lies being perpendicular to the axis of the bore.

4,565,449

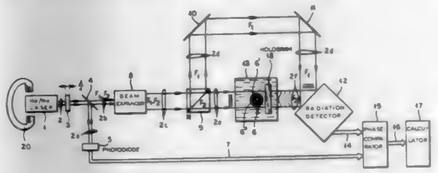
METHOD OF AND APPARATUS FOR DETERMINING REFRACTIVE-INDEX PROFILES OF CYLINDRICAL TRANSPARENT BODIES

Giorgo Grego, Turin, Italy, assignor to Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Feb. 8, 1983, Ser. No. 465,014
Claims priority, application Italy, Feb. 10, 1982, 67150 A/82
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—361 **13 Claims**

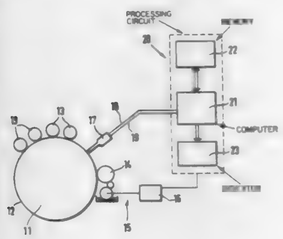
1. A method of determining the refractive-index profile of a generally cylindrical test object transparent to luminous radiation, the refractive index of said test object being constant at a given distance ρ from the axis thereof, comprising the steps of:
(a) generating a first and a second monochromatic beam of luminous radiations of constant frequencies differing slightly from each other;
(b) deriving from said first and second beams an electrical

reference wave of a beat frequency corresponding to the difference between the beam frequencies;
(c) transluminating the test object over the entire width thereof with parallel rays of said second beam in a plane transverse to the axis of said test object;
(d) mixing the transluminating rays of said second beam with rays of said first beam, avoiding the test object, in a field of radiation within said plane which lies downstream of the test object and extends over the entire width thereof;
(e) photoelectrically sampling said field of radiation at a multiplicity of closely spaced locations to produce respective electrical signals of the same beat frequency as said



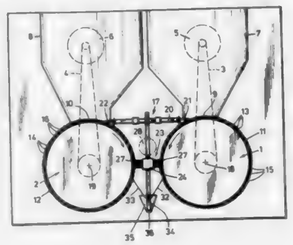
reference wave but differing in phase therefrom to an extent dependent on the refractive index of the parts of the test object traversed by the respective transluminating rays;
(f) determining the phase differences between said signals and said reference wave at said locations;
(g) computing the refractive-index profile of the test object from said phase differences; and
(h) interposing a phase-shift compensator of known refractive-index profile in the path of said transluminating rays whereby the profile computed in step (g) represents deviations from the complement of the known profile of said compensator.

4,565,450
ARRANGEMENT FOR AND METHOD OF DETERMINING THE AMOUNT OF DAMPENING AGENT ON A PRINTING-IMAGE CARRIER
Burkhardt Wirz, Munich, and Rainer Kammüller, Wilnsdorf-Obersdorf, both of Fed. Rep. of Germany, assignors to Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG, Munich, Fed. Rep. of Germany
Filed May 25, 1983, Ser. No. 497,828
Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220282
Int. Cl.⁴ G01J *3/50*; **B41L** *25/00*
U.S. Cl. 356—402 **32 Claims**



1. An arrangement for determining the amount of dampening agent on a printing-image carrier, said arrangement comprising:
(a) a radiation source for directing radiation at the carrier;
(b) first means for generating first signals in response to radiation which returns from the carrier add has a predetermined wavelength at least approximating an absorption wavelength of the dampening agent; and
(c) second means for generating second signals representative of the amount of dampening agent on the carrier, said second means being arranged to receive said first signals and to relate a preselected first signal generated while the carrier is substantially dry to another first signal generated while the carrier is damp, and said second means being designed such that the second signals are derived from the relationship between said preselected and other first signals, said second means being further arranged to receive and process a glancing signal so as to compensate for errors due to radiation which is directed towards the carrier from said source and glances off the dampening agent applied to the carrier.

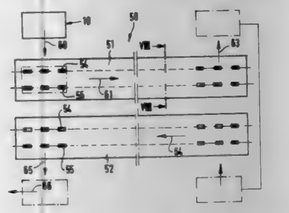
4,565,451
METHOD AND APPARATUS FOR COMBINING GRANULAR COMPONENTS
Eduard Winner, Weierstrasse 3, CH-9500 Wil, Switzerland
Filed Sep. 21, 1984, Ser. No. 653,494
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3334013
Int. Cl.⁴ B01F *11/00, 15/04*; **B65D** *83/06*; **G01F** *11/24*
U.S. Cl. 366—108 **19 Claims**



1. An apparatus for combining granular components including combining said components in divided form and mixing them together by moving said components from spaced-apart locations into trajectories which cross one another to thus effect the mixing of said components; said apparatus comprising:
two drums having longitudinal axes disposed parallel to one another, with said drums being spaced apart adjacent to one another; said drums are rotatably driven in opposite directions, and are each provided with an outer surface;
a respective supply means associated with each of said drums for supplying said components thereto;
respective receiving means distributed over each of said drum surfaces for receiving said components from said supply means; and
an extraction device provided in the region between said drums for withdrawing said components from said receiving means in such a way as to impart thereto trajectories which cross one another in a mixing zone which is provided below said extraction device.

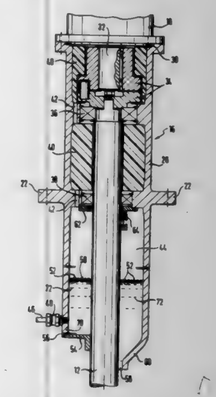
4,565,452
COOLING APPARATUS
Rudolf Wild, Heidelberg-Eppelheim, Fed. Rep. of Germany, assignor to Indag Gesselschaft, fur Industriebedard mbH, Heidelberg-Eppelheim, Fed. Rep. of Germany
Filed Jun. 1, 1983, Ser. No. 500,579
Int. Cl.⁴ B01F *15/06*
U.S. Cl. 366—149 **32 Claims**

1. Apparatus for cooling substances, comprising:
container means for holding the substances, the container means having a central axis and mixing means coupled to an interior surface of the container means for mixing the substances in the container means when the container means is rotated about the central axis;
tank means for receiving the container means and allowing motion of the container means parallel to the central axis of the container means;
movement means coupled to the tank means for rotating the container means about the central axis and moving the container means parallel to the central axis; and



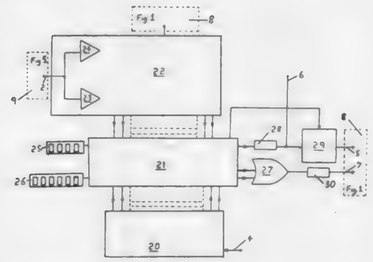
cooling means in the tank means for at least partially surrounding the container means and cooling the substances within the container means;
whereby the rotation of the container means about the central axis causes mixing of the substances within the container means which are thereby substantially evenly cooled.

4,565,453
AGITATOR
Herbert Jekat, Schopfheim; Rainer Junghaus, Lörrach; Walter Geng, Schopfheim, all of Fed. Rep. of Germany, and Vagn Petersen, Birkerod, Denmark, assignors to Ekato Industrieanlagen Verwaltungsgesellschaft mbH & Co., Schopfheim, Fed. Rep. of Germany
Filed Nov. 21, 1984, Ser. No. 674,017
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1983, 3341960
Int. Cl.⁴ B01F *7/16*
U.S. Cl. 366—279 **9 Claims**



1. An agitator for the agitation of liquid media, specifically for use in a completely submerged condition, comprising a motor; a shaft driven by said motor; agitating vanes mounted on the shaft; a submersible housing accommodating a portion of said shaft extending downwardly from said motor and being open in a downward direction; bearings mounted in said housing to support said shaft in said housing; and a coupling mounted between the motor and the shaft the bearings and the coupling being placed in said housing, said housing being filled with a gas with the formation of a gas cushion to prevent a medium from entering the bearings and the coupling, said housing having floats positioned at a lower part of the housing, the floats floating on a surface of the medium entering the housing and at least covering said surface.

4,565,454
TIME DISPLAY SYSTEM
Richard J. Walters, 396 Victoria Rd., Gladesville, New South Wales 2111, Australia
PCT No. PCT/AU83/00144, § 371 Date Jun. 7, 1984, § 102(e) Date Jun. 7, 1984, PCT Pub. No. WO84/01630, PCT Pub. Date Apr. 26, 1984
PCT Filed Oct. 7, 1983, Ser. No. 619,049
Claims priority, application Australia, Oct. 7, 1982, PF6243
Int. Cl.⁴ G04C *11/02*
U.S. Cl. 368—47 **6 Claims**



1. A time display system for receiving at spaced instants of time, a time signal indicative of the time at that instant, and for controlling an analogue time display device having hands operable by a motor so as to indicate said time at said instant, said system comprising a decoder to said time signal, a position means adapted to generate a position signal indicative of the time displayed by said time display device, a comparator means connected to said decoder and said position means to detect the difference, if any, between the time according to said time signal and said displayed time, first offset means connected to said comparator means to provide a first predetermined offset between the time according to said time signal and said displayed time whereby said displayed time corresponds to a time zone determined by said first offset, and a second offset means connected to said comparator means to provide a second offset at a predetermined time whereby said displayed time is corrected for any daylight saving in said time zone, and time adjustment means to apply a time adjust signal to said time display device to reduce said difference to zero and apply said first and second offsets, said time adjust signal having an initial and a final portion in which the rate of time adjustment of said time display device is slowed from a maximum rate corresponding to that portion of said time adjust signal intermediate said initial and final portions.

4,565,455
HEAT REGULATING SENSOR TAPE
Frederick W. Bloore, Wightwick, and Peter H. Seaman, Tettanhall, both of United Kingdom, assignors to Hotfoil Limited, Wombourne, England
Filed Jan. 23, 1984, Ser. No. 573,008
Claims priority, application United Kingdom, Jan. 21, 1983, 8301666
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 374—164 **6 Claims**

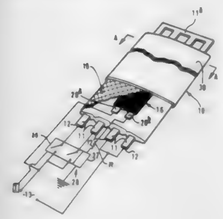
1. In a heat regulating system including power supply means and power supply regulating means connected to said power supply means, the improvement comprising:
(a) a flexible, elongated heating tape including a flexible elongated, non-conductive outer sleeve,

(b) a flexible, elongated resistive heating element positioned within said outer sleeve, said heating element being generally coextensive with said outer sleeve and adapted to be connected to said power supply means via said power supply regulating means,

(c) a pair of spaced-apart, flexible, elongated electrical conductors positioned within said outer sleeve and being generally coextensive therewith, one of said conductors being adapted for connection to said power supply means and the other of said conductors being adapted for connection to said power supply regulating means,

(d) spacer means for maintaining said electrical conductors in spaced relation with respect to one another and with respect to said heating element,

(e) a substance in said outer sleeve in electrical contact with each of said conductors and spaced from said heating element by said spacer means, said substance having a significantly different electrical resistivity when said substance is at a temperature below a transition temperature range than when said substance is at a temperature above said transition temperature range,



(f) said pair of electrical conductors, said spacer means and said substance together forming a temperature sensor for activating said power supply regulating means, whereby when said heating element is connected to said power supply means via said power supply regulating means and said one of said conductors is connected to said power supply means and said other of said conductors is connected to said power supply regulating means, said power supply regulating means is activated by said temperature sensor to disrupt current flow from said power supply means to said heating element in response to a decrease in the resistance of said substance as said substance is heated to a temperature corresponding to said transition temperature range and said power supply regulating means is deactivated by said temperature sensor to allow current flow to said heating element in response to an increase in the resistance of said substance when the temperature of said substance subsides below said transition temperature range.

4,565,456

ELECTRONIC THERMOMETER

Takayuki Iida, Tokyo, and Tamio Miyake, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Apr. 13, 1984, Ser. No. 600,288

Claims priority, application Japan, Apr. 13, 1983, 58-65927; Mar. 7, 1984, 59-44522; Apr. 12, 1984, 59-56948

Int. Cl.⁴ G01K *7/00*

U.S. Cl. 374—169 **9 Claims**



1. An electronic thermometer, comprising a temperature sensor which senses the temperature of an object, a prediction temperature computing means for deriving a converged temperature according to the temperature sensed by the temperature sensor, a means for providing a range of error associated with the predicted converged temperature computed by the prediction temperature computing means, and a display means for displaying the range of error.

4,565,457

RADIAL, RADIAL ANGULAR-CONTACT, AND AXIAL ANGULAR-CONTACT BALL BEARING

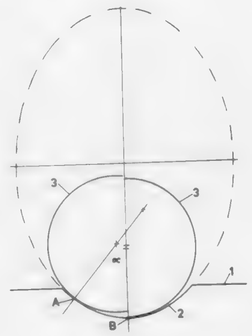
Hans Flander, Nuremberg, Fed. Rep. of Germany, assignor to Georg Muller Kugellager-Fabrik K.G., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 840,153, Oct. 7, 1977, abandoned. This application Jul. 10, 1981, Ser. No. 281,933

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1976, 2645287

Int. Cl.⁴ F16C *33/58*

U.S. Cl. 384—450 **7 Claims**



1. In a bearing capable of operating either as a radial ball bearing, a radial angular-contact ball bearing, or an axial angular-contact bearing, coaxial inner and outer race means respectively formed with ball grooves which face each other, and a plurality of balls of a given ball radius situated between said inner and outer race means and extending into said grooves thereof for rolling with respect to said inner and outer race means in said grooves, the improvement wherein at least one of said race means has at said groove thereof, in any axial plane containing the common axis of said race means, a cross-sectional configuration according to which the innermost part of said groove of said one race means has a radius of curvature which is greater than at least about 51.6% of the diameter of said ball while having a radius of curvature which increases in a continuous manner from said innermost part of said groove of said one race means toward each of a pair of opposed outer side edges of said groove, with the difference between the radius of curvature of said groove and said ball radius increasing from said innermost part of said groove to each of said side edges of said groove by at least a factor of 2, and wherein when the ball is in contact with the innermost part of the race groove the radial clearance between the ball and race groove in at least regions of said race groove proximate to each groove side edges is greater than what the radial clearance would be if the race curvature were that of a circle whose radius is substantially 51.6% of the diameter of the ball.

4,565,458

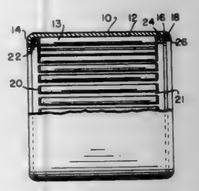
ROLLER BEARING

John D. Achee, and Anthony Cuozzo, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Continuation of Ser. No. 353,673, Mar. 1, 1982. This application Jul. 9, 1984, Ser. No. 628,957

Int. Cl.⁴ F16C *43/04, 33/64*

U.S. Cl. 384—561 **2 Claims**



1. A roller bearing comprising: a carburized and hardened member formed in the soft from low carbon flat sheet metal, and having a tubular roller race with a longitudinal portion thereof providing a roller raceway; said member having an integral inwardly-turned flange at one end to provide an axial thrust face at one end of a roller means, the other end of said member having an annular shoulder and an integral flange turned inwardly through an angle of approximately 90 degrees to form a circumferential groove with the flange having an inside diameter sufficiently large to permit the easy insertion of roller means; roller means inserted in said member and including a plurality of rollers in contact with the roller raceway; and a split ring having a portion thereof inserted into the circumferential groove and constructed to provide an axial thrust face for the roller means.

4,565,459

PHONETIC CHINESE PRINTING APPARATUS

Gilbert DiLucia, 800 Fifth Ave., New York, N.Y. 10021

Filed Jun. 4, 1984, Ser. No. 615,923

Int. Cl.⁴ B41J *5/00*

U.S. Cl. 400—110 **1 Claim**

茶凹恩耳雨翁也乎音安

請我惡日他永屋宜哦平

是月圓充外威萬王印涯

阿司的父國火已看了盈

要有愛艾言羊迎子娃

中西才幺不你們問

1. A phonetic Chinese printing apparatus for communication in the Chinese language, wherein a font is provided of a group of characters comprising a phonetic alphabet, the improvement wherein said characters are conventional characters of the Chinese language, said apparatus being adapted to reproduce only 57 characters of the Chinese language, said font consisting of the font of characters illustrated in FIG. 3.

4,565,460

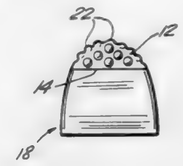
CONVEX KEY TOP CONFIGURATIONS

Alva C. Kline, 35 Hewes St., Brentwood, N.Y. 11717

Filed Mar. 5, 1984, Ser. No. 586,427

Int. Cl.⁴ B41J *5/12*

U.S. Cl. 400—490 **7 Claims**



1. A keyface attachable to a keystem of a keyboard which includes a plurality of keystems arranged in a predetermined order, each keystem having a contoured surface area normally facing upwardly, comprising in combination

an element which has

an operative upper surface which is convex, has a substantially predetermined smallest radius of curvature, has a prearranged pimpled surface area which is formed with a plurality of projections in the range of about 500 to about 1000, each projection extending at a height from said uper surface which is substantially smaller than said smallest radius, and

an operative lower surface attachable to said contoured surface area, and defining an area substantially matching at least a portion of said contoured surface area, said element being dimensioned so as to be free from interfering with a similar element of a neighbouring keystem of said keyboard.

4,565,461

PITCH-CHANGEABLE, CAM-ACTUATED PAPER FEED FOR SERIAL PRINTER

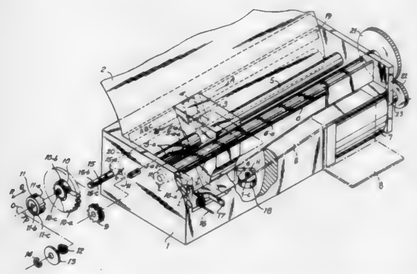
Minoru Usui, and Toshiaki Oshima, both of Shiojiri, Japan, assignors to Epson Corporation, Nagano, Japan

Filed Sep. 16, 1983, Ser. No. 533,032

Claims priority, application Japan, Sep. 17, 1982, 57-162760; Sep. 17, 1982, 57-162761

Int. Cl.⁴ B41J *15/04*

U.S. Cl. 400—611 **11 Claims**



1. A serial printer for printing on a sheet of recording paper, said printer having a print head moveable in a lateral direction perpendicular to the direction of feeding of said sheet of recording paper, said print head printing on a portion of said sheet confronting said print head, comprising:

carriage means supporting said print head thereon;

drive means for reciprocally moving said carriage means laterally, advancing in a first direction and returning in a second direction;

paper feed pitch selection means for selecting among a plurality of paper feed pitches, said selection of pitch being dependent on the lateral distance of movement of said carriage means in said first direction;

paper feed means for feeding said sheet of recording paper, said paper feed means being driven by said paper feed pitch selection means, said pitch selection means including a paper feed cam having at least two paper feed grooves therein, and at least one paper feed pitch changing groove for connecting between said at least two paper feed grooves;

paper feed cam drive means connected to and moving with said carriage means for engaging said grooves of said paper feed cam for driving said paper feed cam as said carriage means moves, said cam drive means and said selection means engaging a particularly selected feed groove in dependence upon the lateral position of said carriage means in said first direction when said reciprocal motion is changed from said first to said second direction, said paper being advanced in said direction of feeding by different distances for each said groove.

4,565,462

PAPER LOADING APPARATUS FOR PRINTER INCLUDING PLURAL FEED PATHS

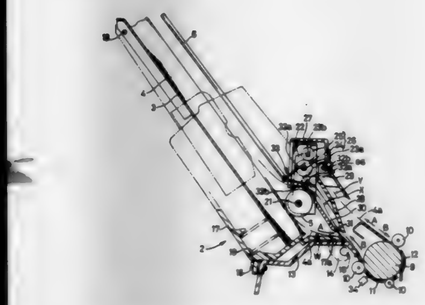
Takemi Yamamoto; Susumu Kuzuya; Isao Kagami, and Yuuichi Takenaka, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 15, 1983, Ser. No. 551,883

Claims priority, application Japan, Nov. 20, 1982, 57-204246; Nov. 20, 1982, 57-175692[U]

Int. Cl.⁴ B41J *13/10*

U.S. Cl. 400—625 **5 Claims**



1. A paper loading apparatus for a printer wherein sheets of paper are moved by a paper feeding device to a printing device for impression of characters on the paper along a line of printing, which comprises:

a paper stacker for storing a stack of said sheets of paper of one kind;

a feed roller engageable with the top of said stack and rotatable for feeding along a first paper path the individual sheets of paper one after another in one direction from said paper stacker toward said paper feeding device;

a first paper guide defining a part of said first paper path and having a plurality of recesses,

control means for controlling said paper feeding device such that the sheets of paper fed from said paper stacker by said feed roller are first moved in said one direction into said printing device and subsequently moved in a reverse direction opposite to said one direction; and

guide means for guiding said sheets of paper moving in said reverse direction along a second paper path in which said sheets of paper are free from engagement with said feed roller,

said guide means including trap means comprising a generally comb-shaped member having a plurality of teeth which extend toward a guiding surface of said first paper guide with the ends of said teeth located in the vicinity of said guiding surface, said plurality of teeth being accommodated in said plurality of recesses, a depth of said recesses as viewed substantially across said second paper path being greater than a thickness of said teeth, said generally comb-shaped member having a first surface which forms an acute angle with respect to said guiding surface on the side of said paper stacker, and a second surface which forms an obtuse angle with respect to said guiding surface of the side of said printing device, said generally comb-shaped member permitting said sheets of paper to pass between said ends of the teeth and said guiding surface in said one direction along said first paper path, but preventing a trailing end of said sheets of paper past said ends from returning along said first paper path in said reverse direction and thereby guiding said trailing end along said second paper path when said sheets of paper are moved in said reversed direction by said paper feeding device.

4,565,463

AQUEOUS INK CARTRIDGE WITH TWO PART VENT PLUG

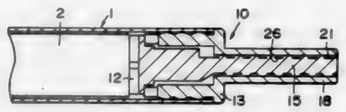
Kunihiko Otaguro, Gunma; Hiroshi Takahashi, Saitama; Kazuma Noguchi, Tokyo; Takeshi Toyama, Saitama; Takashi Ishikawa, and Isao Ebisawa, both of Ibaraki, all of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1984, Ser. No. 592,337

Claims priority, application Japan, Mar. 20, 1983, 58-44837; Mar. 23, 1983, 58-41908; Mar. 29, 1983, 58-45228; Mar. 30, 1983, 58-44826; Mar. 31, 1983, 58-47520

Int. Cl.⁴ B43K *7/02*

U.S. Cl. 401—217 **5 Claims**



1. A writing instrument cartridge for being projectably mounted in a casing of a writing instrument, said cartridge comprising:

a filler impregnated with aqueous ink;

ink feeding means connected to said filler;

a writing point at one end of the cartridge to which said ink feeding means is connected; and

an end plug at the other end of said cartridge with one end exposed outside and the other end inside said cartridge, said end plug having an unapertured inner member and an outer member receiving said inner member therewithin and having at least part of the inner surface thereof spaced from the outer surface of said inner member to define an air passage between said inner member and said outer member extending from said one end to the other end of said end plug, said air passage having a size and shape for, when the difference in atmospheric pressure between the inside and the outside of said cartridge is 0.02 atm. passing an amount of air therethrough within the range of 0.02 to 1 cc/sec.

4,565,464

CLAMPING JOINT

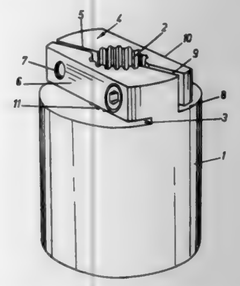
Sven W. Nilsson, Partille, Sweden, assignor to SKF Nova AB, Goteborg, Sweden

Filed Sep. 12, 1984, Ser. No. 649,948

Claims priority, application Sweden, Oct. 5, 1983, 8305459

Int. Cl.⁴ F16B *2/02*

U.S. Cl. 403—290 **4 Claims**



1. A device for clamping onto a shaft, comprising:

a body element (1) having a bore (2) passing through one end thereof for receiving said shaft and forming a bore wall therein, said body element (1) having a first slot (3) extending through a portion of said body in a plane substantially perpendicular to the axis of said bore and extending through a portion of said bore wall, and having a second slot (5) in a plane substantially parallel to said axis and extending axially through a portion of said one end such that it connects with said first slot (3), the result of said slots and bore forming a first deformable portion (6) in said one end and having third (8) and fourth (9) slots corresponding to and diametrically opposed to said first (3) and second (5) slots, respectively and lying in the same planes thereof, forming a second deformable portion (10) symmetrically disposed to said axis in relation to said first deformable portion (6) said deformable portions connected to said body portion at diametrically opposed locations and means (7) for varying the widths of said second (5) and fourth (9) slots so that said first (6) and second (10) deformable portions clamp said shaft therebetween, whereby a symmetrical clamping device is provided, said body element and first and second deformable portions forming a unitary, one-piece assembly.

4,565,465

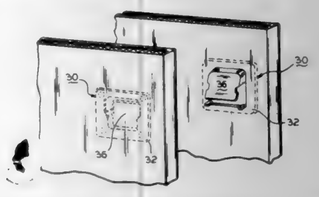
CONNECTORS FOR CORRUGATED MATERIALS

Steven M. Oberst, St. Charles, Ill., assignor to Acorn Box Company, Bedford Park, Ill.

Filed Jan. 26, 1984, Ser. No. 573,879

Int. Cl.⁴ B25G *3/00;* **F16B** *7/08*

U.S. Cl. 403—407.1 **6 Claims**



1. A female connector for attachment to a first piece of corrugated material and also for attachment to another connector which is carried on a second piece of corrugated material, to securely and removably hold two pieces of corrugated material together, said female connector comprising:

a back portion for attachment to corrugated material;

a front wall, and sidewalls attached to said front wall and said back portion to define a receiving pocket having an open top, said sidewalls defining locking protuberances on each side of the pocket that extend into said pocket, said front wall being in non-parallel, skewed relation with said back portion, whereby said locking protuberances are positioned to cooperate with a flange portion of another connector having locking slots which enters said receiving pocket.

4,565,466

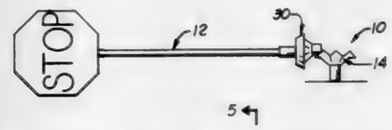
RETURN JOINTED SIGN POST PEDESTAL

Paul R. Daggs, Rte. No. 2, Box 159-H, Yukon, Okla. 73099; Arthur C. Wilkowske, Rte. 3, Box 132-W, El Reno, Okla. 73036, and Gordon D. Miller, Rte. 2, Box 79, Calumet, Okla. 73014

Filed Jun. 21, 1984, Ser. No. 623,205

Int. Cl.⁴ E01F *9/01*

U.S. Cl. 404—10 **10 Claims**



8. The apparatus of claim 7 wherein said top member is further characterized to include an annular plate attached to the top thereof with a vertically positioned tubular member adapted for attachment to said sign post connected thereto.

4,565,467

METHOD AND APPARATUS FOR THE CONTINUOUS LAYING ROAD MARKING STRIPS ONTO ROADWAY SURFACES

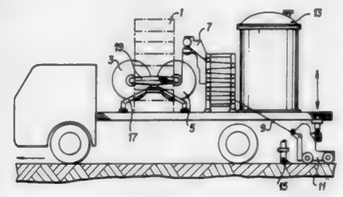
Ludwig Eigenmann, POB 114 CH 6833, Vacallo, Switzerland

Filed Dec. 16, 1983, Ser. No. 562,404

Claims priority, application Italy, Dec. 24, 1982, 24973 A/82

Int. Cl.⁴ E01C *23/16*

U.S. Cl. 404—72 **11 Claims**



1. An auxiliary, or supplemental, apparatus for mounting onto the type of machine which applies markings to road surfaces using the spray method, designed to provide the said machines with the additional capability of being able to lay prefabricated, road-marking strips, characterized by the fact that the said apparatus is mounted onto the outer side of the road-marking machine and that it guarantees uninterrupted laying of prefabricated road-marking strip at running velocity, by means of the use of a device cutting from a reel, and a means for pressing the strip to the road surface avoiding the accumulation of dirt which could compromise the efficiency of the signaletic capacity, and that both devices are controlled by a cam which also contemporaneously controls the action of the spray device of the machine itself which applies the pretreat-

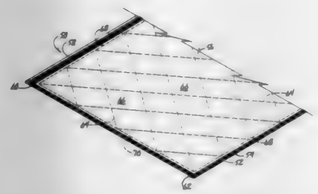
ment liquid to the road surface receiving the length of the prefabricated road marking strip.

4,565,468

MOISTURE IMPERVIENT BARRIER AND METHOD FOR MAKING SAME

Leslie A. Crawford, 1010 NE. Crestmoor, Ankeny, Iowa 50021

Filed Oct. 24, 1983, Ser. No. 544,503
Int. Cl.⁴ E02D *3/12*
U.S. Cl. 405—270 **8 Claims**



1. A device for providing a moisture impervient barrier comprising:

a flexible base sheet member having an upper surface, a lower surface and a longitudinal axis, said base sheet member being comprised of a material which is gas permeable in any direction within the plane defined by said base sheet member so as to permit gases to escape through said base sheet member;

a layer of water swellable bentonite resting on said base sheet member, said bentonite layer having a constant thickness;

an elongated flexible top sheet member resting upon the top of said layer of bentonite;

securing means comprising a plurality of thread stitches extending through said base sheet member, said bentonite, and said top sheet member at a plurality of locations for securing the same together, said stitches spanning the distance between said base sheet member and said top sheet member so as to maintain a substantially uniform thickness for said bentonite layer;

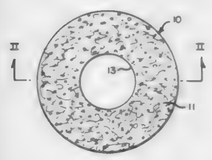
said stitches dividing said spaced apart base and top sheet members into a quilted pattern forming a plurality of four sided compartments, each of said compartments containing a portion of bentonite.

4,565,469

CRIBBING

Nicholas Chlumecky, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Continuation-in-part of Ser. No. 411,583, Aug. 26, 1982, Pat. No. 4,497,597. This application Nov. 13, 1984, Ser. No. 670,951
Int. Cl.⁴ E21D *11/00*
U.S. Cl. 405—288 **13 Claims**



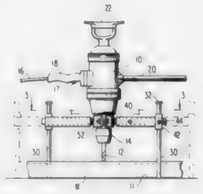
1. A crib member for use in superimposed layers as cribbing in an underground cavity such as a mine comprising a circular concrete member of small substantially uniform thickness relative to its diameter whereby each said member can be rolled into position on its outer periphery and stacked with full surface contact between successive members free of edge loading between member and the bottom member can be rotated about its axis to level an uneven base surface, said member being formed of fibre reenforced concrete whereby brittle failure is prevented.

4,565,470

APPARATUS FOR HAND DRILLING

Karl A. Karlsson, Järna, Sweden, assignor to William E. Mouzavires, Oakton, Va., a part interest

Filed Jul. 12, 1982, Ser. No. 397,537
Int. Cl.⁴ B23B *45/14*
U.S. Cl. 408—72 R **21 Claims**



1. Portable hand-drilling apparatus comprising in combination, a portable hand drill having a body and a chuck mounted to the body for rotation, at least one handle projecting from the body above the chuck for manipulating the drill, a yoke positioned between the handle and chuck and releasably fixed to the body against rotation and having an arm projecting laterally therefrom, an elongated rigid load transfer member having a free end adapted to be freely engaged against a side of a workpiece to be drilled, means mounting the arm to the load transfer member against rotation relative thereto while permitting the arm together with the yoke and drill to move along the load transfer member such that during a drilling operation the free end of the load transfer member is placed against the side of the workpiece to transfer torque through the load transfer member and laterally onto the workpiece to divert torque stress from the user's body while securing the hand drill to the workpiece without positively attaching the load transfer member to the workpiece, said means including a holder receiving said arm for slidable movement of said arm relative to the holder into one of a plurality of selectable positions, said holder having mounting means slidably receiving the load transfer member to allow the holder together with the arm and drill body to move along the load transfer means, and wherein there is further included means releasably fixing the arm to said holder in a selected position.

4,565,471

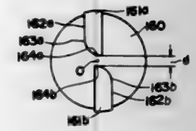
DRILL BIT

Hideo Negishi; Kaoru Goto, both of Tokyo, and Sueji Takaya, Kawasaki, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 192,627, Sep. 30, 1980, Pat. No. 4,373,839. This application Sep. 30, 1982, Ser. No. 428,717
Claims priority, application Japan, Oct. 2, 1979, 54-127046; Nov. 15, 1979, 54-158626[U]; Nov. 15, 1979, 54-158627[U]; Nov. 15, 1979, 54-158628[U]; Dec. 29, 1979, 54-182582[U]; Dec. 29, 1979, 54-182583[U]; Feb. 15, 1980, 55-17567; Jul. 10, 1980, 55-94389; Aug. 28, 1980, 55-122286[U]
The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.
Int. Cl.⁴ B23B *51/00*
U.S. Cl. 408—204 **14 Claims**

1. A drill bit for drilling a hole in a metal workpiece which comprises a body having a shank portion and an end face at its forward end and an axis of rotation therethrough, said body having at its forward end a pair of cutting means each having at least one cutting edge, said cutting edges being disposed symmetrically relative to said axis of rotation of said drill bit,

an inner portion of each cutting edge remote from the outer periphery of said bit body being generally convex when viewed from the forward end of said bit body, at least a part of the innermost sections of said inner portions of said cutting edges being equally spaced from said axis of rotation a distance between 0.1 to 1.25 mm to thereby define a recess having



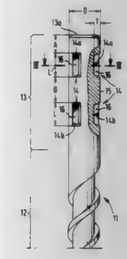
opposed walls between said cutting means, the depth of said recess being not less than 0.2 mm whereby a central core formed in said recess during a drilling operation will be twisted off by the opposed walls of said recess prior to the core engaging the base of the recess, and the opposed walls of said recess extending parallel to said axis of rotation.

4,565,472

DRILL FOR HAND-HELD DRILLING DEVICES

Ernst Brennsteiner, Munich, and Dieter Scholz, Unterpfaffenhofen, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan Fürstentum, Liechtenstein

Continuation of Ser. No. 434,053, Oct. 13, 1982, abandoned. This application Apr. 29, 1985, Ser. No. 727,207
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144826
Int. Cl.⁴ B23B *51/00, 31/08;* **E21B** *10/36*
U.S. Cl. 408—226 **10 Claims**



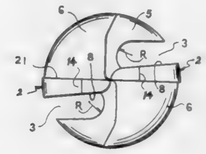
1. A drill for use in a hand-held drilling device comprises an axially elongated shank arranged to be inserted into the hand-held device, said shank having an axially extending outside circumferential surface with a closed ended axially extending groove formed in the axially extending outside circumferential surface and said groove having ends extending transversely of the axially extending direction thereof, wherein the improvement comprises that said shank has a leading end, a trailing end, and a diameter D, the axially extending distance between the trailing end of said shank and the adjacent end of said axially extending groove is in the range of 0.3 to 1 times the diameter D of said shank, at least one web is located within said axially extending groove extending in the axially extending direction of said groove and also transversely thereof and divides said groove intermediate the ends thereof into axially extending groove sections, the surface of said web is located in the outside circumferential surface of said shank, each said groove section has a base spaced radially inwardly from the outside circumferential surface of said shank with said base extending parallel to the axis of said shank and each said groove section having opposite ends spaced apart in the axial direction with said groove section ends forming shoulders extending transversely of the axial direction.

4,565,473

DRILL

Toshiaki Hosoi, 9-10, Kami-minami 5-chome, Hirano-ku, Osaka, Japan

Continuation of Ser. No. 290,130, Aug. 5, 1981, abandoned. This application Feb. 14, 1984, Ser. No. 579,289
Claims priority, application Japan, Aug. 29, 1980, 55-120463; Oct. 30, 1980, 55-153639
Int. Cl.⁴ B23B *51/02*
U.S. Cl. 408—229 **12 Claims**



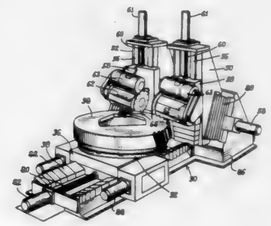
1. A drill of enhanced torsional rigidity for drilling deep holes comprising a shank having discharging flutes, a pair of cutting edges each of said cutting edges having an arcuate central edge portion and a generally straight outer edge portion, a stepped portion between said arcuate central edge portion and said straight outer edge portion, said arcuate central edge portion being longitudinally spaced from said straight outer edge portion, said stepped portion constituting a generally longitudinally disposed surface, said arcuate central edge portion being constructed and arranged with an arcuate configuration so as to form compact and relatively small curled inner chips, said straight outer edge portion being constructed and arranged with a generally straight configuration so as to form generally straight, strip-shaped outer chips separated from said inner chips and having a width corresponding to the width of said straight outer edge portion, said flutes having a flute width ratio which is within the range of 0.5 to 0.02 such that said strip-shaped outer chips are prevented from curling by the inside walls of said flutes, whereby the formation of said uncurled outer chips enables smooth discharge of said outer chips along with said compact and curled inner chips through said flutes.

4,565,474

METHOD OF GENERATING INVOLUTE TOOTH FORMS WITH A MILLING CUTTER

Paul A. S. Charles, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Continuation-in-part of Ser. No. 207,225, Nov. 1, 1980, abandoned. This application Apr. 15, 1983, Ser. No. 485,408
Int. Cl.⁴ B23F *5/20*
U.S. Cl. 409—51 **40 Claims**



1. In the manufacture of a gear, the method of machining a

gear blank to produce a tooth profile which is involute from an imaginary base surface of revolution within said gear blank, said surface having a straight-line generatrix and having an imaginary plane of action tangent to said surface,

said method comprising the steps of

rotating a cutter having a plurality of cutting edges uniformly spaced about the entire periphery of the cutter sweeping a cutting path in the form of a surface of revolution about the axis of the cutter so that said plurality of cutting edges are distributed substantially uniformly about the common surface of revolution which they define, said cutting-path surface comprising a plunge-cutting rim portion of cutting thickness not exceeding the desired tooth space at the tooth root and a contiguous tooth-profile cutting portion,

positioning the rotating cutter on the side of said plane of action opposite to said base surface with said rim portion penetrating said plane of action and with said tooth-profile cutting portion intersecting said plane of action along a predetermined generating line and with said tooth-profile cutting portion perpendicular to said plane of action at least at the center of said generating line,

independently controlling the rotation of the cutter, and

effecting a relative feeding movement of said gear blank and rotating cutter independently of the rotation of the cutter while maintaining the aforesaid position of the cutter relative to said plane of action,

said feeding movement being such as:

to cause a relative rolling motion between said base surface and said plane of action without slippage;

to cause said generating line at all points therealong to maintain a controlled angularity with respect to the instantaneous direction of its movement relative to the line of tangency of said base surface with said plane of action during said rolling motion; and

to cause said rotating cutter to penetrate said gear blank and said generating line to traverse said gear blank between its addendum surface and a depth at which the desired active tooth-profile is achieved at the center of said generating line.

4,565,475

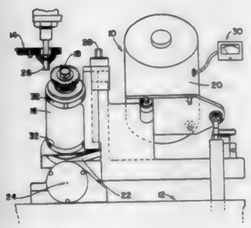
DRILL POINT MILLING MACHINE AND METHOD

Henry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 097,460, Nov. 26, 1979, abandoned. This application Mar. 2, 1983, Ser. No. 471,919

Int. Cl.⁴ B23G *9/00*

U.S. Cl. 409—131 **6 Claims**



1. An apparatus for consistently producing drill screws within exacting tolerances, said screws having drilling tips with at least two flutes and said apparatus including a rotating turret for intermittently conveying successive screw blanks having exposed shanks along a path of travel and at least one cam operated milling station adjacent said path, said station including a motor driven spindle for mounting rotary cutting tools used to form said drilling tips, said cutting tools including at least one pointing cutter for forming a heel surface on said screw blank, wherein the improvement comprises:

(a) means for forming said drilling tips which include a plurality of form relieved milling cutters, said pointing cutter being one of said plurality of milling cutters and, said pointing cutter having a concave profile to provide means for varying the size and orientation of said heel surface movement parallel to the axis of rotation of said pointing cutter and meant to adjust the axial position of said pointing cutter,

(b) means for rotating said cutters at a rate of approximately 1000 surface feet per minute and,

(c) means for firmly holding said screw blanks against uplift and rotational forces resulting from interaction between said blanks and said cutters, said holding means being capable of exerting a downward axial force on said blanks of between 200 and 350 pounds.

4,565,476

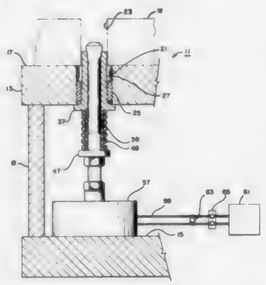
INTERNAL HYDRAULIC CLAMP

Donald F. Smith, Fort Worth, Tex., assignor to General Dynamics Corporation, Fort Worth, Tex.

Filed Jan. 16, 1984, Ser. No. 570,972

Int. Cl.⁴ B23Q *3/06*

U.S. Cl. 409—225 **8 Claims**



1. A device for securing a workpiece to a support surface of a fixture for performing machining operations, comprising:

a mandrel adapted to be carried in a passage provided in the fixture support surface and having an upper end that is expansible and is adapted to extend into a hole provided in the workpiece, the mandrel having a flange on its lower end that is larger in diameter than the passage;

an expander stem carried within a bore of the mandrel, having an upper end that protrudes past the upper end of the mandrel and is adapted to be recessed within the hole in the workpiece, the upper end of the stem being tapered and larger in diameter than the bore of the mandrel;

hydraulic means for pulling downwardly on the stem with hydraulic force; and

spring means for applying an upward force on the mandrel, causing the flange to bear against the lower side of the support surface while the stem is in an upper position, to initially prevent downward movement of the mandrel to expand the upper end of the mandrel into gripping engagement with the workpiece as the stem moves downwardly, the hydraulic force subsequently pulling the mandrel downwardly with the stem after the mandrel grips the workpiece, for tightly securing the workpiece to the support surface, the device being free of any structure below the flange for stopping movement of the mandrel once the stem begins pulling the mandrel downwardly.

4,565,477

METHOD OF CASING-IN BOOKS

Herbert R. Axelrod, Neptune City, N.J., assignor to permaTek, Inc., Las Vegas, Nev.

Continuation of Ser. No. 321,541, Nov. 16, 1981, abandoned. This application Jun. 6, 1984, Ser. No. 617,837

Int. Cl.⁴ B42C *11/00*

U.S. Cl. 412—5 **17 Claims**



1. A method for casing-in a plurality of books, each book comprising book case and book block components, using continuous movement conveyor means having a central axis along its direction of movement for transporting said components, wherein a typical book case has opposite first and second side parts and a central back strip therebetween and opposite inside and outside faces of said side parts and back strip, and a typical book block has opposite first and second outer sides and a spine therebetween, the method for casing-in each book comprising the steps: placing said book case with its outside face downward upon the conveyor means, its inside face upward, and its central back strip aligned generally parallel with said central axis of the conveyor means; forming said central back strip to receive the spine of said book block by heating and then passing said central back strip between a pair of forming pressure rollers; applying glue to said inside face of said book case only once in this method, namely when the book case is in continuous movement as it is moved by said conveyor means after said forming step; placing and aligning said book block with its first outer side upon said glued inside face of said first side part of said book case; folding said glued inside face of said second outer side part of said case over and around the spine of said book block and into contact with said second side of said book block; and applying pressure urging said glued surfaces of said book case and said book block to adhere together.

4,565,478

MATERIALS HANDLING DEVICE

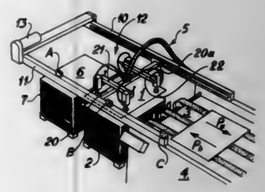
Sylve J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsborg, Sweden

Filed Feb. 26, 1981, Ser. No. 238,168

Claims priority, application Sweden, Feb. 3, 1981, 8100787

Int. Cl.⁴ B65G *57/04, 60/00*

U.S. Cl. 414—71 **4 Claims**



1. In a printing environment in which a sheet on which information to be printed is moved from a stack of sheets to a register position for a subsequent printing operation and in which a sheet having information printed thereon is moved from a finish position onto a stack of printed sheets, a materials handling device for automatically performing at least one of the operations of moving a sheet from a stack to the register position and moving a printed sheet from the finish position to a stack, comprising a transport track defining an axis of translation extending between at least one of said register and finish positions and at least one stack of sheets, a device capable of picking up and holding a sheet and translatable along said axis, means for moving said pick-up and hold device along said axis, at least three position sensors disposed at spaced locations along said transport track, one of said sensors being located at said register or finish position and another one of said sensors being located at said stack, at least two of said sensors being movable along said transport track, a plurality of knobs each having a number of settings equal to the number of sensors, each knob being assigned to one of the operations of picking up a sheet or releasing a sheet, and means responsive to said position sensors for controlling said moving means and said pick-up and hold device to move to the position and perform the operations indicated by each of said knobs in sequence so as to move said device over said stack and carry out one of the operations of picking up a sheet or dropping one onto the stack and then move to said register or finish position and perform the other of said operations.

4,565,479

RAW MATERIALS CHARGING DEVICE FOR PREHEATING FURNACE

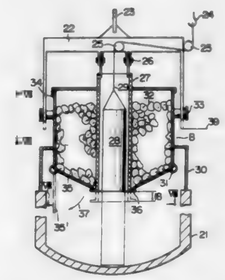
Masahiko Seki; Hiroshi Nakatani; Shozo Minami, and Katsuya Kogumasaka, all of Kitakyushu, Japan, assignors to Nippon Steel Corp., Kitakyushu, Japan

Filed Mar. 5, 1984, Ser. No. 586,463

Claims priority, application Japan, Mar. 10, 1983, 58-34426[U]

Int. Cl.⁴ B66C *3/00*

U.S. Cl. 414—199 **8 Claims**



1. A raw materials charging device comprising:

a bucket for charging raw materials, said bucket having a main body and a bottom plate movable between a closed position and an open position for introducing a charge of said raw materials from said main body into a furnace;

an outer cylindrical member;

an inner cylindrical member positioned coaxially and vertically movable in the outer cylindrical member, both of said cylindrical members being located in the main body of the bucket coaxially therewith; and

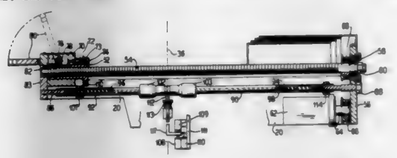
means for moving said inner cylindrical member out of said outer cylindical member and into said furnace before introducing said charge into said furnace and for moving said inner cylindrical member out of said furnace and into said outer cylindrical member after introducing said charge into said furnace so as to form a passage in said charge for heating said raw materials with a gas.

4,565,480

CAROUSEL PALLET SHUTTLE

Edward Merk, Long Beach; George Delaney, Laguna Hills; Leon Wasynczuk, Torrance; Richard Parks, Mission Viejo, and Richard Polacek, Palos Verdes, all of Calif., assignors to Burgmaster - Houdaille, Inc., Los Angeles, Calif.

Filed Sep. 7, 1982, Ser. No. 415,548
Int. Cl.⁴ B65H *5/18*
U.S. Cl. 414—225 **9 Claims**



1. A carousel pallet shuttle adapted for use with a plurality of pallet storage locations oriented in a circular arrangement, comprising a rotatable support member, a rectilinearly movable pallet shuttle member mounted on said rotatable support member for movement in an axial direction relative to said rotatable support member, said pallet shuttle member having a latch member adapted to releasably connect said pallet shuttle member with a pallet located at one of said pallet storage locations, and drive means for moving said pallet together with said pallet shuttle member onto said rotatable support member whereby said pallet is free to rotate past other pallet storage positions, said drive means comprising a drive member for selectively rectilinearly moving said pallet from said rotatable support member to a machining position in operative association with a machine tool and a lost motion linkage for automatically engaging said latch member, in response to motion of said drive member, before said pallet is pulled onto said rotatable support member, and for automatically disengaging said latch member, in response to motion of said drive member, after said pallet is moved off of said rotatable support member, said lost motion linkage comprising a rack and pinion linkage interconnected between said drive member and said latch member for rotating said latch member in response to rotation of said pinion, and spring means for preventing rotation of said pinion except when said drive member is in a fully extended condition.

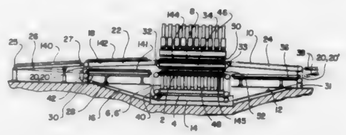
5. A carousel pallet shuttle adapted for use with a plurality of pallet storage locations oriented in a circular arrangement, comprising a rotatable support member, a rectilinearly movable pallet shuttle member mounted on said rotatable support member for movement in an axial direction relative to said rotatable support member, said pallet shuttle member having a latch member adapted to releasably connect said pallet shuttle member with a pallet located at one of said pallet storage locations, and drive means for moving said pallet together with said pallet shuttle member onto said rotatable support member whereby said pallet is free to rotate past other pallet storage positions, said drive means selectively rectilinearly moving said pallet from said rotatable support member machining position in operative association with a machine tool, said drive means comprising a lost motion linkage for automatically engaging said latch member before said pallet is pulled onto said rotatable support member, and for automatically disengaging said latch member after said pallet is moved off of said rotatable member, said drive means comprising a drive screw and a drive screw nut threadably mounted thereon and adapted for rectilinear movement in response to the rotation of said drive screw, and said lost motion linkage comprising a housing member mounted for rectilinear sliding motion relative to said drive and said nut for mounting said latch member, and a spring member for normally maintaining a separation between a portion of said drive screw nut and said housing member.

4,565,481

APPARATUS FOR LOADING AND UNLOADING A DOUBLE OPENING PRESS FOR MANUFACTURING FIBREBOARD

Giorgio Pagnoni, Monza, Italy, assignor to F.LLI Pagnoni S.p.A., Italy

Continuation-in-part of Ser. No. 341,253, Jan. 21, 1982, abandoned. This application May 17, 1984, Ser. No. 611,408
Claims priority, application Italy, May 21, 1981, 21914 A/81
Int. Cl.⁴ B29J *5/08;* **B65G** *65/02*
U.S. Cl. 414—285 **4 Claims**



1. An apparatus for loading and unloading a multi-opening press for manufacturing fibreboard, the press having a lower part (**48**), an upper part (**46**) and an intermediate part (**34**) between the upper and lower parts defining upper and lower openings, comprising:

a first bearing support (**30**);

a second bearing support (**31**) spaced from said first bearing support;

a first endless conveyor movable through the upper opening (**50**) in a first feed path from said first bearing support to said second bearing support, said first endless conveyor movable in said first feed path in a feed direction, and formed of a plurality of conveyor sections (**8, 10, 12, 14, 16, 18**) spaced along said first conveyor and two spaced drive members (**20,20'**) connecting said plurality of conveyor sections together and spaced sufficiently to permit passage of the fibreboard to be processed by the upper and the intermediate parts of the press, said first endless conveyor extending under the lower part (**48**) of the press;

a second endless conveyor movable through the lower opening (**52**) and in a second feed path, said first conveyor intersecting said second feed path at a pair of spaced locations of intersection, each location of intersection adjacent one of said bearing supports so that a board on said second feed path can move between said two spaced drive members (**20,20'**) and two adjacent ones of said plurality of conveyor sections of said first endless conveyor:

an upper loading table (**22**) upstream of the upper opening (**50**) on said feed path and in said feed direction, pivotally mounted at one end thereof (**32**) to the intermediate plate (**34**) and at an opposite end therof to said first bearing support (**30**); and

an upper unloading table (**24**) downstream of the upper opening (**5**) on said first feed half and in said feed direction, pivotally mounted at one end (**33**) thereof to the intermediate plate (**34**) and at an opposite end thereof to said second bearing support (**31**).

4,565,482

WHEELCHAIR DOCKAGE AND STORAGE SYSTEM

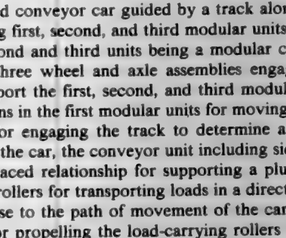
Gary W. Baker, Troy, Mich., assignor to Autodynamics Corporation of America, Madison Heights, Mich.

Filed Nov. 22, 1982, Ser. No. 427,507
Int. Cl.⁴ B60P *1/48*
U.S. Cl. 414—462 **24 Claims**

1. An assembly for raising and collapsing a wheelchair having collapsible legs, said assembly comprising:

first leg engagement means for reversibly engaging the proximal leg of the wheelchair and having a lowered position and a raised position;

second leg engagement means for reversibly engaging the distal leg of the wheelchair and being operatively connected to said first leg engagement means for movement between said raised and lowered positions therewith, said second leg engagement means having a retracted and extended position relative to said first leg engagement means; and



drive means for reversibly moving said first and second leg engagement means between said raised and lowered positions for raising the wheelchair and for reversibly moving said second leg engagement means from said extended position to said retracted position to reversibly collapse the distal leg of the wheelchair against the proximal leg.

4,565,483

MODULAR CONVEYOR CAR AND COUPLINGS THEREFOR

Richard L. Huelster, Indianapolis, and Thomas A. Dyer, Greenwood, both of Ind., assignors to Pentek Corporation, Indianapolis, Ind.

Filed May 20, 1982, Ser. No. 380,085
Int. Cl.⁴ B65G *67/00*
U.S. Cl. 414—353 **8 Claims**



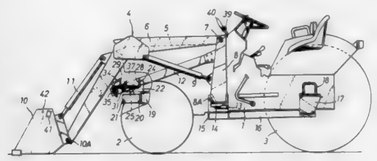
1. A powered conveyor car guided by a track along a surface comprising first, second, and third modular units, at least one of the second and third units being a modular conveyor unit, at least three wheel and axle assemblies engaging the surface to support the first, second, and third modular units, first drive means in the first modular units for moving the car, guide means for engaging the track to determine a path of movement for the car, the conveyor unit including side frame members in spaced relationship for supporting a plurality of load-carrying rollers for transporting loads in a direction generally transverse to the path of movement of the car, second drive means for propelling the load-carrying rollers to transport the loads from one lateral edge to the other lateral edge of the car, first coupling means for coupling the second modular unit to the first modular unit, and second coupling means for coupling the second modular unit to the third modular unit, whereby the modular units are separable for shipping, installation and addition of modular units, one of the first and second coupling means including a hinge connecting means having only a single generally horizontal hinge axis to permit coupled modular units to move hingedly with respect to each other so that the guide means will follow the track when the surface engaged by the wheel and axle assemblies is uneven.

4,565,484

DEVICE FOR ATTACHING FRONT WORKING IMPLEMENT TO VEHICLE BODY

Akio Hamada, Toyonaka; Motomu Masuzawa, Osaka, and Yoshiaki Matsuda, Sapporo, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Jun. 1, 1983, Ser. No. 499,838
Claims priority, application Japan, Sep. 21, 1982, 57-144116[U]
Int. Cl.⁴ E02F *3/72*
U.S. Cl. 414—686 **6 Claims**



1. In an arrangement including a pair of opposed booms having a working portion at their front ends, a pair of masts supporting the booms and removably fixed to a vehicle body and a brace projecting forward from each of the masts, a device for attaching a front working implement to the vehicle body comprising a fitting portion and a bearing portion which are tapered to engage with each other approximately in a vertical direction and one of whch is attached to the vehicle body, the other portion being attached to a longitudinally intermediate portion of the brace toward its front end, an engaging portion provided adjacent the front side of the bearing portion and the fitting portion, lever means, the rearward end of having a lever plate with forward and rearward ends, said lever means the lines plate mounted on the front portion of the brace engageable with the engaging portion to hold the fitting portion and the bearing portion in fitting engagement with each other, the lever plate pivotally movably supported intermediate its ends by a pivot on the brace, the pivot being disposed away from and to the front of the engaging portion, the lever plate extending forward from the pivot, and means for fastening the lever means in a direction to fit the fitting portion into the bearing portion, the fastening means being provided at the forward end of the lever plate so that the lever plate can be fastened to the brace at a position forwardly away from the location where the fitting portion fits to the bearing portion.

6. In an arrangement including a pair of opposed booms having a working portion at their front ends, a pair of masts supporting the booms and removably fixed to a vehicle body and a brace projecting forward from each of the masts, a device for attaching a front working implement to the vehicle body comprising a fitting portion and a bearing portion which are tapered to engage with each other approximately in a vertical direction and one of which is provided on the front portion of the brace, the other portion being provided on the vehicle body, an engaging portion provided on the vehicle body, lever means mounted on the front portion of the brace at a spaced location from the fitting portion and the engaging portion and having one end engageable with the engaging portion and it other end movable to hold the fitting portion and the bearing portion in fitting engagement with each other, means for fastening the other end of the lever means in a direction to force the fitting portion into the bearing portion, said bearing portion being provided at each side of the vehicle body, and the fitting portion is provided on the front portion of the brace to fit into the bearing portion, a guide member being provided above the bearing portion and having a longitudinal guide portion for regulating the position of the fitting portion longitudinally of the vehicle body and guiding the fitting portion into the bearing portion by coming into contact with the fitting portion before it is fitted into place, the guide member further having a lateral guide portion for regulating position of

the fitting portion laterally of the vehicle body by coming into contact with the brace before the fitting.

4,565,485

MECHANICAL GRAB AND SCOOP COMBINATION

Thomas S. Wilman, Mews Cottage, 5 Horsemarket, Kirkby Lonsdale, Carnforth, England (LA6 2AS)

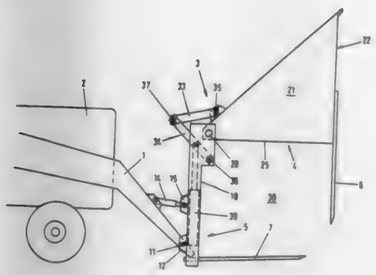
PCT No. PCT/GB83/00337, § 371 Date Aug. 15, 1984, § 102(e) Date Aug. 15, 1984, PCT Pub. No. WO84/02543, PCT Pub. Date Jul. 5, 1984

PCT Filed Dec. 19, 1983, Ser. No. 642,669

Claims priority, application United Kingdom, Dec. 21, 1983, 8236338

Int. Cl.⁴ E02F *3/00*

U.S. Cl. 414—704 **8 Claims**



1. A material handling apparatus for use on a vehicle, said apparatus being capable of acting both as a grab and as a scoop without having additional components fitted or removed, said apparatus comprising a fork member comprising a support structure, a set of tines carried by said support structure so that, in use, the tines project forwardly with respect to said vehicle, and a grab member having a further set of tines projecting therefrom, wherein:

(a) said grab member is pivotally mounted relative to the fork member so as to permit the fork and grab members to open and close thereby to bring the sets of tines carried thereby toward and away from each other so to grasp and accommodate material between them when they are at least partially together;

(b) said tines of the two sets are offset from each other laterally relative to one another so that the fork and grab members can be substantially closed, with the tines of one set fitting between the tines of the other set; and

(c) at least said grab member is provided with a fixed scoop means such that when the fork and grab members are closed a material scoop is formed, with at least a portion of said scoop means on said grab member overlying at least a portion of said set of tines on the fork member.

4,565,486

DEVICE FOR HANDLING MATERIAL

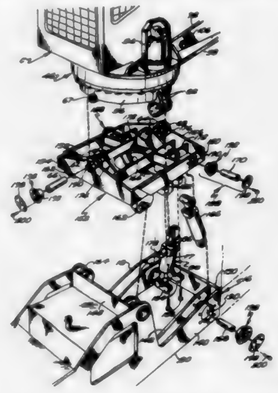
Patrick J. Crawford, and Larry G. Klement, both of Shawano, Wis., assignors to Timbco Hydraulics Inc., Shawano, Wis.

Filed Sep. 29, 1982, Ser. No. 427,090

Int. Cl.⁴ B66D *3/00*

U.S. Cl. 414—729 **10 Claims**

1. Device for handling material comprising, in combination: a frame having a first frame axis and a second frame axis which is perpendicular to the first frame axis; a base portion; a mid-frame; means for pivotally mounting the mid-frame to the frame about a mid-frame pivot axis which is parallel to the first frame axis; means for pivoting the mid-frame about the mid-frame pivot axis; means for pivotally mounting the base portion to the mid-frame about a base portion pivot axis which is parallel to the second frame axis; means for pivoting the base portion about the base portion pivot axis, with the base portion pivoting means being of a compact design while allowing a large degree of tilt, with the base portion pivoting means comprising: at least a first hydraulic ram including a hollow cylinder having a first, open end and a second, closed end and a piston reciprocally received in the first open end of the hollow cylinder, means for pivotally mounting the free end of the piston to the base portion about a piston pivot axis generally parallel to but spaced from the base portion pivot axis, and means for pivotally mounting the cylinder to the mid-frame about a cylinder pivot axis which is perpendicular to the ram, adjacent to the first, open end of the cylinder, and parallel to the piston pivot axis and the base portion pivot axis; and means for handling material operatively attached to the base portion wherein the material handling means can be positioned relative to the material by pivoting the mid-frame about the mid-frame pivot axis by the mid-frame pivoting means and/or by pivoting the base portion about the base portion pivot axis by the base portion pivoting means; wherein the frame comprises, in combination: first and second side members, with the first and second members including an outside plate and an inside plate held in a spaced relation, with the outside and inside plates being parallel to the second frame axis, with the outside plates extending the substantial length of the device in the direction of the second frame axis, a front plate, and a rear plate, with the front and rear plates holding the first and second members in a parallel, spaced relation, with the mid-frame pivot axis being defined by first and second pivot pins secured between the inside and outside plates of the first and second side members of the frame; and wherein the inside plates include front ends and rear ends; wherein the outside plates include front ends and rear ends; wherein the front plate is attached to the front ends of the inside plates and the outside plates of the first and second side members; wherein the rear plate is attached between the outside plates of the first and second side members intermediate the front and rear ends of the outside plates; and wherein the rear plate is attached to the rear ends of the inside plates of the first and second side members.



4,565,487

SYSTEM OF ROBOTS WITH LEGS OR ARMS

Patrice Kroczynski, Vitry sur Seine, France, assignor to International Robotic Engineering, Inc., New York, N.Y.

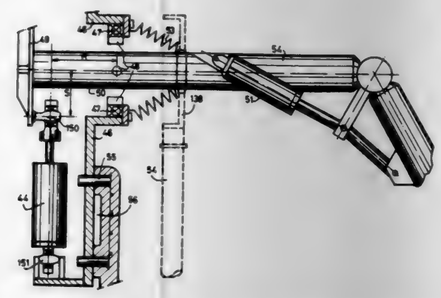
Filed Sep. 1, 1982, Ser. No. 413,791

Claims priority, application France, Sep. 4, 1981, 81 16970

Int. Cl.⁴ B25T *9/00*

U.S. Cl. 414—730 **19 Claims**

1. A robot system comprising a robot having a plurality of articulated members, actuating means for effecting movements of said articulated members, and a data processing unit for controlling said actuating means, one of said articulated members being pivotally mounted about three separate axes intersecting at a first fixed point, said actuating means for said one articulated member comprising two jack actuators, two ball joint means for articulating said jack actuators to said one articulated member about two points separate from and out of alignment with said first fixed point, and two other ball joint means for articulating said two jack actuators about respective second and third fixed points separate from and out of alignment with said first fixed point.



4,565,488

COMPRESSOR

Jack E. Muck, Garfield Heights, Ohio, assignor to AccuSpray, Inc., Bedford Heights, Ohio

Filed Oct. 21, 1983, Ser. No. 544,218

Int. Cl.⁴ F01D *5/00*

U.S. Cl. 415—53 R **19 Claims**

5. An apparatus for stopping an electrically powered air compressor upon the partial blocking of an air filter adjacent the air inlet to said compressor,

said apparatus including a compressor having an inlet, an outlet and a pressure actuated switch for stopping the flow of electricity to the compressor,

an air filter mounted adjacent said inlet to filter air prior to the air entering said inlet,

said switch being in fluid communication with the compressor near the inlet and downstream of the filter,

two spaced apart electrical terminals on said switch, a bar of electrically conductive material extending across the space between the terminals to conduct electricity to said compressor, said bar being connected to a diaphragm, said diaphragm sealing the path of fluid communication between the compressor and the switch,

means biasing the bar toward the terminals and

means for locking the bar out of contact with said terminals upon the pressure actuated withdrawal of said bar from said contact by said diaphragm.

4,565,489

SELF-PRIMING CENTRIFUGAL PUMP

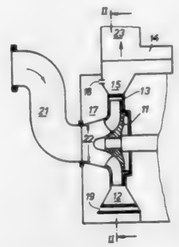
Karl Haide, Friedrichshafen, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Jul. 16, 1982, Ser. No. 398,908

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141080

Int. Cl.⁴ F04D *9/02*

U.S. Cl. 415—53 R **9 Claims**



3. A self-priming centrifugal pump with an arrangement for controlling mixture formation effective during a priming operation, the pump comprising pump impeller means, pump volute means beginning above and surrounding the pump impeller means for conducting liquid, venting chamber means arranged above the impeller means for receiving an air-liquid mixture from the pump volute means during the priming operation, and return-flow duct means terminating in the pump volute means at a position below the pump impeller means for connecting the venting chamber means with the pump volute means, said return-flow duct means terminating in a nozzle means, quieting chamber means operatively arranged beside the pump impeller means, pump volute means and return-flow duct means for receiving liquid directly from at least one of the venting chamber means and return-flow duct means, means for communicating the quieting chamber means with the pump volute means, said means for communicating terminating on a side of the pump volute means at a position arranged downstream of the nozzle means and being exposed to a jet from the nozzle means in the manner of an ejector, and means for communicating the quieting chamber means with the return-flow means.

4,565,490

INTEGRATED GAS/STEAM NOZZLE

Ivan G. Rice, P.O. Box 233, Spring, Tex. 77373

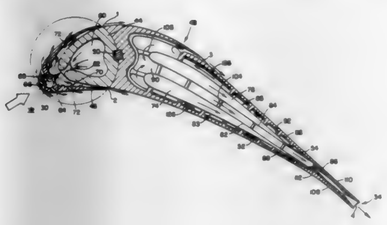
Continuation-in-part of Ser. No. 274,660, Jun. 17, 1981, Pat. No. 4,384,452, which is a division of Ser. No. 47,571, Jun. 11, 1979, Pat. No. 4,314,442, and a continuation-in-part of Ser. No. 224,496, Jan. 13, 1981, Pat. No. 4,438,625, which is a division of Ser. No. 954,832, Oct. 26, 1978, Pat. No. 4,272,953. This application Apr. 19, 1983, Ser. No. 486,336

Int. Cl.⁴ F02C *7/16*

U.S. Cl. 415—114 **1 Claim**

1. An integrated gas and steam nozzle for directing a combustion gas stream onto rotatable blades for the extraction of work, said gas nozzle comprising a plurality of spaced air foil-shaped vanes, said vanes having a leading edge portion and a trailing edge portion proximate to said blades, a source of steam, a vane body steam nozzle located on the suction side surface of said vanes at approximately the mid point between said leading and trailing edges of said vanes, means to supply steam from said source to said vane body steam nozzle, said

vane body steam nozzle capable of directing steam across the exterior suction side surface of said vanes toward said trailing



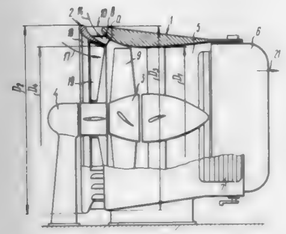
edge, said suction side surface between said vane body nozzle and said trailing edge containing substantially no curvature.

4,565,491

PROPULSION INSTALLATION OF AIR-CUSHION TRANSPORT VEHICLE

Sergei K. Ivanov; Viktor E. Dudkin; Iosif A. Raskin, and Valery P. Peredery, all of Donetsk, U.S.S.R., assignors to Donetsky Nauchno-Issledovatelsky Institut Kompiexnoi Mekhanizatsii Shakht, Moscow, U.S.S.R.

Filed Jul. 28, 1980, Ser. No. 173,163
Claims priority, application U.S.S.R., Sep. 10, 1979, 2804005
Int. Cl.⁴ F01D *1/04*
U.S. Cl. 415—160 **5 Claims**



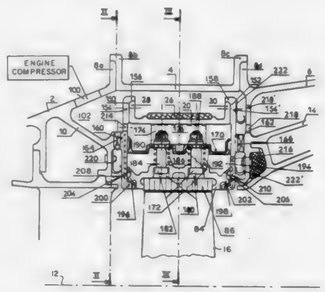
1. A propulsion installation of an air-cushion transport vehicle, comprising: an annular duct; an axial fan with working blades installed in said annular duct which provides an area of elevated pressure in said annular duct at the discharge side of said axial fan; a ring slat disposed before said annular duct; an annular passage formed between said annular duct and said ring slat, with the exit of said annular passage being located ahead of said working blades and adjacent the peripheral portions thereof, and the inlet of said annular passage being outside the area of elevated pressure at the discharge side of said axial fan; a vane cascade positioned in said annular passage and made up of curved vanes, a concave portion of each one of which is directed toward a pressure side of the peripheral portions of said working blades, said vanes being oriented to impart a spin, in a direction opposite the direction of rotation of said working blades, to the air flow entering said annular passage.

4,565,492

SEALING DEVICE FOR TURBINE BLADES OF A TURBOJET ENGINE

Jacques R. Bart, Evry; Gérard E. A. Jourdain, Saintry-sur-Seine, and Daniel Rambach, Paris, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." , Paris, France

Filed Jul. 6, 1984, Ser. No. 628,311
Claims priority, application France, Jul. 7, 1983, 83 11646
Int. Cl.⁴ F01D *11/08*
U.S. Cl. 415—175 **15 Claims**



1. In a turbojet engine having a compressor, an outer casing having a longitudinal axis and at least one turbine wheel rotatably mounted within the casing, the turbine wheel having a plurality of turbine blades attached thereto, an improved device for effecting a seal between the turbine blade tips and the outer casing during transitory and stabilized engine operating modes, comprising:

(a). a plurality of first sector hook elements attached to the outer casing at a position upstream of the turbine blades so as to be movable in a radial direction with respect to the outer casing;

(b). a plurality of second sector hook elements attached to the outer casing at a position downstream of the turbine blades so as to be movable in a radial direction with respect to the outer casing;

(c). a one piece outer ring having an upstream end attached to the first sector hook elements and a downstream end attached to the second sector hook elements;

(d). a one piece inner ring disposed between the first and second sector hook elements and located radially inwardly with respect to the outer ring, the inner ring having a greater coefficient of thermal expansion than the outer ring;

(e). at least three resilient first connecting members each connected to the outer ring and the inner ring and extending in a generally circumferential direction;

(f). a plurality of packing segments disposed bewteen the first and second sector hook elements, an inner sealing surface of the packing segments disposed in close proximity to the tips of the blades;

(g). connecting means to connect each of the packing segments to the inner ring;

(h). labyrinth seal means associated with an upstream and downstream edge of each packing segment to form a labyrinth seal in conjunction with the first and second sector hook elements; and,

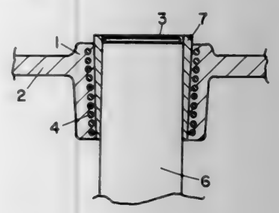
(i). means to direct air from a stage of the compressor onto the outer and inner rings such that thermal expansion/-contractor of the outer and inner rings moves the packing segments radially outwardly/inwardly corresponding to the expansion/contraction of the turbine blade tips so as to maintain clearance bewteen the blade tips of the packing segments and to prevent excess air leakage therebetween.

4,565,493

HUB FOR FANS, WHEELS AND THE LIKE

Stig L. Hallerbäck, Västra Frölunda, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden

Continuation of Ser. No. 477,088, Mar. 21, 1983, abandoned. This application Aug. 22, 1984, Ser. No. 643,046
Claims priority, application Sweden, Mar. 31, 1982, 8202045
Int. Cl.⁴ F04D *29/60;* **F16D** *1/06*
U.S. Cl. 416—204 R **5 Claims**



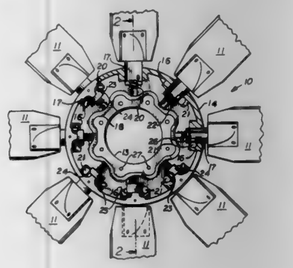
1. A hub assembly for mounting fans, wheels and the like on a shaft member (**6**) comprising a hub portion made of a flexible resilient material, such as plastics, having a bore (**3**) for the shaft and a prestressed reinforcing coil (**4**), preferably of a material having similar expansion properties as that of shaft (**6**) embedded essentially completely within the hub portion adjacent the bore (**3**) of the hub somewhat inside the bore surface whereby the different windings of the coil are somewhat spaced apart, and wherein the coil is so strong that at temperature variations it urges the material to follow the thermal dimension variations of the coil, thereby maintaining a firm grip between the bore surface and the shaft (**6**).

4,565,494

FAN BLADE SUPPORT RING

Nelson E. Dinger, Erie, Pa., assignor to Huber Reversible Fan, Inc., Erie, Pa.

Filed Nov. 5, 1984, Ser. No. 668,100
Int. Cl.⁴ F04D *29/36*
U.S. Cl. 416—206 **4 Claims**



1. A fan, having an outer ring having a circumferentially spaced radially extending holes,

blades, each having a stem on one end thereof,

one said stem extending through each of said holes,

an inner ring,

springs, each having an outer end and and inner end,

circumferentially spaced fan support means on said outer ring to support said fan on an engine,

said inner ring having a plurality of symmetrically spaced outwardly curving parts,

a spring support portion joining each said outwardly curved part and spaced inwardly from said outwardly curving part,

said inner end of each said spring resting on each said spring supporting portion of said inner ring and its outer end engaging a said stem urging said blade attached to said stem outwardly,

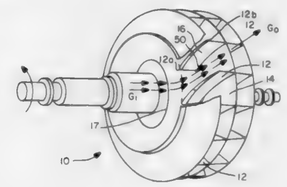
means on said inner end of each said stem limiting the outward movement of said stem and means to retain said stem in a predetermined positions of rotation.

4,565,495

ARMORING SYSTEM FOR AN AIRFOIL CENTRIFUGAL FAN

Donald R. MacLeod, Jr., Hingham, Mass., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 11, 1983, Ser. No. 522,639
Int. Cl.⁴ F04D *29/30*
U.S. Cl. 416—224 **16 Claims**



1. An armoring system for use with an airfoil centrifugal fan for preventing erosion of the airfoil blades of the fan wherein the upper and lower surfaces of each blade define an interior, void space therebetween, comprising:

an armor shield adapted to be releasably secured to the exterior of each blade about at least a portion of the upper surface thereof for preventing erosion of said portion of the blade;

a plurality of support columns adapted to be spaced about the interior, void space formed by the upper and lower surfaces of the blade in the region of the blade to which said armor shield is adapted to be releasably secured, said support columns to be affixed at their respective ends to the upper and lower surfaces of the blade to structurally reinforce the blade;

a threaded member adapted to extend through respective holes in said armor shield and said portion of the blade to which said armor shield is to be releasably secured and into an opening formed in a respective one of said support columns for releasably securing said armor shield to said portion of the blade, said threaded member not extending beyond the upper and lower surfaces of the blade;

means for reducing side loading on said threaded member due to an axial or radial offset between said respective holes in said armor shield and said portion of the blade; and

means for disengagably engaging said threaded member to secure said threaded member in said support column to releasably secure said armor shield to said portion of the blade.

4,565,496

OIL WELL PUMP SYSTEM AND METHOD

Paul B. Soderberg, 1716 Huge Oaks, Houston, Tex. 77055

Continuation of Ser. No. 308,847, Nov. 19, 1981, Pat. No. 4,490,095. This application Dec. 17, 1984, Ser. No. 682,888
The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.
Int. Cl.⁴ F04B *47/08*
U.S. Cl. 417—46 **12 Claims**

1. A system for pumping liquid from a well, the well being capable of producing both gas and liquid, comprising:

a casing mounted within a well bore;

a string of tubing mounted within the casing;

a pump sealably mounted within the tubing so as to allow for

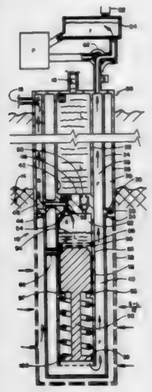
reciprocation of the pump member in a pump chamber, the power stroke of said pump member actuated only when said pump chamber is substantially void of gas and vapor;

a spring member mounted with the pump member so as to return the pump member from a pumping stroke;

a source of fluid pressure at the surface;

a conduit having one end connected with the tubing below the pump member, a second end of the conduit being connected with said source of fluid pressure at the surface such that fluid pressure at the surface is alternately injected into and released from the conduit so as to cause power strokes of the pump member alternately with return strokes caused by the spring member;

a first check valve mounted through the wall of said pump chamber above the pump member so as to allow fluid produced by the well to enter said pump chamber between the uppermost and lowermost positions of the top of the pump member;



a second check valve mounted between said pump chamber and said tubing immediately above the uppermost position of the top of the pump member such that fluid from the well will intermittently flow into the pump chamber through the first check valve and be pumped upwardly through the second check valve and the production tubing to the surface, upon operation of the pump member;

a gas passage for communicating gas and vapor from said pump chamber to the surface;

a vent valve mounted substantially at the same level as said second check valve such that gas and vapor from said pump chamber are vented to the surface through said vent valve and said gas passage;

means for detecting when said chamber is substantially void of gas and vapor; and

means for causing said fluid pressure source at the surface first to increase fluid pressure and then to release fluid pressure in the conduit so as to cause one complete pump and return cycle of said pump member.

4,565,497

PUMP ACTUATOR

Phillip J. Miller, Berkeley, and Jai S. Jassawalla, San Francisco, both of Calif., assignors to Novacor Medical Corporation, Oakland, Calif.

Continuation of Ser. No. 446,454, Dec. 3, 1982, abandoned. This application Dec. 11, 1984, Ser. No. 680,731

Int. Cl.[4] **F04B** *21/00, 43/00;* **H02K** *33/14;* **A61F** *1/00*

U.S. Cl. 417—63 **7 Claims**

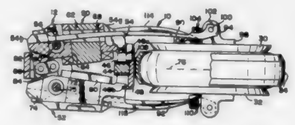
1. In a pump having a flexible enclosure defining a pump chamber, and a pair of opposed substantially axially aligned pusher elements engaged with opposed movable walls in the enclosure for movement between first relatively more spaced positions and second relatively less spaced positions to expel fluid from the enclosure, an actuator for producing coordinated movement of the pusher elements between their first and second positions, comprising:

a frame,

a pair of armatures, each having front and back end regions, and mounted on said frame for movement between open relatively more spaced and closed relatively less spaced positions, substantially in the direction of movement of the elements toward and away from each other, and with the armatures' front end regions being disposed adjacent the enclosure,

a solenoid core in each armature, said solenoid cores being energizeable to cause said armatures to move from their open positions to their closed positions,

a pair of opposed, elongate main springs, each attached at one spring end to an associated armature and being attached at its other spring end to an associated pusher element, said main springs being arranged on opposite sides of the flexible enclosure and having their longitudinal axes substantially coplanar with the axes of the pusher elements, said main springs further being arranged within the outermost dimension of said armatures in the direction of the axes of the pusher elements, and



elongate preload means associated with each of said main springs, each of said preload means having one end connected to the associated armature and having its other end arranged for operative engagement with the associated main spring for holding said main spring in a relatively less stressed condition with the pusher element in its first position, and with said armature in its open position,

said armatures being movable to their closed positions with the pusher elements still in their first positions to disengage said preload means from said associated main springs and bend the main springs to relatively more stressed second conditions, whereby in relieving the increased stress in said main springs, said other ends of said main springs are displaced to move the pusher elements coordinately toward their second, relatively less spaced positions,

said solenoid cores each having a front-to-back slot therein with a respective one of said main springs extending through said slot, said slots each being of a size sufficient to provide clearance between each of said cores and the associated one of said main springs for all said operative positions of said armature and all said operative conditions of said spring.

4,565,498

ROTARY GAS COMPRESSOR

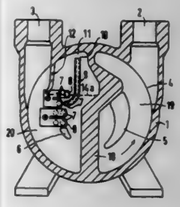
Norbert Schmid, and Siegfried Schönwald, both of Bad Neustadt, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Jul. 9, 1984, Ser. No. 629,037

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337837

Int. Cl.[4] **F04C** *19/00*

U.S. Cl. 417—68 **2 Claims**



1. A rotary liquid ring type gas compressor comprising:

an impeller housing; an impeller rotatably mounted in the housing; a housing cover; a control disc arranged between the housing and the cover; a suction intake; a pressure outlet; a suction slot arranged in the control disc to provide communication between the suction intake and the impeller; a pressure slot arranged in the control disc to provide communication between the impeller and the pressure outlet; an additional aperture arranged in the control disc adjacent to the pressure slot; a recess on the housing cover to define, in use, a gas pocket which is above the liquid level; and a pipe for supplying ballast gas to the compressor, said pipe communicating at one end with the additional aperture and the opposite end of the pipe opening into said recess at a position which in use is above the liquid level.

4,565,499

EJECTOR

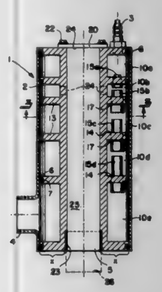
Dan Greenberg, 4 Rehov Haganim, Kiryat Bialik, Israel

Filed Apr. 20, 1984, Ser. No. 602,374

Claims priority, application Israel, Nov. 15, 1983, 70239

Int. Cl.[4] **F04F** *5/00*

U.S. Cl. 417—174 **12 Claims**



1. An ejector device comprising a number of suction chambers which are interconnected by ejector nozzles characterised thereby that the assembly of suction chambers constitutes a cylinder the wall of which is of considerable thickness around a central empty space, and which wall is subdivided into ring shaped chambers by partitions extending across the axis of the cylinder, the said ring shaped chambers constituting the suction chambers, an inlet opening for a pressure medium being provided and leading into that one of the suction chambers which is at one end of the cylinder, several ejector nozzles being positioned co-axially one after the other in the successive suction chambers, one of said chambers being provided with an outlet for the pressure medium while another of said chambers is connected with the inner space of the cylinder, there being further provided apertures in the said partitions, such apertures being covered on one side of the partition by flaps, so as to permit passage of air from one suction chamber into the next one in one direction only, and said flaps extending across said nozzles and being held in position by the bodies of said nozzles.

4,565,500

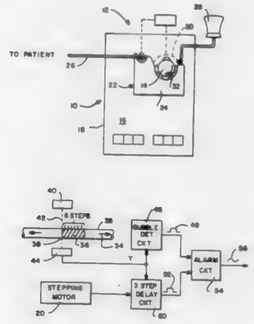
AIR BUBBLE DETECTING AND DISCRIMINATING CIRCUIT ARRANGEMENT AND METHOD

Thipthep Jeensalute, and Somkiat Chakkaw, both of Van Nuys, Calif., assignors to Stewart-Riess Laboratories, Inc., Tarzana, Calif.

Filed Feb. 24, 1983, Ser. No. 469,412

Int. Cl.[4] **F04B** *21/00, 43/12;* **A61M** *5/00;* **G08B** *21/00*

U.S. Cl. 417—53 **8 Claims**



1. A peristaltic infusion pump, assembly, comprising:

(a) means including a continuous length of tubing adapted for connection at one end to a supply of fluid and at its opposite end to a patient;

(b) means including a variable speed motor acting on said tubing for peristaltically pumping said fluid therethrough at a flow rate proportionate to the speed of said motor, whereby any air bubbles in said fluid will move with the latter at the same flow rate;

(c) means for detecting the presence of said air bubbles, if any, as they pass through a fixed point along the path of movement through said tubing, said detecting means being capable of producing a first signal in response to the presence of an air bubble at said fixed point and for the duration that the detected bubble passes through said point, the length of said first signal corresponding to the length of the detected bubble; and

(d) means including said motor responsive to said detecting means for distinguishing between detected bubbles of at least a predetermined size which can cause problems from smaller nuisance bubbles which do not, regradless of the flow rate of the fluid, said distinguishing means including means for producing an alarm signal only if problem bubbles are detected, said distinguishing means being capable of producing a second signal for a predetermined period of time after initiation of said first signal, said second period of time being inversely proportionate to the speed of said motor, and said distinguishing means being capable of producing said alarm signal only during the presence of both said first and second signals, said time delay distinguishing between the larger problem bubbles and the smaller nuisance bubbles regardless of the flow rate of the fluid and bubbles.

8. A method of detecting air bubbles of at least a predeter-

mined size from smaller bubbles in a peristaltic infusion pump or like apparatus in which a liquid is caused to flow in a continuous stream through a tube by means of a motor such that the flow rate of said fluid is directly proportionate to the speed of said motor, said method comprising the steps of:

(a) detecting the presence of said air bubbles, if any, as they pass through a fixed point along their path of movement through said tubing and producing a first signal as soon as an air bubble is detected at said point and for the duration that the detected bubble passes through said point whereby the length of said first signal corresponds to the length of the detected bubble;

(b) using said motor as a clock, producing a second signal a predetermined period of time after initiation of said first signal and for the duration of the latter, said period of time being inversely proportionate to the speed of said motor and therefore inversely proportionate to the flow rate of said fluid; and

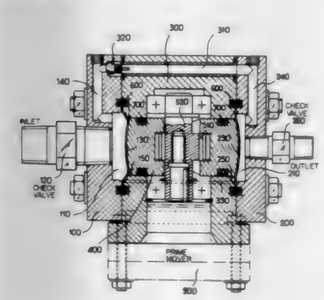
(c) producing an alarm signal in response to the simultaneous presence of said first and second signals, whereby said delay in the production of said second signal after production of said first signal distinguished between larger problem air bubbles and smaller nuisance air bubbles, regardless of the flow rate of fluid and bubbles through said tubing.

4,565,501

TWO-STAGE VOLUMETRIC PUMP FOR LIQUEFIED PETROLEUM GASES IN LIQUID PHASE

Gilles H. Y. Laurendeau, Rouen, and Jean-Bernard G. H. Leprince, Louviers, both of France, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 487,394, Apr. 21, 1983, abandoned.
This application Sep. 21, 1984, Ser. No. 654,032
Claims priority, application France, Apr. 21, 1982, 82 06867
Int. Cl.⁴ F04B *25/04, 11/00*
U.S. Cl. 417—267 **3 Claims**



1. A positive displacement pump having at least two stages for pumping liquefied petroleum gases in substantially a liquid form, said pump comprising:

a housing;

at least two separate chambers formed in said housing, each chamber have one wall that is formed by a diaphragm, said diaphragm being freely deformable in a direction to increase the volume of each chamber and deformable in the opposite direction under the action of actuating means;

a passageway connecting said chambers, said passageway having a non-return valve positioned therein for allowing flow from a first one of said chambers to the other of said chambers while preventing flow from the other chamber to the first chamber;

an inlet means for said first one of said chambers, said inlet means having a non-return valve positioned therein to allow fluid to flow into said first one of said chambers;

an outlet means for said other of said chambers, said outlet means having a non-return valve positioned therein to allow fluid to flow out of said other chamber of said chambers;

a double ended piston disposed in said housing, each end of said piston contacting one of said diaphragms, said piston being sealed in said housing to isolate said chambers from the outside;

a driving means coupled to said piston to reciprocate said piston; and

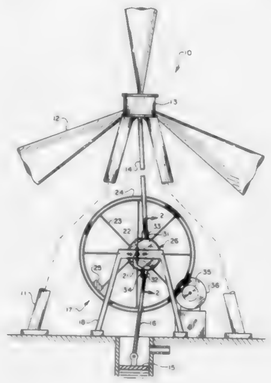
a passageway disposed to connect the spaces on the side of said diaphragm opposite said pump chambers to equalize the pressures in said spaces.

4,565,502

COUNTERBALANCE WHEEL FOR A WIND MACHINE

Otto Sell, 2201 E. Ash, Deming, N. Mex. 88030

Filed Mar. 6, 1985, Ser. No. 708,987
Int. Cl.⁴ F04B *17/02*
U.S. Cl. 417—334 **10 Claims**



1. In combination with a wind-driven apparatus having a driving reciprocating shaft adapted to drive a reciprocatory load, a counterbalancing means for the shaft and load, comprising a frame, an axle journaled in the frame transversely of the reciprocating shaft, coupling means between the shaft and the load, the coupling means having an inner portion, an outer portion, and a rotary bearing means therebetween, the inner portion having an opening formed therein, eccentrically thereof, for receiving the axle, means for pivotably mounting the outer portion of the coupling means to the driving shaft and to the load, respectively, at substantially opposite positions on the outer portion of the coupling means, a wheel carried by the axle and having a hub disposed laterally of the coupling means, means for securing the wheel hub to the inner portion of the coupling means, and means on the wheel for counterbalancing the reciprocating shaft and load.

4,565,503

DEVICE FOR COOLING MOTOR END-TURNS IN A COMPRESSOR

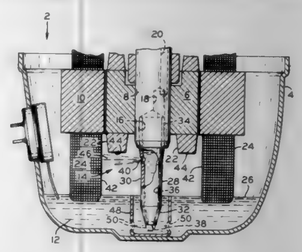
Kennard L. Wise, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation of Ser. No. 433,824, Oct. 12, 1982, abandoned.
This application Feb. 28, 1985, Ser. No. 706,596
Int. Cl.⁴ F04B *39/02;* **H02K** *9/00;* **F01M** *1/06*
U.S. Cl. 417—372 **6 Claims**

1. In a hermetic motor-compressor unit including an outer housing having a lubricant sump in the bottom thereof, a rotatable crankshaft vertically disposed in said housing, and a motor having a stator circumferentially disposed about said rotating crankshaft and a rotor connected to said rotating crankshaft for rotation thereof, a cooling device comprising:

a centrifugal lubricant pick-up tube having one end directly attached to said rotating crankshaft for rotation therewith and its opposite end extending vertically into said lubricant sump, said pick-up tube including an axial bore extending upwardly therein from said opposite end and a pump means for pumping lubricant upwardly from said sump,

said stator having lower end turns extending downwardly in



said outer housing, said lower end turns having their radially inner surfaces in radially adjacent and spaced-apart relationship with said pick-up tube,

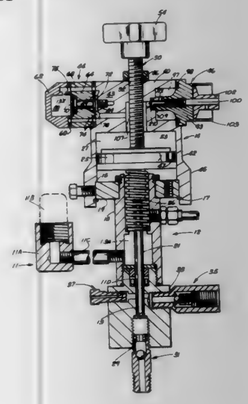
said pick-up tube having a radial passage means therein in communication with said axial bore and in direct facing relationship with said stator lower end turns for throwing a portion of lubricant pumped upwardly through said axial bore radially outwardly therethrough and directly against said radially inner surfaces of said lower end turns for the cooling thereof prior to contacting any other portions of said motor.

4,565,504

PNEUMATIC METERING PUMP APPARATUS

Albert A. George, P.O. Box 3604, Lafayette, La. 70502, and David B. George, 304 Upland Dr., Layfayette, La. 70506

Filed Oct. 20, 1983, Ser. No. 543,531
Int. Cl.⁴ F04B *9/12*
U.S. Cl. 417—401 **8 Claims**



1. A pneumatic metering pump apparatus, comprising:

a. pump means;

b. power head means further comprising a pneumatically driven piston housed in a cylinder cooperating with said pump means, said piston moveable between first and second positions

c. a fluid inlet providing fluid flow to said power head means;

d. valving means on said power head means, including a valving element moveable to a sealing position by said fluid flow and providing fluid communication to said piston when said valving element is in said sealing position, said fluid moving said piston to a second position; and

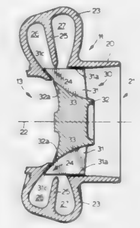
e. means, acted on by said fluid when said piston is in said second position, unseating said valving element, allowing fluid flow to escape said piston cylinder and allowing said piston to return to said first position.

4,565,505

COMBINATION FLOW TURBINE FOR INTERNAL COMBUSTION ENGINE TURBOCHARGERS

William E. Woollenweber, 3905 Cove Rd., Columbus, Ind. 47203

Filed Apr. 11, 1983, Ser. No. 483,600
Int. Cl.⁴ F04B *17/00, 35/00*
U.S. Cl. 417—407 **10 Claims**



1. In a turbine for a turbocharger for an internal combustion engine including a turbine wheel having a central core and a plurality of outwardly extending blades, said turbine wheel being rotatable about a central axis, means forming a meridionally divided volute for exhaust gas surrounding the turbine wheel and defining a turbine wheel opening permitting exhaust gas from said volute to act on the outwardly extending blades of the turbine wheel, the improvement wherein said means forming a meridionally divided volute at its turbine wheel opening includes means for directing exhaust gas from one side thereof into the turbine wheel in a direction generally axially into the turbine wheel and from the other side thereof in a direction generally radially into the turbine wheel.

4,565,506

HAND OPERATED VACUUM PUMP

Danny L. Williams, Clarinda, Iowa, assignor to Lisle Corporation, Clarinda, Iowa

Filed Mar. 13, 1984, Ser. No. 589,140
Int. Cl.⁴ F04B *23/00, 21/04;* **F01B** *29/00*
U.S. Cl. 417—440 **6 Claims**

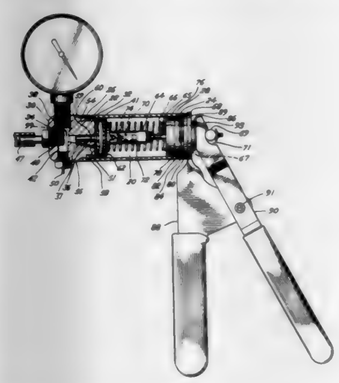
1. A hand-operated vacuum pump comprising, in combination:

a cylinder having a throughbore and defining a first inner circumferential cylinder groove at least at one end thereof;

a head assembly defining a vacuum cavity and a fluid flow passage therein, said head assembly including a cylinder-engaging head section having a shape and dimensions substantially congruent with said one end of said cylinder, said cylinder-engaging section defining an outer circumferential head groove, said first inner circumferential cylinder groove and said outer circumferential head groove being in an opposed relation in an assembly state, said head assembly including a flapper check valve in communication with said fluid flow passage for permitting

substantially unidirectional flow through said fluid flow passage from said vacuum cavity, said flapper check valve including a flexible disc against a face of said head section and over said fluid flow passage and a stem attached to said flexible disc, said stem being attached to said cylinder-engaging head section to hold said flexible disc in position to function as a valve, said head assembly further including a connector in communication with said vacuum cavity and a release valve in communication with said vacuum cavity;

a first elastic seal member positioned within said first inner circumferential cylinder groove and said outer circumferential head groove in said assembled state to retain said



head assembly in sealed and mechanically fixed relation to said cylinder;

a piston assembly operative within said cylinder to draw a vacuum in said vacuum cavity; and

manual drive means, attached to said cylinder and said piston assembly, for actuating said piston assembly,

said piston assembly including a piston slidable within said cylinder, a piston driving rod, and a piston guide, said piston driving rod interconnecting said piston and said manual drive means through said piston guide, said piston including a piston fluid passage, said piston assembly further including a piston valve within said piston fluid passage for permitting substantially unidirectional flow through said piston fluid passage.

4,565,507

RECIPROCATING COMPRESSOR FOR GASEOUS MEDIA

Reimer Reimers, Haltern, Fed. Rep. of Germany, assignor to Flottmann-Werke GmbH, Herne, Fed. Rep. of Germany

Filed Sep. 17, 1984, Ser. No. 650,892

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3333468

Int. Cl.⁴ F04B *21/02, 39/10*

U.S. Cl. 417—564 **8 Claims**

1. A reciprocating compressor for gaseous media, said compressor including the combination of:

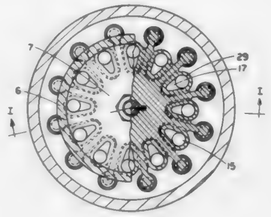
a cylinder having a piston therein for reciprocating along a central axis of said cylinder

a cylinder head,

an apertured valve disc secured between said cylinder and said cylinder head, said disc having intake and delivery valve orifices angularly spaced equally about inner and outer concentric circles centered at said central axis, the orifices spaced about the outer circle being offset by half the angular spacing between the orifices spaced about the inner circle,

an enhaust valve strip comprising a discoidal center area connected by radial arms extending outwardly therefrom to enlarged end portions disposed between said cylinder and said disc to only one of said delivery valve orifices,

an intake valve strip comprising a discoidal center area connected by radial arms extending outwardly therefrom to enlarged end portions disposed between said cylinder head and said disc to only one of said intake valve orifices,



the radial arms of one of said exhaust valve strip and intake valve strip having a width to extend between said orifices spaced about said inner circle,

stroke limiter means for said intake and exhaust valve strips, and

means for securing said stroke limiter means and said exhaust and intake strips to said disc.

4,565,508

DEVICE FOR CONTROLLING THE VOLUMETRIC CAPACITY OF A SCREW COMPRESSOR

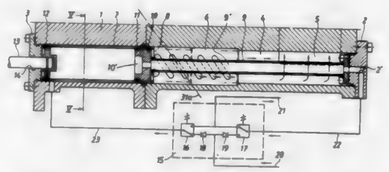
Paul Lindström, Norrköping, Sweden, assignor to Stal Refrigeration AB, Norrköping, Sweden

Filed Oct. 23, 1984, Ser. No. 663,931

Claims priority, application Sweden, Oct. 24, 1983, 8305827

Int. Cl.⁴ F01C *1/16*

U.S. Cl. 418—201 **5 Claims**



1. In a screw compressor which includes a housing that defines an elongated compression chamber, a cylindrical bore which extends in parallel with said elongated compression chamber, said cylindrical bore having a first end and a second end, a low-pressure port which extends from said cylindrical bore near said first end thereof to said compression chamber, and a plurality of high-pressure ports which extend from said cylindrical bore between said low-pressure port and the second end thereof to said compression chamber; a low-pressure cover which covers the first end of said cylindrical bore; a high-pressure cover which covers the second end of said cylindrical bore; two interengaging rotors located in said elongated compression chamber; and a plunger which is slidingly positioned within said cylindrical bore and, depending on its location within said cylindrical bore, is capable of closing a varying number of said high pressure ports, the improvement wherein said plunger includes a hollow cylindrical mantle which seals against said cylindrical bore and is slidingly movable therealong, said mantle having an open first end which faces the first end of said cylindrical bore and a second end which faces the second end of said cylindrical bore; and a closed end wall which sealingly encloses the second end of said mantle, said closed end wall having an inner side which faces the first end of said cylindrical bore and an outer side which faces the second end of said cylindrical bore,

a hollow rod stationarily mounted on said low-pressure cover to extend along said cylindrical bore toward said high-pressure cover, said hollow rod having a free end located between said plurality of high-pressure ports and said high-pressure cover,

a piston attached to the free end of said hollow rod, said piston being sealingly slidable within the mantle of said plunger, said piston having a channel therethrough which communicates between the interior of said hollow rod and the interior of said mantle,

said low-pressure cover includes a channel therethrough which communicates with the interior of said hollow rod and, together with the interior of said hollow rod and the channel in said piston, enables control fluid to pass into and out of the mantle of said plunger, and

a duct which communicates with said cylindrical bore to enable control fluid to pass into and out of the cylindrical bore between the high-pressure cover at the second end thereof and the closed end wall of said plunger, the relative pressures of the control fluid acting against the inner and outer sides of the closed end wall of said plunger determining the location of said plunger along said cylindrical bore and thus the number of high-pressure ports closed by the mantle thereof.

4,565,509

CONTINUOUS OPERATION PRESS

Albert De Mets, Roeselaare, Belgium, assignor to Constructiewerkhuizen De Mets N.V., Izegem/Kachtem, Belgium

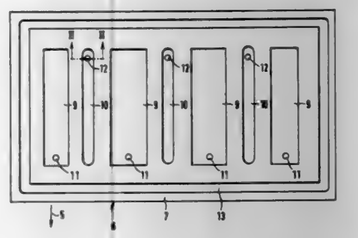
Filed Jun. 15, 1984, Ser. No. 621,044

Claims priority, application European Pat. Off., Jun. 16, 1983, 83105939.9

The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.

Int. Cl.⁴ B30B *5/06*

U.S. Cl. 425—101 **32 Claims**



1. In a continuous operation press for the manufacture and treating of a board web of prefabricated or raw material, particularly of a non-woven material treated with binding means and containing lignol-cellulose or cellulose-containing particles, such as wood chips and wood fibers, the board web is passed into an inlet region of a lower endless steel belt and an upper endless steel belt, which travel at a predetermined velocity in a transport direction, wherein there is provided a smooth coating formed with grooves serving as a sliding surface located at least in the main press region and the calibration region disposed downstream therefrom, the smooth coating is supported on a lower countersupport and on an upper countersupport, the board web gliding above the smooth coating with the aid of fluid lubricant which may serve as a heat transfer medium, the supply of said fluid lubricant being under pressure, the lubricant being supplied to the smooth coating through supply conduits and supply openings and discharged therefrom through discharge openings and discharge conduits, the lubricant being recirculated and optionally heated or cooled, the improvement comprising: each groove in the smooth coating being formed with one opening therein for the lubricant supply and lubricant discharge, each groove having a lubricant supply opening being positioned adjacent a groove having a lubricant discharge opening, and means are provided for controlling the pressure in at least some of said grooves for generation of a counter-pressure.

4,565,510

DOUBLE EXTRUDER FOR THE PRODUCTION OF A TWO-LAYER TUBULAR EXTRUDED PRODUCT

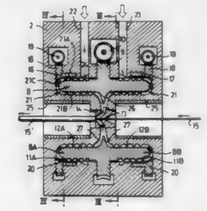
Kari J. Kirjavainen, Helsinki, Finland, assignor to Oy Nokia AB, Helsinki, Finland

Filed Jan. 24, 1985, Ser. No. 694,207

Claims priority, application Finland, Feb. 24, 1984, 840759

Int. Cl.⁴ B29C *39/14, 47/06, 47/10, 47/46*

U.S. Cl. 425—113 **10 Claims**



1. A double extruder for plastic materials for the production of a two-layer tubular extruded product, which extruder comprises

a frame (**2**),

a cylindrical treating screw (**8**) rotatably mounted in a housing provided in said frame, said screw forming a ring-shaped treating space (**21**) between the frame and the screw,

inlet channels(**22**, **23**) provided in the frame and extending to the periphery of the screw for supplying materials to be extruded into said treating space,

an outlet channel (**13**) provided in the frame and extending to the periphery of the screw for discharging the materials to be extruded from the treating space, and

extrusion means (**14**) mounted in the frame in communication with said outlet channel, characterized in that

the treating screw (**8**) is tubular and forms with the frame (**2**) two separate treating spaces (**21**), each space extending from the outer periphery of the treating screw around the end edge to the inner periphery of said treating screw, and

that the outlet channel (**13**) is ring-shaped and joins radially the inner periphery of the treating screw (**8**).

4,565,511

APPARATUS FOR PRODUCING ARTICLES FROM TWO OR MORE FLOWABLE SYNTHETIC RESIN REACTANTS

Heinrich Ramisch, Munich, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 19, 1984, Ser. No. 590,781

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3309964

Int. Cl.⁴ B29B *1/06*

U.S. Cl. 425—146 **9 Claims**

1. An apparatus for producing molded articles from a mixture of two flowable reactive synthetic resin components, said apparatus comprising:

respective supply vessels for each of said components;

a mixing head for receiving said components, mixing same and discharging a mixture of said components into a mold;

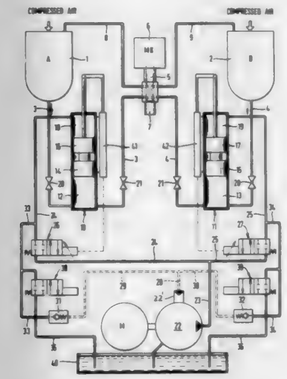
a metering unit connected between each of said vessels and said mixing head, said metering unit comprising a metering piston for displacing the respective component and a

working piston connected to the respective metering piston for displacing same, each of said units having a working compartment to which a pressure medium can be fed to displace the respective working piston;

a single variable displacement pump common to both of said units and provided with a hydraulic operator for varying the displacement of said pump as a function of a control pressure, said pump having a pressure line;

respective volume control valves connected between said pressure line and said working compartments;

a respective servocontroller connected between each of said working pistons and the respective volume control valve for operating same in accordance with the velocity of the



respective working piston to maintain said velocity constant during a displacement stroke wherein the respective component is displaced by the respective unit to said mixing head for mixing therein with the other component; and

hydraulic lines including respective check valves communicating with the respective working compartments and with said operator for actuating said operator with the higher of the pressures applied to said working compartments, said mixing head comprising a plunger displaceable between a position wherein a mixing chamber is freed to enable mixing of said components and a position wherein each of said components is recycled to the respective vessel.

4,565,512

RAM EXTRUDERS

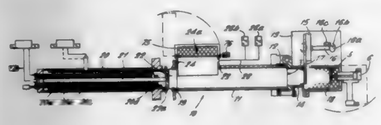
Peter R. Wills, Somersham, and Richard C. Cowley, Ely, both of England, assignors to Barwell Machine and Rubber Group Limited, United Kingdom

Filed May 18, 1984, Ser. No. 611,747

Claims priority, application United Kingdom, May 23, 1983, 8314218

Int. Cl.⁴ B28B *17/00*

U.S. Cl. 425—190 **14 Claims**



1. A ram extruder, comprising:

an extruder barrel to receive material to be extruded, said extruder barrel having a first and a second end,

an extrusion aperture at said first end of the barrel,

a loading port located towards said second end of the barrel,

a piston slidably received by the barrel,

drive means to advance the piston from a retracted position located beyond the loading port approximate said second end of the barrel to advance the piston along said barrel towards said first end to extrude material in the barrel through the extrusion aperture and to return the piston to the retracted position at the end of the extrusion operation,

means to close the loading port in the barrel,

means to evacuate air from the barrel through the closing means prior to the advancing of the piston past the loading port for an extrusion operation, and

a vacuum passageway in said piston through which air is extracted from the barrel from in front of the piston as the piston advances along the barrel.

4,565,513

APPARATUS FOR SHAPING AND CUTTING A THIN THERMOPLASTIC SHEET TO MAKE ARTICLES AND FOR STACKING THE ARTICLES

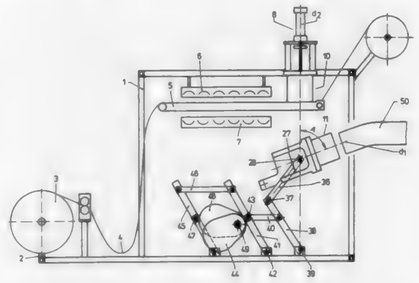
Günther Kiefer, Schwaigern, Fed. Rep. of Germany, assignor to Adolf Illig Maschinenbau GmbH & Co., Heilbronn, Fed. Rep. of Germany

Filed May 29, 1984, Ser. No. 614,782

Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319473; Dec. 23, 1983, 3346628

Int. Cl.⁴ B29C *17/03, 17/10*

U.S. Cl. 425—289 **6 Claims**



1. In apparatus for shaping and cutting articles from a thermoplastic sheet and for stacking the articles in a stacking chute, the improvement comprising:

transporting means for advancing the sheet through said apparatus;

heating means for heating the sheet as the sheet advances through said apparatus;

a table for supporting a cutting and shaping means located downstream of said heating means in the direction of advance of the sheet and which is movable between a first position for shaping and cutting the articles and a second position for stacking the articles;

a bearing pin operatively associated with said table so that said table can be displaced by and pivoted about said bearing pin;

first guide means mounted for being displaced perpendicular to the direction of advance of the sheet, said bearing pin being seated in said first guide means;

a bell crank drive connected to said table via an articulated connection with said bearing pin for moving said table between said first and second positions;

second guide means connected to said table for causing said table to pivot about said bearing pin to place said table in said second position after said table has moved toward said first position along a linear path perpendicular to the direction of advance of the sheet; and

an ejection means for transferring the shaped and cut articles into the stacking chute when said table is in said second position.

4,565,514

APPARATUS FOR SHAPING IN A CALIBRATED WAY A RUBBER PRE-EXTRUDED PROFILED MEMBER FOR REGENERATING TIRES AND THE LIKE

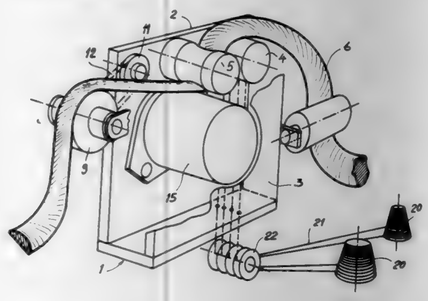
Carlo Marangoni, Via Abetone, 49, 38068 - Rovereto Trento, Italy

Filed Oct. 5, 1984, Ser. No. 658,208

Claims priority, application Italy, Feb. 10, 1984, 82202 A/84

Int. Cl.⁴ B29H *5/01, 5/28;* **B29C** *25/00*

U.S. Cl. 425—328 **6 Claims**



1. An apparatus for shaping in a calibrated way a preextruded rubber profile member, particularly designed for regenerating tires and the like, characterized in that it comprises a pair of calibrating rollers, rotating in opposite directions, therebetween a preextruded rubber profiled member may be inserted, said member having a undefined cross-section, driving means being further provided for driving both said calibrating rollers with a like peripheric speed.

4,565,515

NOZZLE ASSEMBLY FOR EXTRUDING A SYNTHETIC-RESIN TUBE

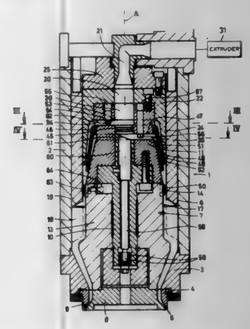
Rudolf Maier, Lohmar, Fed. Rep. of Germany, assignor to Battenfeld Fischer Blasformtechnik GmbH, Lohmar, Fed. Rep. of Germany

Filed Feb. 15, 1984, Ser. No. 580,467

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1983, 3305242

Int. Cl.⁴ B29F *3/02*

U.S. Cl. 425—381 **18 Claims**



1. A nozzle assembly for extruding a tube, the assembly comprising:

an outer housing sleeve having an inner surface centered on an axis and having an axially forwardly directed front end;

a front core part within the sleeve at the front end thereof and forming with the inner housing surface an annular axially forwardly open extrusion passage;

an intermediate core part within the sleeve axially behind and attached to the front core part, the intermediate core part being formed with a pair of radially outwardly open grooves opening into the extrusion passage and each defined by

a respective annular rear face extending generally perpendicular to the axis,

a respective annular front face confronting the rear face and extending generally perpendicular to the axis, and

a heart-shaped annular surface axially bridging the respective faces, facing radially outward, and having a portion forming a radially outwardly directed point, the points being directed generally diametrally oppositely;

a rear core part within the sleeve axially behind and attached to the intermediate core part and axially rearwardly closing the extrusion passage; and

means including at least one feed passage in the rear and intermediate core parts for feeding a mass to be extruded under pressure and radially to the grooves at respective locations therein generally diametrally opposite the respective points so that the mass divides in planes generally perpendicular to the axis.

4,565,516

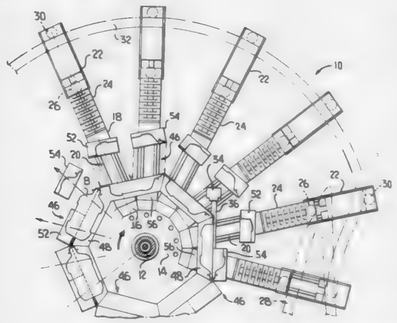
MOLD FOR LARGE CAPACITY CONTAINERS

John L. Szajna, Norridge, and Harry Weissenstein, Woodridge, both of Ill., assignors to Continental Plastic Containers, Inc., Stamford, Conn.

Filed Mar. 16, 1984, Ser. No. 590,316

Int. Cl.⁴ B29C *5/10*

U.S. Cl. 425—540 **5 Claims**



1. A mold particularly adapted for use in a ferris wheel blow molding machine wherein the machine includes a horizontal rotating shaft and a plurality of molds are mounted on said shaft for rotation with said shaft generally in a vertical plane and each mold normally includes a radially fixed radially inner mold half and a radially movable radially outer mold half, said mold comprising a single radially inner radially fixed mold half and two cooperating separately radially movable radially outer mold half segments.

4,565,517

HYDRAULIC PRESS FOR PRESSING MATS OF PLASTIC MATERIAL REINFORCED WITH GLASS FIBERS

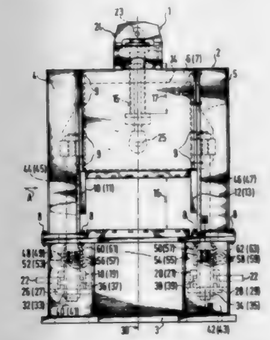
Dirk Brinkmann, Lünen-Niederaden; Wolfgang Muller, Dortmund; Walter Sauerwald, Dortmund; Klaus Schmidts, Dortmund; Dieter Therolf, Dortmund, and Ulrich Weber, Dortmund, all of Fed. Rep. of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Jan. 28, 1985, Ser. No. 695,390

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1984, 3403006

Int. Cl.⁴ B29F *1/00*; B29C *3/00*

U.S. Cl. 425—451.2 **5 Claims**



1. An hydraulic press for pressing plastic material into formed parts, said press comprising a stationary and a movable cross-piece as well as a press drive, said press drive for driving the movable cross-piece into and out of working relationship relative to said stationary cross-piece including at least one adjusting cylinder with a stroke length corresponding to the working range of the press and at least two couplable press cylinders of short stroke and a coupling means for coupling each of said press cylinders to said slidable cross-piece, each of which coupling means includes a coupling rod and a clamping device, each of said press cylinders having a first part fixed relative to said stationary cross-piece and a hollow lifting body movable relative to said first part and to said stationary cross-piece and through which hollow lifting body the coupling rod of the associated one of said coupling means is slidably guided, the clamping device of said associated coupling means being arranged on the lifting body for coupling the lifting body to its coupling rod.

4,565,518

MECHANISM FOR FORMING THREADS IN INJECTION MOLDED PARTS

Gary F. Altman, Clarkston, Mich., and Robert K. Beck, Jr., Westlake, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 26, 1984, Ser. No. 634,592

Int. Cl.⁴ B29C *45/26, 45/33*

U.S. Cl. 425—568 **5 Claims**

1. A mechanism for forming a thread in a molded part, comprising, in combination,

a support, a die cavity for forming the molded part and a threaded bore adjacent the die cavity,

a threaded member rotatably mounted in the threaded bore for extension and retraction relative to the die cavity upon rotation thereof in the bore,

a threaded core member,

a rotatable operator mounted to the support,

cooperating key and keyway coupling means slidably and rotatably coupling the operator to the threaded core member for rotating the threaded core member in opposite rotative directions upon operation of the operator,

second coupling means coupling the threaded core member to the threaded member for linear movement therewith and extension into the die cavity upon rotation of the threaded core member by the operator in one rotative direction and retraction out of the die cavity upon rotation of the threaded core member by the operator in the other rotative direction, and

lost motion means in the key and keyway coupling means permitting initial startup of the operator in the one rotative direction independent of coupling of the operator to the threaded core member.

3. A mechanism for forming a thread in a portion of a molded part, comprising, in combination,

a support, a die cavity for forming the molded part,

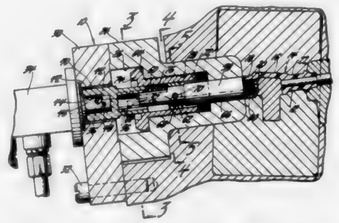
a threaded core member,

a rotatable operator mounted on the support,

coupling means slidably and rotatably coupling the threaded core member to the operator, the threaded core member rotating in place without linear translatory movement upon rotation of the operator in one and opposite rotative directions,

core member moving means,

means threadedly mounting the core member moving means on the support for linear translatory movement of the core member moving means relative to the support and toward the die cavity upon rotation of the core member moving



means in one rotative direction and linear translatory movement of the core member moving means relative to the support and away from the die cavity upon rotation of the core member moving means in an opposite rotative direction,

and means coupling the threaded core member to the core member moving means for rotating the core member moving means conjointly with the threaded core member upon rotation of the threaded core member by the operator,

rotation of the threaded core member in the one rotative direction by the operator rotating the core member moving means in the said one rotative direction to thread the core member moving means relative to the support and linearly translate the core member moving means toward the die cavity and conjointly move the threaded core member into the die cavity,

rotation of the threaded core member in the opposite rotative direction by the operator rotating the core member moving means in the said opposite rotative direction to thread the core member moving means relative to the support and linearly translate the core member moving means away from the die cavity and conjointly threadedly disengage the threaded core member from the threaded portion of the molded part,

the molded part remaining in the die cavity as the threaded core member threadedly disengages from the threaded portion thereof.

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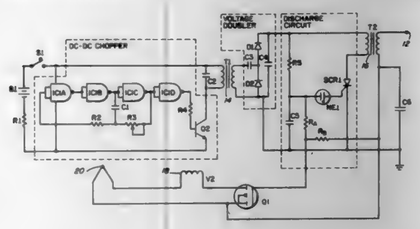
BURNER IGNITION SYSTEM

Forest J. Carignan, Bedford, Mass., assignor to Advanced Mechanical Technology, Inc., Newton, Mass.

Filed Jan. 21, 1983, Ser. No. 459,787

Int. Cl.⁴ F23Q *9/08*

U.S. Cl. 431—46 **14 Claims**



1. An ignition system for a burner comprising:

a low voltage electrical energy storage device;

circuit means for supplying low voltage, periodic current from said energy storage device;

a step-up transformer for converting said low voltage periodic current to a higher voltage output, the transformer having a significant leakage reactance due to leakage flux which makes up a substantial portion of the total flux through the transformer;

a capacitor charged by the higher voltage output from the step-up transformer; and

an output circuit for applying the capacitor voltage to an electrical igniter.

4,565,520

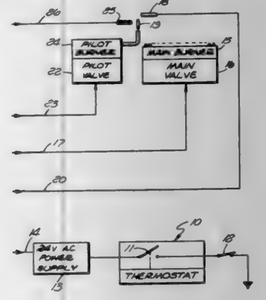
RECYCLING PILOT IGNITION SYSTEM

Ronald A. Gann, La Crescenta, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Jan. 30, 1984, Ser. No. 575,097

Int. Cl.⁴ F23Q *9/08*

U.S. Cl. 431—46 **2 Claims**



1. Ignition apparatus responsive to a thermostat comprising: a main burner; a main valve actuable to admit gas to said main burner; a pilot burner; a pilot valve actuable to admit gas to said pilot burner; a spark generator comprised of an electrode adjacent said pilot burner actuable to emit a spark and thereby to ignite the pilot gas; a flame rod to detect pilot gas ignition; an A.C. voltage produced when heat is requested by said thermostat; a pilot oscillator; a main oscillator; first means connected to receive said A.C. voltage for causing said pilot oscillator to oscillate; second means for actuating said pilot valve when said pilot oscillator is oscillating, said second means including an electrically operable pilot burner switching control means comprised of a single-pole, double-throw switch having a pole connected to said A.C. voltage, a normally closed contact connected to said spark generator to inhibit the same, a normally open contact connected to said pilot valve, and a solenoid energized by said pilot oscillator while oscillating; third means for igniting said pilot gas via said electrode when said pilot oscillator is oscillating; fourth means connected from said flame rod for causing said main oscillator to oscillate; fifth means connected from said main oscillator to sustain said pilot oscillator oscillations; sixth means connected from said main oscillator to cause said main valve to open, whereby a flame of said pilot burner causes ignition of said main burner, said fifth means including an electrically operable main burner switching control means including a single-pole, double-throw switch having a pole connected to said A.C. voltage, a normally closed contact connected to the input of said spark generator to provide enabling power thereto, a normally open contact connected to said main valve, and a solenoid energized by said main oscillator while oscillating, whereby said pilot burner is ignited by said spark generator when heat is requested by said thermostat and said spark generator is inhibited while said main burner is ignited.

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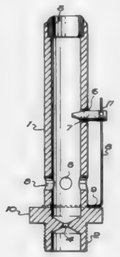
SAFETY PILOT BURNERS

John Hancock, Leeds, England, assignor to Geo. Bray & Co. Limited, Leeds, England

Filed May 26, 1983, Ser. No. 498,373

Int. Cl.⁴ F23D *13/00*

U.S. Cl. 431—75 **1 Claim**



1. Apparatus for inducing ambient air into a fuel gas stream and comprising a duct for said stream, which duct has at least one port through which ambient air may enter the duct and a constriction upstream of the at least one port with reference to the direction of flow of the stream, and means located along the duct downstream of said at least one port, for varying the resistance to the flow of gas and also the induction of said ambient air, said resistance varying means comprising a choke adjustable within said duct for controlling the effective internal cross-section thereof, said choke comprising a pin arranged for variable projection into the interior of said duct through an opening therein, wherein the variation of the projection of said pin is effected by means of a bi-metallic strip.

4,565,522

SHIELDED FLARE GAS BURNER

Robert E. Schwartz, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 645,420, Aug. 29, 1984. This application Feb. 1, 1985, Ser. No. 697,572

Int. Cl.⁴ F23D *21/00*

U.S. Cl. 431—202 **17 Claims**

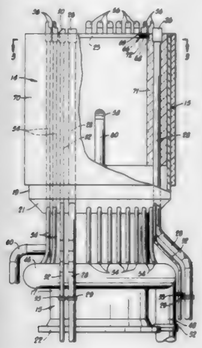
1. A heat and flame impingement shielded flare gas burner comprising:

a tubular member having a discharge end and an inlet end;

an external protective covering formed of refractory mate-

rial attached over the exterior wall surfaces of said tubular member at the discharge end thereof whereby a flame impingement shield is provided thereon;

an internal protective covering formed of refractory material attached over the interior wall surfaces of said tubular member at the discharge end thereof whereby a heat and flame impingement shield is provided thereon; and



pilot flame burner means positioned within and adjacent said discharge end of said tubular member attached to conduit means, said conduit means being disposed within said internal protective covering of refractory material whereby said conduit means are also shielded from heat and flame impingement.

4,565,523

GAS BURNER

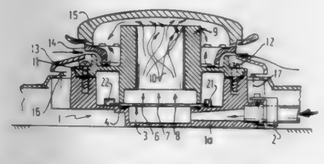
Wilhelm H. Berkelder, Aalten, Netherlands, assignor to Apparatenfabriek ATAG B.V., Netherlands

Filed May 12, 1983, Ser. No. 493,949

Claims priority, application Netherlands, May 24, 1982, 8202118

Int. Cl.⁴ F23D *13/40*

U.S. Cl. 431—354 **2 Claims**



1. A gas burner for use in a domestic cooking apparatus comrpising in combination:

a burner holder including a gas feed tube;

an interchangeable flow plate having apertures therein, the number of apertures being determined by the desired capacity of the burner, said flow plate comprising recesses for regulating the positioning of said flow plate with respect to said burner holder;

a flexible ring provided as a seal between said flow plate and said burner holder;

an associated mixing tube having respective inlet and outlet portions in which air is mixed with gas, said mixing tube comprising an extension connecting with a corresponding recess of said flow plate; and

a burner cover provided at the outlet of said mixing tube said flow plate and mixing tube being a matched pair whereby the capacity of said gas burner can be readily varied by changing both said flow plate and mixing tube by the substitution of the appropriate flow plate and cooperating mixing tube.

4,565,524

SEALED YARN HEATING CHAMBER

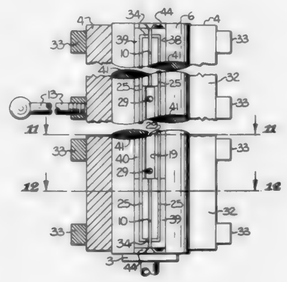
Walter Rünkel, Hückeswagen; Erich Lenk, and Karl Bauer, both of Remscheid, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 563,300

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3247040; Dec. 23, 1982, 3247626; Feb. 11, 1983, 3304752; Mar. 9, 1983, 3308251; Apr. 9, 1983, 3312823; May 21, 1983, 3318645; Jun. 11, 1983, 3321202; Jul. 22, 1983, 3326432; Oct. 5, 1983, 3336101

Int. Cl.⁴ F27B *9/28;* **F27D** *1/18;* **F26B** *13/00, 25/00*

U.S. Cl. 432—59 **27 Claims**



1. A heating chamber for thermally processing an advancing yarn, and comprising

a first member including a surface having an elongate discontinuity therein which extends in a longitudinal direction,

a second member including a surface which is substantially congruent with said surface of said first member,

means mounting said first and second members for relative movement between an operative position wherein the respective surface overlie each other and said surface of said second member and said discontinuity define a relatively narrow yarn passage formed therebetween for completely and closely surrounding the yarn along substantially the entire length of said heating chamber, and a threading position wherein said surface of said second member is positioned relative to said discontinuity to define an enlarged opening to facilitate threading of the yarn,

a pair of sealing strips mounted on at least one of said surfaces of said first and second members, said sealing strips being disposed on respective opposite sides of said discontinuity in said operating position of said members and extending longitudinally along substantially the entire length thereof and so that in said operating position said sealing strips are sealably disposed between said surfaces, and said surfaces and said sealing strips define a heating enclosure which includes said discontinuity, and

means for introducing a hot pressurized vapor into said heating enclosure when said members are in said operating position, whereby the hot vapor is adapted to enter into the gap between any noncontacting portions of the surfaces of said members lying between said sealing strips to thereby achieve substantial heat transfer.

4,565,525

TAPHOLE CONSTRUCTION OF A SHAFT FURNACE

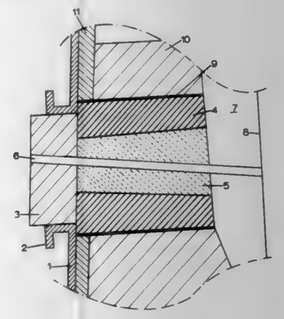
Jacobus Van Laar, Santpoort; Jacob Felthuis, Oudorp; Jahannes A.M. Butter, Uitgeest; Jacob Rengersen, Sint-Pancras, and Albert Sannes, Broek op Langedijk, all of Netherlands, assignors to Hoogovens Groep B.V., IJmuiden, Netherlands

Filed May 21, 1984, Ser. No. 612,430

Claims priority, application Netherlands, May 26, 1983, 8301862

Int. Cl.⁴ F27B *14/08*

U.S. Cl. 432—248 **11 Claims**



10. A blast furnace having a metal shell, a refractory furnace lining inside the shell and a taphole construction comprising an aperture in the shell, a plug located in said aperture and a taphole brick structure forming a part of said lining with a taphole extending through said plug and said taphole brick structure wherein said taphole brick structure comprises at least one brick made of refractory material selected from the group consisting of graphite and semi-graphite out of contact with said shell, and a refractory material selected from the group consisting of chamotte and carbon positioned in contact with said shell.

11. In a blast furnace having a metal shell, a refractory furnace lining inside the shell and a taphole construction in the hearth of the blast furnace comprising an aperture in the furnace shell with behind it the lining consisting of at least one refractory brick, and in front of it, reaching through the aperture in the furnace shell, a refractory plug, a drilled taphole running through the plug and the lining, the improvement being that at least part of the refractory brick of the lining at the location where the taphole runs through it, consists of graphite, or semi-graphite having a high heat conductivity coefficient and is shielded from the furnace shell by refractory material with a considerably lower heat conductivity coefficient.

4,565,526

ORTHODONTIC APPLIANCE

Terushige Kawata, Tokushima; Takashi Kobayashi, Mino, and Katsuyuki Nakagawa, Osaka, all of Japan, assignors to Sankin Industry Co., Ltd., Osaka, Japan

Filed Oct. 12, 1984, Ser. No. 660,365

Claims priority, application Japan, Jun. 28, 1984, 59-131962

Int. Cl.⁴ A61C *7/00*

U.S. Cl. 433—8 **24 Claims**

1. An orthodontic appliance for correcting teeth in a patient's mouth, said orthodontic appliance comprising:

(a) a bracket adapted to be secured to one of the patient's teeth by means of an adhesive and having:

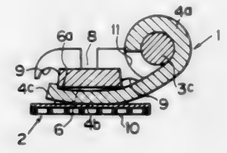
i. a slot for receiving a correcting wire;

ii. means for securing said bracket to said correcting wire; and

iii. an aperture;

(b) a magnet member; and

(c) a holder for said magnet member in the form of a clip member secured to said magnet and having a curved, elastic elongated arm adapted to be received into said



aperture of said bracket, said elongated arm resembling a leaf spring and carrying a protrusion for detachably latching onto said bracket.

4,565,527

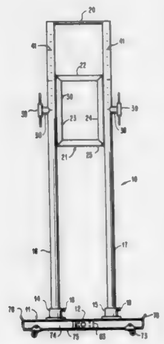
METHOD AND APPARATUS FOR TRAINING A HUMAN BY FEEDBACK ENHANCED LEARNING

Barry L. Burchett, 11 Cavalier Dr., Huntington, W. Va. 25701

Continuation of Ser. No. 464,722, Feb. 7, 1983, abandoned. This application Dec. 18, 1984, Ser. No. 683,047

Int. Cl.⁴ A63B *69/00*

U.S. Cl. 434—248 **20 Claims**



1. A method of improving the learning of a motor skill by identifying a specific, critical parameter of the motor skill of a shooter shooting a basketball along a desired flight path to a basketball goal in which proprioception provides the primary feedback and then enhancing the specificity of this available feedback including:

determining when the specific, critical parameter of the motor skill is satisfactory and not satisfactory with artificial sensors having no contact with the basketball during its movement along the desired flight path;

positioning the artificial sensors and any frame supporting the artificial sensors so that they are not in the field of vision of the shooter when the shooter views the basketball goal to shoot the basketball to the basketball goal and in accordance with the desired flight path as determined by having the shooter shoot the basketball along the desired flight path to the basketball goal;

relaying information by nonproprioceptive channels to the brain from the artificial sensors in accordance with whether the specific, critical parameter of the motor skill of shooting the basketball along the desired flight path to the basketball goal is satisfactory or not satisfactory;

and the relayed information from the artificial sensors including automatically producing a first signal without contact with the basketball when the basketball has moved above the desired flight path by at least a first selected amount at a first selected distance from where the basketball is shot so that the specific, critical parameter of

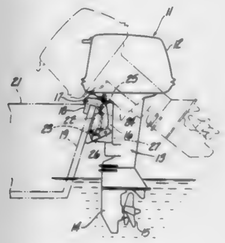
the motor skill is not satisfactory with the first selected distance being substantially prior to the high point of the desired flight path and being such that the velocity of the basketball has a minimum effect on the desired flight path and automatically producing a second signal, different from the first signal, without contact with the basketball when the basketball has moved below the desired flight path by at least a second selected amount at a second selected distance from where the basketball is shot with the second selected distance being substantially prior to the high point of the desired flight path and being such that the velocity of the basketball has a minimum effect on the desired flight path.

4,565,528

TILTING MECHANISM FOR MARINE PROPULSION DEVICE

Ryoichi Nakase, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 16, 1984, Ser. No. 590,891
Claims priority, application Japan, Mar. 19, 1983, 58-45322
Int. Cl.⁴ B63H *71/76*
U.S. Cl. 440—1 **22 Claims**



1. A marine outboard drive comprising an outboard drive unit adapted to be supported relative to the hull of an associated watercraft for pivotal movement about a horizontal extending trim axis between a trim down and a trim up position and velocity responsive means for automatically moving said outboard drive unit from its trim down position to its trim up position when the velocity of the associated watercraft exceeds a predetermined value, said velocity responsive means comprising means for exerting a predetermined and constant force on said outboard drive for tilting up said outboard drive when the driving thrust and weight of said outboard drive fall below a predetermined value.

4,565,529

REMOTELY CONTROLLED STEERING APPARATUS FOR OUTBOARD TROLLING MOTORS

Walter P. Aertker, 2741 Hill St.; William L. Taylor, 3403 Coldstream Ave., and Frank Medica, 1007 Candy La., all of Alexandria, La. 71301

Filed Aug. 17, 1983, Ser. No. 523,940
Int. Cl.⁴ B63H *21/26*
U.S. Cl. 440—7 **15 Claims**

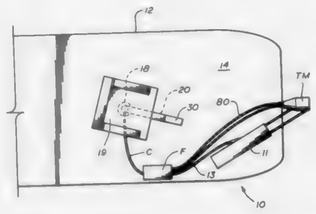
1. A control mechanism for a boat having a seat assembly to support a pilot and an outboard motor which is directionally controlled by extension and retraction of a control cable, said control mechanism comprising:

a. a pedal having a generally planar upper surface;

b. means for mounting the pedal at a location below the seat assembly so that the pilot occupying the seat can position one of his feet on the pedal and use the foot to operate the outboard motor;

c. a pair of switch surfaces disposed on opposite sides of the pedal, each surface extending above the pedal surface so that lateral movement of the user's foot, when positioned on the pedal, contacts one of the switch surfaces;

d. switch means associated with each switch surface for directionally moving the outboard motor to different positions responsive to pressure applied to one of the switch surfaces by one side edge of the user's foot; and



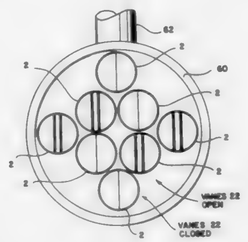
e. a generally U-shaped tiller having one open-ended portion and a pair of spaced apart side wall surfaces with the switch surfaces being the inside surfaces of the side walls, the tiller affixed to the top of the pedal and the open portion receiving the pilot's foot during use.

4,565,530

RECIPROCATING MARINE PROPULSION ENGINE

Donald L. Espenhain, 1671 Pasadena Dr., Dunedin, Fla. 33528

Filed Dec. 5, 1983, Ser. No. 557,832
Int. Cl.⁴ A63B *35/00*
U.S. Cl. 440—18 **13 Claims**



9. A marine propulsion engine of the type having slideably mounted butterfly valves which open and close within a cylinder attendant a return and a thrust stroke, respectively, wherein the improvement comprises:

a cylindrical housing member;

a plurality greater than two of said engines mounted within said housing member;

said engines having their respective axes of symmetry disposed in parallel alignment with one another; and

said engines disposed in radial relation to the longitudinal axis of symmetry of said housing member and in circumferentially spaced relation to one another so that said engines cooperate with one another to provide a propulsive force,

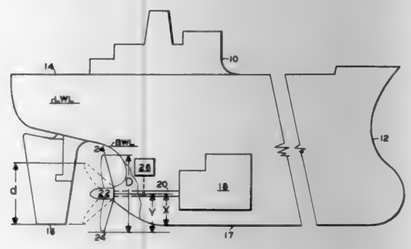
the strokes of the respective engines cooperating with one another so as to impart a centerline thrust to a vessel propelled by said engines.

4,565,531

SHIP PROPULSION SYSTEM

Peter M. Kimon, Mendham, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 24, 1984, Ser. No. 583,434
Int. Cl.⁴ B64C *11/28*
U.S. Cl. 440—50 **10 Claims**



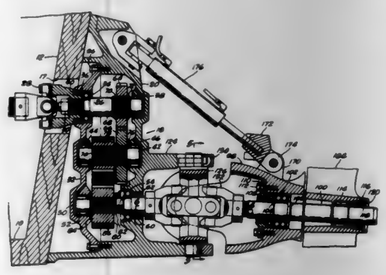
1. An improved efficiency propulsion system for a ship operated in deep and shallow depth waters and at variable loaded and ballast waterlines, comprising variable diameter propeller means, means for varying the diameter of said propeller between a maximum extended diameter D and a minimum diameter d, a propeller shaft mounting said propeller means for rotation in a stern portion of said ship, said propeller shaft extending generally parallel to the bottom keel of said ship and having an axis of rotation displaced from said bottom keel a distance less than one-half the maximum diameter D of said propeller means but more than one-half of said minimum diameter d of said propeller means, whereby when said ship is operated in a fully loaded condition in deep water said propeller means may be extended in diameter to obtain maximum propeller efficiency.

4,565,532

STERN DRIVE

John A. Connor, Costa Mesa, Calif., assignor to Kaama Marine Engineering, Inc., Costa Mesa, Calif.

Filed Feb. 18, 1981, Ser. No. 235,573
Int. Cl.⁴ B63H *23/02*
U.S. Cl. 440—57 **1 Claim**



1. A power train for a boat having a hull, a transom and an inboard motor, comprising

an outboard gearbox rigidly fixed to the outside of the transom;

a gearbox input shaft coupled to receive power from the inboard motor;

a gearbox output shaft being parallel to and vertically below said input shaft;

a drive train in said gearbox coupling said input shaft and said output shaft and including coupling elements all rotatably mounted about axes substantially parallel to said input shaft; and

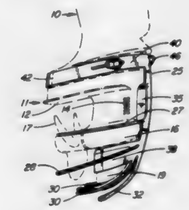
a propeller shaft coupled to said output shaft and being pivotally mounted to effect steering.

4,565,533

BOAT PROPELLER GUARD

Manfred H. Springer, 6935-14th Ave., Edmonton, Alberta, Canada (T6K 3V4)

Filed Oct. 26, 1983, Ser. No. 545,538
Claims priority, application Canada, Oct. 27, 1982, 414328
Int. Cl.⁴ B63H *5/16*
U.S. Cl. 440—71 **4 Claims**



1. A guard for use with an outboard motor including a motor shaft, a motor housing, a propeller having a propeller blade, and a fin, the guard comprising:

an elongate main rib terminating in a shock-absorbing resilient end portion,

attachment means for securing said rib to an outboard motor such that said main rib is disposed adjacent to and forwardly of said motor housing and fin with said rib end portion extending downwardly beyond the fin and generally rearwardly,

a plurality of shock-absorbing side ribs disposed along said main rib and each having a forward end secured to said main rib and terminating in free ends extending outwardly and rearwardly on either side of said motor housing so as to be disposed on either side of said propeller,

said main rib resilient end portion including a plurality of shock-absorbing lower ribs each having an upper portion secured to said main rib with the lower portions thereof extending in spaced, diverging relation downwardly and rearwardly of said fin so as to be disposed below said propeller, and,

arcuate rigid funnelling ribs attached to said main rib adjacent the upper portion thereof and extending downwardly on either side thereof to define therebetween a rearwardly directed funnel opening thereby to direct water flow therethrough from said main rib toward said motor housing to enhance cooling thereof.

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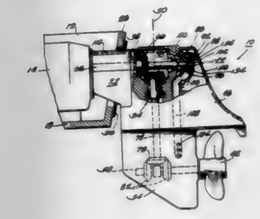
WATER PUMP LOCATION FOR MARINE PROPULSION DEVICE

Gerald F. Bland, Glenview, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 14, 1983, Ser. No. 560,904
Int. Cl.⁴ B63H *21/14*
U.S. Cl. 440—88 **13 Claims**

13. A marine propulsion device comprising a propulsion unit, water pump means communicating with an engine cooling jacket for circulating water through the cooling jacket, a vertically extending drive shaft rotatably supported in said propulsion unit and having an upper end and a lower end adapted to drive a propeller, and a horizontally extending drive shaft rotatably supported in said propulsion unit, driven by an engine, extending forwardly from and drivingly connected to said vertically extending drive shaft, and having an

aft end, one of said upper end of said vertically extending drive shaft and said aft end of said horizontally extending drive shaft



being located beyond the connection of said horizontally and vertically extending drive shafts, and extending into and driving said water pump means.

4,565,535

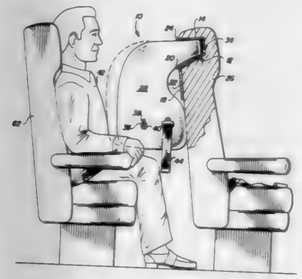
LIFE PRESERVER DEVICE

Tomas Tassy, 8101 Langdon Ave., #57, Van Nuys, Calif. 91406

Filed Jul. 18, 1984, Ser. No. 632,049

Int. Cl.[4] B64D *25/02*

U.S. Cl. 441—118 **19 Claims**



12. An improved life preserver device adapted for use on an aircraft, said device comprising:

(a) a shock absorbing member adapted to be interposed between a passenger and the back of a chair diposed in front of the passenger to brake forward movement of the person's body during a crash of the airplane;

(b) releasable interconnection means securing said shock absorbing member to said chair,

(c) said shock absorbing member having an opening therein adapted to receive a human head and further having a portion thereof contoured to receive a portion of a human body, and

(d) means associated with said member to attach said member to the passenger so as to act as a life preserver when said interconnection means are released.

4,565,536

DOLL WITH INGESTION SYSTEM

Silvana Vairo, Via Giulini 10, Como, Italy

Filed Oct. 26, 1983, Ser. No. 545,626

Int. Cl.[4] A63H *3/24*

U.S. Cl. 446—305 **5 Claims**

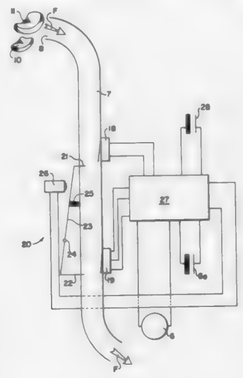
1. A doll having limbs and a motor for the movement thereof, comprising:

an esophagus having one end connected with a mouth of the doll for the insertion of objects simulating food into said one end of said esophagus;

a first sensor organ connected to said esophagus sensitive to the passage therewithin of said objects;

a second sensor organ connected to said esophagus spaced from and below said first sensor organ, said second sensor organ being selectively sensitive to prefixed values of determined characteristics of said objects; and

a two-phase timer operatively connected with each of said



first sensor organ and said second sensor organ selectively sensitive to prefixed values of determined characteristics of said object to stop said motor selectively after a first prefixed time phase and a second prefixed time phase, each related to the size of said object.

4,565,537

IMPACT RESPONSIVE TOY

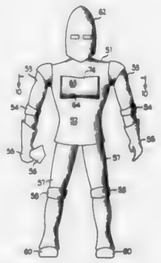
Randall J. Klimpert, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Continuation-in-part of Ser. No. 435,555, Oct. 21, 1982, Pat. No. 4,508,521. This application Sep. 19, 1983, Ser. No. 533,354

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.[4] A63H *17/02, 3/12*

U.S. Cl. 446—321 **20 Claims**



1. A toy having a body comprising:

means mounting a part of the body movably with respect to another part of the body so that the movable part is revolvable about an axis;

the movable part having first and second sections one of which is exposed to access and view while the other is obscured;

the first section representing one appearance;

the second section representing another appearance;

positioning means responsive to a force perpendicular to the axis for selectively exposing one section and obscuring the other section and moving the part to expose the other section while obscuring the one section in response to impact upon the part;

the positioning means including biasing means between the parts urging the movable part to revolve about the axis from one position to another;

the positioning means also including releasable latch means restraining the movable part from revolving; and

the revolving part being movable perpendicular to the axis of revolution to effect release of the latch means.

4,565,538

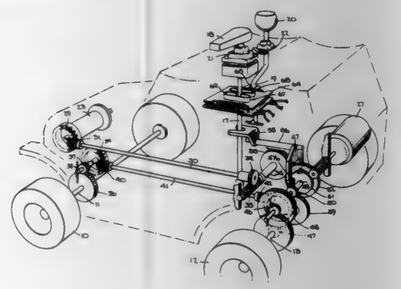
TOY WORK VEHICLE HAVING POWER TAKE-OFF

Melvin R. Kennedy, New York, N.Y.; Dietmar Nagel, Chester, N.J., and Abraham A. Arad, Westport, Conn., assignors to Buddy L. Corporation, New York, N.Y.

Filed Sep. 18, 1984, Ser. No. 651,714

Int. Cl.[4] A63H *17/14, 29/22*

U.S. Cl. 446—427 **8 Claims**



1. A toy vehicle including a chassis with front and rear axles mounted thereon, front wheels mounted on said front axle and rear wheels mounted on said rear axle; said vehicle comprising:

A. a bi-directional d-c motor mounted on said chassis;

B. a polarity-reversing switch mounted on said vehicle for connecting a battery to the motor, said switch having a fixed contact member and a contact member movable in relation thereto having a neutral position wherein it disconnects the battery from the motor, a forward position wherein it connects the battery to the motor in a polarity causing it to turn in one direction, and a back position wherein it connects the battery to the motor in the reverse polarity, causing it to turn in the opposite direction; and

C. means mounted on said chassis including a gearshift mechanism and a manual shift stick for controlling said gear shift mechanism to operatively couple the motor to at least one of the wheel axles, said stick being movably mounted on said chassis and having a neutral position in which the motor is decoupled from the axle and a lateral position in which the motor is coupled to the axle, said shift stick being coupled mechanically to the movable contact member of the switch by means such that when the stick is in its lateral position and is shifted forward, it thereby moves the movable contact member to its forward position whereby the motor then rotates in one direction and drives the vehicle in the forward direction, and when the stick is in its lateral position and is shifted back, it thereby moves the movable contact member to its back position, whereby the motor then reverses direction and drives the vehicle in the reverse direction;

D. said movable contact member being constituted by a slide carrying the movable contacts, said slide having a cruciform slot therein which cooperates with a template fixed to said chassis and having an aperture with a figure-of-eight configuration, the shift stick extending through the slot and the aperture which together permit the stick to occupy the five positions; namely, the neutral position, a first lateral position to one side of the neutral position in which the stick and the movable contact member are shiftable forward or back, and a second lateral position to the other side of the neutral position in which the stick and the movable contact member are shiftable forward or back.

4,565,539

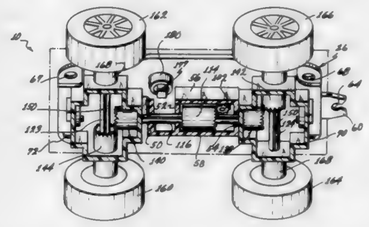
MULTIPLE-USE SHAFT FOR TOY

John S. Cook, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Sep. 19, 1983, Ser. No. 534,027

Int. Cl.[4] A63H *29/20;* **B60B** *35/12, 37/04*

U.S. Cl. 446—462 **5 Claims**



1. In combination with a toy vehicle having driven supporting wheels and including a journal box, the improvement which comprises;

a first multiple-use shaft rotatably mounted to said journal box in bearing surfaces formed in said journal box, said first multiple-use shaft having a generally cylindrical shape with a series of longitudinally arranged grooves in the outer surface running parallel to the axis of said first shaft along the entire length thereof, each of the grooves having a cross-sectional shape adapted to mate with both gear teeth and keys, the edges of each groove formed by the intersection of the walls thereof with the cylindrical surface being radiused to eliminate gouging of said bearing surfaces, and the outer cylindrical surface being adapted to serve as a bearing surface contacting and coacting with said bearing surfaces;

a first internally splined gear having teeth for engaging another gear and being slidably mounted on said first multiple use shaft by the fitting of the internal splines in the grooves of said first multiple-use shaft,

wherein said first shaft is journalled to said box at each end of said first shaft, wherein each of said ends of said first shaft is ring staked and wherein two of said supporting wheels are shrunk-fit, one to each end of said first shaft, each of said wheels including internal splines engaging associated ones of said first series of grooves on said first shaft.

4,565,540

TRIPOD HOMOKINETIC JOINT HAVING SWIVELLING ROLLERS

Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Continuation of Ser. No. 377,999, May 13, 1982, abandoned. This application Apr. 10, 1984, Ser. No. 597,820

Claims priority, application France, Jun. 1, 1981, 81 10799

Int. Cl.[4] F16D *3/24*

U.S. Cl. 464—111 **5 Claims**

1. A homokinetic tripod joint comprising:

a tripod element having three arms having radially extending axes, each said arm having a spherical surface;

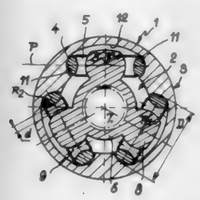
an element defining pairs of rectilinear runways;

three rollers running in respective said runways, each said roller being mounted to swivel about said spherical surface of a respective said arm and to be movable axially of

said respective arm, and each said roller having a convex toric inner surface;

three ring arrangements of rolling elements, each said arrangement comprising a plurality of said rolling elements, each said rolling element having opposed end portions of maximum diameter, a center portion of minimum diameter and a peripheral surface having a concave curvilinear shape in an axial section of said rolling element between said opposed end portions thereof;

said rolling elements of each said arrangement being interposed between said toric inner surface of the respective said roller and said spherical surface of the respective said arm for rolling contact therewith over the entire length of said peripheral surfaces of said rolling elements;



said rolling elements of each said arrangement being positioned relative to each other circumferentially of the respective said roller and said arm such that, upon relative movement of said roller axially of said arm, end portions of said rolling elements abut circumferentially of said spherical surface and limit the extent of said movement of said roller axially of said arm; and

a distance between the center of said spherical surface of each said arm and an axis of rotation of said tripod element is slightly greater than a distance between a plane of symmetry of the respective said pair of runways and an axis of rotation of said runway-defining element, said plane of symmetry extending through centers of said runways and extending parallel to said runway-defining element.

4,565,541

SMALL DEFLECTION COUPLING FOR OSCILLATING SHAFTS

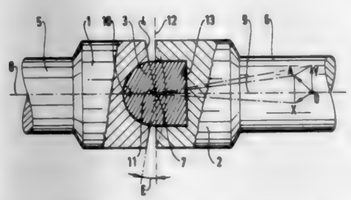
Georges Obrecht, Pont de Claix, France, assignor to Alsthom-Atlantique, Paris, France

Filed Apr. 17, 1984, Ser. No. 601,394

Claims priority, application France, Apr. 18, 1983, 83 06274

Int. Cl.⁴ F16D *3/38*

U.S. Cl. 464—155 **7 Claims**



1. A small deflection coupling for oscillating shafts, said coupling comprising:

first and second end pieces suitable for fixing to the facing ends of first and second shafts, said end pieces having respective longitudinal axes which substantially intersect at a coupling center, and having respective first and second concave cylindrical bearing surfaces which are of circular symmetry about respective first and second oscillation axes which also substantially intersect at the coupling center and which are perpendicular to respective ones of said longitudinal axes of the first and second end pieces, said cylindrical bearing surfaces being of the same diameter;

an intermediate piece having first and second convex cylindrical bearing surfaces which are of circular symmetry about two substantially intersecting perpendicular oscillation axes, said intermediate part being disposed between said end pieces which are oriented relative to one another in such a manner that the first and second convex bearing surfaces of the intermediate piece engage the first and second concave bearing surfaces of the first and second end pieces repsectively, thereby simultaneously enabling driving torque to be transmitted between said shafts when rotating about their axes, enabling axial thrust to be transmitted between said shafts, and, by rocking about said first and second oscillation axes, enabling said shafts to oscillate relatived to each other;

each of said end pieces being in the form of a solid having a front face facing the other end piece, which front face is in the form of a convex dihedral with the line of intersection of the dihedral half-planes constituting the oscaillation axis of the end piece, the dihedral angle being equal to 180° less twice the maximum angle of deflection between the axes of the two end pieces, said concave cylindrical bearing surface being hollowed out in the front face of the end piece such that the cross section of the bearing surface is an arc of a circle extending over said dihedral angle, such that, when said intermediate piece is received in said hollow and any force is applied thereto in a direction which is perpendicular both to the longitudinal axis of the end piece and to the oscillation axis of the end piece, and in particular when any torque is transmitted thereby, a longitudinal reaction is created tending to urge the end piece away form the intermediate piece, the length of the cylindrical concave bearing surface parallel to the generator lines of the cylinder being equal to the length of the convex bearing surface of the intermediate piece so as to prevent the intermediate piece from moving in the hollow of the concave bearing surface in a direction parallel to the oscillation axis of the end piece; and

a retaining member for holding said end pieces together agianst said longitudinal reaction;

the improvement wherein:

the intermediate piece is constituted by a solid core having a surface consisting solely of two portions which are semi-cylindrical having a right cross section to the form of a semicircle and which have an axial length equal to the diameter of the semicircle, the center of the semicircle being substantially at the mid point of said axial length whereby the surface of the core is constituted by said semi-cylindrical bearing surfaces, each of which is terminated by two plane semi-circular bearing surfaces extending from the ends of the semicircles of the cylinder, and said plane semicircular bearing surfaces consituting end faces of a semi-cylindrical volume whose side surface is constituted by the other semi-cylindrical bearing surface, whereby said core is capable of transmitting high driving torque and high axial thrust simultaneously, while being easy to machine.

4,565,542

LOCKING MECHANISM FOR A DRUG DELIVERY SYSTEM

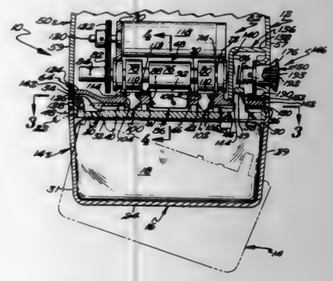
Harvey F. Berg, Stacy, Minn., assignor to Deltec Systems, Inc., St. Paul, Minn.

Filed Oct. 19, 1984, Ser. No. 663,051

Int. Cl.⁴ A61M *1/00;* **B60R** *25/02*

U.S. Cl. 604—131 **20 Claims**

1. Modular system for delivering a drug to a patient comprising, in combination: a control module; a reservoir module; means for removably attaching the reservoir module to the control module along one end, with the removably attaching means having a first position wherein the reservoir module and the control module are separable from each other and a second position wherein the reservoir module and the control module, are interconnected and nonseparable from each other; a locking mechanism for holding the reservoir module and the control module in their second position; with the reservoir module comprising, in combination: a container for storing a drug to be delivered by the system, and means for providing communication between the drug storage container and the patient; with the control module comprising, in combination: means for forcing the drug stored in the drug storage container through the communication providing means at desired rates to the patient, with the drug forcing means of the control module interacting with the communication providing means of the reservoir module when the reservoir module is removably secured to the control module for purposes of delivering a drug stored in the drug storage container to the patient at desired rates; with the locking mechanism comprising, in combination: a latch button having a longitudinal axis and a portion eccentric to the longitudinal axis; means for rotatably and



slideably mounting the latch button about the longitudinal axis in the control module; means for limiting the slideable movement of the latch button in the control module in a first direction; a locking bolt, with the locking bolt being rotatably received on the eccentric portion of the latch button; means for preventing slideable movement of the locking bolt with respect to the latch button; means for preventing the locking bolt from rotating with the latch button and for allowing slideable movement of the locking bolt with the latch button; means for biasing the latch button in a second direction opposite to the first direction; and means connected to the reservoir module for engaging with the locking bolt with the latch button having a first position wherein the locking bolt does not engage with the engaging means of the reservoir module, a second, longitudinal position located longitudinally in the first direction from the first position, and a third, rotated position located longitudinally in the first direction from the first position and in a rotated position from the first and second positions allowing the locking bolt to engage with and place a force on the engaging means of the reservoir module.

4,565,543

AUTOMATIC INJECTION DEVICE

Hendrik M. Bekkering, and Henricus H. M. Vulink, both of Oist, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

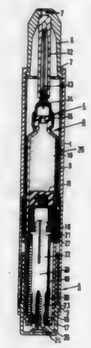
Filed Oct. 24, 1983, Ser. No. 544,704

Claims priority, application Netherlands, Oct. 27, 1982, 8204142

Int. Cl.⁴ A61M *5/20*

U.S. Cl. 604—135 **6 Claims**

1. An automatic injection device, comprising an assembly of a discharge mechanism, a cartridge holder and a cartridge slidably accommodated in the cartridge holder; the discharge mechanism comprising a sleeve that is open on one side, a plunger that is movable in the sleeve, a coil spring that acts on said plunger to move same toward the open end of the sleeve, a locking device that cooperates with said plunger to prevent undesired movement of the plunger; the cartridge comprising a glass ampoule having a needle connected to one end thereof and being open-ended at the opposite end thereof, a part of said ampoule remote from the needle comprising a hollow cylinder having an entirely or substantially uniform inside diameter, a



piston adapted for movement by the plunger being provided in said cylinder, a movable inner sleeve surrounding said coil spring and adapted to bear against said ampoule at its open end; said syringe being characterized in that the ampoule contains at least one injection liquid; said syringe being further characterized in that an annular member of slightly resilient material is interposed between the open end of the ampoule remote from the needle and said movable inner sleeve.

4,565,544

DEVICE FOR INTRODUCING A CATHETER

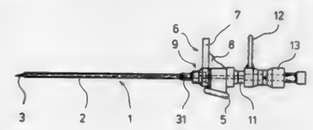
Franz-Josef Müller, St. Wendel; Viktor Krütten, Idstein, and Gerd Krick, Bad Homburg, all of Fed. Rep. of Germany, assignors to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Feb. 10, 1984, Ser. No. 579,210

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304914

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—164 **23 Claims**



1. A device for introducing a catheter into body cavities comprising

an outer catheter portion and an inner puncture needle portion,

said catheter portion, rearwardly of the segment thereof to be introduced into said cavities having a bush circumferentially and rigidly disposed thereon,

said bush comprising a forward and a rearward coaxial segment, the forward segment having a tail portion of forwardly directed frustroconical crosssection, said tail portion being located between said forward and said rearward coaxial segments,

a pair of substantially coplanar wings rigidly disposed on the rearward section of said bush on opposite sides thereof, said wings being so disposed that when said catheter is

disposed in the body cavities the said wings will lie on the skin of the patient and be attachable thereto,

a grip piece rigidly attached to the needle portion disposed rearwardly of the bush, and a grip module comprising an upper grip plate and a lower hollow extension portion,

said extension portion being dimensioned to engage snugly around the forward segment of the bush, but detachable therefrom, and having a longitudinal slit therein.

22. A grip module comprising an upper grip plate and a lower hollow extension portion, for use with a device for introducing a catheter into body cavities comprising an outer catheter portion and an inner puncture needle portion,

said extension portion having a longitudinal slit therein and comprising a body segment and a rearward segment coaxial therewith,

said body segment having a substantially cylindrical cross section,

said rearward segment having a forwardly directed frustroconical cross section, the internal diameter of the forward end of said segment being the same as that of the body segment.

said upper grip plate being located on and attached to the outer surface part of said extension portion substantially opposite to the part of the outer surface having the slit therein.

4,565,545

CATHETER INSERTION DEVICE

Tatsuo Suzuki, Yokohama, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 422,397, Sep. 24, 1982, abandoned. This application Apr. 23, 1985, Ser. No. 726,185

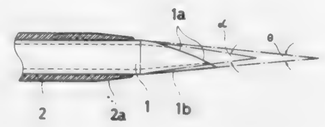
Claims priority, application Japan, Jun. 4, 1982, 57-82293[U]

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—164 **9 Claims**

1. In a catheter insertion device comprising an inner needle having a beveled surface at its distal end which forms a beveled point at said distal end; an inner needle hub attached to the proximal end of said inner needle; an outer catheter having an axially extending bore means for receiving said inner needle and adapted to receive said inner needle in said bore means so that said beveled point formed by said beveled surface is slightly projected from said outer catheter when said inner needle is inserted, and further having a catheter portion with a tapering outside diameter at its distal end; and a catheter hub attached to the proximal end of said outer catheter and adapted to detachably engage with said inner needle hub,

the improvement comprising



said inner needle has an inner needle tapered portion at the distal portion thereof, said beveled surface being partially formed in said inner needle tapered portion and forming said beveled point at said distal end of said needle, said inner needle tapered portion being longer than said beveled surface portion in the axial direction of said inner needle, wherein the width of said beveled surface is not more than 90% of the outside diameter of said inner needle and not less than 40% of the outside diameter of said outer catheter, the tapering angle of said inner needle tapered portion is from 4 to 16 degrees, and the length from the beveled point to the rear end of the inner needle tapered portion is not more than 4.5 mm.

4,565,546

CONDENSATION PRODUCT AND USE THEREOF AS DISPERSANT FOR PITCH IN WATER SLURRY

Osamu Obzeki, Fukui; Katsuhiko Shimakawa; Akihiko Shimizu, both of Sabae, and Toshio Kanai, Yokohama, all of Japan, assignors to Nikka Chemical Industry Co., Fukui and Chiyoda Chem. Engineering & Construction Co. Ltd., Kanagawa, both of, Japan

Filed Jun. 27, 1984, Ser. No. 625,216

Claims priority, application Japan, Jun. 28, 1983, 58-117764

Int. Cl.⁴ C10L *1/32*

U.S. Cl. 44—51 **20 Claims**

1. A condensation product obtained by reaction of (A) a first aromatic compound Y containing one or more sulfonic acid or sulfonate groups and having a ratio of its organic values to inorganic value of at least 0.6, (B) a second aromatic compound Z containing one or more sulfonic acid or sulfonate groups and having a ratio of its organic character value to inorganic character value of not greater than 0.5 and (C) an aldehyde, said condensation product having repeating monomeric units (I) having an aromatic moiety derived from Y and monomeric units (II) having an aromatic moiety derived from Z, the molar ratio of I:II being 1:10 to 7.1:1.

5. A composition of matter comprising:

an aqueous medium;

particulate pitch; and a dispersant which is a condensation product according to claim 1.

4,565,547

DETERGENT COMPOSITION FOR FUEL-SYSTEM PARTS

Toshiya Takada, Aichi, Japan, assignor to Toyoto Jidosha Kabushiki Kaisha, Toyoto and Japan Bars Company Limited, Osaka, both of, Japan

Filed Jul. 3, 1984, Ser. No. 627,476

Claims priority, application Japan, Jul. 12, 1983, 58-126762

Int. Cl.⁴ C10L *1/14*

U.S. Cl. 44—51 **7 Claims**

1. A gasoline suitable for use internal combustion engines, comprising:

a detergent consisting essentially of 5–20 parts by weight of a saturated or unsaturated fatty acid containing 18 carbon atoms, 2–15 parts by weight of a mixture of ammonia and an amine selected from the group consisting of alkylamines of 1–10 carbon atoms, alkanolamines containing 2–10 carbon atoms, morpholine, and mixtures thereof, 5–20 parts by weight of an ester of a higher fatty acid, and 5–15 parts by weight water, and a hydrocarbon fuel containing said detergent in about 1,000–30,000 ppm.

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MOTOR FUEL COMPOSITION

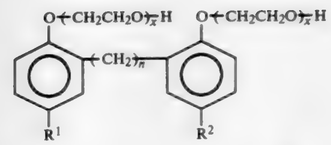
Marshall E. Davis, Poughkeepsie, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 29, 1984, Ser. No. 676,469

Int. Cl.⁴ C10L *1/32*

U.S. Cl. 44—51 **15 Claims**

1. A clear stable motor fuel composition comprising a mixture of alcohol selected from the group consisting of methanol in the amount of about 2.0 to 5.0 vol. %, ethanol in the amount of about 2.0 to 10.0 vol. %, and mixtures thereof in the amount of about 3 to 9.0 vol. % about 2.0 to 10 vol. % of a cosolvent alcohol selected from the group consisting of tertiary butyl alcohol, isopropanol, and mixtures thereof; water to provide a total water concentration of about 0.1 to 0.5 wt. % (basis weight of motor fuel composition); about 0.01 to 3.0 wt. % (basis weight of motor fuel composition) of a nonionic surfactant represented by Formula I, as follows:



I

wherein: R^1 and R^2 may be the same or different and are selected from the group consisting of hydrogen and methyl; n is an integer from 1 to 3; and x is an integer from 8 to 10; and the balance of said motor fuel composition being gasoline.

4,565,549

AQUEOUS SLURRY OF A SOLID FUEL AND A PROCESS FOR THE PRODUCTION THEREOF

Mait M. Mathiesen, Arild; Lars I. Gillberg, Lund; Karl M. E. Hellsten, Ödsmål, and Gunvor B. T. Karlsson, Stenungsund, all of Sweden, assignors to AB Carbogel, Helsingborg and Berol Kemi AB, Stenungsund, both of, Sweden

Filed May 6, 1983, Ser. No. 492,196

Claims priority, application Sweden, May 7, 1982, 8202879

The portion of the term of this patent subsequent to Oct. 29, 2002, has been disclaimed.

Int. Cl.⁴ C10L *1/32*

U.S. Cl. 44—51 **9 Claims**

1. An aqueous slurry consisting essentially of water, a solid fuel in the form of a pulverized, carbonaceous material, and 0.02–2% by weight of at least one additive, the solids content of the slurry being 65–90% by weight, and the aqueous slurry being characterized in that the additive consists essentially of a nonionic water-soluble surface active alkylene oxide adduct with the following formula

$$RO(CH_2CH_2O)_nH$$

wherein R denotes an aliphatic or acyl group comprising 10–24 crbon atoms or a substituted aryl group comprising 12–54 carbon atoms; and n is at least 40 but less than 100.

5. A process for producing an aqueous slurry consisting essentially of water, a solid fuel in the form of a pulverized, carbonaceous material, and 0.02–2% by weight of at least one additive, the solids content of the slurry being 65–90% by weight, characterized by the following steps

(a) wet milling a carbonaceous starting material together with water at a solids content of 20–50% by weight in at least one milling step;

(b) separating, any remaining inorganic material of the carbonaceous starting material from the carbonaceous material of said starting material;

(c) dewatering the carbonaceous material to a solids content which is substantially equal to the solids content of the final slurry;

(d) adding to and distributing in the dewatered carbonaceous material said additive consisting essentially of a nonionic water-soluble surface active alkylene oxide adduct with the following formula

$$RO(CH_2CH_2O)_nH$$

wherein R denotes an aliphatic or acyl group comprising 10–24 carbon atoms or a substituted aryl group comprising 12–54 carbon atoms; and n is at least 40 but less than 100.

4,565,550

HYDROCARBYL SUBSTITUTED CARBOXYLIC ACYLATING AGENT DERIVATIVE CONTAINING COMBINATIONS, AND FUELS CONTAINING SAME

Casper J. Dorer, Jr., 4852 Fairlawn Rd., Lyndhurst, Ohio 44124, and Katsumi Hayashi, 8290 Mentorwood Dr., Mentor, Ohio 44060

Division of Ser. No. 404,845, Aug. 9, 1982. This application Mar. 12, 1985, Ser. No. 711,113
Int. Cl.[4] C10L *1/14*
U.S. Cl. 44—62 111 Claims

1. A composition comprising a major amount of a normally liquid fuel and a minor amount of:

(A) a first component selected from the group consisting of:

(i) an oil-soluble ethylene backbone polymer having a number average molecular weight in the range of about 500 to about 50,000;

(ii) a hydrocarbyl-substituted phenol of the formula

$$(R^*)_a—Ar—(OH)_b \quad (I)$$

wherein R* is a hydrocarbyl group selected from the group consisting of hydrocarbyl groups of from about 8 to about 30 carbon atoms and polymers of at least 30 carbon atoms, Ar is an aromatic moiety having 0 to 4 optional substituents selected from the group consisting of lower alkyl, lower alkoxyl, nitro, halo or combinations of two or more of said optional substituents, and a and b are each independently an integer of 1 up to 5 times the number of aromatic nuclei present in Ar with the proviso that the sum of a and b does not exceed the unsatisfied valences of Ar;

(iii) mixtures of (i) and (ii); and

(B) as a second component, the oil-soluble reaction product of (B) (I) a hydrocarbyl-substituted carboxylic acylating agent with (B) (II) one or more amines, one or more alcohols, or a mixture of one or more amines and/or one or more alcohols, the hydrocarbyl substituent of said agent (B) (I) being selected from the group consisting of

(i') one or more mono-olefins of from about 8 to about 30 carbon atoms;

(ii') mixtures of one or more mono-olefins of from about 8 to about 30 carbon atoms with one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of polymers of mono-l-olefins of from 2 to 8 carbon atoms, or the chlorinated or brominated analogs of such polymers; and

(iii') one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of

(a) polymers of mono-olefins of from about 8 to about 30 carbon atoms;

(b) interpolymers of mono-l-olefins of from 2 to 8 carbon atoms with mono-olefins of from about 8 to about 30 carbon atoms;

(c) one or more mixtures of homopolymers and/or interpolymers of mono-l-olefins of from 2 to 8 carbon atoms with homopolymers and/or interpolymers of mono-olefins of from about 8 to about 30 carbon atoms; and

(d) chlorinated or brominated analogs of (a), (b), or (c).

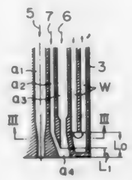
4,565,551

COAL GASIFICATION APPARATUS

Koji Okane, Ibaraki; Hidemasa Nakajima, Ibaraki; Shozo Okamura, Ibaraki; Masanobu Sueyasu, Kawachinagano, and Takashi Manago, Ibaraki, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Oct. 18, 1983, Ser. No. 543,131
Int. Cl.[4] C10J *3/48, 3/50*
U.S. Cl. 48—92 3 Claims

1. An apparatus for the gasification of a solid carbonaceous material, which comprises, in combination, a gasification furnace containing a molten metal bath and a non-immersing multihole lance connected to said furnance and passing through a top opening therein through which lance a finely divided solid carbonaceous material, oxygen gas, and a supplementary gasifying agent are blown onto the molten metal bath, said lance having a main injection nozzle with an injection end opening at the face of said lance and communicated with a main passageway for the solid carbonaceous material, said main injection nozzle with an injection end opening at the face



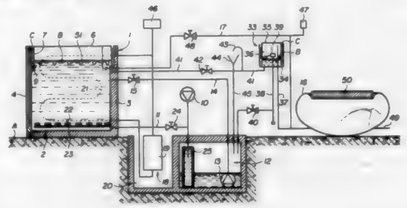
of said lance being surrounded by a plurality of subsidiary injection nozzles, each of said subsidiary injection nozzles having injection ends at the face of the lance and being, communicated with subsidiary passageways for oxygen gas and the supplementary agent, the end of each passageway for said supplementary gasifying agent communicating with a corresponding separate passageway for oxygen gas at a location above an injecting end of corresponding subsidiary nozzle.

4,565,552

METHOD OF PRODUCING BIOGAS AND COMPOST

Armand Cotton, 183 route de Mon Idée, 1253 Crête, Vandoeuvres, Geneva, Switzerland

Filed Nov. 7, 1984, Ser. No. 669,578
Claims priority, application Switzerland, Nov. 9, 1983, 6033/83
Int. Cl.[4] C02F *3/30*; C05F *11/08*; C12P *5/02*
U.S. Cl. 48—197 A 4 Claims



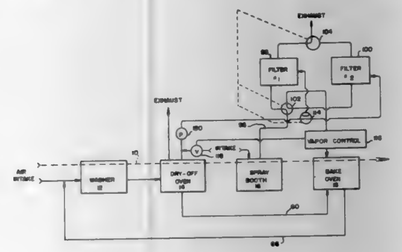
1. A method of producing biogas and compost, which comprises the steps of (1) fermenting in an aerobic environment solid fermentable organic matter at substantially ambient temperature and of appropriate moisture content to raise its temperature to a temperature greater than that required for mesophile methanogenic fermentation in an anaerobic environment, (2) flooding the fermenting organic matter with liquid at substantially ambient temperature to increase the temperature of the liquid by heat exchange with the fermenting organic matter, (3) removing the liquid to store it in a heat insulated environment to reduce the moisture content of the matter to a suitable degree, (4) raising the temperature of said matter to said greater temperature by aerobic fermentation, (5) again flooding the matter with the stored liquid to raise the temperature of the latter still further by heat exchange with the fermenting matter, (6) repeating steps (3), (4) and (5) if the liquid flooding the matter has not yet reached the temperature required for mesophile methanogenic fermentation of the matter in an anaerobic environment, (7) leaving the liquid in situ once said required temperature has been reached to enable anaerobic mesophile methanogenic fermentation to take place, and (8) collecting the gas given off during such anaerobic fermentation.

4,565,553

METHOD FOR THE REMOVAL AND DISPOSAL OF PAINT SOLVENT

William C. Nowack, 340 Kriwel, Twin Lakes, Wis. 53181

Filed May 24, 1984, Ser. No. 614,101
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—59 13 Claims



1. In an industrial painting system including a spray booth and a bake oven, a method for the removal and disposal of the paint solvent contained in the spray booth exhaust gas discharged from the spray booth comprising,

(a) passing solvent laden exhaust gas from said spray booth through a filter capable of adsorbing said solvent from said spray booth exhaust to remove said solvent from said exhaust;

(b) degassing said filter by passing through said filter a gas such that the pressure drop across said filter is less than about six inches of water, said gas having a velocity and temperature sufficient to remove said solvent from said filter such that the solvent concentration in the gas exhausted from the filter does not exceed the lower explosive limit for the solvent;

(c) introducing said filter exhaust to said bake oven to increase the solvent concentration in the bake oven atmosphere; said degassing gas velocity and temperature being so selected that upon introduction of said filter exhaust to said bake oven, the solvent concentration in the bake oven does not exceed the lower explosive limit of the designed theoretical level of operation of the brake oven;

(d) removing a portion of the atmosphere of the bake oven from the bake oven and incinerating said bake oven atmosphere so as to oxidize said solvent to non-polluting combustion products and thereby dispose of said solvent.

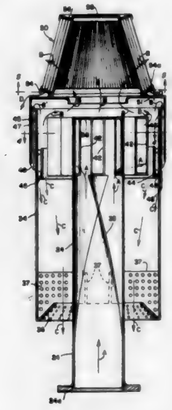
4,565,554

STEAM SEPARATING APPARATUS AND SEPARATORS USED THEREIN

Albert J. Zipay, Clifton, and Walter P. Gorzegno, Morristown, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Continuation of Ser. No. 415,303, Sep. 7, 1982, Pat. No. 4,483,696. This application Jun. 20, 1984, Ser. No. 622,308
Int. Cl.[4] B01D *19/00*
U.S. Cl. 55—185 2 Claims

1. A steam separator comprising an outer shell, a hood extending over the upper end portion of said shell and defining a first outlet passage for directing a portion of a steam-water mixture from a previous separator stage in a downwardly direction and a second outlet passage for directing another portion of said mixture in an upwardly direction, a plurality of plates extending over and supported by said hood, each plate having a W-shaped cross-section and being nested between two adjacent plates in a spaced-apart parallel relationship to define a radially extending W-shaped path between each two adjacent plates, shroud means disposed at the upper and lower end portions of said plates for supporting said plates in a frusto-conical configuration with said W-shaped cross-section extending in a general radial direction, said frusto-cone converging radially inwardly from the lower portion of said cone to the upper portion thereof; means for directing the steam water mixture portion from said second outlet passage from the



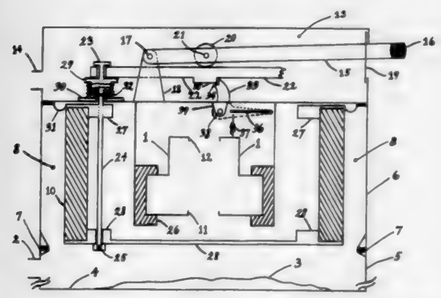
interior of the frusto-cone radially outwardly through said paths so that is impinges on said plates to separate the steam from the water in said mixture, said plates being arranged to discharge said mixture from said paths in a substantial tangential direction to said frusto-cone, and at least one opening extending through said shroud means for permitting said water to drain therefrom.

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VACUUM COLLECTOR

David R. Menasian, 12140 Powerhouse Rd., Potter Valley, Calif. 95469

Filed Sep. 29, 1982, Ser. No. 428,513
The portion of the term of this patent subsequent to Dec. 10, 2002, has been disclaimed.
Int. Cl.[4] B01D *46/00*
U.S. Cl. 55—288 16 Claims



1. A high-suction portable, hybrid shop-style and continuous-duty vacuum collector, whose arrangement also has special purpose applicability, with improved capability and effectiveness in extending the running time between filter cleanings while filtering a wide range of sizes and weights of mixed dust and particulate debris from gases such as air and incorporating a compact, efficient and simple filter-cleaning mechanism that

protects the operator and the environment from exposure to dust during cleaning but cannot accidentally be activated during the dirt collection process, comprising:

a detachable rigid air-tight dust-accumulating enclosure, open on top, into which the incoming particulate-laden gas flows from an inlet on entering in a direction to avoid striking any filter surfaces directly, and which collects the heavier particles by gravity on the bottom of said dust enclosure; and

filter assembly means for producing a very large total filter surface area by mounting as an integral assembly, at least one gas-penetrable and dust-impervious hollow pleated filter, in which the normal directions to all of the filter surfaces are placed in a plane and are thus confined to two dimensions of three-dimensional space, and with this filter surface orientation no filter surface faces or has its normal in the third dimension, in order to collect the lighter particles and dust on the outside of said oriented filter surfaces, and carried on a housing completely covering said open top of said dust enclosure so as to constitute a closed dust chamber containing said filter assembly, and which communicates with the clean gas region of said housing only through said filter; and

filter cleaning means, further comprising:

filter moving means for constrained motion of said integral filter assembly as a unit only in said third dimension, and operated from outside said housing without having to disconnect any connections or subject said filter surfaces to any deformation; and

filter shock means for subjecting said integral filter assembly as a unit to a sharp impact shock in said third dimension by abruptly arresting said motion in order to dislodge said particles and dust adhering to the outside of said filter surfaces, enabling them to fall by gravity to said bottom of said dust enclosure; and

flexible filter connection means connecting said covering housing to said filter assembly for maintaining the integrity of the internal gas passages from said filter assembly to the clean gas region of said housing while said motion and said shock are being applied, so that none of said particles and dust either enter said clean gas region or are dispersed to the external environment; and

suction means with in the filter hollow for applying blower suction to the clean gas inside of said integral filter assembly; and

an outlet from said housing for discharging into the surrounding atmosphere the filtered air from said suction means; and

interlock means for rendering said filter cleaning means inoperable when said suction means is operating.

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MOLECULAR AND ISOTOPIC FRACTIONATING PROCESS AND APPARATUS

Ladislao J. Biró, 1567 Conde, Buenos Aires, Argentina, assignor to Ladislao José05 Biró, Argentina

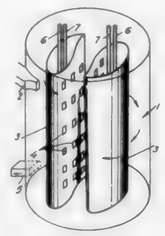
Filed Jan. 10, 1983, Ser. No. 456,987

Claims priority, application Argentina, Jan. 12, 1982, 288105

Int. Cl.⁴ B01D *45/12*

U.S. Cl. 55—460 **4 Claims**

1. A device for the molecular and isotopic fractionating of gaseous mixtures comprising a substantially cylindrical chamber provided with at least one tuyere disposed near one end thereof to tangentially introduce gaseous mixture thereinto, an exhaust port in said chamber disposed near the opposite end thereof to tangentially remove heavy fractions from said chamber, at least two diametrically opposed hollow fixed aerodynamically shaped profile members having rounded longitudinal surfaces tapering to thin longitudinal edges, said members being longitudinally disposed within said chamber and extending substantially throughout the length thereof to direct said gaseous mixture in a helicoidal path outside of and between said profiles and cause pulsations, thereby guiding light fractions of said gaseous mixture toward the inner portion of said chamber, said profiles being provided on the inner opposed side walls thereof with holes for receiving said light fractions,



and means for removing said light fractions from the inner portion of said chamber.

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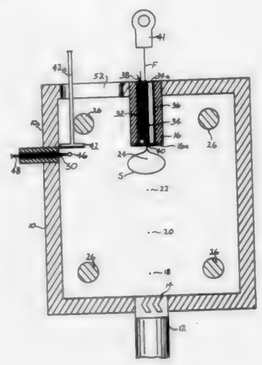
CONTAINERLESS HIGH PURITY PULLING PROCESS AND APPARATUS FOR GLASS FIBER

Robert J. Naumann, and Edwin C. Ethridge, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 526,754, Aug. 26, 1983, abandoned. This application Apr. 19, 1984, Ser. No. 601,130

Int. Cl.⁴ C03D *37/027*

U.S. Cl. 65—1 **13 Claims**



1. Apparatus for producing optical glass fibers from specimen material comprising:

a levitation furnace having a levitation axis along which said material may be levitated;

means for heating said material to form a melt;

a fiber pulling bore formed in said furnace housing through which bore said material may be pulled from said melt in fiber form;

cooling means surrounding said bore to cool said fiber;

insulation means encasing said cooling means and fiber pulling bore;

fiber initiating means; and

means for generating a restoring force along said levitating axis in one direction for levitating said specimen and for constraining said melt against pulling of fiber in an opposing direction so that said melt is stably levitated during fiber pulling.

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APPARATUS FOR THE MANUFACTURE OF CONSTRUCTIONS IN FIBERS

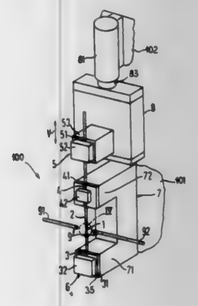
Rudolf Keil, Munich, and Konrad Mathyssek, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 20, 1984, Ser. No. 642,583

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334565

Int. Cl.⁴ C03B *23/08*

U.S. Cl. 65—1 **19 Claims**



1. In an apparatus for the manufacture of constrictions in fibers, said apparatus comprising stretching means for stretching the fiber by applying a tensile force thereto and heating means for brief local heating of a stretched fiber to a softening temperature at which a permanent constriction is formed in the fiber, the tensile force produced in the fiber and the brief local heating are so matched to one another that a constriction is formed in the fiber without pulling the fiber apart, the improvements comprising the stretching means including means for limiting the stretching force of the stretching means, two exactly aligned guide means for positioning the fiber being stretched, means for spacing the two guide means a fixed distance apart and on both sides of the location of the heating means, and first and second holding means for holding and stretching the fiber with means for moving the first and second holding means relative to each other, each of the guide means having a guide groove in alignment with the guide groove of the other guide means, and said means for limiting the stretching force including a limiting force-friction lock mechanism to restrict the maximum tensile force being generated by moving the holding means apart.

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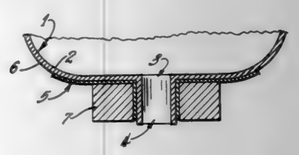
PROTECTION DEVICE FOR BASALT DRAIN BUSHINGS

Richard A. Perkins, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 478,578, Mar. 24, 1983, abandoned. This application Nov. 13, 1984, Ser. No. 670,464

Int. Cl.⁴ C03B *37/02*

U.S. Cl. 65—2 **7 Claims**



1. In a method of manufacturing glass fibers comprising electrically melting fiberizable glass forming batch in a main glass melter, supplying the melted batch to a heated platinum, or platinum alloy, bushing and forming fibers from molten glass emitted from said bushing, the improvement wherein said batch contains iron oxide in a bushing degrading amount and comprising retarding the bushing degradation by passing heat from a lower exteriorally disposed electrical heating element through an electrically insulating barrier to said bushing.

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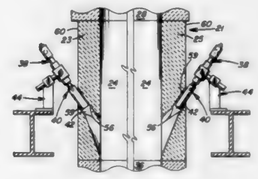
ENERGY EFFICIENT AND ANTI-CORROSIVE BURNER NOZZLE CONSTRUCTION AND INSTALLATION CONFIGURATION

John F. Krumwiede, and Yih-Wan Tsai, both of Allegheny County, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 19, 1984, Ser. No. 683,749

Int. Cl.⁴ C03B *5/04*

U.S. Cl. 65—134 **14 Claims**



1. In a glassmaking furnace of the type comprising a combustion chamber, and a plurality of port tunnel structures disposed in fluid communication with the combustion chamber, an apparatus for passing fuel into the combustion chamber, comprising:

a fuel input passageway provided through a wall of at least one of said port tunnel structures;

a burner nozzle extending at least partially into said fuel input passageway for delivering fuel through said fuel input passageway into the combustion chamber; and

wherein the diameter of said burner nozzle is lesser than the diameter of said fuel input passageway, to thereby provide a space between said burner nozzle and said fuel input passageway, said space being unsealed in direct communication with the ambient atmosphere about the furnace, and wherein further said space is sufficient to allow inspiration of enough ambient air to cool said burner nozzle.

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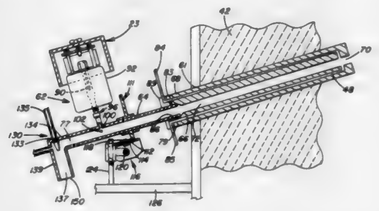
METHOD OF AND APPARATUS FOR ANALYZING ATMOSPHERE OF A FURNACE

Robert Gagne, Cumberland, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 5, 1984, Ser. No. 678,425

Int. Cl.⁴ C03B *5/04*

U.S. Cl. 65—135 **18 Claims**



6. An apparatus for monitoring the interior atmosphere of a regenerative glassmaking furnace, including:

means disposed exteriorly of the furnace for analyzing a portion of the furnace interior atosphere defined as a sample;

means for aspirating said sample from the furnace interior to said analyzing means for analysis of said sample, said aspirating means including:

a refractory adaptor block having a sample passageway extending between and through first and second ends of said adaptor block;

means for mounting said adaptor block in an outside wall of the furnace at a location such that said sample passageway communicates at one end with the interior atmosphere of the furnace;

a sample conduit fluidly connected at one end with the opposite end of said sample passageway, and at its opposite end with the furnace exterior atmosphere;

a convection pipe loop having a sample entrance end and a sample exit end disposed in fluid communication with said sample conduit at spaced points intermediate said ends of said sample conduit, at least a portion of said sample being convected through said convection pipe loop, prior to exiting said sample conduit, and past said analyzing means for analysis of said sample; and

a vacuum creating means, including:

a portion of said sample conduit located downstream of said convection pipe loop, wherein said portion is bent so as to project substantially laterally with respect to the other or unbent portion of said sample conduit;

an aperture provided through a wall of said sample conduit opposite a central portion of the interior of said bent portion; and

means for directing pressurized fluid from a source of pressurized fluid through said aperture and thence through said central portion of said bent portion interior to said furnace exterior atmosphere, to thereby create at least a partial vacuum within said sample conduit; and

wherein the pressure differential between the furnace interior and the furnace exterior is negative.

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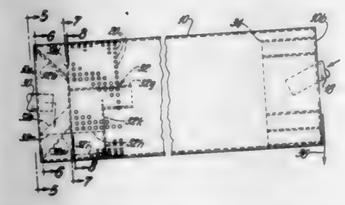
TWO-STAGE HEATING MEDIA FEEDER FOR A GLASS BATCH PREHEATING DRUM

Stephen Seng, Bladensburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 24, 1984, Ser. No. 685,431

Int. Cl.⁴ C03B *3/00*

U.S. Cl. 65—335 **4 Claims**



1. A rotatable glass batch material preheating drum having a two-stage heating media feeder secured therein adjacent an apertured end plate thereof, the heating media feeder comprising a hollow frustoconical portion having a larger open end disposed adjacent said drum end plate, a circular plate disposed adjacent a smaller end of the frustoconical portion and having a diameter substantially equal to the inner diameter of said drum, the frustoconical portion being cut-away at a peripheral portion thereof to provide an opening defined by a leading edge and a trailing edge whereby once each revolution thereof heating media received therein through the aperture in said drum end plate drop through the opening to a lower inner periphery of said drum between said drum end plate and said circular plate of the feeder, a generally triangular flat wall portion aligned axially of the drum with said leading edge defining the opening in the frustoconical portion and joined along three sides thereof respectively to the frustoconical portion, the circular plate, and the drum, the circular plate being cut-away at a peripheral portion between the smaller end of the frustoconical portion and the drum to provide an opening defined by a leading edge and a trailing edge and the trailing edge defining the opening in the circular plate being aligned axially of the drum with the leading edge defining the opening in the frustoconical portion whereby during the next revolution the triangular wall portion engages the heating media at the lower periphery of the drum between the drum end plate and the circular plate of the feeder and carries them toward an upper portion of the drum wherefrom any that haven't already passed through the opening in the circular plate progress along the outer surface of the frustoconical portion and pass through the opening in the circular plate, a generally V-shaped chute for receiving the heating media from the opening in the circular plate, the chute including a pair of generally radially extending rectangular straight wall portions disposed at an acute angle with respect to each other, having outer end portions aligned with the edges defining the opening in the circular plate, and connected adjacent inner ends by a curved wall portion, the chute also including a generally arcuate plate spaced from and joined to the circular plate by the pair of straight wall portions, the arcuate plate extending between the straight wall portions, and a cylindrical nozzle having a portion aligned with the curved wall portion of the chute and adapted to carry the heating media from the chute to the inside of the drum.

4,565,563

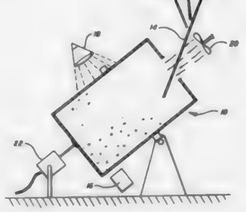
METHOD OF PRODUCING FERTILIZER PRODUCT CONTAINING SEWAGE SLUDGE

Norwood K. Talbert, 7586 Cavalry Cir., Manlius, N.Y. 13104

Continuation-in-part of Ser. No. 224,858, Jan. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 56,989, Jul. 12, 1979, abandoned, which is a division of Ser. No. 932,622, Aug. 10, 1978, abandoned. This application Jan. 14, 1985, Ser. No. 691,635

Int. Cl.⁴ G05F *7/00*

U.S. Cl. 71—12 **2 Claims**



1. The method of producing a fertilizer product consisting of solid, individual, spherical or semi-spherical granules of substantially homogeneously mixed ammonium sulphate crystals and sewage sludge solids comprising the steps of:

(a) determining the approximate water content of a quantity of wet sewage sludge;

(b) placing a quantity of crystalline ammonium sulphate in a mixing vessel;

(c) adding said wet sludge to said mixing vessel at a predetermined rate; and

(d) mixing said ammonium sulphate and sewage sludge together in said vessel and driving off water from said sewage sludge continuously as said sewage sludge is added to said vessel, said water being driven off by applying heat to said mixing vessel and circulating air over the mixture therein to carry away evaporated moisture and said mixing resulting in the producing of said fertilizer product;

(e) the predetermined rate of adding the wet sludge being that rate, relative to the rate of said driving off of water, at which rate sludge solids mix with said ammonium sulphate crystals to form individual, substantially dry, solid granules, without dissolving said ammonium sulphate crystals in the water initially contained by said wet sewage sludge.

4,565,564

COATED FERTILIZER PARTICLES

Peter S. Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Calif.

Division of Ser. No. 471,452, Mar. 7, 1983, Pat. No. 4,494,976, which is a continuation of Ser. No. 259,067, Apr. 30, 1981, abandoned. This application Oct. 15, 1984, Ser. No. 660,805

Int. Cl.⁴ C05C *9/00*

U.S. Cl. 71—28 **17 Claims**

1. A method for producing free-flowing, metal-containing chemical fertilizer particles comprising the steps of:

(a) applying a coating of at least one metal oxide to said fertilizer particles;

(b) covering the metal oxide coating with molten urea; and

(c) heating the particles to a temperature below about 130° C. for a time sufficient to effect a condensation reaction between the metal oxide and urea.

4,565,565

DICHLOROACETAMIDES, HERBICIDES CONTAINING ACETANILIDES AS HERBICIDAL ACTIVE INGREDIENTS AND THE DICHLOROACETAMIDES AS ANTAGONISTS, AND THE USE OF THESE HERBICIDES IN CONTROLLING UNDESIRED PLANT GROWTH

Wolfgang Rohr, Wachenheim; Hanspeter Hansen; Peter Plath, both of Ludwigshafen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

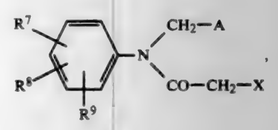
Division of Ser. No. 207,337, Nov. 17, 1980, Pat. No. 4,448,960. This application Aug. 3, 1983, Ser. No. 519,821

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948535

Int. Cl.⁴ A01N *43/48, 37/18*

U.S. Cl. 71—92 **12 Claims**

1. A herbicidal agent containing, as herbicidal active ingredient, an effective amount of at least one acetanilide of the formula



(II)

where

R^7 is hydrogen or linear or branched alkyl or alkoxy of up to 5 carbon atoms,

R^8 is hydrogen, halogen or linear or branched alkyl or alkoxy of up to 5 carbon atoms,

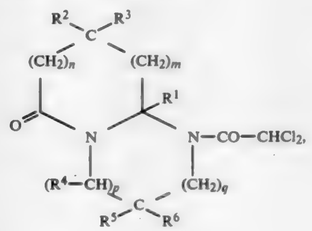
R^9 is hydrogen, halogen or linear or branched alkyl or alkoxy of up to 5 carbon atoms,

R^7 together with R^8 may also be alkylene of up to 6 carbon atoms which is ortho-linked to the benzene ring and is unsubstituted or substituted by linear or branched alkyl of up to 4 carbon atoms,

X is chlorine or bromine and

A is alkoxy or alkoxyalkyl of up to 4 carbon atoms, or is an azole radical which is bonded via a ring nitrogen and which may be monosubstituted or polysubstituted by halogen, phenyl, alkyl, alkoxy, alkylthio or perfluoroalkyl, each of up to 4 carbon atoms, cyano, carboxyl or alkoxycarbonyl, where alkoxy is of up to 4 carbon atoms, and may also be a salified azole radical if the azole ring contains 2 or 3 nitrogens,

and, as antagonist, an effective amount of at least one dichloroacetamide of the formula



(I)

where

R^1 is hydrogen, methyl or ethyl,

R^2 and R^3 are identical or different and are hydrogen, methyl or methoxy,

R^4 is hydrogen or methyl and

R^5 and R^6 are identical or different and are hydrogen or methyl, and

m is 0 or 1, n is 1 or 2, p is 0, 1 or 2 and q is 0, 1 or 2.

4,565,566

IMIDAZO-PYRROLO-PYRIDINE DERIVATIVES USEFUL AS HERBICIDAL AGENTS

Wilfried Draber, Wuppertal; Ludwig Eue, Leverkusen; Hans-Joachim Santel, Cologne, and Robert R. Schmidt, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

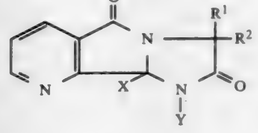
Filed Jul. 3, 1985, Ser. No. 752,214

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1984, 3425124; Jun. 7, 1985, 3520390

Int. Cl.⁴ A01N *43/48;* C07D *487/00;* C07F *7/02*

U.S. Cl. 71—92 **9 Claims**

1. An imidazo-pyrrolo-pyridine derivative of the formula



in which

R^1 and R^2 each independently is alkyl with C_1-C_8 carbon atom,

X is cyano, alkoxycarbonyl with C_1-C_8 carbon atoms or aminocarbonyl, and

Y is hydrogen or, if X is cyano, may also be trimethylsilyl.

8. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound according to claim 1.

4,565,567

HERBICIDAL HETEROCYCLIC ALKYLAMINOCARBONYLSULFONAMIDES

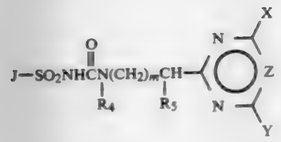
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 472,879, Mar. 14, 1983, Pat. No. 4,496,392, which is a continuation-in-part of Ser. No. 377,371, May 12, 1982, abandoned. This application Dec. 6, 1984, Ser. No. 678,881

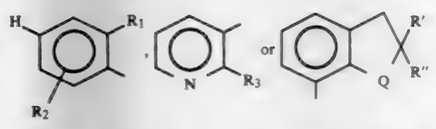
Int. Cl.⁴ C07D *239/42, 239/47;* A01N *47/28*

U.S. Cl. 71—92 **19 Claims**

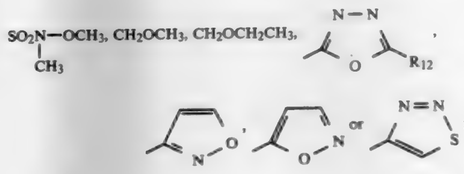
1. A compound of the formula:



wherein
J is



R_1 is NO_2, F, Cl, Br, CF_3, C_1–C_3 alkyl, $CH_2CH_2OCH_3$, CO_2R_6, $S(O)_nR_7$, $SO_2NR_8R_9$, SCF_2H, OR_{10}, OSO_2R_{11},



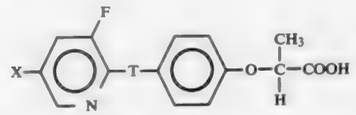
R_2 is H;
R_3 is Cl, SO_2CH_3 or $SO_2N(CH_3)_2$;
R_4 and R_5 are independently H or CH_3;
R_6 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, CH_2CH_2Cl or $CH_2CH_2OCH_3$;
R_7 is C_1–C_3 alkyl or $CH_2CH{=}CH_2$;
R_8 is CH_3;
R_9 is C_1–C_3 alkyl;
R_{10} is C_1–C_3 alkyl, CF_2H or $CH_2CH_2OCH_3$;
R_{11} is C_1–C_3 alkyl;
R_{12} is H or CH_3;
n is 0 or 2;
m is 0;
Q is O, S or SO_2;
R′ is H or CH_3;
R″ is H or C_1–C_3 alkyl;
Z is CH;
X is CH_3 or OCH_3;
Y is CH_3, C_2H_5, OCH_3, OC_2H_5, CH_2OCH_3, $CH(OCH_3)_2$ or



provided that
(1) R_4 and R_5 cannot simultaneously be CH_3; and
(2) when X and Y are both CH_3 then R_1 must be other than NO_2, $S(O)_nR_7$ or C_1–C_3 alkyl;
and their agriculturally suitable salts.

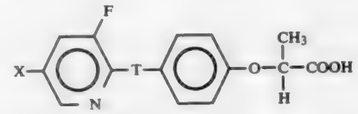
4,565,568
PYRIDYL(OXY/THIO)PHENOXY COMPOUNDS, HERBICIDAL COMPOSITIONS AND METHODS
Howard Johnston, Walnut Creek, and Lillian H. Troxell, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 389,840, Jun. 18, 1982, abandoned. This application May 23, 1983, Ser. No. 497,295
Int. Cl.⁴ C07D *213/64*; A01N *43/40*
U.S. Cl. 71—94 **12 Claims**

1. A compound having herbicidal activity and having the formula



wherein X is CF_3, CHF_2, $CClF_2$, Br or Cl and T is O or S, or a resolved "R" enantiomer thereof, and the agriculturally acceptable salts, esters, and mono- or disubstituted or unsubstituted lower alkyl and phenyl amides thereof, wherein the substituents are selected from lower alkyl, lower alkoxy, halo, cyano, nitro, hydroxy, amino or carboxyl.

9. A composition comprising an inert carrier in admixture with a herbicidally effective amount of a compound having the formula

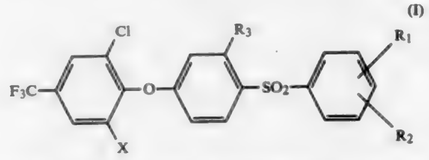


wherein X is CF_3, CHF_2, $CClF_2$, Br or Cl and T is O or S, or a resolved "R" enantiomer thereof, and the agriculturally acceptable salts, esters and mono- or disubstituted or unsubstituted lower alkyl and phenyl amides thereof, wherein the substituents are selected from lower alkyl, lower alkoxy, halo, cyano, nitro, hydroxy, amino or carboxyl.

4,565,569
DIPHENYL SULFONE COMPOUNDS, AND THEIR PRODUCTION AND USE
Hiroyuki Konishi, Sakai; Naganori Hino; Hiroshi Matsumoto, both of Toyonaka, and Ryo Yoshida, Kawanishi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Continuation-in-part of Ser. No. 441,381, Nov. 12, 1982. This application May 13, 1983, Ser. No. 494,453
Claims priority, application Japan, May 14, 1982, 57-81750; Aug. 6, 1982, 57-137790
The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.
Int. Cl.⁴ B21H *3/04*; C07C *147/107, 121/50*
U.S. Cl. 71—103 **17 Claims**

1. A diphenyl sulfone compound of the formula:

(I)

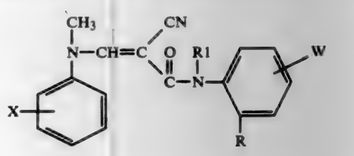


wherein R_1 and R_2 are, same or different, each a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy

group, a lower alkenyloxy group, a lower alkynyloxy group, a phenoxy group, a lower alkylthio group, a lower alkylsulfonyl group or a lower alkoxycarbonyl(lower)alkoxy group, R_3 is a hydroxyl group, a lower alkenyloxy group, a lower alkynyloxy group, a halo(lower)alkoxy group, a dihalo(lower)alkoxy group, a lower alkoxy(lower)alkoxy group, a cyano(lower)alkoxy group, a lower alkoxycyano(lower)alkoxy group, a hydroxy(lower)alkoxy group, a lower alkylcarbonyloxy group, a lower alkoxycarbonyl group, a lower alkylthio(lower)alkoxy group, a lower alkenyloxy(lower)alkoxy group, a di(lower)alkylamino(lower)alkoxy group, a hydroxyimino(lower)alkoxy group, a lower alkoxyimino(lower)alkoxy group, a lower alkylsulfonyloxy group, a lower alkoxycarbonyloxy group, a di(lower)alkoxyphosphinyloxy group, an oxotetrahydrofuranyloxy group, a tetrahydropyranyloxy group, a lower alkyl-1,3-oxolanyl(lower)alkoxy group or a group of the formula: —O—A—COR_4 (in which A is lower alkylene, lower alkenylene, lower alkyleneoxy, halo(lower)alkylene or lower alkoxy(lower)alkylene and R_4 is hydroxyl, lower alkyl, halo(lower)alkyl, lower alkoxy, lower alkenyloxy, lower alkynyloxy, halo(lower)alkoxy, lower alkoxy(lower)alkoxy, cyano(lower)alkoxy, lower alkoxycarbonyl(lower)alkoxy, di(lower)alkylamino, N-(α-lower alkyl(lower)alkylidene)aminoxy or lower alkylthio) and X is a hydrogen atom or a halogen atom.

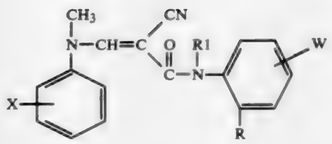
4,565,570
ARYLACRYLARYL AMIDES HERBICIDAL COMPOUNDS AND METHODS OF USE
Jeff K. Curtis, Berkeley, and William J. Michaely, Richmond, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.
Continuation-in-part of Ser. No. 560,367, Dec. 12, 1983, abandoned. This application Mar. 11, 1985, Ser. No. 710,195
Int. Cl.⁴ A01N *37/34*; C07C *121/78*
U.S. Cl. 71—105 **35 Claims**

1. A compound having the structural formula



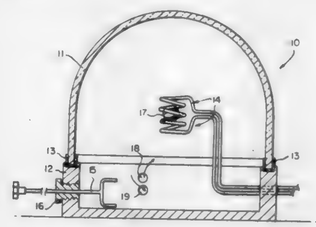
wherein
R is selected from the group consisting of fluorine, chlorine, bromine, iodine, methyl, ethyl, ethenyl, ethinyl, carboxaldehyde, methoxy, nitro, trifluoromethyl, cyano, —S-$(O)_nCH_3$ where n is 0, 1 or 2; —NH_2, —$NHCH_3$, —$N(CH_3)_2$ and —SO_2NH_2, provided that when R is hydrogen, W must be hydrogen and that when R is chlorine, W cannot be 4- or 6-chlorine;
R_1 is selected from the group consisting of hydrogen, C_1–C_3 alkyl or allyl;
W is selected from the group consisting of fluorine, chlorine, bromine, iodine, trifluoromethyl, methyl, C_1–C_3 thioalkyl, —$NHC(O)CH_3$ and methoxy provided that methoxy is not 4-methoxy; and
X is selected from the group consisting of a 2- or 3-fluorine, chlorine, bromine, iodine, thiomethyl, methyl and hydrogen.

19. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



wherein
R is selected from the group consisting of fluorine, chlorine, bromine, iodine, methyl, ethyl, ethenyl, ethinyl, carboxaldehyde, methoxy, nitro, trifluoromethyl, cyano, —S-$(O)_nCH_3$ where n is 0, 1 or 2; —NH_2, —$NHCH_3$, —$N(CH_3)_2$ and —SO_2NH_2, provided that when R is hydrogen, W must be hydrogen and that when R is chlorine, W cannot be 4- or 6-chlorine;
R_1 is selected from the group consisting of hydrogen, C_1–C_3 alkyl or allyl;
W is selected from the group consisting of fluorine, chlorine, bromine, iodine, trifluoromethyl, methyl, C_1–C_3 thioalkyl, —$NHC(O)CH_3$ and methoxy provided that methoxy is not 4-methoxy; and
X is selected from the group consisting of a 2- or 3-fluorine, chlorine, bromine, iodine, thiomethyl, methyl and hydrogen.

4,565,571
METHOD FOR PRODUCING LOW DENSITY POROUS METALS OR HOLLOW METALLIC SPHERES
Gholamreza J. Abbaschian, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.
Filed Sep. 22, 1983, Ser. No. 534,655
Int. Cl.⁴ C22B *4/00*
U.S. Cl. 75—0.5 C **24 Claims**



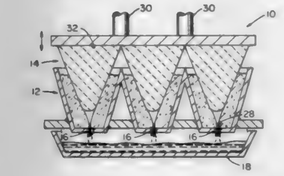
1. A method for the production of a low density, porous metallic structure comprising:
(a) forming from a particulate material containing at least one electrically conductive metal a porous article of sufficient green strength to be substantially self-supporting,
(b) subjecting said green porous article to an electromagnetic field which (i) has a field strength and frequency sufficient to exert a force in a direction such that the force of grvity acting on said green article is counterbalanced thereby levitating it in space, and (ii) has a frequency sufficient to induce an eddy current in said article of such intensity that the dissipation thereof produces sufficient heat to melt said electrically conductive metal, thereby entrapping the pores of said green article and any gases or non-electrically conductive particulate material contained therein, and
(c) cooling said article at a rate sufficient to solidify said molten metal and produce a low density, porous metal structure containing pores which contain any entrapped gases or non-electrically conductive particulate material.

4,565,572

PROCESS FOR RECOVERING METAL FROM ALUMINUM DROSS

Jan H. L. van Linden, Allison Park, Pa., and James S. Whitehead, Newburgh, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 29, 1984, Ser. No. 676,435
Int. Cl.[4] C22B *21/00*
U.S. Cl. 75—24 16 Claims



1. A method for the recovery of free aluminum metal from hot aluminum dross which forms on the surface of molten aluminum during aluminum melting operations, said dross containing free aluminum metal and a solids network, said method comprising the steps of:

(a) charging the hot dross from the aluminum melting operation into a receptacle having at least one inclined sidewall and at least one passageway extending through the bottom of the receptacle, said bottom passageway being sized and configured to permit the passage of free aluminum and inhibit the passage of said solids network;

(b) mechanically compacting the dross with a heated ram, said compacting applying a compressive force on the dross towards the inclined sidewall such that a substantial portion of the free aluminum separates from the dross and passes through the bottom passageway;

(c) maintaining the temperature of the hot dross during its collection in the receptacle and subsequent mechanical compaction so as to enhance the removal of free aluminum therefrom; and

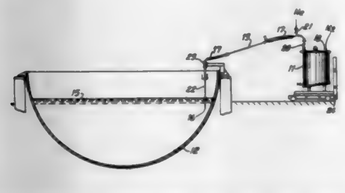
(d) collecting the free aluminum metal which passes through the bottom passageway.

4,565,573

PURIFICATION OF MOLTEN LEAD

Richard D. Symonds; Joseph E. Clapp, both of Salem, and Kenneth Buckley, Viburnum, all of Mo., assignors to Amax Inc., Greenwich, Conn.

Filed Apr. 22, 1985, Ser. No. 725,713
Int. Cl.[4] C22B *13/00*
U.S. Cl. 75—77 2 Claims



1. The process for recovering lead from lead dross which comprises the steps of

(1) establishing a bath of molten lead in a heated vessel, said molten lead bath having a surface,

(2) introducing molten sodium at a point sufficiently below said lead bath surface that said sodium alloys with said lead and does not escape from said bath, said sodium becoming alloyed with said lead up to about 1%, by weight, of said molten lead,

(3) placing preheated lead dross upon the surface of said alloyed molten lead bath

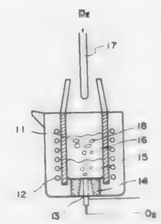
(4) reacting said molten lead alloy with said dross to remove sulfur from said dross, recover the lead content of said dross in said bath and thereby utilize substantially all the sodium content of said alloyed lead bath.

4,565,574

PROCESS FOR PRODUCTION OF HIGH-CHROMIUM ALLOY BY SMELTING REDUCTION

Hiroyuki Katayama; Hidetake Ishikawa; Masatoshi Kuwabara; Chikara Saito; Tuneyuki Inoue, and Masaki Fujita, all of Fukuokaken, Japan, assignors to Nippon Steel Corporation, Otemachi and Japan Metals and Chemicals Co., Ltd., Tokyo, both of, Japan

Filed Nov. 19, 1984, Ser. No. 673,174
Int. Cl.[4] C22C *33/00*
U.S. Cl. 75—130.5 8 Claims



1. A process for the smelting reduction of chromium ore or chromium oxide, comprising the step of pre-reducing said chromium ore or chromium oxide thereby obtaining a partially reduced product and the step of supplying said partially reduced chromium ore or chromium oxide, carbonaceous material, flux and oxidative gas to a top and bottom blowing converter thereby effecting smelting reduction of said partially reduced chromium ore or chromium oxide, wherein said step for the smelting reduction of chromium ore or chromium oxide is divided into two stages, i.e. the first stage for supplying said partially reduced chromium ore or chromium oxide, in conjunction with said carbonaceous material and said flux, into said top and bottom blowing converter, blowing said oxidative gas through a top blowing lance and blowing said oxidative gas and inactive gas, through a bottom blowing tuyere into a molten metal formed in said converter and, in the meantime, keeping the temperature of said molten metal below 1,650° C. and controlling the amounts of the materials supplied through said bottom blowing tuyere into said molten metal so that the ratio of the volume of the gas generated by said materials to the total weight of said molten metal and slag will fall in the range of 100 to 2,500 [Nl/min.t] and the second stage for discontinuing the supply of the materials including said partially reduced chromium ore or chromium oxide, keeping the temperature of said molten metal below 1,650° C., controlling the amounts of said materials supplied through said bottom blowing tuyere into said molten metal so that the ratio of the volume of the gas generated by said materials to the total weight of said molten metal and slag will fall in the range of 100 to 1,800 [Nl/min.t], supplying said carbonaceous material so as to give free carbonaceous material in an amount, C_F, satisfying the following formula:

$$\frac{C_F}{\text{Amount of slag}} \geqq 20 \text{ kg/t}$$

wherein $C_F = W_c - 0.54\ [(\bar{a}+\bar{b})/100]V$, W_c standing for the accumulative value (kg) of the carbon content of the carbonaceous material supplied, $\bar{a}$ and $\bar{b}$ each of the integral averages of CO% and CO_2% in the waste gas composition, and V for

the flow volume of the waste gas (Nm^3), and supplying CaO and other substances so as to give a slag composition satisfying the following formulas

$$\frac{(CaO\ \%) + 1.39\ (MgO\ \%)}{(SiO_2\ \%) + 1.18\ (Al_2O_3\ \%)} = 0.7 \text{ to } 1.5$$

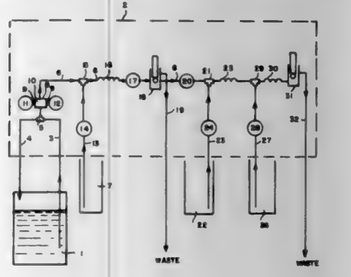
$$(\%\ Al_2O_3) \leqq 25\%.$$

4,565,575

APPARATUS AND METHOD FOR AUTOMATICALLY MAINTAINING AN ELECTROLESS PLATING BATH

William J. Cardin, Merrimack, N.H.; Michael Gulla, Sherborn, Mass., and Charles L. Newton, Clearwater, Fla., assignors to Shipley Company Inc., Newton, Mass.

Filed Nov. 2, 1984, Ser. No. 667,738
Int. Cl.[4] C23C *3/02*
U.S. Cl. 106—1.22 6 Claims



1. In a method for automatically maintaining consumable components of an electroless metal plating solution at predetermined concentration in a plating tank while workpieces are being processed in the tank comprising the steps of:

withdrawing a sample stream of the plating solution from the tank at a predetermined constant rate and passing the sample stream through a sequence of analyzing stations to a point of discharge; and subjecting the stream to analysis of the consumable components of the plating solution; the improvement comprising

introducing a plating solution poison capable of inhibiting the plating of metal from solution into the sample stream at a predetermined rate.

4,565,576

PRINTING INK OF NEW TYPE AND PROCESS FOR PREPARING SAME

Vilmos Salgó; József Hanzély; Anna Baross née Sipöcz, and István Geri, all of Budapest, Hungary, assignors to Budacolor Festekgyar, Budapest, Hungary

Filed Oct. 29, 1982, Ser. No. 437,672
Claims priority, application Hungary, Dec. 30, 1981, 3190/81
Int. Cl.[4] C09D *11/02*
U.S. Cl. 106—23 5 Claims

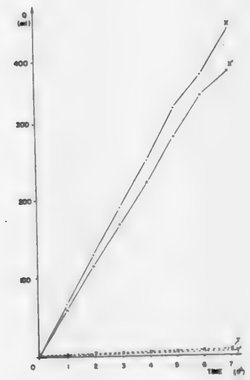
1. A printing ink which comprises pigment(s) dispersed in a fluid vehicle phase, wherein two pigments of different particle size are present, the average particle size of one pigment being 0.1 to 0.9 μm and its amount, related to the total ink weight, being 3 to 27% by weight, the average particle size of the other pigment being 2 to 15 μm, and its amount, related to the total ink weight, being 4 to 37% by weight.

4,565,577

POLLUTANT-RESISTANT SEALING COMPOSITION

Rudolf Burkhardt, Troisdorf, and Hansjürgen Hass, Troisdorf-Spich, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Jul. 24, 1984, Ser. No. 634,317
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1983, 3326836
Int. Cl.[4] C04B *7/00*
U.S. Cl. 106—85 5 Claims



1. A pollutant-resistant composition for sealing walls and other soil barriers comprising expandable clay minerals present in an amount of 1 to 8 wt.-% of the composition, hydraulic binding agents settable by water without activators, fillers and water, a trialkoxysilane of the formula $R—Si(OR')_3$ in an amount of 0.5 to 5 wt.-% with respect to the solid content of the composition, in which R represents an aliphatic moiety having 2 to 6 carbon atoms and R' is hydrogen or identical or different alkyl moieties of 1 to 4 carbon atoms, or their hydrolysis products, and alkali aluminates in such amounts that their Al_2O_3 content corresponds to 0.01 to 1.5 wt.% of the solid content of the composition.

4,565,578

GAS GENERATION RETARDED ALUMINUM POWDER FOR OIL FIELD CEMENTS

David L. Sutton, and John F. Burkhalter, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Feb. 26, 1985, Ser. No. 705,599
Int. Cl.[4] C04B *7/02*
U.S. Cl. 106—87 20 Claims

13. A method of forming a gas generation retarded oil field cement comprising the steps of:

dry blending a hydraulic cement with an essentially dry gas generation retarded aluminum powder to form a mixture thereof, said gas generation retarded aluminum powder being formed by:

dissolving an effective amount of an aluminum reaction rate retarder in an organic solvent, said retarder being selected from the group consisting of sorbitan monooleate, glycerol monoricinoleate, sorbitan monoricinoleate, sorbitan monotallate, pentaerythritol monoricinoleate, sorbitan monoisostearate, glycerol monostearate, sorbitan monostearate and mixtures thereof;

mixing aluminum powder with the resulting solution whereby said aluminum powder is wetted with said solution; and then

drying said aluminum powder by vacuum evaporating and removing said organic solvent therefrom; and

mixing said cement retarded aluminum powder mixture with

a sufficient amount of water to form a pumpable cement slurry.

4,565,579

NONEXPLOSIVE CHEMICAL COMPOSITION FOR GENTLY BREAKING ROCK OR CONCRETE MASS

Isami Fujioka; Kazutoshi Imada; Motoyasu Nishimura, and Takayuki Ishibashi, all of Ube, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Oct. 26, 1983, Ser. No. 545,695

Claims priority, application Japan, Oct. 28, 1982, 57-188238; Jul. 22, 1983, 58-132822

Int. Cl.⁴ C04B *2/02, 7/34;* **B02C** *19/00*

U.S. Cl. 106—118 **14 Claims**

1. A chemical composition for gently breaking a rock or concrete mass, the composition comprising a principal component which is prepared by calcining a starting mixture comprising 100 parts by weight of quick lime, 1 to 20 parts by weight of calcium fluoride and an additional fluoride which gives CaF_2 by reaction with CaO, said calcining performed at a temperature of from about 800° C. to about 1400° C. to produce a sintered starting mixture;

wherein the amount of said additional fluoride in said starting mixture is sufficient to produce an additional amount of CaF2 of from 0.5 to 10 parts by weight per 100 parts by weight of said quick lime, and wherein said additional fluoride is selected from the group consisting of NaF, KF, AlF_3, NH_4F, HF, Na_3AlF_6 and Na_2SiF_6.

11. A chemical composition for gently breaking a rock or concrete mass, the composition comprising a principal component which is prepared by calcining a starting mixture comprising 100 parts by weight of quick lime and 1 to 20 parts by weight of calcium fluoride at a temperature of from about 800° C. to about 1400° C. to produce a sintered starting mixture, said composition further comprising a hydration retarding agent which is selected from the group consisting of glycine, alanine, valine, leucine, aspartic acid, glutamic acid, lysine, arginine, methionine, cystine, cystein and phenylalanine, and salts thereof, in amounts to up to 10% by weight of said principal component.

4,565,580

SUBSTRATE CONSISTING OF REGENERATED COLLAGEN FIBRILS AND METHOD OF MANUFACTURING SAME

Teruo Miyata, Tokyo, and Shinichi Namiki, Ome, both of Japan, assignors to Koken Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1984, Ser. No. 586,944

Claims priority, application Japan, Mar. 10, 1983, 58-39597

Int. Cl.⁴ C08L *89/00*

U.S. Cl. 106—124 **9 Claims**



1. A collagen-containing substrate in the shape of a microsphere, said microsphere comprising irregularly entangled regenerated collagen fibrils having a diameter of 10–1000 mμ and an aqueous solution existing between the regenerated collagen fibrils, the content of the regenerated collagen fibrils being 20–0.01 wt. %.

4,565,581

NACREOUS PIGMENTS HAVING IMPROVED LIGHT FASTNESS, THEIR PREPARATION AND USE

Horst Bernhard, Schwarzenberg, Austria, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,048

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151343

Int. Cl.⁴ C08K *7/18;* **C09C** *3/06*

U.S. Cl. 106—308 B **21 Claims**

1. Nacreous pigments having improved light fastness comprising mica platelets whose surfaces are coated with a layer comprising titanium dioxide and which are coated with a thin top layer comprising manganese oxide, wherein the amount of manganese oxide is about 0.05–0.5% by weight, relative to total pigment weight.

4,565,582

LACTULOSE PURIFICATION PROCESS

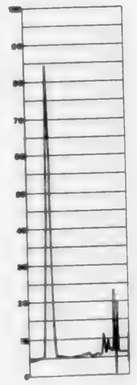
Andrea Filippini, Prato, and Renato Carobbi, Pistoia, both of Italy, assignors to SIRAC S.p.A., Milan, Italy

Filed Jul. 16, 1984, Ser. No. 631,105

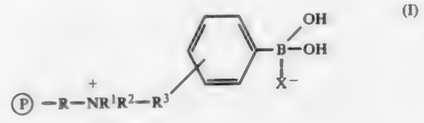
Claims priority, application Italy, Mar. 22, 1984, 20176 A/84

Int. Cl.⁴ C13D *3/12*

U.S. Cl. 127—46.1 **7 Claims**



1. a process for purifying lactulose from other carbohydrates, comprising: passing an aqueous lactulose solution containing 5–40% of carbohydrates through one or more columns containing a bifunctionalized boron resin of the formula



(I)

in which

Ⓟ is a polyacrylic or polystyrene matrix

R and R^3, are the same or different,

and have the formula $-(CH_2)_n-$

wherein n is between 0 and 5

R^1 and R^2 are the same or different, and have the formula C_1–C_5 alkyl and

X^- is an anion selected from the group consisting of hydroxyl and halides.

4,565,583

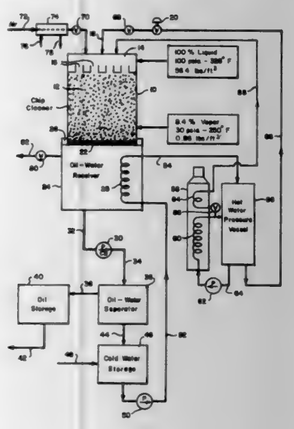
PROCESS FOR REMOVING OIL FROM METAL CHIPS

Henry J. Venetta, Trumull County, Ohio, assignor to Inductotherm Corporation, Rancocas, N.J.

Filed Apr. 24, 1984, Ser. No. 603,503

Int. Cl.⁴ B08B *3/04*

U.S. Cl. 134—12 **37 Claims**



1. A process for removing oil from metal chips with an aqueous stream comprising disposing a bed of metal chips coated with oil within a pressure vessel provided with inlet conduit means and discharge opening means, passing through said inlet conduit means a continuous stream of liquid feed water at a superatmospheric pressure sufficiently high to maintain the water in said inlet conduit means substantially in the liquid phase, passing said stream of water into said vessel and through said bed of metal chips, the temperature and velocity of the water being sufficiently high to remove oil from the chips without substantial vaporization of said oil or said liquid water, maintaining a superatmospheric pressure within said vessel, said oil being removed from said chips and forming an oil-water mixture, and continously removing said oil-water mixture from said vessel through said discharge opening means.

4,565,584

METHOD OF PRODUCING SINGLE CRYSTAL FILM UTILIZING A TWO-STEP HEAT TREATMENT

Masao Tamura, Tokorozawa; Makoto Ohkura, Hachioji; Masanobu Miyao, Tokorozawa; Nobuyoshi Natsuaki, Kodaira; Naotsugu Yoshihiro, Matsudo; Takashi Tokuyama, Higashikurume, and Hiroshi Ishihara, Ohta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1983, Ser. No. 460,801

Claims priority, application Japan, Jan. 29, 1982, 57-11635

Int. Cl.⁴ H01L *21/263, 21/205*

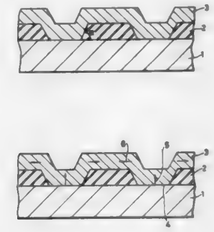
U.S. Cl. 148—1.5 **8 Claims**

1. A method of producing a single crystal film, comprising:

(1) the step of depositing an insulating film which has a desired plane shape, on a surface of a single crystal substrate,

(2) the step of depositing an amorphous or polycrystalline film in an atmosphere of ultra-high vacuum, said film continuously covering exposed surface parts of said single crystal substrate and said insulating film, and

(3) the step of turning said amorphous or polycrystalline film into a single crystal by solid phase epitaxial growth, said step of turning including a first heat treatment, at a temperature of not lower than approximately 200° C., which is conducted in the ultra-high vacuum atmosphere, and a second heat treatment, at a temperature of approximately



500°–1000° C., which is conducted in a non-oxidizing atmosphere.

4,565,585

METHOD FOR FORMING A CHEMICAL CONVERSION PHOSPHATE FILM ON THE SURFACE OF STEEL

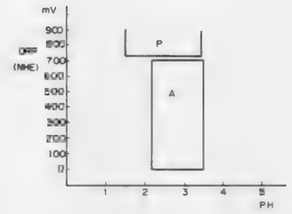
Shigeki Matsuda, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 16, 1984, Ser. No. 641,484

Claims priority, application Japan, Aug. 19, 1983, 58-152150

Int. Cl.⁴ C23F *7/10*

U.S. Cl. 148—6.15 R **10 Claims**



1. A method of forming a chemical conversion phosphate film on the surface of steel parts comprising the steps of:

(a) bringing said steel parts into contact with a conversion bath containing materials participating in the chemical conversion reactions, including a conversion-coating agent, an oxyacid anions, and an oxidizer, and maintaining the conversion bath within the range of from 0° C. to 40° C.;

(b) predetermining a hydrogen-ion concentration (pH) of the conversion bath in the range of from pH 2.2 to pH 3.5 and oxidation reduction potential (ORP) of the conversion bath in a range of from 0 mV to 700 mV (normal hydrogen electrode potential), so that concentrations of said materials is controlled and maintained to form said chemical conversion phosphate film on the surface of the steel parts, and further, that said pH an ORP ranges in combination with said temperature range produce, in step (a), a relationship between the concentration of said oxidizer said ORP, indicating at a given ORP value of the concentration of said oxidizer;

(c) measuring the hydrogen-ion concentration of the conversion bath during the step (a);

(d) measuring an oxidation reduction potential (ORP) of said conversion bath during the step (a);

(e) replenishing a main agent containing phosphate ions, when the measured pH rises above a value predetermined within said range of pH 2.2 to 3.5;

(f) replenishing said oxidizer, when the measured ORP de-

creases to less than a value predetermined within said range of 0 to 700 mV;

(g) when, due to an increase in a relative amount of the oxyacid anions to conversion-coating agents, said measured pH value falls below a value predetermined within said range of pH 2.2 to 3.5, replenishing alkali and thereby removing the oxyacid anions by added alkali, and maintaining concentrations of said materials to form said chemical conversion phosphate film;

(h) repeating replenishing steps (e), (f), and (g) during the step (a) as required, thereby maintaining said concentrations of materials during the chemical conversion of steel parts.

4,565,586

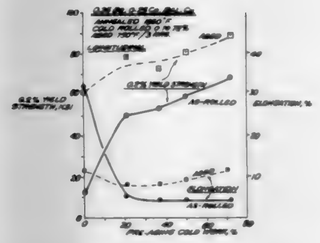
PROCESSING OF COPPER ALLOYS

Nathan L. Church, Chagrin Falls; W. Raymond Cribb, Mentor, and John C. Harkness, Lakewood, all of Ohio, assignors to Brush Wellman Inc., Cleveland, Ohio

Filed Jun. 22, 1984, Ser. No. 623,463

Int. Cl.⁴ C22F *1/08*

U.S. Cl. 148—12.7 C **6 Claims**



1. The method for producing copper beryllium alloy material made from an alloy consisting essentially of about 0.05% to about 0.5% beryllium, about 0.05% to about 0.5% cobalt and the balance essentially copper which comprises providing said alloy in a wrought intermediate form, solution treating said alloy at a temperature between about 1450° F. (790° C.) and about 1850° F. (1000° C.) for a time sufficient to effect recrystallization and solid solution of that portion of the alloying elements capable of contributing to precipitation hardening, final cold working the solution treated alloy to at least about 70% reduction in area and aging the cold worked alloy at a temperature in the range of about 600° F. (315° C.) to about 1000° F. (540° C.) for less than one to about 8 hours to effect precipitation hardening with accompanying substantial increase in stress relaxation resistance, formability, ductility, conductivity and strength.

4,565,587

PERMANENT MAGNET ALLOY

Kalatur S. V. L. Narasimhan, Monroeville, Pa., assignor to Crucible Materials Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 468,903, Feb. 23, 1983, abandoned. This application Dec. 23, 1983, Ser. No. 564,667

Int. Cl.⁴ C04B *35/00*

U.S. Cl. 148—31.57 **2 Claims**

1. A permanent magnet of R_2Co_{17} type crystal structure consisting essentially of in percent by weight samarium 25.1, cobalt 48.7, copper 3.9, iron 19.7 and zirconium 2.6, said magnet having been formed by cold isostatic pressing.

4,565,588

METHOD FOR DIFFUSION OF IMPURITIES

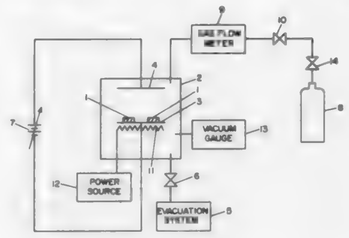
Yasukazu Seki, Tokyo, and Noritada Sato, Yokosuka, both of Japan, assignors to Fuji Electric Corporate Research and Development Ltd., Japan

Filed Oct. 10, 1984, Ser. No. 659,360

Claims priority, application Japan, Jan. 20, 1984, 59-8795

Int. Cl.⁴ H01L *21/385*

U.S. Cl. 148—186 **18 Claims**



1. A method for diffusion of a desired impurity into a semiconductor substrate, wherein said impurity is capable of acting as a donor or acceptor in a semiconductor, which comprises introducing the impurity into a liquid of high volatility in which the impurity is highly soluble, applying the resultant solution to the semiconductor substrate, drying the semiconductor substrate, and exposing the dried semiconductor substrate to an inactive gas plasma at a temperature less than 300° C., thereby diffusing the impurity into said semiconductor substrate.

4,565,589

NICKEL/TITANIUM/COPPER SHAPE MEMORY ALLOY

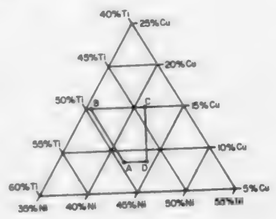
John D. Harrison, Watsonville, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 355,274, Mar. 5, 1982, abandoned. This application Sep. 28, 1983, Ser. No. 537,316

The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.⁴ C22C *19/03*

U.S. Cl. 148—402 **4 Claims**



1. A shape memory alloy consisting essentially of nickel, titanium, and copper within an area defined on a nickel, titanium, and copper ternary composition diagram by a quadrilateral with its first vertex at 42.5 atomic percent nickel, 50.0 atomic percent titanium, and 7.5 atomic percent copper; its second vertex at 36.0 atomic percent nickel, 50.0 atomic percent titanium, and 14.0 atomic percent copper; its third vertex at 41.5 atomic percent nickel, 44.5 atomic percent titanium, and 14.0 atomic percent copper, and its fourth vertex at 44.75 atomic percent nickel, 47.75 atomic percent titanium, and 7.5 atomic percent copper.

4,565,590

SILVER AND METAL OXIDES ELECTRICAL CONTACT MATERIAL AND METHOD FOR MAKING ELECTRICAL CONTACTS

Joachim Grosse, Erlangen; Güenter Tiefel, Fuerth, and Wolfgang Haufe, Heasdorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich

Filed Jan. 23, 1985, Ser. No. 693,717

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1984, 3403115; Jul. 30, 1984, 3428070

Int. Cl.⁴ C22C *1/05, 5/06, 32/00;* H01H *1/02*

U.S. Cl. 148—431 **18 Claims**

1. A material for electrical contacts, comprising:
5–20 percent by mass SnO_2;
0.1–5 percent by mass Ta_2O_5;
0.1–5 percent by mass CuO;
0.1–5 percent by mass Bi_2O_3; and
the balance being substantially silver.

13. A method for making electrical contact studs, comprising: processing the material of claim 1 in powder form; pressing the material; sintering the material; repressing the material; and producing the material in a ribbon-shaped form.

4,565,591

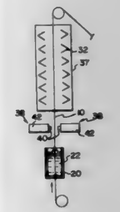
METHOD AND APPARATUS FOR MAKING A MAGNETICALLY LOADED INSULATED ELECTRICAL CONDUCTOR

Michael A. Shannon, Glenburnie, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 6, 1984, Ser. No. 597,647

Int. Cl.⁴ H01B *13/06*

U.S. Cl. 156—51 **15 Claims**



1. A method of making an insulated electrical conductor comprising a solid conductor having an insulation layer formed from a dielectric carrier provided with a plurality of magnetically permeable particles homogeneously dispersed therein, wherein said method comprises applying the layer to the solid conductor with the dielectric carrier in fluid form and passing the solid conductor along a feedpath and axially through the windings of a coil which is energized to create a magnetic field and the field causes an increase in magnetization of magnetic domains of the particles towards the axial direction of the conductor while maintaining the particles homogeneously dispersed.

4,565,592

AUTOMATED MANUFACTURING MONITORING

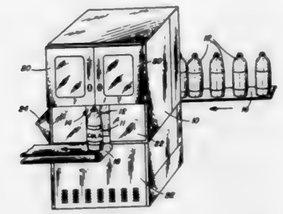
Rick Wehrmann, Twinsburg, and Robert Haby, Stow, both of Ohio, assignors to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Jul. 2, 1984, Ser. No. 626,731

Int. Cl.⁴ B65H *23/18*

U.S. Cl. 156—64 **23 Claims**

1. A process where one or more operations are repetitively performed on a connected series of like objects, said process inlcuding the steps of:
moving said objects in turn to a first work station
and separating a first of said objects from the series;
monitoring the separation of said first object in anticipation of performing said one or more operations;



moving said first object along a path of travel based upon said monitoring step to a second work station; and
performing said one or more operations on said object.

4,565,593

CONNECTION AND INSPECTION OF OPTICAL FIBRES BY FUSION SPLICING

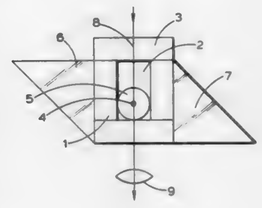
Donald Marr, Ufford, Great Britain, assignor to British Telecommunications, London, England

Filed Oct. 5, 1983, Ser. No. 539,166

Claims priority, application United Kingdom, Oct. 8, 1982, 8228877

Int. Cl.⁴ B65H *69/06*

U.S. Cl. 156—64 **20 Claims**



17. A method of connecting and inspecting the tail ends of two optical fibers, each fiber having a core and a cladding, said method comprising the steps of:
(a) fusion splicing at least the cores of said fiber tail ends;
(b) adhesively assembling the resulting fused splice and adjacent portions of the two optical fibers within a transparent support member having generally planar opposed first and second side faces, each face being generally parallel to the longitudinal axis of the spliced fiber, using a transparent adhesive approximately matched in refractive index to the refractive index of the fiber cladding; and
(c) transmitting light transversely through said spliced fiber by passing it into said first side face of the assembly and out of said second opposite side face and forming an image of said fused splice using said transmitted light.

4,565,594

LOW NOISE CABLE CONSTRUCTION

Horst Kuettner, Huntington, N.Y., assignor to Thermax Wire Corporation, Flushing, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,566

Int. Cl.⁴ H01B *13/00*

U.S. Cl. 156—47 **1 Claim**

1. The method of manufacturing a low noise electrical cable including at least one centrally disposed conductor, a dielectric sleeve and an outer conductive sheath which includes the steps of shorting the sheath to the conductor, and while maintaining the short, subjecting the cable to temperatures below the melt-

ing point of the dielectric and above any transition points for a period of time sufficient to completely change all crystalline



structure of the material of the dielectric to amorphous state, and gradually reducing the temperature of the cable to room temperature.

4,565,595

METHOD OF MAKING COMPOSITE AIRCRAFT WING

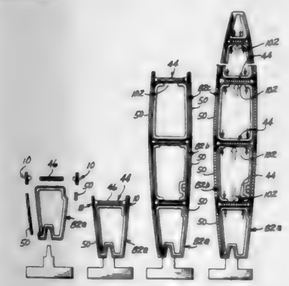
Philip C. Whitener, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US83/00893, § 371 Date Jun. 6, 1983, § 102(e) Date Jun. 6, 1983, PCT Pub. No. WO84/04905, PCT Pub. Date Dec. 20, 1984

Continuation-in-part of Ser. No. 333,247, filed as PCT US81/01319, Sep. 30, 1981, published as W083/01238, Apr. 14, 1983, § 102(e) date Sep. 30, 1981, Pat. No. 4,395,450. This PCT application Jun. 6, 1983, Ser. No. 514,283

Int. Cl.⁴ B64C *3/18;* **B32B** *5/00*

U.S. Cl. 156—156 **8 Claims**



1. A method of preparing a contoured composite structure, with steps comprising: wrapping resin impregnated nonmetallic reinforcing fibers around a plastic covering on each of a series of individually contoured elongated mandrels, arranging the wrapped mandrels in a line and in spaced relation to each other, locating a pair of reinforced load bearing joints and a honeycomb core at each spacing between wrapped mandrels, placing honeycomb core between the load bearing joints along the sides of the wrapped mandrels, covering the sides with a preformed reinforced skin, establishing the outside contour of the skin by placing the built up composite structure in a mold and introducing pneumatic pressure around each mandrel forcing all parts together in the mold, and curing into a contoured composite structure.

4,565,596

TAPERED CONTAINER LABELING APPARATUS AND METHOD

Henry W. Clowe, 3600 Old Canton Rd., Jackson, Miss. 39216

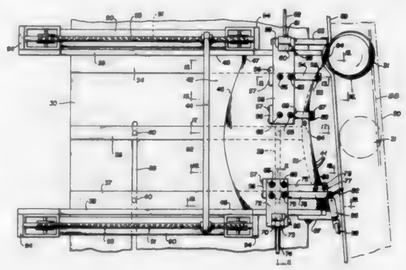
Filed Nov. 20, 1984, Ser. No. 673,366

Int. Cl.⁴ B65C *3/16, 9/04*

U.S. Cl. 156—215 **13 Claims**

1. A method of labeling conically tapered containers comprising transporting the containers in succession along a linear path while rotating them in one direction on their cone axes, applying glue to the conically tapered peripheries of the containers during their transport, positioning labels in a stack on edge adjacent to one side of the linear movement path of the containers, configuring the labels in the stack so that at least the forwardmost label is twisted between its upstream and downstream ends with its upstream end substantially vertically disposed and its downstream end forwardly inclined from bottom-to-top and with the inclination of the label progressively increasing from its upstream to its downstream end, and engaging the glued periphery of each container with the upstream end of the forwardmost label in the stack and progressively withdrawing the forwardmost label from the stack between its upstream and downstream ends and during such withdrawal wrapping the label around and adhering it to the tapered periphery with the ends of the label in substantial alignment following application to the container.

6. A tapered container labeling apparatus comprising a bed plate, fixed and adjustable parallel spaced label guide rails on the bed plate, a contoured label stack pusher block engaged with said guide rails, a substantially constant pressure label stack feed means engaged with the rear of the pusher block, an on-edge stack of labels having their lower edges engaged with



said rails and the rear of said stack being engaged with a forward contoured face of said pusher block, a system of upper and lower laterally spaced knives on the bed plate adapted to engage the forward labels in the stack at laterally spaced points along and near their upper and lower edges to impart to the labels a longitudinally twisted configuration between their upstream and downstream ends and a progressively forwardly inclined disposition between their upstream and downstream ends, means to convey upwardly tapering and rotating containers horizontally in succession across the front of the stack of labels with glue applied to the tapered peripheries of the containers whereby the tapered peripheries of the containers can engage the upstream ends of labels and separate them from the front of the stack while winding them around the tapered peripheries, and means to apply glue to the downstream end forward faces of labels in said stack whereby the downstream ends can adhere to the upstream ends of labels applied to said tapered peripheries.

4,565,597

METHOD FOR PRODUCING A VENEER WEB

Gerhard Schülte, Blomberg, Fed. Rep. of Germany, assignor to Blomberger Holzindustrie, B. Hausmann GmbH & Co, KG, Blombeg, Fed. Rep. of Germany

Continuation of Ser. No. 491,484, May 4, 1983, abandoned. This application Apr. 19, 1985, Ser. No. 724,936

Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3217063

Int. Cl.⁴ B32B *31/00*

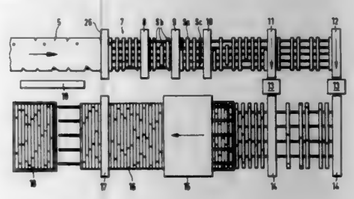
U.S. Cl. 156—250 **6 Claims**

1. A method for producing a veneer web by joining individual veneer strips of limited length and width, said strips being cut from a raw veneer sheet in dependence on fault areas and quality variations thereof, comprising the steps of:

(a) dividing the raw veneer substantially parallel to the fiber direction into strips of equal width independently of the dimensions of the finished veneer web,

(b) trimming the non-usable longitudinal sections of strips having partially unacceptable faults along their longitudinal extent for obtaining equal width strip sections of effectively usable length,

(c) eliminating strips having no effectively usable sections as well as the non-usable sections trimmed off the usable strip sections,



(d) joining the usable strip sections and any usable full length strips in their longitudinal direction for obtaining an endless strip, and dividing the same into strip lengths all of equal width, and

(e) joining the thus obtained strips, all of equal width, transversely to their longitudinal direction for obtaining a veneer web.

4,565,598

METHOD AND APPARATUS FOR CONTROLLING DIAMETER IN CZOCHRALSKI CRYSTAL GROWTH BY MEASURING CRYSTAL WEIGHT AND CRYSTAL-MELT INTERFACE TEMPERATURE

Robert S. Seymour, Adelaide, Australia, assignor to The Commonwealth of Australia, Canberra, Australia

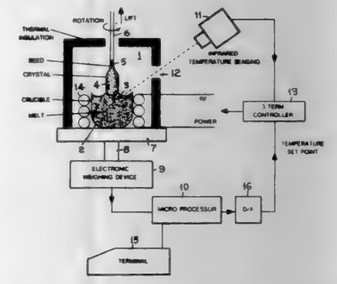
PCT No. PCT/AU82/00216, § 371 Date Aug. 11, 1983, § 102(e) Date Aug. 11, 1983, PCT Pub. No. WO83/02464, PCT Pub. Date Jul. 21, 1983

PCT Filed Dec. 22, 1982, Ser. No. 527,516

Claims priority, application Australia, Jan. 4, 1982, PF2151

Int. Cl.⁴ C30B *15/28;* **G06F** *15/46*

U.S. Cl. 156—601 **8 Claims**



1. A method of diameter control in Czochralski crystal growth which comprises the steps of:

(a) drawing a crystal-forming material from a melt in a crucible at a controlled rate and progressively measuring both the temperature of the melt and the weight of the residue of the melt in the crucible;

(b) feeding the weight measurement data obtained according to step (a) to a microprocessor of the type including a control algorithm to obtain an output; and

(c) feeding the temperature measurement and the microprocessor output to a threee term temperature controller which regulates the temperature of the melt and thereby controls automatically the diameter of the crystal.

4,565,599

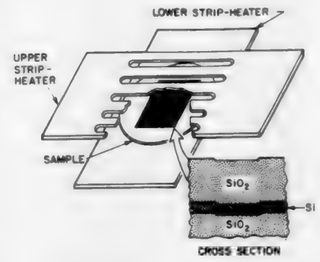
GRAPHOEPITAXY BY ENCAPSULATION

Michael W. Geis, Acton; Henry I. Smith, Sudbury; Dimitri A. Antoniadis, Brookline, and Dale C. Flanders, Lexington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 332,553, Dec. 21, 1981, abandoned, which is a continuation of Ser. No. 181,102, Aug. 25, 1980, abandoned. This application Dec. 10, 1984, Ser. No. 680,237

Int. Cl.⁴ C30B *1/08*

U.S. Cl. 156—603 **7 Claims**



1. A method of enhancing epitaxy or preferred orientation in a silicon film on a silicon dioxide substrate which method includes the steps of depositing a silicon film to be oriented on the surface of a solid silicon dioxide substrate,

depositing a cap of material over said film to be oriented prior to crystallizing said film so that said cap coacts with said substrate and helps enhance epitaxy or preferred orientation in said film when said film is crystallized,

and applying heat to said film while sandwiched between said cap and said substrate to crystallize said film.

4,565,600

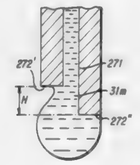
PROCESSES FOR THE CONTINUOUS PREPARATION OF SINGLE CRYSTALS

Jean Ricard, Grenoble, France, assignor to Criceram, Paris, France

Continuation of Ser. No. 257,968, Apr. 27, 1981, abandoned, and a continuation of Ser. No. 764,641, Feb. 1, 1977, abandoned, which is a continuation of Ser. No. 712,706, Aug. 9, 1976, abandoned. This application May 11, 1983, Ser. No. 492,368

Int. Cl.⁴ C30B *15/34*

U.S. Cl. 156—608 **17 Claims**



1. A continuous process for the preparation of single crystals having a predetermined shape, which process comprises:

(a) charging the crystal-forming material to a crucible tapped in its lower region by a capillary conduit with a height greater than or equal to the retention height of the melted crystal-forming material in the capillary at the temperature and pressure used,

(b) bringing th crystal-forming material to a temperature above its melting point so as to form a drop at the lower end of the capillary,

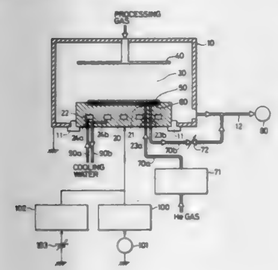
(c) contacting a preformed seed crystal having a selected crystal orientation with the drop, and
(d) pulling the seed crystal in contact with the drop downwardly away from the crucible to form a single crystal, at a growth front between the crystal and the melted crystal-forming material, the quantity of crystal-forming material fed per unit of time being substantially equal to the amount of material pulled into the single crystal and the force at the growth front being substantially nil.

4,565,601

METHOD AND APPARATUS FOR CONTROLLING SAMPLE TEMPERATURE

Yutaka Kakehi, Hikari; Norio Nakazato, Kudamatsu; Yoshimasa Fukushima, Hikari; Kousai Hiratsuka, Kudamatsu; Fumio Shibata, Kudamatsu; Noriaki Yamamoto, Kudamatsu, and Tsunehiko Tsubone, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1984, Ser. No. 675,863
Claims priority, application Japan, Nov. 28, 1983, 58-166647
Int. Cl.[4] B44C *1/22*; **C03C** *15/00, 25/06*; **C23F** *1/02*
U.S. Cl. 156—643 **20 Claims**



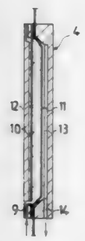
1. A method for controlling the temperature of a sample comprising electrostatically attracting a sample to be mounted on a sample stand and processed in a vacuum and supplying a heat transmission gas to the gap between the under surface of said sample thus electrostatically attracted and said stand.

4,565,602

METHOD FOR TREATING CELLULOSE OBTAINED FROM CELLULOSE COOKING PROCESS

Juhani Haartti, Taipalsaari; Pertti Heitto, Espoo; Jaakko J. Helsto, Helsinki, and Nuutti Vartiainen, Saimaanharju, all of Finland, assignors to Larox Oy, Lappenranta, Finland

Filed Feb. 8, 1984, Ser. No. 578,127
Claims priority, application Finland, Feb. 17, 1983, 830542
Int. Cl.[4] D21C *9/02*
U.S. Cl. 162—56 **7 Claims**



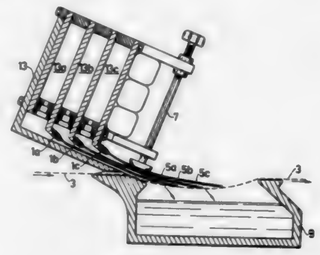
1. A method for treating cellulose obtained from a pulp digestion process for paper making purposes, the treatment being carried out in a chamber filter comprising a filter cloth and a compression membrane defining therebetween a chamber for the intake of the cellulose to be treated, as well as a first space on the other side of the compression membrane for the intake of a compression medium and a second space on the other side of the filter cloth for receiving and disposing of materials separated from the cellulose, said method comprising the steps of:
(a) feeding into said chamber defined by said filter cloth and said membrane a cellulose pulp slurry containing waste digestion liquor
(b) introducing into said first space a pressurized medium to compress said membrane and pulp and separate said waste digestion liquor from the cellulose through said filter cloth and into said second space;
(c) removing said compression medium from said first space;
(d) feeding water into said chamber to wash said cellulose and removing the resulting wash liquor through said second space;
(e) feeding a bleaching medium into said chamber to bleach said cellulose;
(f) passing a drying medium through said cellulose while retaining it in said chamber; and
(g) removing the cellulose from said chamber.

4,565,603

METHOD AND DEVICE FOR REDUCING DISTURBANCES DURING PAPER WEB FORMATION

Per L. Reiner, Matfors, and Sven U. T. Aberg, Mölnlycke, both of Sweden, assignors to Molnlycke Aktiebolag, Gothenburg, Sweden

Continuation of Ser. No. 412,965, Aug. 30, 1982, abandoned, which is a continuation of Ser. No. 220,029, Dec. 1, 1980, abandoned. This application May 31, 1984, Ser. No. 615,667
Claims priority, application Sweden, May 23, 1979, 7904555; PCT Int'l Appl., May 20, 1980, PCT/SE/8000145
Int. Cl.[4] D21F *1/02*
U.S. Cl. 162—123 **9 Claims**



1. A method of forming a paper web from a fiber suspension comprising injecting a stream of said fiber suspension through a slice opening onto an upper surface of a travelling paper web-forming surface; maintaining said travelling paper web-forming surface free of support for a predetermined distance downstream of said slice opening, said predetermined distance including a first end and a second end, said first end being substantially adjacent to said slice opening; maintaining a flexible lip proximate to said upper surface of said travelling paper web-forming surface and spaced therefrom for only a portion of said predetermined distance; and applying a vacuum to the lower surface of said travelling paper web-forming surface throughout said predetermined distance, whereby said paper web is substantially entirely formed and said fiber suspension is substantially dewatered within said space between said flexible lip and said travelling paper web-forming suspension, said vacuum is applied to said lower surface of said travelling paper web-forming surface for a distance beyond said flexible lip so as to further dewater said fiber suspension, and disturbances during the formation of said paper web and throughout said predetermined distance are substantially reduced.

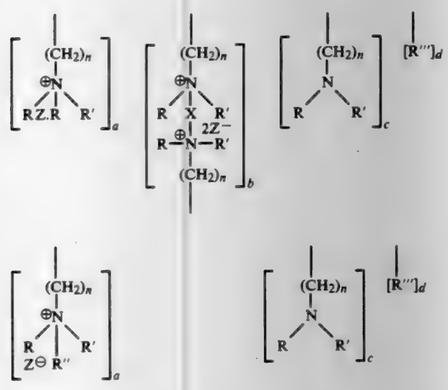
4,565,604

RETENTION AND DRAINAGE AID

P. E. Anders Hansson, and Felek Jachimowicz, both of Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 476,807, Mar. 18, 1983, Pat. No. 4,513,122.
This application Dec. 31, 1984, Ser. No. 687,682
Int. Cl.[4] D21H *3/40*
U.S. Cl. 162—168.2 **11 Claims**

1. A process for forming cellulosic paper products using conventional paper making apparatus which comprises contacting cellulosic pulp used to form said products prior to its placement on a drainage web with an effective amount of an aqueous solution of a polymeric product comprising a water soluble polymer having a substantially completely saturated polymeric backbone chain with a pendant alkylene amine groups represented by the formula:



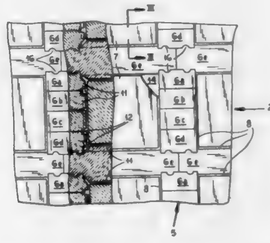
wherein ~~~~ represents a substantially saturated hydrocarbon polymer chain, each R separately represents an unsubstituted or substituted C_1–C_6 alkyl, cycloalkyl or aryl; R′ represents hydrogen or an R group; R″ represents hydrogen or a C_1–C_3 alkyl; R‴ represents hydrogen or a comonomer pendant group or both, X is a residual organic group of a compound capable of covalently bonding with at least two nitrogen atoms of the polymer and Z is a counterion; n is an integer of from 1 to 3; a, b, c, d and e are each integers such that a, c and e is from about 1 to 90 percent, b is from about 1 to 30 percent and d is from about 1 to 60 percent of the total sum of a+b+c+d+e; and the sum of the groups of a+c+e is at least 4 weight percent of the polymer product; said polymer is formed by reacting under substantially anhydrous conditions an olefinic bond containing polymer with an amine selected from a primary or secondary amine, hydrogen and carbon monoxide in the presence of a Group VIII metal containing compound to form a polymeric material having pendant alkylene amine groups and further reacting a portion of the alkylene amine groups with an agent which is at least difunctional with respect to the pendant secondary and tertiary amino groups, said difunctional agent being in molar ratio of from 0.3 to 1.1 with respect to said secondary amino groups and from 0.5 to 2.2 with respect to said tertiary amino groups.

4,565,605

HEATING WALL FOR COKE-OVEN BATTERY

Dirk Kruse, Düsseldorf-Heerdt, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 18, 1983, Ser. No. 476,527
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210108
Int. Cl.[4] C10B *29/02*
U.S. Cl. 202—139 **9 Claims**



1. In a coke-oven battery with a plurality of juxtaposed horizontal coking chambers separated by longitudinal walls each provided with a multiplicity of vertical heating ducts,
the improvement wherein each of said longitudinal walls comprises a frame structure of refractory blocks of silica defining said heating ducts and forming columns of vertically spaced-apart rectangular apertures with vertical and horizontal sides between each heating duct and the adjoining coking chambers, said apertures being each occupied by a unitary silicon carbide refractory plate of lower thermal resistance than the surrounding blocks, said blocks being divided into longitudinal and transverse blocks, said structure consisting of two parallel frameworks each composed of longitudinal blocks between the apertures of a column and transverse blocks separating adjacent heating ducts from one another, the transverse blocks of said frameworks being provided with interlocking formations, said transverse blocks being stacked in a plurality of tiers along each vertical side of a respective aperture between horizontal rows of longitudinal blocks, the transverse blocks of said frameworks overlapping one another in alternate tiers.

4,565,606

METALLIZATION OF ELECTRICALLY INSULATING POLYIMIDE/AROMATIC POLYAMIDE FILM SUBSTRATES

Robert Cassat, Ternay, France, assignor to Rhone-Poulenc Recherches, Courbevoie, France

Filed Apr. 16, 1984, Ser. No. 600,457
Claims priority, application France, Apr. 15, 1983, 83 06404
Int. Cl.[4] C25D *5/56*
U.S. Cl. 204—20 **35 Claims**

1. A process for conductively metallizing an electrically insulating polyimide/aromatic polyamide film substrate, comprising (1) shaping into a thermally stable film substrate an intimate homogeneous admixture of an essentially thermosetting film-forming polyimide/aromatic polyamide polymer matrix having from 20 to 60 percent by total weight of said admixture of finely divided, non-conductive non-precious metal oxide particles uniformly distributed therein, (2) disrupting at least one face surface of said shaped film substrate to expose thereon a plurality of said finely divided, non-conductive metal oxide particles, and (3) treating said at least one disrupted face surface with a reducing agent to reduce said exposed metal oxide particles into a layer of electrically conductive free metal, whereby said at least one face surface is rendered electrically conductive.

4,565,607

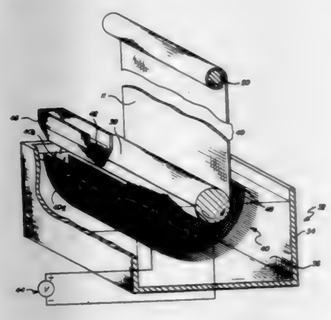
METHOD OF FABRICATING AN ELECTROPLATED SUBSTRATE

Joseph J. Hanak, Lawrenceville, N.J.; Prem Nath, Rochester, Mich.; Masatsugu Izu, Birmingham, Mich., and James Young, West Bloomfield, Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 588,013, Mar. 9, 1984, Pat. No. 4,530,739. This application May 16, 1985, Ser. No. 734,712

Int. Cl.⁴ C25D *5/48*

U.S. Cl. 204—38.1 **17 Claims**



1. A method of fabricating a large area semiconductor device, said device divided into a plurality of small area segments; each small area segment including a thin film body of semiconductor material and a substrate having a substantially defect-free surface; said method including the steps of:

electroplating, from a mandril, a relatively thin metallic substrate characterized by a substantially defect free deposition surface having features which (1) provide for the reflection of light and (2) do not substantially interfere with the subsequent deposition of the uniform and homogeneous thin film body of semiconductor material thereupon,

depositing the thin film body of semiconductor material atop the substantially defect free deposition surface of the substrate;

removing portions of the (1) body of semiconductor material and/or (2) subjacent metallic substrate; and

securing an insulating support member to the surface of the metallic substrate opposite the substantially defect-free deposition surface thereof; whereby the large area semiconductor device is divided into a plurality of electrically discrete small area segments.

4,565,608

ALKALINE CYANIDE BATH FOR ELECTROLYTIC DEPOSITION OF COPPER-TIN-ALLOY COATINGS

Gerd Hoffacker, Schwabisch Gmund, and Willi Müller, Deggingen, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 30, 1984, Ser. No. 666,318

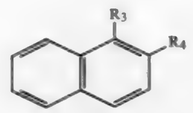
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339541

Int. Cl.⁴ C25D *3/58, 3/60*

U.S. Cl. 204—44 **15 Claims**

1. In an alkaline cyanide bath for the electrolytic deposition of bright to brilliant copper-tin alloy coatings, the improvement comprising including in the bath at least one organic material from the following group:

ethoxylated naphthols of the general formula



wherein

R_3 is H or $O(CH_2—CH_2O)_mH$,

R_4 is $O(CH_2CH_2O)_mH$ or H

m=10 to 14

in an amount of 0.05 to 5 g/l.

4,565,609

BATH AND PROCESS FOR PLATING TIN, LEAD AND TIN-LEAD ALLOYS

Fred I. Nobel, Sands Point; Barnet Ostrow, Roslyn, and David N. Schram, Freeport, all of N.Y., assignors to LeaRonal, Inc., Freeport, N.Y.

Division of Ser. No. 564,516, Dec. 22, 1983, which is a continuation-in-part of Ser. No. 301,390, Sep. 11, 1981, abandoned. This application Apr. 15, 1985, Ser. No. 723,595

Int. Cl.⁴ C25D *3/32, 3/36, 3/56, 3/60*

U.S. Cl. 204—44.4 **24 Claims**

1. An electrolytic bath for the electrodeposition of tin, lead and tin-lead alloy metals comprising an aqueous solution containing the metal or metals as a soluble alkyl sulfonate salt, a soluble alkylsulfonic acid in a sufficient amount to impart a pH below about 3 to the bath, and a quaternary nitrogen-fatty acid wetting agent in sufficient amount to improve the throwing power of the bath and the surface finish of the electrolytic deposit.

17. A method for electroplating tin, lead, or tin-lead alloy metals which comprises immersing a substrate to be plated in a electroplating bath comprising an aqueous solution containing the metal or metals as a soluble alkylsulfonate salt, a soluble alkylsulfonic acid in a sufficient amount to impart a pH below about 3 to the bath, and a quaternary nitrogen-fatty acid wetting agent in sufficient amount to improve the throwing power of the bath and the surface finish of the electrolytic deposit.

4,565,610

BATH AND PROCESS FOR PLATING LEAD AND LEAD/TIN ALLOYS

Fred I. Nobel, Sands Point; Barnet Ostrow, Roslyn, and David N. Schram, Freeport, all of N.Y., assignors to LeaRonal, Inc., Freeport, N.Y.

Division of Ser. No. 564,516, Dec. 22, 1983, which is a continuation-in-part of Ser. No. 301,390, Sep. 11, 1981, abandoned. This application Apr. 15, 1985, Ser. No. 723,597

Int. Cl.⁴ C25D *3/32, 3/36, 3/56, 3/60*

U.S. Cl. 204—44.4 **8 Claims**

1. An electroplating bath for the electrodeposition of lead and lead-tin alloys comprising an aqueous solution containing the metal or metals as a lower alkylsulfonate salt, a soluble alkylsulfonic acid in a sufficient amount to give a pH below about 3 to the bath, an aromatic aldehyde and a soluble bismuth compound in a sufficient amount to extend current density range for producing bright deposits.

7. A method for electroplating lead and lead-tin alloys which comprises immersing a substrate to be plated into an electroplating bath comprising an aqueous solution containing lead and tin as soluble alkyl-sulfonates, a sufficient amount of a soluble alkylsulfonic acid salt to impart a pH value below about 3 to said bath, and an aromatic aldehyde and a soluble bismuth compound in a sufficient amount to extend current density range for producing bright deposits.

4,565,611

AQUEOUS ELECTROLYTES AND METHOD FOR ELECTRODEPOSITING NICKEL-COBALT ALLOYS

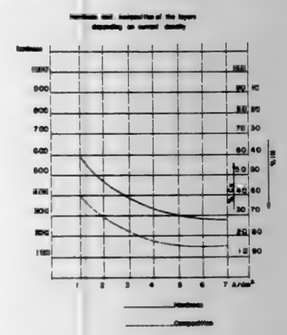
Heinz Wagner, Hilden; Klaus Scharwaechter, Solingen, and Monika Nee, Duesseldorf, all of Fed. Rep. of Germany, assignors to Gerhard Collardin GmbH, Cologne, Fed. Rep. of Germany

Filed May 1, 1985, Ser. No. 729,314

Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3416993

Int. Cl.⁴ C25D *3/56*

U.S. Cl. 204—44.5 **21 Claims**



13. An aqueous electrodeposition bath for the electrodeposition of hard, tarnish resistant, white shining, nickel and cobalt containing coatings comprising

a. a nickel ion content of from about 15 to about 150 g/l,

b. a cobalt ion content of from about 0.5 to about 15 g/l,

c. a chloride ion content of from about 5.0 to about 25.0 g/l,

d. a boric acid content of from about 20 to about 40 g/l,

e. an aliphatic C_1–C_4 aldehyde content of from about 0.1 to about 1 g/l, and

f. an aromatic water-soluble carbonyl compound content of from about 0.005 to about 0.05 g/l,

wherein the pH of the bath is from about 3.6 to about 4.8, the ratio of nickel ions to cobalt ions is from about 8:1 to about 20:1, and the ratio of aldehyde to carbonyl compound is from about 20:1 to about 50:1.

4,565,612

PROCESS FOR REDUCING SULPHATE ION CONCENTRATION IN AQUEOUS SODIUM HYDROXIDE SOLUTIONS

David L. Fry, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 10, 1984, Ser. No. 680,016

Int. Cl.⁴ C25B *1/16*

U.S. Cl. 204—98 **4 Claims**

3. A process for reducing chloride and sulphate ion concentration in an aqueous concentrated solution comprising sodium hydroxide, sodium chloride, and sodium sulphate which comprises:

(A) adding at least one of sodium carbonate or bicarbonate to said aqueous concentrated solution in at least a stoichiometric amount based upon the concentration of sodium sulphate present therein in accordance with the formulas:

$$Na_2CO_3+2Na_2SO_4 \rightarrow Na_4CO_3(SO_4)_2 \text{ and}$$

$$NaHCO_3+NaOH \rightarrow Na_2CO_3+H_2O,$$

(B) forming an insoluble sodium carbonate-sodium sulphate double salt;

(C) removing said insoluble salt and said sodium chloride from said aqueous solution; and

(D) recovering a purified aqueous solution of sodium hydroxide.

4. The process of claim 3 wherein an excess of at least one of sodium carbonate or bicarbonate is added to said aqueous concentrated solution wherein said excess is that amount which provides, after formation of said insoluble sodium carbonate-sodium sulphate double salt, a sodium carbonate and/or bicarbonate concentration of at least about 0.3 to about 1.0 gram per liter.

4,565,613

PROCESS FOR REMOVING A LAYER OF THICK MERCURY FROM THE BOTTOM OF MERCURY-CATHODE ELECTROLYSIS CELLS AND A PROCESS FOR THE ELECTROLYSIS OF AN AQUEOUS SOLUTION OF AN ALKALI METAL HALIDE IN A MERCURY-CATHODE CELL

Robert Schöberle, Brussels, Belgium, and Walter Schaffer, Hallein, Austria, assignors to Solvay & Cie, Brussels, Belgium

Filed Jun. 19, 1984, Ser. No. 622,223

Claims priority, application France, Jun. 20, 1983, 83 10284

Int. Cl.⁴ C25G *1/40*

U.S. Cl. 204—99 **11 Claims**

1. Process for removing a layer of thick mercury from the bottom of electrolysis cells having a cathode formed by a film of mercury flowing over the bottom, according to which a scraper is moved in the mercury film, characterized in that the movement of the scraper is controlled so as to leave continuously a residual film of thick mercury of a thickness of at least 0.04 mm adhering to the bottom.

4,565,614

POLYMER MIXTURES AND CO-VULCANIZATES PRODUCED THEREFROM

Hartmuth Buding, Dormagen; Zsolt Szentiványi, and Joachim Thörmer, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 4, 1984, Ser. No. 657,536

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1983, 3337397

Int. Cl.⁴ C08F *2/46*

U.S. Cl. 522—112 **5 Claims**

1. Mixtures comprising (a) from 95 to 5% by weight of a fluoroelastomer and (b) from 5 to 95% by weight of an elastomer which contains nitrile groups and has from 25 to 140 nitrile-nitrogen atoms and less than 35 double bonds per 1000 carbon atoms, the percentages relating to the total of (a) and (b).

4,565,615

GLOW DISCHARGE STABILIZATION OF PIEZOELECTRIC POLYMER FILM

Peter F. Radice, Upper Merion, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 1, 1984, Ser. No. 667,187

Int. Cl.⁴ C07C *3/24*

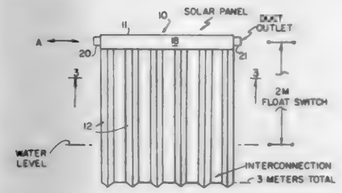
U.S. Cl. 204—168 **12 Claims**

1. Method of stabilizing a poled piezoelectric and pyroelectric polymer film comprising the step of exposing surface of said film to a glow discharge at a reduced pressure for a time sufficient to form said stabilized film.

4,565,616
METHOD FOR PRODUCING A PHOTOELECTROFORMING MANDREL
James S. Kenworthy, Rockland, and Thomas G. Kozinski, South Attleboro, both of Mass., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 605,506, Apr. 30, 1984. This application May 6, 1985, Ser. No. 730,414
Int. Cl.[4] C23C 14/00
U.S. Cl. 204—192 C 7 Claims

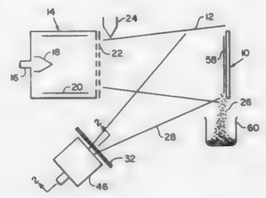
1. A method for producing an electroforming mandrel comprising the steps of:
a. providing a substrate which transmits actinic radiation with a pattern which masks the transmission of actinic radiation;
b. depositing on a surface of the patterned substrate a continuous conductive film which transmits actinic radiation;
c. depositing on the conductive film a continuous layer of a photoresist;
d. exposing said photoresist to actinic radiation through said masking substrate and conductive film; and
e. developing said photoresist to selectively remove a portion thereof in order to uncover a pattern of the underlying conductive film.

4,565,617
PHOTOVOLTAIC ENERGY GAS GENERATING APPARATUS
Om Ahuja, 89 Clearmeadow Dr., East Meadow, N.Y. 11554
Filed Dec. 18, 1981, Ser. No. 331,971
Int. Cl.[4] C25B 15/08, 9/00, 11/04
U.S. Cl. 204—229 16 Claims



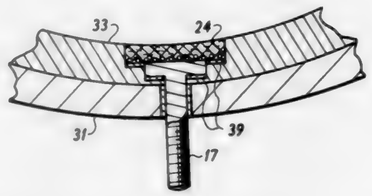
1. An apparatus for the recovery and storage of hydrogen, cathode gas, from water, said apparatus comprising:
(a) an aquatic float, said float defining:
(i) a cathode gas collection chamber,
(ii) at least one outlet to said collection chamber for withdrawing the collected gas,
(iii) a plurality of elongate tubes extending downwardly from said collection chamber and in open communication therewith,
(iv) the displacement of the float creating a column of water within each said elongate tube,
(b) at least one cathode within each elongate tube, said cathodes extending downwardly from the upper ends of said elongate tubes to a predetermined level,
(c) at least one anode outside said elongate tubes extending downwardly from said float into said water,
(d) a photovoltaic panel mounted on said collection chamber and in electrical communication with said cathodes and anodes to electrolyze said water and collect the electrolyzed cathode gas about said cathode within said elongate tubes,
whereby the electrolyzed cathode gas rises within said elongate tubes to collect within said collection chamber until the float rises above said predetermined level, whereupon the electrolysis is automatically terminated as said cathodes and, or anodes rise above said water.

4,565,618
APPARATUS FOR PRODUCING DIAMONDLIKE CARBON FLAKES
Bruce A. Banks, Olmsted Township, Cuyahoga County, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Continuation-in-part of Ser. No. 591,089, Mar. 19, 1984, Pat. No. 4,495,044, which is a continuation-in-part of Ser. No. 495,381, May 17, 1983, Pat. No. 4,437,962. This application Nov. 5, 1984, Ser. No. 668,433
Int. Cl.[4] C23C 14/00
U.S. Cl. 204—298 18 Claims



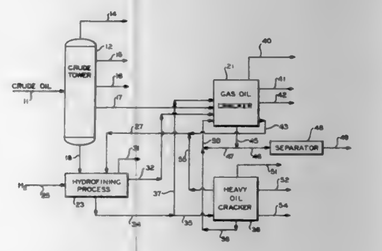
1. In apparatus for making diamondlike carbon flakes wherein carbon is deposited on a target that is ion sputtered in a vacuum environment, an improved carbon source comprising
a cylindrical graphite cathode having a curved peripheral surface terminating at a substantially planar end surface facing towards said target,
a graphite anode positioned between said cylindrical cathode and said target,
means for establishing an electrical arc between a cathode spot on said planar end surface of said cathode and said anode thereby generating a flow of carbon ions and atoms towards said target, and
means for confining said cathode spot to said planar end surface of said cylindrical cathode thereby inhibiting movement of said cathode spot to said curved peripheral surface of said cathode from said planar end surface.

4,565,619
COMPOSITE ELECTRODE STRUCTURE
Robert J. Gardner, Norton, and John R. Martin, Foxboro, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.
Filed Feb. 18, 1983, Ser. No. 467,711
Int. Cl.[4] G01N 27/46; C25B 11/12; G01F 1/58
U.S. Cl. 204—400 11 Claims



1. A nonporous electrode assembly comprising: a composite electrode element, including:
a plurality of carbon fibers arranged in a threedimensional array, the majority of said fibers being randomly aligned within a series of mutually parallel planes, yet being packed densely enough to produce multiple points of contact thereamong, said electrode element having an elongated face with a longitudinal dimension which is greater than a thickness dimension measured perpendicular to said elongated face, said parallel planes being parallel to said elongated face, whereby electrical continuity is established throughout said array, and the electrical conductivity characteristic of said electrode element is greater in a direction parallel said elongated face than that in a direction normal to said elongated face, and
a matrix of polymeric material permeating the interfiber voids within said array so as to produce a coherent, nonporous structure; and
contact means for electrically coupling said electrode element to an external electrical circuit.

4,565,620
CRUDE OIL REFINING
Dean P. Montgomery; James W. Gall, both of Bartlesville, Okla., and Ed D. Davis, Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed May 25, 1984, Ser. No. 613,944
Int. Cl.[4] C10G 69/00, 69/14
U.S. Cl. 208—80 3 Claims

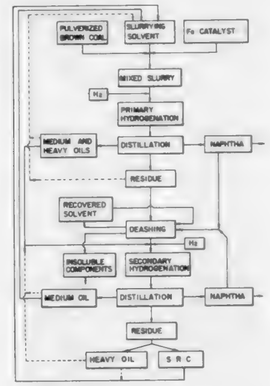


1. A method for improving the value of the product mix obtained from the refining of a crude oil in a process in which a crude oil feed is fractionated, hydrofined and cracked, wherein a first gas oil fraction resulting from the fractionation of said crude oil is cracked in a first catalytic cracking process, wherein topped crude resulting from the fractionation of said crude oil is hydrofined to produce at least a heavy hydrofined fraction, wherein at least a portion of said heavy hydrofined fraction is cracked in a second catalytic cracking process to produce at least a first heavy cycle oil fraction, wherein at least a second heavy cycle oil fraction is produced by said first catalytic cracking process, said method comprising the step of recycling said first heavy cycle oil fraction from said second catalytic cracking process as a feed to the process in which said topped crude is hydrofined, and the step of recycling said second heavy cycle oil fraction from said first catalytic cracking process as a feed to the process in which said topped crude is hydrofined.

4,565,621
HYDROCRACKING WITH RARE EARTH-CONTAINING Y ZEOLITE COMPOSITIONS
John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Division of Ser. No. 327,611, Dec. 4, 1981, Pat. No. 4,429,053. This application Jan. 9, 1984, Ser. No. 569,238
Int. Cl.[4] C10G 47/18, 47/20
U.S. Cl. 208—111 25 Claims

1. A hydrocracking process which comprises contacting a hydrocarbon feedstock with hydrogen in the presence of a hydrocracking catalyst under hydrocracking conditions, said catalyst containing a zeolite having been prepared by a process comprising:
(a) cation-exchanging a type Y crystalline aluminosilicate zeolite with rare earth-containing cations;
(b) calcining the resultant rare earth-exchanged zeolite in the presence of water vapor at a water vapor partial pressure of at least about 0.2 p.s.i.a.;
(c) ion-exchanging the calcined zeolite from step (b) with ammonium ions; and
(d) introducing, after said ammonium ion exchange of step (c), a metal component consisting essentially of one or more noble metal-containing cations into said zeolite by cation exchange.

4,565,622
METHOD OF LIQUEFYING BROWN COAL
Yukio Nakako, Takarazuka; Tetsuo Matsumura, Kobe; Toshio Ozawa, Kobe; Kaizaburo Saito, Kobe; Shin-ichi Katsushima, Kobe; Shin-ichi Oya, Kobe; Toshiaki Okui, Kobe; Yutaka Mito, Ibaraki; Osamu Okuma, and Tomoji Takahashi, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seikosho, Kobe; Mitsubishikaseikogyo Kabushikikaisha, Tokyo; Idemitsukosan Kabushiki Kaisha, Tokyo; Aziaseiyu Kabushiki Kaisha, Tokyo and Nippon Kattan Ekika Kabushiki Kaisha, Tokyo, all of, Japan
Filed Nov. 9, 1983, Ser. No. 550,122
Claims priority, application Japan, Dec. 15, 1982, 57-220970
Int. Cl.[4] C10G 1/06
U.S. Cl. 208—10 18 Claims



1. A method of liquefying brown coal which comprises:
[I] effecting a primary hydrogenation at a temperature and pressure sufficient to promote the efficient hydrogenation of a slurry prepared by adding an iron-based catalyst and a slurrying solvent to brown coal;
[II] distilling all or a portion of the primary hydrogenation product, whereby a naphtha fraction, a middle distillate oil fraction, a heavy distillate oil fraction and a distillation residue are produced;
[III] recycling a portion of said middle distillate oil fraction, said heavy distillate oil fraction and said distillation residue to said primary hydrogenation step as the slurrying solvent;
[IV] removing ash from the remaining portion of the distillation residue, thereby separating the same into an insoluble fraction containing ash, insoluble organic matter or a mixture thereof, and a soluble fraction as a solution in said solvent; and feeding the soluble fraction and the remainder of said middle and heavy distillate fractions to a fixed-bed column reactor packed with a molbdenum-based cayalyst for a secondary hydrogenation at a temperature and pressure sufficient to promote the efficient hydrogenation thereof, wherein a slurrying solvent having an aromatic carbon number index within the range of about 0.4 to 0.8 is used in said secondary hydrogenation; and
[V] separating the naphtha fraction from the secondary hydrogenation product and recycling all or a portion of

the remainder to said primary hydrogenation step as the slurrying solvent therefor.

4,565,623

METHOD FOR DEASPHALTING HEAVY OILS USING A MISCIBLE SOLVENT AT A LOW TREAT RATIO AND A CARBON DIOXIDE ANTISOLVENT

Thomas A. Davis, Annandale, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 20, 1984, Ser. No. 642,502
Int. Cl.⁴ C10C *3/08*
U.S. Cl. 208—309 **7 Claims**

1. A process for extracting hydrocarbon oil from heavy hydrocarbon oil feedstock comprising the steps of:

contacting said heavy hydrocarbon oil feedstock with a solvent at a temperature and in a volume ratio of solvent to feedstock in the range between about 1:0.75 to 1:1.5 such that the solvent and feedstock are completely miscible and form a single phase mixture,

introducing a gaseous antisolvent into said single phase mixture to produce an upper phase containing the extracted hydrocarbon oil and a heavier lower phase, and

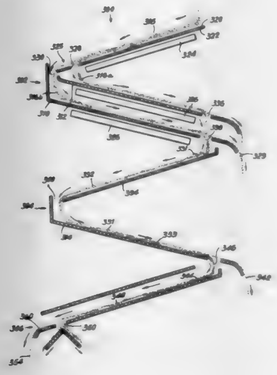
recovering said hydrocarbon oil from the upper phase.

4,565,624

GRAVITY—MAGNETIC ORE SEPARATORS

Edward Martinez, 1 Alpine Ct., Huntington Ct., Belle Mead, N.J. 08502

Filed Apr. 4, 1983, Ser. No. 482,040
Int. Cl.⁴ B03C *1/06*
U.S. Cl. 209—40 **7 Claims**



1. A method for separating magnetic or weakly magnetic material from a mixture including non-magnetic material having a lower specific gravity than said magnetic or weakly magnetic material, said method being effective for separating magnetic or weakly magnetic particles, the method comprising:

combining said mixture with non-magnetic liquid for defining a pulp density of above about 5%;

feeding said pulp onto the raised end of a downwardly sloping progressively narrower surface of sufficient length to achieve at least partial gravity separation between said magnetic or weakly magnetic material and said non-magnetic material as said pulp flows downwardly over said surface under the influence of the force of gravity;

applying a magnetic force beneath said sloping surface while said pulp flows thereover for augmenting said gravity separation by magnetic separation by attracting said magnetic or weakly magnetic material toward said surface, there being no other forces applied to said magnetic or weakly magnetic material in opposition to said magnetic and gravity forces;

intermittently reducing the magnetic force to prevent the buildup of said magnetic or weakly magnetic material on said surface by permitting forward motion of said magnetic or weakly magnetic material; and

separating, at the lower end of said surface, the higher specific gravity magnetic or weakly magnetic material comprising a portion of the material adjacent said surface from the lower specific gravity non-magnetic material comprising a portion of the material riding above said material adjacent said surface.

4,565,625

BENEFICIATION OF PHOSPHATE ORES CONTAINING SURFACE ACTIVATED SILICA

Shuang-shii Hsieh, and James R. Lehr, both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 650,390, Sep. 14, 1984, now Defensive Publication No. T105,404. This application Dec. 10, 1984, Ser. No. 680,117
Int. Cl.⁴ B03D *1/02*
U.S. Cl. 209—167 **2 Claims**

1. An ore flotation process which comprises the steps of:

(1) subjecting a Florida phosphate ore containing surface-activated silica and silicates to washing and sizing means wherefrom is removed as flotation feed the minus 28-plus 400-mesh fraction;

(2) subsequently beneficiating said flotation feed by adjusting the pulp density thereof, through the addition of aqueous medium thereto, to about 65 percent solids; adjusting the pH thereof, by mixing therewith predetermined quantities of caustic soda sufficient to raise the pH to at least about 9; and conditioning same by intimately mixing therewith predetermined quantities of fatty acid and fuel oil;

(3) removing the resulting conditioned flotation feed from step 2 supra and introducing same into first froth flotation means wherein the phosphate values therein are recovered in the float therefrom as intermediate product and the underflow therefrom is discarded to waste;

(4) subsequently deoiling the resulting intermediate phosphate concentrate from step 3 supra by scrubbing same with sulfuric acid to remove said fatty acid and fuel oil residuals from the phosphate mineral surfaces introduced theronto in step 2 supra;

(5) subsequently introducing the resulting deoiled first froth flotation intermediate product into reverse second froth flotation means and intimately mixing therewith as silica modifier from about 0.01 to about 2.0 kg of HF per ton of feed or from about 0.01 to about 1.0 kg of alkyl diphosphonic acid per ton of feed and mixtures thereof, along with predetermined quantities of an amine sufficient to be utilized therewith as a silica collector to float said silica as waste; and

(6) recovering as an underflow from said second reverse froth flotation means, as product, substantial amount of the phosphate values introduced into said process as said froth flotation feed fraction;

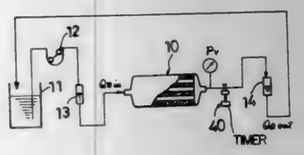
said process characterized by the fact that the use of the silica modifier(s) in step 5 thereof effects an increase in the recovery of the phosphate values in step 6 thereof, of at least about 10 percent greater than would be realized without the use of said silica modifier(s).

4,565,626

APPARATUS FOR BLOOD TREATMENT BY PRESSING BLOOD INTO TREATING MATERIAL AND THEN DRAWING IT OUT

Junichi Azuma, Nishinomiya; Koichi Watanabe, Kawabe, and Masatake Hori, Itami, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 30, 1983, Ser. No. 557,227
Int. Cl.⁴ B01D *31/00*
U.S. Cl. 210—138 **7 Claims**



1. An apparatus for blood treatment, comprising:

a housing having a blood inlet means for introducing blood to be treated and a blood outlet means for exhausting treated blood from said housing;

at least one blood channel within said housing and extending from said inlet means to said outlet means and being constituted by a plasma-separating membrane capable of allowing plasma component of blood to permeate therethrough while preventing blood cells from penetrating therethrough, said housing having a space therein surrounding said membrane;

a blood treating material packed in said space within said housing around said membrane;

a pump connected to said inlet means for pumping the blood to be treated into said inlet means at a predetermined pressure;

a blood circuit connected to said outlet means;

at least part of the housing comprising means including an elastic material in contact with said blood treating material for undergoing elastic expansion in response to a pressure buildup and for undergoing contraction when said pressure is reduced; and

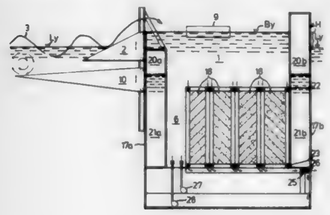
a clamp mechanism downstream of said outlet means including means for intermittently operating said clamp mechanism for clamping said blood circuit for at least substantially reducing flow of blood through said blood circuit downstream of said outlet means and for causing a buildup of pressure in said at least one blood channel for causing plasma component of blood flowing in said at least one blood channel to permeate through said plasma-separating membrane toward said blood treating material to bring plasma into contact with said blood treating material and building up pressure in said space around said membrane and causing elastic expansion of said elastic material, then for releasing said blood circuit for allowing reduction of pressure in said blood circuit, and for permitting said elastic material to contract for exerting a force on plasma and blood treating material in said space for forcing plasma back through said plasma separating membrane back into said at least one blood channel.

4,565,627

APPARATUS FOR GATHERING VALUABLE FLOATING, DISSOLVED AND SUSPENDED SUBSTANCES FROM SEA WATER

Emil G. Lagström, Essingeringen 72C, S-112 64 Stockholm, Sweden; Torbjörn E. G. Westermark, Ladugårdsvägen 5, Täby, Sweden (S-18338), and Sevald Forberg, Gillerbaken 15, Bandhagen, Sweden (S-12442)

PCT No. PCT/SE80/00108, § 371 Date Dec. 18, 1980, § 102(e) Date Dec. 8, 1980, PCT Pub. No. WO80/02235, PCT Pub. Date Oct. 30, 1980
PCT Filed Apr. 17, 1980, Ser. No. 220,037
Claims priority, application Sweden, Apr. 18, 1979, 7903367
Int. Cl.⁴ C02F *1/28*; E02B *15/04*
U.S. Cl. 210—242.1 **6 Claims**



1. An offshore plant for recovery of valuable materials from sea water comprising an elongated floating unit having a basin and adapted to be anchored in a sea current with one of its sides facing the approaching sea waves and in which said basin extends above the still-water surface of the sea water, at least one sloping ramp attached to the side of the unit facing the approaching waves for leading the waves into said basin from above to fill said basin with sea water, at least one layer of filters for sorbing the materials from the sea water in communication with said basin through intake valve means located in the basin to permit the water to pass through the filters by means of the hydrostatic pressure caused by the filling of the basin by the waves to above the still-water surface of the sea water and outlet valve means located below the still-water surface of the sea water for discharging the water passed through the filters back into the sea.

4,565,628

FILTER APPARATUS

Johnny Arnaud, Houston, Tex., assignor to Hydrotreat, Inc., Houston, Tex.

Continuation of Ser. No. 491,712, May 5, 1983, abandoned, and a continuation-in-part of Ser. No. 428,345, Sep. 29, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 626,474
Int. Cl.⁴ B01D *29/46*
U.S. Cl. 210—232 **6 Claims**

1. A filter apparatus, comprising:

a housing, said housing being sealed at a first end thereof;

a filter element, comprising,

a mounting member, said mounting member including a first peripheral groove, said first peripheral groove extending from a first surface of said mounting member, said mounting member including a second peripheral groove extending from a second surface of said mounting member, at least a portion of each of said first and second grooves being tapered,

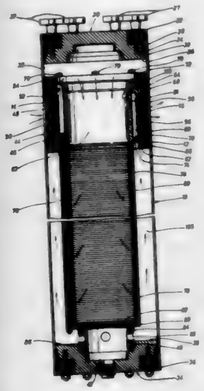
a first flexible sealing member disposed within said first groove,

a first ring at least partially insertable into said first groove, and

means for causing said first ring to enter said first groove and to cause said sealing member to wedge against the inner surface of said housing,

a second flexible sealing member disposed within said second groove,

a second ring at least partially insertable into said second groove, and



means for causing said second ring to enter said second groove and cause said second sealing member to wedge against the inner surface of said housing.

4,565,629

FILTER ASSEMBLY

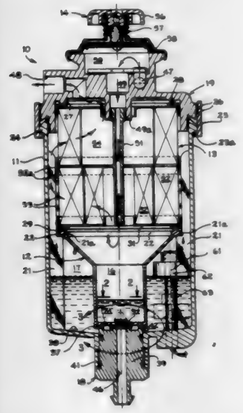
Michael E. Wilson, Modesto; David R. Olson, Turlock; Walter H. Stone, and Robin B. MacDonald, both of Modesto, all of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 568,271, Jan. 3, 1984, Pat. No. 4,502,956, Continuation of Ser. No. 351,761, Feb. 24, 1982, abandoned. This application Nov. 19, 1984, Ser. No. 672,931

The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.

Int. Cl.⁴ B01D *75/38*

U.S. Cl. 210—248 **20 Claims**



1. A filter cartridge adapted to remove contaminants from liquid fuel comprising:

(a) a body;

(b) filter means including at least a first filter media disposed within said body;

(c) a first contaminant outlet disposed on a first side of said body, at least one second contaminant outlet disposed on said first side, and said first contaminant outlet is upstream of all of said filter means and said second contaminant outlet is upstream of at least a portion of said filter means;

(d) a fuel inlet port and a fuel outlet port disposed on a second side of said body, said second side opposite said first side; and

(e) threads on said first side for removably attaching a collection bowl unit to said body to receive contaminants passed out through said first and second contaminant outlets; and wherein said first contaminant outlet is surrounded by a mating portion disposed on said first side, said mating portion adapted for mating to a wall on a collection bowl unit when said threads removably attach a collection bowl unit to said body, and wherein said second contaminant outlet is outside of said mating portion.

4,565,630

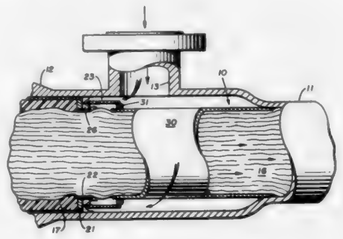
FLUID DISTRIBUTION SYSTEM FOR SEPARATION MODULES

Charles J. Runkle, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 26, 1984, Ser. No. 665,424

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—321.1 **5 Claims**



1. A fluid distribution system for a fluid separation module having a bundle of hollow fiber membranes positioned in a cylindrical shell and extending through a tube sheet positioned in an enlarged end portion of the shell, the enlarged end portion of the shell having therein an inlet opening for the admission of a fluid mixture into the shell, comprising:

(a) a first sleeve attached to the tube sheet in a position enclosing the bundle of fibers, said first sleeve having a distal end spaced from the tube sheet,

(b) a second sleeve positioned to enclose the fiber bundle, said second sleeve being spaced from the tube sheet to provide a first annular opening for the passage of the fluid mixture in a radial direction toward the first sleeve, said second sleeve surrounding the distal end of the first sleeve and having a diameter greater than the diameter of the first sleeve to provide a second annular opening for flow of the fluid mixture in an axial direction between said first and second sleeves,

(c) means securing the first and second sleeves together at spaced points therearound to hold the second sleeve in a position concentric with the first sleeve,

(d) a third sleeve enclosing the fiber bundle and being spaced from the first sleeve to provide a third annular opening therebetween for the axially flowing fluid mixture to enter the fiber bundle at an oblique angle, and

(e) means for securing the second sleeve to the third sleeve.

4,565,631

BACKFLOW-TYPE SELF-CLEANING FILTER

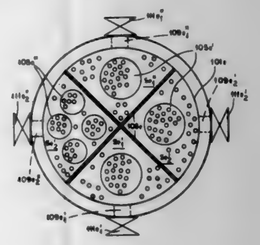
Klaus M. Bitzer, Krefeld; Klaus Eimer, Ratingen; Klaus Grobe, Duisburg; Georg Mayer, and Dieter Patzig, both of Ratingen, all of Fed. Rep. of Germany, assignors to Taprogge Gesellschaft mbH, Dusseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 477,814, Mar. 22, 1983, and a continuation-in-part of Ser. No. 477,862, Mar. 22, 1983. This application Dec. 19, 1983, Ser. No. 562,866

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1982, 3246718; Feb. 22, 1983, 3306003

Int. Cl.⁴ B01D *35/22*

U.S. Cl. 210—333.1 **7 Claims**



1. A self-cleaning filter for use with a cylindrical conduit generally axially traversed by a liquid to be cleaned, comprising:

(a) a cylindrical housing connectable to a conduit for generally axial flow of liquid therethrough;

(b) substantially radial partition means located in said housing and extending generally axially therethrough between upstream and downstream planes transverse to the axis of said housing and dividing the interior of said housing into a plurality of compartments of generally sectoral shape as viewed axially of said housing, and said compartments being provided with wide-open entrances at their upstream boundaries;

(c) respective sieve means associated with each of said compartments each for filtering the liquid flowing through its associated compartment, each of said sieve means including at least one substantially cylindrical portion having an axis oriented substantially parallel to the axis of said housing and further having first and second ends of which the former is unobstructed and the latter is not obstructed, a first substantially flat portion constituting a rim structure surrounding said first end of said substantially cylindrical portion and extending laterally therefrom to the proximate boundary surfaces of the associated compartment, a second substantially flat portion constituting the obstruction at said second end of said cylindrical portion and having its periphery spaced from said proximate boundary surfaces of the associated compartment and said cylindrical portion, and said first and second flat portions being perforated to form a sieve;

(d) a plurality of drainage outlet ports incorporated in said housing and each communicating laterally with a respective one of said compartments, and a plurality of shutoff valve means associated with said drainage outlet ports, respectively, and normally activated to block the same to inhibit drainage of liquid from said compartments through said drainage outlet ports; and

(e) respective flap means movably mounted in each of said compartments of said housing, said flap means each having a generally sectoral shape corresponding to that of the respective one of said compartments and being arranged in that compartment for selective disposition across the entire upstream boundary of the same to inhibit entry of liquid thereinto, and means operatively interconnecting each of said flap means and the associated one of said shutoff valve means which enables said shutoff valve means associated with any given compartment to be deactivated, so as to unblock the respective drainage output port, upon the respective one of said flap means being disposed across the upstream boundary of that compartment thereby closing said compartment while the other valves remain activated and the other compartments remain open;

(f) of liquid through the respective sieve means associated with said given compartment, is generated when said shutoff valve means associated with said given compartment is deactivated, while the shutoff valve means associated with each other compartment remains activated and in its normal drainage blocking state, and while the flow of liquid through each such other compartment continues in order to dislodge filtered-out impurities from the upstream surface of said respective sieve means.

4,565,632

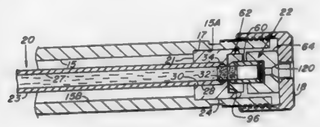
CHROMATOGRAPHIC CARTRIDGE COLUMN SYSTEM

Richard G. Hatch, Berkeley, and Gary Tepermeister, Pleasant Hill, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 11, 1985, Ser. No. 690,565

Int. Cl.⁴ B01D *15/08*

U.S. Cl. 210—656 **12 Claims**



1. A liquid chromatography cartridge column assembly including an analytical column having an analytical column bore and a precolumn having a precolumn bore, comprising:

a holder body having a bore therein;

a first end cap mounted upon an end of the analytical column, the first end cap having a first end configured to fit slidably within the bore;

stop means for limiting movement of the first end cap within the bore;

a second end cap mounted upon an end of the precolumn, the second end cap having a portion configured to abut the first end cap to form a fluid flow path between the analytical column bore and the precolumn bore; and

means cooperating with said stop means for forming a seal between the first and second end caps and around the fluid flow path.

4,565,633

REMOVAL OF DISSOLVED HEAVY METALS FROM AQUEOUS WASTE EFFLUENTS

Krishna V. Mayenkar, Glendale Heights, Ill., assignor to Harza Engineering Company, Chicago, Ill.

Filed May 8, 1984, Ser. No. 608,351

Int. Cl.⁴ C02F *1/42*

U.S. Cl. 210—688 **18 Claims**

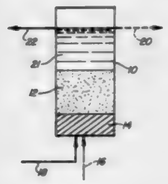
13. An environmentally-compatible process for the removal of toxic heavy metals from aqueous effluent comprising the steps of:

(a) providing a bed of iron particulates having at least 50% by weight pure iron, 50% or more of the particulates having a mesh size in the range of about 10 to 80 (U.S. Standard Sieve Series);

(b) flowing an aqueous medium at a temperature in the range of about 40° F. to 140° F. and a pH in the range of about 7 to 10 upwardly through said bed in the presence of air so as to form an upwardly rising interface of iron particulates, air and aqueous medium for a period sufficient to

react at least a substantial portion of the iron particulates with oxygen and water so as to form active iron surfaces having enhanced adsorptive properties for said heavy metals, the flow rate of said aqueous medium being insufficient to cause agitation of said bed or entrainment of said iron particulates in said aqueous medium;

(c) thereafter and without allowing the adsorptive surfaces so formed to dry, flowing the aqueous effluent to be treated through the bed at a temperature in the range of



about 40° F. to 140° F. and a pH in the range of about 7 to 10, whereby the iron particulates with adsorptive surfaces intimately contact the effluent and toxic heavy metals are adsorbed on said adsorptive surfaces;

(d) periodically discontinuing the flow of aqueous effluent through the bed, replacing the exhausted bed with a fresh bed of particulates as in step (a), and repeating steps (b), (c) and (d); and

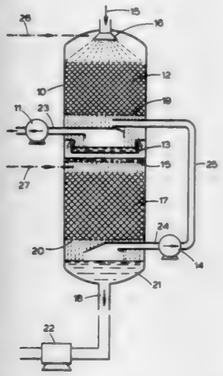
(e) disposing of the exhausted bed having adsorbed heavy metals thereon as a scrap iron charge to other processing.

4,565,634

METHOD FOR THE REMOVAL OF OXYGEN FROM WATER

Aksel Lydersen, Trondheim, Norway, assignor to Sintef, Trondheim, Norway

Filed Nov. 30, 1983, Ser. No. 557,229
Claims priority, application Norway, Dec. 28, 1982, 824395
Int. Cl.⁴ B01D *19/00*
U.S. Cl. 210—718 **5 Claims**



1. A method for removing oxygen from water, said method comprising:

providing a vacuum tower having therein at least one stage including a packing;

introducing water containing oxygen and nitrogen into the top of said tower and passing said water downwardly through said packing;

maintaining said stage under a vacuum, thereby liberating oxygen and water vapor from said water during downward passage thereof through said packing, and thereby liberating nitrogen from said water at the top of said stage;

drawing off from the bottom only of said stage a mixture of liberated gases and water vapor and thus separating said mixture from said water, thereby drawing said nitrogen released from said water at the top of said stage downwardly through said stage in cocurrent flow with said water, and causing said nitrogen to act as an internal stripping gas to facilitate removal of said oxygen from said water, until said nitrogen is drawn off from said bottom only of said stage with said liberated oxygen and water vapor; and

discharging from the bottom of said tower said water having oxygen liberated therefrom.

4,565,635

FLOCCULATION OF AQUEOUS MEDIA WITH NOVEL FLOCCULATING ADJUVANT

Yannick Le Du, Maisons Alfort, and Francois Meiller, Palaiseau, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Continuation of Ser. No. 442,002, Nov. 16, 1982, abandoned. This application Jan. 25, 1983, Ser. No. 460,770
Claims priority, application France, Nov. 16, 1981, 81 21360
Int. Cl.⁴ C02F *1/54*
U.S. Cl. 210—727 **33 Claims**

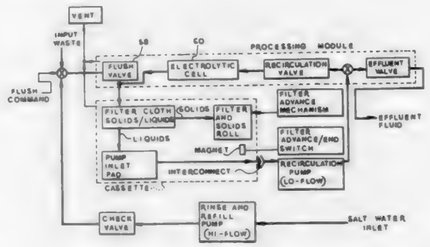
1. In a process for the treatment/purification of an aqueous medium by flocculation, the improvement which comprises, utilizing as a flocculant adjuvent therefor, that composition of matter adapted for ready dispersion/dissolution in said aqueous medium comprising intimate admixture of a water soluble gum, polymer or biogum heteropolysaccharide, and a dispersion/dissolution enhancing amount of a water donor material and water associated with said water donor said flocculant adjuvent comprising from 30 to 70% by weight of the water soluble gum, polymer or biogum heteropolysaccharide; from 7 to 40% by weight of the water donor; and from 15 to 37% by weight of water associated with said water donor.

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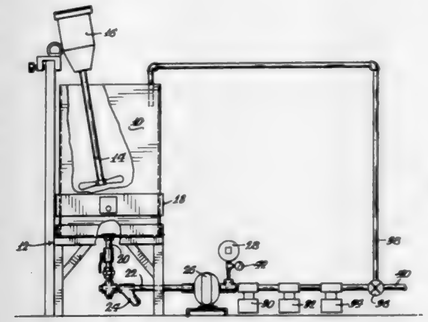
SELF-CONTAINED FLOW THROUGH SEWAGE WASTE DISPOSAL SYSTEM

Kenneth J. DeGraw, Montvale; Brian Wilcockson, Wayne; Earl W. Nickerson, Ocean City; William R. Bocchini, Wyckoff; Armen Bogossian, Teaneck, and Steve Proios, Northvale, all of N.J., assignors to American Standard Inc., New York, N.Y.

Division of Ser. No. 320,599, Nov. 12, 1981, Pat. No. 4,433,443. This application Nov. 9, 1983, Ser. No. 550,476
The portion of the term of this patent subsequent to Jan. 14, 2000, has been disclaimed.
Int. Cl.⁴ C02F *9/00*
U.S. Cl. 210—748 **12 Claims**



1. A method of disposing of sewage waste within a self-contained flow-through system comprising; providing a toilet bowl adapted to receive human waste and fluid for diluting the waste, transporting the waste and rinsing the bowl, placing a removable filter cassette in alignment and in communication with the toilet bowl, filtering the fluid and separating particles of solid material from the fluid received from the bowl, storing the solid material in a compact manner in the cassette for subsequent disposal upon removal of the cassette from alignment with the toilet bowl, transporting fluid other than human waste fluid from an external source upon initiation of each waste treatment sequence through interconnected conduits in the system to fill the bowl after a flush, to transport and recirculate filtered fluid through the system for further waste disposal treatment and to direct the effluent fluid from the system thereafter, and controlling by control means the passage of the fluid through the system to facilitate the collection and disposal of sewage waste within the system in a predetermined waste treatment sequence with fluid from the external source being introduced into the system, flowing through and being discharged from the system in each operational sequence.

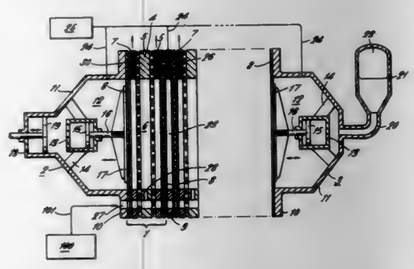


4,565,637

METHOD OF, AND APPARATUS FOR, FILTERING A SLURRY

Kenneth W. Pearce, Hartlepool, England, assignor to Steetley Refractories Limited, England

Filed Dec. 16, 1983, Ser. No. 562,010
Claims priority, application United Kingdom, Dec. 22, 1982, 8236501
Int. Cl.⁴ B01D *37/00;* **C02F** *1/00*
U.S. Cl. 210—770 **9 Claims**



1. A method of filtering a slurry, comprising confining filter cake produced from the slurry in a stationary chamber having a pair of opposed flexible walls at least one of which is constituted by a filter medium compressing the filter cake in the chamber by hydraulic fluid pressure acting on said walls; and cyclically deforming the filter cake, while under compression in the chamber by said hydraulic fluid pressure inducing pressure oscillations in said hydraulic fluid acting on said walls of the chamber to cause the filter cake to bow alternately from side to side of an initial central plane.

4,565,638

METHOD FOR PURIFYING INK

Jerry Zucker, 16 Buckingham Dr., Charleston, S.C. 29407

Filed Sep. 22, 1983, Ser. No. 534,676
Int. Cl.⁴ B01D *35/18;* **C02B** *1/02*
U.S. Cl. 210—774 **4 Claims**

1. Method for purifying used printing ink containing impurities comprising the steps of first combining a volume of the used ink with a greater volume of virgin ink to reduce the level of impurities in the combined volume, heating and agitating the mixture to reduce the viscosity thereof, and then removing the impurities from the heated mixture.

4,565,639

METHOD OF INCREASING HYDROCARBON PRODUCTION BY REMEDIAL WELL TREATMENT

Glenn S. Penny, and James E. Briscoe, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 456,473, Jan. 7, 1983, abandoned. This application Feb. 7, 1985, Ser. No. 699,227
Int. Cl.⁴ C09K *7/00;* **E21B** *43/25*
U.S. Cl. 252—8.55 B **13 Claims**

1. A method of increasing the production of hydrocarbons from a hydrocarbon-containing subterranean formation having impaired permeability as a result of formation invasion by aqueous fluids comprising contacting said formation with a penetrating solvent capable of disrupting a least a portion of any aqueous layer present on solid surfaces within said formation and a cationic perfluoro compound whereby said compound is adsorbed onto said solid surfaces of said formation said cationic perfluoro compound being selected from the group consisting of a compound or mixtures of compounds represented by the formula:

$$F(CF_2\frac{}{}_x CH_2CH_2O\leftarrow CH_2CHO)_w\leftarrow CH_2CHO)_y\leftarrow CH_2CHO\frac{}{}_z H$$

(with R, CH_2—A, and CH_2—$Q^{(+)}A^{(-)}$ as the respective substituents)

wherein x is an integer from 2 to 12 or an integer or fractional integer representing an average value of from 2 to 12; w and y are both individually integers from 0 to 20 or integers or fractional integers representing average values of from 0 to 20; z is an integer from 0 to 20 or an integer or fractional integer representing an average value of from 0 to 20, the sum of y and z being from 1 to 20; R is a hydrogen, methyl, ethyl or propyl radical, or mixtures thereof; A is a halogen chosen from chlorine, bromine or iodine; and Q is a cationic nitrogen radical from the group consisting of an aromatic amino radical, a heterocyclic amino radical, and an amine radical represented by the formula:

$$R_1—\underset{\displaystyle R_2}{\overset{\displaystyle |}{\overset{|}{N}}}—R_3$$

wherein R_1, R_2 and R_3 are from the group consisting of

hydrocarbon radicals containing from 1 to 30 carbon atoms, aromatic hydrocarbon radicals such as phenyl and any alkyl substituted phenyl radical, and hydrogen radicals, provided that at least one of R_1, R_2 and R_3 is an aliphatic hydrocarbon radical containing from 1 to 30 carbon atoms or an aromatic hydrocarbon and that when any one of R_1, R_2 and R_3 radicals contains more than four aliphatic carbon atoms or an aromatic hydrocarbon, the other two radicals are each chosen from the group consisting of hydrogen, methyl and ethyl radicals.

4,565,640

AQUEOUS COMPOSITIONS CONTAINING CYANURIC ACID

Chris F. Parks, Tulsa, Okla., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 24, 1984, Ser. No. 685,808

Int. Cl.⁴ E21B *43/26*

U.S. Cl. 252—8.55 R **3 Claims**

1. An aqueous controlled viscosity composition containing: (1) about 0.1% to about 1.0% xanthan gum, (2) about 0.025% to about 1.5% alkali metal or alkaline earth metal hypochlorite, and (3) about 0.005% to about 0.5% cyanuric acid.

4,565,641

BLEND OF FLUOROCHEMICAL GUANIDINES AND POLY(OXYALKYLENES)

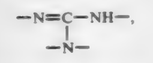
John C. Chang, New Brighton, and Kathryn L. Williams, Lakeland, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 440,317, Nov. 9, 1982, abandoned. This application Jul. 24, 1984, Ser. No. 633,977

Int. Cl.⁴ D06M *13/08*

U.S. Cl. 252—8.75 **20 Claims**

1. A composition comprising a blend of: (a) a normally solid, water-insoluble, fluorochemical guanidine composition which is a fluoroaliphatic radical-containing, substituted guanidine compound, or composition comprising a mixture of such compounds, said compound having one or more monovalent fluoroaliphatic radicals, having at least three fully fluorinated carbon atoms, and one or more substituted guanidino moieties, which moieties can be represented in terms of the formula



said radicals and moieties being bonded together by linking groups selected from aliphatic, aromatic, oxy, thio, carbonyl, sulfone, sulfoxy, —N(CH_3)—, sulfonamido, carbonamido, sulfonamidoalkylene, carbonamidoalkylene, carbonyloxy, urethane, and urea groups, and combinations thereof, with the proviso that when only one guanidino moiety is present, and only two organic substituents are in said guanidino moiety, said substituents must be on different nitrogen atoms of the moiety, and when more than one guanidino moiety is present, said moieties are bonded together by divalent linking groups selected from the group consisting of alkylene, aralkylene, arylene, polyoxyalkylene, and combinations thereof and can contain said fluoroaliphatic radical; and (b) a normally liquid or low melting solid, water soluble or dispersible, fluoroaliphatic radical-containing poly(oxyalkylene), or composition comprising a mixture of such poly(oxyalkylenes), said poly(oxyalkylene) having one or more of said fluoroaliphatic radicals and one or more poly(oxyalkylene) moieties, said radicals and poly(oxyalkylene) moieties bonded together by linking groups selected from aliphatic, aromatic, oxy, thio, carbonyl, sulfone, sulfoxy, phosphoxy, and amine groups and combinations thereof.

4,565,642

PIEZOELECTRIC SUBSTANCES

Shigeru Jyomura, Tokyo, and Hiroshi Takeuchi, Matsudo, both of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corp., both of Tokyo, Japan

Filed Jul. 13, 1983, Ser. No. 513,424

Claims priority, application Japan, Jul. 14, 1982, 57-121156; Sep. 10, 1982, 57-156746; Nov. 4, 1982, 57-192481; Dec. 22, 1982, 57-223810

Int. Cl.⁴ C04B *35/49*

U.S. Cl. 252—62.9 **2 Claims**

1. A piezoelectric substance, which consists essentially of a binary solid solution having a composition represented by the general formula:

$$xPbZrO_3—yA$$

wherein $0.905 \leqq x \leqq 0.960$ and $x+y=1.00$ and A is a substance selected from the group consisting of $Pb(Mn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Sb_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Ta_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Sb_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Sb_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Sb_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Ta_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Sb_{\frac{1}{3}}Ta_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Ta_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}W_{\frac{2}{3}})O_3$, $Pb(Sb_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Ta_{\frac{2}{3}})O_3$, and $Pb(Fe_{\frac{1}{3}}Te_{\frac{2}{3}})O_3$, the binary solid solution having an electromechanical coupling factor of thickness vibration mode kt of at least 0.46 and an electromechanical coupling factor ratio kt/kp of at least 9.2.

2. A piezoelectric substance, which consists essentially of a ternary solid solution having a composition represented by the general formula:

$$xPbZrO_3—yA—zPbTiO_3$$

and having a composition ratio represented by coordinate in a quadrilateral formed by successively connecting point P (x=0.905; y=0.095; z=0.000), point Q (x=0.960; y=0.040; z=0.000), point R (x=0.932; y=0.005; z=0.063), point S (x=0.905; y=0.005; z=0.090) and said P by straight lines, including the respective lines except the straight line connecting point P to point Q, in a ternary composition diagram showing the composition of said ternary solid solution, and said A being a substance selected from the group consisting of $Pb(Mn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Sb_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Ta_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Sb_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Sb_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Sb_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Ta_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Sb_{\frac{1}{3}}Ta_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Ta_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}W_{\frac{2}{3}})O_3$, $Pb(Sb_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{3}}Ta_{\frac{2}{3}})O_3$, and $Pb(Fe_{\frac{1}{3}}Te_{\frac{2}{3}})O_3$, the ternary solid solution having an electromechanical coupling factor of thickness vibration mode kt of at least 0.46 and an electromechanical coupling factor ratio kt/kp of at least 9.6.

4,565,643

ANTIFREEZING AGENT

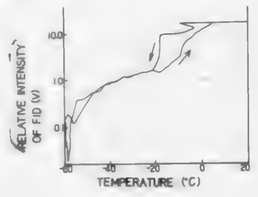
Soichi Arai, Yokohama, and Michiko Watanabe, Matsudo, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 7, 1984, Ser. No. 648,216

Claims priority, application Japan, Apr. 24, 1984, 59-82553

Int. Cl.⁴ C09K *5/06*

U.S. Cl. 252—70 **10 Claims**



1. A method for preventing destruction in biological tissues caused from the formation of ice crystals during exposure to a low temperature or a frozen state, said method comprising; contacting the biological tissues with an anti-freezing agent comprising, in an aqueous medium system, a protein which is enzymatically modified with the covalent incorporation of an amino acid ester.

7. The method of claim 1, wherein the enzymatically modified protein is a product prepared by covalently attaching leucine dodecyl ester to gelatin by the action of papain.

4,565,644

FLOOR CLEANING AND WAXING COMPOSITION

James A. Smith, Old Tappan, and Betty J. Murphy, Upper Montclair, both of N.J., assignors to Creative Products Resource Associates, Ltd., Clifton, N.J.

Division of Ser. No. 688,864, Jan. 4, 1985, Pat. No. 4,537,914, which is a continuation-in-part of Ser. No. 511,185, Jul. 6, 1983, which is a continuation-in-part of Ser. No. 660,350, Oct. 12, 1984, abandoned. This application May 30, 1985, Ser. No. 739,129

Int. Cl.⁴ C11D *17/00*

U.S. Cl. 252—92 **10 Claims**

1. A composition for cleaning flooring of soiled wax deposits and depositing a fresh coating of wax thereupon comprising moist shreds of a hydrophilic polyurethane foam comprising an open-celled highly reticulated matrix, wherein said matrix incorporates an interior aqueous phase and an effective scouring amount of abrasive particles silane coupled within said matrix, and wherein said shreds incorporate a wax which is partially released from said shreds as an aqueous emulsion when the shreds are contacted with the flooring under conditions of pressure.

4,565,645

SINGLE-STAGE PROCESS FOR THE PRODUCTION OF POLYAMINES AND POLYAMINES PRODUCED BY SUCH PROCESS

Werner Rasshofer, Cologne, and Dieter Dieterich, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,263

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1982, 3223397

Int. Cl.⁴ C09K *3/00;* **C08G** *18/08, 18/20, 18/10*

U.S. Cl. 252—182 **15 Claims**

1. A single stage process for the production of a polyamine containing primary amino groups comprising hydrolyzing (a) an isocyanate compound having an NCO-content of from 0.5 to 40 wt % with (b) an excess of water in the presence of (c) from 0.01 to 25 wt % of a compound selected from the group of alkali carbonates and hydrogen carbonates, alkali and alkaline earth salts of monocarboxylic and polycarboxylic acids, and mixtures thereof in the presence of (d) a water-miscible polar solvent in a quantity of at least 10 parts by weight solvent for each 100 parts by weight isocyanate compound at a temperature of from 50 to 165° C. in a manner such that (a), (b), (c) and (d) are kept substantially homogeneous during the hydrolysis reaction.

4,565,646

WOOL WAX ACID HYDROGENATION PRODUCTS USEFUL AS EMULSIFIERS

Wolfgang Hofeditz, Hamburg, Fed. Rep. of Germany, assignor to Beiersdorf Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 404,770, Aug. 3, 1982, abandoned, which is a continuation of Ser. No. 189,391, Sep. 19, 1982, abandoned. This application Feb. 29, 1984, Ser. No. 584,638

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938656

Int. Cl.⁴ B01J *13/00*

U.S. Cl. 252—309 **9 Claims**

1. An emulsifier for oil-in-water emulsions consisting essentially of a substantially steroid-free wool-wax alcohol free of α,ω-diols prepared by subjecting

(a) wool-wax esters of mono- or multivalent alcohols of 1 to 6 carbon atoms or

(b) wool-wax acids optionally containing monovalent aliphatic alcohols of 1 to 6 carbon atoms to catalytic hydrogenation at a pressure of 170 to 300 bars and a temperature of 200° to 300° C. in the presence of a high pressure hydrogenation catalyst to obtain substantially steroid free wool wax alcohols and removing therefrom α,ω-diols.

4,565,647

FOAMING SURFACTANT COMPOSITIONS

Ramon A. Llenado, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 371,747, Apr. 26, 1982, abandoned, and Ser. No. 282,976, Jul. 13, 1981, abandoned. This application Jul. 12, 1982, Ser. No. 395,751

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.⁴ B01F *17/02, 17/12, 17/56;* **B01J** *13/00*

U.S. Cl. 252—354 **10 Claims**

1. A foaming composition comprising

(1) an alkylpolysaccharide surfactant having the formula $RO(R^1O)_t(Z)_x$ where Z is a moiety derived from a reducing saccharide containing from 5 to 6 carbon atoms and wherein R is a hydrophobic group selected from the group consisting of alkyl, alkylphenyl, hydroxyalkylphenyl and hydroxyalkyl groups and mixtures thereof in which said alkyl groups contain from about 8 to about 20 carbon atoms; R^1 contains from 2 to about 4 carbon atoms; t is from 0 to about 30; and x is a number from about 1.5 to about 10;

(2) an anionic cosurfactant selected from the group consisting of sulfates, sulfonates, carboxylates and mixtures thereof, neutralized with one or more cationic moieties,

the ratio of (2) to (1) being from about 1:10 to about 10:1 except that when the cosurfactant is an alkylbenzene sulfonate, the ratio of (2) to (1) is at least about 1:2, and when the cosurfactant is soap the ratio of (2) to (1) is at least about 1:2, and when the anionic cosurfactant does not contain a sulfonate or carboxylate x must be from 1.5 to 3 and the alkylpolysaccharide surfactant must have a free fatty alcohol content of less than about 2% by weight.

4,565,648

USE OF CARBONYL COMPOUNDS, SULFONYL COMPOUNDS AND/OR THIOUREAS AS STABILIZERS FOR SOLUTIONS CONTAINING PYROCARBONIC ACID DIALKYL ESTERS AND POLYISOCYANATE PREPARATIONS CONTAINING THOSE ESTERS

Richard Kopp, Cologne, and Wolfgang Reichmann, Hilden, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 15, 1983, Ser. No. 523,300

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1982, 3231397

Int. Cl.⁴ A61K *31/265*

U.S. Cl. 252—397 **4 Claims**

1. A process for the production of storage-stable solutions of pyrocarbonic acid dialkyl esters in organic liquids inert to these esters comprising adding to said esters one or more members selected from the group consisting of urea, N-alkyl ureas, N-aryl ureas, N,N'-diaryl ureas, thiourea, sulfamide, N-aryl sulfamides, N,N'-diarylsulfamides, aliphatic or aromatic sulfonic acid amides, sulfuric acid dialkyl esters, aliphatic and aromatic carboxylic acid halides, aliphatic and aromatic sulfonic acid halides, aliphatic and aromatic carbonyl isocyanates, aliphatic and aromatic sulfonyl isocyanates, and aliphatic and aromatic carboxylic acid anhydrides.

4,565,649

GRAPHITE INTERCALATION COMPOUNDS

F. Lincoln Vogel, Whitehouse Station, N.J., assignor to Intercal Company, Port Huron, Mich.

Continuation of Ser. No. 206,647, Nov. 13, 1980, abandoned, which is a continuation-in-part of Ser. No. 499,834, Aug. 23, 1974, abandoned. This application Jul. 30, 1984, Ser. No. 635,940

Int. Cl.⁴ H01B *1/04*

U.S. Cl. 252—503 **17 Claims**

1. A process for preparing a conductor for transmission of electricity, which comprises reacting graphite with a Bronsted acid selected from hydrogen fluoride, hydrogen chloride, hydrogen bromide, nitric acid, nitrous acid, sulfuric acid or perchloric acid and an electron acceptor metal halide selected from a boron trihalide, a pentahalide of a Group V A or B metal, a tetrahalide of a Group IV A or B metal, or mixtures thereof wherein the molar ratio of the Bronsted acid to metal halide ranges from about 0.01:1 to about 100:1, the reaction is conducted under a substantially moisture free, inert atmosphere, at a temperature of at least about 10° C. and the Bronsted acid and metal halide or boron trihalide are in a liquid or gas phase, said reaction producing a graphite intercalation compound; and shaping said graphite intercalation compound into a form adapted for the conduction of electricity.

4,565,650

PROCESS FOR N-DOPING OF POLYMERS

Bernard Francois, Strasbourg, and Claude Mathis, Truchtersheim, both of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Jul. 20, 1984, Ser. No. 633,122

Claims priority, application France, Jul. 21, 1983, 83 12075

Int. Cl.⁴ C08F *8/42, 138/02;* **H01B** *1/12;* **H01L** *29/28*

U.S. Cl. 252—518 **24 Claims**

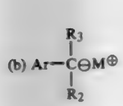
1. A process for the production of N doped polyacetylene and polyphenylene which comprises:

contacting the polymer with a doping agent, in a solvent for the doping agent, wherein the doping agent is selected from the group consisting of compounds of formula

(a) R_1-Li (I)

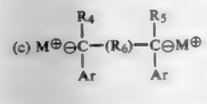
wherein R_1 is an aryl radical, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical, each of which can be a polymeric chain containing up to about 100,000 carbon atoms;

(II)



wherein Ar is an aryl radical containing up to about 3 rings which can be fused, a 2-pyridyl or a 4-pyridyl radical, R_2 and R_3 are identical or different and represent hydrogen, an aryl radical, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical, each of which can be a polymeric chain containing up to about 100,000 carbon atoms and M represents an alkali metal atom selected from Na, K, Li, Cs and Rb; and

(III)



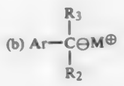
wherein Ar and M are as defined above, R_4 and R_5 independently represent hydrogen, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical and an aryl containing up to about 3 rings which can be fused, R_6 represents a saturated or unsaturated bivalent hydrocarbon radical each of which can be a polymeric chain containing up to about 100,000 carbon atoms.

18. An N-doped polymer comprising polyacetylene or polyphenylene and an N-doping effective amount of a dopand comprising at least one compound selected from the group consisting of compounds of the formula

(a) R_1-Li (I)

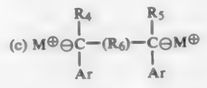
wherein R_1 is an aryl radical, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical, each of which can be a polymeric chain containing up to about 100,000 carbon atoms;

(II)



wherein Ar is an aryl radical containing up to 3 rings, which can be fused, a 2-pyridyl or a 4-pyridyl radical, R_2 and R_3, are identical or different and represent hydrogen, an aryl radical, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical, each of which can be a polymeric chain containing up to about 100,000 carbon atoms and M represents an alkali metal atom selected from Na, K, Li, Cs and Rb; and

(III)



wherein Ar and M are as defined above, R_4 and R_5 independently represent hydrogen, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical and an aryl containing up to about 3 rings which can be fused, R_6 represents a saturated or unsaturated bivalent hydrocarbon radical each of which can be a polymeric chain containing up to about 100,000 carbon atoms wherein R_1, R_2, R_3, R_4, R_5, R_6, and M are as defined above.

4,565,651

METHOD OF LYOPHILIZING COLD INSOLUBLE GLOBULIN

Takao Ohmura, Takarazuka; Yutaka Hirao; Takuji Hanamura, both of Toyonaka; Akimasa Ohmizu, Hirakata, and Satoshi Funakoshi, Kutano, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Oct. 3, 1983, Ser. No. 538,572

Claims priority, application Japan, Oct. 7, 1982, 57-176917

Int. Cl.⁴ C07G *7/00;* **A61K** *35/14*

U.S. Cl. 260—112 B **10 Claims**

1. A method of lyophilizing an aqueous solution of a cold insoluble globulin containing from about 0.1 to 10% w/v cold insoluble globulin which has been purified by heat treatment to a pharmaceutically acceptable degree, said method comprising lyophilizing the aqueous solution to which from about 0.25 to 5% w/v albumin and from about 1 to 10% w/v of at least one stabilizer selected from the group consisting of neutral amino acids, monosaccharides, disaccharides, and sugar alcohols have been added, the amounts of albumin and the stabilizer being sufficient for preventing the occurrence of turbidity when the lyophilized cold insoluble globulin is dissolved in water.

4,565,652

PROCESS FOR REMOVING LIPOPROTEINS USING DERIVATIZED POLYHYDROXYMETHYLENE

Rudolf Schmidtberger, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Aug. 23, 1984, Ser. No. 643,465

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1983, 3330648

Int. Cl.⁴ C07G *7/00;* **G01N** *33/92*

U.S. Cl. 260—112 B **4 Claims**

1. A process for removing lipoproteins from an aqueous fluid, which comprises bringing said fluid into contact with a polyhydroxymethylene onto which has been grafted an oxyethylated alcohol or an oxyethylated carboxylic acid and separating the fluid from said polyhydroxymethylene to which at least some of said lipoproteins have become bound.

4,565,653

ACYLTRIPEPTIDE IMMUNOSTIMULANTS

Jeffrey L. Ives, Guilford, and Frank C. Sciavolino, Niantic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

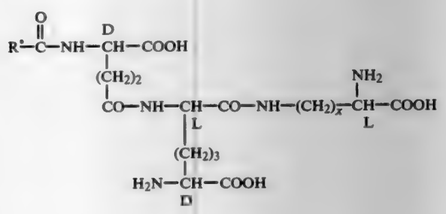
Filed Mar. 30, 1984, Ser. No. 595,169

Int. Cl.⁴ C07C *103/52*

U.S. Cl. 260—112.5 R **9 Claims**

1. A compound having formula (I)

(I)



wherein R° is alkyl having from one to six carbon atoms, and x is an integer from 1 to 4.

4,565,654

N-ACYLOXY MONOCYCLIC β-LACTAMS

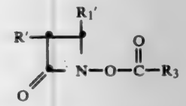
Marvin J. Miller, South Bend, Ind., assignor to University of Notre Dame Du Lac, Notre Dame, Ind.

Filed Mar. 28, 1983, Ser. No. 479,375

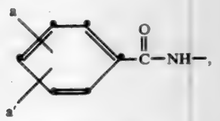
Int. Cl.⁴ C07D *411/12*

U.S. Cl. 260—239 A **12 Claims**

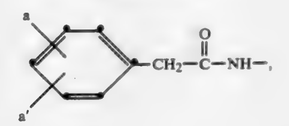
1. A compound of the formula

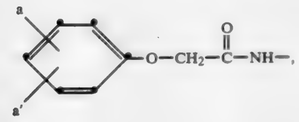


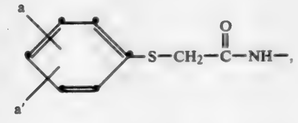
wherein R′ is amino, hydrogen, C_1–C_4 alkyl, carboxy, protected carboxy, C_1–C_4 alkyl mono-substituted by hydroxy, halogen, methoxy, amino, protected amino, carboxy, protected carboxy, or cyano; or R′ is an acylamino group of the formulae

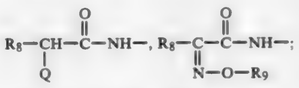


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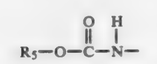




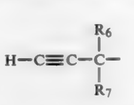




or a protected amino group selected from a group of the formula



wherein R_5 is C_1–C_5 alkyl, halo-substituted alkyl, C_3–C_5 alkenyl, C_3–C_6 cycloalkyl, adamantyl, diphenylmethyl, benzyl, substituted benzyl substituted by methoxy, methyl, halogen, or nitro; or R_5 is an alkinyl group of the formula



wherein R_6 and R_7 when taken separately are independently hydrogen, or C_1–C_3 alkyl, and when taken together with the carbon to which they are attached form a C_5–C_7 cycloalkyl group; or R′ is a diphenyloxazolino group of the formula



wherein ϕ is phenyl; and where in the above R′ acylamino groups, a and a′ are independently hydrogen, halogeny, hydroxy, C_1–C_4 alkyl, C_1–C_4 alkoxy, or cyano; R_8 is phenyl, thienyl, furyl, thiazolyl, oxazolyl, 1,3,4-thiadiazolyl, 1,2,4-oxadiazolyl, and such heterocyclic rings mono-substituted by amino, hydroxy, halogen, or methyl; Q is hydrogen, amino, hydroxy, carboxy, or methyl; and R_9 is C_1–C_4 alkyl, carboxymethyl, 1- or 2-carboxyethyl, or 2-carboxyprop-2-yl;

R'_1 is hydrogen, C_1–C_4 alkyl, protected carboxy, carboxy, phenyl, substituted phenyl substituted by C_1–C_4 alkyl, hydroxy, halogen, C_1–C_4 alkoxy, amino, protected amino, carboxy, protected carboxy, or cyano; or R'_1 is C_1–C_4 alkyl, mono-substituted by hydroxy, halogen, methoxy,

amino, protected amino, carboxy, protected carboxy, or cyano; and

R_3 is methyl, phenyl, or substituted phenyl substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, or nitro; and when R'_1 is C_1–C_4 alkyl substituted by amino, or Q is amino, the acid addition salts thereof.

4,565,655

DIAZABICYCLONONENE ANTIBACTERIALS

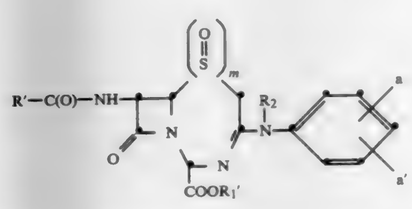
Douglas O. Spry, Mooresville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 28, 1983, Ser. No. 536,473

Int. Cl.⁴ C07D *513/04*

U.S. Cl. 260—245.2 R **6 Claims**

1. The process for preparing a compound of the formula



wherein R′ is hydrogen, C_1–C_5 alkyl, C_1–C_5 alkyl substituted by cyano or halogen;

a phenyl or a substituted phenyl group represented by the formula



wherein a and a′ independently are hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, hydroxy, amino, acetylamino, carboxy, carboxymethyl, or trifluoromethyl;

a substituted methyl group of the formula

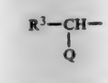
$$R^1—(Z)_n—CH_2—$$

wherein R^1 is phenyl, substituted phenyl as defined above, cyclohex-1-ene or cyclohexa-1,4-diene, Z is O or S, and n is 0 or 1; a heteroarylmethyl group of the formula

$$R^2—CH_2—$$

wherein R^2 is thienyl, furyl, tetrazolyl, thiazolyl, oxazolyl, isoxazolyl, thiadiazolyl, oxadiazolyl, wherein said hetero ring is optionally substituted by chloro, bromo, C_1–C_4 alkyl, amino, or protected amino;

a disubstituted methyl group of the formula



wherein R^3 is R^1 or R^2 as defined above, and Q is hydroxy, formyloxy, carboxy, amino, or sulfo;

an oximino group of the formula



wherein

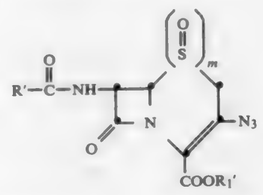
R^4 is R^1 or R^2 as defined above and R^5 is C_1–C_4 alkyl, monocarboxy-substituted C_1–C_7 alkyl, or monocarboxy-substituted C_3–C_7 cycloalkyl;

R_2 is hydrogen or C_1–C_3 alkyl;

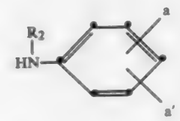
m is 0 or 1; and

R_1' is a carboxy protecting group;

which comprises heating in an inert solvent at a temperature between about 45° C. and about 95° C. a 3-azido-3-cephem ester of the formula



wherein R′, R_1' and m have the same meanings as defined above; with an aniline of the formula



wherein R_2, a and a′ have the same meanings as defined above.

4,565,656

PREPARATION OF 17β-HYDROXYACETYL-17α-OL-STEROIDS

Lucien Nedelec, Le Raincy; Vesperto Torelli, and Michel Hardy, both of Maisons-Alfort, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jan. 27, 1982, Ser. No. 343,357

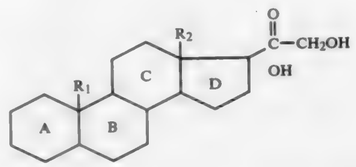
Claims priority, application France, Jan. 29, 1981, 81 01688

The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.

Int. Cl.⁴ C07J *3/00*

U.S. Cl. 260—397.47 **9 Claims**

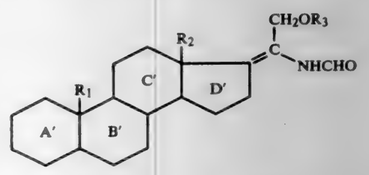
1. A process for the preparation of 17β-hydroxyacetyl-17α-ol steroids of the formula



I

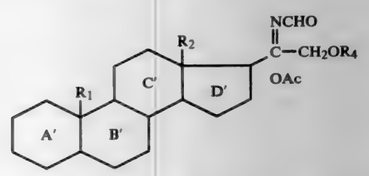
wherein R^1 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms optionally substituted with halogen or an oxygen or nitrogen function and alkenyl and alkynyl of 2 to 4 carbon atoms, R_2 is alkyl of 1 to 4 carbon atoms and the A,B,C, and D rings may contain one of more double bonds

and are optionally substituted with at least one member of the group consisting of hydroxy, keto, halogen, alkyl and alkoxy of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms comprising reacting a compound of the formula



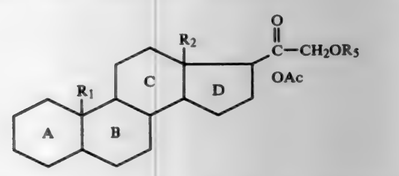
II

wherein R_1 and R_2 have the above definition, R_3 is selected from the group consisting of hydrogen and R_3', R_3' is a group protecting the hydroxyl and A′, B′, C′ and D′ have the same definition as A, B, C and D with the supplemental possibility of being substituted with a protected hydroxyl or protected ketone with a reactant capable of introducing an acetoxyl group selected from the group consisting of lead tetraacetate and idosobenzene diacetate to obtain a compound of the formula



III

wherein R_4 is selected from the group consisting of R_3' and acetyl and Ac is acetyl, reacting the latter with a hydrolysis agent to obtain a compound of the formula



IV

wherein R_1, R_2, A,B,C and D have the above definitions and R_5 is selected from the group consisting of hydrogen, a non-easily hydrolyzable hydroxy protective group and an acetyl group and reacting the latter to eliminate the acetyl group in the 17α-position and the R_5 group where it is other than hydrogen to obtain the corresponding compound of formula I.

4,565,657

PROCESS FOR THE PRODUCTION OF 17α-ACYLOXY-6-CHLORO-1α,2α-METHYLENE-3,20-DIONES

Klaus Junghans, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

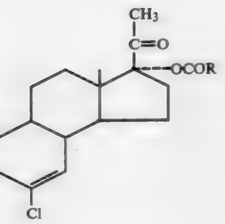
Filed Sep. 4, 1984, Ser. No. 647,211

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, 3331824

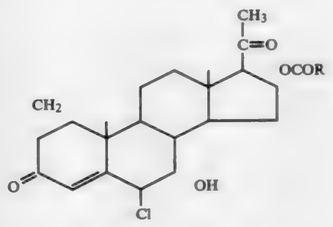
Int. Cl.⁴ C07J *1/00*

U.S. Cl. 260—397.4 **12 Claims**

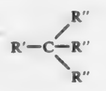
1. A process for the production of a 17α-acyloxy-6-chloro-1α,2α-methylene-3,20-dione of the formula



wherein R is alkyl of up to 5 carbon atoms or phenyl comprising reacting a compound of the formula



wherein R is as defined above, in the presence of a strong acid, with a compound of the formula



wherein R′ is hydrogen or alkyl of up to 4 carbon atoms and R″ represents alkoxy groups, alkylthio groups, dialkylamino groups or a combination thereof, with 1 to 4 carbon atoms in each alkyl radical.

4,565,658

OXIDATION AND AMMOXIDATION PROCESS

Jerry R. Ebner, St. Charles, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 500,518, Jun. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 254,231, Apr. 14, 1981, Pat. No. 4,405,498, which is a continuation-in-part of Ser. No. 104,625, Dec. 17, 1979, abandoned. This application Jan. 22, 1985, Ser. No. 693,634

Int. Cl.⁴ C07C *120/14, 120/00*

U.S. Cl. 260—465.3 **1 Claim**

1. A process for the ammoxidation of propylene to produce acrylonitrile comprising passing propylene along with ammonia and oxygen at an elevated temperature in the vapor phase over a catalyst consisting essentially of catalytic elements having the empirical formula

$$BiMo_aV_bSb_cM_dO_x$$

wherein a is from 0.5 to 2, b is from 0.12 to 3, c is from 0.12 to 10, d is from 0 to 0.5, and x is taken to satisfy the valence requirements of the other elements present, said catalyst being prepared by forming a mixture containing a preformed vanadium antimonate component and a bismuth molybdate component, forming said mixture into dry particles and calcining at a temperature of from 500° to 850° C., and wherein M is one or more elements selected from potassium, calcium, manganese, boron, phosphorus, titanium, zirconium, silver, and tungsten.

4,565,659

SUBSTITUTED AMINOALKANOL PHOSPHOLIPIDS

Hans-Heiner Lautenschläger, Pulheim; Harald Borbe, Cologne; Gerrit Prop; Ferdinand Wirtz-Peitz, both of Pulheim; Ille-Stephanie Doppelfeld, Giessen, and Michael J. Parnham, Pulheim, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

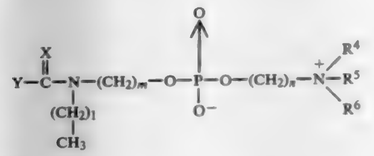
Filed Oct. 18, 1983, Ser. No. 543,149

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1982, 3239388; Oct. 25, 1982, 3239390

Int. Cl.⁴ C07F *9/10*

U.S. Cl. 260—925 **5 Claims**

1. Substituted aminoalkanol phospholipids of the general Formula I



I

in which

X represents an oxygen or a sulphur atom and

Y the radical $-NR^1R^2$ or $-OR^3$,

wherein

R^1, R^2 can be the same or different and represent a saturated or unsaturated, straight-chained or branched alkyl radical having 1 to 20 carbon atoms, a benzyl radical, a phenyl radical or hydrogen,

R^3 represents phenyl, benzyl or C_{1-4}-alkyl

R^4, R^5, R^6 can be the same or different and represent hydrogen or a low alkyl radical having 1 to 4 carbon atoms,

l represents an integer from 0 to 19

m represents an integer from 2 to 6

n represents an integer from 2 to 4.

4,565,660

METHOD FOR DISPERSING GAS, FOR MIXING A PULVEROUS SOLID INTO A LIQUID TO FORM A SUSPENSION, AND FOR MAINTAINING THE OBTAINED GOOD SOLID-GAS-LIQUID SUSPENSION IN THE REACTOR

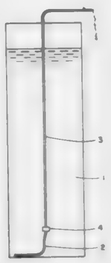
Stig-Erik Hultholm; Launo L. Lilja; Valto J. Mäkitalo, all of Pori, and Bror G. Nyman, Vanha-Ulvila, all of Finland, assignors to Outokumpu Oy, Outokumpu, Finland

Filed Aug. 16, 1983, Ser. No. 523,732

Claims priority, application Finland, Aug. 24, 1982, 822937

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—121 R **6 Claims**



1. A method for dispersing a gas into a liquid in a reactor, forming a good suspension of the three phases of said gas, said liquid and a pulverulent solid in the liquid and for maintaining the achieved good suspension in the reactor, said method comprising directing a gas jet below the surface of the liquid which contains said solid, by means of at least one flexible-structured dispersing member, said member having solid, imperforate walls with an outlet opening solely at its outermost end, the support point of the dispersing member being above the dispersing member at the bottom of the reactor and at the center point of its operating area, the full gas jet under pressure being dicharged freely from the outermost end of the dispersing member, changing its direction randomly whereby the dispersing member exerts a whip-like, repeating movement at the bottom of the reactor, which movement has a continuously decreasing radius of curvature, at the same time causing strong mechanical mixing and thereby producing a good suspension of the three different phases over the entire cross-sectional area of the reactor.

4,565,661

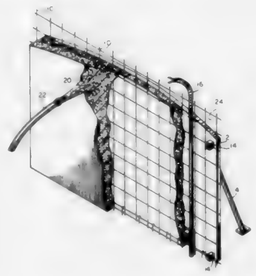
METHOD OF MOLDING A SHELTER STRUCTURE

Giacomo F. Michienzi, 282 Old Bedford Rd., Concord, Mass. 01742

Division of Ser. No. 220,353, Dec. 29, 1980, Pat. No. 4,366,942, and Ser. No. 220,354, Dec. 29, 1980, Pat. No. 4,381,853. This application Apr. 20, 1981, Ser. No. 255,766

Int. Cl.⁴ B28B *19/00, 23/02;* E04B *1/16*

U.S. Cl. 264—34 **7 Claims**



1. Method for erecting a shelter structure comprising providing a substantially rigid and solid sheet member disposed in an upright position, said member having a substantially planar inside surface, providing brace means for retaining said rigid member in said upright position, providing a first panel of mesh material substantially parallel to and spaced from said inside surface of said rigid member to define substantially a void therebetween, attaching conduit means to said first mesh panel, projecting a cementitious material at said mesh panel and onto a majority of said inside surface of said rigid member from a side of said mesh panel remote from said void and forming an inside wall surface substantially parallel to said planar inside surface, thereby forming a first wall of cementitious material of substantially uniform thickness bounded on one side of said rigid member and having said mesh panel embedded therein, allowing said cementitious material to harden, and removing said brace means and said rigid member, whereby a leave standing said first wall devoid of said rigid member.

4,565,662

METHOD FOR THE PRODUCTION OF PARTICLE BOARDS

Björn Mansson; Kurt Sirenius, both of Sundsvall, and Birger Sundin, Nacka, all of Sweden, assignors to AB Casco, Stockholm, Sweden

Filed Apr. 29, 1983, Ser. No. 489,721

Claims priority, application Sweden, May 6, 1982, 8202856

Int. Cl.⁴ D04H *1/64*

U.S. Cl. 264—113 **10 Claims**

1. A method for the production of particle boards by addition of a hydrophobic agent and a curable glue to wood based particles, formation of the particles into a mat and subsequent curing of the glue by application of heat and pressure, comprising the steps of

(a) adding a hydrophobic agent, which is solid or non-fluid at normal temperatures, to the wood based particles,

(b) maintaining both the hydrophobic agent and the wood based particles at temperatures above the melting temperature of the hydrophobic agent,

(c) maintaining contact under agitation between the heated hydrophobic agent and the heater wood based particles, so as to spread and distribute the hydrophobic agent over the surfaces of the particles, and

(d) subsequently adding a formaldehyde-based glue to the particles from step (c) before mat formation and pressing.

4,565,663

METHOD FOR MAKING WATER-SWELLABLE COMPOSITE SHEET

Louis A. Errede, North Oaks; James D. Stoesz, St. Paul, both of Minn., and George D. Winter, deceased, Bridgend, Wales (by Jenny Upton, legal representative), assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 444,199, Nov. 23, 1982, Pat. No. 4,460,642, which is a continuation-in-part of Ser. No. 277,990, Jun. 26, 1981, Pat. No. 4,373,519. This application Apr. 25, 1984, Ser. No. 603,607

Int. Cl.⁴ B29D *27/00, 7/14;* B29B *1/04*

U.S. Cl. 264—120 **17 Claims**



1. A method of preparing a tear-resistant composite sheet material having hydrophilic, absorptive particles enmeshed in a network of interlaced microfibrous polytetrafluoroethylene forming a fibril matrix, said hydrophilic absorptive particles being present in said matrix in the range of 1.0 to 10 parts particles per part polytetrafluoroethylene by weight, and said hydrophilic absorptive particles having absorptive capacity greater than 1.0 gram of water per gram of dry particle, said method comprising:

(1) dry blending one or more hydrophilic, absorptive particulate materials;

(2) admixing water to particulate in a weight ratio in the range of 1:2 to 10:1, to form a damp mixture, the water being present in a quantity insufficient to exceed the absorptive capacity of the particulate;

(3) adding gradually, with stirring, to said mixture an equal weight of an aqueous emulsion of polytetrafluoroethylene having in the range of 15 to 25 weight percent solids so that the resulting mass has a cohesive consistency;

(4) mixing said mass in an intensive mixer at a temperature between 50° C. and 100° C. for a time sufficient to cause initial fibrillation of said polytetrafluoroethylene particles;

(5) biaxially calendering said mass between calendering rolls maintained at about 50° C. to about 100° C. to cause additional fibrillation of said polytetrafluoroethylene particles to form a self-supporting sheet, while closing the gap between the calendering rolls with each successive calendering operation, for a time sufficient to produce a tear-resistant sheet having a tensile strength of at least 0.5 megapascal; and

(6) drying the resultant sheet to remove water.

4,565,664

DRAWN TUBING MANUFACTURING PROCESS AND APPARATUS THEREFOR

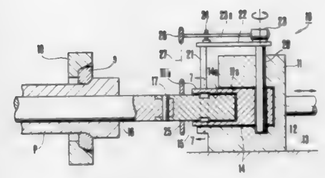
Shigeki Ikehata; Kuniharu Shutoh, and Kazuya Aoyagi, all of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 17, 1983, Ser. No. 476,274

Claims priority, application Japan, Mar. 18, 1982, 57-41744

Int. Cl.⁴ B29D *23/04*

U.S. Cl. 264—130 **15 Claims**



1. A process of manufacturing seamless tubing by using a press having a mandrel and a die, comprising: the steps of:

preparing a formed blank having a thick-walled cup shape;

fitting said formed blank on the mandrel of said press with the bottom of the former abutting against the leading end of the latter;

applying a lubricant to a portion of the surface of said blank;

pushing out said mandrel by the action of said press to draw said blank through the die of said press;

pulling in the drawn blank together with said mandrel out of said die by the action of said press; and

repeating the applying, pushing and pulling steps in the recited order until a drawn tubular product having desired shape and size is manufactured,

wherein the improvement comprises the step of turning said drawn blank a predetermined angle on the axis thereof with respect to said mandrel during each of said repeating steps, whereby said lubricant can be applied to another portion of the surface of said drawn blank at a second or subsequent applying step so that longitudinal and circumferential irregularities, if any, in the thickness of said tubular product can be eliminated by said turning step after the final repeating step.

9. A tubing manufacturing press of horizontal push bench type, comprising:

a hydraulic cylinder for pushing out and pulling in a ram;

a cross head secured to the leading end of said ram and adapted to be actuated by said hydraulic cylinder through said ram for moving back and forth;

a mandrel holder fitted in said cross head;

a mandrel end member fitted in said mandrel for turning on the axis thereof;

a mandrel removably connected to said mandrel end member;

a means of applying lubricant to said tubing; and

a die for receiving a blank together with said mandrel to draw said blank into desired shape and size when said blank is pushed out through said mandrel, sand mandrel end member, said mandrel holder, said cross head and said ram by the actuation of said hydraulic cylinder,

wherein the improvement comprises turning means for turning said mandrel a predetermined angle on the axis thereof through said mandrel end member relative to said mandrel holder and said cross head thereby to turn said drawn blank said predetermined angle.

4,565,665

FLOW THROUGH ION SELECTIVE ELECTRODE

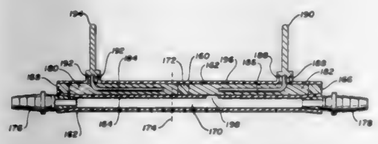
Eric J. Fogt, Maple Grove, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 3, 1983, Ser. No. 519,934

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.⁴ B29D *3/00*; G01N *27/46*

U.S. Cl. 264—267 **4 Claims**



1. A method for producing a flow-through ion sensing electrode, comprising the following ordered steps:

dissolving an ion selective material in a solvent which is a swelling agent for a plastic;

subsequently soaking in said solvent at least a portion of a plastic tube having a proximal end, a distal end, an outer wall, a first lumen, a second lumen, and an inner wall separating said first and second lumens, until said portion of said tube swells, said portion including at least part of said inner wall;

subsequently drying said tube to remove said solvent; and

subsequently filling only the first lumen of said tube with an electrolye;

said method further comprising the following non-ordered steps which may be performed in any convenient order relative to said ordered steps:

sealing said first lumen distal to at least a part of said portion of said tube and sealing said first lumen proximal to at least a part of said portion of said tube; and

inserting an electrode into the first lumen of said tube intermediate said first and second sealing means.

4,565,666

METHOD OF PRODUCING COMBINATION ION SELECTIVE SENSING ELECTRODE

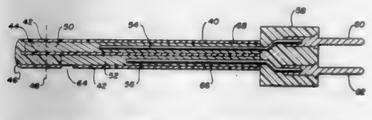
Patrick T. Cahalan, Maple Grove, and Michelle A. Schwinghammer, Forest Lake, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 519,938, Aug. 3, 1983, Pat. No. 4,486,290. This application Jul. 18, 1984, Ser. No. 632,519

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.⁴ B29C *39/04*

U.S. Cl. 264—267 **1 Claim**



1. A method for producing an ion sensing electrode, comprising the following ordered steps:

dissolving an ion selective material in a solvent which is a swelling agent for a plastic;

subsequently soaking in said solvent a tube fabricated of said plastic and having a proximal end, a distal end, and outer wall, a first lumen, a second lumen and an inner wall separating said first and second lumens, said tube soaked only distal to a first point intermediate the proximal and distal ends of said tube, until said tube swells;

subsequently drying said tube until said solvent evaporates; and

filling the first and second lumens of said tube with an electrolyte;

said method further comprising the following non-ordered steps which may be performed in any convenient order relative to said ordered steps:

removing that portion of the outer wall of said tube located exterior to said second lumen, intermediate the distal end of said tube and a second point proximal to said first point;

sealing the distal end of the first lumen of said tube; and

inserting first and second electrodes into the first and second lumens of said tube.

4,565,667

FAILED FUEL DETECTION APPARATUS

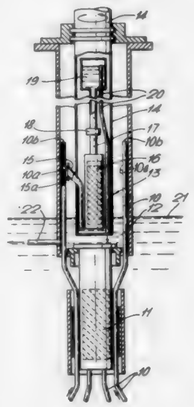
Edward Duncombe, Altrincham, and Gordon Thatcher, Lymm, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 13, 1982, Ser. No. 449,526

Claims priority, application United Kingdom, Jan. 8, 1982, 8200593

Int. Cl.⁴ G21C *17/00*

U.S. Cl. 376—246 **4 Claims**



1. Failed fuel detection apparatus of the kind having liquid coolant sampling pipes which are selected in turn for testing for products, indicative of fuel failure, in the liquid coolant; said apparatus comprising a pump for impelling coolant in the pipes to outlet points in the pipes downstream of said pump, and a rotary collector having an open mouth constructed and arranged to scan said outlet points, and an unsealed gap between said points and said collector mouth for precluding contact thereof, across which gap coolant in the pipes can be impelled by said pump upstream of said points.

4,565,668

METHOD OF MAKING POWDER-METALLURGICAL ARTICLES

Christer Aslund, Bruksgränd 14, and Claes Tornberg, Staltappargatan 27, both of S-64400 Torshälla, Sweden

Filed Nov. 5, 1984, Ser. No. 668,296

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338369

Int. Cl.⁴ B22F *1/00*

U.S. Cl. 419—68 **8 Claims**

1. A method of making powder-metallurgical articles, in which powder of metal and/or metal alloys fills a thin-walled closed casing and cold-isostatic pressure is applied to the casing whereby the powder within the casing is compacted so as to form a solid or dimensionally stable article said casing having an outer wall surface with an approximately straight joining weld seam, comprising applying to the outside of said wall surface including said weld seam prior to the application of the cold-isostatic pressure a closely fitting and elastically expandable layer of an elastically expandable material preferably in such a way that an approximately uniform prestress is applied to the wall surface.



4,565,669

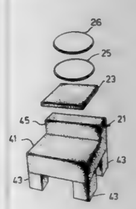
MICROWAVE ASHING APPARATUS

Michael J. Collins, and Wyatt P. Hargett, Jr., both of Matthews, N.C., assignors to CEM Corporation, Matthews, N.C.

Filed Apr. 21, 1983, Ser. No. 487,307

Int. Cl.⁴ G01N *31/12*; H05B *6/64*

U.S. Cl. 422—78 **2 Claims**



1. An apparatus for ash analysis of an ashable material selected from the group consisting of synthetic organic polymers, waste water sludges, activated sludges, industrial wastes, river bottom sediments, lake bottom sediments, stream bottom sediments, coals, foods, papers and structural materials, while removing gaseous products of combustion from the material during ashing without removing any ash, said apparatus comprising means defining a chamber, a source of microwave radiation for radiating onto contents of said chamber, a substantially flat, silicon carbide ashing means located within the chamber, which is stable and essentially non-oxidizable, capable of being heated by microwave radiation to a temperature in the range of 400° to 1,000° C. without deterioration, and which has horizontal flat top and bottom surfaces, first and second thin flat non-woven cloth pads of fused quartz fibers, both of which have flat upper and lower surfaces, the first of which pads is located on top of and in continuous intimate contact with the top surface of the silicon carbide ashing means, and the second of which pads is located atop the first pad, so that ashable material to be analyzed for ash content may be placed between such pads for such ashing to be effected, said second pad being permeable to passage of gas released during ashing of the ashable material and a refractory material in contact with the bottom surface of the ashing means so as to at least partially inhibit heat loss therefrom.

4,565,670

HEAT TREATING APPARATUS USING MICROWAVES

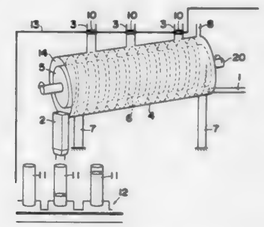
Hitoshi Miyazaki, Katsuta; Katsuyuki Ohtsuka, Mito, and Kazutoshi Miyata, Hitschiota, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 489,410

Claims priority, application Japan, May 6, 1982, 57-75755

Int. Cl.⁴ G21F *9/08*

U.S. Cl. 422—186.04 **9 Claims**



1. A heat treating apparatus using microwaves for continuously treating a substance which contains nuclear materials, comprising:

a stationary outer cylinder having an inlet port at one end thereof, an outlet port at the other end thereof, and a gas discharge port;

an inner cylinder coaxially rotatably mounted within said outer cylinder;

said apparatus having an annular passage defined between said outer cylinder and said inner cylinder through which the materials to be treated are caused to pass for being heat treated;

waveguide means opening into said annular passage for guiding microwaves into said annular passage; and

a helical vane on said inner cylinder extending along substantially the entire length of the outer surface of said inner cylinder and projecting radially outwardly from the outer surface of said inner cylinder a distance such that the outer end thereof is movable in frictional contact with the inner surface of said outer cylinder when said inner cylinder is rotated for transferring the material to be treated along said annular passage from said inlet port to said outlet port, the distance between the spires of said vane parallel to the axis of said cylinders and the radial dimension of said annular passage defining a space between the spires of said vane having a size for limiting the amount of material to be treated to less than that necessary for maintaining criticality safety of the material being treated.

4,565,671

SINGLE CRYSTAL MANUFACTURING APPARATUS

Kinya Matsutani, Yokohama, and Toshikazu Yokota, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 1, 1984, Ser. No. 636,682

Claims priority, application Japan, Aug. 5, 1983, 58-143539; Aug. 5, 1983, 58-143540

Int. Cl.⁴ C30B *15/14*

U.S. Cl. 422—249 **11 Claims**

1. A single crystal manufacturing apparatus comprising:

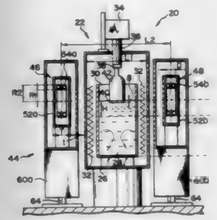
a crucible containing a melting liquid of a single crystal raw material;

heating means arranged outside the crucible for heating the melting liquid;

a pulling mechanism having a seed crystal movably supported substantially along a perpendicular direction to the surface of the melting liquid for growing a single crystal by inserting the seed crystal into the melting liquid and then pulling the seed crystal from the melting liquid; and

magnetic field generating means having a superconductive

magnet for applying to the melting liquid a magnetic field for suppressing a thermal convection in the vicinity of the



surface of the melting liquid and allowing the thermal convection in the region of the melting liquid below the surface thereof.

4,565,672

METHOD FOR THE MANUFACTURE OF PUO_2-CONTAINING CRYSTALS

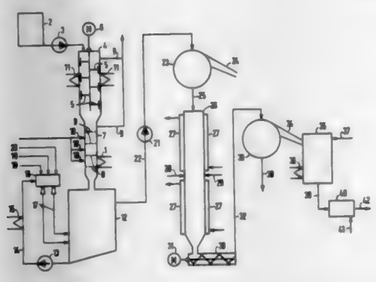
Volker Schneider, Heusenstamm; Wolfgang Stoll, Hanau, and Wolf-Günther Druckenbrodt, Rodenbach, all of Fed. Rep. of Germany, assignors to Alkem GmbH, Hanau, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,638

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1982, 3245051

Int. Cl.⁴ C01G *56/00*

U.S. Cl. 423—15 **4 Claims**



1. In a method for the manufacture of PuO_2-containing crystals by oxidizing plutonium in a nitric acid solution to form Pu^{6+}, precipitation of ammonium plutonyl carbonate containing crystals through reaction with ammonium and carbonate ions and subsequent separation and calcining of these crystals, the improvement comprising removing metal compound contaminents in the nitric acid solution which form difficult-to-dissolve metal hydroxide compounds by introducing the oxidized Pu^{6+} in solution in nitric acid into an aqueous solution of a salt selected from the group consisting of ammonium carbonate and ammonium acetate, dosing said aqueous solution with NH_3 and acid ions selected from the group consisting of carbonate (CO_3^{-2}) ions and acetate (CH_3COO^-) ions to produce a mol ratio of acid ions to the Pu^{6+} ions in said aqueous solution of at least 4:1, said acid ions forming complex compounds containing plutonium which remain dissolved in the aqueous solution, while the metal compound contaminants convert to difficult-to-dissolve metal hydroxide compounds and are precipitated, separating the precipitated metal hydroxide compounds from the aqueous solution, and thereafter adding NH_3 and carbonate ions to effect precipitation of the ammonium plutonyl carbonate containing crystals.

4,565,673

PROCESS FOR ELUTING INDIUM FROM A CHELATE RESIN CONTAINING ADSORBED INDIUM

Yushin Kataoka; Masaaki Matsuda; Masahiro Aoi, and Kunitake Chino, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 27, 1984, Ser. No. 686,937

Claims priority, application Japan, Jan. 5, 1984, 59-391

Int. Cl.⁴ C01G *15/00*

U.S. Cl. 423—112 **13 Claims**

1. A process for eluting indium from a chelate resin having a phosphorus atom-containing, chelate-forming group selected from the group consisting of a phosphine group, a phosphonium base, a phosphonic acid ester group, a phosphonic acid group, a phosphinic acid ester group, a phosphinic acid group, a aminoalkylenephosphonic acid ester group or an aminoalkylenephosphonic acid group, which contains adsorbed indium and at least one metal selected from the group consisting of iron, zinc, nickel, cobalt, copper, cadmium and lead, which comprises contacting said resin firstly with a primary eluent for the metals other than indium containing an acid containing no halogen atom in the molecule selected from the group consisting of sulfuric acid, nitric acid, phosphoric acid, acetic acid and a mixture thereof at a concentration of 0.1N or higher and then with an eluent for indium which is selected from the group consisting of (1) a solution of an acid containing a halogen atom in the molecule, (2) a mixed solution of (a) a metal halide, an ammonium halide or a mixture thereof and (b) an acid and (3) a mixed solution of a sulfide and a base compound.

4,565,674

ALUMINA CHLORINATION

Yalamanchili K. Rao, and Mohamad K. Soleiman, both of King County, Wash., assignors to Washington Research Foundation, Seattle, Wash.

Filed Feb. 10, 1984, Ser. No. 579,026

Int. Cl.⁴ C01F *7/60*

U.S. Cl. 423—137 **19 Claims**

1. A carbothermic method for preparing $AlCl_3$, comprising the steps of contacting aluminum containing ore with chlorine in the presence of a carbonaceous reducing agent at an elevated temperature of and between 750°-950° C., the reaction occurring in the presence of a catalytically active amount of a catalyst selected from the group consisting of:

alkaline earth carbonates;

fused mixtures of alkaline earth carbonates;

fused mixtures of alkali and alkaline earth carbonates;

alkaline earth oxides;

sources of alkaline earth oxides upon heat decomposition in situ at a temperature of about 750° C.;

and mixtures thereof.

4,565,675

PROCESS FOR TREATING AND RECOVERING PICKLING WASTE LIQUIDS FOR STAINLESS STEEL

Kazuhiro Uchino; Toshio Watanabe, both of Chiba; Yoshio Nakazato, Tokyo; Minoru Hoshino, and Noboru Ishihara, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe; Research Development Corporation and Solex Research Corporation of Japan, both of Tokyo, all of, Japan

Filed Mar. 20, 1985, Ser. No. 713,870

Claims priority, application Japan, Mar. 30, 1984, 59-62435

Int. Cl.⁴ C01G *49/02, 53/04, 37/02*

U.S. Cl. 423—140 **2 Claims**

1. A process for treating and recovering nitric-hydrofluoric acid, nitric acid and hydrochloric acid waste liquids used for the pickling of stainless steel, which comprises removing Fe^{3+} from the nitric-hydrofluoric acid and nitric acid waste liquids by a solvent extraction process to recover it as an iron oxide or a metallic iron, recovering the nitric acid and the hydrofluoric acid by another solvent extraction process, converting the remaining ions of Cr and Ni into a hydroxide by adding an alkali, and recovering them as ferromagnetic oxides by a ferrite formation process using the hydrochloric acid waste liquid as an acid for resolving the hydroxide and an ion source of Fe^{2+}.

4,565,676

METHOD FOR TREATING EXHAUST GASES

Mark A. Propster, Granville; Subhash Kithany, Columbus, and Stephen Seng, Frazeysburg, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 19, 1984, Ser. No. 672,755

Int. Cl.⁴ B01D *47/00;* **B01J** *8/00;* **F01N** *3/10*

U.S. Cl. 423—210 **14 Claims**

1. A process for cleaning and incinerating exhaust gases from a curing oven including the steps of

forming and maintaining a vertical, packed bed of durable heat transfer media,

discharging exhaust gases from the curing oven into the lower central portion of the bed and moving the gases upwardly through the bed,

discharging hot gases into the intermediate central portion of the bed and moving the gases upwardly through the bed, the hot gases incinerating any particulate or condensate in the exhaust gases from the curing oven,

moving the media downwardly and in direct contact with and countercurrently to the flow of gases wherein the direct contact media with the gases and in the lower portion the hot media preheats incoming fume gases and in the upper portion the hot gases preheat the incoming cool media, and

removing the gases that pass through the top portion of the packed bed.

4,565,677

METHOD FOR PURIFYING RAW MATERIAL GAS FOR USE IN SEMICONDUCTOR MANUFACTURING AND PURIFIER FOR USE IN SAID METHOD AND METHOD OF MANUFACTURING SAID PURIFIER

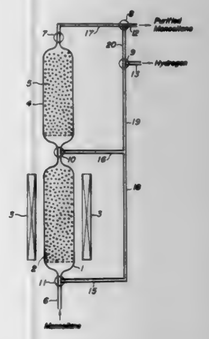
Atsushi Yusa, Kamiina, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Jun. 20, 1984, Ser. No. 622,757

Claims priority, application Japan, Jul. 1, 1983, 58-120646

Int. Cl.⁴ C01B *13/00*

U.S. Cl. 423—219 **16 Claims**



1. A method for purifying a raw material gas for use in manufacturing semi-conductor devices, comprising:

(a) preparing a purifier by:

(i) charging an oxygen absorption tank with a high surface area carrier;

(ii) heating the carrier to a temperature greater than a thermal decomposition temperature of at least one gaseous hydride of at least one element selected from the group consisting of silicon, germanium, phosphorus and arsenic;

(iii) flushing said heated carrier with said at least one hydride, thereby depositing on said carrier a hydrogenated amorphous layer of said at least one element;

(b) heating said purifier to a predetermined temperature; and

(c) bringin raw material gas into contact with the heated purifier to remove any oxygen contained in the raw material gas.

4,565,678

METHOD OF REDUCING SULFUR OXIDE AND NITROGEN OXIDE CONTENT OF FLUE GAS

Clyde W. Zielke, McMurray, and Muh-Cheng M. Wu, Bethel Park, both of Pa., assignors to Conoco Inc., Wilmington, Del.

Filed Dec. 10, 1984, Ser. No. 680,037

Int. Cl.⁴ C01B *21/00, 17/00*

U.S. Cl. 423—235 **4 Claims**

1. The method for simultaneously removing both sulfur oxides and nitrogen oxides from a mixture of gases containing such oxides in a regenerable wet-scrubbing process, which method comprises:

(a) contacting said mixture of gases in a gas-liquid contacting zone with fresh aqueous scrubbing solution comprising ammonium hydroxide, ammonium thiosulfate, and a ferrous chelating agent salt, said solution being at a pH between about 5.8 and 6.0;

(b) removing from said contacting zone as a product of the process a gaseous stream containing a significantly reduced proportion of sulfur oxides and nitrogen oxides, and an increased proportion of molecular nitrogen;

(c) also removing from said contacting zone spent aqueous scrubbing solution containing an increased concentration of bisulfite and nitric oxide chelate complex;

(d) passing a first portion of said spent solution to regeneration described further hereinafter;

(e) admixing a second portion of said spent solution with regenerated solution from said regeneration;

(f) passing the admixed solution from step (e) to a residence-time reaction zone to produce fresh aqueous scrubbing solution;

(g) returning the fresh aqueous scrubbing solution from step (f) to said contacting zone of step (a);

(h) adding hydrogen sulfide to said first portion of spent solution at elevated temperature and pressure as an initial step of said regeneration to reduce sulfur-containing compounds therein to polysulfides and to produce water vapor and elemental sulfur;

(i) flashing the reduced spent solution from step (h) to a zone of lower pressure to produce an aqueous liquid phase containing increased concentrations of ammonium hydroxide and bisulfide, minor amounts of sulfate, and liquid elemental sulfur;

(j) removing elemental sulfur from said zone of lower pressure as a product of the process; and

(k) returning said aqueous liquid phase of step (i), as comprising said regenerated solution, to said admixing of step (e).

4,565,679

METHOD OF REGULATING THE AMOUNT OF REDUCING AGENT ADDED DURING CATALYTIC REDUCTION OF NO_x CONTAINED IN FLUE GASES

Stanislaw Michalak; Klaus-Dieter Weber, both of Reichshof, and Jürgen Meier, Wiehl, all of Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Oct. 17, 1984, Ser. No. 661,892

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337793

Int. Cl.⁴ B01J *8/00;* **C01B** *21/00;* **C01G** *31/00*

U.S. Cl. 423—239 **4 Claims**

1. In a process of regulating the amount of reducing agent

added during the catalytic reduction of NO_x of flue gases originating from the combustion installation fired with fossil fuels with which an adjustment value to be used for regulation of a quantity of reducing agent to be added is determined selectively, in response to a prescribed reducing agent/NO_x stoichiometry factor, from the quantity of combustion air supplied to the combustion installation, as well as from the quantity of exiting flue gas, plus the NO_x concentration downstream ahead of the catalyzer; the improvement therewith which includes the steps of:

returning to the regulation process, as a primary correction value, the value of the NO_x concentration downstream after said catalyzer;

returning to the regulation process, as a secondary correction value, the reducing agent concentration downstream after said catalyzer; and

while maintaining the NO_x emission limit value, appropriately changing said stoichiometry factor in such a way as to regulate an excess of not-reacted reducing agent after said catalyzer over a prescribed fixed value of from 50 to 3 ppm volume.

4,565,680

RECOVERY OF PHOSPHORUS AND ALUMINUM FROM SPENT ACID FROM THE BRIGHT-DIP ALUMINUM FINISHING PROCESS

Lanny E. Todd; Philip E. Burke; Danny L. Smith, all of Nashville, Tenn., and Carla T. Gleason, Wendell, N.C., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 14, 1985, Ser. No. 691,326
Int. Cl.⁴ C01B *25/28*
U.S. Cl. 423—310 **11 Claims**

1. A method for recovering phosphorus values from aqueous phosphoric acid solutions containing phosphoric acid in combination with appreciable amounts of dissolved aluminum phosphate and nitric acid which comprises the steps of concentrating and stripping with air the aqueous acid to remove therefrom nitric acid; filtering the concentrated aqueous acid solution to remove therefrom precipitated monoaluminum phosphate, then ammoniating the filtrate to produce a monoammonium phosphate solution, recovering the solids, then treating the solids with aqueous ammonia to produce diammonium phosphate.

4,565,681

SYNTHETIC ZEOLITE ZSM-5 HAVING A DIMETHYLETHYLPROPYLAMMONIUM COMPONENT

Günter H. Kühl, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 3, 1984, Ser. No. 606,570
Int. Cl.⁴ C01B *33/28*; B11J *29/06*
U.S. Cl. 423—328 **9 Claims**

1. A method for synthesizing ZSM-5 crystalline silicate exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification

which method comprises preparing a mixture containing a source of silicon dioxide; dimethylethylpropylammonium cation as the only tetraalkylammonium component; a source of alkali metal oxide; optionally a source of alumina; and water, and having a composition in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3—20 to infinity

H_2O/OH^-—50 to 400

OH^-/SiO_2—0.05–0.4

$Q/(Q+M)$—0.05–0.95

wherein Q is dimethylethylpropylammonium cation and M is an alkali metal; and maintaining the mixture at a temperature of from about 120° C. to about 200° C. until crystals of the ZSM-5 crystalline silicate are formed.

4,565,682

PROCESS FOR PRODUCING PYROGENIC SILICIC ACID WITH INCREASED THICKENING EFFECT

Stephen Loskot, Kempten; Günter Kratel, Durach; Wilfried Lang, and Ernst Mühlhofer, both of Sulzberg, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 498,955, May 29, 1983, abandoned. This application Feb. 5, 1985, Ser. No. 698,737
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1982, 3223454
Int. Cl.⁴ C01B *33/12*
U.S. Cl. 423—336 **3 Claims**

1. A process for producing pyrogenic silicic acid having an increased thickening effect, comprising the steps of:

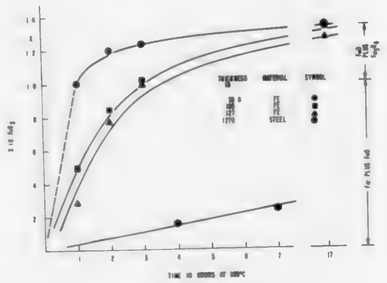
subjecting silicon-containing materials selected from the group consisting of silicon tetrachloride, silicon tetrafluoride, tetramethylsilane, trimethylchlorosilane, dimethyldichlorosilane, and methyltrichlorosilane to a pyrolysis flame, while introducing additional energy in amounts of 20 to 150%, calculated on the energy content of the pyrolysis flame, into the pyrolysis flame in an area between one-fourth and three-fourths of the longitudinal extension of the pyrolysis flame.

4,565,683

PRODUCTION OF CARBON FILAMENTS

David J. C. Yates, W. Millington, and Rees T. Baker, Annandale, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 440,451, Nov. 10, 1982, abandoned, which is a continuation-in-part of Ser. No. 222,613, Jan. 5, 1981, abandoned. This application Jul. 6, 1984, Ser. No. 628,520
Int. Cl.⁴ C01B *31/02*; D01F *9/12*
U.S. Cl. 423—447.3 **4 Claims**



1. A method for producing carbon filaments, which method comprises:

(a) heating a metallic iron composition, comprised of at least about 95 wt. % iron, to a temperature of at least about 540° C., which iron composition is in a form selected from tube, sheet, rod, foil, and gauze;

(b) contacting the heated iron composition with steam for an amount of time which will convert all, or a portion of, the iron composition to FeO, but no greater than the time at which FeO begins to convert to Fe_3O_4; and

(c) contacting the resulting iron monoxide with one or more carbon-containing gases at a temperature from the dissociation temperature of the gas to about 800° C., wherein the iron composition is substantially free of: (aa) elements which form protective oxides at the temperature employed in step (a) above; and (bb) metal components which are volatile at the temperature employed in step (a) above.

4,565,684

REGULATION OF PYROLYSIS METHANE CONCENTRATION IN THE MANUFACTURE OF GRAPHITE FIBERS

Gary G. Tibbetts, Birmingham, and Michael G. Devour, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 642,574, Aug. 20, 1984, abandoned. This application Dec. 21, 1984, Ser. No. 685,046
Int. Cl.⁴ C01B *31/04*; D01F *9/12*
U.S. Cl. 423—447.3 **6 Claims**

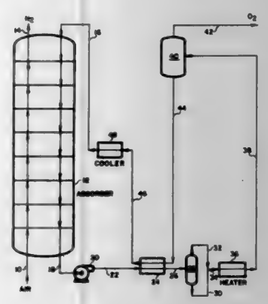
1. A methane pyrolysis process for growing graphite fibers on a suitably nucleated ceramic surface, said process comprising flowing a hydrogenbase gas comprising about 5 to 15 volume percent methane over said surface while heating to decompose the methane to form microscopic carbon filaments that project from the surface, and thereafter flowing a gas containing greater than 25 volume percent methane over said surface while heating to decompose the methane to thicken the filaments into fibers.

4,565,685

AIR SEPARATION WITH TEMPERATURE AND PRESSURE SWING

Anthony A. Cassano, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 14, 1984, Ser. No. 651,181
Int. Cl.⁴ C01B *13/00*
U.S. Cl. 423—579 **11 Claims**



1. A continuous process for separating air into oxygen and nitrogen comprising the repeated steps of contacting feed air with an oxygen acceptor mixture of alkali metal nitrite and nitrate salts in an absorption zone at relatively low temperature and pressure to absorb oxygen from the feed air and oxidize the acceptor, removing an oxygen-depleted nitrogen-rich stream from the absorption zone, pumping the oxidized acceptor to an elevated pressure, separately releasing the absorbed oxygen from the acceptor at elevated temperature and the elevated pressure in a desorption zone so as to regenerate the oxygen acceptor and generate high pressure product oxygen and recycling the oxygen acceptor to the absorption zone after reducing its temperature and pressure to absorpation zone conditions.

4,565,686

METHOD OF STORING HYDROGEN USING NONEQUILIBRIUM MATERIALS AND SYSTEM

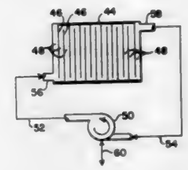
Kaplesh Kumar, Wellesley, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation of Ser. No. 226,927, Jan. 21, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 502,535
Int. Cl.⁴ C01B *6/24*
U.S. Cl. 423—644 **8 Claims**

6. A process for reversibly storing hydrogen in an amorphous rare earth-transition metal alloy material comprising the steps of:

supplying hydrogen to amorphous rare earth-transition metal alloy material in a closed system, cycling said hydrogen over said alloy material to cause hydrogen to be stored in said alloy material; and

withdrawing hydrogen from said system to retrieve the stored hydrogen.

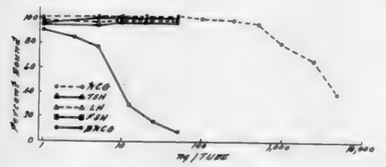


4,565,687

MONOCLONAL ANTIBODIES SPECIFIC FOR THE UNBOUND β SUBUNIT OF HUMAN CHORIONIC GONADOTROPIN

Mohammad B. Khazaeli; William H. Beierwaltes, and Barry G. England, all of Ann Arbor, Mich., assignors to The Reagents of the University of Michigan, Ann Arbor, Mich.

Filed Nov. 16, 1981, Ser. No. 321,578
Int. Cl.⁴ C12N *15/00*; G01N *33/54*; A61K *43/00*
U.S. Cl. 424—1.1 **11 Claims**



5. A murine hybridoma produced by the fusion of a murine lymphocyte and a murine myeloma cell line that produces and secretes monoclonal antibodies of the IgG class that specifically bind to the unbound β subunit of human chorionic gonadotropin having substantially no cross reactivity with intact human luteinizing hormone, human thyroid stimulating hormone and human follicle stimulating hormone and less than 0.25% cross reactivity with intact human chorionic gonadotropin and having substantially no inhibition in said binding in the presence of unbound β subunits of human follicle stimulating hormone, human thyroid stimulating hormone and human follicle stimulating hormone at up to 250 ng/tube.

10. The hybridoma cell line having the essential characteristics of hybridoma cell line KEB-1E5.1, deposited as ATCC HB8095, said characteristics consisting essentially of the production of murine monoclonal antibodies which specifically bind to the unbound β-human chorionic gonadotropin subunit in the presence of intact human chorionic gonadotropin and in the presence of the β subunit of human follicle stimulating hormone, human thyroid stimulating hormone and human luteinizing hormone.

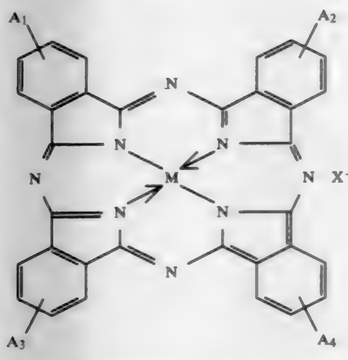
4,565,688

QUATERNIZED PHTHALOCYANIN DERIVATIVES

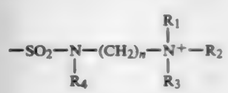
Michael J. Matin, Park Ridge, N.J.; Bernard Loev, Scarsdale, and Deng R. Hwang, Tarrytown, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,242
Int. Cl.⁴ C09B *47/04, 47/30, 47/32*
U.S. Cl. 424—3 **9 Claims**

1. A compound having the formula



wherein each of A_1–A_4, same or different, is hydrogen, sulfonate, hydroxyl or a C_1–C_7 hydrocarbon, optionally containing at least one heteroatom, selected from alkoxy, cyano, carbalkoxy, a linear or branched, saturated or unsaturated aliphatic or cycloaliphatic hydrocarbon, an unsubstituted or substituted aryl or heteroaryl group, a benzyl radical or a benzyl substituted by oxygen or a nonalkylatable nitrogen or sulfur atom with the proviso that at least one of A_1–A_4 is



in which each of R_1–R_3, same or different, is lower alkyl, cycloalkyl or alkenyl, wherein at least one is C_2–C_4 and two of R_1–R_3 may join to form a ring; R_4 is hydrogen or a C_1–C_3 alkyl; n is an integer from 2 to 6; M is a polyvalent metal ion; and X^- is a water-soluble anion.

4,565,689

METHOD FOR TREATING THE EFFECTS OF ALCOHOL

Emanuel Revici, New York, N.Y., assignor to Wirth Maschinen- und Bohrgerate-Fabrik GmbH, New York, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,870
Int. Cl.⁴ A61K *31/21, 31/095, 31/105, 31/265, 31/045, 33/04*
U.S. Cl. 424—10 **13 Claims**

1. A method for treating or aiding in the treating of the manifestations of alcoholism or alcohol intoxication by adding in the control of the craving for alcohol or by aiding in the control of alcohol withdrawal symptoms, or by aiding in the control of alcoholic intoxication in a human having said manifestations, craving, symptoms or intoxication which comprises internally administering to said human an effective amount of compound having an active ingredient of an organic compound containing at least one bivalent negative sulfur or its pharmaceutically acceptable salts to control said craving, symptoms, manifestations or intoxification so as to counteract the effects of alcohol.

4,565,690

METHOD FOR TREATING DRUG ADDICTION

Emanuel Revici, New York, N.Y., assignor to Elena Avram, New York, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,493
Int. Cl.⁴ A61K *31/21, 31/095, 31/105, 31/265, 31/045, 33/04*
U.S. Cl. 424—10 **16 Claims**

1. A method for treating drug addiction in a human body from compounds which have caused the body to produce abnormal fatty acids having a catabolic character which comprises administering to said body a sufficient amount of an antifatty acid agent comprising a lipidic or liposoluble organic compound containing bivalent negative selenium or sulfur to counteract the effects of said abnormal fatty acids.

4,565,691

ORAL HYGIENE COMPOSITIONS

Robert J. Jackson, Leatherhead, England, assignor to Beecham Group p.l.c., England

Filed Apr. 18, 1983, Ser. No. 485,609
Claims priority, application United Kingdom, Apr. 20, 1982, 8211343
Int. Cl.⁴ A61K *7/16, 7/18*
U.S. Cl. 424—52 **8 Claims**

1. An oral hygiene composition, comprising from 0.01 to 2.0% by weight of the composition of a water soluble fluoride source consisting of an ionic fluoride or an ionic fluoride admixed with an ionic monofluorophosphate, from 10 to 99% by weight of the composition of a water insoluble ionic abrasive material containing metal cations capable of forming a water insoluble fluoride, and between 0.01% and 9% by weight of the composition of a water soluble ionic agent containing the anionic counter ions of the ionic abrasive together with metal cations capable of forming a water soluble fluoride.

4,565,692

EXTRUDABLE DENTIFRICE

Patricia S. Mulvey, Manalapan; Jordan B. Barth, East Brunswick, and Linda J. Vellekoop, Neshanic, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 23, 1983, Ser. No. 564,968
Int. Cl.⁴ A61K *7/16*
U.S. Cl. 424—57 **8 Claims**

1. A dentifrice suitable for use in a mechanically operated or pressure differential dispenser comprising about 20–80% by weight of an aqueous humectant vehicle, about 0.1–5% by weight of gelling agent and about 10–75% by weight of polishing agent, which dentifrice contains as polishing agent at least about 20% by weight of dicalcium phosphate based upon the weight of the dentifrice or at least about 10% by weight of a siliceous polishing agent, wherein said gelling agent is i-carrageenan in amount of about 0.1–2.0% by weight of the dentifrice or a mixture of in amount of about 0.1–2.5% by weight of the dentifrice of i-carrageenan mixed with a cellulosic gelling agent in a weight ratio of i-carrageenan to cellulosic gelling agent of about 99:1 to about 1:3 and the total gelling agent is present in amount of up to about 5% by weight.

4,565,693

DEODORANT COMPOSITION

Frank W. Marschner, Whitehouse Station, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,527
Int. Cl.⁴ A61K *7/36, 9/12*
U.S. Cl. 424—67 **10 Claims**

1. A method of deodorizing odorous body locations comprising contacting said locations with a deodorant composition comprising an effective deodorizing amount of a particulate zinc glycinate compound having a pH of about 7.9–8.7, which deodorizes within the pH range of about 8 and 7 by means of chemically neutralizing body odors by chemical interaction with the odoriferous compounds in sweat, and inhibits bacterial growth on the skin; dissolved and/or suspended in a cosmetically acceptable vehicle free of inorganic and organic acids and water soluble metal salts of fatty acids.

4,565,694

CONTRACEPTIVE VAGINAL TABLETS

András Kovács, Bajcsy Zs. ut 19/a, 1065 Budapest; Rudolf Szebeni, Béke u. 48, 2131 Göd, and Béla Köszegi, Corvin körut 52, 1192 Budapest, all of Hungary

PCT No. PCT/HU83/00052, § 371 Date Jun. 7, 1984, § 102(e) Date Jun. 7, 1984, PCT Pub. No. WO84/01502, PCT Pub. Date Apr. 26, 1984
PCT Filed Oct. 7, 1983, Ser. No. 621,905
Claims priority, application Hungary, Oct. 7, 1982, 3211/82
Int. Cl.⁴ A61K *31/79*
U.S. Cl. 424—80 **2 Claims**

1. A contraceptive vaginal tablet comprising 0.2 to 3 parts by weight of boric acid, 10 to 20 parts by weight of tartaric acid, 1 to 2 parts by weight of vitamin K_3-sodium bisulfite adduct, 0.8 to 1.2 parts by weight of polyvinyl pyrrolidone, 2 to 5 parts by weight of magnesium stearate, 8 to 12 parts by weight of carboxymethyl cellulose, 8 to 12 parts by weight of lactose and 50 to 65 parts by weight of microscrystalline cellulose.

4,565,695

SYNTHETIC PHEROMONE 10-METHYL-2-TRIDECANONE AND ITS USE IN CONTROLLING THE SOUTHERN CORN ROOTWORM AND RELATED DIABROTICITES

Paul L. Guss, Brookings, S. Dak.; James H. Tumlinson, III, Gainesville, Fla.; Philip E. Sonnet, Gainesville, Fla., and John R. McLaughlin, Gainesville, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 461,299, Jan. 27, 1983, Pat. No. 4,474,991. This application Jun. 27, 1984, Ser. No. 625,265
Int. Cl.⁴ A01N *25/00, 35/00*
U.S. Cl. 424—84 **4 Claims**

1. A method of attracting a male *Diabrotica undecimpunctata* adult to a locus for the monitoring or control of reproduction in adult populations, comprising applying to said locus an effective amount of 10-methyl-2-tridecanone in combination with a suitable carrier.

4,565,696

PRODUCTION OF IMMUNOGENS BY ANTIGEN CONJUGATION TO LIPOSOMES

Timothy D. Heath, San Francisco, Calif.; Pang Shek, Willowdale, Canada, and Demetrios Papahadjopoulos, San Francisco, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 3, 1983, Ser. No. 520,090
Int. Cl.⁴ A61K *39/00, 31/00, 9/22, 9/52, 31/682, 47/00;* **C07G** *7/00;* **G01N** *33/54*
U.S. Cl. 424—88 **3 Claims**

1. In a method for eliciting an immune response for the production of antibodies to a predetermined antigen, wherein an immunogen containing said predetermined antigen is administered to a vertebrate host resulting in the production of antibodies, the improvement which comprises employing as the immunogen, antigen covalently bound to the membrane of a liposome, said antigen being present in at least about 25 grams of antigen per mole of lipid, where said liposome internally contains an antibody enhancing effective amount of a cell growth inhibitor.

4,565,697

PROCESS FOR PRODUCING A HEPATITIS B INFECTION PREVENTING VACCINE

Takao Ohmura, Osaka; Terufumi Fujiwara; Akimasa Ohmizu, both of Hyogo, all of Japan, and Satoshi Funakoshi, Los Angeles, Calif., assignors to Green Cross Corporation, Osaka, Japan

Filed Nov. 15, 1983, Ser. No. 552,079
Claims priority, application Japan, Nov. 29, 1982, 57-210240
Int. Cl.⁴ A61K *39/12, 35/14;* **C12N** *7/04, 7/02*
U.S. Cl. 424—89 **2 Claims**

1. A process for producing a hepatitis B infection preventing vaccine containing, as main component thereof, hepatitis B surface antigen (HBsAg) and free of hepatitis B infectivity and of human plasma components which comprises the steps of:

(a) subjecting an aqueous solution of a human plasma protein fraction containing hepatitis B surface antigen to heat treatment at 50°–70° C. for 8–12 hours,

(b) removing from the so-treated aqueous solution those proteins precipitate by 10–20% saturation with ammonium sulfate by such ammonium sulfate saturation,

(c) collecting those proteins precipitable by 40–50% saturation with ammonium sulfate by such ammonium sulfate saturation,

(d) bringing an aqueous solution of the proteins precipitated in (c) into contact with a colloidal silicate and thereby causing HBsAg to be adsorbed on said colloidal silicate,

(e) eluting that portion of HBsAg adsorbed with a buffer (ph 8.5 to 9.5) containing 0.1–1% of a deoxycholic acid salt,

(f) adjusting the elute thus-obtained substantially to neutrality,

(g) adding polyethylene glycol to a level of 3–7% (w/v) and thereby removing hepatitis B virus (HBV) and immune complexes as a precipitate from supernatant,

(h) increasing the polyethylene glycol concentration in the supernatant to 15–20% (w/v), thus collecting HBsAg as a precipitate,

(i) subjecting the precipitate from (h) to gel filtration using a gel filtrating carrier equilibrated with a buffer having a pH of 6–8 and applicable to substances having a molecular weight of several hundred thousand to several million and thereby removing an HBsAg fraction,

(j) recovering a specific HBsAg fraction having a particle size of 18–24 nm and a density of 1.18–1.22 g/cm^3 by ultracentrifugation,

(k) inactivating the fraction from (j) at a formalin concentration of 1/1,500–1/2,500 at 35°–40° C. for 94–98 hours,

(l) allowing the resulting product to stand at 2°–6° C. for 6–10 days,

(m) dialyzing the inactivated HBsAg fraction from (l) against a buffer with pH 6–8,

(n) adding a vehicle and lyophilizing the resulting mixture.

4,565,698

MICROBIAL HAIR TONIC COMPOSITION

Hajime Yoshizumi, Takatsuki; Teruo Amachi, Takarazuka; Takaaki Kusumi, Suita; Takaharu Tanaka, Osaka, and Hiroshi Ishigooka, Ibaraki, all of Japan, assignors to Suntory Limited, Osaka, Japan

Filed Jun. 17, 1983, Ser. No. 505,273
Claims priority, application Japan, Jun. 25, 1982, 57-110395
Int. Cl.⁴ A61K *37/00, 35/78*
U.S. Cl. 424—93 **8 Claims**

1. A microbial hair treatment composition comprising 10^6 to 10^8 cells/ml of cultured living *Staphylococcus capitis* and a suitable solvent.

4,565,699

COMPOSITION OF MATTER AND PROCESS

Lester A. Dolak, Plainwell; Alice L. Laborde, Kalamazoo; Oldrich E. Sebek, Kalamazoo; Thomas M. Castle, Kalamazoo, and Thomas F. Brodasky, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 18, 1983, Ser. No. 515,077

Int. Cl.[4] A61K *35/74;* **C12D** *1/06;* **C07D** *333/32*

U.S. Cl. 424—117 **5 Claims**

1. Antibiotic U-68,204, which is active against Gram-positive bacteria, and which in its essentially pure form has the following characteristics:
(a) molecular weight of 267;
(b) color of crystals: white;
(c) is soluble in most organic solvents, but not in water;
(d) a characteristic infrared absorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1;
(e) a characteristic UV spectrum as shown in FIG. 2;
(f) a characteristic ^1H NMR spectrum as shown in FIG. 3;
(g) a characteristic ^{13}C-NMR spectrum as shown in FIG. 4;
(h) a molecular formula $C_{1317}NO_3S$; and,
(i) a melting point of 98°–101°.

4,565,700

PROCESS FOR PREPARATION OF SUBSTANCE HAVING HYPOTENSIVE COMPONENT

Tetsuya Suzuki, 3-1, Teraodai 2-chome, Ayase-shi, Kanagawa 252, Japan

Filed Dec. 12, 1983, Ser. No. 560,158

Claims priority, application Japan, Apr. 16, 1982, 57-62483; PCT Int'l Appl., Apr. 14, 1983, PCT/JP83/00116

Int. Cl.[4] A61K *35/78*

U.S. Cl. 424—195.1 **17 Claims**

1. A process for the preparation of a substance having a hypotensive component, which comprises (i) mixing an oil component squeezed or extracted from a soybean, with an aqueous extraction medium composed of (A) water, (B) an aqueous solution containing a salt selected from the group consisting of ammonium sulfate and sodium chloride in the concentration of 0.1 to 3%, (C) an aqueous solution containing an acid selected from the group consisting of lactic acid, acetic acid, succinic acid, oxalic acid, malic acid and citric acid in the concentration of up to 10% or (D) a combined aqueous solution of (B) and (C), said extraction medium being used in an amount of at least 5% based on the oil component, at such a temperature that the temperature of the mixture is lower than 90° C. at the initial stage but is lowered below 50° C. at the final stage, thereby to extract said substance in the aqueous extraction medium, (ii) subjecting the mixture to centrifugal separation to separate the aqueous extract from the oil phase, and (iii) recovering the substance in the solid state from the aqueous extract, said steps (i) and (ii) being carried out under temperature-time conditions included within the operation region A shown in FIG. 4.

4,565,701

PROTEIN SUPPLEMENT TABLET USED IN DIET PROGRAMS

Roger Ferguson, Rexburg, Id., assignor to Diet Center, Inc., Rexburg, Id.

Filed Dec. 28, 1981, Ser. No. 334,723

Int. Cl.[4] A23L *1/302*

U.S. Cl. 426—72 **2 Claims**

1. A method of preparing a diet supplement comprising:
mixing first ingredients comprising a blend of flavors with dicalcium phosphate,
blending said first ingredients,
mixing second ingredients comprising approximately 1.125 kilograms of d-calcium pantothenate, approximately 1.200 kilograms of thiamine mononitrate, approximately 1.650 kilograms of riboflavin, approximately 0.750 kilograms of pyridoxine and approximately 0.103 kilograms of cobalamin,
blending said second ingredients until they pass through a 12 to 14 mesh screen,
mixing third ingredients comprising approximately 131.800 kilograms of an invert sugar, approximately 110.140 kilograms of a protein isolate, approximately 4.500 kilograms of yeast and approximately 12.000 kilograms of hydroxypropyl cellulose,
blending said third ingredients until they pass through a 12 to 14 mesh screen, and
blending said first, second and third ingredients,
mixing approximately 1.350 kilograms of magnesium stearate with the mixture of said first, second and third ingredients until said latter mixture passes through a 12 to 14 mesh screen, and
forming said last mixture into tablet or wafer form.

4,565,702

DIETARY FIBER FOOD PRODUCTS AND METHOD OF MANUFACTURE

Robin C. Morley, Hackettstown, and Shri C. Sharma, Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 4, 1984, Ser. No. 616,990

Int. Cl.[4] A23L *1/29*

U.S. Cl. 426—93 **20 Claims**

1. A dietary fiber product comprising
(a) at least one sweetener present in amounts of about 40% to about 60%;
(b) at least one flavor source;
(c) a dietary fiber composition present in amounts of about 10% to about 40% by weight of the total dietary fiber product; said dietary fiber composition comprising an insoluble dietary fiber coated with or enrobed with a soluble dietary fiber, the insoluble dietary fiber being concentrated by means of purification and free of digestible components, said soluble dietary fiber being selected from the group consisting of alginates, gums, pectins, mucillages, plant exudates and mixtures thereof present in an amount sufficient to mask the mouthfeel or taste of the insoluble dietary fiber and said insoluble dietary fiber being derived from a cereal bran.

4,565,703

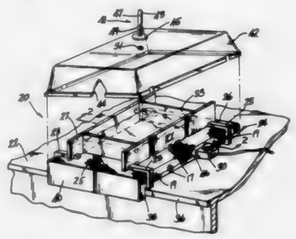
METHOD FOR PREPARING BREAD DOUGH

Henry J. Garbar, and Joan H. Garbar, both of 95 Winding Rd., Madison, Conn. 06443

Continuation-in-part of Ser. No. 343,493, Jan. 28, 1982, abandoned. This application Feb. 13, 1984, Ser. No. 579,408

Int. Cl.[4] G01N *7/22;* **A21D** *6/00;* **F27D** *11/00*

U.S. Cl. 426—232 **3 Claims**



1. In a method for rising bread dough in an apparatus having an electrically heated support member with a generally planar top surface and having first and second height indicator means disposed above said planar top surface, the improvement comprising:

(a) flattening a mass of kneaded dough on said support member top surface to impart to said dough mass a generally planar upper surface, said upper surface being substantially parallel to said support member top surface and said upper surface being a first predetermined distance above said support member top surface as measured by said first height indicator means;
(b) confining substantially the entire periphery of the flattened dough mass while the latter is on said support member top surface to restrict the periphery of the dough mass to planes substantially perpendicular to said support member top surface;
(c) covering said flattened confined dough mass to provide a heat and moisture retaining environment in which said dough mass will rise solely in a direction perpendicular to said support member top surface until the dough mass upper surface reaches a second predetermined distance above said support member top surface as measured by said second height indicator means; and
(d) removing the risen dough mass from the support member.

4,565,704

METHOD AND APPARATUS FOR FRYING

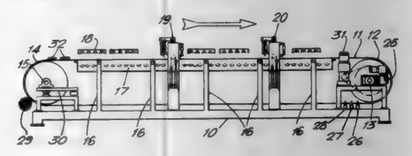
Magnus Dagerskog, Aengelholm; Anders B. Ganrot, and Kurt O. G. Jonsson, both of Bjuv, all of Sweden, assignors to Nestec S.A., Vevey, Switzerland

Filed Jun. 30, 1983, Ser. No. 509,416

Claims priority, application European Pat. Off., Oct. 4, 1982, 82109147.7

Int. Cl.[4] A23L *3/18;* **A47J** *37/08*

U.S. Cl. 426—233 **9 Claims**



1. A method of contact frying a foodstuff which comprises transporting the foodstuff on the upper run of a single solid endless thin steel conveyor belt which is heated from below by short wave infrared radiation, sensing the temperature of said belt and controlling said radiation in response to changes in said temperature.

4,565,705

PRODUCTION OF JERUSALEM ARTICHOKE FLOUR

H. Keith Snider, Hamilton, Mo., assignor to Show-Me Low Calorie Foods, Inc., Hamilton, Mo.

Filed Mar. 12, 1985, Ser. No. 711,009

Int. Cl.[4] A23L *1/214*

U.S. Cl. 426—270 **12 Claims**

1. The process for the production of a flour from Jerusalem artichoke tubers which comprises:
reducing said tubers to particles having an average surface to volume ratio of not less than about 25 cm^2 to 1 cm^3 and exposing said particles to a solution comprised of water acidfied to a pH not greater than about 4 for a period of time sufficient to inhibit color formation;
pressing said particles at a final pressure of not less than about 6 atmospheres, gauge by subjecting the particles to a series of pressings at increasing pressures to remove juice from the particles, while releasing the pressure and loosening the compressed particles between each pressing;
washing the particles at least once with water prior to the final pressing and after exposure to the acidified water;
drying the particles at a temperature not greater than about 200° F. to a moisture content not greater than about 13%; and grinding the dried particles to a flour.

4,565,706

FREEZE DRYING A FROZEN FOAM OF COFFEE CONCENTRATE

John H. Wertheim, and Abraham R. Mishkin, both of Marysville, Ohio, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 177,481, Aug. 12, 1980, abandoned, and Ser. No. 537,679, Mar. 28, 1966, said Ser. No. 177,481, is a continuation of Ser. No. 537,679,. This application Dec. 7, 1981, Ser. No. 328,242

Claims priority, application Switzerland, Apr. 2, 1965, 4606/65

Int. Cl.[4] A23F *5/32*

U.S. Cl. 426—385 **11 Claims**

1. Process for preparing freeze dried soluble coffee, which comprises adding inert gas to a concentrated aqueous extract of roast coffee having a solids content of about 25% to 60% by weight to provide a foam, freezing the foam to a solid mass, grinding the frozen foam to particles having a size of about 0.25 to 2.0 mm and freeze drying said particles to form freeze dried particulate soluble coffee, the amount of inert gas added to the aqueous extract being such as to provide said freeze dried soluble coffee with a density between about 0.2 and 0.3 gm/cc.

4,565,707

FLAVORING WITH DIALKYLTHIOALKENES, DIALKYLTHIOALKYLCYCLOALKENES AND MONOALKYLTHIOALKENYLCYCLOALKENES

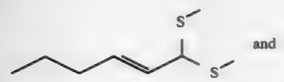
Alan O. Pittet, Atlantic Highlands; Ranya Muralidhara, Fair Haven; Kevin P. Miller, Middletown; Domenick Luccarelli, Jr., Neptune, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 8, 1985, Ser. No. 731,919

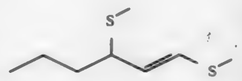
Int. Cl.[4] A23L *1/226, 1/231, 1/235*

U.S. Cl. 426—535 **2 Claims**

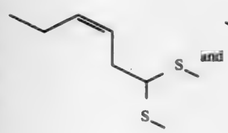
1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the steps of intimately admixing with said foodstuff from about 0.001 ppm up to about 250 ppm of approximately 2:8 mixture of dithio derivatives having the structures:



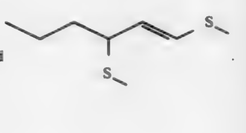
and



2. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the steps of intimately admixing with said foodstuff from about 0.001 ppm up to about 250 ppm of approximately 65:35 mixture of dithio derivation having the structures:



and



4,565,708

PUDDING MIX

Jon R. Blake, Brooklyn Center; Richard K. Knutson, Corcoran, and Glenn J. VanHulle, Brooklyn Park, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Division of Ser. No. 433,074, Oct. 6, 1982, Pat. No. 4,513,016. This application Sep. 12, 1984, Ser. No. 649,583

Int. Cl.⁴ A23L *1/187*

U.S. Cl. 426—579 **1 Claim**

1. A method for making a pudding component useful for addition to a dry layer cake mix in granulated form, comprising the steps of:

A. providing granules of cold water setting pudding dry mixes, said pudding granules having
   a. a particle size of from about 0.9 to 3.35 mm.;
   b. a bulk porosity of from about 0.50 to 0.60;
   c. a density of from about 0.5 to 0.70 g./cc.;
   d. an initial rate of moisture absorption of from about 0.060 to 0.080 of water per gram of granules per second;
   e. a moisture content of less than about 5% based on said granules, and

B. providing a heated sugar solution, said solution having a sugar solids concentration ranging from about 70% to 95% and a temperature sufficient to fluidize said solution;

C. mixing the pudding granules and the sugar solution to form a matrix of sugar and pudding granules;

D. forming the matrix into pieces ranging up to about one inch in longest dimension; and

E. allowing the pieces to cool to room temperature to harden, forming pudding mix matrix pieces.

4,565,709

PROCESS FOR THE PRODUCTION OF FODDER AND FAT FROM ANIMAL RAW MATERIALS

Odd Berge, Os, and Helge Hovland, Hop, both of Norway, assignors to Stord Bartz A/S

Continuation of Ser. No. 342,886, Jan. 26, 1982, abandoned. This application Feb. 6, 1984, Ser. No. 577,010

Claims priority, application Norway, Oct. 16, 1981, 813485

Int. Cl.⁴ A23K *1/10*

U.S. Cl. 426—641 **27 Claims**

1. In a process for the production of fodder and fat from animal raw material, such as slaughterhouse waste, which comprises the steps of:

(a) heating said raw material to a temperature of from about 60° to about 135° C. and separating the heated product into a solid material phase and a fluid phase,

(b) separately drying said solid material phase and thereafter separating the dried product into solid fodder and fat,

(c) separately evaporating said fluid phase, and

(d) extracting fat by a procedure selected from

(i) feeding the evaporated product of step (c) at least in part to said solid material phase of step (a) prior to carrying out step (b), and

(ii) directly working up the evaporated product of step (c) into fat,

the improvement which consists in utilising heat energy derived from gases emitted on drying said solid material phase when separately evaporating said fluid phase in step (c).

4,565,710

PROCESS FOR PRODUCING CARBIDE COATINGS

Irwin L. Singer, Alexandria, and Russell A. Jeffries, Arlington, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 6, 1984, Ser. No. 617,777

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—35 **20 Claims**

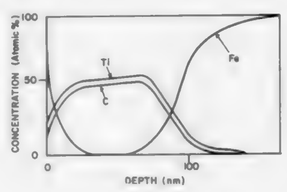
1. A method of treating the surface of a substrate comprising an alloy, comprising the steps of:

selecting a solid substrate, said substrate comprising an alloy having at least one minority solute;

selecting one of said minority solutes;

bombarding the surface of said substrate with an ion beam of a monatomic ion species, while said substrate is heated, at such an ion beam energy and substrate temperature that said selected minority solute migrates to the surface of said substrate and said monatomic ion species and minority solute react to form a surface alloy comprising the neutral atom of said ion species and said minority solute at the surface of said solid substrate.

19. A method of treating the surface of a substrate comprising an alloy, comprising the steps of:



selecting a solid silicon substrate, said substrate having at least one minority solute;

bombarding the surface of said substrate with an ion beam of titanium or yttrium ions, while said substrate is heated, at such an ion beam energy and substrate temperature that at least one minority solute migrates to the surface of said substrate and said titanium or yttrium ions and at least one of said minority solutes which have migrated to the surface of said substrate react to form a surface alloy essentially consisting of the neutral atom of said ion species and at least one of said minority solute or solutes which have migrated to the surface of said solid substrate.

4,565,711

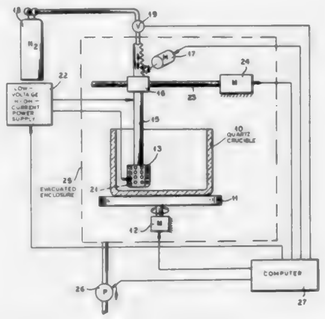
METHOD OF AND APPARATUS FOR THE COATING OF QUARTZ CRUCIBLES WITH PROTECTIVE LAYERS

Eduard Pinkhasov, Forest Hills, N.Y., assignor to Wedtech Corp., Bronx, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,055

Int. Cl.⁴ B05D *1/40*; C23C *13/04*

U.S. Cl. 427—50 **18 Claims**



1. A method of generating a vapor at least one component of which is derived from a granular material which comprises the steps of:

disposing a mass of granules of said material between a pair of electrodes, said electrodes being unconnected to each other except through a power supply and by said mass; and

applying an electric current between said electrodes and through said mass of granules of an intensity sufficent to induce local vaporization of said material at contact points between granules thereof by the current passing therethrough without bodily melting said granules.

14. An apparatus for coating a crucible comprising:

a vessel provided with at least one opening and containing a mass of granules of low thermal and electrical conductivity of a material including an element adapted to form a coating from a vapor phase;

a pair of electrodes in contact with said mass and disposed across at least a portion thereof;

means for supplying an electric current through said portion of a magnitude sufficient to induce localized vaporization of granules at mutual contact points of said granules in said portion without substantial melting of said granules whereby vapors pass through said opening for coating a substrate juxtaposed therewith;

means for supporting said vessel in juxtaposition with said substrate; and

means for passing a gas through said mass, the means for passing said gas through said mass being one of said electrodes and said gas adapted to react with said element in said mass.

4,565,712

METHOD OF MAKING A SEMICONDUCTOR READ ONLY MEMORY

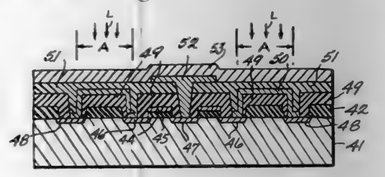
Hideo Noguchi, Yokohama; Tugunari Iwamoto, Tokyo, and Sakae Takei, Ebina, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 245,544, Mar. 19, 1981, Pat. No. 4,476,478. This application May 23, 1984, Ser. No. 613,408

Claims priority, application Japan, Apr. 24, 1980, 55-054552; May 6, 1980, 55-59708

Int. Cl.⁴ H01L *21/70*

U.S. Cl. 427—53.1 **3 Claims**



1. A method of manufacturing a semiconductor read only memory comprising the steps of:

forming a plurality of MOS transistors on the surface of a semiconductor substrate,

connecting a plurality of silicon resistances to source and drain regions of said MOS transistors respectively,

forming an insulator film on the surface of said substrate to provide an unactivated ROM, and

irradiating with a laser beam selected silicon resistances through said insulator film to activate said ROM.

4,565,713

DEVICE AND METHOD FOR UNIFORMLY CURING UV PHOTOREACTIVE OVERVARNISH LAYERS USING MAGNETIC CONVEYORS

Robert H. Schultz, Broomfield, Colo., assignor to Adolph Coors Company, Golden, Colo.

Continuation-in-part of Ser. No. 525,059, Aug. 22, 1983, Pat. No. 4,503,086. This application Nov. 13, 1984, Ser. No. 670,035

The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—54.1 **19 Claims**

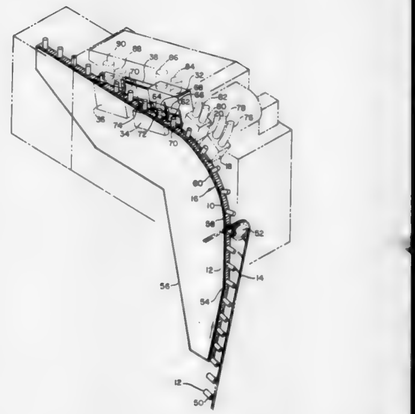
1. An apparatus for uniformly and completely curing uv photoreactive coatings on can bodies comprising:

magnetic conveyor means for non-rotatably holding said can bodies by external bottom portions and transporting said can bodies along a curved path having a curvature which exposes face portions and inside portions of said can bodies to radiation emitted from a predetermined location which impinges upon said face portions and said inside portions of said can bodies at an angle of incidence sufficient to completely cure said uv photoreactive coatings on said face portions and said inside portions, said face portion being substantially aligned with the direction of travel of said can bodies;

first irradiator means disposed at said predetermined location for producing uv radiation to cure said uv photoreactive coatings on said face portions and inside portions of said can bodies;

second irradiator means for irradiating side portions of said can bodies with uv radiation to completely cure uv photoreactive coatings on said side portions and achieve complete and uniform curing of uv photoreactive coatings on said can bodies;

whereby the axis of said can bodies is substantially parallel to the plane of said curved path.



16. A method of uniformly curing uv photoreactive coatings on can bodies comprising the steps of:

non-rotatably holding said can bodies by external bottom portions on a magnetic conveyor;

transporting said can bodies on said magnetic conveyor along a predetermined path having a predetermined portion which changes direction along an arcuate path by a predetermined angle;

exposing said can bodies to uv radiation from at least one uv irradiation source aligned radially outward from said arcuate path to cure said uv photoreactive coatings on face portions and inside portions of said can bodies, said face portions being substantially aligned with the direction of travel of said can bodies;

exposing said can bodies to uv radiation from at least one uv irradiation source disposed along side portions of said predetermined path to cure said uv photoreactive coatings on side portions of said can bodies;

whereby the axis of said can bodies is substantially parallel to the plane of said predetermined path.

4,565,714

LOW SURFACE ENERGY MATERIAL

Robert J. Kosbar, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 14, 1984, Ser. No. 620,438
Int. Cl.⁴ B05D *3/06*
U.S. Cl. 427—54.1 **26 Claims**

1. A composition of matter comprising:

(1) a polyorganohydrosiloxane comprising at least two hydrogen atoms attached to silicon atoms and no more than two hydrogen atoms on any one silicon atom and a number average molecular weight of from 106 to 50,000;

(2) an ethylenically-unsaturated perfluoropolyether monomer having segments comprising a plurality of repeating units of $-C_aF_{2a}O-$ in which "a" in each unit independently is an integer of 1 to 4, and at least one ethylenically-unsaturated group; and

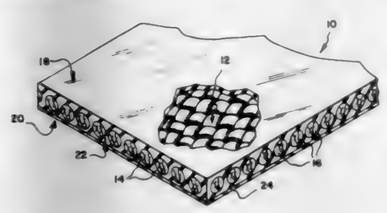
(3) an effective amount of a hydrosilation catalyst for bringing about the condensation of said polyorganohydrosiloxane and said ethylenically-unsaturated perfluoropolyether monomer.

4,565,715

ELASTOMER-COATED BIAS REINFORCEMENT FABRIC AND METHOD FOR PRODUCING SAME

Delmar D. Long, Rock Hill, S.C., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 533,098, Sep. 16, 1983, Pat. No. 4,490,428, which is a continuation-in-part of Ser. No. 350,969, Feb. 22, 1982, Pat. No. 4,501,771. This application Sep. 20, 1984, Ser. No. 652,394
Int. Cl.⁴ B05D *3/12*
U.S. Cl. 427—176 **18 Claims**



1. In a method for manufacturing elastomer-coated, bias fabric comprising:

a. transversely stretching a bias fabric having opposed surfaces, yarns, or fiber bundles, and interstices between said yarns or fiber bundles,

b. applying an elastomeric latex composition to both surfaces of said fabric while said fabric is maintained transversely stretched, such that said composition substantially penetrates the interstices of said fabric and provides an elastomeric coating of substantially uniform thickness, and

c. drying said coated latex composition, the improvement which comprises:

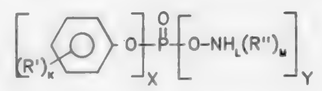
prior to stretching said bias fabric, pre-impregnating said bias fabric with a liquid non-elastomeric composition which facilitates the impregnation of said fabric by an elastomer but does not stabilize the orientation of said yarns or bundles in said fabric, said liquid non-elastomeric composition being an aqueous composition including an impregnation facilitating agent selected from the group consisting of a wetting agent, a fiber lubricant, a softening agent, and mixtures thereof.

4,565,716

WATER RESISTANT ALUMINUM PARTICLES AND COATING

James E. Williams, Jr., New Kensington, and Pamela L. Claassen, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 5, 1983, Ser. No. 510,982
Int. Cl.⁴ C04B *31/40*; B05D *7/00*
U.S. Cl. 427—216 **23 Claims**



8. A method which comprises contacting metal particles with compound of the formulae of FIGS. 1A, 1B or 1C in an effective concentration to retard the reaction of the metal with water, thereby inhibiting the evolution of hydrogen gas, where in said formulae,

$X=1$ or 2,

$Y=1$ or 2,

and

$X+Y=3$;

where Z is hydrogen or means for neutralizing acid phosphate; and where R is benzo, a halo group, an alkyl group having from 1 to 24 carbon atoms, a cycloalkyl group having from 3 to 20 carbon atoms, an aryl group having from 6 to 40 carbon atoms, a halo substituted aryl group wherein said aryl has from 6 to 40 carbon atoms, an alpha or beta naphthyl, a halo substituted alpha or beta naphthyl, a 3 to 20 carbon atom cycloalkyl substituted alpha or beta naphthyl, an alpha or beta alkyl substituted naphthyl wherein said alkyl has from 1 to 24 carbon atoms, a heterosubstituent substituted aryl wherein said aryl has from 6 to 40 carbon atoms, and said heterosubstituent is selected from the group consisting of CN, NO_2, COOH, CHO, OH, a pyridinyl, an alpha or beta furyl, or an alpha or beta thienyl.

4,565,717

ANTISOILING TREATMENT OF SYNTHETIC FILAMENTS

Edward A. Hosegood, Salisbury, Md., and Ludwig E. Seufert, Seaford, Del., assignors to E. I. DuPont De Nemours and Company, Wilmington, Del.

Filed Oct. 20, 1983, Ser. No. 543,758
Int. Cl.⁴ B05D *3/04*
U.S. Cl. 427—339 **7 Claims**

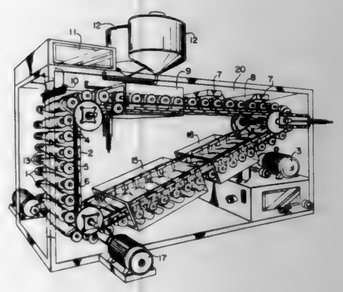
1. A process for producing synthetic polyamide filaments of enhanced soil resistance through the application of a fluorochemical antisoiling agent to the filaments as a yarn finish during a melt-spinning process which comprises applying to freshly solidified filaments a first finish composition containing a textile lubricant, an antisoiling fluorochemical and an epoxy resin having an epoxy equivalent of less than 200 and a molecular weight of less than 500 and subsequently applying any curing agent to substantially remove all of any free epoxide, such that the synthetic polyamide filaments resist soiling.

4,565,718

PROCESS AND APPARATUS FOR COATING THE SURFACES OF CONTAINERS WITH A MATERIAL

Iwao Katsuyama, Moriyama, and Aijiro Okuzumi, Hachiouji, both of Japan, assignors to Kyowa Denki Kagaku K.K., Tokyo, Japan

Continuation of Ser. No. 551,853, Nov. 15, 1983, abandoned. This application Dec. 26, 1984, Ser. No. 685,218
Int. Cl.⁴ B05D *1/02*
U.S. Cl. 427—420 **3 Claims**



1. A process for coating surfaces of plural containers with a liquid material as the containers are continuously transported in spaced apart relation in a stream comprising moving said stream of containers continuously along a span in the vertical direction while rotating the containers about their horizontal axes, the containers having similarly contoured surfaces defining a particular contoured edge as viewed in a horizontal plane, flowing said liquid material downwardly from just above the uppermost container of the vertical span so as to coat the surface of the uppermost container adjacent the horizontal contoured edge from one end to the other with said liquid material along a line which in a horizontal plane corresponds generally to the particular horizontal contoured edge of the container to be coated, moving the stream of containers along a span which communicates with the uppermost container position in the vertical span, so that the liquid material will be directed on the exposed surface of the uppermost container in the vertical span even while an adjacent container in the stream is moving above and relative to the vertical span along the span which communicates with the uppermost container position, the arrangement being such that there is always a surface of a container presented below said line of flow of liquid material, and when the coating of said uppermost container has been completed, feeding a subsequent container to the uppermost position in the vertical span.

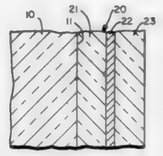
4,565,719

ENERGY CONTROL WINDOW FILM SYSTEMS AND METHODS FOR MANUFACTURING THE SAME

Roger W. Phillips; Patrick K. Higgins, both of Santa Rosa, and Peter H. Berning, Sebastapol, all of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Oct. 8, 1982, Ser. No. 433,511
Int. Cl.⁴ E06B *3/24*
U.S. Cl. 428—34 **33 Claims**

1. In an energy control sheet, a highly transparent substructure having first and second surfaces; a substantially transparent, thin film metal layer formed on one surface of said substructure; and a highly transparent thin film dielectric layer formed over said metal layer, said dielectric layer comprising a mixed metal oxide layer having metal constituents of at least one lanthanide series metal and at least one transition or semiconductor metal and being characterized by substantial water vapor impermeability, said lanthanide series metal being cerium and said transition or semiconductor metal being tin and each of said dielectric layers includes relative concentrations of cerium and tin in the range of about 20:80 weight percent to



about 70:30 weight percent, whereby the weatherability of said energy control sheet is substantially improved.

4,565,720

PACKAGING BAG

Kenta Yaeo; Shinji Kawamura, and Yoshiyuki Mihara, all of Sodegaura, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,765
Int. Cl.⁴ B32B *7/02*
U.S. Cl. 428—35 **29 Claims**

1. A packaging bag comprising an outer layer made of a low density ethylene-based polymer or a mixture of said ethylene-based polymer and an ethylene-vinyl acetate copolymer, and an inner layer made of a mixture of 50 to 90% by weight of a high density polyethylene and from 50 to 10% by weight of an ethylene-α-olefin copolymer.

4,565,721

CARBOWAX STICKS FOR PREPARATION OF THE CARBOWAX FIXATIVE USE IN CANCER CYTOLOGY

Kenneth Sills, and Bernard Sills, both of 535 Cathedral Pkwy., New York, N.Y. 10025

Filed May 18, 1982, Ser. No. 379,313
Int. Cl.⁴ B32B *9/04*
U.S. Cl. 428—36 **7 Claims**



1. A molded stick of synthetic wax comprising a cylindrical, hollow, plastic tube filled with a wax, polyethylene glycol, of the general formula $HOCH_2(CH_2OCH_2)_xCH_2OH$, the two of which when thus combined function synergistically as a single unit to provide a source of measured quantities of wax whose weight can be calculated from linear measurements stamped on the surface of the tube-mold.

4,565,722

DEFORMABLE POLYMERIC COMPOSITIONS

Donald J. Highgate, and John D. Frankland, both of IH Laboratories Limited, Meopham Trading Estate, Meopham, Gravesend, Kent, United Kingdom (DA13 OLT)

Filed May 7, 1984, Ser. No. 607,689
Claims priority, application United Kingdom, May 9, 1983, 8312728; Feb. 29, 1984, 8405258
Int. Cl.[4] A61F *13/00;* A61C *5/04*
U.S. Cl. 428—36 5 Claims



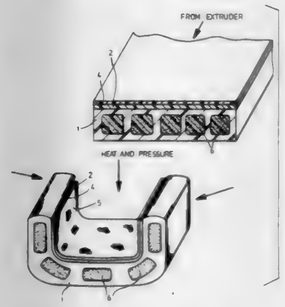
1. An article for surgical or dental use, said article being of a polymeric composition and specifically shaped for its particular use and capable of water absorption in situ, said article having been prepared by straining in at least one direction while swollen with absorbed water and the straining permanently fixed by removal of the absorbed water whereby upon placement in a body cavity and subsequent exposure to water the dimensions of the article will change in a predetermined and controlled manner as to amount and only in a direction different from that in which it was strained.

4,565,723

COMPOSITE POLYMERIC PANEL AND PROCESS FOR MAKING SAME

Elisabeth Hirsch, Wiener Neustadt, Austria, assignor to General Electric Plastics Structured Products Europe B.V., AC Bergen op Zoom, Netherlands

Filed Nov. 10, 1983, Ser. No. 550,922
Claims priority, application Austria, Nov. 10, 1982, 4092/82
Int. Cl.[4] B32B *3/00;* B29D *7/00*
U.S. Cl. 428—71 24 Claims



6. A composite panel comprising:
a basic skeletal layer of a first polymeric material, said skeletal layer consisting of two parallel plates interconnected by spaced-apart webs leaving voids therebetween; and
a reinforcing layer of a protective second polymeric material, said reinforcing layer overlying at least one of said plates of said skeletal layer;
said second polymeric material being of greater hardness than said first polymeric material.

12. A panel as defined in claim 6 wherein said voids are filled with a highly porous polymer.

13. A panel as defined in claim 12 wherein said highly porous polymer is a foam plastic.

4,565,724

ROOFING-MATERIAL

Philippus R. J. Smits, Basel, Switzerland, assignor to CBL Consolidated Ltd. BS, Switzerland

Filed Aug. 20, 1984, Ser. No. 642,119
Claims priority, application Netherlands, Aug. 24, 1983, 8302958
Int. Cl.[4] B32B *3/24*
U.S. Cl. 428—138 9 Claims



1. Roofing-material provided with perforations and comprising a bituminized carrier underlayer with a non-sticking lower surface and destined for being applied on a substratum and for being covered by an upper layer, which contains a carrier which is bituminized with modified bitumen, and which may be applied by means of torch, wherein the carrier of the roofing material is bituminized with modified bitumen, has a coating lying above and below the carrier, and the perforations extending therethrough having a smallest inner dimension of 50-110 mm, and preferably of about 70 mm, are so large that the upper layer can be directly applied on the roofing material by means of a torch thereby simultaneously adhering the upper layer and the bituminized carrier underlayer to the substratum, and the upper layer to the bituminized carrier underlayer itself, via the perforations only.

4,565,725

COMPOSITE PLASTIC TRACK AND METHOD OF MAKING

William S. Spamer, Roswell, Ga., and Alan D. Preis, Peninsula, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 2, 1984, Ser. No. 585,396
Int. Cl.[4] B32B *3/28*
U.S. Cl. 428—167 7 Claims

1. A plastic track comprising an elongated base plate formed of high impact polystyrene and a low friction slide plate bonded to the upper surface of said base plate and formed of high impact polystyrene impregnated with 2% to 10% by weight of organopolysiloxane.

4,565,726

MAGNETIC RECORDING MEDIA HAVING FERROMAGNETIC AND FERRITE PARTICLES IN THE MAGNETIC LAYER THEREOF

Toshihiko Oguchi, Atsugi; Hirohisa Kato, Ebina; Moriyasu Wada, Ninomiya, and Toshimitsu Asano, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 26, 1983, Ser. No. 488,759
Claims priority, application Japan, May 24, 1982, 57-86425
Int. Cl.[4] G11B *5/68*
U.S. Cl. 428—328 9 Claims

1. A magnetic recording medium comprising 5 to 100 parts by weight of hexagonal ferrite particles having an average particle diameter of 0.01 to 0.2 microns, and 100 parts by weight of ferromagnetic particles having a saturation magnetization of 70 to 220 emu/g and an average particle diameter within the range of 0.05 to 1 microns, said hexagonal ferrite particles and said ferromagnetic particles being dispersed in a single layer comprised of a resinous binder, wherein the said hexagonal ferrite particles have a coercive force (iHc) of from 600 to 2000 Oe, and said ferromagnetic particles have a coercive force (iHc) of from 300 to 2000 Oe.

4,565,727

NON-WOVEN ACTIVATED CARBON FABRIC

Robert D. Giglia, Rye, N.Y., and Edward A. Battistelli, Stratford, Conn., assignors to American Cyanamid Co., Stamford, Conn.

Continuation-in-part of Ser. No. 531,366, Sep. 12, 1983, abandoned. This application Apr. 23, 1985, Ser. No. 725,527
Int. Cl.[4] B32B *5/16, 7/14, 31/00*
U.S. Cl. 428—172 4 Claims

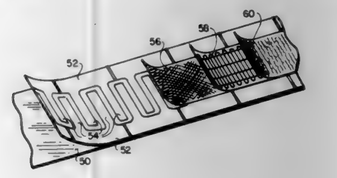
1. An air and water vapor permeable, toxic vapor absorptive, non-woven fabric material comprising a wet-laid sheet containing fibrillated acrylic fiber, activated carbon fiber and activated carbon particles, wherein the concentration of fibrillated acrylic fiber ranges from about 5–25% by weight based on the total weight of fibers and particles, the concentration of activated carbon fiber ranges from about 10–75% by weight, same basis, and the concentration of activated carbon particles ranges from about 15–80% by weight, same basis.

4,565,728

SYSTEM AND METHOD FOR APPLICATION OF INTERNAL HEATING TO THERMALLY RESPONSIVE STRUCTURES

James B. Gray, and Robert A. Joyce, both of San Diego, Calif., assignors to Seam Team, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 464,132, Feb. 4, 1983, Pat. No. 4,483,896. This application Oct. 1, 1984, Ser. No. 656,599
Int. Cl.[4] B32B *3/00*
U.S. Cl. 428—200 21 Claims



1. A structural forming member comprising:
a thermally responsive substrate;
electrical resistance circuit means extending throughout the area of said substrate and including multiple terminal means located at multiple positions throughout said substrate for selective application of electrical current to selective areas of said circuit means for heating selective areas of said substrate.

4,565,729

POLYURETHANE LAMINATE OF CONTRASTING LAYERS AND PROCESS THEREFOR

Paul E. Liggett, Wooster, and David L. Braun, North Canton, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jun. 9, 1983, Ser. No. 502,867
Int. Cl.[4] B32B *27/20, 27/40*
U.S. Cl. 428—201 12 Claims



1. A polyurethane laminate, comprising: at least a first polyurethane layer, and
a second contiguous polyurethane layer residing directly on said first layer, said second layer having a contrasting color with respect to said first layer, said second layer consisting of one or more polyurethane layers.

3. A polyurethane laminate according to claim 1, including two or more polyurethane layers, wherein each said layer is contiguous to another layer, wherein each layer has a contrasting color to said contiguous layer and resides directly thereon.

4,565,730

COATING COMPOSITION, IN PARTICULAR FOR PRODUCING A TRANSPARENT TOPCOAT OF A MULTILAYER COATING, A PROCESS FOR PRODUCING COATINGS, AND AN ARTICLE COATED WITH A MULTILAYER COATING

Ulrich Poth, Münster; Fritz Bartol, Hamm, and Adolf Machholz, Würzburg, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Jun. 14, 1984, Ser. No. 620,755
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1983, 3322037
Int. Cl.[4] C08F *8/30;* B05D *1/36*
U.S. Cl. 428—204 12 Claims

1. A binder for coating compositions applied as transparent topcoats of multilayer coatings in the wet-on-wet method, consisting essentially of:
(A) 50 to 90% by weight, based on total acrylic polymers, of a first acrylic polymer having a molecular weight of 800 to 4,000; a hydroxyl number of 80 to 180; and a glass transition temperature below −10° C.;
(B) 10 to 50% by weight, based on total acrylic polymers, of a second acrylic polymer having a molecular weight of 3,000 to 10,000; a hydroxyl number of 40 to 120; and a glass transition temperature of −10° C. to +70° C.; and
(C) polyisocyanates selected from the group consisting of aliphatic polyisocyanates, cycloaliphatic polyisocyanates, and mixtures thereof in a sufficient amount that there are 0.8 to 1.3 isocyanate groups per hydroxyl group of components (A) and (B).

4,565,731

IMAGE-FORMING MEMBER FOR ELECTROPHOTOGRAPHY

Toshiyuki Komatsu, Kawasaki; Yutaka Hirai; Katsumi Nakagawa, both of Tokyo, and Tadaji Fukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 36,226, May 9, 1979, Pat. No. 4,471,042. This application Sep. 15, 1982, Ser. No. 418,293
Claims priority, application Japan, May 4, 1978, 53-53605; May 4, 1978, 53-53506
Int. Cl.[4] B32B *7/12, 9/04;* G03G *5/04;* H01L *13/00*
U.S. Cl. 428—212 13 Claims



1. An article comprising a light-sensitive film constructed of at least a single layer of at least one photoconductive material on a substrate, wherein at least one layer of said at least a single layer is made of an amorphous photoconductive material whose composition is expressed by a formula $[Si_{1-x}C_x]_{1-y}[H]_y$ wherein $0.001 \leqq x \leqq 0.3$ and $0.01 \leqq y \leqq 0.4$, whereby said light-sensitive film exhibits photoconductive characteristics.

4,565,732

VINYL CHLORIDE POLYMER LAMINATE

Richard W. Stamper, Lambertville, Mich., and Robert C. Hultz, Toledo, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 518,247, Jul. 28, 1983, Pat. No. 4,515,744.
This application Mar. 6, 1985, Ser. No. 709,242
Int. Cl.[4] B32B *27/08*; E04C *1/00*; E04B *5/00*
U.S. Cl. 428—215 3 Claims

1. A building having a roof wherein the structural or insulation member of the roof contains a roofing membrane comprising a laminate of

(A) a first layer having a thickness of from about 12 to 50 mils and comprising a compounded and stabilized vinyl chloride polymer plastisol composition containing antimony trioxide and

(B) a second layer on said first layer having a thickness of from about 12 to 50 mils and comprising a compounded and stabilized vinyl chloride polymer plastisol composition containing titanium dioxide,

said layers having been heated at a temperature of from about 250° to 400° F. for from about one to five minutes to fuse said layers and to adhere said layers together to obtain a flexible vinyl chloride polymer laminate and said layer (A) being adjacent said structural or insulation member of said roof.

4,565,733

PACKAGING MATERIAL FOR PHOTOSENSITIVE MATERIALS

Mutsuo Akao, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed May 1, 1984, Ser. No. 605,925
Claims priority, application Japan, May 2, 1983, 58-76271
Int. Cl.[4] B32B *27/32, 3/26*
U.S. Cl. 428—215 16 Claims

1. A laminate film comprising at least three layers comprised of a foam-sheet sandwiched between two uniaxially molecular oriented thermoplastic resin films, wherein:

(a) the thickness of the foam-sheet is 0.3–2.0 mm, and the foaming magnification is 5–50 times;

(b) the two uniaxially molecular oriented films are so hot-welded to the both surfaces of the foam-sheet, without or with an interposing hot-melting adhesive layer therebetween, that the respective molecular orientation axes cross each other at an angle of 30 degrees or more; and

(c) the thickness of the hot-welded laminate film has been compressed to 40–85% (thickness retention) of the theoretical sum of each layers.

11. The laminate film for packaging photosensitve materials, as defined in claim 1 wherein;

the said uniaxially molecular oriented film as a high density polyethylene-uniaxially oblique-stretched-film having a density of 0.94 g/cm^3 or more and a thickness of 15–70 microns, the elongation magnification is 2–6 times, the film contains 1–7 wt% of carbon black, and the cross angle of the stretch-axes of the two stretched film layers is 45–90 degrees;

the said hot-melting adhesive layer is a polyolefin type thermoplastic resin, and the layers are hot-welded at 250°–350° C.; and

the said foam-sheet is substantially comprised of polyethylene, polypropylene and/or polystyrene.

4,565,734

MAGNETIC RECORDING MEDIUM

Yoshihiro Arai; Akira Nahara, and Kiyotaka Fukino, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 14, 1984, Ser. No. 589,553
Claims priority, application Japan, Mar. 18, 1983, 58-45717
Int. Cl.[4] G11B *5/72*
U.S. Cl. 428—216 10 Claims



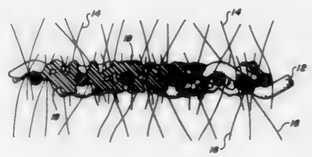
1. A magnetic recording medium comprising a nonmagnetic substrate, a thin magnetic metal film layer provided on the surface thereof with a metallic oxide layer, and a polymer film formed by plasma polymerization which is overlaid on said metallic oxide layer so as to cover said metallic oxide layer.

4,565,735

PAPERMAKERS' FELT

August Murka, Jr., Arnprior, and Michael Marcellus, Sandpoint, both of Canada, assignors to Huyck Corporation, Wake Forest, N.C.

Filed Oct. 19, 1984, Ser. No. 62,503
Claims priority, application Canada, Oct. 19, 1983, 439316
Int. Cl.[4] B32B *7/02*
U.S. Cl. 428—234 13 Claims



1. A papermaker's felt for use with a paper-making machine comprising:

a base layer of fabric formed into a belt, and

a batt layer having a major portion of a discontinuous phase which includes fibers having a relatively high melting point, and a minor portion of a continuous phase which includes fusible material, said continuous phase also defining channels for the drainage of water, said fusible material having a melting point lower than the melting point of the fibers of said discontinuous phase and higher than the highest expected operating temperature of the papermaking machine, said fusible material fused to said fibers and said base layer.

4,565,736

FIBROUS SURGICAL COMPRESS WITH COVER LAYER AUTOGENOUSLY BONDED TO ABSORPTION LAYER

Karl H. Stein, Hemsbach, and Manfred Krull, Heiligkreuzsteinach, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstr, Fed. Rep. of Germany

Continuation of Ser. No. 301,101, Sep. 17, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,073
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036814
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—286 11 Claims

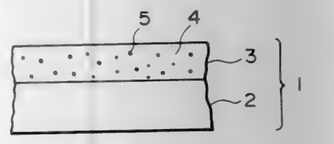
1. A fibrous surgical compress, which comprises: a fibrous absorption layer and an overlapping, liquid permeable, fibrous cover layer having a smooth outer surface which is free of protruding nap and fiber ends, the cover layer being autogenously bonded to the absorption layer by direct formation of tacky cover layers fibers on the absorption layer, said tacky fibers thereafter drying to produce pressureless, interlayer autogeneous bonding and pressureless, random fashion, intralayer fiber autogeneous bonding; said fibers being comprised of hydrophobic, hydrolysis-resistant, aliphatic urethane fibers.

4,565,737

HEAT-SENSITIVE TRANSFER MATERIAL

Katsuhiko Nishide, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1984, Ser. No. 602,710
Claims priority, application Japan, May 2, 1983, 58-76178; May 2, 1983, 58-76179
Int. Cl.[4] B41M *5/26*
U.S. Cl. 428—321.5 7 Claims



1. A heat-sensitive transfer material comprising a support and a heat-transferable ink layer formed on said support, said heat-transferable ink layer comprising a heat-fusible binder, a colorant and a heat-decomposable foaming agent, said colorant and heat-decomposable foaming agent being dispersed in said heat-fusible binder, and said heat-decomposable foaming agent being contained in said heat-transferable ink layer in a proportion of 30 parts by weight or less per 100 parts by weight of said heat-fusible binder.

4,565,738

MULTIPLE-LAYER POLYOLEFIN FILMS

John R. Purdy, Hertfordshire, England, assignor to Imperial Chemical Industries, PLC, London, England

Continuation-in-part of Ser. No. 514,609, Jun. 1, 1983, abandoned. This application May 22, 1984, Ser. No. 612,919
Claims priority, application United Kingdom, Jun. 1, 1983, 8315001
Int. Cl.[4] B32B *27/32*
U.S. Cl. 428—349 10 Claims



1. A multiple-layer film comprising a polyolefin base layer and, on at least one surface thereof, a receptive layer wherein the polyolefin of the base layer comprises a propylene polymer and the at least one receptive layer comprises a blend of

(a) a propylene-ethylene end block copolymer containing from 1 to 20% of ethylene by weight of the end block copolymer, and

(b) an ethylene-monoalphaolefin random copolymer containing from 1 to 15% by weight of the random copolymer of a monoalphaolefin the molecule of which contains from 3 to 10 carbon atoms,

the weight ratio of the propylene-ethylene end block copolymer to the ethylene-monoalphaolefin random copolymer in the blend being within a range of from 0.5:1 to 99:1.

4,565,739

ORIENTED MULTI-LAYER HEAT SEALABLE FILM

Melvil B. Clauson, Newark, and John R. Wagner, Jr., Rochester, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1984, Ser. No. 687,391
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—349 10 Claims

1. A heat sealable multi-layer structure comprising:

(a) a substrate comprising a polyolefin film;

(b) a skin layer on at least one surface of (a), said layer comprising a member selected from the group consisting of a medium density polyethylene, a high density polyethylene, mixtures thereof and blends of (I) said member and (II) polypropylene;

(c) a primer coating between layers (b) and (d) on at least one of said layer (b); and

(d) a heat sealable layer on said coating (c) said heat sealable layer being a member selected from the group consisting of a vinylidene chloride polymer and an acrylic polymer.

4,565,740

SURFACE MODIFIED SOLID SUBSTRATE AND A METHOD FOR ITS PREPARATION

Carl-Gustaf Gölander, Stockholm, and Rolf Larsson, Ekerö, both of Sweden, assignors to IRD-Biomaterial AB, Bromma, Sweden

Filed Feb. 8, 1983, Ser. No. 464,935
Claims priority, application Sweden, Feb. 9, 1982, 8200750
Int. Cl.[4] A61F *1/00*; A61M *25/00*; B01D *39/00*; B32B *27/08*
U.S. Cl. 428—409 39 Claims

1. A surface modified solid substrate, wherein the substrate carries a complex adsorbed thereto which complex is of a polymeric cationic surfactant and a dialdehyde, the surfactant containing primary amino nitrogens as well as secondary and/or tertiary amino nitrogens, and the dialdehyde having 1–4 carbon atoms between the two aldehyde groups.

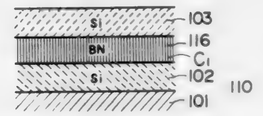
18. A method of surface modifying a solid substrate by introducing ionic charges on the substrate surface, which comprises contacting the substrate with a polymeric cationic surfactant which contains primary amino nitrogens as well as secondary and/or tertiary amino nitrogens, and a dialdehyde which contains 1–4 carbon atoms between the two aldehyde groups, at such conditions that a complex of the polymeric cationic surfactant and the dialdehyde is formed, which complex is adsorbed to the substrate surface.

4,565,741

BORON NITRIDE FILM AND PROCESS FOR PREPARING SAME

Kiyoshi Morimoto, Mobara, and Toshinori Takagi, Nagaoka-kyo, both of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Feb. 28, 1984, Ser. No. 584,403
Claims priority, application Japan, Feb. 28, 1983, 58-30792
Int. Cl.[4] B32B *9/00, 17/06, 19/00*
U.S. Cl. 428—427 2 Claims



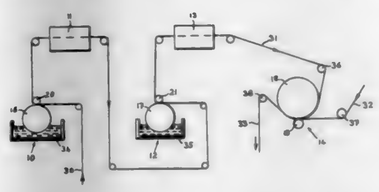
1. A boron nitride film grown on the surface of a substrate by an ionized cluster beam deposition process to be orientated to a predetermined axis of said film, wherein said substrate is formed of an amorphous insulating material, said film being C-axis oriented on said substrate.

4,565,742

PROCESS FOR FORMING A SEALANT WEB-PVDC-BASE FILM LAMINATE

Theodore J. Lang, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Oct. 20, 1983, Ser. No. 543,759
Int. Cl.⁴ B32B *27/08;* **B05D** *3/02*
U.S. Cl. 428—476.3 **14 Claims**



1. A film laminate comprising a base film and a first sealant web with a coating of polyvinylidene chloride sandwiched therebetween,

said first sealant web being selected from the group consisting of (a) film made from a copolymer of ethylene and vinyl acetate, and (b) a film made from a blend of (i) a copolymer of ethylene and vinyl acetate with (ii) a homopolymer of ethylene, or a copolymer of ethylene and one or more C_4 to C_{10} α-olefins, said homopolymer or copolymer having a density of from about 0.915 to about 0.955 g/cm^3, or blends of said homopolymer and copolymer,

said base film being selected from the group consisting of oriented nylon film, oriented polyester film, oriented polypropylene film, cast nylon film and a second sealant web, said second sealant web being selected from the same group as said first sealant web and having a slip coefficient of less than about 0.4,

said polyvinylidene chloride coating consisting of at least one layer having a crystallinity index of less than 1.15 if dried and allowed to stand for 30 days at 20° C. and, if the base film is selected from nylon film, polyester film or polypropylene film, the layer in contact with the base film having a crystallinity index of from 1.12 to 1.25 if dried and allowed to stand for 5 days at 40° C.

4,565,743

PACKAGE MATERIALS FOR BUNDLE-WRAPPING UNIT CASES

Mutsuo Akao, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 8, 1984, Ser. No. 578,290
Claims priority, application Japan, Feb. 14, 1983, 58-21614
Int. Cl.⁴ B32B *27/30*
U.S. Cl. 428—522 **18 Claims**



1. A package material for wrapping unit cases in a bundle which comprises:

(a) a biaxially-stretched polypropylene film substrate having a stretching magnification of 2–15 times, coefficients of the thermal contraction both in the longitudinal and transverse directions of 2–8%, and a relative ratio of the coefficients of the thermal contraction in the longitudinal and transverse directions of 40% or less;

(b) polyvinylidene chloride resin coating applied onto at least one surface of the polypropylene film substrate; and

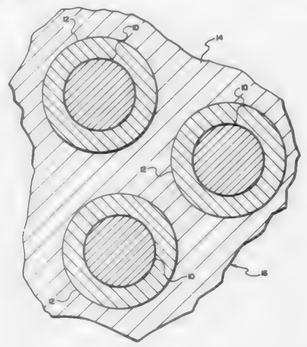
(c) an antistatic agent incorporated in at least one of the layers constituting the package material.

4,565,744

WETTABLE COATING FOR REINFORCEMENT PARTICLES OF METAL MATRIX COMPOSITE

Robert J. Walter, Thousand Oaks, and Jerhong Lin, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 30, 1983, Ser. No. 556,660
Int. Cl.⁴ B22F *3/00*
U.S. Cl. 428—570 **8 Claims**



1. Improved submicron reinforcing particles for use in forming a metal matrix composite in which the material of the particles is not easily wettable by the metal; said improved particles comprising:

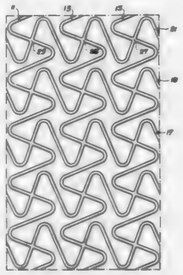
reinforcing submicron particles coated on their surfaces with a material which is easily wettable by the matrix metal.

4,565,745

METALLIC STRETCH FABRIC

Rimvydas A. Kaminskas, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sep. 10, 1984, Ser. No. 649,109
Int. Cl.⁴ H01Q *15/14*
U.S. Cl. 428—596 **4 Claims**



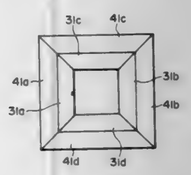
1. A metallic mesh for use as the dish material of a radio-frequency dish antenna, formed as a single piece of metal and shaped in a pattern having a first set of a plurality of parallel lines, each line in the set being formed in the shape of a periodically repeating curve, and a second set of a plurality of parallel lines intersecting the first set, each line in the additional set being formed in the shape of a periodically repeating curve, the second set of lines being substantially orthogonal in direction with respect to said first set of lines; and wherein the periodically repeating curve is approximately sinusoidal in shape.

4,565,746

IRON CORE FOR A STATIONARY INDUCTION APPARATUS

Iwao Hayase, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00421, § 371 Date Jun. 29, 1983, § 102(e) Date Jun. 29, 1983
PCT Filed Oct. 28, 1982, Ser. No. 522,380
Claims priority, application Japan, Oct. 30, 1981, 56-175340
Int. Cl.⁴ H01F *27/24*
U.S. Cl. 428—638 **4 Claims**



3. A magnetic core comprising a plurality of laminates stacked in a first direction, each said laminate comprising an alternate laminate of a thin substantially unbent amorphous magnetic strip and a substantially unbent silicon steel sheet, said silicon steel sheet being disposed inwardly of said amorphous magnetic strip and closer to the center of said core in a second direction perpendicular to said first direction, wherein each said amorphous magnetic strip comprises a plurality of contiguous amorphous magnetic sheets disposed along said first direction.

4,565,747

BORON NITRIDE CONTAINING TITANIUM NITRIDE, METHOD OF PRODUCING THE SAME AND COMPOSITE CERAMICS PRODUCED THEREFROM

Hiroyuki Nakae, 14-7, Kamiasao 1 chome, Asao-ku, Kawasaki-shi, Kanagawa; Toshitsugu Matsuda, 67-4, Futamatagawa 1 chome, Asahi-ku, Yokohama-shi, Kanagawa; Naoki Uno, Furukawa Denko Kibogaoka Shataku, 11-3, Nakakibogaoka, Asahi-ku, Yokohama-shi, Kanagawa; Yukio Matsunami, Nihon Jukagaku Kogyo Daini Mitakaryo, 8-7-6, Kamirenjaku, Mitaka-shi, Tokyo; Toshio Hirai, 4-91, Takamori 3-chome, Izumi-shi, Miyagi, and Tsuyoshi Masumoto, 8-22, Kamisugi 3-chome, Sendai-shi, Miyagi, all of Japan, assignors to Research Development Corporation, Tokyo; Hiroyuki Nakae, Kawasaki; Toshitsugu Matsuda; Naoki Uno, both of Yokohama; Yukio Matsunami, Tokyo; Toshio Hirai, Izumi and Tsuyoshi Masumoto, Sendai, all of, Japan

Filed Nov. 9, 1984, Ser. No. 670,154
Claims priority, application Japan, Nov. 11, 1983, 58-211035; Nov. 11, 1983, 58-211036
Int. Cl.⁴ B32B *18/00;* **C04B** *35/58*
U.S. Cl. 428—698 **22 Claims**

1. Boron nitride produced by chemical vapor deposition, said boron nitride containing titanium nitride in an amount of 0.05 to 10 wt. %.

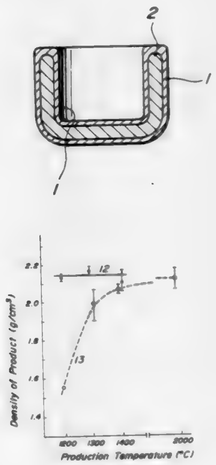
11. A method of producing boron nitride containing titanium nitride in an amount of 0.05 to 10 wt. % by a chemical vapor deposition, comprising the steps of:

(a) mounting a substrate shaped into a desired form in a reactor;

(b) evacuating said reactor and heating said substrate to the temperature range of 500° to 2000° C.;

(c) introducing a boron depositing source gas, a nitrogen depositing source gas, a titanium depositing source gas and carrier and/or diluent gas into said evacuated reactor, and then contacting said source gases with said substrate within the substrate temperature ranging from 500° to 2000° C. and at the total internal pressure of said reactor ranging from 0.1 to 770 torr, thereby depositing said boron nitride containing titanium nitride, the ratio of said titanium depositing source gas to said boron depositing source gas being controlled to give a Ti/B atomic ratio of 0.005 to 0.45;

(d) continuing to feed said source gases and said carrier and/or diluent gas while degassing to maintain said total internal pressure of said reactor within said pressure range until the desired amount of said boron nitride is deposited onto said substrate;



(e) cooling and taking out said substrate; and

(f) removing said deposited boron nitride from said substrate.

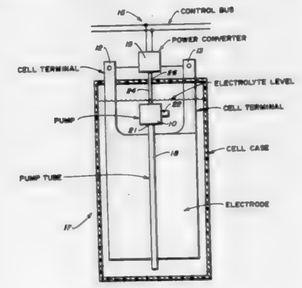
22. Boron nitride type composite ceramics composed of (1) one or more boron nitride ceramic base layers containing titanium nitride in an amount of 0.05 to 10 wt. % which is produced by chemical vapor deposition and (b) one or more BN ceramic surface layers.

4,565,748

MAGNETICALLY OPERATED ELECTROLYTE CIRCULATION SYSTEM

Ernest A. Dahl, 3247 Breaker, Ventura, Calif. 93003

Filed Jan. 31, 1985, Ser. No. 696,968
Int. Cl.⁴ H01M *2/38*
U.S. Cl. 429—10 **8 Claims**



1. A magnetic system for circulating liquid acid electrolyte

in battery cells to prevent electrolyte stratification, comprising:

a. an electrolyte flow tube made from non-corrodable material forming an electrolyte passageway which extends from the lower portion to the upper portion of a battery cell; the upper end of said flow tube being lower than the electrolyte level in said battery cell;

b. a magnetic pump means positioned about said electrolyte flow tube;

c. said magnetic pump means comprising a plurality of adjacent electromagnetic coils and respective magnetic cores with pole pieces located along said electrolyte flow tube; the pole pieces of said magnetic cores being positioned adjacent said flow tube such that a magnetic field generated between said pole pieces by said electromagnetic coils when energized passes directly across the electrolyte passageway within said flow tube;

d. power means for providing at least two-phase AC current to the plurality of electromagnetic coils along said electrolyte flow tube such that at any one given instant the phasing of the magnetic field generated by one electromagnetic coil is leading while that of the next adjacent electromagnetic coil is neutral and the magnetic field of the following adjacent electromagnetic coil is lagging 90°, with repeating sequence;

e. the sequentially created magnetic fields operating to sequentially magnetically charge electrolyte within the flow tube between the respective pole pieces to a fixed magnetic state for the given instant, such that change of phase of the AC current causes change of phase in the magnetic fields across the electrolyte flow tube resulting in the sequential attraction of electrolyte in one portion of the flow tube and repulsion of electrolyte in the next adjacent portion of the flow tube to provide a minute pumping action that forces the acid electrolyte to move through said flow tube passageway, thereby preventing stratification of the acid electrolyte.

4,565,749

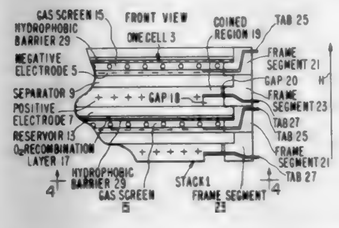
LIGHTWEIGHT BIPOLAR METAL-GAS BATTERY

Gerrit van Ommering, San Francisco, and Charles W. Koehler, Fremont, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 26, 1984, Ser. No. 686,353

Int. Cl.⁴ H01M *12/06*

U.S. Cl. 429—27 **10 Claims**



1. A bipolar metal-gas battery cell stack comprising:

several electrically series-connected stacked cells each having one negative electrode and one positive electrode, wherein series electrical connections between oppositely polarized electrodes of adjacent cells are made external to the cells;

means for confining electrolyte within each cell; and

means for confining overcharge gasses within each cell at a region proximate the positive electrode.

4,565,750

ELECTROLYTE CONTAINER FOR BATTERY AND METHOD OF FILLING ELECTROLYTE

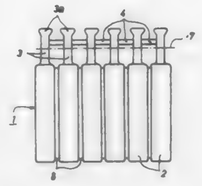
Toshihiro Isoi, Takatsuki; Michio Yashima, Kawagoe, and Shuji Takahashi, Ooi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Yuasa Battery Co., Ltd., Osaka, both of, Japan

Filed Oct. 1, 1984, Ser. No. 656,373

Claims priority, application Japan, Sep. 30, 1983, 58-184046; Oct. 10, 1983, 58-156408[U]

Int. Cl.⁴ H01M *2/36*

U.S. Cl. 429—72 **3 Claims**



1. An electrolyte container for use in simultaneously filling electrolyte into the individual cells of a multi-cell dry-charged storage battery, said container comprising a shell body having a plurality of spaced cell units, equal in number to the number of individual cells in the dry-charged storage battery to be filled, each container cell unit enclosing the quantity of electrolyte required to fill the corresponding cell unit of the multi-cell battery to be filled with electrolyte, each of said container shells having a filling tube, said cell units and said filling tubes thereon being spaced on said electrolyte container to coincide with the spacing between said individual cells on said multi-cell battery and the filling ports of said individual battery cells to enable the individual one of said container shell filling tubes to fit into the corresponding one of the filling ports of the corresponding battery cell, each of said container filling tubes includes a flow regulator having a hole of a prescribed size in its inside.

4,565,751

CATHODE FOR HIGH CURRENT DENSITY AND HIGH POWER DENSITY ELECTROCHEMICAL CELLS

Marilyn A. Faust, Rochester, and Hans W. Osterhoudt, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 18, 1984, Ser. No. 621,350

Int. Cl.⁴ H01M *6/16, 4/40*

U.S. Cl. 429—94 **16 Claims**

1. A cathode comprising a current collector coated with a dispersion of $(CF_x)_n$ wherein x is equal to or less than 1.2 and n is an indeterminately large number, a current carrier and a binder characterized in that the current collector is a metal foil, the binder is sufficiently adhesive to adhere the coated dispersion to the metal foil and the coated dispersion has a porosity of 57–73 percent.

4,565,752

ELECTROCHEMICAL CELL HAVING WOUND ELECTRODE STRUCTURES

Franz Goebel, Sudbury; Timothy B. Haskins, Concord, and David C. Batson, Melrose, all of Mass., assignors to GTE Government Systems Corporation, Waltham, Mass.

Filed Dec. 24, 1984, Ser. No. 685,638

Int. Cl.⁴ H01M *6/10, 6/16*

U.S. Cl. 429—94 **4 Claims**

1. An electrochemical cell comprised of:

a metal case having a cylindrical wall and a flat bottom;

a metal cover in contact with the wall of said metal case;

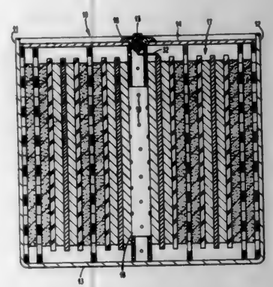
a terminal extending through the center of said cover and electrically insulated therefrom;

a first electrode structure including a first elongated metal substrate having a first edge and a second edge extending along its length, a first end, and a second end;

a first electrode material covering both sides of said first substrate except for bare borders adjacent to said first and second edges of said first substrate and a bare end extending from said first end;

a second electrode structure including a second elongated metal substrate generally covered with a second electrode material;

an insulating porous sheet interposed between said first electrode structure and said second electrode structure;



said first electrode structure, said insulating porous sheet and said second electrode structure wound in a coil with said bare end of said first substrate on the outside of said coil;

said first substrate having a width greater than said second substrate;

said coil arranged within said case with one edge of said first substrate in electrical contact with said flat bottom and the other edge of said first substrate in electrical contact with said cover;

said bare end of said first substrate in contact with said wall;

conducting means for providing electrical communication between said first electrode structure and said terminal; and

an electrolytic solution substantially immersing said coil.

4,565,753

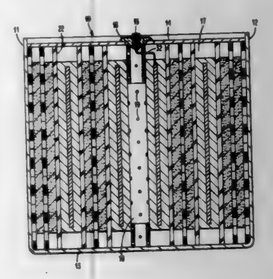
ELECTROCHEMICAL CELL HAVING WOUND ELECTRODE STRUCTURES

Franz Goebel, Sudbury; David C. Batson, Melrose, and Timothy B. Haskins, Concord, all of Mass., assignors to GTE Government Systems Corporation, Waltham, Mass.

Filed Apr. 3, 1985, Ser. No. 719,833

Int. Cl.⁴ H01M *6/10, 6/16*

U.S. Cl. 429—94 **1 Claim**



1. An electrochemical cell comprised of:

a metal case having a cylindrical wall and a flat bottom;

a metal cover in contact with the wall of said metal case;

a terminal extending through the center of said cover and electrically insulated therefrom;

a first electrode structure including a first elongated metal substrate having a first edge and a second edge extending along its length, a first end, and a second end;

a first electrode material covering both sides of said first substrate except for bare borders adjacent to said first and second edges of said first substrate and a bare end extending from said first end;

a second electrode structure including a second elongated metal substrate generally covered with a second electrode material;

a multiplicity of sheets of insulating porous material interposed between said first electrode structure and said second electrode structure;

said first electrode structure, said insulating porous sheets and said second electrode structure wound in a coil with said bare end of said first substrate on the outside of said coil;

said first substrate and said sheets of porous insulating material having a width greater than said second substrate;

said coil arranged within said case with one edge of said first substrate and one edge of each said sheets of porous insulating material in contact with said flat bottom and the other edge of said first substrate and the other edge of each of said sheets of porous insulating material in contact with said cover;

said bare end of said first substrate in contact with said wall conducting means for providing electrical communication between said first electrode structure and said terminal; and

an electrolytic solution substantially immersing said coil.

4,565,754

ELECTRODE FOR ORGANIC BATTERY

Hiromochi Muramatsu, Nagoya, and Atsushi Watanabe, Toyokawa, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

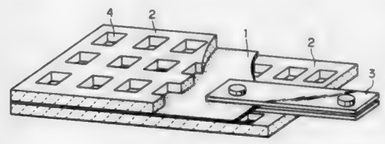
PCT No. PCT/JP83/00235, § 371 Date Jun. 13, 1984, § 102(e) Date Jun. 13, 1984, PCT Pub. No. WO84/02231, PCT Pub. Date Jun. 7, 1984

PCT Filed Jul. 21, 1983, Ser. No. 621,923

Claims priority, application Japan, Nov. 26, 1982, 57-207340

Int. Cl.⁴ H01M *4/00*

U.S. Cl. 429—213 **3 Claims**



1. An electrode assembly for an organic battery comprising an electrode made from an organic conductive material, and a layer of carbon material covering about 30–70% of the surface of the electrode and having a plurality of holes therein so that about 70–30% of the surface of the electrode is exposed.

4,565,755

METHOD OF MANUFACTURING SHADOW MASK

Yasuhisa Ohtake, and Hiroshi Tanaka, both of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 24, 1984, Ser. No. 583,329
Claims priority, application Japan, Feb. 28, 1983, 58-30835
Int. Cl.⁴ G03F *9/00*; B41C *1/00*
U.S. Cl. 430—5 **4 Claims**



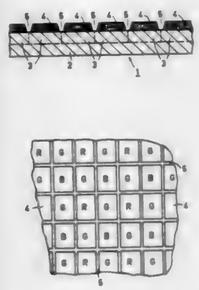
1. A method of manufacturing a shadow mask, comprising the steps of:
forming photoresist films on first and second surfaces of a sheet made of a shadow mask material;
forming latent images on said first and second surfaces by selectively exposing said photoresist films, respectively;
developing said latent images to form photoresist film patterns on said first and second surfaces, respectively; and
spraying an etching solution onto said first and second surfaces to etch bared portions of said shadow mask sheet to form apertures with a large opening side on said first surface and a small opening side on said second surface, wherein the photoresist film formed on said first surface is thicker than the photoresist film formed on said second surface, and wherein said spraying step includes a first spraying step and a second spraying step, wherein an impact strength of the etching solution against the shadow mask sheet in said first step is greater than that in said second step.

4,565,756

COLOR IMAGING DEVICE

Howard C. Needs, and Lodewijk Blok, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 434,666, Oct. 15, 1982, abandoned. This application Oct. 12, 1984, Ser. No. 660,256
Claims priority, application Netherlands, Nov. 10, 1981, 8105071
Int. Cl.⁴ G03F *9/00*; G03C *5/00*
U.S. Cl. 430—7 **10 Claims**



1. A method of manufacturing a color imaging device comprising the steps of:
providing an imaging device substrate;
providing a transparent layer on the substrate;
providing, by a photolithographic process, a pattern of filter elements separated by separation regions in the transparent layer;
providing a barrier layer over the transparent layer;
providing, by a photolithographic process, a pattern of apertures in the barrier layer, the pattern of apertures corresponding to the locations of a first system of filter elements for passing light of a first color;
providing a dye, through the apertures in the barrier layer, to dye the filter elements of the first system; and
removing the barrier layer.

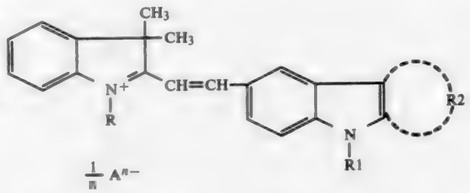
4,565,757

PHOTOCONDUCTIVE COMPOSITIONS SENSITIVE TO BOTH LASER LIGHT AND TUNGSTEN HALIDE LIGHT

Anthony J. Chalk, Leeds; Graham Charnock, Huddersfield; Allen P. Gates, Knaresborough; David E. Murray, Leeds, and Ian S. Smith, Bradford, all of England, assignors to Vickers PLC, England

Filed Dec. 15, 1983, Ser. No. 562,696
Claims priority, application United Kingdom, Dec. 16, 1982, 8235884
Int. Cl.⁴ G03G *5/04*
U.S. Cl. 430—83 **9 Claims**

1. A photoconductive composition comprising at least one photoconductor and, as sensitiser, a compound having the formula;



$\frac{1}{n} A^{n-}$

wherein R represents alkyl; R1 represents alkyl or aryl; R2 represents the atoms required to complete a hetero or carbocylic ring and A^{n-} represents an anion.

4,565,758

ELECTROPHOTOGRAPHIC PLATE HAVING A CHARGE GENERATING LAYER CONTAINING AN ORGANIC PIGMENT FOR CHARGE GENERATION

Shigeo Tachiki; Ikutoshi Shibuya, both of Hitachi; Makoto Fujikura, Matsudo, and Atsushi Kakuta, Hitachiota, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company Ltd., both of Tokyo, Japan

Continuation of Ser. No. 420,888, Sep. 21, 1982, abandoned. This application Jul. 5, 1984, Ser. No. 627,890
Claims priority, application Japan, Sep. 22, 1981, 56-150095; May 14, 1982, 57-82235
Int. Cl.⁴ G03G *5/10*
U.S. Cl. 430—58 **18 Claims**

1. In an electrophotographic plate comprising an electroconductive layer, a charge generating layer containing one or more organic pigments for charge generation and a charge transport layer containing charge transport material having functions of charge maintenance and charge transport, the improvement wherein a silane coupling agent is present in the charge generating layer in an amount of 0.5 to 40% by weight based on the weight of the charge generating layer.

4,565,759

PLATES FOR USE IN LITHOGRAPHIC PRINTING

Kyoji Tsutsui, Mishima, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1984, Ser. No. 618,604
Claims priority, application Japan, Jun. 16, 1983, 58-106733
Int. Cl.⁴ G03G *5/14, 13/28*
U.S. Cl. 430—66 **8 Claims**



1. A plate for use in lithographic printing comprising an electrically conductive substrate, a photoconductive layer on said substrate and a hydrophobic overcoat layer on said photoconductive layer, said hydrophobic overcoat layer having a thickness of from 0.05 to 10 μm and consisting essentially of the product obtained by cross-linking a resin containing at least 50 wt.% of a maleic anhydride copolymer with a polyisocyanate cross-linking agent, said hydrophobic overcoat layer being convertible to a hydrophilic overcoat layer by immersing said overcoat layer in an aqueous alkaline solution to effect hydrolysis of said copolymer.

4,565,760

PROTECTIVE OVERCOATINGS FOR PHOTORESPONSIVE IMAGING MEMBERS

Richard L. Schank, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 13, 1984, Ser. No. 670,710
Int. Cl.⁴ G03G *5/14*
U.S. Cl. 430—66 **14 Claims**

1. A photoresponsive imaging member with acceptable residual voltages at from about 20 percent to about 80 percent relative humidities consisting essentially of inorganic or organic photoconductive substances, and as a release protective coating thereover a dispersion of colloidal silica and a hydroxylated silsesquixone in an alcoholic medium, which overcoating is of a thickness of from about 0.2 micron to about 1.5 microns.

4,565,761

ELECTROPHOTOGRAPHIC PROCESS UTILIZING AN AZULENIUM SALT-CONTAINING PHOTOSENSITIVE MEMBER

Kazuharu Katagiri; Yoshihiro Oguchi, both of Yokohama, and Yoshio Takasu, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 500,978, Jun. 3, 1983. This application Jun. 15, 1984, Ser. No. 620,821
Claims priority, application Japan, Jun. 8, 1982, 57-98047; Sep. 13, 1982, 57-160156; Sep. 13, 1982, 57-160157; Sep. 22, 1982, 57-165263; Jan. 17, 1983, 58-6070; Jan. 20, 1983, 58-7523
Int. Cl.⁴ G03G *5/06*
U.S. Cl. 430—83 **18 Claims**

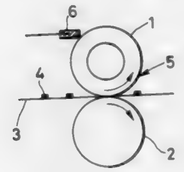
1. An electrophotographic process comprising the steps of:
(a) charging an electrophotographic photosensitive member having a conductive substrate and a photosensitive layer containing a compound having at least one nucleus of an azulenium salt with charges of a positive or negative polarity,
(b) imagewise exposing the charged photosensitive member to a pattern of light sufficient to produce an electrostatic latent image, and
(c) developing the resulting latent image with a developer.

4,565,762

APPLICATOR FOR RELEASING AGENT

Chiaki Kato, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 12, 1984, Ser. No. 649,762
Claims priority, application Japan, Sep. 30, 1983, 58-183468
Int. Cl.⁴ G03G *13/20*; B05C *11/00*
U.S. Cl. 430—99 **8 Claims**



4. A method of applying a releasing agent to a heated fixation roller comprising the steps of:
(a) dispersing a polypropylene powder in silicone oil;
(b) heating the dispersed polypropylene powder in the silicone oil to a temperature greater than the melting point of said polypropylene powder;
(c) cooling said heated polypropylene powder to form a fine particle polypropylene powder; and
(d) applying said fine particle polypropylene powder dispersed in said silicone oil to the heated fixation roller.

4,565,763

PROCESS FOR PRODUCING TONER

Masaki Uchiyama, Tokyo, and Yasuo Mitsuhashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1983, Ser. No. 498,293
Claims priority, application Japan, Jun. 2, 1982, 57-94496
Int. Cl.⁴ G03G *11/00*
U.S. Cl. 430—109 **22 Claims**

1. A process for producing a toner by melt-blending at least a colorant and a polymer and finely pulverizing the resulting blend after cooling characterized in that said polymer is a crosslinked resin having a ratio of weight-average molecular weight to number-average molecular weight (Nw/Mn) exceeding 4.0 and a melt index of 0.01–10 g/10 min. at 110° C. under a load of 10 Kg, said polymer further crosslinked during the melt-blending, and the final gel content of said polymer after the melt-blending is lower than 50%.

4,565,764

MICROCAPSULE TONER AND PROCESS OF MAKING SAME

Toshiaki Nakahara; Ichiro Ohsaki, both of Kawasaki, and Hisayuki Ushiyama, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1983, Ser. No. 527,395
Claims priority, application Japan, Sep. 10, 1982, 57-158360; Sep. 13, 1982, 57-160155; Nov. 4, 1982, 57-194361
Int. Cl.⁴ G03G *9/16*
U.S. Cl. 430—111 **9 Claims**

1. A microcapsule toner for developing electrostatic or magnetic latent images, comprising a colored solid core material containing a binder resin, a first resin wall coating said core material and a second resin wall coating said first resin wall, wherein said first and second resin walls have been prepared through phase separation, and said first resin wall has a charging characteristic to a polarity opposite to those of said core material and said second wall resin in encapsulating media for formation of said first resin wall and for formation of said second resin wall, respectively.

4,565,765

PROCESS OF DEVELOPING ELECTROSTATIC LATENT IMAGES COMPRISED OF ROTATING MAGNETS CONTAINED IN STATIONARY SHELL AND SYNTHETIC CARRIER

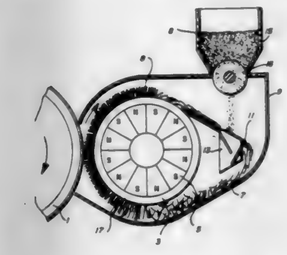
John F. Knapp, Fairport; Leon A. Howland, Williamson; Robert J. Gruber, Pittsford, and Ronald J. Koch, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 17, 1983, Ser. No. 552,934

The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.⁴ G03G *13/08, 13/09*

U.S. Cl. 430—122 **22 Claims**



1. An improved process for developing electrostatic latent images comprising (1) providing a development zone situated between an imaging member and a transporting member, consisting essentially of a stationary shell containing rotating magnets therein, which magnets are rotating at a speed of from about 200 revolutions per minute to about 2,000 revolutions per minute, (2) transporting a synthetic developer composition comprised of toner particles and carrier particles wherein the carrier particles contain therein resin particles and magnetite particles in an amount of from about 10 percent by weight to about 60 percent by weight, into the development zone by causing rotation of the magnets in the stationary shell, (3) effecting movement of the imaging member in a direction opposite to the direction of movement of the rotating magnets, wherein the developer composition is desirably agitated in the development zone by magnetic means, and wherein developer particles are available immediately adjacent the imaging member; with the distance between the imaging member and stationary shell being from about 0.1 millimeter to about 1.5 millimeters.

4,565,766

DEVELOPING POWDER

Yasuo Mitsuhashi, Yokohama, and Masaki Uchiyama, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 319,083, Nov. 6, 1981, Pat. No. 4,481,274. This application Jul. 20, 1984, Ser. No. 620,807

Claims priority, application Japan, Nov. 11, 1980, 55-158511

The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.

Int. Cl.⁴ G03G *15/16*

U.S. Cl. 430—126 **1 Claim**

1. An electrophotographic process comprising developing a latent image on a latent image supporting member with a toner, transferring the toner image developed, and removing the toner remaining on said image supporting member, characterized in that said toner is a developing powder which comprises a binder containing 0.1–5% by weight of an olefin homopolymer or copolymer having a melt viscosity at 140° C. of $10–10^6$ cps. and containing 50% by weight or more of a crosslinked polymer, said crosslinked polymer in its entirety having a gel content of 10% or less and being prepared from a vinyl type monomer and a crosslinking agent monomer contained in an amount of 0.01–10% by weight based on the total weight of the monomers.

4,565,767

LIGHT-SENSITIVE POLYMER COMPOSITION WITH POLY(AMIC ACID), BISAZIDE, AND TERTIARY AMINE COMPOUND

Fumio Kataoka; Fusaji Shoji, both of Yokohama; Isao Obara, Kamakura; Issei Takemoto, Yokohama; Hitoshi Yokono, Katsuta; Tokio Isogai, Fujisawa, and Mitsumasa Kojima, Hitachi, all of Japan, assignors to Hitachi, Ltd and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 368,006, Apr. 13, 1982, abandoned. This application Apr. 24, 1984, Ser. No. 603,451

Claims priority, application Japan, Apr. 13, 1981, 56-54408

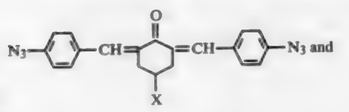
Int. Cl.⁴ G03C *1/71;* **G03F** *7/26*

U.S. Cl. 430—196 **11 Claims**

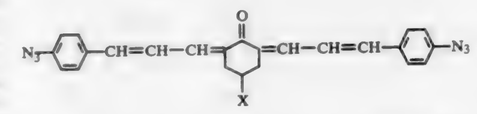
1. A light-sensitive polymer composition for forming fine patterns consisting essentially of:

(a) 100 parts by weight of a poly(amic acid),

(b) 0.1 to 100 parts by weight of at least one bisazide compound selected from the group consisting of



and



wherein X is —OH, —R^3'OH, —OR^3 or —COOH; R^3 is a lower alkyl group; —R^3' is an alkylene group; and

(c) 1 to 400 parts by weight of a tertiary amine compound together in an admixture.

4,565,768

PHOTOSENSITIVE AZIDE COMPOSITION WITH ALKALI SOLUBLE POLYMER AND PROCESS OF USING TO FORM RESIST PATTERN

Saburo Nonogaki, Tokyo, and Michiaki Hashimoto, Yono, both of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,749

Claims priority, application Japan, Jun. 1, 1983, 58-95650

Int. Cl.⁴ G03C *1/52, 1/71;* **G03F** *7/26*

U.S. Cl. 430—197 **8 Claims**

1. A photosensitive composition which comprises an admixture of a photosensitive condensation product of equimolar amounts of isophorone and an aromatic azide compound having an aldehyde group, and an alkali-soluble polymeric compound, the amount of the condensation product being 5–40% by weight on the basis of the polymeric compound.

4. A photosensitive composition which comprises an admixture of

(i) a condensation product of equimolar amounts of isophorone and at least one azide compound selected from the group consisting of an azidobenzaldehyde and an azidocinnamaldehyde; and

(ii) an alkali-soluble polymeric compound; the amount of the condensation product being 5 to 40% by weight on the basis of the polymeric compound.

8. A process for forming a pattern which comprises a step of coating a substrate with a photosensitive composition comprising (i) a photosensitive condensation product of equimolar amounts of isophorone and at least one azide compound selected from the group consisting of an azidobenzaldehyde and an azidocinnamaldehyde, and (ii) an alkali-soluble polymeric compound, the amount of the condensation product being 5 to 40% by weight on the basis of the polymeric compound, thereby forming a film on the substrate; a step of exposing the film to light of a predetermined pattern; and a step of developing the film with an aqueous alkali solution, thereby removing unexposed parts and forming a pattern.

4,565,769

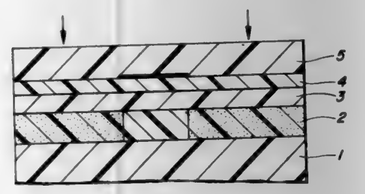
POLYMERIC SENSITIZERS FOR PHOTOPOLYMER COMPOSITION

Thomas E. Dueber, and Bruce M. Monroe, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 21, 1984, Ser. No. 673,924

Int. Cl.⁴ G03C *1/69*

U.S. Cl. 430—281 **11 Claims**



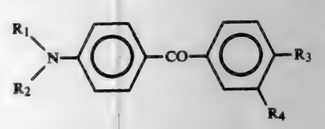
1. A photopolymerizable composition consisting essentially of

(A) at least one nongaseous ethylenically unsaturated compound having at least one terminal ethylenically unsaturated group, a boiling point above 100° C. at normal atmospheric pressure and being capable of addition polymerization;

(B) at least one 2,4,5-triarylimidazolyl dimer consisting of two lophine radicals bound together by a single covalent bond;

(C) at least one polymeric sensitizer sensitive to ultraviolet or visible radiation and having a weight average molecular weight in the range of 10,000 to 300,000, the polymeric sensitizer being the reaction product of

(1) a reactive sensitizer moiety of the formula:



(I)

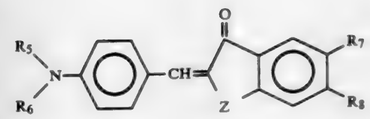
wherein R_1 is alkyl of 1 to 12 carbon atoms;

R_2 is alkyl of 1 to 12 carbon atoms, —CH_2CH_2Cl;

R_3 is H, and with the proviso that when R_2 is not —CH_2CH_2Cl, R_3 can be one of —$O(CH_2CH_2O)_n$—CH_2CH_2OH, —$O(CH_2CH_2CH_2O)_n$—$CH_2CH_2CH_2OH$ wherein n is 0 to 10, —$OCH_2CH_2NH_2$, —$(CH_2)_nOH$, —$(CH_2)_nNH_2$ wherein n is 1 to 12; and

R_4 is H, and with the proviso that when R_2 is not —CH_2CH_2Cl and R_3 is H, R_4 is one of —$O(CH_2CH_2O)_n$—CH_2CH_2OH, —$O(CH_2CH_2CH_2O)_n$—$CH_2CH_2CH_2OH$ wherein n is 0 to 10, —$OCH_2CH_2NH_2$, —$(CH_2)_nOH$, —$(CH_2)_nNH_2$ wherein n is 1 to 12;

(IIa)



wherein Z is —CH_2—; —CH_2CH_2—; —CH_2O— with oxygen bonded to the aromatic ring;

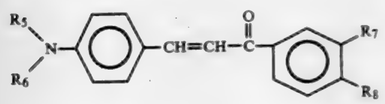
R_5 is alkyl of 1 to 12 carbon atoms;

R_6 is alkyl of 1 to 12 carbon atoms, —CH_2CH_2Cl;

R_7 is H, —OCH_3, and with the proviso that when R_6 is not —CH_2CH_2Cl, R_7 can be one of —$O(CH_2CH_2O)_n$—CH_2CH_2OH, —$O(CH_2CH_2CH_2O)_n$—$CH_2CH_2CH_2OH$ wherein n is 0 to 10, —$OCH_2CH_2NH_2$, —$(CH_2)_nOH$, —$(CH_2)_nNH_2$ wherein n is 1 to 12; and

R_8 is H, —OCH_3, and with the proviso that when R_6 is not —CH_2CH_2Cl and R_7 is H or —OCH_3, R_8 is one of —$O(CH_2CH_2O)_n$—CH_2CH_2OH, —$O(CH_2CH_2CH_2O)_n$—$CH_2CH_2CH_2OH$ wherein n is 0 to 10, —$OCH_2CH_2NH_2$, —$(CH_2)_nOH$, —$(CH_2)_nNH_2$ wherein n is 1 to 12;

(IIb)



wherein R_5 is alkyl of 1 to 12 carbon atoms;

R_6 is alkyl of 1 to 12 carbon atoms, —CH_2CH_2Cl;

R_7 is H, —OCH_3, and with the proviso that when R_6 is not —CH_2CH_2Cl, R_7 can be one of —$O(CH_2CH_2O)_n$—CH_2CH_2OH, —$O(CH_2CH_2CH_2O)_n$—$CH_2CH_2CH_2OH$ wherein n is 0 to 10, —$OCH_2CH_2NH_2$, —$(CH_2)_nOH$, —$(CH_2)_nNH_2$ wherein n is 1 to 12; and

R_8 is H, —OCH_3, and with the proviso that when R_6 is not —CH_2CH_2Cl and R_7 is H or —OCH_3, R_8 is one of —$O(CH_2CH_2O)_n$—CH_2CH_2OH, —$O(CH_2CH_2CH_2O)_n$—$CH_2CH_2CH_2OH$ wherein n is 0 to 10, —$OCH_2CH_2NH_2$, —$(CH_2)_nOH$, —$(CH_2)_nNH_2$ wherein n is 1 to 12; and

(2) a reactive polymer taken from the group consisting of methyl methacrylate, methyl acrylate, isocyanatoethyl methacrylate, maleic anhydride, chloromethyl styrene, p-hydroxystyrene, acrylic acid, methacrylic acid, phenol-formaldehyde resins, epoxy polymers, and mixtures of said polymers, the polymeric sensitizer having 0.1 to 70% by weight of the sensitizer moiety; and

(D) 0 to 97 parts by weight of at least one organic polymeric binder relative to 3 to 100 parts by weight of ethylenically unsaturated compound (A); component (B) being present in an amount of 0.001 to 20 parts by weight per 100 parts by weight of the combined weight of components (A) and (D); and component (C) being present in an amount of 0.1 to 80% by weight based on the total dry weight of the composition.

4,565,770

PROCESS FOR DOT ETCHING ACID SOLUBLE PHOTOPOLYMERIZABLE ELEMENTS UTILIZING CHEMICALLY SOLUBLE PIGMENTS

Robert P. Held, Englishtown, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1984, Ser. No. 670,949

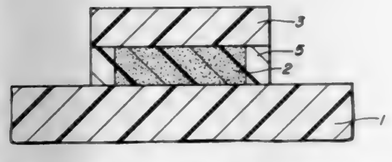
Int. Cl.⁴ G03C *5/16, 5/24, 5/38, 1/68*

U.S. Cl. 430—294 **22 Claims**

1. A process for the preparation of a dot-etched photopolymerizable lithographic film which comprises

(A) exposing imagewise to actinic radiation a photpolymerizable element taken from the group consisting of

(i) a support bearing a layer of an acid soluble photopolymerizable composition having dispersed therein a chemically soluble pigment;
(ii) a support bearing, in order
(a) a layer of acid soluble photopolymerizable composition having dispersed therein a chemically soluble pigment,
(b) a layer of clear, unpigmented acid soluble photopolymerizable composition which is the same or different from the composition of layer (a); and
(iii) a support bearing, in order
(a) a nonphotosensitive layer of an aqueous soluble polymeric binder having dispersed therein a chemically soluble pigment,



(b) a layer of a clear, unpigmented acid soluble photopolymerizable composition comprising an acid soluble binder;
(B) developing the exposed element with an acid solution with the proviso that when the photopolymerizable element is type (iii) the acid development solution is followed by treatment with water; and
(C) treating the developed element with chemical solubilizing agent for the pigment whereby there occurs diffusion etching of the image.

17. A process according to claim **1** wherein in step (B) the water is below 25° C.

18. A process according to claim **17** wherein the chemically soluble pigment is colloidal silver which after said acid development and water treatment is bleached with ferricyanide solution and fixed with thiosulfate solution.

4,565,771

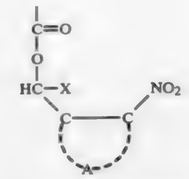
PRODUCTION OF GRAVURE PRINTING PLATES HAVING PLASTIC PRINTING LAYERS

John Lynch, Monsheim; Reinhold J. Leyrer, Ludwigshafen, and Dietrich Saenger, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 22, 1983, Ser. No. 525,509
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231144
The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.
Int. Cl.⁴ G03C *5/16, 1/495, 1/72*
U.S. Cl. 430—307 **20 Claims**

1. A process for the production of a gravure printing plate having a plastic printing layer applied to a printing plate base, which comprises:
(a) subjecting a solid photosensitive layer (L), which is firmly bonded to said base, to imagewise exposure to actinic light, the said photosensitive layer (L) containing as the photosensitive component, a compound possessing two or more aromatic and/or heteroaromatic o-nitrocarbinol ester groups of the formula (I)

(I)



where A is a radical of an unsubstituted or substituted 5-membered to 14-membered aromatic or heteroaromatic ring system and X is hydrogen, alkyl of 1 to 8 carbon atoms or an unsubstituted or substituted aryl or aralkyl radical, said layer (L) further containing a compound which effects cross-linking and possesses two or more reactive groups, which, under the action of heat, are capable of reacting with —COOH groups to form a covalent chemical bond; and thereafter either
(b) first washing out the imagewise exposed layer (L) with an aqueous developer, post-exposing the washed-out layer uniformly to actinic light and afterwards subjecting it to thermal hardening and cross-linking, or
(c) first subjecting the imagewise exposed layer (L) to selective thermal hardening and cross-linking in the exposed areas, post-exposing the selectively hardened and cross-linked layer (L) uniformly to actinic light and thereafter washing it out with an aqueous developer.

4,565,772

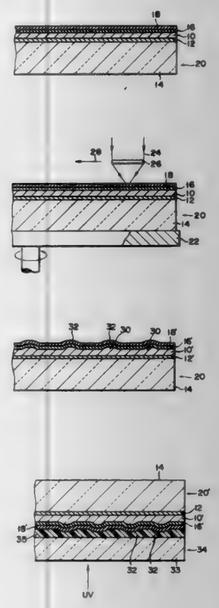
PROCESS OF USING RADIATION-SENSITIVE CARRIER BODY TO FORM STAMPER STRUCTURE AND SUBSEQUENT USE AS A STAMPER TO MAKE OPTICAL DISKS

Yoshikatsu Takeoka, Kawasaki; Nobuaki Yasuda, Zushi; Akio Hori, and Norio Ozawa, both of Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 535,205, Sep. 23, 1983. This application Jul. 12, 1984, Ser. No. 630,232
Claims priority, application Japan, Sep. 29, 1982, 57-168623; Dec. 27, 1982, 57-226711; Dec. 27, 1982, 57-226712
Int. Cl.⁴ G03C *5/00;* **B29D** *17/00;* **B29C** *43/00*
U.S. Cl. 430—320 **6 Claims**

1. A method for manufacturing a stamper structure which is used to manufacture optical disks, comprising the steps of:
(a) preparing a disk-shaped carrier body which has a radiation-sensitive layer which serves as a single recording layer which absorbs energy froma beam with which said layer is irradiated and which locally expands and deforms due to discharging of a gas component contained therein, a substrate for supporting said radiation-sensitive layer, and a first adhesive layer which is interposed between said substrate and said radiation-sensitive layer and which adheres said radiation-sensitive layer to said substrate;
(b) additionally providing said carrier body with a metal layer, which has a releasability sufficient to easily separate it from a disk substrate made of a preselected material for manufacturing optical disks, and a second adhesive layer which is provided between said radiation-sensitive layer and said metal layer and which has an adhesion strength sufficient to effectively adhere said metal layer to said radiation-sensitive layer;
(c) irradiating, after said metal layer and said second adhesive layer are additionally prepared, a focussed radiation beam to form on said carrier body a spot having a diameter of the order of microns, in a manner as to cause said radiation-sensitive layer to absorb energy of the beam and deform due to the discharging of the gas component, thereby forming a protuberance in said metal layer of said carrier body; and

(d) directly using the carrier body having said protuberance as a stamper structure for manufacturing optical disks



each of which comprises a substrate in a surface of which a groove corresponding in shape to the protubuerance is formed.

4,565,773

DRY NONELECTROSCOPIC TONERS SURFACE COATED WITH NONIONIC SILOXANE-OXYALKYLENE BLOCK COPOLYMER

Howard Matrick, Highlands, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 22, 1983, Ser. No. 554,330
Int. Cl.⁴ G03C *5/04*
U.S. Cl. 430—331 **8 Claims**

1. A dry nonelectroscopic toner consisting essentially of pigmented organic resin particles having a size distribution within the range of 0.2 to 30 micrometers and not more than 50 percent of the particles being less than one micrometer particle size, the improvement whereby the pigmented particles are surface coated with a nonionic black copolymer compound which is liquid above 10° C., present as a single phase, and having a viscosity of less than 1000 cps and a hydrophile-lipophile balance in the range of 7 to 15 taken from the group consisting of
(A) A mixture of block copolymers wherein each copolymer contains a siloxane polymer and at least one oxyalkylene polymer in combination, the siloxane polymer being composed of at least one trifunctional silicon atom, bonded to three oxygen atoms and a single monovalent hydrocarbon radical, and joined to at least three difunctional silicon atoms through oxysilicon bonds, each of said difunctional silicon atoms having two monovalent hydrocarbon radicals bonded thereto and the oxyalkylene polymer being composed of at least two oxyalkylene groups bonded to each other by oxycarbon bonds and bonded at one end to the siloxane polymer through a carbon-oxy-silicon bond and bonded at the other end to a monoether radical,
(B) a block copolymer composed of (1) at least one siloxane unit represented by the formula:

$$R_bSiO_{4-b/2}$$

wherein R contains from one to about twenty-two carbon atoms inclusive and is selected from the class consisting of monovalent hydrocarbon groups and divalent hydrocarbon groups and b has a value from 1 to 3 inclusive, said siloxane block containing at least one of said siloxane units wherrein at least one R group is a divalent hydrocarbon group, and (2) at least one oxyalkylene block containing at least two oxyalkylene groups represented by the formula: —R'O—, wherein R' is an alkylene group containing from two to about ten carbon atoms inclusive, said siloxane and oxyalkylene blocks being interconnected by said divalent hydrocarbon group, and
(C) mixtures of said block copolymers.

4,565,774

METHOD FOR THE FORMATION OF DYE IMAGE

Makoto Kajiwara, and Kaoru Onodera, both of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 443,237, Nov. 22, 1982, abandoned. This application Oct. 18, 1984, Ser. No. 662,264
Claims priority, application Japan, Dec. 1, 1981, 55-193443
Int. Cl.⁴ G03C *7/16*
U.S. Cl. 430—382 **11 Claims**

1. A method for forming a dye image comprising imagewise exposing and developing a silver halide light-sensitive color photographic material having a support and coated thereon at least one silver halide emulsion layer, each of said layers containing at least 80 mole % silver chloride, said developing taking place in a developer essentially free from bromide ion and having a pH value of at least 9.5, in the presence of a p-phenylenediamine color-developing agent and a compound of the formula



having an acid dissociation constant of not more than 1×10^{-8} and a solubility produce with silver ion of not more than 1×10^{-10}, wherein Z, together with N, forms a heterocyclic ring.

4,565,775

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES BY THE SILVER DYE BLEACH PROCESS

Eddy Forte, Pully, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

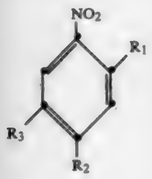
Filed Jan. 9, 1985, Ser. No. 689,755
Claims priority, application Switzerland, Jan. 20, 1984, 250/84; Oct. 8, 1984, 4813/84
Int. Cl.⁴ G03C *7/32*
U.S. Cl. 430—390 **9 Claims**

1. A process for the production of photographic images by the silver dye bleach process by exposure, development, dye and silver bleach, and fixing of a photographic material which, on a base, contains at least one photographic element comprising a silver halide-free gelatin layer, which contains a diffu-

sion-resistant bleachable image dye, and a silver halide emulsion layer which is arranged directly on top of the former layer on the side facing the light source and is free of image dye, wherein

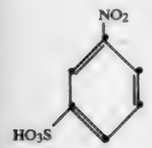
(a) the gelatin layer containing the image dye has a gelatin/-dye ratio of at most 10:1,

(b) the oxidising agent used in the dye and silver bleach is of the formula



(1)

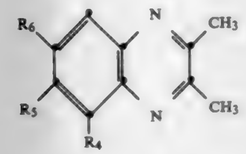
or



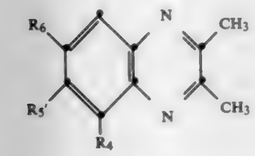
(1b)

in which R_1 is hydrogen, alkyl having 1 to 4 carbon atoms, amino or $—SO_3H$, R_2 is hydrogen, amino or hydroxyl and R_3 is hydrogen, nitro or $—SO_3H$, R_3 being other than $—SO_3H$ if R_1 and R_2 are hydrogen, and

(c) the bleach catalyst used in the dye and silver bleach is of the formula

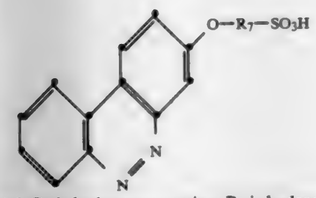


(2a)



(2b)

or



(3)

in which R_4 is hydrogen or amino, R_5 is hydrogen, hydroxyl, alkyl or alkoxy having 1 to 4 carbon atoms or $—O—R_7—SO_3H$ or $—O—R_7—OH$, R_5' is as defined for R_5 with the exception of hydrogen and $—O—R_7—SO_3H$, and R_5' is not methyl or methoxy if R_4 and R_6 are hydrogen, R_6 is hydrogen or alkyl or alkoxy each having 1 to 4 carbon atoms and R_7 is alkylene having 1 to 4 carbon atoms, those oxidising agents in which R_2 is hydroxyl being used only in conjunction with at least tetrasubstituted quinoxalines, those oxidising agents in which R_2 is amino being used only in conjunction with at most trisubstituted quinoxalines, and the oxidising agent of the formula (1b) being used only with bleach catalysts of the formula (2b).

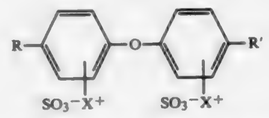
4,565,776

PHOTOGRAPHIC DEVELOPER COMPOSITION

Hongzoon Kim, Boonton, N.J., and Thomas E. Salamy, North Kingstown, R.I., assignors to Philip A. Hunt Chemical Corporation, Palisades Park, N.J.

Filed Apr. 29, 1985, Ser. No. 728,557
Int. Cl.⁴ G03C *5/30*
U.S. Cl. 430—467 **20 Claims**

1. A photographic color developer composition comprising, (1) a primary aromatic amino color developing agent and, (2) an oxidation inhibiting amount of an alkylated diphenyl oxide disulfonate represented by the formula:



where R is a linear or branched alkyl group of between about 8 and about 20 carbon atoms, where R^1 is R or hydrogen, and where X is an alkali metal or hydrogen.

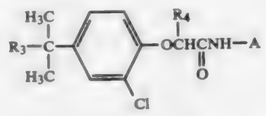
4,565,777

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Akira Ogawa; Kozo Aoki; Osami Tanabe, and Makoto Umemoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 20, 1984, Ser. No. 632,735
Claims priority, application Japan, Jul. 21, 1983, 58-133293
Int. Cl.⁴ G03C *7/32*
U.S. Cl. 430—552 **9 Claims**

1. A silver halide color photographic light-sensitive material comprising a coupler represented by formula (II):



(II)

wherein A represents the residue of a coupler, R_3 represents an alkyl group having from 1 to 7 carbon atoms, R_4 represents an alkyl group having from 4 to 16 carbon atoms, with the total number of carbon atoms of R_3 and R_4 being from 8 to 22.

4,565,778

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Akihiko Miyamoto; Hideki Takiguchi; Shoji Matsuzaka; Hiroshi Kashiwagi, and Yoshiyuki Nonaka, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,635
Claims priority, application Japan, Mar. 31, 1983, 58-57649; Apr. 7, 1983, 58-61874; Apr. 15, 1983, 58-67181
Int. Cl.⁴ G03C *1/28, 1/34*
U.S. Cl. 430—567 **28 Claims**

1. A silver halide photographic material having at least one silver halide emulsion layer on a support characterized in that an emulsion of said emulsion layer substantially contains core/-shell silver halide grains, the core portion of said grain containing silver iodide in a greater amount than the shell portion of said grain, and said emulsion has been subjected to chemical ripening in the presence of a labile selenium compound sensitizer.

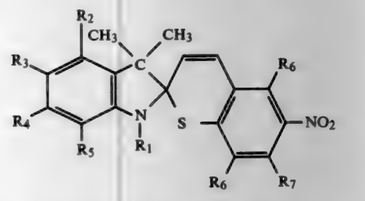
4,565,779

PHOTOCHROMIC COMPOUNDS AND PHOTOSENSITIVE COMPOSITIONS CONTAINING THE COMPOUNDS

Seiichi Arakawa, Chigasaki; Hirofumi Kondo, and Junetsu Seto, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 23, 1983, Ser. No. 565,201
Claims priority, application Japan, Dec. 28, 1982, 57-233036
Int. Cl.⁴ G03C *1/52, 1/733*
U.S. Cl. 430—962 **4 Claims**

1. A photosensitive composition comprising 3 to 50 wt. % of a photochromic compound of the general formula



in which R_1 represents an alkyl group having 1 to 20 carbon atoms, R_2, R_3, R_4 and R_5 independently represent an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a halogen atom, a nitro group, a cyano group or a dimethylamino group, and R_6, R_7 and R_8 independently represent a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, or a halogen atom, and correspondingly 97 to 50 wt. % of a film-forming polymer.

4,565,780

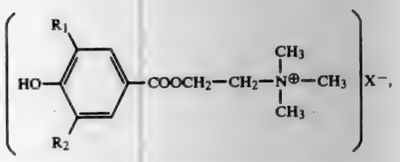
METHOD FOR DETERMINATION OF CHOLINESTERASE ACTIVITY

Hideo Motonaga, and Masahiro Naito, both of Kanagawa, Japan, assignors to Shino-Test Laboratory Co., Ltd., Tokyo, Japan

PCT No. PCT/JP81/00405, § 371 Date Jun. 21, 1982, § 102(e) Date Jun. 21, 1982, PCT Pub. No. WO82/02212, PCT Pub. Date Jul. 8, 1982
PCT Filed Dec. 23, 1981, Ser. No. 395,029
Claims priority, application Japan, Dec. 25, 1980, 55-182910
Int. Cl.⁴ C12Q *1/46, 1/26*
U.S. Cl. 435—20 **11 Claims**

1. The method for determination of cholinesterase activity by measuring the extinction decrease or the oxygen consumption, comprising the following steps:

(a) Subjecting a substrate having the formula:



wherein R_1 and R_2 represent a hydrogen atom or one or both of R_1 and R_2 represent a lower-alkoxy group with 1 through 4 carbon atoms, and X represents a halogen atom, to hydrolysis by the action of cholinesterase to produce a p-hydroxybenzoic acid,

(b) reacting the p-hydroxybenzoic acid thus-produced with p-hydroxybenzoic acid hydroxylase in the presence of the coenzyme nicotinamide adenine dinucleotide phosphate in reduced form (NADPH), whereby the NADPH is oxidized to nicotinamide adenine dinucleotide phosphate (NADP), and

(c) measuring the extent of extinction decrease or oxygen consumption in the reaction mixture produced by conversion of the nicotinamide-adenine-dinucleotide phosphate in reduced form (NADPH) to the oxidized form (NADP).

4,565,781

ANTIBIOTIC, SPICAMYCIN

Noboru Otake, Yokohama; Yoichi Hayakawa, Tokyo; Hiroyuki Kawai, Urawa; Masayu Nakagawa, Ichikawa; Kozo Tanabe, and Junichiro Mochizuki, both of Takasaki, all of Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1984, Ser. No. 583,108
Claims priority, application Japan, Mar. 4, 1983, 58-35662
Int. Cl.⁴ C12P *19/40, 19/28;* **C07H** *17/02, 19/06*
U.S. Cl. 435—88 **2 Claims**

1. A antibiotic, Spicamycin, having the following physicochemical properties:

(a) Color and properties: Weakly acidic white powder

(b) Melting point: 215° to 220° C. (decomposed)

(c) Specific rotatory power: $[\alpha]_D^{25} = +15°$ (C: 0.15, in methanol)

(d) Elementary analysis (Found): C: 57.4%, H: 8.38%; N: 15.7%, O: 18.6%

(e) Ultraviolet absorption spectrum (maximum):

CH_3OH	264 nm ($E_{1cm}^{1\%}$ 257)
0.01N NaOH = CH_3OH	272 nm ($E_{cm}^{1\%}$ 226)
0.01N HCl + CH_3OH	273 nm ($E_{cm}^{1\%}$ 258)

(f) Infrared absorption spectrum (as measured by the potassium bromide method): As shown in FIG. 2,

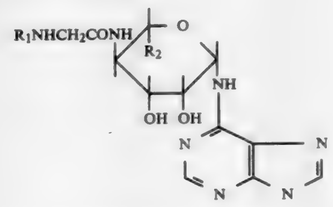
(g) Solubility in solvent: Soluble in basic water, dimethyl sulfoxide, methanol, ethanol, n-propanol, an n-butanol Sparingly soluble in water, acetone, ethyl acetate, and chloroform, Insoluble in benzene, ethyl ether, and hexane

(h) Thin layer chromatography (using "Silica Gel $60F_{254}$" plate supplied by Merck & Co., Inc.):

Developing solvent	Rf value
Chloroform:Methanol (1:1)	0.34

(i) NMR spectrum (400 MHz, in deuteromethanol): As shown in FIG. 3,

(j) Chemical formula:



wherein R_1 is $(CH_3)_2CH(CH_2)_nCO$ wherein n is 8–14, or $CH_3(CH_2)_mCO$ wherein m is 10–16, and R_2 is $CH_2(OH)CH(OH)$.

4,565,782

PROCESS FOR PRODUCING OPTICALLY ACTIVE ARYLOXYPROPIONIC ACIDS AND DERIVATIVES THEREOF USEFUL AS HERBICIDES

David W. Bewick, Bracknell, England, assignor to Imperial Chemical Industries PLC, London, England

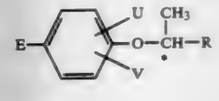
Filed Jul. 26, 1984, Ser. No. 634,491

Claims priority, application United Kingdom, Jul. 27, 1983, 8320222; Nov. 1, 1983, 8329086

Int. Cl.[4] C12P *17/12;* **C07P** *41/00*

U.S. Cl. 435—122 **13 Claims**

1. A process for the stereospecific inversion of the enantiomer of an α-aryloxypropionic acid of formula I:



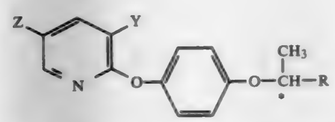
(I)

wherein E is OR^1 or



R^1 is an unsubstituted or substituted aryl or heterocyclic ring system, and R^2 is hydrogen or methyl, U and V each independently represent hydrogen or halogen and R is a carboxyl group, or an enzymic and herbicidal equivalent thereof, in a mixture with its [R] enantiomer, which process comprises contacting said [S] enantiomer with a stereospecific inverting enzyme so as to convert the [S] enantiomer to the corresponding [R] enantiomer without substantially affecting the [R] enantiomer in said mixture.

7. A process according to claim 1 wherein the α-aryloxypropionic acid is of formula II



(II)

wherein Z and Y each represent fluorine, chlorine, bromine, iodine or hydrogen or a trifluoromethyl, difluoromethyl or chlorodifluoromethyl group provided that at least one of Z and Y is a halogenomethyl group and R represents a carboxyl group.

4,565,783

DRY CULTURE MEDIA

Paul E. Hansen, and Robert L. Nelson, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 228,893, Jan. 27, 1981, abandoned. This application Jan. 11, 1982, Ser. No. 338,559

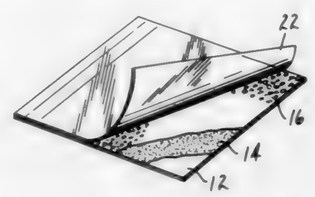
Int. Cl.[4] C12M *1/16;* **C12Q** *1/24*

U.S. Cl. 435—299 **33 Claims**

1. A device for growing microorganisms, comprising:

a body member comprising a self-supporting, waterproof substrate having upper and lower surfaces;

a layer of adhesive-coated on said upper surface of said substrate, said adhesive being non-inhibitory to the growth of microorganisms; and a cold-water-soluble powder adhered uniformly to said adhesive, said powder comprising at least one ingredient selected from the group consisting of a gelling agent, one or more nutrients for growing microorganisms, and a mixture thereof;



said device being free of matrixes which adversely affect visualization and isolation of bacterial colonies.

4,565,784

HYDROGELS CAPABLE OF SUPPORTING CELL GROWTH

Carl Franzblau, Newton; Barbara A. Faris, Squantum, and Linda Civerchia-Perez, Norwood, all of Mass., assignors to Trustees of Boston University, Boston, Mass.

Continuation of Ser. No. 228,133, Jan. 26, 1981, abandoned. This application Dec. 7, 1983, Ser. No. 558,977

Int. Cl.[4] C12N *5/00;* **C12R** *1/91*

U.S. Cl. 435—240 **3 Claims**

1. A method of growing anchorage-dependent cells, comprising:

a. forming an aqueous solution containing:

(1) a hydrophilic monomer in an amount which will, upon polymerization and crosslinking, produce a three-dimensional polymer network sufficient to gel said aqueous solution thereby forming a hydrogel; and

(2) a macromolecule capable of supporting cell growth, said macromolecule being present in an amount sufficient to support cell growth on said hydrogel;

b. polymerizing and crosslinking said hydrophilic monomer to thereby form a hydrogel which spports cell growth;

c. introducing said hydrogel into a vessel as a substrate therein for attachment of said anchorage-dependent cells;

d. adding cell culture medium to said vessel;

inoculating anchorage-dependent cells into said vessel to form a cell culture therein; and

f. maintaining said cell culture under conditions conducive to cell attachment and growth.

4,565,785

RECOMBINANT DNA MOLECULE

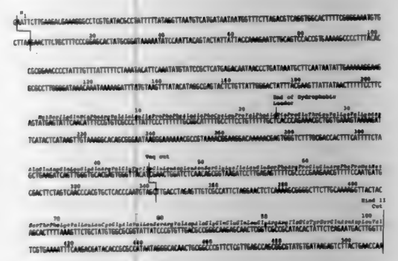
Walter Gilbert; Stephanie A. Broome, both of Cambridge; Lydia J. Villa-Komaroff, Boston, and Argiris A. Efstratiadis, Cambridge, all of Mass., assignors to The President and Fellows of Harvard College, Cambridge, Mass.

Division of Ser. No. 913,533, Jun. 8, 1978, Pat. No. 4,411,994. This application Aug. 1, 1983, Ser. No. 519,303

Int. Cl.[4] C12N *1/00, 15/00, 9/86;* **C07H** *15/12*

U.S. Cl. 435—317 **4 Claims**

1. A recombinant DNA molecule comprising a bacterial gene for an extracellular or periplasmic carrier protein and a non-bacterial gene which codes for a selected protein or polypeptide, said non-bacterial gene having been inserted into said



bacterial gene and joined end to end with a portion thereof so as to maintain constant the proper reading frame in both genes.

4,565,786

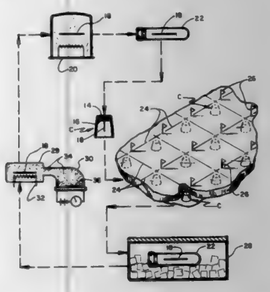
METHOD FOR DETECTING MERCURY GAS

John A. Dunkhase, Golden; Ronald W. Klusman, Evergreen, and James C. Fisher, Golden, all of Colo., assignors to Earth Search, Inc., Golden, Colo.

Filed Apr. 11, 1984, Ser. No. 599,147

Int. Cl.[4] G01N *1/22, 33/20, 33/24*

U.S. Cl. 436—26 **4 Claims**



1. A method of detecting mercury gas emanating from a subsurface ore body containing precious metal or sulfides, said method comprising the steps of:

heating lengths of silver wire to a sufficient temperature for a sufficient length of time to clean them and to render them mercury free;

attaching one end of each wire to the inside of a removable vial cap;

attaching each cap to the top of a vial with the wire suspended from the cap therein;

transporting the silver wires in the vials to a test area;

removing each cap and attached wire from each vial and attaching the outside of each cap to the inside bottom of an inverted plastic cup without touching the wire so that the wire is suspended by each cap inside of each cup;

burying a plurality of the cups to which a cap and wire has been attached to each in the ground in a predetermined array over an area suspected to contain the ore body;

leaving said array of cups in the earth for a predetermined period of time to allow the silver wires to adsorb mercury-vapor emitted from the ore body;

locating each cup in the array and removing it from the earth;

removing the cap with attached silver wire from each cup after the cup is removed from the earth without touching the wire;

reattaching each cap to each vial with a silver wire still suspended from each cap to form an airtight enclosure for each silver wire;

refrigerating each vial and silver wire so that any mercury adsorbed on the silver wires will remain therein;

storing each vial and wire at refrigerated temperature prior to determining the amount of mercury adsorbed in each wire; said

subsequently removing each wire from its refrigerated vial and heating it to vaporize the mercury from it; and

measuring the amount of mercury removed from each wire.

4,565,787

HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC) ANALYSIS OF SULFUR MUSTARDS AND THEIR DECOMPOSITION BY-PRODUCTS BY DERIVATIZATION

Paul C. Bossle, Baltimore; John J. Martin, Joppa; Emory W. Sarver, and Harold Z. Sommer, both of Havre de Grace, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

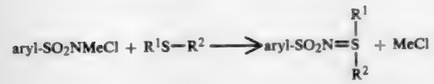
Filed May 9, 1983, Ser. No. 492,862

Int. Cl.[4] G01N *33/00;* **C07C** *143/78*

U.S. Cl. 436—120 **10 Claims**

1. A method for the simultaneous detection, separation, and analysis of a mixture of non-chromophoric aliphatic sulfides, which comprises:

reacting a mixture of said aliphatic sulfides of the formula $R^1—S—R^2$, wherein R^1 and R^2 are alkyl radicals, which may or may not contain substituents and may be the same or different, with an alkali metal arylsulfochloramide of the formula aryl-SO_2NMeCl, wherein Me is an alkali metal, to produce a mixture of corresponding ultraviolet fluorescent arylsulfonylsulfilimine compounds according the the following equation:



wherein Me, R^1 and R^2 have the aforesaid definitions;

separating the mixture of arylsulfonylsulfilimine compounds into the individual compounds by high pressure liquid chromatography (HPLC) and

fluorescing the individual arylsulfonylsulfilimines by ultraviolet radiation.

4,565,788

METHOD OF DETERMINING HEAT LOSSES DUE TO INCOMPLETE FUEL COMBUSTION

Boris A. Milovidov, ulitsa Kalinina, 143, kv. 25, Pavlodar, U.S.S.R.; Iosif B. Kaplunov, deceased, late of Moscow, U.S.S.R., and by Nadezhda V. Kaplunova, administratix, Simonovsky val, 22 korpus 2, kv. 155, Moscow, U.S.S.R.

Division of Ser. No. 468,982, Feb. 23, 1983, Pat. No. 4,481,168. This application Jun. 26, 1984, Ser. No. 624,780

Int. Cl.[4] G01N *31/12, 25/22, 25/00*

U.S. Cl. 436—137 **1 Claim**

1. A method of determining heat losses due to incomplete fuel combustion, which comprises:

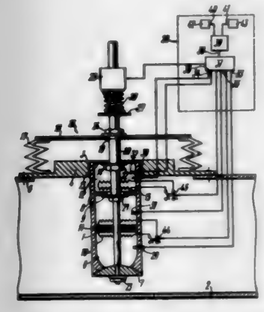
periodically taking a sample of fuel combustion products, said sample including solid and gaseous phases;

separating the sample into two parts, one of which includes a solid and a gaseous phase; and the other, a gaseous phase;

determinng an oxygen concentration C_1 in each of said parts of said sample;

heating said parts of said sample to the temperature of ignition of combustible material remaining in said parts to assist burning, while maintaining the volume of said parts at a constant level;

determining an oxygen concentration C_2 after said heating in the part of the sample containing only said gaseous phase;
determining an oxygen concentration C_3 after said heating in the part of the sample containing said solid and said gaseous phases;
determining an oxygen loss Δ_1 in the part of said sample containing said gaseous phase as the difference of said concentrations C_1 and C_2;
determining an oxygen loss Δ_2 in the part of said sample containing said solid and said gaseous phases as the difference of said concentrations C_1 and C_3;
determining an oxygen loss Δ_3 in an initial oxidizer in the event of complete combustion of fuel as the difference of an initial oxygen concentration C_0 and said concentration C_3;



determining heat losses due to chemical underburning of fuel as the ratio between said oxygen loss Δ_1 and said oxygen loss Δ_3, multiplied by a first coefficient predetermined from the ratio of the volume of the part of the sample having the gas/solid phases and total volume of the sample;
determining heat losses due to chemical and mechanical underburning of fuel as the ratio between the oxygen loss Δ_2 and the oxygen loss Δ_3, multiplied by a second coefficient predetermined from the ratio of the volume of the part of the sample having the gas/solid phases and total volume of the sample; and
determining heat losses due to mechanical underburning of the fuel as the difference of said heat losses due to said chemical and said mechanical underburning of fuel, and said heat losses due to said chemical underburning of fuel.

4,565,789

CELL MATRIX RECEPTOR SYSTEM AND USE IN CANCER DIAGNOSIS AND MANAGEMENT

Lance A. Liotta, Bethesda, Md.; Nageswara C. Rao, Visiting Fellow, India, and Victor Terranova, Gaithersburg, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 4, 1983, Ser. No. 481,934
Int. Cl.⁴ G01N *33/566, 33/50, 33/534, 33/567*
U.S. Cl. 436—504 **26 Claims**

1. An isolated receptor having specific binding affinity for laminin.

3. A method for evaluating the effectiveness of a chemotherapeutic agent for treating cancer cells expressing the receptor of claim 1, comprising interacting a conjugate of the agent and a ligand specific for said receptor with a population of carcinoma cells prior and after chemotherapy.

4. A laminin fragment having a binding domain for the receptor of claim 1 without having a binding domain for type IV collagen.

6. A method for inhibiting attachment to type IV collagen of cells having the receptor of claim 1 comprising blocking the receptor site of said cells with a laminin, a laminin fragment having a binding domain for the cell receptor without having a binding domain for type IV collagen, a ligand having specificity against said receptor, or an analogue thereof.

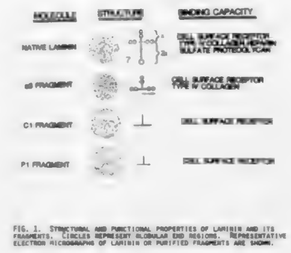


FIG. 1. STRUCTURAL AND FUNCTIONAL PROPERTIES OF LAMININ AND ITS FRAGMENTS. CIRCLES REPRESENT GLOBULAR END REGIONS. REPRESENTATIVE ELECTRON MICROGRAPHS OF LAMININ OR PURIFIED FRAGMENTS ARE SHOWN.

8. A method for separating metastatic cancer cells expressing the cell receptor of claim 1 from a mixed population of cells comprising binding the metastatic cancer cells to a ligand having a binding domain for the cell receptor, and separating bound from unbound cells.

4,565,790

METHOD FOR FLUORESCENCE SPECTROSCOPIC DETERMINATION OF A BIOLOGICALLY ACTIVE SUBSTANCE

Ilkka Hemmilä , Turku, Finland, and Salifu Dakubu, London, United Kingdom, assignors to WALLAC Oy, Turku, Finland

Continuation-in-part of Ser. No. 368,274, Apr. 14, 1982, abandoned. This application Jul. 14, 1983, Ser. No. 513,744
Claims priority, application Sweden, Apr. 30, 1981, 8102753
Int. Cl.⁴ G01N *33/536, 33/533*
U.S. Cl. 436—537 **10 Claims**

1. In a method for fluorescence spectroscopic determination of a biological substance provided with a marker consisting of a lanthanide chelate complex formed of a lanthanide coupled to the substance via a chelate forming compound, by excitation by a short radiation pulse, and detection of the fluorescence of the marker when the fluorescence from any noise source has substantially ceased, wherein the improvement comprises, adding, before the determination, a solution that brings the pH to 3.5 or below and contains a detergent and a β-diketone to dissociate the lanthanide ion from the chelate complex and to transfer the dissociated lanthanide ion into a fluorescent form to enable the determination in the solution.

4,565,791

GLASSES FOR OPHTHALMIC APPLICATIONS

Jean E. Boudot, and Jean P. Mazeau, both of Avon, France, assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 12, 1984, Ser. No. 630,094
Claims priority, application France, Jan. 13, 1984, 84 00481
Int. Cl.⁴ C03C *3/11, 3/091, 3/093, 4/00*
U.S. Cl. 501—56 **4 Claims**

1. A glass for ophthalmic applications having a refractive index of 1.523±0.004, Abbe number between 51–59, a density less than 2.43 g/cm^3, a transmission at 400 nm in 2 mm thickness greater than 89%, and a UV cutoff between about 325–335 nm characterized in that it is prepared from a batch composition consisting essentially, in weight percent on the oxide basis, of :

SiO_2	54–70	$Li_2O + Na_2O + K_2O$	10–13
B_2O_3	9–22	TiO_2	4–6
Al_2O_3	3–10	ZrO_2	0–2
Li_2O	0.5–3	As_2O_3	0.10–0.50
Na_2O	3–9	Cl	0.2–0.7
K_2O	3–10		

4,565,792

PARTIALLY STABILIZED ZIRCONIA BODIES

Christopher E. Knapp, Niagara Falls, Canada, assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 506,239, Jun. 20, 1983, abandoned. This application Jun. 15, 1984, Ser. No. 621,017
Int. Cl.⁴ C04B *35/48*
U.S. Cl. 501—104 **7 Claims**

1. A crystalline sintered stabilized zirconia body made from a powder, said powder consisting essentially of a cofusion of zirconia and from 2.6% to 10% of a stabilizing metal oxide, the crystals in said body having a size of 10 microns or less.

4,565,793

COMPOSITE ZEOLITIC MAGNETIC MATERIAL

Ronald E. Rosensweig, Summit, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 192,228, Sep. 30, 1980, abandoned, which is a division of Ser. No. 935,566, Aug. 21, 1978, Pat. No. 4,296,080, which is a division of Ser. No. 786,613, Apr. 11, 1977, Pat. No. 4,115,927, which is a continuation-in-part of Ser. No. 610,071, Sep. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 514,003, Oct. 11, 1974, abandoned. This application Oct. 28, 1982, Ser. No. 437,408
Int. Cl.⁴ B01J *29/06;* **C01G** *49/08*
U.S. Cl. 502—74 **10 Claims**

1. A solid particulate magnetizable, fluidizable composite particle having a particle size ranging from about 0.001 mm to 50 mm which comprises 2–40 volume percent of ferro- or ferrimagnetic material with the balance of the composite being a non-magnetic material containing zeolite, said ferro- or ferrimagnetic material being dispersed in said non-magnetic material.

6. The composite of claim 1 wherein the ferro- or ferrimagnetic material has a low or zero coercivity.

7. The composite of claim 1 wherein the ferro- or ferrimagnetic material is selected from the group consisting of magnetic Fe_3O_4, γ-iron oxide (Fe_2O_3), ferrites of the form $XO{\cdot}Fe_2O_3$ wherein X is a metal or mixture of metals selected from the group consisting of Zn, Mn and Cu, iron, nickel, cobalt, gadolinium and mixtures thereof.

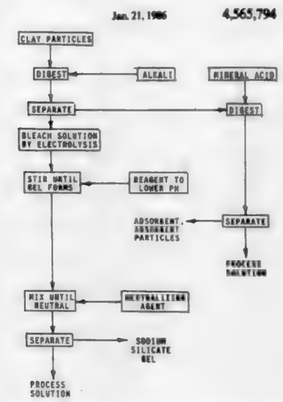
4,565,794

PRODUCTION OF SILICA GEL AND AN ADSORBENT, ABSORBENT PRODUCT FROM SERICITIC CLAY

Francis de Buda, Santa Barbara, Calif., assignor to John Stephens, Santa Barbara, Calif.

Filed Dec. 16, 1983, Ser. No. 562,426
Int. Cl.⁴ B01J *20/12, 20/10*
U.S. Cl. 502—83 **9 Claims**

1. A process for treating sericitic clay particles so as to produce silica gel and an adsorbent, absorbent product which comprises:
removing silica from said particles by digesting said particles with an alkali solution under such conditions that the alkali and the silica react to form a soluble alkali silicate process solution,
separating said process solution from the particles remaining after the digestion of said clay particles,
bleaching said process solution so as to remove discoloration from said process solution,
forming an alkali silicate gel from the bleached process solution by adding a gel forming reagent to it,
separating the gel from the solution within which it is formed,
drying the resultant gel,
removing alumina from the particles remaining after the removal of silica by digesting them with a mineral acid under such conditions that the acid and the alumina react to form a salt of the acid which dissolves in the solution present,



separating and drying the particles remaining after this second digestion.

4,565,795

POLYMERIZATION AND CATALYSTS

James N. Short, and Max P. McDaniel, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 7, 1979, Ser. No. 101,375
Int. Cl.⁴ C08F *4/02, 4/64*
U.S. Cl. 502—110 **19 Claims**

7. A method of producing a polymerization catalyst which comprises;
(1) pretreating a particulate silica-containing support containing at least 80 wt. % silica by reacting same with at least one of a chlorinating compound, a lower alkanol, a silating compound, a carboxylic acid chloride and an organoboron compound under conditions such that at least a portion of the OH groups on the support are reacted with the treating agent and thereby provide an activating amount of treating agent into the support,
(2) contacting the pretreated silica of (1) with an organomagnesium compound of the formula MgR_2 wherein R is a hydrocarbon radical having from 1 to about 12, inclusive, carbon atoms,
(3) treating the product obtained in (2) with a halogenated tetravalent titanium compound of the formula $TiX_n(OR')_{4-n}$ in which X is bromine, chlorine, or iodine, R' is a hydrocarbon radical selected from saturated aliphatic, saturated cycloaliphatic and aromatic groups containing from 1 to about 12, inclusive, carbon atoms, and n is an integer of 3 or 4,
(4) isolating and purifying the product obtained in (3), and
(5) combining the purified product of (4) with a cocatalyst comprising a metallic hydride or organometal compound wherein said metal is selected from a metal of Groups IA, IIA and IIIA of the Periodic Table.

4,565,796

POLYMERIZATION CATALYST, PRODUCTION AND USE

Bradley P. Etherton, Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 6, 1984, Ser. No. 638,320
Int. Cl.⁴ C08F *4/62, 4/64, 4/68*
U.S. Cl. 502—112 **40 Claims**

1. A transition metal containing catalyst component comprising the solid reaction produce obtained by treating an inert

solid support material in an inert solvent sequentially with (A) an organometallic compound of a Group IIa, IIb or IIIa metal wherein all the metal valencies are satisfied with a hydrocarbon group, (B) an oxygen containing compound selected from ketones, aldehydes, alcohols, siloxanes or mixtures thereof, (C) optionally one of more halogen containing compounds selected from chlorosilanes represented by the formula $R_b{}^9SiX''_{(4-b)}$ wherein $0<b<4$, X'' is chlorine, bromine or iodine and R^9 is a hydrocarbyl group having from 1–18 carbon atoms and/or Cl_2, Br_2 or interhalogens, (D) at least one transition metal compound of a Group IVb, Vb, VIb or VIII metal, (E) optionally Cl_2, Br_2 or an interhalogen with the proviso that if a chlorosilane is not employed in step (C), then a Cl_2, Br_2 or interhalogen is employed in at least one of steps (C) or (E), and with the further proviso that the inert solid support material can also be treated with (i) the (A) organometallic compound and the (B) oxygen containing compound simultaneously, (ii) the reaction product of the (A) organometallic compound and (B) oxygen containing compound or (iii) the (B) oxygen containing compound followed by treating with the (A) organometallic compound, the mole ratio of the organometallic compound to the oxygen containing compound being in the range of about 0.5 to 1.5.

4,565,797

POLYMERIZATION CATALYST, PRODUCTION AND USE (P-1010)

Bradley P. Etherton, Houston, and Malcolm J. Kaus, Humble, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 3, 1984, Ser. No. 637,641
Int. Cl.⁴ C08F *4/62, 4/64, 4/68*
U.S. Cl. 502—116 **46 Claims**

1. A transition metal containing catalyst component comprising the solid reaction product obtained by treating an inert solid support material in an inert solvent sequentially with (A) an organometallic compound of a Group IIa, IIb or IIIa metal wherein all the metal valencies are satisfied with a hydrocarbon group, (B) an oxygen containing compound selected from ketones, aldehydes, alcohols, siloxanes or mixtures thereof, (C) optionally one or more halogen containing compounds selected from chlorosilanes and/or Cl_2, Br_2 or interhalogens, (D) at least one transition metal compound of a Group IVb, Vb, VIb or VIII metal, (E) optionally Cl_2, Br_2 or an interhalogen, and (F) treating the transition metal containing component with an organometallic compound of a Group IIa, IIb or IIIa metal, with the proviso that if a chlorosilane is not employed in step (C), then Cl_2, Br_2 or an interhalogen is employed in at least one of steps (C) or (E), if a chlorosilane is employed in step (C), then Cl_2, Br_2 or an interhalogen is additionally employed in step (C) and/or step (E), and with the further proviso that the inert solid support material can also be treated with (i) the (A) organometallic compound and the (B) oxygen containing compound simultaneously, (ii) the reaction product of the (A) organometallic compound and (B) oxygen containing compound or (iii) the (B) oxygen containing compound followed by treating with the (A) organometallic compound.

4,565,798

PROCESS FOR POLYMERIZATION OF OLEFINS

Tadashi Yamamoto; Hiroyuki Furuhashi; Masafumi Imai; Hiroshi Ueno, and Naomi Inaba, all of Saitama, Japan, assignors to TOA Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1984, Ser. No. 672,780
Claims priority, application Japan, Nov. 29, 1983, 58-223247
Int. Cl.⁴ C08F *4/64*
U.S. Cl. 502—119 **11 Claims**

1. A catalyst for polymerizing olefins, said catalyst composed of

(A) a titanium-containing catalyst component obtained by contacting with one another,

(a) a magnesium dialkoxide,

(b) a silane having at least one hydrogen-silicon bond, and

(c) an electron donor compound, and

(d) a titanium compound,

(B) an organic compound of a metal of Groups I and III of the Periodic Table, and

(C) an organo silicon compound represented by the formula $R_pSiX_m(OR')_n$ wherein R and R' are the same or different C_{1-20} hydrocarbon groups, X is a halogen atom, $0 \leqq p < 4$, $0 \leqq m < 4$, $0 < n \leqq 4$, and $p+m+n=4$.

2. The catalyst of claim 1 wherein the magnesium alkoxide and the silicon compound having the hydrogen-silicon bond are reacted together prior to contact with the electron donor and the titanium compound.

3. The catalyst of claim 2 wherein the silicon compound having the hydrogen-silicon bond is trichlorosilane and the magnesium dialkoxide is magnesium diethoxide.

4,565,799

IONICALLY POLYMER-BOUND TRANSITION METAL COMPLEX FOR PHOTOCHEMICAL CONVERSION OF LIGHT ENERGY

Paul J. Giordano, Jr., Hudson, and Richard C. Smierciak, Streetsboro, both of Ohio, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Jul. 12, 1984, Ser. No. 630,097
Int. Cl.⁴ B01J *31/08, 31/22*
U.S. Cl. 502—155 **26 Claims**

1. A catalyst for the photochemical conversion and storage of radiant energy through the conversion of strained cyclic non-conjugated carbon containing compounds to their corresponding conjugated forms which comprises:

a transition metal complex having a square planar geometry and multiple sites of coordination, wherein said transistion metal complex is a macrocylic tetraaza complex; and

an anion-exhcange resin; wherein said transition metal complex and said anion-exchange resin are bonded together ionically.

4,565,800

HYDROFINING CATALYSTS

Simon G. Kukes; Stephen L. Parrott, and Karlheinz K. Brandes, all of Bartlesville, Okla., assignors to Philips Petroleum Company, Bartlesville, Okla.

Filed Jun. 24, 1985, Ser. No. 748,110
Int. Cl.⁴ B01J *23/22*
U.S. Cl. 502—200 **14 Claims**

1. A process for preparing a composition of matter comprising the steps of:

(A) mixing (a) at least one vanadium and oxygen containing compound, (b) at least one nickel (II) compound, (c) ammonia, and (d) water, in such amounts and under such conditions as to obtain a solution;

(B) mixing the solution obtained in step (A) with an alumina-containing support material;

(C) heating the mixture obtained in step (B) at a first temperature under such conditions as to at least partially dry said mixture; and

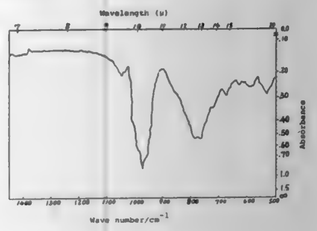
(D) heating the at least partially dried mixture obtained in step (C) at a second temperature, which is higher than said first temperature, under such conditions as to activate said mixture.

4,565,801

HETEROPOLY-ACIDS AND THEIR PRODUCTION AND USE

Shinkichi Shimizu; Hiroshi Ichihashi, and Koichi Nagai, all of Nihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 23, 1982, Ser. No. 371,223
Claims priority, application Japan, Apr. 24, 1981, 56-62710
Int. Cl.⁴ B01J *27/14*
U.S. Cl. 502—209 **9 Claims**



1. A heteropoly-acid of the formula:

$$H_{3+x}(PMo_{12-x}V_xO_{40}).nH_2O$$

wherein x and n are numbers satisfying respectively the equations: $0 \leqq x \leqq 3$ and $n \leqq 6$, and comprising phosphorus as the central atom and molybdenum or molybdenum and vanadium as the coordinating atoms, or its reduction-form product, which is in a cubic crystal structure having diffraction lines at lattice spacings (d) of at least 8.4, 6.8, 5.9, 4.8, 4.2 and 3.4 in the X-ray powder diffraction.

4,565,802

SILICA-CONTAINING CATALYSTS

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 157,211, Jun. 9, 1980, Pat. No. 4,433,187, which is a division of Ser. No. 12,868, Feb. 16, 1979, Pat. No. 4,270,017. This application Dec. 5, 1983, Ser. No. 558,170
Int. Cl.⁴ B01J *27/82, 21/08*
U.S. Cl. 502—214 **19 Claims**

1. A catalyst composite comprising about 9 weight percent to about 91 weight percent of a silica polymorph consisting of crystalline silica, said silica polymorph, after calcination in air at 600° C. for one hour, having a mean refractive index of 1.39 ± 0.01 and a specific gravity at 25° C. of 170 ± 0.05 g/cc., and about 9 weight percent to about 91 weight percent Catapal alumina.

3. The catalyst component defined in claim 1 which comprises a phosphorus-containing component.

4,565,803

METHANOL SYNTHESIS CATALYST

Galeon W. Schoenthal, Houston, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 16, 1983, Ser. No. 562,304
Int. Cl.⁴ B01J *21/04, 23/06, 23/10, 23/72*
U.S. Cl. 502—303 **10 Claims**

1. A catalyst composition to be used for the conversion of syngas to methanol which comprises copper, zinc and a modifier selected from the group consisting of yttrium, a lanthanide element, an actinide element and mixtures thereof supported on a zinc-aluminum oxide spinel carrier wherein the amount of said modifier is from 1 to 25 weight percent based on total catalyst composition, calculated as metal, the relative proportions of copper oxide to zinc oxide are from 1:10 to 20:1, calculated as weight percent metal, wherein said composition is prepared by a process comprising:

a. precipitating a first precipitate from an aqueous solution of dissolved zinc and aluminum salts utilizing as a precipitating agent an aqueous solution of alkali metal or ammonium carbonate,

b. slurrying the first precipitate in an aqueous solution containing dissolved salts of copper, zinc and promoter,

c. precipitating a second precipitate from the slurry-solution of step b utilizing as a precipitating agent an aqueous solution of alkali metal or ammonium carbonate,

d. washing, drying and calcining the precipitate of Step c at a temperature ranging from about 200° C. to about 400° C. and

e. activating in a hydrogen-containing atmosphere at a temperature ranging from about 175° C. to about 400° C.

4,565,804

GNRH ANTAGONISTS VI

Jean E. F. Rivier, and Wylie W. Vale, Jr., both of La Jolla, Calif., assignors to The Salk Institute For Biological Studies, San Diego, Calif.

Filed Sep. 7, 1984, Ser. No. 648,637
Int. Cl.⁴ C07C *103/52;* **A61K** *37/02*
U.S. Cl. 514—15 **20 Claims**

1. A peptide or a nontoxic salt thereof, said peptide having the formula: X-R_1-(W)D-Phe-R_3-R_4-R_5-R_6(V)-R_7-Arg-Pro-R_{10} wherein X is hydrogen or an acyl group having 7 or less carbon atoms; R_1 is dehydro-Pro, Pro, D-pGlu, D-Phe, D-Trp or β-D-NAL; W is 4F, 4Cl, 2,4Cl_2, 3,4Cl_2, 4Br, 4NO_2 or C^{α}Me-4Cl; R_3 is D-Trp, (N^{in}For)D-Trp or D-Trp which is substituted in the 5- or 6-position with NO_2, NH_2, OCH_3, F, Cl, Br or CH_3; R_4 is Ser, Orn, AAL or aBu; R_5 is Tyr, (3F)Phe, (2F)Phe, (3I)Tyr, (3CH_3)Phe, (2CH_3)Phe, (3Cl)Phe or (2Cl)Phe; R_6 is D-Lys, D-Orn or D-Dap; V is (arg-R',R'')$_n$(X), with n being 1 to 5 and R' and R'' being H, methyl, ethyl, propyl or butyl; R_7 is Leu, NML, Nle or Nva; and R_{10} is Gly-NH_2, D-Ala-NH_2 or NH-Y, with Y being lower alkyl, cycloalkyl, fluoro lower alkyl or NHCONH-Q, where Q is H or lower alkyl.

4,565,805

PHARMACEUTICAL PREPARATION FOR THE TREATMENT OF PEPTIC ULCER

Vladimir N. Smirnov, Juzhinsky pereulok, 3, kv. 7; Mikhail I. Titov, Kuntsevskaya ulitsa, 1/5, kv. 368; Zhanna D. Bespalova, Kuntsevskaya ulitsa, 1/5, kv. 229; Andrei A. Azmuko, ulitsa Ukhtomskaya, 13, kv. 21; Tatyana R. Sax, ulitsa Marshala Timoshenko, 34, kv. 115; Oleg S. Medvedev, Berezhkovskaya naberezhnaya, 14, kv. 32; Nadezhda I. Rozhanskaya, ulitsa Dmitria Ulyanova, 4, korpus 2, kv. 226; Vsevolod G. Smagin, ulitsa Vesnina, 30, kv. 17; Valentin A. Vinogradov, Khoroshevskoe shosse, 34, kv. 38; Vladimir M. Polonsky, prospekt Mira, 91, korpus 3, kv. 386; Sergei A. Bulgakov, Ruzheiny pereulok, 4, kv. 17, and Vladimir N. Ivanov, Kavkazsky bulvar, 38, kv. 18, all of Moscow, U.S.S.R.

PCT No. PCT/SU83/00039, § 371 Date Jul. 20, 1984, § 102(e) Date Jul. 20, 1984, PCT Pub. No. WO84/02470, PCT Pub. Date Jul. 5, 1984
PCT Filed Oct. 31, 1983, Ser. No. 633,909
Int. Cl.⁴ A61K *37/00;* **C07C** *103/52*
U.S. Cl. 514—17 **6 Claims**

1. A process for the treatment of peptic ulcer in a warm blooded animal which comprises administering to said warm blooded animal an anti-peptic ulcer effective amount of a peptide of the following structure:

Tyr-D-Ala-Gly-Phe-Leu-Arg

in a pharmaceutically acceptable carrier.

4,565,806

COMPOSITION AND METHOD FOR RATIONAL TREATMENT OF CANCER

Kai M. E. Setälä, Uimarinpolku 10 B, 00330 Helsinki 33, Finland

Continuation-in-part of Ser. No. 293,973, Aug. 18, 1981. This application May 11, 1984, Ser. No. 609,475

Int. Cl.⁴ A61K *31/715, 31/725, 31/66, 31/505*

U.S. Cl. 514—54 **5 Claims**

1. A method of treatment of skin cancer in man comprising percutaneous or intravenous administration thereto of an effective dosage of a composition comprising in combination dimethylsulfoxide and a therepeutically effective subthreshold dose of a cytostatic agent selected from the group consisting of colchicine, vinblastine sulfate, phloridzin, triethylene thiophosphamide, cyclophosphamide, humic acid, fluorouracil and mechlorethamine.

4,565,807

MEDICINAL COMPOSITION CONTAINING PIRPROFEN AND CYCLODEXTRIN AND A METHOD OF USE

Kaneto Uekama, Kumamoto; Mikio Hanafusa, Sanda; Masashi Tatsumi, Takatsuki, and Tohru Hibi, Toyonaka, all of Japan, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,793

Claims priority, application Japan, Jul. 19, 1982, 57-125559

Int. Cl.⁴ A61K *31/73;* **C08B** *37/16*

U.S. Cl. 514—58 **13 Claims**

1. A pharmaceutical composition comprising an analgesic, antiinflammatory and antipyretic effective amount of an inclusion compound of α-[3-chloro-4-(3-pyrrolin-1-yl)-phenyl]-propionic acid and a cyclodextrin, and a pharmaceutically acceptable carrier.

4,565,808

3-PHOSPHONATE CARBAPENEMS

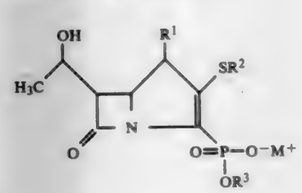
W. Alexander Asdrus, Fanwood; Burton G. Christensen, Cliffside Park, and James V. Heck, Fanwood, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 6, 1983, Ser. No. 529,194

Int. Cl.⁴ A61K *31/675;* **C07P** *9/65*

U.S. Cl. 514—80 **8 Claims**

1. A compound of the formula:



I

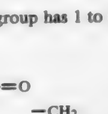
wherein

R^1 is hydrogen, alkyl having 1 to 6 carbon atoms, amino, —NHCO-alkyl wherein the alkyl moiety has 1 to 6 carbon atoms, hydroxy, alkoxy wherein the alkyl moiety has 1 to 6 carbon atoms, halo, hydroxyalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, carboxyl or trifluoromethyl;

R^2 is alkyl having 1 to 6 carbon atoms, substituted alkyl wherein the alkyl moiety has 1 to 6 carbon atoms and is substituted with cyano, amino or

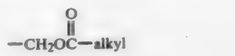


phenyl, phenyl substituted with at least one substituent wherein the substituents are selected from amino, —NHCOCH$_3$, —NHCH=NH, aminoalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, nitro, halo, alkyl having 1 to 6 carbon atoms and trifluoromethyl, pyrrolidinyl, N-substituted pyrrolidinyl wherein the substituent is selected from —CH=NH and



3-Δ^1-2-amino-pyrrolidinyl, piperidinyl, 3-Δ^1-2-amino-piperidinyl, and N,N-dimethylcarboxamidine; and

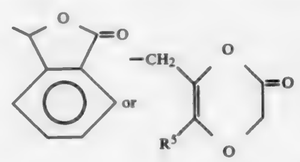
R^3 is hydrogen, a metal cation, alkyl having 1 to 6 carbon atoms, benzyl, substituted benzyl wherein the phenyl moiety of the benzyl group may be substituted with alkyl having 1 to 6 carbon atoms, chloro, fluoro or bromo,



wherein the alkyl group has 1 to 6 carbon atoms,



wherein the alkyl group has 1 to 6 carbon atoms,



wherein R^5 is hydrogen or alkyl having 1 to 6 carbon atoms; and

M is a metal cation or H^+.

7. An antibacterial pharmaceutical composition comprising an effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,565,809

S-ARALKYLTRITHIOPHOSPHONATE INSECTICIDES

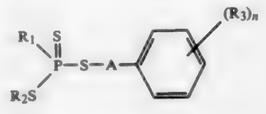
Charles G. Chavdarian, Martinez, and David B. Kanne, Richmond, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Filed Jun. 4, 1984, Ser. No. 617,210

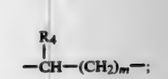
Int. Cl.⁴ A01N *57/22;* **C07F** *9/40*

U.S. Cl. 514—112 **73 Claims**

1. A method for controlling insects comprising applying to said insects or a locus at which control is desired an insecticidally effective amount of a compound having the formula

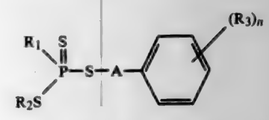


in which R_1 is C_1–C_3 alkyl; R_2 is C_3–C_6 alkyl; R_3 is hydrogen, halo, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, phenoxy, cyano, nitro or C_2–C_5 carboalkoxy; n is an integer from 1 to 5; —A— is

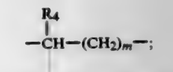


R_4 is hydrogen, C_1–C_4 alkyl, or —CH_2Y; m is 0 or 1; and Y is halo.

10. A compound having the formula



in which R_1 is C_1–C_3 alkyl; R_2 is C_3–C_6 alkyl; R_3 is hydrogen, halo, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, phenoxy, cyano, nitro or C_2–C_5 carboalkoxy; n is an integer from 1 to 5; —A— is



R_4 is hydrogen, C_1–C_4 alkyl, or —CH_2Y; m is 0 or 1; and Y is halo.

4,565,810

DERIVATIVES OF BILIARY ACIDS, PROCESS FOR THE PRODUCTION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Virginio Castagnola, Milan; E. Giuliano Frigerio, Bresso, and Roberto Pellicciari, Perugia, all of Italy, assignors to Lehner A.G., Muttenz, Switzerland

Filed Apr. 24, 1984, Ser. No. 603,332

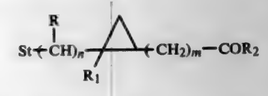
Claims priority, application Italy, Apr. 29, 1983, 20843 A/83

The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.

Int. Cl.⁴ A61K *31/56*

U.S. Cl. 514—182 **15 Claims**

1. Compounds of general formula I



I

wherein: St represents the 17-ethiocholanyl residue, having two or more hydroxy groups both in the α and β conformation, some of which being optionally replaced by keto groups;

n is zero or 1:

R and R^1 represent hydrogen or methyl, with the proviso that when one of them is methyl the other one is hydrogen;

m is zero, 1 or 2;

R^2 represents OH or taurine or glycine residues, optionally salified, of formula —$NH(CH_2)_2SO_3H$ and $NHCH_2COOH$;

with the proviso that when N is 1, m is zero and, when n is 1 and R is methyl, R_2 is different from OH.

15. Pharmaceutical compositions characterized by containing as the active ingredient one or more compounds of claim 1.

4,565,811

SODIUM SALT OF URSODEOXYCHOLIC SULPHATE

Michele G. Di Schiena, Milan, Italy, assignor to Istituto Biologico Chemioterapico "ABC" S.p.A., Turin, Italy

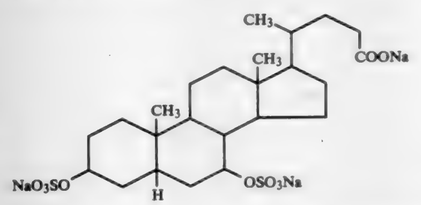
Filed Feb. 22, 1984, Ser. No. 582,522

Claims priority, application Italy, Feb. 24, 1983, 19737 A/83

Int. Cl.⁴ A61K *31/56;* **C07J** *7/00*

U.S. Cl. 514—182 **3 Claims**

1. Trisodium salt of ursodeoxycholic O-sulphate having the following general formula I:



(I)

3. A pharmaceutical composition comprising the compound of claim 1 and a pharmaceutically acceptable carrier.

4,565,812

FUNGICIDAL TIN SALTS OF THIENYL AND FURYL HYDROXAMIC ACIDS, COMPOSITIONS, AND METHOD OF USE THEREFOR

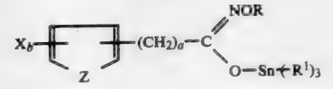
William F. King, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 30, 1984, Ser. No. 676,706

Int. Cl.⁴ C07D *333/16, 307/42;* **A61K** *31/34, 31/38*

U.S. Cl. 514—189 **35 Claims**

1. A compound of the formula:



wherein Z is sulfur or oxygen; R is alkyl of 1 to 7 carbon atoms; R^1 is aryl of 6 to 10 carbon atoms, lower alkyl of 1 to 6 carbon atoms or cycloalkyl of 3 to 8 carbons, all optionally substituted with 1 to 3 halogen atoms; a is 0 or 1; b is 0, 1, or 2; X is independently halo, nitro, trihalomethyl, lower alkyl of 1 to 3 carbon atoms, or lower alkoxy of 1 to 3 carbon atoms.

20. A fungicidal composition which comprises an inert carrier and a fungicidally effective amount of a compound of claim 1.

28. A method of controlling fungi which comprises contacting said fungi or their growth environment with a fungicidally effective amount of a compound of claim 1.

4,565,813

1,4-THIAZINE DERIVATIVES

Muneaki Takase, Oizumi; Kimitomo Yoshioka, Tokyo, and Hiroaki Yamazaki, Fujishiro, all of Japan, assignors to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

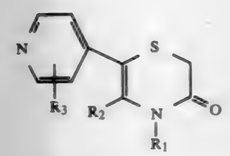
Filed Sep. 14, 1984, Ser. No. 650,530

Claims priority, application Japan, Sep. 16, 1983, 58-170862

Int. Cl.⁴ C07D *401/04;* **A61K** *31/54*

U.S. Cl. 514—222 **7 Claims**

1. A 1,4thiazine derivative represented by the following formula I and a pharmaceutically acceptable acid addition salt thereof:



wherein R_1,R_2 and R_3 respectively represent a hydrogen atom or a lower alkyl group.

4,565,814

PYRIDAZINE DERIVATIVES HAVING A PSYCHOTROPIC ACTION AND COMPOSITIONS

Jean-Paul Kan; Kathleen Biziere, both of Clapiers, and Camille-Georges Wermuth, Strasbourg, all of France, assignors to Sanofi, Paris, France

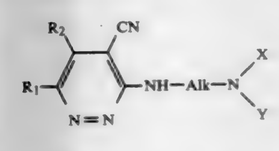
Filed Jan. 18, 1984, Ser. No. 571,696

Claims priority, application France, Jan. 28, 1983, 83 01366; Nov. 18, 1983, 83 18433

Int. Cl.⁴ A61K *31/535;* **C07D** *413/12, 413/14*

U.S. Cl. 514—228 **13 Claims**

1. A 4-cyanopyridazine corresponding to the formula:



(I)

in which:

one of the substituents R_1 and R_2 represents hydrogen or a lower alkyl group and the other represents hydrogen; a C_1–C_6 alkyl group; a C_3–C_7 cycloalkyl group; a phenyl group; a phenyl group monosubstituted by a halogen atom, a trifluoromethyl group, a hydroxyl group, a C_1–C_6 alkoxy group, a C_1–C_6 alkyl group, a C_1–C_6 alkanoyloxy group, a cyano group, a C_1–C_6 alkylthio group, a C_1–C_6 alkylsulphinyl group, a C_1–C_6 alkylsulphonyl group, a nitro group, or a sulphamyl group; a phenyl group disubstituted by one of the abovementioned substituents and at least a chlorine atom, a fluorine atom or a methoxy group; a naphth-1-yl group; a naphth-2-yl group; a thien-2-yl group; a thien-3-yl group; or an indol-3-yl group;

Alk represents an ethylene group, a 1,2-propylene group or a 1,3-propylene group;

the group



represents a morpholin-4-yl or 3-oxomorpholin-4-yl group, and pharmaceutically acceptable salts thereof.

12. A pharmaceutical composition containing as active ingredient the compound of claim **1** present in an amount sufficient to produce psychotropic action and a pharmaceutically acceptable carrier.

4,565,815

PYRAZOLO[1,5-A]-1,3,5-TRIAZINES

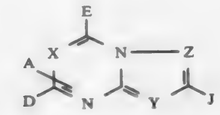
Sun H. Kim, Chestnut Hill, and Jacques-Pierre Moreau, Upton, both of Mass., assignors to Biomeasure, Inc., Hopkinton, Mass.

Continuation-in-part of Ser. No. 454,734, Dec. 30, 1982, abandoned. This application May 25, 1984, Ser. No. 614,454

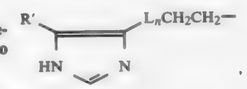
Int. Cl.⁴ C07D *487/04, 403/14, 407/14;* **A61K** *31/415*

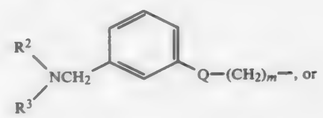
U.S. Cl. 514—246 **14 Claims**

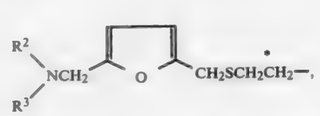
1. A compound having anti-ulcer activity and having the formula



wherein D is H, SH, OH, R^4S where R^4 is a lower alkyl group containing between 1 and 7 carbon atoms, inclusive, or NH_2; E is OH or NH_2; J is H or phenyl; X is N; Y is, CH or CT, wherein T is a halogen; Z is N; A is







and replaces a hydrogen of, D or E; R^1 is H or CH_3; L is CH_2S; Q is O or CH_2S; n is 0 or 1; 2 m 4; each R^2 and R^3, independently, is H, lower alkyl containing between 1 and 7 carbon atoms, inclusive, cycloalkyl containing between 3 and 6 carbon atoms, inclusive, benzyl, or phenethyl; or R^2 and R^3, together with the nitrogen atom to which they are attached, form a morpholino, piperidino, or N-alkyl piperazino ring;

or a pharmaceutically acceptable salt thereof.

4,565,816

PIPERAZINE DERIVATIVES AND PHARMACEUTICAL COMPOSITION CONTAINING THEM

Peter Neumann, Berne, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

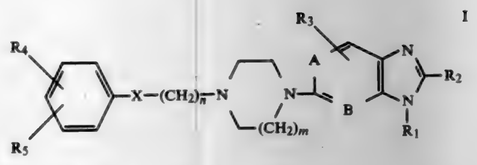
Filed May 27, 1983, Ser. No. 498,952

Claims priority, application Switzerland, May 28, 1982, 3317/82; Jun. 2, 1982, 3379/82; Jul. 22, 1982, 4484/82; Jul. 22, 1982, 4485/82

Int. Cl.⁴ A61K *31/495;* **C07D** *401/14*

U.S. Cl. 514—253 **6 Claims**

1. A compound of formula I,



I

wherein one of A and B is N and the other CH,

R_1 and R_2 are each, independently, hydrogen, $(C_{1\text{-}6})$-alkyl or $(C_{7\text{-}10})$phenylalkyl, optionally monosubstituted in the phenyl ring by halogen, $(C_{1\text{-}4})$alkyl or $(C_{1\text{-}4})$alkoxy,

R_3 is hydrogen or $(C_{1\text{-}4})$alkyl,

m is 1 or 2,

R_4 and R_5 are each, independently, hydrogen, halogen, $(C_{1\text{-}4})$alkyl, $(C_{1\text{-}4})$alkoxy, $(C_{2\text{-}4})$acyl or trifluoromethyl, and

X is $—CH_2—$ and n is 0, 1 2 or 3, or

X is —CO— and n is 1, 2 or 3, or

X is —O— and n is 2 or 3,

or a pharmaceutically acceptable acid addition salt thereof.

6. A pharmaceutical composition useful in treating schizophrenia, hypertension and cardiac disorders comprising a pharmaceutically acceptable carrier or diluent and a therapeutically effective amount of a compound of claim **1**, or a pharmaceutically acceptable acid addition salt thereof.

4,565,817

THEOPHYLLINYL-ALKYL-OXADIAZOLES, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Dezsö Korbonits; Maria Szomor née Wundele; Gergely Héja, all of Budapest; Ida Szvoboda née Kanzel, Dunakeszi; Pál Kiss; Csaba Gönczi, both of Budapest; Endre Pálosi; Gábor Kovács, both of Budapest; Judit Kun, Budapest; Emil Minker, Szeged; Sándor Virág; Gyula Sebestyén, both of Budapest, and Tamás Sziits, Budapest, all of Hungary, assignors to Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

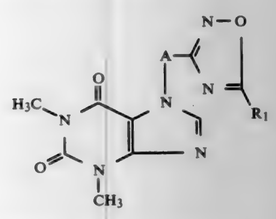
Filed Mar. 11, 1983, Ser. No. 474,227

Claims priority, application Hungary, Dec. 3, 1982, 762/82

Int. Cl.⁴ C07D *473/10;* **A61K** *31/52*

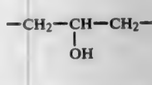
U.S. Cl. 514—263 **6 Claims**

1. A compound of the formula I

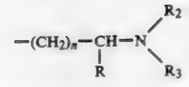


(I)

or a physiological acceptable addition salt thereof, wherein A stands for straight or branched chain $C_{1\text{-}5}$ alkylene or



R_1 stands for straight or branched chain $C_{1\text{-}10}$ alkyl, halogenoalkyl, hydroxyalkyl, $C_{5\text{-}6}$ cycloalkyl, vinyl, 2-ethoxyethyl, carbonylalkyl or aminoalkyl of the formula



wherein R stands for hydrogen or methyl,

n is 0 to 3,

R_2 stands for hydrogen or straight or branched chain alkyl,

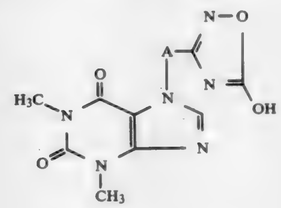
R_3 stands for hydrogen or straight or branched chain alkyl or,

R_2 and R_3 together with the nitrogen atom may form a 5–6 membered ring, which ring can optionally contain an oxygen or a second nitrogen atom, the latter, optionally substituted by methyl or,

R_1 can stand for a phenyl group of the formula $R_4R_5C_6H_3$ wherein

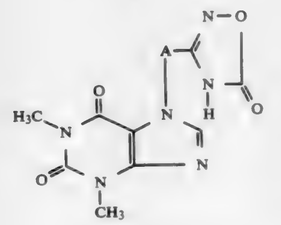
R_4 and R_5 represent independently hydrogen, chlorine, hydroxy, methoxy, ethoxy, methyl or amino or,

R_1 may further stand for hydroxy, in this case the compound of the formula I may exist according to the conditions in the form of tautomers of the formula Ia



(Ia)

or



(Ib)

and R_1 may further stand for benzyl, 2,2-diphenylethyl or theophyllin-7-yl-methyl.

4,565,818

PHARMACEUTICALLY ACTIVE 1,2,3,4,4A,5,10,10A-OCTAHYDRO-BENZO[G]QUINOLINE DERIVATIVES

René Nordmann, Basel, and Trevor J. Petcher, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

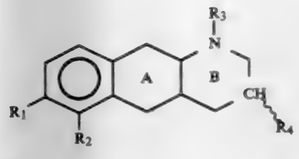
Filed Oct. 14, 1982, Ser. No. 434,202

Claims priority, application Switzerland, Oct. 16, 1981, 6631/81; Jun. 25, 1982, 3927/81

Int. Cl.⁴ C07D *221/08, 401/12, 401/06;* **A61K** *31/435*

U.S. Cl. 514—290 **16 Claims**

1. A benzo[g]quinoline of formula I,



(I)

wherein
the rings A and B are trans-fused and wherein
R_1 and R_2 are each independently hydrogen, hydroxy or methoxy, with the proviso that R_1 and R_2 may not both be hydrogen;
R_3 is hydrogen or C_{1-4}alkyl;
R_4 is —COOH, $—CH_2OR_5$, $—CH_2CN$, $—CON(R_6)R_7$, $—CH_2SR_8$, $—NHSO_2N(R_9)R_{10}$ or $—NHCON(R_9)R_{10}$,
R_5 is hydrogen or C_{1-3}alkyl,
R_6 is hydrogen or C_{1-3}alkyl and
R_7 is hydrogen, C_{1-3}alkyl, phenyl or pyridyl, said phenyl or pyridyl being optionally substituted by halogen, methyl or methoxy or
R_6 and R_7 together are $—(CH_2)_4—$, $—(CH_2)_5—$ or $—(CH_2)_2—O—(CH_2)_2—$,
R_8 is C_{1-4}alkyl or pyridyl, said pyridyl being optionally substituted by halogen, methyl or methoxy, and
R_9 and R_{10} are each independently hydrogen or C_{1-3}alkyl or together are $—(CH_2)_4—$ or $—(CH_2)_5—$,
or a physiologically-hydrolysable and -acceptable ester thereof, in free or in pharmaceutically acceptable salt form.

9. A pharmaceutical composition for use in inhibiting prolactin secretion, treating Morbus Parkinson or in the treatment or prophylaxis of coronary disease, hypertension or oliguric renal failure comprising a pharmaceutically effective amount of a compound according to claim **1** in free or in pharmaceutically acceptable salt form, together with a pharmaceutically acceptable diluent or carrier therefor.

4,565,819

SUBSTITUTED IMINO DIACIDS, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS WHICH CONTAIN THEM

Michel Vincent, Bagneux; Georges Remond, Versailles, and Michel Laubie, Vaucresson, all of France, assignors to ADIR, Neuilly-sur-Seine, France

Continuation of Ser. No. 308,234, Oct. 2, 1981, Pat. No. 4,508,729, which is a continuation-in-part of Ser. No. 212,607, Dec. 3, 1980, Pat. No. 4,404,206. This application Sep. 20, 1982, Ser. No. 420,005

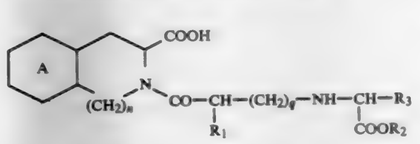
Claims priority, application France, Dec. 7, 1979, 79 30046; Jul. 31, 1980, 80 16875; Oct. 2, 1980, 80 21095; Apr. 7, 1981, 81 06916

The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.

Int. Cl.[4] **C07D** *217/26;* **A61K** *31/47*

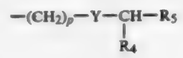
U.S. Cl. 514—307 **9 Claims**

1. Compounds having the general formula:



(I)

wherein
the ring A is saturated and n=1,
R_1 represents a lower alkyl group having from 1 to 4 carbon atoms which can carry an amino group,
R_2 represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms,
R_3 represents a straight or branched alkyl group, a monoor di-cycloalkylalkyl group having no more than a total of 9 carbon atoms, or a substituted alkyl group of the formula:



with
R_4=H, a lower alkyl (C_1 to C_4) or a cycloalkyl (C_3 to C_6) group,
$R_5$32 H, a lower alkyl (C_1 to C_4), a cycloalkyl (C_3 to C_6) or an alkoxycarbonyl group,
Y=S or >N—Q where Q=H, or an acetyl or benzyloxycarbonyl group,
and
p=1 or 2, and
a=0 or 1
in their racemic form or as optical isomers, and the salts thereof obtained with a therapeutically compatible inorganic or organic base, or their addition salts obtained with a pharmaceutically compatible inorganic or organic acid.

4,565,820

HYPOGLYCEMIC 5-PYRROLYL, INDOLYL AND QUINOLYL SUBSTITUTED OXAZOLIDINE-2,4-DIONES AND THEIR USE

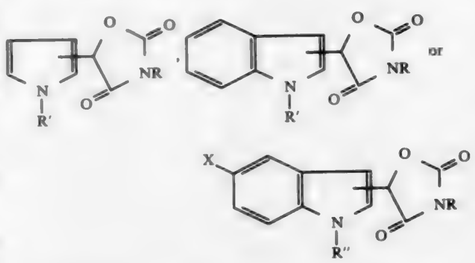
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 380,176, May 20, 1982, Pat. No. 4,310,810, which is a division of Ser. No. 252,962, Apr. 23, 1981, Pat. No. 4,342,771, which is a continuation-in-part of Ser. No. 222,202, Jan. 2, 1981, Pat. No. 4,367,234, which is a continuation-in-part of Ser. No. 173,206, Jul. 28, 1980, abandoned. This application Jan. 26, 1984, Ser. No. 574,236

Int. Cl.[4] **A61K** *31/40, 31/47;* **C07D** *411/02, 413/04*

U.S. Cl. 514—314 **15 Claims**

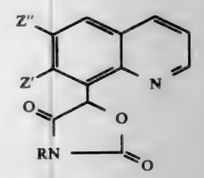
1. A compound of the formula



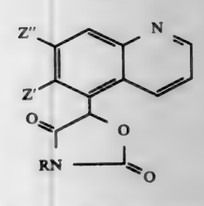
or a pharmaceutically acceptable salt thereof, wherein
R is hydrogen, (C_1–C_4)-alkanoyl, benzoyl, (C_2–C_4)-carbalkoxy, (C_1–C_3)-alkylcarbamoyl, (C_5–C_7)-cycloalkylcarbamoyl or di(C_1–C_3)-alkylcarbamoyl;
R′ is (C_1–C_4)-alkyl or phenyl;
R″ is hydrogen, (C_1–C_4)-alkyl or phenyl; and
X is halo.

7. A method of lowering the blood glucose in a hyperglycemic mammal which comprises administering a blood glucose lowering amount of a compound of claim **1**.

8. A compound of the formula



or



or a pharmaceutically acceptable salt thereof; wherein
R is hydrogen, (C_1–C_4)-alkanoyl, benzoyl, (C_2–C_4)-carbalkoxy, (C_1–C_3)-alkylcarbamoyl, (C_5–C_7)-cycloalkylcarbamoyl or di(C_1–C_3)-alkylcarbamoyl;
Z′ is hydrogen, halo or (C_1–C_3)-alkoxy; and
Z″ is hydrogen or halo.

15. A method of lowering the blood glucose in a hyperglycemic mammal which comprises administering a blood glucose lowering amount of a compound of claim **8**.

4,565,821

METHOD AND OPHTHALMIC COMPOSITION FOR TREATING OCULAR HYPERTENSION AND GLAUCOMA WITH BUTYROPHENONES

George C. Y. Chiou, College Station, Tex., assignor to The Texas A&M University System, College Station, Tex.

Filed Mar. 21, 1983, Ser. No. 477,179

Int. Cl.[4] **A61K** *31/445*

U.S. Cl. 514—327 **15 Claims**

1. A method of reducing aqueous humor formation and intraocular pressure in mammals having ocular hypertension which comprises topically administering to a hypertensive eye an opthalmologically acceptable amount, effective for lowering intraocular pressure, of a compound selected from ophthamologically acceptable 4-piperadino-4′-fluoro-butyrophenones and opthalmologically acceptable acid addition salts thereof.

4,565,822

2-FLUORO-2-CYANOETHENYL CYCLOPROPANE CARBOXYLATES AS PESTICIDES

Jean Tessier, Vincennes; André Teche, and Pierre Girault, both of Paris, all of France, assignors to Roussel Uclaf, Paris, France

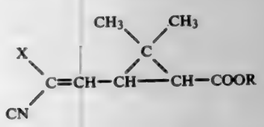
Filed Aug. 2, 1984, Ser. No. 637,106

Claims priority, application France, Aug. 4, 1983, 83 12858; Jan. 19, 1984, 84 00798

Int. Cl.[4] **C07D** *213/65;* **C07C** *121/48;* **A01N** *53/00*

U.S. Cl. 514—351 **26 Claims**

1. A cyclopropanecarboxylate in all possible isomeric forms or mixtures thereof of the formula

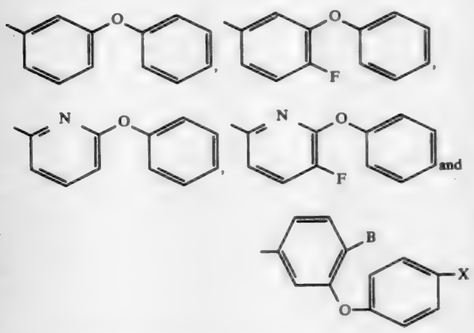


I

with a 1R,cis, (E) or (Z) structure and wherein X is fluorine, R is selected from the group consisting of (A) optionally unsaturated alkyl of 2 to 12 carbon atoms, (B) optionally unsaturated cycloalkyl of 3 to 12 carbon atoms, (c)



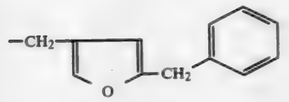
Z is selected from the group consisting of —C≡CH, $—CH_3$ and —CN and Ar is selected from the group consisting of $—C_6H_5$, $—C_6F_5$,



B is hydrogen or fluorine and X is fluorine, chlorine or bromine

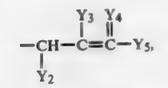


(D)



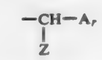
(E)

and

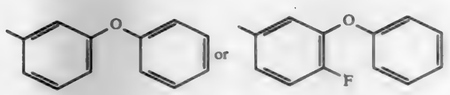


(F)

Y_2 is selected from the group consisting of hydrogen, fluorine, chlorine, bromine, —C≡N and —C≡CH, Y_3, Y_4 and Y_5 are individually selected from the group consisting of hydrogen, fluorine, chlorine, bromine alkyl of 1 to 8 carbon atoms and cycloalkyl of 3 to 8 carbon atoms alkenyl of 2 to 8 carbon atoms and alkynyl of 2 to 8 carbon atoms, and two of Y_3, Y_4 and Y_5 can form rings between them with the proviso that if X is bromine and R is



and Z is cyano or ethynyl and A_r is



the carbon carrying Z is in the (S) configuration and the double bond in the 3-side chain may have E or Z structure.

7. A pesticidal composition comprising an amount effective to combat insects, nematodes and parasitic acariens of at least one compound of claim 1 and an inert carrier.

4,565,823

MEDICAL AGENT FOR SUPPRESSING ARTERIOSCLEROSIS

Isao Ohata, Saitama, and Nobuo Sakamoto, Chiba, both of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1983, Ser. No. 507,024

Claims priority, application Japan, Jul. 2, 1982, 57-114946

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—356 **6 Claims**

1. A method of suppressing arteriosclerosis in a subject having said condition which comprises:

administering to the subject being treated an arteriosclerosis suppressing amount of a composition containing nicardipine or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

4,565,824

CERTAIN NITRATOALKYL ESTER DIHYDROPYRIDINES HAVING ANTIHYPERTENSIVE PROPERTIES

Egbert Wehinger; Horst Meyer; Stanislav Kazda, and Andreas Knorr, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

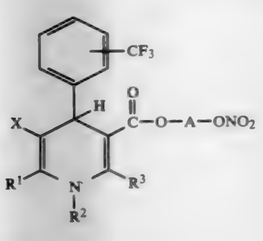
Filed Nov. 9, 1983, Ser. No. 550,321

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244178

Int. Cl.⁴ C07D *211/90;* **A61K** *31/455*

U.S. Cl. 514—356 **16 Claims**

11. A 1,4-dihydropyridine of the formula



in which

B represents nitro or CF_3,

R^1 and R^3, which can be identical or different, denote hydrogen, a straight-chain or branched alkyl radical with 1 to 4 carbon atoms, a phenyl radical or a benzyl radical,

R^2 represents a hydrogen atom or a straight-chain or branched alkyl radical with 1 to 8 carbon atoms, the alkyl radical optionally being interrupted in the alkyl chain by an oxygen atom, or a phenyl radical or a benzyl radical,

A represents a straight-chain or branched alkylene radical,

X represents the group —COR^4,

wherein

R^4 represents a straight-chain or branched alkyl radical with 1 to 4 carbon atoms, or

X represents the group —$COOR^5$,

wherein

R^5 represents an alkyl radical which has up to 20 carbon atoms and is optionally interrupted by oxygen,

or a pharmaceutically acceptable acid addition salt thereof.

14. An antihypertensive composition of matter comprising an amount of a dihydropyridine or salt according to claim 11 effective in the treatment of hypertension in admixture with a pharmaceutically acceptable diluent.

4,565,825

ANTIHYPERTENSIVE N-BENZIMIDAZOLYL- AND N-IMIDAZOLYL-AMINO ACID DERIVATIVES

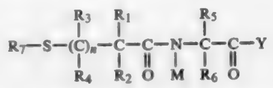
John T. Suh, Greenwich, Conn.; Jerry W. Skiles, Tuckahoe, N.Y.; Bruce E. Williams, Cottage Grove, Minn., and Alfred Schwab, Williston Park, N.Y., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Division of Ser. No. 323,852, Nov. 23, 1981, Pat. No. 4,507,312, which is a division of Ser. No. 200,180, Oct. 24, 1980, Pat. No. 4,304,771, which is a continuation-in-part of Ser. No. 57,175, Jul. 13, 1979, Pat. No. 4,256,761. This application Nov. 19, 1984, Ser. No. 672,747

Int. Cl.⁴ A61K *43/50, 43/52;* **C07D** *233/88, 235/30*

U.S. Cl. 514—394 **7 Claims**

1. A compound of the structure:



wherein p1 R_1, R_2, R_3, R_4, R_5 and R_6 are independently hydrogen, alkyl, alkenyl containing 2 to 6 carbon atoms, alkynyl containing 2 to 6 carbon atoms, phenyl-alkyl, or cycloalkyl containing 3 to 16 carbon atoms,

n is an integer from 0 to 4 inclusive,

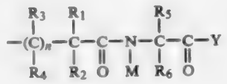
M is imidazolyl or benzimidazolyl,

Y is hydroxy, alkoxy, amino, aminoalkanoyl, hydrocarbylaryloxy containing from 6 to 10 carbon atoms, aminoalkoxy, or hydroxyalkoxy, and

R_7 is hydrogen, alkanoyl, carboxyalkanoyl, hydroxyalkanoyl, amino-alkanoyl, cyano, amidino, carbalkoxy, ZS, or



wherein Z is hydrogen, alkyl, hydroxyalkyl, aminoalkyl or the radical



wherein R_1, R_2, R_3, R_4, R_5, R_6, n, M and Y are as described above; or where Y is hydroxy, a nontoxic, pharmaceutically acceptable alkali metal, alkaline earth metal, or amine salt thereof,

wherein the alkyl groups per se and alkyl moieties of groups containing an alkyl group, contain 1 to 6 carbon atoms.

7. A method of reducing the blood pressure in mammals having hypertension which comprises administering to said animals an effective amount of a compound according to claim 1.

4,565,826

HETEROCYCLIC AMIDINOUREAS

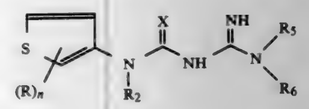
William L. Studt, Harleysville; Harry K. Zimmerman, Quakertown, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 262,811, May 12, 1981, Pat. No. 4,436,911. This application Feb. 24, 1984, Ser. No. 583,235

Int. Cl.⁴ A61K *31/38;* **C07D** *333/36*

U.S. Cl. 514—447 **7 Claims**

1. A compound of the formula



wherein

X is O or S;

n is 0 to 3;

R_2 is hydrogen or lower alkyl;

R_5 and R_6 are hydrogen, lower alkyl, lower alkoxy, cycloalkyl, aryl, lower alkenyl, or aralkyl,

(R) is a ring substituent selected from the group consisting of lower alkyl, lower alkoxy, halo, lower alkyl, acyloxy, carboxyl, cyano, lower alkenyl, lower alkynyl, aryl, carbamoyl, nitro, amino, lower alkylamino, sulfonyl, lower alkanoyl, lower alkyl amido, amino lower alkyl, aralkyl, alkaryl and halo lower alkyl; or a nontoxic pharmaceutically acceptable salt thereof.

4,565,827

7-SUBSTITUTED PGI_2-DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

István Székely, Dunakeszi; Marianna Lovász née Gáspár, Budapest; Gábor Kovács, Budapest; Krisztina Kékesi, Debrecen; Sándor Botár, Budapest; Károly Horváth, Budapest; Péter Körmöczy, Budapest; Pál Hadházy, Budapest; István Rákóczy, Budapest, and László Fésüs, Debrecen, all of Hungary, assignors to CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

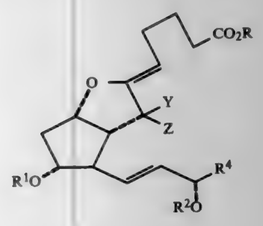
Filed Oct. 27, 1981, Ser. No. 315,408

Claims priority, application Hungary, Oct. 27, 1980, 2587/80; Oct. 27, 1980, 2588/80; Oct. 27, 1980, 2589/80

Int. Cl.⁴ C07D *307/935;* **A61K** *31/34, 31/557*

U.S. Cl. 514—469 **11 Claims**

1. A compound of the formula (I)



wherein

R is hydrogen, an alkali metal cation, a cation that is derived from a pharmaceutically acceptable amine, or an alkyl group having 1 to 4 carbon atoms;

R^1 and R^2 are hydrogen, a straight or branched alkanoyl of 1 to 4 carbon atoms, benzoyl, tetrahydropyranyl, ethoxyethyl or trialkylsilyl containing alkyl groups of 1 to 4 carbon atoms;

R^4 is straight or branched alkyl of 3 to 7 carbon atoms;

Y is hydrogen;

Z is fluoro, chloro, bromo or a group of the formula —OR^5, wherein

R^5 is hydrogen, straight or branched chain alkyl of 1 to 4 carbon atoms, straight or branched alkanoyl of 1 to 4 carbon atoms, benzoyl, or trialkylsilyl containing alkyl groups of 1 to 4 carbon atoms, or

Y and Z together form a =N—OH, =N—OCH_3, =N—N-H—CO—NH_2 or =N—$N(CH_3)_2$ group.

10. A method of inhibiting thrombocyte aggregation in an animal subject which comprises the step of administering to said animal subject a pharmaceutically effective amount of the compound of the formula (I) as defined in claim 1.

4,565,828

BENZOFURAN DERIVATIVES AND THEIR THERAPEUTIC USE

Marcel Descamps, Rosieres, and Peter Polster, Beauvechain, both of Belgium, assignors to Sanofi, Paris, France

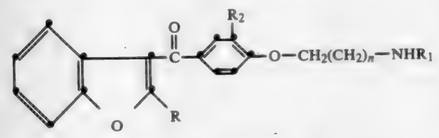
Filed Jul. 5, 1984, Ser. No. 628,208

Claims priority, application France, Jul. 18, 1983, 83 11805

Int. Cl.⁴ A61K *31/34;* **C07D** *307/80*

U.S. Cl. 514—469 **23 Claims**

1. A benzofuran derivative corresponding to the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

R represents an ethyl, n-propyl, isopropyl or n-butyl radical;

R_1 represents a branched-chain alkyl radical having from 4 to 7 carbon atoms wherein at least one of the carbon atoms does not bear a hydrogen atom;

R_2 represents hydrogen, chlorine or bromine;

n is 1 or 2.

22. A method of inducing calcium-antagonistic and antiadrenergic effects in a subject in need of such treatment which method comprises the administration to said subject of an effective dose of at least one benzofuran derivative as claimed in claim 1.

4,565,829

FUNGICIDAL 2-THIOCYANATO-BENZAMIDES

Hans-Georg Schmitt, Leverkusen; Karlfried Wedemeyer, Cologne; Wilhelm Brandes, Leichlingen, and Paul Reinecke, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

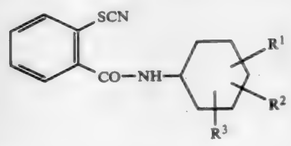
Filed Dec. 7, 1984, Ser. No. 679,181

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3347073

Int. Cl.⁴ A01N *47/48;* **C07C** *161/02*

U.S. Cl. 514—514 **10 Claims**

1. A 2-thiocyanato-benzamide of the formula



in which

R^1, R^2 and R^3 are identical or different and represent straight-chain, branched or cyclic alkyl radical with up to 8 carbon atoms, a phenyl-alkyl radical which has 1 to 4

carbon atoms in the alkyl radical and is optionally mono-, di-, tri-, tetra- or penta-substituted by alkyl with 1 to 4 carbon atoms, or a cycloalkyl-alkyl radical with 5 to 8 carbon atoms in the cycloalkyl part and 1 to 4 carbon atoms in the alkyl part, or

R^1 and R^2 independently of one another represent hydrogen.

9. A method of combating fungi which comprises administering to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim 1.

4,565,830

METHOD OF AMELIORATING THE SUBJECTIVE SYMPTOMS AND OBJECTIVE SIGNS IN CONGESTIVE HEART FAILURE

Jun-ichi Azuma, 13-14, Momoyamadai 1-cho, Sakai, Osaka, Japan (590-01)

Filed Dec. 21, 1982, Ser. No. 451,837

Claims priority, application Japan, Dec. 22, 1981, 56-207766

Int. Cl.⁴ A61K *31/185*

U.S. Cl. 514—553 **2 Claims**

1. A method of ameliorating at least one of the subjective symptoms and objective signs consisting of dyspnea, palpitation, hepato-jugular reflux, pulmonary crackles, cardiomegaly and peripheral edema in subjects who were clinically judged to have been in congestive heart failure which comprises administering to said subjects a therapeutically effective amount of taurine.

4,565,831

PROCESS FOR PRODUCING AROMATIC HYDROCARBONS FROM CARBON MONOXIDE AND WATER

Franklin J. Wright, Watchung; Michael A. Richard, Fanwood, and James C. Pirkle, Jr., Lebanon, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 331,160, Dec. 16, 1981, abandoned. This application Sep. 29, 1983, Ser. No. 537,269

Int. Cl.⁴ C07C *1/10*

U.S. Cl. 518—700 **18 Claims**

1. A process for producing liquid hydrocarbons, including those in the C_6–C_{13} range, comprising contacting a mixture of carbon monoxide and water vapor, in a 5:1 to 1:5 volume ratio, respectively, with a catalyst composition, which can be unpromoted or promoted with an agent other than copper or its compounds, wherein said catalyst consists essentially of a mixture of iron compounds and thallium compounds being supported or unsupported, said compound of iron and thallium being selected from the group consisting of an oxide, hydroxide, carbonate, sulfate, carbide, halide, nitrate, or mixtures thereof, wherein said iron compound contains iron value initially being substantially in the trivalent state prior to pretreatment, said thallium compounds being substantially impregnated on the surface of said iron compound, which is pretreated at 270° C. or above, with a gaseous reducing atmosphere, wherein the weight ratio of iron/thallium, taken as the free metals, is from about 100:1 to 1:100, said process being conducted at a temperature of about 250° C. to 550° C. a pressure of about 0.1 to 7.5 MPa, and a space velocity of about 10 to 10,000 v/v/hr., thereby resulting in product liquid hydrocarbons in the C_6–C_{13} range, comprising a substantial amount of C_6–C_{13} aromatic hydrocarbons.

4,565,832

PROCESS FOR PRODUCING PACKING MATERIAL FOR USE IN LIQUID CHROMATOGRAPHY

Toshiyuki Kobashi; Shoyo Takagi, and Hideo Naka, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Nov. 30, 1984, Ser. No. 677,678

Claims priority, application Japan, Feb. 8, 1984, 59-22633

Int. Cl.⁴ C08J *9/28*

U.S. Cl. 521—63 **4 Claims**

1. A process for producing a packing material for use in liquid chromatography which comprises aqueous suspension polymerizing vinyl acetate, a (meth)acrylic acid ester, or a glycidyl monovinyl ester or ether with a monomer mixture composed mainly of a cross-linking monomer in the presence of a diluent selected from among epichlorohydrin and glycidyl ethers, treating the resultant polymer particles so as to ring-open and hydrophilize epoxy groups in said diluent contained in said polymer particles, and washing the treating polymer particles with water.

4,565,833

FIRE RETARDANT COMPOSITION

David L. Buszard, Woodford, and Richard J. Dellar, Altrincham, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 12, 1983, Ser. No. 541,352

Claims priority, application United Kingdom, Oct. 12, 1982, 8229075

Int. Cl.⁴ C08K *5/52, 5/53;* **C08G** *18/08*

U.S. Cl. 521—107 **15 Claims**

1. A fire retardant composition for rigid polyurethanes or polyisocyanurates which comprises (a) dimethyl methyl phosphonate, diethyl ethyl phosphonate or a mixture thereof, and (b) a triaryl phosphate, a trialkyl phosphate or an alkyl/aryl phosphate in a ratio of (a):(b) by weight of 5:95 to 95:5.

4,565,834

STABILIZER-CONTAINING REACTIVE COMPONENTS FOR PU-FOAMS, NEW STABILIZERS AND A PROCESS FOR PRODUCING THESE STABILIZERS

Hans-Josef Buysch, Krefeld; Hans-Walter Illger, Roesrath, and Karl H. Dörner, Pulheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 547,185, Oct. 31, 1983, abandoned, which is a division of Ser. No. 395,552, Jul. 6, 1982, Pat. No. 4,430,452. This application Sep. 17, 1984, Ser. No. 651,397

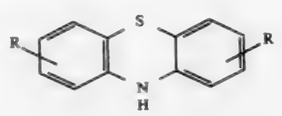
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127750

Int. Cl.⁴ C08J *9/00*

U.S. Cl. 521—121 **6 Claims**

1. Stabilizer-containing reactive components for the production of polyurethane foams with little or no tendency towards core discoloration based on polyisocyanates, polyols and, optionally, water, blowing agents, catalysts, other stabilizers and standard additives, characterized in that they contain as stabilizers monomeric and/or oligomeric derivatives of the diphenylamine series, including the phenothiazine series, in stabilizing quantities of from 0.02 to 5% by weight of compounds corresponding to the general formulae I-II or III,

(a) general formula I:

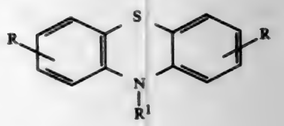


(I)

wherein

R represents C_7–C_{18}-aralkyl (the number of carbon atoms indicates the total number in the aryl radical, including its alkyl substituents);

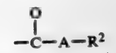
(b) general formula II:



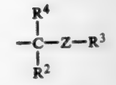
wherein

R is defined as above,

R^1 represents a C_1–C_{18}-alkyl; a C_5–C_{12} cycloalkyl or -cycloalkenyl; a C_7–C_{18}-aralkyl which may optionally be substituted by OH—, SH—, ether, thioether, carbonic ester, carbonamide and carboxyl groups or which may be interrupted by such groups other than OH, SH and COOH-groups and olefinic double bonds; a radical



or a radical of the formula



wherein

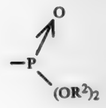
R^2, R^3 and R^4 are the same or different and represent a C_1–C_{12}-alkyl; a C_5–C_{12}-cycloalkyl or -cycloalkenyl; a C_7–C_{12}-aralkyl;

in addition to which R^2 represents optionally substituted aryl and, together with R^4 and the central C-atom, may form a 5- to 12-member aliphatic ring;

Z represents O, S, NH, NR^5 where $R^5 = R^2$, or a radical of the formula CO—A—R^2, wherein A is a single bond, S, O, NH or NR^2; both here and in the following,

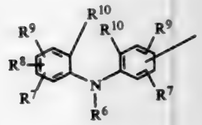
R^2 does not form a ring with R^4; or

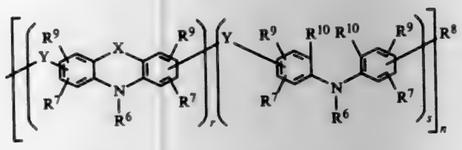
Z together with R^3 also represents the radical



and

(c) general formula III:





wherein

X is a single bond, $>CH_2$, $>CH$, $>S$, $>O$, $>NR^5$,

$-CR^7R^{11}$

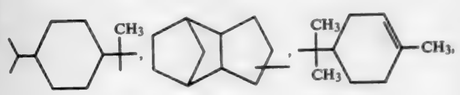
or $>POH$;

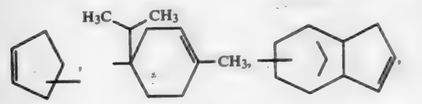
r and s are integers of from 1 to 29;

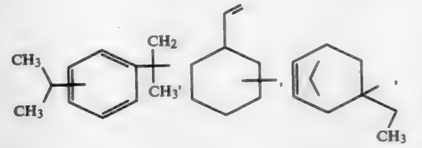
R^6 represents H or R^1 as defined above;

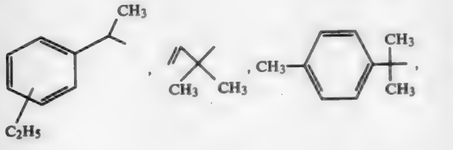
R^7, R^9 and R^{10} may be the same or different and represent H, CH_3 or C_2H_5,

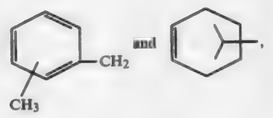
R^8 represents H, benzyl, styryl, α-methyl-styryl, tert.-butyl, tert.-amyl, isononyl, cyclohexyl, methyl cyclohexyl,









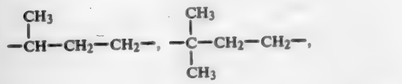


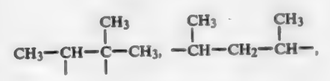
Y represents



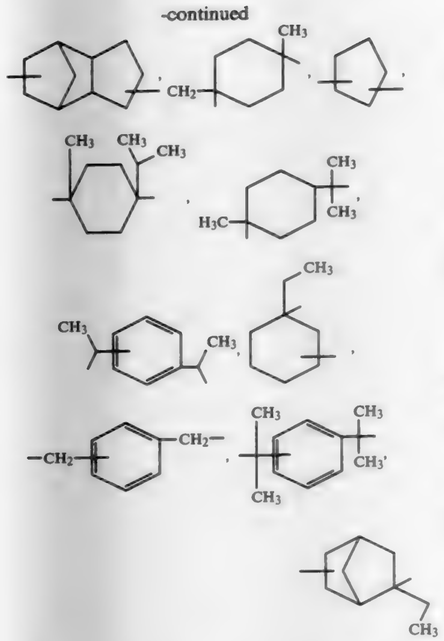
where

R^7 is as defined above and R^{11} represents a C_1–C_7-alkyl; a cyclohexyl, a cyclohexenyl; an aryl; or





-continued



and, up to 60 mole percent may also be —S—, —CH_2—, —CH_2—S—CH_2— or —CH_2—O—CH_2—; and n is an integer of from 1 to 29.

4,565,835

DIISOCYANATE

Richard W. Oertel, III, Guilford; Benjamin W. Tucker, Bethany, and Reinhard H. Richter, North Haven, all of Conn., assignors to The Upjohn Company, Midland, Mich.

Division of Ser. No. 440,565, Nov. 10, 1982, Pat. No. 4,522,762. This application Mar. 25, 1985, Ser. No. 715,861

Int. Cl.⁴ C08G *18/75*

U.S. Cl. 521—155 **2 Claims**

1. In a polyurethane elastomer prepared by the reaction of an organic diisocyanate, a polymeric diol and a low molecular weight diol extender the improvement which comprises employing 1,4-bis(2-isocyanatoethyl)cyclohexane as the organic diisocyanate.

4,565,836

MULTI-MODAL EMULSIONS OF WATER-SOLUBLE POLYMERS

Richard R. Emerson; Do I. Lee, both of Midland, and James P. Easterly, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 26, 1983, Ser. No. 498,222

Int. Cl.⁴ C08J *3/00*

U.S. Cl. 523—346 **26 Claims**

1. A water-in-oil emulsion polymerization method for preparing polymers of water-soluble monomers which comprises:

(1) preparing a stable water-in-oil emulsion by:

(a) providing an aqueous solution comprising water and at least one water-soluble monomer,

(b) providing an oil solution comprising an inert hydrophobic organic liquid,

(c) mixing a portion of the aqueous solution to the oil solution in an amount sufficient to form an aqueous dispersed phase,

(d) subjecting the mixture to a shear rate at least sufficient to form a portion of said water-in-oil emulsion,

(e) admixing an additional portion of the aqueous solution to the resulting portion of the emulsion previously prepared in amounts sufficient to form an aqueous dispersed phase, and

(f) subjecting the resulting mixture to a shear rate progressively lower than that employed in forming the previous portion of the emulsion,

(g) wherein steps (e) and (f) are performed at least once until said water-in-oil emulsion is formed, and

(2) subjecting the resulting emulsion to polymerization conditions.

4,565,837

RAPID CURING EPOXIDE COMPOSITION EMPLOYING STABLE CARBENIUM SALT CATALYST

Kieran F. Drain, Parma Heights, and David J. Dunn, Twinsburg, both of Ohio, assignors to Loctite Corporation, Newington, Conn.

Filed Nov. 7, 1984, Ser. No. 669,189

Int. Cl.⁴ C08G *59/18, 59/68*

U.S. Cl. 523—400 **15 Claims**

1. A two part composition curable to a solid upon mixing at room temperature comprising:

(I) a first part comprising a di- or polyepoxide compound, and

(II) a second part comprising a trityl or tropylium salt of weak nucleophile anion in a solvent.

4,565,838

CATHODICALLY DEPOSITABLE ELECTRODEPOSITION PAINT BINDERS BASED ON EPOXY RESIN-AMINO ADDUCTS REACTED WITH PHENOL AND FORMALDEHYDE MODIFIED WITH AN UNSATURATED, SUBSTANTIALLY WATER-INSOLUBLE COMPONENT

Willibald Paar, and Wolfgang Daimer, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Mar. 18, 1985, Ser. No. 712,540

Claims priority, application Austria, Oct. 1, 1984, 3096/84

Int. Cl.⁴ C08G *18/80, 59/14;* **C09D** *3/58, 5/44*

U.S. Cl. 523—414 **29 Claims**

1. Process for producing cathodically depositable electrodeposition paint binders based on modified epoxy resins characterized in that-

(A) 95 to 50% by weight of a reaction product obtained through reaction of

an epoxy resin with at least two epoxy groups and having an epoxy equivalent weight of from about 180 to 1000 at from about 50° to 120° C. with

0.6 to 1.0 moles of primary amino groups on a primary monoalkyl amine or a primary alkylene diamine or a primary-tertiary alkylene diamine per each available epoxy group and

0 to 0.4 moles of a carboxylic compound or a secondary amine per each available epoxy group

to provide an epoxy resin-amino adduct having an epoxy value of substantially zero, said epoxy resin-amino adduct thereafter being reacted at from about 50° to 90° C., calculated on one mole of NH-groups, with

0.5 to 1.0 moles phenol, and with

0.25 to 0.9 moles of formaldehyde per formaldehyde-reactive site, until the formaldehyde is substantially bound and the reaction product, upon partial or total neutralization with acids, is dilutable with water, is mixed with

(B) 5 to 50% by weight of an addition component which is substantially water-insoluble under the conditions of electrodeposition and compatible with the base resin Component A, said addition component being selected from the group consisting of

(a) drying oils with an iodine number of above 120;

(b) synthetic esters of the fatty acids with polyols;

(c) addition products of maleic anhydride to hydroxyfree drying oils with an iodine number above 120; synthetic esters of fatty acids with polyols; unsaturated hydrocarbon oligomers or polymers or copolymers with a molecular weight of from about 400 to 3000, the carboxy or anhydride groups of said maleic anhydride having been substantially completely transformed to ester, amide, or imide groups; and

(d) compounds carrying at least two (meth)acrylic or allyl double bonds,

the mixture, after being transformed to the water-dilutable salt by partial neutralization of the basic groups with inorganic or organic acids being dilutable with water.

4,565,839

AQUEOUS EMULSION COMPOSITION

Yasuharu Nakayama, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Hyogo, Japan

Division of Ser. No. 220,086, Dec. 24, 1980, Pat. No. 4,465,803. This application May 4, 1984, Ser. No. 606,963

Claims priority, application Japan, Dec. 29, 1979, 54-172054; Feb. 1, 1980, 58-10014

Int. Cl.⁴ C08F *2/16*

U.S. Cl. 524—458 **12 Claims**

1. An aqueous emulsion composition which is the product of emulsion polymerization of at least one radical-polymerizable unsaturated monomer in the presence of a water-solubilized resin having a graft-polymerizable unsaturated group in the side chain in water or a mixture consisting essentially of water and a water-miscible organic solvent.

4,565,840

FIBER-REINFORCED CONCRETE AND REINFORCING MATERIAL FOR CONCRETE

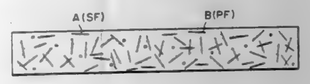
Kazusuke Kobayashi, Sagamihara, and Ryokche Cho, Yokohama, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 223,717, Jan. 9, 1981, abandoned. This application Jun. 11, 1984, Ser. No. 619,344

Claims priority, application Japan, Jan. 11, 1980, 55-2280

Int. Cl.⁴ E04C *5/00*

U.S. Cl. 524—8 **16 Claims**



1. A fiber-reinforced, craze-resistant and high tensile strength concrete composite comprising a concrete matrix containing from 1 to 6% by volume of a mixture of short steel fibers (A) having a length of about 20 to 60 mm. and a Young's modulus higher than that of concrete and short polyethylene fibers (B) having a length of about 5 to 100 mm. and a Young's modulus lower than concrete, said fibers (B) further having surface protrusions along the longitudinal axis so that the fiber is firmly adhesive to the concrete matrix, with both of said fibers being dispersed in the concrete matrix in a volume ratio (B)/(A) ranging from about 0.5 to 6, the reinforcing amount of short steel fibers (A) ranging from about 0.5 to about 3% by volume and the reinforcing amount of short polyethylene fibers (B) ranging from about 0.5 to about 5% by volume.

4,565,841

SPIRIT DUPLICATING WITH INDICIA FORMED BY INK COMPRISING DYE MEANS AND SMUDGE-RESISTANT BINDER MEANS SOLUBLE IN SPIRIT DUPLICATING FLUID

Curt Thies, Ballwin, Mo., assignor to The Nimrod Press, Inc., Boston, Mass.

Filed Sep. 10, 1979, Ser. No. 74,060

Int. Cl.⁴ C08L *1/18, 3/02;* **C09D** *11/00*

U.S. Cl. 524—31 **30 Claims**

1. A spirit duplicating master comprising,

a master sheet,

indicia comprising a first significant weight % of dye means soluble in a spirit duplicating fluid comprising water and an organic solvent for producing a visible image on said master sheet and a second significant but lesser than said first significant weight % of binder means consisting essentially of nitrocelloulose and poly(vinyl methyl ether) and soluble in both the water and organic solvent comprising said spirit duplicating fluid for releasably binding said dye means to said master sheet essentially free from smudge while negligibly interfering with transfer of said dye means from said master sheet to a copy sheet moistened with said spirit duplicating fluid,

said indicia being formed by a dry residue of ink comprising said dye means, said binder means and carrier means for carrying said dye means and said binder means in solution,

said dry residue being rich in said dye means and poor in said binder means to facilitate ready transfer of said dye means to a copy sheet from said master sheet,

said dye means and said binder means being soluble in said carrier means.

4,565,842

THERMALLY TRANSFERABLE INK COMPOSITIONS

Robert C. Fitzer, Mahtomedi; Charles J. Fabbrini, and Frank L. Deyak, both of Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 163,884, Jun. 27, 1980, Pat. No. 4,513,107. This application Apr. 18, 1985, Ser. No. 724,605

Int. Cl.⁴ C08F *14/06*

U.S. Cl. 524—57 **1 Claim**

1. A thermally transferable ink composition having a 20% elongation temperature of less than about 85° C. and an elongation at break of at least about 15% comprising:

(a) from about 36 to 95% by weight of a thermoplastic polymer selected from the group consisting of polyvinyl chloride, copolymers thereof, and blends, thereof;

(b) from about 50 to 5% by weight of a flexibilizer for said thermoplastic polymer that is compatible with said thermoplastic polymer; and

(c) up to about 40% by weight of a colorant wherein said composition is thermally transferable from a carrier to a receptor at a temperature in the range of 75° C. to 110° C.

4,565,843

LACQUER SOLUTIONS BASED ON HYDANTOIN GROUP-CONTAINING POLYMERS

Willi Düwald, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 18, 1984, Ser. No. 683,033

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347659

Int. Cl.⁴ C08L *75/02*

U.S. Cl. 524—89 **6 Claims**

1. Lacquers for the production of coatings based on hydantoin group-containing polymers prepared by admixing i) from 0.01 to 10%, by weight, based on the solids content, of compounds containing one or more primary, secondary or tertiary amine nitrogens and ii) a solution of hydantoin group-containing polymers.

4,565,844

PROPYLENE-ETHYLENE BLOCK COPOLYMER COMPOSITION

Toshikazu Kasahara, Ichihara; Toshifumi Kajiya, Sodegaura, and Tomio Akiyoshi, Ichihara, all of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1984, Ser. No. 653,509

Claims priority, application Japan, Oct. 12, 1983, 58-190403

Int. Cl.⁴ C08K *3/34, 5/10, 5/15;* **C08L** *23/16*

U.S. Cl. 524—108 **14 Claims**

1. A transparent propylene-ethylene block copolymer composition having low haze comprising (a) from 0.01 to 1.0 part by weight of a nucleating agent and (b) from 0.01 to 3.0 parts by weight of talc having an average particle size of not more than 10 microns, admixed in 100 parts by weight of propylene-ethylene block copolymer; said proylene-ethylene block copolymer having been formed in a multi-stage polymerization process wherein the ethylene content of the copolymer formed at the propylene-ethylene copolymerization stage of said multi-stage polymerization process is from 5 to 40 percent by weight based on the total polymerization amount of the copolymer formed at said propylene-ethylene copolymerization stage.

4,565,845

PROCESS FOR PRODUCING POLYESTER AND BLOCK COPOLYMER THEREOF

Shohei Inoue; Takuzo Aida; Koichi Sanuki, and Masahide Ishikawa, all of Tokyo, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,181

Claims priority, application Japan, Sep. 5, 1984, 59-185968; Sep. 5, 1984, 59-185969; Sep. 5, 1984, 59-185970

Int. Cl.⁴ C08G *63/76*

U.S. Cl. 525—25 **22 Claims**

1. A process for producing a polyester which comprises reacting an acid anhydride with an epoxide using as catalyst an aluminum porphyrin complex and an organic quaternary salt.

6. A process for producing a block copolymer which comprises reacting an acid anhydride with an epoxide using as catalyst an aluminum prophyrin complex and an organic quaternary salt to produce a polyester, and reacting the polyester with an epoxide, an epoxide and an acid anhydride, or an epoxide and a carbon dioxide gas in the presence of the above-mentioned catalyst.

19. A polyester having a molecular weight distribution of 1.0 to 1.5 produced by the process of claim 1.

4,565,846

SELECTIVE GAS-PERMEABLE FILMS

Yukihiro Saito, Kawasaki; Yoshimasa Ito, Machida, and Shiro Asakawa, Zama, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Jul. 16, 1982, Ser. No. 398,851

Claims priority, application Japan, Jul. 17, 1981, 56-112456; Jul. 17, 1981, 56-112457; Jul. 17, 1981, 56-112458

Int. Cl.⁴ C08L *83/06, 83/08*

U.S. Cl. 525—101 **8 Claims**

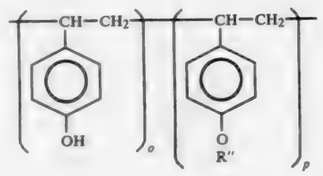
1. A selective gas-permeable film comprising a crosslinked copolymer product of

(1) an α,ω-bifunctional polyorganosiloxane of the general formula



in which each Z represents a halogen atom, a hydroxy group, an alkoxy group, an amino group, a dimethylamino group, a diethylamino group or a dipropylamino group, R and R′ independently represent a hydrogen atom, a methyl group, a phenyl group, a halogenated alkyl group or a vinyl group, and n is an integer from 5 to 200; with a mixture of:

(2) a styrene polymer having an aromatic ring at each side chain thereof and an average molecular weight ranging from 1,000 to 30,000 and selected from the group consisting of poly-p-hydroxystyrene, poly-3,5-dimethyl-4-hydroxy-styrene, poly-p-hydroxystyrene bromide, poly-3-methoxy-4-hydroxystyrene and mixtures thereof, poly-o-hydroxystyrene, poly-p-aminostyrene, polystyrenesulfonic acid, polyvinylbenzoic acid, polyvinylsalicylic acid, poly-2,5-dihydroxystyrene, polyisopropenylphenol, copolymers of the styrene polymers with acrylic esters, etherized derivatives of polyhydroxystyrene which have recurring units of the formula



in which R″ represents $Si(CH_3)_3$ or an alkyl group having 1 to 18 carbon atoms, and o and p are integers sufficient to define the molecular weight range; and

(3) a functional end group-bearing polymer having an average molecular weight of from 1,000 to 10,000 and represented by the general formula

in which each R_1 represents a dihydric phenol residue, R_2 represents a reactive residue capable of condensing with the phenolic hydroxyl groups to form polyester, polyether or polyurethane, and i is an integer from 5 to 50.

4,565,847

BLENDS OF LLDPE, PP AND EPDM OR EPR FOR FILMS OF IMPROVED STIFFNESS, TEAR AND IMPACT STRENGTH

Surinder K. Bahl, West Windsor; Peter J. Canterino, Towaco, and Richard G. Shaw, Bradley Beach, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 4, 1984, Ser. No. 568,016

Int. Cl.⁴ C08L *23/20, 23/16, 23/12, 23/24*

U.S. Cl. 525—240 **9 Claims**

1. A film of a thermoplastic blend comprising:

60 to 95 weight percent of a linear low density copolymer of ethylene and an olefin having 4 to 10 carbon atoms (LLDPE);

2 to 30 weight percent of polypropylene (PP) or propylene-ethylene copolymer with a high propylene content; and

less than 2 weight percent of an ethylene-propylene-diene terpolymer (EPDM) in an amount sufficient to improve the MD tear strength of the LLDPE/PP blend by at least 10 percent.

4,565,848

PROCESS FOR THE PREPARATION OF POLYACETYLENES BY DEHYDROCHLORINATION OF POLYVINYL CHLORIDE, THE PRODUCTS OBTAINED AND THEIR APPLICATIONS, IN PARTICULAR, AS SEMICONDUCTORS

Daniele Dussoubs; Alain Perichaud, and Louis Savidon, all of Marseilles, France, assignors to Universite d'Aix-Marseille II, Marseilles, France

PCT No. PCT/FR82/00112, § 371 Date Jun. 9, 1982, § 102(e) Date Jun. 9, 1982, PCT Pub. No. WO83/00152, PCT Pub. Date Jan. 20, 1983

PCT Filed Jun. 29, 1982, Ser. No. 478,530

Claims priority, application France, Jun. 30, 1981, 81 13286

Int. Cl.⁴ C08F *0/00*

U.S. Cl. 525—331.5 **17 Claims**

1. A process for the dehydrochlorination of polyvinyl chloride with potassium tertiary butoxide in anhydrous tetrahydrofuran medium, characterized in that the number of moles of tertiary butoxide reacted is greater than the number of CH_2CHCl units of polyvinyl chloride, this excess being directly related to the presence of oxygen in the anhydrous tetrahydrofuran and leading to a practically complete dehydrochlorination.

4,565,849

POLYAMIDE ELASTOMER FROM CARBOXY TERMINATED POLYAMIDE AND POLYOXY-2-METHYL-1,3-PROPYLENE DIOL

Takeshi Horikawa, and Kenichi Sasaki, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

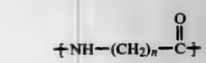
Filed Jul. 11, 1984, Ser. No. 630,509

Claims priority, application Japan, Jul. 25, 1983, 58-135384

Int. Cl.⁴ C08L *67/00, 77/00*

U.S. Cl. 525—420 **12 Claims**

1. A process for preparing a polyamide elastomer, which comprises: reacting (I) polyamide-forming component having carboxyl groups at both ends of the molecule and capable of forming polyamide blocks, with (II) polyoxyalkylene glycol component whereby to form the polyamide elastomer, the recurring units of said polyamide block being selected from the group consisting of units of the formula A



wherein n is an integer of 5 to 11, units of the formula B



wherein l is an integer of 6 to 20 and m is an integer of 4 to 20,

and units of both of formula A and formula B, said polyamide blocks having a number average molecular weight of from 400 to 10,000, said polyoxyalkylene glycol component containing at least 10 wt.% of polyoxy-2-methyl-1,3-propylene glycol having a number average molecular weight of 400 to 10,000.

4,565,850

THERMOPLASTIC COMPOSITION CONTAINING NEMATIC OLIGOMER

Dusan C. Prevorsek, Morristown, and Murali K. Akkapeddi, Morris Plains, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 289,619, Aug. 31, 1981, abandoned. This application Mar. 3, 1983, Ser. No. 471,934

Int. Cl.⁴ C08L *59/00, 67/02, 77/00, 69/00*

U.S. Cl. 525—425 **20 Claims**

1. A thermoplastic composition comprising:

(a) a thermoplastic polymer of high molecular weight selected from the group consisting of polyesters, polyamides, polycarbonates and polyacetals which has a fusion temperature at a first temperature, has a glass transition temperature and forms an isotropic liquid above the first temperature, and

(b) dispersed in said thermoplastic polymer a polyester oligomer having a melting point at a second temperature, said second temperature being not more than 50° C. less than said first temperature nor more than 70° C. more than said first temperature; said oligomer exhibiting nematic behavior between said second temperature and a third temperature, said third temperature being at least 30° C. above said second temperature and at least about 10° C. above said first temperature; said oligomer having a number average length/diameter ratio (L/D) of between 10 and 50, a glass transition temperature at least 10° C. greater than the glass transition temperature of said polymer and a Small's solubility parameter within 2 of the Small's solubility parameter of said polymer;

the amount of said oligomer being sufficient to raise the modulus value of the thermoplastic composition to at least 110% of the corresponding value of the polymer at the glass transition temperature of said polymer.

4,565,851

CONTAINERS HAVING IMPROVED GAS BARRIER PROPERTIES

Robert B. Barbee, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 25, 1983, Ser. No. 488,295

Int. Cl.⁴ C08L *67/02, 67/04*

U.S. Cl. 525—437 **9 Claims**

1. A polymer blend comprising about 5 to 50 percent by weight of a first polyester comprising polyglycolic acid and correspondingly about 50 to 95 percent by weight of a second polyester comprising units derived from a diacid component comprising terephthalic acid and units derived from a diol component which comprises at least one diol containing up to about 8 carbon atoms.

4,565,852

CROSSLINKABLE COMPOSITION COMPRISING AMINOEPOXY RESIN-II

Saiyed B. A. Qaderi, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1983, Ser. No. 566,063

The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.

Int. Cl.⁴ C08L *63/00*

U.S. Cl. 525—528 **37 Claims**

1. A crosslinkable composition of matter comprising first and second chain extended diepoxide resins, at least one of which resins is prepared using an excess of diepoxide reactant and modified by reaction with modifying agent comprising hydroxy functional secondary amine in approximately 1:1 epoxy to amine equivalent ratio,

said first resin being substantially gel-free diene functional aminoepoxy resin of number average molecular weight (Mn) about 1000–9000 comprising the reaction product of

diepoxide reactant with first reactants comprising (a) amine functional diene chain extending reactant, and

said second resin being substantially gel-free blocked dieneophile functional aminoepoxy resin of number average molecular weight (Mn) about 1000–9000, comprising the reaction product of diepoxide reactant with second reactants comprising (a) amine functional blocked dieneophile chain extending reactant selected from the group consisting of di-secondary amine functional bis-blocked dieneophile, mono-primary amine functional blocked dieneophile, and a compatible mixture of any of them.

4,565,853

COMPOSITIONS FOR FORMING EPOXY ADHESIVE CONTAINING ACRYLATE RUBBER

Eva J. Herscovici, Chappaqua, and Ki-Soo Kim, Katonah, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 19, 1983, Ser. No. 459,071
Int. Cl.⁴ C08L *13/00, 51/08, 63/00*
U.S. Cl. 525—530 **16 Claims**

1. A reaction mixture, for forming a curable epoxy resin composition containing a polyacrylate rubber which comprises an epoxy resin, a monoethylenically unsaturated monomer capable of forming a polyacrylate rubber, an effective amount of a chain transfer agent for the unsaturated monomer to allow for an increased rubber content in the epoxy rubber composition, and a monomer soluble initiator for forming the rubber from the monomer.

4,565,854

POLYMER HAVING THIOL END GROUP

Toshiaki Sato; Junnosuke Yamauchi, both of Kurashiki, and Takuji Okaya, Nagaokakyo, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 22, 1984, Ser. No. 592,476
Claims priority, application Japan, Apr. 7, 1983, 58-61745; Apr. 7, 1983, 58-61746; Apr. 7, 1983, 58-61747; Apr. 8, 1983, 58-62671
Int. Cl.⁴ C08F *2/42*
U.S. Cl. 526—214 **9 Claims**

1. A polymer having a thiol group at one end obtained by polymerizing at least one monomer capable of radical polymerization in contact with a thiolcarboxylic acid represented by the formula R—COSH wherein R is a C_1–C_{18} aliphatic or aromatic hydrocarbon group; and then treating the resulting polymer wtih an alkali or acid.

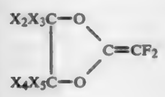
4,565,855

POLYMERS OF DIOXOLANES

Burton C. Anderson; David C. England, and Paul R. Resnick, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 417,697, Sep. 13, 1982, abandoned, which is a division of Ser. No. 306,390, Sep. 28, 1981, Pat. No. 4,429,143. This application Oct. 29, 1984, Ser. No. 665,980
Int. Cl.⁴ C08F *14/18*
U.S. Cl. 526—247 **6 Claims**

1. A polymer of a dioxolane of the formula:



wherein

X_2, X_3, X_4 and X_5, independently, are Cl or F, provided that at least two are F.

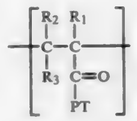
4,565,856

PYRITHIONE-CONTAINING BIOACTIVE POLYMERS AND THEIR USE IN PAINT AND WOOD PRESERVATIVE PRODUCTS

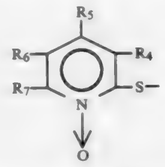
Samuel I. Trotz, Orange, and Theodore H. Fedynyshyn, Branford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Oct. 12, 1984, Ser. No. 660,208
Int. Cl.⁴ C08F *26/06*
U.S. Cl. 526—265 **8 Claims**

1. A bioactive polymer comprising an effective biocidal amount of moieties derived from pyrithione and having the formula



wherein R_1, R_2 and R_3 are individually selected from hydrogen and alkyl groups having from 1 to 4 carbon atoms; and PT represents the pyrithione moiety which is defined as



wherein R_4, R_5, R_6 and R_7 are individually selected from hydrogen and, a lower alkyl group having from 1 to about 8 carbon atoms, a lower alkoxy group having from 1 to about 8 carbon atoms, a nitro group and a halo group.

4,565,857

RADIATION-CURABLE CELLULOSE COATING

Richard J. Grant, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 21, 1984, Ser. No. 673,872
Int. Cl.⁴ C08G *18/06, 18/28;* **C08L** *1/10;* **C09D** *3/72*
U.S. Cl. 527—301 **18 Claims**

1. Ethylenically unsaturated cellulose ester comprising the reaction product of (a) a cellulose ester of cellulose and saturated aliphatic monocarboxylic acids having 2 to 4 carbon atoms or aromatic monocarboxylic acids, said cellulose ester having an average of about 0.1 to 2.0 unreacted hydroxyl groups per anhydroglucose unit, and (b) a polymerizable ethylenically unsaturated compound having an isocyanato group reactive with the hydroxyl groups of the cellulose ester, said reaction product being substantially free of unreacted isocyanate groups.

4,565,858

POLYETHERIMIDES WITH HIGH THERMAL STABILITY AND SOLVENT RESISTANCE AND PRECURSORS THEREFOR

Howard J. Klopfer, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 26, 1984, Ser. No. 665,262
Int. Cl.⁴ C08G *73/10*
U.S. Cl. 528—172 **11 Claims**

1. A polymer consisting essentially of structural units having formula I in the drawings, wherein:

in each instance, X is OH and Y is NH, or X and Y taken together are N;

each A has formula II or III, at least about 50% of the A moieties in said polymer having formula II; and

each R has formula IV, V or VI, at least about 5% of the R moieties in said polymer having formula VI.

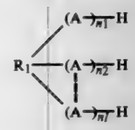
4,565,859

POLYETHER COMPOUNDS, EPOXY RESINS, EPOXY RESIN COMPOSITIONS, AND PROCESSES FOR PRODUCTION THEREOF

Takaaki Murai; Shoji Watanabe; Kimio Inoue, and Toyokazu Yagii, all of Hiroshima, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

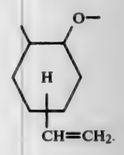
Filed Jan. 29, 1985, Ser. No. 696,239
Claims priority, application Japan, Jan. 30, 1984, 59-14859; Jan. 30, 1984, 59-14860; Feb. 16, 1984, 59-27693
Int. Cl.⁴ C08G *59/42*
U.S. Cl. 528—365 **15 Claims**

1. A polyether compound having ether groups and vinyl double bonds represented by formula (I)



(I)

wherein R_1 represents a residue of an organic compound having l active hydrogen atoms, n_1 through n_l each represents 0 or an integer of from 1 to 100, the sum of the integers represented by n_1 through n_l is from 1 to 100, and l represents an integer of from 1 to 100, and A represents



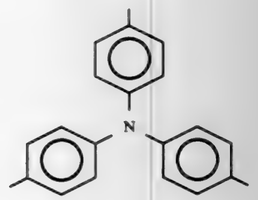
4,565,860

POLYMER OF TRIPHENYLAMINE

Yasuyuki Murofushi, Yokohama; Masazumi Ishikawa, Yokosuka, and Mikio Kawai, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 3, 1985, Ser. No. 719,461
Claims priority, application Japan, Apr. 9, 1984, 59-68986; Apr. 9, 1984, 59-68987; Jul. 18, 1984, 59-148868
Int. Cl.⁴ C08G *73/02*
U.S. Cl. 528—422 **7 Claims**

1. A polymer comprising structural units represented by the formula (I):



(I)

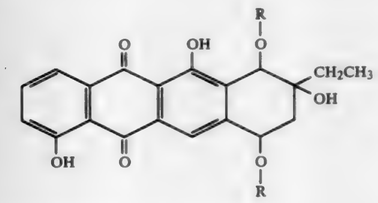
4,565,861

SERIRUBICUM

Hamao Umezawa; Tomio Takeuchi; Masa Hamada; Hiroshi Naganawa, all of Tokyo; Tsutomu Sawa, Ayase; Takeshi Uchida, Yokohama, and Masaya Imoto, Urawa, all of Japan, assignors to Microbial Chemistry Research Foundation, Tokyo, Japan

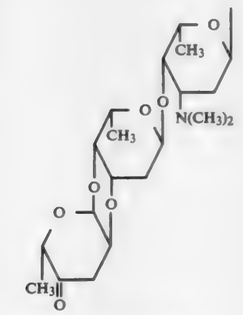
Filed Jan. 3, 1984, Ser. No. 567,792
Claims priority, application Japan, Feb. 8, 1983, 58-19341
The portion of the term of this patent subsequent to Oct. 29, 2002, has been disclaimed.
Int. Cl.⁴ C07H *15/24*
U.S. Cl. 536—6.4 **1 Claim**

1. An anthracycline compound, serirubicin, of the formula (I):



(I)

wherein R represents the substituent:



or an acid addition salt of the serirubicin.

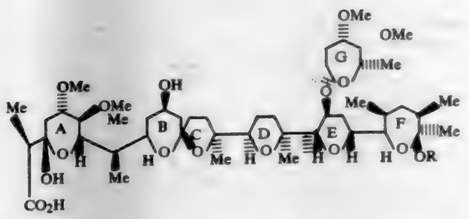
4,565,862

ETHERS OF ANTIBIOTIC X-14868A

Louise H. Foley, Durham, N.H.; Lilian H. Sello, and John Westley, both of Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 444,958, Nov. 29, 1982, abandoned. This application Oct. 24, 1983, Ser. No. 530,187
Int. Cl.⁴ C07H *17/04;* **A61K** *31/71*
U.S. Cl. 536—16.8 **8 Claims**

1. A compound of the formula:



wherein R is lower alkyl hydroxy and the pharmaceutically acceptable salts thereof.

4,565,863

RETINOID CARBOHYDRATES

Werner Bollag, Basel; Hans J. Mayer, Füllinsdorf, and Pierre-Charles Wyss, Muttenz, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

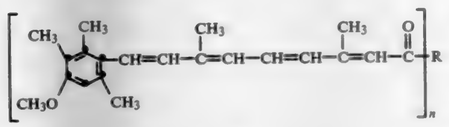
Filed Dec. 3, 1984, Ser. No. 677,441

Claims priority, application Switzerland, Dec. 8, 1983, 6570/83

Int. Cl.⁴ C07H *13/02*

U.S. Cl. 536—18.2 **23 Claims**

1. A retinoid of the formula:



wherein n is 1 or 2; R is XR_1; X is —O—, —NH— or $—NH(CH_2)_m—O—$; m is an integer of from 2 to 6; and R_1 is a residue obtained by removal of a hydroxy group from a member selected from the group consisting of a sugar, an aminosugar, a deoxyaminosugar, deoxysugar, loweralkyl glycosides thereof, derivatives thereof wherein one or more of the hydroxy or amino groups contained therein are acylated with a lower alkanoyl, derivatives thereof wherein at least two of the hydroxy groups contained therein are acetalized and derivatives thereof where the free $—CH_2OH$ group is oxidized to a —COOH group; with said sugars being mono- or di-saccharides of pentoses or hexoses.

4,565,864

SUBSTITUTED IMIDAZO[1,2-C]PYRIMIDINES

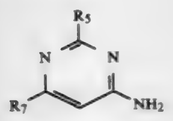
James J. Wade, Oakdale, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 500,410, Jun. 2, 1983, Pat. No. 4,503,050. This application Dec. 17, 1984, Ser. No. 682,663

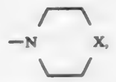
Int. Cl.⁴ C07D *417/04, 403/04*

U.S. Cl. 544—58.2 **2 Claims**

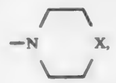
1. A compound of the formula



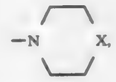
wherein R_5 is hydrogen, lower alkyl, phenyl or



wherein X is sulfur, sulfonyl, imido or N-alkylimido; and R_7 is halogen or



wherein X is sulfur, sulfonyl, imido or N-alkylimido; with the proviso that one and only one of R_5 and R_7 is



wherein X is as defined above.

4,565,865

PHOSPHOLIPID CARBAMATES

Motoo Hozumi, Omiya; Hiroaki Nomura, Takatsuki, and Yoshio Yoshioka, Kitakatsuragi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

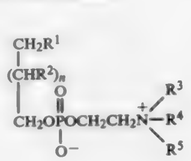
Division of Ser. No. 237,970, Feb. 25, 1981, Pat. No. 4,408,052. This application Jul. 14, 1983, Ser. No. 513,617

Claims priority, application Japan, Feb. 27, 1980, 55-24333; Oct. 14, 1980, 55-143980

Int. Cl.⁴ C07F *9/65, 9/10;* **C07C** *49/66*

U.S. Cl. 544—110 **14 Claims**

1. A compound of the formula



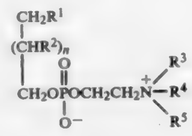
wherein n is 0 or 1;

R^1 represents —OCONHR⁶ in which R^6 is C_{8-26} alkyl, C_{8-26} alkenyl, C_{8-26} alkynyl, 15-(4-n-butylphenoxy)pentadecyl, ω-p-tolylheptadecyl or 9-(2,3-dimethoxy-5-methyl-1,4-benzoquinon-6-yl)nonyl;

R^2 represents —H or $—OCH_3$; and

R^3, R^4 and R^5 independently hydrogen or C_{1-3} alkyl, or a pharmaceutically acceptable salt thereof.

11. A compound of the formula

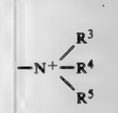


wherein

n is 0 or 1;

R^1 represents —OCONHR⁶ in which R^6 is C_{8-26} alkyl, C_{8-26} alkenyl, C_{8-26} alkynyl, 15-(4-n-butylphenoxy)-pentadecyl, ω-p-tolylheptadecyl or 9-(2,3-dimethoxy-5-methyl-1,4-benzoquinon-6-yl)nonyl;

R^2 represents —H or $—OCH_3$; and



represents oxazolio, N—C_{1-4} alkylpiperazinio or N—C_{1-4} alkylmorpholinio, or a pharmaceutically acceptable salt thereof.

4,565,866

METHOD FOR THE PREPARATION OF FORMAMIDES

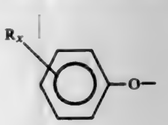
Roger G. Duranleau, Georgetown; John F. Knifton, and George P. Speranza, both of Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 24, 1984, Ser. No. 573,443

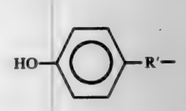
Int. Cl.⁴ C07C *102/00;* **C07D** *265/30, 241/04*

U.S. Cl. 544—176 **17 Claims**

1. In a process for the preparation of formamide and N-substituted formamides in which ammonia, a primary or a secondary amine is reacted with carbon monoxide at an elevated temperature and pressure, the improvement which comprises conducting said reaction in the presence of a mixture consisting of a phenol and a phenate salt from the group consisting of an alkali metal phenate and an alkaline earth metal phenate, said phenol and said phenate salt each having the radical:



wherein R is selected from the group consisting of an alkyl radical having from 3 to 18 carbon atoms and a hydroxyaryl radical having the formula:



in which R' is a alkylene radical having from 2 to 5 carbon atoms and in which x has a value of 1 to 2 when R is said alkyl radical and x has a value of 1 when R is said hydroxyaryl radical.

4,565,867

ANHYDROUS HIGH-PRESSURE MELAMINE SYNTHESIS

Roger E. Thomas, Baton Rouge, and David E. Best, Prairieville, both of La., assignors to Melamine Chemicals, Inc., Donaldsonville, La.

Continuation of Ser. No. 568,408, Jan. 5, 1984, abandoned. This application Jan. 9, 1985, Ser. No. 689,921

Int. Cl.⁴ C07D *251/60*

U.S. Cl. 544—201 **16 Claims**

1. A continuous process for producing melamine from urea comprising pyrolyzing urea in a reactor at a pressure at from about 1500 to 2500 psig and at a temperature at from about 670° to 800° F. to produce a reaction product containing liquid melamine, CO_2 and NH_3; transferring, under pressure, said reaction product as a mixed stream to a separator unit; maintaining said separator unit at substantially the same pressure and temperature as said reactor; separating said reaction product in said separator unit into CO_2 and NH_3 offgases containing melamine vapors and liquid melamine; simultaneously transferring

(a) said CO_2 and NH_3 offgases containing melamine at a temperature and pressure substantially the same as said temperature and pressure of said separator unit to a scrubber unit and scrubbing said off-gases with molten urea to preheat said urea and cool said offgases and remove therefrom said melamine, and thereafter removing NH_3 and CO_2 gases from said scrubber unit at a temperature of from about 350° to about 450° F. and feeding said preheated molten urea containing said melamine to said reactor, and

(b) said liquid melamine to a product cooling unit;

and depressurizing and quenching said liquid melamine with a liquid medium which will form a gas at the temperature of said liquid melamine in said product cooling unit to produce a commercially useful solid melamine product, without washing or further purification.

4,565,868

PROCESS FOR PREPARING GUANINE DERIVATIVES

Julien P. H. Verheyden, Los Altos, and John C. Martin, Redwood City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

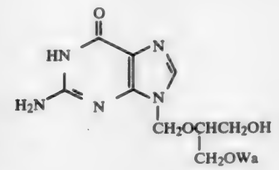
Continuation-in-part of Ser. No. 464,274, Feb. 7, 1983, which is a continuation-in-part of Ser. No. 431,933, Sep. 30, 1982. This application Sep. 29, 1983, Ser. No. 537,237

Int. Cl.⁴ C07D *473/18;* **A61K** *31/52*

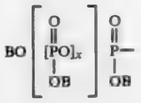
U.S. Cl. 544—276 **18 Claims**

1. A process for preparing a compound of the formula

(I)

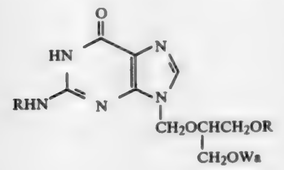


wherein Wa is



wherein each B is independently hydrogen or a pharmaceutically acceptable counterion, which process comprises contacting a solution of a compound of the formula

(XIV)



wherein R is benzoyl or a triphenylmethyl group and Wa is as defined above with an acid or a base for a time sufficient to form compound of formula (I).

4,565,869

DICARBAMATES

Marquard Imfeld, Oberwil; Henri Ramuz, Birsfelden; Peter Vogt, Aesch, all of Switzerland, and Jean-Claude Muller, Morsang-sur-Orge, France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

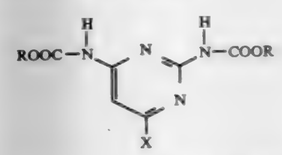
Filed Mar. 7, 1983, Ser. No. 472,696

Claims priority, application Switzerland, Mar. 16, 1982, 1639/82

Int. Cl.⁴ C07D *239/48*

U.S. Cl. 544—323 **4 Claims**

1. Dicarbamates of the formula



wherein R represents a member of the group consisting of lower alkyl and (lower alkyloxy)-(lower alkyl), and X represents a halogen atom or a sulfonic acid group.

4,565,870

PROCESS FOR THE PREPARATION OF A SALT OF 1-(γ-HALOPROPYL)-1,2,3,4-β-CARBOLINES

Rudolf Kropp, Limburgerhof, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

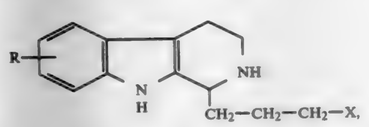
Filed Aug. 2, 1983, Ser. No. 519,508

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1982, 3229215

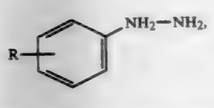
Int. Cl.⁴ C07D *471/04*

U.S. Cl. 546—85 **5 Claims**

1. A process for the preparation of a salt of a compound of the formula I



where R is hydrogen, halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, CF_3 and X is halogen which comprises: reacting a phenylhydrazine of the formula V



wherein R has the above meanings with a haloaldehyde of the formula III



where X is halogen at a temperature of from about 50° to 150° C., and thereafter isolating the salt of the compound I.

4,565,871

1-ALKYL-6-PYRROLIDINO-OCTAHYDROQUINOLINES

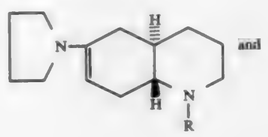
Cynthia L. Nicholas; Edmund C. Kornfeld, and John M. Schaus, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 535,518, Sep. 26, 1983, Pat. No. 4,507,478. This application Dec. 11, 1984, Ser. No. 679,730

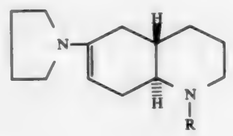
Int. Cl.⁴ C07D *401/04*

U.S. Cl. 546—165 **2 Claims**

1. A trans-(±) racemate composed of enantiomers of the formulas



and



wherein R is C_1–C_3 alkyl or allyl.

4,565,872

PROCESS FOR 8-CYANO-6,7-DIHYDRO-5-METHYL-1-OXO-1H,5H-BENZO[IJ]QUINOLIZINE-2-CARBOXYLIC ACIDS AND INTERMEDIATES THEREOF

Charles M. Leir, New Richmond, Wis., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Continuation of Ser. No. 386,196, Jun. 7, 1982, abandoned. This application Oct. 26, 1983, Ser. No. 545,595

Int. Cl.⁴ C07D *215/48*

U.S. Cl. 546—176 **2 Claims**

1. A compound selected from the group consisting of 5-cyanoquinaldine and 5-cyano-6-fluoroquinaldine.

4,565,873

SILANES CONTAINING IMIDE GROUPS

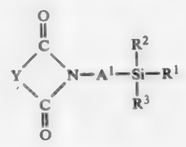
Dieter Lohmann, Muttenz, and Siegfried Wyler, Dornach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 419,386, Sep. 17, 1982, abandoned, which is a continuation of Ser. No. 216,220, Dec. 15, 1980, abandoned, which is a division of Ser. No. 67,864, Aug. 20, 1979, Pat. No. 4,271,074. This application Feb. 24, 1984, Ser. No. 583,453

Int. Cl.⁴ C07D *231/00*

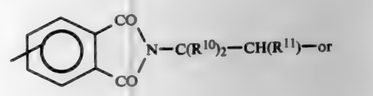
U.S. Cl. 548—110 **2 Claims**

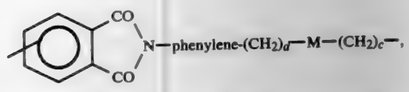
1. A compound of the formula XIX



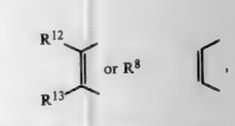
in which R^1 and R^2 independently of one another are methyl, ethyl, phenyl, vinyl, chlorine or a group —OR, R^3 is chlorine or —OR, R is alkyl having 1–10 C atoms, cycloalkyl having 5–8 C atoms or phenyl, A^1 is one of the divalent radicals $—(CH_2)_a—$, $—C(R^{10})_2—CH=C(R^{11})—$, $—C(R^{10})_2—CH(R^{1}$

1)—, $—(CH_2)_b—G—(CH_2)_c—$, phenylene—$(CH_2$-$)_d—G—(CH_2)_c—$, phenylene—$(CH_2)_d—$,

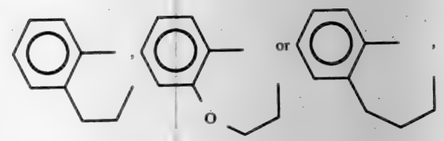




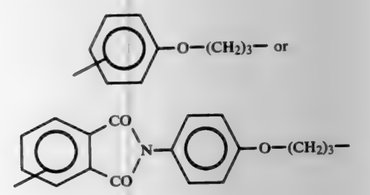
and in these divalent radicals A the bond to the Si atom is in each case effected via the bond on the right-hand side, R^{10} is hydrogen, methyl or ethyl, R^{11} is hydrogen or alkyl having 1 to 10 C atoms, a is a number from 1 to 10, b and c independently of one another are a number from 1 to 6, d is a number from 0 to 6, G is $—CH(R^{11})—$, —NH—, $—N(R^{11})—$, —O— or phenylene and M is —O—, —NH— or $—N(R^{11})—$, and in which Y is



R^{12} is hydrogen, methyl, phenyl, —CN or halogen, R^{13} is methyl, phenyl, —CN or halogen and R^8 is alkylene having 3 or 4 C atoms, which can be branched, or R^8 is one of the radicals



with the proviso that A^1 cannot be



if R^{12} and R^{13} are each methyl.

4,565,874

SYNTHESIS OF PARABACTIN AND HOMOLOGS THEREOF

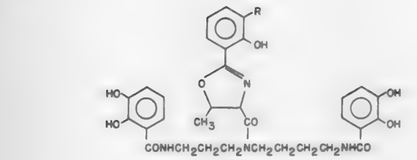
Raymond J. Bergeron, Jr., Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Filed Aug. 5, 1982, Ser. No. 405,693

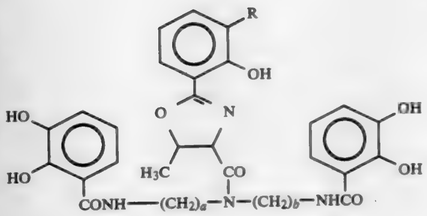
Int. Cl.⁴ C07D *233/24*

U.S. Cl. 548—239 **18 Claims**

1. A method for the preparation of a compound having the structural formula:



(I)



wherein R is H or OH,
a is 3 or 4, and
b is 3 or 4
comprising the sequential steps:

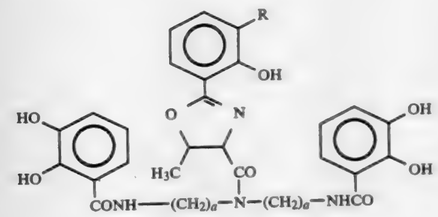
(a) reacting N,N-bis(2,3-dimethoxybenzoyl)-spermidine, -homospermidine or -norspermidine with N-Z-L-, D- or DL-threonine, wherein Z is a nitrogen protective group, to produce N′-(N-Z-L-, D- or DL-threonyl)-N,N-bis(2,3-dimethoxybenzoyl)-spermidine, -homospermidine or -norspermidine;

(b) removing said nitrogen protective group, Z, from said threonyl moiety to produce N′-(L-, D- or DL-threonyl)-N,N-bis(2,3-dimethoxybenzoyl)-spermidine, -homospermidine or -norspermidine;

(c) demethylating the ether product of step (b) to produce N′-(L-, D- or DL-threonyl)-N,N-bis(2,3-dihydroxybenzoyl)-spermidine, -homospermidine or -norspermidine;

(d) coupling the product of step (c) with 2-hydroxybenziminoethyl ether or 2,3-dihydroxybenziminoethyl ether to produce compound (I).

16. A compound having the structural formula:



wherein R is H or OH, and
a is 3 or 4.

4,565,875

IMIDAZOLE PLANT GROWTH REGULATORS

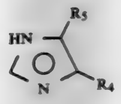
Patricia L. Cavender, Princeton Junction, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jun. 27, 1984, Ser. No. 625,056

Int. Cl.⁴ C07D *233/90*

U.S. Cl. 548—336 **21 Claims**

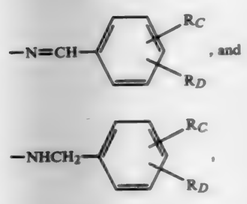
1. Plant growth regulating substituted imidazoles of the formula



wherein

R_4 is selected from the group consisting of —H, —lower alkyl, —CN, and —CONHZ; and

R_5 is selected from the group consisting of —$NZCOR_A$, —$CONZR_B$,

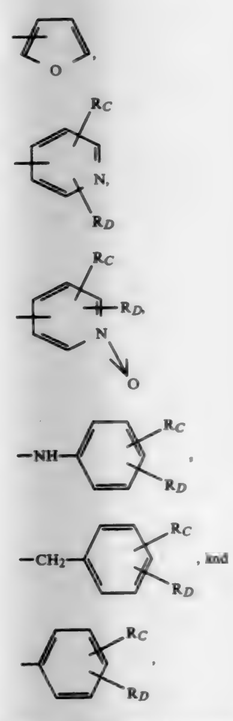


provided R_4 is —CN;

in which

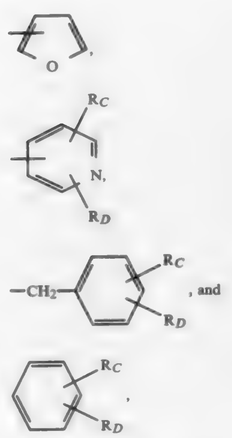
Z is selected from the group consisting of —H and —lower alkyl;

R_A is selected from the group consisting of —straight or branched (C_2–C_8) alkyl provided R_4 is other than —CONHZ,



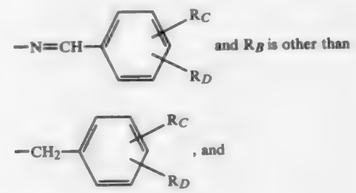
provided R_4, R_C and R_D are other than —H or —lower alkyl;

R_B is selected from the group consisting of —straight or branched alkyl, provided R_4 is other than —CN, —H or —lower alkyl,



provided R_4 is other than —H or —lower alkyl;

R_C is selected from the group consisting of —H provided R_5 is other than



and R_B is other than

and —halogen; and

R_D is selected from the group consisting of —H, —lower alkyl, —lower alkoxyl, —halogen, and —CF_3.

4,565,876

PROCESS

Alain Jouquey, Paris, and Peter F. Hunt, Gonesse, both of France, assignors to Roussel Uclaf, Paris, France

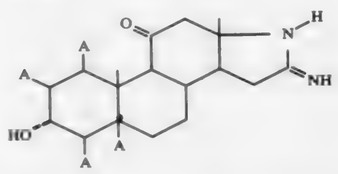
Filed May 21, 1984, Ser. No. 612,606

Claims priority, application France, Jun. 20, 1983, 83 10141

Int. Cl.⁴ C07D *209/56*

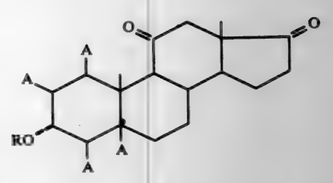
U.S. Cl. 548—426 **6 Claims**

1. A process for the preparation of a 16-imino-17-aza-steroid of the formula



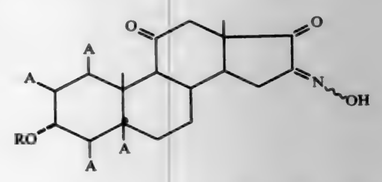
I

wherein A is selected from the group consisting of hydrogen and tritium comprises reacting a compound of the formula



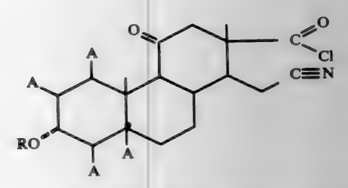
II

wherein A has the above definition and R is an acyl of an alkanoic acid of 1 to 8 carbon atoms with an alkyl nitrite to obtain a compound of the formula



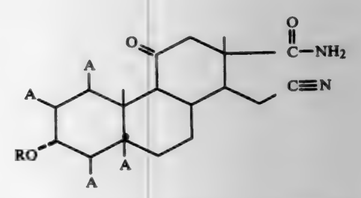
III

reacting the latter with a chlorinating agent to form an acid chloride to obtain a compound of the formula



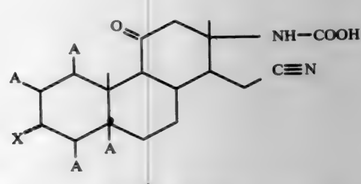
IV

reacting the latter with ammonia to obtain a compound of the formula



V

reacting the latter with an alkali metal hypohalite in the presence of a base to obtain a compound of the formula



VI

wherein A has the above definition and X is a halogen and reacting the latter with a base to obtain the desired compound of formula I.

4,565,877

NAPHTHALENE DERIVATIVES AND METHOD FOR PREPARATION THEREOF

Hiroshi Wada, Omiya; Kazuhiro Ishii, Nara; Nobuchika Tsumagari, Habikino; Masaaki Matsuo, Kyoto, and Mikio Matsumoto, Settsu, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

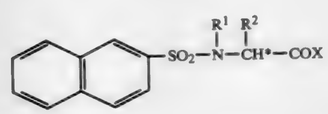
Filed Oct. 11, 1983, Ser. No. 540,414

Claims priority, application Japan, Oct. 21, 1982, 57-185884

Int. Cl.⁴ C07C *53/42;* **C07D** *205/04, 207/48, 211/96*

U.S. Cl. 548—530 **6 Claims**

1. An optically active naphthalene derivative of the formula:



[I]

wherein R^1 is hydrogen and R^2 is lower alkyl or phenyl-lower alkyl; or R^1 and R^2 are combined together to form alkylene of 2–4carbons; X is halogen; and the absolute configuration at the asymmetric carbon atom shown by the asterisk is either (S)- or (R)-configuration.

4,565,878

PROCESS FOR PRODUCING SUBSTITUTED PYRROLES

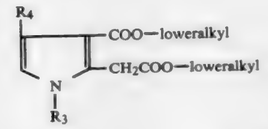
Michael J. Dagani, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 4, 1980, Ser. No. 137,231

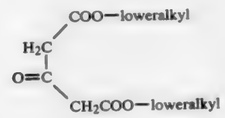
Int. Cl.⁴ C07D *207/34*

U.S. Cl. 548—531 **4 Claims**

1. In a process for the preparation of a loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonyl-pyrrole-2-acetate of the formula:

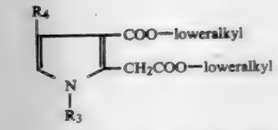


by reacting a mixture of a chloromethyl loweralkyl ketone of the formula: Cl—CH_2—CO—R_4, with a diloweralkyl acetone dicarboxylate of the formula:

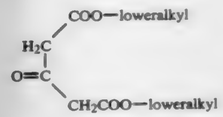


and an aqueous solution of a loweralkylamine of the formula: R_3NH_2, wherein the foregoing formulas said R_3 and said R_4 represent loweralkyl, the improvement comprising said reacting being carried out in the presence of an added water-immiscible co-solvent in which said diloweralkyl acetone dicarboxylate is soluble and which can extract said loweralkylamine from the aqueous phase at a rate so that the exothermic reaction is moderated and the product remains in solution, said added co-solvent being a chlorinated or brominated aliphatic or aromatic hydrocarbon compound having a boiling point from about 30 to about 200° C.

4. In a process for the preparation of a loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonyl-pyrrole-2-acetate of the formula:



by reacting a mixture of a chloromethyl loweralkyl ketone of the formula: Cl—CH_2—CO—R_4, with a diloweralkyl acetone dicarboxylate of the formula:



and an aqueous solution of a loweralkylamine of the formula: R_3NH_2, where in the foregoing formulas said R_3 and said R_4 represent loweralkyl, the improvement comprising said reacting being carried out in the presence of an added co-solvent which is a chlorinated or brominated aliphatic or aromatic hydrocarbon compound having a boiling point from about 30° to about 200° C.

4,565,879

PROCESS FOR PRODUCING SUBSTITUTED PYRROLES

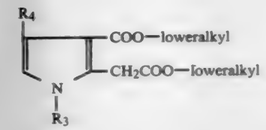
James T. F. Kao, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 4, 1980, Ser. No. 137,250

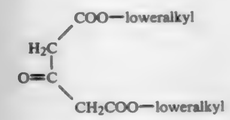
Int. Cl.⁴ C07D *207/34*

U.S. Cl. 548—531 **4 Claims**

1. In a process for the preparation of a loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonyl-pyrrole-2-acetate of the formula:

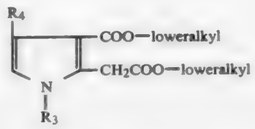


by reacting a mixture of a chloromethyl loweralkyl ketone of the formula: Cl—CH_2—CO—R_4, with a diloweralkyl acetone dicarboxylate of the formula:

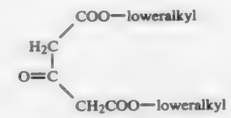


and an aqueous solution of a loweralkylamine of the formula: R_3NH_2, wherein the foregoing formulas said R_3 and said R_4 represent loweralkyl, the improvement comprising said reacting being carried out in the presence of an added co-solvent in which said diloweralkyl acetone dicarboxylate is soluble and which can extract said loweralkylamine from the aqueous phase at a rate so that the exothermic reaction is moderated and the product remains in solution, said co-solvent being an aromatic hydrocarbon compound having a boiling point in the range of from about 75° to 150° C.

4. In a process for the preparation of a loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonyl-pyrrole-2-acetate of the formula:



by reacting a mixture of a chloromethyl loweralkyl ketone of the formula: Cl—CH_2—CO—R_4, with a diloweralkyl acetone dicarboxylate of the formula:



and an aqueous solution of a loweralkylamine of the formula: R_3NH_2, where in the foregoing formulas said R_3 and said R_4 represent loweralkyl, the improvement comprising said reacting being carried out in the presence of an added co-solvent which is an aromatic hydrocarbon compound having a boiling point in the range of from about 75° to about 150° C.

4,565,880

MALEIC ANHYDRIDE PROCESS

Bruno J. Barone, Houston, and William G. Bowman, Dickinson, both of Tex., assignors to Denka Chemical Corporation, Houston, Tex.

Filed Jun. 29, 1983, Ser. No. 508,870

Int. Cl.⁴ C07D *307/60*

U.S. Cl. 549—256 **20 Claims**

1. In the process of producing maleic anhydride comprising:
(a) oxidizing a hydrocarbon which is a precursor of maleic anhydride to form a reactor effluent comprising maleic anhydride,
(b) scrubbing the reactor effluent with water to obtain a crude aqueous composition comprising maleic acid and up to 10 ppm of an alkali metal, and
(c) recovering maleic anhydride by fractionation of said crude aqueous composition wherein the improvement comprises having present in said aqueous composition, a combination of phosphoric acid in the range of 100 to 2000 ppm and in a ratio of at least 9 equivalent acid groups of phosphoric acid per atomic equivalent of alkali metal ion present and from 10 to 150 ppm phenothiazine, methyl-p-benzoquinone, or a mixture thereof whereby the loss of said maleic anhydride is reduced.

17. In the process of producing maleic anhydride comprising:
(a) oxidizing a hydrocarbon which is a precursor of maleic anhydride to form a reactor effluent comprising maleic anhydride,
(b) scrubbing the reactor effluent with water to obtain a crude aqueous composition comprising maleic acid and up to 5 ppm of an alkali metal, and
(c) recovering maleic anhydride by fractionation of said crude aqueous composition wherein the improvement comprises having present in said aqueous composition, phosphoric acid in the range of 100 to 2000 ppm and in a ratio of 15 to 156 equivalent acid groups of phosphoric acid per atomic equivalent of alkali metal ion present whereby the loss of said maleic anhydride is reduced.

4,565,881

LIQUID CRYSTAL SUBSTITUTED 1,3-DIOXANES AND MIXTURES CONTAINING THEM

Dietrich Demus; Horst Zaschke, both of Halle; Hans-Matthias Vorbrodt, Quedlinburg; Horst Kresse, and Wolfgang Weissflog, both of Halle, all of German Democratic Rep., assignors to Veb Werk für Fernsehdektronik im Veb Kombinat Mikroelektronik, Berlin, Fed. Rep. of Germany

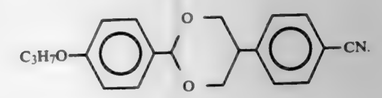
Continuation-in-part of Ser. No. 102,944, Dec. 12, 1979, Pat. No. 4,348,324. This application Aug. 6, 1982, Ser. No. 405,677

Claims priority, application German Democratic Rep., Dec. 13, 1978, 209708; Dec. 13, 1978, 209707

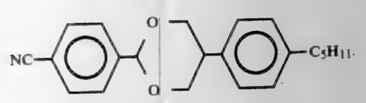
Int. Cl.⁴ C07D *319/06*

U.S. Cl. 549—373 **4 Claims**

1. The compound



2. The compound



4,565,882

SUBSTITUTED DIHYDROBENZOPYRAN-2-CARBOXYLATES

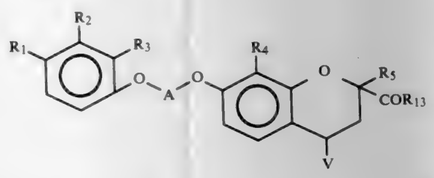
Masateru Miyano, Northbrook, and Robert L. Shone, Palatine, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jan. 6, 1984, Ser. No. 568,846

Int. Cl.⁴ C07D *311/04*

U.S. Cl. 549—399 **17 Claims**

1. Compounds of the formula:



wherein A is a methylene chain having 1 to 10 carbon atoms inclusive, optionally substituted by hydroxy;
wherein V is:
(a) hydrogen;
(b) hydroxy; or
(c) R_6CH_2O—;
wherein R_1 is:
(a) —COOH;
(b) —CHOHCH$_3$;
(c) —C_2H_5;
(d) -hydrogen; or
(e) —$CO_2C_2H_5$
wherein R_2 is:
(a) -hydrogen;
(b) —OH; or
(c) $R_{12}CH_2CO_2$—;
wherein R_3, R_4, R_6, R_7, R_8, R_9, R_{10}, R_{11} and R_{12} each of which may be the same or different, are:
(a) hydrogen;
(b) lower-alkyl having 1–6 carbon atoms inclusive; or
(c) allyl;
wherein R_5 is:
(a) hydrogen; or
(b) $R_7CH_2C(O)$—;
wherein R_{13} is hydrogen, hydroxy, alkoxy of 1 to 6 carbon atoms inclusive, or —OM wherein M is an alkali metal, alkyl of 1 to 6 carbon atoms, inclusive, or $NR_8{\oplus}R_9R_{10}R_{11}$, or $HNR_8{\oplus}R_9R_{10}$, or the pharmacologically acceptable addition salts thereof.

4,565,883

CYANOACRYLATE ADHESIVE COMPOSITION

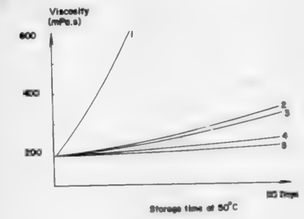
Heinz Sieger, Eppelheim, and Heinz Tomaschek, Heidelberg, both of Fed. Rep. of Germany, assignors to Teroson GmbH, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,725

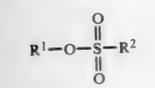
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239776

Int. Cl.⁴ C07D *307/12;* **C07C** *121/30, 121/46, 121/70*

U.S. Cl. 549—475 **9 Claims**



1. An alpha-cyanoacrylate composition containing as stabilizer a stabilizing amount of one or more sulfonic acid derivatives of the formula:



(I)

in which R^1 stands for a trimethylsilyl group $Si(CH_3)_3$, R^2 is a halogen atom, a straight or branched-chain alkyl group having 1 to 10 carbon atoms, a perfluoroalkyl group having 1 to 10 carbon atoms, a phenyl group or a tolyl group.

4,565,884

BIS-PLATINUM COMPLEXES AS ANTITUMOR AGENTS

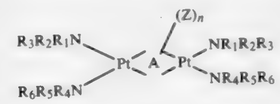
Peter J. Andrulis, Jr., Washington, D.C., and Paul Schwartz, Rockville, Md., assignors to Andrulis Research Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 493,177, May 10, 1983, abandoned. This application May 10, 1984, Ser. No. 608,743

Int. Cl.⁴ C07F *15/00*

U.S. Cl. 556—137 **20 Claims**

1. A bis-platinum complex having the formula



wherein A is a ligand having two pairs of platinum-coordinating acidic groups which are each independently a carboxylate, phenolate, sulfonate or phosphonate group, each said pair being capable of coordinating with a platinum ion to form a 5–10 membered chelate ring; Z is a water-solubilizing group; n is 0 or a positive integer, with the proviso that n is 0 only when at least one of said platinum-coordinating acidic groups is

sulfonate or phosphonate, or when at least one platinum ion is a Pt(IV) ion; and R_1, R_2, R_3, R_4, R_5 and R_6 are each independently H or a C_{1-20} alkyl, aryl, aralkyl or alkaryl group, or together form one or more C_{1-30} alkylene, cycloalkylene, arylene, aralkylene or alkarylene groups;
or a pharmaceutically acceptable salt thereof.

4,565,885

METHOD FOR PREPARING OLEFINIC SILAZANES

Jimmy L. Webb, Ballston Lake, and Cathryn E. Olsen, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 12, 1985, Ser. No. 743,836
Int. Cl.⁴ C07F *7/10*
U.S. Cl. 556—410 **14 Claims**

1. A method for preparing a composition comprising an olefinic silazane of formula I in the drawings, wherein R^1 and each R^2 is independently a C_{1-4} primary or secondary alkyl radical, phenyl or substituted phenyl and m is from 1 to about 20, which comprises reacting an olefinic amine of formula II with a silazane of formula III, wherein R^3 is hydrogen or methyl and n is 1 or 2, with removal of the highly volatile amino compound $(R^3)_{3-n}NH_n$.

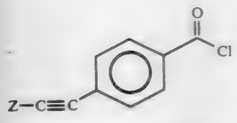
4,565,886

ETHYNYL AND SUBSTITUTED ETHYNYL-TERMINATED POLYSULFONES

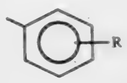
Paul M. Hergenrother, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 433,598, Oct. 8, 1982, Pat. No. 4,431,761. This application Aug. 30, 1983, Ser. No. 527,914
Int. Cl.⁴ C07F *7/08, 7/18*; C07C *13/00, 15/00*
U.S. Cl. 556—436 **2 Claims**

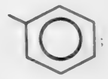
1. A process for preparing the substituted 4-ethynylbenzoyl chloride of the formula



where Z is selected from the group consisting of $Si(CH_3)_3$; H; straight or branched alkyl groups having from 1 to 10 carbon atoms; substituted aromatic groups of the formula



where R is selected from the group including straight or branched alkyl groups having from 1 to 12 carbon atoms, H, and



and halogenated derivatives of all of the above, comprising the steps of:
stirring, a catalytic amount of dichlorobis(triphenbylphosphine)palladium, and at least a stoichiometric amount of a substituted acetylene in an organic base under an inert atmosphere at 70°–74° C. for five to seven hours,
precipitating the substituted 4-ethynylbenzoic acid with cold dilute aqueous acid (10°–20° C.), and purifying the precipitate by recrystallization from toluene,
stirring the precipitate in thionyl chloride with a small amount of N,N-dimethylformamide added at ambient temperature for 8–20 hours, and
concentrating the solution to dryness at temperatures <40° C. in vacuo to yield the substituted 4-ethynylbenzoyl chloride which may be purified by recrystallization from n-hexane or by sublimation.

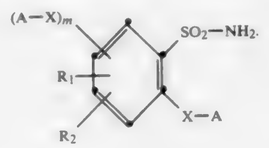
4,565,887

N-PHENYLSULFONAMIDES

Werner Föry, Basel; Karl Gass, Magden; Willy Meyer, Riehen, and Rolf Schurter, Binningen, all of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

Division of Ser. No. 396,959, Jul. 9, 1982, Pat. No. 4,443,243. This application Jan. 19, 1984, Ser. No. 571,986
Claims priority, application Switzerland, Jul. 16, 1981, 4667/81
Int. Cl.⁴ C07C *143/78, 149/447*
U.S. Cl. 564—85 **10 Claims**

1. A phenylsulfonamide of the formula II



wherein
A is a C_3–C_6 alkynyl group,
X is oxygen, sulfur or a sulfinyl or sulfonyl bridge,
m is the number zero or one,
R_1 is hydrogen, halogen, C_1–C_5-alkyl or C_2–C_5-alkenyl or a group —Y—R_5,
R_2 is hydrogen, halogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or C_1–C_4-haloalkyl, or a group —Y—R_5, —$COOR_6$, —NO_2 or —CO—NR_7—R_8,
R_5 and R_6 are each C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl,
R_7 and R_8 are each hydrogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl, and
Y is oxygen, sulfur or a sulfinyl or sulfonyl bridge.

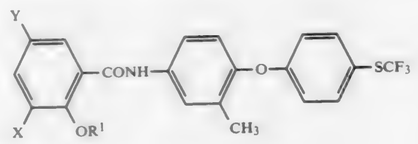
4,565,888

SUBSTITUTED SALICYLIC ACID AMIDE ANTHELMINTICS

Peter Andrews, Wuppertal; Horst Böshagen, and Heinrich Kölling, both of Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 11, 1985, Ser. No. 691,032
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1984, 3401950
Int. Cl.⁴ C07C *103/76*
U.S. Cl. 564—179 **5 Claims**

1. A substituted salicylic acid amide of the formula



in which
X and Y each independently is halogen, and,

R^1 is hydrogen or acetyl.

4,565,889

PROCESS FOR THE PRODUCTION OF N-(3-DIMETHYLAMINOPROPYL)METHACRYLAMIDE

David R. Livingston; Edward E. McEntire, and Edward C. Nieh, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 12, 1984, Ser. No. 588,826
Int. Cl.⁴ C07C *102/00*
U.S. Cl. 564—205 **4 Claims**

1. In a method wherein N-(3-dimethylaminopropyl)-3-dimethylaminopropyl-2-methylpropionamide is pyrolyzed to provide a reaction product comprising a dimethylaminopropylmethacrylamide (DMAPMA) product, a dimethylaminopropylamine (DMAPA) recycle and a N-(3-dimethylaminopropyl)-3-dimethylaminopropyl-2-methylpropionamide recycle,
the improvement for obtaining a reaction product containing a reduced percentage of impurities boiling between DMAPA and DMAPMA which comprises conducting said pyrolysis reaction in a continuous tubular reactor at a temperature within the range of about 180° to about 300° C., a pressure of about 50 to about 150 psig., an average residence time from about 1 to about 6 hours and thereafter separating the continuous tubular reactor product containing a reduced percentage of said impurities in a fractionation zone into a purified dimethylaminopropylmethacrylamide product fraction, a dimethylaminopropylamine recycle fraction and a substituted propionamide recycle fraction.

4,565,890

PROCESS FOR THE PREPARATION OF N-ACETYL-P-AMINOPHENOL

Sharad S. Sathe, Manchester, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Oct. 27, 1983, Ser. No. 546,051
Int. Cl.⁴ C07C *103/127*
U.S. Cl. 564—216 **27 Claims**

1. In a process for the preparation of N-acetyl-p-aminophenol which comprises acetylation of p-aminophenol in an aqueous medium to produce a crude aqueous reaction mixture, recovery of the N-acetyl-p-aminophenol product by crystallization from an aqueous system comprising the reaction mixture, and separation of the crystals from the crude mother liquor, said mother liquor containing residual N-acetyl-p-aminophenol and unreacted acetic acid, the improvement comprising recovering residual N-acetyl-p-aminophenol and acetic acid from the crude mother liquor by liquid-liquid extraction with a water immiscible organic solvent, thereby producing an extract containing N-acetyl-p-aminophenol and acetic acid; and
distilling said extract to strip off said solvent and acetic acid.

27. In a process for the preparation of N-acetyl-p-aminophenol which comprises acetylation of p-aminophenol in an aqueous medium to produce a crude aqueous reaction mixture, recovery of the N-acetyl-p-aminophenol product by crystallization from an aqueous system comprising the reaction mixture, and separation of the crystals from the crude mother liquor, said mother liquor containing residual N-acetyl-p-aminophenol and unreacted acetic acid, the improvement comprising recovering residual N-acetyl-p-aminophenol and acetic acid from the crude mother liquid by liquid/liquid extraction with a water immiscible organic solvent, thereby producing an extract containing N-acetyl-p-aminophenol and acetic acid.

4,565,891

OXIDATION OF TERTIARY AMINES USING OCTACYANOMOLYBDATE OR IRON (III) SALTS AS CATALYSTS

Paul E. Correa, Cincinnati, Ohio, and Dennis P. Riley, Chesterfield, Mo., assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Jul. 19, 1984, Ser. No. 632,774
Int. Cl.⁴ C07C *135/02*
U.S. Cl. 564—298 **28 Claims**

1. A process for the catalytic oxidation of a nonaromatic tertiary amine to the respective amine oxide, which comprises the steps of:
(a) providing an aqueous solvent system containing a nonaromatic tertiary amine, the aqueous solvent system having an initial pH about equal to or greater than the pKa of the tertiary amine; and
(b) contacting the aqueous solvent system with molecular oxygen in the presence of a catalytic amount of a catalyst selected from the group consisting of: (1) octacyanomolybdate salts having the formula (I):

$$(M^+)_{4-n}(Mo^{(n+4)+})(CN^-)_8 \qquad \text{I}$$

wherein M is a compatible cationic group; and n is 0 or 1; and (2) iron (III) salts having the formula (II):

$$[(Fe^{3+})(A)_3](A^-)_3 \qquad \text{II}$$

wherein A is chelating bipyridyl group and A^- is a noncoordinating anionic group, to oxidize the tertiary amine to the respective amine oxide.

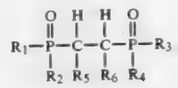
4,565,892

PROCESS FOR THE PREPARATION OF BISPHOSPHINE DIOXIDES

Richard L. Wife; Aart B. van Oort; Petrus W. N. M. van Leeuwen, and Johannes A. van Doorn, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 19, 1983, Ser. No. 562,620
Claims priority, application United Kingdom, Dec. 20, 1982, 8236147
Int. Cl.⁴ C07F *9/53*
U.S. Cl. 568—14 **11 Claims**

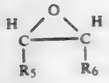
1. A process for the preparation of a bisphosphine dioxide of the formula:



in which R_1, R_2 and R_4 being the same or different and R_3 being different than R_1 and R_2, represent alkyl- aryl- alkaryl-, alkoxyaryl- or aralkyl groups containing up to about 10 carbon atoms, or an alkylene group containing up to about 8 carbon atoms is formed by R_1 and R_2 and/or R_3 and R_4 respectively, R_5 represents H, R_6 represents H or an alkyl-, aryl-, alkaryl or aralkyl group containing up to about 8 carbon atoms, or R_5 and R_6 form an alkylene group containing up to about 6 carbon atoms, by contacting in a first stage one mole of a phosphine oxide with formula



in a solvent having less polarity than the solvent in subsequent second stage with one mole of oxirane with formula



and contacting the reaction product obtained in a second stage in a solvent having more polarity than the solvent in the first stage with one mole of a phosphine oxide with formula



and producing said bisphosphine dioxide.

4,565,893

PROCESS OF SYNTHESIS OF MERCAPTANS FROM OLEFINS AND HYDROGEN SULPHIDE BY HETEROGENEOUS CATALYSIS

Emmanuel Arretz, Pau; Alfred Mirassou, Lescar; Claude Landoussy, and Patrick Augé, both of Pau, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Aug. 4, 1983, Ser. No. 520,201

Claims priority, application France, Aug. 5, 1982, 82 13689

Int. Cl.⁴ C07D *221/18*

U.S. Cl. 568—72 **15 Claims**

1. Process for the synthesis of a mercaptan from an olefin, by the action of hydrogen sulphide thereon, in the presence of a catalyst comprising a polymer or copolymer cation exchange resin selected from the group consisting of cross-linked sulfonated polystyrene, acrylic and phenylacrylic resin having free carboxyl groups, phenolsulfonic acid-formaldehyde resin, lignosulfonic resin and copolymer of tetrafluoroethylene and perfluorosulfonic acid, characterized in that the resin is dry containing not more than 0.5% water determinable by drying at 80° for six hours and that the reaction is carried out at a temperature ranging between 45° and 75° C.

4,565,894

PREPARATION OF IONONES

Otto Hertel, Ludwigshafen; Hans Kiefer, Wachenheim, and Lothar Arnold, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,890

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 3328440

Int. Cl.⁴ C07C *49/21*

U.S. Cl. 568—349 **10 Claims**

1. A process for the continuous preparation of ionones by cyclization of pseudoionone with concentrated sulfuric acid in the presence of an organic solvent or diluent, while cooling, and by dilution of the reaction mixture with water, wherein the pseudoionone is combined with an aliphatic or cycloaliphatic hydrocarbon which boils at 25°–65° C. under the reaction conditions, or an aliphatic chlorohydrocarbon, and the sulfuric acid, with thorough mixing and evaporative cooling by partial or complete vaporization of the solvent present in the reaction mixture, combination being effected so that the temperature of the reaction mixture is from 25° to 65° C. and the residence time of this mixture before it is diluted with water is from 0.05 to 20 seconds.

4,565,895

PROCESS FOR THE PREPARATION OF 4-HYDROXY-2,4,6-TRIMETHYL-2,5-CYCLOHEXADIENONE

Michel Costantini, Lyons; Francoise Igersheim, Villeurbanne, and Léon Krumenacker, Serezin du Rhone, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Sep. 21, 1984, Ser. No. 652,919

Claims priority, application France, Sep. 22, 1983, 83 15071

Int. Cl.⁴ C07C *45/29*

U.S. Cl. 568—362 **9 Claims**

1. A process for the preparation of 4-hydroxy-2,4,6-trimethyl-2,5-cyclohexadienone, which comprises oxidising 2,4,6-trimethylphenol with a manganese derivative of valency greater than 2 in an aqueous acidic medium, and isolating the product obtained.

4,565,896

PROCESS FOR LOW PRESSURE SYNTHESIS OF ETHYLENE GLYCOL FROM SYNTHESIS GAS

John F. Knifton, Austin, and Roger G. Duranleau, Georgetown, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 22, 1984, Ser. No. 663,284

Int. Cl.⁴ C07C *29/00, 31/20*

U.S. Cl. 568—852 **15 Claims**

1. A low pressure process for making ethylene glycol comprising reacting synthesis gas, a mixture of carbon monoxide and hydrogen, plus formaldehyde or paraformaldehyde in the presence of a catalyst containing an effective amount of cobalt-containing compound, a a halogen-free silicon-containing promoter containing at least one silicon-carbon bond per molecule, and a solvent selected from the group consisting of an aromatic hydrocarbon solvent, a halogenated aromatic-containing solvent and a solvent containing both the halogen and ether functions, at a temperature of at least 50° C. and a pressure of at least 500 psig, wherein the majority of said ethylene glycol product separates as a separate liquid phase from the cobalt catalyst-rich solvent phase.

4,565,897

PRODUCTION OF AROMATIC HYDROCARBONS

Brian R. Gane, Ottershaw, and Antony H. P. Hall, Cobham, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Dec. 13, 1984, Ser. No. 681,010

Claims priority, application United Kingdom, Dec. 24, 1983, 8334486

Int. Cl.⁴ C07C *2/84*

U.S. Cl. 585—415 **11 Claims**

1. A process for producing aromatic hydrocarbons comprising bringing into contact at a temperature below 580° C. a mixed hydrocarbon feedstock containing at least 50% w/w of C_3 and/or C_4 hydrocarbons and from 10 to 50% w/w of ethane with a catalyst composition comprising an aluminosilicate in which the molar ratio of silica to alumina is at least 5:1.

4,565,898

DEHYDROGENATION OF DEHYDROGENATABLE HYDROCARBONS

Mark J. O'Hara; Tamotsu Imai, both of Mount Prospect; Jeffery C. Bricker, Des Plaines, and David E. Mackowiak, Mount Prospect, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Mar. 6, 1985, Ser. No. 708,832

Int. Cl.⁴ C07C *5/333*

U.S. Cl. 585—441 **20 Claims**

1. In a process for the dehydrogenation of dehydrogenatable hydrocarbon with separate and intermediate selective oxidation of hydrogen which comprises:

(a) contacting said hydrocarbon with a dehydrogenation catalyst comprising an alkaline metal-promoted iron compound in a first-reaction dehydrogenation zone in the presence of steam at dehydrogenation conditions to produce a first-reaction dehydrogenation zone effluent stream comprising a mixture of unconverted hydrocarbons, dehydrogenated hydrocarbons, hydrogen and steam;

(b) removing said first-reaction dehydrogenation zone effluent from said first-reaction dehydrogenation zone;

(c) passing said removed first-reaction dehydrogenation zone effluent of step (b) to a second-reaction oxidation zone, which is separate and discrete from said first-reaction dehydrogenation zone;

(d) contacting said first-reaction dehydrogenation zone effluent in said second-reaction oxidation zone with an oxygen-containing gas to selectively oxidize said hydrogen within said first-reaction zone effluent to the substantial exclusion of oxidation of said unconverted and dehydrogenated hydrocarbons in the presence of an oxidation catalyst consisting essentially of a Group VIII noble metal, a Group IVA metal, and a Group IA or IIA metal composited on an alumina support at oxidation conditions wherein said exothermic selective oxidation of said hydrogen provides additional heat and thereby raises the temperature of said unconverted and dehydrogenated hydrocarbons;

(e) withdrawing said unconverted and dehydrogenated hydrocarbons from said second-reaction oxidation zone having an increased temperature with respect to the temperature of said first-reaction dehydrogenation zone effluent;

(f) passing said removed second-reaction oxidation zone product stream of step (e) to a third-reaction dehydrogenation zone containing a dehydrogenation catalyst comprising an alkaline metal-promoted iron compound at dehydrogenation conditions to produce dehydrogenated hydrocarbons; and

(g) withdrawing and recovering said dehydrogenated hydrocarbons, the improvement which comprises calcining said alumina support of said oxidation catalyst used in step (d) at a temperature in the range of from about 900° to about 1500° C. prior to impregnation thereon of all of the metallic portions of said oxidation catalyst.

4,565,899

IRON OXIDE CATALYSTS CONTAINING COPPER AND ZINC COMPOUNDS AND PROCESS FOR PARA-ETHYLTOLUENE DEHYDROGENATION

George T. Burress, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 14, 1984, Ser. No. 681,968

Int. Cl.⁴ C07C *2/66, 4/12, 5/32, 5/327*

U.S. Cl. 585—445 **7 Claims**

1. A process for the dehydrogenation of para-ethyltoluene to selectively form para-methylstyrene, said process comprising contacting para-ethyltoluene under dehydrogenation reaction conditions with a catalyst composition comprising:

a. from about 30% to 60% by weight of iron oxide, calculated as ferric oxide;

b. from about 13% to 48% by weight of potassium compound, calculated as potassium oxide;

c. from about 0% to about 5% of chromium compound, calculated as chromic oxide;

d. from about 1% to 10% by weight of copper chromite; and

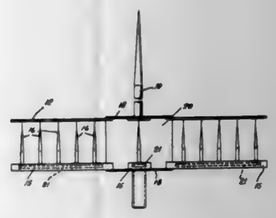
e. from 1% to 10% by weight of zinc ferrate.

4,565,900

LIGHTNING ROD CONSTRUCTION

Angel I. Arnau, Terrassa, Cardoner, 4 Barcelona, Spain

Filed Sep. 14, 1984, Ser. No. 650,726
Claims priority, application Spain, Sep. 19, 1983, 526264
Int. Cl.⁴ H02G *13/00*
U.S. Cl. 174—3 **4 Claims**



1. A lightning rod structure comprising a steel rod for electrical connection to the ground, the rod extending upwardly from a central hub, the structure further including an accelerator comprising plural metallic deflector arms extending radially from the hub, each arm having a series of holes therethrough and being electrically connected to the rod, further arms of dielectric material radially extending from the hub below the respective deflector arms, the further arms supporting upright exciter needles centered substantially on the respective holes in the deflector arms.

4,565,901

GAS-INSULATED ELECTRIC DEVICE

Koichi Hirooka, Osaka; Setsuyuki Matsuda, and Yoshikuni Arahata, both of Kobe, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1984, Ser. No. 618,823
Claims priority, application Japan, Jun. 14, 1983, 58-108177
Int. Cl.⁴ H01B *3/16*
U.S. Cl. 174—17 GF **1 Claim**

1. A gas-insulated electric device comprising an electric conductor disposed in a sealed vessel filled with an insulating gas, said conductor being supported by a solid insulating member, wherein the insulating gas is a mixture comprising 10–60 mole % of C_2F_5CN and 40–90 mole % of SF_6.

4,565,902

TELEPHONE CARE SYSTEM WITH SUPPLEMENTARY ALARM MESSAGE

Patrick G. Phillipps, Lincoln, Mass., assignor to Lifeline Systems, Inc., Watertown, Mass.

Filed Nov. 21, 1983, Ser. No. 553,749
Int. Cl.⁴ H04M *11/04*
U.S. Cl. 179—5 R **10 Claims**

1. A system for communication by telephone wires of information concerning the circumstances of a subscriber, the system comprising:

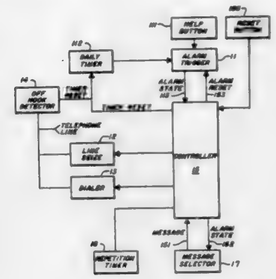
(a) line-seizing means for connecting a communicator output to the telephone wires;

(b) dialing means for dialing a telephone number over the communicator output;

(c) alarm means, for, in the event of a specified occurrence, entering an alarm state;

(d) message selection means, for selecting a message from a plurality of predetermined messages, at least one criterion for selection being whether a message was previously sent without the alarm state of the alarm means thereafter having been terminated, so that a first message is selected when the system first enters an alarm state, and a second, supplementary message is selected at a specified time interval thereafter during a continuing alarm state; and

(e) control means, activated by the alarm means and further connected to the line-seizing means, the dialing means, and the message selection means, for (i) activating the line-seizing means and the dialing means, (ii) sending a



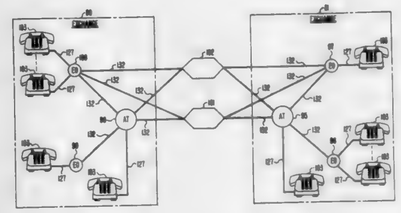
message selected by the message selection means, and (iii) causing the alarm state of the alarm means to be terminated on receipt of a reset signal.

4,565,903

TELEPHONE INTEREXCHANGE CARRIER SELECTION

Douglas H. Riley, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1983, Ser. No. 519,851
Int. Cl.⁴ H04M *3/42*
U.S. Cl. 179—18 B **38 Claims**



1. A method of selecting a carrier for a telephone call being made over an originating terminal link, comprising the steps of:

examining signals associated with the call and received over the originating terminal link to determine whether they include signals other than call destination-identifying signals that identify a particular one of a plurality of carriers to carry the call;

examining contents of a memory associated with the terminal link to determine whether they identify a carrier predesignated to carry calls made over the originating terminal link, when the signals received over the terminal link are determined not to include the signals that identify a carrier to carry the call; and

connecting the call to the identified carrier when a carrier is determined to be identified by either the received signals or the memory contents.

4,565,904

REMOVAL HANDLE FOR IN-THE-EAR HEARING AIDS

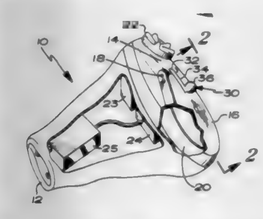
Mas Harada, Minneapolis, Minn., assignor to Qualitone Hearing Aids, Division of XCor Corp., Minneapolis, Minn.

Filed Oct. 9, 1984, Ser. No. 658,562
Int. Cl.⁴ H04K *25/02*
U.S. Cl. 179—107 E **5 Claims**

1. An in-the-ear hearing aid device having means for receiving and amplifying sound external to an ear; said device includ-

ing a proximal receiver end portion which is positionable within an ear canal adjacent an eardrum and a distal faceplate portion facing the outside of an ear when said device is positioned therewithin; the improvement comprising:

(a) handle means for aiding removal of said device from an ear, said handle means including an elongated handle member attached to an exterior surface of said faceplate



portion, said handle member being hingedly attached at one end to said portion such that movement of said handle member about said hinge causes an opposite end of said handle member to move toward or away from said faceplate; and

(b) said faceplate includes a battery door, hingedly mounted thereto by a hinge pin, said handle member being hingedly mounted to said faceplate through the same said hinge pin.

4,565,905

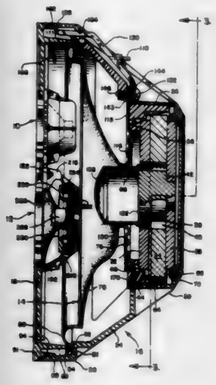
LOUDSPEAKER CONSTRUCTION

Melvin S. Nation, Elmhurst, Ill., assignor to International Jensen Incoporated, Schiller Park, Ill.

Continuation-in-part of Ser. No. 372,744, Apr. 28, 1982, Pat. No. 4,465,905. This application May 9, 1984, Ser. No. 608,385

Int. Cl.⁴ H04R *9/00, 9/04, 9/06*

U.S. Cl. 179—115.5 PC **36 Claims**



1. In a loudspeaker of the type comprising a frame, a diaphragm, and a spider secured to the diaphragm, the improvement comprising:

a first mounting member, secured to the frame and located at a perimeter region of the spider;

a second mounting member held in place with respect to the frame and located to clamp the perimeter region of the spider between the first and second mounting members in order to locate the spider and hold it in place with respect to the frame mechanically;

one of the mounting members comprising a ridge and the other of the mounting members defining a mating groove positioned such that the ridge forces the perimeter region of the spider into the groove to enhance the clamping action of the mounting members.

4,565,906

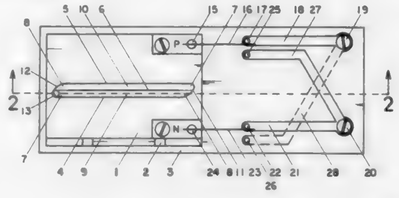
RECIPROCATING REVERSE-CIRCUIT SWITCH

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Jan. 30, 1985, Ser. No. 696,551

Int. Cl.⁴ H01H *9/00*

U.S. Cl. 200—1 V **1 Claim**



1. A reciprocating reverse-circuit switch comprising in general a reciprocating plastic block (**1**) with positive and negative terminal posts, terminal arms and connectors which serve as means of reversing a direct current through an electromagnetic device, and comprising in particular;

a reciprocating plastic block (**1**) mounted on horizontal transverse tracks (**2**) in a plastic housing (**3**) so as to reciprocate thereon in a transverse direction perpendicular to the longitudinal centerline of the block,

said reciprocating plastic block (**1**) having two adjacent parallel grooves (**4,5**) located on opposite sides of a vertical plate (**6**) embedded in and occupying the longitudinal centerline of the block,

a reciprocating pin (**13**) mounted to the housing of an electromagnetic device, engaging one of two grooves (**4,5**), and reciprocating in a direction parallel to the longitudinal centerline of the block as means of actuating transverse reciprocating motion in the block,

said grooves (**4,5**) having bottoms which are inclined upward in opposite directions from a low end (**7**) to a high end (**8**) so as to form ramps (**9,10**) which confine reciprocating pin (**13**) to one of said grooves (**4,5**) by controlling the elevation of reciprocating pin (**13**) in the respective groove,

one of said grooves (**4**) having a curve (**11**) in the outer wall at one end of the groove, said curve (**11**) deflecting said reciprocating plastic block (**1**) in a transverse direction by engaging reciprocating pin (**13**) at the end of a stroke, said deflection forcing reciprocating pin (**13**) from the high end (**8**) of one of said grooves (**4**) into the low end (**7**) of the other of said grooves (**5**),

the other of said grooves (**5**) having a curve (**12**) in the outer wall at one end of the groove, said curve (**12**) deflecting said reciprocating plastic block (**1**) in a transverse direction by engaging reciprocating pin (**13**) at the end of a stroke, said deflection forcing reciprocating pin (**13**) from the high end (**8**) of the other of said grooves (**5**) into the low end (**7**) of one of said grooves (**4**),

said reciprocating plastic block (**1**) having a positive (P) main terminal post (**15**) and a terminal arm (**16**) communicating with a parallel post (**17**) as means of conducting a direct current through parallel connector (**18**) and terminal (**19**) to the electromagnetic device, and having a negative (N) main terminal post (**24**) and terminal arm (**23**) communicating with parallel post (**22**) as means of conducting a direct current through parallel conductor (**21**) and terminal (**20**) to the electromagnetic device,

a reciprocating plastic block (**1**) having a positive (P) main terminal post (**15**) and a terminal arm (**16**) communicating with a cross post (**25**) as means of conducting a direct current through cross conductor (**27**) and terminal (**20**) to the electromagnetic device, and having a negative (N) main terminal post (**24**) and a terminal arm (**23**) communicating with cross post (**26**) as means of conducting a direct current through cross conductor (**28**) and terminal (**19**) to the electromagnetic device.

4,565,907

IGNITION DISTRIBUTOR FOR INTERNAL COMBUSTION ENGINE

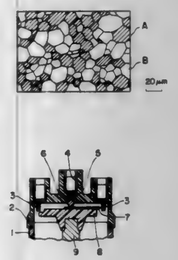
Ken Takahashi, Ibaraki; Ryutarou Jimbou, Hitachiota; Yasuo Matsushita, Hitachi; Seiichi Yamada, and Tetuo Kosugi, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 25, 1984, Ser. No. 634,470

Claims priority, application Japan, Jul. 27, 1983, 58-138102

Int. Cl.⁴ H01H *19/00*

U.S. Cl. 200—19 DR **5 Claims**



1. An ignition distributor for an internal combustion engine, which comprises a rotor electrode capable of rotary motion and a plurality of stationary electrodes arranged substantially in a circle around the rotor electrode through an electric discharge clearance therebetween, the rotor electrode being a sintered mixture comprising silicon carbide and one of the aluminum compounds aluminum oxide or aluminum nitride and/or one of the boron compounds boron nitride or boron carbide, said sintered mixture having a specific resistance of 10 to 10^6 Ωcm at room temperature.

4,565,908

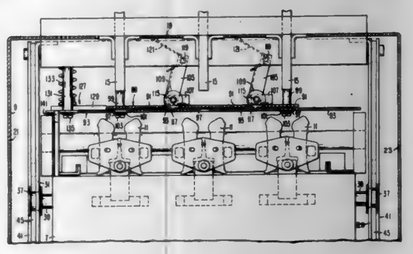
DRAWOUT SWITCHGEAR APPARATUS WITH RETRACTABLE SHUTTER MECHANISM FOR TERMINAL STABS

Fred Bould, Edgewood Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 12, 1984, Ser. No. 680,691

Int. Cl.⁴ H02B *1/04*

U.S. Cl. 200—50 AA **2 Claims**



1. Switchgear apparatus comprising:

a cell;

a plurality of spaced fixed terminal stabs in the cell;

a switchgear unit removably disposed in the cell and including terminal means for detachably engaging the terminal stabs during movement into and out of the cell;

a barrier of electrically insulative material including a first shutter having opening means for receiving the stabs;

support means including links movably mounting the shutter between lateral positions of nonalignment and alignment of the opening means with the stabs and biased in the nonalignment position;

obstruction means retractably mounted in the path of movement of the shutter for barring movement of the shutter from the nonalignment position;

the unit including trigger means releasing the obstruction means when the unit moves into the cell so as to retract the obstruction means from the path of movement of the shutter to enable the opening means to align with the stabs and to enable connection of the terminal means with corresponding stabs;

a second shutter adjacent to the first shutter and having holes aligned with the stabs, the second shutter being biased away from the stabs and is disposed on the side of the first shutter away from the stabs; and

the links including roller means extending through the opening means for rolling contact with the second shutter so that as the unit moves into the cell the unit retracts the second shutter and causes the first shutter to retract laterally and to thereby bring the opening means into alignment with the stabs whereby the stabs are exposed to the terminal means.

4,565,909

HANDLE SWITCH ASSEMBLY FOR A MOTOR VEHICLE

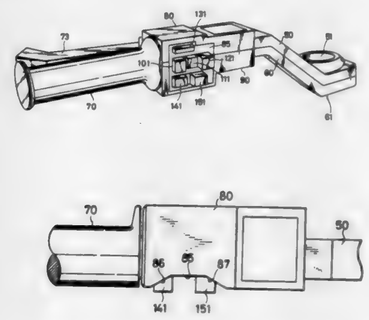
Michio Yashima, Kawagoe; Masami Takanashi, Yokohama, and Akihiro Komatsu, Tokyo, all of Japan, assignors to Honda Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1983, Ser. No. 501,882

Claims priority, application Japan, Jun. 9, 1982, 57-98938; Jun. 11, 1982, 57-87712[U]; Jun. 11, 1982, 57-87713[U]; Jun. 11, 1982, 57-87714[U]; Jun. 11, 1982, 57-87715[U]; Jun. 11, 1982, 57-87716[U]

Int. Cl.⁴ H01H *9/06*

U.S. Cl. 200—61.85 **7 Claims**



1. A handle switch assembly for a motorcycle having a handle bar with a handle grip mounted at an end thereof, comprising:

a pair of elongated members oppositely fitted with each other to form said handle bar, said elongated members having mutually opposing portions formed therein bent such as to form a first cavity therebetween near to the end on which the handle grip is mounted, and

at least a switch element with a switch operating member housed in said first cavity of said elongated members such that the switch element can be actuated by manual operation of the switch operating member from outside of said first cavity.

4,565,910

SWITCH APPARATUS RESPONSIVE TO DISTORTION

Jeff L. Musick; Robert D. Blaker, and David G. Blaker, all of Tulsa, Okla., assignors to Bed-Check Corporation, Tulsa, Okla.

Continuation-in-part of Ser. No. 429,047, Sep. 30, 1982, Pat. No. 4,484,043. This application Nov. 19, 1984, Ser. No. 673,118

The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.

Int. Cl.⁴ H01H *3/02*

U.S. Cl. 200—85 R **3 Claims**



1. An improved switch responsive to distortion by the weight of a patient in a bed comprising

an elongated, thin, generally rectangular base member of insulating flexible material providing a top and bottom surface and having an elongated generally rectangular cutout therein;

a first non-conductive, thin, generally rectangular upper cover member of flexible material having a bottom and a top surface;

a second non-conductive, thin, generally rectangular lower cover member of flexible material having a bottom and a top surface, the dimensions of said first and second cover members being of length and width greater than said base member, said base member being received between said upper and lower cover members, and said cover members providing overlapping edges;

a first electrically conductive layer affixed to said bottom surface of said upper cover and a second conductive layer affixed to said top surface of said lower cover, the width of said conductive layers being less than the width of said cover members; and

a cable having a first and second conductor, the first conductor having engagement with said first conductive layer and the second conductor having engagement with said second conductive layer, the peripheries of said cover members being sealed, the conductive layers being normally supported by said base member in spaced apart relationship by the memory of said base and said cover member, but which surfaces contact each other through said cutout in said base member when the apparatus is subject to bending or twisting distortion.

4,565,911

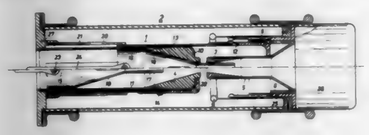
HIGH-VOLTAGE CIRCUIT-BREAKER

Ernst Slamecka, Alt-Pichelsdorf 13, D-Berlin 20, Fed. Rep. of Germany

Filed Aug. 9, 1983, Ser. No. 521,536

Int. Cl.⁴ H01H *33/88*

U.S. Cl. 200—148 A **2 Claims**



1. A gas-blast circuit-breaker comprising:

(a) dual-blast nozzle arrangement, one nozzle being made of electrically conductive material, the other nozzle being made of electrically insulating material, both nozzles facing each other in a fixed axial distance;

(b) said dual-blast nozzles, each of them continuing into a pipe structure conducting the downstream gas flow, and being temporarily surrounded by a movable single compression cylinder, cooperating with a fixed piston;

(c) fixed and movable contact pieces, each separated according to carrying continuous and arc current respectively;

the improvement of said circuit-breaker characterize:

(d) in one of said dual-blast nozzles, a nozzle body (**4**) and a piston body (**10**) being integrated into a structural unit;

(e) said structural unit being mounted on a pipe shaped body (**11**);

(f) said pipe shaped body (**11**) featuring a diameter being at least approximately equal to the diameter of said piston body (**10**).

4,565,912

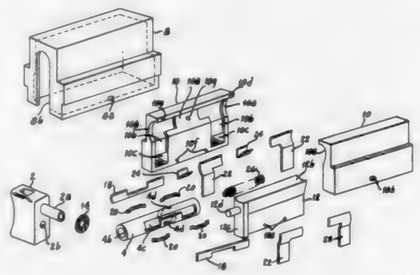
TRIGGER SWITCH WITH ROTATING CONTACT CARRIER

Robert L. Glenn, Arab, Ala., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 14, 1984, Ser. No. 610,067

Int. Cl.⁴ H01H *21/10, 13/08*

U.S. Cl. 200—157 **5 Claims**



1. A trigger operated electric switch adapted for use in a hand held portable tool comprising, in combination:

a housing;

stationary contacts in said housing;

linearly depressible trigger operating means extending from said housing;

means biasing said trigger operating means to an extended position with respect to said housing;

contact carrier means rotatably mounted on said trigger operating means within said housing for linear movement with said trigger operating means and for rotation about an axis extending in the direction of linear depression of said trigger operating means;

movable contacts carried by said contact carrier means; and

means responsive to depression of said trigger operating means for effecting rotation of said contact carrier means to move said movable contacts into bridging engagement with said stationary contacts with a combined linear and rotational wiping action.

4,565,913

METHOD FOR THE DISINTEGRATION OF SILICON FOR SEMICONDUCTOR

Yoshifumi Yatsurugi, Fujisawa, and Meiseki Katayama, Ebetsu, both of Japan, assignors to Komatsu Electronic Metals Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1984, Ser. No. 630,118

Claims priority, application Japan, Aug. 2, 1983, 58-140589

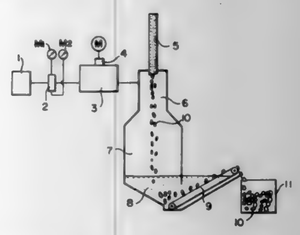
Int. Cl.⁴ H05B *6/80*

U.S. Cl. 219—10.55 M **6 Claims**

1. A method of disintegrating polycrystalline silicon in rod form into a size suitable for making monocrystalline material according to the Czochralski method comprising:

introducing polycrystalline silicon in rod form into a microwave oven;

subjecting the polycrystalline silicon in rod form to microwave radiation in said oven for a short time to quickly dielectrically heat the polycrystalline silicon in rod form and to disintegrate it into a size suitable for making monocrystalline material according to the Czochralski method.



4,565,914

METHOD AND APPARATUS FOR DEMOUNTING A SPOT WELDED METAL PLATE

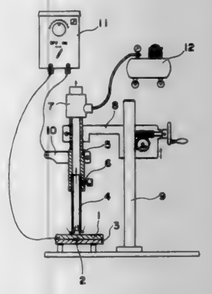
Hidenori Suzaki, Uji; Tetsuro Miura, Tenri; Masanori Maeda, Higashiosaka, and Koji Inaoka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 29, 1983, Ser. No. 490,155

Claims priority, application Japan, Apr. 30, 1982, 57-73623; May 4, 1982, 57-74918

Int. Cl.⁴ B23P *1/06*

U.S. Cl. 219—68 **13 Claims**



1. A method of demounting a metal plate spot welded to a metal member, comprising the steps of:

(1) placing a hollow electrode rod having a free tip perpendicular to the metal plate in air such that the tip of the electrode rod opposes a ring-shaped portion of the metal plate at the periphery of a spot weld between the metal plate and the metal member;

(2) forming and maintaining a continuous electric arc, through the air, between the electrode rod and the metal plate;

(3) melting only a ring-shaped portion of the metal plate at the periphery of the spot weld with continuous arc heat to form molten metal on the metal plate; and

(4) drawing up the molten metal through the hollow portion of the electrode rod.

4,565,915

TRAVELLING WIRE EDM APPARATUS PROVIDED WITH A WIRE SUPPORT ARM PASSED THROUGH THE WALL OF A MACHINING FLUID TANK

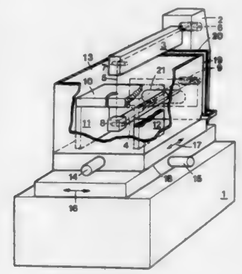
Roger Girardin, Vernier, Switzerland, assignor to Charmilles Technologies, S.A., Geneva, Switzerland

Filed Jul. 16, 1984, Ser. No. 631,449

Claims priority, application Switzerland, Jul. 27, 1983, 4112/83

Int. Cl.⁴ B23H *1/00, 7/10, 7/26;* **F16J** *15/56*

U.S. Cl. 219—69 W **5 Claims**



1. A travelling wire EDM apparatus for cutting by electrical discharges an electrode workpiece by means of an electrode wire stretched and travelling between two guide arms, said apparatus having a base supporting said guide arms and a tank filled with machining fluid, an electrode workpiece mounted within said tank, said apparatus having means for displacing said tank along two displacement axes relative to said electrode wire guide arms, at least one opening through a wall of said tank, one of said guide arms projecting through said opening, and sealing means preventing said machining fluid from leaking through said opening, said sealing means comprising a plate slidably mounted along one of said displacement axes, said plate being disposed parallel to said tank wall and overlapping said opening, an aperture in said plate, a tubular member disposed through said plate aperture and affixed rigidly in said plate aperture in a leakproof manner, said one of said guide arms being supported slidably through said tubular member such as to enable said one of said guide arms to be displaced along said displacement axes, at least one seal disposed between the plate and the tank wall, and at least one annular seal mounted internally in said tubular member in engagement with a peripheral surface portion of said one of said guide arms.

4,565,916

ELECTRIC HAIR CURLING IRON WITH ROTATABLE POWER CORD

Eiji Tsuji, Hikone; Akio Gotou, and Kuniharu Ichikawa, both of Kyoto, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 30, 1982, Ser. No. 428,660

Claims priority, application Japan, Nov. 25, 1981, 56-191075

Int. Cl.⁴ A45D *1/04;* **H05B** *3/00*

U.S. Cl. 219—225 **13 Claims**

1. A hair iron comprising:

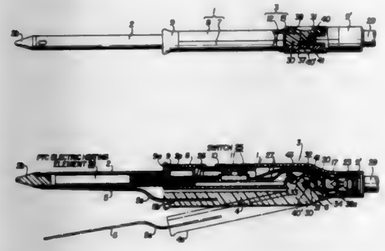
(a) first and second elongated handles pivotally connected together adjacent an end of each;

(b) a heating means comprising an electric heater rod secured to and projecting outwardly from the free end of said first handle;

(c) a hair press plate secured to and projecting outwardly from the free end of said second handle so as to be pivotally contactable with said heater rod; a power cord for supplying power to said electric heater rod;

(d) a rotary connector connected to said power cord adja-

cent the pivotal connection of said first and second handles, said connector being formed as a protrusion on one of said pivotally connected ends of said first and second handles on the opposite side of the pivotal connection of the first and second handles from the free ends thereof and



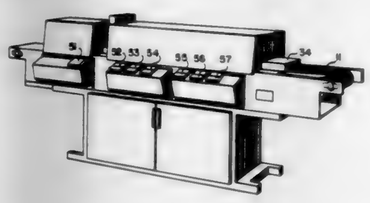
being coaxial with a longitudinal center line between the two handles and the axis of rotation of the rotary connector being also in substantially the same plane as siad pivotal connection between the handles, and means connecting said rotary connector to said heater rod.

4,565,917

MULTI-ZONE THERMAL PROCESS SYSTEM UTILIZING NONFOCUSED INFRARED PANEL EMITTERS

Edward J. Furtek, Salisbury, Mass., assignor to Vitronics Corporation, Newmarket, N.H.

Filed Jan. 18, 1984, Ser. No. 572,163
Int. Cl.⁴ F27B *9/06*
U.S. Cl. 219—388 **17 Claims**



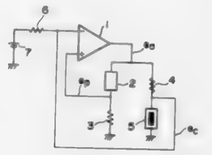
1. A multi-zone thermal process apparatus utilizing nonfocused infrared panel emitters, said apparatus comprising:
an insulated housing having a plurality of zones along its length;
at least one nonfocused infrared panel emitter disposed in each of said zones, each said panel emitter having an emitting surface for emitting infrared radiation;
means for moving a product load through each of said zones, said moving means being spaced a predetermined distance from each of said emitting surfaces; and
control means for selectively tuning each of said panel emitters in each of said zones to cause each of said panel emitters to selectively emit infrared radiation of a predetermined peak wavelength for selective heating of desired components of the product load which have absorption characteristics adapted to more readily absorb the radiation having the predetermined peak wavelength.

4,565,918

HEATING CIRCUIT FOR A THERMAL RECORDING-PEN

Hideaki Ayabe; Takeshi Toyosawa; Shigeo Ikeda, and Ken-Ichiro Ohta, all of Tokyo, Japan, assignors to Graphtec Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,933
Claims priority, application Japan, Jun. 28, 1982, 57-109960
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 219—499 **10 Claims**



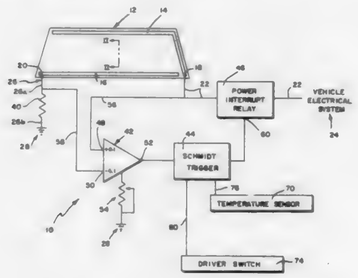
1. Heating circuit for a thermal recording-pen having a heating element which exhibits changes in resistance under certain printing conditions, comprising:
a resistance bridge which includes one resistance arm composed of said heating element of the thermal recording-pen and three other resistance arms,
an operational amplifier having an input and having an output which supplies power to said resistance bridge, and
a feedback circuit connecting an output of said resistance bridge to the input of said operational amplifier;
at least one of said three other resistance arms being a nonlinear resistance characterized in that the resistance of the arm varies in a predetermined non-linear relation to the voltage across said arm, said relation being selected so that a resultant change in power provided by said operational amplifier output will cause a corresponding change in heating of said heating element to compensate for said exhibited change.

4,565,919

CRACK DETECTOR FOR ELECTRICALLY CONDUCTIVE WINDSHIELD

Lowell E. Bitter, Holland, and Bryan L. Lundgren, South Haven, both of Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Jun. 14, 1984, Ser. No. 620,687
Int. Cl.⁴ H05B *1/02*; **B60L** *1/02*
U.S. Cl. 219—509 **12 Claims**



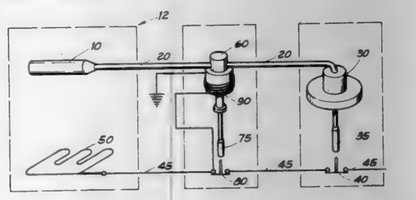
1. An electrically heated panel assembly comprising:
a panel including an electrically conductive coating;
cable means for conducting direct current through said coating;
controllable switch means coupled in series with said cable means for opening and closing a circuit through said cable means, said controllable switch means including a control terminal;
a ground resistor coupled in series with said cable means between said conductive coating and ground;
comparator means for comparing the voltage across said coating and the voltage across said ground resistor; and
control means coupled to said control terminal and responsive to said comparator means for opening said controllable switch means when the relation of the coating voltage to the ground resistor voltage is unacceptable.

4,565,920

FAIL SAFE THERMAL CONTROL DEVICE

John J. Theiss, St. Louis, Mo., and Paul T. Durst, Louisville, Ky., assignors to Temp. Systems, Inc., St. Louis, Mo.

Filed May 14, 1984, Ser. No. 610,035
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 219—513 **6 Claims**



1. A pressure responsive mechanism consisting of:
(a) a pressure containing chamber;
(b) a hollow, resilient ellipsoid having a major axis mounted in said chamber;
(c) means for varying the pressure within said chamber so that the major axis of the ellipsoid increases in length when the chamber pressure is increased and decreases in length when the chamber pressure is reduced; and
(d) means for communicating the variation in length of said major axis to the exterior of the pressure containing chamber.

4,565,921

ELECTRIC THERMAL UNIT FOR CONTROLLABLY HEATING CYLINDERS HAVING TWO COAXIAL INTERSPACES FOR CIRCULATING VENTILATION AIR THERETHROUGH

Gaetano Piazzola, Via Borri, 148 21100- Varese, Italy

Filed Mar. 12, 1984, Ser. No. 588,670
Claims priority, application Italy, Mar. 17, 1983, 20131 A/83
Int. Cl.⁴ H05B *3/02*
U.S. Cl. 219—550 **5 Claims**



1. An electric thermal unit for controllably heating cylinders in extruders, injection presses and drawing machines, comprising a coiled resistance heater incorporated to a structure bent on itself into a ring-like shape and including a plurality of ceramic strips which are coupled together and define, at the middle longitudinal portion thereof, holes for passing as many runs of said coiled resistance heater therethrough, characterized in that, at the peripheral longitudinal portions thereof, said strips are formed with holes forming two substantially continuous outer and inner interspaces, intercommunicating at two end portions whereof, said structure comprising a double outer band, said outer interspace being in communication with a heater adapted to deliver air, as heated by said resistance heater, to provide utilization outlets.

4,565,922

KEY CARD APPARATUS

Eric G. Anderson, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 19, 1983, Ser. No. 496,044
Int. Cl.⁴ G06K *19/06*
U.S. Cl. 235—492 **16 Claims**



1. Key card apparatus comprising: a circuit card stock having first and second sides, and having first and second longitudinally extending edges and first and second opposite end edges; a first series of spaced contacts mounted on the first side adjacent the first end edge and extending generally perpendicularly from the first end edge; a second series of spaced contacts mounted on the second side near the first end edge and extending generally perpendicularly from the first end edge; a first series of conductors respectively connected to the first series of contacts and extending inward therefrom on the first side towards the second end edge; means for commonly connecting the first series of conductors together; a second series of conductors respectively connected to the second series of contacts, the second series of conductors extending inward from the contacts on the second side of the card towards the second end edge, and then extending across the card between the first and second longitudinal edges and then extending longitudinally on the card toward the first end edge, the second series of conductors on the second side being spaced inwardly from the first and second longitudinally extending edges, and the second end edge a distance greater than corresponding portions of the first series of conductors on first side so as to leave a peripheral area through which holes may be punched to sever selected ones of the first series of conductors to incorporate a code into the card; connectors extending through the card from the first surface to the second surface for selectively connecting the first series of conductors to the second series of conductors thereby connecting the second series of contacts to the first series of contacts in reverse order so that the card is reversible; and means for interrupting selected conductors.

4,565,923

IMAGE CONVERTER HAVING SEPARATE AND SEQUENTIAL SWITCHING OF DEFLECTOR PLATE POTENTIALS

Alexander E. Huston, Berkshire, England, assignor to Hadland Photonics Limited, Bovington, England

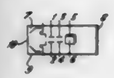
Filed Oct. 13, 1982, Ser. No. 433,968

Claims priority, application United Kingdom, Oct. 15, 1981, 8131152; Aug. 10, 1982, 8222999

Int. Cl.⁴ H01J *31/50*

U.S. Cl. 250—213 VT **3 Claims**





1. In an image converter including a screen and means for producing a beam of electrons for forming an image on said screen, a beam deflection system comprising the combination of:

at least one pair of electrostatic deflector plates for deflecting said beam of electrons whereby to change the position of said image on said screen; and

means for switching each plate in said pair of plates between respective potentials in a single step whereby to provide a plurality of distinct image positions on said screen.

4,565,924

LIGHT SIGNAL BINARY DEVICE WITH OPTICAL FEEDBACK

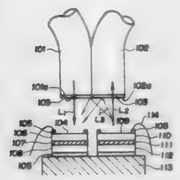
Haruo Misumi; Hiroshi Ogawa, both of Joyo; Naotake Nagao, Muko, and Katsuhiko Oimura, Osaka, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 4, 1983, Ser. No. 472,244

Claims priority, application Japan, Mar. 5, 1982, 57-34794; Mar. 31, 1982, 57-47192[U]; Mar. 31, 1982, 57-47193[U]; Mar. 31, 1982, 57-47194[U]

Int. Cl.⁴ H01L *31/14*

U.S. Cl. 250—227 **5 Claims**



1. A light signal binary device comprising:

an input optical fiber for transmitting an input light signal;

light receiving means for receiving said input light signal and converting said input light signal into an electric signal;

light emitting means for receiving said electric signal and converting said electric signal into an output light signal;

an output optical fiber having an open end for receiving and transmitting said output light signal; and

a partially reflecting film on said open end of said output optical fiber for reflecting part of said output light signal to said light receiving means as positive optical feedback.

4,565,925

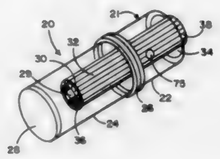
INFRARED DETECTOR DEWAR WITH ALL-KOVAR LEADS, AND METHOD OF MAKING THE SAME

David A. K. Anderson, Irvine; James B. Gilpin, San Juan Capistrano, and Melvin J. Kniffin, Costa Mesa, all of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Aug. 10, 1983, Ser. No. 522,439

Int. Cl.⁴ G01J *5/06*

U.S. Cl. 250—352 **2 Claims**



1. A dewar for infrared detectors adapted to operate in a cryogenic environment, comprising:

(a) evacuated envelope means;

(b) hollow glass stem means closed at one end providing a cryogenic fluid conduit and extending into said envelope means from the outside thereof;

(c) infrared detector means positioned in said envelope means at the closed end of said stem means; and

(d) electrical conductor means extending along said stem means between said detector means and the open end of said stem means,

(e) said conductor means being longitudinally and transversely homogeneous throughout the length of said stem means, said conductor means being encapsulated in the walls of said stem means generally throughout its length.

4,565,926

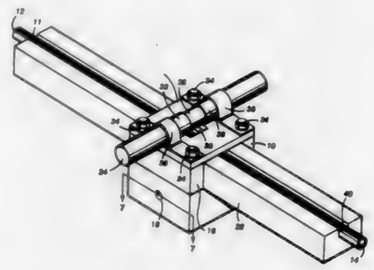
METHOD AND APPARATUS FOR DETERMINING THE CONTENT AND DISTRIBUTION OF A THERMAL NEUTRON ABSORBING MATERIAL IN AN OBJECT

Thomas W. Crane, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 21, 1983, Ser. No. 564,125

Int. Cl.⁴ G01T *3/00*

U.S. Cl. 250—390 **18 Claims**



1. An apparatus for determining the content and distribution of a thermal neutron absorbing material within an object, said apparatus comprising:

a. means for generating neutrons having an energy higher than thermal neutrons;

b. means for thermalizing said higher energy neutrons, said neutron thermalizing means being disposed between said neutron generating means and the object;

c. neutron detecting means for counting thermal neutrons, said neutrons detecting means including an active portion, said active portion being centrally disposed within said neutron detecting means and in substantial alignment with said neutron generating means; and

d. shield means interposed between the object and said neutron detecting means, said shield means comprising an effective thermal neutron absorbing material and having portions defining an orifice, said orifice disposed in substantial alignment between said active portion and said neutron generating means, whereby the number of neutrons absorbed by the object per unit time is determined by comparing the neutron flux at said neutron detecting means when the object is located between said neutron thermalizing means and said shield means with the neutron flux when the object is absent.

4,565,927

RADIATION GENERATION OF "SIGNATURE" FOR REELED-WEB

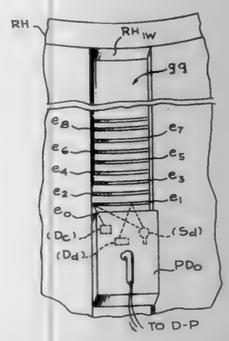
Herbert U. Ragle, San Mateo, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 351,952, Feb. 24, 1982, which is a continuation-in-part of Ser. No. 53,304, Jun. 29, 1979, Pat. No. 4,337,659, and Ser. No. 342,242, Jan. 25, 1982, Pat. No. 4,485,674. This application Oct. 17, 1984, Ser. No. 661,844

The portion of the term of this patent subsequent to Jul. 6, 1994, has been disclaimed.

Int. Cl.⁴ G01N *21/86*

U.S. Cl. 250—560 **20 Claims**



1. A method of developing a wrapping profile, or winding signature, for a tape web segment adapted to be wrapped upon a prescribed reel, this method being adapted to enhance computer tape file security so that each time such a web is wound upon a reel, the winding mode, after repeated windings, is assumed to leave the array of wrapped web edges in a unique edge wrap profile represented by the position of each winding edge as sighted radially along one side of the reel, such a profile constituting the "winding signature", this method involving:

providing radiant energy beam means automatically scanning the relative positions of these web-edges and detecting reflections therefrom as a "winding signature", and also providing associated means for electronically representing and storing these position values as a prescribed encoded set of signature-representing signals each time the web is wound; this means being adapted to automatically make such "signature" representations available for use in monitoring unspooling and respooling operations.

4,565,928

PHOTO ELECTRO TRANSDUCER DEVICE

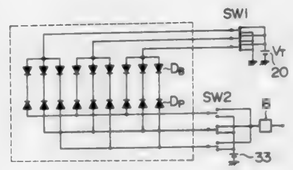
Hideaki Yamamoto, Tokorozawa; Toru Baji, Kokubunji; Toshihisa Tsukada, and Akira Sasano, both of Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp. and Hitachi, Ltd., both of Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,403

Claims priority, application Japan, Sep. 30, 1981, 56-153724

Int. Cl.⁴ H01J *40/14*

U.S. Cl. 250—578 **16 Claims**



1. A photo electro transducer device including:

a plurality of first wiring conductors formed on an insulating substrate in the form of a one-dimensional array;

a plurality of photo electro transducing elements respectively formed on each of said first wiring conductors;

a plurality of second wiring conductors for dividing said photo electro transducing elements into at least two groups each having equal numbers of photo electro transducing elements and for electrically connecting one end of each of said transducing elements belonging to each group with each other, said second wiring conductors being the same in number as the number of said groups;

a first bias voltage source;

a first electric circuit for electrically connecting a predetermined one of said second wiring conductors to said first bias voltage source to select a predetermined one of said groups of photo electro transducing elements and for electrically connecting the remaining ones of said second wiring conductors to a grounding point;

a plurality of third wiring conductors for electrically connecting the other end of each of said photo electro transducing elements located in the same respective position in each of said groups with each other, said third wiring conductors being the same in number as the number of said transducing elements belonging to each group;

a second bias voltage source; and

a second electric circuit for electrically connecting a selected one of said third wiring conductors connected to photo electro transducing elements of said selected group of said photo electro transducing elements to a read circuit and for electrically connecting the remaining ones of said third wiring conductors to said second bias voltage source;

wherein said first, second and third wiring conductors are formed on said insulating substrate, and

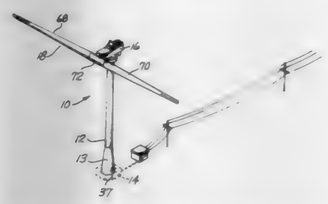
wherein each of said photo electro transducing elements has two semiconductor layers formed on said first wiring conductors and separated from each other, one of said semiconductor layers being provided between said first and second wiring conductors to form a blocking diode and the other semiconductor layer being provided between said first and third wiring conductors to form a photo diode.

4,565,929

WIND POWERED SYSTEM FOR GENERATING ELECTRICITY

Joseph M. Baskin, Mercer Island; Gary E. Miller, Tukwila, and Wayne Wiesner, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1983, Ser. No. 537,750
Int. Cl.⁴ F03D *1/06*
U.S. Cl. 290—44 **18 Claims**



1. A wind turbine system for generating electricity, comprising:
- a wind turbine rotor;
- a rotor shaft connected to said hub for rotation with said wind turbine rotor;
- a step-up transmission having a low speed input connected to said rotor shaft and a high speed output;
- a rotary pole amplitude modulated induction machine having a rotor that is connected to the output of said transmission, said machine being operable as a generator at a plurality of discreet speeds of rotation;
- wind speed responsive switch means for changing speed of operation of said induction machine; and
- wherein said wind turbine rotor comprises an elongated central hub with no twist having rounded edges and a substantially constant thickness between the edges;
- a pair of fixed pitch essentially straight blades, each blade extending radially outwardly from said hub in a direction diametrically opposite from the other blade;
- each said blade having a mid-section of airfoil cross section positioned radially outwardly of said central hub portion, and a tip section of airfoil cross section positioned radially outwardly of the mid-section;
- each said blade smoothly changing from the substantially constant thickness and rounded edge shape of the central hub portion into an airfoil cross section as it extends radially outwardly from the central hub portion;
- each blade first changing to first a plus twist and then a zero twist and then a minus twist as it extends radially outwardly;
- each said blade tapering in thickness and chord as it extends radially outwardly from a location in its mid-section through its tip section; and
- wherein the tip section of each said blade includes a sculptured tip end portion which decreases in thickness as it extends radially outwardly , said tip portion having an aerodynamic cross-sectional shape which progressively decreases in size, and having a leading edge which progressively sweeps rearwardly.

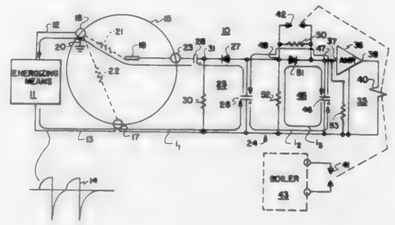
4,565,930

BOILER LOW WATER SENSING SYSTEM UTILIZING ENERGY TRANSFER NETWORK MEANS FOR DELAY

James I. Bartels, Hudson, Wis., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Jun. 1, 1984, Ser. No. 616,101
Int. Cl.⁴ G08B *29/00;* **H01H** *35/18*
U.S. Cl. 307—118 **5 Claims**

1. A low water sensing system in a boiler, including: energizing means having a bidirectional and periodic output of voltage; probe means adapted to make contact between water in a boiler and control circuit means; said control circuit means having input means connected between said probe means and said energizing means; said control circuit means further having output means responsive to the presence or absence of water in said boiler to in turn operate said output means for operation of said boiler; said input means including a pair of capacitors and a diode connected in series circuit to allow a current to flow to charge a first of said capacitors when water is present between said probe and said boiler with said diode blocking a reverse flow of current to said first capacitor; energy transfer network means having an input connected across said first capacitor and said network means having a third capacitor as an output; said third capacitor connected to said control circuit output means; and said energy transfer network means further including a resistor connecting said first capacitor and said third capacitor to controllably transfer energy from said first capacitor to said third capacitor to operate said control circuit output means upon the detection of water for a variable period of time.

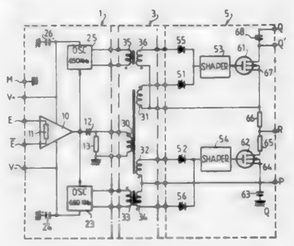


4,565,931

ISOLATED AMPLIFIER CIRCUIT FOR AMPLIFYING PULSES, IN PARTICULAR FOR A HIGH VOLTAGE OUTPUT

Michel J. R. Fumey, Saint-Cloud, France, assignor to Electronizue Serge Dassault S.A., Paris, France

Filed Jan. 16, 1985, Ser. No. 691,776
Claims priority, application France, Jan. 16, 1984, 84 00629
Int. Cl.⁴ H03K *5/00;* **H01F** *27/00;* **H03F** *3/217*
U.S. Cl. 307—262 **6 Claims**



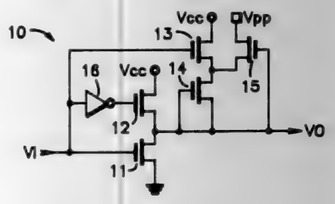
1. An isolated amplifier circuit for amplifying pulses, in particular for a high voltage output, the amplifier comprising a low voltage input stage connected via transformers to a high voltage output stage, and including the improvement wherein:
- the transformers comprise a central transformer having one primary winding and two oppositely-wound secondary windings, and two end transformers each having a primary winding and a secondary winding;
- the low voltage input stage comprises an input amplifier, a differentiator and two oscillators, the amplifier output being fed via the differentiator to the primary winding of the central transformer and being connected to both oscillators in such a manner as to actuate one or other of the two oscillators depending on its polarity, each of the oscillators being connected to the primary winding of a respective one of the two end transformers; and
- the output stage comprises two controllable switches connected symmetrically in series about a mid point, each of the switches being controlled, via a respective shaping circuit, by a respective one of the secondary windings of the central transformer and also by the secondary winding of a respective one of the end transformers.

4,565,932

HIGH VOLTAGE CIRCUIT FOR USE IN PROGRAMMING MEMORY CIRCUITS (EEPROMS)

Clinton C. K. Kuo, and Sam Dehganpour, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1983, Ser. No. 566,610
Int. Cl.⁴ H03K *17/10, 3/027, 17/687;* **G11C** *11/40*
U.S. Cl. 307—264 **11 Claims**



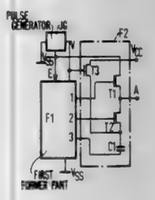
1. A high voltage circuit, comprising:
- a first transistor having a control electrode for receiving an input signal, a first current electrode coupled to a first power supply terminal, and a second current electrode;
- a load coupled between an output node and the second current electrode of the first transistor; and
- a second transistor having a control electrode coupled to the output node, a first current electrode coupled to a high voltage power supply terminal, and a second current electrode coupled to the second current electrode of the first transistor.

4,565,933

CIRCUIT FOR GENERATING RAPID PULSES

Focko Frieling, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,986
Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217264
Int. Cl.⁴ H03K *17/04, 17/693*
U.S. Cl. 307—269 **10 Claims**



1. Integrated pulse former constructed in MIS circuit technology and connected to a first supply potential as well as to a second supply potential serving as a reference potential, and acted upon by control pulses from a pulse generator, comprising a first former part and a second former part both being connected to the pulse generator and directly addressed by the control pulses from the pulse generator, said first former part being connected to both the first and the second supply potentials and having three signal outputs, said second former part being additionally controlled via said three signal outputs of said first former part and being connected only to the first one of the two supply potentials, a first one of said signal outputs connected to and controlling a gate of a first field-effect transistor having a source-drain path directly connected, on one hand, to an output of the pulse generator furnishing the control pulses and, on the other hand, to a signal output of said second former part for furnishing secondary pulses, a second one of said three signal outputs of said first former part being connected to and controlling a gate of a second field-effect transistor having a source-drain path connecting said signal output of said second former part to one terminal of a capacitor having another terminal connected to the third one of said three signal outputs of said first former part, said one terminal of said capacitor connected to said second field-effect transistor being also connected via a third field-effect transistor to the first supply potential, said third field-effect transistor having a controllable gate, means connected to said gate for controlling said gate, said third field-effect transistor having a source-drain path connecting the first supply potential to a circuit node located between the source of said second field-effect transistor and said one terminal of said capacitor, said first former part being of such construction that, due to a rising edge of the control pulses from the pulse generator in said first former part:
- (a) at said first signal output of said first former part, a first potential initially maintained at a value between the two supply potentials is increased to a peak value beyond that of the first supply potential immediately at the start of the rising edge of the respective control pulse and then immediately lowered to the value of the second supply potential;
- (b) at said second signal output of said first former part, a second potential initially having a value equal to that of the second supply potential is first brought to the value of the first supply potential immediately at the start of the rising edge of the respective control pulse and then, with increased rate of rise, to a value beyond that of the first supply potential which is also maintained after the falling edge of the respective control pulse; and
- (c) at said third signal output of said first former part, a third potential initially having a value equal to that of the second supply potential is raised with delay on the rising edge of the respective control pulse to the value of the first supply potential; and

means provided for effecting a return of said first, second and third potentials at the respective signal outputs of said first former part to a state prevailing before onset of a final control pulse, after the end of the falling edge of the control pulses from the pulse generator and before onset of the rising edge of the next control pulse.

4,565,934

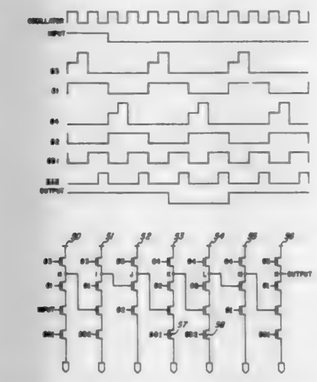
DYNAMIC CLOCKING SYSTEM USING SIX CLOCKS TO ACHIEVE SIX DELAYS

Ebbin R. Southerland, Jr., Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 1, 1982, Ser. No. 353,672
Int. Cl.⁴ H03K *19/096, 5/135, 5/153*
U.S. Cl. 307—481 **2 Claims**

1. A dynamic metal oxide semiconductor field effect device clocking circuit to produce an output at a fixed time interval after receiving an input signal at an input node comprising:
- a first circuit means responsive to a first precharge signal having a repetitive first active state, a first clocking signal having a repetitive active state coincident with said first active state of said first precharge signal, a second clocking signal having a repetitive active state coincident with the inactive state of said first clocking signal, a first discharge signal having an active state when neither said first precharge signal nor a second precharge signal which is noncoincident with said first precharge signal is active and a second discharge signal having an active state during a

final portion of the active state of said first discharge signal, having a first input node responsive to said input signal, a first output node, a first branch connected to said first input node including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said first precharge signal, said first clocking signal, said input signal and said first discharge signal, respectively, said junction of the first branch field effect devices responsive to the first precharge signal and to the first clocking signal providing the first branch output; a second branch connected to said first branch including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said first precharge signal, said first clocking signal, the signal at said first branch output and said second discharge signal, respectively, said junction of the second branch field effect devices responsive to the first precharge signal and to the first clocking signal providing the second branch output; and a third branch connected to said second branch and providing an output on said first output node including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said first precharge signal, the signal at said second branch output and said second



clocking signal, respectively, for generating an output on said first output node, at the junction of the third branch field effect devices responsive to the first precharge signal and to the signal at the second branch output, a predetermined interval after receiving an input on said first input node;

a second circuit means responsive to a second precharge signal having a repetitive second active state noncoincident with said first active state, said first clocking signal, said second clocking signal, said first discharge signal and said second discharge signal, having a second input node connected to said first output node and a second output node, a fourth branch connected to said first output node including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said second precharge signal, said second clocking signal, the signal at said first output node and said first discharge signal, respectively, said junction of the fourth branch field effect devices responsive to the second precharge signal and to the second clocking signal providing the fourth branch output; a fifth branch connected to sad fourth branch including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said second precharge signal, said second clocking signal, the signal at said fourth branch output and said second discharge signal, respectively, said junction of the fifth branch field effect devices responsive to the second precharge signal and to the second clocking signal providing the fifth branch output; and a sixth branch connected to said fifth branch and providing an output on said second output node including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said second precharge signal, the signal at sad fifth branch output and said first clocking signal, respectively, for generating an output on said second output node, corresponding to the junction of the sixth branch field effect devices responsive to the second precharge signal and to the fifth branch output, a predetermined interval after receiving an input on said second input node, thereby generating an extended delay from the signal applied to said first input node; and

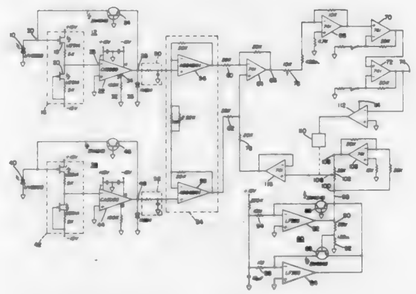
a third circuit means having a seventh branch connected to said second output node including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said first precharge signal, said first clocking signal, the signal at said second output node and said first discharge signal, said seventh branch connected to said second output node for isolating the output of said second output node and producing said dynamic output having said fixed delay at the junction of the seventh branch field effect devices responsive to the first precharge signal and the first clocking signal.

4,565,935

LOGARITHMIC CONVERTER CIRCUIT ARRANGEMENTS

Norman F. Rolfe, Carlisle, Mass., assignor to Allied Corporation, Morristown, N.J.

Filed Jul. 22, 1982, Ser. No. 400,688
Int. Cl.⁴ G06G *7/24*
U.S. Cl. 307—491 **23 Claims**



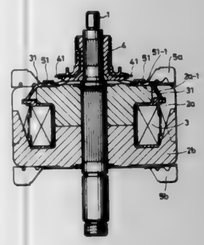
1. A logarithmic converter circuit comprising an input to which a data signal may be applied, a logarithmic transfer function generating device connected to said input, a transconductance amplifier connected in parallel with said logarithmic transfer function generating device, and an output, said circuit generating a signal at said output that is a logarithmic function of the data signal applied to said input.

4,565,936

ROTOR FOR ROTARY MACHINE

Takashi Ikegami, and Masakazu Mori, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1984, Ser. No. 647,586
Claims priority, application Japan, Sep. 5, 1983, 58-138993[U]
Int. Cl.⁴ H02K *9/06*
U.S. Cl. 310—62 **2 Claims**



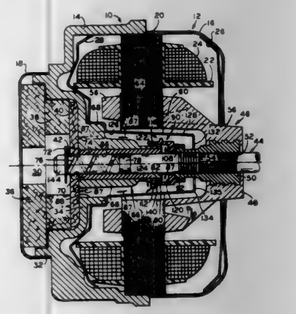
1. A rotor for rotary machines, comprising:
a rotary shaft;
magnetic field cores fixed to said rotary shaft and having an annular recessed portion;
a magnetic field coil received within said recessed portion;
slit rings mounted on said rotary shaft at one side of said magnetic field cores for supplying electric current to said field coil;
lead wires introduced at outsides of said magnetic field cores from said magnetic field coil and connected via terminals to said slip rings; and
a fan fixed at one side of said magnetic field cores and having holding portions for firmly holding said lead wires;
wherein said holding portions are formed by recessed portions formed on said fan.

4,565,937

DYNAMOELECTRIC MACHINE HAVING IMPROVED LUBRICANT SLINGER

Richard F. Uhen, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 29, 1984, Ser. No. 584,622
Int. Cl.⁴ H02K *7/08*
U.S. Cl. 310—90 **20 Claims**



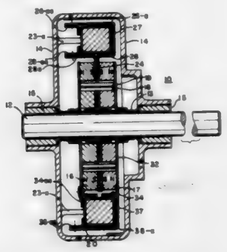
1. A dynamoelectric machine comprising: a stator; a rotor including a shaft; bearing means supporting said shaft, along a bearing and shaft interface, for rotation relative to the stator, with said shaft extending out of at least one end of said bearing means; a lubricant reservoir; means associated with said shaft for pumping lubricant from the reservoir along the shaft and bearing interface in a first axial direction and out of an end of said bearing means; lubricant slinger means, mounted on said shaft for rotation therewith, for throwing radially outwardly from said shaft lubricant pumped out of said end of said bearing means; said slinger means having flight means projecting from a radially outer peripheral surface of said slinger means and skewed in an axial direction for impelling, with an axial component of velocity opposite to the first axial direction, the lubricant pumped out of said end of said bearing means.

4,565,938

PERMANENT MAGNET ROTOR TOROIDAL GENERATOR AND MOTOR

Moharram M. Fawzy, Malvern, Pa., assignor to Intra-Technology Associates, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 503,914, Jun. 13, 1983, Pat. No. 4,459,501. This application Jul. 9, 1984, Ser. No. 629,102
The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.
Int. Cl.⁴ H02K *21/12*
U.S. Cl. 310—156 **12 Claims**



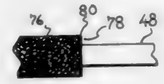
1. An electromechanical device, comprising:
a housing, including bearing means supporting a rotatable shaft;
a magnetized disc magnet means;
at least one first pole shoe positioned to contact said magnet means at a first polarity and having portions extending radially outward to define a pair of virtual pole chambers of said first polarity;
at least one second pole shoe positioned to contact said magnet means at a second polarity and having portions extending radially outward to define a pair of virtual pole chambers of said second polarity;
a toroid stator mounted on said housing and having windings thereon, said stator being positioned annularly around said disc magnet means such that the virtual poles surround portions of said windings with alternating fields of polarity.

4,565,939

EVERTED KNITTED TUBE INSULATION FOR WINDINGS OF DYNAMOELECTRIC MACHINES

Roy L. Balke, and Jerome R. Filipowski, both of Erie, Pa., assignors to General Electric Company, Salem, Va.

Filed Aug. 16, 1984, Ser. No. 641,571
Int. Cl.⁴ H02K *1/00;* H01B *7/00*
U.S. Cl. 310—177 **12 Claims**



1. Apparatus for insulating a conductor bar comprising:
a knitted fabric tube;
a cut end on said knitted fabric tube;

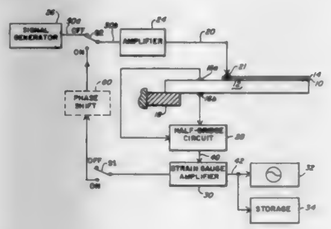
said knitted fabric tube being everted to provide a purse mouth at said cut end;
said knitted fabric tube being slipped over said conductor bar with an end of said conductor bar protruding therefrom; and
said purse mouth being effective to urge said cut end toward said conductor bar whereby a close fit is obtained between said cut end and said conductor bar.

4,565,940

METHOD AND APPARATUS USING A PIEZOELECTRIC FILM FOR ACTIVE CONTROL OF VIBRATIONS

James E. Hubbard, Jr., Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 14, 1984, Ser. No. 640,759
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—326 **26 Claims**



1. A method of damping vibrations in a member, comprising the steps of:
a. applying a distributed parameter film means of piezoelectric material for sensing and damping vibration in said member in cooperative relationship with the surface of said member and;
b. sensing, with said film means, vibrations in said member and producing with said film means a first electrical signal proportional to said sensed vibration;
c. applying to said film means a second electrical signal derived from said first signal of proper amplitude frequency and phase to dampen said vibrations in said member.

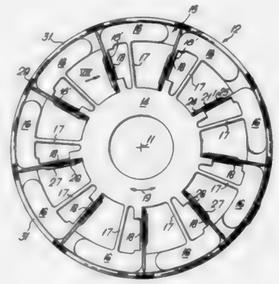
4,565,941

OSCILLATORY DRIVE MECHANISMS FOR A RING LASER GYRO

Peter C. Ridgway, Laleham, and John A. Geen, Bracknell, both of England, assignors to British Aerospace PLC, London, England

Filed Oct. 22, 1982, Ser. No. 436,335
Claims priority, application United Kingdom, Oct. 28, 1981, 8132437
Int. Cl.⁴ F16F *1/18*; H01L *41/08*
U.S. Cl. 310—328 **14 Claims**

1. An oscillatory drive mechanism for a member to be driven comprising:
a flexural element having first and second portions, the first portion being adapted to be rigidly attached to a datum with respect to which the member is to be driven and the second portion being adapted to be rigidly attached to the member, the first and second portions being interconnected by at least one drive unit;
the drive unit comprising first and second interconnecting members, and drive means bonded to the second interconnecting member;
the second interconnecting member having a dimension generally in the direction of drive, which is less than the corresponding dimension of the first interconnecting member, the first interconnecting member, in the main, determining the spring characteristics of the flexural element;
the mechanism being in the form of a wheel with one of the first portion and the second portion forming the hub, and the other portion forming a generally circumferential portion of the wheel with the first and second interconnecting members of each of the drive units extending generally radially between the hub and circumferential portions;



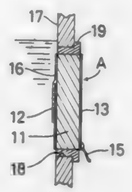
the drive means being operable, when energized, to flex the second interconnecting member which in turn moves the second portion of the flexural element relative to the first portion so as, in use, to oscillate the member to be driven.

4,565,942

ENERGY TRAPPED PIEZOELECTRIC RESONATOR LIQUID SENSOR

Katsumi Sakai, Kanazawa, and Isao Toyoshima, Ishikawa, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jun. 29, 1984, Ser. No. 626,123
Claims priority, application Japan, Jul. 1, 1983, 58-103324[U]; Jul. 1, 1983, 58-103325[U]
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—338 **2 Claims**



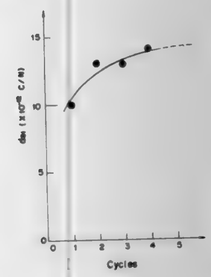
1. A liquid sensor, comprising:
a piezoelectric substrate having a first planar side for contacting a liquid, and a second planar side opposite said first side, bounded by a periphery, mountable on a wall on said periphery;
at least one first electrode located on said first side and at least one second electrode located on said second side so that said substrate vibrates in the direction extending between said first and second sides in an energy-trapped manner in response to electric excitation applied across said at least one first electrode and said at least one second electrode when said substrate is mounted at said periphery to a wall, said substrate, said at least one first electrode and said at least one second electrode thereby defining an energy-trapped type resonant element; and
a liquid-proof coating covering said first side including the at least one first electrode.

4,565,943

PROCESS FOR PREPARING POLYMERIC PIEZOELECTRIC MATERIAL

Junichi Sako, Osaka; Toshiharu Yagi, Hyogo; Yoshihide Higashihata, and Kouji Fukuyama, both of Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed May 2, 1984, Ser. No. 606,136
Claims priority, application Japan, May 9, 1983, 58-81480
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—357 **22 Claims**



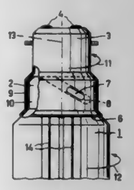
1. A process for preparing a polymeric piezoelectric material which comprises a vinylidene fluoride containing polymer, comprising:
locating said polymer between two electrodes; and
polarizing said polymer by applying at least two cycles of an alternating electric field, except a rectangular wave, to the polymer while said polymer is located between said two electrodes.

4,565,944

ELECTRIC LAMP

Johannes H. H. Beurskens, and Wilhelmus H. F. Winkelmolen, both of Weert, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 29, 1983, Ser. No. 556,208
Claims priority, application Netherlands, Dec. 7, 1982, 8204723
Int. Cl.⁴ H01J *5/48, 5/50*
U.S. Cl. 313—318 **4 Claims**



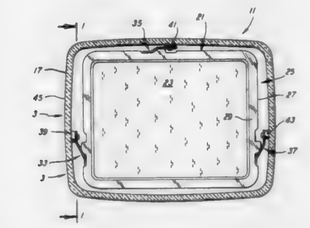
1. An electric lamp comprising a blown glass lamp envelope having a neck-shaped portion, a bayonet lamp cap, and current-supply conductors extending from contacts on the lamp cap through the wall of the lamp envelope to an electric element arranged inside the lamp envelope; which lamp cap surrounds at least part of the neck-shaped portion and is coupled to the envelope, by means of circumferentially distributed projections and respective guides cooperating therewith, such that an edge of the lamp cap abuts the envelope, the coupling being locked against displacement by means of a solidified mass, characterized in that the guides are so arranged that the coupling is established by relative rotation in the counterclockwise direction between the lamp cap and the lamp envelope, the abutting of the cap against the envelope stopping further rotation.

4,565,945

DEFLECTION LIMITING MEANS FOR CRT MASK SUPPORT MEANS

Stanley L. Pawlikowski, Seneca Falls; Carl W. Penird, Waterloo, and Richard A. Tamburrino, Auburn, all of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed May 11, 1983, Ser. No. 493,493
Int. Cl.⁴ H01J *29/07, 29/80*
U.S. Cl. 313—404 **9 Claims**



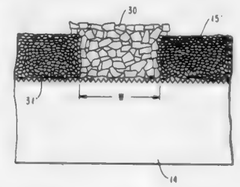
1. An improvement in a cathode ray tube having a viewing panel with face and sidewall portions and a shadow mask-frame assembly positioned adjacent the inner screen-supporting surface of the face portion, a plurality of spaced apart support means fixedly oriented on a perimetrical sidewall portion of the frame in a manner to mate with positioning studs embedded in and protruding from the sidewall portion of the viewing panel, each of said support means being an elongated metallic member incorporating an off-center transverse transitional bend therein to demarcate a basal seating portion from a longer integrally opposed arm-like resilient portion having a terminally-related stud accepting aperture formed therein, said improvement comprising:
a structural modification of the perimetrical sidewall portion of the mask framing member in the region of each support means in the form of a localized outwardly raised portion of said sidewall under the resilient portion and adjacent the seating portion of each support means for limiting deflection of the resilient portion and preventing permanent deformation of the support means during tube fabrication.

4,565,946

COLOR CATHODE RAY TUBE WITH INFRARED EMITTING PHOSPHOR IN SCREEN

William H. Barrett, and Andre B. Minn, both of Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1983, Ser. No. 495,882
Int. Cl.⁴ H01J *29/07, 29/20, 29/32*
U.S. Cl. 313—408 **6 Claims**



1. A color producing cathode-ray tube comprising, within an evacuated envelope, an image screen provided with a plurality of groups of elemental phosphor areas, each group of phosphor areas having a different color radiation characteristic

and the groups being interspersed so as to form repetitive clusters of areas including one area from each group, electron gun means for projecting a corresponding plurality of electron beams toward an image screen, deflection means for causing the electron beams to scan the image screen in synchronism, and a mask disposed adjacent the screen between the latter and the electron gun means and having a plurality of apertures so arranged as to constrain each beam to strike the elemental phosphor areas of only one respective group,

each of the elemental phosphor areas being spaced on the screen from all adjacent such areas and the apertures in the shadow mask being individually larger than the elemental phosphor areas so that each beam striking any given elemental phosphor area of the respective group additionally falls on a portion of the screen which spaces that area from the adjacent areas,

the image screen further being provided with a material emissive of invisible radiation when struck by an electron beam, said material being infrared emissive material which is absorptive of visible light and which is provided over substantially the entire area of the screen not occupied by the elemental phosphor areas, said material being located in the spaces between the elemental phosphor areas and adjacent each elemental phosphor area on at least part of the said additional portion of the screen struck by the same electron beam as that which strikes the said area,

wherein the infra-red emissive material comprises particles of an infra-red phosphor pigmented with a visible-light absorbing material, the particles of the infra-red phosphor being substantially smaller in size than the particles of the elemental phosphor areas.

4,565,947

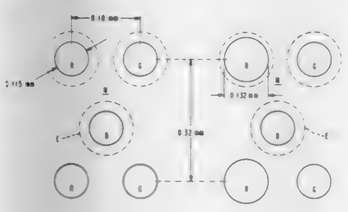
COLOR CATHODE RAY TUBE FOR USE WITH A LIGHT PEN

Andre B. Minn, Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1984, Ser. No. 588,425

Int. Cl.⁴ H01J *29/20, 29/32*

U.S. Cl. 313—467 **6 Claims**



1. In a shadow mask cathode ray tube for use with a light pen, the improvement wherein the elemental phosphor areas emissive of red light comprise a blend of a red-emissive phosphor with silver-activated cadmium sulphide (CdS:Ag), the CdS:Ag being present in an amount from 10% to 30% by weight of the blend.

4,565,948

FLUORESCENT LAMP

Yoshio Kimura, Yokohama; Kenji Terashima, Chigasaki; Masao Asada, and Satoshi Sugano, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

PCT No. PCT/JP82/00234, § 371 Date Feb. 16, 1983, § 102(e) Date Feb. 16, 1983, PCT Pub. No. WO82/04439, PCT Pub. Date Dec. 23, 1982

PCT Filed Jun. 18, 1982, Ser. No. 474,581

Claims priority, application Japan, Jun. 18, 1981, 56-93033

Int. Cl.⁴ H01J *1/63*

U.S. Cl. 313—487 **1 Claim**

1. A fluorescent lamp having a phosphor film comprising:

a blue-emitting phosphor consisting essentially of at least one of a divalent europium activated chlorophosphate phosphor having a general formula $3(M, Eu)_3(PO_4)_2.M'Cl_2$ wherein M and M' are independently at least one of strontium (Sr), calcium (Ca) and barium (Ba); and a divalent europium activated haloborophosphate phosphor having a general formula:

$$x(M_{1-p}.Eu_p.O).yP_2O_5.aM'X_2.bB_2O_3$$

wherein M and M' are independently at least one of strontium (Sr), calcium (Ca) and barium (Ba); X is at least one of chlorine (Cl), fluorine (F) and bromine (Br); and $2.7 \leqq x \leqq 3.3$, $0.50 \leqq y \leqq 1.50$, $0.10 \leqq a \leqq 0.50$, $0.01 \leqq b \leqq 0.50$, and $0.001 \leqq p \leqq 0.20$;

a green-emitting phosphor consisting essentially of a cerium and terbium activated silicophosphate phosphor of a general formula:

$$(Re_{1-c-d-3e}Tb_cCe_dA_{3e})_2O_3.qP_2O_5.rSiO_2$$

wherein Re is at least one of yttrium (Y), lanthanum (La) and gadolinium (Gd); A is at least one of lithium (Li), sodium (Na), potassium (K), rubidium (Rb), and cesium (Cs); and $0<c$, $0<d$, $5\times10^{-2} \geqq e \geqq 1\times10^{-5}$, $0<c+d+3e<1$, $0<q$, and $0<r$; and

a red-emitting phosphor consisting essentially of a trivalent europium activated yttrium oxide phosphor having a general formula $(Y, Eu)_2O_3$, wherein

the phosphor film comprises 1 to 38% by weight of the blue-emitting phosphor, 13 to 73% by weight of the green-emitting phosphor and 15 to 65% by weight of the red-emitting phosphor based on 100% by weight of a total weight of the phosphors, and wherein said lamp exhibits a starting voltage at 21° C. of 88 V or less.

4,565,949

TELEVISION RASTER DISTORTION CORRECTION CIRCUIT

Peter E. Haferl, Adliswil, Switzerland, assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 19, 1984, Ser. No. 672,955

Claims priority, application United Kingdom, Nov. 25, 1983, 8331573; Feb. 29, 1984, 8405317

Int. Cl.⁴ H01K *29/56*

U.S. Cl. 315—371 **17 Claims**

1. A deflection apparatus that includes a raster distortion correction circuit, comprising:

a deflection winding;

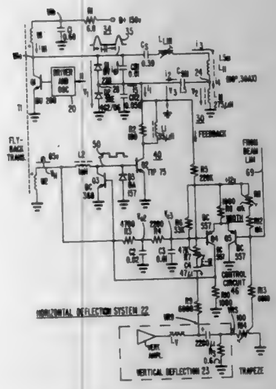
means coupled to said deflection winding for developing a trace voltage;

first switching means for applying said trace voltage to said deflection winding to generate a trace current of a deflection current in said deflection winding during a trace interval, and for developing at a terminal thereof a retrace interval defining retrace voltage;

an impedance coupled to said deflection winding to form first and second current paths of said deflection current in first and second branches of said impedance, respectively;

a source of modulation rate voltage;

second switching means coupled to said first current path for developing in accordance with said modulation rate voltage a raster distortion correction first voltage that is combined with said trace voltage to control said trace current during the trace interval, said second switching means reducing the impedance in said first current path during a portion of the retrace interval that varies in accordance with said modulation rate voltage to a lower value relative to the higher value of said impedance in said first current path that is maintained higher by said second switching means from the beginning of the retrace interval and until the beginning time of said portion;



a first retrace capacitance coupled to said terminal of said first switching means for developing across said first retrace capacitance a first portion of said retrace voltage; and

third means responsive to the current in said first current path of said impedance for controlling in accordance therewith the amplitude of said first portion of said retrace voltage relative to that of said retrace voltage, wherein said first portion of said retrace voltage is coupled to said deflection winding during the retrace interval for generating in accordance therewith a retrace scanning current in said deflection winding.

4,565,950

SERVO SYSTEM

Mitsutoyo Kikuno, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 4, 1983, Ser. No. 548,795

Claims priority, application Japan, Nov. 9, 1982, 57-196615; Nov. 26, 1982, 57-208007

Int. Cl.⁴ H02P *7/74*

U.S. Cl. 318—85 **5 Claims**

1. A servo system for moving at least two movable objects to positions which are respectively predetermined therefor, said servo system comprising:

drive start signal generator means for generating independent drive start signals which respectively cause the movable objects to start moving;

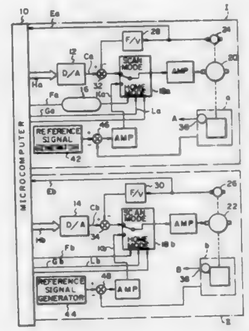
servo motor means for driving the movable objects in response to the independent drive start signals;

pulse signal generator means for generating pulse signals which respectively represent amounts of movement of the movable objects;

reference signal generator means for generating independent reference velocity signals for respectively moving the movable objects;

adder means for adding the pulse signals to the reference velocity signals associated therewith, the servo motor means being rotated at a velocity which corresponds to an output of the adder means;

sync signal generator means for generating independent sync signals when the movable objects individually reach the predetermined positions;



detector means for detecting a time lag between the sync signals; and

prevention means for preventing said time lag from being developed.

4,565,951

PROCESS AND ELECTRONIC DEVICE FOR THE CONTROL AND REGULATION OF THE SUPPLY CURRENT IN AN ELECTRIC MOTOR FED FROM A FIXED VOLTAGE DIRECT CURRENT SOURCE

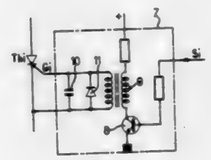
Jean C. Petit, 50, Rue Robert Gaillard, 86100 Chatellerault, France

Filed Dec. 21, 1984, Ser. No. 684,780

Claims priority, application France, Dec. 21, 1983, 83 20511

Int. Cl.⁴ H02P *3/14*

U.S. Cl. 318—317 **7 Claims**



1. A process for electronically controlling and regulating the supply current in an electric motor fed from a fixed voltage, direct current source by means of a chopper comprising:

generating a measuring voltage, representing the current passing through the motor, and a command voltage representing the command current required to be imposed on the motor; comparing said measuring voltage and said command voltage; applying the results of said comparison to a memory condenser to produce a progressive positive or negative charge voltage in response thereto; generating a reference voltage; comparing said progressive charge voltage with said reference voltage; determining a first time delay period after said progressive charge voltage exceeds said reference voltage; generating a conduction initiation signal for the chopper upon expiration of said first time delay period to initiate application of conduction current to a motor connected to the chopper; reducing the difference between said measuring voltage and said command voltage; determining a second time delay period after said progressive charge voltage falls below said

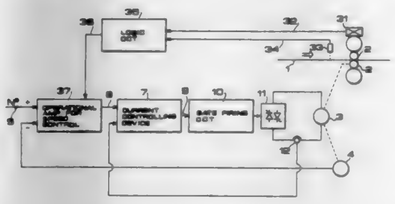
reference voltage; and generating a conduction cutoff signal for said chopper upon expiration of said second time delay period for terminating said conduction current.

4,565,952

SPEED CONTROLLING DEVICE FOR ROLLING MILLS

Akira Kaiko, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1984, Ser. No. 667,727
Claims priority, application Japan, Nov. 4, 1983, 58-207011
Int. Cl.[4] H02P *5/00*
U.S. Cl. 318—345 R **3 Claims**



1. A speed controlling device for a rolling mill, comprising:
a speed detector for detecting the speed of an electric motor for rolls of said rolling mill;
a rolling pressure detector for detecting a rolling pressure applied to said rolls and for detecting introduction of a work to be rolled between said rolls to output an introduction signal;
a speed controlling circuit responsive to an error of an output signal of said rotational speed detector from a prescribed reference speed signal and to the introduction signal for changing a gain and a time constant of a speed control system of said electric motor;
a thyristor device for controlling an electric current flowing through said electric motor;
a current detector for detecting an electric current flowing through said electric motor;
a current controlling circuit responsive to an error of the output signal of said current detector from a current instruction to said electric motor for outputting a firing phase angle signal to said thyristor device to cancel the error;
a work presence detector for detecting if the work to be rolled is present or not at a time directly before the work is introduced between said rolls;
a circuit responsive to an output of said work presence detector and also to an output of said rolling pressure detector for outputting signals respresentative of rolling pressure before and after introduction of the work to be rolled; and
means responsive to output signals of said work presence detector representative of presence or absence of the work to be rolled before and after introduction of the work to be rolled and also to an output signal of said rolling pressure detector for changing the gain and the time constant of said speed controlling circuit to reduce the amount of drop of the speed of said rolls upon introduction of the work to be rolled and to reduce the speed restoration time.

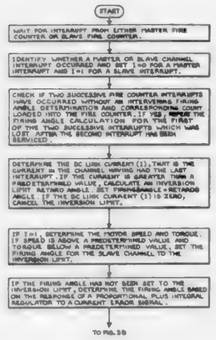
4,565,953

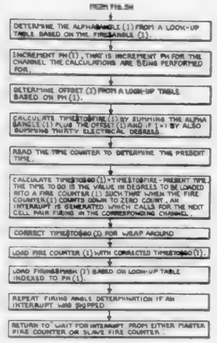
TWELVE PULSE AC MOTOR DRIVE

Paul M. Espelage, Salem, and James M. Nowak, Roanoke, both of Va., assignors to General Electric Company, Salem, Va.

Filed Jul. 2, 1984, Ser. No. 626,982
Int. Cl.[4] H02P *5/16*
U.S. Cl. 318—345 E **10 Claims**

1. A control for independent parallel first and second AC to DC converters having controlled switches coupled to a DC load, said control comprising:





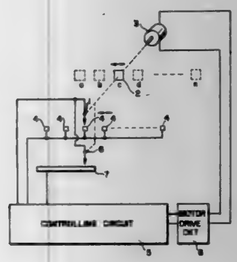
means for providing a first interrupt signal at the time of firing a switch of said first AC to DC converter;
means for providing a second interrupt signal at the time of firing a switch of said second AC to DC converter; and,
current regulator means responsive to said current setpoint and said first interrupt signal for determining and loading the time to go to fire the next controllable switch into said first fire counter means and responsive to said current setpoint and said second interrupt signal for determining and loading the time to go to fire the next controllable switch into said second firing counter means, said current regulator means comprising a single microcomputer.
first fire counter means for receiving the time to fire the next controlled switch in the first AC to DC converter;
second fire counter means for receiving the time to fire the next controlled switch in the second AC to DC converter;
first buffer means responsive to said first fire counter means timing out for firing the next controlled switch in the first AC to DC converter;
second buffer means responsive to said second fire counter means timing out to fire the next controlled swith in the second AC to DC converter;
means for generating a current setpoint representing the desired level of current output from said converters;

4,565,954

MULTIPOSITION CONTROLLER

Kazuhiro Yamanishi, Higashiosaka, and Mino Mineo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 1, 1982, Ser. No. 445,988
Claims priority, application Japan, Dec. 2, 1981, 56-194063
Int. Cl.[4] G05D *3/12*
U.S. Cl. 318—603 **3 Claims**



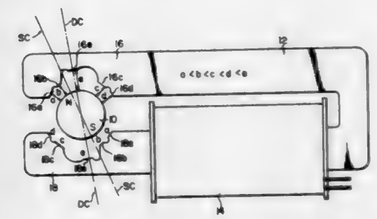
1. A multiposition controller for moving an object to a desired one of a plurality of predetermined positions, comprising:
a means for driving said object;
a first switching means comprising a first movable contact which is movable in association with said object within a range corresponding to a movable range of said object, and a plurality of fixed contacts which are connected in common with a single output line and arranged along said movable range of said contact so as to correspond to said plurality of predetermined positions of said object and so as to be sequentially in contact with said first movable contact as said movable contact is moved, said first switching means being in an on state only when said first movable contact is in contact with one of said plurality of fixed contacts;
a second switching means for detecting a direction of movement of the object comprising a second movable contact which is movable in association with said first movable contact within a range corresponding to the movable range of said object and a single fixed contact extending along a portion of said movable range of said second movable contact including an end of said movable range of said second movable contact so as to be in contact with said second movable contact when said second contact is in a position which is within said portion of said movable range of said second movable contact, said second switching means being in an on state only when said second movable contact is in contact with said single fixed contact; and
a control means for producing a control signal for controllng said drive means in accordance with a signal from said single ouptut line of said first switching means and an externally provided position assigning signal;
wherein said control means is further coupled to said second switching means for determining an initial position value by which values corresponding to said plurality of predetermined positions of said object are determined.

4,565,955

SYNCHRONOUS MOTOR DEVICE FOR TIMEPIECE

Susumu Kubota, Saitama, Japan, assignor to Rhythm Watch Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1983, Ser. No. 544,395
Claims priority, application Japan, Oct. 29, 1982, 57-190628
Int. Cl.[4] H02K *29/64, 21/00*
U.S. Cl. 318—696 **5 Claims**



1. A synchronous motor device for timepiece including a synchronous motor for timepiece having:
a rotor having a pair of magnetized rotor poles around its circumference;
a stator consisting of a pair of stator plates having a plurality of stator poles arranged around the vicinity of said rotor with separation of air gap; and
an energizing coil supplying alternating magnetic flux to said stator;
wherein said synchronous motor for timepiece comprises:
main stator poles being prepared with both of the stator poles at the facing position against the rotor shaft and mainly forming a static stable position of the rotor;
first supplementary stator poles being facingly positioned against the rotor shaft, being prepared with both of the stator poles at separate position from said main stator poles, forming a dynamic stable position of the rotor with the cooperation of said main stator poles, and having wider airgaps than said main stator poles; and
second supplementary stator poles being facingly positioned against the rotor shaft, being prepared in the vicinity of the dynamic stable position of the rotor in order to place a predetermined braking force on the rotor which rotates over the dynamic stable position, having wider air gaps than said main stator poles and said first supplementary stator poles;
whereby smooth self-starting rotation can be achieved.

4,565,956

FAST-ACTING SERVO DRIVE SYSTEM

Peter Zimmermann, Dieburg, Fed. Rep. of Germany, and John W. Teape, Cambridge, England, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 357,623, Mar. 12, 1982, abandoned.
This application Oct. 9, 1984, Ser. No. 658,466
Claims priority, application Fed. Rep. of Germany, May 23, 1981, 3120559
Int. Cl.[4] H02P *5/28*
U.S. Cl. 318—721 **12 Claims**

1. In a power servo system, particularly for a numerically controlled machine tool, a fast-acting servo drive system providing rated torque at any speed from speed zero having
a multiphase synchronous motor including
a magnetic rotor (**17**),
a stator (**43**) having a plurality of armature phase windings (**L1**, **L2**, **L3**),
current level and switching means (**33**, **35**, **36**, **37**) controlling current flow through said windings;
rotor position sensing means (**8**, **15**; **19**) coupled to the rotor and providing rotor position output signals;
and switching control means connected to and controlled by

the rotor position output signals and controlling operation of the current level and switching means to provide switching in four-quadrant mode by the current level switching means, wherein

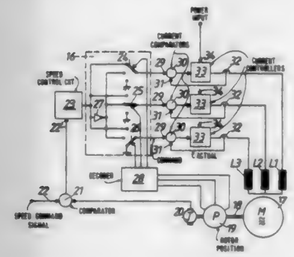
means are provided for generating an induced counter electromotive force (EMF) of essentially trapezoidal wave shape having rising and falling portions, connected by a flat or horizontal waveshape portion comprising

a plurality of armature core elements (43) in which the armature phase windings are inserted;

a plurality of field core elements (41) on the rotor (17) and providing a magnetic field,

at least one of the armature core elements and the field core elements being skewed or inclined,

the angle of skewing or inclination of the at least one of of the core elements and the armature pole coverage angles of the magnet core elements being relatively so positioned that said essentially trapezoidal wave shape of the induced electromotive force is obtained,



wherein the switching control means are connected to control said current level and said switching means to supply current (4, 5, 6, 7) to the phase windings under control of the rotor positioning means (19) in pulses of essentially square wave shape occurring only during the time of occurrence of the flat or horizontal portion of the trapezoidal counter electromotive force (EMF) voltages and extending, in time, essentially for the duration of occurrence of said flat or horizontal wave portion;

wherein the current level and switching means are controlling the current flow, in pulses (4, 7), through the phase windings to be of essentially constant value for the entire duration of said pulses at any rotary or angular position of the rotor; and

wherein the current level and switching means are additionally controlling and switching current flow to the respective current carrying windings such that the sum of the currents flowing in the respective windings is constant.

4,565,957

METHOD AND SYSTEM FOR STARTING A MOTOR-COMMUTATED SCR INVERTER

James R. Gary, Elk Grove Village, Ill.; Everett R. Geis, Orange, Calif.; Todd L. King, Buffalo Grove, and Daljit Singh, Elk Grove Village, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 30, 1983, Ser. No. 509,625

Int. Cl.⁴ H02P *5/40*

U.S. Cl. 318—723 **1 Claim**

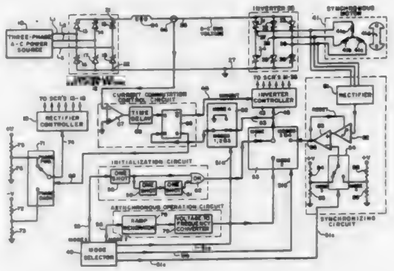
1. A starting system for an interter-motor system wherein a synchronous motor, having a stator and a rotor, is normally driven by the output a-c voltage developed by an inverter, which has a series of motor-commutated SCRs that are gated into conduction in predetermined pairs and in a prescribed sequence to conduct current to the motor, from an applied d-c bus voltage, and in response to received bus current, translated to the inverter over a d-c bus and a series-connected filter inductance from a controlled rectifier bridge to which is applied a-c line voltage, said starting system comprising:

means for sequentially gating the pairs of inverter SCRs at an increasing frequency to current pulse energize the motor to effect step-by-step rotation thereof at a faster and faster rate, the motor current being reduced to zero at the termination of each energizing pulse by controlling the rectifier bridge to force commutate the conducting pair of SCRs,

the bus current being decreased to zero, to force commutate the conducting SCRs, by controlling the rectifier bridge so that it will rapidly dissipate the energy that builds up and becomes stored in the filter and motor inductances when the bus current flows therethrough, thereby minimizing the decay time of the bus current to zero to facilitate faster gating on of the next pair of SCRs in the sequence;

a synchronizing circuit, operative after the motor has reached a preset speed, for sensing only the motor voltage and for developing synchronizing pulses in response to that sensed motor voltage,

said synchronizing circuit including a rectifier for rectifying



the motor voltage, an integrator for integrating the rectified motor voltage, a comparator for comparing the integrated voltage with a reference voltage representing a preset threshold level, a synchronizing pulse being produced each time the integrated voltage integrates up to the reference voltage and reaches the threshold level, and a reset circuit for feeding each synchronizing pulse back to the integrator to effect reset thereof to zero in order to start a new integration cycle, a constant volt-time integral thereby being obtained between successive synchronizing pulses as determined by the value of the reference voltage;

and means for utilizing each synchronizing pulse to control the rectifier bridge to reduce the bus current to zero to force commutate the conducting pair of inverter SCRs and to then gate on the next pair of SCRs in the prescribed sequence and supply current to the motor through that next pair of SCRs, thereby effectively synchronizing the gating of the inverter SCRs to the rotor position while at the same time force commutating the SCRs,

a constant ratio of the inverter output voltage relative to the inverter frequency being obtained as a result of the constant volt-time integral.

4,565,958

AC LINE VOLTAGE REGULATOR WITH CONTROLLED ENERGY DISPENSER

Edward Cooper, San Diego, Calif., assignor to Power-Matic, Inc., San Diego, Calif.

Filed Jan. 24, 1984, Ser. No. 573,493

Int. Cl.⁴ G05F *1/38*

U.S. Cl. 323—248 **10 Claims**

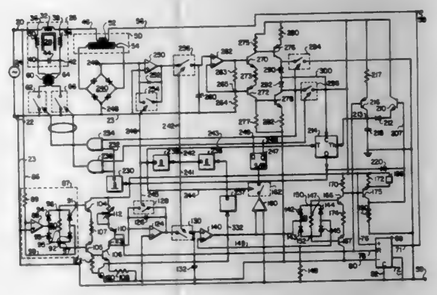
1. An apparatus for regulating an AC voltage, comprising:

an input port for connecting to a source of input AC voltage;

an output port for delivering a regulated load voltage and a load current to a load;

oscillatory tank circuit means connected between said input and output ports for being activated to produce an AC adjustment voltage and for combining said AC adjustment voltage with said input AC voltage;

first sensing means responsive to a zero crossing of an input AC voltage connected to said input port for measuring the difference in magnitude and polarity between the level of said input AC voltage and a predetermined voltage level and for providing a first difference signal representative of said magnitude difference and a second difference signal representative of said polarity difference;



variable trigger means responsive to said first difference signal and to said zero crossing for providing an activation signal at a time after said zero crossing determined by said first difference signal; and

switched tank circuit activating means responsive to said second difference signal and to said activation signal for activating said oscillatory tank circuit means to produce an AC adjustment signal having a magnitude determined by the time when said activation signal occurs after said zero crossing and having a phase of oscillation with respect to said input AC voltage determined by said second difference signal.

4,565,959

CURRENT SUPPLY CIRCUIT WITH REDUNDANT BACK-UP CURRENT SOURCE

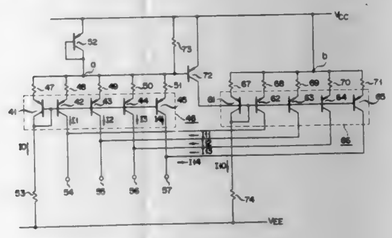
Katsumi Nagano, Shimonoseki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 3, 1982, Ser. No. 414,909

Claims priority, application Japan, Oct. 30, 1981, 56-173776

Int. Cl.⁴ G05F *3/16*

U.S. Cl. 323—315 **5 Claims**



1. A current supply circuit comprising:

first and second power source terminals;

a plurality of output terminals;

a first current mirror circuit including a first input transistor whose current path is connected between said first and second power source terminals, and a plurality of output transistors whose current paths are connected between said first power source terminal and said plurality of output terminals and whose bases are connected to the base of said first input transistor;

a second current mirror circuit including a second input transistor whose current path is connected between said first and second power source terminals, and a plurality of output transistors whose current paths are connected between said first power source terminal and said plurality of output terminals and whose bases are connected to the base of said second input transistor;

first input current setting means connected to said first input transistor for limiting current flowing through said first input transistor;

second input current setting means connected to said second input transistor for limiting current flowing through said second input transistor;

a plurality of first resistance means connected respectively between said first power source terminal and said plurality of output transistors constituting said first current mirror circuit;

a plurality of second resistance means connected respectively between said second power source terminal and said plurality of output transistors constituting said second current mirror circuit; and

control means for detecting current flowing through said first input transistor, and supplying a first control signal to said second input transistor to set said second input transistor into an inoperative state when it is detected that a current is flowing through said first input transistor, and for supplying a second control signal to said second input transistor to set said second input transistor into an operative state when it is detected that a current is not flowing through said first input transistor, said control means including a control transistor having an emitter connected to said first power source terminal, a collector connected to the base of said second input transistor, and a base connected to said second power source terminal through the current path of said first input transistor.

4,565,960

POWER SUPPLY SWITCHING CIRCUIT

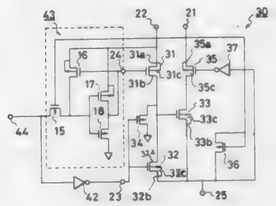
Akira Takata, and Shigeki Matsuoka, both of Toyonaka, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 11, 1984, Ser. No. 629,672

Claims priority, application Japan, Jul. 14, 1983, 58-126919

Int. Cl.⁴ G05F *3/20*

U.S. Cl. 323—317 **12 Claims**



1. A circuit for switching between a pair of power supply voltages, comprising:

a first terminal to which a first voltage is applied;

a second terminal to which a second voltage larger than said first voltage is applied;

a pair of third and fourth terminals for receiving a control signal for controlling the switching between a pair of power supply voltages, said control signal having either a high or low state;

a fifth terminal to which a selected voltage is supplied as an output;

a pair of first and second switching means connected in series between said second terminal and said fifth terminal, said first switching means being turned on or off depending upon the state of said control signal at said third termi-

nal and said second switching means being turned on or off depending upon the state of said control signal at said fourth terminal;

third switching means connected between a junction between said first and second switching means and a reference voltage, said third switching means being turned on or off depending upon the state of said control signal at said third terminal; and

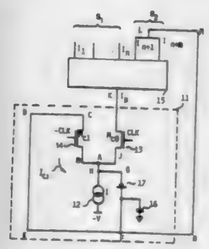
fourth switching means connected between said first terminal and said fifth terminal, said fourth switching means being turned on or off depending upon a low or high state at said junction between said first and second switching means.

4,565,961

CIRCUIT FOR PRESERVING THE MAGNITUDE OF THE DC COMPONENT IN A PULSED CURRENT SOURCE

Thomas Hornak, Portola Valley, and Gary L. Baldwin, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 18, 1984, Ser. No. 611,802
Int. Cl.⁴ G05F *1/46*
U.S. Cl. 323—312 **4 Claims**



1. An improved pulsed current source of the type in which a current I is supplied by a dc current source to the input of a switch which alternately switches the current I between a first output and a second output of the switch to produce at the first output a pulsed current I_p, said switch having a duty cycle equal to the fraction of time that current I is directed by the switch to the first output and said improvement comprising:

first loop means for adding the dc component of the current at the second output to the current I supplied to the input of the switch, whereby the dc component of I_p is independent of variations in the duty cycle of the switch.

4,565,962

GYRATOR

Katsumi Nagano, Shimonoseki, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jul. 20, 1984, Ser. No. 632,858
Claims priority, application Japan, Jul. 29, 1983, 58-138816
Int. Cl.⁴ G05F *1/00*; H03H *7/44*
U.S. Cl. 323—351 **7 Claims**

1. A gyrator comprising:

a first terminal to be coupled with first voltage;

a second terminal to be coupled with second voltage;

load means connected to said second terminal;

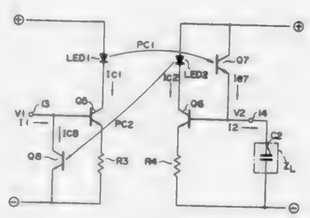
first voltage-current converting means for converting said first voltage applied to said first terminal into electric current;

first electro-photo converting means for converting the output current of said first voltage-current converting means into a corresponding photosignal;

first photo-electric converting means optically connected to said first electro-photo converter, for converting the photosignal, which is produced from said first electro-photo converting means, into a corresponding current, said means supplying the converted current to said load means connected to said second terminal;

second voltage-current converting means for converting voltage, which is caused at said second terminal by said load means, into a corresponding electric current;

second electro-photo converting means for converting the output current of said second voltage-current converting means into a corresponding photosignal;



second photo-electric converting means optically connected to said second electro-photo converting means, said second photo-electric converting means converting the photosignal from said second electro-photo converting means into a corresponding electric current; and

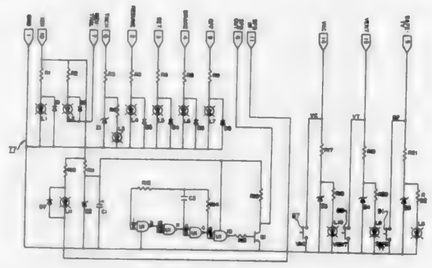
means for supplying the converted electric current from said second photo-electric converting means to said first terminal.

4,565,963

TEST CIRCUIT FOR MOTOR VEHICLE SPEED CONTROL

Mark L. Shaw, Fort Worth, Tex., assignor to Specific Cruise Systems, Inc., Fort Worth, Tex.

Filed Apr. 7, 1983, Ser. No. 482,834
Int. Cl.⁴ G01R *31/02*
U.S. Cl. 324—51 **7 Claims**



1. For use with a motor vehicle speed control system of the type having vacuum servo means for moving a throttle, solenoid valve means for increasing and decreasing the vacuum in the servo means, selector switch means for actuating the system and selecting the speed, an electronic control module for controlling the solenoid valve means in response to the speed selected, and speed sensor means for providing to the control module electrical pulses corresponding to the actual vehicle speed, an improved test means, comprising:

a test circuit adapted to be connected to the control module and having series leads connecting terminals of the solenoid valve means and selector switch means directly with respective terminals of the control module;

indicating means in the test circuit for indicating whether or not voltage potential is present in the series leads; and

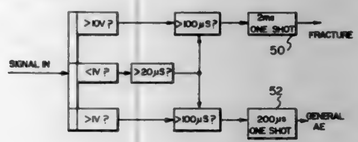
oscillator means in the test circuit for applying pulses to the control module that simulate pulses provided by the speed sensor means corresponding to a selected speed.

4,565,964

CABLE INTEGRITY BY ACOUSTIC EMISSION

James R. Matthews, Lower Sackville; George K. Schattschneider; Mervin R. Black, both of Victoria, and James A. Perkins, Sooke, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Oct. 11, 1983, Ser. No. 540,476
Claims priority, application Canada, Oct. 15, 1982, 413580
Int. Cl.⁴ G01R *31/02*
U.S. Cl. 324—51 **8 Claims**



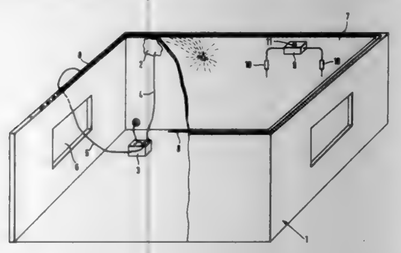
1. A system for monitoring the integrity of a potentially weak section of a towing cable having a plurality of electrical signal transmitting wires and a plurality of wires for carrying a load at one end under a body of water, the system comprising: an acoustic emission transducer secured on the cable at said one end proximate the potentially weak section of cable to receive acoustic emissions from said section coupled through the surrounding water on occurrence of microcracks or breaks in any of the load carrying wires and provide electrical signals representative of said emissions to said signal transmitting wires, and means for processing said signals from the transducer to obtain an indication at the other end of said cable of the number of cracks or breaks in the load carrying wires of said cable, said means for processing said signals from said transducer including means at the other end of said cable for monitoring the magnitude and duration of the electrical signals to discriminate between electrical noise and signals arising as a result of cracks or breaks and between signals arising from cracks and breaks.

4,565,965

METHOD AND APPARATUS FOR LOCATING ROOF LEAKS IN FLAT ROOFS

Heinrich Geesen, Mootzenstrasse 24, 2915 Saterland 1, Fed. Rep. of Germany

Filed Apr. 19, 1984, Ser. No. 601,798
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 3314182
Int. Cl.⁴ G01R *27/02*
U.S. Cl. 324—65 R **6 Claims**



1. A method for locating roof leaks in a flat roof, comprising the steps of:

connecting the positive terminal of a pulse generator to a moisture location below the flat roof;

connecting the negative terminal of the pulse generator to a metal gutter edge of the roof;

detecting pulses fed through the moisture path from the moisture location to the leak location and to the metal gutter by measurement sensors; and

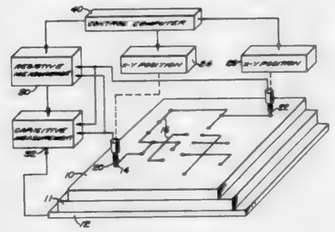
measuring the pulse amplitudes by means of a measurement apparatus connected to said measurement sensors, the pulse amplitudes attenuating in a direction away from the leak location towards the edge of the flat roof.

4,565,966

METHOD AND APPARATUS FOR TESTING OF ELECTRICAL INTERCONNECTION NETWORKS

Robert P. Burr, Matinicus, Me.; Raymond J. Keogh, Huntington, N.Y.; Ronald Morino, Sea Cliff, N.Y.; Jonathan C. Crowell, Brooklyn, N.Y.; James B. Burr, Centerport, N.Y., and James C. Christophersen, West Islip, N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Mar. 7, 1983, Ser. No. 473,590
Int. Cl.⁴ G01R *15/12*
U.S. Cl. 324—73 PC **33 Claims**



1. A method for testing rigid or flexible electrical interconnection network boards including at least two networks including terminal points and interconnecting conductors, said method comprising the steps of:

establishing an electrically conductive reference means in a predetermined electrical and geometrical position with respect to the surface containing the interconnecting conductors of the networks, and separated therefrom by a dielectric;

making measurements from terminal points of the interconnection board being tested including

at least one impedance measurement from a terminal point of each network to said reference means, and

at least a measurement of the end-to-end resistance of each network;

with either the impedance or the resistance measurement(s) being made first;

comparing said measured impedance and resistance values with the respective pre-established values for an interconnection board with no electrical faults;

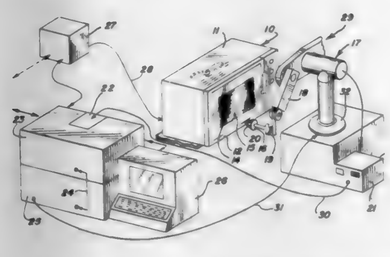
and indicating faults when either

(a) said impedance measurement value is above said respective established value by more than a predetermined amount;

(b) said impedance measurement value is below said respective established value by more than a predetermined amount; and/or

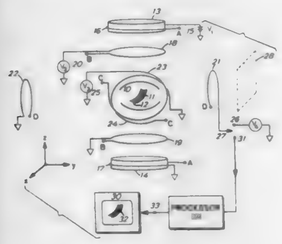
(c) said resistance measurement value departs from said respective predetermined value.

4,565,967
METHOD AND APPARATUS FOR TESTING MICROWAVE OVENS
Gerald A. Eisenbrandt, Lincoln Township, Berrien County, Mich., and James R. Marks, Perrysburg, Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jun. 21, 1982, Ser. No. 390,788
Int. Cl.⁴ G01R *21/04;* **H05B** *9/06*
U.S. Cl. 324—95 **36 Claims**



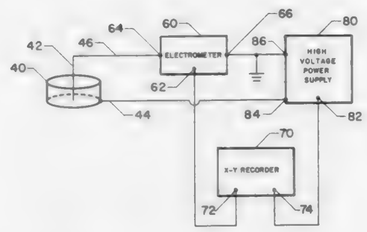
1. Apparatus for determining microwave leakage characteristics of a microwave oven for use in quality control of the manufacture of such ovens, comprising:
a microwave energy sensor;
means for moving the sensor at high speed adjacent the oven to sense microwave leakage therefrom;
first control means for causing the moving means to move the sensor at slower speeds whenever an elevated level of leakage is sensed; and
second control means for identifying the location of the sensed levels having a maximum leakage above a preselected amount, said second control means including reference means for comparing the sensed leakage with preselected values for acceptable leakage for said identified location, said reference values being adjusted by a factor correlated with the speed of the sensor.

4,565,968
BLOOD VESSEL PROJECTION IMAGING SYSTEM USING NUCLEAR MAGNETIC RESONANCE
Albert Macovski, 2505 Alpine Road, Menlo Park, Calif. 94025
Filed Feb. 16, 1983, Ser. No. 466,969
Int. Cl.⁴ G01R *33/08*
U.S. Cl. 324—309 **25 Claims**



1. In a method for producing a two-dimensional projection image of moving material in a volume using nuclear magnetic resonance the steps of:
insensitizing the magnetic spins in a region of the volume using saturation excitation;
exciting the spins in the region with a burst so that only moving material that has traveled into the region and not experienced complete saturation will produce an output signal; and
processing the output signals to produce a two-dimensional projection image of the volume.

4,565,969
SATURATION CURRENT INCIPIENT SOOT DETECTOR
Douglas B. Olson, Lawrenceville, and Hartwell F. Calcote, Princeton, both of N.J., assignors to AeroChem Research Laboratories, Inc., Princton, N.J.
Filed Apr. 29, 1983, Ser. No. 489,714
Int. Cl.⁴ G01N *27/62*
U.S. Cl. 324—468 **21 Claims**

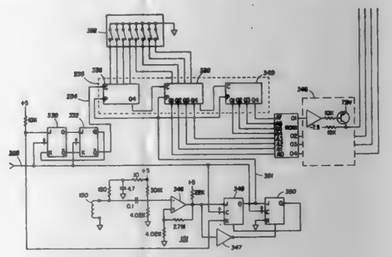


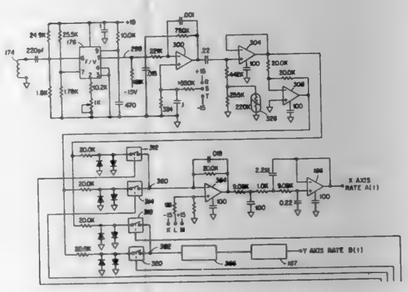
1. A detection apparatus for determining the onset of sooting conditions in a flame having a flame front, said detection apparatus comprising:
probe means for insertion down-stream of said flame front, said probe means including a negative electrode and a positive electrode;
a voltage supply means connected to said electrodes for applying a variable voltage across said electrodes; and,
detecting means for detecting the change from a substantially chemi-ionization saturation current condition to a substantially thermal ionization non-saturation current condition across said electrodes,
wherein said detecting means is sufficiently sensitive to detect the substantial change in the current voltage relationship which identifies the transition from a substantially chemi-ionization saturation current condition to a substantially thermal ionization non-saturation current condition at the onset of soot formation.

4,565,970
PRECISION HARMONIC REJECTING DEMODULATOR WITH DIGITAL PHASE ALIGNMENT
Billie F. Rider, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Oct. 20, 1982, Ser. No. 435,516
Int. Cl.⁴ H03D *3/18*
U.S. Cl. 329—50 **9 Claims**

1. In apparatus of the type generating a periodic signal having a peak amplitude representing a physical quantity measured by said apparatus, said periodic signal including a fundamental component and a plurality of harmonic components, a demodulator, comprising:
means for dividing a period of said periodic signal into a plurality of segments;
means for regenerating selected ones of said plurality of segments of said periodic signal in accordance with a predetermined pattern; and
means receiving said ones of said plurality of selected segments of said periodic signal for generating a voltage related to said measured physical quantity, wherein said

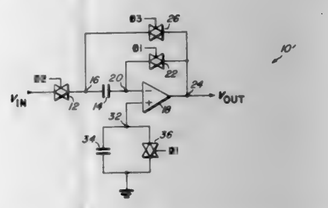
predetermined pattern selects segments of said periodic signal which maximize gain of said fundamental compo-





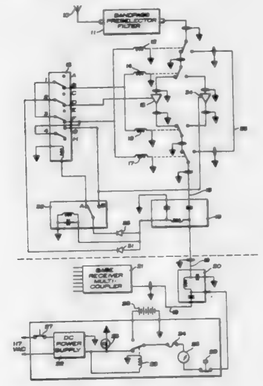
nent and minimize gain of said plurality of harmonic components of said periodic signal.

4,565,971
PARASITIC INSENSITIVE AUTO-ZEROED OPERATIONAL AMPLIFIER
Daniel A. Brookshire, Manor, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 28, 1985, Ser. No. 695,644
Int. Cl.⁴ H03F *1/02, 1/14*
U.S. Cl. 330—9 **8 Claims**



1. In combination with a differential input operational amplifier citcuit having an operational amplifier with a negative input having parasitic capacitance associated therewith which induces an error voltage at an output of the operational amplifier, and a positive input adpated to be coupled to a reference voltage, a parasitic compensation circuit for compensating for the parasitic error voltage induced by said parasitic capacitance, comprising:
first switching means for selectively auto-zeroing the operational amplifier;
first capacitance means having a first electrode coupled to the negative input of the operational amplifier and a second electrode, for selectively storing an input voltage and a first parasitic error voltage;
second switching means for selectively coupling the second electrode of the first capacitance means to the output of the operational amplifier;
third switching means coupled between the positive input of the operational amplifier and a reference voltage terminal, for selectively coupling the operational amplifier to the reference voltage terminal; and
second capacitance means having a capacitance proportional to the first capacitance means and coupled between the positive input of the operational amplifier and the reference voltage terminal, for selectively storing and coupling a second perasitic voltage substantially equal to the first parasitic voltage to the positive input of the operational amplifier.

4,565,972
TOWER MOUNTED PREAMPLIFIER
Daniel P. Kaegebein, Depew, N.Y., assignor to TX RX Systems, Inc., Angola, N.Y.
Filed Mar. 18, 1985, Ser. No. 713,304
Int. Cl.⁴ H03F *3/68*
U.S. Cl. 330—124 D **18 Claims**

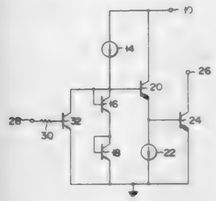


1. An amplifier system, comprising:
an input transmission line;
an output transmission line;
a primary amplifier circuit;
a backup amplifier circuit;
an amplifier system power supply;
amplifier switching means for mutually exclusively connecting said primary amplifying circuit or said backup amplifying circuit between said input transmission line and said output transmission line;
routing switching means for controlling said amplifier switching means; and
latching switch means responsive to interruptions in an output from said amplifier system power supply for setting said routing switching means in a first or second mode.

4,565,973
CURRENT AMPLIFYING CIRCUIT
Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Nov. 9, 1981, Ser. No. 319,413
Claims priority, application Japan, Nov. 12, 1980, 55-159267
Int. Cl.⁴ H03F *3/04*
U.S. Cl. 330—288 **6 Claims**

1. A current amplifying circuit comprising:
diode means to which an input current is applied to a high potential terminal thereof;
a first transistor whose base is connected to the high potential terminal of said diode means;

current source means connected to said first transistor for causing a current lineraly proportional to the input current to flow through said first transistor;



a second transistor whose base is connected to an emitter of said first transistor and whose emitter is connected to a low potential terminal of said diode means; and

the current output terminal connected to a collector of said second transistor.

4,565,974

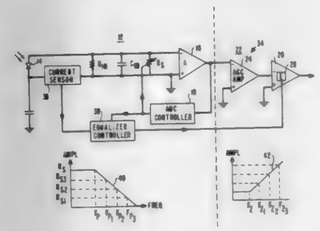
OPTICAL RECEIVER CIRCUIT WITH ACTIVE EQUALIZER

Lanny S. Smoot, Essex, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 13, 1984, Ser. No. 640,259

Int. Cl.⁴ H03F *3/191*; H03G *3/10*

U.S. Cl. 330—304 **8 Claims**



1. A signal receivieng apparatus of the type having:

an input section including:

a transimpedance amplifier with first and second input nodes and an output node;

a signal current source connected between the input nodes;

a variable shunt impedance connected between the input nodes;

means for controlling the resistance value of the shunt impedance in response to the output of the apparatus, and

a shaping section including an equalizer having a frequency response characteristic which compensates for the frequency response characteristic of the input section when no significant current is flowing in the variable shunt impedance, WHEREIN THE IMPROVEMENT COMPRISES:

means responsive to input signal current for controlling the frequency response characteristic of the equalizer when significant current is flowing in the shunt impedance to maintain the frequency response characteristic of the shaping section so that it continues to compensate for the frequency response characteristic of the input section even when the latter is changed as a result of changes in the value of the shunt impedance.

4,565,975

SYNCHRONIZATION OF PULL-IN OSCILLATORS IN THE TRANSMISSION OF DIGITAL SIGNALS

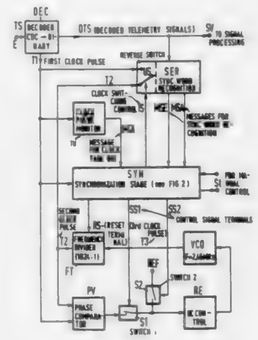
Peter Gegner, Munich, and Friedemann Vollnhals, Wolfratshausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,917

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1983, 3309270

Int. Cl.⁴ H03L *7/14*; H04L *7/08*

U.S. Cl. 331—1 A **2 Claims**



1. A method for the synchronization of clock generators in the transmission of digital signals which contain clock information and periodically at least one synchronization word, where, from the digital signals, a first clock pulse signal phaselocked relative to these transmitted digital signals is generated, and therefrom, by means of a phase control loop containing a phase comparator and a voltage-controlled oscillator connected therewith, a second clock signal is generated by the fact that first, in the phase control loop, a third clock signal of a frequency corresponding to a multiple of the clock frequency of the transmitted digital signals is generated, and from the third clock signal by frequency division the second clock signal is formed, that, upon a disturbance which leads to a failure of the first clock signal, the operation of the phase control loop between the phase comparator and the voltage-controlled oscillator is interrupted, and that, after elimination of the disturbance, the phase control loop between phase comparator and voltage-controlled oscillator is again closed, characterized by the generation of the second clock signal by means of a resettable frequency divider, that, in normal operation, a means for monitoring the synchronization word of the transmitted digital signals is controlled by the second clock signal, that, in the case of a disturbance of the first clock signal or of the synchronization word, the control of the means for monitoring the synchronization word, in addition to the actuation of the phase control loop, is switched to the first clock signal, and that after elimination of the disturbance, in addition to the closing of the phase control loop with the first recognition of the synchronization word when the first clock signal is present, the delivery of clock pulses of the second clock signal is triggered by a resetting of the frequency divider, and the means for monitoring the synchronization word is again connected to and controlled by the second clock signal.

4,565,976

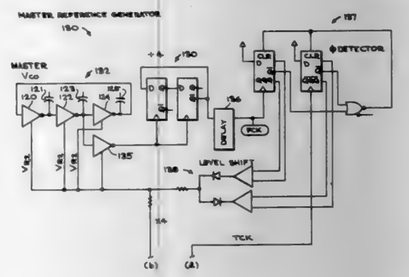
INTERRUPTABLE VOLTAGE-CONTROLLED OSCILLATOR AND PHASE-LOCKED LOOP USING SAME

David L. Campbell, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 5, 1983, Ser. No. 520,876

Int. Cl.⁴ H03B *1/00*

U.S. Cl. 331—57 **22 Claims**



1. A voltage-controlled oscillator (VCO) circuit, comprising:

one or more emitter-coupled-logic (ECL) inverter stages connected as a ring oscillator, each ECL inverter stage having a respective first input terminal and a respective output terminal, each ECL inverter stage having a timing capacitor coupled between its output terminal and a first supply voltage, each ECL inverter stage having a first current source coupled between its output terminal and a second supply voltage, each first current source having a control terminal for varying its output current such that its output current controls the fall time of an output signal on the output terminal of the respective ECL inverter stage and such that the frequency of the ring oscillator is variable in response to a control signal applied to the control terminal of each first current source.

4,565,977

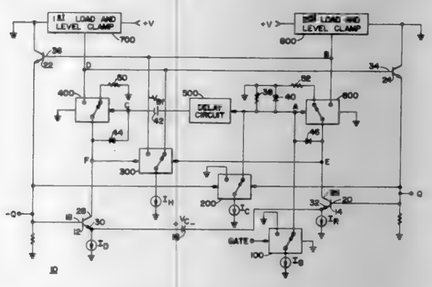
EMITTER COUPLED PROGRAMMABLE OSCILLATOR

William H. Davenport, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 18, 1984, Ser. No. 683,079

Int. Cl.⁴ H03K *3/281*

U.S. Cl. 331—113 R **10 Claims**



1. A multistable circuit comprising:

a pair of active elements,

first means for coupling said active elements in feedback relation to cause said active elements to alternately switch on and off in oscillatory fashion, and including frequency determining means in circuit between said active elements effective for determining the frequency of oscillation, and

switching means for disabling the feedback normally provided by said first means and returning said active elements to points of reference potential in order to preset a non-oscillatory state of conduction by said active elements wherein said frequency determining means is held at a voltage level corresponding to the voltage level associated therewith when said active elements are about to switch during oscillation whereby resumption of oscillation can subsequently take place at a predetermined point in the oscillation cycle.

4,565,978

INTEGRABLE OSCILLATOR CIRCUIT

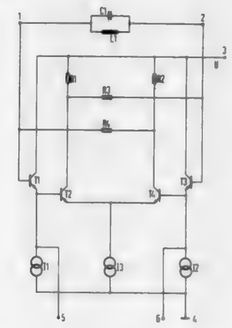
Josef Fenk, Eching, and Richard Stepp, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 30, 1984, Ser. No. 646,005

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333402

Int. Cl.⁴ H03B *5/12*; H03C *3/24*

U.S. Cl. 331—117 R **15 Claims**



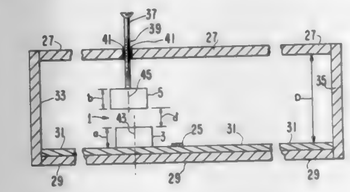
1. Integrable bipolar oscillator circuit, comprising first, second, third and fourth transistors of the same conductivity type, first, second, third and fourth resistors, first, second and third constant current sources having base points and outputs, a reference potential terminal connected to said base points of said first, second and third constant current sources, a supply potential terminal, and a frequency-determining feedback member, said output of said first constant current source being connected to the emitter of said first transistor and to the base of said second transistor, said output of said second constant current source being connected to the emitter of said third transistor and to the base of said fourth transistor, the emitters of said second and fourth transistors being connected to said output of said third constant current source through a given connection, the collectors of said first and third transistors being directly connected to said supply potential terminal, said first and second resistors each being connected between a respective one of the collectors of said second and fourth transistors and said supply potential terminal, said fourth resistor being connected between the base of said first transistor and the collector of said fourth transistor, said third resistor being connected between the base of said third transistor and the collector of said second transistor, said frequency-determining feedback member being connected between the base of said third transistor and the base of said first transistor, and an oscillator voltage being supplied between the emitters of said first and third transistors.

4,565,979

DOUBLE DIELECTRIC RESONATOR STABILIZED OSCILLATOR

Slawomir J. Fiedziuszko, Palo Alto, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 10, 1984, Ser. No. 679,852
Int. Cl.⁴ H03B *7/00*
U.S. Cl. 331—117 D **14 Claims**



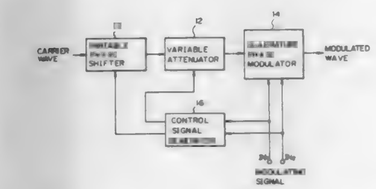
1. A double dielectric resonator stabilized oscillator comprising:
oscillating means having an output conductor carrying an RF sinusoid at substantially one frequency; and
in close proximity to the oscillating means and magnetically coupled thereto, a double dielectric resonator comprising upper and lower dielectric elements magnetically coupled to each other and separated from each other by a nonzero distance d.

4,565,980

PSK MODULATOR WITH PRESET AMPLITUDE AND PHASE CORRECTIONS FOR EACH PHASE

Hideo Ashida, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 26, 1983, Ser. No. 545,460
Claims priority, application Japan, Oct. 29, 1982, 57-190398
Int. Cl.⁴ H03C *3/00, 3/04, 3/18;* **H04B** *1/04*
U.S. Cl. 332—16 R **19 Claims**



1. A phase modulation method for modulating the phase of a carrier wave in accordance with a binary modulating signal to produce a modulated wave, comprising the step of independently correcting at least one of the amplitude and the phase of one of the carrier wave or the modulated wave by respective, predetermined amplitude and phase increments in accordance with the respective values of the binary modulating signal.

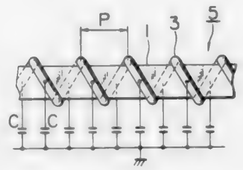
4,565,981

ELECTROMAGNETIC DELAY LINE

Kazuo Kameya, Tsurugashima, Japan, assignor to Elmec Corporation, Tsurugashima, Japan

Filed Sep. 21, 1984, Ser. No. 652,735
Claims priority, application Japan, Oct. 5, 1983, 58-186205
Int. Cl.⁴ H03H *7/32*
U.S. Cl. 333—138 **3 Claims**

1. A lumped constant electromagnetic delay line comprising:
a nonmagnetic coil form,
an inductance element formed by spirally winding a conductor about said form thereby forming a single layer solenoid-like element, each 360 degree turn of said conductor about said coil form being comprised of a number of inductance sections, said number being greater than one, and
a plurality of capacitors connecting said conductor to a



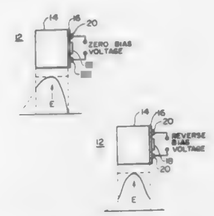
ground terminal to form a ladder-network-like configuration, the number of capacitors connected to said turn of said conductor being equal to the number of inductance sections in said turn.

4,565,982

MILLIMETER-WAVE ELECTRONIC PHASE SHIFTER USING SCHOTTKY BARRIER CONTROL

Richard A. Stern, Allenwood, and Elio A. Mariani, Hamilton Square, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 20, 1983, Ser. No. 505,668
Int. Cl.⁴ H01P *1/18*
U.S. Cl. 333—157 **10 Claims**



1. A millimeter-wave phase shifter comprising:
a dielectric waveguide of rectangular cross-section and an energy wave with an associated E-field distribution propagating longitudinally to said cross-section in said waveguide;
a first semi-conducting epitaxial layer formed on a first side surface of said dielectric waveguide;
ohmic contact means for applying a first bias voltage to said first epitaxial layer; and
first Schottky barrier electrode means, formed on said first epitaxial layer, for varying the conductance of said epitaxial layer when the first bias voltage is applied thereby causing a portion of the E-field distribution of the energy wave to be partially displaced from said waveguide resulting in a change in phase of the propagating energy wave.

4,565,983

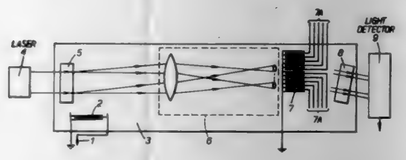
FILTER

Stephen C. Gratze, Boreham, England, assignor to The Marconi Company Limited, Stanmore, England

Filed May 11, 1983, Ser. No. 493,561
Claims priority, application United Kingdom, May 12, 1982, 8213759
Int. Cl.⁴ H03H *9/64;* **G02B** *5/172*
U.S. Cl. 333—193 **5 Claims**

1. A frequency selective filter for filtering an input signal,

comprising: means for receiving such input signal; a device for deflecting a light beam by an amount dependent on the frequency of the input signal; a spatial light modulator having a light receiving region disposed to receive light from said device, said light receiving region extending in the direction in which light is deflected by said device; and means for applying control signals to the said spatial light modulator, for giving



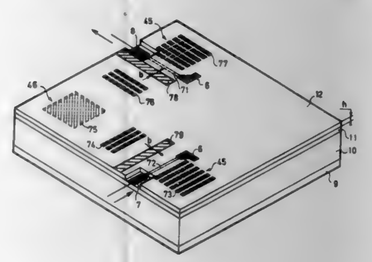
said modulator a light transmissivity which varies in the direction in which light is deflected by said device as a function of the value of said control signals, said spatial light modulator being arranged to receive the deflected light and to distinguish between light deflected through different angles by said device so that said modulator transmits light modulated in response to components of said input signal having a particular frequency characteristic defined by the said control signals.

4,565,984

FILTER DEVICE UTILIZING MAGNETOSTATIC WAVES

Jean-Paul Castera, Orsay, and Jean-Marie Dupont, Les Ulis, both of France, assignors to Thomson-CSF, Paris, France

Filed May 25, 1984, Ser. No. 614,156
Claims priority, application France, May 27, 1983, 83 08828
Int. Cl.⁴ H03H *9/24, 9/48;* **H01P** *1/203*
U.S. Cl. 333—202 **10 Claims**



1. A filter device for magnetostatic waves of predetermined wavelength, these magnetostatic waves being propagated in a magnetic layer epitaxied on a non-magnetic layer, comprising:
at least one filter microstrip positioned along the path of the said waves, the width of the said microstrip being equal to a multiple of the wavelength which is to be selectively transmitted; and
dissipating means associated with the said microstrip for dissipating the energy originating from the interaction of the magnetostatic waves with the said filter microstrip.

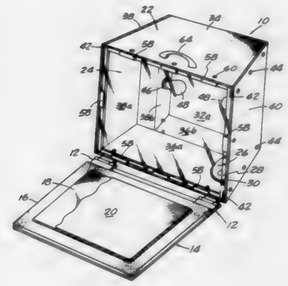
4,565,985

FILM COPYING APPARATUS

John M. Reel, 1361 Colo Rio Vista, Bullhead City, Ariz. 86430

Filed Jul. 6, 1984, Ser. No. 628,505
Int. Cl.⁴ G03B *27/04*
U.S. Cl. 355—113 **11 Claims**

1. Film copying apparatus, comprising:
a housing structure having walls defining a light chamber extending above a bottom light emitting opening;
a light transmitting window member spanning said opening;
a flat base member coextensive with and positioned below said window member and having an upper surface covering of a soft compressible material;
hinge means connecting said housing structure to said base member for hinged swinging movement to an open position to enable the placement of a light sensitive film and a superposed film negative on the upper surface covering of said base member, and to a closed position with the win-



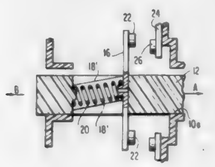
dow member in overlying engagement with the film negative; and
in which said hinge means in said closed position are operable to enable raising and lowering movements between the housing structure and said base member, whereby the weight of the housing will be uniformly applied by said window member and operatively hold the film negative and light sensitive film in contact engagement.

4,565,986

ELECTROMAGNETIC CONTACTOR

Shigeharu Otsuka; Yuji Mizuno, both of Aichi; Tomoharu Hasegawa, and Masahisa Kobukuro, both of Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,292
Claims priority, application Japan, Sep. 19, 1983, 58-172497
Int. Cl.⁴ H01H *50/02*
U.S. Cl. 335—131 **6 Claims**



1. An electromagnetic contactor, comprising:
(a) a contactor body having a base (**10**);
(b) a crossbar (**12**) slidably mounted on said base and having a plurality of elongate apertures (**14**) therein defining guide surfaces;
(c) a plurality of movable contact members (**16**) individually slidably supported in said apertures on said guide surfaces, having movable contacts (**22**) mounted thereon, and being biased towards an end of said apertures; and
(d) a plurality of fixed contacts (**26**) disposed in confronting relation to said movable contacts, respectively;
(e) said movable and fixed contacts jointly constituting normally open and normally closed contact pairs so that electrical circuits controlled by the contactor can be opened and closed in response to the sliding movement of said crossbar; and

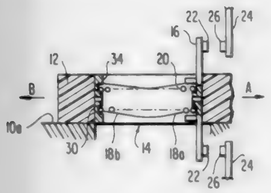
(f) said guide surfaces (18', 18") being linear and continuously inclined relative to the direction of movement of said crossbar throughout the lengths of the apertures to ensure that a movable contact member of a closed contact pair is always supported on inclined guide surfaces, to thereby haltingly wedge said crossbar against said base during the sliding movement of the crossbar with a closed contact pair fused together.

4,565,987

ELECTROMAGNETIC CONTACTOR

Shigeharu Otsuka, and Yuji Mizuno, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,302
Claims priority, application Japan, Sep. 27, 1983, 58-178493
Int. Cl.⁴ H01H *50/02*
U.S. Cl. 335—131 **6 Claims**



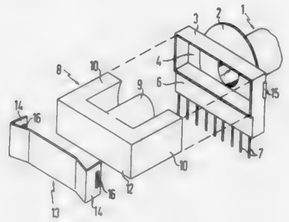
1. An electromagnetic contactor, comprising:
(a) a contactor body having a base (10);
(b) a crossbar (12) slidably mounted on said base and having a plurality of elongate apertures (14) therein defining guide surfaces;
(c) a plurality of movable contact members (16) individually slidably supported in said apertures on said guide surfaces, having movable contacts (22) mounted thereon, and being biased towards an end of said apertures;
(d) a plurality of fixed contacts (26) disposed in confronting relation to said movable contacts, respectively;
(e) said movable and fixed contacts jointly constituting normally open and normally closed contact pairs so that electrical circuits controlled by the contactor can be opened and closed in response to the sliding movement of said crossbar; and
(f) said guide surfaces (18*a*, 18*b*; 18*c*, 18*d*) in each aperture being linear and continuously inclined at two different angles relative to the direction of movement of said crossbar throughout the lengths of the apertures to ensure that a movable contact member of a closed contact pair is always supported on inclined guide surfaces, to thus accommodate, respectively, a movable contact member for either normally open or normally closed contact pairs, and to thereby haltingly wedge said crossbar against said base during the sliding movement of the crossbar with a closed contact pair fused together.

4,565,988

ELECTRIC COIL WITH SECURED CORES

Marc Moura, Pavillons sous Bois, France; Johannes H. Tobben, Breugel, Netherlands, and Ernst Schmotz, Willing, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany; Thomson-CSF, Paris; L.C.C.-C.I.C.E., Bagnolet, both of, France and U.S. Philips Corp., Tarrytown, N.Y.

Continuation of Ser. No. 534,588, Sep. 22, 1983, abandoned. This application Dec. 28, 1984, Ser. No. 685,978
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3235655
Int. Cl.⁴ H01F *27/26*
U.S. Cl. 336—192 **2 Claims**



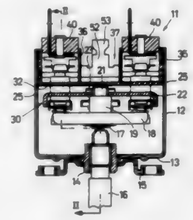
1. Electric coil comprising a winding on a coil form, said coil form having a longitudinal axis and coil form flanges located at respective ends thereof, each of said coil form flanges carrying a plurality of soldering lugs extending parallel to one another and perpendicularly to the longitudinal axis of said coil form, respective magnetizable cores disposed on said coil form at said respective ends thereof, and springs having a substantially planar middle portion and formed with end portions bent out of the plane of said middle portion, said springs respectively engaging said magnetizable cores at said respective ends of the coil form, said coil form flange and said bent end portions of said springs, respectively, being formed with respective laterally extending projections and recesses snappable over said projections so as to urge said cores towards one another in longitudinal direction of said coil form.

4,565,989

TEMPERATURE CONTROL APPARATUS

Bruno Lotter, Oberderdingen; Willi Easig, Böblingen, and Hans Mayer, Kuernbach, all of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Nov. 2, 1983, Ser. No. 547,787
Int. Cl.⁴ H01H *37/36*
U.S. Cl. 337—311 **13 Claims**



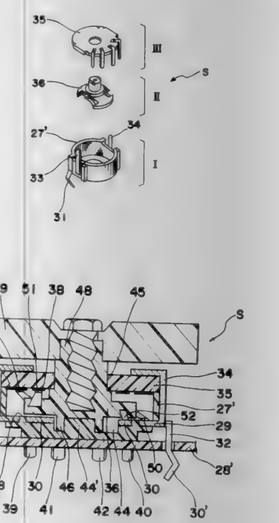
1. A modular temperature control apparatus, comprising:
a casing defining a plurality of modular holding means for snap switches;
at least one preassembled modular snap switch mountable in any one of the modular holding means formed in the casing, each modular snap switch comprising a separate insulating base and coacting switch parts mounted on the base, the switch parts defining at least one pole of the temperature control apparatus; and,
a common snap switch operating means disposed in the casing, the operating means comprising an expansion element and a transmission mechanism for acting on each modular snap switch mounted in one of the modular holding means, whereby different numbers of the preassembled modular snap switches can be independently mounted one each in the modular holding means to form single and multipole control apparatus in the same casing.

4,565,990

ROTARY OPERATION TYPE MINIATURIZED ELECTRONIC COMPONENT

Hiroshi Matsui, Hirakata; Tadashi Mihara, and Koji Umino, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 3, 1984, Ser. No. 596,821
Claims priority, application Japan, Apr. 7, 1983, 58-52446[U]; Apr. 7, 1983, 58-52447[U]
Int. Cl.⁴ H01C *10/32*
U.S. Cl. 338—171 **9 Claims**



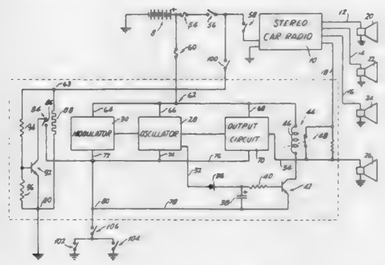
1. A rotary operation type minaturized eletronic component comprising:
a boxlike casing made of insulating synthetic resin, which has an opening formed at an upper face thereof and a metal plate insert molded at a bottom face thereof such that said metal plate functions as fixed contact;
said metal plate being formed with first and second extended portions projecting out of said casing,
said first extended portion being bent so as to project out of said casing to define a connecting terminal, said second extended portion being bent so as to secure said cover plate to said casing, thereby defining a retaining leg;
a movable contact member in sliding contact with said fixed contact;
a cover plate covering said opening of said casing and having a through-hole formed therein and;
an operating means for rotating said movable contact member in said casing, said operating means projecting out of said casing through said through-hole of said cover plate.

4,565,991

CHIME GENERATOR CIRCUIT FOR CONNECTION WITH EXISTING AUTOMOBILE RADIO SPEAKER

Peter J. Lupoli, Hamden, and Brooke N. Westover, Stratford, both of Conn., assignors to Casco Products Corporation, Bridgeport, Conn.

Filed Jun. 30, 1983, Ser. No. 509,246
Int. Cl.⁴ B60Q *1/00*
U.S. Cl. 340—52 R **18 Claims**



1. A monitoring system for an automobile or other vehicle, comprising in combination:
(a) an automobile radio having an on-off switch enabling it to be energized from the vehicle electrical supply, and having an audio output line,
(b) a speaker electrically connected to be driven by said audio output line,
(c) an audio signal generator electrically connected to and powered by the electrical system of the vehicle, and having an output lead adapted to drive the speaker, and
(d) control means electrically connected with said audio signal generator and responsive to changes in a condition in the automobile or vehicle that is being monitored, for selectively providing an audio signal from said signal generator to said speaker so as to indicate to the car's driver the existence of said condition,
(e) an impedance permanently connected to and in series with the audio output line of the radio and the speaker, and
(f) a switch bridging the impedance, said switch being open when the audio signal is provided to the speaker and being closed when no audio signal is provided, whereby a load is permanently presented to the radio output.

4,565,992

ANALOG TO DIGITAL CONVERTER

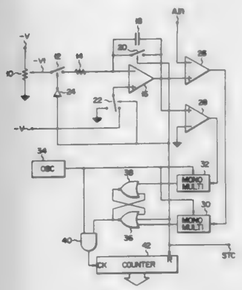
Shigemi Sakamoto, Kawasaki, and Satoru Saito, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 18, 1982, Ser. No. 442,589
Claims priority, application Japan, Dec. 2, 1981, 56-193802; Dec. 2, 1981, 56-193803
Int. Cl.⁴ H03K *13/02*
U.S. Cl. 340—347 AD **6 Claims**

1. An analog to digital converter comprising:
signal generating means operable as a voltage follower during a first period of analog-digital conversion for resetting the output signal of the signal generating means to a first predetermined reference level during said first period, said first reference level being input into said signal generating means in said first period, and operable as an integrator during a second period of time after said first period for generating an output signal monotonically varying from

said first reference level at a predetermined rate during said second period;

comparing means for comparing the output signal of said signal generating means with a second predetermined reference level and an analog input level during said second period, the magnitude of said second reference level



being between said first reference level and said analog input level; and

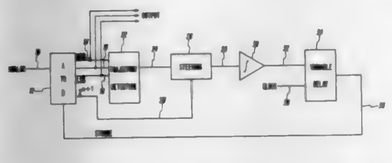
counting means counting clock pulses over a time interval in which the output signal level of said signal generating means is between said second reference level and said analog input level, said time interval being determined by the output signal of said comparing means.

4,565,993

DYNAMIC STROBE TIMING CIRCUITRY FOR A/D CONVERSION APPARATUS

Michael Brian, Garland, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 22, 1984, Ser. No. 623,738
Int. Cl.⁴ H03M *1/12*
U.S. Cl. 340—347 AD **5 Claims**



1. The method of dynamically delaying a clock signal to optimize the strobe point in the process of digitizing an analog signal comprising the steps of:

A/D converting a multilevel analog signal which analog signal is level representative of a digital value to produce an N+1 bit digital word output signal;

comparing the N most significant bits of the present and previous word values for ascertaining the slope of the analog signal;

exclusive ORing the most significant bit, of the present digital word, not used in the comparison, with a given logic value when the present digital word value is greater than the previous digital word value;

integrating the result of the exclusive ORing step; and

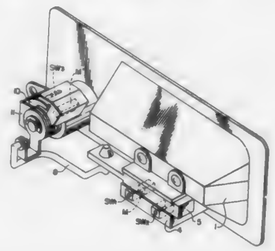
variably delaying a clock signal in accordance with the results of the integrating to generate a strobe signal for initiating each A/D conversion.

4,565,994

DETECTING DEVICE FOR DETECTING THE REMOVAL OF A CYLINDER LOCK

Haruo Mochida, Kiyokawa; Isamu Uemura, Yokosuka; Tokutaro Kurita, and Toshikazu Kobayashi, both of Kawasaki, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Kokusan Kinzoku Kogyo Co., Ltd., Tokyo, both of, Japan

Filed Aug. 1, 1983, Ser. No. 519,367
Claims priority, application Japan, Nov. 16, 1982, 57-19912
Int. Cl.⁴ E05B *45/06*
U.S. Cl. 340—542 **7 Claims**



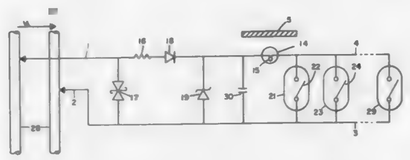
1. A detecting device for detecting the removal of a cylinder lock comprising a magnetic sensor switch and a magnet provided adjacent to each other on a base member and a magnetic shield plate having one end thereof connected to said cylinder lock and the other end thereof being adapted to be inserted into the clearance between said magnetic sensor switch and said magnet, wherein the removal of said cylinder lock causes said one end of said magnetic shield plate to be disconnected from said cylinder lock and said other end of said magnetic shield plate to be removed from said clearance between said magnetic sensor switch and said magnet, said magnetic sensor switch thereby turned on so that said removal of said cylinder lock is detected.

4,565,995

ANTI-ENERGY DIVERSION SYSTEM FOR ELECTRIC UTILITY METERS

John H. Stokes; John I. Clark, both of Las Cruces, and Charles E. Maxwell, Albuquerque, all of N. Mex., assignors to Energy Optics, Inc., Las Cruces, N. Mex.

Filed Aug. 22, 1983, Ser. No. 524,897
Int. Cl.⁴ G08B *13/14*
U.S. Cl. 340—571 **9 Claims**



1. An anti-energy diversion system for use with an electric utility meter connected to an AC power line for discouraging energy theft by providing a positive indication of meter tampering, comprising in combination:

non-battery energy storage means for extracting and storing electrical energy from the AC power line of the meter for providing an initial charging delay and backup operation in power outages;

light discharging means effective to convert the stored energy to light and heat when meter tampering is detected;

heat sensitive indicator means responsive to said heat in a manner effective to generate a highly contrasting change in appearance when exposed to said heat;

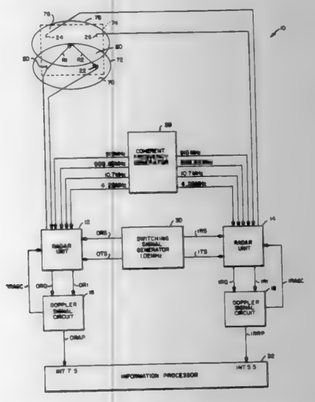
multiple switch means electrically connected to said storage means and connectable to said discharging means, and effective to close the circuit path between said storage and discharging means when any one of several energy diversion events are sensed, thereby delivering said stored energy to said light discharging means.

4,565,996

RANGE LIMITED COHERENT FREQUENCY DOPPLER SURVEILLANCE SYSTEM

Leo R. Close, Sepulveda, Calif., assignor to Mrs. Lawrence Israel, Van Nuys, Calif.

Filed Feb. 6, 1984, Ser. No. 577,348
Int. Cl.⁴ G08B *13/14*
U.S. Cl. 340—572 **16 Claims**



14. A merchandise surveillance system comprising:

a coherent frequency doppler radar system disposed to generate a doppler signal indicative of motion of a transducer within a detection zone limited in extent by a maximum transmitter-to-transducer-to-receiver radar signal propagation time; and

a processing system coupled to receive the doppler signal and indicate the presence of a transducer within the detection zone in response to an indication by the doppler signal of motion of the transducer within the detection zone in a given direction and through a selected minimum distance.

4,565,997

WARNING DEVICE FOR A VEHICLE

Yasutoshi Seko, Yokohama, and Takayuki Yanagishima, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

PCT No. PCT/JP81/00224, § 371 Date May 6, 1982, § 102(e) Date May 6, 1982, PCT Pub. No. WO82/00802, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 8, 1981, Ser. No. 377,267
Claims priority, application Japan, Sep. 8, 1980, 55-124165
Int. Cl.⁴ B60Q *1/00*
U.S. Cl. 340—576 **30 Claims**

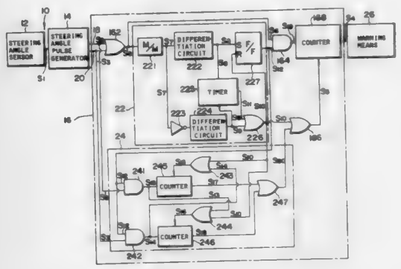
2. A warning device for a vehicle comprising:

a steering angle detecting means for producing pulse signals whenever variation of the steering angular position from a predetermined standard position exceeds a predetermined angle;

a dozing detecting means including

a warning signal generating means for counting pulses of said pulse signals and producing a warning signal when the counted value reaches a threshold value within a predetermined time period, and

a control means for counting pulses of said pulse signals representing the steering angle variation in only one direction to produce a reset signal for clearing the



counted value of said warning signal generating means when the value counted by said control section reaches a predetermined value; and

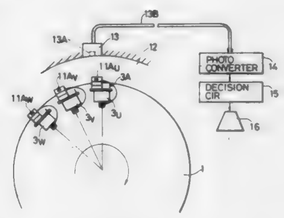
a warning means for producing a warning in response to the warning signal.

4,565,998

DIODE FAILURE DETECTING DEVICE IN ROTARY RECTIFIER

Nobuhiko Tsuji; Keijiro Nakamura, and Masanori Iike, all of Kanagawa, Japan, assignors to Fuji Electric Company Limited, Kanagawa, Japan

Filed Feb. 15, 1983, Ser. No. 466,753
Claims priority, application Japan, Feb. 15, 1982, 57-21319
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—645 **15 Claims**



1. A diode failure detecting system in a rotary rectifier device having a rotor and a stator comprising:

a plurality of fuses on said rotor connected in series to a plurality of rectifying diodes;

fusing flag means arranged along the peripheral surface of said rotor and associated with each fuse to indicate whether or not said fuse has blown out;

optical means on said stator to continuously monitor said fusing flag means to indicate whether said fuse has blown out and produce an optical output, said optical means comprising an optical fiber sensor having a light applying section for irradiating said fusing flag of each fuse and, a light receiving section for receiving light reflected from said fusing flag;

photo-electric converter means converting a reflected light beam from said receiving section into an electrical signal to generate a regular pulse train signal when said fuses are not blown out and to generate a regular pulse train signal lacking a periodic pulse or pulses when said fuse or fuses are blown out; and

decision circuit means counting the number of pulses for

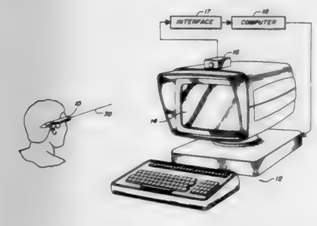
each revolution of said rotor from said pulse train signal from said photo-electric converter for determining the flow of over-current in a diode when said count is smaller than a preset value.

4,565,999

LIGHT PENCIL

Allen King, Needham; Peter Collins, Danvers, and Jay Goldman, Wellesley, all of Mass., assignors to Prime Computer, Inc., Natick, Mass.

Filed Apr. 1, 1983, Ser. No. 466,074
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—706 **19 Claims**



1. A cursor positioning system for a data terminal having a display, comprising:

A. a first radiation source and an associated first radiation sensor, wherein the radiation characteristics of one of said first source and first sensor has a substantially omnidirectional pattern over a predetermined angular segment, the radiation characteristic of the other of said first source and first sensor corresponds to the superposition of a plurality of directional patterns extending substantially from a single point, said plurality of patterns being substantially uniformly distributed over partially overlapping predetermined angular segments, said first sensor including means for generating a sensor signal associated with each of said directional patterns, said sensor signals being related to the radiational coupling between said first source and first sensor,

B. means for fixing the position of one of said first source and first sensor with respect to said display and for fixing the position of the other of said first source and first sensor with respect to the head of an operator of said system,

C. motion processing means responsive to said sensor signals and including means for extracting operator motion signals from said sensor signals and for generating position signals therefrom representative of the orientation of the operator's head, said extracting means including means for suppressing portions of said sensor signal representative of predetermined operator head motions, and

D. means for generating cursor signals adapted for controlling the position of a cursor on said display in response to said position signals.

4,566,000

IMAGE DISPLAY APPARATUS AND METHOD HAVING VIRTUAL CURSOR

Craig E. Goldman, Natick, and Douglas A. Voorhies, Framingham, both of Mass., assignors to Prime Computer, Inc., Natick, Mass.

Filed Feb. 14, 1983, Ser. No. 466,077
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—709 **5 Claims**

1. Electrical image processing apparatus comprising

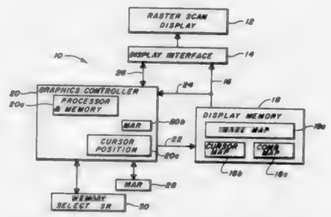
A. memory means for storing concurrently

(1) first signals representative of an image field,

(2) second signals representative of a cursor pattern for display at an addressable cursor position on a display of the stored image field, and

(3) third signals representative of a selected combinatoral function of said stored cursor pattern and of a segment of said stored image field at said addressable cursor position,

B. image display means coupled for receiving signals stored in said memory means and arranged for producing a visual image in response to signals applied to it, and



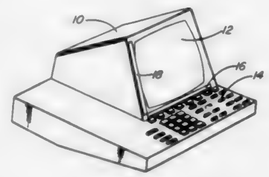
C. control means coupled with said memory means and responsive to a cursor display command for applying to said display means either of said stored first signals or said stored third signals to produce said visual image and to include therein a selective display of said cursor pattern combined with said image field at an addressed cursor position.

4,566,001

TOUCH STRIP INPUT FOR DISPLAY TERMINAL

Timothy G. Moore, Ottawa; David G. Dockendorff, Kanata, and Stephen J. Harris, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 8, 1983, Ser. No. 464,959
Int. Cl.⁴ G09G *1/00, 3/00*
U.S. Cl. 340—711 **18 Claims**



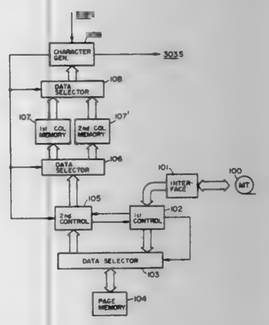
1. A terminal comprising a rectangular display screen, display means for displaying an image on the screen, a position sensitive touch strip spaced from the screen, mounted along one side thereof and extending the length of the screen, voltage generating means for generating a voltage level in response to the touch strip being touched, the voltage level corresponding to the position at which the strip is touched, a selector for selecting one of a plurality of possible display modes, an input interface unit having inputs from said voltage generating means and from said selector, a microprocessing unit having an input from the input interface unit and an output to an output interface unit, the output interface unit having an output controlling said display means, the microprocessing unit having stored therein a control program which determines the display mode in response to an input from the selector and determines image detail in response to an input from the voltage generating means.

4,566,002

DATA OUTPUT APPARATUS CAPABLE OF ROTATING DATA OUTPUT THEREFROM RELATIVE TO DATA INPUT THERETO

Genmei Miura, Tokyo; Akira Konno, Sayama, and Motofumi Konishi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 134,221, Mar. 26, 1980, abandoned. This application Dec. 16, 1982, Ser. No. 450,352
Claims priority, application Japan, Mar. 30, 1979, 54-39076; May 8, 1979, 54-56539; May 8, 1979, 54-56540
Int. Cl.⁴ G09G *3/20*
U.S. Cl. 340—727 **43 Claims**



1. Data output apparatus, comprising:

first memory means for storing image data in coded form in row by row format;

control means for rearranging said coded image data in row by row format as coded image data in column by column format;

second memory means for storing said coded image data rearranged by said control means in said column by column format; and

output means for putting out said coded image data in said column by column format from said second memory means; and

pattern generating means responsive to said coded image data in said column by column format put out by said output means from said second memory means, for generating a dot pattern represented by said coded image data in said column by column format.

4,566,003

DISPLAY ELEMENT AND DISPLAY PANEL USING THE SAME

Masayuki Wakatake, No. 405, 9-5 Tamagawa 1-chome, Setagaya-ku, Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,096
Claims priority, application Japan, Dec. 7, 1981, 56-196646
Int. Cl.⁴ G09G *3/16*
U.S. Cl. 340—764 **2 Claims**

2. A display panel comprising:

a movable display surface structure;

a display switching unit; and

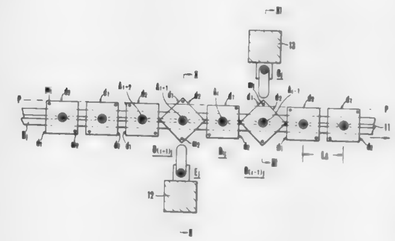
a drive unit;

wherein, letting M lines of arrangement spaced a predetermined distance apart in a first direction and arranged to extend in a second direction perpendicular to the first direction to be represented by $b_1, b_2, \ldots b_M$ respectively, the display surface structure has N display elements D_{1j} to D_{Nj} sequentially disposed on the line of arrangement b_j ($j=1, 2, \ldots M$) at predetermined intervals in the second direction, said first and second directions defining a plane of arrangement having a front side and a back side;

wherein the display element D_{ij} ($i=1, 2, \ldots N$) is formed by a four-sided right prismatic block member having an axis and a top and a bottom and having four outer peripheral surfaces formed to define first, second, third and fourth edges in parallel to and around said axis of the block member, said block member being rotatable about said axis, said block member having a shaft receiving hole therethrough along said axis; said block member further consisting of first and second magnetic pieces disposed to extend along said first and third edges, respectively, first and second display surfaces defined by the outer peripheral surfaces between said first and second edges and said first and fourth edges, respectively, and first and second grooves formed in the bottom of said block member, each of said grooves intersecting said axis, said first and second grooves parallel to said said first and second display surfaces, respectively;

wherein said display surface structure includes N shafts A_i extending in said first direction and spaced apart in said second direction, each of said display elements D_{ij} slidingly receiving a corresponding shaft A_i in said shaft receiving hole to be rotatable thereabout and slidable in the axial direction relative to said shaft A_i;

wherein said display surface structure further includes M support rods B_j extending in said second direction and spaced apart in said first direction, each said rod having a flange which is receivably engageable with said first or second groove in the bottom of said block member;



wherein the display switching unit has, mounted on opposite sides of said plane of arrangement of the display elements D_{ij}, an erasing magnetic head E_j and a writing head G_j common to the display elements D_{1j} to D_{Nj} disposed on the line of arrangement b_j, said erasing magnetic head E_j and said writing magnetic head G_j being spaced apart from one another in the second direction;

wherein the drive unit is provided with means for moving said display elements D_{ij} and the erasing magnetic heads E_j and the writing magnetic heads G_j relative to each other in the second direction, and means for energizing the writing magnetic heads G_j in synchronism with the relative movement between said writing magnetic heads G_j and said display elements D_{ij};

said erasing head E_j, when said second display surface lies in a predetermined plane, turning said display element D_{ij} in synchronism with the relative movement of the display element D_{ij} and the erasing head E_j to locate said first display surface in said predetermined plane; and

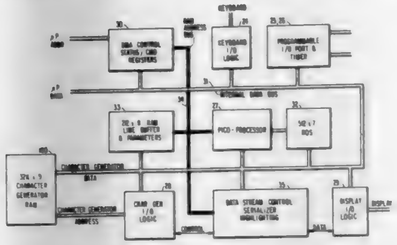
said writing head G_j, when energized, turning the display element D_{ij} 90° to switch the state in which said first display surface lies in said predetermined plane to the state in which the second display surface lies in said predetermined plane.

4,566,004

DATA MANAGEMENT FOR PLASMA DISPLAY

Geoffrey A. Emerson, Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,783
Int. Cl.⁴ G09G *3/28*
U.S. Cl. 340—771 **10 Claims**



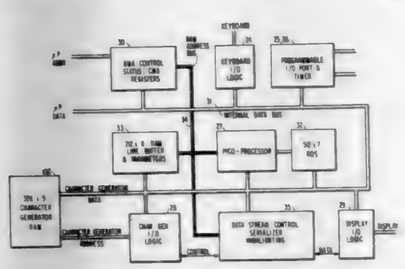
1. A display management system for at least one plasma gas panel display, said at least one plasma gas panel display having a complex interface requiring the computation of the boundaries of write and erase operations based on commands from an application program and the geometry of said at least one plasma gas panel, said display management system comprising:
host processor means for supplying application program operations,
system microprocessor means connected to said host processor means for receiving and storing application program operations downloaded from said host processor means, said system microprocessor means further carrying out decoding and execution of commands in said application program operations downloaded from said host processor means including management of display data, and
at least one plasma display adapter means for providing high level control of said interface to said gas panel display, for serialization of character data, and for computing the boundaries of said gas panel write and erase operations,
wherein said at least one plasma display adapter means includes picoprocessor means for computing said boundaries of said plasma gas panel write and erase operations.

4,566,005

DATA MANAGEMENT FOR PLASMA DISPLAY

Norman Apperley, Chandlers Ford, United Kingdom; Roger J. Edwards, Woodstock, N.Y.; Raymond L. J. Foster, Landford, United Kingdom; David C. Haigh, Winchester, United Kingdom; Michael Haslam, Winchester, United Kingdom, and Peter Verey, Winchester, United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,776
Int. Cl.⁴ G09G *3/28*
U.S. Cl. 340—771 **9 Claims**



1. A display management system for at least one plasma gas panel display, said at least one plasma gas panel display having a complex interface requiring the computation of the boundaries of write and erase operations based on commands from an application program and the geometry of said at least one plasma gas panel, said display management system comprising:
host processor means for supplying application program operations,
system microprocessor means connected to said host processor means for receiving and storing application program operations downloaded from said host processor means, said system microprocessor means further carrying out decoding and execution of commands in said application program operations downloaded from said host processor means including management of display data, and
at least one plasma display adapter means for providing high level control of said interface to said gas panel display, for serialization of character data, and for computing the boundaries of said gas panel write and erase operations.

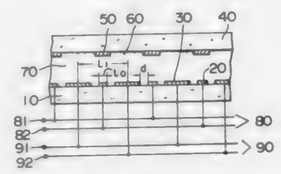
4,566,006

GAS DISCHARGE DISPLAY APPARATUS

Yukio Okamoto, Sagamihara; Shinichi Shinada, Kokubunji, both of Japan, and Tadao Okabe, deceased, late of Hachioji, Japan (by Kumiko Okabe, administratrix), assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 17, 1983, Ser. No. 495,496
Claims priority, application Japan, May 17, 1982, 57-81431
Int. Cl.⁴ G09G *3/22, 3/20, 3/00*
U.S. Cl. 340—771 **22 Claims**

PRIOR ART



1. A gas discharge display apparatus, comprising:
a discharge display panel including a plurality of electrodes formed on a substrate with a predetermined distance therebetween, and connecting means for interconnecting said plurality of electrodes so as to enable polyphase pulse voltages to be applied thereto; and voltage applying means for applying sequentially bipolar polyphase pulse voltages to said electrodes through said connecting means so that each of said electrodes operates alternately as an anode and a cathode on a time division basis in response to said bipolar pulse voltages and discharge produced between electrodes operating as the anode and the cathode is caused to perform self-scanning.

4,566,007

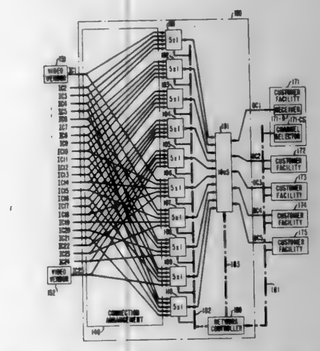
REARRANGEABLE MULTICONNECTION SWITCHING NETWORKS

Gaylord W. Richards, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 16, 1983, Ser. No. 494,901
Int. Cl.⁴ H04Q *3/62;* **H04M** *3/00*
U.S. Cl. 340—825.8 **22 Claims**

1. A switching network for selectively connecting N_1 input channels to n_2 output channels, N_1 and n_2 being positive integers, n_2 being at most equal to N_1, said switching network comprising
a plurality of first stage switches each having a plurality of inlets and at least one outlet and each comprising means for selectively connecting any one of the inlets of that first stage switch to the at least one outlet of that first stage switch, the number of said plurality of first stage switches being at least equal to n_2,

a second stage switch having n_2 outlets each connected to a different one of said output channels and having a plurality of inlets each associated with a different one of said plurality of first stage switches and each being connected to the at least one outlet of the associated first stage switch, said second stage switch comprising means for selectively connecting said outlets of said second stage switch to said inlets of said second stage switch and



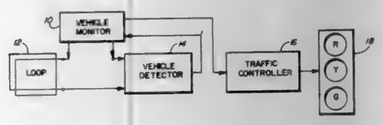
connection means for connecting each of said inlets of said plurality of first stage switches to an associated predetermined one of said input channels such that for any group of n_2 of said input channels, there is a group of n_2 of said first stage switches each having one inlet connected to a different one of that group of n_2 of said input channels, and where no two inlets of a single first stage switch are connected to the same input channel.

4,566,008

FAULT DETECTING CIRCUIT AND METHOD FOR A VEHICLE DETECTOR SYSTEM

Avery W. Powers, Scottsdale; Guy L. Cates, Mesa; Charles W. Staats, Jr., and Jarrell W. Mullies, both of Tempe, all of Ariz., assignors to Solid State Devices, Inc., Tempe, Ariz.

Filed Jun. 29, 1982, Ser. No. 393,452
Int. Cl.⁴ G08G *1/01*
U.S. Cl. 340—941 **40 Claims**



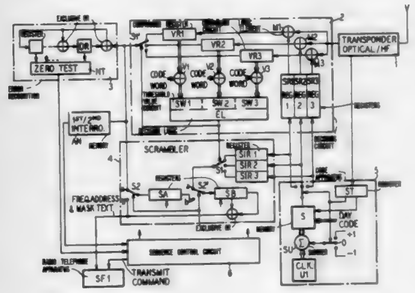
1. A vehicle detector monitor coupling a vehicle detector output to a traffic controller input comprising:
means for receiving a call in signal from said vehicle detector output when a vehicle is detected;
means coupled to said receiving means for generating a call out signal in response to said call in signal;
means coupled to said receiving and generating means for comparing said call in and call out signals, said comparing means developing a first control signal when said call in and call out signals correspond, and a second control signal when said call in and call out signals do not correspond; and
means for coupling said generating means to said traffic controller input in response to said first control signal, and means for disconnecting said generating means from said traffic controller input in response to said second control signal.

4,566,009

IDENTIFICATION, FRIEND OR FOE IFF INSTALLATION

Manfred Hanni, Puchheim, and Kurt Hechfellner, Taufkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 207,996
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941820
Int. Cl.⁴ G01S *9/56, 13/74*
U.S. Cl. 343—6.5 LC **16 Claims**



1. An identification friend or foe arrangement utilizing a radio telephone installation, operable on a frequency hopping basis, for coded communication between interrogating and interrogated stations with coded interrogations and replies, comprising:
a transmitting station including an IFF-transmitter and a radio telephone receiver comprising a frequency synthesizer;
identification generator means connected to said IFF-transmitter including an encoder for providing thereto an interrogation including a fixed code word known to the interrogated station and a variable data portion including a frequency address and reply masking data, said receiver connected to adjust to the transmit frequency of the expected reply;
said frequency synthesizer connected to said receiver and controlled by the frequency address;
identification means connected to said identification generator means and to said receiver for identifying a reply of low redundancy and producing a friend signal, and including retry means operable after a predetermined interval during which a friend reply is not received to cause a second interrogation and a second reply with great redundancy at respective different frequencies and with respective different mask text;
a transponder, including an IFF-receiver, in the interrogated station and operable in response to an interrogation to transmit a reply, including radio telephone apparatus operable to transmit to said radio telephone receiver of said transmitting station a mask text on a frequency derived from the variable data portion of the interrogation signal in response to a transmit command.

4,566,010

PROCESSING ARRANGEMENT FOR PULSE COMPRESSION RADAR

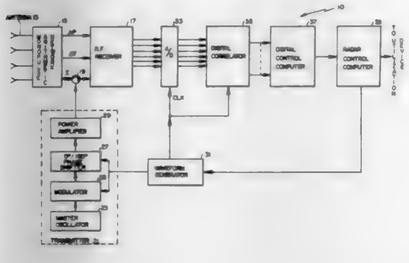
John D. Collins, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 28, 1982, Ser. No. 372,517
Int. Cl.⁴ G01S *13/26*
U.S. Cl. 343—17.2 PC **2 Claims**

1. In a phase-coded pulse compression radar transmitting an N-bit sequence of pulses to provide an aperiodic coded signal,

an arrangement for processing echo signals to suppress selected range sidelobes, such arrangement comprising:

(a) a waveform generator, actuable during each interval between coded transmitted signals, for forming a first set of N+M digital numbers, such set consituting a reference code representative of the complete N-bit sequence of pulses followed by the first M bits of such sequence, where M is an integer, less than N, corresponding with the number of sidelobes to be cancelled;



(b) analog-to-digital converter means, responsive to the echo signal and signals in the range sidelobes, for forming a second set of digital numbers representing the echo signal and signals in all range sidelobes; and

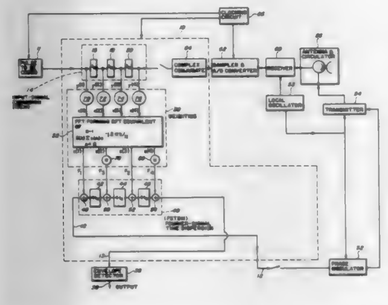
(c) digital correlator means, responsive digit by digit, to the first and the second set of digital numbers to produce a third set of digital numbers representative of the echo signal and the signals in all range sidelobes, less the signals in the selected range sidelobes.

4,566,011

PALINDROMIC POLYPHASE CODE EXPANDER-COMPRESSOR

Bernard L. Lewis, Fort Washington, and Frank F. Kretschmer, Jr., Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 8, 1983, Ser. No. 512,045
Int. Cl.[4] G01S *13/28*
U.S. Cl. 343—17.2 PC **18 Claims**



1. A digital pulse expander-compressor comprising:

input-signal expansion means responsive to an applied pulse for successively generating N replicas y(n) of the pulse, where n=1, 2, 3, . . . N, and N is an integer;

matched filter weighting means connected to said input-signal expansion means and having N output terminals, said weighting means operating to weight the replicas y(n) with predetermined weights to effect a discrete Fourier Transform processing of the replicas; and

time dispersion means connected to said weighting means for appropriately delaying each of said N weighted pulses to effect an expansion or a compression;

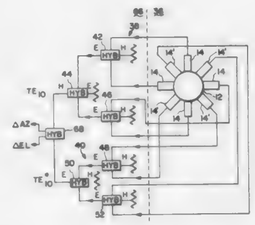
wherein said predetermined weights are chosen so that in the expansion mode a polyphase code equivalent to the sample values obtained by sampling at the Nyquist rate a coherently detected linear-frequency-modulated waveform one-half of a Nyquist sample period after the leading edge of the waveform is formed.

4,566,012

WIDE-BAND MICROWAVE SIGNAL COUPLER

Younho Choung, and Kenneth R. Goudey, both of Sunnyvale, Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 30, 1982, Ser. No. 454,896
Int. Cl.[4] H01P *5/18;* **H04B** *7/10*
U.S. Cl. 343—359 **6 Claims**



1. An apparatus for extracting tracking signals from a received microwave signal for directing an antenna, said apparatus operative to pass dominant mode information-containing microwave signals with minimum attenuation through a signal path of a first waveguide while extracting from said signal path selected favored nondominant mode microwave signals for use in developing error signals to control directional orientation of said antenna, said apparatus comprising a first waveguide, a second waveguide, a third waveguide, a fourth waveguide, a fifth waveguide, a sixth waveguide, a seventh waveguide, an eigth waveguide and a ninth waveguide, said first waveguide being circular and said second through ninth waveguides being rectangular, said second through ninth waveguides being disposed at angular separations of 45° juxtaposed to said first waveguide and oriented along a central axis of said first waveguide, said first waveguide forming a common wall with one wall of each said second through ninth waveguides, said common wall defining a coupling structure having the following characteristics between said first waveguide and each one of said second through ninth waveguides:

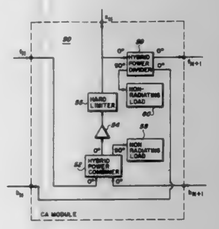
a row of holes whose centers are spaced equidistant along said central axis, each said hole being of a diameter no greater than 0.3 wavelengths of the wavelength of the highest frequency intended to be conveyed through said first waveguide in its characteristic dominant TE_{11} mode, said holes being circular, said holes being of a diameter selected to produce a distribution of coupling strengths of a preselected nondominant mode of said first waveguide for coupling to each of said second through ninth waveguides, and specifically a nondominant TE_{21} circular mode in said circular first waveguide which is manifest as a TE_{10} rectangular mode in each one of said second through ninth waveguides, said distribution of coupling strengths being characterized by a Bessel function distribution of coupling strength along said central axis, said Bessel function distribution of coupling strength being established at a certain coupling strength level at each one of said holes to minimize reverse coupling from said second through ninth waveguides into said first waveguide by the size of said holes, said second through ninth waveguides having output ports being coupled in preselected pairs to extract from said first waveguide two balanced and orthogonal signals representative of energy contained in the TE_{21} nondominant circular signal of said first waveguide for use in developing a tracking signal based on phase and amplitude information contained in the carrier of said TE_{21} mode signal.

4,566,013

COUPLED AMPLIFIER MODULE FEED NETWORKS FOR PHASED ARRAY ANTENNAS

Richard Steinberg, Columbia, Md., and J. Paul Shelton, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 1, 1983, Ser. No. 481,432
Int. Cl.[4] H01Q *3/26*
U.S. Cl. 343—372 **24 Claims**



1. A phase divider system for producing a plurality of incrementally phased output signals comprising:

a plurality of phase divider modules serially coupled together to form a network, each module producing a module output signal;

said network being coupled to receive first and second boundary signals, said first and second boundary signals being coupled respectively to first and second ends of said serially coupled modules in said network, said first and second boundary signals each having an associated phase angle, the phase angle of said first boundary signal differing from the phase angle of said second boundary signal by a phase angle difference;

wherein said phase angle difference is divided by said plurality of modules in said network, said output signal of each module having a phase angle differing from the phase angles of the output signals of immediately adjacent modules in said network by a phase gradient;

whereby said phase angle difference is divided into a plurality of incrementally phased module output signals;

wherein said phase gradient is given by:

$$\Delta\phi_o=(\theta_M-\theta_o)/M$$

where:

$\Delta\phi_o$ is said phase gradient,

θ_M is the phase angle of said second boundary signal,

θ_o is the phase angle of said first boundary signal, and

M is the total number of said plurality of modules plus one.

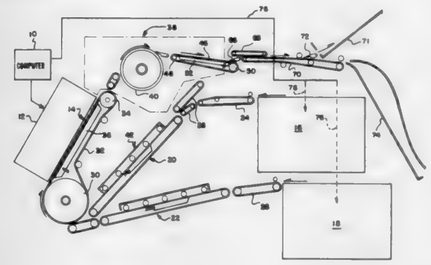
4,566,014

DROP COUNTER PRINTER CONTROL SYSTEM

Suresh C. Paranjpe, Dallas; Burton W. Scott, Plano, both of Tex., and Henry N. Kannapell, Raleigh, N.C., assignors to The Mead Corporation, Dayton, Ohio

Filed May 31, 1984, Ser. No. 615,625
Int. Cl.[4] G01P *15/18;* **B41J** *5/44, 13/08*
U.S. Cl. 346—1.1 **9 Claims**

6. In a printing system wherein images represented by image data are formed by directing ink drops onto paper sheets with desired images being formed by depositing only selected ink drops on said paper sheets and comprising printer means for generating and selecting ink drops corresponding to an image to be printed in response to said image data, transport means for conveying sheets of paper at a substantially constant speed in a printing relationship past said printer means, sheet feeder means for feeding paper sheets into said transport means, and dryer means for receiving and drying printed sheets conveyed by said transport means, a method for controlling said sheet feeder means to improve the operation of said printing system comprising the steps of:



determining the print density of each paper sheet fed to said transport means; and

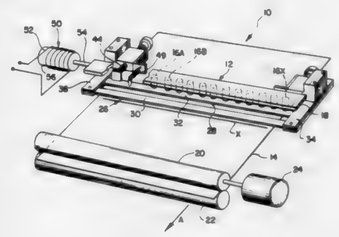
operating said sheet feeder means to define spacing between successive paper sheets on said transport means dependent upon the print density of said sheets.

4,566,015

IMAGE RECORDING APPARATUS WITH ADJUSTABLE MASK

Hugh R. MacKenzie, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 7, 1984, Ser. No. 618,184
Int. Cl.[4] G01D *9/42;* **G03B** *41/00*
U.S. Cl. 346—107 R **9 Claims**



1. Image recording apparatus responsive to electrical signal input information representative of a select image for recording that image by exposing a photosensitive material, said image recording apparatus comprising:

a line exposure array including a plurality of linearly spaced apart light emitting image defining elements;

means for holding said line exposure array in light exposing relationship across the photosensitive material and for moving either the photosensitive material or said exposure array in a direction transverse to the longitudinal axis of said exposure array to expose the entire surface of the photosensitive material excepting those portions of the photosensitive material directly opposite the spaces between adjacent light emitting elements, said holding and moving means also operating to simultaneously oscillate said line exposure array in a direction parallel to the longitudinal axis thereof so as to displace each light emitting element by a distance at least equal to the spacing between adjacent light emitting elements to expose the surface of

the photosensitive material directly opposite the spaces between adjacent light emitting elements; and

means for masking the light emitting elements so as to reduce the area of said photosensitive material that would otherwise be exposed, said masking means comprising means for defining an elongated slit in parallel light transmitting relationship with respect to said linearly spaced apart light emitting elements and means for finely adjusting the width of said slit to control the width of the exposed lines across the photosensitive material so as to also control image resolution.

4,566,016

DUAL INTENSITY LASER BEAM PICTURE RECORDING METHOD

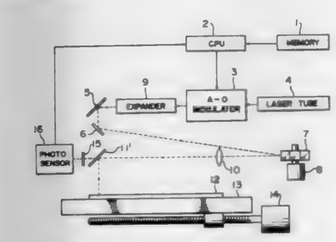
Tatsunosuke Masuda, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Feb. 21, 1984, Ser. No. 582,085

Claims priority, application Japan, Mar. 24, 1983, 58-47890

Int. Cl.⁴ G01D *9/00, 9/42*

U.S. Cl. 346—108 **3 Claims**



1. In a method of recording desired images on a photosensitive material including the steps of modulating a light beam generated from a light source by modulating means, deflecting said modulated light beam by deflecting means, separating said deflected light beam by a half mirror whereby one of said separated light beams reflected by said half mirror is scanned on the photosensitive material to record desired images thereon, and the other separated light beam is fed to photosensor means through grating means, said method characterized in that:

a first intensity of the light beam generated by said light source is maintained at a low enough intensity not capable of sensitizing said photosensitive material,

said first intensity light beam is always modulated according to said grating means, and

a second intensity of the light beam for recording, modulated at a high enough intensity for sensitizing said photosensitive material,

whereby said two kinds of light beams modulate in such a manner as described above and are binarily controlled by said modulating means.

4,566,017

METHOD AND TRANSDUCER FOR INCREASING INKING RESOLUTION IN AN INK-MOSAIC RECORDING DEVICE

Kenth Nilsson, Akersberga, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany and Siemens Eleman AB, Solna, Sweden

Filed Oct. 9, 1984, Ser. No. 658,745

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1983, 3341401

Int. Cl.⁴ G01D *15/18*

U.S. Cl. 346—140 R **12 Claims**

1. A method for increasing inking resolution in an ink-mosaic recording device having a recording head with a plurality of serially-arranged piezoelectric transducers wherein by means of piezoelectric deformation of the transducers, recording fluid is ejected drop-wise in a direction toward a recording carrier, comprising the steps of:

forming each of the transducers with two spaced strips of piezoelectric material which are contacted on opposite sides for electrically driving the same, and are covered on opposite sides by plates, the plates and strips forming a



longitudinally extending substantially rectangular channel;

providing recording fluid in the channel for ejection from an end thereof; and

applying voltages through the contacts to the two strips such that the two strips at least timewise are deformed differently.

4,566,018

RECORDER OPERATING WITH DROPS OF LIQUID

Kenth Nilsson, Akersberga, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

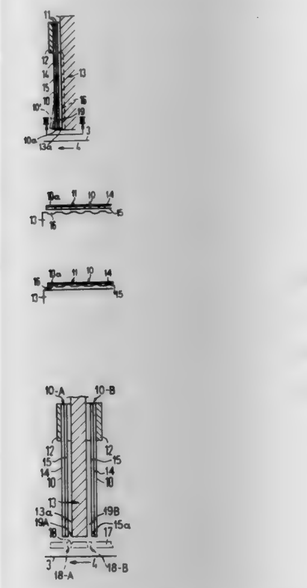
Filed May 3, 1984, Ser. No. 606,994

Claims priority, application Fed. Rep. of Germany, May 10, 1983, 3317082

Int. Cl.⁴ G01D *15/18;* **B41J** *3/04*

U.S. Cl. 346—140 R **9 Claims**

1. A recorder operating with drops of liquid for recording of analog curves, alphanumerical characters and/or images on a recording medium at a recording medium location, said recorder comprising piezoelectric transducers with deflectable zones actuatable for producing drops of writing fluid, said piezoelectric transducers being reed-shaped and being mounted in at least one plane and having electrical contacts such that the deflectable zones deflect perpendicularly to the plane extending through the transducers in response to electrical potential variations at the contacts, said recorder further comprising plate means disposed parallel to said transducers and confronting said deflectable zones at such a distance that a drop of writing fluid is ejected from a writing fluid receiving space between a respective individual transducer and the plate means and toward the recording medium location during travel of the individual transducer toward the plate means after deflection of such transducer in a direction away from said plate means, characterized in that the plate means has grooves that extend parallel to the respective transducers and toward



the recording medium location for guiding the drops of writing fluid.

4,566,019

METHOD OF DRIVING ELECTRODES IN AN ELECTROEROSION PRINTER

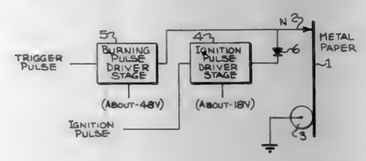
Gottfried Goldrian, Boeblingen, and Volker Rudolph, Aidlingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corp. (IBM), Armonk, N.Y.

Filed Mar. 9, 1984, Ser. No. 586,905

Claims priority, application European Pat. Off., Mar. 15, 1983, 83 102548.1

Int. Cl.⁴ G06K *15/10*

U.S. Cl. 346—163 **4 Claims**



4. A circuit for operating a print electrode of an electroerosion printer comprising:

means for supplying a trigger pulse having a predetermined duration,

means for supplying an ignition pulse of shorter duration than the trigger pulse and in a time delayed relationship with respect to each trigger pulse, but during the continuation of each trigger pulse,

an output conductor connected to the print electrode,

first driver stage means operable upon receipt of a trigger pulse for delivering a high voltage, low current pulse to said output,

second driver stage means operable upon receipt of an ignition pulse for delivering a relatively short duration, high current pulse to said output conductor, and

a unidirectionally conductive device connected between said second stage driver and said output conductor, said device being oriented such that conduction therethrough is inhibited in the presence of a voltage on said output conductor during continuance of the low current pulse and the presence of an arc at said printing electrode.

4,566,020

HOT-ELECTRON AND HOT-HOLE TRANSISTORS HAVING SILICIDE CONTACTS

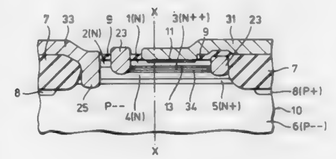
John M. Shannon, Whyteleafe, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,517

Claims priority, application United Kingdom, Apr. 8, 1982, 8210534

Int. Cl.⁴ H01L *29/48, 27/02, 23/48, 29/72*

U.S. Cl. 357—15 **18 Claims**



1. A transistor comprising a semiconductor body including a silicon surface region adjacent a surface of the body, a base region which at least partially underlies the surface region, a collector region which at least partially underlies the base region, a barrier-forming means which form an emitter-base barrier between the base region and at least a portion of the surface region and a base-collector barrier between the base region and the collector region, the current flow through the base region from across the emitter-base barrier being by hot charge carriers characteristic of one conductivity type, characterized in that at least one of the base and collector regions is extended to said surface of the body by a metal-silicide region which extends from said surface at least through the thickness of the surface region to contact electrically said one of the base and collector regions, said metal-silicide region forming an isolating Schottky barrier with an adjacent semiconductor portion of the body to isolate electrically said one of the base and collector regions from said adjacent semiconductor portion.

4,566,021

SEMICONDUCTOR DEVICE

Naoki Yokoyama, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 334,923, Dec. 28, 1981, abandoned. This application Apr. 10, 1985, Ser. No. 721,144

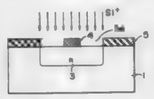
Claims priority, application Japan, Dec. 30, 1980, 55-189544

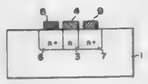
Int. Cl.⁴ H01L *25/54, 29/48*

U.S. Cl. 357—15 **14 Claims**

1. A semiconductor device, comprising a Schottky contact of at least one refractory metal silicide formed on a compound

semiconductor substrate, wherein said Schottky contact on said substrate is characterized by a barrier height and an ideal-





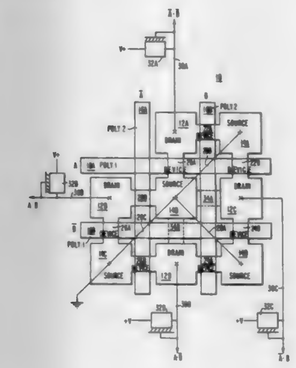
ity factor that are stable with respect to heat treatment at a temperature up to at least 800° C.

4,566,022

FLEXIBLE/COMPRESSED ARRAY MACRO DESIGN

Howard L. Kalter, Colchester, and Donald B. Kiley, Shelburne, both of Vt., assignors to International Business Machines Corporation, Armonk, N.J.

Filed Jan. 27, 1983, Ser. No. 461,421
Int. Cl.[4] H01L *27/04, 29/78*
U.S. Cl. 357—23.14 7 Claims



1. An integrated circuit logic device comprising

a semiconductor substrate of a first conductivity type having a plurality of second conductivity type regions in a surface thereof;

said second conductivity type regions being bounded at least partially by at least two sets of intersecting conductive gate means which serve as input means to form a plurality of FET devices, at least some of which have one of said second regions as a common first current conducting electrode; and

at least three of the remaining second regions adjacent to said one second region forming the second current conducting electrode of three FET devices;

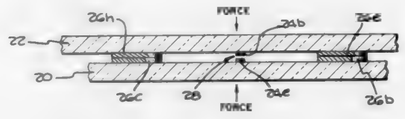
said second regions not being connected to each other.

4,566,023

SQUEEZABLE ELECTRON TUNNELLING JUNCTION

Paul K. Hansma; John M. Moreland, both of Goleta, and Sam Alexander, Santa Barbara, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 12, 1983, Ser. No. 522,870
Int. Cl.[4] H01L *29/84*
U.S. Cl. 357—26 8 Claims



1. A squeezable electron tunnelling junction comprising:

flexible substrate means for providing two opposed supporting surfaces;

electrode means, disposed on said substrate means, for defining a gap between said surfaces; and

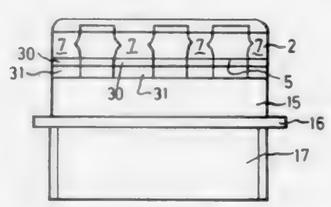
spacer means for maintaining said electrode means in spaced apart relation, whereby an external force can be applied to said substrate means to decrease said gap to a point where tunnelling will occur.

4,566,024

MATRIX INFRARED DETECTOR

Joël J. Fleury, Lille, and Jacques H. P. Maille, Paris, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Aug. 6, 1982, Ser. No. 405,886
Claims priority, application France, Mar. 12, 1982, 82 04259
Int. Cl.[4] H01L *31/14*
U.S. Cl. 357—32 8 Claims



1. Matrix infrared detector comprising:

a first solid semi-conductor wafer of one of two types: p and n, said first wafer having first and second faces;

zones of the other of the two types p and n in the first wafer, extending from said first face which is adapted to be exposed to infrared radiations, thereby defining interfaces and forming a matrix of detector elements;

a second semi-conductor wafer having a third face which faces the second face of the first wafer, said second wafer comprising integrated circuit means for processing the signals delivered by the detector elements of the matrix of the first wafer; and

solder studs connecting said zones of the first wafer to the third face of the second wafer;

said zones of the first wafer extending from the first to the second faces of the first wafer, each zone being in the form of a channel comprising a detection space extending from the first face, and a connection space extending form the second face of the first wafer;

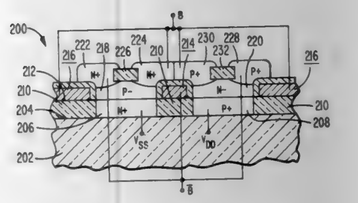
said solder studs extending along the second face of the first wafer facing the second wafer.

4,566,025

CMOS STRUCTURE INCORPORATING VERTICAL IGFETS

Lubomir L. Jastrzebski, Plainsboro, and Alfred C. Ipri, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 10, 1983, Ser. No. 503,044
Claims priority, application United Kingdom, Jun. 24, 1982, 8218286
Int. Cl.[4] H01C *27/02, 29/78, 27/01*
U.S. Cl. 357—42 12 Claims



1. An integrated circuit device incorporating a plurality of interconnected vertical IGFETs on a bulk silicon substrate, comprising:

an insulated gate electrode disposed on a surface of the substrate;

the substrate including a first substrate portion of second conductivity type and a second substrate portion of first conductivity type disposed at said surface, said first and second substrate portions being electrically isolated from each other;

first and second monocrystalline silicon regions extending, respectively, from said first and second substrate portions, said monocrystalline silicon regions each being contiguous with a part of the insulated gate electrode;

the first monocrystalline silicon region having a body region of first conductivity type, and the second monocrystalline silicon region having a body region of second conductivity type, such that a predetermined voltage applied to the insulated gate electrode selectively creates an inversion channel in one of the body regions, said inversion channel having a length which is perpendicular to the substrate surface;

a second insulated gate electrode disposed on the substrate surface, the second insulated gate electrode being contiguous with the body region of the first monocrystalline silicon region and the body region of the second monocrystalline silicon region;

a source/drain region underlying each body region and of opposite conductivity type thereto; and

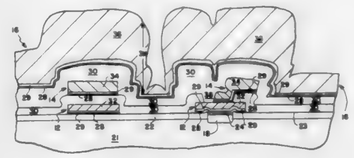
first and second source/drain regions overlying each body region, said first and second overlying source/drain regions being isolated from each other and being of opposite conductivity type to the body region thereunder.

4,566,026

INTEGRATED CIRCUIT BIMETAL LAYER

Ed C. Lee, Bloomington, and Jon A. Roberts, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 25, 1984, Ser. No. 603,862
Int. Cl.[4] H01L *23/48;* B05D *5/12*
U.S. Cl. 357—71 25 Claims



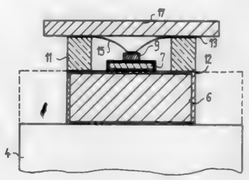
1. A bimetal layer located between a metalization layer and a semiconductor device in an integrated circuit, the bimetal layer comprising a layer of TiWN and a layer of TiN, wherein one of the TiWN and TiN layers is deposited above the other.

4,566,027

PRE-MATCHED MODULE FOR AN ULTRA-HIGH FREQUENCY DIODE WITH HIGH HEAT DISSIPATION

Michel Heitzmann, Combs la Ville, and Marianne Boudot, Clichy, both of France, assignors to Thomson-CSF, Paris, France

Filed Nov. 21, 1983, Ser. No. 554,099
Claims priority, application France, Nov. 23, 1982, 82 19585
Int. Cl.[4] H01L *23/56, 23/04*
U.S. Cl. 357—81 8 Claims



1. A pre-matched module for an ultra-high frequency diode having a diode chip mounted in a case, said case comprising:

a first metal-coated diamond base;

a second metal-coated diamond base very much smaller than said first base, said second base being fixed to said first base so as to form a central stud, said diode chip being fixed to said second base, said first and second bases acting as a first electrical connection for said diode chip;

a dielectric ring mounted on said first base and surrounding said second base and said diode;

a metal cap mounted on said dielectric ring on the side oposite said first base, so as to form an enclosure around said second base and said diode;

connection means extending from said diode to a joint between said dielectric ring and said metal cap to act as a second electrical connection for said diode chip;

said first and second bases having high heat conductivity to dissipate the heat from said diode chip; and

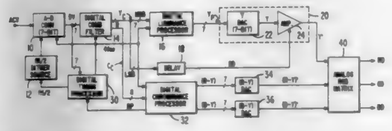
said first and second bases having dimensions and being arranged so as to form a radial impedance transformation base.

4,566,028

DIGITAL SIGNAL PROCESSING APPARATUS FOR PROCESSING DITHERED DIGITAL SIGNALS

Henry G. Lewis, Jr., Hamilton Square, and Thomas V. Bolger, Merchantville, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 25, 1983, Ser. No. 498,102
Int. Cl.⁴ H04N *11/04*
U.S. Cl. 358—21 R **20 Claims**



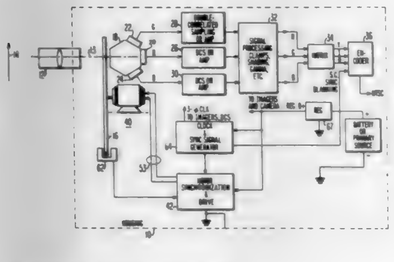
1. Digital signal processing apparatus comprising:
a signal source for providing digital input signals having N bits, where N is a positive integer;
processing means, coupled to said signal source, for digitally processing said digital input signals to develop processed digital signals therefrom, wherein said processing means is responsive to less than N of the most significant bits of said digital input signals;
first means, coupled to said processing means and including digital-to-analog converting means, for developing analog output signals representing the magnitude of said processed digital signals; and
second means, coupled to said first means and to said signal source, for changing the correspondence between the magnitude of said analog output signals and the magnitude of said processed digital signals in response to the least significant bit of said digital input signals.

4,566,029

SHUTTERED CCD CAMERA WITH LOW NOISE

Cydney A. Johnson, Marlton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 23, 1984, Ser. No. 592,839
Int. Cl.⁴ H04N *9/09, 9/04, 9/07, 5/225*
U.S. Cl. 358—50 **11 Claims**



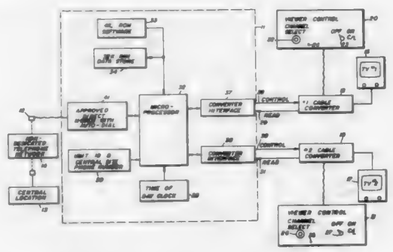
1. A television camera comprising:
charge-coupled imaging means coupled to receive light from an image for generating low-level signals therefrom, said imaging means being subject to smear in the presence of an illumination highlight which detracts from the appearance of the televised image;
shutter means coupled in the light path from said image to said imaging means, said shutter means including an opaque portion for cutting off said light from said image, and including a light-passing portion for transmitting said light from said image to said imaging means;
energizing means coupled to said charge-coupled imaging means for energizing said imaging means for allowing integration of signal-representative charges;
synchronizing means coupled to said energizing means for being energized thereby and coupled to said imaging means for recurrently clocking said signal-representative charges to form a recurrent stream of said low-level signals;
amplifying means coupled to said imaging means for receiving said stream of low-level signals for amplifying said signals in a low-noise manner;
shutter motor means electrically coupled to said energizing means for being energized thereby and coupled to said shutter means for causing said shutter means to move to successively interpose said opaque and transparent portions between said image and said imaging means, said shutter motor means being synchronized by said synchronizing means for interposing said opaque portions of said shutter means in said light path during recurrent pull-down intervals and for interposing said light-passing portions of said shutter means in said light path during intervals in which said signal-representative charges are clocked, whereby said motor means coupled to said shutter means is physically near said imaging means, and motor noise is undesirably radiated to said imaging means, which motor noise while small in magnitude is nevertheless significant relative to said low-level signals;
conductive shielding means surrounding a substantial portion of said motor for providing shielding of said motor noise, whereby electrically connecting said shielding means to a point of reference potential for said energizing means unexpectedly perturbs the shielding; and
electrical isolating means coupled to said motor and to said conductive shielding means for mechanically supporting said shielding means while providing electrical isolation of said shielding means from said energizing means whereby said shielding means is effective to reduce said motor noise.

4,566,030

TELEVISION VIEWER DATA COLLECTION SYSTEM

Rand B. Nickerson, Scarborough, and Russell J. Welsh, Toronto, both of Canada, assignors to CTBA Associates, Cincinnati, Ohio

Filed Jun. 9, 1983, Ser. No. 502,654
Int. Cl.⁴ H04N *7/00*
U.S. Cl. 358—84 **4 Claims**



1. In a system for monitoring habits of cooperating television viewers or panelists, including a central location and a plurality of remote units at a plurality of panelist locations, a remote unit for connection to a television broadcast receiver comprising:
means for receiving a television broadcast signal;
a viewer control means including a channel selector and a channel lock switch actuable between channel lock and unlock positions and coupled to said means for receiving a television broadcast signal, said channel lock switch functioning in said channel lock position to lock the associated television broadcast receiver to the channel currently selected notwithstanding any subsequent changes in the channel selector;
a microprocessor;

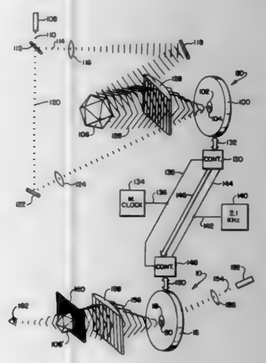
first memory means for storing programming information for said microprocessor and second memory means for storing data;
timing means for generating time of day information;
means for coupling said viewer control means through said microprocessor to the television broadcast receiver, said microprocessor functioning to monitor changes in said channel selector and the state of said channel lock switch and to store same, together with time of day information, in said second memory means, changes in said channel selector while said channel lock switch is in the unlock position being stored as channel viewing data and changes in said channel selector while said channel lock switch is in the lock position being stored as one of viewer reaction and viewer identification data;
a modem for connection of the non-dedicated telephone network, said modem being coupled to and under the control of said microprocessor;
register means for setting a unique identification signal for each remote unit, each such unique identification signal corresponding to a preselected unique call-in time for each such remote unit;
said microprocessor functioning to establish communication through said modem with the central location at the preselected unique call-in time and to transmit the data stored in said second memory means to the central location; and
wherein said second memory means includes a channel substitution table and wherein the contents of said channel substitution table are down loaded from the central location to the remote unit during communication at said unique call-in time, said microprocessor controlling channel selection to effect substitute channel selection at preselected times in accordance with said channel substitution table regardless of the manually viewer selected channel.

4,566,031

SPATIAL LIGHT MODULATION WITH APPLICATION TO ELECTRONICALLY GENERATED HOLOGRAPHY

Ronald L. Kirk, Findlay, Ohio, assignor to The Holotronics Corporation, Findlay, Ohio

Filed Feb. 16, 1984, Ser. No. 580,650
Int. Cl.⁴ H04N *13/00*
U.S. Cl. 358—90 **33 Claims**



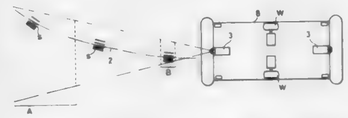
1. A spatial light modulator comprising:
first and second spaced, planar supports;
a first array of parallel, transparent, electrically conductive electrodes supported from said first support in a first predetermined orientation;
a second array of parallel, electrically conductive electrodes supported from said second support in a second predetermined orientation to define with said first array of electrodes a matrix of electrode crossing locations;
a normally opaque medium intermediate said first and second transparent supports, having a suspension of dipolar particles normally randomly dispersed therein, said particles being movable into alignment with an applied electrical field of at least threshold field strength value to effect a transmissive condition of said medium;
field restriction means adjacent each said electrode crossing location and adjacent each said first and second array for dissipating flux components of a said applied electrical field extensible laterally from said crossing locations; and
control means electrically coupled with each said first and second electrode arrays for applying select signals to predetermined discrete electrodes thereof to form electrical fields therebetween having predetermined values at and above said threshold value.

4,566,032

VISUALLY GUIDED VEHICLE

Shigeru Hirooka; Shuichi Maeda; Shigehiro Yamamoto, and Toshihiko Yamaguchi, all of Kyoto, Japan, assignors to Nippon Yusoki Co., Ltd. and Dac Engineering Co., Ltd., both of Kyoto, Japan

Filed Nov. 10, 1983, Ser. No. 550,690
Claims priority, application Japan, Dec. 20, 1982, 57-223516
Int. Cl.⁴ H06N *7/18*
U.S. Cl. 358—103 **5 Claims**



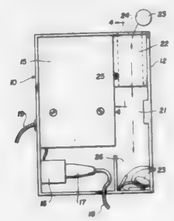
1. An unmanned load transporting vehicle comprising:
a guide belt laid on a floor on which said vehicle is run, said guide belt comprising a plurality of reflecting segments comprising a plurality of bar codes representing corresponding instructions including a halt instruction, a deceleration instruction and turning instructions;
a video camera installed on an upper portion of the vehicle, said camera being directed to receive light reflected from said guide belt;
controller means installed on the body of the vehicle receiving an output signal from said camera for controlling running of said vehicle in response to said output signal from said camera.

4,566,033

TELEVISION VIEWING TIME REGULATOR

Linda L. Reidenouer, 205 Rowledge Rd., Charlottesville, Va. 22901

Filed Aug. 11, 1983, Ser. No. 522,020
Int. Cl.⁴ H04N *7/16, 1/34*
U.S. Cl. 358—115 **7 Claims**



1. A television viewing time regulator unit including a receptacle adapted to receive a plug of a television receiver power cable and further including another power cable adapted to be

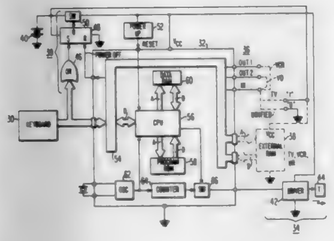
plugged into a conventional household power outlet, a regulated power supply on the regulator unit connected with said another power cable, a timer circuit means on the regulator unit including a magnetically operated activating switch and means to enable the delivery of operating power through the first-named receptacle to the television receiver for a predetermined period of time regulated by the timer circuit means, and the regulator unit having a receiving passage adjacent to the magnetically operated activating switch for a token of magnetic material.

4,566,034

REMOTE CONTROL TRANSMITTER ARRANGEMENT FOR ONE OR MORE TELEVISION DEVICES

Mark A. Harger, Noblesville; Joseph E. Amaral, Carmel, and Harold Blatter, Indianapolis, all of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed May 2, 1983, Ser. No. 490,721
Int. Cl.[4] H04N *1/32;* **H04B** *9/00;* **H04Q** *9/00*
U.S. Cl. 358—194.1 **7 Claims**



1. A remote control transmitter comprising:

a microcontroller including an input/output unit by which data is coupled to and from said microcontroller; a program memory in which is stored a program for controlling the operation of said remote control transmitter; a data memory for temporarily storing data processed during the operation of said remote control transmiter; and a central processing unit coupled to said input/output unit, to said program memory, and to said data memory for processing data received from or supplied to said input/output unit and to said data memory under the control of said program;

a keyboard including a plurality of function control keys coupled to said input/output unit by which a user may control respective functions of a remotely located device, said keyboard generating function representative coded signals representing respective functions to be controlled when a function key is activated by a user;

transmitter type code generating means coupled to said input/output unit for providing a transmitter type representative coded signal of either a first type indicating a particular device which said remote control transmitter is to control or of a second type indicating that the remote control transmitter is to control more than one device;

said central processing unit being responsive, under program control, to said transmitter type representative coded signals and to said function representative coded signals provided for generating remote control message representative coded signals representing a remote control message including a preamble portion identifying the particular device to be controlled and a data portion identifying the particular function to be controlled; said central processing unit, under program control, generating said preamble portion in accordance with said transmitter type representative coded signals and generating said data portion in accordance with said function representative code signals if said transmitter type representative coded signal is of said first type, and said central processing unit, under program control, selectively interrogating said input/output unit to generate said preamble portion in accordance with device representative coded signals representing the particular device to be controlled, other than said transmitter type representative signals, and generating said data portion in accordance with said function representative signals and said device representative signals if said transmitter type representative signal is of said second type; and

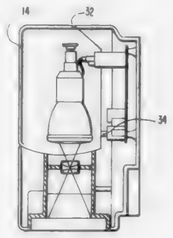
transmitting means having an input coupled to said input/output unit for transmitting a remote control signal in accordance with said remote control message representative coded signals.

4,566,035

CRT MONITOR WITH BUILT-IN CAMERA

Robert A. Samuel, Snohomish; Gary J. Selke, Seattle, and Russell W. Morris, Redmond, all of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Mar. 18, 1983, Ser. No. 476,460
Int. Cl.[4] H04N *5/84*
U.S. Cl. 358—244 **6 Claims**



1. An improved CRT monitor of the type comprising a memory unit which stores pixcels of information which are then displayed on the screen of said CRT comprising:

(a) a cabinet for said CRT;

(b) means for moving said CRT from a depressed position within said cabinet to a raised "viewing" position;

(c) an apparatus within said cabinet for holding a light-sensitive medium in a plane parallel to the screen of said CRT, said apparatus being separated from the screen of said CRT;

(d) a lens which projects an image from said CRT onto said light-sensitive medium whereby the image on said CRT will be projected onto said light-sensitive medium; and

(e) means for producing a photograph of said image on said light-sensitive medium.

4,566,036

REMOTE CONTROL APPARATUS

Tsuneaki Kadosawa, Ninomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,547
Claims priority, application Japan, Jun. 7, 1983, 58-100239; Jun. 17, 1983, 58-107851
Int. Cl.[3] H04N *5/26*
U.S. Cl. 358—210 **17 Claims**

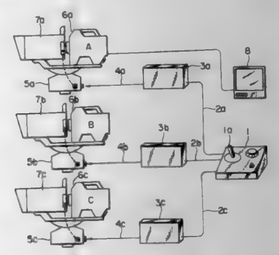
1. A remote control apparatus provided with:

a plurality of cameras;

a plurality of universal heads for supporting said cameras thereon and effecting panning and tilting of said cameras;

signal producing means for producing an electrical signal regarding the position of an object to which said cameras are to be turned;

electrical memory means for storing information for determining the angle of panning and the angle of tilting; and



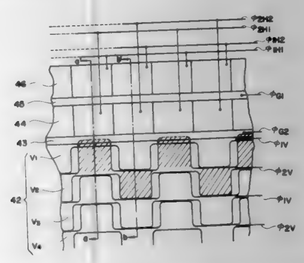
control means for controlling the panning and tilting of said universal heads by said stored information and said electrical signal to turn said cameras to said object.

4,566,037

SOLID-STATE AREA IMAGING APPARATUS

Norihiko Takatsu; Atsushi Kawahara, both of Kawasaki, and Masaki Isogai, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,599
Claims priority, application Japan, Dec. 25, 1982, 56-209105
Int. Cl.[4] H01N *3/14*
U.S. Cl. 358—213 **7 Claims**



1. A solid-state area imaging apparatus for producing a still picture signal, said apparatus being provided on an electronic still camera, comprising:

(a) photosensitive means including a plurality of photoelectric conversion elements for storing electric charges in accordance with the intensity of light impinging thereupon, said plurality of photoelectric conversion elements being so arranged as to form a plurality of parallel lines on a predetermined area in a predetermined direction and being divided into a first group and a second group, such that the photoelectric conversion elements of said first group are arranged apart from one another in a checkered pattern with one or more photoelectric conversion elements of said second group being disposed therebetween;

(b) first transfer means for transferring a first plurality of electric charges in a direction substantially perpendicular to said predetermined direction, said first plurality of electric charges being previously stored in said first group of photoelectric conversion elements; and

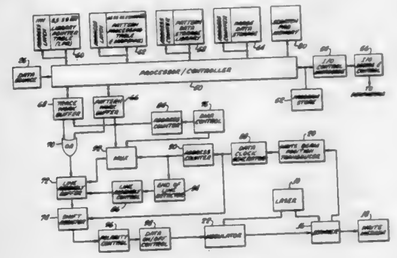
(c) second transfer means for transferring a second plurality of electric charges in said direction substantially perpendicular to said predetermined direction, said second plurality of electric charges being previously stored in said second group of photoelectric conversion elements wherein said first transfer means extend linearly in said predetermined direction and comprise a plurality of electrodes, each of said electrodes having a plurality of projections extending therefrom at regular intervals, said projections extending alternatingly in a first direction substantially perpendicular to said predetermined direction and in a second direction opposite to said first direction.

4,566,038

SCAN LINE GENERATOR

Delbert R. Dimick, Irvine, Calif., assignor to Excellon Industries, Torrance, Calif.

Continuation-in-part of Ser. No. 314,524, Oct. 26, 1981, abandoned. This application Aug. 30, 1982, Ser. No. 413,167
Int. Cl.[4] H04N *7/18, 1/00*
U.S. Cl. 358—256 **35 Claims**



1. A system for generating an image in a plurality of scan lines of image elements, said image comprising a plurality of traces having relatively less change from one scan line to the next, and a plurality of patterns having relatively more change from one scan line to the next, said system comprising

trace buffer means for containing data defining trace elements on a scan line,

pattern buffer means for containing data defining pattern elements on a scan line,

means for providing a group of trace data defining trace elements line by line,

means for providing a group of pattern data defining pattern elements line by line,

means for clearing said pattern buffer means and feeding a line of said pattern data thereto for each line of said data,

means for clearing said trace buffer means and feeding trace data thereto only upon occurrence of a line of trace data that varies from a preceding line,

means for generating a data stream that controls a plurality of scan lines to produce an image,

control means for controlling said data stream, and

means for transferring data from both said trace and pattern buffer means to said control means to control said data stream.

4,566,039

FACSIMILE SYSTEM

Koichi Oya, Kokubunji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 17, 1982, Ser. No. 378,734
Claims priority, application Japan, May 20, 1981, 56-74879
Int. Cl.[4] H04N *7/04*
U.S. Cl. 358—280 **31 Claims**

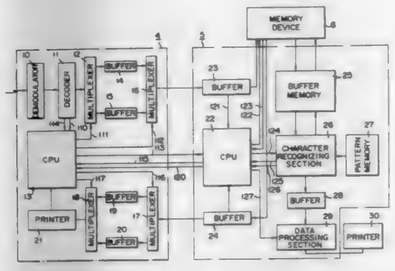
1. A character recognition facsimile system comprising:

receiving means for receiving facsimile signals representing a document pattern, said document pattern including a plurality of input character patterns;

first memory means, responsive to said facsimile signals, for storing said plurality of input patterns in the form of associated input character pattern data;

second memory means for storing a plurality of standard character patterns in the form of standard character pattern data;

recognizing means for comparing said input pattern data stored in said first data memory means with said standard pattern data stored in said second memory means, for rewriting the input character pattern data stored in said first memory means associated with input patterns corresponding to said standard patterns with stored standard character pattern data associated with said corresponding standard patterns, and for permitting the stored input



pattern data associated with input patterns not corresponding to one of said plurality of standard patterns to remain in said first memory means; and

means for printing the character patterns associated with the pattern data stored in said first memory means,

wherein said printing means prints out a document pattern of one page containing said non-corresponding input patterns, together with an index code locating said non-corresponding input pattern in said document pattern.

4,566,040

ORIGINAL READING DEVICE

Takashi Ozawa, and Mutsuo Takenouchi, both of c/o Fuji Xerox Co., Ltd., Ebina Works, No. 2274, Hongo, Ebina-shi, Kanagawa, Japan

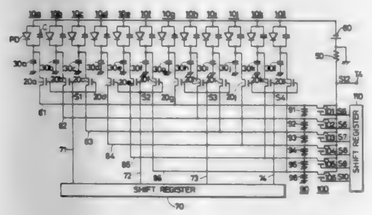
Filed Jun. 21, 1983, Ser. No. 506,265

Claims priority, application Japan, Oct. 4, 1982, 57-175455

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.⁴ G06K *9/00;* **H04N** *3/14*

U.S. Cl. 358—293 **4 Claims**



1. An original reading device in which a plurality of lower electrodes are formed on a substrate, and photoconductors and transparent, electrically conductive upper electrodes are formed on said lower electrodes to form photoelectric conversion elements, comprising:

a plurality of thin film transistors, one of said thin film transistors being provided for each of said photoelectric conversion elements, each of said photoelectric conversion elements being coupled to an input electrode of a corresponding one of said film transistors, and said film transistors being divided into a plurality of alternating even- and odd-ordered groups with gate electrodes of each of said film transistors in each group being connected together;

a first shift register for applying first switching signals to connection points of said gate electrodes of each said group in time sequence;

a first set of connecting lines through which the output electrodes of ones of said thin film transistors in said odd-ordered groups are connected in a predetermined order;

a second set of connecting lines through which output electrodes of said thin film transistors in said even-ordered groups are connected in a predetermined order;

a plurality of temporary storing means, one of said temporary storing means being provided for each of said first and second connecting lines, for temporarily storing the switched photoelectric conversion outputs;

a plurality of MOS transistors, one of said MOS transistors being provided for and having an input electrode coupled to each of said temporary storing means for reading said photoelectric conversion outputs thus temporarily stored, said MOS transistors having output electrodes connected together; and

a second shift register for applying second switching signals to gate electrodes of said MOS transistors in time sequence.

4,566,041

PICTURE SIGNAL DETECTOR AND DETECTION METHOD FOR IMAGE REPRODUCING SYSTEM

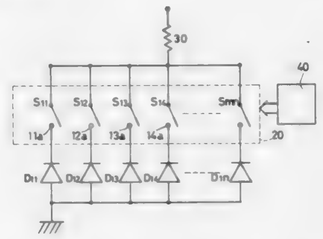
Noriyuki Shimano, Uji, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jul. 8, 1983, Ser. No. 512,779

Claims priority, application Japan, Oct. 21, 1982, 57-15961[U]

Int. Cl.⁴ H04N *1/02, 1/10, 3/12, 1/04*

U.S. Cl. 358—284 **9 Claims**



1. A detector for a picture signal of an image reproducing system which records the reproduced image of an original picture by using a picture signal, comprising a sensory face composed of multiple photo-diodes arranged in a matrix on an imaging face, and means for selectively enabling current to flow through only some of said photo-diodes to establish a predetermined sensory area.

4,566,042

ELECTROPHOTOGRAPHIC IMAGING APPARATUS BY VARIABLY PLACING PIXEL ELEMENTS

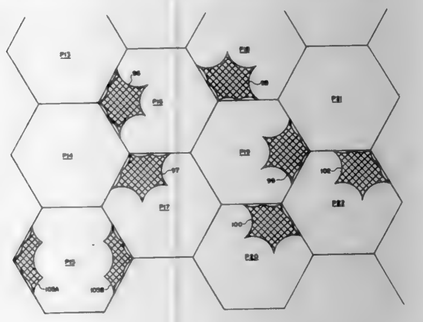
Lysle D. Cahill, Dayton, Ohio, assignor to Coulter Systems Corporation, Bedford, Mass.

Division of Ser. No. 11,320, Feb. 13, 1979, Pat. No. 4,468,706. This application Aug. 3, 1984, Ser. No. 637,512

Int. Cl.⁴ H04N *1/30*

U.S. Cl. 358—300 **41 Claims**

41. Electrophotographic imaging apparatus including an electrophotographic member having a chargeable photoconductive outer surface capable of being discharged by a composite beam of radiant energy, said apparatus comprising a source of a composite beam of radiant energy rays, means for charging the photoconductive surface of the electrophotographic member, means for scanning said charged surface with the composite beam of radiant energy rays over said electrophotographic member, said scanning means operable to effect a plurality of movements repeated in side-by-side substantially parallel lines defining a certain direction, means for modulating the rays by turning certain ones on and off, means for moving the beam along one of said parallel lines during modulation of the rays to form a consecutive series of microscopic pixels of discrete groupings of charged and discharged elements along said one line, whereby each formed pixel corresponds to an incremental area of an image in which the areal extent of the



grouping of charged elements remaining after the beam passes is substantially proportional to the desired density of said incremental area providing plural area-weighted patterns for at least some of the densities of said incremental areas, means selecting at random any one of the plural area-weighted patterns corresponding to the desired density, to vary the placement of the groupings in the pixels to decrease undesirable optical effects and means for developing the resulting latent charge image thereby formed.

4,566,043

LASER RECORDING APPARATUS

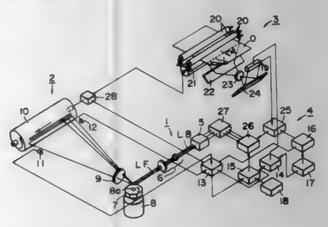
Yasuyuki Tamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 359,029, Mar. 17, 1982, abandoned, which is a division of Ser. No. 201,538, Oct. 28, 1980, abandoned. This application Nov. 9, 1984, Ser. No. 670,131

Claims priority, application Japan, Nov. 5, 1979, 54-142939

Int. Cl.⁴ H01N *1/30;* **G01D** *15/14*

U.S. Cl. 358—300 **4 Claims**



1. A laser recording apparatus for recording information on a recording medium by use of a plurality of modulated laser beams, comprising:

a photosensitive medium movable in a secondary scanning direction;

a semiconductor laser array including a plurality of laser-radiating sources for radiating a plurality of laser beams;

primary scan means for moving said plurality of laser beams in a primary scanning direction which is substantially perpendicular to the secondary scanning direction, said semiconductor laser array being oriented in such a manner that the beams radiated by said plurality of laser-radiating sources are arranged in a line inclined relative to the primary scanning direction and to the secondary scanning direction on said photosensitive medium;

reading means for reading photoelectrically an original line by line and converting the information carried on the original and represented by each line respectively into time series signals;

memory means having a plurality of memory areas corresponding to each of said plurality of laser-radiating sources, each of said plurality of the memory areas being operative to memorize the information represented by different ones of the lines of the original; and

control means for controlling each of said plurality of laser-radiating sources to radiate a laser beam in accordance with information memorized in a respective different one of said plurality of memory areas.

4,566,044

DIRECTION-CONSTRAINED TERNARY CODES USING PEAK AND POLARITY DETECTION

Glen G. Langdon, Jr., and Paul H. Siegel, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1984, Ser. No. 665,807

Int. Cl.⁴ G11B *5/09;* **H04L** *3/00*

U.S. Cl. 360—40 **5 Claims**



1. A method for coding binary symbol strings into ternary symbol strings and for synchronously recording said ternary symbol strings onto a magnetic medium such that clocked recovery of the recorded signal may be subsequently made using peak position and polarity detection, comprising the steps of:

(a) mapping a binary symbol string into a direction-constrained run length limited (RLL) ternary symbol string;

(b) transforming the ternary symbol string into a clocked multilevel recording signal, said recording signal including signal levels in the range $-a<0<+a$, transitions between levels being made as either full-steps ($+a$ to $-a$, $-a$ to $+a$), or half-steps (0 to $\pm a$ or $\pm a$ to 0), consecutively occurring half-steps being limited to pairs of like polarity ($+a$, $+a$; $-a$, $-a$), half-steps of alternate polarity ($+a$, $-a$; $-a$, $+a$) being excluded; and

(c) imprinting a magnetic medium with the recording signal.

4,566,045

SYSTEM FOR THE REPRODUCTION OF SIGNALS STORED ON A MAGNETIC TAPE

Walter Weissensteiner, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1984, Ser. No. 621,414

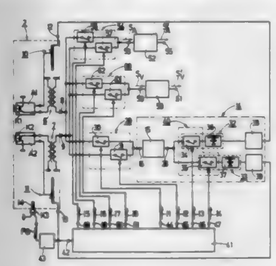
Claims priority, application Austria, Jun. 17, 1983, 2243/83

Int. Cl.⁴ G11B *5/56*

U.S. Cl. 360—77 **2 Claims**

1. A system for the reproduction of signals stored on parallel tracks adjacent to one another and running diagonally to the longitudinal axis of the magnetic tape on which they are stored, with a drum-shaped scanning device round whose outer surface the magnetic tape is wound spirally within a predetermined angular range and which, for the purpose of scanning the tracks successively and reproducing the signals stored on them, comprises at least two magnetic heads which can be driven with a rotary movement, of which magnetic

heads only one is at any time in scanning contact with the magnetic tape in cyclically successive first scanning intervals and both of whch are simultaneously in scanning contact with the magnetic tape in second scanning intervals and which are mounted on electromechanical adjustment devices with which, for their guidance over the tracks to be scanned, the magnetic heads are adjustable transversely in relation to the tracks in response to adjustment signals applied to the adjustment devices, for the generation of which signals an adjustment-signal generating circuit is provided, to which circuit, via a first switching device controlled by a control-signal generator, the signals reproduced by the magnetic heads and containing a measurement of the deviations of the magnetic heads from the track are to be applied alternately for the purpose of generating signals corresponding to the adjustment signals for the adjustment devices and which circuit incorporates the storage circuits connected at the inputs to the adjustment devices, to which storage circuits, via a second switching device controlled by the control-signal generator in a similar manner to the first switching device, the signals corresponding



to the adjustment signals can be led alternately and which keep these signals for generation of the adjustment signals stored, the control-signal generator activating in the first scanning intervals the first switching device so as to pass th signals reproduced by the particular magnetic head in scanning contact on to the adjustment-signal generating circuit, and the second switching device so as to pass the signals corresponding to the adjustment signals for the adjustment device carrying the particular magnetic head in scanning contact on to th storage circuit connected at the input to this adjustment circuit, IN WHICH, during the second scanning intervals, the control-signal generator activates the first and second switching devices so as to pass at least once on an alternate time-division multiplex basis the signals reproduced by the two magnetic heads simultaneously in scanning contact on to the adjustment-signal generating circuit and the signals corresponding to the adjustment signals for the adjustment devices carrying the two magnetic heads simultaneously in scanning contact on to the storage circuits connected at the inputs to these adjustment devices.

4,566,046

POSITIONING APPARATUS FOR A MAGNETIC HEAD OF A MAGNETIC DISK DRIVE APPARATUS

Masao Fujiki, Hamura, and Kazukuni Seguchi, Oume, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 598,404, Apr. 11, 1984, abandoned, which is a continuation of Ser. No. 334,911, Dec. 28, 1981, abandoned. This application Jun. 17, 1985, Ser. No. 744,904

Claims priority, application Japan, Jan. 9, 1981, 56-1188

Int. Cl.⁴ G11B *21/08, 17/00;* **G05B** *5/01*

U.S. Cl. 360—78 **6 Claims**

1. A positioning apparatus for a magnetic head of a magnetic disk drive apparatus, comprising:

a carriage;

means for cutting off the power to said apparatus;

a magnetic head positioned on said carriage;

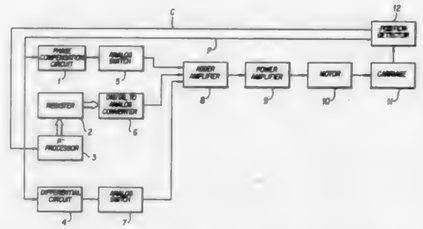
biasing means for returning said carriage holding said magnetic head to a fixed position when said apparatus is in a power-off state, connected to said carriage;

said biasing means supplying said carriage with the biasing force when said magnetic head is positioned in a desired track position;

a closed loop feedback circuit for holding said magnetic head in a desired track position;

means for determining the position of said carriage;

processor means connected to said mean for determining for calculating the force information of said biasing means



acting upon said carriage when said magnetic head is positioned in said desired track position prior to the positioning of said magnetic head in said desired track position; and

force compensation means independent from said closed loop feedback circuit for supplying said carriage with an opposite force equivalent to the force of said biasing means responding to said force information provided by said processor means when said magnetic head is positioned in said desired track position.

4,566,047

MODE SETTING ARRANGEMENT FOR USE IN VIDEO TAPE RECORDER

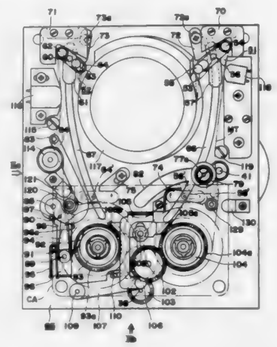
Kunio Hirose, Joyo; Tadatoshi Hukuta, Hirakata; Hiroshi Horiuchi, Neyagawa; Toyozo Urakami, Kobe, and Minoru Yoshida, Neyagawa, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Aug. 5, 1982, Ser. No. 405,557

Claims priority, application Japan, Aug. 5, 1981, 56-123484

Int. Cl.⁴ G11B *15/66*

U.S. Cl. 360—85 **11 Claims**



1. In a video tape recorder having means for receiving a cassette having a pair of reels and magnetic tape wound thereon for feed from one of said reels to the other of said reels, as said reels are rotated in forward and reverse directions,

means, including reel bases, a capstan and a pinch roller, in said recorder for rotating said reels and advancing said magnetic tape at a predetermined speed during the recording and the playback of the recording on said magnetic tape and for advancing said magnetic tape at a higher speed when said magnetic tape is being wound from one reel to the other reel without recording and playback, a mode setting means in said recorder comprising:

first cam means;

a loading motor having means for positioning said first cam means;

means for braking said reel bases and said reels thereon and preventing said magnetic tape from being advanced when said loading motor and said positioning means thereon has positioned said first cam means in a first position;

means for releasing said braking and tape advance preventing means when said loading motor and said positioning means thereon has positioned said first cam means in a second position, and for rotating said pair of reel bases for advancing said tape at said higher speed;

means for holding said pinch roller against said capstan with the application of pressure, and with said magnetic tape passing over said pinch roller when said loading motor and said positioning means thereon has positioned said first cam means in a third position;

a pivotally mounted lever means for supporting said pinch roller;

a second cam means for pivoting said lever means; and

means interconnecting said first cam means and said second cam means for pivoting said lever means to a first position for positioning said pinch roller inside said cassette with said magnetic tape passing thereover when said loading motor has positioned said first cam means in said first position and said reel bases and said reels are braked and for pivoting said lever means to a second position for positioning said pinch roller with said magnetic tape passing thereover against said capstan when said loading motor has positioned said first cam means in said third position.

4,566,048

TAPE CASSETTE ADAPTER

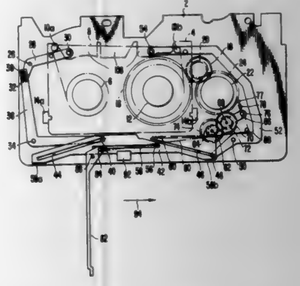
Tomokazu Tokunaga, Neyagawa; Masataka Izaki, Yawata; Jirou Kajino, Neyagawa, and Toshibumi Kamiyama, Tsuyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 24, 1982, Ser. No. 423,212

Claims priority, application Japan, Sep. 26, 1981, 56-152748; Oct. 23, 1981, 56-170379

Int. Cl.⁴ G11B *15/32;* **G03B** *1/04*

U.S. Cl. 360—94 **8 Claims**



1. A tape cassette adapter for enabling a compact tape cassette to be used in a standard size magnetic tape recording and/or reproducing apparatus, said adapter comprising:

a chassis having therein a recess for receiving a compact tape cassette which includes a shorter length tape, a smaller size and a lighter weight than a standard size tape cassette, a take-up reel and a supply reel on which the tape is wound, and a cut-away portion through which the tape may be drawn outwardly of the cassette;

tape drawing means, mounted on said chassis and movable between an inoperative position disposed at the cut-away portion and an operative position spaced outwardly of the cut-away portion, for drawing the tape through the cut-away portion from the compact tape cassette such that the path of the tape substantially is the same as that of a standard tape cassette;

reel rotating means, mounted on said chassis, for winding back onto the take-up reel of the compact tape cassette that length of the tape previously drawn from the cassette by said tape drawing means;

a slide member mounted on said chassis for reciprocal sliding movement in opposite directions longitudinally of said chassis;

means connecting said slide member to said tape drawing means for transmitting longitudinal reciprocal movement of said slide member into movement of said tape drawing means between said inoperative and operative positions thereof;

means connecting said slide member to said reel rotating means for operating said reel rotating means only upon sliding movement of said slide member in a respective said longitudinal direction which causes said tape drawing means to move from said operative position thereof to said inoperative position thereof, said means connecting said slide member to said reel rotating means comprising at least first and second gears connected by a one way clutch, means for transducing sliding movement of said slide member to rotation of said first gear, said transducing means comprising a rack on said slide member, and a pinion mounted for engagement with said rack and said first gear, and said second gear being engageable with said reel rotating means; and

disengagement means for selectively separating connection between said slide member and said reel rotating means.

4,566,049

TRANSDUCER HEAD INDEXING DEVICE AND METHOD

Dewey M. Sims, Jr., Wayne, and Robert T. Haas, Milan, both of Mich., assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 29, 1982, Ser. No. 444,868

Int. Cl.⁴ G11B *21/08, 21/10, 21/24*

U.S. Cl. 360—106 **5 Claims**

1. An apparatus for positioning a transducer head relative to a recording medium wherein

said head is carried by a carrier mounted for linear translational movement substantially parallel to a surface of said recording medium,

and said carrier supports a cam follower means,

said carrier and said cam follower means resiliently biased against a camming means,

said apparatus comprising:

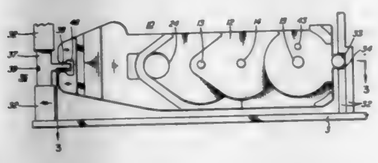
a gear train, including both a motor and said camming means,

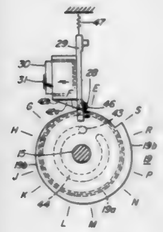
all pivotally mounted as a single unit such that said camming means contacts said cam follower means and the motor controllably drives said camming means via said gear train, and

means for controllably pivoting the entire gear train,

and adjustments can be made to the position of said head relative to said medium

such that said head can be controllably linearly translated substantially parallel to said surface of the recording medium either by pivoting said entire gear train or by rotatably driving said camming means.



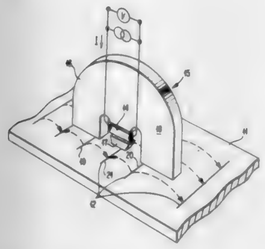


4,566,050

SKEW INSENSITIVE MAGNETIC READ HEAD

David L. Beam, Cary, and Glen P. Double, Charlotte, both of N.C., assignors to International Business Machines Corp. (IBM), Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,916
Int. Cl.[4] G11B *5/127, 5/33, 5/187*
U.S. Cl. 360—113 10 Claims



1. In a magnetic reader for detecting binary flux transitions recorded on a surface of a magnetic media, a read head comprising:

a substantially planar magnetic resistive element mounted within said head so as to be perpendicular to the surface of said media when detecting said transitions,

a magnetically permeable yoke disposed substantially coplanar with said magnetic resistive element, which together define a magnetic circuit, said yoke having at least one substantially coplanar leg portion providing a pole face adjacent said surface and being dimensioned to bridge over at least one flux transition adjacent to a second flux transition beneath said element when the plane of said element is skewed with respect to flux transitions on said surface, and providing a further substantially coplanar pole face positioned adjacent the edge of said element most distant from said surface to couple flux to said magnetoresistive element, and

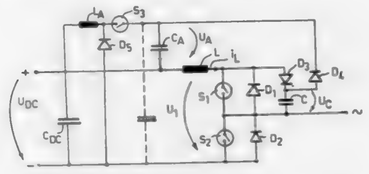
conductor means electrically connected to two spaced points on said magnetoresistive element for detecting any change in the electrical resistance thereof in response to a flux transition.

4,566,051

INVERTER PROTECTED IN RESPECT OF THE RATES OF INCREASE OF CURRENT AND VOLTAGE

Risto Komulainen, Helsinki, Finland, assignor to Kymi-Stromberg OY, Helsinki, Finland

PCT No. PCT/FI83/00058, § 371 Date Apr. 17, 1984, § 102(e) Date Apr. 17, 1984, PCT Pub. No. WO84/00858, PCT Pub. Date Mar. 1, 1984
PCT Filed Aug. 19, 1983, Ser. No. 601,626
Claims priority, application Finland, Aug. 19, 1982, 822885
Int. Cl.[4] H02H *7/122*
U.S. Cl. 361—13 3 Claims



1. An inverter protected from surges of current and voltage, in which said surges represent changes in the rates of increase of current and voltage, said inverter comprising:

first circuit means comprising a filter capacitor and a choke for protecting said inverter from said current and voltage surges;

at least two controlled semiconductor switches for each phase of said inverter coupled to said first circuit means;

second circuit means, comprising a series connected capacitor and diode, for each phase of said inverter for protecting against voltage surfaces, said second circuit means for each phase of said inverter being connected in parallel with one of said at least two controlled semiconductor switches for each phase of said inverter;

storage means, comprising a storage capacitor, for storing energy resulting from said current and voltage surges, said storage means being connected to said first circuit means;

energy transfer means, for each phase of said inverter, for transferring energy from said storage means to said filter capacitor of said first circuit means, said energy transfer means comprising a diode connected between the connection point of said series connected capacitor and diode and said storage capacitor; and

breaker means coupled to each of said energy transfer means for regulating the transfer of energy between said storage means to said filter capacitor.

4,566,052

OVERVOLTAGE PROTECTION CIRCUIT FOR POWER SUPPLY

Neil A. Kammiller, Lakewood, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Division of Ser. No. 402,628, Jul. 28, 1982, Pat. No. 4,525,674.
This application Nov. 2, 1984, Ser. No. 667,724
Int. Cl.[4] H02H *3/20*
U.S. Cl. 361—18 4 Claims

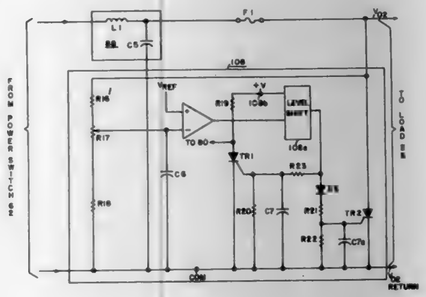
1. A circuit for use in a power supply of the type which includes a power switching means and a fuse connected in series with one of its two output terminals, said supply including means which attempts to turn off said power switching means in response to a signal from said circuit when the output voltage of the supply exceeds a reference signal representative of a predetermined amplitude of said output voltage and said circuit also capable of providing a short circuit across said output terminals, said circuit comprising:

means connected to said output terminals for generating a signal representative of said supply output voltage;

means responsive to said signal representative of said output voltage and said reference signal for generating an overvoltage signal when said output voltage exceeds said reference signal;

first semiconductor means having a control electrode connected to said overvoltage signal generating means and responsive to said overvoltage signal for turning on and generating said supply turn-off signal said semiconductor means having a turn-on threshold;

second semiconductor means having a control electrode and a turn-on threshold said second semiconductor means being connected to said output terminals to provide a short circuit thereacross when said second semiconductor means turns on; and



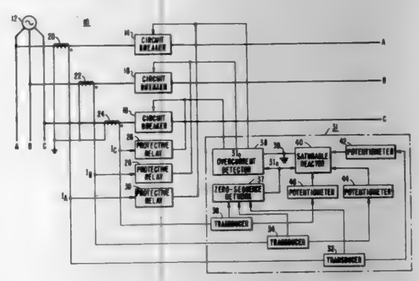
means connected between said overvoltage signal generating means and said second semiconductor means control electrode for increasing said second means turn-on threshold to be greater than said first semiconductor means turn-on threshold, said second means turning on in response to said overvoltage signal later than the turn-on of said first semiconductor means and only if said turn-off means has not turned off said supply and only when said overvoltage signal exceeds said second semiconductor means increased turn-on threshold, the turning on of said second means providing said short circuit across said output terminals such that current sufficient to open said fuse may flow therethrough.

4,566,053

GROUND-FAULT PROTECTIVE RELAY

William A. Strickland, Jr., Coral Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 10, 1984, Ser. No. 629,532
Int. Cl.[4] H02H *3/16*
U.S. Cl. 361—42 6 Claims



1. A protective relay for detecting ground faults on a three-phase electrical power distribution system with phase conductors A, B, and C, said protective relay comprising:

means for providing an unbalanced current signal representative of unbalanced current in the three-phase electrical power distribution system;

first, second, and third current transformer means for producing first, second, and third current signals representative of the current flowing on the phase conductors A, B, and C, respectively;

overcurrent fault detecting means responsive to said unbalanced current signal for indicating a fault when the unbalanced current exceeds a predetermined limit; and

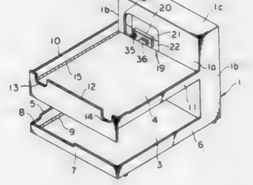
impedance means responsive to said first, second, and third current signals, wherein said impedance means has an impedance dependent on the value of said first, second, and third current signals, and wherein said impedance means is connected in shunt with said overcurrent fault detecting means such said unbalanced current signal is input to said impedance means and said overcurrent fault detecting means, wherein the amount of said unbalanced current signal flowing into said overcurrent fault detecting means depends upon the impedance of said impedance means, and therefore varies as a function of the current flowing through the three-phase electrical power distribution system.

4,566,054

RACK FOR MOUNTING TWO ELECTRONIC DEVICES CONNECTABLE TO AND DISCONNECTABLE FROM EACH OTHER

Mituhiko Shimoda; Masahiro Koinuma, and Yoshitaka Ohta, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1984, Ser. No. 631,733
Claims priority, application Japan, Jul. 20, 1983, 58-111503[U]
Int. Cl.[4] H05K *7/00*
U.S. Cl. 361—422 4 Claims



1. A rack for mounting two electronic devices connectable to and disconnectable from each other, which rack comprises:

(a) a rack body vertically extending and having a wiring space inside thereof;

(b) a first mount shelf for mounting a first electronic device, said first mount shelf being integrally provided with a lower portion of a front wall of the rack body;

(c) a second mount shelf for mounting a second electronic device, said second mount shelf being integrally provided with an upper portion of the front wall of the rack body;

(d) an opening formed in the front wall of the rack body, said opening bridging an upper portion and a lower portion of the second mount shelf;

(e) side plates upwardly projected at both sides of each of the mount shelves;

(f) a front side plate detachably attached between front ends of the side plates of each of the mount shelves;

(g) a fixture for mounting a connector holder, said fixture being provided at a rear end of the second mount shelf and projecting into said wiring space from said opening in the front wall of the rack body; and

(h) the connector holder being mounted on the fixture and having means for positional adjustment in right and left directions with respect to the front wall of the rack body and having means for holding a connector of a connection cord of the first electronic device mounted on the first mount shelf in such a manner that a connecting projection of the connector may project forwardly from the front wall of the rack body.

4,566,055

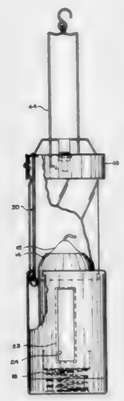
CANDLE HOLDER

Gary W. Klees, 9130 SE. 72nd Pl., and Gregory L. Draper, 5340 Lansdowne La., both of Mercer Island, Wash. 98040

Continuation of Ser. No. 412,146, Aug. 22, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,545

Int. Cl.⁴ F21V *35/00*; F21L *19/00*

U.S. Cl. 362—162 **11 Claims**



1. A portable candle holder comprising:

an outer rigid cover having upper and lower ends, said upper end having at least three circumferentially spaced alignment notches;

an inner candle receiver coupled to said cover;

means for pushing a candle upwardly in said candle receiver;

a glass lens having upper and lower portions including upper and lower ends;

a heat shield overlying and engaging the upper end of said lens for dissipating the heat from a candle flame;

means for securing a bail to said holder; and

coupling means for positioning said lens telescopically between retracted and extended positions within and extending out of said cover, respectively, said coupling means including at least three circumferentially spaced, metallic, flexible, elastic bars, each of said bars having an upper end and a lower end, said upper bar ends pressing directly down on said lens upper end, said lower bar ends pressing directly upon said lens lower end, said bars spaced from said lens at all other locations, said bars extending radially outward against, being frictionally engaged within and telescopically guided by said cover notches to prevent circumferential rotation of the bars and the lens with respect to the cover and for holding said lens at least in said axially extended and retracted positions above and within said cover, respectively, said cover spaced from said bars at all other locations when in the extended position, limiting structural heat-conductive paths to transfer heat from the lens to the cover through the bars.

4,566,056

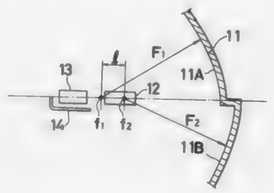
HEADLAMP FOR VEHICLE

Tadashi Kouchi, Fuchu, and Yoshiharu Urakami, Kawasaki, both of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1984, Ser. No. 587,573

Int. Cl.⁴ F21V *7/00*; H01J *5/16*

U.S. Cl. 362—297 **4 Claims**



1. A headlamp for a vehicle comprising:

a reflector having a main filament and a sub-filament disposed on the same axis;

said reflector having a first paraboloidal surface having a first focal distance and a second paraboloidal surface having a second focal distance;

said reflector having first and second focal points disposed on the same longitudinal axis and defined by said first and second focal distances;

said reflector having a space of 0.5 to 4 mm between said first and second focal points; and

said second focal point being located at the same location as said main filament.

4,566,057

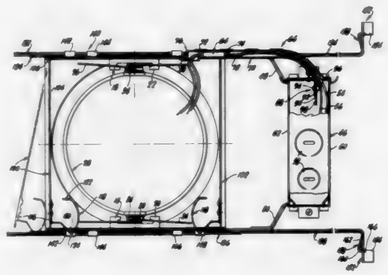
RECESSED LIGHTING HOUSING

James B. Druffel, Oakland, Calif., assignor to Prescolite, Inc., San Leandro, Calif.

Division of Ser. No. 477,377, Mar. 21, 1983, Pat. No. 4,471,416. This application Jun. 4, 1984, Ser. No. 616,614

Int. Cl.⁴ F21S *1/06*

U.S. Cl. 362—364 **1 Claim**



1. A door used in conjunction with a housing including a wall portion forming an enclosure and possessing an entrance to the enclosure, the housing further including an opening through the wall portion, comprising:

a. a member having a first end portion and a second end portion, said first end portion including means for hingedly attaching said first end portion to the housing at the entrance to the enclosure; and

b. means for removably latching said second end portion of said member to the housing, said latching means comprising a spring element connected to and projecting from said second end portion of said member, said spring element having a bent portion capable of entering the housing wall portion opening from the inside of the housing enclosure, occupying the housing wall portion opening, and being accessible from the outside of the housing enclosure.

4,566,058

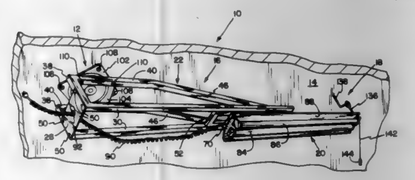
BOOM SUPPORTED LIGHT FIXTURE

Norton C. Barnett, 23570 Ironwood Dr., Elkhart, Ind. 46516

Filed Jul. 9, 1984, Ser. No. 628,811

Int. Cl.⁴ F21S *1/02*

U.S. Cl. 362—430 **17 Claims**



1. A boom assembly for supporting an elongated light fixture, comprising:

an elongated frame including two arms connected together in spaced apart relationship and having a pivot end portion and an opposite remote end portion,

a mountable swivel connected to said pivot end portion for pivoting said elongated frame thereabout, whereby said remote end portion is movable in a generally circular path in a plane generally perpendicular to the axis of rotation of said swivel and having said swivel at the center thereof,

a carriage adjustably mounted between said two arms at said remote end portion of said frame whereby said carriage is selectively axially adjustable radially outwardly from said swivel;

a holding means secured to said carriage for selectively positively supporting said carriage at any desired point along the circular path, and

said carriage adapted to have connected thereto an elongated illuminating device, whereby illumination can be provided at selected areas.

4,566,059

CONVERTER WITH LOSSLESS SNUBBING COMPONENTS

George C. Gallios, Setauket; Derek Whitehead, Locust Valley, and Richard Seleski, Huntington Station, all of N.Y., assignors to Venus Scientific Inc., Farmingdale, N.Y.

Filed Jul. 21, 1983, Ser. No. 516,146

Int. Cl.⁴ H02M *3/335*

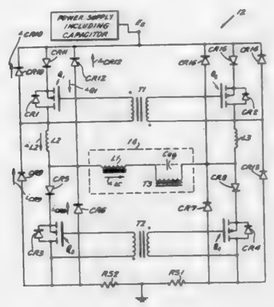
U.S. Cl. 363—17 **25 Claims**

1. A power converter, comprising:

a DC to AC converter circuit including a plurality of transistors which are switched on and off to convert a DC signal into an AC signal, said converter circuit including a diode which is alternatively forward and reverse biased during the operation of said converter circuit, said diode having a reverse recovery period whenever said diode is switched from a forward to a reverse biased condition during which the reverse resistance of said diode is substantially zero;

an inductor connected to said diode for limiting the current through said diode during said reverse recovery period such that shoot through currents pass through said diode are limited to desired levels; and

an output circuit for applying the output of said DC to AC converter circuit to a load; and



means for discharging excess power stored in said inductor due to shoot through currents into said output circuit once said diode has completed said reverse recovery period.

4,566,060

DC-TO-AC VOLTAGE CONVERTER HAVING GALVANICALLY SEPARATED INPUT AND OUTPUT(S)

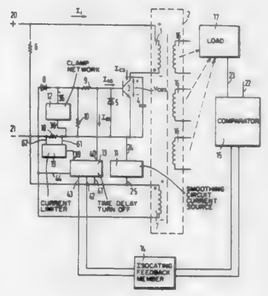
Gerben S. Hoeksma, Winterswijk, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek Nedap, De Groenlo, Netherlands

Filed Aug. 31, 1983, Ser. No. 528,153

Claims priority, application Netherlands, Sep. 6, 1982, 8203474

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—21 **23 Claims**



1. A DC-to-AC voltage converter for the supply of power to at least one load, comprising an input circuit and at least one output circuit galvanically separated from said input circuit, and a converter transformer, characterized in that a primary winding of the converter transformer is series-connected to a switching transistor, which series circuit arrangement is connected between a positive input terminal and a negative input terminal, with one or more resonance capacitors being connected in parallel with the collector-emitter circuit of the switching transistor and/or in parallel with said primary winding; there being provided control means for said switching transistor, with the resonance capacitor(s) and said primary winding being dimensioned so that, under all anticipated load conditions of the converter, including short-circuiting of the output circuits, the control means causes the voltage across the collector-emitter circuit of the switching transistor, after the latter has become non-conductive, to fall back to a very low value before the switching transistor is again driven into the

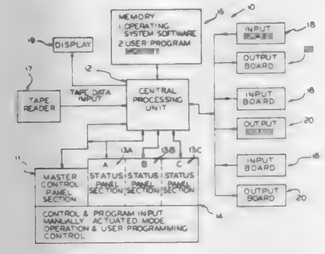
conductive state and dimensioned such that the backfire current through the base-collector diode of said switching transistor results in a charge storage in said switching transistor which is adapted to supply a substantial part of the driving power for said switching transistor, said backfire current being determined at least in part by said load and hence said charge storage is adapted to automatically follow said load; said converter transformer having a first auxiliary winding strongly coupled with said primary winding and, at least in part, providing the driving power required for the switching transistor; there being provided a time-delay and turn-off circuit energized and synchronized by at least one second auxiliary winding of the converter transformer; there being provided a smoothing circuit providing the driving power for turning off the switching transistor, which driving power is withdrawn from a third auxiliary winding of the converter transformer.

4,566,061

METHOD AND MEANS OF MANUAL INPUT OF PROGRAMS INTO INDUSTRIAL PROCESS PROGRAMMABLE CONTROLLER SYSTEMS

Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321, and Patrick H. Eich, 954 Cypress Point Dr., Crown Point, Ind. 46307

Filed Sep. 15, 1983, Ser. No. 532,316
Int. Cl.[4] G06K *21/00;* **G06C** *15/00*
U.S. Cl. 364—146 **21 Claims**



1. The method of programming a programmable controller system for controlling an industrial process, in which the system includes a central processing unit, operating system software and user program memory storage means for said unit means for entering and storing binary notation system fashion program defining computer data bits in the memory storage means, circuit means for operatively connecting the industrial process I/O devices to said unit, control panel means including means for setting said unit to operate in manual and automatic modes, respectively, a work sheet delineated to define on its working face a series of vertical columns to which the process inputs and outputs of the industrial process are respectively assigned and a series of horizontal channels consecutively listing the steps of the process in operational sequence, with said columns and said channels intersecting to form individual work sheet data bit receiving blank areas for selectively receiving manual entry marks binary notation system faashion indicating I/O device functions for each step of said process in accordance with a predetermined program of operation for said process, and with said channels each having computer data word end indicia at either end of same between which said blank areas are disposed to form for each channel a computer data word space of the same predetermined length, means for manually marking said work sheet word spaces binary rotation system fashion to indicate I/O device function for each step in the process in accordance with the predetermined program of operation for said process to provide the computer data word for each step of said process, with the circuit means for operatively connecting the I/O devices to said unit comprising one or more status panel keyboard means integrated with said control panel means and including for each such I/O function separate key means and visible off-on signal means therefor, respectively, for controlling the individual I/O switches and electrically connected to provide and indicate visually on said status panel means the status of said I/O device function for any one step of a program in binary notation system oriented computer word arrangement in accordance with any such program of operation, and with the memory means having a memory map for accepting programs designated by program number, and including master keyboard panel means including keys for setting said unit in manual and automatic modes, respectively, said master, keyboard panel means also including and operable when said unit is in its manual mode, a program select key for locating a desired program slot site of said memory map by program number, a manual programming key for setting said unit for changing the program entries in said memory means, a program step key for setting said unit to accept into the memory means in a step by step manner the predetermined program transmitted to said unit via said status panel keyboard means for changing the memory means program entries, key means for advancing any selected program entered into said memory means step by step from step one thereof for reviewing visually on said status panel means the status of the program I/O functions entered in said memory means for each such program step, and means for displaying the program number and step identities of programs of the memory means, the method of entering such predetermined program into the memory means when the control keyboard panel is operated to place said unit in its manual mode, including the steps of:

locating in the memory means map the desired site thereof, for said predetermined program by actuating said program select key,

conditioning said unit for changing the program entries in said memory means by setting said unit to accept into the memory means such predetermined program at the site located by the practice of said locating step,

setting said individual I/O switches in accordance with the binary notation system fashion oriented computer data word arrangement thereof for the first step of said such predetermined program as shown on said work sheet by manually actuating as needed the respective I/O key means of said status panels keyboard means for transmitting such first step computer data word to said unit,

entering said first step of said such predetermined program into the memory means at said located site by actuating said program step key,

repeating the last mentioned I/O switch setting and entering steps for each consecutive step of said such predetermined program for entering same consecutively into said memory means following consecutively said first step of said predetermined program,

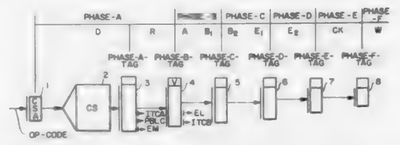
and returning said unit to said manual operation mode.

4,566,062

TIMING CONTROL SYSTEM IN DATA PROCESSOR

Katsumi Ohnishi; Yoshihiro Mizushima, and Kiyosumi Sato, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 28, 1983, Ser. No. 508,503
Claims priority, application Japan, Jun. 28, 1982, 57-110971
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—200 **6 Claims**



1. A timing control system for a pipeline processor which executes micro-instructions including a dummy instruction having first and second control fields, comprising:

a pipeline processing control circuit comprising:

a first TAG register, operatively connected to the pipeline processor, receiving the micro-instructions, and having an instruction TAG control phase-A portion for holding the first control field and an execution mask portion for holding the second control field; and

a second TAG register operatively connected to the pipeline processor and said first TAG register and having an instruction TAG control portion;

decoder means, operatively connected to the instruction TAG control phase-A portion of said first TAG register, for decoding the first control field and outputting an identifying signal when the dummy instruction is decoded;

counter means, operatively connected to the execution mask portion of said first TAG register, the instruction TAG control portion of said second TAG register and said decoder means, for receiving an initial value from the execution mask portion of said first TAG register, storing the initial value in the instruction TAG control portion of said second TAG register and decrementing the contents of the instruction TAG control portion of said second TAG register; and

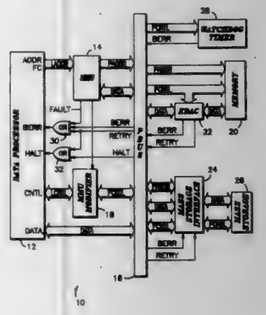
end detecting means, operatively connected to said first and second TAG registers, for outputting an end of processing signal indicating the end of the execution of the dummy instruction when the contents of the instruction TAG control portion of said second TAG register reaches zero.

4,566,063

DATA PROCESSOR WHICH CAN REPEAT THE EXECUTION OF INSTRUCTION LOOPS WITH MINIMAL INSTRUCTION FETCHES

John Zolnowsky; Douglas B. MacGregor, both of Austin, Tex., and Kim Eckert, Downingtown, Pa., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 17, 1983, Ser. No. 542,800
Int. Cl.[4] G06F *9/38*
U.S. Cl. 364—200 **5 Claims**



1. A method for selectively repeating the execution of an instruction in a data processor comprising:

an instruction pipeline having at least input and output stages;

bus cycle control means for selectively transferring instructions into the input stage of the pipeline;

pipeline control means for selectively advancing the instructions from the input stage of the pipeline to the output stage thereof; and

instruction execution means for executing the instruction in the output stage of the pipeline;

the method comprising the steps of:

selectively setting a loop control bit;

sequentially enabling the bus cycle control means and the pipeline control means to advance an instruction to the output stage of the pipeline;

enabling the instruction execution means to execute said instruction at the output stage of the pipeline; and

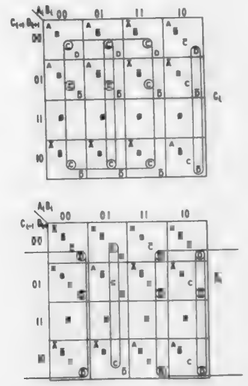
if said loop control bit is set, enabling the pipeline control means to advance the instructions in the pipeline while inserting said instruction into a selected stage of the pipeline.

4,566,064

COMBINATIONAL LOGIC STRUCTURE USING PASS TRANSISTORS

Sterling Whitaker, Cubbuck, Id., assignor to American Microsystems, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 376,895, May 10, 1982. This application Dec. 8, 1982, Ser. No. 447,817
Int. Cl.[4] G06F *15/56*
U.S. Cl. 364—300 **6 Claims**



1. The method of constructing a logic circuit to represent a given logical function, said circuit using as its basic element the PASS transistor, said PASS transistor having an input lead, an output lead and a control lead controlled by a control function, said method comprising;

establishing a first truth table of the desired logic function, said truth table depicting the state of the first output variable or variables for each state of the input variables;

said step of establishing said first truth table including entering into said first truth table for each input state the input variables which, when passed to the output lead of a PASS transistor, yield the desired output variable or variables, said input variables comprising the PASS function for that state;

establishing a plurality of second truth tables, each said second truth table having fewer variables than said first truth table, each said second truth table depicting one or more of a plurality of second output variables;

said step of establishing said second truth table including, for each said second truth table, entering the PASS function for each state of the input variables into an associated modified Karnaugh map wherein each state of the modified Karnaugh map contains the particular input variables which yield the desired output variable, said particular input variables being called the PASS function for that state of input variables;

identifying the identical PASS variables in each PASS function for each state of input variables such that every state has at least one PASS variable identified;

identifying a control function among the input variables which is independent of the identical PASS variables previously identified, for controlling said control lead of said PASS transistor; and

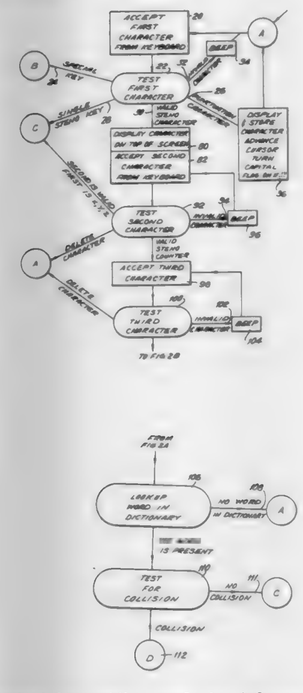
constructing a logic circuit using said PASS transistors in accordance with said identified PASS variables and said control function.

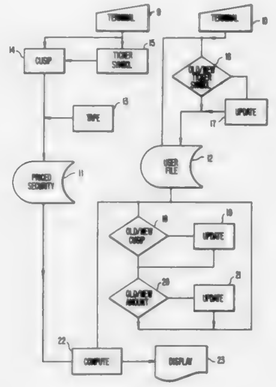
4,566,065

COMPUTER AIDED STENOGRAPHIC SYSTEM

Kalman Toth, 24 Jean La., Monsey, N.Y. 10952

Filed Apr. 22, 1983, Ser. No. 487,517
Int. Cl.⁴ G06F *1/00*
U.S. Cl. 364—300 **1 Claim**





1. A method for rapidly transferring information from a written or spoken form into a typewriter or printed form comprising the steps of:

assigning a first numeric code to a predetermined first group of frequently used words,

assigning a two letter code to a predetermined second group of frequently used words,

identifying a predetermined third group of words by the first two letters and the last letter of a particular word within said third group of words,

providing a second numeric code to identify words within said third group of words having the same first two and last letters, and

entering into an appropriately programmed data processing system a combination of said first numeric code, said two letter code, said first two and last letters of a desired word, and said second numeric code to produce information in a typed or printed form.

4,566,066

SECURITIES VALUATION SYSTEM

Frederic C. Towers, 8033 Herb Farm Dr., Bethesda, Md. 20034

Continuation of Ser. No. 279,781, Aug. 11, 1972, Pat. No. 4,334,270. This application Jun. 4, 1982, Ser. No. 385,323
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.⁴ G06F *15/21*
U.S. Cl. 364—408 **1 Claim**

1. A stored program data processing system including a digital computer having a memory and logic means for storing and retrieving and displaying information about investment securities, the combination including:

(a) a plurality of input/output terminals operatively connected to said system;

(b) a memory providing a plurality of data storage areas for data;

(c) a first data storage area for system data comprising records of data hereinafter termed priced securities;

(d) a second data storage area comprising records of data hereinafter termed a user file;

(e) each user file including an area reserved for the date of the data, the identity of the security, and the amount of the security holding;

(f) key means to access and edit each of said priced security records;

(g) means to access and edit each of said user file records;

(h) a second key means to access each of said priced security records;

(i) a plurality of conversion means for translation of a signal of one key means into a signal for another key means;

(j) a first conversion means for translating a key representing a prior memory address of a priced security to a current memory address;

(k) a second conversion means for translating an alphameric key representing a prior security identification into a current alphameric key representative of said security;

(l) a third conversion means for converting the data in the amount field in a user file based on its date of entry to data corresponding to the current amount of said holding;

(m) means to retrieve a selected user file;

(n) means to retrieve corresponding data from said priced securities files;

(o) means to compute and display the current value of said selected portfolio of securities.

4,566,067

SPEED CONTROL APPARATUS AND METHOD FOR RAPID TRANSIT VEHICLES

Arun P. Sahasrabudhe, West Mifflin, and Robert J. DiSilvestro, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 29, 1983, Ser. No. 489,989
Int. Cl.⁴ G06F *15/50;* **B61L** *3/20, 3/06*
U.S. Cl. 364—426 **10 Claims**

1. In speed control apparatus for a vehicle including a propulsion motor and reponsive to an input command speed, the combination of:

means responsive to the input command speed for determining a desired operating state for said propulsion motor,

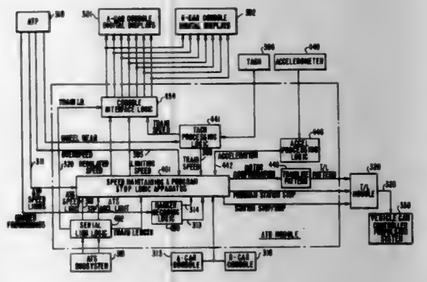
means for determining a predetermined speed control band in relation to said command speed,

means for determining a first time period in relation to said speed band and in accordance with the speed of the vehicle and the acceleration of the vehicle,

means for determining a second time period in accordance with the operating characteristic of said motor and the mass of said vehicle, and

means for comparing the first time period with the second time period to determine when a transition of the motor is made to said desired state.

7. The method of speed control for a vehicle having a propulsion motor and a present speed and being responsive to a first command speed limit, including the steps of



determining desired speed band limits for said vehicle in response to the first command speed limit,

determining a first time required for the vehicle speed to change from the present speed to a predetermined one of said speed band limits in relation to the acceleration of the vehicle,

determining a second time required for the vehicle tractive effort to change from the present tractive effort to a desired tractive effort in relation to said one speed band limit, a known operational characteristic of said motor and the mass of the vehicle, and

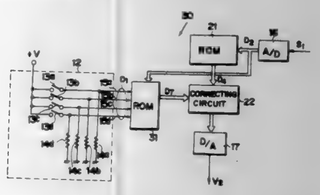
comparing the first time with the second time to control a change of the vehicle speed from the present speed to said one speed band limit.

4,566,068

CHARACTERISTIC SIGNAL GENERATOR FOR AN ELECTRONICALLY CONTROLLED FUEL INJECTION PUMP

Yuji Iwasaki, Sakado; Kyoichi Fujimori, Higashimatsuyama, and Yasuhiro Hiyama, Musashino, all of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,597
Claims priority, application Japan, Nov. 26, 1981, 56-174732; Dec. 4, 1981, 56-180125
Int. Cl.⁴ F02D *5/02;* **F02M** *59/20*
U.S. Cl. 364—431.05 **4 Claims**



1. A characteristic signal generator which produces a characteristic signal determined from a characteristic curve for the maximum amount of fuel to be injected into an internal combustion engine from an electronically controlled fuel injection pump, said signal generator comprising:

a first means for producing first data relating to the engine speed at each instant;

a first memory for storing a set of basic characteristic data representing a basic characteristic curve for the maximum amount of fuel to be injected, said basic characteristic data being a function of the engine speed where said first memory outputs a desired subset of the basic characteristic data in response to the first data from said first means;

a second memory for storing a plurality of sets of correcting data for correcting the basic characteristic curve as represented by the basic characteristic data stored in said first memory;

a second means for producing second data for selecting a desired set of correcting data in said second memory, the second data being applied to said second memory to select the desired set of correcting data;

means responsive to the data from said first and second memories for correcting the basic characteristic data by the use of the correcting data; and

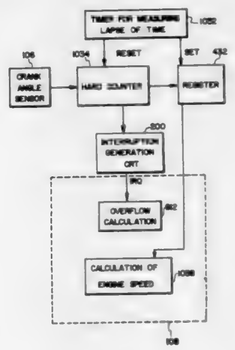
means for converting the data from said correcting means into a characteristic signal for controlling the maximum amount of fuel to be injected.

4,566,069

ELECTRONIC CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Takeshi Hirayama, Mito; Matsuo Amano; Shinichi Sakamoto, both of Hitachi; Masami Shiida, Mito, and Shirou Baba, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 313,831, Oct. 22, 1981, abandoned. This application Sep. 21, 1984, Ser. No. 652,892
Claims priority, application Japan, Oct. 22, 1980, 55-146935
Int. Cl.⁴ G05B *15/02;* **G01P** *3/48;* **F02B** *5/02*
U.S. Cl. 364—431.12 **7 Claims**



1. In an engine control apparatus having a crank angle sensor for producing an output signal at every predetermined rotational angle of an engine shaft, an arithmetic processing unit for executing arithmetic operations in accordance with a program, and an input/output circuit, wherein said input/output circuit includes timer means for producing a timing signal every time a preset period for measuring the rotational speed of the engine elapses, a crank angle counter for counting output pulses derived from said crank angle sensor, an overflow detecting means for detecting each occurrence of an overflow in said counter and for generating an overflow signal in response thereto;

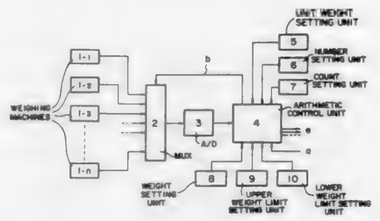
a method of measuring the rotational speed of said engine in which said arithmetic processing unit executes the steps of:

(a) counting the number of overflow signals produced at the output from said overflow detecting means while said crank angle counter counts the output pulses from said crank angle sensor;
(b) reading the count value of said crank angle counter in response to the timing signal output from said timer means;
(c) correcting the read counter value of said crank angle counter by an amount based on the count value of said number of overflow signals and the maximum count capacity of said crank angle counter;
(d) determining the rotational speed of the engine on the basis of the corrected read counter value;
(e) controlling the operation of the engine on the basis of the predetermined rotational speed;
(f) resetting to zero the count of said number of overflow signals and the count value of said crank angle counter; and
(g) repeating the steps (a) to (f).

5. In an engine control apparatus having a crank angle sensor for producing an output signal at every predetermined rotational angle of an engine shaft, an arithmetic processing unit for executing arithmetic operations in accordance with a stored program, memory means connected to said arithmetic processing unit for storing programs and data, and an input-/output circuit connected to said arithmetic processing unit and said memory means, means for measuring the rotational speed of the engine, comprising: timer means for producing a timing signal every time a preset period for measuring the rotational speed of the engine elapses; a crank angle counter connected to said crank angle sensor and having a predetermined maximum count capacity which is less than the count value required for a maximum engine rotational speed to be measured for counting the output pulses derived from said crank angle sensor; and overflow detecting means connected to said crank angle counter for detecting each occurrence of an overflow in said crank angle counter and for generating an overflow signal in response thereto; said arithmetic processing unit operating on the basis of said stored programs to count the number of overflow signals generated while said crank angle counter counts the output pulses from said crank angle sensor, to read the count value of said crank angle counter in response to the timing signal output from said timer means, to correct the count value read from said crank angle sensor on the basis of the maximum count capacity of said crank angle counter and the number of overflow signals counted by said overflow counting means at the time of generation of said timing signal, and to calculate the rotational speed of said engine on the basis of said corrected count value.

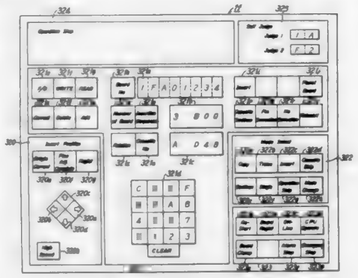
4,566,070
METHOD OF COUNTING PARTS
Kunifusa Tanaka, Kyoto, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan
Filed Sep. 7, 1982, Ser. No. 415,751
Claims priority, application Japan, Sep. 7, 1981, 56-141346; Sep. 7, 1981, 56-141347; Sep. 7, 1981, 56-141348
Int. Cl.⁴ G01G *19/04, 19/42*
U.S. Cl. 364—567 **33 Claims**

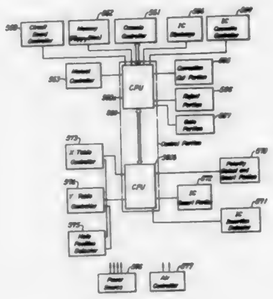
1. A method of counting articles, comprising the steps of:
(a) weighing articles contained in a plurality of hoppers to determine their weights;
(b) converting the weights into the numbers of articles contained in the hoppers by dividing each of the weights by a preset unit weight for the articles;
(c) computing the converted numbers of articles contained in the hoppers in combinations to derive the number of articles in each of the combinations;
(d) comparing the computed number of articles in each of the combinations with a preset request number to find a combination for which the number of articles is equal to or closest to the preset request number within a preset allowable range;
(e) generating a discharge signal to select hoppers out of the plurality of hoppers, in dependence upon the combination found in said step (d), to discharge the articles from the selected hoppers;
(f) deriving a new unit weight from at least one of the weights determined in said step (b) and the corresponding at least



one of the numbers converted therefrom in said step (b) each time a predetermined number of counting operations, including said steps (a) through (e), are effected or after a predetermined length of time has elapsed; and
(g) renewing the preset unit weight with the new unit weight.

4,566,071
APPARATUS FOR AUTOMATICALLY INSERTING ELECTRONIC PARTS INTO PRINTED CIRCUIT BOARD
Hiroshi Takahashi, Mito, Japan, assignor to Ikegami Tsushinki Co. Ltd., Tokyo, Japan
Filed Dec. 21, 1982, Ser. No. 451,842
Claims priority, application Japan, Dec. 26, 1981, 56-210608
Int. Cl.⁴ H05K *3/30*
U.S. Cl. 364—468 **30 Claims**

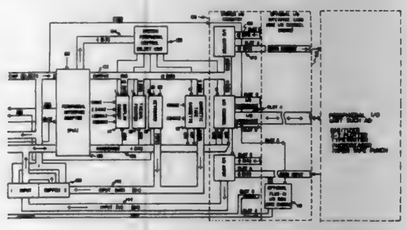




1. An apparatus for inserting automatically pins of electronic parts into holes formed in a printed circuit board at predetermined inserting positions comprising

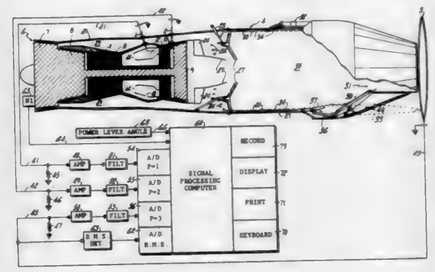
means comprising a table movable in mutually orthogonal X and Y directions, while the printed circuit board is mounted on the table;
means for holding a number of cassettes, each of which contains a plurality of electronic parts of the same kind;
means for discharging selectively electronic parts one by one form given cassettes onto an inlet of an electronic part feeding path;
means provided in the electronic part feeding path for correcting the shape and posture of the pins of electronic parts and for cutting the tips of the pins into V-shape;
means provided at an outlet of the electronic part feeding path for gripping the pins of an electronic part and inserting the pins into holes formed at a given inserting position in the printed circuit board mounted on the table; and
means for controlling the table, parts discharging means, correcting and cutting means, and inserting means in such a manner that during a copy mode, position data of the respective inserting positions on the printed circuit board and electronic part data representing kinds of electronic parts to be inserted at respective inserting positions are stored in a memory, and during an insertion mode, the position data is successively read out of the memory to drive the table into such a position that the inserting position is aligned with an insertion axis of the inserting means and the electronic part data is read out of the memory to control the discharging means in such a manner that given electronic parts are successively discharged from given cassettes mounted on the cassette holding means.

4,566,072
PROGRAMMABLE CALCULATOR INCLUDING MEANS FOR DIGITIZING THE POSITION OF AN X-Y PLOTTER PEN
Alan C. Mortensen; Bradley W. Miller; Franklin T. Hickenlooper; David C. Uhlrich; Marl D. Godfrey; Douglas M. Clifford; Rex L. James; Robert E. Watson, and John C. Keith, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 53,442, Jun. 29, 1979, Pat. No. 4,330,839, which is a division of Ser. No. 880,241, Feb. 22, 1978, abandoned, which is a division of Ser. No. 597,957, Jul. 21, 1975, Pat. No. 4,089,059. This application Mar. 8, 1982, Ser. No. 355,431
Int. Cl.⁴ G06F *3/13*
U.S. Cl. 364—520 **4 Claims**



1. An electronic calculator comprising:
keyboard input means for entering information into the calculator, said keyboard input means comprising a plurality of keys, including plotter control keys;
memory means for storing routines and subroutines of instructions to be executed by the calculator in performing selected functions and for storing information entered into the calculator from said keyboard input means;
processing means, coupled to said keyboard input means and said memory means, for selectively executing the routines and subroutines of instructions stored in said memory means and for processing selected information stored in said memory means;
output means, coupled to said processing means, for providing a visual indication of the results of performance of selected functions and of the processing of selected information by said processing means; and
X-Y plotter means, coupled to said processing means, said X-Y plotter means including a pen movable to any selected point on a flat plotter platen;
said processing means being responsive to actuation of at least one of said plotter control keys of said keyboard input means for selecting a digitizing mode of calculator operation and for initiating motion of the pen of said X-Y plotter means to a selected point on the plotter platen, said processing means thereafter being responsive to at least one of said plurality of keys of said keyboard input means for terminating the digitizing mode of calculator operation, for storing, in said memory means, an X coordinate and a Y coordinate of the selected point on the plotter platen to which the pen had previously been moved, and for causing said output means to visually indicate said stored X and Y coordinates to the user.

4,566,073
SOFT CATEGORY CLASSIFIER
Philip E. Zwicke, South Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 28, 1982, Ser. No. 454,120
Int. Cl.⁴ G06F *15/20;* **G01M** *15/00*
U.S. Cl. 364—551 **7 Claims**



1. Electronic signal processing apparatus for distinctly classifying different events occurring in an operating system, comprising:
transducer means disposed for response to a physical phenomenon in said system, for providing, when said transducer is disposed in an operating system, a signal having characteristics which differ in dependence upon operating conditions in said system;
an analog to digital converter connected for response to said transducer; and
digital signal processing means connected to said analog to digital converter
(a) for causing said analog to digital converter to sample the signal provided by said transducer in a manner to provide a record of digital signals indicative of the characteristics of the signal provided by said transducer,
(b) for providing a plurality of groups of classification signals, each of said groups identifying characteristics of a paradigm signal representative of a category which is correlated to a particular operating condition of said operating system, record of digital
(c) for providing, for each record of digital signals, a plurality of groups of measured signals, each group of measured signals indicative of the characteristics of the waveshape corresponding to characteristics of said paradigm signal,
(d) for providing a degrade increment signal in response to

deviations between said measured signals and corresponding ones of said classification signals,

(e) for providing a degradation signal as a summation of a plurality of said degrade increment signals, for each category, and

(f) for providing a category signal indicative of one of said categories to which said record of signals most nearly correlates in response to the degradation signals provided for all of said categories.

4,566,074

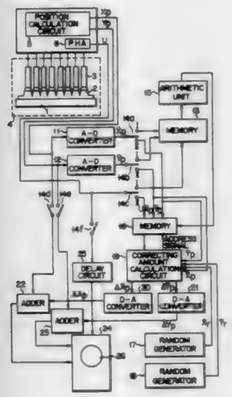
SCINTILLATION CAMERA

Mineki Nishikawa, Tochigi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1981, Ser. No. 309,845

Int. Cl.⁴ G01T *1/20*

U.S. Cl. 364—571 **3 Claims**



1. A non-linearity correction apparatus for a scintillation camera including a radiation detector, the scintillation camera providing an analog position-coordinate signal defining a position of each of a plurality of image events and an energy signal representing an energy level corresponding to each such image event, the position signal being inaccurate as a result of a non-linear response of the radiation detector, the non-linearity correction apparatus comprising:

A/D converter means for converting the analog position-coordinate signal from the scintillation camera to an N-bit digital position-coordinate signal;

a correction amount memory for storing a plurality of correction values defining the non-linearity of the response of the radiation detector at a plurality of position points of its field of view;

means coupled to said A/D converter means, for establishing during calibration mode operation said correction values and storing them in said correction amount memory,

random data generator means for generating n-bit random data;

means for combining, during measuring mode operation, the n-bit random data from said random data generator means with the N-bit signal from said A/D converter means by adding the n-bit random data as lower order bits following the least significant bit of the N-bit A/D converter signal, thereby causing the resulting combined signal to be an N+n bit quanta;

a correction amount calculating circuit means for calculating based on said N+n bit quanta and correction values read from said correction amount memory, a digital correction amount applicable to said analog position coordinate signal for correcting the non-linear response of the radiation detector;

D/A converter means, coupled to said correction amount calculation circuit, for receiving said digital correction amount signals therefrom and providing analog correction amount signals indicative thereof; and

means for combining said analog correction amount signals with said analog position coordinate signals from said scintillation camera during measuring mode operation to provide non-linear corrected positional signals.

4,566,075

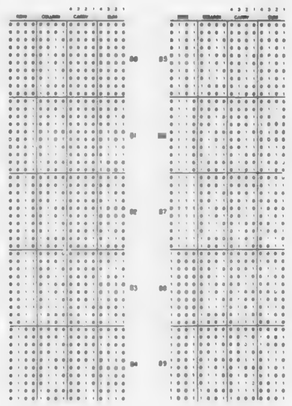
TABLE LOOKUP MULTIPLIER EMPLOYING COMPRESSED DATA READ ONLY MEMORY

Karl M. Guttag, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 21, 1982, Ser. No. 451,663

Int. Cl.⁴ G06F *7/52*

U.S. Cl. 364—754 **9 Claims**



1. In a digital processing system, a multiplier comprising:

a first input means for receiving at least one multibit multiplicand digit;

a second input means for receiving at least one multibit multiplier digit;

a memory means connected to said first and second input means including an array of memory locations disposed in a plurality of rows and a plurality of sets of columns, a row decode means connected to said first input means for selecting a row of said array corresponding to said at least one multiplicand digit, a column decode means connected to said second input means for selecting a set of columns of said array corresponding to said at least one multiplier digit, said array having stored at memory locations of said selected row and said selected set of columns bits corresponding to the product digits of said at least one multiplicand digit and said at least one multiplier digit, said array having less than the total number of memory locations required to specify all bits of said product digits by deletion of any column of memory locations which would be "0" for all rows; and

an output means connected to said memory means to output the product digits from said memory means for said at least one multiplicand digit and said at least one multiplier digit input.

4,566,076

METHOD OF ATTENUATING A DIGITAL SIGNAL AND DEVICE FOR CARRYING OUT SAID METHOD

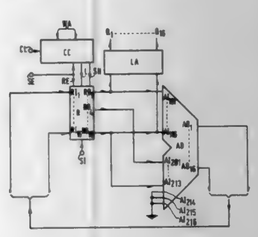
Antonie C. A. M. van der Steen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 337,645, Jan. 7, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 671,146

Claims priority, application Netherlands, Jan. 23, 1981, 8100307

Int. Cl.⁴ G06F *7/38*

U.S. Cl. 364—757 **12 Claims**



1. Apparatus for modifying a first binary word comprising a plurality of bits representing the value of a first analog signal to produce a second binary word having a plurality of bits representing the value of a second analog signal, said last mentioned value being in a predetermined ratio to the value of said first analog signal, comprising a colon a shift register having a plurality of parallel inputs and a plurality of parallel outputs; an adding device having a plurality of parallel first inputs, a plurality of parallel second inputs, and a plurality of parallel outputs, for adding a binary word applied to said first inputs to a binary word applied to said second inputs and presenting the result of the addition at its outputs; means for connecting each of said first inputs of said adding device to one of the outputs of the shift register in accordance with its binary weight and for connecting each of a plurality of the second inputs of said adding device to one of said shift register outputs; in such a way that said second inputs are shifted in the direction of the least significant bit relative to said first inputs of said adding device; and means for connecting the remaining second inputs of said adding device, for which no output of the shift register is available, to a point of constant logic level.

4,566,077

DEVICE FOR THE EXECUTION OF A SCALAR MULTIPLICATION OF VECTORS

Dieter Schuöcker, Vienna, Austria, and Ekkehard Klement, Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 17, 1983, Ser. No. 552,772

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1982, 3242818

Int. Cl.⁴ G06G *9/00, 7/16;* G06F *7/56*

U.S. Cl. 364—845 **11 Claims**

1. In a device for execution of a scalar multiplication of vectors, the improvement comprising:

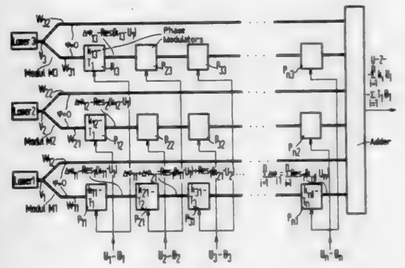
an interferometric adder means for residue numbers formed of a plurality of modules, and wherein a respective phase-modulatable light beam is provided for each module intended for residue representation, said light beam producing an interference pattern in an allocated reference surface in the module with a reference beam allocated to a respective phase-modulatable light beam;

an angle of incidence relative to the reference surface of a phase-modulatable light beam and of the corresponding reference beam, or a wavelength of the pair of associated light beams being selected such that a strip spacing of the interference pattern produced by said light beam pair in the allocated reference surface corresponds to the module allocated to this light beam pair;

a plurality of series-connected vector-component-controlled phase modulator means disposed in each of the phase-modulatable light beams;

one phase modulator means being provided for each component of a vector;

the phase modulator means producing a phase shift as a function of components of the vectors to be multiplied which are



supplied to it, said phase shift being proportional both to the components of the one as well as to the components of the other of the vectors to be multiplied; and

the phase shift produced by each component amounting to 2π when a numerical value of said component is divisible by the allocated module without remainder;

whereby a result of the scalar multiplication may be obtained as a positionally notated number from the interference pattern or interference patterns generated after radiation has passed through the phase modulator means.

4,566,078

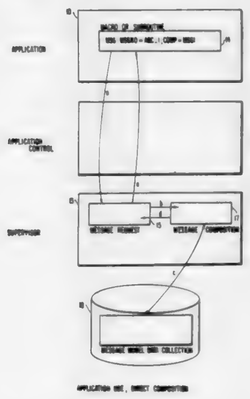
CONCURRENT MULTI-LINGUAL USE IN DATA PROCESSING SYSTEMS

Robert P. Crabtree, Colleyville, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,419

Int. Cl.⁴ G06F *3/00, 15/00*

U.S. Cl. 364—900 **12 Claims**



1. A method of providing a distributed, interactive data processing system with concurrent multi-lingual use by a plurality of users, said data processing system including a message composition service, said method comprising the steps of:

establishing a message model data collection by storing

message models, said message models being stored with a message identifier primary key that is common for all usage and a secondary key that is a national language index,

establishing for each user who signs onto said system a national language index corresponding to said secondary key,

requesting said message composition service to compose a message for use by an interactive program run on said system, said message being identified by said primary key for the specific message requested and said secondary key established for the user for which the message is intended,

retrieving from said message model data collection message models using said primary and secondary keys in response to a request to compose a message,

composing said message from said message models retrieved from said message model data collection, and

storing the composed message so that it can be used by said interactive program to communicate the message to the user.

4,566,079

CASSETTE-TYPE MAGNETIC-BUBBLE MEMORY APPARATUS

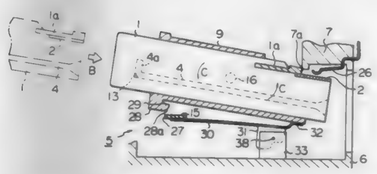
Hirosi Hasegawa, Suzaka; Tatsuro Onuma, Tokyo; Norio Matsubayashi, Nagano, and Masayoshi Tamura, Suzaka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 17, 1982, Ser. No. 450,792

Claims priority, application Japan, Dec. 18, 1981, 56-188693[U]

Int. Cl.⁴ G11C *19/08*

U.S. Cl. 365—1 **5 Claims**



1. A cassette-type magnetic-bubble memory apparatus comprising

a bubble cassette having contacts and which houses a bubble memory device and

a main apparatus which comprises a holder into which said cassette is inserted, said holder having contacts which contact said contacts of said cassette in cooperation with the action of inserting said cassette into said holder so that current may flow into said bubble memory device,

said main apparatus including a detecting means for detecting the action of inserting and withdrawing said cassette, and a circuit for controlling the current into said magnetic-bubble memory device via said contacts wherein the current begins to flow into said bubble memory device after said contacts of said cassette and said contacts of said holder are connected, and ceases to flow before said contacts of said cassette and said contacts of said holder are disconnected.

4,566,080

BYTE WIDE EEPROM WITH INDIVIDUAL WRITE CIRCUITS

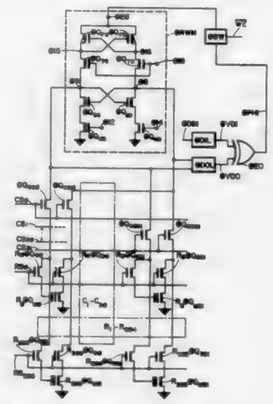
Sheng Fang, E. Palo Alto, and Kameswara K. Rao, Santa Clara, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Jul. 11, 1983, Ser. No. 512,853

Int. Cl.⁴ G11C *7/00, 11/40*

U.S. Cl. 365—185 **5 Claims**

1. A memory system of the EEPROM type including a plurality of sections of rows and columns of memory cells forming a plurality of bytes of memory, each section including a writing circuit, each row in each section including one memory cell for each column in the section, each section including the same number of rows and the same number of columns, each of the memory cells in the same row and column location in each section together comprising each byte of memory and selection means for each section selectively connecting each cell of a byte to its associated writing circuit simultaneously, each said writing circuit thereby being enabled to change information in its associated cell electrically from a first state to a second state or vice versa independent of the change another



writing circuit may be making electrically in the information stored in its associated cell, wherein each cell includes a floating gate field effect transistor (Q_M) and two conventional field effect transistors (Q_G, Q_D), each transistor including a source, a gate and drain, the source of one conventional transistor being connected to the gate of said floating gate transistor, the source of the other conventional transistor being connected to the drain of said floating gate field effect transistor, said gates of said conventional transistors being connected together and to said selection means, said selection means turning on both said conventional transistors to connect said floating gate transistor to its associated writing circuit.

4,566,081

SEMICONDUCTOR DEVICE WITH SPARE MEMORY CELLS

Kiyofumi Ochii, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 28, 1983, Ser. No. 461,951

Claims priority, application Japan, Jan. 29, 1982, 57-12781

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—200 **14 Claims**

1. A semiconductor memory device responsive to a plurality of column select signals comprising:

a plurality of bit memory sections each including a plurality of memory cells arranged in a plurality of columns;

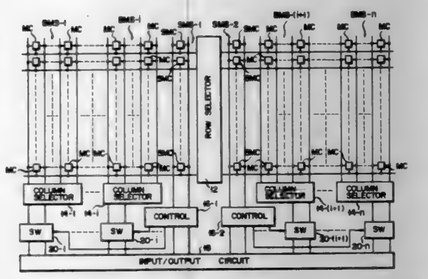
a plurality of column select circuits coupled to said columns of memory cells in each of said bit memory sections for selecting said columns;

a plurality of first switching means coupled to said column select circuits for selectively energizing said column select circuits;

a spare memory section containing a column of spare memory cells;

second switching means coupled to said spare memory section; and

control means coupled to said first and second switching means for turning off one of said first switching means and



for turning on said second switching means in response to one of said column select signals.

4,566,082

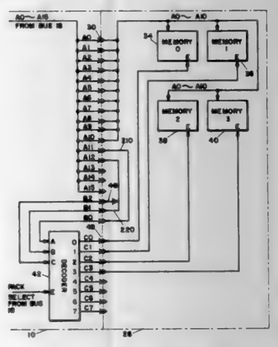
MEMORY PACK ADDRESSING SYSTEM

Russell Y. Anderson, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 23, 1983, Ser. No. 478,181

Int. Cl.⁴ G11C *8/00*

U.S. Cl. 365—230 **3 Claims**



1. An expandable memory pack addressing system for a microprocessor system, comprising:

an address bus provided within said microprocessor system, said address bus having a plurality of parallel-bit address lines coupled to respective first contacts of a memory pack connector;

memory selection means provided within said microprocessor system, said memory selection means having a plurality of input lines coupled to respective second contacts of said memory pack connector and a plurality of memory select output lines coupled to respective third contacts of said memory pack connector; and

memory pack means connectable to said memory pack connector, said memory pack means comprising a plurality of selectable memories, a plurality of address lines connected to said memories, a plurality of memory selection lines connected to said memories, and a plurality of feedback signal lines,

wherein said address lines are connectable to some, but not all, of said first contacts of said memory pack connector, said feedback signal lines are connectable between predetermined said first contacts and second contacts of said memory pack connector, and said memory selection lines are connectable to said third contacts of said memory pack connector.

4,566,083

SEISMIC TIMING CONTROL SYSTEM

Ben B. Thigpen, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed Jun. 3, 1983, Ser. No. 500,922

Int. Cl.⁴ G01V *1/38*

U.S. Cl. 367—21 **3 Claims**



1. In an intermittent-tow seismic exploration operation wherein a seismic detector cable is towed in a body of water behind a ship and is manipulated in a timed sequence of events during a recording episode, a method for initiating a recording cycle, comprising the steps of:

continuously measuring and displaying the RMS cable-noise level during a recording episode;

establishing a desired steady-state cable-noise quiet-window said recording episode;

positioning the start of a recording cycle with respect to said quiet window to optimize the acoustic signal-to-noise ratio during a useful maximal-length recording cycle within the time frame of a minimal-length recording episode.

4,566,084

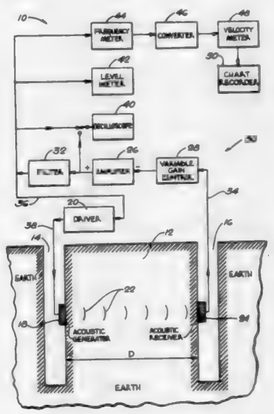
ACOUSTIC VELOCITY MEASUREMENTS IN MATERIALS USING A REGENERATIVE METHOD

Edwin F. Laine, Alamo, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 429,920

Int. Cl.⁴ G01V *1/28*

U.S. Cl. 367—49 **19 Claims**



19. A method for measuring stress in the material of a volume of earth between first and second boreholes, including the steps of:

generating acoustic energy in the form of sinusoidal shear

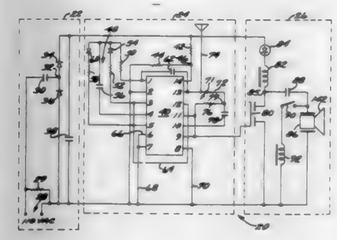
waves in the first borehole by means of a generator that converts electrical energy to acoustic energy, said acoustic energy being directed toward the second borehole;
receiving the acoustic energy in the second borehole and converting the received energy into electrical signals;
amplifying the electrical signals for transmission to the generator;
said steps of generating, receiving said amplifying being performed inclusively in a closed loop that also includes the material.
said amplification having sufficient regenerative gain to produce sustained oscillations in the closed loop which indicate the stress of the material of the volume of earth through which the acoustic energy is being transmitted,
said generating, receiving and amplifying being done in the closed loop, the inherent noise in the closed loop providing initial signals to build sustained oscillations.

4,566,085

HIGH INTENSITY ULTRASONIC GENERATOR

Stanley Weinberg, Los Angeles, Calif., assignor to Wein Products, Inc., Los Angeles, Calif.

Filed Jan. 19, 1982, Ser. No. 340,598
Int. Cl.⁴ H04B *1/02*; G08B *3/10*
U.S. Cl. 367—139 **13 Claims**



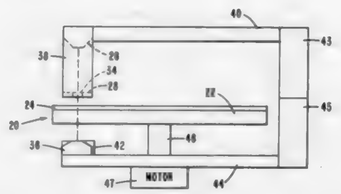
1. An ultrasonic vibration generator comprising:
a variable frequency oscillator means for producing an oscillating signal at a variable ultrasonic frequency, responsive to a varying frequency control input signal to the variable frequency oscillator;
frequency control input signal means for providing the varying frequency control input signal to the variable frequency oscillator means;
speaker means, responsive to the output of the variable frequency oscillator means, for producing mechanical vibrations; and
amplifier means for amplifying the output of the variable frequency oscillator and providing the amplified output of the variable frequency oscillator to the speaker means, said amplifier means including a VMOS field effect transistor having a drain; a choke; a capacitor, the choke and the capacitor each having a first terminal connected to the drain of said field effect transistor; and an inductive load in parallel with the speaker means, the parallel combination of the inductive load and speaker means being connected to a second terminal of said capacitor;
the inductive load and the speaker means having respective inductive and capacitive values which provide resonance between the inductive load and the speaker means at a selected output frequency of the variable frequency oscillator means.

4,566,086

INFORMATION STORAGE SYSTEM UTILIZING ELECTRETS

Jeff L. Anderson, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 13, 1983, Ser. No. 503,447
Int. Cl.⁴ G11B *11/08*
U.S. Cl. 369—13 **11 Claims**



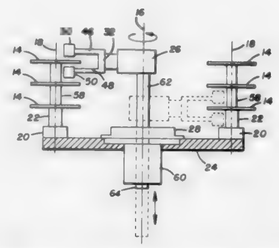
1. A system for storing and reading coded information comprising:
a rotating substrate having coated on one side a layer of dielectric material for the type in which electrets may be induced;
a source of radiant energy located adjacent the layer of dielectric material and operated at a first intensity level which increases the temperature of the dielectric material on which the radiant energy is projected to an electret-forming condition;
an electrical field generator means positioned between the layer of dielectric material and the source of radiant energy for generating a coplanar electrical field within said layer, said generator means including an aperture aligned with said radiant energy source for enabling the radiant energy source to heat the dielectric material adjacent the aperture and thereby form an electret extending in a direction parallel to the surface of the dielectric material upon operation of the generator means;
and first means located adjacent said substrate slidably supporting said radiant energy source and said field generator means for movement in a direction across the substrate enabling a plurality of electrets to be formed in said dielectric material representing coded information.

4,566,087

DIGITAL OPTICAL DISK SYSTEM

Crispin S. Kraft, Mill Valley, Calif., assignor to Casdade Systems Incorporated, Mill Valley, Calif.

Filed May 22, 1984, Ser. No. 613,082
Int. Cl.⁴ G11B *17/22, 17/30*
U.S. Cl. 369—34 **18 Claims**



1. A memory disk system adapted for receiving a plurality of data disks, each of said disks having an obverse face, a reverse face, and a plurality of tracks on at least one said faces said memory disk system comprising:

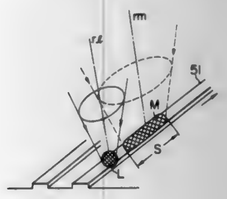
means for rotatably mounting said plurality of disks radially from a main axis, the rotation axis of each of said disks being radially disposed equidistantly from and parallel to said main axis;
means for rotating each of said disks about its axis;
an arm rotatably mounted about said main axis and extending radially therefrom;
means for positioning said arm adjacent a selected one of said disks;
a transducer head carried on a distal end of said arm; and
means for operatively positioning said transducer head adjacent a selected one of said tracks on said one of said disks.

4,566,088

OPTICAL AND REVERSIBLE RECORDING AND REPRODUCING APPARATUS

Tomio Yoshida, Katano; Isao Satoh, Neyagawa; Shunji Ohara, Higashiosaka; Kenji Koishi, Hyogo, and Yuzuru Kuroki, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 12, 1983, Ser. No. 542,014
Claims priority, application Japan, Oct. 14, 1982, 57-179086
Int. Cl.⁴ G11B *7/00*
U.S. Cl. 369—44 **5 Claims**



1. An apparatus for optically and reversibly recording and reproducing signals by applying micro-lightspots on an optical recording medium which uses a thin recording film made of optical recording material which can reversibly change its optical characteristic between its amorphous state and its crystal state as a result of light being irradiated on said thin film, said film being formed on a substrate having optical guide tracks, said apparatus comprising:
two light source means for respectively applying light beams having different wavelengths; and
optical means for respectively converging the applied light beams so as to obtain a first substantially circular micro-lightspot and a second elliptic lightspot having a major diameter in the tangential direction of said optical guide track on one and the same optical guide track, the condition for temperature elevation and rapid cooling being provided for said optical recording medium by said first almost circular lightspot, and the condition for temperature elevation and slow-cooling being provided for said optical recording medium by said second elliptic light spot solely or by cooperation of said second elliptic light spot and said first almost circular light spot.

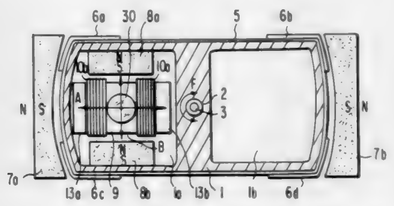
4,566,089

DEVIATION CORRECTION APPARATUS FOR OPTICAL DISC LIGHT BEAMS

Kenjiro Kime, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1984, Ser. No. 589,914
Claims priority, application Japan, Mar. 30, 1983, 58-57378; Jun. 6, 1983, 58-100421
Int. Cl.⁴ G11B *7/08*
U.S. Cl. 369—45 **15 Claims**

1. A driving apparatus for controlling and tracing light beams of an optical disc player or recorder, comprising:
(a) a base member (**4**),
(b) a first holder member (**1**) slidably and rotatably disposed on a shaft (**3**) upstanding from said base member,
(c) optical means (**30**) for focusing a light beam (**11**) irradiated thereon and emitting said light beam as a light spot (**12**),
(d) a second holder member (**9**) mounting said optical means,
(e) means (**13***a*, **13***b*) for flexibly mounting said second holder member to said first holder member for movement towards and away from said shaft in a direction perpendicular thereto,



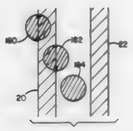
(f) rotation driving means (**6***a*–**6***d*, **7***a*, **7***b*) for rotating said first holder member and optical means about said shaft to correct tracking deviations of said light spot transverse to an information track on a storage disc,
(g) thrust driving means (**5**, **7***a*, **7***b*) for sliding said first holder member and optical means on said shaft to correct focus deviations of said light spot with respect to said information track, and
(h) parallel driving means (**10***a*,**10***b*, **8***a*, **8***b*) for moving said second holder member and optical means perpendicular to said shaft to correct time axis or jitter deviations of said light spot.

4,566,090

STORAGE MEDIUM TRACK PITCH DETECTOR

Carlyle J. Eberly, Long Beach, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 329,462, Dec. 10, 1981, Pat. No. 4,504,939.
This application Jul. 30, 1984, Ser. No. 635,955
Int. Cl.⁴ G11B *3/82, 3/90*
U.S. Cl. 369—46 **8 Claims**



1. Apparatus for measuring a condition of excessively close spacing between adjacent tracks on an information recording medium comprising:
light means for projecting a spot of light onto a recording medium at a predetermined location thereon intermediate a first and a second track;
photodetector means for providing an electrical signal representative of the amount of light from said spot reflected off of the medium in a predetermined direction;
tracking means for maintaining a substantially constant lateral spacing of said spot of light from said first track; and
scanning means for providing relative motion between said

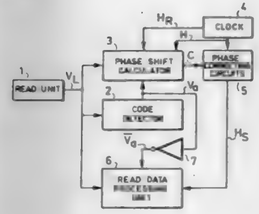
spot of light and said medium in a direction parallel to said first track.

4,566,091

PROCESS AND DEVICE FOR REGENERATING THE PHASE OF SYNCHRONIZING SIGNALS IN A DATA CARRIER OPTICAL WRITE-READ APPARATUS

Jean-Louis Gerard, and Marc Loret, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 9, 1983, Ser. No. 473,809
Claims priority, application France, Mar. 12, 1982, 82 04220
Int. Cl.⁴ G11B *7/00*
U.S. Cl. 369—47 **31 Claims**



1. A data carrier having on a reference surface a plurality of adjacent track elements for digital data storage in alloted non-contiguous portions of said track elements, said data carrier comprising:

flag means repeatedly arranged along each one of said track elements and intermediate said non-contiguous portions for producing specific synchronizing signals in response to the lengthwise scanning thereof with an illuminating spot;

each of said flag means comprising a pair of spaced synchronizing marks succeeding one another in the direction of scanning;

each one of said marks having in the scanning direction a front edge and a rear edge defining a mark length substantially equal to half an odd multiple of a predetermined unit length;

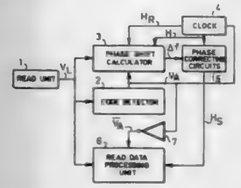
the distance in each of said flag means from the front edge of the first scanned mark to the rear edge of the last scanned mark being a multiple of said predetermined unit length.

4,566,092

PROCESS AND DEVICE FOR GENERATING SYNCHRONIZING SIGNALS IN AN OPTICAL DATA CARRIER WRITE-READ APPARATUS

Jean-Louis Gérard; Claude Lehureau, and Marc Loret, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 9, 1983, Ser. No. 473,568
Claims priority, application France, Mar. 12, 1982, 82 04219
Int. Cl.⁴ G11B *7/00, 27/00*
U.S. Cl. 369—59 **11 Claims**



1. A synchronizing signal generating process for use in a optical system performing the optical scanning of a reference surface of a data carrier with an illuminating spot, said system having clock means, means for causing said spot to scan any one of a plurality of track elements arranged on said reference surface, and optoelectronic detection means for sensing radiation modified by the optical interaction of said spot with synchronizing flag means repeatedly arranged along each one of said track elements, each of said flag means comprising at least one recorded synchronizing mark having in the direction of scanning a front edge and a rear edge, said process comprising the steps of:

extracting from a pulsed electric signal supplied by said optoelectronic detection means a trailing edge corresponding to the scanning by said spot of said rear edge, said extracting being controlled by a leading edge corresponding to the scanning by said spot of said front edge;

determining with reference to a time scale provided by said clock means a time value representative of the occurrence of said trailing edge; and

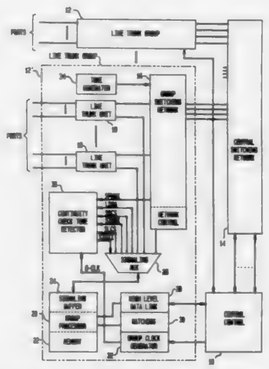
deriving from said time scale a further time scale resynchronized under the control of said time value.

4,566,093

CONTINUITY CHECK TONE DETECTOR FOR USE WITH A DIGITAL TELECOMMUNICATION SYSTEM

Felix V. Diaz, Boca Raton, Fla., assignor to Siemens Corporate Res. & Support, Inc., Iselin, N.J.

Filed Apr. 23, 1984, Ser. No. 602,794
Int. Cl.⁴ H04J *1/16, 3/14*
U.S. Cl. 370—14 **23 Claims**



1. A continuity check tone detector for use with a pulse code modulated time division telecommunication system adapted to be connected to a plurality of transmission lines and including interface units for connecting respective groups of transmission lines to said telecommunication system, a digital tone generator for providing call processing tones, a switching network and a switch control unit for supervision of line connection, line release, and test operations, and including a clock generator, said continuity check tone detector being designed for detecting continuous tones transmitted across temporarily established transmission paths and comprising:

detector interface means, connected to said switching network, for receiving serial tone information and for deriving digitally encoded tone samples therefrom, said detector interface means, being further connected to said switch control unit, for receiving serial control information and converting the same into detector timing and control signals;

a digital signal processor connected to receive said detector timing and control signals and said tone samples and including means for converting each tone sample into a linearized tone sample, means for digitally filtering the linearized tone sample and means for measuring the tone level of said filtered tone sample and for generating output data representing the measured tone level; and

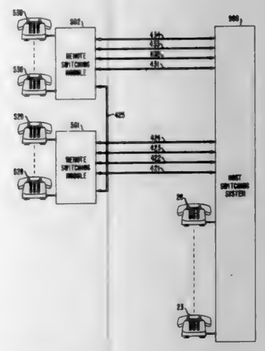
a control processor connected to receive said output data from said digital signal processor and said detector timing and control signals and including means for evaluating a measured tone level with respect to programmed level and predetermined duration in order to determine the presence of a continuous tone, and means for generating a corresponding test message to said switch control unit.

4,566,094

CHANNEL SELECTION IN A SWITCHING SYSTEM HAVING CLUSTERED REMOTE SWITCHING MODULES

Menachem T. Ardon, Naperville; James C. Kennedy, St. Charles; Douglas S. Sand, Naperville; Lawrence J. Trimnell, Wheaton, and Meyer J. Zola, Oak Park, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 11, 1983, Ser. No. 493,741
Int. Cl.⁴ H04Q *11/04*
U.S. Cl. 370—58 **15 Claims**



1. An arrangement comprising

host switching means,

first and second remote switching means,

first interconnection means for interconnecting said host switching means and said first remote switching means,

second interconnection means for interconnecting said host switching means and said second remote switching means and

third interconnection means comprising a plurality of communications channels for interconnecting said first and second remote switching means, said third interconnection means being separate and distinct from said first and second interconnection means,

wherein said first remote switching means comprises means for transmitting and receiving data words representing subscriber-generated information in ones of said communication channels, selection means for selecting ones of said communications channels, means responsive to a first selection by said selection means of any first given one of said communications channels for transmitting in a predetermined one of said communications channels, control information defining said any first given channel out of said plurality of communicating channels and means responsive to said first selection by said selection means for transmitting and receiving control information in said any first given channel and

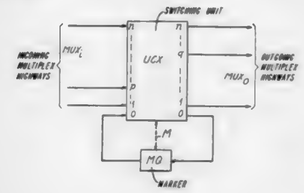
wherein said second remote switching means comprises means for transmitting and receiving data words representing subscriber-generated information in ones of said communications channels, means for receiving in said predetermined one of said communications channels, said control information defining said any first given channel out of said plurality of communications channels and means responsive to said control information defining said any first given channel out of said plurality of communications channels for transmitting and receiving control information in said any first given channel.

4,566,095

TIME DIVISION MULTIPLEX SWITCHING NETWORK PERMITTING COMMUNICATIONS BETWEEN ONE OR SEVERAL CALLING PARTIES AND ONE OR SEVERAL CALLED PARTIES

Michel Devault, 22, rue de Bourgogne, 22300 Lannion; Bernard Gérard, 24, Cite des Lauriers, Ker-Maria-Sulard, 22450 La Roche-Derrien, and Yvon Rouaud, Les Fontaines, A33, 22300 Lannion, all of France

Filed Dec. 28, 1983, Ser. No. 566,433
Claims priority, application France, Dec. 30, 1982, 82 22122
Int. Cl.⁴ H04Q *11/04*
U.S. Cl. 370—60 **2 Claims**



1. Asynchronous time division multiplex switching network for switching multi-service communication data, said network being intended to perform point-to-point data switching, data switching between a single calling party and a plurality of called parties and data switching between a plurality of calling parties and a single called party, said network comprising:

a plurality of incoming time division multiplex highways including asynchronous channels each formed by a packet of data and an address label (j) and a plurality of outgoing time division multiplex highways including asynchronous channels each formed by a packet of data and an address label (k);

incoming and outgoing terminal switching equipments respectively connected to said incoming and outgoing multiplex highways;

a bus interconnecting said incoming and outgoing terminal switching equipments;

means for converting the label (j) of an incoming asynchronous channel into an identification word which is decoded in the outgoing terminal switching equipments and is composed of three sub-words, the first sub-word being a sub-word characterizing the switching as being selected from

(a) point-to-point communication switching;

(b) communication switching from one called party to several called parties; and

(c) communication switching from several calling parties to one called party;

the second sub-word selectively designating the number of an outgoing multiplex highway or not having any significance with regard to the selected type of communication switching, and the third sub-word being a sub-word characterizing the number (k) of an outgoing asynchronous channel or the numbers (α) of several outgoing asynchronous channels in the case of one calling party to several called parties communication switching; and

means for controlling the acceptation of the packets by the outgoing terminal switching equipments in response to the values of the three sub-words.

4,566,096

TELEPHONE EXCHANGE CONFERENCE CIRCUIT

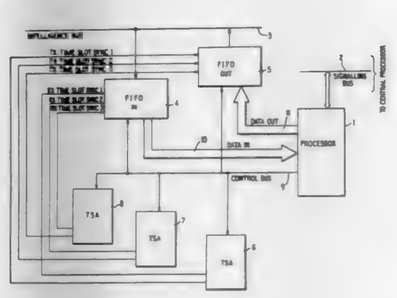
Gary A. Sarson, Ottawa, Canada, and Michael P. McKenzie, Enfield, England, assignors to Standard Telephones and Cables, Public Limited Company, London, England

Filed Oct. 6, 1983, Ser. No. 538,412

Claims priority, application United Kingdom, Oct. 8, 1982, 8228844

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—62 **5 Claims**



1. A telephone exchange conference circuit, for setting up a conference call including n exchange terminations corresponding to n conferees, where n is an integer greater than 2, in a PCM-TDM telephone exchange, comprising:

an input store for the reception of n PCM code bytes from the conferees;

an output store from which n PCM code bytes can be sent to the conferees;

a processor which controls the operations of the conference circuit;

an input to the processor over which the identities of 2 n TDM time slots to be used for the connection are received when the circuit is in use, there being separate 'talk' and 'listen' time slots allocated to each of the conferees, which 2 n time slots do not need to occur consecutively in a cycle;

connections from the processor to the stores via which the input store is set to its condition for the reception of bytes from the n conferees and to the output store via which said output store is set to is condition for sending bytes to the n conferees; and

connections from the stores via which bytes are transferred from the input store to the processor and from the processor to the output store;

wherein the bytes which enter the input store are received from a telephone exchange bus also used for nonconference calls and the bytes which leave the output store go to said same telephone exchange bus;

wherein on reception of n bytes from the input store the processor compares these bytes and selects the one which represents the largest speech amplitude;

wherein the processor, after having made said selection, sends the selected byte to the output store for the time slots for the (n−1) conferees other than the one from which it came;

wherein the processor sends a silent code byte to the output store for the time slot for the selected conferee; and

wherein the n PCM bytes thus sent to the output store are sent each at the appropriate one of said time slots to the respective ones of the conferees;

whereby the conferee whose byte is selected as representing the largest speech amplitude receives said silent code byte while the other conferees receive the byte from the selected conferee.

4,566,097

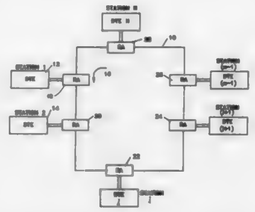
TOKEN RING WITH SECONDARY TRANSMIT OPPORTUNITIES

Seymour Bederman, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 23, 1983, Ser. No. 565,244

Int. Cl.⁴ H04J *3/16, 3/00*

U.S. Cl. 370—89 **12 Claims**



1. A method for operating stations on a ring network comprising the steps of:

(a) monitoring an input terminal at each of said stations to detect a first predetermined bit pattern on the ring network;

(b) inserting, from one of the stations, message characters onto the ring network in place of a portion of said first predetermined bit pattern;

(c) monitoring the input at said one station to detect a second predetermined bit pattern from any station other than said one station;

(d) buffering at said one station a portion of the second predetermined bit pattern;

(e) determining a relative priority between the received second predetermined bit pattern and the message characters being transmitted; and

(f) aborting transmission of the message character and forwarding the second predetermined bit pattern only if the relative priority has a predetermined relationship.

4,566,098

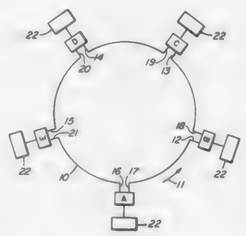
CONTROL MECHANISM FOR A RING COMMUNICATION SYSTEM

Neil D. Gammage, Kanata; Jan K. Pachl, and Liam M. Casey, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 14, 1984, Ser. No. 609,691

Int. Cl.⁴ H04J *3/16*

U.S. Cl. 370—89 **12 Claims**



1. A communication system comprising, a plurality of stations each having an input port for receiving data and an output port for transmitting data, and a transmission medium for interconnecting said stations in a ring, each of the stations comprising means for determining the busy/idle status of the ring, one of said stations comprising means for generating

clock and framing signals, each frame of data on the ring being preceded by a toggle signal having one or another value, the determining means being responsive to the values of the toggle signal in two consecutive frames for determining the busy/idle status of the ring whereby a station recognizes the ring as being idle only if the present value of the toggle signal is the same as the value of the toggle signal in the previous frame, and a station recognizes the ring as being busy only if the present value of the toggle signal is different from the value of the toggle signal in the previous frame.

4,566,099

SYNCHRONOUS CLOCK GENERATOR FOR DIGITAL SIGNAL MULTIPLEX DEVICES

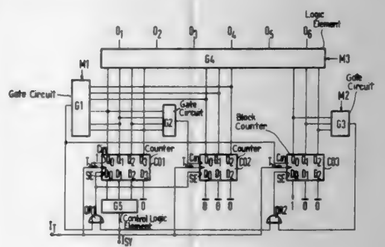
Johann Magerl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,329

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1982, 3226201

Int. Cl.⁴ H04J *3/06*

U.S. Cl. 370—100 **9 Claims**



1. A synchronous clock generator for digital signal multiplex devices comprising a first counter whose counting period corresponds to a block length of a pulse frame and which can be set into a prescribed counter reading, a block counter controlled by the first counter, and a logic element for generating working clock signals which logic element is connected to the outputs of the counters, characterized in that change-over means are provided for changing the counting period of at least one of the first counter and the block counter to adapt such counting period selectively to a plurality of respective different multiplexers; and in that the logic element gates out the working clock signals for such respective different multiplexers according to the condition of said changeover means.

4,566,100

BIT ERROR RATE MEASURING SYSTEM

Toshio Mizuno, Tanashi; Gunkichi Satoh, Yokohama, and Michihisa Ohkawa, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1983, Ser. No. 486,319

Claims priority, application Japan, Apr. 20, 1982, 57-64666

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 371—5 **15 Claims**



1. A system for equivalently measuring bit error rate of received M-phase digital phase-modulated waves by steps comprising multiplying a frequency of an M-phase digital phase-modulated wave by M, wherein M is a positive integer, phase-detecting the M-multiplied signal directly or after frequency conversion by using a reference carrier which is orthogonal to a boundary of an error region in a phasor diagram, detecting errors by comparing the phase detection output with a given threshold which is determined so as to correspond to said boundary of the error region, and counting the number of pulses which represent errors.

4,566,101

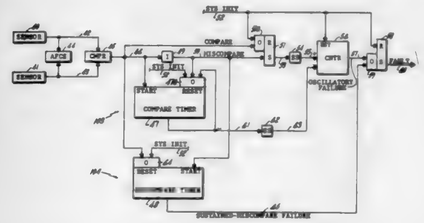
OSCILLATORY FAILURE MONITOR

Joseph P. Skonieczny, Madison; Richard D. Murphy, and Douglas H. Clelford, both of Trumbull, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 28, 1983, Ser. No. 470,370

Int. Cl.⁴ G06F *11/30*

U.S. Cl. 371—5 **1 Claim**



1. An oscillatory-failure monitor that comprises:

means (**40**, **41**) for providing a plurality of signals,

comparator means (**45**) for providing a compare signal (**46**) when a parameter of each signal of the plurality of signals is in agreement, within a tolerance, with the parameter of each of the other signals of the plurality of signals, in response to the plurality of signals;

timer means (**47**) for providing a decrement signal in response to the sustained provision of the compare signal for a threshold interval of time;

means (**45**, **49**) for providing a discrete miscompare signal (**55**) upon each discrete occurance of at least a single disparity, without the tolerance, among the signal parameters, in response to the plurality of signals;

counter means (**56**) for providing a count signal that increments in value in response to each discrete miscompare signal and that decrements in value in response to each provision of the decrement signal;

means (**58**) for providing a fault indication in response to the count signal having incremented to a threshold value.

4,566,102

PARALLEL-SHIFT ERROR RECONFIGURATION

James L. Hefner, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,816

Int. Cl.⁴ G11C *29/00*

U.S. Cl. 371—11 **11 Claims**

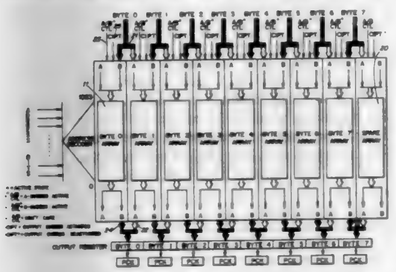
1. A method for reconfiguring a parallel configuration of identical functional units in response to a failure of one of said units, said configuration comprising a rightmost unit serving as a spare, at least two input busses coupled to each of said units except for a leftmost and said rightmost units, and at least two output busses coupled to each of said units except for said leftmost and rightmost units, each of said input and output busses suitably coupled to at least two functional units, the method comprising the steps of:

shifting the contents of the failed unit and the contents of all the units to the right of said failed unit one unit to the right;

deactivating the outputs associated with said failed unit;

activating the rightmost input bus associated with each unit for all of the units to the left of said failed unit;

activating the leftmost input bus associated with each unit for all the units to the right of said failed unit;
activating the rightmost output bus associated with each unit for all of the units to the left of said failed unit and



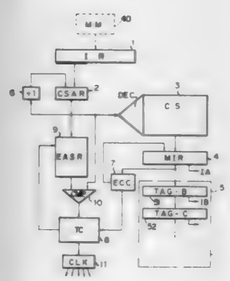
activating the leftmost output bus associated with each unit for all of the units to the right of said failed unit;
whereby said failed unit is operationally eliminated from said parallel configuration of identical functional units.

4,566,103

METHOD FOR RECOVERING FROM ERROR IN A MICROPROGRAM-CONTROLLED UNIT

Kiyosumi Sato, Kawasaki, and Kazuyuki Shimizu, Machida, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 20, 1983, Ser. No. 534,134
Claims priority, application Japan, Sep. 28, 1982, 57-168912
Int. Cl.⁴ G06F *11/00*
U.S. Cl. 371—12 **10 Claims**



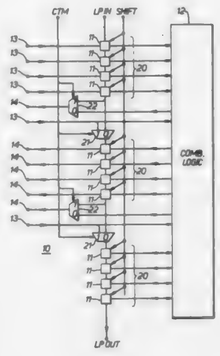
1. A method for recovering from an error in a microprogram-controlled unit, the microprogram-controlled unit comprising a control storage for storing microinstructions, a control storage address register for storing an address specifying one of the microinstructions, a microinstruction register for storing a specified microinstruction, serially connected registers (tags) in stages following the microinstruction register for storing microinstructions during processing, an error detection and correction circuit for performing a validity check on the specified microinstruction stored in the microinstruction register and correcting erroneous microinstructions, an error address storage for storing the address of the specified microinstruction when an error is detected, and a comparator for comparing the addresses in the control storage address register and the error address storage, the validity check by the error detection and correction circuit for each of the microinstructions being carried out in parallel with the processing of each of the microinstructions, said method comprising the steps of:
(a) detecting an erroneous microinstruction when the specified microinstruction contains an error;
(b) performing a retry operation for related microinstructions, including the erroneous microinstruction, in an interlock mode in which the erroneous microinstruction and the related microinstructions preceding the erroneous microinstruction are successively subjected to error detection and correction, followed by reexecution;
(c) recording an address specifying the erroneous microinstruction in the error address storage;
(d) determining whether the address for the erroneous microinstruction is again stored in the control storage address register; and
(e) performing an operation in the interlock mode for the erroneous microinstruction only, when the address for the erroneous microinstruction is again stored in the control storage address register.

4,566,104

TESTING DIGITAL ELECTRONIC CIRCUITS

George M. Bradshaw, Stockport; Peter L. L. Desyllas, and Keith McLaren, both of Wilmslow, all of England, assignors to International Computers Limited, London, England

Filed Oct. 26, 1983, Ser. No. 545,520
Claims priority, application United Kingdom, Nov. 20, 1982, 8233179
Int. Cl.⁴ G01R *31/28*
U.S. Cl. 371—15 **4 Claims**



1. A digital electronic circuit comprising:
(a) a plurality of data storage elements having respective inputs and outputs,
(b) a combinational logic network having a plurality of inputs and outputs,
(c) first connection means connecting the outputs of at least some of the data storage elements to respective inputs of the combinational logic network and connecting at least some of the outputs of the combinational logic network to respective inputs of the data storage elements,
(d) a plurality of input and output terminals,
(e) second connection means connecting all the data storage elements together in series by way of their inputs and outputs, between a pair of said input and output terminals, thereby forming a serial shift path,
(f) a control line for receiving a shift control signal, the control line being connected to all the data storage elements for enabling each of the data storage elements to receive data from said serial shift path,
(g) at least one first multiplexer connected in said serial shift path and having
(i) a first input connected to the output of one of said data storage circuits,
(ii) a second input connected to one of the said input terminals, and
(iii) an output connected to the input of another one of said data storage circuits,
(h) at least one second multiplexer having

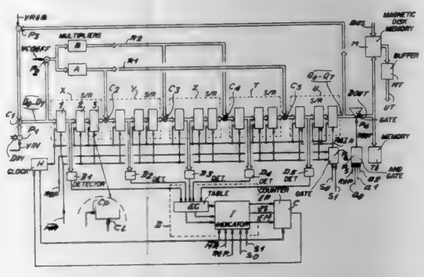
(i) a first input connected to one of said outputs of the combinational logic network
(ii) a second input connected to the output of one of said data storage elements, and
(iii) an output connected to one of the said output terminals, and
(j) a further control line for receiving a test mode control signal, the further control line being connected to all said first and second multiplexers for switching each said multiplexer to select its first input when the test mode control signal has one value and otherwise to select its second input.

4,566,105

CODING, DETECTING OR CORRECTING TRANSMISSION ERROR SYSTEM

André Oisel, Elancourt; Abdelhamid Boulenouar, Les Ulis, and Denise Le Gleau, Paris, all of France, assignors to Cli Honeywell Bull (Societe Anonyme), Paris, France

Filed Sep. 13, 1983, Ser. No. 531,680
Claims priority, application France, Sep. 13, 1982, 82 15403
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—37 **29 Claims**



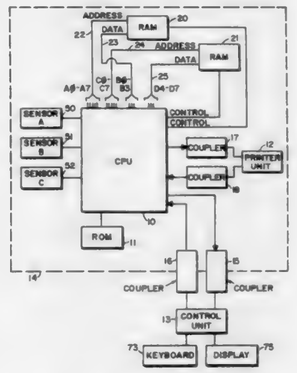
1. A system for coding, detecting or correcting transmission errors in an interleaved Reed-Solomon cyclically coded binary message, formed of at least one useful sub-block of symbols each having the same number Dn of data bits, the number of sub-blocks corresponding to an interleaving depth of the code, the code being represented by a polynominal $G(x)=Ax^n+Bx^{n-1}+\ldots Nx+1$, said coding system comprising several cascaded connected shift register assemblies **1, 2** . . . n having parallel input and output bits, each assembly having a number of cascaded shift registers equal to the interleaving depth, k, of the code, whereby there are n·k of said registers arranged as registers **1, 2,** . . . (n·k−1) and n·k, means for shifting the bits in register P to register P+1, where P is selectively each of registers **1, 2,** . . . (n·k−1), means for initially sequentially loading into register **1** (1) data symbols of a message to be encoded as modified by a control checkword formed of symbols obtained by concatenation with the useful message symbols or (2) data symbols of a coded message containing a checkword and which may include errors, a first EXCLUSIVE OR adder having output bits respectively coupled to inputs of register **1**, the first adder having a first set of inputs respectively responsive to outputs of register n·k and a second set of inputs responsive to the message data symbols, intermediate EXCLUSIVE OR adders, each having a first set of inputs and a set of outputs respectively responsive to the outputs of register j and supplying signals to inputs of register (j+1), where j is selectively every kth one of P, the intermediate adders including a second set of inputs respectively connected by circuit means to be responsive to the same bits as applied to the inputs of register **1**, the circuit means respectively including matrix means for deriving the coefficients of the polynomial G(x) of the cyclic code of the message; said coefficients being obtained from primitive elements of a predetermined Galois group and being stored in the matrix means; the matrix means modifying the second inputs of the intermediate adders by binary values representing the coefficients of the polynomial G(x).

4,566,106

ELECTRONIC POSTAGE METER HAVING REDUNDANT MEMORY

Frank T. Check, Jr., Orange, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 343,877, Jan. 29, 1982, abandoned. This application Apr. 15, 1985, Ser. No. 723,001
Int. Cl.⁴ G06F *11/30*
U.S. Cl. 371—67 **8 Claims**



1. In an electronic postage meter having a microprocessor, memory means coupled to said microprocessor for storing postage accounting data and operational condition data, and a plurality of sensors for detecting operation conditions in said postage meter, the improvement wherein said microprocessor comprises means for checking said sensors periodically on a time-shared basis, said time sharing including at least verification of said stored accounting data, said checking being effected between successive operations of said meter by said microprocessor, said meter operation being in response to external operational inputs, comparing data, said microprocesor presenting in said means for comparing a unique pattern of said stored operational condition data for comparison with a pattern of actual operational condition data from said sensors, and means response to an absence of said unique pattern in the outputs of said sensors for indicating an error condition.

4,566,107

LASER APPARATUS

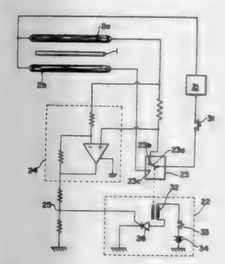
Tomimaro Kitaura; Yutaka Ohashi, and Masami Yoneda, all of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Aug. 11, 1983, Ser. No. 522,355
Claims priority, application Japan, Aug. 13, 1982, 57-139853
Int. Cl.⁴ H01S *3/00*
U.S. Cl. 372—38 **8 Claims**

1. In a laser apparatus including a reflector with a reflective inner surface which defines an elliptical cavity and along a focal line of the ellipse formed by which a laser medium and a pumping source are each located, said pumping source providing pumping energy for exciting said laser medium to produce stimulated laser emission, said apparatus comprising:
two sets of optical pumping arrangements for providing pumping energy, each comprising a reflector with a reflective inner surface which defines an elliptical cavity and a pumping source located along the focal line of the ellipse formed by said elliptical cavity, and holding a laser

medium in common along the other focal line of said ellipse;

current detecting means for detecting current flowing through said pumping source; and



changeover means for changing one set of said optical arrangements over to the other formerly held in reserve to be available when a current flowing through the pumping source of said one set of said optical arrangements falls below a predetermined value and is detected by said current detecting means.

4,566,108

BOTTOM-ELECTRODE ARRANGEMENT FOR A DIRECT-CURRENT ARC FURNACE

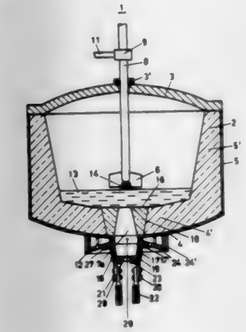
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Jul. 24, 1984, Ser. No. 633,924

Claims priority, application Switzerland, Jul. 28, 1983, 4132/83

Int. Cl.⁴ H05B *7/00*

U.S. Cl. 373—108 **12 Claims**



1. A direct-current electric arc furnace for melting metals, comprising:

a furnace vessel including a bottom wall having interior and exterior surfaces;

at least a pair of electrodes, including a bottom electrode; and

a molded part formed of refractory material enveloping said bottom electrode to provide in combination therewith an electrode unit which is mounted in the bottom wall, said electrode unit having a cross-sectional shape tapered from said interior surface to said exterior surface such that said bottom electrode is removable in a direction toward the interior of the furnace vessel.

4,566,109

DOCUMENT HANDLING EQUIPMENT WITH COUNTER CONTROLLABLE COVER

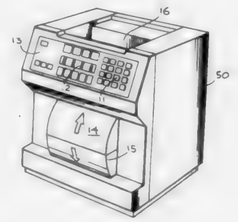
Fumiwo Sanuga, Tokyo, Japan, assignor to Billcon Co., Ltd., Kawasaki, Japan

Filed Mar. 1, 1984, Ser. No. 585,209

Claims priority, application Japan, Mar. 2, 1983, 58-028924

Int. Cl.⁴ B65H *43/00, 43/06*

U.S. Cl. 377—2 **10 Claims**



1. An improved sheet-by-sheet paper feed counter, including:

counting means for counting passing sheets of paper;

a case enclosing said counting means and having an inlet and an exit for said sheets of paper to be stacked and retrieved respectively;

cover means sized and positioned to cover said exit and movable, alternatively, between positions covering said exit and, exposing said exit;

count-starting means coupled to said counting means for producing a signal controlling the commencement of the sheets feeding from said inlet;

a means for producing an end-of-count signal in response to the last sheet passing to said exit included in said counting means;

said cover means being coupled to said count-starting means and said end-of-count means and responsive to signals therefrom to cover said exit and expose said exit, respectively.

4,566,110

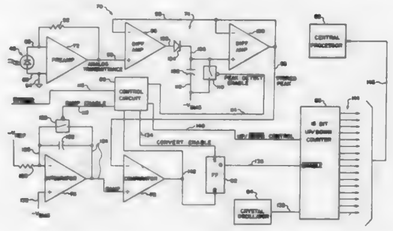
AUTO-ZEROING LINEAR ANALOG TO DIGITAL CONVERTER APPARATUS AND METHOD

Steven Kolber, Boca Raton, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Sep. 17, 1982, Ser. No. 419,696

Int. Cl.⁴ H03M *1/06*

U.S. Cl. 377—10 **24 Claims**



1. A method of generating reaction effect data in the form of offset-error free digital transmission data derived by directing a beam of radiant energy through a plurality of cuvettes containing reaction samples, the cuvettes being partially transparent, the method comprising:

A. scanning the cuvettes seriatium with the beam during cuvette sample intervals by passing the beam through the cuvettes containing reaction samples and directing the light transmitted therethrough to a sensor;

B. blocking the beam from passing to the sensor during at least one dark sample interval occurring other than during cuvette sample intervals;

C. generating from said sensor representative analog cuvette and dark transmittance signals representing, respectively, the quantity of light from said beam striking said sensor during said cuvette sample interval and during said at least one dark sample interval;

D. converting said representative analog cuvette and dark transmittance signals to digital cuvette and dark transmittance signals, said digital cuvette transmittance signals including an offset-error value and said digital dark transmittance signal representing the offset-error value; and

E. using the digital dark transmittance signal that represent the offset-error value to eliminate the offset-error value included in the digital cuvette transmittance signals.

4,566,111

WATCHDOG TIMER

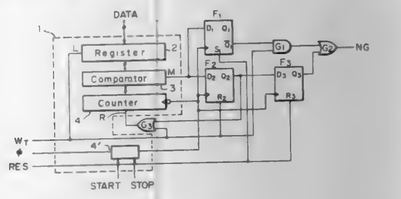
Kouji Tanagawa, Tokyo, Japan, assignor to OKI Electric Industry Co., Tokyo, Japan

Filed Nov. 2, 1983, Ser. No. 547,932

Claims priority, application Japan, Nov. 4, 1982, 57-192558

Int. Cl.⁴ H03K *21/30*

U.S. Cl. 377—28 **4 Claims**



1. A watchdog timer comprising;

a register (2) for presetting predetermined DATA upon receipt of a writing signal (W_T),

a counter (4) which is incremented by a clock pulse (ϕ),

a comparator (3) which compares contents of said register (2) with contents of said counter and providing a coincidence output signal when two contents coincide with each other,

a first flip-flop (F_1) for storing said coincidence output signal for one period of said clock pulse ϕ,

a second flip-flop (F_2) for storing said coincidence output signal upon receipt of said clock pulse ϕ,

a third flip-flop (F_3) for storing output of said second flip-flop F_2 upon receipt of said clock pulse ϕ,

an AND circuit (G_1) for providing logical product of a reverse output $\bar{Q}_1$ of said first flip-flop F_1 and said writing signal(W_T) , and

an OR circuit (G_2) for receiving an output of said third flip-flop F_3 and an output of said AND circuit (G_1) and producing an alarm signal NG which indicates an error of a computer to be monitored.

4,566,112

TOMOSYNTHESIS APPARATUS

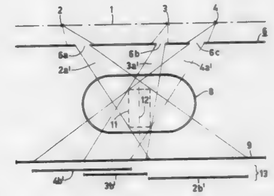
Rolf Linde, Haseldorf, and Erhard Klotz, Halstenbek, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 378,573, May 17, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 580,763

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121324

Int. Cl.⁴ G03B *41/16*

U.S. Cl. 378—2 **6 Claims**



1. A tomosynthesis apparatus for forming images of layers of a body, said apparatus comprising:

at least one radiation source for irradiating the body from a plurality of radiation source positions, said radiation source positions being situated in a radiation source plane on a first side of the body;

a diaphragm device positioned on the first side of the body between the radiation source plane and the body, said diaphragm having apertures therein for forming radiation beams which irradiate a common zone of the body; and

a detector in a detector plane located on a second side of the body opposite the first side;

characterized in that the apertures in the diaphragm are shaped and oriented such that the radiation beams formed therefrom have edge rays at the periphery of each beam, the edge rays being tangent to the boundaries of a cylinder situated within the common zone of the body, said cylinder having an axis transverse to the detector plane.

4,566,113

METHOD AND APPARATUS FOR EXAMINING THE CONTENT OF CONTAINERS

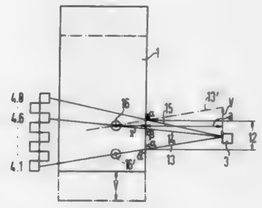
Gerhard Dönges, Heidenrod-Kemel; Thomas Herwig, Eltville-Martinsthal; Claus Kunze, Taunusstein, and Karl-Ulrich Stein, Munich, all of Fed. Rep. of Germany, assignors to Heimann GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 436,996

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145227

Int. Cl.⁴ G01N *23/04*

U.S. Cl. 378—57 **2 Claims**



1. Method for examining the content of containers, which comprises weighing the container, comparing the weight of the container with a total weight derived from the weight of the unloaded container and the product of the volume and the packing weight of a declared load, transilluminating the con-

tainer with a spatially limited high energy X-ray beam, moving the container relative to the X-ray beam so as to scan one surface of the container from at least two different directions, determining and evaluating the distribution of the mass attenuation coefficient of the contents of the container along said two directions determining the filling height in the container from the change of the mass attenuation coefficient, determining the packing weight from the filling height and the weight of the load determined by weighing, comparing the packing weight with the packing weight of the declared container content and determining the spatial location of unknown container contents from the mass attenuation coefficients along said two directions.

4,566,114

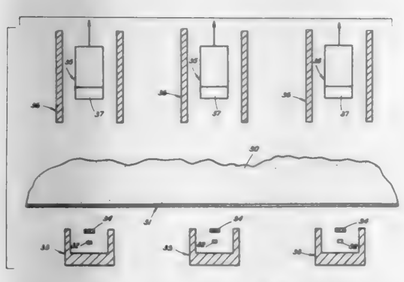
X- AND γ-RAY TECHNIQUES FOR DETERMINATION OF THE ASH CONTENT OF COAL

John S. Watt, Heathcote; Reginald A. Fookes, Caringbah, and Vilis L. Gravitis, Revesby, all of Australia, assignors to Australian Atomic Energy Commission, Coogee, Australia

Continuation-in-part of Ser. No. 161,252, Jun. 20, 1980, abandoned. This application Aug. 25, 1982, Ser. No. 411,403

Int. Cl.⁴ G01N *23/20*

U.S. Cl. 378—88 **11 Claims**



1. A measuring apparatus for quantitative determination of the concentration of ash in coal or coke, which apparatus comprises at least two X-ray or γ-ray scatter assemblies. and means to compute said ash concentration from the outputs of said assemblies, the geometries of said assemblies each being arranged so that the detected X-ray or γ-ray intensity is a measure over substantially the same amount by volume of coal or coke sample, said assemblies each comprising an X-ray or γ-ray source, an energy-sensitive detector to detect scattered X-rays or γ-rays resulting from scattering in the coal or coke of X-ray or γ-rays from said source, an electronic analyzer associated therewith to select all or one or more parts of the detected X-ray or γ-ray spectrum as output from said assemblies, and shielding means for reducing the intensity of direct X-rays or γ-rays, said shielding means being specifically chosen to collimate partly the beam of X-rays or γ-rays in such way as to ensure maximized matched volumes and deep penetration in the coal or coke, and wherein the energy of the X-rays or γ-rays emitted by said assemblies differs from each other.

4,566,115

X-RAY DIAGNOSTIC SYSTEM FOR RADIOGRAPHS

Klaüs Brünn, Erlangen, and Walter Polster, Spardorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

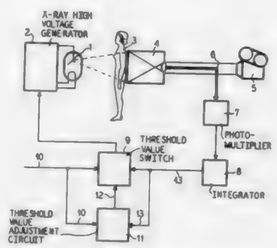
Continuation-in-part of Ser. No. 227,467, Jun. 22, 1981, abandoned. This application Oct. 6, 1983, Ser. No. 539,430

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1980, 3006049

Int. Cl.⁴ H05G *1/44*

U.S. Cl. 378—097 **1 Claim**

1. An X-ray diagnostic system for radiography, comprising an X-ray tube, an X-ray intensifier coupled with said X-ray tube for receiving an X-ray image and for supplying an intensified optical output image in accordance therewith, and a camera for photographing the X-ray image intensifier—optical output image, an automatic exposure timer which includes light sensing means for the detection of the optical output image, and an integrator connected with the output of the light sensing means for forming an integration signal in accordance with the light quantity per optical output image for the X-ray image intensifier, and a threshold means connected to the X-ray tube for switching off the X-ray tube, the threshold means having a control input for receiving a switch-off control signal for controlling when the X-ray tube is to be switched-off, and correction means having an input connected with the



integrator for receiving the integration signal representing the actual value of the light quantity per output optical image and having an input means for receiving a set point value representing a desired light quantity per optical output image, and having an output coupled with said control input which so determines the switch-off operation of said threshold means with respect to said integration signal that the X-ray tube is switched off by said threshold means before the integration signal reaches a value corresponding to the set point value representing the desired light quantity per optical output image, so that the actual value of the light quantity per optical output image is matched to the set point value in spite of a substantial persistence in the optical output image of said image intensifier.

4,566,116

SOFT X-RAY GENERATOR

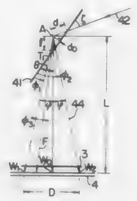
Asuo Nakano, and Yutaka Hiratsuka, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 488,758

Claims priority, application Japan, Apr. 30, 1982, 57-71201; Jul. 26, 1982, 57-128913

Int. Cl.⁴ H01J *35/00, 35/10, 35/14, 5/18*

U.S. Cl. 378—121 **11 Claims**



1. A soft X-ray generator comprising an electron gun for generating an electron beam, an anode irradiated with the electron beam to generate soft X-rays, and a vacuum chamber for containing said electron gun and said anode, wherein an incident angle ξ of the electron beam with respect to said anode, an angle θ formed between said anode and a line interconnecting a point at which the soft X-rays are generated in said anode and the center of a field of irradiation by the soft

X-rays, and an angle ζ formed between the line interconnecting said soft X-ray generating point and the center of said field of irradiation and a line interconnecting said soft X-ray generating point and an outer peripheral edge of said field of irradiation are selected so that a function

$$F = \frac{1}{\sin\theta} \exp\left(\frac{-\mu d \sin\xi}{\sin(\theta - \zeta)}\right)$$

becomes a maximum, F being the intensity of the soft X-rays at a location in said field of irradiation where said intensity is most feeble, μ being the soft X-ray absorption coefficient of said anode and d being an average depth of said soft X-ray generating point in said anode, and wherein said electron gun, said anode and said field of irradiation are arranged at locations determined by the selected angles ξ, θ and ζ.

4,566,117

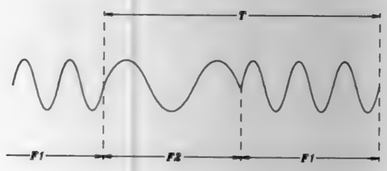
SPEECH SYNTHESIS SYSTEM

Leonard I. Suckle, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1982, Ser. No. 432,466

Int. Cl.⁴ G10L *1/00*

U.S. Cl. 381—51 **5 Claims**



1. A method of generating elements of speech comprising: providing a short duration of a first formant frequency; providing a short duration of a second formant frequency; and alternating between the first and second formant frequencies at a pitch frequency rate.

4,566,118

METHOD OF AND APPARATUS FOR CANCELLING VIBRATIONS FROM A SOURCE OF REPETITIVE VIBRATIONS

George B. B. Chaplin, and Roderick A. Smith, both of Colchester, United Kingdom, assignors to Sound Attenuators Limited, Colchester, England

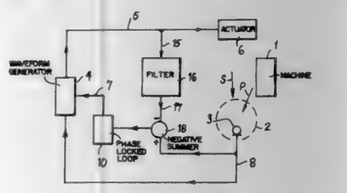
PCT No. PCT/GB82/00337, § 371 Date Jul. 25, 1983, § 102(e) Date Jul. 25, 1983, PCT Pub. No. WO83/02031, PCT Pub. Date Jun. 9, 1983

PCT Filed Nov. 26, 1982, Ser. No. 522,172

Claims priority, application United Kingdom, Nov. 26, 1981, 8135628

Int. Cl.⁴ F10N *1/06*

U.S. Cl. 381—71 **8 Claims**



1. A method of generating a synchronising signal for an active vibration cancelling system in which a primary vibration, from a source of repetitive vibrations, entering a location is at least partially nulled by a specially generated secondary vibration fed to the location, the synchronising signal being used to synchronise the secondary vibrations to said source of repetitive vibrations, characterised in that the synchronising signal is obtained from the output of a residual vibration sensor located at said location by combining an electrical output from the vibration sensor with an electrical signal derived from the source of the secondary vibration.

4,566,119

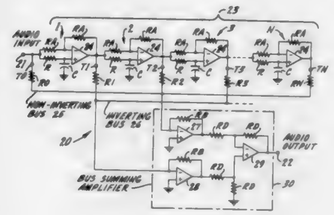
EQUALIZER NETWORKS AND METHODS OF DEVELOPING SCALING COEFFICIENTS THEREFOR

Richard W. Peters, Algonquin, Ill., assignor to Industrial Products, Inc., Elk Grove Village, Ill.

Filed Oct. 12, 1983, Ser. No. 541,089

Int. Cl.⁴ H03G *5/00*

U.S. Cl. 381—103 **70 Claims**



1. A minimum-phase equalizer network adapted to develop an equalized output signal having a predetermined frequency response characteristic, with minimum ripple, over a preselected frequency range, comprising:

a series chain of N all pass delay stages, the chain having an initial tap connected to the input to the first stage in the chain and N additional taps each connected to the output of a succeeding stage in the chain;

M minimum-phase transversal filters, all connected to and each including the entire series chain of all pass delay stages as a part thereof, each filter developing an intermediate signal within a pass band representative of one of a contiguous series of M nominal frequency bands extending across the frequency range;

final summing circuit means for additively combining the intermediate signals in predetermined amplitude relation to each other to develop the equalized output signal; and

adjusting means for adjusting the amplitude of each intermediate signal, independently of the others, to adjust the overall frequency response characteristic of the equalizer network.

4,566,120

LOUDSPEAKER SYSTEM AND LOUDSPEAKER FOR USE IN A LOUD-SPEAKER SYSTEM FOR CONVERTING AN N-BIT DIGITIZED ELECTRIC SIGNAL INTO AN ACOUSTIC SIGNAL

Joris A. M. Nieuwendijk; Franciscus J. Op de Beek; Georgius B. J. Sanders; Wilhelmus D. A. M. Van Gijsel, and Jacob M. Van Nieuwland, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 7, 1984, Ser. No. 648,427

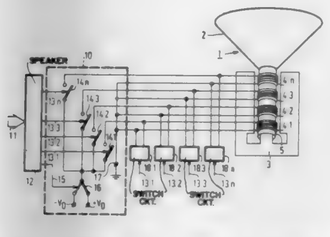
Claims priority, application Netherlands, Sep. 15, 1983, 8303186

Int. Cl.⁴ H04R *9/06*

U.S. Cl. 381—117 **6 Claims**

1. In a loudspeaker system for converting a digitized electric signal having a plurality of bits, each of said bits having a first or a second value, into an acoustic signal, said system having an electrodynamic loudspeaker comprising a voice coil device

having a plurality of voice coil sections corresponding in number to said plurality of bits of said digitized electric signal, said system further having means for driving each of said plurality of voice coil sections when a respective one of said bits has said first value, the improvement comprising



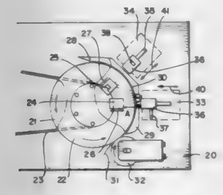
means for short-circuiting a voice coil section when the respective one of said plurality of bits has said second value.

4,566,121

PROCESS AND APPARATUS FOR IDENTIFYING ARTICLES OF SHEET MATERIAL BY MEANS OF MICROWAVES

Johan Samyn, Oostnieuwkerksesteenweg 199, 8800 Roeselare, Belgium

Filed Apr. 8, 1983, Ser. No. 481,242
Claims priority, application Luxembourg, Jul. 29, 1982, 84308
Int. Cl.⁴ G06K *9/00*; G01R *27/04*
U.S. Cl. 382—7 **15 Claims**



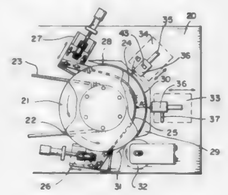
1. An apparatus for the identification of a sheet or plate article, the article being composed of an electrically non-conductive material and being marked for identification by the incorporation of electrically conductive materials, comprising: a frame; at least one first and at least one second microwave device, for producing waves, said first and second device being mounted on said frame one adjacent the other; at least one first and one second detector of waves transmitted by the article when the article is advanced before said devices, said detectors being placed in front of the respective microwave devices so, when the article is advanced, the article traverses each said detector and respective device in a traversing direction; a support for the article, said support positioned between said devices and said detectors; a circulator means or directional coupler means, associated with each said microwave device, for deviating waves reflected by the article towards a detector of said reflected waves; and, adjusting means for adjusting the respective distance between said microwave devices and said detectors of transmitted waves and said microwave devices and said support.

4,566,122

PROCESS AND APPARATUS FOR IDENTIFYING ARTICLES OF SHEET MATERIAL BY MEANS OF MICROWAVES

Johan Samyn, Oostnieuwkerksesteenweg 199, 8800 Roeselare, Belgium

Filed Apr. 8, 1983, Ser. No. 481,243
Claims priority, application Luxembourg, Jul. 29, 1982, 84307
Int. Cl.⁴ G06K *9/00*; G01R *27/04*
U.S. Cl. 382—7 **28 Claims**



1. An apparatus for the identification of a sheet or article composed of an electrically non-conductive material, the article being marked for the identification, by the incorporation of electrically conductive materials comprising: a frame; at least two microwave devices, one adjacent the other, mounted in said frame; a support, for the article, placed in front of said microwave devices; at least two detectors for waves reflected by the article when the article is advanced before said devices, the article thereby traversing each said detector and respective device in a traversing direction; a circulator means or directional coupler means, associated with each said microwave devices, for deviating waves reflected by the article towards said detectors; a screen means, for reflecting waves, positioned in front of at least one of the microwave devices at a distance greater than that between said microwave device and said support; and, adjusting means for adjusting the respective distances between said microwave device and said screen and said microwave device and said support.

4,566,123

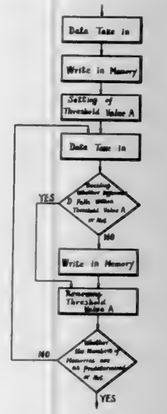
STANDARD MEMORY TAKE IN METHOD

Hajime Yoshida, c/o Hajime Industries Ltd., Kudan Sanzen Bldg., 2-5-9, Kudanminami, Chiyoda-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 289,498, Aug. 3, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,408
Claims priority, application Japan, Oct. 4, 1978, 53-122140
Int. Cl.⁴ G06K *9/66*
U.S. Cl. 382—15 **4 Claims**

1. A standard memory take-in method for selecting a set of standard data for use with a pattern recognition system in which a plurality of samples of data representing a single known object to be recognized and stored as a set of standard data are stored, said plurality of samples being compared with data representing a subsequent sample to decide whether or not said subsequent sample belonging to said single known object should be stored, said standard memory take-in method comprising the steps of:

a. storing a first coming sample of data representing said object in a memory unconditionally as a standard data;
b. setting a predetermined threshold value which is used to determine whether or not a second coming sample of data is stored as a standard data;
c. taking in said second coming sample of data;
d. calculating a difference between said first coming sample of data and said second coming sample of data;
e. storing said second coming sample of data in said memory only if said difference exceeds said predetermined threshold value and refusing to store said second coming sample of data in said memory if said difference is less than said predetermined threshold value;
f. calculating differences between each subsequent sample of data and each sample of data previously stored in said memory;
g. storing each subsequent sample of data in said memory only if all of said differences exceed said predetermined threshold value and refusing to store said subsequent



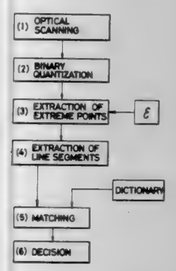
sample of data in said memory if any of said differences is less than said predetermined threshold value;
h. checking whether said memory is fulfilled or not; and
i. repeating said steps c to g when said memory is not fulfilled to fulfil said memory.

4,566,124

PATTERN READING SYSTEM

Kazuhiko Yamamoto, Ushiku, and Taiichi Saito, Ibaraki, both of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Aug. 10, 1983, Ser. No. 521,956
Claims priority, application Japan, Aug. 10, 1982, 57-139059
Int. Cl.⁴ G06K *9/78*
U.S. Cl. 382—21 **4 Claims**



1. A pattern reading system by line segment approximation, which comprises the steps of:

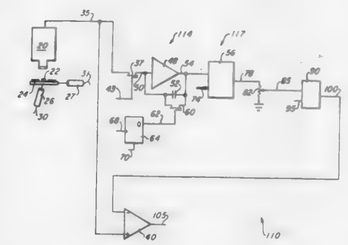
tracing the contour of a pattern given to be read and simultaneously detecting from a series of coordinate point vectors of the contour, a contour point at which the inner product of the coordinate point vector of the contour point and a directional vector in a plurality of prescribed directions has the largest value;
storing the coordinates and said inner product of the detected point in memories;
feeding out said coordinates of said detected point as an extreme point when the difference between said inner product in said detected point and inner product of a coordinate point vector of a successive contour point and said directional vector exceeds an allowance fixed in advance;
extracting convex and concave structures of said pattern by using said extreme points fed out as points of polygonal approximation in said contour of pattern, and
matching a pattern composed of said convex and concave structures with a preparatorily set dictionary and reading said pattern based on maximum values of feature magnitudes.

4,566,125

APPARATUS AND METHOD FOR PATTERN LOCATION

Robert H. Ciunn, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 8, 1982, Ser. No. 447,868
Int. Cl.⁴ G06K *9/20*
U.S. Cl. 382—48 **6 Claims**



1. Apparatus for location of a predetermined pattern on a surface of an object comprising:

a. an imaging camera incident to light reflected from said object producing an analog output corresponding to an image of said surface during each of a plurality of optical scans;
b. a reference memory storing a reference representation of said predetermined pattern;
c. an adaptive threshold circuit connected to receive said analog output for receiving one optical scan of said optical scans and producing a threshold output determined from the magnitude of at least a portion of said analog output, the adaptive threshold circuit includes an integrator means for integrating the analog output over one scan of said plurality of optical scans, and a normalizing means for normalizing the magnitude of the integrated analog output by a factor corresponding to the area of said scan to obtain the threshold signal thereby;
d. a comparator connected at one input to receive said analog output and another input to receive said threshold output, said comparator producing an indication at a digital output when the difference between the magnitudes of said threshold output exceed a preselected value;
e. a video memory connected to said comparator to receive said digital output and storing a digital representation of said image; and
f. a logic network connected to said video memory and said reference memory and detecting location of aid predetermined pattern within said image.

4,566,126

PATTERN DISCRIMINATOR

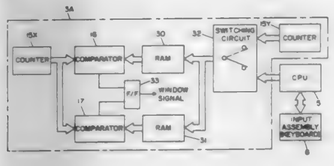
Michiaki Miyagawa, Hachiooji; Kouichi Ohki, Tokyo; Matsuhiko Takaya, Hino; Naoto Fujihara, Hino, and Tadayuki Yamada, Hino, all of Japan, assignors to Fuji Electric Company, Ltd., Kawasaki, Japan

Filed Apr. 11, 1983, Ser. No. 483,505

Claims priority, application Japan, Apr. 30, 1982, 57-71498; Apr. 30, 1982, 57-71499; Apr. 30, 1982, 57-71500

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—48 **8 Claims**



1. In a pattern discriminator which receives scanning data obtained by scanning objects within defined window regions with a photoelectric converter of the two-dimensional scanning type, and having means for converting the scanned data into pixel binary data representing characteristics of the objects scanned by using a threshold value, and having means for evaluating the binary data in accordance with predetermined criteria and for producing an output signal indicative of said evaluation, the improvement comprising means for obtaining data which defines polygonal window regions within which scanning data is obtained, comprising:

data input means for inputting apex data representing the location of the pixels at the apexes of at least one window polygon representing at least one desired window region;

computing means for computing coordinate data representing the coordinates of each pixel on the polygon perimeter lines connecting adjacent apexes by taking the coordinates of sequentially inputted apex data as adjacent apexes of the window polygon; and

memory means for storing the apex and coordinate data as starting and ending pixels of each polygonal window region on each scanning line of said scanning.

4,566,127

COMPLEX SYSTEM HAVING THE FUNCTIONS OF OPTICAL CHARACTER READER AND FACSIMILE

Kunihiko Sekiya, Yokohama; Kunio Sakai, Urayasu; Shoichi Hirai, Yokohama; Shigeru Miyao, and Masatoshi Fukuda, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 30, 1982, Ser. No. 413,161

Claims priority, application Japan, Oct. 9, 1981, 56-160268

Int. Cl.⁴ G06K *9/00;* **G06F** *3/14*

U.S. Cl. 382—56 **1 Claim**

1. A system having an optical character reader function, a facsimile function, and an image editing function, comprising:

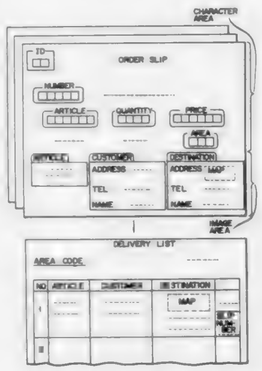
scanning means for optically scanning documents to produce electrical signals indicative of character-image information on the documents, said documents including a document of a first predetermined format having a character area in which character groups each having a predetermined attribute are disposed in predetermined first locations of the document, and an image area in which images each having a predetermined attribute are disposed in predetermined second locations of the document, the document of said first format having a detecting character group in a predetermined location of the character area which is adapted to detect whether or not the document is of the first format;

communication control means for effecting communication of the character-image information on the documents including the document of the first format with external devices through facsimile communication lines;

character recognition means connected to receive the character information from said scanning means and said communication control means for recognizing characters on the character area of the document of the first format to produce character code information;

character-image file means for storing character information, obtained from said scanning means and said communication control means, of the characters in the character area and the image information in the image area of the document of the first format, in predetermined locations thereof, said character-image file means comprising a buffer region adapted for temporarily storing the character-image information from said scanning means and said communication control means, an image region adapted for storing the image information on the image area of the document of the first format, and a character code region adapted for storing the character code information on the character area of the document of the first format from said character recognition means;

processing mode designating means for designating processing modes to be performed, said processing modes including an editing mode in which the character-image information of the first format stored in said character image file means is rearranged according to a second format



different from the first format, and a printing mode in which the edited character-image information is printed out;

processor means responsive to the designation of a processing mode by said processing mode designating means for implementing the designated processing mode, said processor means including, when the editing mode is designated, means for receiving the character-image information from said character-image file means, means for causing said recognizing means to recognize said detecting character group of the character area to detect whether or not the document is of the first format, and, when the document is of the first format, to recognize the character groups on the remaining portion of the character area of the document; means for transferring the image information to said image region of said character-image file means and the character code information to said character code region of said character-image file means after said recognizing means has recognized the character information in the character area of the document when the document is of the first format;

means for receiving the character code information corresponding to recognized characters and the image information on the document of the first format stored in said character-image file means, and for arranging the character code information and the image information of the

document of the first format according to the second format; and

printing means responsive to the designation of the printing mode by said processing mode designating means and an instruction thereto from said processor means for printing the edited character image information from said processor means on a sheet of the second format.

4,566,128

METHOD FOR DATA COMPRESSION FOR TWO-VALUE PICTURE IMAGE

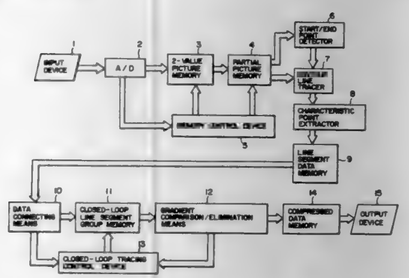
Shuichi Araki, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Jul. 18, 1983, Ser. No. 514,674

Claims priority, application Japan, Sep. 13, 1982, 57-159225

Int. Cl.⁴ G06K *9/48*

U.S. Cl. 382—56 **3 Claims**



1. Method for data compression for two-value picture image, characterized by the steps of:

dividing an original picture image into a plurality of partial picture images;

determining a start point and an end point of each contour line found in each of the partial picture images by finding the intersections between the contour line and the lines dividing the original picture image into the partial picture images;

detecting characteristic points in each contour line by tracing the contour line in each of the partial picture images from the corresponding start point and end point;

extracting those start points and end points which connect to those in the neighboring partial picture images and the characteristic points as necessary coordinate points for determining a group of closed-loop line segments as an aggregate of the contour lines; and

further compressing the data of the original picture image by removing any redundant coordinate point data through comparison of the gradients of the closed-loop line segments for each neighboring coordinate point pairs on the particular contour line.

4,566,129

RESEALABLE BAG AND TAMPER PROOF SEALING RING

Douglas D. McNamee, 8804 Bluff La., Fair Oaks, Calif. 95628

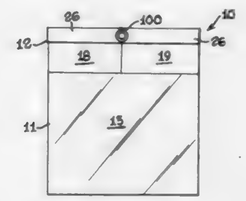
Filed Dec. 21, 1983, Ser. No. 563,725

Int. Cl.⁴ B65D *33/14*

U.S. Cl. 383—5 **1 Claim**

1. A tamper proof sealing element for use in conjunction with a bag assembly, wherein the bag assembly comprises front and rear bag panels secured together by a closure element, and having an aperture extending through the closure element and at least one of said front and rear bag panels, wherein the tamper proof sealing element comprises;

an elongated spirally wound strip extending through said suspension aperture and secured in a generally circular



fashion to both the front and rear faces of the bag assembly.

4,566,130

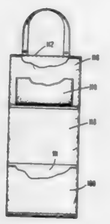
COMBINATION CARRYING BAG FOR INFANT ACCESSORIES AND DIAPERING STATION

Fredrica Coates, 1608 Dublin Rd., Charlottesville, Va. 22903

Continuation-in-part of Ser. No. 465,371, Feb. 10, 1983. This application Apr. 7, 1983, Ser. No. 482,722

Int. Cl.⁴ A45C *9/00;* **A45F** *4/06*

U.S. Cl. 383—15 **17 Claims**



1. A bag for carrying diapers and other paraphernalia, comprising a middle section and first and second end sections having approximately the same size, fold lines being established between adjacent sections to enable the end sections, in a folded position, to fold inwardly, one over the other, onto the middle section, a first pocket being provided on an inner surface of the first end section and having a side opened toward the middle section to retain diapers, a handle means formed of at least one continuous strap having at least one side secured to said bag, and means for releasably securing the bag in the folded position, wherein said handle means includes a first handle loop having ends secured to a free edge of said second end section, a U-shaped fold formed in the outer surface of the bag along the fold line between said first end section and said middle section; a second handle loop secured to said fold, and said releasably securing fastener means includes means on said handle loops to releasably secure together said loops.

4,566,131

VALVED BAG

Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 625,213

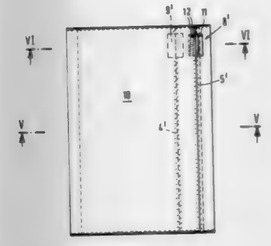
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323587

Int. Cl.⁴ B65D *30/29*

U.S. Cl. 383—44 **6 Claims**

1. A valved bag comprising a section of a plastic film web, in which side portions of the plastic film web have been infolded to overlap each other and in which the film web has been provided with transverse top and bottom seams, and in an overlap area of the side portions has been provided with two

spaced apart parallel longitudinal seams, which join only said side portions, the longitudinal seams comprising portions of respective strips of adhesive extending essentially between the transverse seams of the film web and in contact with both side portions of the film web at respective edges of the overlap area of the side portions, with at least a part of one of said side portions being provided with a slip of material which includes an adhesive bond-inhibiting leg portion and which is joined by



means of a pressure-sensitive adhesive to the one side portion, with the leg portion of said slip of material extending across adjacent adhesive and protruding to the outside of the bag from the area in which the side portions of the film web overlap, such that the slip of material precludes the part of the one side portion and an opposed part of the other side portion from being joined by the adjacent adhesive and thereby defines at least a portion of a filling passage for the bag.

4,566,132

MULTIFUNCTION ULTRA-HIGH FREQUENCY CIRCUIT AND MEANS USING SUCH A CIRCUIT

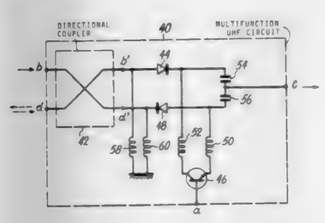
Sylvain Meyer, 36 Résidence duroux, 22300 Lannion; Michel Goloubkoff, Penvern, 22560 Pleumeur Bodou, and Jean Guéna, 30 Cité Morgane, 22560 Trébeurden, all of France

Filed Jan. 6, 1983, Ser. No. 456,091

Claims priority, application France, Jan. 8, 1982, 82 00194

Int. Cl.⁴ H04B *1/40*

U.S. Cl. 455—86 **6 Claims**



1. A multifunction ultra-high frequency circuit, wherein it comprises:

a 3 dB directional coupler having a first access (b), a second access (d), a third access (b') and a fourth access (d');

a branch having in series a first diode, a transistor and a second diode, the transistor having a base connected to a fifth access (a) for controlling its conductive or blocking state, an emitter connected to a first rejection inductor to one of the diodes and a collector connected via a second rejection inductor to the other diode, said branch being connected between the third and fourth accesses of the coupler and having impedances equal to a matching value when the transistor is in the conductive state;

two lines having at least one quarter-wave element connecting the earth to the two diodes;

a sixth access (c) connected to the two diodes between two capacitors.

4,566,133

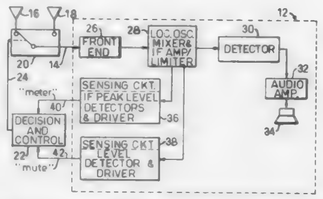
SWITCHED DIVERSITY METHOD AND APPARATUS FOR FM RECEIVERS

William R. Rambo, Stanford, Calif., assignor to Commtech International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 453,470, Dec. 27, 1982, Pat. No. 4,499,606. This application Feb. 13, 1984, Ser. No. 579,786

Int. Cl.⁴ H04B *7/08*

U.S. Cl. 455—277 **37 Claims**



1. In an FM diversity receiver system having at least two antennas, antenna switching means for switching the receiver system from one antenna to the other, sensing means for producing a fade control signal related to the amplitude of the received FM signal, multipath disturbances in the received signal such as frequency selective fading and non-multipath disturbances such as received electrical noise impulses, including ignition noise signals, being manifested in said fade control signal, decision and control means responsive to the fade control signal from said sensing means for producing an antenna switching signal for control of said switching means, the improvement wherein said decision and control means comprises,

means for establishing a threshold voltage, and

means for comparing the threshold voltage to the magnitude of disturbances manifested in the fade control signal and for momentarily disabling antenna switching operation for a time period when the disturbances manifested in the fade control signal initially exceeds the threshold voltage to prevent antenna switching in response to short duration disturbances produced by electrical noise impulses, including ignition noise signals.

4,566,134

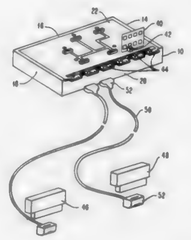
CIRCUIT FOR INTERFACING REMOTE FUNCTIONAL UNITS TO A TERMINAL

Edward E. Harbour; Robert C. Lynch, both of Cary, and George R. Stilwell, Jr., Raleigh, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 456,071, Jan. 6, 1983, abandoned. This application Dec. 7, 1984, Ser. No. 679,526

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—607 **16 Claims**



1. In a terminal device having one or more integrated functional units which communicate with each other by means of optical signals propagated through a closed chamber, a circuit for interfacing one or more remote functional units to the chamber where each of the remote functional units is connected to the terminal device through a signal carrying cable, said interfacing circuit being characterized by:

(a) an optoelectronic transducer having a single detector responsive to optical energy extent in the chamber for generating representative signals and a single emitter for converting signals from the remote functional units to an optical format suitable for injection into the chamber;

(b) a plurality of signal producing elements, each located at the terminal end of one of the signal-carrying cables;

(c) signal conducting means connected to the detector and to said plurality of signal producing elements for conducting the representative signals to each of the signal producing elements; and

(d) means being responsive to the signals received through any of the cables from the remote functional units and operable for logically combining said received signals to provide a single drive signal for enabling the single emitter in said optoelectronic transducer.

4,566,135

PRESSURE TRANSDUCER

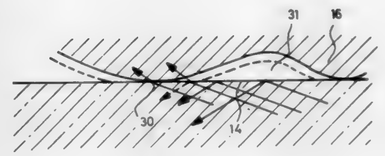
Dieter W. Schmidt, Steinbreite 16a, Goettingen, Fed. Rep. of Germany

Filed Dec. 21, 1983, Ser. No. 564,096

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247843

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—614 **10 Claims**



1. A pressure transducer comprising:

(a) a base body having a plane surface and consisting of a material which is transparent for optical radiation;

(b) a diaphragm positioned to contact said plane surface at a plurality of spaced regions, the area of which being variable by pressure variations applied to said diaphragm;

(c) means for coupling optical radiation into said base body so that said radiation impinges on said plane surface and undergoes total reflection at portions of said surface not contacted by said diaphragm;

(d) means for deriving an output signal in response to a variation of total reflection of said radiation caused by said variation of the area of said regions of contact between said base body surface and said diaphragm.

DESIGN PATENTS

GRANTED JAN. 21, 1986

ERRATA

For CLASS	See PATENT NO.
D21–121	282,218

282,212
TROUSERS
Rita Langmyr, P.O. Box 12061, S-250 12 Helsingborg, Sweden
Filed Sep. 8, 1983, Ser. No. 530,223
Claims priority, application Sweden, Mar. 15, 1983, 83-0745
Term of patent 14 years
U.S. Cl. D2—28



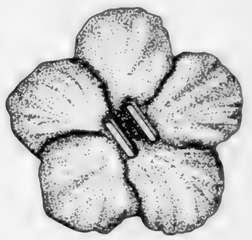
282,213
PENGUIN BOOT
Peter Valori, London, England, assignor to Button Fronts (London) Limited, London, England
Filed Dec. 12, 1983, Ser. No. 560,160
Claims priority, application United Kingdom, Jun. 10, 1983, 1013498
Term of patent 14 years
U.S. Cl. D2—273



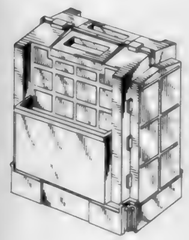
282,214
BOOT
Peter Valori, London, England, assignor to Button Fronts Ltd., London, England
Filed Aug. 26, 1983, Ser. No. 526,872
Claims priority, application United Kingdom, Mar. 1, 1983, 83-1011707
Term of patent 14 years
U.S. Cl. D2—273



282,215
BELT BUCKLE
Ellen F. Foreman, Rte. 6, Box 301-B, Andalusia, Ala. 36420
Filed Oct. 3, 1983, Ser. No. 538,483
Term of patent 14 years
U.S. Cl. D2—431



282,216
SEWING BOX
John S. Doyel, 404 W. 20th St., New York, N.Y. 10016
Filed Apr. 25, 1983, Ser. No. 488,164
Term of patent 14 years
U.S. Cl. D3—20

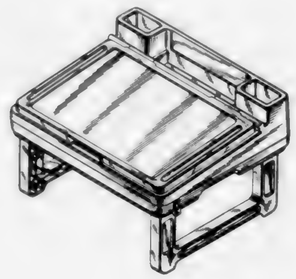


282,217
BEAUTY CASE
André Seynhaeve, Senlis, France, assignor to Ste Delsey, Bobigny, France
Filed Apr. 28, 1983, Ser. No. 489,437
Claims priority, application France, Nov. 17, 1982, 823,966
Term of patent 14 years
U.S. Cl. D3—39





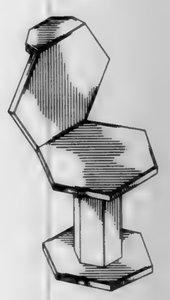
282,218
BLACKBOARD DESK TOY
Pietro Catelli, Como, Italy, assignor to Artsana S.p.A., Italy
Filed Jul. 28, 1983, Ser. No. 518,149
Term of patent 14 years
U.S. Cl. D21—121



282,219
CYCLE SEAT OR SIMILAR ARTICLE
Charles Persons, Huron, Ohio, assignor to Persons-Majestic Manufacturing Company, Monroeville, Ohio
Filed Apr. 25, 1983, Ser. No. 488,054
Term of patent 14 years
U.S. Cl. D6—354



282,220
CHAIR
Angelo J. Ianuzzi, 7070 N. 59th Pl., Paradise Valley, Ariz. 85253
Filed Aug. 19, 1983, Ser. No. 524,763
Term of patent 14 years
U.S. Cl. D6—365



282,221
HIGH BACK DESK CHAIR
Warren Platner, Foote's Bridge Rd., Guilford, Conn. 06437
Filed Jan. 3, 1983, Ser. No. 455,229
The portion of the term of this patent subsequent to Oct. 1, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



282,222
DESK CHAIR
Warren Platner, Foote's Bridge Rd., Guilford, Conn. 06437
Filed Jan. 3, 1983, Ser. No. 455,231
The portion of the term of this patent subsequent to Oct. 1, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



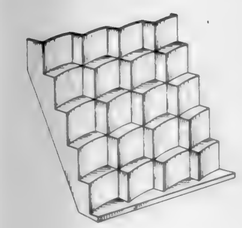
282,223
CHAIR
Yaun H. Lee, 28-14 Youngdabdon, Sungdong-Ku, Seoul, Rep. of Korea
Filed Jun. 23, 1983, Ser. No. 492,187
Claims priority, application Rep. of Korea, Jul. 8, 1982, 6104/1982
Term of patent 14 years
U.S. Cl. D6—368



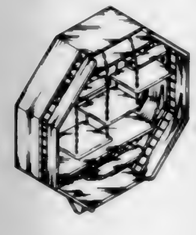
282,224
CHAIR
Johan Huldt, Stockholm, Sweden, assignor to Johan Huldt Design AB, Stockholm, Sweden
Filed Oct. 22, 1982, Ser. No. 435,954
Claims priority, application Sweden, Apr. 29, 1982, 82-1119
Term of patent 14 years
U.S. Cl. D6—375



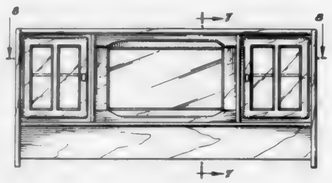
282,225
MAGAZINE DISPLAY RACK
Hal D. Sandy, 4937 Glendale Rd., Shawnee Mission, Kans. 66205
Filed Dec. 12, 1983, Ser. No. 559,638
Term of patent 14 years
U.S. Cl. D6—474



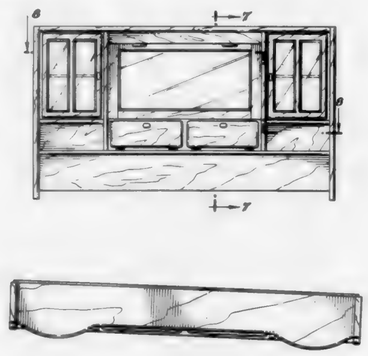
282,226
ENTERTAINMENT CENTER
Vincent A. Branciforti, 2312 Artic Ave., Atlantic City, N.J. 08401
Filed Aug. 10, 1983, Ser. No. 521,888
Term of patent 14 years
U.S. Cl. D6—474



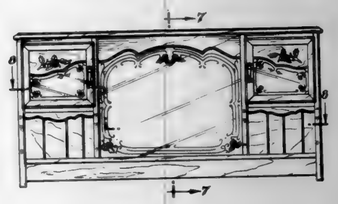
282,227
HEADBOARD
Vincent P. Scully, Los Angeles, and Leon E. Waxman, Sherman Oaks, both of Calif., assignors to Water & Wood Mfg., Gardena, Calif.
Filed Sep. 27, 1983, Ser. No. 536,184
Term of patent 14 years
U.S. Cl. D6—505



282,228
HEADBOARD
Vincent P. Scully, Los Angeles, and Leon E. Waxman, Sherman Oaks, both of Calif., assignors to Water & Wood Mfg., Gardena, Calif.
Filed Sep. 27, 1983, Ser. No. 536,186
Term of patent 14 years
U.S. Cl. D6—505



282,229
HEADBOARD
Vincent P. Scully, Los Angeles, and Leon E. Waxman, Sherman Oaks, both of Calif., assignors to Water & Wood Mfg., Gardena, Calif.
Filed Sep. 27, 1983, Ser. No. 536,187
Term of patent 14 years
U.S. Cl. D6—505

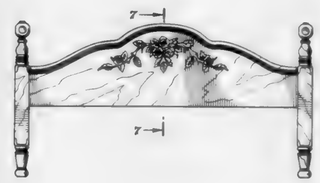




282,230
HEADBOARD
Vincent P. Scully, Los Angeles, and Leon E. Waxman, Sherman Oaks, both of Calif., assignors to Water & Wood Mfg., Gardena, Calif.
Filed Sep. 27, 1983, Ser. No. 536,248
Term of patent 14 years
U.S. Cl. D6—505



282,231
HEADBOARD
Vincent P. Scully, Los Angeles, and Leon E. Waxman, Sherman Oaks, both of Calif., assignors to Water & Wood Mfg., Gardena, Calif.
Filed Sep. 27, 1983, Ser. No. 536,188
Term of patent 14 years
U.S. Cl. D6—506



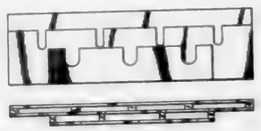
282,232
TUMBLER
Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J. 07446
Filed Jun. 22, 1983, Ser. No. 506,808
Term of patent 14 years
U.S. Cl. D7—6



282,233
COMBINED FOOD ORGANIZER AND SERVING TRAY
Thomas P. Kelley, 11434 W. Pico Blvd., West Los Angeles, Calif. 90064
Filed Jul. 7, 1983, Ser. No. 511,737
Term of patent 14 years
U.S. Cl. D7—27

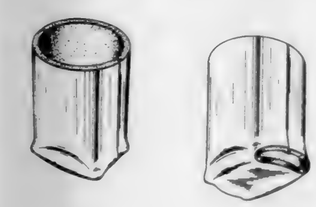


282,235
STORAGE RACK FOR FOOD PROCESSOR BLADES
Edward A. Pendleton, 10 Ipswich Ave., Great Neck, N.Y. 11021
Filed Feb. 18, 1983, Ser. No. 467,964
Term of patent 14 years
U.S. Cl. D7—74

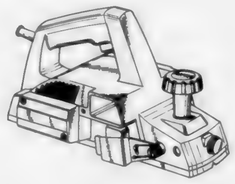




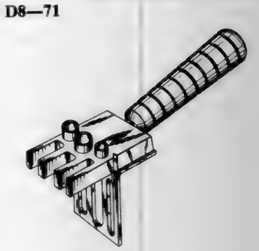
282,234
BEVERAGE INSULATOR
Scott R. Henderson, 5025 Eagle Pass, Plano, Tex. 75023
Filed Dec. 1, 1983, Ser. No. 557,222
Term of patent 14 years
U.S. Cl. D7—70



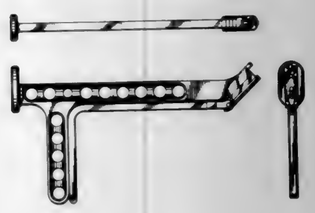
282,236
ELECTRIC PLANE
Takeshi Shohoji, Chiba, and Yutaka Kanamaru, Kanagawa, both of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Sep. 29, 1983, Ser. No. 537,240
Claims priority, application Japan, Apr. 5, 1983, 58-14549
Term of patent 14 years
U.S. Cl. D8—61



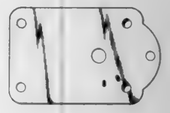
282,237
DOWEL JIG
Joseph H. Warburg, Monsey, N.Y., assignor to Arco Products Corp., Englewood, N.J.
Filed Sep. 1, 1983, Ser. No. 528,707
Term of patent 14 years
U.S. Cl. D8—71



282,238
RASP HANDLE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Apr. 15, 1983, Ser. No. 485,369
Term of patent 14 years
U.S. Cl. D8—94

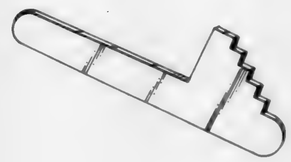


282,239
COMBINED CASE AND COVER FOR A QUICK MOUNT COMBINATION LOCK
Joseph M. Remenicky, Nicholasville, Ky., assignor to Sargent & Greenleaf, Inc., Nicholasville, Ky.
Filed May 13, 1983, Ser. No. 494,418
Term of patent 14 years
U.S. Cl. D8—330

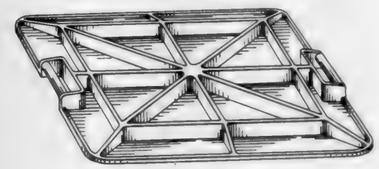




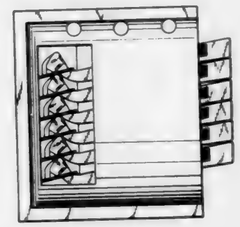
282,240
GASOLINE PUMP LEVER HOLDER
Luther G. Gilford, 16694 Turner, Detroit, Mich. 48221
Filed Oct. 14, 1983, Ser. No. 541,869
Term of patent 14 years
U.S. Cl. D8—349



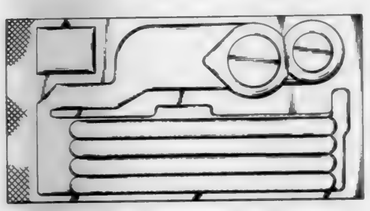
282,241
OUTRIGGER PAD
Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182
Filed Jan. 28, 1983, Ser. No. 461,695
Term of patent 14 years
U.S. Cl. D8—373



282,242
DISPOSABLE RAZOR PACKAGE
Donald Thorpe, Madison, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 16, 1983, Ser. No. 494,816
Term of patent 14 years
U.S. Cl. D9—337



282,243
GAS PRODUCING AND INDICATING PACKAGE
Edwin W. Mason, Wyckoff, N.J., assignor to Mason-Keller Corporation, Roseland, N.J.
Filed Mar. 15, 1983, Ser. No. 475,614
Term of patent 14 years
U.S. Cl. D9—345



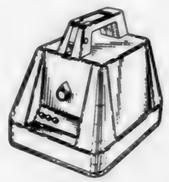
282,244
LIQUID CONTAINER
Carl V. Santoiemmo, Gates Mills, Ohio, assignor to Norcarl Products, Inc., Gates Mills, Ohio
Filed Aug. 3, 1983, Ser. No. 520,121
Term of patent 14 years
U.S. Cl. D9—367



282,245
FOOD CONTAINER
Yat K. Yeung, Los Angeles, Calif., assignor to Sunlux Best Group, USA, Inc., Los Angeles, Calif.
Filed Jun. 20, 1983, Ser. No. 505,924
Term of patent 14 years
U.S. Cl. D9—425



282,246
PORTABLE TRANSMITTER UNIT FOR A METALLIC OBJECT DETECTOR
Richard C. Thomas, Cramlington, and David J. Daniels, Pontefland, both of England, assignors to British Gas Corporation, London, England
Filed Jul. 19, 1983, Ser. No. 515,159
Claims priority, application United Kingdom, Jan. 21, 1983, 1010940
Term of patent 14 years
U.S. Cl. D10—47



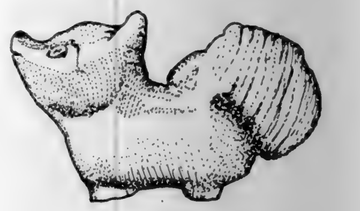
282,247
FLUID LEVEL MONITOR
Mark A. Faris; John A. Miller, and H. Kent Wainwright, all of Laramie, Wyo., assignors to In-Situ, Inc., Laramie, Wyo.
Filed May 9, 1983, Ser. No. 492,570
Term of patent 14 years
U.S. Cl. D10—101



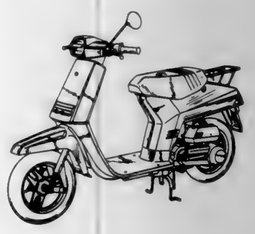
282,248
FIGURINE OF A BABY GIRAFFE
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Jan. 17, 1983, Ser. No. 458,293
Term of patent 14 years
U.S. Cl. D11—158



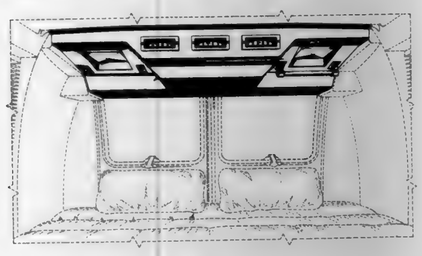
282,249
FIGURINE OF A BABY FOX
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Sep. 15, 1983, Ser. No. 532,400
Term of patent 14 years
U.S. Cl. D11—158



282,250
MOTORCYCLE
Kentaro Ito, Tokyo; Shoichi Kuwahata, and Munehito Nakamura, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 7, 1983, Ser. No. 464,719
Claims priority, application Japan, Aug. 10, 1982, 57-36234
Term of patent 14 years
U.S. Cl. D12—110



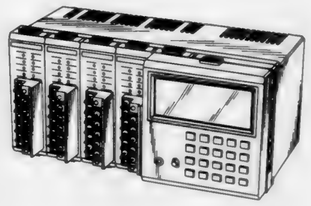
282,251
CONSOLE FOR VAN CONVERSION
Robert O. Isham, Decatur, and Wayne S. Reese, Richland Hills, both of Tex., assignors to TRA-TECH Corporation, Fort Worth, Tex.
Filed Mar. 7, 1983, Ser. No. 472,967
Term of patent 14 years
U.S. Cl. D12—155



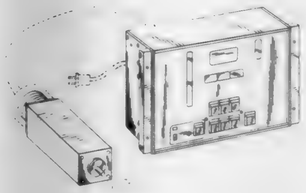
282,252
GENERATOR
Hiroshi Yamaguchi, Omiya; Yukinori Ito, Kawagoe, and Mitsuhiko Shibata, Kasukabe, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 22, 1983, Ser. No. 524,946
Claims priority, application Japan, Feb. 23, 1983, 58-7457
Term of patent 14 years
U.S. Cl. D13—2



282,253
PROGRAMABLE CONTROLLER
Norio Shimizu, and Yuichi Watanabe, both of Tokyo, Japan, assignors to Koyo Electronics Industries Co., Ltd., Tokyo, Japan
Filed Feb. 10, 1983, Ser. No. 465,414
Claims priority, application Japan, Sep. 9, 1982, 57-41248; Sep. 9, 1982, 57-41249
Term of patent 14 years
U.S. Cl. D13—12



282,254
PROGRAMMABLE LIMIT SWITCH UNIT
Peter G. Serev, Woodbury, and Roger M. Bogin, Washington Depot, both of Conn., assignors to C & A Products, Inc., Washington Depot, Conn.
Filed Nov. 9, 1982, Ser. No. 440,284
Term of patent 14 years
U.S. Cl. D13—35

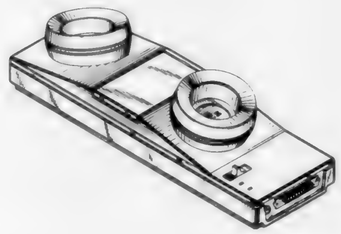


282,255
LOUDSPEAKER ENCLOSURE
Robert Ross, San Francisco, Calif., assignor to Meyer Sound Laboratories, Inc., Berkeley, Calif.
Filed Sep. 16, 1982, Ser. No. 418,733
Term of patent 14 years
U.S. Cl. D14—33

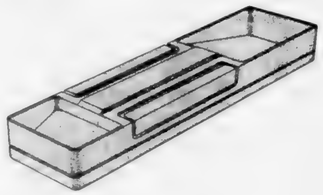


282,256
ACOUSTICALLY COUPLED MODEM
Masahiko Mizuno, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan
Filed Aug. 19, 1983, Ser. No. 524,620
Claims priority, application Japan, Feb. 24, 1983, 58-7314
Term of patent 14 years
U.S. Cl. D14—57

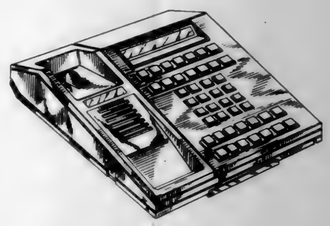




282,257
TELEPHONE STAND
Cristian J. Felix, Flushing, N.Y.; Donald M. Genaro, Haworth; Carl W. Gomes, II, Ocean, both of N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Information Systems, Holmdel, N.J.
Filed May 17, 1985, Ser. No. 735,892
Term of patent 14 years
U.S. Cl. D14—60

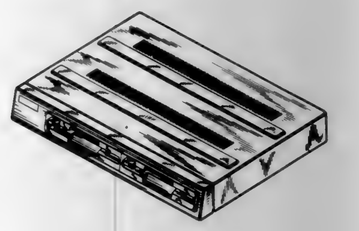


282,258
BASE FOR A TELEPHONE SET
Wilbert C. Brown, Fairfield, Conn., assignor to TIE/Communications, Inc., Shelton, Conn.
Filed Jul. 18, 1983, Ser. No. 514,839
Term of patent 14 years
U.S. Cl. D14—62

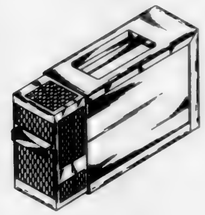




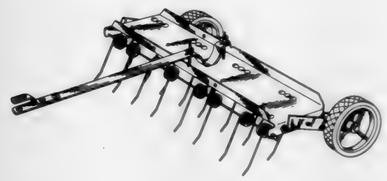
282,259
COMPUTER DISC DRIVE
Chiaki Kuroiwa, and Masahiko Mizuno, both of Shiojiri, Japan, assignors to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan
Filed Aug. 19, 1983, Ser. No. 524,619
Claims priority, application Japan, Feb. 24, 1983, 58-7315
Term of patent 14 years
U.S. Cl. D14—109



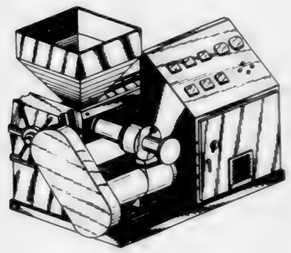
282,260
HOUSING FOR COMPUTER MODULE
Richard E. Carlson, New Hope, Minn., and Michael E. McCadden, Centuria, Wis., assignors to Zycad Corporation, Arden Hills, Minn.
Filed Feb. 14, 1983, Ser. No. 466,307
Term of patent 14 years
U.S. Cl. D14—114



282,261
TRAILING DETHATCHER
Charles W. Doering, Louisville, Ky., assignor to Brinly-Hardy Co., Inc., Louisville, Ky.
Filed Dec. 13, 1983, Ser. No. 560,982
Term of patent 14 years
U.S. Cl. D15—27



282,262
THERMOPLASTIC MATERIAL EXTRUDER
Dario J. Ramazzotti, Sandy Springs, Ga., assignor to Nordson Corporation, Amherst, Ohio
Filed Feb. 22, 1983, Ser. No. 468,738
Term of patent 14 years
U.S. Cl. D15—145



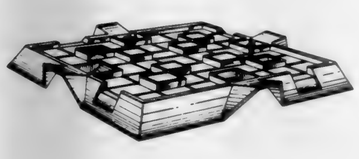
282,263
MUSIC BOX
Chong T. Ahn, P.O. Box 3194, San Leandro, Calif. 94578
Filed Nov. 7, 1983, Ser. No. 548,914
Term of patent 14 years
U.S. Cl. D17—24



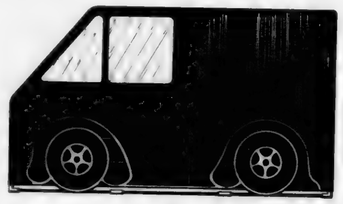
282,264
CUTTING GUIDE FOR REPLACEMENT OF MODEL RAILROAD COUPLERS
James A. Wiese, 1309 Mississippi Blvd. P.O. Box 737, Bettendorf, Iowa 52722
Filed Jun. 16, 1983, Ser. No. 504,816
Term of patent 14 years
U.S. Cl. D19—37



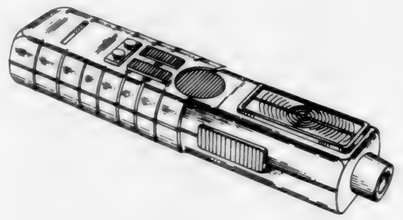
282,265
GAMEBOARD
Joseph F. Hyland, Nokomis, Fla.; Wayne J. Yee, Springfield, Mass., and Louis W. Wurmnest, South Windsor, Conn., assignors to Milton Bradley International, Inc., Springfield, Mass.
Filed Jan. 24, 1983, Ser. No. 460,199
Term of patent 14 years
U.S. Cl. D21—17



282,266
TOY PLAY VAN
Lawrence D. Richards, Huntington Station, N.Y., assignor to Arco Industries Ltd., Kowloon, Hong Kong
Filed May 20, 1983, Ser. No. 496,481
Term of patent 14 years
U.S. Cl. D21—115



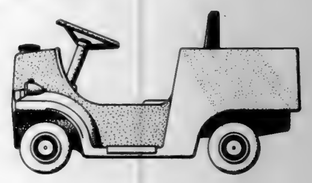
282,267
TOY ELECTRIC TOOTHBRUSH HOLDER
Patrick J. Coyne, Cleveland Heights, Ohio, assignor to Meritus Industries, Inc., Fairfield, N.J.
Filed May 19, 1983, Ser. No. 496,238
Term of patent 14 years
U.S. Cl. D21—122



282,268
TOY TOOTHPASTE DISPENSER
Patrick J. Coyne, Cleveland Heights, Ohio, assignor to Meritus Industries, Inc., Fairfield, N.J.
Filed May 19, 1983, Ser. No. 496,253
Term of patent 14 years
U.S. Cl. D21—122



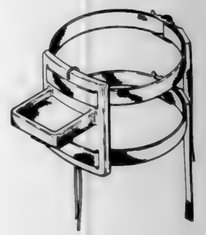
282,269
TOY VEHICLE
James F. Mariol, 481 Dean View Dr., Cincinnati, Ohio 45224
Filed Jun. 29, 1983, Ser. No. 508,920
Term of patent 14 years
U.S. Cl. D21—137



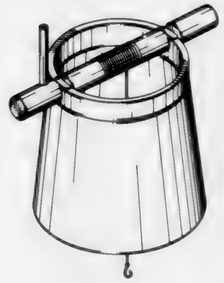
282,270
PUTTER HEAD
Kenneth W. Burgess, Macclesfield, England, assignor to The E.C.K. Manufacturing Co., Ltd., United Kingdom
Filed Dec. 15, 1983, Ser. No. 561,526
Claims priority, application United Kingdom, Jun. 17, 1983, 1013630; Nov. 30, 1983, 1016631
Term of patent 14 years
U.S. Cl. D21—217



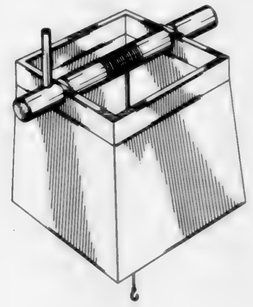
282,271
ARCHER'S THIGH-FASTENED BOW SUPPORT
Dale Morrell, P.O. Box 233, Dyer, Ark. 72935
Filed Aug. 15, 1983, Ser. No. 523,166
Term of patent 14 years
U.S. Cl. D22—13



282,272
CONICALLY SHAPED ICE FISHING BOX HAVING AN INDICATOR MOUNTED ON A REMOVABLE REEL ASSEMBLY
Alvin H. Eli, R.R. 1100, Great Falls, Mont. 59401
Filed Apr. 20, 1983, Ser. No. 486,562
Term of patent 14 years
U.S. Cl. D22—22



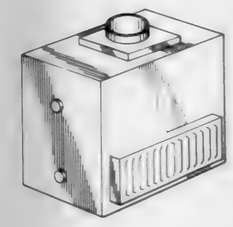
282,273
ICE FISHING BOX HAVING AN INDICATOR MOUNTED ON A REMOVABLE REEL ASSEMBLY
Alvin H. Eli, R.R. 1100, Great Falls, Mont. 59401
Filed Apr. 20, 1983, Ser. No. 486,570
Term of patent 14 years
U.S. Cl. D22—22



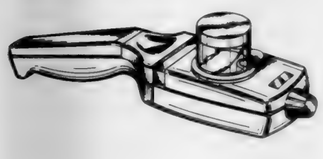
282,274
SPRAY GUN CASING
Arthur N. Buroff, Rahway, N.J., assignor to Spray-All, Inc., Millburn, N.J.
Filed Aug. 15, 1983, Ser. No. 523,332
Term of patent 14 years
U.S. Cl. D23—18



282,275
WASTE HEAT RECOVERY DEVICE
Edwin A. Price, 16001 E. 11th Ave., Aurora, Colo. 80011
Filed Aug. 20, 1982, Ser. No. 409,886
Term of patent 14 years
U.S. Cl. D23—136



282,276
AMALGAM DISPENSER
Peter A. Basile, Hudson, Ohio, assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Feb. 4, 1983, Ser. No. 463,769
Term of patent 14 years
U.S. Cl. D24—10



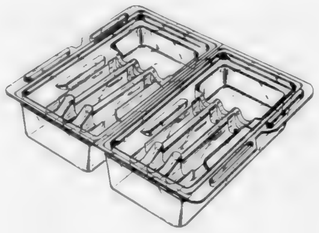
282,277
GUIDE FOR FEMORAL NECK OSTEOTOMY
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Apr. 15, 1983, Ser. No. 485,536
Term of patent 14 years
U.S. Cl. D24—26



282,278
CULTURE SPREADER
Maurice Asa, 1287 66th St., Emeryville, Calif. 94608
Filed Sep. 27, 1983, Ser. No. 536,945
Term of patent 14 years
U.S. Cl. D24—29



282,279
HINGED CONTAINER WITH COMPONENT INSERTS
Robert D. Holewinski, Lakehurst; Leslie Hamilton, Trenton, and William J. Blatherwick, Hamilton Square, all of N.J., assignors to Johnson & Johnson Dental Products Co., East Windsor, N.J.
Filed Jan. 26, 1983, Ser. No. 460,974
Term of patent 14 years
U.S. Cl. D24—31



282,280
HINGED CONTAINER WITH COMPONENT INSERTS
Robert D. Holewinski, Lakehurst; Leslie Hamilton, Trenton, and William J. Blatherwick, Hamilton Square, all of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Jan. 26, 1983, Ser. No. 460,976
Term of patent 14 years
U.S. Cl. D24—31



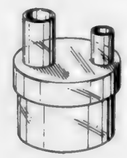
282,281
CASE FOR SYRINGES
Raymond P. Nitzsche, Edison, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.
Filed Aug. 22, 1983, Ser. No. 525,524
Term of patent 14 years
U.S. Cl. D24—31



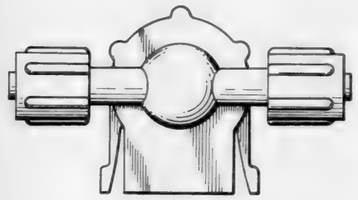
282,282
CARDIOTOMY RESERVOIR WITH FILTER
Milton P. Chernack, Hempstea.., N.Y., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.
Filed Jan. 10, 1983, Ser. No. 456,648
Term of patent 14 years
U.S. Cl. D24—51

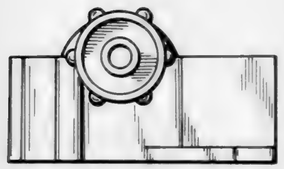


282,283
SENSOR LINE FITTING FOR A RESPIRATORY SYSTEM
James Weigl, 2241 Chicago Ave., Riverside, Calif. 92507, and Burrell E. Clawson, 823 W. 16th St., Newport Beach, Calif. 92663
Filed Apr. 23, 1982, Ser. No. 371,317
Term of patent 14 years
U.S. Cl. D24—53



282,284
TRANSDUCER HOUSING ASSEMBLY FOR MONITORING BLOOD PRESSURE AND THE LIKE
Kenneth R. McCord, Menlo Park; James K. Bullock, Burbank, and Henrick K. Gille, West Los Angeles, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Apr. 29, 1983, Ser. No. 489,927
Term of patent 14 years
U.S. Cl. D24—53

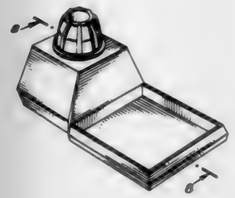




282,285
ASPIRATOR
Aldo Levy, 10, rue Vandrezanne, 75013 Paris, France
Filed Oct. 7, 1983, Ser. No. 540,150
Term of patent 14 years
U.S. Cl. D24—54



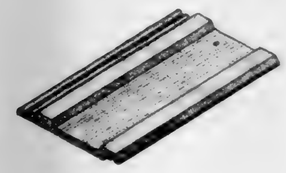
282,286
MEDICAL WASTE STATION WITH HYPODERMIC NEEDLE CUTTER
Richard F. Gianni, Danville, Calif., assignor to Biosafety Systems, Inc., San Diego, Calif.
Filed May 2, 1983, Ser. No. 490,872
Term of patent 14 years
U.S. Cl. D24—99



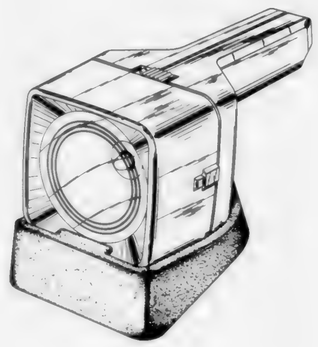
282,287
SHINGLE
David J. McKeagan, Basking Ridge, N.J., and Giuseppe Spinelli, St. Constant, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.
Filed Nov. 23, 1982, Ser. No. 443,909
Claims priority, application Canada, Mar. 8, 1982, 03-08-82-3
Term of patent 14 years
U.S. Cl. D25—80



282,288
ROOF TILE
Leon H. Bates, 2807 Vista Palomar, Fairfield, Calif. 94533
Filed Feb. 17, 1983, Ser. No. 467,363
Term of patent 14 years
U.S. Cl. D25—80



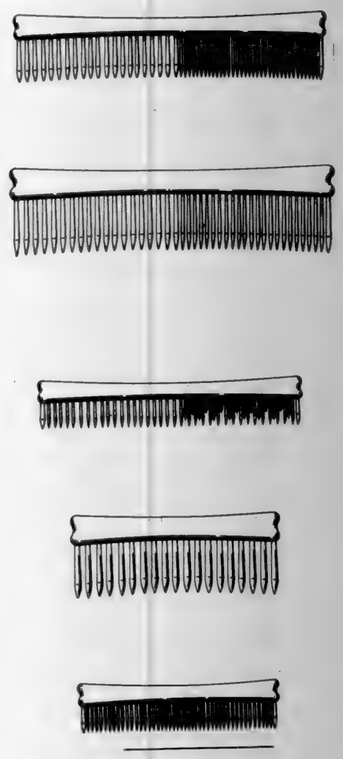
282,289
COMBINED RECHARGEABLE FLASHLIGHT AND RECHARGING STAND THEREFOR
Alain Verdier, Sainte-Foy-Les-Lyon, France, assignor to Black & Decker, Inc., Newark, Del.
Filed Jul. 26, 1983, Ser. No. 517,417
Claims priority, application France, Jan. 26, 1983, 830247
Term of patent 14 years
U.S. Cl. D26—46



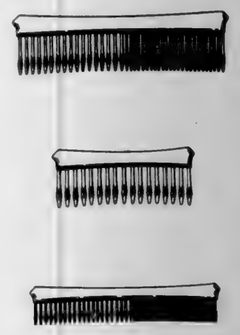
282,290
TABLE LAMP
Tobia Scarpa, Via Campagna 3, Trevignano (Treviso), Italy
Filed Mar. 17, 1983, Ser. No. 476,386
Claims priority, application Italy, Sep. 17, 1982, 7080/82[U]
Term of patent 14 years
U.S. Cl. D26—93



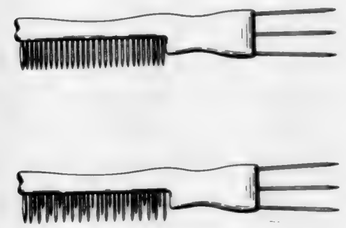
282,291
COMB
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,411
Term of patent 14 years
U.S. Cl. D28—21



282,292
COMB
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,414
Term of patent 14 years
U.S. Cl. D28—21



282,293
COMBINED COMB AND HAIR PICK
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,407
Term of patent 14 years
U.S. Cl. D28—25



282,294
COMBINED COMB AND HAIR PICK
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,408
Term of patent 14 years
U.S. Cl. D28—25



282,295
COMB
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,413
Term of patent 14 years
U.S. Cl. D28—29



282,296
HAIR COMB
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,409
Term of patent 14 years
U.S. Cl. D28—30



282,297
COMB
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,410
Term of patent 14 years
U.S. Cl. D28—30



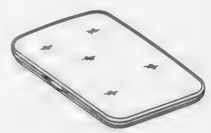
282,298
COMB
Aldo J. Mazzaferro, 71 Water St., Leominster, Mass. 01453
Filed Feb. 1, 1984, Ser. No. 575,875
Term of patent 14 years
U.S. Cl. D28—31



282,299
HAIR LIFT
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,402
Term of patent 14 years
U.S. Cl. D28—31



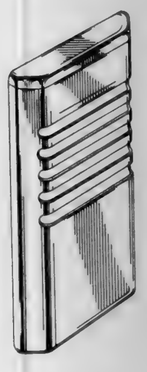
282,300
COSMETIC CASE
Dieter Bakic, Romerstr. 15, D-8000 Munchen 40, Fed. Rep. of Germany
Filed Nov. 3, 1983, Ser. No. 548,368
Claims priority, application Fed. Rep. of Germany, May 9, 1983, URA 542/83
The portion of the term of this patent subsequent to Apr. 2, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D28—83



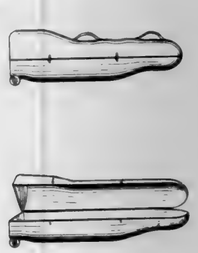
282,301
COSMETIC CONTAINER FOR LIPSTICK AND THE LIKE
Thomas F. Holloway, Southbury, Conn., assignor to Risdon Corporation, Naugatuck, Conn.
Filed Sep. 23, 1983, Ser. No. 535,381
Term of patent 14 years
U.S. Cl. D28—85



282,302
SWIMMING POOL SKIMMER
Arturo Reynoso, 27933 Oakmoor, Canyon Country, Calif. 91351, and Julian J. Groger, 25445 Via Alcira, Valencia, Calif. 91355
Filed Mar. 17, 1983, Ser. No. 476,196
Term of patent 14 years
U.S. Cl. D32—32



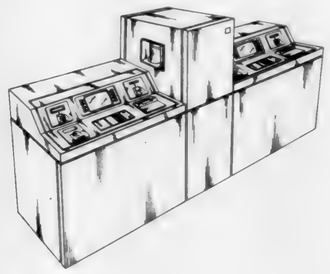
282,303
GOLF BAG CARRIER
Lutz Jessen, Hauptstrasse 11, 8130 Starnberg, Fed. Rep. of Germany
Filed Jan. 24, 1983, Ser. No. 460,279
Term of patent 14 years
U.S. Cl. D34—15



282,304
HYDRAULIC CYLINDER BOOM
William E. Bickley, P.O. Box 120841, Nashville, Tenn. 37212
Filed Apr. 29, 1983, Ser. No. 490,245
Term of patent 14 years
U.S. Cl. D34—36



282,305
AUTOMATIC TELLER MACHINE
Elizabeth A. Kusenberg, Charlotte, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 10, 1983, Ser. No. 550,678
Term of patent 14 years
U.S. Cl. D99—28

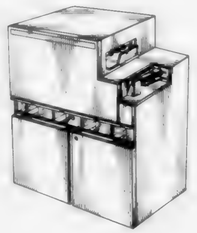


282,306
RELIGIOUS CHAPEL OR THE LIKE
John T. Torlone, 37 Orchard St., Englewood, Ohio 45322
Filed Aug. 23, 1982, Ser. No. 410,310
Term of patent 14 years
U.S. Cl. D99—25



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282,307
APPARATUS FOR SORTING AND COUNTING BANK NOTES
Yoshiaki Nishida, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Aug. 19, 1983, Ser. No. 524,597
Claims priority, application Japan, Mar. 8, 1983, 58-9258
Term of patent 14 years
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JANUARY, 1986

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-Lok Products, Inc.: *See—*
Ditcher, Jack, 4,565,347, Cl. 249-83.000.

A. Nattermann & Cie GmbH: *See—*
Lautenschlager, Hans-Heiner; Borbe, Harald; Prop, Gerrit; Wirtz-Peitz, Ferdinand; Doppelfeld, Ille-Stephanie; and Parnham, Michael J., 4,565,659, Cl. 260-925.000.

A. O. Smith Corporation: *See—*
Nickel, Herbert W., 4,565,356, Cl. 267-54.00R.

AB Carbogel: *See—*
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,565,549, Cl. 44-51.000.

AB Casco: *See—*
Mansson, Bjorn; Sirenius, Kurt; and Sundin, Birger, 4,565,662, Cl. 264-113.000.

Abbaschian, Gholamreza J., to University of Florida. Method for producing low density porous metals or hollow metallic spheres. 4,565,571, Cl. 75-0.50C.

Abbott, Scot D.; and Robertson, Charles W., Jr, to Du Pont de Nemours, E. I., and Company. Particle counting apparatus. 4,565,448, Cl. 356-336.000.

Abe, Hideo: *See—*
Tanaka, Masaru; and Abe, Hideo, 4,565,361, Cl. 271-10.000.

Abe, Tomoaki: *See—*
Ito, Katsunori; Akiyama, Susumu; Mizuno, Tiaki; Yamada, Toshitaka; and Abe, Tomoaki, 4,565,091, Cl. 73-118.000.

Aberg, Sven U. T.: *See—*
Reiner, Per L.; and Aberg, Sven U. T., 4,565,603, Cl. 162-123.000.

Abraham, Edward D. Foundry sand molding apparatus. 4,565,232, Cl. 164-181.000.

AccuSpray, Inc.: *See—*
Muck, Jack E., 4,565,488, Cl. 415-53.00R.

Achee, John D.; and Cuozzo, Anthony, to Torrington Company, The. Roller bearing. 4,565,458, Cl. 384-561.000.

Achelpohl, Fritz, to Windmoller & Holscher. Valved bag. 4,566,131, Cl. 383-44.000.

Acheson Industries, Inc.: *See—*
Heath, Allan B.; and Gossman, Richard C., 4,565,082, Cl. 72-45.000.

Acorn Box Company: *See—*
Oberst, Steven M., 4,565,465, Cl. 403-407.100.

Action Pact, Inc.: *See—*
Berkan, Ronald R., 4,565,323, Cl. 239-230.000.

Acumeter Laboratories, Inc.: *See—*
McIntyre, Frederic S., 4,565,217, Cl. 137-625.500.

Adams Plastics, Inc.: *See—*
Simpson, Roy G., 4,565,055, Cl. 54-24.000.

Adamski, John S.: *See—*
Pirmantgen, Robert E.; Adamski, John S.; and Devens, Mark F., 4,565,190, Cl. 128-80.00C.

Adell, Robert, to U.S. Product Development Company. Edge guard. 4,565,032, Cl. 49-462.000.

ADIR: *See—*
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,565,819, Cl. 514-307.000.

Adolf Illig Maschinenbau GmbH & Co.: *See—*
Kiefer, Gunther, 4,565,513, Cl. 425-289.000.

Adolph Coors Company: *See—*
Schultz, Robert H., 4,565,713, Cl. 427-54.100.

Advance Transformer Co.: *See—*
Feinberg, Albert E., 4,565,415, Cl. 339-50.00R.

Advanced Mechanical Technology, Inc.: *See—*
Carignan, Forest J., 4,565,519, Cl. 431-46.000.

Advanced Micro Devices, Inc.: *See—*
Campbell, David L., 4,565,976, Cl. 331-57.000.

Advanced Technology Laboratories, Inc.: *See—*
Samuel, Robert A.; Selke, Gary J.; and Morris, Russell W., 4,566,035, Cl. 358-244.000.

AeroChem Research Laboratories, Inc.: *See—*
Olson, Douglas B.; and Calcote, Hartwell F., 4,565,969, Cl. 324-468.000.

Aeroquip Corporation: *See—*
Denney, Raymond E., 4,565,211, Cl. 137-321.000.
Gray, Kevin J.; and Sibley, Bruce D., 4,565,120, Cl. 92-130.00R.

Aertker, Walter P.; Taylor, William L.; and Medica, Frank. Remotely controlled steering apparatus for outboard trolling motors. 4,565,529, Cl. 440-7.000.

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Yamamoto, Kazuhiko; and Saito, Taiichi, 4,566,124, Cl. 382-21.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
Benker, Gerhard; and Treiber, Helmut, 4,565,442, Cl. 355-68.000.
Bloechl, Hanns; and Schnall, Guenther, 4,565,440, Cl. 355-27.000.

Agren, Nils A.: *See—*
Nytomt, Jan G.; Ottosson, Lars-Olof; and Agren, Nils A., 4,565,179, Cl. 123-599.000.

Ahuja, Om. Photovoltaic energy gas generating apparatus. 4,565,617, Cl. 204-229.000.

Aida, Takuzo: *See—*
Inoue, Shohei; Aida, Takuzo; Sanuki, Koichi; and Ishikawa, Masahide, 4,565,845, Cl. 525-25.000.

Air Products and Chemicals, Inc.: *See—*
Cassano, Anthony A., 4,565,685, Cl. 423-579.000.

Aisin Seiki Co., Ltd.: *See—*
Kaneko, Kenichi; Hirashiba, Yuji; and Kawai, Shinji, 4,564,961, Cl. 4-443.000.

Aisin-Warner Limited: *See—*
Sumiyoshi, Masaharu, 4,565,106, Cl. 74-359.000.

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Akin, Thomas A., to Scientific-Atlanta, Inc. Linear actuator for large-angle motions. 4,565,104, Cl. 74-89.150.

Akiyama, Susumu: *See—*
Ito, Katsunori; Akiyama, Susumu; Mizuno, Tiaki; Yamada, Toshitaka; and Abe, Tomoaki, 4,565,091, Cl. 73-118.000.

Akiyoshi, Tomio: *See—*
Kasahara, Toshikazu; Kajiya, Toshifumi; and Akiyoshi, Tomio, 4,565,844, Cl. 524-108.000.

Akkapeddi, Murali K.: *See—*
Prevorsek, Dusan C.; and Akkapeddi, Murali K., 4,565,850, Cl. 525-425.000.

Aktiebolaget SKF: *See—*
Hallerback, Stig L., 4,565,493, Cl. 416-204.00R.

Aktiebolaget Svenska Elektromagneter: *See—*
Nytomt, Jan G.; Ottosson, Lars-Olof; and Agren, Nils A., 4,565,179, Cl. 123-599.000.

Alard, Francis; and Jeunhomme, Luc B. Process and apparatus for measuring the effective diameter of the guided mode in a monomode optical fibre. 4,565,445, Cl. 356-73.100.

Albert, Ernst: *See—*
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.

Albrecht, Hans P.: *See—*
Moessner, Heinz E.; and Albrecht, Hans P., 4,565,231, Cl. 160-133.000.

Alexander, Sam: *See—*
Hansma, Paul K.; Moreland, John M.; and Alexander, Sam, 4,566,023, Cl. 357-26.000.

Alf, Herbert; Leipelt, Rudolf; Fusser, Rolf; and Spannbauer, Helmut, to Filterwerk Mann & Hummel GmbH. Device for controlling the intake air temperature of a mixture-compressing internal combustion engine. 4,565,176, Cl. 123-556.000.

Alkem GmbH: *See—*
Schneider, Volker; Stoll, Wolfgang; and Druckenbrodt, Wolf-Gunther, 4,565,672, Cl. 423-15.000.

Allen, Richard S.: *See—*
Mims, Donald S.; and Allen, Richard S., 4,565,245, Cl. 166-50.000.

Allied Corporation: *See—*
Draizen, Seymour; and Sossong, Henry J., 4,565,237, Cl. 164-463.000.
Mullins, Phillip L.; Neal, James G.; and Perkins, Jeffrey T., 4,565,154, Cl. 118-410.000.
Prevorsek, Dusan C.; and Akkapeddi, Murali K., 4,565,850, Cl. 525-425.000.
Rolfe, Norman F., 4,565,935, Cl. 307-491.000.

Alps Electric Co., Ltd.: *See—*
Moriyama, Naoki; Koike, Hiroshi; and Hatakeyama, Osamu, 4,565,128, Cl. 101-93.190.

Alsthom-Atlantique: *See—*
Obrecht, Georges, 4,565,541, Cl. 464-155.000.

Altman, Gary F.; and Beck, Robert K., Jr., to General Motors Corporation. Mechanism for forming threads in injection molded parts. 4,565,518, Cl. 425-568.000.

Aluminum Company of America: *See—*
van Linden, Jan H. L.; and Whitehead, James S., 4,565,572, Cl. 75-24.000.
Williams, James E., Jr.; and Claassen, Pamela L., 4,565,716, Cl. 427-216.000.

Amachi, Teruo: *See—*
Yoshizumi, Hajime; Amachi, Teruo; Kusumi, Takaaki; Tanaka, Takaharu; and Ishigooka, Hiroshi, 4,565,698, Cl. 424-93.000.

Amano, Matsuo: *See—*
Hirayama, Takeshi; Amano, Matsuo; Sakamoto, Shinichi; Shiida, Masami; and Baba, Shirou, 4,566,069, Cl. 364-431.120.

Amaral, Joseph E.: *See—*
Harger, Mark A.; Amaral, Joseph E.; and Blatter, Harold, 4,566,034, Cl. 358-194.100.

Amax Inc.: *See—*
Symonds, Richard D.; Clapp, Joseph E.; and Buckley, Kenneth, 4,565,573, Cl. 75-77.000.

American Cyanamid Co.: *See—*
Giglia, Robert D.; and Battistelli, Edward A., 4,565,727, Cl. 428-172.000.

American Microsystems, Inc.: *See—*
Whitaker, Sterling, 4,566,064, Cl. 364-300.000.

American Standard Inc.: *See—*
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,565,636, Cl. 210-748.000.

Ameron Inc.: *See—*
Greaves, Gerald G., 4,565,393, Cl. 285-107.000.

AMP Incorporated: *See—*
Rudy, William J.; and Smith, Dennis E., 4,565,416, Cl. 339-59.00M.

Analog Devices, Incorporated: *See—*
Brokaw, Adrian P., 4,565,000, Cl. 29-611.000.

Anazawa, Osamu: *See—*
Kokubun, Yoshikazu; and Anazawa, Osamu, 4,565,300, Cl. 221-116.000.

ANCRA Corporation: *See—*
Knox, Howard T., 4,564,981, Cl. 24-68.0CD.

Anderson, Burton C.; England, David C.; and Resnick, Paul R., to Du Pont de Nemours, E. I., and Company. Polymers of dioxolanes. 4,565,855, Cl. 526-247.000.

Anderson, David A. K.; Gilpin, James B.; and Kniffin, Melvin J., to Ford Aerospace & Communications Corporation. Infrared detector dewar with all-Kovar leads, and method of making the same. 4,565,925, Cl. 250-352.000.

Anderson, Eric G., to Rockwell International Corporation. Key card apparatus. 4,565,922, Cl. 235-492.000.

Anderson, Jeff L., to NCR Corporation. Information storage system utilizing electrets. 4,566,086, Cl. 369-13.000.

Anderson, Russell Y., to Tektronix, Inc. Memory pack addressing system. 4,566,082, Cl. 365-230.000.

Ando, Takayuki: *See—*
Oguro, Sadao; Sakagami, Yukio; and Ando, Takayuki, 4,565,039, Cl. 52-167.000.

Andrews, Peter; Boshagen, Horst; and Kolling, Heinrich, to Bayer Aktiengesellschaft. Substituted salicylic acid amide anthelmintics. 4,565,888, Cl. 564-179.000.

Andrulis, Peter J., Jr.; and Schwartz, Paul, to Andrulis Research Corporation. Bis-platinum complexes as antitumor agents. 4,565,884, Cl. 556-137.000.

Andrulis Research Corporation: *See—*
Andrulis, Peter J., Jr.; and Schwartz, Paul, 4,565,884, Cl. 556-137.000.

Andrus, W. Alexander; Christensen, Burton G.; and Heck, James V., to Merck & Co., Inc. 3-Phosphonate carbapenems. 4,565,808, Cl. 514-80.000.

Antoniadis, Dimitri A.: *See—*
Geis, Michael W.; Smith, Henry I.; Antoniadis, Dimitri A.; and Flanders, Dale C., 4,565,599, Cl. 156-603.000.

Aoi, Masahiro: *See—*
Kataoka, Yushin; Matsuda, Masaaki; Aoi, Masahiro; and Chino, Kunitake, 4,565,673, Cl. 423-112.000.

Aoki, Kozo: *See—*
Ogawa, Akira; Aoki, Kozo; Tanabe, Osami; and Umemoto, Makoto, 4,565,777, Cl. 430-552.000.

Aoyagi, Kazuya: *See—*
Ikehata, Shigeki; Shutoh, Kuniharu; and Aoyagi, Kazuya, 4,565,664, Cl. 264-130.000.

Apparatenfabriek ATAG B.V.: *See—*
Berkelder, Wilhelm H., 4,565,523, Cl. 431-354.000.

Apperley, Norman; Edwards, Roger J.; Foster, Raymond L. J.; Haigh, David C.; Haslam, Michael; and Verey, Peter, to International Business Machines Corporation. Data management for plasma display. 4,566,005, Cl. 340-771.000.

Aqua-Chem, Inc.: *See—*
Wright, Richard C., 4,565,137, Cl. 110-264.000.

Arad, Abraham A.: *See—*
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,565,538, Cl. 446-427.000.

Arahata, Yoshikuni: *See—*
Hirooka, Koichi; Matsuda, Setsuyuki; and Arahata, Yoshikuni, 4,565,901, Cl. 174-17.0GF.

Arai, Soichi; and Watanabe, Michiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Antifreezing agent. 4,565,643, Cl. 252-70.000.

Arai, Yoshihiro; Nahara, Akira; and Fukino, Kiyotaka, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,565,734, Cl. 428-216.000.

Arakawa, Seiichi; Kondo, Hirofumi; and Seto, Junetsu, to Sony Corporation. Photochromic compounds and photosensitive compositions containing the compounds. 4,565,779, Cl. 430-962.000.

Araki, Shuichi, to Dainippon Screen Seizo Kabushiki Kaisha. Method for data compression for two-value picture image. 4,566,128, Cl. 382-56.000.

Arciszewski, Henry; Porzio, Linda A.; and Chiang, Bin Y., to Nabisco Brands, Inc. Consistometer. 4,565,089, Cl. 78-82.000.

Ardon, Menachem T.; Kennedy, James C.; Sand, Douglas S.; Trimnell, Lawrence J.; and Zola, Meyer J., to AT&T Bell Laboratories. Channel selection in a switching system having clustered remote switching modules. 4,566,094, Cl. 370-58.000.

Ariyoshi, Toshihiko: *See—*
Masui, Tamenori; Ono, Hitoshi; and Ariyoshi, Toshihiko, 4,565,236, Cl. 164-459.000.

Armour Pharmaceutical Co.: *See—*
Lavender, Ardis, 4,565,073, Cl. 62-373.000.

Armstrong World Industries, Inc.: *See—*
Brennan, Michael F.; and Kauffman, Harold L., 4,565,077, Cl. 68-158.000.
Corrigan, James L.; and Schouten, Gerard M., 4,565,290, Cl. 211-41.000.

Arnau, Angel I. Lightning rod construction. 4,565,900, Cl. 174-3.000.

Arnaud, Johnny, to Hydrotreat, Inc. Filter apparatus. 4,565,628, Cl. 210-232.000.

Arnco Corporation: *See—*
Conti, Allen C.; and Conti, Armand R., 4,565,351, Cl. 254-134.3FT.

Arndt, Klaus; and Sanvido, Saverio, to Contraves AG. Eye shield for a viewing device. 4,565,428, Cl. 350-579.000.

Arnold, Lothar: *See—*
Hertel, Otto; Kiefer, Hans; and Arnold, Lothar, 4,565,894, Cl. 568-349.000.

Arnold, William S., to Smiser Industries, Inc. Method and apparatus for determining tension in a cable. 4,565,099, Cl. 73-862.410.

Arretz, Emmanuel; Mirassou, Alfred; Landoussy, Claude; and Auge, Patrick, to Societe Nationale Elf Aquitaine (Production). Process of synthesis of mercaptans from olefins and hydrogen sulphide by heterogeneous catalysis. 4,565,893, Cl. 568-72.000.

Asada, Masao: *See—*
Kimura, Yoshio; Terashima, Kenji; Asada, Masao; and Sugano, Satoshi, 4,565,948, Cl. 313-487.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Shimoda, Mituhiko; Koinuma, Masahiro; and Ohta, Yoshitaka, 4,566,054, Cl. 361-422.000.

Asai, Isao; Muramatsu, Shigeru; Morita, Takayuki; and Tanaka, Akira, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method of transferring yarn packages. 4,565,278, Cl. 198-400.000.

Asakawa, Shiro: *See—*
Saito, Yukihiro; Ito, Yoshimasa; and Asakawa, Shiro, 4,565,846, Cl. 525-101.000.

Asano, Toshimitsu: *See—*
Oguchi, Toshihiko; Kato, Hirohisa; Wada, Moriyasu; and Asano, Toshimitsu, 4,565,726, Cl. 428-328.000.

Asanomi, Koji: *See—*
Ishimi, Haruyoshi; and Asanomi, Koji, 4,565,163, Cl. 123-41.440.

ASEA AB: *See—*
Kojima, Shinji; Mizota, Hisakazu; Kodama, Masanori; and Miyazaki, Yasuharu, 4,565,238, Cl. 164-468.000.

ASEA Aktiebolag: *See—*
Jonsson, Finn, 4,565,084, Cl. 72-387.000.

Ashida, Hideo, to Fujitsu Limited. PSK Modulator with preset amplitude and phase corrections for each phase. 4,565,980, Cl. 332-16.00R.

Aslund, Christer; and Tornberg, Claes. Method of making powder-metallurgical articles. 4,565,668, Cl. 419-68.000.

Associated Equipment Corporation: *See—*
French, Gerald H., 4,565,414, Cl. 339-32.00R.

AT&T Bell Laboratories: *See—*
Ardon, Menachem T.; Kennedy, James C.; Sand, Douglas S.; Trimnell, Lawrence J.; and Zola, Meyer J., 4,566,094, Cl. 370-58.000.
Richards, Gaylord W., 4,566,007, Cl. 340-825.800.
Riley, Douglas H., 4,565,903, Cl. 179-18.00B.
Scholz, Harry R., 4,565,314, Cl. 228-180.200.
Smoot, Lanny S., 4,565,974, Cl. 330-304.000.

Auge, Patrick: *See—*
Arretz, Emmanuel; Mirassou, Alfred; Landoussy, Claude; and Auge, Patrick, 4,565,893, Cl. 568-72.000.

August, Paul. Internal combustion engine with one or more compression caps between piston and cylinder head and deflection means in the combustion chamber through which rotary flow is induced in the charge. 4,565,181, Cl. 123-601.000.

Australian Atomic Energy Commission: *See—*
Watt, John S.; Fookes, Reginald A.; and Gravitis, Vilis L., 4,566,114, Cl. 378-88.000.

Austria Metall AG: *See—*
Koser, Jaroslav; and Eder, Theodor, 4,565,146, Cl. 114-79.00R.

Autodynamics Corporation of America: *See—*
Baker, Gary W., 4,565,482, Cl. 414-462.000.

Automated Packaging Systems, Inc.: *See—*
Wehrmann, Rick; and Haby, Robert, 4,565,592, Cl. 156-64.000.

AVA Tech International Ltd.: *See—*
Stephan, Gerhard, 4,565,028, Cl. 47-39.000.

Avram, Elena: *See—*
Revici, Emanuel, 4,565,690, Cl. 424-10.000.

Axelrod, Herbert R., to permaTek, Inc. Method of casing-in books. 4,565,477, Cl. 412-5.000.

Ayabe, Hideaki; Toyosawa, Takeshi; Ikeda, Shigeo; and Ohta, Kenichiro, to Graphtec Kabushiki Kaisha. Heating circuit for a thermal recording-pen. 4,565,918, Cl. 219-499.000.

Aziaseiyu Kabushiki Kaisha: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Azmuko, Andrei A.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Azuma, Jun-ichi. Method of ameliorating the subjective symptoms and objective signs in congestive heart failure. 4,565,830, Cl. 514-553.000.

Azuma, Junichi; Watanabe, Koichi; and Hori, Masatake, to Takeda Chemical Industries, Ltd. Apparatus for blood treatment by pressing blood into treating material and then drawing it out. 4,565,626, Cl. 210-138.000.

B. F. Goodrich Company, The: *See—*
Kramer, James H., 4,565,281, Cl. 198-628.000.

B & P Barnett Limited: *See—*
Barnett, Bernard T., 4,565,182, Cl. 124-25.000.

Baba, Shirou: *See—*
Hirayama, Takeshi; Amano, Matsuo; Sakamoto, Shinichi; Shiida, Masami; and Baba, Shirou, 4,566,069, Cl. 364-431.120.

Babcock & Wilcox Company, The: *See—*
Rebula, Edward; and Kurasz, Alexander J., 4,565,324, Cl. 239-290.000.

Bacardit, Juan S., to Bendiberica S.A. Hydraulic distributor for assistance power motor with return to rest position. 4,565,115, Cl. 91-375.00A.

Back, Karl J. Method and apparatus for wrapping cylindrical articles. 4,565,051, Cl. 53-441.000.

Backlund, Peter S., to Union Oil Company of California. Coated fertilizer particles. 4,565,564, Cl. 71-28.000.

Bahl, Surinder K.; Canterino, Peter J.; and Shaw, Richard G., to Mobil Oil Corporation. Blends of LLDPE, PP and EPDM or EPR for films of improved stiffness, tear and impact strength. 4,565,847, Cl. 525-240.000.

Bains, William R., to Ford Aerospace & Communications Corporation. Guided projectile flight control fin system. 4,565,340, Cl. 244-3.280.

Baji, Toru: *See—*
Yamamoto, Hideaki; Baji, Toru; Tsukada, Toshihisa; and Sasano, Akira, 4,565,928, Cl. 250-578.000.

Baker Drilling Equipment Company: *See—*
Orr, Raymond T., Jr., 4,565,086, Cl. 73-23.000.

Baker, Gary W., to Autodynamics Corporation of America. Wheelchair dockage and storage system. 4,565,482, Cl. 414-462.000.

Baker, Rees T.: *See—*
Yates, David J. C.; and Baker, Rees T., 4,565,683, Cl. 423-447.300.

Bakthavachalam, Nanjappa: *See—*
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.

Baldwin, Gary L.: *See—*
Hornak, Thomas; and Baldwin, Gary L., 4,565,961, Cl. 323-312.000.

Balke, Roy L.; and Filipowski, Jerome R., to General Electric Company. Everted knitted tube insulation for windings of dynamoelectric machines. 4,565,939, Cl. 310-177.000.

Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., to United States Steel Corporation. Apparatus for suppressing fume from a metal pouring operation. 4,565,353, Cl. 266-147.000.

Ballhaus, Heribert, to GMN Georg Muller Nurnberg GmbH. Magnetic fluid seal. 4,565,379, Cl. 277-25.000.

Balzers AG: *See—*
Koprio, Jurgen, 4,565,158, Cl. 118-726.000.

Banks, Bruce A., to United States of America, National Aeronautics and Space Administration. Apparatus for producing diamondlike carbon flakes. 4,565,618, Cl. 204-298.000.

Barbee, Robert B., to Eastman Kodak Company. Containers having improved gas barrier properties. 4,565,851, Cl. 525-437.000.

Barkhurst, David J. Exercise device. 4,565,365, Cl. 272-73.000.

Barmag Barmer Maschinenfabrik AG: *See—*
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,565,524, Cl. 432-59.000.

Barnard, Rodney N.: *See—*
Burdick, Bruce E.; Rodden, John A.; Brown, Robert G.; and Barnard, Rodney N., 4,565,114, Cl. 89-35.010.

Barnes-Hind, Inc.: *See—*
Koeniger, Erich A., 4,565,198, Cl. 128-305.000.

Barnett, Bernard T., to B & P Barnett Limited. Crossbow with rotatable magazine having open-sided channels. 4,565,182, Cl. 124-25.000.

Barnett, Norton C. Boom supported light fixture. 4,566,058, Cl. 362-430.000.

Barone, Bruno J.; and Bowman, William G., to Denka Chemical Corporation. Maleic anhydride process. 4,565,880, Cl. 549-256.000.

Baross nee Sipocz, Anna: *See—*
Salgo, Vilmos; Hanzely, Jozsef; Baross nee Sipocz, Anna; and Geri, Istvan, 4,565,576, Cl. 106-23.000.

Barrett, William H.; and Minn, Andre B., to International Business Machines. Color cathode ray tube with infrared emitting phosphor in screen. 4,565,946, Cl. 313-408.000.

Bart, Jacques R.; Jourdain, Gerard E. A.; and Rambach, Daniel, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." . Sealing device for turbine blades of a turbojet engine. 4,565,492, Cl. 415-175.000.

Bartels, James I., to Honeywell, Inc. Boiler low water sensing system utilizing energy transfer network means for delay. 4,565,930, Cl. 307-118.000.

Barth, Jordan B.: *See—*
Mulvey, Patricia S.; Barth, Jordan B.; and Vellekoop, Linda J., 4,565,692, Cl. 424-57.000.

Bartling, Jerry W.; and Hofstetter, James F., to Timpte Industries. Method and apparatus for providing heating or cooling for a vehicle. 4,565,071, Cl. 62-89.000.

Bartol, Fritz: *See—*
Poth, Ulrich; Bartol, Fritz; and Machholz, Adolf, 4,565,730, Cl. 428-204.000.

Barwell Machine and Rubber Group Limited: *See—*
Wills, Peter R.; and Cowley, Richard C., 4,565,512, Cl. 425-190.000.

BASF Aktiengesellschaft: *See—*
Hertel, Otto; Kiefer, Hans; and Arnold, Lothar, 4,565,894, Cl. 568-349.000.
Kropp, Rudolf, 4,565,870, Cl. 546-85.000.
Lynch, John; Leyrer, Reinhold J.; and Saenger, Dietrich, 4,565,771, Cl. 430-307.000.
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,565,565, Cl. 71-92.000.

BASF Farben & Fasern AG: *See—*
Poth, Ulrich; Bartol, Fritz; and Machholz, Adolf, 4,565,730, Cl. 428-204.000.

Baskin, Joseph M.; Miller, Gary E.; and Wiesner, Wayne, to Boeing Company, The. Wind powered system for generating electricity. 4,565,929, Cl. 290-44.000.

Basquin, Maurice H.: *See—*
Kay, John W.; Shaffer, Dale A.; and Basquin, Maurice H., 4,565,021, Cl. 38-137.000.

Batson, David C.: *See—*
Goebel, Franz; Haskins, Timothy B.; and Batson, David C., 4,565,752, Cl. 429-94.000.
Goebel, Franz; Batson, David C.; and Haskins, Timothy B., 4,565,753, Cl. 429-94.000.

Battenfeld Fischer Blasformtechnik GmbH: *See—*
Maier, Rudolf, 4,565,515, Cl. 425-381.000.

Battistelli, Edward A.: *See—*
Giglia, Robert D.; and Battistelli, Edward A., 4,565,727, Cl. 428-172.000.

Batts, John H.; and Garrison, Judd F., to John Thomas Batts, Inc. Shipping hanger. 4,565,309, Cl. 223-96.000.

Bauer, Karl: *See—*
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,565,524, Cl. 432-59.000.

Bayer Aktiengesellschaft: *See—*
Andrews, Peter; Boshagen, Horst; and Kolling, Heinrich, 4,565,888, Cl. 564-179.000.
Buding, Hartmuth; Szentivanyi, Zsolt; and Thormer, Joachim, 4,565,614, Cl. 522-112.000.
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,565,834, Cl. 521-121.000.
Draber, Wilfried; Eue, Ludwig; Santel, Hans-Joachim; and Schmidt, Robert R., 4,565,566, Cl. 71-92.000.
Dunwald, Willi, 4,565,843, Cl. 524-89.000.
Kopp, Richard; and Reichmann, Wolfgang, 4,565,648, Cl. 252-397.000.
Rasshofer, Werner; and Dieterich, Dieter, 4,565,645, Cl. 252-182.000.
Schmitt, Hans-Georg; Wedemeyer, Karlfried; Brandes, Wilhelm; and Reinecke, Paul, 4,565,829, Cl. 514-514.000.
Wehinger, Egbert; Meyer, Horst; Kazda, Stanislav; and Knorr, Andreas, 4,565,824, Cl. 514-356.000.

BBC Brown, Boveri & Co., Ltd.: *See—*
Buhler, Karl, 4,566,108, Cl. 373-108.000.

Beam, David L.; and Double, Glen P., to International Business Machines Corp. (IBM). Skew insensitive magnetic read head. 4,566,050, Cl. 360-113.000.

Beatriz, Dulce; and Beatriz, Leonardo. Fabric stretching device. 4,565,020, Cl. 38-102.500.

Beatriz, Leonardo: *See—*
Beatriz, Dulce; and Beatriz, Leonardo, 4,565,020, Cl. 38-102.500.

Becht, Carl T., to Senmed, Inc. Ligator. 4,565,199, Cl. 128-325.000.

Bechtloff, Gert, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Supporting tube of a steep-rise conveyor, especially a vertically elevating conveyor, or a down-feed device. 4,565,286, Cl. 198-861.100.

Beck, Robert K., Jr.: *See—*
Altman, Gary F.; and Beck, Robert K., Jr., 4,565,518, Cl. 425-568.000.

Becker, Floyd W. Dual-wall drill pipe. 4,565,394, Cl. 285-141.000.

Beckman Instruments, Inc.: *See—*
Hatch, Richard G.; and Tepermeister, Gary, 4,565,632, Cl. 210-656.000.

Bed-Check Corporation: *See—*
Musick, Jeff L.; Blaker, Robert D.; and Blaker, David G., 4,565,910, Cl. 200-85.00R.

Bederman, Seymour, to International Business Machines Corp. Token ring with secondary transmit opportunities. 4,566,097, Cl. 370-89.000.

Bedgood, Douglas H. Aquatic exercising device. 4,565,369, Cl. 272-130.000.

Beech, Jeffrey A.; and Penprase, John N., to Pritchard Sales Company, Inc. Apparatus for processing poultry breasts. 4,564,976, Cl. 17-11.000.

Beecham Group p.l.c.: *See—*
Jackson, Robert J., 4,565,691, Cl. 424-52.000.

Behringwerke Aktiengesellschaft: *See—*
Schmidtberger, Rudolf, 4,565,652, Cl. 260-112.00B.

Behrle, William L. Fishing pole mount. 4,565,025, Cl. 43-21.200.

Beiersdorf Aktiengesellschaft: *See—*
Hofeditz, Wolfgang, 4,565,646, Cl. 252-309.000.

Beierwaltes, William H.: *See—*
Khazaeli, Mohammad B.; Beierwaltes, William H.; and England, Barry G., 4,565,687, Cl. 424-1.100.

Bekkering, Hendrik M.; and Vulink, Henricus H. M., to Duphar International Research B.V. Automatic injection device. 4,565,543, Cl. 604-135.000.

Bender, Heinz G.: *See—*
Slaghuis, Hermann; Mayer, Rolf; Kargel, Heribert; and Bender, Heinz G., 4,565,332, Cl. 242-18.100.

Bendiberica S.A.: *See—*
Bacardit, Juan S., 4,565,115, Cl. 91-375.00A.

Benier B.V.: *See—*
Benier, Johan, 4,565,277, Cl. 198-365.000.

Benier, Johan, to Benier B.V. Dough tray for a pre-proofer. 4,565,277, Cl. 198-365.000.

Benker, Gerhard; and Treiber, Helmut, to Agfa-Gevaert Aktiengesellschaft. Method of and apparatus for copying photographic originals. 4,565,442, Cl. 355-68.000.

Bennett, Charles O. Safety flag. 4,565,152, Cl. 116-50.000.

Berg, Harvey F., to Deltec Systems, Inc. Locking mechanism for a drug delivery system. 4,565,542, Cl. 604-131.000.

Berge, Odd; and Hovland, Helge, to Stord Bartz A/S. Process for the production of fodder and fat from animal raw materials. 4,565,709, Cl. 426-641.000.

Bergelin, Klaus: *See—*
ITT Industries, Inc.; Weiler, Rolf; and Bergelin, Klaus, 4,565,066, Cl. 60-533.000.

Bergeron, Raymond J., Jr., to University of Florida. Synthesis of parabactin and homologs thereof. 4,565,874, Cl. 548-239.000.

Bergmark, Nils R. Drying device for shower space. 4,564,963, Cl. 4-597.000.

Bergwerksverband GmbH: *See—*
Kruse, Dirk, 4,565,605, Cl. 202-139.000.

Berkan, Ronald R., to Action Pact, Inc. Sprinkler systems. 4,565,323, Cl. 239-230.000.

Berkelder, Wilhelm H., to Apparatenfabriek ATAG B.V. Gas burner. 4,565,523, Cl. 431-354.000.

Berliebner, James A.; and Reifel, Charles J., to Penta-Pak Inc. Computerized combination weigher with preset optimum weigher discharge. 4,565,253, Cl. 177-1.000.

Bernhard, Horst, to Merck Patent Gesellschaft mit beschrankter Haftung. Nacreous pigments having improved light fastness, their preparation and use. 4,565,581, Cl. 106-308.00B.

Bernhardt & Frederick Co., Inc.: *See—*
Giebeler, Bernhardt F., 4,565,213, Cl. 137-494.000.

Berning, Peter H.: *See—*
Phillips, Roger W.; Higgins, Patrick K.; and Berning, Peter H., 4,565,719, Cl. 428-34.000.

Berol Kemi AB: *See—*
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,565,549, Cl. 44-51.000.

Berry, Brian E., to Uniset Corporation. Powder actuated tool with safety. 4,565,312, Cl. 227-8.000.

Bertsch, Gotthilf, to Maschinenfabrik Sulzer-Ruti AG. Weaving machine. 4,565,225, Cl. 139-434.000.

Bespalova, Zhanna D.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Best, David E.: *See—*
Thomas, Roger E.; and Best, David E., 4,565,867, Cl. 544-201.000.

Beurskens, Johannes H. H.; and Winkelmolen, Wilhelmus H. F., to U.S. Philips Corporation. Electric lamp. 4,565,944, Cl. 313-318.000.

Bewick, David W., to Imperial Chemical Industries PLC. Process for producing optically active aryloxypropionic acids and derivatives thereof useful as herbicides. 4,565,782, Cl. 435-122.000.

Billcon Co., Ltd.: *See—*
Sanuga, Fumiwo, 4,566,109, Cl. 377-2.000.

Bilodeau, Peter R.; and Bilodeau, Theodore W. Marking and measuring instrument. 4,565,012, Cl. 33-458.000.

Bilodeau, Theodore W.: *See—*
Bilodeau, Peter R.; and Bilodeau, Theodore W., 4,565,012, Cl. 33-458.000.

Bio Mabuchi Co. Ltd.: *See—*
Mabuchi, Kenichi, 4,565,189, Cl. 128-49.000.

Biomeasure, Inc.: *See—*
Kim, Sun H.; and Moreau, Jacques-Pierre, 4,565,815, Cl. 514-246.000.

Biro, Ladislao J., to Biro, Ladislao Jose. Molecular and isotopic fractionating process and apparatus. 4,565,556, Cl. 55-460.000.

Biro, Ladislao Jose: *See—*
Biro, Ladislao J., 4,565,556, Cl. 55-460.000.

Bitsch, Harald: *See—*
Hasselmann, Heinz; Kunze, Volkmar; and Bitsch, Harald, 4,565,352, Cl. 254-344.000.

Bitter, Lowell E.; and Lundgren, Bryan L., to Donnelly Corporation. Crack detector for electrically conductive windshield. 4,565,919, Cl. 219-509.000.

Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, to Taprogge Gesellschaft mbH. Backflow-type self-cleaning filter. 4,565,631, Cl. 210-333.100.

Biziere, Kathleen: *See—*
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, 4,565,814, Cl. 514-228.000.

Black, Mervin R.: *See—*
Matthews, James R.; Schattschneider, George K.; Black, Mervin R.; and Perkins, James A., 4,565,964, Cl. 324-51.000.

Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., to General Mills, Inc. Pudding mix. 4,565,708, Cl. 426-579.000.

Blaker, David G.: *See—*
Musick, Jeff L.; Blaker, Robert D.; and Blaker, David G., 4,565,910, Cl. 200-85.00R.

Blaker, Robert D.: *See—*
Musick, Jeff L.; Blaker, Robert D.; and Blaker, David G., 4,565,910, Cl. 200-85.00R.

Bland, Gerald F., to Outboard Marine Corporation. Water pump location for marine propulsion device. 4,565,534, Cl. 440-88.000.

Blatter, Harold: *See—*
Harger, Mark A.; Amaral, Joseph E.; and Blatter, Harold, 4,566,034, Cl. 358-194.100.

Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, to Deutsche Star Kugelhalter GmbH. Double nut and method of forming the double nut. 4,564,993, Cl. 29-434.000.

Blaurock, Werner: *See—*
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.

Bloechl, Hanns; and Schnall, Guenther, to Agfa-Gevaert Aktiengesellschaft. Device for exposing and developing a light-sensitive material. 4,565,440, Cl. 355-27.000.

Blohm & Voss AG: *See—*
Spengel, Heinz F. J., Sr., 4,565,292, Cl. 212-232.000.

Blok, Lodewijk: *See—*
Needs, Howard C.; and Blok, Lodewijk, 4,565,756, Cl. 430-7.000.

Blomberger Holzindustrie, B. Hausmann GmbH & Co, KG: *See—*
Schulte, Gerhard, 4,565,597, Cl. 156-250.000.

Bloore, Frederick W.; and Seaman, Peter H., to Hotfoil Limited. Heat regulating sensor tape. 4,565,455, Cl. 374-164.000.

Bocchini, William R.: *See—*
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,565,636, Cl. 210-748.000.

Boeing Company, The: *See—*
Baskin, Joseph M.; Miller, Gary E.; and Wiesner, Wayne, 4,565,929, Cl. 290-44.000.
Whitener, Philip C., 4,565,595, Cl. 156-156.000.

Boettcher, Marlon, to Gunderson Clinic. Isokinetic exercise and monitoring machine. 4,565,368, Cl. 272-129.000.

Bogossian, Armen: *See—*
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,565,636, Cl. 210-748.000.

Bohm, Horst: *See—*
Stahl, Bernhard; and Bohm, Horst, 4,565,357, Cl. 269-32.000.

Bohme, August E. Remote release deep trolling system. 4,565,026, Cl. 43-43.120.

Bolger, Thomas V.: *See—*
Lewis, Henry G., Jr.; and Bolger, Thomas V., 4,566,028, Cl. 358-21.00R.

Bollag, Werner; Mayer, Hans J.; and Wyss, Pierre-Charles, to Hoffmann-La Roche Inc. Retinoid carbohydrates. 4,565,863, Cl. 536-18.200.

Bonerb, Timothy C., to Bonerb, Vincent C., a part interest. Method and apparatus for causing caking material to flow in bins. 4,565,307, Cl. 222-386.500.

Bonerb, Vincent C.: *See—*
Bonerb, Timothy C., 4,565,307, Cl. 222-386.500.

Booij, Johannes, to Innus Industrial Nuclear Services S.A. Apparatus for cleaning a steam generator by means of a high-pressure lance. 4,565,206, Cl. 134-112.000.

Borbe, Harald: *See—*
Lautenschlager, Hans-Heiner; Borbe, Harald; Prop, Gerrit; Wirtz-Peitz, Ferdinand; Doppelfeld, Ille-Stephanie; and Parnham, Michael J., 4,565,659, Cl. 260-925.000.

Borg-Warner Corporation: *See—*
Gary, James R.; Geis, Everett R.; King, Todd L.; and Singh, Daljit, 4,565,957, Cl. 318-723.000.

Boron, Joseph J., to Midwest Instrument Co., Inc. Molten metal pin sampler. 4,565,101, Cl. 73-864.570.

Bortolotti, Vanes. Mutual and multi-restrained fixing fender. 4,565,147, Cl. 114-219.000.

Boshagen, Horst: *See—*
Andrews, Peter; Boshagen, Horst; and Kolling, Heinrich, 4,565,888, Cl. 564-179.000.

Bossle, Paul C.; Martin, John J.; Sarver, Emory W.; and Sommer, Harold Z., to United States of America, Army. High performance liquid chromatography (HPLC) analysis of sulfur mustards and their decomposition by-products by derivatization. 4,565,787, Cl. 436-120.000.

Boston University, Trustees of: *See—*
Franzblau, Carl; Faris, Barbara A.; and Civerchia-Perez, Linda, 4,565,784, Cl. 435-240.000.

Botar, Sandor: *See—*
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Kriaztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

Boudot, Jean E.; and Mazeau, Jean P., to Corning Glass Works. Glasses for ophthalmic applications. 4,565,791, Cl. 501-56.000.

Boudot, Marianne: *See—*
Heitzmann, Michel; and Boudot, Marianne, 4,566,027, Cl. 357-81.000.

Bould, Fred, to Westinghouse Electric Corp. Drawout switchgear apparatus with retractable shutter mechanism for terminal stabs. 4,565,908, Cl. 200-50.0AA.

Boulenouar, Abdelhamid: *See—*
Oisel, Andre ; Boulenouar, Abdelhamid; and Le Gleau, Denise, 4,566,105, Cl. 371-37.000.

Bowles Fluidics Corporation: *See—*
Stouffer, Ronald D., 4,565,220, Cl. 137-835.000.

Bowman, William G.: *See—*
Barone, Bruno J.; and Bowman, William G., 4,565,880, Cl. 549-256.000.

Bradshaw, George M.; Desyllas, Peter L. L.; and McLaren, Keith, to International Computers Limited. Testing digital electronic circuits. 4,566,104, Cl. 371-15.000.

Brandes, Karlheinz K.: *See—*
Kukes, Simon G.; Parrott, Stephen L.; and Brandes, Karlheinz K., 4,565,800, Cl. 502-200.000.

Brandes, Wilhelm: *See—*
Schmitt, Hans-Georg; Wedemeyer, Karlfried; Brandes, Wilhelm; and Reinecke, Paul, 4,565,829, Cl. 514-514.000.

Braun, David L.: *See—*
Liggett, Paul E.; and Braun, David L., 4,565,729, Cl. 428-201.000.

Brautigam, Peter F., to Deere & Company. Seat holdup mechanism. 4,565,407, Cl. 297-335.000.

Brennan, Michael F.; and Kauffman, Harold L., to Armstrong World Industries, Inc. Liquid treating apparatus. 4,565,077, Cl. 68-158.000.

Brennsteiner, Ernst; and Scholz, Dieter, to Hilti Aktiengesellschaft. Drill for hand-held drilling devices. 4,565,472, Cl. 408-226.000.

Brian, Michael, to Rockwell International Corporation. Dynamic strobe timing circuitry for A/D conversion apparatus. 4,565,993, Cl. 340-347.0AD.

Bricker, Jeffery C.: *See—*
O'Hara, Mark J.; Imai, Tamotsu; Bricker, Jeffery C.; and Mackowiak, David E., 4,565,898, Cl. 585-441.000.

Brille, Maurice. Connecting rod bearings for a volumetric piston chamber machine. 4,565,103, Cl. 74-60.000.

Briner, Emil: *See—*
Stalder, Herbert; and Briner, Emil, 4,565,063, Cl. 57-328.000.

Brinker, Alfred: *See—*
Stewart, Iain G. H.; Pitz, Hans P.; and Brinker, Alfred, 4,565,203, Cl. 131-283.000.

Brinkmann, Dirk; Muller, Wolfgang; Sauerwald, Walter; Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, to Hoesch Aktiengesellschaft. Hydraulic press for pressing mats of plastic material reinforced with glass fibers. 4,565,517, Cl. 425-451.200.

Briscoe, James E.: *See—*
Penny, Glenn S.; and Briscoe, James E., 4,565,639, Cl. 252-8.55B.

British Aerospace PLC: *See—*
Ridgway, Peter C.; and Geen, John A., 4,565,941, Cl. 310-328.000.

British Petroleum Company p.l.c., The: *See—*
Gane, Brian R.; and Hall, Antony H. P., 4,565,897, Cl. 585-415.000.

British Telecommunications: *See—*
Marr, Donald, 4,565,593, Cl. 156-64.000.

Brodasky, Thomas F.: *See—*
Dolak, Lester A.; Laborde, Alice L.; Sebek, Oldrich K.; Castle, Thomas M.; and Brodasky, Thomas F., 4,565,699, Cl. 424-117.000.

Brokaw, Adrian P., to Analog Devices, Incorporated. Matching of resistor sensitivities to process-induced variations in resistor widths. 4,565,000, Cl. 29-611.000.

Brookshire, Daniel A., to Motorola, Inc. Parasitic insensitive auto-zeroed operational amplifier. 4,565,971, Cl. 330-9.000.

Broome, Stephanie A.: *See—*
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., 4,565,785, Cl. 435-317.000.

Brors, Daniel L.; Fair, James A.; and Monnig, Kenneth A., to Genus, Inc. Method and apparatus for deposition of tungsten silicides. 4,565,157, Cl. 118-719.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,565,462, Cl. 400-625.000.

Brown, Robert G.: *See—*
Burdick, Bruce E.; Rodden, John A.; Brown, Robert G.; and Barnard, Rodney N., 4,565,114, Cl. 89-35.010.

Brown, Robert R. Marksman's collapsible, portable, shooting bench and table assembly. 4,565,403, Cl. 297-3.000.

Browne, Ronald O.; and Hertzberg, William E., to Browne, Ronald O. Pastry processor to divide pastries and insert separators. 4,565,053, Cl. 53-516.000.

Brunke, Michael: *See—*
Wehrfritz, Heinz; and Brunke, Michael, 4,565,378, Cl. 277-3.000.

Brunn, Klaus; and Polster, Walter, to Siemens Aktiengesellschaft. X-Ray diagnostic system for radiographs. 4,566,115, Cl. 378-097.000.

Brunn, Otto, to International Standard Electric Corporation. Socket and base for picture tubes. 4,565,420, Cl. 339-193.00P.

Brush Wellman Inc.: *See—*
Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., 4,565,586, Cl. 148-12.70C.

Bryant, Clyde C. Internal combustion engine. 4,565,167, Cl. 123-70.00R.

Buchner, Delmer B. Cartridge assembly. 4,565,131, Cl. 102-444.000.

Buck, Manfred; Schmid, Wolfgang; and Wanner, Karl, to Robert Bosch GmbH. Drive-in apparatus particularly an electric tacker for driving in fasteners. 4,565,313, Cl. 227-131.000.

Buckley, Elizabeth. Hand-cleaning device. 4,564,968, Cl. 15-21.00R.

Buckley, Kenneth: *See—*
Symonds, Richard D.; Clapp, Joseph E.; and Buckley, Kenneth, 4,565,573, Cl. 75-77.000.

Budacolor Festekgyar: *See—*
Salgo, Vilmos; Hanzely, Jozsef; Baross nee Sipocz, Anna; and Geri, Istvan, 4,565,576, Cl. 106-23.000.

Buddy L. Corporation: *See—*
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,565,538, Cl. 446-427.000.

Buding, Hartmuth; Szentivanyi, Zsolt; and Thormer, Joachim, to Bayer Aktiengesellschaft. Polymer mixtures and co-vulcanizates produced therefrom. 4,565,614, Cl. 522-112.000.

Buhler, Karl, to BBC Brown, Boveri & Co., Ltd. Bottom-electrode arrangement for a direct-current arc furnace. 4,566,108, Cl. 373-108.000.

Buist, Kevin S.: *See—*
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.

Bulgakov, Sergei A.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Buma, Shuuichi, to Toyota Jidosha Kabushiki Kaisha. Apparatus for indicating a range position for an automatic transmission installed in a vehicle. 4,565,151, Cl. 116-28.100.

Bunning, Ernst, to Maremont Corporation. Automatic weapon charging handle and bolt latch. 4,565,113, Cl. 89-1.400.

Burchett, Barry L. Method and apparatus for training a human by feedback enhanced learning. 4,565,527, Cl. 434-248.000.

Burdick, Bruce E.; Rodden, John A.; Brown, Robert G.; and Barnard, Rodney N., to Olin Corporation. Cartridge strip magazine for powder-actuated tools. 4,565,114, Cl. 89-35.010.

Burgmaster - Houdaille, Inc.: *See—*
Merk, Edward; Delaney, George; Wasynczuk, Leon; Parks, Richard; and Polacek, Richard, 4,565,480, Cl. 414-225.000.

Burke, Philip E.: *See—*
Todd, Lanny E.; Burke, Philip E.; Smith, Danny L.; and Gleason, Carla T., 4,565,680, Cl. 423-310.000.

Burkhalter, John F.: *See—*
Sutton, David L.; and Burkhalter, John F., 4,565,578, Cl. 106-87.000.

Burkhardt, Rudolf; and Hass, Hansjurgen, to Dynamit Nobel AG. Pollutant-resistant sealing composition. 4,565,577, Cl. 106-85.000.

Burr, James B.: *See—*
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.

Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., to Kollmorgen Technologies Corporation. Method and apparatus for testing of electrical interconnection networks. 4,565,966, Cl. 324-73.0PC.

Burress, George T., to Mobil Oil Corporation. Iron oxide catalysts containing copper and zinc compounds and process for para-ethyltoluene dehydrogenation. 4,565,899, Cl. 585-445.000.

Burroughs Corporation: *See—*
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.
Ragle, Herbert U., 4,565,927, Cl. 250-560.000.

Buszard, David L.; and Dellar, Richard J., to Ciba-Geigy AG. Fire retardant composition. 4,565,833, Cl. 521-107.000.

Butler, Donald F.; and Shelton, Mark E. Stereo headset system for use in a wet environment. 4,565,258, Cl. 181-129.000.

Butter, Jahannes A.M.: *See—*
Van Laar, Jacobus; Felthuis, Jacob; Butter, Jahannes A.M.; Rengersen, Jacob; and Sannes, Albert, 4,565,525, Cl. 432-248.000.

Buysch, Hans-Josef; Iliger, Hans-Walter; and Dorner, Karl H., to Bayer Aktiengesellschaft. Stabilizer-containing reactive components for pu-foams, new stabilizers and a process for producing these stabilizers. 4,565,834, Cl. 521-121.000.

Cahalan, Patrick T.; and Schwinghammer, Michelle A., to Medtronic, Inc. Method of producing combination ion selective sensing electrode. 4,565,666, Cl. 264-267.000.

Cahill, Lysle D., to Coulter Systems Corporation. Electrophotographic imaging apparatus by variably placing pixel elements. 4,566,042, Cl. 358-300.000.

Calcote, Hartwell F.: *See—*
Olson, Douglas B.; and Calcote, Hartwell F., 4,565,969, Cl. 324-468.000.

Cameron, Mick G., to Dana Corporation. Friction clutch element. 4,565,274, Cl. 192-107.00R.

Campbell, David L., to Advanced Micro Devices, Inc. Interruptable voltage-controlled oscillator and phase-locked loop using same. 4,565,976, Cl. 331-57.000.

Campbell, Thomas R.; Cunningham, William L.; and Perkin, Gregg S., to LOR, Inc. Borehole operating tool with fluid circulation through arms. 4,565,252, Cl. 175-269.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See—*
Matthews, James R.; Schattschneider, George K.; Black, Mervin R.; and Perkins, James A., 4,565,964, Cl. 324-51.000.

Canadian Patents & Development Limited: *See—*
Inculet, Ion I., 4,565,318, Cl. 239-3.000.

Canon Kabushiki Kaisha: *See—*
Fukahori, Hidehiko; Fujino, Masahisa; and Satoh, Toshihiko, 4,565,432, Cl. 354-173.110.
Kadosawa, Tsuneaki, 4,566,036, Cl. 358-210.000.
Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, 4,565,761, Cl. 430-83.000.
Kato, Masatake, 4,565,433, Cl. 354-201.000.
Komatsu, Toshiyuki; Hirai, Yutaka; Nakagawa, Katsumi; and Fukuda, Tadaji, 4,565,731, Cl. 428-212.000.
Minoura, Kazuo, 4,565,421, Cl. 350-6.800.
Mitsuhashi, Yasuo; and Uchiyama, Masaki, 4,565,766, Cl. 430-126.000.
Miura, Genmei; Konno, Akira; and Konishi, Motofumi, 4,566,002, Cl. 340-727.000.
Nakahara, Toshiaki; Ohsaki, Ichiro; and Ushiyama, Hisayuki, 4,565,764, Cl. 430-111.000.
Nishide, Katsuhiko, 4,565,737, Cl. 428-321.500.
Notagashira, Hidehumi, 4,565,434, Cl. 354-286.000.
Tamura, Yasuyuki, 4,566,043, Cl. 358-300.000.
Uchiyama, Masaki; and Mitsuhashi, Yasuo, 4,565,763, Cl. 430-109.000.

Canron Corp.: *See—*
Moore, Roy J., 4,565,133, Cl. 104-7.00B.

Canterino, Peter J.: *See—*
Bahl, Surinder K.; Canterino, Peter J.; and Shaw, Richard G., 4,565,847, Cl. 525-240.000.

Cardin, William J.; Gulla, Michael; and Newton, Charles L., to Shiplay Company Inc. Apparatus and method for automatically maintaining an electroless plating bath. 4,565,575, Cl. 106-1.220.

Carignan, Forest J., to Advanced Mechanical Technology, Inc. Burner ignition system. 4,565,519, Cl. 431-46.000.

Carl Freudenberg, Firma: *See—*
Stein, Karl H.; and Krull, Manfred, 4,565,736, Cl. 428-286.000.

Carl-Zeiss-Stiftung: *See—*
Schilling, Albert; and Schob, Wolfgang, 4,565,427, Cl. 350-530.000.

Carlisle, G. Ross. Indicia display means. 4,565,023, Cl. 40-486.000.

Carobbi, Renato: *See—*
Filippini, Andrea; and Carobbi, Renato, 4,565,582, Cl. 127-46.100.

Carpenter, James H., Jr.; and Mullins, Ronald L., to Kennecott Corporation. Impeller even discharge apparatus. 4,565,035, Cl. 51-434.000.

Carrier Corporation: *See—*
Drucker, Alan S.; Kwok, King H.; and Whipple, Charles E., 4,565,075, Cl. 62-507.000.
Raymond, Glendon A., 4,565,070, Cl. 62-81.000.

Carter, Malcolm A.: *See—*
Pethers, Peter C.; Duck, Ivan A.; and Carter, Malcolm A., 4,564,971, Cl. 15-250.350.

Casco Products Corporation: *See—*
Lupoli, Peter J.; and Westover, Brooke N., 4,565,991, Cl. 340-52.00R.

Casdade Systems Incorporated: *See—*
Kraft, Chrispin S., 4,566,087, Cl. 369-34.000.

Casey, Liam M.: *See—*
Gammage, Neil D.; Pachl, Jan K.; and Casey, Liam M., 4,566,098, Cl. 370-89.000.

Cassano, Anthony A., to Air Products and Chemicals, Inc. Air separation with temperature and pressure swing. 4,565,685, Cl. 423-579.000.

Cassat, Robert, to Rhone-Poulenc Recherchea. Metallization of electrically insulating polyimide/aromatic polyamide film substrates. 4,565,606, Cl. 204-20.000.

Castagnola, Virginio; Frigerio, E. Giuliano; and Pellicciari, Roberto, to Lehner A.G. Derivatives of biliary acids, process for the production thereof and pharmaceutical compositions containing the same. 4,565,810, Cl. 514-182.000.

Castera, Jean-Paul; and Dupont, Jean-Marie, to Thomson-CSF. Filter device utilizing magnetostatic waves. 4,565,984, Cl. 333-202.000.

Castle, Thomas M.: *See—*
Dolak, Lester A.; Laborde, Alice L.; Sebek, Oldrich K.; Castle, Thomas M.; and Brodasky, Thomas F., 4,565,699, Cl. 424-117.000.

Castleberry, Kenneth B.; and McDonald, Norman L. Energy efficient thermosyphoning spa heater system. 4,564,962, Cl. 4-543.000.

Cates, Guy L.: *See—*
Powers, Avery W.; Cates, Guy L.; Staats, Charles W., Jr.; and Mullies, Jarrell W., 4,566,008, Cl. 340-941.000.

Cavalli, Alfredo. Steam iron stand with pivotable water reservoir. 4,565,019, Cl. 38-77.600.

Cavender, Patricia L., to FMC Corporation. Imidazole plant growth regulators. 4,565,875, Cl. 548-336.000.

CBL Consolidated Ltd. BS: *See—*
Smits, Philippus R. J., 4,565,724, Cl. 428-138.000.

CEM Corporation: *See—*
Collins, Michael J.; and Hargett, Wyatt P., Jr., 4,565,669, Cl. 422-78.000.

Central Glass Company, Limited: *See—*
Fujioka, Isami; Imada, Kazutoshi; Nishimura, Motoyasu; and Ishibashi, Takayuki, 4,565,579, Cl. 106-118.000.

Chakkaw, Somkiat: *See—*
Jeensalute, Thipthep; and Chakkaw, Somkiat, 4,565,500, Cl. 417-53.000.

Chalk, Anthony J.; Charnock, Graham; Gates, Allen P.; Murray, David E.; and Smith, Ian S., to Vickers PLC. Photoconductive compositions sensitive to both laser light and tungsten halide light. 4,565,757, Cl. 430-83.000.

Chang, John C.; and Williams, Kathryn L., to Minnesota Mining and Manufacturing Company. Blend of fluorochemical guanidines and poly(oxyalkylenes). 4,565,641, Cl. 252-8.750.

Chapin, William L. Method and apparatus for animating illuminated signs and displays. 4,565,022, Cl. 40-442.000.

Chaplin, George B. B.; and Smith, Roderick A., to Sound Attenuators Limited. Method of and apparatus for cancelling vibrations from a source of repetitive vibrations. 4,566,118, Cl. 381-71.000.

Chapman Manufacturing Company, Inc.: *See—*
Rockwood, Richard D.; and Ruskin, Bernard J., 4,565,395, Cl. 285-282.000.

Charles, Paul A. S., to Ingersoll Milling Machine Company, The. Method of generating involute tooth forms with a milling cutter. 4,565,474, Cl. 409-51.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Kumar, Kaplesh, 4,565,686, Cl. 423-644.000.

Charmilles Technologies, S.A.: *See—*
Girardin, Roger, 4,565,915, Cl. 219-69.00W.

Charnock, Graham: *See—*
Chalk, Anthony J.; Charnock, Graham; Gates, Allen P.; Murray, David E.; and Smith, Ian S., 4,565,757, Cl. 430-83.000.

Chavdarian, Charles G.; and Kanne, David B., to Stauffer Chemical Co. S-Aralkyltrithiophosphonate insecticides. 4,565,809, Cl. 514-112.000.

Check, Frank T., Jr., to Pitney Bowes Inc. Electronic postage meter having redundant memory. 4,566,106, Cl. 371-67.000.

Chen, York, to Contax Sports, Inc. Construction for an athletic shoe and process of making. 4,564,966, Cl. 12-146.00B.

Chevron Research Company: *See—*
King, William F., 4,565,812, Cl. 514-189.000.

Chiang, Bin Y.: *See—*
Arciszewski, Henry; Porzio, Linda A.; and Chiang, Bin Y., 4,565,089, Cl. 78-82.000.

Chino, Kunitake: *See—*
Katsuka, Yushin; Matsuda, Masaaki; Aoi, Masahiro; and Chino, Kunitake, 4,565,673, Cl. 423-112.000.

Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara R.T.: *See—*
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

Chiou, George C. Y., to Texas A&M University System, The. Method and ophthalmic composition for treating ocular hypertension and glaucoma with butyrophenones. 4,565,821, Cl. 514-327.000.

Chiyoda Chem. Engineering & Construction Co. Ltd.: *See—*
Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, 4,565,546, Cl. 44-51.000.

Chlumecky, Nicholas, to Commercial Shearing, Inc. Cribbing. 4,565,469, Cl. 405-288.000.

Cho, Ryokche: *See—*
Kobayashi, Kazusuke; and Cho, Ryokche, 4,565,840, Cl. 524-8.000.

Choquette, Andre, to Uraken Canada Limited. Steam generation. 4,565,161, Cl. 122-32.000.

Choung, Younho; and Goudey, Kenneth R., to Ford Aerospace & Communications Corporation. Wide-band microwave signal coupler. 4,566,012, Cl. 343-359.000.

Christensen, Burton G.: *See—*
Andrus, W. Alexander; Christensen, Burton G.; and Heck, James V., 4,565,808, Cl. 514-80.000.

Christianson, Tony. Foot holding device for hanging upside-down. 4,565,370, Cl. 272-145.000.

Christophersen, James C.: *See—*
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.

Chu, Benjamin, to Research Foundation of State University of New York, The. Scattering cells. 4,565,446, Cl. 356-246.000.

Chubu Industries, Inc.: *See—*
Himi, Kohei, 4,565,329, Cl. 241-95.000.

Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., to Brush Wellman Inc. Processing of copper alloys. 4,565,586, Cl. 148-12.70C.

Ciba-Geigy AG: *See—*
Buszard, David L.; and Dellar, Richard J., 4,565,833, Cl. 521-107.000.
Forte, Eddy, 4,565,775, Cl. 430-390.000.
Graber, Alfred, 4,565,322, Cl. 239-223.000.

Ciba-Geigy Corp.: *See—*
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,565,887, Cl. 564-85.000.
Lohmann, Dieter; and Wyler, Siegfried, 4,565,873, Cl. 548-110.000.
Uekama, Kaneto; Hanafusa, Mikio; Tatsumi, Masashi; and Hibi, Tohru, 4,565,807, Cl. 514-58.000.

Cii Honeywell Bull (Societe Anonyme): *See—*
Oisel, Andre ; Boulenouar, Abdelhamid; and Le Gleau, Denise, 4,566,105, Cl. 371-37.000.

Cirkot, David M.: *See—*
Kornbrekke, Henning N.; Cirkot, David M.; and Ranaudo, Anthony R., 4,565,029, Cl. 49-25.000.

Cischke, Michael R. Post driving device. 4,565,251, Cl. 173-128.000.

Civerchia-Perez, Linda: *See—*
Franzblau, Carl; Faris, Barbara A.; and Civerchia-Perez, Linda, 4,565,784, Cl. 435-240.000.

Claas OHG: *See—*
Heidjann, Franz, 4,565,056, Cl. 56-14.400.

Claassen, Pamela L.: *See—*
Williams, James E., Jr.; and Claassen, Pamela L., 4,565,716, Cl. 427-216.000.

Clairol Incorporated: *See—*
Skovdal, Jorgen, 4,565,204, Cl. 132-39.000.

Clapp, Joseph E.: *See—*
Symonds, Richard D.; Clapp, Joseph E.; and Buckley, Kenneth, 4,565,573, Cl. 75-77.000.

Clark, John I.: *See—*
Stokes, John H.; Clark, John I.; and Maxwell, Charles E., 4,565,995, Cl. 340-571.000.

Clasky, Richard; and Vogl, Wilfred, to Clasky, Richard. Semi-submergible spherical residential structure. 4,565,149, Cl. 114-264.000.

Clauson, Melvil B.; and Wagner, John R., Jr., to Mobil Oil Corporation. Oriented multi-layer heat sealable film. 4,565,739, Cl. 428-349.000.

Clegg, John E. Reciprocating reverse-circuit switch. 4,565,906, Cl. 200-1.00V.

Clelford, Douglas H.: *See—*
Skonieczny, Joseph P.; Murphy, Richard D.; and Clelford, Douglas H., 4,566,101, Cl. 371-5.000.

Clifford, Douglas M.: *See—*
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.

Close, Leo R., to Israel, Mrs. Lawrence. Range limited coherent frequency doppler surveillance system. 4,565,996, Cl. 340-572.000.

Clowe, Henry W. Tapered container labeling apparatus and method. 4,565,596, Cl. 156-215.000.

Clunn, Robert H., to Texas Instruments Incorporated. Apparatus and method for pattern location. 4,566,125, Cl. 382-48.000.

Coates, Fredrica. Combination carrying bag for infant accessories and diapering station. 4,566,130, Cl. 383-15.000.

Coleman, Leonard John: *See—*
Hardie, Laurie S., 4,565,188, Cl. 128-24.200.

Colgate-Palmolive Company: *See—*
Marschner, Frank W., 4,565,693, Cl. 424-67.000.
Mulvey, Patricia S.; Barth, Jordan B.; and Vellekoop, Linda J., 4,565,692, Cl. 424-57.000.

Collins, Bruce H.; and Jurgens, Heinrich J. W. Combustible particulate fuel heater. 4,565,184, Cl. 126-368.000.

Collins, John D., to Raytheon Company. Processing arrangement for pulse compression radar. 4,566,010, Cl. 343-17.2PC.

Collins, Michael J.; and Hargett, Wyatt P., Jr., to CEM Corporation. Microwave ashing apparatus. 4,565,669, Cl. 422-78.000.

Collins, Peter: *See—*
King, Allen; Collins, Peter; and Goldman, Jay, 4,565,999, Cl. 340-706.000.

Combustion Engineering, Inc.: *See—*
Deve, Vagn, 4,565,328, Cl. 241-65.000.

Commercial Shearing, Inc.: *See—*
Chlumecky, Nicholas, 4,565,469, Cl. 405-288.000.

Comminge, Hubert; Cunningham, John E.; and White, Howard R., Jr., to United States of America, Army. Track and road wheel assemblies for tracked vehicles. 4,565,412, Cl. 305-53.000.

Commonwealth of Australia, The: *See—*
Seymour, Robert S., 4,565,598, Cl. 156-601.000.

Commtech International: *See—*
Rambo, William R., 4,566,133, Cl. 455-277.000.

Connor, John A., to Kaama Marine Engineering, Inc. Stern drive. 4,565,532, Cl. 440-57.000.

Conoco Inc.: *See—*
Zielke, Clyde W.; and Wu, Muh-Cheng M., 4,565,678, Cl. 423-235.000.

Constructiewerkhuizen De Mets N.V.: *See—*
De Mets, Albert, 4,565,509, Cl. 425-101.000.

Contax Sports, Inc.: *See—*
Chen, York, 4,564,966, Cl. 12-146.00B.

Conti, Allen C.; and Conti, Armand R., to Arnco Corporation. Method for installing cable using an inner duct. 4,565,351, Cl. 254-134.3FT.

Conti, Armand R.: *See—*
Conti, Allen C.; and Conti, Armand R., 4,565,351, Cl. 254-134.3FT.

Continental Plastic Containers, Inc.: *See—*
Szajna, John L.; and Weissenstein, Harry, 4,565,516, Cl. 425-540.000.

Contraves AG: *See—*
Arndt, Klaus; and Sanvido, Saverio, 4,565,428, Cl. 350-579.000.

Cook, John S., to Mattel, Inc. Multiple-use shaft for toy. 4,565,539, Cl. 446-462.000.

Cook, Melvin J. Livestock treatment system. 4,565,160, Cl. 119-159.000.

Cooper, Edward, to Power-Matic, Inc. AC Line voltage regulator with controlled energy dispenser. 4,565,958, Cl. 323-248.000.

Cooper, Hugh E.: *See—*
Hollonbeck, Gary G.; and Cooper, Hugh E., 4,565,409, Cl. 297-411.000.

Corley, Larry S., to Shell Oil Company. Apparatus for impregnation of reinforcing fibers. 4,565,153, Cl. 118-405.000.

Corning Glass Works: *See—*
Boudot, Jean E.; and Mazeau, Jean P., 4,565,791, Cl. 501-56.000.

Correa, Paul E.; and Riley, Dennis P., to Procter & Gamble Company, The. Oxidation of tertiary amines using octacyanomolybdate or iron (III) salts as catalysts. 4,565,891, Cl. 564-298.000.

Corrigan, James L.; and Schouten, Gerard M., to Armstrong World Industries, Inc. Display rack. 4,565,290, Cl. 211-41.000.

Cosman, Eric R. Universal lesion and recording electrode system. 4,565,200, Cl. 128-642.000.

Costantini, Michel; Igersheim, Francoise; and Krumenacker, Leon, to Rhone-Poulenc Sante. Process for the preparation of 4-hydroxy-2,4,6-trimethyl-2,5-cyclohexadienone. 4,565,895, Cl. 568-362.000.

Cotton, Armand. Method of producing biogas and compost. 4,565,552, Cl. 48-197.00A.

Coulter Electronics, Inc.: *See—*
Kolber, Steven, 4,566,110, Cl. 377-10.000.

Coulter Systems Corporation: *See—*
Cahill, Lysle D., 4,566,042, Cl. 358-300.000.

Cowley, Richard C.: *See—*
Wills, Peter R.; and Cowley, Richard C., 4,565,512, Cl. 425-190.000.

CP Schmidt-Verpackungswerk GmbH & Co., KG: *See—*
Wagner, Heinz; and Schieler, Karl, 4,565,315, Cl. 229-17.00R.

Crabtree, Robert P., to International Business Machines Corp. Concurrent multi-lingual use in data processing systems. 4,566,078, Cl. 364-900.000.

Crainich, Lawrence, to Design Standards Corporation. Ski. 4,565,386, Cl. 280-602.000.

Crambes, Michel, to Elf France. Process and apparatus for the detection of changes of composition in a medium with the aid of ultrasound. 4,565,088, Cl. 73-61.10R.

Crane, Thomas W., to United States of America, Energy. Method and apparatus for determining the content and distribution of a thermal neutron absorbing material in an object. 4,565,926, Cl. 250-390.000.

Cranston Ky: *See—*
Cranston, W. Charles, 4,565,399, Cl. 294-74.000.

Cranston, W. Charles, to Cranston Ky. Disposable lifting loop and method of lifting a cargo load therewith. 4,565,399, Cl. 294-74.000.

Crawford, Leslie A. Moisture impervient barrier and method for making same. 4,565,468, Cl. 405-270.000.

Crawford, Patrick J.; and Klement, Larry G., to Timbco Hydraulics Inc. Device for handling material. 4,565,486, Cl. 414-729.000.

Creative Products Resource Associates, Ltd.: *See—*
Smith, James A.; and Murphy, Betty J., 4,565,644, Cl. 252-92.000.

Cribb, W. Raymond: *See—*
Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., 4,565,586, Cl. 148-12.70C.

Criceram: *See—*
Ricard, Jean, 4,565,600, Cl. 156-608.000.

Croll, Lionel. Animal simulating three dimensional archery target and method of manufacture. 4,565,376, Cl. 273-408.000.

Crowell, Jonathan C.: *See—*
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.

Crucible Materials Corporation: *See—*
Narasimhan, Kalatur S. V. L., 4,565,587, Cl. 148-31.570.

Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Grego, Giorgo, 4,565,449, Cl. 356-361.000.

CTBA Associates: *See—*
Nickerson, Rand B.; and Welsh, Russell J., 4,566,030, Cl. 358-84.000.

Cullen, Ralph A. W. Beam splitter. 4,565,426, Cl. 350-401.000.

Culture-Tek: *See—*
Malinoff, Don W., 4,565,100, Cl. 73-863.320.

Cummings, Leslie L., deceased; and by Cummings, Mildred, executrix. Chemical injection valve. 4,565,215, Cl. 137-538.000.

Cummings, Mildred, executrix: *See—*
Cummings, Leslie L., deceased; and Cummings, Mildred, executrix, 4,565,215, Cl. 137-538.000.

Cummins Engine Company, Inc.: *See—*
Roettgen, Leslie A.; and Israel, Kenneth W., 4,565,177, Cl. 123-563.000.

Cunningham, John E.: *See—*
Comminge, Hubert; Cunningham, John E.; and White, Howard R., Jr., 4,565,412, Cl. 305-53.000.

Cunningham, William L.: *See—*
Campbell, Thomas R.; Cunningham, William L.; and Perkin, Gregg S., 4,565,252, Cl. 175-269.000.

Cuozzo, Anthony: *See—*
Achee, John D.; and Cuozzo, Anthony, 4,565,458, Cl. 384-561.000.

Curtis, Jeff K.; and Michaely, William J., to Stauffer Chemical Company. Arylacrylaryl amides herbicidal compounds and methods of use. 4,565,570, Cl. 71-105.000.

Custom-Bilt Machinery, Inc.: *See—*
Faltin, Hans G., 4,565,363, Cl. 271-315.000.

Dac Engineering Co., Ltd.: *See—*
Hirooka, Shigeru; Maeda, Shuichi; Yamamoto, Shigehiro; and Yamaguchi, Toshihiko, 4,566,032, Cl. 358-103.000.

Dagani, Michael J., to Ethyl Corporation. Process for producing substituted pyrroles. 4,565,878, Cl. 548-531.000.

Dagerskog, Magnus; Ganrot, Anders B.; and Jonsson, Kurt O. G., to Nestec S.A. Method and apparatus for frying. 4,565,704, Cl. 426-233.000.

Daggs, Paul R.; Wilkowske, Arthur C.; and Miller, Gordon D. Return jointed sign post pedestal. 4,565,466, Cl. 404-10.000.

Dahl, Ernest A. Magnetically operated electrolyte circulation system. 4,565,748, Cl. 429-10.000.

Daicel Chemical Industries, Ltd.: *See*—
Horikawa, Takeshi; and Sasaki, Kenichi, 4,565,849, Cl. 525-420.000.
Murai, Takaaki; Watanabe, Shoji; Inoue, Kimio; and Yagii, Toyokazu, 4,565,859, Cl. 528-365.000.

Daikin Kogyo Co., Ltd.: *See*—
Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; and Fukuyama, Kouji, 4,565,943, Cl. 310-357.000.

Daimer, Wolfgang: *See*—
Paar, Willibald; and Daimer, Wolfgang, 4,565,838, Cl. 523-414.000.

Daimler-Benz Aktiengesellschaft: *See*—
Merkle, Josef, 4,565,390, Cl. 280-726.000.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Shimano, Noriyuki, 4,566,041, Cl. 358-284.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Araki, Shuichi, 4,566,128, Cl. 382-56.000.
Masuda, Tatsunosuke, 4,566,016, Cl. 346-108.000.

Dakubu, Salifu: *See*—
Hemmila , Ilkka; and Dakubu, Salifu, 4,565,790, Cl. 436-537.000.

Dall'Osso, Gastone: *See*—
Seragnoli, Enzo; and Dall'Osso, Gastone, 4,565,284, Cl. 198-792.000.

Daly, Richard T., to Lasers For Medicine. Laser ophthalmic surgical system. 4,565,197, Cl. 128-303.100.

Damson, Eckart; Klenk, Martin; Moser, Winfried; and Moller, Heinz, to Robert Bosch GmbH. Method and apparatus for recognition of knocking in an internal combustion engine. 4,565,087, Cl. 73-35.000.

Dana Corporation: *See*—
Cameron, Mick G., 4,565,274, Cl. 192-107.00R.

Davenport, William H., to Tektronix, Inc. Emitter coupled programmable oscillator. 4,565,977, Cl. 331-113.00R.

Davis, Ed D.: *See*—
Montgomery, Dean P.; Gall, James W.; and Davis, Ed D., 4,565,620, Cl. 208-80.000.

Davis, Marshall E.; and Sung, Rodney L., to Texaco Inc. Motor fuel composition. 4,565,548, Cl. 44-51.000.

Davis, Thomas A., to Exxon Research and Engineering Co. Method for deasphalting heavy oils using a miscible solvent at a low treat ratio and a carbon dioxide antisolvent. 4,565,623, Cl. 208-309.000.

Dayco Corporation: *See*—
Long, Delmar D., 4,565,715, Cl. 427-176.000.

de Buda, Francis, to Stephens, John. Production of silica gel and an adsorbent, absorbent product from sericitic clay. 4,565,794, Cl. 502-83.000.

Deere & Company: *See*—
Brautigam, Peter F., 4,565,407, Cl. 297-335.000.

DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, to American Standard Inc. Self-contained flow through sewage waste disposal system. 4,565,636, Cl. 210-748.000.

Degussa Aktiengesellschaft: *See*—
Hoffacker, Gerd; and Muller, Willi, 4,565,608, Cl. 204-44.000.

Dehganpour, Sam: *See*—
Kuo, Clinton C. K.; and Dehganpour, Sam, 4,565,932, Cl. 307-264.000.

Dehnisch, Torbjorn. Motorcycle fork tree. 4,565,384, Cl. 280-279.000.

Delaney, George: *See*—
Merk, Edward; Delaney, George; Wasyncznk, Leon; Parks, Richard; and Polacek, Richard, 4,565,480, Cl. 414-225.000.

DeLigt, John; and Nikkel, Willem A., to Westvaco Corporation. Method and apparatus for wrapping paper rolls. 4,565,049, Cl. 53-415.000.

Dellar, Richard J.: *See*—
Buszard, David L.; and Dellar, Richard J., 4,565,833, Cl. 521-107.000.

Deltec Systems, Inc.: *See*—
Berg, Harvey F., 4,565,542, Cl. 604-131.000.

De Mets, Albert, to Constructiewerkhuizen De Mets N.V. Continuous operation press. 4,565,509, Cl. 425-101.000.

Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Matthias; Kresse, Horst; and Weissflog, Wolfgang, to Veb Werk fur Fernsehdektronik im Veb Kombinat Mikroelektronik. Liquid crystal substituted 1,3-dioxanes and mixtures containing them. 4,565,881, Cl. 549-373.000.

Denga, Bernd; and Dyson, Neil, to O&K Orenstein & Koppel Aktiengesellschaft. Autowalk. 4,565,276, Cl. 198-321.000.

Denka Chemical Corporation: *See*—
Barone, Bruno J.; and Bowman, William G., 4,565,880, Cl. 549-256.000.

Denney, Raymond E., to Aeroquip Corporation. Hydraulic manifold with automatic flow control. 4,565,211, Cl. 137-321.000.

Descampa, Marcel; and Polster, Peter, to Sanofi. Benzofuran derivatives and their therapeutic use. 4,565,828, Cl. 514-469.000.

DeSchane, Robert W. Insulation hold-down device. 4,565,037, Cl. 52-95.000.

Design Standards Corporation: *See*—
Crainich, Lawrence, 4,565,386, Cl. 280-602.000.

Despot, Janko: *See*—
Simeth, Claus; and Despot, Janko, 4,565,129, Cl. 101-240.000.

Desyllas, Peter L. L.: *See*—
Bradshaw, George M.; Desyllas, Peter L. L.; and McLaren, Keith, 4,566,104, Cl. 371-15.000.

Deutsche Star Kugelhalter GmbH: *See*—
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.

Devault, Michel; Gerard, Bernard; and Rouaud, Yvon. Time division multiplex switching network permitting communications between one or several calling parties and one or several called parties. 4,566,095, Cl. 370-60.000.

Deve, Vagn, to Combustion Engineering, Inc. Sand reclamation system with thermal pipe reclaimer apparatus. 4,565,328, Cl. 241-65.000.

Devens, Mark F.: *See*—
Pirmantgen, Robert E.; Adamski, John S.; and Devens, Mark F., 4,565,190, Cl. 128-80.00C.

Devour, Michael G.: *See*—
Tibbetts, Gary G.; and Devour, Michael G., 4,565,684, Cl. 423-447.300.

Deyak, Frank L.: *See*—
Fitzer, Robert C.; Fabbrini, Charles J.; and Deyak, Frank L., 4,565,842, Cl. 524-57.000.

Diaz, Felix V., to Siemens Corporate Res. & Support, Inc. Continuity check tone detector for use with a digital telecommunication system. 4,566,093, Cl. 370-14.000.

DiBuono, Dominick. Golf glove with rain shield. 4,564,956, Cl. 2-16.000.

Diepers, Heinrich, to Siemens Aktiengesellschaft. Ultrasonic transducer system and manufacturing method. 4,564,980, Cl. 29-25.350.

Diesel Kiki Co., Ltd.: *See*—
Iwasaki, Yuji; Fujimori, Kyoichi; and Hiyama, Yasuhiro, 4,566,068, Cl. 364-431.050.
Kimura, Hideyuki; and Tomita, Hitoshi, 4,565,065, Cl. 60-285.000.

Diet Center, Inc.: *See*—
Ferguson, Roger, 4,565,701, Cl. 426-72.000.

Dieterich, Dieter: *See*—
Rasshofer, Werner; and Dieterich, Dieter, 4,565,645, Cl. 252-182.000.

Dietrich, Anton, to Optische Werke Rodenstock. Non-metallic eyeglass frame with adjustable nose pad arms. 4,565,429, Cl. 351-137.000.

DiLucia, Gilbert. Phonetic Chinese printing apparatus. 4,565,459, Cl. 400-110.000.

Dimeff, John, to Mark Telephone Products, Inc. Method and apparatus for transducer error cancellation. 4,565,097, Cl. 73-765.000.

Dimick, Delbert R., to Excellon Industries. Scan line generator. 4,566,038, Cl. 358-256.000.

Dinger, Nelson E., to Huber Reversible Fan, Inc. Fan blade support ring. 4,565,494, Cl. 416-206.000.

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Disco Abrasive Systems, Ltd.: *See*—
Sekiya, Shinji, 4,565,034, Cl. 51-401.000.

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Eberly, Carlyle J., 4,566,090, Cl. 369-46.000.

DiSilvestro, Robert J.: *See*—
Sahasrabudhe, Arun P.; and DiSilvestro, Robert J., 4,566,067, Cl. 364-426.000.

Ditcher, Jack, to A-Lok Products, Inc. Monolithic precast invert system. 4,565,347, Cl. 249-83.000.

Dockendorff, David G.: *See*—
Moore, Timothy G.; Dockendorff, David G.; and Harris, Stephen J., 4,566,001, Cl. 340-711.000.

Dr. Ing. h.c.F. Porsche A.G.: *See*—
Muller, Robert, 4,565,107, Cl. 74-473.00P.

Dolak, Lester A.; Laborde, Alice L.; Sebek, Oldrich K.; Castle, Thomas M.; and Brodasky, Thomas F., to Upjohn Company, The. Composition of matter and process. 4,565,699, Cl. 424-117.000.

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Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; and Peredery, Valery P., 4,565,491, Cl. 415-160.000.

Donges, Gerhard; Herwig, Thomas; Kunze, Claus; and Stein, Karl-Ulrich, to Heimann GmbH. Method and apparatus for examining the content of containers. 4,566,113, Cl. 378-57.000.

Donnelly Corporation: *See*—
Bitter, Lowell E.; and Lundgren, Bryan L., 4,565,919, Cl. 219-509.000.

Doonan, David F., to Olin Corporation. Process for drying aminoguanidine bicarbonate. 4,565,014, Cl. 34-36.000.

Doppelfeld, Ilie-Stephanie: *See*—
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Dorer, Casper J., Jr.; and Hayashi, Katsumi. Hydrocarbyl substituted carboxylic acylating agent derivative containing combinations, and fuels containing same. 4,565,550, Cl. 44-62.000.

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Kordes, Herbert, 4,564,973, Cl. 16-71.000.

Dorner, Karl H.: *See*—
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,565,834, Cl. 521-121.000.

Doryokuro Kakunenryo Kaihatsu Jigyodan: *See*—
Miyazaki, Hitoshi; Ohtsuka, Katsuyuki; and Miyata, Kazutoshi, 4,565,670, Cl. 422-186.040.

Double, Glen P.: *See*—
Beam, David L.; and Double, Glen P., 4,566,050, Cl. 360-113.000.

Douglas, George H.: *See*—
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., 4,565,826, Cl. 514-447.000.

Dover Corporation: *See*—
Parman, Oscar D., 4,565,214, Cl. 137-512.150.

Dow Chemical Company, The: *See*—
Emerson, Richard R.; Lee, Do I.; and Easterly, James P., 4,565,836, Cl. 523-346.000.
Fry, David L., 4,565,612, Cl. 204-98.000.
Johnston, Howard; and Troxell, Lillian H., 4,565,568, Cl. 71-94.000.

Dozier, Jan D.: *See*—
Frazier, Terry L.; and Dozier, Jan D., 4,565,246, Cl. 166-112.000.

Draber, Wilfried; Eue, Ludwig; Santel, Hans-Joachim; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Imidazo-pyrrolo-pyridine derivatives useful as herbicidal agents. 4,565,566, Cl. 71-92.000.

Dragerwerk AG: *See*—
Weerda, Hilko; Meuret, Gerhard; and Pedersen, Peter, 4,565,194, Cl. 128-204.230.

Drain, Kieran F.; and Dunn, David J., to Loctite Corporation. Rapid curing epoxide composition employing stable carbenium salt catalyst. 4,565,837, Cl. 523-400.000.

Draizen, Seymour; and Sossong, Henry J., to Allied Corporation. Expandable quench surface. 4,565,237, Cl. 164-463.000.

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Klees, Gary W.; and Draper, Gregory L., 4,566,055, Cl. 362-162.000.

Dresel, Donald W. Game apparatus. 4,565,375, Cl. 273-401.000.

Dronet, Jean-Marc, to Plastimecanique, S.A. Dosing apparatus for viscous liquid foodstuff. 4,565,304, Cl. 222-108.000.

Druckenbrodt, Wolf-Gunther: *See*—
Schneider, Volker; Stoll, Wolfgang; and Druckenbrodt, Wolf-Gunther, 4,565,672, Cl. 423-15.000.

Drucker, Alan S.; Kwok, King H.; and Whipple, Charles E., to Carrier Corporation. Polygon fan coil cabinet and method of assembly. 4,565,075, Cl. 62-507.000.

Druffel, James B., to Prescolite, Inc. Recessed lighting housing. 4,566,057, Cl. 362-364.000.

Du Pont Canada Inc.: *See*—
Lang, Theodore J., 4,565,742, Cl. 428-476.300.

Duck, Ivan A.: *See*—
Pethers, Peter C.; Duck, Ivan A.; and Carter, Malcolm A., 4,564,971, Cl. 15-250.350.

Dudkin, Viktor E.: *See*—
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; and Peredery, Valery P., 4,565,491, Cl. 415-160.000.

Dueber, Thomas E.; and Monroe, Bruce M., to Du Pont de Nemours, E. I., and Company. Polymeric sensitizers for photopolymer composition. 4,565,769, Cl. 430-281.000.

Duncombe, Edward; and Thatcher, Gordon, to United Kingdom Atomic Energy Authority. Failed fuel detection apparatus. 4,565,667, Cl. 376-246.000.

Dunkhase, John A.; Klusman, Ronald W.; and Fisher, James C., to Earth Search, Inc. Method for detecting mercury gas. 4,565,786, Cl. 436-26.000.

Dunn, David J.: *See*—
Drain, Kieran F.; and Dunn, David J., 4,565,837, Cl. 523-400.000.

Dunwald, Willi, to Bayer Aktiengesellschaft. Lacquer solutions based on hydantoin group-containing polymers. 4,565,843, Cl. 524-89.000.

Duphar International Research B.V.: *See*—
Bekkering, Hendrik M.; and Vulink, Henricus H. M., 4,565,543, Cl. 604-135.000.

Du Pont de Nemours, E. I., and Company: *See*—
Abbott, Scot D.; and Robertson, Charles W., Jr, 4,565,448, Cl. 356-336.000.
Anderson, Burton C.; England, David C.; and Resnick, Paul R., 4,565,855, Cl. 526-247.000.
Dueber, Thomas E.; and Monroe, Bruce M., 4,565,769, Cl. 430-281.000.
Held, Robert P., 4,565,770, Cl. 430-294.000.
Hosegood, Edward A.; and Seufert, Ludwig E., 4,565,717, Cl. 427-339.000.
Levitt, George, 4,565,567, Cl. 71-92.000.
Matrick, Howard, 4,565,773, Cl. 430-331.000.

Dupont, Jean-Marie: *See*—
Castera, Jean-Paul; and Dupont, Jean-Marie, 4,565,984, Cl. 333-202.000.

Duranleau, Roger G.; Knifton, John F.; and Speranza, George P., to Texaco Inc. Method for the preparation of formamides. 4,565,866, Cl. 544-176.000.

Duranleau, Roger G.: *See*—
Knifton, John F.; and Duranleau, Roger G., 4,565,896, Cl. 568-852.000.

Durbin, Enoch J. String for rackets. 4,565,061, Cl. 57-234.000.

Durst, Paul T.: *See*—
Theiss, John J.; and Durst, Paul T., 4,565,920, Cl. 219-513.000.

Dussel, Klaus; Orlowski, Werner; Ott, Gerhard; and Toczelowski, Hans, to Siemens Aktiengesellschaft. Single pole plug connector arranged at the end of a single conductor shielded electric cable. 4,565,417, Cl. 339-94.00C.

Dussoubs, Daniele; Perichaud, Alain; and Savidan, Louis, to Universite d'Aix-Marseille II. Process for the preparation of polyacetylenes by dehydrochlorination of polyvinyl chloride, the products obtained and their applications, in particular, as semiconductors. 4,565,848, Cl. 525-331.500.

Dyer, Thomas A.: *See*—
Huelster, Richard L.; and Dyer, Thomas A., 4,565,483, Cl. 414-353.000.

Dynametric, Inc.: *See*—
LaSance, William A., 4,565,030, Cl. 49-44.000.

Dynamit Nobel AG: *See*—
Burkhardt, Rudolf; and Hass, Hansjurgen, 4,565,577, Cl. 106-85.000.

Dyson, Neil: *See*—
Dengs, Bernd; and Dyson, Neil, 4,565,276, Cl. 198-321.000.

E.G.O. Elektro-Gerate Blanc u. Fischer: *See*—
Lotter, Bruno; Essig, Willi; and Mayer, Hans, 4,565,989, Cl. 337-311.000.

E. R. Squibb & Sons, Inc.: *See*—
Varley, Willard D., 4,565,326, Cl. 241-24.000.

Earth Search, Inc.: *See*—
Dunkhase, John A.; Klusman, Ronald W.; and Fisher, James C., 4,565,786, Cl. 436-26.000.

Easterly, James P.: *See*—
Emerson, Richard R.; Lee, Do I.; and Easterly, James P., 4,565,836, Cl. 523-346.000.

Eastern Company, The: *See*—
Kincaid, Herbert; and Wray, Michael L., 4,565,080, Cl. 70-215.000.

Eastman Kodak Company: *See*—
Barbee, Robert B., 4,565,851, Cl. 525-437.000.
Faust, Marilyn A.; and Osterhoudt, Hans W., 4,565,751, Cl. 429-94.000.
Henley, Charles J.; and Harvey, Frederick W., 4,565,431, Cl. 354-135.000.

Eaton Corporation: *See*—
Glenn, Robert L., 4,565,912, Cl. 200-157.000.

Eberly, Carlyle J., to Discovision Associates. Storage medium track pitch detector. 4,566,090, Cl. 369-46.000.

Ebisawa, Isao: *See*—
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.

Ebner, Jerry R., to Monsanto Company. Oxidation and ammoxidation process. 4,565,658, Cl. 260-465.300.

Ecker, Karl-Heinz; and Hoffmann, Erhard, to Wirth Maschinen-und Bohrgerate-Fabrick GmbH. Device for rotating and axially moving a bolt. 4,565,111, Cl. 81-53.200.

Eckert, Kim: *See*—
Zolnowsky, John; MacGregor, Douglas B.; and Eckert, Kim, 4,566,063, Cl. 364-200.000.

Eder, Theodor: *See*—
Koser, Jaroslav; and Eder, Theodor, 4,565,146, Cl. 114-79.00R.

Edwards, Ivan J. Adjustable bracket mount. 4,565,346, Cl. 248-558.000.

Edwards, Roger J.: *See*—
Apperley, Norman; Edwards, Roger J.; Foster, Raymond L. J.; Haigh, David C.; Haslam, Michael; and Verey, Peter, 4,566,005, Cl. 340-771.000.

Efstratiadis, Argiris A.: *See*—
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., 4,565,785, Cl. 435-317.000.

Ehara, Kohei: *See*—
Matsuo, Seitaro; Muramoto, Susumu; Ehara, Kohei; and Itsumi, Manabu, 4,564,997, Cl. 29-576.00W.

Eich, Patrick H.: *See*—
Ogden, Ralph; and Eich, Patrick H., 4,566,061, Cl. 364-146.000.

Eigenmann, Ludwig. Method and apparatus for the continuous laying road marking strips onto roadway surfaces. 4,565,467, Cl. 404-72.000.

Eimer, Klaus: *See*—
Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, 4,565,631, Cl. 210-333.100.

Eisenberg, Joel H. Glove. 4,565,195, Cl. 128-133.000.

Eisenbrandt, Gerald A.; and Marks, James R., to Whirlpool Corporation. Method and apparatus for testing microwave ovens. 4,565,967, Cl. 324-95.000.

Ekato Industrieanlagen Verwaltungsgesellschaft mbH & Co.: *See*—
Jekat, Herbert; Junghaus, Rainer; Geng, Walter; and Petersen, Vagn, 4,565,453, Cl. 366-279.000.

Elder, Inc.: *See*—
Tapp, William T.; and Roberts, William M., 4,565,247, Cl. 166-123.000.

Electric Power Research Institute, Inc.: *See*—
MacLeod, Donald R., Jr., 4,565,495, Cl. 416-224.000.

Electronizue Serge Dassault S.A.: *See*—
Fumey, Michel J. R., 4,565,931, Cl. 307-262.000.

Elf France: *See*—
Crambes, Michel, 4,565,088, Cl. 73-61.10R.

Eli Lilly and Company: *See*—
Nicholas, Cynthia L.; Kornfeld, Edmund C.; and Schaus, John M., 4,565,871, Cl. 546-165.000.
Spry, Douglas O., 4,565,655, Cl. 260-245.20R.

Elmec Corporation: *See*—
Kameya, Kazuo, 4,565,981, Cl. 333-138.000.

Emerson, Geoffrey A., to International Business Machines Corporation. Data management for plasma display. 4,566,004, Cl. 340-771.000.

Emerson, Richard R.; Lee, Do I.; and Easterly, James P., to Dow Chemical Company, The. Multi-modal emulsions of water-soluble polymers. 4,565,836, Cl. 523-346.000.

Energy Conversion Devices, Inc.: *See*—
Hanak, Joseph J.; Nath, Prem; Izu, Masatsugu; and Young, James, 4,565,607, Cl. 204-38.100.

Energy Optics, Inc.: *See*—
Stokes, John H.; Clark, John I.; and Maxwell, Charles E., 4,565,995, Cl. 340-571.000.

England, Barry G.: *See*—
Khazaeli, Mohammad B.; Beierwaltes, William H.; and England, Barry G., 4,565,687, Cl. 424-1.100.

England, David C.: *See—*
Anderson, Burton C.; England, David C.; and Resnick, Paul R., 4,565,855, Cl. 526-247.000.
Enomoto, Hiroshi: *See—*
Iwasaki, Takeru; Sasaki, Kenji; and Enomoto, Hiroshi, 4,565,064, Cl. 57-404.000.
Epson Corporation: *See—*
Usui, Minoru; and Oshima, Toshiaki, 4,565,461, Cl. 400-611.000.
Ericason, Sylve J. D., to Svecia Silkscreen Maskiner AB. Materials handling device. 4,565,478, Cl. 414-71.000.
Ernst, Donald M.; and Sanzi, James L., to Thermacore, Inc. Hybrid heat pipe. 4,565,243, Cl. 165-104.260.
Errede, Louis A.; Stoesz, James D.; and Winter, George D., deceased (by Upton, Jenny, legal representative), to Minnesota Mining and Manufacturing Company. Method for making water-swellable composite sheet. 4,565,663, Cl. 264-120.000.
Espelage, Paul M.; and Nowak, James M., to General Electric Company. Twelve pulse AC motor drive. 4,565,953, Cl. 318-345.00E.
Espenhain, Donald L. Reciprocating marine propulsion engine. 4,565,530, Cl. 440-18.000.
Essig, Willi: *See—*
Lotter, Bruno; Essig, Willi; and Mayer, Hans, 4,565,989, Cl. 337-311.000.
Etablissements Georges Olivier: *See—*
Varin, Michel, 4,564,972, Cl. 15-359.000.
Etherton, Bradley P., to Exxon Research & Engineering Co. Polymerization catalyst, production and use. 4,565,796, Cl. 502-112.000.
Etherton, Bradley P.; and Kaus, Malcolm J., to Exxon Research & Engineering Co. Polymerization catalyst, production and use (P-1010). 4,565,797, Cl. 502-116.000.
Ethridge, Edwin C.: *See—*
Naumann, Robert J.; and Ethridge, Edwin C., 4,565,557, Cl. 65-1.000.
Ethyl Corporation: *See—*
Dagani, Michael J., 4,565,878, Cl. 548-531.000.
Kao, James T. F., 4,565,879, Cl. 548-531.000.
Eto, Shin'ichi: *See—*
Tani, Masanori; Eto, Shin'ichi; Funakoshi, Takeshi; Nishikawa, Susumu; and Hashikura, Kiyoteru, 4,565,067, Cl. 60-545.000.
Eue, Ludwig: *See—*
Draber, Wilfried; Eue, Ludwig; Santel, Hans-Joachim; and Schmidt, Robert R., 4,565,566, Cl. 71-92.000.
Evans, William C.; and Noble, Haven D., to Viva-Tech, Inc. Light source for photographic color printers. 4,565,441, Cl. 355-37.000.
Everitube: *See—*
Lesueur, Pierre, 4,565,289, Cl. 206-443.000.
Excellon Industries: *See—*
Dimick, Delbert R., 4,566,038, Cl. 358-256.000.
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Davis, Thomas A., 4,565,623, Cl. 208-309.000.
Etherton, Bradley P., 4,565,796, Cl. 502-112.000.
Etherton, Bradley P.; and Kaus, Malcolm J., 4,565,797, Cl. 502-116.000.
Kimon, Peter M., 4,565,531, Cl. 440-50.000.
Rosensweig, Ronald E., 4,565,793, Cl. 502-74.000.
Wright, Franklin J.; Richard, Michael A.; and Pirkle, James C., Jr., 4,565,831, Cl. 518-700.000.
Yates, David J. C.; and Baker, Rees T., 4,565,683, Cl. 423-447.300.
Eyster, Jerry L.: *See—*
Pugliese, Lawrence S.; and Eyster, Jerry L., 4,565,311, Cl. 225-94.000.
F.H.I. Finanz-, Handels und Investment AG: *See—*
Meier, Ernst, 4,565,239, Cl. 164-475.000.
F.LLI Pagnoni S.p.A.: *See—*
Pagnoni, Giorgio, 4,565,481, Cl. 414-285.000.
Fabbrini, Charles J.: *See—*
Fitzer, Robert C.; Fabbrini, Charles J.; and Deyak, Frank L., 4,565,842, Cl. 524-57.000.
Fabrique Ebel SA: *See—*
Paolini, Jean, 4,564,982, Cl. 24-71.00J.
Fair, James A.: *See—*
Brors, Daniel L.; Fair, James A.; and Monnig, Kenneth A., 4,565,157, Cl. 118-719.000.
Faltin, Hans G., to Custom-Bilt Machinery, Inc. Apparatus for accurately spacing a sequence of shingled paper sheet products on a conveyor. 4,565,363, Cl. 271-315.000.
Fang, Sheng; and Rao, Kameswara K., to Signetics Corporation. Byte wide EEPROM with individual write circuits. 4,566,080, Cl. 365-185.000.
Fanuc Ltd.: *See—*
Nakashima, Seiichiro; Torii, Nobutoshi; and Terada, Akihiro, 4,565,400, Cl. 294-88.000.
Faris, Barbara A.: *See—*
Franzblau, Carl; Faris, Barbara A.; and Civerchia-Perez, Linda, 4,565,784, Cl. 435-240.000.
Faust, Marilyn A.; and Osterhoudt, Hans W., to Eastman Kodak Company. Cathode for high current density and high power density electrochemical cells. 4,565,751, Cl. 429-94.000.
Fawzy, Moharram M., to Intra-Technology Associates, Inc. Permanent magnet rotor toroidal generator and motor. 4,565,938, Cl. 310-156.000.
Feasel, Robert L.: *See—*
Trumbo, Leroy C.; and Feasel, Robert L., 4,565,299, Cl. 220-323.000.
Fedynyshyn, Theodore H.: *See—*
Trotz, Samuel I.; and Fedynyshyn, Theodore H., 4,565,856, Cl. 526-265.000.
Feichtlbauer, Werner, to Trak Incorporated. Running-surface coating layer for skis. 4,565,387, Cl. 280-604.000.
Feinberg, Albert E., to Advance Transformer Co. Socket for fluorescent lamps. 4,565,415, Cl. 339-50.00R.
Felthuis, Jacob: *See—*
Van Laar, Jacobus; Felthuis, Jacob; Butter, Jahannes A.M.; Rengersen, Jacob; and Sannes, Albert, 4,565,525, Cl. 432-248.000.
Fenk, Josef; and Stepp, Richard, to Siemens Aktiengesellschaft. Integrable oscillator circuit. 4,565,978, Cl. 331-117.00R.
Ferag AG: *See—*
Leu, Willy, 4,565,130, Cl. 101-240.000.
Ferguson, Roger, to Diet Center, Inc. Protein supplement tablet used in diet programs. 4,565,701, Cl. 426-72.000.
Fesus, Laszlo : *See—*
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.
Feuillalay, Jean P. Cooking utensil having chamber beneath perforated cooking surface. 4,565,122, Cl. 99-447.000.
Fidelity Medical (Israel) Ltd.: *See—*
Lass, Yoram, 4,565,201, Cl. 128-696.000.
Fiedziuszko, Slawomir J., to Ford Aerospace & Communications Corporation. Double dielectric resonator stabilized oscillator. 4,565,979, Cl. 331-117.00D.
Filipowski, Jerome R.: *See—*
Balke, Roy L.; and Filipowski, Jerome R., 4,565,939, Cl. 310-177.000.
Filippini, Andrea; and Carobbi, Renato, to SIRAC S.p.A. Lactulose purification process. 4,565,582, Cl. 127-46.100.
Filterwerk Mann & Hummel GmbH: *See—*
Alf, Herbert; Leipelt, Rudolf; Fusser, Rolf; and Spannbauer, Helmut, 4,565,176, Cl. 123-556.000.
Fischer, John; Heaton, Kenneth A.; and Pfeiffer, John W., to Koppers Company, Inc. Rotary vane valve. 4,565,305, Cl. 222-368.000.
Fischer, Kurt; and Tanner, Hans, to Georg Fischer Aktiengesellschaft. Method and apparatus for compacting granular moulding materials. 4,565,233, Cl. 164-37.000.
Fischer, Kurt; and Tanner, Hans, to Georg Fischer Aktiengesellschaft. Apparatus for compacting granular molding materials by pressurized gaseous mediums. 4,565,235, Cl. 164-169.000.
Fischer & Porter Company: *See—*
Herzl, Peter J., 4,565,098, Cl. 73-861.220.
Fisher, James C.: *See—*
Dunkhase, John A.; Klusman, Ronald W.; and Fisher, James C., 4,565,786, Cl. 436-26.000.
Fitzer, Robert C.; Fabbrini, Charles J.; and Deyak, Frank L., to Minnesota Mining and Manufacturing Company. Thermally transferable ink compositions. 4,565,842, Cl. 524-57.000.
Flander, Hans, to Georg Muller Kugellager-Fabrik K.G. Radial, radial angular-contact, and axial angular-contact ball bearing. 4,565,457, Cl. 384-450.000.
Flanders, Dale C.: *See—*
Geis, Michael W.; Smith, Henry I.; Antoniadis, Dimitri A.; and Flanders, Dale C., 4,565,599, Cl. 156-603.000.
Fleet Industries: *See—*
Meneian, Harry, 4,565,333, Cl. 242-54.00R.
Fleury, Joel J.; and Maille, Jacques H. P., to Societe Anonyme de Telecommunications. Matrix infrared detector. 4,566,024, Cl. 357-32.000.
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Reimers, Reimer, 4,565,507, Cl. 417-564.000.
FMC Corporation: *See—*
Cavender, Patricia L., 4,565,875, Cl. 548-336.000.
Fogt, Eric J., to Medtronic, Inc. Flow through ion selective electrode. 4,565,665, Cl. 264-267.000.
Foley, Louise H.; Sello, Lilian H.; and Westley, John, to Hoffmann-La Roche Inc. Ethers of antibiotic X-14868A. 4,565,862, Cl. 536-16.800.
Folkins, Jeffrey J., to Xerox Corporation. Development system using electrically field dependent developer material. 4,565,438, Cl. 355-3.0DD.
Fookes, Reginald A.: *See—*
Watt, John S.; Fookes, Reginald A.; and Gravitis, Vilis L., 4,566,114, Cl. 378-88.000.
Forberg, Sevald: *See—*
Lagstrom, Emil G.; Westermark, Torbjorn E. G.; and Forberg, Sevald, 4,565,627, Cl. 210-242.100.
Ford Aerospace & Communications Corporation: *See—*
Anderson, David A. K.; Gilpin, James B.; and Kniffin, Melvin J., 4,565,925, Cl. 250-352.000.
Bains, William R., 4,565,340, Cl. 244-3.280.
Choung, Younho; and Goudey, Kenneth R., 4,566,012, Cl. 343-359.000.
Fiedziuszko, Slawomir J., 4,565,979, Cl. 331-117.00D.
van Ommering, Gerrit; and Koehler, Charles W., 4,565,749, Cl. 429-27.000.
Ford Motor Company: *See—*
Qaderi, Saiyed B. A., 4,565,852, Cl. 525-528.000.
Forster, Franz, to Linde Aktiengesellschaft. Axial piston motors having a friction brake. 4,565,117, Cl. 92-20.000.
Forte, Eddy, to Ciba-Geigy AG. Process for the production of photographic images by the silver dye bleach process. 4,565,775, Cl. 430-390.000.

Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, to Ciba-Geigy Corp. N-Phenylsulfonamides. 4,565,887, Cl. 564-85.000.
Foster, Raymond L. J.: *See—*
Apperley, Norman; Edwards, Roger J.; Foster, Raymond L. J.; Haigh, David C.; Haslam, Michael; and Verey, Peter, 4,566,005, Cl. 340-771.000.
Foster Wheeler Energy Corporation: *See—*
Zipay, Albert J.; and Gorzegno, Walter P., 4,565,554, Cl. 55-185.000.
Foxboro Company, The: *See—*
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Highgate, Donald J.; and Frankland, John D., 4,565,722, Cl. 428-36.000.
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Marx, John J., 4,564,994, Cl. 29-468.000.
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Muller, Franz-Josef; Krutten, Viktor; and Krick, Gerd, 4,565,544, Cl. 604-164.000.
Frieling, Focko, to Siemens Aktiengesellschaft. Circuit for generating rapid pulses. 4,565,933, Cl. 307-269.000.
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Castagnola, Virginio; Frigerio, E. Giuliano; and Pellicciari, Roberto, 4,565,810, Cl. 514-182.000.
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Olsson, Lennart; and Heber, Gerald, 4,565,282, Cl. 198-778.000.
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Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,566,126, Cl. 382-48.000.
Tsuji, Nobuhiko; Nakamura, Keijiro; and Iike, Masanori, 4,565,998, Cl. 340-645.000.
Fuji Electric Corporate Research and Development Ltd.: *See—*
Seki, Yasukazu; and Sato, Noritada, 4,565,588, Cl. 148-186.000.
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Tanaka, Masaru; and Abe, Hideo, 4,565,361, Cl. 271-10.000.
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Makita, Fujio, 4,565,108, Cl. 74-475.000.
Suzuki, Tsunehiko, 4,565,169, Cl. 123-192.00B.
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Akao, Mutsuo, 4,565,733, Cl. 428-215.000.
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Arai, Yoshihiro; Nahara, Akira; and Fukino, Kiyotaka, 4,565,734, Cl. 428-216.000.
Ogawa, Akira; Aoki, Kozo; Tanabe, Osami; and Umemoto, Makoto, 4,565,777, Cl. 430-552.000.
Uchiyama, Kaoru; and Ichikawa, Koji, 4,564,999, Cl. 29-806.000.
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Kitaura, Tomimaro; Ohashi, Yutaka; and Yoneda, Masami, 4,566,107, Cl. 372-38.000.
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Fujikura, Makoto: *See—*
Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, 4,565,758, Cl. 430-58.000.
Fujimori, Kyoichi: *See—*
Iwasaki, Yuji; Fujimori, Kyoichi; and Hiyama, Yasuhiro, 4,566,068, Cl. 364-431.050.
Fujino, Masahisa: *See—*
Fukahori, Hidehiko; Fujino, Masahisa; and Satoh, Toshihiko, 4,566,432, Cl. 354-173.110.
Fujioka, Isami; Imada, Kazutoshi; Nishimura, Motoyasu; and Ishibashi, Takayuki, to Central Glass Company, Limited. Nonexplosive chemical composition for gently breaking rock or concrete mass. 4,565,579, Cl. 106-118.000.
Fujita, Masahiro; and Uemura, Yukio, to Maeda Metal Industries, Ltd.; and Nissan Motor Co., Ltd. Bolt tightening apparatus having bolt tip discharging device. 4,565,112, Cl. 81-56.000.
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Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.
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Ashida, Hideo, 4,565,980, Cl. 332-16.00R.
Hasegawa, Hirosi; Onuma, Tatsuro; Matsubayashi, Norio; and Tamura, Masayoshi, 4,566,079, Cl. 365-1.000.
Ohnishi, Katsumi; Mizushima, Yoshihiro; and Sato, Kiyosumi, 4,566,062, Cl. 364-200.000.
Sato, Kiyosumi; and Shimizu, Kazuyuki, 4,566,103, Cl. 371-12.000.
Yokoyama, Naoki, 4,566,021, Cl. 357-15.000.
Fujiwara, Kenichi; Hasada, Eiichi; and Sugi, Hikaru, to Nippondenso Co., Ltd. Air-conditioning and refrigerating system. 4,565,072, Cl. 62-196.200.
Fujiwara, Terufumi: *See—*
Ohmura, Takao; Fujiwara, Terufumi; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,697, Cl. 424-89.000.
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Komatsu, Toshiyuki; Hirai, Yutaka; Nakagawa, Katsumi; and Fukuda, Tadaji, 4,565,731, Cl. 428-212.000.
Fukushima, Yoshimasa: *See—*
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.
Fukuyama, Kouji: *See—*
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Furtek, Edward J., to Vitronics Corporation. Multi-zone thermal process system utilizing nonfocused infrared panel emitters. 4,565,917, Cl. 219-388.000.
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Alf, Herbert; Leipelt, Rudolf; Fusser, Rolf; and Spannbauer, Helmut, 4,565,176, Cl. 123-556.000.
Futaba Denshi Kogyo K.K.: *See—*
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,565,741, Cl. 428-427.000.
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Miyano, Masateru; and Shone, Robert L., 4,565,882, Cl. 549-399.000.
G.D Societa' per Azioni: *See—*
Seragnoli, Enzo; and Mattei, Riccardo, 4,565,202, Cl. 131-281.000.
Seragnoli, Enzo; and Dall'Osso, Gastone, 4,565,284, Cl. 198-792.000.
Gagne, Robert, to PPG Industries, Inc. Method of and apparatus for analyzing atmosphere of a furnace. 4,565,561, Cl. 65-135.000.
Gala Industries, Inc.: *See—*
Hundley, Raymond E., III, 4,565,015, Cl. 34-182.000.
Gall, James W.: *See—*
Montgomery, Dean P.; Gall, James W.; and Davis, Ed D., 4,565,620, Cl. 208-80.000.
Gallios, George C.; Whitehead, Derek; and Seleski, Richard, to Venus Scientific Inc. Converter with lossless snubbing components. 4,566,059, Cl. 363-17.000.
Gammage, Neil D.; Pachl, Jan K.; and Casey, Liam M., to Northern Telecom Limited. Control mechanism for a ring communication system. 4,566,098, Cl. 370-89.000.
Gane, Brian R.; and Hall, Antony H. P., to British Petroleum Company p.l.c., The. Production of aromatic hydrocarbons. 4,565,897, Cl. 585-415.000.
Gann, Ronald A., to ITT Corporation. Recycling pilot ignition system. 4,565,520, Cl. 431-46.000.
Ganrot, Anders B.: *See—*
Dagerskog, Magnus; Ganrot, Anders B.; and Jonsson, Kurt O. G., 4,565,704, Cl. 426-233.000.
Garbar, Henry J.; and Garbar, Joan H. Method for preparing bread dough. 4,565,703, Cl. 426-232.000.
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Gardner, Robert J.; and Martin, John R., to Foxboro Company, The. Composite electrode structure. 4,565,619, Cl. 204-400.000.
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Batts, John H.; and Garrison, Judd P., 4,565,309, Cl. 223-96.000.
Gary, James R.; Geis, Everett R.; King, Todd L.; and Singh, Daljit, to Borg-Warner Corporation. Method and system for starting a motor-commutated SCR inverter. 4,565,957, Cl. 318-723.000.
Gass, Karl: *See—*
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,565,887, Cl. 564-85.000.
Gates, Allen P.: *See—*
Chalk, Anthony J.; Charnock, Graham; Gates, Allen P.; Murray, David E.; and Smith, Ian S., 4,565,757, Cl. 430-83.000.
Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH: *See—*
Hotger, Karl, 4,565,410, Cl. 299-81.000.
Geen, John A.: *See—*
Ridgway, Peter C.; and Geen, John A., 4,565,941, Cl. 310-328.000.

Geesen, Heinrich. Method and apparatus for locating roof leaks in flat roofs. 4,565,965, Cl. 324-65.00R.

Gegner, Peter; and Vollnhals, Friedemann, to Siemens Aktiengesellschaft. Synchronization of pull-in oscillators in the transmission of digital signals. 4,565,975, Cl. 331-1.00A.

Geis, Everett R.: *See—*
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Geis, Michael W.; Smith, Henry I.; Antoniadis, Dimitri A.; and Flanders, Dale C., to Massachusetts Institute of Technology. Graphoepitaxy by encapsulation. 4,565,599, Cl. 156-603.000.

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Smith, Donald F., 4,565,476, Cl. 409-225.000.

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Balke, Roy L.; and Filipowski, Jerome R., 4,565,939, Cl. 310-177.000.
Espelage, Paul M.; and Nowak, James M., 4,565,953, Cl. 318-345.00E.
Klopfer, Howard J., 4,565,858, Cl. 528-172.000.
Spiro, Clifford L.; and Lamby, Edward J., 4,565,248, Cl. 166-267.000.
Uhen, Richard F., 4,565,937, Cl. 310-90.000.
Webb, Jimmy L.; and Olsen, Cathryn E., 4,565,885, Cl. 556-410.000.

General Electric Plastics Structured Products Europe B.V.: *See—*
Hirsch, Elisabeth, 4,565,723, Cl. 428-71.000.

General Kinematics Corporation: *See—*
Muschoot, Albert, 4,565,279, Cl. 198-505.000.

General Mills, Inc.: *See—*
Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., 4,565,708, Cl. 426-579.000.

General Motors Corporation: *See—*
Altman, Gary F.; and Beck, Robert K., Jr., 4,565,518, Cl. 425-568.000.
Graeser, Joseph H., Jr.; and Schlais, Rudolph A., Jr., 4,565,418, Cl. 339-97.00C.
Tibbetts, Gary G.; and Devour, Michael G., 4,565,684, Cl. 423-447.300.
Woolley, James M., 4,565,265, Cl. 188-72.600.

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Stamper, Richard W.; and Hultz, Robert C., 4,565,732, Cl. 428-215.000.

Geng, Walter: *See—*
Jekat, Herbert; Junghaus, Rainer; Geng, Walter; and Petersen, Vagn, 4,565,453, Cl. 366-279.000.

Genus, Inc.: *See—*
Brors, Daniel L.; Fair, James A.; and Monnig, Kenneth A., 4,565,157, Cl. 118-719.000.

Georg Fischer Aktiengesellschaft: *See—*
Fischer, Kurt; and Tanner, Hans, 4,565,233, Cl. 164-37.000.
Fischer, Kurt; and Tanner, Hans, 4,565,235, Cl. 164-169.000.

Georg Muller Kugellager-Fabrik K.G.: *See—*
Flander, Hans, 4,565,457, Cl. 384-450.000.

George, Albert A.; and George, David B. Pneumatic metering pump apparatus. 4,565,504, Cl. 417-401.000.

Geo. Bray & Co. Limited: *See—*
Hancock, John, 4,565,521, Cl. 431-75.000.

George, David B.: *See—*
George, Albert A.; and George, David B., 4,565,504, Cl. 417-401.000.

Geoservices S. A.: *See—*
Iasenmann, Olivier, 4,565,007, Cl. 33-127.000.

Gerard, Bernard: *See—*
Devault, Michel; Gerard, Bernard; and Rouaud, Yvon, 4,566,095, Cl. 370-60.000.

Gerard, Jean-Louis; and Loret, Marc, to Thomson-CSF. Process and device for regenerating the phase of synchronizing signals in a data carrier optical write-read apparatus. 4,566,091, Cl. 369-47.000.

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Gerhard Collardin GmbH: *See—*
Wagner, Heinz; Scharwaechter, Klaus; and Nee, Monika, 4,565,611, Cl. 204-44.500.

Geri, Istvan: *See—*
Salgo, Vilmos; Hanzely, Jozsef; Baross nee Sipocz, Anna; and Geri, Istvan, 4,565,576, Cl. 106-23.000.

Giebeler, Bernhardt F., to Bernhardt & Frederick Co., Inc. Ball valve device with hold-open tube. 4,565,213, Cl. 137-494.000.

Giglia, Robert D.; and Battistelli, Edward A., to American Cyanamid Co. Non-woven activated carbon fabric. 4,565,727, Cl. 428-172.000.

Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., to President and Fellows of Harvard College, The. Recombinant DNA molecule. 4,565,785, Cl. 435-317.000.

Gilbertson, John E. Device for dispensing paste from a tube. 4,565,303, Cl. 222-103.000.

Gillberg, Lars I.: *See—*
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,565,549, Cl. 44-51.000.

Gilpin, James B.: *See—*
Anderson, David A. K.; Gilpin, James B.; and Kniffin, Melvin J., 4,565,925, Cl. 250-352.000.

Giordano, Paul J., Jr.; and Smierciak, Richard C., to Standard Oil Company (Ohio), The. Ionically polymer-bound transition metal complex for photochemical conversion of light energy. 4,565,799, Cl. 502-155.000.

Girardin, Roger, to Charmilles Technologies, S.A. Travelling wire EDM apparatus provided with a wire support arm passed through the wall of a machining fluid tank. 4,565,915, Cl. 219-69.00W.

Girault, Pierre: *See—*
Tessier, Jean; Teche, Andre ; and Girault, Pierre, 4,565,822, Cl. 514-351.000.

Girodin, Georges H., to S.A. Heuliez DEA. Axial cylinder machine. 4,565,118, Cl. 92-68.000.

Glaenzer Spicer: *See—*
Orain, Michel A., 4,565,540, Cl. 464-111.000.

Gleason, Carla T.: *See—*
Todd, Lanny E.; Burke, Philip E.; Smith, Danny L.; and Gleason, Carla T., 4,565,680, Cl. 423-310.000.

Glenn, Robert L., to Eaton Corporation. Trigger switch with rotating contact carrier. 4,565,912, Cl. 200-157.000.

GMN Georg Muller Nurnberg GmbH: *See—*
Ballhaus, Heribert, 4,565,379, Cl. 277-25.000.
Wehrfritz, Heinz; and Brunke, Michael, 4,565,378, Cl. 277-3.000.

Godfrey, Marl D.: *See—*
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.

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Golander, Carl-Gustaf; and Larsson, Rolf, to IRD-Biomaterial AB. Surface modified solid substrate and a method for its preparation. 4,565,740, Cl. 428-409.000.

Goldman, Craig E.; and Voorhies, Douglas A., to Prime Computer, Inc. Image display apparatus and method having virtual cursor. 4,566,000, Cl. 340-709.000.

Goldman, Jay: *See—*
King, Allen; Collins, Peter; and Goldman, Jay, 4,565,999, Cl. 340-706.000.

Goldrian, Gottfried; and Rudolph, Volker, to International Business Machines Corp. (IBM). Method of driving electrodes in an electroerosion printer. 4,566,019, Cl. 346-163.000.

Goloubkoff, Michel: *See—*
Meyer, Sylvain; Goloubkoff, Michel; and Guena, Jean, 4,566,132, Cl. 455-86.000.

Gonczi, Csaba: *See—*
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Goodin, Richard L.: *See—*
Jurva, Edsel O.; and Goodin, Richard L., 4,565,093, Cl. 73-40.700.

Goodwin, Vernon L., to Support Systems International, Inc. Fluidized patient support system. 4,564,965, Cl. 5-453.000.

Goodyear Aerospace Corporation: *See—*
Liggett, Paul E.; and Braun, David L., 4,565,729, Cl. 428-201.000.

Gordini, Dovilio, to Officine Savio S.p.A. Device to carry out doubling-twisting operations and twisted yarn obtained with said device. 4,565,060, Cl. 57-58.300.

Gorzegno, Walter P.: *See—*
Zipay, Albert J.; and Gorzegno, Walter P., 4,565,554, Cl. 55-185.000.

Gossman, Richard C.: *See—*
Heath, Allan B.; and Gossman, Richard C., 4,565,082, Cl. 72-45.000.

Gotanda, Motohiro. Detection device for detecting and indicating operation of a gas meter. 4,565,090, Cl. 73-198.000.

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Liden, Hadar, 4,565,150, Cl. 114-265.000.

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Negishi, Hideo; Goto, Kaoru; and Takaya, Sueji, 4,565,471, Cl. 408-204.000.

Gotou, Akio: *See—*
Tsuji, Eiji; Gotou, Akio; and Ichikawa, Kuniharu, 4,565,916, Cl. 219-225.000.

Goudey, Kenneth R.: *See—*
Choung, Younho; and Goudey, Kenneth R., 4,566,012, Cl. 343-359.000.

Graber, Alfred, to Ciba-Geigy AG. Liquid spray apparatus for dispensing liquid droplets of constant droplet size. 4,565,322, Cl. 239-223.000.

Graeser, Joseph H., Jr.; and Schlais, Rudolph A., Jr., to General Motors Corporation. Insulation displacement terminal for nonmetallic core cable. 4,565,418, Cl. 339-97.00C.

Grant, Richard J., to Minnesota Mining and Manufacturing Company. Radiation-curable cellulose coating. 4,565,857, Cl. 527-301.000.

Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG: *See—*
Wirz, Burkhardt; and Kammuller, Rainer, 4,565,450, Cl. 356-402.000.

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Ayabe, Hideaki; Toyosawa, Takeshi; Ikeda, Shigeo; and Ohta, Ken-Ichiro, 4,565,918, Cl. 219-499.000.

Gratze, Stephen C., to Marconi Company Limited, The. Filter. 4,565,983, Cl. 333-193.000.

Gravitis, Vilis L.: *See—*
Watt, John S.; Fookes, Reginald A.; and Gravitis, Vilis L., 4,566,114, Cl. 378-88.000.

Gray, James B.; and Joyce, Robert A., to Seam Team, Inc. System and method for application of internal heating to thermally responsive structures. 4,565,728, Cl. 428-200.000.

Gray, Kevin J.; and Sibley, Bruce D., to Aeroquip Corporation. Safety restraint for brake actuators. 4,565,120, Cl. 92-130.00R.

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Greenlee, Fred S., III, 4,565,283, Cl. 198-790.000.

Greaves, Gerald G., to Ameron Inc. Pipe joint. 4,565,393, Cl. 285-107.000.

Green Cross Corporation, The: *See—*
Ohmura, Takao; Hirao, Yutaka; Hanamura, Takuji; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,651, Cl. 260-112.00B.
Ohmura, Takao; Fujiwara, Terufumi; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,697, Cl. 424-89.000.

Greenberg, Dan. Ejector. 4,565,499, Cl. 417-174.000.

Greenlee, Fred S., III, to Great Plains Ventures. Means and process for extracting power from a passing cable. 4,565,283, Cl. 198-790.000.

Grego, Giorgo, to Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and apparatus for determining refractive-index profiles of cylindrical transparent bodies. 4,565,449, Cl. 356-361.000.

Grgic, Ivica; and Sochtig, Wolfgang, to Krauss-Maffei Aktiengesellschaft. Method of and apparatus for measuring the degree of gas charge in a liquid synthetic resin component. 4,565,085, Cl. 73-19.000.

Grieshaber, Hermann; Sieber, Albrecht; Schueler, Peter; and Steimer, Helmut, to Robert Bosch GmbH. Control device for shutting off an internal combustion engine. 4,565,170, Cl. 123-359.000.

Grobe, Klaus: *See—*
Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, 4,565,631, Cl. 210-333.100.

Groelz, Philip. Cylindrical surface railcar center plate. 4,565,134, Cl. 105-199.00C.

Grosse, Joachim; Tiefel, Guenter; and Haufe, Wolfgang, to Siemens Aktiengesellschaft. Silver and metal oxides electrical contact material and method for making electrical contacts. 4,565,590, Cl. 148-431.000.

Grow, Robert D. Anchoring device for rock climbing. 4,565,342, Cl. 248-1.000.

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Knapp, John F.; Howland, Leon A.; Gruber, Robert J.; and Koch, Ronald J., 4,565,765, Cl. 430-122.000.

Grunwald, Peter H. Overhead projector. 4,565,430, Cl. 353-61.000.

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Seymour, Robert J.; and Stegeman, George I., 4,565,422, Cl. 350-96.190.

Guena, Jean: *See—*
Meyer, Sylvain; Goloubkoff, Michel; and Guena, Jean, 4,566,132, Cl. 455-86.000.

Gulla, Michael: *See—*
Cardin, William J.; Gulla, Michael; and Newton, Charles L., 4,565,575, Cl. 106-1.220.

Gunderson Clinic: *See—*
Boettcher, Marlon, 4,565,368, Cl. 272-129.000.

Guss, Paul L.; Tumlinson, James H., III; Sonnet, Philip E.; and McLaughlin, John R., to United States of America, Agriculture. Synthetic pheromone 10-methyl-2-tridecanone and its use in controlling the southern corn rootworm and related diabroticites. 4,565,695, Cl. 424-84.000.

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Wehrmann, Rick; and Haby, Robert, 4,565,592, Cl. 156-64.000.

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Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

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Huston, Alexander E., 4,565,923, Cl. 250-213.0VT.

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Gane, Brian R.; and Hall, Antony H. P., 4,565,897, Cl. 585-415.000.

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Penny, Glenn S.; and Briscoe, James E., 4,565,639, Cl. 252-8.55B.
Sutton, David L.; and Burkhalter, John F., 4,565,578, Cl. 106-87.000.

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Milbright, Arnold M.; and Hampe, Peter A., 4,565,038, Cl. 52-146.000.

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Uekama, Kaneto; Hanafusa, Mikio; Tatsumi, Masashi; and Hibi, Tohru, 4,565,807, Cl. 514-58.000.

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Ohmura, Takao; Hirao, Yutaka; Hanamura, Takuji; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,651, Cl. 260-112.00B.

Hancock, John, to Geo. Bray & Co. Limited. Safety pilot burners. 4,565,521, Cl. 431-75.000.

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Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,565,565, Cl. 71-92.000.

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Salgo, Vilmos; Hanzely, Jozsef; Baross nee Sipocz, Anna; and Geri, Istvan, 4,565,576, Cl. 106-23.000.

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Harbour, Edward E.; Lynch, Robert C.; and Stilwell, George R., Jr., to International Business Machines Corp. Circuit for interfacing remote functional units to a terminal. 4,566,134, Cl. 455-607.000.

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Collins, Michael J.; and Hargett, Wyatt P., Jr., 4,565,669, Cl. 422-78.000.

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Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., 4,565,586, Cl. 148-12.70C.

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Kay, John W.; Shaffer, Dale A.; and Basquin, Maurice H., 4,565,021, Cl. 38-137.000.

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Moore, Timothy G.; Dockendorff, David G.; and Harris, Stephen J., 4,566,001, Cl. 340-711.000.

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Hart, Lawrence M., to Xerox Corporation. Apparatus and method for removing developer from the sump of an electrostatic copying or printing machine. 4,565,435, Cl. 355-3.0DD.

Harvey, Frederick W.: *See—*
Henley, Charles J.; and Harvey, Frederick W., 4,565,431, Cl. 354-135.000.

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Mayenkar, Krishna V., 4,565,633, Cl. 210-688.000.

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Otsuka, Shigeharu; Mizuno, Yuji; Hasegawa, Tomoharu; and Kobukuro, Masahisa, 4,565,986, Cl. 335-131.000.

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Matsubara, Susumu; Nitta, Shouetsu; Hashiba, Kiyoaki; and Noguchi, Yuuichi, 4,565,331, Cl. 242-18.0PW.

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Tani, Masanori; Ezo, Shin'ichi; Funakoshi, Takeshi; Nishikawa, Susumu; and Hashikura, Kiyoteru, 4,565,067, Cl. 60-545.000.

Hashimoto, Michiaki: *See—*
Nonogaki, Saburo; and Hashimoto, Michiaki, 4,565,768, Cl. 430-197.000.

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Takata, Junzo; Jinushi, Michio; and Hashizume, Mitsuo, 4,565,186, Cl. 126-428.000.

Haskins, Timothy B.: *See—*
Goebel, Franz; Haskins, Timothy B.; and Batson, David C., 4,565,752, Cl. 429-94.000.
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Apperley, Norman; Edwards, Roger J.; Foster, Raymond L. J.; Haigh, David C.; Haslam, Michael; and Verey, Peter, 4,566,005, Cl. 340-771.000.

Hass, Hansjurgen: *See—*
Burkhardt, Rudolf; and Hass, Hansjurgen, 4,565,577, Cl. 106-85.000.

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Moriyama, Naoki; Koike, Hiroshi; and Hatakeyama, Osamu, 4,565,128, Cl. 101-93.190.

Hatch, Richard G.; and Tepermeister, Gary, to Beckman Instruments, Inc. Chromatographic cartridge column system. 4,565,632, Cl. 210-656.000.

Hathorn, Jack L.: *See—*
Scheier, Donald J.; and Hathorn, Jack L., 4,564,977, Cl. 17-11.000.

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Hayase, Iwao, to Mitsubishi Denki Kabushiki Kaisha. Iron core for a stationary induction apparatus. 4,565,746, Cl. 428-638.000.

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Dorer, Casper J., Jr.; and Hayashi, Katsumi, 4,565,550, Cl. 44-62.000.

Hayashi, Yoshimasa: *See—*
Seki, Nakanobu; Hayashi, Yoshimasa; and Uemura, Masakazu, 4,565,162, Cl. 123-41.080.

Haybuster Manufacturing, Inc.: *See—*
Kopecky, Ivyl D., 4,565,141, Cl. 111-7.000.

Heath, Allan B.; and Gossman, Richard C., to Acheson Industries, Inc. Spray apparatus for metal forming machines. 4,565,082, Cl. 72-45.000.

Heath, Timothy D.; Shek, Pang; and Papahadjopoulos, Demetrios, to University of California, The Regents of the. Production of immunogens by antigen conjugation to liposomes. 4,565,696, Cl. 424-88.000.

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Fischer, John; Heaton, Kenneth A.; and Pfeiffer, John W., 4,565,305, Cl. 222-368.000.

Heber, Gerald: *See—*
Olsson, Lennart; and Heber, Gerald, 4,565,282, Cl. 198-778.000.

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Hanni, Manfred; and Hechfellner, Kurt, 4,566,009, Cl. 343-6.5LC.

Heck, James V.: *See—*
Andrus, W. Alexander; Christensen, Burton G.; and Heck, James V., 4,565,808, Cl. 514-80.000.

Hefner, James L., to International Business Machines Corporation. Parallel-shift error reconfiguration. 4,566,102, Cl. 371-11.000.

Hefty, Arpad: *See—*
Hefty, Bela; and Hefty, Arpad, 4,565,336, Cl. 242-55.550.

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Hehl, Karl. Hydraulic speed controls for die closing unit of injection molding machine. 4,565,116, Cl. 91-519.000.

Heidjann, Franz, to Claas OHG. Self-propelled harvester thresher. 4,565,056, Cl. 56-14.400.

Heimann GmbH: *See—*
Donges, Gerhard; Herwig, Thomas; Kunze, Claus; and Stein, Karl-Ulrich, 4,566,113, Cl. 378-57.000.

Heine, Otto R.; and Riede, Peter M., to R&H Technology, Inc. Throttling and shut-off valve for slurry pipelines and the like. 4,565,210, Cl. 137-219.000.

Heinonen, Ahti. Means for cleaning floor. 4,564,969, Cl. 15-147.00A.

Heinz, Peter G. Stained glass window constructing tool. 4,565,004, Cl. 30-314.000.

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Heitzmann, Michel; and Boudot, Marianne, to Thomson-CSF. Prematched module for an ultra-high frequency diode with high heat dissipation. 4,566,027, Cl. 357-81.000.

Heja, Gergely: *See—*
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Held, Robert P., to Du Pont de Nemours, E. I., and Company. Process for dot etching acid soluble photopolymerizable elements utilizing chemically soluble pigments. 4,565,770, Cl. 430-294.000.

Hellsten, Karl M. E.: *See—*
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,565,549, Cl. 44-51.000.

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Haartti, Juhani; Heitto, Pertti; Helsto, Jaakko J.; and Vartiainen, Nuutti, 4,565,602, Cl. 162-56.000.

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Henley, Charles J.; and Harvey, Frederick W., to Eastman Kodak Company. Photographic camera and flash assembly. 4,565,431, Cl. 354-135.000.

Hergenrother, Paul M., to United States of America, National Aeronautics and Space Administration. Ethynyl and substituted ethynyl-terminated polysulfones. 4,565,886, Cl. 556-436.000.

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Ruchser, Erich; and Ott, Helmut, 4,565,209, Cl. 137-116.300.

Herman, Robert D. Electronic signaling level. 4,565,010, Cl. 33-366.000.

Herscovici, Eva J.; and Kim, Ki-Soo, to Stauffer Chemical Company. Compositions for forming epoxy adhesive containing acrylate rubber. 4,565,853, Cl. 525-530.000.

Hertel, Otto; Kiefer, Hans; and Arnold, Lothar, to BASF Aktiengesellschaft. Preparation of ionones. 4,565,894, Cl. 568-349.000.

Hertzberg, William E.: *See—*
Browne, Ronald O.; and Hertzberg, William E., 4,565,053, Cl. 53-516.000.

Herwig, Thomas: *See—*
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Herzl, Peter J., to Fischer & Porter Company. Hybrid sensing system for vortex flowmeter. 4,565,098, Cl. 73-861.220.

Hewlett-Packard Company: *See—*
Hornak, Thomas; and Baldwin, Gary L., 4,565,961, Cl. 323-312.000.
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.

Hibi, Tohru: *See—*
Uekama, Kaneto; Hanafusa, Mikio; Tatsumi, Masashi; and Hibi, Tohru, 4,565,807, Cl. 514-58.000.

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Hosoi, Kinji; Kobayashi, Hisao; Takeda, Hiroyuki; and Hibino, Mitsuyoshi, 4,565,358, Cl. 269-60.000.

Hickenlooper, Franklin T.: *See—*
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.

Higashihata, Yoshihide: *See—*
Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; and Fukuyama, Kouji, 4,565,943, Cl. 310-357.000.

Higgins, Patrick K.: *See—*
Phillips, Roger W.; Higgins, Patrick K.; and Berning, Peter H., 4,565,719, Cl. 428-34.000.

Highgate, Donald J.; and Frankland, John D. Deformable polymeric compositions. 4,565,722, Cl. 428-36.000.

Higuchi, Yasuo, to Kabushiki Kaisha Japanlicensor. Vane-type rotary actuator. 4,565,119, Cl. 92-125.000.

Hilti Aktiengesellschaft: *See—*
Brennsteiner, Ernst; and Scholz, Dieter, 4,565,472, Cl. 408-226.000.

Himi, Kohei, to Chubu Industries, Inc. Food slicer. 4,565,329, Cl. 241-95.000.

Hino, Naganori: *See—*
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,565,569, Cl. 71-103.000.

Hirai, Shoichi: *See—*
Sekiya, Kunihiko; Sakai, Kunio; Hirai, Shoichi; Miyao, Shigeru; and Fukuda, Masatoshi, 4,566,127, Cl. 382-56.000.

Hirai, Toshio: *See—*
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.

Hirai, Yutaka: *See—*
Komatsu, Toshiyuki; Hirai, Yutaka; Nakagawa, Katsumi; and Fukuda, Tadaji, 4,565,731, Cl. 428-212.000.

Hirao, Yutaka: *See—*
Ohmura, Takao; Hirao, Yutaka; Hanamura, Takuji; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,651, Cl. 260-112.00B.

Hirashiba, Yuji: *See—*
Kaneko, Kenichi; Hirashiba, Yuji; and Kawai, Shinji, 4,564,961, Cl. 4-443.000.

Hiratsuka, Kousai: *See—*
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.

Hiratsuka, Yutaka: *See—*
Nakano, Asao; and Hiratsuka, Yutaka, 4,566,116, Cl. 378-121.000.

Hirayama, Takayuki: *See—*
Nagase, Hidenobu; and Hirayama, Takayuki, 4,565,178, Cl. 123-564.000.

Hirayama, Takeshi; Amano, Matsuo; Sakamoto, Shinichi; Shiida, Masami; and Baba, Shirou, to Hitachi, Ltd. Electronic control apparatus for an internal combustion engine. 4,566,069, Cl. 364-431.120.

Hirooka, Koichi; Matsuda, Setsuyuki; and Arahata, Yoshikuni, to Mitsubishi Denki Kabushiki Kaisha. Gas-insulated electric device. 4,565,901, Cl. 174-17.0GF.

Hirooka, Shigeru; Maeda, Shuichi; Yamamoto, Shigehiro; and Yamaguchi, Toshihiko, to Nippon Yusoki Co., Ltd.; and Dac Engineering Co., Ltd. Visually guided vehicle. 4,566,032, Cl. 358-103.000.

Hirose, Kunio; Hukuta, Tadatoshi; Horiuchi, Hiroshi; Urakami, Toyozo; and Yoshida, Minoru, to Sanyo Electric Co., Ltd. Mode setting arrangement for use in video tape recorder. 4,566,047, Cl. 360-85.000.

Hirsch, Elisabeth, to General Electric Plastics Structured Products Europe B.V. Composite polymeric panel and process for making same. 4,565,723, Cl. 428-71.000.

Hitachi Chemical Company, Ltd.: *See—*
Inoue, Shohei; Aida, Takuzo; Sanuki, Koichi; and Ishikawa, Masahide, 4,565,845, Cl. 525-25.000.
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.
Nonogaki, Saburo; and Hashimoto, Michiaki, 4,565,768, Cl. 430-197.000.
Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, 4,565,758, Cl. 430-58.000.

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Hoshi, Yoshikazu, 4,565,172, Cl. 123-446.000.
Jyomura, Shigeru; and Takeuchi, Hiroshi, 4,565,642, Cl. 252-62.900.
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.
Nakano, Asao; and Hiratsuka, Yutaka, 4,566,116, Cl. 378-121.000.
Okamoto, Yukio; Shinada, Shinichi; and Okabe, Tadao, deceased, 4,566,006, Cl. 340-771.000.
Sugiura, Noboru; and Suda, Seiji, 4,565,171, Cl. 123-425.000.
Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, 4,565,758, Cl. 430-58.000.
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Kosugi, Tetuo, 4,565,907, Cl. 200-19.0DR.
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.
Yamamoto, Hideaki; Baji, Toru; Tsukada, Toshihisa; and Sasano, Akira, 4,565,928, Cl. 250-578.000.
Yoshida, Kunihiko; Izumi, Eiki; and Ichiyama, Shuichi, 4,565,221, Cl. 137-885.000.

Hitachi, Ltd: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.

Hitachi Medical Corp.: *See—*
Jyomura, Shigeru; and Takeuchi, Hiroshi, 4,565,642, Cl. 252-62.900.

Hiyama, Yasuhiro: *See—*
Iwasaki, Yuji; Fujimori, Kyoichi; and Hiyama, Yasuhiro, 4,566,068, Cl. 364-431.050.

Hoeksma, Gerben S., to N.V. Nederlandsche Apparatenfabriek Nedap. DC-to-AC Voltage converter having galvanically separated input and output(s). 4,566,060, Cl. 363-21.000.

Hoesch Aktiengesellschaft: *See—*
Brinkmann, Dirk; Muller, Wolfgang; Sauerwald, Walter; Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,565,517, Cl. 425-451.200.

Hofeditz, Wolfgang, to Beiersdorf Aktiengesellschaft. Wool wax acid hydrogenation products useful as emulsifiers. 4,565,646, Cl. 252-309.000.

Hoffacker, Gerd; and Muller, Willi, to Degussa Aktiengesellschaft. Alkaline cyanide bath for electrolytic deposition of copper-tin-alloy coatings. 4,565,608, Cl. 204-44.000.

Hoffmann, Erhard: *See—*
Ecker, Karl-Heinz; and Hoffmann, Erhard, 4,565,111, Cl. 81-53.200.

Hoffmann-La Roche Inc.: *See—*
Bollag, Werner; Mayer, Hans J.; and Wyss, Pierre-Charles, 4,565,863, Cl. 536-18.200.
Foley, Louise H.; Sello, Lilian H.; and Westley, John, 4,565,862, Cl. 536-16.800.
Imfeld, Marquard; Ramuz, Henri; Vogt, Peter; and Muller, Jean-Claude, 4,565,869, Cl. 544-323.000.
Petrzilka, Martin; and Schadt, Martin, 4,565,425, Cl. 350-350.00R.

Hofstetter, James F.: *See—*
Bartling, Jerry W.; and Hofstetter, James F., 4,565,071, Cl. 62-89.000.

Hollonbeck, Gary G.; and Cooper, Hugh E. Body support apparatus. 4,565,409, Cl. 297-411.000.

Holotronics Corporation, The: *See—*
Kirk, Ronald L., 4,566,031, Cl. 358-90.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Isoi, Toshihiro; Yashima, Michio; and Takahashi, Shuuji, 4,565,750, Cl. 429-72.000.
Kami, Yozo; Minakawa, Masaaki; and Kubo, Kanji, 4,565,389, Cl. 280-663.000.
Kawasaki, Hiroshi; and Ukiana, Kazuoki, 4,565,269, Cl. 192-70.120.
Nagase, Hidenobu; and Hirayama, Takayuki, 4,565,178, Cl. 123-564.000.
Nishikawa, Masao; and Sakurai, Yoshimi, 4,565,267, Cl. 192-3.310.

Honda Kogyo Kabushiki Kaisha: *See—*
Yashima, Michio; Takanashi, Masami; and Komatsu, Akihiro, 4,565,909, Cl. 200-61.850.

Honeywell, Inc.: *See—*
Bartels, James I., 4,565,930, Cl. 307-118.000.
Kompelien, Arlon D., 4,565,092, Cl. 73-202.000.
Lee, Ed C.; and Roberts, Jon A., 4,566,026, Cl. 357-71.000.

Hoogovens Groep B.V.: *See—*
Van Laar, Jacobus; Felthuis, Jacob; Butter, Jahannes A.M.; Rengersen, Jacob; and Sannes, Albert, 4,565,525, Cl. 432-248.000.

Hopkins, David B. Truck bed support frame unit. 4,565,402, Cl. 296-3.000.

Horbinski, Ronald T. Perspective drafting instrument. 4,565,016, Cl. 33-432.000.

Hori, Akio: *See—*
Takeoka, Yoshikatsu; Yasuda, Nobuaki; Hori, Akio; and Ozawa, Norio, 4,565,772, Cl. 430-320.000.

Hori, Masatake: *See—*
Azuma, Junichi; Watanabe, Koichi; and Hori, Masatake, 4,565,626, Cl. 210-138.000.

Horikawa, Takeshi; and Sasaki, Kenichi, to Daicel Chemical Industries, Ltd. Polyamide elastomer from carboxy terminated polyamide and polyoxy-2-methyl-1,3-propylene diol. 4,565,849, Cl. 525-420.000.

Horiuchi, Hiroshi: *See—*
Hirose, Kunio; Hukuta, Tadatoshi; Horiuchi, Hiroshi; Urakami, Toyozo; and Yoshida, Minoru, 4,566,047, Cl. 360-85.000.

Hornak, Thomas; and Baldwin, Gary L., to Hewlett-Packard Company. Circuit for preserving the magnitude of the dc component in a pulsed current source. 4,565,961, Cl. 323-312.000.

Hosaka, Akio: *See—*
Oshiage, Katsunori; and Hosaka, Akio, 4,565,173, Cl. 123-458.000.

Hosegood, Edward A.; and Seufert, Ludwig E., to Du Pont de Nemours, E. I., and Company. Antisoiling treatment of synthetic filaments. 4,565,717, Cl. 427-339.000.

Hoshi, Yoshikazu, to Hitachi, Ltd. High-pressure fuel injection system for diesel engine. 4,565,172, Cl. 123-446.000.

Hoshino, Minoru: *See—*
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.

Hosoi, Kinji; Kobayashi, Hisao; Takeda, Hiroyuki; and Hibino, Mitsuyoshi, to Nihon Early Kabushiki Kaisha (Japan Early Co., Ltd.). Plate positioning apparatus. 4,565,358, Cl. 269-60.000.

Hosoi, Toshiaki. Drill. 4,565,473, Cl. 408-229.000.

Hotfoil Limited: *See—*
Bloore, Frederick W.; and Seaman, Peter H., 4,565,455, Cl. 374-164.000.

Hotger, Karl, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH. Apparatus for controlling the supply of high-pressure liquid to a cutter drum assembly. 4,565,410, Cl. 299-81.000.

Hovland, Helge: *See—*
Berge, Odd; and Hovland, Helge, 4,565,709, Cl. 426-641.000.

Howa Kogyo Kabushiki Kaisha: *See—*
Iwasaki, Takeru; Sasaki, Kenji; and Enomoto, Hiroshi, 4,565,064, Cl. 57-404.000.

Howland, Leon A.: *See—*
Knapp, John F.; Howland, Leon A.; Gruber, Robert J.; and Koch, Ronald J., 4,565,765, Cl. 430-122.000.

Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, to Takeda Chemical Industries, Ltd. Phospholipid carbamates. 4,565,865, Cl. 544-110.000.

Hsieh, Shuang-shii; and Lehr, James R., to Tennessee Valley Authority. Beneficiation of phosphate ores containing surface activated silica. 4,565,625, Cl. 209-167.000.

Hubbard, James E., Jr., to Massachusetts Institute of Technology. Method and apparatus using a piezoelectric film for active control of vibrations. 4,565,940, Cl. 310-326.000.

Hubbard, Robert E.; and Wedemeyer, Robert C., to Medi-Physics, Inc. Device for dispensing radioactive gas. 4,565,301, Cl. 222-5.000.

Huber Reversible Fan, Inc.: *See—*
Dinger, Nelson E., 4,565,494, Cl. 416-206.000.

Huelster, Richard L.; and Dyer, Thomas A., to Pentek Corporation. Modular conveyor car and couplings therefor. 4,565,483, Cl. 414-353.000.

Huffman, William A.; and Novack, James C., to Minnesota Mining and Manufacturing Company. Asymmetric dichroic dye molecules having poly(arylazo) linking groups, a bis-substituted aryl thiazyl end group, and another end group. 4,565,424, Cl. 350-349.000.

Hukuta, Tadatoshi: *See—*
Hirose, Kunio; Hukuta, Tadatoshi; Horiuchi, Hiroshi; Urakami, Toyozo; and Yoshida, Minoru, 4,566,047, Cl. 360-85.000.

Hultholm, Stig-Erik; Lilja, Launo L.; Makitalo, Valto J.; and Nyman, Bror G., to Outokumpu Oy. Method for dispersing gas, for mixing a pulverous solid into a liquid to form a suspension, and for maintaining

the obtained good solid-gas-liquid suspension in the reactor. 4,565,660, Cl. 261-121.00R.

Hultz, Robert C.: *See—*
Stamper, Richard W.; and Hultz, Robert C., 4,565,732, Cl. 428-215.000.

Hundley, Raymond E., III, to Gala Industries, Inc. Centrifugal pellet dryer. 4,565,015, Cl. 34-182.000.

Hunt, Peter F.: *See—*
Jouquey, Alain; and Hunt, Peter F., 4,565,876, Cl. 548-426.000.

Huston, Alexander E., to Hadland Photonics Limited. Image converter having separate and sequential switching of deflector plate potentials. 4,565,923, Cl. 250-213.0VT.

Huyck Corporation: *See—*
Murka, August, Jr.; and Marcellus, Michael, 4,565,735, Cl. 428-234.000.

Hwang, Deng R.: *See—*
Malin, Michael J.; Loev, Bernard; and Hwang, Deng R., 4,565,688, Cl. 424-3.000.

Hydrotreat, Inc.: *See—*
Arnaud, Johnny, 4,565,628, Cl. 210-232.000.

Hygolet AG: *See—*
Hefty, Bela; and Hefty, Arpad, 4,565,336, Cl. 242-55.550.

Ichihashi, Hiroshi: *See—*
Shimizu, Shinkichi; Ichihashi, Hiroshi; and Nagai, Koichi, 4,565,801, Cl. 502-209.000.

Ichikawa, Koji: *See—*
Uchiyama, Kaoru; and Ichikawa, Koji, 4,564,999, Cl. 29-806.000.

Ichikawa, Kuniharu: *See—*
Tsuji, Eiji; Gotou, Akio; and Ichikawa, Kuniharu, 4,565,916, Cl. 219-225.000.

Ichinose, Isao: *See—*
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, 4,565,295, Cl. 215-252.000.

Ichiyama, Shuichi: *See—*
Yoshida, Kunihiko; Izumi, Eiki; and Ichiyama, Shuichi, 4,565,221, Cl. 137-885.000.

Idemitsu Petrochemical Co., Ltd.: *See—*
Kasahara, Toshikazu; Kajiya, Toshifumi; and Akiyoshi, Tomio, 4,565,844, Cl. 524-108.000.
Yaeo, Kenta; Kawamura, Shinji; and Mihara, Yoshiyuki, 4,565,720, Cl. 428-35.000.

Idemitsukosan Kabushiki Kaisha: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Igersheim, Francoise: *See—*
Costantini, Michel; Igersheim, Francoise; and Krumenacker, Leon, 4,565,895, Cl. 568-362.000.

Iida, Takayuki; and Miyake, Tamio, to Omron Tateisi Electronics Co. Electronic thermometer. 4,565,456, Cl. 374-169.000.

Iike, Masanori: *See—*
Tsuji, Nobuhiko; Nakamura, Keijiro; and Iike, Masanori, 4,565,998, Cl. 340-645.000.

Ikeda, Shigeo: *See—*
Ayabe, Hideaki; Toyosawa, Takeshi; Ikeda, Shigeo; and Ohta, Ken-Ichiro, 4,565,918, Cl. 219-499.000.

Ikegami, Takashi; and Mori, Masakazu, to Mitsubishi Denki Kabushiki Kaisha. Rotor for rotary machine. 4,565,936, Cl. 310-62.000.

Ikegami Tsushinki Co. Ltd.: *See—*
Takahashi, Hiroshi, 4,566,071, Cl. 364-468.000.

Ikehata, Shigeki; Shutoh, Kuniharu; and Aoyagi, Kazuya, to Sumitomo Metal Industries, Ltd. Drawn tubing manufacturing process and apparatus therefor. 4,565,664, Cl. 264-130.000.

Ikemoto, Shigeru. Wrapping device. 4,565,045, Cl. 53-64.000.

Illger, Hans-Walter: *See—*
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,565,834, Cl. 521-121.000.

Illinois Tool Works Inc.: *See—*
Peterson, Francis C., 4,564,986, Cl. 29-33.00K.
Sygnator, Henry A., 4,565,475, Cl. 409-131.000.

Imada, Kazutoshi: *See—*
Fujioka, Isami; Imada, Kazutoshi; Nishimura, Motoyasu; and Ishibashi, Takayuki, 4,565,579, Cl. 106-118.000.

Imai, Masafumi: *See—*
Yamamoto, Tadashi; Furuhashi, Hiroyuki; Imai, Masafumi; Ueno, Hiroshi; and Inaba, Naomi, 4,565,798, Cl. 502-119.000.

Imai, Tamotsu: *See—*
O'Hara, Mark J.; Imai, Tamotsu; Bricker, Jeffery C.; and Mackowiak, David E., 4,565,898, Cl. 585-441.000.

Imfeld, Marquard; Ramuz, Henri; Vogt, Peter; and Muller, Jean-Claude, to Hoffmann-La Roche Inc. Dicarbamates. 4,565,869, Cl. 544-323.000.

Imoto, Masaya: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Saws, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, 4,565,861, Cl. 536-6.400.

Imperial Chemical Industries PLC: *See—*
Bewick, David W., 4,565,782, Cl. 435-122.000.
Purdy, John R., 4,565,738, Cl. 428-349.000.

Inaba, Naomi: *See—*
Yamamoto, Tadashi; Furuhashi, Hiroyuki; Imai, Masafumi; Ueno, Hiroshi; and Inaba, Naomi, 4,565,798, Cl. 502-119.000.

Inaoka, Koji: *See—*
Suzaki, Hidenori; Miura, Tetsuro; Maeda, Masanori; and Inaoka, Koji, 4,565,914, Cl. 219-68.000.

Inculet, Ion I., to Canadian Patents & Development Limited. Multi-liquid electrostatic method. 4,565,318, Cl. 239-3.000.

Indag Gesselschaft, fur Industriebedard mbH: *See—*
Wild, Rudolf, 4,565,452, Cl. 366-149.000.

Inductotherm Corporation: *See—*
Venetta, Henry J., 4,565,583, Cl. 134-12.000.

Industrial Products, Inc.: *See—*
Peters, Richard W., 4,566,119, Cl. 381-103.000.

Industrias Hidraulicas Pardo S.A.: *See—*
Pardo Herrera, Jose , 4,564,964, Cl. 5-164.00R.

Ing. Erich Pfeiffer GmbH & Co. KG: *See—*
Pfeiffer, Peter; and Maerte, Leo, 4,565,302, Cl. 222-38.000.

Ingersoll Milling Machine Company, The: *See—*
Charles, Paul A. S., 4,565,474, Cl. 409-51.000.

Innus Industrial Nuclear Services S.A.: *See—*
Booij, Johannes, 4,565,206, Cl. 134-112.000.

Inoue, Kimio: *See—*
Murai, Takaaki; Watanabe, Shoji; Inoue, Kimio; and Yagii, Toyokazu, 4,565,859, Cl. 528-365.000.

Inoue, Shohei; Aida, Takuzo; Sanuki, Koichi; and Ishikawa, Masahide, to Hitachi Chemical Company, Ltd. Process for producing polyester and block copolymer thereof. 4,565,845, Cl. 525-25.000.

Inoue, Tuneyuki: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.

Intercal Company: *See—*
Vogel, F. Lincoln, 4,565,649, Cl. 252-503.000.

International Business Machines: *See—*
Barrett, William H.; and Minn, Andre B., 4,565,946, Cl. 313-408.000.

International Business Machines Corporation: *See—*
Apperley, Norman; Edwards, Roger J.; Foster, Raymond L. J.; Haigh, David C.; Haslam, Michael; and Verey, Peter, 4,566,005, Cl. 340-771.000.
Bederman, Seymour, 4,566,097, Cl. 370-89.000.
Crabtree, Robert P., 4,566,078, Cl. 364-900.000.
Emerson, Geoffrey A., 4,566,004, Cl. 340-771.000.
Harbour, Edward E.; Lynch, Robert C.; and Stilwell, George R., Jr., 4,566,134, Cl. 455-607.000.
Hefner, James L., 4,566,102, Cl. 371-11.000.
Kalter, Howard L.; and Kiley, Donald B., 4,566,022, Cl. 357-23.140.
Langdon, Glen G., Jr.; and Siegel, Paul H., 4,566,044, Cl. 360-40.000.
Minn, Andre B., 4,565,947, Cl. 313-467.000.

International Business Machines Corp. (IBM): *See—*
Beam, David L.; and Double, Glen P., 4,566,050, Cl. 360-113.000.
Goldrian, Gottfried; and Rudolph, Volker, 4,566,019, Cl. 346-163.000.

International Computers Limited: *See—*
Bradshaw, George M.; Desyllas, Peter L. L.; and McLaren, Keith, 4,566,104, Cl. 371-15.000.

International Flavors & Fragrances Inc.: *See—*
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,565,707, Cl. 426-535.000.

International Jensen Incoporated: *See—*
Nation, Melvin S., 4,565,905, Cl. 179-115.5PC.

International Robotic Engineering, Inc.: *See—*
Kroczynski, Patrice, 4,565,487, Cl. 414-730.000.

International Standard Electric Corporation: *See—*
Brunn, Otto, 4,565,420, Cl. 339-193.00P.

International Telephone and Telegraph Corporation: *See—*
Milbright, Arnold M.; and Hampe, Peter A., 4,565,038, Cl. 52-146.000.
Young, Kenneth P., 4,565,241, Cl. 164-499.000.

Intra-Technology Associates, Inc.: *See—*
Fawzy, Mohamram M., 4,565,938, Cl. 310-156.000.

Ipri, Alfred C.: *See—*
Jastrzebski, Lubomir L.; and Ipri, Alfred C., 4,566,025, Cl. 357-42.000.

IRD-Biomaterial AB: *See—*
Golander, Carl-Gustaf; and Larsson, Rolf, 4,565,740, Cl. 428-409.000.

Isaac, Timothy S., to Trek Bicycle Corporation. Front and rear wheel drop outs for bicycle frames. 4,565,383, Cl. 280-276.000.

Isett, Donald D.: *See—*
Martell, Charles R.; Isett, Donald D.; and Treadwell, Stephen S., 4,565,140, Cl. 112-121.110.

Ishibashi, Takayuki: *See—*
Fujioka, Isami; Imada, Kazutoshi; Nishimura, Motoyasu; and Ishibashi, Takayuki, 4,565,579, Cl. 106-118.000.

Ishigooka, Hiroshi: *See—*
Yoshizumi, Hajime; Amachi, Teruo; Kusumi, Takaaki; Tanaka, Takaharu; and Ishigooka, Hiroshi, 4,565,698, Cl. 424-93.000.

Ishihara, Hiroshi: *See—*
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.

Ishihara, Noboru: *See—*
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.

Ishii, Kazuhiro: *See—*
Wada, Hiroshi; Ishii, Kazuhiro; Tsumagari, Nobuchika; Matsuo, Masaaki; and Matsumoto, Mikio, 4,565,877, Cl. 548-530.000.

Ishii, Osamu: *See—*
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, 4,565,295, Cl. 215-252.000.

Ishikawa, Hidetake: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.

Ishikawa, Masahide: *See—*
Inoue, Shohei; Aida, Takuzo; Sanuki, Koichi; and Ishikawa, Masahide, 4,565,845, Cl. 525-25.000.

Ishikawa, Masazumi: *See—*
Murofushi, Yasuyuki; Ishikawa, Masazumi; and Kawai, Mikio, 4,565,860, Cl. 528-422.000.

Ishikawa, Takashi: *See—*
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.

Ishimi, Haruyoshi; and Asanomi, Koji, to Mazda Motor Corporation. V-Type engine. 4,565,163, Cl. 123-41.440.

Ishizuka, Hiroshi. Apparatus for producing purified refractory metal from a chloride thereof. 4,565,354, Cl. 266-171.000.

Isogai, Masaki: *See—*
Takatsu, Norihiko; Kawahara, Atsushi; and Isogai, Masaki, 4,566,037, Cl. 358-213.000.

Isogai, Tokio: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Isei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.

Isoi, Toshihiro; Yashima, Michio; and Takahashi, Shuuji, to Honda Giken Kogyo Kabushiki Kaisha; and Yuasa Battery Co., Ltd. Electrolyte container for battery and method of filling electrolyte. 4,565,750, Cl. 429-72.000.

Israel, Kenneth W.: *See—*
Roettgen, Leslie A.; and Israel, Kenneth W., 4,565,177, Cl. 123-563.000.

Israel, Mrs. Lawrence: *See—*
Close, Leo R., 4,565,996, Cl. 340-572.000.

Issenmann, Olivier, to Geoservices S. A. Process and apparatus for measuring the coiled/uncoiled length of winding gear cable. 4,565,007, Cl. 33-127.000.

Istituto Biologico Chemioterapico "ABC" S.p.A.: *See—*
Di Schiena, Michele G., 4,565,811, Cl. 514-182.000.

Ito, Hajime: *See—*
Yano, Naomichi; Ito, Hajime; and Tanaka, Shigeru, 4,565,242, Cl. 165-10.000.

Ito, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Hydraulic apparatus for a continuously variable transmission. 4,565,110, Cl. 74-868.000.

Ito, Katsunori; Akiyama, Susumu; Mizuno, Tiaki; Yamada, Toshitaka; and Abe, Tomoaki, to Nippondenso Co., Ltd. Apparatus for measuring the quantity of airflow passing through an intake passage of an engine. 4,565,091, Cl. 73-118.000.

Ito, Yo: *See—*
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.

Ito, Yoshimasa: *See—*
Saito, Yukihiro; Ito, Yoshimasa; and Asakawa, Shiro, 4,565,846, Cl. 525-101.000.

Itsubo, Junichi: *See—*
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, 4,565,295, Cl. 215-252.000.

Itsumi, Manabu: *See—*
Matsuo, Seitaro; Muramoto, Susumu; Ehara, Kohei; and Itsumi, Manabu, 4,564,997, Cl. 29-576.00W.

ITT Corporation: *See—*
Gann, Ronald A., 4,565,520, Cl. 431-46.000.

ITT Industries, Inc.; Weiler, Rolf; and Bergelin, Klaus. Die-casting mold for a brake master cylinder housing and a die-cast brake master cylinder housing manufactured with this mold. 4,565,066, Cl. 60-533.000.

ITT Industries, Inc.: *See—*
Seiber, Wolfram, 4,565,411, Cl. 303-110.000.

Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; and Peredery, Valery P., to Donetsky Nauchno-Issledovatelsky Institut Komplexnoi Mekhanizatsii Shakht. Propulsion installation of air-cushion transport vehicle. 4,565,491, Cl. 415-160.000.

Ivanov, Vladimir N.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Ives, Jeffrey L.; and Sciavolino, Frank C., to Pfizer Inc. Acyltripeptide immunostimulants. 4,565,653, Cl. 260-112.50R.

Iwami, Masahide, to Tachikawa Spring Co. Ltd. Seat adjustment device for a vehicle seat. 4,565,344, Cl. 248-429.000.

Iwamoto, Tugunari: *See—*
Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, 4,565,712, Cl. 427-53.100.

Iwasaki, Takeru; Sasaki, Kenji; and Enomoto, Hiroshi, to Howa Kogyo Kabushiki Kaisha. Process and apparatus for preparing fasciated spun yarns. 4,565,064, Cl. 57-404.000.

Iwasaki, Yuji; Fujimori, Kyoichi; and Hiyama, Yasuhiro, to Diesel Kiki Co., Ltd. Characteristic signal generator for an electronically controlled fuel injection pump. 4,566,068, Cl. 364-431.050.

Iwata, Masao, to Oppama Kogyo Kabushiki Kaisha. Contactless ignition device for internal combustion engines. 4,565,180, Cl. 123-602.000.

Izaki, Masataka: *See—*
Tokunaga, Tomokazu; Izaki, Masataka; Kajino, Jirou; and Kamiyama, Toshibumi, 4,566,048, Cl. 360-94.000.

Izu, Masatsugu: *See—*
Hanak, Joseph J.; Nath, Prem; Izu, Masatsugu; and Young, James, 4,565,607, Cl. 204-38.100.

Izumi, Eiki: *See—*
Yoshida, Kunihiko; Izumi, Eiki; and Ichiyama, Shuichi, 4,565,221, Cl. 137-885.000.

J. I. Case Company: *See—*
Hanson, Charles B., 4,565,257, Cl. 180-135.000.

Jachimowicz, Felek: *See—*
Hansson, P. E. Anders; and Jachimowicz, Felek, 4,565,604, Cl. 162-168.200.

Jackson, Robert J., to Beecham Group p.l.c. Oral hygiene compositions. 4,565,691, Cl. 424-52.000.

Jacobsen, Steinar F.: *See—*
Stautland, Thomas; and Jacobsen, Steinar F., 4,565,124, Cl. 100-117.000.

James, Rex L.: *See—*
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.

Janome Sewing Machine Co., Ltd.: *See—*
Hanyu, Susumu; Kato, Kenji; and Hara, Kazumasa, 4,565,143, Cl. 112-262.100.

Japan Bars Company Limited: *See—*
Takada, Toshiya, 4,565,547, Cl. 44-51.000.

Japan Crown Cork Co Ltd.: *See—*
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, 4,565,295, Cl. 215-252.000.

Japan Exlan Company Limited: *See—*
Kobashi, Toshiyuki; Takagi, Shoyo; and Naka, Hideo, 4,565,832, Cl. 521-63.000.

Japan Metals and Chemicals Co., Ltd.: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.

Jassawalla, Jal S.: *See—*
Miller, Phillip J.; and Jassawalla, Jal S., 4,565,497, Cl. 417-63.000.

Jastrzebski, Lubomir L.; and Ipri, Alfred C., to RCA Corporation. CMOS Structure incorporating vertical IGFETS. 4,566,025, Cl. 357-42.000.

Jeensalute, Thipthep; and Chakkaw, Somkiat, to Stewart-Riess Laboratories, Inc. Air bubble detecting and discriminating circuit arrangement and method. 4,565,500, Cl. 417-53.000.

Jeffries, Russell A.: *See—*
Singer, Irwin L.; and Jeffries, Russell A., 4,565,710, Cl. 427-35.000.

Jekat, Herbert; Junghaus, Rainer; Geng, Walter; and Petersen, Vagn, to Ekato Industrieanlagen Verwaltungsgesellschaft mbH & Co. Agitator. 4,565,453, Cl. 366-279.000.

Jekat, Herbert: *See—*
Korner, Jorg-Peter; and Jekat, Herbert, 4,565,297, Cl. 220-254.000.

Jes, Otto J., to Willamette Industries, Inc. Two-piece asparagus carton. 4,565,316, Cl. 229-23.0BT.

Jeunhomme, Luc B.: *See—*
Alard, Francis; and Jeunhomme, Luc B., 4,565,445, Cl. 356-73.100.

Jilek, Walter; and Poferl, Gunter, to Voest-Alpine Aktiengesellschaft. Flushing arrangement for a metallurgical vessel. 4,565,355, Cl. 266-224.000.

Jimbou, Ryutarou: *See—*
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Kosugi, Tetuo, 4,565,907, Cl. 200-19.0DR.

Jinushi, Michio: *See—*
Takata, Junzo; Jinushi, Michio; and Hashizume, Mitsuo, 4,565,186, Cl. 126-428.000.

Joelson, C. R. Self aligning concrete pipe with configured joint. 4,565,381, Cl. 277-207.00A.

John Thomas Batts, Inc.: *See—*
Batts, John H.; and Garrison, Judd F., 4,565,309, Cl. 223-96.000.

John Zink Company: *See—*
Schwartz, Robert E., 4,565,522, Cl. 431-202.000.

Johnson, Cydney A., to RCA Corporation. Shuttered CCD camera with low noise. 4,566,029, Cl. 358-50.000.

Johnson, George E.; and Newman, Walter, to Leviton Manufacturing Company, Inc. Threaded lamp adapter system with spring adapter. 4,565,419, Cl. 339-154.00L.

Johnston, Howard; and Troxell, Lillian H., to Dow Chemical Company, The. Pyridyl(oxy/thio)phenoxy compounds, herbicidal compositions and methods. 4,565,568, Cl. 71-94.000.

Jonas, Thomas S., to National Plastics Limited. Container closure. 4,565,293, Cl. 215-246.000.

Jonsson, Finn, to ASEA Aktiebolag. Method and a tool for bending the edge of thick sheet metal. 4,565,084, Cl. 72-387.000.

Jonsson, Kurt O. G.: *See—*
Dagerskog, Magnus; Ganrot, Anders B.; and Jonsson, Kurt O. G., 4,565,704, Cl. 426-233.000.

Jouquey, Alain; and Hunt, Peter F., to Roussel Uclaf. Process. 4,565,876, Cl. 548-426.000.

Jourdain, Gerard E. A.: *See—*
Bart, Jacques R.; Jourdain, Gerard E. A.; and Rambach, Daniel, 4,565,492, Cl. 415-175.000.

Joyce, Robert A.: *See—*
Gray, James B.; and Joyce, Robert A., 4,565,728, Cl. 428-200.000.

Junghans, Klaus, to Schering Aktiengesellschaft. Process for the production of 17α-acyloxy-6-chloro-1α,2α-methylene-3,20-diones. 4,565,657, Cl. 260-397.400.

Junghaus, Rainer: *See—*
Jekat, Herbert; Junghaus, Rainer; Geng, Walter; and Petersen, Vagn, 4,565,453, Cl. 366-279.000.

Jurgens, Heinrich J. W.: *See—*
Collins, Bruce H.; and Jurgens, Heinrich J. W., 4,565,184, Cl. 126-368.000.

Jurva, Edsel O.; and Goodin, Richard L., to Medtronic, Inc. Method for facilitating hermeticity leakage testing of an electrical feedthrough. 4,565,093, Cl. 73-40.700.

Jyomura, Shigeru; and Takeuchi, Hiroshi, to Hitachi, Ltd.; and Hitachi Medical Corp. Piezoelectric substances. 4,565,642, Cl. 252-62.900.

Kaama Marine Engineering, Inc.: *See—*
Connor, John A., 4,565,532, Cl. 440-57.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Tojima, Hiromi; and Kajitani, Kouji, 4,565,273, Cl. 192-106.200.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Tanaka, Kunifusa, 4,566,070, Cl. 364-567.000.

Kabushiki Kaisha Japanlicensor: *See—*
Higuchi, Yasuo, 4,565,119, Cl. 92-125.000.

Kabushiki Kaisha Kobe Seikosho: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Kabushiki Kaisha Toshiba: *See—*
Matsutani, Kinya; and Yokota, Toshikazu, 4,565,671, Cl. 422-249.000.
Nagano, Katsumi, 4,565,962, Cl. 323-351.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Asai, Isao; Muramatsu, Shigeru; Morita, Takayuki; and Tanaka, Akira, 4,565,278, Cl. 198-400.000.

Kachnowski, Thomas A.: *See—*
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.

Kadosawa, Tsuneaki, to Canon Kabushiki Kaisha. Remote control apparatus. 4,566,036, Cl. 358-210.000.

Kaegebein, Daniel P., to TX RX Systems, Inc. Tower mounted preamplifier. 4,565,972, Cl. 330-124.00D.

Kagami, Isao: *See—*
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,565,462, Cl. 400-625.000.

Kaiko, Akira, to Mitsubishi Denki Kabushiki Kaisha. Speed controlling device for rolling mills. 4,565,952, Cl. 318-345.00R.

Kaiser, Robert T., to Spymark, Inc. Hand held body engaging exercise device. 4,565,367, Cl. 272-126.000.

Kajino, Jirou: *See—*
Tokunaga, Tomokazu; Izaki, Masataka; Kajino, Jirou; and Kamiyama, Toshibumi, 4,566,048, Cl. 360-94.000.

Kajitani, Kouji: *See—*
Tojima, Hiromi; and Kajitani, Kouji, 4,565,273, Cl. 192-106.200.

Kajiwara, Makoto; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Method for the formation of dye image. 4,565,774, Cl. 430-382.000.

Kajiya, Toshifumi: *See—*
Kasahara, Toshikazu; Kajiya, Toshifumi; and Akiyoshi, Tomio, 4,565,844, Cl. 524-108.000.

Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, to Hitachi, Ltd. Method and apparatus for controlling sample temperature. 4,565,601, Cl. 156-643.000.

Kakuta, Atsushi: *See—*
Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, 4,565,758, Cl. 430-58.000.

Kalter, Howard L.; and Kiley, Donald B., to International Business Machines Corporation. Flexible/compressed array macro design. 4,566,022, Cl. 357-23.140.

Kameya, Kazuo, to Elmec Corporation. Electromagnetic delay line. 4,565,981, Cl. 333-138.000.

Kami, Yozo; Minakawa, Masaki; and Kubo, Kanji, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle suspension system. 4,565,389, Cl. 280-663.000.

Kaminaga, Hiromitsu, to Yoshida Kogyo K.K. Unit curtain wall. 4,565,040, Cl. 52-235.000.

Kaminskas, Rimvydas A., to TRW Inc. Metallic stretch fabric. 4,565,745, Cl. 428-596.000.

Kamiyama, Toshibumi: *See—*
Tokunaga, Tomokazu; Izaki, Masataka; Kajino, Jirou; and Kamiyama, Toshibumi, 4,566,048, Cl. 360-94.000.

Kammiller, Neil A., to Reliance Electric Company. Overvoltage protection circuit for power supply. 4,566,052, Cl. 361-18.000.

Kammuller, Rainer: *See—*
Wirz, Burkhardt; and Kammuller, Rainer, 4,565,450, Cl. 356-402.000.

Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, to Sanofi. Pyridazine derivatives having a psychotropic action and compositions. 4,565,814, Cl. 514-228.000.

Kan, Takahiro: *See—*
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.

Kanai, Toshio: *See—*
Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, 4,565,546, Cl. 44-51.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Arai, Soichi; and Watanabe, Michiko, 4,565,643, Cl. 252-70.000.

Kaneko, Kenichi; Hirashiba, Yuji; and Kawai, Shinji, to Aisin Seiki Co., Ltd. Appliance for washing parts of human body. 4,564,961, Cl. 4-443.000.

Kannapell, Henry N.: *See—*
Paranjpe, Suresh C.; Scott, Burton W.; and Kannapell, Henry N., 4,566,014, Cl. 346-1.100.

Kanne, David B.: *See—*
Chavdarian, Charles G.; and Kanne, David B., 4,565,809, Cl. 514-112.000.

Kansai Paint Co., Ltd.: *See—*
Nakayama, Yasuharu, 4,565,839, Cl. 524-458.000.

Kao, James T. F., to Ethyl Corporation. Process for producing substituted pyrroles. 4,565,879, Cl. 548-531.000.

Kaplunov, Iosif B., deceased: *See—*
Milovidov, Boris A.; Kaplunov, Iosif B., deceased; and Kaplunova, Nadezhda V., administratix, 4,565,788, Cl. 436-137.000.

Kaplunova, Nadezhda V., administratix: *See—*
Milovidov, Boris A.; Kaplunov, Iosif B., deceased; and Kaplunova, Nadezhda V., administratix, 4,565,788, Cl. 436-137.000.

Kargel, Heribert: *See—*
Slaghuis, Hermann; Mayer, Rolf; Kargel, Heribert; and Bender, Heinz G., 4,565,332, Cl. 242-18.100.

Karger, Kim. Automatically retractable chalk line assembly. 4,565,011, Cl. 33-414.000.

Karlsson, Gunvor B. T.: *See—*
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,565,549, Cl. 44-51.000.

Karlsson, Karl A., to Mouzavires, William E., a part interest. Apparatus for hand drilling. 4,565,470, Cl. 408-72.00R.

Kasahara, Toshikazu; Kajiya, Toshifumi; and Akiyoshi, Tomio, to Idemitsu Petrochemical Co., Ltd. Propylene-ethylene block copolymer composition. 4,565,844, Cl. 524-108.000.

Kase, Hiroshi, to O-M Limited. Composite machine tool. 4,564,995, Cl. 29-563.000.

Kashiwagi, Hiroshi: *See—*
Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, 4,565,778, Cl. 430-567.000.

Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 4,565,388, Cl. 280-644.000.

Kassai, Kenzou, to Kassai Kabushikikaisha. Structure for connecting a handle to the push rods of a baby carriage. 4,565,388, Cl. 280-644.000.

Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, to Canon Kabushiki Kaisha. Electrophotographic process utilizing an azulenium salt-containing photosensitive member. 4,565,761, Cl. 430-83.000.

Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, to Hitachi, Ltd; and Hitachi Chemical Company, Ltd. Light-sensitive polymer composition with poly(amic acid), bisazide, and tertiary amine compound. 4,565,767, Cl. 430-196.000.

Kataoka, Yushin; Matsuda, Masaaki; Aoi, Masahiro; and Chino, Kunitake, to Sumitomo Chemical Company, Limited. Process for eluting indium from a chelate resin containing adsorbed indium. 4,565,673, Cl. 423-112.000.

Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, to Nippon Steel Corporation; and Japan Metals and Chemicals Co., Ltd. Process for production of high-chromium alloy by smelting reduction. 4,565,574, Cl. 75-130.500.

Katayama, Meiseki: *See—*
Yatsurugi, Yoshifumi; and Katayama, Meiseki, 4,565,913, Cl. 219-10.55M.

Kato, Chiaki, to Sumitomo Electric Industries, Ltd. Applicator for releasing agent. 4,565,762, Cl. 430-99.000.

Kato, Hirohisa: *See—*
Oguchi, Toshihiko; Kato, Hirohisa; Wada, Moriyasu; and Asano, Toshimitsu, 4,565,726, Cl. 428-328.000.

Kato, Kenji: *See—*
Hanyu, Susumu; Kato, Kenji; and Hara, Kazumasa, 4,565,143, Cl. 112-262.100.

Kato, Masatake, to Canon Kabushiki Kaisha. Viewfinder for camera. 4,565,433, Cl. 354-201.000.

Katoh, Hiroharu, to Yoshin Giken Co., Ltd. Shredding apparatus. 4,565,330, Cl. 241-236.000.

Katsushima, Shin-ichi: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Katsuyama, Iwao; and Okuzumi, Aijiro, to Kyowa Denki Kagaku K.K. Process and apparatus for coating the surfaces of containers with a material. 4,565,718, Cl. 427-420.000.

Kauffman, Harold L.: *See—*
Brennan, Michael F.; and Kauffman, Harold L., 4,565,077, Cl. 68-158.000.

Kaus, Malcolm J.: *See—*
Etherton, Bradley P.; and Kaus, Malcolm J., 4,565,797, Cl. 502-116.000.

Kawahara, Atsushi: *See—*
Takatsu, Norihiko; Kawahara, Atsushi; and Isogai, Masaki, 4,566,037, Cl. 358-213.000.

Kawai, Hiroyuki: *See—*
Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, 4,565,781, Cl. 435-88.000.

Kawai, Mikio: *See—*
Murofushi, Yasuyuki; Ishikawa, Masazumi; and Kawai, Mikio, 4,565,860, Cl. 528-422.000.

Kawai, Osamu, to NSK-Warner K.K. Driving force transmitting member for passive seat belt. 4,565,391, Cl. 280-804.000.

Kawai, Shinji: *See—*
Kaneko, Kenichi; Hirashiba, Yuji; and Kawai, Shinji, 4,564,961, Cl. 4-443.000.

Kawamura, Shinji: *See—*
Yaeo, Kenta; Kawamura, Shinji; and Mihara, Yoshiyuki, 4,565,720, Cl. 428-35.000.

Kawasaki, Hiroshi; and Ukiana, Kazuoki, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulically operated friction clutch. 4,565,269, Cl. 192-70.120.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Nakamura, Masahiro, 4,565,136, Cl. 110-245.000.
Yamamoto, Masaru; and Yuasa, Tsuneyoshi, 4,565,268, Cl. 192-0.049.

Kawasaki Seitetsu Kabushiki Kaisha: *See—*
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.

Kawasaki Steel Corporation: *See—*
Kojima, Shinji; Mizota, Hisakazu; Kodama, Masanori; and Miyazaki, Yasuharu, 4,565,238, Cl. 164-468.000.
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.

Kawata, Terushige; Kobayashi, Takashi; and Nakagawa, Katsuyuki, to Sankin Industry Co., Ltd. Orthodontic appliance. 4,565,526, Cl. 433-8.000.

Kay, John W.; Shaffer, Dale A.; and Basquin, Maurice H., to Harmeson Manufacturing Company, Inc. Portable ironing board. 4,565,021, Cl. 38-137.000.

Kaye, George C., to Sabre Engines Limited. Engine cooling system. 4,565,175, Cl. 123-542.000.

Kazda, Stanislav: *See—*
Wehinger, Egbert; Meyer, Horst; Kazda, Stanislav; and Knorr, Andreas, 4,565,824, Cl. 514-356.000.

Keen, Walter L. Hand-grippable carrier for transporting containers. 4,565,397, Cl. 294-34.000.

Keil, Rudolf; and Mathyssek, Konrad, to Siemens Aktiengesellschaft. Apparatus for the manufacture of constructions in fibers. 4,565,558, Cl. 65-1.000.

Keith, John C.: *See—*
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.

Kekesi, Krisztina: *See—*
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

Keller, Hans-Peter, to Loepfe Brothers Limited. Apparatus for monitoring weft thread in a weaving machine. 4,565,224, Cl. 139-370.200.

Kennecott Corporation: *See—*
Carpenter, James H., Jr.; and Mullins, Ronald L., 4,565,035, Cl. 51-434.000.
Ruhl, Robert C., 4,565,334, Cl. 242-54.00R.

Kennedy, James C.: *See—*
Ardon, Menachem T.; Kennedy, James C.; Sand, Douglas S.; Trimnell, Lawrence J.; and Zola, Meyer J., 4,566,094, Cl. 370-58.000.

Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., to Buddy L. Corporation. Toy work vehicle having power take-off. 4,565,538, Cl. 446-427.000.

Kenworthy, James S.; and Kozinski, Thomas G., to PPG Industries, Inc. Method for producing a photoelectroforming mandrel. 4,565,616, Cl. 204-192.00C.

Keogh, Raymond J.: *See—*
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.

Kershaw, Roger F.: *See—*
McGrail, John F.; and Kershaw, Roger F., 4,564,974, Cl. 16-353.000.

Khan, Aman U., to Whirlpool Corporation. Ram and frameless cabinet assembly for compactor. 4,565,125, Cl. 100-214.000.

Khazaeli, Mohammad B.; Beierwaltes, William H.; and England, Barry G., to Reagents of the University of Michigan, The. Monoclonal antibodies specific for the unbound β subunit of human chorionic gonadotropin. 4,565,687, Cl. 424-1.100.

Khirwadkar, Prabhakar R. Hydraulic lifting assembly for mounting a crane jib. 4,565,291, Cl. 212-180.000.

Kiefer, Gunther, to Adolf Illig Maschinenbau GmbH & Co. Apparatus for shaping and cutting a thin thermoplastic sheet to make articles and for stacking the articles. 4,565,513, Cl. 425-289.000.

Kiefer, Hans: *See—*
Hertel, Otto; Kiefer, Hans; and Arnold, Lothar, 4,565,894, Cl. 568-349.000.

Kikuno, Mitsutoyo, to Ricoh Company, Ltd. Servo system. 4,565,950, Cl. 318-85.000.

Kiley, Donald B.: *See—*
Kalter, Howard L.; and Kiley, Donald B., 4,566,022, Cl. 357-23.140.

Kim, Hongzoon; and Salamy, Thomas E., to Philip A. Hunt Chemical Corporation. Photographic developer composition. 4,565,776, Cl. 430-467.000.

Kim, Ki-Soo: *See—*
Herscovici, Eva J.; and Kim, Ki-Soo, 4,565,853, Cl. 525-530.000.

Kim, Sun H.; and Moreau, Jacques-Pierre, to Biomeasure, Inc. Pyrazolo[1,5-a]-1,3,5-triazines. 4,565,815, Cl. 514-246.000.

Kime, Kenjiro, to Mitsubishi Denki Kabushiki Kaisha. Deviation correction apparatus for optical disc light beams. 4,566,089, Cl. 369-45.000.

Kimon, Peter M., to Exxon Research and Engineering Co. Ship propulsion system. 4,565,531, Cl. 440-50.000.

Kimura, Hideyuki; and Tomita, Hitoshi, to Diesel Kiki Co., Ltd. Exhaust-gas particle treating device for internal-combustion engine. 4,565,065, Cl. 60-285.000.

Kimura, Yoshio; Terashima, Kenji; Asada, Masao; and Sugano, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorescent lamp. 4,565,948, Cl. 313-487.000.

Kincaid, Herbert; and Wray, Michael L., to Eastern Company, The. Latch with removable lock. 4,565,080, Cl. 70-215.000.

King, Allen; Collins, Peter; and Goldman, Jay, to Prime Computer, Inc. Light pencil. 4,565,999, Cl. 340-706.000.

King, Todd L.: *See—*
Gary, James R.; Geis, Everett R.; King, Todd L.; and Singh, Daljit, 4,565,957, Cl. 318-723.000.

King, William F., to Chevron Research Company. Fungicidal tin salts of thienyl and furyl hydroxamic acids, compositions, and method of use therefor. 4,565,812, Cl. 514-189.000.

Kirin Beer Kabushiki Kaisha: *See—*
Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, 4,565,781, Cl. 435-88.000.

Kirjavainen, Kari J., to Oy Nokia AB. Double extruder for the production of a two-layer tubular extruded product. 4,565,510, Cl. 425-113.000.

Kirk, Ronald L., to Holotronics Corporation, The. Spatial light modulation with application to electronically generated holography. 4,566,031, Cl. 358-90.000.

Kiss, Pal: *See—*
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Kitaura, Tomimaro; Ohashi, Yutaka; and Yoneda, Masami, to Fuji Photo Optical Co., Ltd. Laser apparatus. 4,566,107, Cl. 372-38.000.

Kithany, Subhash: *See—*
Propster, Mark A.; Kithany, Subhash; and Seng, Stephen, 4,565,676, Cl. 423-210.000.

Klees, Gary W.; and Draper, Gregory L. Candle holder. 4,566,055, Cl. 362-162.000.

Klein, Walter; and Rhemann, Herbert, to OMV Aktiengesellschaft. Device for the step-wise pressure release on the expansion of, in particular hot, gases. 4,565,212, Cl. 137-486.000.

Klement, Ekkehard: *See—*
Schuocker, Dieter; and Klement, Ekkehard, 4,566,077, Cl. 364-845.000.

Klement, Larry G.: *See—*
Crawford, Patrick J.; and Klement, Larry G., 4,565,486, Cl. 414-729.000.

Klenk, Martin: *See—*
Damson, Eckart; Klenk, Martin; Moser, Winfried; and Moller, Heinz, 4,565,087, Cl. 73-35.000.

Klimpert, Randall J.; and Meyer, Burton C., to Marvin Glass & Associates. Impact responsive toy. 4,565,537, Cl. 446-321.000.

Kline, Alva C. Convex key top configurations. 4,565,460, Cl. 400-490.000.

Klockner-Humboldt-Deutz AG: *See—*
Schneider, Wilfried, 4,565,068, Cl. 60-602.000.

Klopfer, Howard J., to General Electric Company. Polyetherimides with high thermal stability and solvent resistance and precursors therefor. 4,565,858, Cl. 528-172.000.

Klotz, Erhard: *See—*
Linde, Rolf; and Klotz, Erhard, 4,566,112, Cl. 378-2.000.

Klusman, Ronald W.: *See—*
Dunkhase, John A.; Klusman, Ronald W.; and Fisher, James C., 4,565,786, Cl. 436-26.000.

Knapp, Christopher E., to Norton Company. Partially stabilized zirconia bodies. 4,565,792, Cl. 501-104.000.

Knapp, John F.; Howland, Leon A.; Gruber, Robert J.; and Koch, Ronald J., to Xerox Corporation. Process of developing electrostatic latent images comprised of rotating magnets contained in stationary shell and synthetic carrier. 4,565,765, Cl. 430-122.000.

Knecht, Thomas A., to Rosemount Inc. Pressure transducer. 4,565,096, Cl. 73-718.000.

Kniffin, Melvin J.: *See—*
Anderson, David A. K.; Gilpin, James B.; and Kniffin, Melvin J., 4,565,925, Cl. 250-352.000.

Knifton, John F.; and Duranleau, Roger G., to Texaco Inc. Process for low pressure synthesis of ethylene glycol from synthesis gas. 4,565,896, Cl. 568-852.000.

Knifton, John F.: *See—*
Duranleau, Roger G.; Knifton, John F.; and Speranza, George P., 4,565,866, Cl. 544-176.000.

Knorr, Andreas: *See—*
Wehinger, Egbert; Meyer, Horst; Kazda, Stanislav; and Knorr, Andreas, 4,565,824, Cl. 514-356.000.

Knox, Howard T., to ANCRA Corporation. Buckle-strap tiedown assembly. 4,564,981, Cl. 24-68.0CD.

Knutson, Richard K.: *See—*
Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., 4,565,708, Cl. 426-579.000.

Kobashi, Toshiyuki; Takagi, Shoyo; and Naka, Hideo, to Japan Exlan Company Limited. Process for producing packing material for use in liquid chromatography. 4,565,832, Cl. 521-63.000.

Kobayashi, Hisao: *See—*
Hosoi, Kinji; Kobayashi, Hisao; Takeda, Hiroyuki; and Hibino, Mitsuyoshi, 4,565,358, Cl. 269-60.000.

Kobayashi, Kazusuke; and Cho, Ryokche, to Mitsui Petrochemical Industries, Ltd. Fiber-reinforced concrete and reinforcing material for concrete. 4,565,840, Cl. 524-8.000.

Kobayashi, Takashi: *See—*
Kawata, Terushige; Kobayashi, Takashi; and Nakagawa, Katsuyuki, 4,565,526, Cl. 433-8.000.

Kobayashi, Toshikazu: *See—*
Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, 4,565,994, Cl. 340-542.000.

Kobukuro, Masahisa: *See—*
Otsuka, Shigeharu; Mizuno, Yuji; Hasegawa, Tomoharu; and Kobukuro, Masahisa, 4,565,986, Cl. 335-131.000.

Koch, James J.: *See—*
Melby, Phillip J.; and Koch, James J., 4,565,196, Cl. 128-205.240.

Koch, Ronald J.: *See—*
Knapp, John F.; Howland, Leon A.; Gruber, Robert J.; and Koch, Ronald J., 4,565,765, Cl. 430-122.000.

Kodama, Masanori: *See—*
Kojima, Shinji; Mizota, Hisakazu; Kodama, Masanori; and Miyazaki, Yasuharu, 4,565,238, Cl. 164-468.000.

Koehler, Charles W.: *See—*
van Ommering, Gerrit; and Koehler, Charles W., 4,565,749, Cl. 429-27.000.

Koeniger, Erich A., to Barnes-Hind, Inc. Method for altering the curvature of the cornea. 4,565,198, Cl. 128-305.000.

Kogumasaka, Katsuya: *See—*
Seki, Masahiko; Nakatani, Hiroshi; Minami, Shozo; and Kogumasaka, Katsuya, 4,565,479, Cl. 414-199.000.

Kohler Co.: *See—*
Rozek, Roy J., 4,565,350, Cl. 251-292.000.

Kohshoh Limited: *See—*
Saito, Koji, 4,564,983, Cl. 24-170.000.

Koike, Hiroshi: *See—*
Moriyama, Naoki; Koike, Hiroshi; and Hatakeyama, Osamu, 4,565,128, Cl. 101-93.190.

Koinuma, Masahiro: *See—*
Shimoda, Mituhiko; Koinuma, Masahiro; and Ohta, Yoshitaka, 4,566,054, Cl. 361-422.000.

Koishi, Kenji: *See—*
Yoshida, Tomio; Satoh, Isao; Ohara, Shunji; Koishi, Kenji; and Kuroki, Yuzuru, 4,566,088, Cl. 369-44.000.

Koistinen, Pauli A. T., to Outokumpu Oy. Tube belt conveyor. 4,565,285, Cl. 198-819.000.

Kojima, Mitsumasa: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.

Kojima, Shinji; Mizota, Hisakazu; Kodama, Masanori; and Miyazaki, Yasuharu, to Kawasaki Steel Corporation; and ASEA AB. Method of stirring molten steel in a continuously casting mold and an apparatus therefor. 4,565,238, Cl. 164-468.000.

Koken Co., Ltd.: *See—*
Miyata, Teruo; and Namiki, Shinichi, 4,565,580, Cl. 106-124.000.

Kokubun, Yoshikazu; and Anazawa, Osamu, to Sanden Corporation. Dispensing mechanism for vending machines or the like. 4,565,300, Cl. 221-116.000.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Mizuno, Toshio; Satoh, Gunkichi; and Ohkawa, Michihisa, 4,566,100, Cl. 371-5.000.

Kokusan Kinzoku Kogyo Co., Ltd.: *See—*
Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, 4,565,994, Cl. 340-542.000.

Kolber, Steven, to Coulter Electronics, Inc. Auto-zeroing linear analog to digital converter apparatus and method. 4,566,110, Cl. 377-10.000.

Kolling, Heinrich: *See—*
Andrews, Peter; Boshagen, Horst; and Kolling, Heinrich, 4,565,888, Cl. 564-179.000.

Kollmorgen Technologies Corporation: *See—*
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.

Komatsu, Akihiro: *See—*
Yashima, Michio; Takanashi, Masami; and Komatsu, Akihiro, 4,565,909, Cl. 200-61.850.

Komatsu Electronic Metals Co., Ltd.: *See—*
Yatsurugi, Yoshifumi; and Katayama, Meiseki, 4,565,913, Cl. 219-10.55M.

Komatsu, Toshiyuki; Hirai, Yutaka; Nakagawa, Katsumi; and Fukuda, Tadaji, to Canon Kabushiki Kaisha. Image-forming member for electrophotography. 4,565,731, Cl. 428-212.000.

Kompelien, Arlon D., to Honeywell Inc. Flow sensor with adjustable sensitivity. 4,565,092, Cl. 73-202.000.

Komulainen, Risto, to Kymi-Stromberg OY. Inverter protected in respect of the rates of increase of current and voltage. 4,566,051, Cl. 361-13.000.

Kondo, Hirofumi: *See—*
Arakawa, Seiichi; Kondo, Hirofumi; and Seto, Junetsu, 4,565,779, Cl. 430-962.000.

Kondo, Hiroshi, to Tenyo Co., Ltd. Implement for magic trick for falsely cutting card or the like. 4,565,364, Cl. 272-8.00N.

Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, to Sumitomo Chemical Company, Limited. Diphenyl sulfone compounds, and their production and use. 4,565,569, Cl. 71-103.000.

Konishi, Motofumi: *See—*
Miura, Genmei; Konno, Akira; and Konishi, Motofumi, 4,566,002, Cl. 340-727.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Kajiwara, Makoto; and Onodera, Kaoru, 4,565,774, Cl. 430-382.000.
Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, 4,565,778, Cl. 430-567.000.

Konno, Akira: *See—*
Miura, Genmei; Konno, Akira; and Konishi, Motofumi, 4,566,002, Cl. 340-727.000.

Koomey, Inc.: *See—*
Tomlin, Jerry B., 4,565,349, Cl. 251-29.000.

Kopecky, Ivyl D., to Haybuster Manufacturing, Inc. Seeding apparatus with fertilizer applicator. 4,565,141, Cl. 111-7.000.

Kopo Konepohja Oy: *See—*
Kylmanen, Pasi, 4,565,327, Cl. 241-56.000.

Kopp, Richard; and Reichmann, Wolfgang, to Bayer Aktiengesellschaft. Use of carbonyl compounds, sulfonyl compounds and/or thioureas as stabilizers for solutions containing pyrocarbonic acid dialkyl esters and polyisocyanate preparations containing those esters. 4,565,648, Cl. 252-397.000.

Koppers Company, Inc.: *See—*
Fischer, John; Heaton, Kenneth A.; and Pfeiffer, John W., 4,565,305, Cl. 222-368.000.

Koprio, Jurgen, to Balzers AG. Evaporator cell for vacuum deposition on substrates. 4,565,158, Cl. 118-726.000.

Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, to Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara R.T. Theophyllinyl-alkyl-oxadiazoles, process for the preparation thereof and pharmaceutical compositions containing same. 4,565,817, Cl. 514-263.000.

Kordes, Herbert, to Dorma-Baubeschlag GmbH & Co. KG. Door closing device having an adjustable length arm. 4,564,973, Cl. 16-71.000.

Kormoczy, Peter: *See—*
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

Kornbrekke, Henning N.; Cirkot, David M.; and Ranaudo, Anthony R., to Stanley Works, The. Traffic responsive control system for automatic swinging door. 4,565,029, Cl. 49-25.000.

Korner, Jorg-Peter; and Jekat, Herbert, to Uhde GmbH. High-pressure vessel with inner closure. 4,565,297, Cl. 220-254.000.

Kornfeld, Edmund C.: *See—*
Nicholas, Cynthia L.; Kornfeld, Edmund C.; and Schaus, John M., 4,565,871, Cl. 546-165.000.

Koser, Jaroslav; and Eder, Theodor, to Austria Metall AG. Boat hull and method of making same. 4,565,146, Cl. 114-79.00R.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Low surface energy material. 4,565,714, Cl. 427-54.100.

Koski, Erkki, to Valmet Oy. Size press. 4,565,155, Cl. 118-412.000.

Kosugi, Tetuo: *See—*
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Kosugi, Tetuo, 4,565,907, Cl. 200-19.0DR.

Koszegi, Bela: *See—*
Kovacs, Andras; Szebeni, Rudolf; and Koszegi, Bela, 4,565,694, Cl. 424-80.000.

Kouchi, Tadashi; and Urakami, Yoshiharu, to Stanley Electric Co., Ltd. Headlamp for vehicle. 4,566,056, Cl. 362-297.000.

Kovacs, Andras; Szebeni, Rudolf; and Koszegi, Bela. Contraceptive vaginal tablets. 4,565,694, Cl. 424-80.000.

Kovacs, Gabor: *See—*
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Kozinski, Thomas G.: *See—*
Kenworthy, James S.; and Kozinski, Thomas G., 4,565,616, Cl. 204-192.00C.

Kraft, Chrispin S., to Casdade Systems Incorporated. Digital optical disk system. 4,566,087, Cl. 369-34.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Stolben, Hans-Adolf, 4,565,008, Cl. 33-172.00E.

Kramer, James H., to B. F. Goodrich Company, The. Pressure device for conveyor. 4,565,281, Cl. 198-628.000.

Kranz, Richard, to Tension Envelope Corporation. Two-way envelope with inside return seal flap. 4,565,317, Cl. 229-73.000.

Kratel, Gunter: *See—*
Loskot, Stephen; Kratel, Gunter; Lang, Wilfried; and Muhlhofer, Ernst, 4,565,682, Cl. 423-336.000.

Krause, Dieter, to Siemens Aktiengesellschaft. Method and apparatus for cutting light waveguides. 4,565,310, Cl. 225-2.000.

Krauss-Maffei Aktiengesellschaft: *See—*
Grgic, Ivica; and Sochtig, Wolfgang, 4,565,085, Cl. 73-19.000.
Ramisch, Heinrich, 4,565,511, Cl. 425-146.000.

Kresse, Horst: *See—*
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Matthias; Kresse, Horst; and Weissflog, Wolfgang, 4,565,881, Cl. 549-373.000.

Kretschmer, Frank F., Jr.: *See—*
Lewis, Bernard L.; and Kretschmer, Frank F., Jr., 4,566,011, Cl. 343-17.2PC.

Krick, Gerd: *See—*
Muller, Franz-Josef; Krutten, Viktor; and Krick, Gerd, 4,565,544, Cl. 604-164.000.

Kroczynski, Patrice, to International Robotic Engineering, Inc. System of robots with legs or arms. 4,565,487, Cl. 414-730.000.

Kropp, Rudolf, to BASF Aktiengesellschaft. Process for the preparation of a salt of 1-(γ-halopropyl)-1,2,3,4-β-carbolines. 4,565,870, Cl. 546-85.000.

Krull, Manfred: *See—*
Stein, Karl H.; and Krull, Manfred, 4,565,736, Cl. 428-286.000.

Krumenacker, Leon: *See—*
Costantini, Michel; Igersheim, Francoise; and Krumenacker, Leon, 4,565,895, Cl. 568-362.000.

Krumwiede, John F.; and Tsai, Yih-Wan, to PPG Industries, Inc. Energy efficient and anti-corrosive burner nozzle construction and installation configuration. 4,565,560, Cl. 65-134.000.

Kruse, Dirk, to Bergwerksverband GmbH. Heating wall for coke-oven battery. 4,565,605, Cl. 202-139.000.

Krutten, Viktor: *See—*
Muller, Franz-Josef; Krutten, Viktor; and Krick, Gerd, 4,565,544, Cl. 604-164.000.

Kubo, Kanji: *See—*
Kami, Yozo; Minakawa, Masaaki; and Kubo, Kanji, 4,565,389, Cl. 280-663.000.

Kubota Ltd.: *See—*
Hamada, Akio; Masuzawa, Motomu; and Matsuda, Yoshiaki, 4,565,484, Cl. 414-686.000.
Miyahara, Masayoshi; and Takagi, Masao, 4,565,102, Cl. 74-15.400.
Yano, Naomichi; Ito, Hajime; and Tanaka, Shigeru, 4,565,242, Cl. 165-10.000.

Kubota, Susumu, to Rhythm Watch Co., Ltd. Synchronous motor device for timepiece. 4,565,955, Cl. 318-696.000.

Kuettner, Horst, to Thermax Wire Corporation. Low noise cable construction. 4,565,594, Cl. 156-47.000.

Kuffner Innenausbau: *See—*
Kuffner, Reinhold O., 4,564,975, Cl. 16-370.000.

Kuffner, Reinhold O., to Kuffner Innenausbau. Hinge hardware element for doors and windows of building and furniture. 4,564,975, Cl. 16-370.000.

Kuhl, Gunter H., to Mobil Oil Corporation. Synthetic zeolite ZSM-5 having a dimethylethylpropylammonium component. 4,565,681, Cl. 423-328.000.

Kukes, Simon G.; Parrott, Stephen L.; and Brandes, Karlheinz K., to Philips Petroleum Company. Hydrofining catalysts. 4,565,800, Cl. 502-200.000.

Kumar, Kaplesh, to Charles Stark Draper Laboratory, Inc., The. Method of storing hydrogen using nonequilibrium materials and system. 4,565,686, Cl. 423-644.000.

Kun, Judit: *See—*
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Kunii, Kazushi, to Mitsubishi Denki Kabushiki Kaisha. Elevator system. 4,565,264, Cl. 187-89.000.

Kunogi, Mahito, to Oilgear Japan Company, The. Multiple-position solenoid-operated control valve. 4,565,219, Cl. 137-625.650.

Kunze, Claus: *See—*
Donges, Gerhard; Herwig, Thomas; Kunze, Claus; and Stein, Karl-Ulrich, 4,566,113, Cl. 378-57.000.

Kunze, Volkmar: *See—*
Hasselmann, Heinz; Kunze, Volkmar; and Bitsch, Harald, 4,565,352, Cl. 254-344.000.

Kuo, Clinton C. K.; and Dehganpour, Sam, to Motorola, Inc. High voltage circuit for use in programming memory circuits (EEPROMs). 4,565,932, Cl. 307-264.000.

Kuraray Co., Ltd.: *See—*
Sato, Toshiaki; Yamauchi, Junnosuke; and Okaya, Takuji, 4,565,854, Cl. 526-214.000.

Kurasz, Alexander J.: *See—*
Rebula, Edward; and Kurasz, Alexander J., 4,565,324, Cl. 239-290.000.

Kurita, Tokutaro: *See—*
Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, 4,565,994, Cl. 340-542.000.

Kuroki, Yuzuru: *See—*
Yoshida, Tomio; Satoh, Isao; Ohara, Shunji; Koishi, Kenji; and Kuroki, Yuzuru, 4,566,088, Cl. 369-44.000.

Kusumi, Takaaki: *See—*
Yoshizumi, Hajime; Amachi, Teruo; Kusumi, Takaaki; Tanaka, Takaharu; and Ishigooka, Hiroshi, 4,565,698, Cl. 424-93.000.

Kuwabara, Masatoshi: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.

Kuzuya, Susumu: *See—*
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,565,462, Cl. 400-625.000.

Kwok, King H.: *See—*
Drucker, Alan S.; Kwok, King H.; and Whipple, Charles E., 4,565,075, Cl. 62-507.000.

Kylmanen, Pasi, to Kopo Konepohja Oy. Apparatus for piece-chopping wood. 4,565,327, Cl. 241-56.000.

Kymi-Stromberg OY: *See—*
Komulainen, Risto, 4,566,051, Cl. 361-13.000.

Kyowa Denki Kagaku K.K.: *See—*
Katsuyama, Iwao; and Okuzumi, Aijiro, 4,565,718, Cl. 427-420.000.

Kyowa Kentetsu Kabushiki Kaisha: *See—*
Naka, Masayasu, 4,565,005, Cl. 33-1.00G.

L.C.C.-C.I.C.E.: *See—*
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, 4,565,988, Cl. 336-192.000.

L. & C. Steinmuller GmbH: *See—*
Michalak, Stanislaw; Weber, Klaus-Dieter; and Meier, Jurgen, 4,565,679, Cl. 423-239.000.

Laborde, Alice L.: *See—*
Dolak, Lester A.; Laborde, Alice L.; Sebek, Oldrich K.; Castle, Thomas M.; and Brodasky, Thomas F., 4,565,699, Cl. 424-117.000.

Lade, Gunther, to Robert Bosch GmbH. Convertible-format packaging machine. 4,565,048, Cl. 53-201.000.

Lagstrom, Emil G.; Westermark, Torbjorn E. G.; and Forberg, Sevald. Apparatus for gathering valuable floating, dissolved and suspended substances from sea water. 4,565,627, Cl. 210-242.100.

Laine, Edwin F., to United States of America, Energy. Acoustic velocity measurements in materials using a regenerative method. 4,566,084, Cl. 367-49.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Rimbert, Jean F., 4,565,234, Cl. 164-66.100.

Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., to Burroughs Corporation. Terminal elevating mechanism. 4,565,343, Cl. 248-346.000.

Lam, Yanta, to Meyer Manufacturing Company Limited. Cooking pans. 4,565,296, Cl. 220-94.00R.

Lamby, Edward J.: *See—*
Spiro, Clifford L.; and Lamby, Edward J., 4,565,248, Cl. 166-267.000.

Landoussy, Claude: *See—*
Arretz, Emmanuel; Mirassou, Alfred; Landoussy, Claude; and Auge, Patrick, 4,565,893, Cl. 568-72.000.

Lang, Theodore J., to Du Pont Canada Inc. Process for forming a sealant WEB-PVDC-base film laminate. 4,565,742, Cl. 428-476.300.

Lang, Wilfried: *See—*
Loskot, Stephen; Kratel, Gunter; Lang, Wilfried; and Muhlhofer, Ernst, 4,565,682, Cl. 423-336.000.

Langdon, Glen G., Jr.; and Siegel, Paul H., to International Business Machines Corporation. Direction-constrained ternary codes using peak and polarity detection. 4,566,044, Cl. 360-40.000.

Larimer, John M. Pneumatic contact lens insertion device. 4,565,396, Cl. 294-1.200.

Larox Oy: *See—*
Haartti, Juhani; Heitto, Pertti; Helsto, Jaakko J.; and Vartiainen, Nuutti, 4,565,602, Cl. 162-56.000.

Larsen, Hans-Ole, to Mia-Lens Production A/S. Mold for making contact lenses, the male mold member being more flexible than the female mold member. 4,565,348, Cl. 249-122.000.

Larson, Charles R. Work piece holding device. 4,565,229, Cl. 144-154.000.

Larsson, Rolf: *See—*
Golander, Carl-Gustaf; and Larsson, Rolf, 4,565,740, Cl. 428-409.000.

LaSance, William A., to Dynametric, Inc. Emergency exit systems for revolving doors. 4,565,030, Cl. 49-44.000.

Lasers For Medicine: *See—*
Daly, Richard T., 4,565,197, Cl. 128-303.100.

Lass, Yoram, to Fidelity Medical (Israel) Ltd. Signal processing apparatus and high resolution electrocardiograph equipment including same. 4,565,201, Cl. 128-696.000.

Lassiaz, Philippe, to Valeo. Operating member for clutch diaphragm spring, and process for mounting it thereon. 4,565,271, Cl. 192-89.00B.

Latraverse, Germain. Device for carrying out a paint touch up in a corner. 4,564,970, Cl. 15-230.110.

Laubie, Michel: *See—*
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,565,819, Cl. 514-307.000.

Laurendeau, Gilles H. Y.; and Leprince, Jean-Bernard G. H., to Shell Oil Company. Two-stage volumetric pump for liquefied petroleum gases in liquid phase. 4,565,501, Cl. 417-267.000.

Lautenschlager, Hans-Heiner; Borbe, Harald; Prop, Gerrit; Wirtz-Peitz, Ferdinand; Doppelfeld, Ille-Stephanie; and Parnham, Michael J., to A. Nattermann & Cie GmbH. Substituted aminoalkanol phospholipids. 4,565,659, Cl. 260-925.000.

Lavender, Ardis, to Armour Pharmaceutical Co. Freezing frame for a plasma container. 4,565,073, Cl. 62-373.000.

LeaRonal, Inc.: *See*—
Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., 4,565,609, Cl. 204-44.400.
Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., 4,565,610, Cl. 204-44.400.

Le Du, Yannick; and Meiller, Francois, to Rhone-Poulenc Specialites Chimiques. Flocculation of aqueous media with novel flocculating adjuvant. 4,565,635, Cl. 210-727.000.

Lee, Do I.: *See*—
Emerson, Richard R.; Lee, Do I.; and Easterly, James P., 4,565,836, Cl. 523-346.000.

Lee, Ed C.; and Roberts, Jon A., to Honeywell Inc. Integrated circuit bimetal layer. 4,566,026, Cl. 357-71.000.

Lefferts, Johannes, to Siteg Siebtechnik GmbH. Method for producing helix structures for use in forming helix belts. 4,564,992, Cl. 29-429.000.

Le Gleau, Denise: *See*—
Oisel, Andre ; Boulenouar, Abdelhamid; and Le Gleau, Denise, 4,566,105, Cl. 371-37.000.

Lehner A.G.: *See*—
Castagnola, Virginio; Frigerio, E. Giuliano; and Pellicciari, Roberto, 4,565,810, Cl. 514-182.000.

Lehr, James R.: *See*—
Hsieh, Shuang-shii; and Lehr, James R., 4,565,625, Cl. 209-167.000.

Lehureau, Claude: *See*—
Gerard, Jean-Louis; Lehureau, Claude; and Loret, Marc, 4,566,092, Cl. 369-59.000.

Leipelt, Rudolf: *See*—
Alf, Herbert; Leipelt, Rudolf; Fusser, Rolf; and Spannbauer, Helmut, 4,565,176, Cl. 123-556.000.

Leir, Charles M., to Riker Laboratories, Inc. Process for 8-cyano-6,7-dihydro-5-methyl-1-oxo-1H,5H-benzo[ij]quinolizine-2-carboxylic acids and intermediates thereof. 4,565,872, Cl. 546-176.000.

Lenk, Erich: *See*—
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,565,524, Cl. 432-59.000.

Leprince, Jean-Bernard G. H.: *See*—
Laurendeau, Gilles H. Y.; and Leprince, Jean-Bernard G. H., 4,565,501, Cl. 417-267.000.

Lesueur, Pierre, to Everitube. Method and apparatus for loading tubular objects. 4,565,289, Cl. 206-443.000.

Leu, Willy, to Ferag AG. Apparatus for producing stacks of printed products provided with a cover sheet. 4,565,130, Cl. 101-240.000.

Leviton Manufacturing Company, Inc.: *See*—
Johnson, George E.; and Newman, Walter, 4,565,419, Cl. 339-154.00L.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal heterocyclic alkylaminocarbonylsulfonamides. 4,565,567, Cl. 71-92.000.

Lewis, Bernard L.; and Kretschmer, Frank F., Jr., to United States of America, Navy. Palindromic polyphase code expander-compressor. 4,566,011, Cl. 343-17.2PC.

Lewis, Henry G., Jr.; and Bolger, Thomas V., to RCA Corporation. Digital signal processing apparatus for processing dithered digital signals. 4,566,028, Cl. 358-21.00R.

Leyrer, Reinhold J.: *See*—
Lynch, John; Leyrer, Reinhold J.; and Saenger, Dietrich, 4,565,771, Cl. 430-307.000.

Liden, Hadar, to Gotaverken Arendal AB. Offshore vessel. 4,565,150, Cl. 114-265.000.

Lifeline Systems, Inc.: *See*—
Phillippe, Patrick G., 4,565,902, Cl. 179-5.00R.

Liggett, Paul E.; and Braun, David L., to Goodyear Aerospace Corporation. Polyurethane laminate of contrasting layers and process therefor. 4,565,729, Cl. 428-201.000.

Light, Glenn M.; and Van der Veer, William R., to Southwest Research Institute. Sound transducer apparatus system and method. 4,565,095, Cl. 73-621.000.

Lilja, Launo L.: *See*—
Hultholm, Stig-Erik; Lilja, Launo L.; Makitalo, Valto J.; and Nyman, Bror G., 4,565,660, Cl. 261-121.00R.

Lin, Jerhong: *See*—
Walter, Robert J.; and Lin, Jerhong, 4,565,744, Cl. 428-570.000.

Linde Aktiengesellschaft: *See*—
Forster, Franz, 4,565,117, Cl. 92-20.000.

Linde, Rolf; and Klotz, Erhard, to U.S. Philips Corporation. Tomosynthesis apparatus. 4,566,112, Cl. 378-2.000.

Lindstrom, Paul, to Stal Refrigeration AB. Device for controlling the volumetric capacity of a screw compressor. 4,565,508, Cl. 418-201.000.

Liotta, Lance A.; Rao, Nageswara C.; and Terranova, Victor, to United States of America, Health and Human Services. Cell matrix receptor system and use in cancer diagnosis and management. 4,565,789, Cl. 436-504.000.

Lipe-Rollway Corporation: *See*—
Yanko, John P., 4,565,270, Cl. 192-70.130.

Lisle Corporation: *See*—
Williams, Danny L., 4,565,506, Cl. 417-440.000.

Livingston, David R.; McEntire, Edward E.; and Nieh, Edward C., to Texaco Inc. Process for the production of N-(3-dimethylaminopropyl)methacrylamide. 4,565,889, Cl. 564-205.000.

Llenado, Ramon A., to Procter & Gamble Company, The. Foaming surfactant compositions. 4,565,647, Cl. 252-354.000.

Loctite Corporation: *See*—
Drain, Kieran F.; and Dunn, David J., 4,565,837, Cl. 523-400.000.

Loepfe Brothers Limited: *See*—
Keller, Hans-Peter, 4,565,224, Cl. 139-370.200.

Loev, Bernard: *See*—
Malin, Michael J.; Loev, Bernard; and Hwang, Deng R., 4,565,688, Cl. 424-3.000.

Lohmann, Dieter; and Wyler, Siegfried, to Ciba-Geigy Corporation. Silanes containing imide groups. 4,565,873, Cl. 548-110.000.

Long, Delmar D., to Dayco Corporation. Elastomer-coated bias reinforcement fabric and method for producing same. 4,565,715, Cl. 427-176.000.

Lonnoy, Jacques J.; and Mousson, Roland, to Societe Anonyme de Telecommunications. System for guiding a missile by a flat light pencil beam. 4,565,339, Cl. 244-3.130.

LOR, Inc.: *See*—
Campbell, Thomas R.; Cunningham, William L.; and Perkin, Gregg S., 4,565,252, Cl. 175-269.000.

Loret, Marc: *See*—
Gerard, Jean-Louis; and Loret, Marc, 4,566,091, Cl. 369-47.000.
Gerard, Jean-Louis; Lehureau, Claude; and Loret, Marc, 4,566,092, Cl. 369-59.000.

Loskot, Stephen; Kratel, Gunter; Lang, Wilfried; and Muhlhofer, Ernst, to Wacker-Chemie GmbH. Process for producing pyrogenic silicic acid with increased thickening effect. 4,565,682, Cl. 423-336.000.

Lotter, Bruno; Essig, Willi; and Mayer, Hans, to E.G.O. Elektro-Gerate Blanc u. Fischer. Temperature control apparatus. 4,565,989, Cl. 337-311.000.

Lovasz nee Gaspar, Marianna: *See*—
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

Lubinsky, Anthony R., to Xerox Corporation. Hybrid development system. 4,565,437, Cl. 355-3.0DD.

Lucas Industries public limited company: *See*—
Potter, James C., 4,565,319, Cl. 239-88.000.

Luccarelli, Domenick, Jr.: *See*—
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,565,707, Cl. 426-535.000.

Ludwig, Bernhard, to Mannesmann Aktiengesellschaft. Water cooling apparatus for metal sheets and belts. 4,565,325, Cl. 239-597.000.

Lundgren, Bryan L.: *See*—
Bitter, Lowell E.; and Lundgren, Bryan L., 4,565,919, Cl. 219-509.000.

Lundman, Philip L. Inflatable apparatus for use in plugging a large diameter pipe. 4,565,222, Cl. 138-93.000.

Lupoli, Peter J.; and Westover, Brooke N., to Casco Products Corporation. Chime generator circuit for connection with existing automobile radio speaker. 4,565,991, Cl. 340-52.00R.

Lydersen, Aksel, to Sintef. Method for the removal of oxygen from water. 4,565,634, Cl. 210-718.000.

Lyman, Hugh M., Jr. Front-supported telescoping seating structure. 4,565,036, Cl. 52-9.000.

Lynch, John; Leyrer, Reinhold J.; and Saenger, Dietrich, to BASF Aktiengesellschaft. Production of gravure printing plates having plastic printing layers. 4,565,771, Cl. 430-307.000.

Lynch, Robert C.: *See*—
Harbour, Edward E.; Lynch, Robert C.; and Stilwell, George R., Jr., 4,566,134, Cl. 455-607.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Bechtloff, Gert, 4,565,286, Cl. 198-861.100.

Mabuchi, Kenichi, to Bio Mabuchi Co. Ltd. Beauty treatment device. 4,565,189, Cl. 128-49.000.

MacCracken, Calvin D. Method of cyclic air conditioning with cogeneration of ice. 4,565,069, Cl. 62-66.000.

MacDonald, Robin B.: *See*—
Wilson, Michael E.; Olson, David R.; Stone, Walter H.; and MacDonald, Robin B., 4,565,629, Cl. 210-248.000.

MacGregor, Douglas B.: *See*—
Zolnowsky, John; MacGregor, Douglas B.; and Eckert, Kim, 4,566,063, Cl. 364-200.000.

Machholz, Adolf: *See*—
Poth, Ulrich; Bartol, Fritz; and Machholz, Adolf, 4,565,730, Cl. 428-204.000.

MacKenzie, Hugh R., to Polaroid Corporation. Image recording apparatus with adjustable mask. 4,566,015, Cl. 346-107.00R.

Mackowiak, David E.: *See*—
O'Hara, Mark J.; Imai, Tamotsu; Bricker, Jeffery C.; and Mackowiak, David E., 4,565,898, Cl. 585-441.000.

MacLeod, Donald R., Jr., to Electric Power Research Institute, Inc. Armoring system for an airfoil centrifugal fan. 4,565,495, Cl. 416-224.000.

Macovski, Albert. Blood vessel projection imaging system using nuclear magnetic resonance. 4,565,968, Cl. 324-309.000.

Mactaggart, John W., to Sentrol Systems Ltd. Electronically scanned spectrometer color, brightness and opacity measurement and control system. 4,565,444, Cl. 356-73.000.

Maeda, Masanori: *See*—
Suzaki, Hidenori; Miura, Tetsuro; Maeda, Masanori; and Inaoka, Koji, 4,565,914, Cl. 219-68.000.

Maeda Metal Industries, Ltd.: *See*—
Fujita, Masahiro; and Uemura, Yukio, 4,565,112, Cl. 81-56.000.

Maeda, Shuichi: *See*—
Hirooka, Shigeru; Maeda, Shuichi; Yamamoto, Shigehiro; and Yamaguchi, Toshihiko, 4,566,032, Cl. 358-103.000.

Maerte, Leo: *See*—
Pfeiffer, Peter; and Maerte, Leo, 4,565,302, Cl. 222-38.000.

Maerz, Leslie R. Ice fishing device. 4,565,024, Cl. 43-17.000.

Magerl, Johann, to Siemens Aktiengesellschaft. Synchronous clock generator for digital signal multiplex devices. 4,566,099, Cl. 370-100.000.

Maier, Josef. Detachable gallery for use on buildings or the like. 4,565,261, Cl. 182-113.000.

Maier, Rudolf, to Battenfeld Fischer Blasformtechnik GmbH. Nozzle assembly for extruding a synthetic-resin tube. 4,565,515, Cl. 425-381.000.

Maille, Jacques H. P.: *See*—
Fleury, Joel J.; and Maille, Jacques H. P., 4,566,024, Cl. 357-32.000.

Makita, Fujio, to Fuji Jukogyo Kabushiki Kaisha. Gearshift apparatus for an automobile. 4,565,108, Cl. 74-475.000.

Makitalo, Valto J.: *See*—
Hultholm, Stig-Erik; Lilja, Launo L.; Makitalo, Valto J.; and Nyman, Bror G., 4,565,660, Cl. 261-121.00R.

Malin, Michael J.; Loev, Bernard; and Hwang, Deng R., to Technicon Instruments Corporation. Quaternized phthalocyanin derivatives. 4,565,688, Cl. 424-3.000.

Malinoff, Don W., to Culture-Tek. Pipette device. 4,565,100, Cl. 73-863.320.

Mallinckrodt, Inc.: *See*—
Sathe, Sharad S., 4,565,890, Cl. 564-216.000.

Manago, Takashi: *See*—
Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,565,551, Cl. 48-92.000.

Mannesmann Aktiengesellschaft: *See*—
Hasselmann, Heinz; Kunze, Volkmar; and Bitsch, Harald, 4,565,352, Cl. 254-344.000.
Ludwig, Bernhard, 4,565,325, Cl. 239-597.000.

Mannesmann Tally GmbH: *See*—
Pichler, Josef; Puchegger, Karl; and Starek, Bruno, 4,565,127, Cl. 101-93.040.

Mansson, Bjorn; Sirenius, Kurt; and Sundin, Birger, to AB Casco. Method for the production of particle boards. 4,565,662, Cl. 264-113.000.

Marangoni, Carlo. Apparatus for shaping in a calibrated way a rubber pre-extruded profiled member for regenerating tires and the like. 4,565,514, Cl. 425-328.000.

Marcellus, Michael: *See*—
Murka, August, Jr.; and Marcellus, Michael, 4,565,735, Cl. 428-234.000.

Marconi Company Limited, The: *See*—
Gratze, Stephen C., 4,565,983, Cl. 333-193.000.

Maremont Corporation: *See*—
Bunning, Ernst, 4,565,113, Cl. 89-1.400.
Scheidt, Wayne A.; and Paterick, Robert J., 4,565,260, Cl. 181-243.000.

Mariani, Elio A.: *See*—
Stern, Richard A.; and Mariani, Elio A., 4,565,982, Cl. 333-157.000.

Mark Telephone Products, Inc.: *See*—
Dimeff, John, 4,565,097, Cl. 73-765.000.

Marks, James R.: *See*—
Eisenbrandt, Gerald A.; and Marks, James R., 4,565,967, Cl. 324-95.000.

Marr, Donald, to British Telecommunications. Connection and inspection of optical fibres by fusion splicing. 4,565,593, Cl. 156-64.000.

Marschner, Frank W., to Colgate-Palmolive Company. Deodorant composition. 4,565,693, Cl. 424-67.000.

Martell, Charles R.; Isett, Donald D.; and Treadwell, Stephen S., to Microdynamics, Inc. Method and apparatus for automatically adjusting the sensitivity of edge sensors in a semi-automatic sewing machine. 4,565,140, Cl. 112-121.110.

Martin, John C.: *See*—
Verheyden, Julien P. H.; and Martin, John C., 4,565,868, Cl. 544-276.000.

Martin, John J.: *See*—
Bossle, Paul C.; Martin, John J.; Sarver, Emory W.; and Sommer, Harold Z., 4,565,787, Cl. 436-120.000.

Martin, John R.: *See*—
Gardner, Robert J.; and Martin, John R., 4,565,619, Cl. 204-400.000.

Martinez, Edward. Gravity—magnetic ore separators. 4,565,624, Cl. 209-40.000.

Marvin Glass & Associates: *See*—
Klimpert, Randall J.; and Meyer, Burton C., 4,565,537, Cl. 446-321.000.

Marx, John J., to Fraser Automation. Multiple plate clutch orienting fixture and method of using. 4,564,994, Cl. 29-468.000.

Maschinenfabrik Fr. Niepmann GmbH & Co.: *See*—
Stewart, Iain G. H.; Pitz, Hans P.; and Brinker, Alfred, 4,565,203, Cl. 131-283.000.

Maschinenfabrik Sulzer-Ruti AG: *See*—
Bertsch, Gotthilf, 4,565,225, Cl. 139-434.000.

Maschinenfabrik WIFAG: *See*—
von Hein, Eduard, 4,565,359, Cl. 270-41.000.

Massachusetts Institute of Technology: *See*—
Geis, Michael W.; Smith, Henry I.; Antoniadis, Dimitri A.; and Flanders, Dale C., 4,565,599, Cl. 156-603.000.
Hubbard, James E., Jr., 4,565,940, Cl. 310-326.000.

Massee, Johan. Forming machine. 4,565,081, Cl. 72-19.000.

Masuda, Tatsunosuke, to Dainippon Screen Seizo Kabushiki Kaisha. Dual intensity laser beam picture recording method. 4,566,016, Cl. 346-108.000.

Masui, Tamenori; Ono, Hitoshi; and Ariyoshi, Toshihiko, to Nippon Steel Corporation. Method of and mold for continuously casting steel beam blanks. 4,565,236, Cl. 164-459.000.

Masumoto, Tsuyoshi: *See*—
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.

Masuzawa, Motomu: *See*—
Hamada, Akio; Masuzawa, Motomu; and Matsuda, Yoshiaki, 4,565,484, Cl. 414-686.000.

Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., to AB Carbogel; and Berol Kemi AB. Aqueous slurry of a solid fuel and a process for the production thereof. 4,565,549, Cl. 44-51.000.

Mathis, Claude: *See*—
Francois, Bernard; and Mathis, Claude, 4,565,650, Cl. 252-518.000.

Mathyssek, Konrad: *See*—
Keil, Rudolf; and Mathyssek, Konrad, 4,565,558, Cl. 65-1.000.

Matrick, Howard, to Du Pont de Nemours, E. I., and Company. Dry nonelectroscopic toners surface coated with nonionic siloxane-oxyalkylene block copolymer. 4,565,773, Cl. 430-331.000.

Matsubara, Susumu; Nitta, Shouetsu; Hashiba, Kiyoaki; and Noguchi, Yuuichi, to Yoshida Kogyo K.K. Thread anchoring method and apparatus for use in winder. 4,565,331, Cl. 242-18.0PW.

Matsubayashi, Norio: *See*—
Hasegawa, Hirosi; Onuma, Tatsuro; Matsubayashi, Norio; and Tamura, Masayoshi, 4,566,079, Cl. 365-1.000.

Matsuda, Masaaki: *See*—
Kataoka, Yushin; Matsuda, Masaaki; Aoi, Masahiro; and Chino, Kunitake, 4,565,673, Cl. 423-112.000.

Matsuda, Setsuyuki: *See*—
Hirooka, Koichi; Matsuda, Setsuyuki; and Arahata, Yoshikuni, 4,565,901, Cl. 174-17.0GF.

Matsuda, Shigeki, to Nippondenso Co., Ltd. Method for forming a chemical conversion phosphate film on the surface of steel. 4,565,585, Cl. 148-6.15R.

Matsuda, Toshitsugu: *See*—
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.

Matsuda, Yoshiaki: *See*—
Hamada, Akio; Masuzawa, Motomu; and Matsuda, Yoshiaki, 4,565,484, Cl. 414-686.000.

Matsui, Hiroshi; Mihara, Tadashi; and Umino, Koji, to Matsushita Electric Industrial Co., Ltd. Rotary operation type miniaturized electronic component. 4,565,990, Cl. 338-171.000.

Matsumoto, Hiroshi: *See*—
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,565,569, Cl. 71-103.000.

Matsumoto, Mikio: *See*—
Wada, Hiroshi; Ishii, Kazuhiro; Tsumagari, Nobuchika; Matsuo, Masaaki; and Matsumoto, Mikio, 4,565,877, Cl. 548-530.000.

Matsumura, Tetsuo: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Matsunami, Yukio: *See*—
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.

Matsuo, Masaaki: *See*—
Wada, Hiroshi; Ishii, Kazuhiro; Tsumagari, Nobuchika; Matsuo, Masaaki; and Matsumoto, Mikio, 4,565,877, Cl. 548-530.000.

Matsuo, Seitaro; Muramoto, Susumu; Ehara, Kohei; and Itsumi, Manabu, to Nippon-Telegraph and Telephone Public Corporation. Semiconductor device and manufacturing process thereof. 4,564,997, Cl. 29-576.00W.

Matsuo, Setsuo; Nakanome, Noboru; and Nishishita, Koji, to Sanyo Electric Co., Ltd. Method of forming a separator for a cylindrical battery. 4,565,002, Cl. 29-623.400.

Matsuoka, Shigeki: *See*—
Takata, Akira; and Matsuoka, Shigeki, 4,565,960, Cl. 323-317.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Matsui, Hiroshi; Mihara, Tadashi; and Umino, Koji, 4,565,990, Cl. 338-171.000.
Saito, Yukihiro; Ito, Yoshimasa; and Asakawa, Shiro, 4,565,846, Cl. 525-101.000.
Suzaki, Hidenori; Miura, Tetsuro; Maeda, Masanori; and Inaoka, Koji, 4,565,914, Cl. 219-68.000.
Tokunaga, Tomokazu; Izaki, Masataka; Kajino, Jirou; and Kamiyama, Toshibumi, 4,566,048, Cl. 360-94.000.
Yamanishi, Kazuhiro; and Mineo, Mino, 4,565,954, Cl. 318-603.000.
Yoshida, Tomio; Satoh, Isao; Ohara, Shunji; Koishi, Kenji; and Kuroki, Yuzuru, 4,566,088, Cl. 369-44.000.

Matsushita Electric Works, Ltd.: *See*—
Tsuji, Eiji; Gotou, Akio; and Ichikawa, Kuniharu, 4,565,916, Cl. 219-225.000.

Matsushita, Yasuo: *See—*
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Kosugi, Tetuo, 4,565,907, Cl. 200-19.0DR.

Matsutani, Kinya; and Yokota, Toshikazu, to Kabushiki Kaisha Toshiba. Single crystal manufacturing apparatus. 4,565,671, Cl. 422-249.000.

Matsuura, Yoshikazu, to Teraoka Seiko Co., Ltd. Measuring apparatus. 4,565,254, Cl. 177-25.000.

Matsuzaka, Shoji: *See—*
Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, 4,565,778, Cl. 430-567.000.

Mattei, Riccardo: *See—*
Seragnoli, Enzo; and Mattei, Riccardo, 4,565,202, Cl. 131-281.000.

Mattel, Inc.: *See—*
Cook, John S., 4,565,539, Cl. 446-462.000.

Matthews, James R.; Schattschneider, George K.; Black, Mervin R.; and Perkins, James A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Cable integrity by acoustic emission. 4,565,964, Cl. 324-51.000.

Mauries, Reinhard: *See—*
Rohner, Joachim; Mauries, Reinhard; and Zumfeld, Heinz, 4,565,058, Cl. 57-22.000.

Maxwell, Charles E.: *See—*
Stokes, John H.; Clark, John I.; and Maxwell, Charles E., 4,565,995, Cl. 340-571.000.

Mayall, Phillip L.; and Whitten, Edward M. Marine observatory craft. 4,565,145, Cl. 114-61.000.

Mayenkar, Krishna V., to Harza Engineering Company. Removal of dissolved heavy metals from aqueous waste effluents. 4,565,633, Cl. 210-688.000.

Mayer, Camille. Seat mat assembly with headrests. 4,565,405, Cl. 297-230.000.

Mayer, Georg: *See—*
Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, 4,565,631, Cl. 210-333.100.

Mayer, Hans: *See—*
Lotter, Bruno; Essig, Willi; and Mayer, Hans, 4,565,989, Cl. 337-311.000.

Mayer, Hans J.: *See—*
Bollag, Werner; Mayer, Hans J.; and Wyss, Pierre-Charles, 4,565,863, Cl. 536-18.200.

Mayer, Rolf: *See—*
Slaghuis, Hermann; Mayer, Rolf; Kargel, Heribert; and Bender, Heinz G., 4,565,332, Cl. 242-18.100.

Mazda Motor Corporation: *See—*
Ishimi, Haruyoshi; and Asanomi, Koji, 4,565,163, Cl. 123-41.440.

Mazeau, Jean P.: *See—*
Boudot, Jean E.; and Mazeau, Jean P., 4,565,791, Cl. 501-56.000.

Mazzarese, Joseph A. Building block with reinforcement and/or positioning lugs and recesses. 4,565,043, Cl. 52-593.000.

McBee, William D. Trash compactor. 4,565,126, Cl. 100-214.000.

McDaniel, Max P.: *See—*
Short, James N.; and McDaniel, Max P., 4,565,795, Cl. 502-110.000.

McDonald, Norman L.: *See—*
Castleberry, Kenneth B.; and McDonald, Norman L., 4,564,962, Cl. 4-543.000.

McEntire, Edward E.: *See—*
Livingston, David R.; McEntire, Edward E.; and Nieh, Edward C., 4,565,889, Cl. 564-205.000.

McGann, Leo E., to Singer Company, The. Sewing machine bed extension. 4,565,142, Cl. 112-260.000.

McGilp, Kenneth J.: *See—*
Newman, Ira R.; Minshull, Kenneth N.; and McGilp, Kenneth J., 4,565,380, Cl. 277-178.000.

McGrail, John F.; and Kershaw, Roger F. Security hinge. 4,564,974, Cl. 16-353.000.

McIntyre, Frederic S., to Acumeter Laboratories, Inc. Three-way poppet valve, method and apparatus. 4,565,217, Cl. 137-625.500.

McKenzie, Michael P.: *See—*
Sarson, Gary A.; and McKenzie, Michael P., 4,566,096, Cl. 370-62.000.

McLaren, Keith: *See—*
Bradshaw, George M.; Desyllas, Peter L. L.; and McLaren, Keith, 4,566,104, Cl. 371-15.000.

McLaughlin, John R.: *See—*
Guss, Paul L.; Tumlinson, James H., III; Sonnet, Philip E.; and McLaughlin, John R., 4,565,695, Cl. 424-84.000.

McLeod, Malcolm L., to Phillips Petroleum Company. Pipe alignment apparatus. 4,565,003, Cl. 29-281.100.

McNamee, Douglas D. Resealable bag and tamper proof sealing ring. 4,566,129, Cl. 383-5.000.

Mead Corporation, The: *See—*
Paranjpe, Suresh C.; Scott, Burton W.; and Kannapell, Henry N., 4,566,014, Cl. 346-1.100.
Spamer, William S.; and Preis, Alan D., 4,565,725, Cl. 428-167.000.

Medi-Physics, Inc.: *See—*
Hubbard, Robert E.; and Wedemeyer, Robert C., 4,565,301, Cl. 222-5.000.

Medica, Frank: *See—*
Aertker, Walter P.; Taylor, William L.; and Medica, Frank, 4,565,529, Cl. 440-7.000.

Medlock, Wayne D. Gauge for measuring clearance in the body side bearings of rail cars. 4,565,013, Cl. 33-517.000.

Medtronic, Inc.: *See—*
Cahalan, Patrick T.; and Schwinghammer, Michelle A., 4,565,666, Cl. 264-267.000.
Fogt, Eric J., 4,565,665, Cl. 264-267.000.
Jurva, Edsel O.; and Goodin, Richard L., 4,565,093, Cl. 73-40.700.

Medvedev, Oleg S.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Meier, Ernst, to F.H.I. Finanz-, Handels und Investment AG. Apparatus for screening a stream of molten metal. 4,565,239, Cl. 164-475.000.

Meier, Jurgen: *See—*
Michalak, Stanislaw; Weber, Klaus-Dieter; and Meier, Jurgen, 4,565,679, Cl. 423-239.000.

Meier, Werner, to Sulzer Brothers Limited. Device for gravimetric distribution of liquid for mass and heat transfer columns. 4,565,216, Cl. 137-561.00A.

Meiller, Francois: *See—*
Le Du, Yannick; and Meiller, Francois, 4,565,635, Cl. 210-727.000.

Melamine Chemicals, Inc.: *See—*
Thomas, Roger E.; and Best, David E., 4,565,867, Cl. 544-201.000.

Melby, Phillip J.; and Koch, James J., to Melco Co Inc. Disposable smoke mask and apparatus. 4,565,196, Cl. 128-205.240.

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Menasian, David R. Vacuum collector. 4,565,555, Cl. 55-288.000.

Meneian, Harry, to Fleet Industries. Cable winder system. 4,565,333, Cl. 242-54.00R.

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Andrus, W. Alexander; Christensen, Burton G.; and Heck, James V., 4,565,808, Cl. 514-80.000.
Parks, Chris F., 4,565,640, Cl. 252-8.55R.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Bernhard, Horst, 4,565,581, Cl. 106-308.00B.

Merk, Edward; Delaney, George; Wasynczuk, Leon; Parks, Richard; and Polacek, Richard, to Burgmaster - Houdaille, Inc. Carousel pallet shuttle. 4,565,480, Cl. 414-225.000.

Merkle, Josef, to Daimler-Benz Aktiengesellschaft. Rocker arm mounting. 4,565,390, Cl. 280-726.000.

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Weerda, Hilko; Meuret, Gerhard; and Pedersen, Peter, 4,565,194, Cl. 128-204.230.

Meyer, Burton C.: *See—*
Klimpert, Randall J.; and Meyer, Burton C., 4,565,537, Cl. 446-321.000.

Meyer, Horst: *See—*
Wehinger, Egbert; Meyer, Horst; Kazda, Stanislav; and Knorr, Andreas, 4,565,824, Cl. 514-356.000.

Meyer Manufacturing Company Limited: *See—*
Lam, Yanta, 4,565,296, Cl. 220-94.00R.

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Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,565,887, Cl. 564-85.000.

Mia-Lens Production A/S: *See—*
Larsen, Hans-Ole, 4,565,348, Cl. 249-122.000.

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Curtis, Jeff K.; and Michaely, William J., 4,565,570, Cl. 71-105.000.

Michalak, Stanislaw; Weber, Klaus-Dieter; and Meier, Jurgen, to L. & C. Steinmuller GmbH. Method of regulating the amount of reducing agent added during catalytic reduction of NO_x contained in flue gases. 4,565,679, Cl. 423-239.000.

Michienzi, Giacomo F. Method of molding a shelter structure. 4,565,661, Cl. 264-34.000.

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Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, 4,565,861, Cl. 536-6.400.

Microdynamics, Inc.: *See—*
Martell, Charles R.; Isett, Donald D.; and Treadwell, Stephen S., 4,565,140, Cl. 112-121.110.

Midwest Instrument Co., Inc.: *See—*
Boron, Joseph J., 4,565,101, Cl. 73-864.570.

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Matsui, Hiroshi; Mihara, Tadashi; and Umino, Koji, 4,565,990, Cl. 338-171.000.

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Baskin, Joseph M.; Miller, Gary E.; and Wiesner, Wayne, 4,565,929, Cl. 290-44.000.

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Daggs, Paul R.; Wilkowske, Arthur C.; and Miller, Gordon D., 4,565,466, Cl. 404-10.000.

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Nelson, Kenneth E., 4,565,447, Cl. 356-319.000.

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Okada, Takao; Toda, Akitoshi; and Mimura, Yoshiyuki, 4,565,436, Cl. 355-3.00R.

Minakawa, Masaaki: *See—*
Kami, Yozo; Minakawa, Masaaki; and Kubo, Kanji, 4,565,389, Cl. 280-663.000.

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Seki, Masahiko; Nakatani, Hiroshi; Minami, Shozo; and Kogumasaka, Katsuya, 4,565,479, Cl. 414-199.000.

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Yamanishi, Kazuhiro; and Mineo, Mino, 4,565,954, Cl. 318-603.000.

Minker, Emil: *See—*
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Minn, Andre B., to International Business Machines Corporation. Color cathode ray tube for use with a light pen. 4,565,947, Cl. 313-467.000.

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Barrett, William H.; and Minn, Andre B., 4,565,946, Cl. 313-408.000.

Minnesota Mining and Manufacturing Company: *See—*
Chang, John C.; and Williams, Kathryn L., 4,565,641, Cl. 252-8.750.
Errede, Louis A.; Stoesz, James D.; and Winter, George D., deceased, 4,565,663, Cl. 264-120.000.
Fitzer, Robert C.; Fabbrini, Charles J.; and Deyak, Frank L., 4,565,842, Cl. 524-57.000.
Grant, Richard J., 4,565,857, Cl. 527-301.000.
Hansen, Paul E.; and Nelson, Robert L., 4,565,783, Cl. 435-299.000.
Huffman, William A.; and Novack, James C., 4,565,424, Cl. 350-349.000.
Koshar, Robert J., 4,565,714, Cl. 427-54.100.

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Newman, Ira R.; Minshull, Kenneth N.; and McGilp, Kenneth J., 4,565,380, Cl. 277-178.000.

Mirassou, Alfred: *See—*
Arretz, Emmanuel; Mirassou, Alfred; Landoussy, Claude; and Auge, Patrick, 4,565,893, Cl. 568-72.000.

Mishkin, Abraham R.: *See—*
Wertheim, John H.; and Mishkin, Abraham R., 4,565,706, Cl. 426-385.000.

Mr. Gasket Company: *See—*
Valdez, Henry R., 4,565,256, Cl. 180-68.500.

Misumi, Haruo; Ogawa, Hiroshi; Nagao, Naotake; and Oimura, Katsuhiko, to Omron Tateisi Electronics Co. Light signal binary device with optical feedback. 4,565,924, Cl. 250-227.000.

Mito, Yutaka: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Hayase, Iwao, 4,565,746, Cl. 428-638.000.
Hirooka, Koichi; Matsuda, Setsuyuki; and Arahata, Yoshikuni, 4,565,901, Cl. 174-17.0GF.
Ikegami, Takashi; and Mori, Masakazu, 4,565,936, Cl. 310-62.000.
Kaiko, Akira, 4,565,952, Cl. 318-345.00R.
Kime, Kenjiro, 4,566,089, Cl. 369-45.000.
Kunii, Kazushi, 4,565,264, Cl. 187-89.000.
Otsuka, Shigeharu; Mizuno, Yuji; Hasegawa, Tomoharu; and Kobukuro, Masahisa, 4,565,986, Cl. 335-131.000.
Otsuka, Shigeharu; and Mizuno, Yuji, 4,565,987, Cl. 335-131.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Tani, Masanori; Eto, Shin'ichi; Funakoshi, Takeshi; Nishikawa, Susumu; and Hashikura, Kiyoteru, 4,565,067, Cl. 60-545.000.

Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
Negishi, Hideo; Goto, Kaoru; and Takaya, Sueji, 4,565,471, Cl. 408-204.000.

Mitsubishikaseikogyo Kabushikikaisha: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

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Uchiyama, Masaki; and Mitsuhashi, Yasuo, 4,565,763, Cl. 430-109.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Kobayashi, Kazusuke; and Cho, Ryokche, 4,565,840, Cl. 524-8.000.

Miura, Genmei; Konno, Akira; and Konishi, Motofumi, to Canon Kabushiki Kaisha. Data output apparatus capable of rotating data output therefrom relative to data input thereto. 4,566,002, Cl. 340-727.000.

Miura, Tetsuro: *See—*
Suzaki, Hidenori; Miura, Tetsuro; Maeda, Masanori; and Inaoka, Koji, 4,565,914, Cl. 219-68.000.

Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, to Fuji Electric Company, Ltd. Pattern discriminator. 4,566,126, Cl. 382-48.000.

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Miyahara, Takashi, to Nippon Seiko Kabushiki Kaisha. Self-aligning type clutch release apparatus. 4,565,272, Cl. 192-98.000.

Miyake, Tamio: *See—*
Iida, Takayuki; and Miyake, Tamio, 4,565,456, Cl. 374-169.000.

Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic materials. 4,565,778, Cl. 430-567.000.

Miyano, Masateru; and Shone, Robert L., to G. D. Searle & Co. Substituted dihydrobenzopyran-2-carboxylates. 4,565,882, Cl. 549-399.000.

Miyao, Masanobu: *See—*
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.

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Sekiya, Kunihiko; Sakai, Kunio; Hirai, Shoichi; Miyao, Shigeru; and Fukuda, Masatoshi, 4,566,127, Cl. 382-56.000.

Miyata, Kazutoshi: *See—*
Miyazaki, Hitoshi; Ohtsuka, Katsuyuki; and Miyata, Kazutoshi, 4,565,670, Cl. 422-186.040.

Miyata, Teruo; and Namiki, Shinichi, to Koken Co., Ltd. Substrate consisting of regenerated collagen fibrils and method of manufacturing same. 4,565,580, Cl. 106-124.000.

Miyazaki, Hitoshi; Ohtsuka, Katsuyuki; and Miyata, Kazutoshi, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Heat treating apparatus using microwaves. 4,565,670, Cl. 422-186.040.

Miyazaki, Yasuharu: *See—*
Kojima, Shinji; Mizota, Hisakazu; Kodama, Masanori; and Miyazaki, Yasuharu, 4,565,238, Cl. 164-468.000.

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Ito, Katsunori; Akiyama, Susumu; Mizuno, Tiaki; Yamada, Toshitaka; and Abe, Tomoaki, 4,565,091, Cl. 73-118.000.

Mizuno, Toshio; Satoh, Gunkichi; and Ohkawa, Michihisa, to Kokusai Denshin Denwa Co., Ltd. Bit error rate measuring system. 4,566,100, Cl. 371-5.000.

Mizuno, Yuji: *See—*
Otsuka, Shigeharu; Mizuno, Yuji; Hasegawa, Tomoharu; and Kobukuro, Masahisa, 4,565,986, Cl. 335-131.000.
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Mizushima, Yoshihiro: *See—*
Ohnishi, Katsumi; Mizushima, Yoshihiro; and Sato, Kiyosumi, 4,566,062, Cl. 364-200.000.

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Bahl, Surinder K.; Canterino, Peter J.; and Shaw, Richard G., 4,565,847, Cl. 525-240.000.
Burress, George T., 4,565,899, Cl. 585-445.000.
Clauson, Melvil B.; and Wagner, John R., Jr., 4,565,739, Cl. 428-349.000.
Kuhl, Gunter H., 4,565,681, Cl. 423-328.000.
Pebdani, Farrokh N.; and Shu, Winston R., 4,565,249, Cl. 166-303.000.

Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, to Nissan Motor Co., Ltd.; and Kokusan Kinzoku Kogyo Co., Ltd. Detecting device for detecting the removal of a cylinder lock. 4,565,994, Cl. 340-542.000.

Mochizuki, Junichiro: *See—*
Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, 4,565,781, Cl. 435-88.000.

Moessner, Heinz E.; and Albrecht, Hans P. Roller blind unit. 4,565,231, Cl. 160-133.000.

Moller, Heinz: *See—*
Damson, Eckart; Klenk, Martin; Moser, Winfried; and Moller, Heinz, 4,565,087, Cl. 73-35.000.

Molnlycke Aktiebolag: *See—*
Reiner, Per L.; and Aberg, Sven U. T., 4,565,603, Cl. 162-123.000.

Monarch Knitting Machinery Corporation: *See—*
Nishikawa, Masao; and Saibe, Seiichi, 4,565,047, Cl. 53-137.000.

Mondini, Giancarlo; and Schmid, Rene, to Rieter Machine Works Limited. Method and apparatus for forming a lap. 4,565,337, Cl. 242-66.000.

Monnig, Kenneth A.: *See—*
Brors, Daniel L.; Fair, James A.; and Monnig, Kenneth A., 4,565,157, Cl. 118-719.000.

Monroe, Bruce M.: *See—*
Dueber, Thomas E.; and Monroe, Bruce M., 4,565,769, Cl. 430-281.000.

Monsanto Company: *See—*
Ebner, Jerry R., 4,565,658, Cl. 260-465.300.
Runkle, Charles J., 4,565,630, Cl. 210-321.100.

Montgomery, Dean P.; Gall, James W.; and Davis, Ed D., to Phillips Petroleum Company. Crude oil refining. 4,565,620, Cl. 208-80.000.

Moore, Roy J., to Canron Corp. Clamp arrangement for track lifting and aligning device. 4,565,133, Cl. 104-7.00B.

Moore, Timothy G.; Dockendorff, David G.; and Harris, Stephen J., to Northern Telecom Limited. Touch strip input for display terminal. 4,566,001, Cl. 340-711.000.

Moreau, Jacques-Pierre: *See—*
Kim, Sun H.; and Moreau, Jacques-Pierre, 4,565,815, Cl. 514-246.000.

Moreland, John M.: *See—*
Hansma, Paul K.; Moreland, John M.; and Alexander, Sam, 4,566,023, Cl. 357-26.000.

Morford, Marvin A. Tiltable supporting wheelchair. 4,565,385, Cl. 280-289.0WC.

Morgan, Marshall M. Ice tray for use with a portable ice chest. 4,565,074, Cl. 62-457.000.

Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, to Japan Crown Cork Co Ltd. Plastic container closure having pilferproof characteristics. 4,565,295, Cl. 215-252.000.

Mori, Kei. Foundation for mounting solar ray collecting devices. 4,565,185, Cl. 126-417.000.

Mori, Masakazu: *See—*
Ikegami, Takashi; and Mori, Masakazu, 4,565,936, Cl. 310-62.000.

Morimoto, Kiyoshi; and Takagi, Toshinori, to Futaba Denshi Kogyo K.K. Boron nitride film and process for preparing same. 4,565,741, Cl. 428-427.000.

Morino, Ronald: *See—*
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.

Morita, Takayuki: *See—*
Asai, Isao; Muramatsu, Shigeru; Morita, Takayuki; and Tanaka, Akira, 4,565,278, Cl. 198-400.000.

Moriyama, Naoki; Koike, Hiroshi; and Hatakeyama, Osamu, to Alps Electric Co., Ltd. Rotary wheel printer. 4,565,128, Cl. 101-93.190.

Morley, Robin C.; and Sharma, Shri C., to Warner-Lambert Company. Dietary fiber food products and method of manufacture. 4,565,702, Cl. 426-93.000.

Morris, Russell W.: *See—*
Samuel, Robert A.; Selke, Gary J.; and Morris, Russell W., 4,566,035, Cl. 358-244.000.

Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., to Hewlett-Packard Company. Programmable calculator including means for digitizing the position of an X-Y plotter pen. 4,566,072, Cl. 364-520.000.

Moser, Winfried: *See—*
Damson, Eckart; Klenk, Martin; Moser, Winfried; and Moller, Heinz, 4,565,087, Cl. 73-35.000.

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Haide, Karl, 4,565,489, Cl. 415-53.00R.

Motorola, Inc.: *See—*
Brookshire, Daniel A., 4,565,971, Cl. 330-9.000.
Kuo, Clinton C. K.; and Dehganpour, Sam, 4,565,932, Cl. 307-264.000.
Suckle, Leonard I., 4,566,117, Cl. 381-51.000.
Zolnowsky, John; MacGregor, Douglas B.; and Eckert, Kim, 4,566,063, Cl. 364-200.000.

Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, to Siemens Aktiengesellschaft; Thomson-CSF; L.C.C.-C.I.C.E.; and U.S. Philips Corp. Electric coil with secured cores. 4,565,988, Cl. 336-192.000.

Mousson, Roland: *See—*
Lonnoy, Jacques J.; and Mousson, Roland, 4,565,339, Cl. 244-3.130.

Mouzavires, William E.: *See—*
Karlsson, Karl A., 4,565,470, Cl. 408-72.00R.

Muck, Jack E., to AccuSpray, Inc. Compressor. 4,565,488, Cl. 415-53.00R.

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Loskot, Stephen; Kratel, Gunter; Lang, Wilfried; and Muhlhofer, Ernst, 4,565,682, Cl. 423-336.000.

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Muller, Jean-Claude: *See—*
Imfeld, Marquard; Ramuz, Henri; Vogt, Peter; and Muller, Jean-Claude, 4,565,869, Cl. 544-323.000.

Muller, Robert, to Dr. Ing. h.c.F. Porsche A.G. Ball through-passage for the gearshifting lever of a motor vehicle. 4,565,107, Cl. 74-473.00P.

Muller, Willi: *See—*
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Muller, Wolfgang: *See—*
Brinkmann, Dirk; Muller, Wolfgang; Sauerwald, Walter; Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,565,517, Cl. 425-451.200.

Mullies, Jarrell W.: *See—*
Powers, Avery W.; Cates, Guy L.; Staats, Charles W., Jr.; and Mullies, Jarrell W., 4,566,008, Cl. 340-941.000.

Mullins, Phillip L.; Neal, James G.; and Perkins, Jeffrey T., to Allied Corporation. Process and apparatus for applying and confining finish. 4,565,154, Cl. 118-410.000.

Mullins, Ronald L.: *See—*
Carpenter, James H., Jr.; and Mullins, Ronald L., 4,565,035, Cl. 51-434.000.

Multinorm B.V.: *See—*
Vissers, Hermanus H.; and Wondergem, Jan, 4,565,057, Cl. 56-364.000.

Mulvey, Patricia S.; Barth, Jordan B.; and Vellekoop, Linda J., to Colgate-Palmolive Company. Extrudable dentifrice. 4,565,692, Cl. 424-57.000.

Murai, Takaaki; Watanabe, Shoji; Inoue, Kimio; and Yagii, Toyokazu, to Daicel Chemical Industries, Ltd. Polyether compounds, epoxy resins, epoxy resin compositions, and processes for production thereof. 4,565,859, Cl. 528-365.000.

Muralidhara, Ranya: *See—*
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,565,707, Cl. 426-535.000.

Muramatsu, Hiromochi; and Watanabe, Atsushi, to Nippondenso Co., Ltd. Electrode for organic battery. 4,565,754, Cl. 429-213.000.

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Asai, Isao; Muramatsu, Shigeru; Morita, Takayuki; and Tanaka, Akira, 4,565,278, Cl. 198-400.000.

Muramoto, Susumu: *See—*
Matsuo, Seitaro; Muramoto, Susumu; Ehara, Kohei; and Itsumi, Manabu, 4,564,997, Cl. 29-576.00W.

Murata Kikai Kabushiki Kaisha: *See—*
Mima, Hiroshi, 4,565,059, Cl. 57-22.000.

Murata Manufacturing Co., Ltd.: *See—*
Sakai, Katsumi; and Toyoshima, Isao, 4,565,942, Cl. 310-338.000.

Murka, August, Jr.; and Marcellus, Michael, to Huyck Corporation. Papermakers' felt. 4,565,735, Cl. 428-234.000.

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Murphy, Betty J.: *See—*
Smith, James A.; and Murphy, Betty J., 4,565,644, Cl. 252-92.000.

Murphy, Richard D.: *See—*
Skonieczny, Joseph P.; Murphy, Richard D.; and Clelford, Douglas H., 4,566,101, Cl. 371-5.000.

Murray, David E.: *See—*
Chalk, Anthony J.; Charnock, Graham; Gates, Allen P.; Murray, David E.; and Smith, Ian S., 4,565,757, Cl. 430-83.000.

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Arciszewski, Henry; Porzio, Linda A.; and Chiang, Bin Y., 4,565,089, Cl. 78-82.000.

Nagai, Koichi: *See—*
Shimizu, Shinkichi; Ichihashi, Hiroshi; and Nagai, Koichi, 4,565,801, Cl. 502-209.000.

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Nagano, Katsumi, to Kabushiki Kaisha Toshiba. Gyrator. 4,565,962, Cl. 323-351.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Current amplifying circuit. 4,565,973, Cl. 330-288.000.

Nagao, Naotake: *See—*
Misumi, Haruo; Ogawa, Hiroshi; Nagao, Naotake; and Oimura, Katsuhiko, 4,565,924, Cl. 250-227.000.

Nagase, Hidenobu; and Hirayama, Takayuki, to Honda Giken Kogyo Kabushiki Kaisha. Supercharger control system for internal combustion engines. 4,565,178, Cl. 123-564.000.

Nagel, Dietmar: *See—*
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,565,538, Cl. 446-427.000.

Nahara, Akira: *See—*
Arai, Yoshihiro; Nahara, Akira; and Fukino, Kiyotaka, 4,565,734, Cl. 428-216.000.

Naito, Masahiro: *See—*
Motonaga, Hideo; and Naito, Masahiro, 4,565,780, Cl. 435-20.000.

Naka, Hideo: *See—*
Kobashi, Toshiyuki; Takagi, Shoyo; and Naka, Hideo, 4,565,832, Cl. 521-63.000.

Naka, Masayasu, to Kyowa Kentetsu Kabushiki Kaisha. Right-angle index device. 4,565,005, Cl. 33-1.00G.

Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, to Research Development Corporation; Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi. Boron nitride containing titanium nitride, method of producing the same and composite ceramics produced therefrom. 4,565,747, Cl. 428-698.000.

Nakagawa, Katsumi: *See—*
Komatsu, Toshiyuki; Hirai, Yutaka; Nakagawa, Katsumi; and Fukuda, Tadaji, 4,565,731, Cl. 428-212.000.

Nakagawa, Katsuyuki: *See—*
Kawata, Terushige; Kobayashi, Takashi; and Nakagawa, Katsuyuki, 4,565,526, Cl. 433-8.000.

Nakagawa, Masaya: *See—*
Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, 4,565,781, Cl. 435-88.000.

Nakahara, Toshiaki; Ohsaki, Ichiro; and Ushiyama, Hisayuki, to Canon Kabushiki Kaisha. Microcapsule toner and process of making same. 4,565,764, Cl. 430-111.000.

Nakajima, Hidemasa: *See—*
Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,565,551, Cl. 48-92.000.

Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, to Kabushiki Kaisha Kobe Seikosho; Mitsubishikaseikogyo Kabushikikaisha; Idemitsukosan Kabushiki Kaisha; Aziaseiyu Kabushiki Kaisha; and Nippon Kattan Ekika Kabushiki Kaisha. Method of liquefying brown coal. 4,565,622, Cl. 208-10.000.

Nakamura, Keijiro: *See—*
Tsuji, Nobuhiko; Nakamura, Keijiro; and Iike, Masanori, 4,565,998, Cl. 340-645.000.

Nakamura, Masahiro, to Kawasaki Jukogyo Kabushiki Kaisha. Fluidized bed combustion furnace. 4,565,136, Cl. 110-245.000.

Nakanishi, Kenichi; Ogita, Hideo; Saito, Tadao; and Ogawa, Riichi, to Yoshino Kogyosho Co., Ltd. Cream-state fluid container. 4,565,306, Cl. 222-383.000.

Nakano, Asao; and Hiratsuka, Yutaka, to Hitachi, Ltd. Soft X-ray generator. 4,566,116, Cl. 378-121.000.

Nakanome, Noboru: *See—*
Matsuo, Setsuo; Nakanome, Noboru; and Nishishita, Koji, 4,565,002, Cl. 29-623.400.

Nakase, Ryoichi, to Sanshin Kogyo Kabushiki Kaisha. Tilting mechanism for marine propulsion device. 4,565,528, Cl. 440-1.000.

Nakashima, Seiichiro; Torii, Nobutoshi; and Terada, Akihiro, to Fanuc Ltd. Double hand for an industrial robot. 4,565,400, Cl. 294-88.000.

Nakatani, Hiroshi: *See—*
Seki, Masahiko; Nakatani, Hiroshi; Minami, Shozo; and Kogumasaka, Katsuya, 4,565,479, Cl. 414-199.000.

Nakayama, Yasuharu, to Kansai Paint Co., Ltd. Aqueous emulsion composition. 4,565,839, Cl. 524-458.000.

Nakazato, Norio: *See—*
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.

Nakazato, Yoshio: *See—*
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.

Namiki, Shinichi: *See—*
Miyata, Teruo; and Namiki, Shinichi, 4,565,580, Cl. 106-124.000.

Nankoso Ltd.: *See—*
Takata, Junzo; Jinushi, Michio; and Hashizume, Mitsuo, 4,565,186, Cl. 126-428.000.

Narasimhan, Kalatur S. V. L., to Crucible Materials Corporation. Permanent magnet alloy. 4,565,587, Cl. 148-31.570.

Nath, Prem: *See—*
Hanak, Joseph J.; Nath, Prem; Izu, Masatsugu; and Young, James, 4,565,607, Cl. 204-38.100.

Nation, Melvin S., to International Jensen Incoporated. Loudspeaker construction. 4,565,905, Cl. 179-115.5PC.

National Plastics Limited: *See—*
Jonas, Thomas S., 4,565,293, Cl. 215-246.000.

Natsuaki, Nobuyoshi: *See—*
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.

Naumann, Robert J.; and Ethridge, Edwin C., to United States of America, National Aeronautics and Space Administration. Containerless high purity pulling process and apparatus for glass fiber. 4,565,557, Cl. 65-1.000.

NCR Corporation: *See—*
Anderson, Jeff L., 4,566,086, Cl. 369-13.000.

Neal, James G.: *See—*
Mullins, Phillip L.; Neal, James G.; and Perkins, Jeffrey T., 4,565,154, Cl. 118-410.000.

Nedelec, Lucien; Torelli, Vesperto; and Hardy, Michel, to Roussel Uclaf. Preparation of 17β-hydroxyacetyl-17α-ol-steroids. 4,565,656, Cl. 260-397.470.

Nee, Monika: *See—*
Wagner, Heinz; Scharwaechter, Klaus; and Nee, Monika, 4,565,611, Cl. 204-44.500.

Needs, Howard C.; and Blok, Lodewijk, to U.S. Philips Corporation. Color imaging device. 4,565,756, Cl. 430-7.000.

Negishi, Hideo; Goto, Kaoru; and Takaya, Sueji, to Mitsubishi Kinzoku Kabushiki Kaisha. Drill bit. 4,565,471, Cl. 408-204.000.

Nelson, Kenneth E., to Millipore Corporation. Photometric apparatus with multi-wavelength excitation. 4,565,447, Cl. 356-319.000.

Nelson, Robert L.: *See—*
Hansen, Paul E.; and Nelson, Robert L., 4,565,783, Cl. 435-299.000.

Nestec S.A.: *See—*
Dagerskog, Magnus; Ganrot, Anders B.; and Jonsson, Kurt O. G., 4,565,704, Cl. 426-233.000.

Wertheim, John H.; and Mishkin, Abraham R., 4,565,706, Cl. 426-385.000.

Neumann, Peter, to Sandoz Ltd. Piperazine derivatives and pharmaceutical composition containing them. 4,565,816, Cl. 514-253.000.

Newman, Ira R.; Minshull, Kenneth N.; and McGilp, Kenneth J., to Precision Tube Bending. Seal with two sealing portions having flange receiving opening therebetween. 4,565,380, Cl. 277-178.000.

Newman, Walter: *See—*
Johnson, George E.; and Newman, Walter, 4,565,419, Cl. 339-154.00L.

Newton, Charles L.: *See—*
Cardin, William J.; Gulla, Michael; and Newton, Charles L., 4,565,575, Cl. 106-1.220.

Nicholas, Cynthia L.; Kornfeld, Edmund C.; and Schaus, John M., to Eli Lilly and Company. 1-Alkyl-6-pyrrolidino-octahydroquinolines. 4,565,871, Cl. 546-165.000.

Nickel, Herbert W., to A. O. Smith Corporation. Bushing construction for a fiber reinforced plastic leaf spring. 4,565,356, Cl. 267-54.00R.

Nickerson, Earl W.: *See—*
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,565,636, Cl. 210-748.000.

Nickerson, Rand B.; and Welsh, Russell J., to CTBA Associates. Television viewer data collection system. 4,566,030, Cl. 358-84.000.

Nickolay, Helmut, to Zinser Textilmaschinen GmbH. Thread and yarn end retrieval nozzle. 4,565,062, Cl. 57-305.000.

Nieh, Edward C.: *See—*
Livingston, David R.; McEntire, Edward E.; and Nieh, Edward C., 4,565,889, Cl. 564-205.000.

Nieuwendijk, Joris A. M.; Op de Beek, Franciscus J.; Sanders, Georgius B. J.; Van Gijsel, Wilhelmus D. A. M.; and Van Nieuwland, Jacob M., to U.S. Philips Corporation. Loudspeaker system and loudspeaker for use in a loud-speaker system for converting an n-bit digitized electric signal into an acoustic signal. 4,566,120, Cl. 381-117.000.

Nifco Inc.: *See—*
Omata, Nobuaki, 4,565,266, Cl. 188-322.500.

Nihon Early Kabushiki Kaisha (Japan Early Co., Ltd.): *See—*
Hosoi, Kinji; Kobayashi, Hisao; Takeda, Hiroyuki; and Hibino, Mitsuyoshi, 4,565,358, Cl. 269-60.000.

Nikka Chemical Industry Co.: *See—*
Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, 4,565,546, Cl. 44-51.000.

Nikkel, Willem A.: *See—*
DeLigt, John; and Nikkel, Willem A., 4,565,049, Cl. 53-415.000.

Nilsson, Kenth, to Siemens Aktiengesellschaft; and Siemens Eleman AB. Method and transducer for increasing inking resolution in an ink-mosaic recording device. 4,566,017, Cl. 346-140.00R.

Nilsson, Kenth, to Siemens Aktiengesellschaft. Recorder operating with drops of liquid. 4,566,018, Cl. 346-140.00R.

Nilsson, Sven W., to SKF Nova AB. Clamping joint. 4,565,464, Cl. 403-290.000.

Nimrod Press, Inc., The: *See—*
Thies, Curt, 4,565,841, Cl. 524-31.000.

Nippon Felt Co., Ltd.: *See—*
Tanabe, Takeo, 4,564,985, Cl. 28-142.000.

Nippon Kattan Ekika Kabushiki Kaisha: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Nippon Kogaku K.K.: *See—*
Takatsu, Norihiko; Kawahara, Atsushi; and Isogai, Masaki, 4,566,037, Cl. 358-213.000.

Nippon Seiko Kabushiki Kaisha: *See—*
Miyahara, Takashi, 4,565,272, Cl. 192-98.000.

Nippon Steel Corporation: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.
Masui, Tamenori; Ono, Hitoshi; and Ariyoshi, Toshihiko, 4,565,236, Cl. 164-459.000.
Seki, Masahiko; Nakatani, Hiroshi; Minami, Shozo; and Kogumasaka, Katsuya, 4,565,479, Cl. 414-199.000.

Nippon-Telegraph and Telephone Public Corporation: *See—*
Matsuo, Seitaro; Muramoto, Susumu; Ehara, Kohei; and Itsumi, Manabu, 4,564,997, Cl. 29-576.00W.
Yamamoto, Hideaki; Baji, Toru; Tsukada, Toshihisa; and Sasano, Akira, 4,565,928, Cl. 250-578.000.

Nippon Yusoki Co., Ltd.: *See—*
Hirooka, Shigeru; Maeda, Shuichi; Yamamoto, Shigehiro; and Yamaguchi, Toshihiko, 4,566,032, Cl. 358-103.000.

Nippondenso Co., Ltd.: *See—*
Fujiwara, Kenichi; Hasada, Eiichi; and Sugi, Hikaru, 4,565,072, Cl. 62-196.200.
Ito, Katsunori; Akiyama, Susumu; Mizuno, Tiaki; Yamada, Toshitaka; and Abe, Tomoaki, 4,565,091, Cl. 73-118.000.
Matsuda, Shigeki, 4,565,585, Cl. 148-6.15R.
Muramatsu, Hiromochi; and Watanabe, Atsushi, 4,565,754, Cl. 429-213.000.

Nishide, Katsuhiko, to Canon Kabushiki Kaisha. Heat-sensitive transfer material. 4,565,737, Cl. 428-321.500.

Nishikawa, Masao; and Saibe, Seiichi, to Monarch Knitting Machinery Corporation; and Takatori Machinery Mfg. Co., Ltd. Apparatus for packaging folded hosiery. 4,565,047, Cl. 53-137.000.

Nishikawa, Masao; and Sakurai, Yoshimi, to Honda Giken Kogyo Kabushiki Kaisha. Direct-coupling clutch control device for a torque converter in vehicular automatic transmission. 4,565,267, Cl. 192-3.310.

Nishikawa, Mineki, to Tokyo Shibaura Denki Kabushiki Kaisha. Scintillation camera. 4,566,074, Cl. 364-571.000.

Nishikawa, Susumu: *See—*
Tani, Masanori; Eto, Shin'ichi; Funakoshi, Takeshi; Nishikawa, Susumu; and Hashikura, Kiyoteru, 4,565,067, Cl. 60-545.000.

Nishimura, Motoyasu: *See—*
Fujioka, Isami; Imada, Kazutoshi; Nishimura, Motoyasu; and Ishibashi, Takayuki, 4,565,579, Cl. 106-118.000.

Nishishita, Koji: *See—*
Matsuo, Setsuo; Nakanome, Noboru; and Nishishita, Koji, 4,565,002, Cl. 29-623.400.

Nishiyama, Takashi. Device for fixing a belt of goggles. 4,564,960, Cl. 2-452.000.

Nishizawa, Jun-ichi; and Okuno, Yasuo, to Zaidan Hojin Handotai Kenkyu Shinkokai. Apparatus for performing solution growth relying on temperature difference technique. 4,565,156, Cl. 118-412.000.

Nissan Motor Co., Ltd.: *See—*
Fujita, Masahiro; and Uemura, Yukio, 4,565,112, Cl. 81-56.000.
Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, 4,565,994, Cl. 340-542.000.
Murofushi, Yasuyuki; Ishikawa, Masazumi; and Kawai, Mikio, 4,565,860, Cl. 528-422.000.
Oshiage, Katsunori; and Hosaka, Akio, 4,565,173, Cl. 123-458.000.
Seki, Nakanobu; Hayashi, Yoshimasa; and Uemura, Masakazu, 4,565,162, Cl. 123-41.080.
Seko, Yasutoshi; and Yanagishima, Takayuki, 4,565,997, Cl. 340-576.000.

Nitta, Shouetsu: *See—*
Matsubara, Susumu; Nitta, Shouetsu; Hashiba, Kiyoaki; and Noguchi, Yuuichi, 4,565,331, Cl. 242-18.0PW.

Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., to LeaRonal, Inc. Bath and process for plating tin, lead and tin-lead alloys. 4,565,609, Cl. 204-44.400.

Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., to LeaRonal, Inc. Bath and process for plating lead and lead/tin alloys. 4,565,610, Cl. 204-44.400.

Noble, Haven D.: *See—*
Evans, William C.; and Noble, Haven D., 4,565,441, Cl. 355-37.000.

Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of making a semiconductor read only memory. 4,565,712, Cl. 427-53.100.

Noguchi, Kazuma: *See—*
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.

Noguchi, Yuuichi: *See—*
Matsubara, Susumu; Nitta, Shouetsu; Hashiba, Kiyoaki; and Noguchi, Yuuichi, 4,565,331, Cl. 242-18.0PW.

Nomura, Hiroaki: *See—*
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,565,865, Cl. 544-110.000.

Nomura, Kenichi: *See—*
Suzuki, Makoto; and Nomura, Kenichi, 4,565,174, Cl. 123-478.000.

Nonaka, Yoshiyuki: *See—*
Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, 4,565,778, Cl. 430-567.000.

Nonogaki, Saburo; and Hashimoto, Michiaki, to Hitachi Chemical Company, Ltd. Photosensitive azide composition with alkali soluble polymer and process of using to form resist pattern. 4,565,768, Cl. 430-197.000.

Nordmann, Rene ; and Petcher, Trevor J., to Sandoz Ltd. Pharmaceutically active 1,2,3,4,4a,5,10,10a-octahydro-benzo[g]quinoline derivatives. 4,565,818, Cl. 514-290.000.

Norris, Charles R., to Weyerhaeuser Company. Case closing apparatus. 4,565,050, Cl. 53-491.000.

Norrod, Lutro. Apparatus for fitting a boot to a universal joint. 4,564,988, Cl. 29-235.000.

North American Philips Consumer Electronics Corp.: *See—*
Pawlikowski, Stanley L.; Penird, Carl W.; and Tamburrino, Richard A., 4,565,945, Cl. 313-404.000.

Northern Telecom Limited: *See—*
Gammage, Neil D.; Pachl, Jan K.; and Casey, Liam M., 4,566,098, Cl. 370-89.000.
Moore, Timothy G.; Dockendorff, David G.; and Harris, Stephen J., 4,566,001, Cl. 340-711.000.
Shannon, Michael A., 4,565,591, Cl. 156-51.000.
Sims, Dewey M., Jr.; and Haas, Robert T., 4,566,049, Cl. 360-106.000.

Northwestern University: *See—*
Pirmantgen, Robert E.; Adamski, John S.; and Devens, Mark F., 4,565,190, Cl. 128-80.00C.

Norton Company: *See—*
Knapp, Christopher E., 4,565,792, Cl. 501-104.000.

Notagashira, Hidehumi, to Canon Kabushiki Kaisha. Signal transferring device for photographic instrument or accessory. 4,565,434, Cl. 354-286.000.

Novack, James C.: *See—*
Huffman, William A.; and Novack, James C., 4,565,424, Cl. 350-349.000.

Novacor Medical Corporation: *See—*
Miller, Phillip J.; and Jassawalla, Jal S., 4,565,497, Cl. 417-63.000.

Nowack, William C. Method for the removal and disposal of paint solvent. 4,565,553, Cl. 55-59.000.

Nowak, James M.: *See—*
Espelage, Paul M.; and Nowak, James M., 4,565,953, Cl. 318-345.00E.

NSK-Warner K.K.: *See—*
Kawai, Osamu, 4,565,391, Cl. 280-804.000.

N.V. Nederlandsche Apparatenfabriek Nedap: *See—*
Hoeksma, Gerben S., 4,566,060, Cl. 363-21.000.

Nyman, Bror G.: *See—*
Hultholm, Stig-Erik; Lilja, Launo L.; Makitalo, Valto J.; and Nyman, Bror G., 4,565,660, Cl. 261-121.00R.

Nytomt, Jan G.; Ottosson, Lars-Olof; and Agren, Nils A., to Aktiebolaget Svenska Elektromagneter. Apparatus in magneto ignition systems for providing time-separated sequences for charging and triggering in co-phased charging and triggering voltage sequences, including inhibition of the ignition sequence in such apparatus. 4,565,179, Cl. 123-599.000.

O&K Orenstein & Koppel Aktiengesellschaft: *See—*
Dengs, Bernd; and Dyson, Neil, 4,565,276, Cl. 198-321.000.

O-M Limited: *See—*
Kase, Hiroshi, 4,564,995, Cl. 29-563.000.

Obara, Isao: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.

Oberst, Steven M., to Acorn Box Company. Connectors for corrugated materials. 4,565,465, Cl. 403-407.100.

Obrecht, Georges, to Alsthom-Atlantique. Small deflection coupling for oscillating shafts. 4,565,541, Cl. 464-155.000.

Ochii, Kiyofumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device with spare memory cells. 4,566,081, Cl. 365-200.000.

O'Connor, Joseph M.; and Pasternak, Stephen F., to Peerless of America, Inc. Tubular articles of manufacture and method of making same. 4,565,244, Cl. 165-181.000.

Oertel, Richard W., III; Tucker, Benjamin W.; and Richter, Reinhard H., to Upjohn Company, The. Diisocyanate. 4,565,835, Cl. 521-155.000.

Officine Savio S.p.A.: *See—*
Gordini, Dovilio, 4,565,060, Cl. 57-58.300.

Ogawa, Akira; Aoki, Kozo; Tanabe, Osami; and Umemoto, Makoto, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive materials. 4,565,777, Cl. 430-552.000.

Ogawa, Hiroshi: *See—*
Misumi, Haruo; Ogawa, Hiroshi; Nagao, Naotake; and Oimura, Katsuhiko, 4,565,924, Cl. 250-227.000.

Ogawa, Riichi: *See—*
Nakanishi, Kenichi; Ogita, Hideo; Saito, Tadao; and Ogawa, Riichi, 4,565,306, Cl. 222-383.000.

Ogden, Ralph; and Eich, Patrick H. Method and means of manual input of programs into industrial process programmable controller systems. 4,566,061, Cl. 364-146.000.

Ogita, Hideo: *See—*
Nakanishi, Kenichi; Ogita, Hideo; Saito, Tadao; and Ogawa, Riichi, 4,565,306, Cl. 222-383.000.

Oguchi, Toshihiko; Kato, Hirohisa; Wada, Moriyasu; and Asano, Toshimitsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic recording media having ferromagnetic and ferrite particles in the magnetic layer thereof. 4,565,726, Cl. 428-328.000.

Oguchi, Yoshihiro: *See—*
Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, 4,565,761, Cl. 430-83.000.

Oguro, Sadao; Sakagami, Yukio; and Ando, Takayuki, to Ohbayashi-Gumi, Ltd.; and Tokico Ltd. Floor structure for reducing vibration. 4,565,039, Cl. 52-167.000.

O'Hara, Mark J.; Imai, Tamotsu; Bricker, Jeffery C.; and Mackowiak, David E., to UOP Inc. Dehydrogenation of dehydrogenatable hydrocarbons. 4,565,898, Cl. 585-441.000.

Ohara, Shunji: *See—*
Yoshida, Tomio; Satoh, Isao; Ohara, Shunji; Koishi, Kenji; and Kuroki, Yuzuru, 4,566,088, Cl. 369-44.000.

Ohashi, Yutaka: *See—*
Kitaura, Tomimaro; Ohashi, Yutaka; and Yoneda, Masami, 4,566,107, Cl. 372-38.000.

Ohata, Isao; and Sakamoto, Nobuo, to Yamanouchi Pharmaceutical Co., Ltd. Medical agent for suppressing arteriosclerosis. 4,565,823, Cl. 514-356.000.

Ohbayashi-Gumi, Ltd.: *See—*
Oguro, Sadao; Sakagami, Yukio; and Ando, Takayuki, 4,565,039, Cl. 52-167.000.

Ohkawa, Michihisa: *See—*
Mizuno, Toshio; Satoh, Gunkichi; and Ohkawa, Michihisa, 4,566,100, Cl. 371-5.000.

Ohki, Kouichi: *See—*
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,566,126, Cl. 382-48.000.

Ohkura, Makoto: *See—*
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.

Ohmizu, Akimasa: *See—*
Ohmura, Takao; Hirao, Yutaka; Hanamura, Takuji; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,651, Cl. 260-112.00B.
Ohmura, Takao; Fujiwara, Terufumi; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,697, Cl. 424-89.000.

Ohmura, Takao; Hirao, Yutaka; Hanamura, Takuji; Ohmizu, Akimasa; and Funakoshi, Satoshi, to Green Cross Corporation, The. Method of lyophilizing cold insoluble globulin. 4,565,651, Cl. 260-112.00B.

Ohmura, Takao; Fujiwara, Terufumi; Ohmizu, Akimasa; and Funakoshi, Satoshi, to Green Cross Corporation. Process for producing a hepatitis B infection preventing vaccine. 4,565,697, Cl. 424-89.000.

Ohnishi, Katsumi; Mizushima, Yoshihiro; and Sato, Kiyosumi, to Fujitsu Limited. Timing control system in data processor. 4,566,062, Cl. 364-200.000.

Ohsaki, Ichiro: *See—*
Nakahara, Toshiaki; Ohsaki, Ichiro; and Ushiyama, Hisayuki, 4,565,764, Cl. 430-111.000.

Ohta, Ken-Ichiro: *See—*
Ayabe, Hideaki; Toyosawa, Takeshi; Ikeda, Shigeo; and Ohta, Ken-Ichiro, 4,565,918, Cl. 219-499.000.

Ohta, Yoshitaka: *See—*
Shimoda, Mituhiko; Koinuma, Masahiro; and Ohta, Yoshitaka, 4,566,054, Cl. 361-422.000.

Ohtake, Yasuhisa; and Tanaka, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing shadow mask. 4,565,755, Cl. 430-5.000.

Ohtsuka, Katsuyuki: *See—*
Miyazaki, Hitoshi; Ohtsuka, Katsuyuki; and Miyata, Kazutoshi, 4,565,670, Cl. 422-186.040.

Ohya, Yoshio; Sano, Junichi; and Tamaki, Koichi, to Toshiba Heating Appliances Co., Ltd. Apparatus for use in preparing infusions. 4,565,121, Cl. 99-281.000.

Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, to Nikka Chemical Industry Co.; and Chiyoda Chem. Engineering & Construction Co. Ltd. Condensation product and use thereof as dispersant for pitch in water slurry. 4,565,546, Cl. 44-51.000.

Oilgear Japan Company, The: *See—*
Kunogi, Mahito, 4,565,219, Cl. 137-625.650.

Oimura, Katsuhiko: *See—*
Misumi, Haruo; Ogawa, Hiroshi; Nagao, Naotake; and Oimura, Katsuhiko, 4,565,924, Cl. 250-227.000.

Oisel, Andre ; Boulenouar, Abdelhamid; and Le Gleau, Denise, to Cii Honeywell Bull (Societe Anonyme). Coding, detecting or correcting transmission error system. 4,566,105, Cl. 371-37.000.

Okabe, Kumiko, administratrix: *See—*
Okamoto, Yukio; Shinada, Shinichi; and Okabe, Tadao, deceased, 4,566,006, Cl. 340-771.000.

Okabe, Tadao, deceased: *See—*
Okamoto, Yukio; Shinada, Shinichi; and Okabe, Tadao, deceased, 4,566,006, Cl. 340-771.000.

Okada, Takao; Toda, Akitoshi; and Mimura, Yoshiyuki, to Olympus Optical Co., Ltd. Electrophotographic copying process. 4,565,436, Cl. 355-3.00R.

Okamoto, Yukio; Shinada, Shinichi; and Okabe, Tadao, deceased (by Okabe, Kumiko, administratrix), to Hitachi, Ltd. Gas discharge display apparatus. 4,566,006, Cl. 340-771.000.

Okamura, Shozo: *See—*
Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,565,551, Cl. 48-92.000.

Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, to Sumitomo Metal Industries, Ltd. Coal gasification apparatus. 4,565,551, Cl. 48-92.000.

Okaya, Takuji: *See—*
Sato, Toshiaki; Yamauchi, Junnosuke; and Okaya, Takuji, 4,565,854, Cl. 526-214.000.

OKI Electric Industry Co.: *See—*
Tanagawa, Kouji, 4,566,111, Cl. 377-28.000.

Okui, Toshiaki: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Okuma, Osamu: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Okuno, Yasuo: *See—*
Nishizawa, Jun-ichi; and Okuno, Yasuo, 4,565,156, Cl. 118-412.000.

Okuzumi, Aijiro: *See—*
Katsuyama, Iwao; and Okuzumi, Aijiro, 4,565,718, Cl. 427-420.000.

Olin Corporation: *See—*
Burdick, Bruce E.; Rodden, John A.; Brown, Robert G.; and Barnard, Rodney N., 4,565,114, Cl. 89-35.010.
Doonan, David F., 4,565,014, Cl. 34-36.000.
Trotz, Samuel I.; and Fedynyshyn, Theodore H., 4,565,856, Cl. 526-265.000.

Olsen, Cathryn E.: *See—*
Webb, Jimmy L.; and Olsen, Cathryn E., 4,565,885, Cl. 556-410.000.

Olson, David R.: *See—*
Wilson, Michael E.; Olson, David R.; Stone, Walter H.; and MacDonald, Robin B., 4,565,629, Cl. 210-248.000.

Olson, Douglas B.; and Calcote, Hartwell F., to AeroChem Research Laboratories, Inc. Saturation current incipient soot detector. 4,565,969, Cl. 324-468.000.

Olsson, Lennart; and Heber, Gerald, to Frigoscandia Contracting AB. Storing installation for carrying a number of piled helically extending turns of an endless conveyor belt. 4,565,282, Cl. 198-778.000.

Olympus Optical Co., Ltd.: *See—*
Okada, Takao; Toda, Akitoshi; and Mimura, Yoshiyuki, 4,565,436, Cl. 355-3.00R.
Ueda, Yasuhiro, 4,565,423, Cl. 350-171.000.
Yusa, Atsushi, 4,565,677, Cl. 423-219.000.

Omata, Nobuaki, to Nifco Inc. Oil type damper. 4,565,266, Cl. 188-322.500.

Omron Tateisi Electronics Co.: *See—*
Iida, Takayuki; and Miyake, Tamio, 4,565,456, Cl. 374-169.000.
Misumi, Haruo; Ogawa, Hiroshi; Nagao, Naotake; and Oimura, Katsuhiko, 4,565,924, Cl. 250-227.000.

OMV Aktiengesellschaft: *See—*
Klein, Walter; and Rhemann, Herbert, 4,565,212, Cl. 137-486.000.

Ono, Hitoshi: *See—*
Masui, Tamenori; Ono, Hitoshi; and Ariyoshi, Toshihiko, 4,565,236, Cl. 164-459.000.

Onoda Cement Co., Ltd.: *See—*
Ueda, Yoshihiko; Saito, Ikuo; Sakae, Kazumasa; and Oogiri, Tetuo, 4,565,138, Cl. 110-346.000.

Onodera, Kaoru: *See—*
Kajiwara, Makoto; and Onodera, Kaoru, 4,565,774, Cl. 430-382.000.

Onuma, Tatsuro: *See—*
Hasegawa, Hirosi; Onuma, Tatsuro; Matsubayashi, Norio; and Tamura, Masayoshi, 4,566,079, Cl. 365-1.000.

Oogiri, Tetuo: *See—*
Ueda, Yoshihiko; Saito, Ikuo; Sakae, Kazumasa; and Oogiri, Tetuo, 4,565,138, Cl. 110-346.000.

Op de Beek, Franciscus J.: *See—*
Nieuwendijk, Joris A. M.; Op de Beek, Franciscus J.; Sanders, Georgius B. J.; Van Gijsel, Wilhelmus D. A. M.; and Van Nieuwland, Jacob M., 4,566,120, Cl. 381-117.000.

Oppama Kogyo Kabushiki Kaisha: *See—*
Iwata, Masao, 4,565,180, Cl. 123-602.000.

Optical Coating Laboratory, Inc.: *See—*
Phillips, Roger W.; Higgins, Patrick K.; and Berning, Peter H., 4,565,719, Cl. 428-34.000.

Optima Spanntechnik GmbH: *See—*
Stahl, Bernhard; and Bohm, Horst, 4,565,357, Cl. 269-32.000.

Optische Werke Rodenstock: *See—*
Dietrich, Anton, 4,565,429, Cl. 351-137.000.

Orain, Michel A., to Glaenzer Spicer. Tripod homokinetic joint having swivelling rollers. 4,565,540, Cl. 464-111.000.

Orc Manufacturing Co., Ltd.: *See—*
Yazaki, Yoshio, 4,565,443, Cl. 355-99.000.

Orlowski, Werner: *See—*
Dussel, Klaus; Orlowski, Werner; Ott, Gerhard; and Toczelowski, Hans, 4,565,417, Cl. 339-94.00C.

Orr, Raymond T., Jr., to Baker Drilling Equipment Company. Method and apparatus for detecting entrained gases in fluids. 4,565,086, Cl. 73-23.000.

Oshiage, Katsunori; and Hosaka, Akio, to Nissan Motor Company, Limited. Method and system for controlling fuel to be supplied from fuel pump to engine. 4,565,173, Cl. 123-458.000.

Oshima, Toshiaki: *See—*
Usui, Minoru; and Oshima, Toshiaki, 4,565,461, Cl. 400-611.000.

Osterhoudt, Hans W.: *See—*
Faust, Marilyn A.; and Osterhoudt, Hans W., 4,565,751, Cl. 429-94.000.

Ostrow, Barnet: *See—*
Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., 4,565,609, Cl. 204-44.400.
Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., 4,565,610, Cl. 204-44.400.

Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, to Pentel Kabushiki Kaisha. Aqueous ink cartridge with two part vent plug. 4,565,463, Cl. 401-217.000.

Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, to Kirin Beer Kabushiki Kaisha. Antibiotic, Spicamycin. 4,565,781, Cl. 435-88.000.

Otsuka, Shigeharu; Mizuno, Yuji; Hasegawa, Tomoharu; and Kobukuro, Masahisa, to Mitsubishi Denki Kabushiki Kaisha. Electromagnetic contactor. 4,565,986, Cl. 335-131.000.

Otsuka, Shigeharu; and Mizuno, Yuji, to Mitsubishi Denki Kabushiki Kaisha. Electromagnetic contactor. 4,565,987, Cl. 335-131.000.

Ott, Gerhard: *See—*
Dussel, Klaus; Orlowski, Werner; Ott, Gerhard; and Toczelowski, Hans, 4,565,417, Cl. 339-94.00C.

Ott, Helmut: *See—*
Ruchser, Erich; and Ott, Helmut, 4,565,209, Cl. 137-116.300.

Ottieri Enterprises: *See—*
Ottieri, Marco T., 4,565,017, Cl. 36-117.000.

Ottieri, Marco T., to Ottieri Enterprises. Ski boot. 4,565,017, Cl. 36-117.000.

Ottosson, Lars-Olof: *See—*
Nytomt, Jan G.; Ottosson, Lars-Olof; and Agren, Nils A., 4,565,179, Cl. 123-599.000.

Outboard Marine Corporation: *See—*
Bland, Gerald F., 4,565,534, Cl. 440-88.000.
Shebuski, Robert C., 4,565,227, Cl. 141-1.000.

Outokumpu Oy: *See—*
Hultholm, Stig-Erik; Lilja, Launo L.; Makitalo, Valto J.; and Nyman, Bror G., 4,565,660, Cl. 261-121.00R.
Koistinen, Pauli A. T., 4,565,285, Cl. 198-819.000.

Owens-Corning Fiberglas Corporation: *See—*
Perkins, Richard A., 4,565,559, Cl. 65-2.000.
Propster, Mark A.; Kithany, Subhash; and Seng, Stephen, 4,565,676, Cl. 423-210.000.
Seng, Stephen, 4,565,562, Cl. 65-335.000.

Oy Nokia AB: *See—*
Kirjavainen, Kari J., 4,565,510, Cl. 425-113.000.

Oya, Anders, to Stiansen & Oya A/S. Plow frame for a front-mounted snowplow. 4,565,018, Cl. 37-232.000.

Oya, Koichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Facsimile system. 4,566,039, Cl. 358-280.000.

Oya, Shin-ichi: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Ozawa, Norio: *See—*
Takeoka, Yoshikatsu; Yasuda, Nobuaki; Hori, Akio; and Ozawa, Norio, 4,565,772, Cl. 430-320.000.

Ozawa, Takashi; and Takenouchi, Mutsuo. Original reading device. 4,566,040, Cl. 358-293.000.

Ozawa, Toshio: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Paar, Willibald; and Daimer, Wolfgang, to Vianova Kunstharz, A.G. Cathodically depositable electrodeposition paint binders based on epoxy resin-amino adducts reacted with phenol and formaldehyde modified with an unsaturated, substantially water-insoluble component. 4,565,838, Cl. 523-414.000.

Pachl, Jan K.: *See—*
Gammage, Neil D.; Pachl, Jan K.; and Casey, Liam M., 4,566,098, Cl. 370-89.000.

Pagnoni, Giorgio, to F.LLI Pagnoni S.p.A. Apparatus for loading and unloading a double opening press for manufacturing fibreboard. 4,565,481, Cl. 414-285.000.

Pak, Kyong H. Mathematical board game apparatus. 4,565,374, Cl. 273-272.000.

Palley, Maria. Portable head support for sleeping or resting in a sitting position. 4,565,408, Cl. 297-393.000.

Palosi, Endre: *See—*
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Paolini, Jean, to Fabrique Ebel SA. Clasp for a bracelet or the like. 4,564,982, Cl. 24-71.00J.

Papahadjopoulos, Demetrios: *See—*
Heath, Timothy D.; Shek, Pang; and Papahadjopoulos, Demetrios, 4,565,696, Cl. 424-88.000.

Papanicolaou, John P. S. Internal combustion engine. 4,565,165, Cl. 123-51.0BA.

Paranjpe, Suresh C.; Scott, Burton W.; and Kannapell, Henry N., to Mead Corporation, The. Drop counter printer control system. 4,566,014, Cl. 346-1.100.

Pardo Herrera, Jose , to Industrias Hidraulicas Pardo S.A. Retaining element for swinging weights. 4,564,964, Cl. 5-164.00R.

Parker-Hannifin Corporation: *See—*
Wilson, Michael E.; Olson, David R.; Stone, Walter H.; and MacDonald, Robin B., 4,565,629, Cl. 210-248.000.

Parks, Chris F., to Merck & Co., Inc. Aqueous compositions containing cyanuric acid. 4,565,640, Cl. 252-8.55R.

Parks, Richard: *See—*
Merk, Edward; Delaney, George; Wasynczuk, Leon; Parks, Richard; and Polacek, Richard, 4,565,480, Cl. 414-225.000.

Parman, Oscar D., to Dover Corporation. Flapper check valve assembly. 4,565,214, Cl. 137-512.150.

Parnham, Michael J.: *See—*
Lautenschlager, Hans-Heiner; Borbe, Harald; Prop, Gerrit; Wirtz-Peitz, Ferdinand; Doppelfeld, Ille-Stephanie; and Parnham, Michael J., 4,565,659, Cl. 260-925.000.

Parrott, Stephen L.: *See—*
Kukes, Simon G.; Parrott, Stephen L.; and Brandes, Karlheinz K., 4,565,800, Cl. 502-200.000.

Pasternak, Stephen F.: *See—*
O'Connor, Joseph M.; and Pasternak, Stephen F., 4,565,244, Cl. 165-181.000.

Paterick, Robert J.: *See—*
Scheidt, Wayne A.; and Paterick, Robert J., 4,565,260, Cl. 181-243.000.

Patton, Roy A. Method of making crimp connect terminals. 4,565,001, Cl. 29-866.000.

Patzig, Dieter: *See—*
Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, 4,565,631, Cl. 210-333.100.

Pawlicki, Ulrich; and Schuler, Wolfgang. Racket having a handle with different striking characteristics on opposite sides. 4,565,371, Cl. 273-73.00J.

Pawlikowski, Stanley L.; Penird, Carl W.; and Tamburrino, Richard A., to North American Philips Consumer Electronics Corp. Deflection limiting means for CRT mask support means. 4,565,945, Cl. 313-404.000.

Pearce, Kenneth W., to Steetley Refractories Limited. Method of, and apparatus for, filtering a slurry. 4,565,637, Cl. 210-770.000.

Pebdani, Farrokh N.; and Shu, Winston R., to Mobil Oil Corporation. Heavy oil recovery process using cyclic carbon dioxide steam stimulation. 4,565,249, Cl. 166-303.000.

Pedersen, Peter: *See—*
Weerda, Hilko; Meuret, Gerhard; and Pedersen, Peter, 4,565,194, Cl. 128-204.230.

Peerless of America, Inc.: *See—*
O'Connor, Joseph M.; and Pasternak, Stephen F., 4,565,244, Cl. 165-181.000.

Peichl, Benno: *See—*
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.

Pellicciari, Roberto: *See—*
Castagnola, Virginio; Frigerio, E. Giuliano; and Pellicciari, Roberto, 4,565,810, Cl. 514-182.000.

Penird, Carl W.: *See—*
Pawlikowski, Stanley L.; Penird, Carl W.; and Tamburrino, Richard A., 4,565,945, Cl. 313-404.000.

Pennwalt Corporation: *See—*
Radice, Peter F., 4,565,615, Cl. 204-168.000.

Penny, Glenn S.; and Briscoe, James E., to Halliburton Company. Method of increasing hydrocarbon production by remedial well treatment. 4,565,639, Cl. 252-8.55B.

Penprase, John N.: *See—*
Beech, Jeffrey A.; and Penprase, John N., 4,564,976, Cl. 17-11.000.

Penta-Pak Inc.: *See—*
Berlebner, James A.; and Reifel, Charles J., 4,565,253, Cl. 177-1.000.

Pentek Corporation: *See—*
Huelster, Richard L.; and Dyer, Thomas A., 4,565,483, Cl. 414-353.000.

Pentel Kabushiki Kaisha: *See—*
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.

Peredery, Valery P.: *See—*
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; and Peredery, Valery P., 4,565,491, Cl. 415-160.000.

Perichaud, Alain: *See—*
Dussoubs, Daniele; Perichaud, Alain; and Savidan, Louis, 4,565,848, Cl. 525-331.500.

Perkin, Gregg S.: *See—*
Campbell, Thomas R.; Cunningham, William L.; and Perkin, Gregg S., 4,565,252, Cl. 175-269.000.

Perkins, James A.: *See—*
Matthews, James R.; Schattschneider, George K.; Black, Mervin R.; and Perkins, James A., 4,565,964, Cl. 324-51.000.

Perkins, Jeffrey T.: *See—*
Mullins, Phillip L.; Neal, James G.; and Perkins, Jeffrey T., 4,565,154, Cl. 118-410.000.

Perkins, Richard A., to Owens-Corning Fiberglas Corporation. Protection device for basalt drain bushings. 4,565,559, Cl. 65-2.000.

permaTek, Inc.: *See—*
Axelrod, Herbert R., 4,565,477, Cl. 412-5.000.

Perschka, Dale O.; and Rieben, Stuart L., to Westinghouse Electric Corp. Coil winding methods and apparatus. 4,564,998, Cl. 29-605.000.

Petcher, Trevor J.: *See—*
Nordmann, Rene ; and Petcher, Trevor J., 4,565,818, Cl. 514-290.000.

Peters, Richard W., to Industrial Products, Inc. Equalizer networks and methods of developing scaling coefficients therefor. 4,566,119, Cl. 381-103.000.

Petersen, Vagn: *See—*
Jekat, Herbert; Junghaus, Rainer; Geng, Walter; and Petersen, Vagn, 4,565,453, Cl. 366-279.000.

Peterson, Francis C., to Illinois Tool Works Inc. Apparatus for securement of clinch nut to carrier material. 4,564,986, Cl. 29-33.00K.

Peterson Manufacturing Company: *See—*
Templeman, Arthur R., 4,565,345, Cl. 248-481.000.

Peterson, Walter O. Power transmission apparatus. 4,565,105, Cl. 74-119.000.

Pethers, Peter C.; Duck, Ivan A.; and Carter, Malcolm A., to Trico Products Corporation. Wiper equipment. 4,564,971, Cl. 15-250.350.

Petit, Jean C. Process and electronic device for the control and regulation of the supply current in an electric motor fed from a fixed voltage direct current source. 4,565,951, Cl. 318-317.000.

Petrzilka, Martin; and Schadt, Martin, to Hoffmann-La Roche Inc. Liquid crystals. 4,565,425, Cl. 350-350.00R.

Pfeiffer, John W.: *See—*
Fischer, John; Heaton, Kenneth A.; and Pfeiffer, John W., 4,565,305, Cl. 222-368.000.

Pfeiffer, Peter; and Maerte, Leo, to Ing. Erich Pfeiffer GmbH & Co. KG. Actuatable dosing mechanism. 4,565,302, Cl. 222-38.000.

Pfizer Inc.: *See—*
Ives, Jeffrey L.; and Sciavolino, Frank C., 4,565,653, Cl. 260-112.50R.
Schnur, Rodney C., 4,565,820, Cl. 514-314.000.

Philip A. Hunt Chemical Corporation: *See—*
Kim, Hongzoon; and Salamy, Thomas E., 4,565,776, Cl. 430-467.000.

Philips Petroleum Company: *See—*
Kukes, Simon G.; Parrott, Stephen L.; and Brandes, Karlheinz K., 4,565,800, Cl. 502-200.000.

Phillipps, Patrick G., to Lifeline Systems, Inc. Telephone care system with supplementary alarm message. 4,565,902, Cl. 179-5.00R.

Phillips Petroleum Company: *See—*
McLeod, Malcolm L., 4,565,003, Cl. 29-281.100.
Montgomery, Dean P.; Gall, James W.; and Davis, Ed D., 4,565,620, Cl. 208-80.000.
Short, James N.; and McDaniel, Max P., 4,565,795, Cl. 502-110.000.

Phillips, Roger W.; Higgins, Patrick K.; and Berning, Peter H., to Optical Coating Laboratory, Inc. Energy control window film systems and methods for manufacturing the same. 4,565,719, Cl. 428-34.000.

Piazzola, Gaetano. Electric thermal unit for controllably heating cylinders having two coaxial interspaces for circulating ventilation air therethrough. 4,565,921, Cl. 219-550.000.

Pichler, Josef; Puchegger, Karl; and Starek, Bruno, to Mannesmann Tally GmbH. Mechanism for reciprocating a line printer shuttle. 4,565,127, Cl. 101-93.040.

Piereder, Ludwig. Meat packaging apparatus. 4,565,054, Cl. 53-517.000.

Pinkhasov, Eduard, to Wedtech Corp. Method of and apparatus for the coating of quartz crucibles with protective layers. 4,565,711, Cl. 427-50.000.

Pirkle, James C., Jr.: *See—*
Wright, Franklin J.; Richard, Michael A.; and Pirkle, James C., Jr., 4,565,831, Cl. 518-700.000.

Pirmantgen, Robert E.; Adamski, John S.; and Devens, Mark F., to Northwestern University. Knee orthosis with swivel-action supracondular cuff. 4,565,190, Cl. 128-80.00C.

Pitney Bowes Inc.: *See—*
Check, Frank T., Jr., 4,566,106, Cl. 371-67.000.

Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Flavoring with dialkylthioalkenes, dialkylthioalkylcycloalkenes and monoalkylthioalkenylcycloalkenes. 4,565,707, Cl. 426-535.000.

Pitz, Hans P.: *See—*
Stewart, Iain G. H.; Pitz, Hans P.; and Brinker, Alfred, 4,565,203, Cl. 131-283.000.

Plastimecanique, S.A.: *See—*
Dronet, Jean-Marc, 4,565,304, Cl. 222-108.000.

Plath, Peter: *See—*
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,565,565, Cl. 71-92.000.

Poferl, Gunter: *See—*
Jilek, Walter; and Poferl, Gunter, 4,565,355, Cl. 266-224.000.

Polacek, Richard: *See—*
Merk, Edward; Delaney, George; Wasynczuk, Leon; Parks, Richard; and Polacek, Richard, 4,565,480, Cl. 414-225.000.

Polaroid Corporation: *See—*
MacKenzie, Hugh R., 4,566,015, Cl. 346-107.00R.

Polonsky, Vladimir M.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Polster, Peter: *See—*
Descamps, Marcel; and Polster, Peter, 4,565,828, Cl. 514-469.000.

Polster, Walter: *See—*
Brunn, Klaus; and Polster, Walter, 4,566,115, Cl. 378-097.000.

Ponce, Felix C. Strike template for a portable router. 4,565,228, Cl. 144-27.000.

Porter, Wade T. Sighting apparatus. 4,565,009, Cl. 33-233.000.

Porzio, Linda A.: *See—*
Arciszewski, Henry; Porzio, Linda A.; and Chiang, Bin Y., 4,565,089, Cl. 78-82.000.

Poth, Ulrich; Bartol, Fritz; and Machholz, Adolf, to BASF Farben & Fasern AG. Coating composition, in particular for producing a transparent topcoat of a multilayer coating, a process for producing coatings, and an article coated with a multilayer coating. 4,565,730, Cl. 428-204.000.

Potter, James C., to Lucas Industries public limited company. Fuel injection unit. 4,565,319, Cl. 239-88.000.

Poulin, Charlemagne. Multi-purpose compound hand tool. 4,565,398, Cl. 294-52.000.

Power-Matic, Inc.: *See—*
Cooper, Edward, 4,565,958, Cl. 323-248.000.

Powers, Avery W.; Cates, Guy L.; Staats, Charles W., Jr.; and Mullies, Jarrell W., to Solid State Devices, Inc. Fault detecting circuit and method for a vehicle detector system. 4,566,008, Cl. 340-941.000.

PPG Industries, Inc.: *See—*
Gagne, Robert, 4,565,561, Cl. 65-135.000.
Kenworthy, James S.; and Kozinski, Thomas G., 4,565,616, Cl. 204-192.00C.
Krumwiede, John F.; and Tsai, Yih-Wan, 4,565,560, Cl. 65-134.000.

Precision Fukuhara Works, Ltd.: *See—*
Tsuchiya, Koji, 4,565,076, Cl. 66-151.000.

Precision Tube Bending: *See—*
Newman, Ira R.; Minshull, Kenneth N.; and McGilp, Kenneth J., 4,565,380, Cl. 277-178.000.

Preis, Alan D.: *See—*
Spamer, William S.; and Preis, Alan D., 4,565,725, Cl. 428-167.000.

Prescolite, Inc.: *See—*
Druffel, James B., 4,566,057, Cl. 362-364.000.

President and Fellows of Harvard College, The: *See—*
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., 4,565,785, Cl. 435-317.000.

Prevorsek, Dusan C.; and Akkapeddi, Murali K., to Allied Corporation. Thermoplastic composition containing nematic oligomer. 4,565,850, Cl. 525-425.000.

Prime Computer, Inc.: *See—*
Goldman, Craig E.; and Voorhies, Douglas A., 4,566,000, Cl. 340-709.000.
King, Allen; Collins, Peter; and Goldman, Jay, 4,565,999, Cl. 340-706.000.

Pritchard Sales Company, Inc.: *See—*
Beech, Jeffrey A.; and Penprase, John N., 4,564,976, Cl. 17-11.000.

Procter & Gamble Company, The: *See—*
Correa, Paul E.; and Riley, Dennis P., 4,565,891, Cl. 564-298.000.
Llenado, Ramon A., 4,565,647, Cl. 252-354.000.

Proios, Steve: *See—*
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,565,636, Cl. 210-748.000.

Prop, Gerrit: *See—*
Lautenschlager, Hans-Heiner; Borbe, Harald; Prop, Gerrit; Wirtz-Peitz, Ferdinand; Doppelfeld, Ille-Stephanie; and Parnham, Michael J., 4,565,659, Cl. 260-925.000.

Propster, Mark A.; Kithany, Subhash; and Seng, Stephen, to Owens-Corning Fiberglas Corporation. Method for treating exhaust gases. 4,565,676, Cl. 423-210.000.

Puchegger, Karl: *See—*
Pichler, Josef; Puchegger, Karl; and Starek, Bruno, 4,565,127, Cl. 101-93.040.

Pugliese, Lawrence S.; and Eyster, Jerry L. Syringe disposal device. 4,565,311, Cl. 225-94.000.

Purdy, John R., to Imperial Chemical Industries, PLC. Multiple-layer polyolefin films. 4,565,738, Cl. 428-349.000.

Qaderi, Saiyed B. A., to Ford Motor Company. Crosslinkable composition comprising aminoepoxy resin-II. 4,565,852, Cl. 525-528.000.

Qualitone Hearing Aids, Division of XCor Corp.: *See—*
Harada, Mas, 4,565,904, Cl. 179-107.00E.

R&H Technology, Inc.: *See—*
Heine, Otto R.; and Riede, Peter M., 4,565,210, Cl. 137-219.000.

Radice, Peter F., to Pennwalt Corporation. Glow discharge stabilization of piezoelectric polymer film. 4,565,615, Cl. 204-168.000.

Ragle, Herbert U., to Burroughs Corporation. Radiation generation of "signature" for reeled-web. 4,565,927, Cl. 250-560.000.

Rakoczy, Istvan: *See—*
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

Ramasco, Carlo, to Sant' Andrea Novara Officine Meccaniche e Fonderie. Combing machine for textile fibres. 4,564,979, Cl. 19-215.000.

Rambach, Daniel: *See—*
Bart, Jacques R.; Jourdain, Gerard E. A.; and Rambach, Daniel, 4,565,492, Cl. 415-175.000.

Rambo, William R., to Commtech International. Switched diversity method and apparatus for FM receivers. 4,566,133, Cl. 455-277.000.

Ramisch, Heinrich, to Krauss-Maffei Aktiengesellschaft. Apparatus for producing articles from two or more flowable synthetic resin reactants. 4,565,511, Cl. 425-146.000.

Ramuz, Henri: *See—*
Imfeld, Marquard; Ramuz, Henri; Vogt, Peter; and Muller, Jean-Claude, 4,565,869, Cl. 544-323.000.

Ranaudo, Anthony R.: *See—*
Kornbrekke, Henning N.; Cirkot, David M.; and Ranaudo, Anthony R., 4,565,029, Cl. 49-25.000.

Rankin, Georgia A. Simulated animal toilet tissue holder. 4,565,335, Cl. 242-55.200.

Rao, Kameswara K.: *See—*
Fang, Sheng; and Rao, Kameswara K., 4,566,080, Cl. 365-185.000.

Rao, Nageswara C.: *See—*
Liotta, Lance A.; Rao, Nageswara C.; and Terranova, Victor, 4,565,789, Cl. 436-504.000.

Rao, Yalamanchili K.; and Soleiman, Mohamad K., to Washington Research Foundation. Alumina chlorination. 4,565,674, Cl. 423-137.000.

Raskin, Iosif A.: *See—*
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; and Peredery, Valery P., 4,565,491, Cl. 415-160.000.

Rasshofer, Werner; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Single-stage process for the production of polyamines and polyamines produced by such process. 4,565,645, Cl. 252-182.000.

Rauschenberger, Joerg. Hinge. 4,565,404, Cl. 297-19.000.

Raychem Corporation: *See—*
Harrison, John D., 4,565,589, Cl. 148-402.000.

Raymond, Glendon A., to Carrier Corporation. Apparatus and method for defrosting a heat exchanger in a refrigeration circuit. 4,565,070, Cl. 62-81.000.

Raytheon Company: *See—*
Collins, John D., 4,566,010, Cl. 343-17.2PC.

RCA Corporation: *See—*
Haferl, Peter E., 4,565,949, Cl. 315-371.000.
Harger, Mark A.; Amaral, Joseph E.; and Blatter, Harold, 4,566,034, Cl. 358-194.100.
Jastrzebski, Lubomir L.; and Ipri, Alfred C., 4,566,025, Cl. 357-42.000.
Johnson, Cydney A., 4,566,029, Cl. 358-50.000.
Lewis, Henry G., Jr.; and Bolger, Thomas V., 4,566,028, Cl. 358-21.00R.

Reagents of the University of Michigan, The: *See—*
Khazaeli, Mohammad B.; Beierwaltes, William H.; and England, Barry G., 4,565,687, Cl. 424-1.100.

Rebula, Edward; and Kurasz, Alexander J., to Babcock & Wilcox Company, The. Nozzle structure for sootblower. 4,565,324, Cl. 239-290.000.

Rede, Hector; Winfield, Armand G.; and Winfield, Barbara L., to Rede, Hector. Apparatus for preservation of a leather glove. 4,565,287, Cl. 206-213.000.

Reel, John M. Film copying apparatus. 4,565,985, Cl. 355-113.000.

Regie Nationale des Usines Renault: *See—*
Rivere, Jean-Pierre, 4,565,168, Cl. 123-90.340.

Reichert, Klaus: *See—*
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.

Reichmann, Wolfgang: *See—*
Kopp, Richard; and Reichmann, Wolfgang, 4,565,648, Cl. 252-397.000.

Reidenouer, Linda L. Television viewing time regulator. 4,566,033, Cl. 358-115.000.

Reifel, Charles J.: *See—*
Berlebner, James A.; and Reifel, Charles J., 4,565,253, Cl. 177-1.000.

Reimers, Reimer, to Flottmann-Werke GmbH. Reciprocating compressor for gaseous media. 4,565,507, Cl. 417-564.000.

Reinecke, Paul: *See—*
Schmitt, Hans-Georg; Wedemeyer, Karlfried; Brandes, Wilhelm; and Reinecke, Paul, 4,565,829, Cl. 514-514.000.

Reiner, Per L.; and Aberg, Sven U. T., to Molnlycke Aktiebolag. Method and device for reducing disturbances during paper web formation. 4,565,603, Cl. 162-123.000.

Reinke, Theodore S., to Sea Savory, Inc. Crab body supporting means for a vibratory type machine for removing edible meat. 4,564,978, Cl. 17-71.000.

Reliance Electric Company: *See—*
Kammiller, Neil A., 4,566,052, Cl. 361-18.000.

Remond, Georges: *See—*
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,565,819, Cl. 514-307.000.

Rengersen, Jacob: *See—*
Van Laar, Jacobus; Felthuis, Jacob; Butter, Jahannes A.M.; Rengersen, Jacob; and Sannes, Albert, 4,565,525, Cl. 432-248.000.

Research Development Corporation: *See—*
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.

Research Foundation of State University of New York, The: *See—*
Chu, Benjamin, 4,565,446, Cl. 356-246.000.

Resnick, Paul R.: *See—*
Anderson, Burton C.; England, David C.; and Resnick, Paul R., 4,565,855, Cl. 526-247.000.

Revici, Emanuel, to Wirth Maschinen-und Bohrgerate-Fabrik GmbH. Method for treating the effects of alcohol. 4,565,689, Cl. 424-10.000.

Revici, Emanuel, to Avram, Elena. Method for treating drug addiction. 4,565,690, Cl. 424-10.000.

Reynolds, Scott D., to Xerox Corporation. Low mass heat and pressure fuser. 4,565,439, Cl. 355-3.0FU.

Rheinmetall GmbH.: *See—*
Theis, Ulrich, 4,565,132, Cl. 102-517.000.

Rhemann, Herbert: *See—*
Klein, Walter; and Rhemann, Herbert, 4,565,212, Cl. 137-486.000.

Rhone-Poulenc Recherches: *See—*
Cassat, Robert, 4,565,606, Cl. 204-20.000.

Rhone-Poulenc Sante: *See—*
Costantini, Michel; Igersheim, Francoise; and Krumenacker, Leon, 4,565,895, Cl. 568-362.000.

Rhone-Poulenc Specialites Chimiques: *See—*
Le Du, Yannick; and Meiller, Francois, 4,565,635, Cl. 210-727.000.

Rhythm Watch Co., Ltd.: *See—*
Kubota, Susumu, 4,565,955, Cl. 318-696.000.

Rible, Richard A. Lever wrench for snap fit valves. 4,564,990, Cl. 29-267.000.

Ricard, Jean, to Criceram. Processes for the continuous preparation of single crystals. 4,565,600, Cl. 156-608.000.

Ricci, John D. Towel support. 4,565,144, Cl. 112-437.000.

Rice, Ivan G. Integrated gas/steam nozzle. 4,565,490, Cl. 415-114.000.

Richard, Michael A.: *See—*
Wright, Franklin J.; Richard, Michael A.; and Pirkle, James C., Jr., 4,565,831, Cl. 518-700.000.

Richards, Gaylord W., to AT&T Bell Laboratories. Rearrangeable multiconnection switching networks. 4,566,007, Cl. 340-825.800.

Richter, Reinhard H.: *See—*
Oertel, Richard W., III; Tucker, Benjamin W.; and Richter, Reinhard H., 4,565,835, Cl. 521-155.000.

Ricoh Company, Ltd.: *See—*
Kikuno, Mitsutoyo, 4,565,950, Cl. 318-85.000.
Takata, Akira; and Matsuoka, Shigeki, 4,565,960, Cl. 323-317.000.
Tsutsui, Kyoji, 4,565,759, Cl. 430-66.000.

Rider, Billie F., to Rockwell International Corporation. Precision harmonic rejecting demodulator with digital phase alignment. 4,565,970, Cl. 329-50.000.

Ridgway, Peter C.; and Geen, John A., to British Aerospace PLC. Oscillatory drive mechanisms for a ring laser gyro. 4,565,941, Cl. 310-328.000.

Rieben, Stuart L.: *See—*
Perschka, Dale O.; and Rieben, Stuart L., 4,564,998, Cl. 29-605.000.

Riede, Peter M.: *See—*
Heine, Otto R.; and Riede, Peter M., 4,565,210, Cl. 137-219.000.

Rieter Machine Works Limited: *See—*
Mondini, Giancarlo; and Schmid, Rene, 4,565,337, Cl. 242-66.000.
Stalder, Herbert; and Briner, Emil, 4,565,063, Cl. 57-328.000.

Riker Laboratories, Inc.: *See—*
Leir, Charles M., 4,565,872, Cl. 546-176.000.
Wade, James J., 4,565,864, Cl. 544-58.200.

Riley, Dennis P.: *See—*
Correa, Paul E.; and Riley, Dennis P., 4,565,891, Cl. 564-298.000.

Riley, Douglas H., to AT&T Bell Laboratories. Telephone interexchange carrier selection. 4,565,903, Cl. 179-18.00B.

Rimbert, Jean F., to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Casting process and installation for a non-ferrous metal in the molten state. 4,565,234, Cl. 164-66.100.

Ritchie, David E.; and Seay, Edward E. Seismic shut-off valve. 4,565,208, Cl. 137-38.000.

Rivere, Jean-Pierre, to Regie Nationale des Usines Renault. Valve control device, particularly for valves of internal combustion engines. 4,565,168, Cl. 123-90.340.

Rivier, Jean E. F.; and Vale, Wylie W., Jr., to Salk Institute For Biological Studies, The. GnRH Antagonists VI. 4,565,804, Cl. 514-15.000.

Robert Bosch GmbH: *See—*
Buck, Manfred; Schmid, Wolfgang; and Wanner, Karl, 4,565,313, Cl. 227-131.000.
Damson, Eckart; Klenk, Martin; Moser, Winfried; and Moller, Heinz, 4,565,087, Cl. 73-35.000.
Grieshaber, Hermann; Sieber, Albrecht; Schueler, Peter; and Steimer, Helmut, 4,565,170, Cl. 123-359.000.
Lade, Gunther, 4,565,048, Cl. 53-201.000.
Zimmermann, Peter; and Teape, John W., 4,565,956, Cl. 318-721.000.

Roberts, Jon A.: *See—*
Lee, Ed C.; and Roberts, Jon A., 4,566,026, Cl. 357-71.000.

Roberts, Peter, to Thrush Incorporated. Method for manufacturing a tail-pipe replacement kit. 4,564,987, Cl. 29-157.00R.

Roberts, William M.: *See—*
Tapp, William T.; and Roberts, William M., 4,565,247, Cl. 166-123.000.

Robertson, Charles W., Jr: *See—*
Abbott, Scot D.; and Robertson, Charles W., Jr, 4,565,448, Cl. 356-336.000.

Rockwell International Corporation: *See—*
Anderson, Eric G., 4,565,922, Cl. 235-492.000.
Brian, Michael, 4,565,993, Cl. 340-347.0AD.
Rider, Billie F., 4,565,970, Cl. 329-50.000.
Walter, Robert J.; and Lin, Jerhong, 4,565,744, Cl. 428-570.000.

Rockwood, Richard D.; and Ruskin, Bernard J., to Chapman Manufacturing Company, Inc. Extensible swivel. 4,565,395, Cl. 285-282.000.

Rodden, John A.: *See—*
Burdick, Bruce E.; Rodden, John A.; Brown, Robert G.; and Barnard, Rodney N., 4,565,114, Cl. 89-35.010.

Roettgen, Leslie A.; and Israel, Kenneth W., to Cummins Engine Company, Inc. Unitized cross tie aftercooler assembly. 4,565,177, Cl. 123-563.000.

Rohner, Joachim; Mauries, Reinhard; and Zumfeld, Heinz, to W. Schlafhorst & Co. Make-ready unit for making a thread end ready. 4,565,058, Cl. 57-22.000.

Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Dichloroacetamides, herbicides containing acetanilides as herbicidal active ingredients and the dichloroacetamides as antagonists, and the use of these herbicides in controlling undesired plant growth. 4,565,565, Cl. 71-92.000.

Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See—*
Simeth, Claus; and Despot, Janko, 4,565,129, Cl. 101-240.000.

Rolfe, Norman F., to Allied Corporation. Logarithmic converter circuit arrangements. 4,565,935, Cl. 307-491.000.

Rosemount Inc.: *See—*
Knecht, Thomas A., 4,565,096, Cl. 73-718.000.

Rosensweig, Ronald E., to Exxon Research and Engineering Co. Composite zeolitic magnetic material. 4,565,793, Cl. 502-74.000.

Rouaud, Yvon: *See—*
Devault, Michel; Gerard, Bernard; and Rouaud, Yvon, 4,566,095, Cl. 370-60.000.

Roussel Uclaf: *See—*
Jouquey, Alain; and Hunt, Peter F., 4,565,876, Cl. 548-426.000.
Nedelec, Lucien; Torelli, Vesperto; and Hardy, Michel, 4,565,656, Cl. 260-397.470.
Tessier, Jean; Teche, Andre ; and Girault, Pierre, 4,565,822, Cl. 514-351.000.

Rozek, Roy J., to Kohler Co. Handle assembly. 4,565,350, Cl. 251-292.000.

Rozhanskaya, Nadezhda I.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Ruchser, Erich; and Ott, Helmut, to Herion-Werke KG. Pressure regulating valve with feedback control. 4,565,209, Cl. 137-116.300.

Rudolph, Volker: *See—*
Goldrian, Gottfried; and Rudolph, Volker, 4,566,019, Cl. 346-163.000.

Rudy, William J.; and Smith, Dennis E., to AMP Incorporated. Latching means and locking means for retaining terminals in a connector. 4,565,416, Cl. 339-59.00M.

Ruhl, Robert C., to Kennecott Corporation. Electrohydraulic drive for process line winders, unwinders and other equipment. 4,565,334, Cl. 242-54.00R.

Runkel, Walter; Lenk, Erich; and Bauer, Karl, to Barmag Barmer Maschinenfabrik AG. Sealed yarn heating chamber. 4,565,524, Cl. 432-59.000.

Runkle, Charles J., to Monsanto Company. Fluid distribution system for separation modules. 4,565,630, Cl. 210-321.100.

Runzi, Kurt. Separable single-sheet feeding apparatus for office machines. 4,565,360, Cl. 271-4.000.

Ruskin, Bernard J.: *See—*
Rockwood, Richard D.; and Ruskin, Bernard J., 4,565,395, Cl. 285-282.000.

Sabre Engines Limited: *See—*
Kaye, George C., 4,565,175, Cl. 123-542.000.

Saenger, Dietrich: *See—*
Lynch, John; Leyrer, Reinhold J.; and Saenger, Dietrich, 4,565,771, Cl. 430-307.000.

Sage, Warnie L.; and Stringfellow, Thomas E., to Stearns Catalytic World Corp. Method and apparatus for obtaining energy. 4,565,139, Cl. 110-347.000.

Sahasrabudhe, Arun P.; and DiSilvestro, Robert J., to Westinghouse Electric Corp. Speed control apparatus and method for rapid transit vehicles. 4,566,067, Cl. 364-426.000.

Saibe, Seiichi: *See—*
Nishikawa, Masao; and Saibe, Seiichi, 4,565,047, Cl. 53-137.000.

Saito, Chikara: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.

Saito, Ikuo: *See—*
Ueda, Yoshihiko; Saito, Ikuo; Sakae, Kazumasa; and Oogiri, Tetuo, 4,565,138, Cl. 110-346.000.

Saito, Kaizaburo: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Saito, Koji, to Kohshoh Limited. Device for fastening a belt or the like. 4,564,983, Cl. 24-170.000.

Saito, Satoru: *See—*
Sakamoto, Shigemi; and Saito, Satoru, 4,565,992, Cl. 340-347.0AD.

Saito, Tadao: *See—*
Nakanishi, Kenichi; Ogita, Hideo; Saito, Tadao; and Ogawa, Riichi, 4,565,306, Cl. 222-383.000.

Saito, Taiichi: *See—*
Yamamoto, Kazuhiko; and Saito, Taiichi, 4,566,124, Cl. 382-21.000.

Saito, Yukihiro; Ito, Yoshimasa; and Asakawa, Shiro, to Matsushita Electric Industrial Company, Limited. Selective gas-permeable films. 4,565,846, Cl. 525-101.000.

Sakae, Kazumasa: *See—*
Ueda, Yoshihiko; Saito, Ikuo; Sakae, Kazumasa; and Oogiri, Tetuo, 4,565,138, Cl. 110-346.000.

Sakagami, Yukio: *See—*
Oguro, Sadao; Sakagami, Yukio; and Ando, Takayuki, 4,565,039, Cl. 52-167.000.

Sakai, Katsumi; and Toyoshima, Isao, to Murata Manufacturing Co., Ltd. Energy trapped piezoelectric resonator liquid sensor. 4,565,942, Cl. 310-338.000.

Sakai, Kunio: *See—*
Sekiya, Kunihiko; Sakai, Kunio; Hirai, Shoichi; Miyao, Shigeru; and Fukuda, Masatoshi 4,566,127, Cl. 382-56.000.

Sakamoto, Kazuhiko, to Sugatsune Industrial Co., Ltd. Rail arrangement for flush sliding door panels. 4,565,031, Cl. 49-130.000.

Sakamoto, Nobuo: *See—*
Ohata, Isao; and Sakamoto, Nobuo, 4,565,823, Cl. 514-356.000.

Sakamoto, Shigemi; and Saito, Satoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Analog to digital converter. 4,565,992, Cl. 340-347.0AD.

Sakamoto, Shinichi: *See—*
Hirayama, Takeshi; Amano, Matsuo; Sakamoto, Shinichi; Shiida, Masami; and Baba, Shirou, 4,566,069, Cl. 364-431.120.

Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; and Fukuyama, Kouji, to Daikin Kogyo Co., Ltd. Process for preparing polymeric piezoelectric material. 4,565,943, Cl. 310-357.000.

Sakurai, Yoshimi: *See—*
Nishikawa, Masao; and Sakurai, Yoshimi, 4,565,267, Cl. 192-3.310.

Salamy, Thomas E.: *See—*
Kim, Hongzoon; and Salamy, Thomas E., 4,565,776, Cl. 430-467.000.

Salgo, Vilmos; Hanzely, Jozsef; Baross nee Sipocz, Anna; and Geri, Istvan, to Budacolor Festekgyar. Printing ink of new type and process for preparing same. 4,565,576, Cl. 106-23.000.

Salk Institute For Biological Studies, The: *See—*
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,565,804, Cl. 514-15.000.

Samuel, Robert A.; Selke, Gary J.; and Morris, Russell W., to Advanced Technology Laboratories, Inc. CRT Monitor with built-in camera. 4,566,035, Cl. 358-244.000.

Samyn, Johan. Process and apparatus for identifying articles of sheet material by means of microwaves. 4,566,121, Cl. 382-7.000.

Samyn, Johan. Process and apparatus for identifying articles of sheet material by means of microwaves. 4,566,122, Cl. 382-7.000.

Sand, Douglas S.: *See—*
Ardon, Menachem T.; Kennedy, James C.; Sand, Douglas S.; Trimnell, Lawrence J.; and Zola, Meyer J., 4,566,094, Cl. 370-58.000.

Sanden Corporation: *See—*
Kokubun, Yoshikazu; and Anazawa, Osamu, 4,565,300, Cl. 221-116.000.

Sanders, Georgius B. J.: *See—*
Nieuwendijk, Joris A. M.; Op de Beek, Franciscus J.; Sanders, Georgius B. J.; Van Gijsel, Wilhelmus D. A. M.; and Van Nieuwland, Jacob M., 4,566,120, Cl. 381-117.000.

Sanders, Gerald W. Tension control for baling machine. 4,565,123, Cl. 100-43.000.

Sandoz Ltd.: *See—*
Neumann, Peter, 4,565,816, Cl. 514-253.000.
Nordmann, Rene ; and Petcher, Trevor J., 4,565,818, Cl. 514-290.000.

Sankin Industry Co., Ltd.: *See—*
Kawata, Terushige; Kobayashi, Takashi; and Nakagawa, Katsuyuki, 4,565,526, Cl. 433-8.000.

Sannes, Albert: *See—*
Van Laar, Jacobus; Felthuis, Jacob; Butter, Jahannes A.M.; Rengersen, Jacob; and Sannes, Albert, 4,565,525, Cl. 432-248.000.

Sano, Junichi: *See—*
Ohya, Yoshio; Sano, Junichi; and Tamaki, Koichi, 4,565,121, Cl. 99-281.000.

Sanofi: *See—*
Descamps, Marcel; and Polster, Peter, 4,565,828, Cl. 514-469.000.
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, 4,565,814, Cl. 514-228.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Nakase, Ryoichi, 4,565,528, Cl. 440-1.000.

Sant' Andrea Novara Officine Meccaniche e Fonderie: *See—*
Ramasco, Carlo, 4,564,979, Cl. 19-215.000.

Santel, Hans-Joachim: *See—*
Draber, Wilfried; Eue, Ludwig; Santel, Hans-Joachim; and Schmidt, Robert R., 4,565,566, Cl. 71-92.000.

Sanuga, Fumiwo, to Billcon Co., Ltd. Document handling equipment with counter controllable cover. 4,566,109, Cl. 377-2.000.

Sanuki, Koichi: *See—*
Inoue, Shohei; Aida, Takuzo; Sanuki, Koichi; and Ishikawa, Masahide, 4,565,845, Cl. 525-25.000.

Sanvido, Saverio: *See—*
Arndt, Klaus; and Sanvido, Saverio, 4,565,428, Cl. 350-579.000.

Sanyo Electric Co., Ltd.: *See—*
Hirose, Kunio; Hukuta, Tadatoshi; Horiuchi, Hiroshi; Urakami, Toyozo; and Yoshida, Minoru, 4,566,047, Cl. 360-85.000.
Matsuo, Setsuo; Nakanome, Noboru; and Nishishita, Koji, 4,565,002, Cl. 29-623.400.

Sanzi, James L.: *See—*
Ernst, Donald M.; and Sanzi, James L., 4,565,243, Cl. 165-104.260.

Sarrazin, Michel, to SEB S.A. Weighing device with strain gages. 4,565,255, Cl. 177-211.000.

Sarson, Gary A.; and McKenzie, Michael P., to Standard Telephones and Cables, Public Limited Company. Telephone exchange conference circuit. 4,566,096, Cl. 370-62.000.

Sarver, Emory W.: *See—*
Bossle, Paul C.; Martin, John J.; Sarver, Emory W.; and Sommer, Harold Z., 4,565,787, Cl. 436-120.000.

Sasaki, Kenichi: *See—*
Horikawa, Takeshi; and Sasaki, Kenichi, 4,565,849, Cl. 525-420.000.

Sasaki, Kenji: *See—*
Iwasaki, Takeru; Sasaki, Kenji; and Enomoto, Hiroshi, 4,565,064, Cl. 57-404.000.

Sasano, Akira: *See—*
Yamamoto, Hideaki; Baji, Toru; Tsukada, Toshihisa; and Sasano, Akira, 4,565,928, Cl. 250-578.000.

Sathe, Sharad S., to Mallinckrodt, Inc. Process for the preparation of N-acetyl-P-aminophenol. 4,565,890, Cl. 564-216.000.

Sato, Kiyosumi; and Shimizu, Kazuyuki, to Fujitsu Limited. Method for recovering from error in a microprogram-controlled unit. 4,566,103, Cl. 371-12.000.

Sato, Kiyosumi: *See—*
Ohnishi, Katsumi; Mizushima, Yoshihiro; and Sato, Kiyosumi, 4,566,062, Cl. 364-200.000.

Sato, Megumi. Basket for catching fish and the like. 4,565,027, Cl. 43-102.000.

Sato, Noritada: *See—*
Seki, Yasukazu; and Sato, Noritada, 4,565,588, Cl. 148-186.000.

Sato, Toshiaki; Yamauchi, Junnosuke; and Okaya, Takuji, to Kuraray Co., Ltd. Polymer having thiol end group. 4,565,854, Cl. 526-214.000.

Satoh, Gunkichi: *See—*
Mizuno, Toshio; Satoh, Gunkichi; and Ohkawa, Michihisa, 4,566,100, Cl. 371-5.000.

Satoh, Isao: *See—*
Yoshida, Tomio; Satoh, Isao; Ohara, Shunji; Koishi, Kenji; and Kuroki, Yuzuru, 4,566,088, Cl. 369-44.000.

Satoh, Masayuki; and Wada, Yoshisada, to Toyota Jidosha Kabushiki Kaisha. Internal combustion engine cylinder-head cover. 4,565,164, Cl. 123-41.860.

Satoh, Toshihiko: *See—*
Fukahori, Hidehiko; Fujino, Masahisa; and Satoh, Toshihiko, 4,565,432, Cl. 354-173.110.

Sauerwald, Walter: *See—*
Brinkmann, Dirk; Muller, Wolfgang; Sauerwald, Walter; Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,565,517, Cl. 425-451.200.

Savidan, Louis: *See—*
Dussoubs, Daniele; Perichaud, Alain; and Savidan, Louis, 4,565,848, Cl. 525-331.500.

Sawa, Tsutomu: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, 4,565,861, Cl. 536-6.400.

Sax, Tatyana R.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Schadt, Martin: *See—*
Petrzilka, Martin; and Schadt, Martin, 4,565,425, Cl. 350-350.00R.

Schaffer, Walter: *See—*
Schoberle, Robert; and Schaffer, Walter, 4,565,613, Cl. 204-99.000.

Schank, Richard L., to Xerox Corporation. Protective overcoatings for photoresponsive imaging members. 4,565,760, Cl. 430-66.000.

Scharf, Ruth. Baby bottle security garment. 4,564,957, Cl. 2-75.000.

Scharwaechter, Klaus: *See—*
Wagner, Heinz; Scharwaechter, Klaus; and Nee, Monika, 4,565,611, Cl. 204-44.500.

Schattschneider, George K.: *See—*
Matthews, James R.; Schattschneider, George K.; Black, Mervin R.; and Perkins, James A., 4,565,964, Cl. 324-51.000.

Schaus, John M.: *See—*
Nicholas, Cynthia L.; Kornfeld, Edmund C.; and Schaus, John M., 4,565,871, Cl. 546-165.000.

Scheidt, Wayne A.; and Paterick, Robert J., to Maremont Corporation. Mechanical lock joint for vehicular exhaust system muffler and the like. 4,565,260, Cl. 181-243.000.

Scheier, Donald J.; and Hathorn, Jack L., to Simon-Johnson, Inc. Poultry vent removal machine. 4,564,977, Cl. 17-11.000.

Schering Aktiengesellschaft: *See—*
Junghans, Klaus, 4,565,657, Cl. 260-397.400.

Schieler, Karl: *See—*
Wagner, Heinz; and Schieler, Karl, 4,565,315, Cl. 229-17.00R.

Schilling, Albert; and Schob, Wolfgang, to Carl-Zeiss-Stiftung. Device for the rapid adjustment of microscope stages. 4,565,427, Cl. 350-530.000.

Schlafhorst & Co.: *See—*
Slaghuis, Hermann; Mayer, Rolf; Kargel, Heribert; and Bender, Heinz G., 4,565,332, Cl. 242-18.100.

Schlais, Rudolph A., Jr.: *See—*
Graeser, Joseph H., Jr.; and Schlais, Rudolph A., Jr., 4,565,418, Cl. 339-97.00C.

Schlereth, Rudolf: *See—*
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.

Schmid, Norbert; and Schonwald, Siegfried, to Siemens Aktiengesellschaft. Rotary gas compressor. 4,565,498, Cl. 417-68.000.

Schmid, Rene: *See—*
Mondini, Giancarlo; and Schmid, Rene, 4,565,337, Cl. 242-66.000.

Schmid, Wolfgang: *See—*
Buck, Manfred; Schmid, Wolfgang; and Wanner, Karl, 4,565,313, Cl. 227-131.000.

Schmidt, Dieter W. Pressure transducer. 4,566,135, Cl. 455-614.000.

Schmidt, Robert R.: *See—*
Draber, Wilfried; Eue, Ludwig; Santel, Hans-Joachim; and Schmidt, Robert R., 4,565,566, Cl. 71-92.000.

Schmidtberger, Rudolf, to Behringwerke Aktiengesellschaft. Process for removing lipoproteins using derivatized polyhydroxymethylene. 4,565,652, Cl. 260-112.00B.

Schmidts, Klaus: *See—*
Brinkmann, Dirk; Muller, Wolfgang; Sauerwald, Walter; Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,565,517, Cl. 425-451.200.

Schmitt, Hans-Georg; Wedemeyer, Karlfried; Brandes, Wilhelm; and Reinecke, Paul, to Bayer Aktiengesellschaft. Fungicidal 2-thiocyanato-benzamides. 4,565,829, Cl. 514-514.000.

Schmotz, Ernst: *See—*
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, 4,565,988, Cl. 336-192.000.

Schnall, Guenther: *See—*
Bloechl, Hanns; and Schnall, Guenther, 4,565,440, Cl. 355-27.000.

Schneider, Volker; Stoll, Wolfgang; and Druckenbrodt, Wolf-Gunther, to Alkem GmbH. Method for the manufacture of PuO_2-containing crystals. 4,565,672, Cl. 423-15.000.

Schneider, Wilfried, to Klockner-Humboldt-Deutz AG. Turbocharger. 4,565,068, Cl. 60-602.000.

Schnur, Rodney C., to Pfizer Inc. Hypoglycemic 5-pyrrolyl, indolyl and quinolyl substituted oxazolidine-2,4-diones and their use. 4,565,820, Cl. 514-314.000.

Schob, Wolfgang: *See—*
Schilling, Albert; and Schob, Wolfgang, 4,565,427, Cl. 350-530.000.

Schoberle, Robert; and Schaffer, Walter, to Solvay & Cie. Process for removing a layer of thick mercury from the bottom of mercury-cathode electrolysis cells and a process for the electrolysis of an aqueous solution of an alkali metal halide in a mercury-cathode cell. 4,565,613, Cl. 204-99.000.

Schoenthal, Galeon W.; and Slaugh, Lynn H., to Shell Oil Company. Methanol synthesis catalyst. 4,565,803, Cl. 502-303.000.

Scholz, Dieter: *See—*
Brennsteiner, Ernst; and Scholz, Dieter, 4,565,472, Cl. 408-226.000.

Scholz, Harry R., to AT&T Bell Laboratories. Registration and assembly of integrated circuit packages. 4,565,314, Cl. 228-180.200.

Schonwald, Siegfried: *See—*
Schmid, Norbert; and Schonwald, Siegfried, 4,565,498, Cl. 417-68.000.

Schouten, Gerard M.: *See—*
Corrigan, James L.; and Schouten, Gerard M., 4,565,290, Cl. 211-41.000.

Schram, David N.: *See—*
Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., 4,565,609, Cl. 204-44.400.
Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., 4,565,610, Cl. 204-44.400.

Schuberth-Werk GmbH & Co. KG: *See—*
Zahn, Christian, 4,564,959, Cl. 2-411.000.

Schueler, Peter: *See—*
Grieshaber, Hermann; Sieber, Albrecht; Schueler, Peter; and Steimer, Helmut, 4,565,170, Cl. 123-359.000.

Schuler, Wolfgang: *See—*
Pawlicki, Ulrich; and Schuler, Wolfgang, 4,565,371, Cl. 273-73.00J.

Schulte, Gerhard, to Blomberger Holzindustrie, B. Hausmann GmbH & Co. KG. Method for producing a veneer web. 4,565,597, Cl. 156-250.000.

Schultz, Robert H., to Adolph Coors Company. Device and method for uniformly curing uv photoreactive overvarnish layers using magnetic conveyors. 4,565,713, Cl. 427-54.100.

Schuocker, Dieter; and Klement, Ekkehard, to Siemens Aktiengesellschaft. Device for the execution of a scalar multiplication of vectors. 4,566,077, Cl. 364-845.000.

Schurter, Rolf: *See—*
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,565,887, Cl. 564-85.000.

Schwab, Alfred: *See—*
Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, 4,565,825, Cl. 514-394.000.

Schwartz, Paul: *See—*
Andrulis, Peter J., Jr.; and Schwartz, Paul, 4,565,884, Cl. 556-137.000.

Schwartz, Robert E., to John Zink Company. Shielded flare gas burner. 4,565,522, Cl. 431-202.000.

Schwinghammer, Michelle A.: *See—*
Cahalan, Patrick T.; and Schwinghammer, Michelle A., 4,565,666, Cl. 264-267.000.

Sciavolino, Frank C.: *See—*
Ives, Jeffrey L.; and Sciavolino, Frank C., 4,565,653, Cl. 260-112.50R.

Scientific-Atlanta, Inc.: *See—*
Akin, Thomas A., 4,565,104, Cl. 74-89.150.

Scott, Burton W.: *See—*
Paranjpe, Suresh C.; Scott, Burton W.; and Kannapell, Henry N., 4,566,014, Cl. 346-1.100.

Sea Savory, Inc.: *See—*
Reinke, Theodore S., 4,564,978, Cl. 17-71.000.

Seam Team, Inc.: *See—*
Gray, James B.; and Joyce, Robert A., 4,565,728, Cl. 428-200.000.

Seaman, Peter H.: *See—*
Bloore, Frederick W.; and Seaman, Peter H., 4,565,455, Cl. 374-164.000.

Seay, Edward E.: *See—*
Ritchie, David E.; and Seay, Edward E., 4,565,208, Cl. 137-38.000.

SEB S.A.: *See—*
Sarrazin, Michel, 4,565,255, Cl. 177-211.000.

Sebek, Oldrich K.: *See—*
Dolak, Lester A.; Laborde, Alice L.; Sebek, Oldrich K.; Castle, Thomas M.; and Brodasky, Thomas F., 4,565,699, Cl. 424-117.000.

Sebestyen, Gyula: *See—*
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Sedgewick, Richard D. Apparatus for precision placement and parameter measurement. 4,565,094, Cl. 73-432.00R.

Seguchi, Kazukuni: *See—*
Fujiki, Masao; and Seguchi, Kazukuni, 4,566,046, Cl. 360-78.000.

Seiber, Wolfram, to ITT Industries, Inc. Hydraulic brake system with slip control. 4,565,411, Cl. 303-110.000.

Seki, Masahiko; Nakatani, Hiroshi; Minami, Shozo; and Kogumasaka, Katsuya, to Nippon Steel Corp. Raw materials charging device for preheating furnace. 4,565,479, Cl. 414-199.000.

Seki, Nakanobu; Hayashi, Yoshimasa; and Uemura, Masakazu, to Nissan Motor Co., Ltd. Cooling system of an internal combustion engine. 4,565,162, Cl. 123-41.080.

Seki, Yasukazu; and Sato, Noritada, to Fuji Electric Corporate Research and Development Ltd. Method for diffusion of impurities. 4,565,588, Cl. 148-186.000.

Sekiya, Kunihiko; Sakai, Kunio; Hirai, Shoichi; Miyao, Shigeru; and Fukuda, Masatoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Complex system having the functions of optical character reader and facsimile. 4,566,127, Cl. 382-56.000.

Sekiya, Shinji, to Disco Abrasive Systems, Ltd. Grinding and/or cutting endless belt. 4,565,034, Cl. 51-401.000.

Seko, Yasutoshi; and Yanagishima, Takayuki, to Nissan Motor Company, Limited. Warning device for a vehicle. 4,565,997, Cl. 340-576.000.

Seleski, Richard: *See—*
Gallios, George C.; Whitehead, Derek; and Seleski, Richard, 4,566,059, Cl. 363-17.000.

Selke, Gary J.: *See—*
Samuel, Robert A.; Selke, Gary J.; and Morris, Russell W., 4,566,035, Cl. 358-244.000.

Sell, Otto. Counterbalance wheel for a wind machine. 4,565,502, Cl. 417-334.000.

Sello, Lilian H.: *See—*
Foley, Louise H.; Sello, Lilian H.; and Westley, John, 4,565,862, Cl. 536-16.800.

Seng, Stephen, to Owens-Corning Fiberglas Corporation. Two-stage heating media feeder for a glass batch preheating drum. 4,565,562, Cl. 65-335.000.

Seng, Stephen: *See—*
Propster, Mark A.; Kithany, Subhash; and Seng, Stephen, 4,565,676, Cl. 423-210.000.

Senmed, Inc.: *See—*
Becht, Carl T., 4,565,199, Cl. 128-325.000.

Sentrol Systems Ltd.: *See—*
Mactaggart, John W., 4,565,444, Cl. 356-73.000.

Seragnoli, Enzo; and Mattei, Riccardo, to G.D Societa' per Azioni. Method and apparatus for forming perforation in bar-shape articles. 4,565,202, Cl. 131-281.000.

Seragnoli, Enzo; and Dall'Osso, Gastone, to G.D. Societa per Azioni. Apparatus for transferring individual or batch formed products from a first to a second machine. 4,565,284, Cl. 198-792.000.

Setala, Kai M. E. Composition and method for rational treatment of cancer. 4,565,806, Cl. 514-54.000.

Seto, Junetsu: *See—*
Arakawa, Seiichi; Kondo, Hirofumi; and Seto, Junetsu, 4,565,779, Cl. 430-962.000.

Seufert, Ludwig E.: *See—*
Hosegood, Edward A.; and Seufert, Ludwig E., 4,565,717, Cl. 427-339.000.

Seymour, Robert J.; and Stegeman, George I., to GTE Laboratories Incorporated. Surface plasmon coupler. 4,565,422, Cl. 350-96.190.

Seymour, Robert S., to Commonwealth of Australia, The. Method and apparatus for controlling diameter in Czochralski crystal growth by measuring crystal weight and crystal-melt interface temperature. 4,565,598, Cl. 156-601.000.

Shaffer, Dale A.: *See—*
Kay, John W.; Shaffer, Dale A.; and Basquin, Maurice H., 4,565,021, Cl. 38-137.000.

Shannon, John M., to U.S. Philips Corporation. Hot-electron and hot-hole transistors having silicide contacts. 4,566,020, Cl. 357-15.000.

Shannon, Michael A., to Northern Telecom Limited. Method and apparatus for making a magnetically loaded insulated electrical conductor. 4,565,591, Cl. 156-51.000.

Shapiro, James A. Device for cutting a patella and method therefor. 4,565,192, Cl. 128-92.00H.

Sharma, Shri C.: *See—*
Morley, Robin C.; and Sharma, Shri C., 4,565,702, Cl. 426-93.000.

Shaw, Mark L., to Specific Cruise Systems, Inc. Test circuit for motor vehicle speed control. 4,565,963, Cl. 324-51.000.

Shaw, Richard G.: *See—*
Bahl, Surinder K.; Canterino, Peter J.; and Shaw, Richard G., 4,565,847, Cl. 525-240.000.

Shebuski, Robert C., to Outboard Marine Corporation. Process and apparatus for surrounding foam pattern with sand. 4,565,227, Cl. 141-1.000.

Shek, Pang: *See—*
Heath, Timothy D.; Shek, Pang; and Papahadjopoulos, Demetrios, 4,565,696, Cl. 424-88.000.

Shell Oil Company: *See—*
Corley, Larry S., 4,565,153, Cl. 118-405.000.
Laurendeau, Gilles H. Y.; and Leprince, Jean-Bernard G. H., 4,565,501, Cl. 417-267.000.
Schoenthal, Galeon W.; and Slaugh, Lynn H., 4,565,803, Cl. 502-303.000.
Wife, Richard L.; van Oort, Aart B.; van Leeuwen, Petrus W. N. M.; and van Doorn, Johannes A., 4,565,892, Cl. 568-14.000.

Shelton, J. Paul: *See—*
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Shelton, Mark E.: *See—*
Butler, Donald F.; and Shelton, Mark E., 4,565,258, Cl. 181-129.000.

Sherman, William S. Combined portable table and hand truck. 4,565,382, Cl. 280-47.180.

Sherrod, Donnell. Method for proportioning fuel usage by a fluid fueled apparatus. 4,565,207, Cl. 137-1.000.

Shibata, Fumio: *See—*
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.

Shibuya, Ikutoshi: *See—*
Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, 4,565,758, Cl. 430-58.000.
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, to Kawasaki Seitetsu Kabushiki Kaisha; and Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method and apparatus for continuous casting of metal sheet. 4,565,240, Cl. 164-480.000.

Shiida, Masami: *See—*
Hirayama, Takeshi; Amano, Matsuo; Sakamoto, Shinichi; Shiida, Masami; and Baba, Shirou, 4,566,069, Cl. 364-431.120.

Shimakawa, Katsuhiko: *See—*
Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, 4,565,546, Cl. 44-51.000.

Shimanaka, Hiroshi: *See—*
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.

Shimano, Noriyuki, to Dainippon Screen Mfg. Co., Ltd. Picture signal detector and detection method for image reproducing system. 4,566,041, Cl. 358-284.000.

Shimizu, Akihiko: *See—*
Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, 4,565,546, Cl. 44-51.000.

Shimizu, Kazuyuki: *See—*
Sato, Kiyosumi; and Shimizu, Kazuyuki, 4,566,103, Cl. 371-12.000.

Shimizu, Shinkichi; Ichihashi, Hiroshi; and Nagai, Koichi, to Sumitomo Chemical Company, Limited. Heteropoly-acids and their production and use. 4,565,801, Cl. 502-209.000.

Shimoda, Mituhiko; Koinuma, Masahiro; and Ohta, Yoshitaka, to Asahi Kogaku Kogyo Kabushiki Kaisha. Rack for mounting two electronic devices connectable to and disconnectable from each other. 4,566,054, Cl. 361-422.000.

Shinada, Shinichi: *See—*
Okamoto, Yukio; Shinada, Shinichi; and Okabe, Tadao, deceased, 4,566,006, Cl. 340-771.000.

Shino-Test Laboratory Co., Ltd.: *See—*
Motonaga, Hideo; and Naito, Masahiro, 4,565,780, Cl. 435-20.000.

Shiplay Company Inc.: *See—*
Cardin, William J.; Gulla, Michael; and Newton, Charles L., 4,565,575, Cl. 106-1.220.

Shoji, Fusaji: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Isaei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.

Shone, Robert L.: *See—*
Miyano, Masateru; and Shone, Robert L., 4,565,882, Cl. 549-399.000.

Short, James N.; and McDaniel, Max P., to Phillips Petroleum Company. Polymerization and catalysts. 4,565,795, Cl. 502-110.000.

Show-Me Low Calorie Foods, Inc.: *See—*
Snider, H. Keith, 4,565,705, Cl. 426-270.000.

Shu, Winston R.: *See—*
Pebdani, Farrokh N.; and Shu, Winston R., 4,565,249, Cl. 166-303.000.

Shutoh, Kuniharu: *See—*
Ikehata, Shigeki; Shutoh, Kuniharu; and Aoyagi, Kazuya, 4,565,664, Cl. 264-130.000.

Sibley, Bruce D.: *See—*
Gray, Kevin J.; and Sibley, Bruce D., 4,565,120, Cl. 92-130.00R.

Sieber, Albrecht: *See—*
Grieshaber, Hermann; Sieber, Albrecht; Schueler, Peter; and Steimer, Helmut, 4,565,170, Cl. 123-359.000.

Siegel, Paul H.: *See—*
Langdon, Glen G., Jr.; and Siegel, Paul H., 4,566,044, Cl. 360-40.000.

Sieger, Heinz; and Tomaschek, Heinz, to Teroson GmbH. Cyanoacrylate adhesive composition. 4,565,883, Cl. 549-475.000.

Siemens Aktiengesellschaft: *See—*
Brunn, Klaus; and Polster, Walter, 4,566,115, Cl. 378-097.000.
Diepers, Heinrich, 4,564,980, Cl. 29-25.350.
Dussel, Klaus; Orlowski, Werner; Ott, Gerhard; and Toczelowski, Hans, 4,565,417, Cl. 339-94.00C.
Fenk, Josef; and Stepp, Richard, 4,565,978, Cl. 331-117.00R.
Frieling, Focko, 4,565,933, Cl. 307-269.000.
Gegner, Peter; and Vollnhals, Friedemann, 4,565,975, Cl. 331-1.00A.
Grosse, Joachim; Tiefel, Guenter; and Haufe, Wolfgang, 4,565,590, Cl. 148-431.000.
Hanni, Manfred; and Hechfellner, Kurt, 4,566,009, Cl. 343-6.5LC.
Keil, Rudolf; and Mathyssek, Konrad, 4,565,558, Cl. 65-1.000.
Krause, Dieter, 4,565,310, Cl. 225-2.000.
Magerl, Johann, 4,566,099, Cl. 370-100.000.
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, 4,565,988, Cl. 336-192.000.
Nilsson, Kenth, 4,566,017, Cl. 346-140.00R.
Nilsson, Kenth, 4,566,018, Cl. 346-140.00R.
Schmid, Norbert; and Schonwald, Siegfried, 4,565,498, Cl. 417-68.000.
Schuocker, Dieter; and Kiement, Ekkehard, 4,566,077, Cl. 364-845.000.
Walther, Albert, 4,565,288, Cl. 206-328.000.

Siemens Corporate Res. & Support, Inc.: *See—*
Diaz, Felix V., 4,566,093, Cl. 370-14.000.

Siemens Eleman AB: *See—*
Nilsson, Kenth, 4,566,017, Cl. 346-140.00R.

Sigma Enterprises Incorporated: *See—*
Hagiwara, Takashi, 4,565,275, Cl. 194-97.00R.

Signetics Corporation: *See—*
Fang, Sheng; and Rao, Kameswara K., 4,566,080, Cl. 365-185.000.

Sills, Bernard: *See—*
Sills, Kenneth; and Sills, Bernard, 4,565,721, Cl. 428-36.000.

Sills, Kenneth; and Sills, Bernard. Carbowax sticks for preparation of the carbowax fixative use in cancer cytology. 4,565,721, Cl. 428-36.000.

Simeth, Claus; and Despot, Janko, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Device for the automatic pile change at the delivery of a printing. 4,565,129, Cl. 101-240.000.

Simmons U.S.A. Corporation: *See—*
Stumpf, Walter, 4,565,046, Cl. 53-114.000.

Simon-Johnson, Inc.: *See—*
Scheier, Donald J.; and Hathorn, Jack L., 4,564,977, Cl. 17-11.000.

Simpson, Roy G., to Adams Plastics, Inc. Halter saver. 4,565,055, Cl. 54-24.000.

Sims, Dewey M., Jr.; and Haas, Robert T., to Northern Telecom Limited. Transducer head indexing device and method. 4,566,049, Cl. 360-106.000.

Singer Company, The: *See—*
McGann, Leo E., 4,565,142, Cl. 112-260.000.

Singer, Irwin L.; and Jeffries, Russell A., to United States of America, Navy. Process for producing carbide coatings. 4,565,710, Cl. 427-35.000.

Singh, Daljit: *See—*
Gary, James R.; Geis, Everett R.; King, Todd L.; and Singh, Daljit, 4,565,957, Cl. 318-723.000.

Sintef: *See—*
Lydersen, Aksel, 4,565,634, Cl. 210-718.000.

SIRAC S.p.A.: *See—*
Filippini, Andrea; and Carobbi, Renato, 4,565,582, Cl. 127-46.100.

Sirenius, Kurt: *See—*
Mansson, Bjorn; Sirenius, Kurt; and Sundin, Birger, 4,565,662, Cl. 264-113.000.

Siteg Siebtechnik GmbH: *See—*
Lefferts, Johannes, 4,564,992, Cl. 29-429.000.

SKF Nova AB: *See—*
Nilsson, Sven W., 4,565,464, Cl. 403-290.000.

Skiles, Jerry W.: *See—*
Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, 4,565,825, Cl. 514-394.000.

Skonieczny, Joseph P.; Murphy, Richard D.; and Clelford, Douglas H., to United Technologies Corporation. Oscillatory failure monitor. 4,566,101, Cl. 371-5.000.

Skovdal, Jorgen, to Clairol Incorporated. Vapor generating hair roller. 4,565,204, Cl. 132-39.000.

Slaghuis, Hermann; Mayer, Rolf; Kargel, Heribert; and Bender, Heinz G., to Schlafhorst & Co. Method and device for avoiding the formation of ribbon windings when winding cheeses. 4,565,332, Cl. 242-18.100.

Slamecka, Ernst. High-voltage circuit-breaker. 4,565,911, Cl. 200-148.00A.

Slaugh, Lynn H.: *See—*
Schoenthal, Galeon W.; and Slaugh, Lynn H., 4,565,803, Cl. 502-303.000.

Slocum, D. Barclay. Apparatus and method for performing cuneiform osteotomy. 4,565,191, Cl. 128-92.00H.

Smagin, Vsevolod G.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Smierciak, Richard C.: *See—*
Giordano, Paul J., Jr.; and Smierciak, Richard C., 4,565,799, Cl. 502-155.000.

Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N. Pharmaceutical preparation for the treatment of peptic ulcer. 4,565,805, Cl. 514-17.000.

Smiser Industries, Inc.: *See—*
Arnold, William S., 4,565,099, Cl. 73-862.410.

Smith, Danny L.: *See—*
Todd, Lanny E.; Burke, Philip E.; Smith, Danny L.; and Gleason, Carla T., 4,565,680, Cl. 423-310.000.

Smith, Dennis E.: *See—*
Rudy, William J.; and Smith, Dennis E., 4,565,416, Cl. 339-59.00M.

Smith, Donald F., to General Dynamics Corporation. Internal hydraulic clamp. 4,565,476, Cl. 409-225.000.

Smith, Henry I.: *See—*
Geis, Michael W.; Smith, Henry I.; Antoniadis, Dimitri A.; and Flanders, Dale C., 4,565,599, Cl. 156-603.000.

Smith, Ian S.: *See—*
Chalk, Anthony J.; Charnock, Graham; Gates, Allen P.; Murray, David E.; and Smith, Ian S., 4,565,757, Cl. 430-83.000.

Smith, James A.; and Murphy, Betty J., to Creative Products Resource Associates, Ltd. Floor cleaning and waxing composition. 4,565,644, Cl. 252-92.000.

Smith Locks, Inc.: *See—*
Smith, Robert J., 4,565,079, Cl. 70-134.000.

Smith, Moe S. Tamper evident container shroud. 4,565,294, Cl. 215-251.000.

Smith, Robert J., to Smith Locks, Inc. Deadbolt gate lock. 4,565,079, Cl. 70-134.000.

Smith, Roderick A.: *See—*
Chaplin, George B. B.; and Smith, Roderick A., 4,566,118, Cl. 381-71.000.

Smith, Samuel C. Spring type ball projecting device. 4,565,183, Cl. 124-26.000.

Smits, Philippus R. J., to CBL Consolidated Ltd. BS. Roofing-material. 4,565,724, Cl. 428-138.000.

Smoot, Lanny S., to AT&T Bell Laboratories. Optical receiver circuit with active equalizer. 4,565,974, Cl. 330-304.000.

Snider, H. Keith, to Show-Me Low Calorie Foods, Inc. Production of Jerusalem artichoke flour. 4,565,705, Cl. 426-270.000.

Sochtig, Wolfgang: *See—*
Grgic, Ivica; and Sochtig, Wolfgang, 4,565,085, Cl. 73-19.000.

Societe a Responsabilite Limitee dite: *See—*
Hautemont, Jean-Claude, 4,565,052, Cl. 53-453.000.

Societe Anonyme de Telecommunications: *See—*
Fleury, Joel J.; and Maille, Jacques H. P., 4,566,024, Cl. 357-32.000.
Lonnoy, Jacques J.; and Mousson, Roland, 4,565,339, Cl. 244-3.130.

S.A. Heuliez DEA: *See—*
Girodin, Georges H., 4,565,118, Cl. 92-68.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." : *See—*
Bart, Jacques R.; Jourdain, Gerard E. A.; and Rambach, Daniel, 4,565,492, Cl. 415-175.000.

Societe Nationale Elf Aquitaine: *See—*
Francois, Bernard; and Mathis, Claude, 4,565,650, Cl. 252-518.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Arretz, Emmanuel; Mirassou, Alfred; Landoussy, Claude; and Auge, Patrick, 4,565,893, Cl. 568-72.000.

Soderberg, Paul B. Oil well pump system and method. 4,565,496, Cl. 417-46.000.

Sogandares, Franklin, to Southern Methodist University. Device for inserting and removing tubes from stoppers. 4,564,989, Cl. 29-235.000.

Soleiman, Mohamad K.: *See—*
Rao, Yalamanchili K.; and Soleiman, Mohamad K., 4,565,674, Cl. 423-137.000.

Solex Research Corporation of Japan: *See—*
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.

Solid State Devices, Inc.: *See—*
Powers, Avery W.; Cates, Guy L.; Staats, Charles W., Jr.; and Mullies, Jarrell W., 4,566,008, Cl. 340-941.000.

Solomon, Martin D. Lock assembly. 4,565,078, Cl. 70-95.000.

Soloway, David J. Laryngoscope. 4,565,187, Cl. 128-11.000.

Solvay & Cie: *See—*
Schoberle, Robert; and Schaffer, Walter, 4,565,613, Cl. 204-99.000.

Sommer, Harold Z.: *See—*
Bossle, Paul C.; Martin, John J.; Sarver, Emory W.; and Sommer, Harold Z., 4,565,787, Cl. 436-120.000.

Sonnet, Philip E.: *See—*
Guss, Paul L.; Tumlinson, James H., III; Sonnet, Philip E.; and McLaughlin, John R., 4,565,695, Cl. 424-84.000.

Sony Corporation: *See—*
Arakawa, Seiichi; Kondo, Hirofumi; and Seto, Junetsu, 4,565,779, Cl. 430-962.000.

Sorbo, Inc.: *See—*
Vasko, Kent A., 4,565,250, Cl. 168-12.000.

Sossong, Henry J.: *See—*
Draizen, Seymour; and Sossong, Henry J., 4,565,237, Cl. 164-463.000.

Sound Attenuators Limited: *See—*
Chaplin, George B. B.; and Smith, Roderick A., 4,566,118, Cl. 381-71.000.

Southerland, Ebbin R., Jr., to Texas Instruments Incorporated. Dynamic clocking system using six clocks to achieve six delays. 4,565,934, Cl. 307-481.000.

Southern Methodist University: *See—*
Sogandares, Franklin, 4,564,989, Cl. 29-235.000.

Southwest Research Institute: *See—*
Light, Glenn M.; and Van der Veer, William R., 4,565,095, Cl. 73-621.000.

Southworth, Ted J. Sawhorse with extendible and contractible leg assemblies. 4,565,263, Cl. 182-184.000.

Spamer, William S.; and Preis, Alan D., to Mead Corporation, The. Composite plastic track and method of making. 4,565,725, Cl. 428-167.000.

Spannbauer, Helmut: *See—*
Alf, Herbert; Leipelt, Rudolf; Fusser, Rolf; and Spannbauer, Helmut, 4,565,176, Cl. 123-556.000.

Specific Cruise Systems, Inc.: *See—*
Shaw, Mark L., 4,565,963, Cl. 324-51.000.

Spengel, Heinz F. J., Sr., to Blohm & Voss AG. Cargo handling apparatus with a cargo boom which can be swung in a swivel bearing between two kingposts. 4,565,292, Cl. 212-232.000.

Speranza, George P.: *See—*
Duranleau, Roger G.; Knifton, John F.; and Speranza, George P., 4,565,866, Cl. 544-176.000.

Spiro, Clifford L.; and Lamby, Edward J., to General Electric Company. Method for producing water soluble resols and use therefor. 4,565,248, Cl. 166-267.000.

Springer, Manfred H. Boat propeller guard. 4,565,533, Cl. 440-71.000.

Spry, Douglas O., to Eli Lilly and Company. Diazabicyclononene antibacterials. 4,565,655, Cl. 260-245.20R.

Spymark, Inc.: *See—*
Kaiser, Robert T., 4,565,367, Cl. 272-126.000.

Staats, Charles W., Jr.: *See—*
Powers, Avery W.; Cates, Guy L.; Staats, Charles W., Jr.; and Mullies, Jarrell W., 4,566,008, Cl. 340-941.000.

Stahl, Bernhard; and Bohm, Horst, to Optima Spanntechnik GmbH. Quick-acting clamping devices. 4,565,357, Cl. 269-32.000.

Stal Refrigeration AB: *See—*
Lindstrom, Paul, 4,565,508, Cl. 418-201.000.

Stalder, Herbert; and Briner, Emil, to Rieter Machine Works Ltd. Method and apparatus for false twist spinning. 4,565,063, Cl. 57-328.000.

Stamper, Richard W.; and Hultz, Robert C., to General Tire & Rubber Company, The. Vinyl chloride polymer laminate. 4,565,732, Cl. 428-215.000.

Standard Oil Company (Ohio), The: *See—*
Giordano, Paul J., Jr.; and Smierciak, Richard C., 4,565,799, Cl. 502-155.000.

Standard Telephones and Cables, Public Limited Company: *See—*
Sarson, Gary A.; and McKenzie, Michael P., 4,566,096, Cl. 370-62.000.

Stanley Electric Co., Ltd.: *See—*
Kouchi, Tadashi; and Urakami, Yoshiharu, 4,566,056, Cl. 362-297.000.

Stanley Works, The: *See—*
Kornbrekke, Henning N.; Cirkot, David M.; and Ranaudo, Anthony R., 4,565,029, Cl. 49-25.000.

Starek, Bruno: *See—*
Pichler, Josef; Puchegger, Karl; and Starek, Bruno, 4,565,127, Cl. 101-93.040.

Stauffer Chemical Co.: *See—*
Chavdarian, Charles G.; and Kanne, David B., 4,565,809, Cl. 514-112.000.
Curtis, Jeff K.; and Michaely, William J., 4,565,570, Cl. 71-105.000.
Herscovici, Eva J.; and Kim, Ki-Soo, 4,565,853, Cl. 525-530.000.
Todd, Lanny E.; Burke, Philip E.; Smith, Danny L.; and Gleason, Carla T., 4,565,680, Cl. 423-310.000.

Stautland, Thomas; and Jacobsen, Steinar F., to Stord Bartz A/S. Screw presses. 4,565,124, Cl. 100-117.000.

Stearns Catalytic World Corp.: *See—*
Sage, Warnie L.; and Stringfellow, Thomas E., 4,565,139, Cl. 110-347.000.

Steel Heddle Mfg. Co.: *See—*
Hall, Wayne A., 4,565,223, Cl. 139-91.000.

Steetley Refractories Limited: *See—*
Pearce, Kenneth W., 4,565,637, Cl. 210-770.000.

Stegeman, George I.: *See—*
Seymour, Robert J.; and Stegeman, George I., 4,565,422, Cl. 350-96.190.

Steimer, Helmut: *See—*
Grieshaber, Hermann; Sieber, Albrecht; Schueler, Peter; and Steimer, Helmut, 4,565,170, Cl. 123-359.000.

Stein, Karl H.; and Krull, Manfred, to Carl Freudenberg, Firma. Fibrous surgical compress with cover layer autogenously bonded to absorption layer. 4,565,736, Cl. 428-286.000.

Stein, Karl-Ulrich: *See—*
Donges, Gerhard; Herwig, Thomas; Kunze, Claus; and Stein, Karl-Ulrich, 4,566,113, Cl. 378-57.000.

Steinberg, Richard; and Shelton, J. Paul, to United States of America, Navy. Coupled amplifier module feed networks for phased array antennas. 4,566,013, Cl. 343-372.000.

Stender, Hans-Georg: *See—*
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.

Stephan, Gerhard, to AVA Tech International Ltd. Christmas tree stand. 4,565,028, Cl. 47-39.000.

Stephens, Frank H.: *See—*
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.

Stephens, John: *See—*
de Buda, Francis, 4,565,794, Cl. 502-83.000.

Stepp, Richard: *See—*
Fenk, Josef; and Stepp, Richard, 4,565,978, Cl. 331-117.00R.

Sterling Drug Inc.: *See—*
Yuhl, Edward J., Jr., 4,565,308, Cl. 222-632.000.

Stern, Richard A.; and Mariani, Elio A., to United States of America, Army. Millimeter-wave electronic phase shifter using Schottky barrier control. 4,565,982, Cl. 333-157.000.

Stern, Timothy R.: *See—*
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.

Stewart, Iain G. H.; Pitz, Hans P.; and Brinker, Alfred, to Maschinenfabrik Fr. Niepmann GmbH & Co. Apparatus for conveying cigarette-filled trays to a cigarette-packaging machine. 4,565,203, Cl. 131-283.000.

Stewart-Riess Laboratories, Inc.: *See—*
Jeensalute, Thipthep; and Chakkaw, Somkiat, 4,565,500, Cl. 417-53.000.

Stiansen & Oya A/S: *See—*
Oya, Anders, 4,565,018, Cl. 37-232.000.

Stilwell, George R., Jr.: *See—*
Harbour, Edward E.; Lynch, Robert C.; and Stilwell, George R., Jr., 4,566,134, Cl. 455-607.000.

Stoesz, James D.: *See—*
Errede, Louis A.; Stoesz, James D.; and Winter, George D., deceased, 4,565,663, Cl. 264-120.000.

Stokes, John H.; Clark, John I.; and Maxwell, Charles E., to Energy Optics, Inc. Anti-energy diversion system for electric utility meters. 4,565,995, Cl. 340-571.000.

Stolben, Hans-Adolf, to Kraftwerk Union Aktiengesellschaft. Relative-distance pickup. 4,565,008, Cl. 33-172.00E.

Stoll, Kurt. Connection block. 4,565,259, Cl. 181-230.000.

Stoll, Wolfgang: *See—*
Schneider, Volker; Stoll, Wolfgang; and Druckenbrodt, Wolf-Gunther, 4,565,672, Cl. 423-15.000.

Stone, Walter H.: *See—*
Wilson, Michael E.; Olson, David R.; Stone, Walter H.; and MacDonald, Robin B., 4,565,629, Cl. 210-248.000.

Stord Bartz A/S: *See—*
Berge, Odd; and Hovland, Helge, 4,565,709, Cl. 426-641.000.
Stautland, Thomas; and Jacobsen, Steinar F., 4,565,124, Cl. 100-117.000.

Stouffer, Ronald D., to Bowles Fluidics Corporation. Liquid metering and fluidic transducer for electronic computers. 4,565,220, Cl. 137-835.000.

Stratoflex, Inc.: *See—*
Vyse, Gerrard N., 4,565,392, Cl. 285-23.000.

Streli, Elke. Pronged plate for resetting fractured bones. 4,565,193, Cl. 128-92.00D.

Strickland, William A., Jr., to Westinghouse Electric Corp. Ground-fault protective relay. 4,566,053, Cl. 361-42.000.

Stringfellow, Thomas E.: *See—*
Sage, Warnie L.; and Stringfellow, Thomas E., 4,565,139, Cl. 110-347.000.

Struss, Thomas G. Martial arts practice device. 4,565,366, Cl. 272-76.000.

Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., to William H. Rorer, Inc. Heterocyclic amidinoureas. 4,565,826, Cl. 514-447.000.

Stumpf, Walter, to Simmons U.S.A. Corporation. Apparatus for manufacturing pocketed coil springs. 4,565,046, Cl. 53-114.000.

Suckle, Leonard I., to Motorola, Inc. Speech synthesis system. 4,566,117, Cl. 381-51.000.

Suda, Seiji: *See—*
Sugiura, Noboru; and Suda, Seiji, 4,565,171, Cl. 123-425.000.

Sueyasu, Masanobu: *See—*
Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,565,551, Cl. 48-92.000.

Sugano, Satoshi: *See—*
Kimura, Yoshio; Terashima, Kenji; Asada, Masao; and Sugano, Satoshi, 4,565,948, Cl. 313-487.000.

Sugatsune Industrial Co., Ltd.: *See—*
Sakamoto, Kazuhiko, 4,565,031, Cl. 49-130.000.

Sugi, Hikaru: *See—*
Fujiwara, Kenichi; Hasada, Eiichi; and Sugi, Hikaru, 4,565,072, Cl. 62-196.200.

Sugiura, Noboru; and Suda, Seiji, to Hitachi, Ltd. Knock controller for an internal combustion engine. 4,565,171, Cl. 123-425.000.

Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, to USV Pharmaceutical Corp. Antihypertensive N-benzimidazolyl- and N-imidazolyl-amino acid derivatives. 4,565,825, Cl. 514-394.000.

Sulzer Brothers Limited: *See—*
Meier, Werner, 4,565,216, Cl. 137-561.00A.

Sumitomq Chemical Company, Limited: *See—*
Kataoka, Yushin; Matsuda, Masaaki; Aoi, Masahiro; and Chino, Kunitake, 4,565,673, Cl. 423-112.000.
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,565,569, Cl. 71-103.000.
Shimizu, Shinkichi; Ichihashi, Hiroshi; and Nagai, Koichi, 4,565,801, Cl. 502-209.000.

Sumitomo Electric Industries, Ltd.: *See—*
Kato, Chiaki, 4,565,762, Cl. 430-99.000.

Sumitomo Metal Industries, Ltd.: *See—*
Ikehata, Shigeki; Shutoh, Kuniharu; and Aoyagi, Kazuya, 4,565,664, Cl. 264-130.000.
Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,565,551, Cl. 48-92.000.

Sumiyoshi, Masaharu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin-Warner Limited. Gear transmission mechanism with multiple layshafts. 4,565,106, Cl. 74-359.000.

Sumsion, Alton E.: *See—*
Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., 4,565,353, Cl. 266-147.000.

Sundin, Birger: *See—*
Mansson, Bjorn; Sirenius, Kurt; and Sundin, Birger, 4,565,662, Cl. 264-113.000.

Sung, Rodney L.: *See—*
Davis, Marshall E.; and Sung, Rodney L., 4,565,548, Cl. 44-51.000.

Suntory Limited: *See—*
Yoshizumi, Hajime; Amachi, Teruo; Kusumi, Takaaki; Tanaka, Takaharu; and Ishigooka, Hiroshi, 4,565,698, Cl. 424-93.000.

Super Brush Co., Inc.: *See—*
Taylor, Charles H., 4,565,205, Cl. 132-88.700.

Support Systems International, Inc.: *See—*
Goodwin, Vernon L., 4,564,965, Cl. 5-453.000.

Sutton, David L.; and Burkhalter, John F., to Halliburton Company. Gas generation retarded aluminum powder for oil field cements. 4,565,578, Cl. 106-87.000.

Sutton Engineering Company: *See—*
Thompson, E. Gordon, 4,565,083, Cl. 72-98.000.

Suzaki, Hidenori; Miura, Tetsuro; Maeda, Masanori; and Inaoka, Koji, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for demounting a spot welded metal plate. 4,565,914, Cl. 219-68.000.

Suzuki, Hiroshi, to Tachikawa Spring Co., Ltd. Lumbar support device. 4,565,406, Cl. 297-284.000.

Suzuki, Makoto; and Nomura, Kenichi, to Toyota Jidosha Kabushiki Kaisha. Fuel injection control apparatus. 4,565,174, Cl. 123-478.000.

Suzuki, Tatsuo, to Terumo Kabushiki Kaisha. Catheter insertion device. 4,565,545, Cl. 604-164.000.

Suzuki, Tetsuya. Process for preparation of substance having hypotensive component. 4,565,700, Cl. 424-195.100.

Suzuki, Tsunehiko, to Fuji Jukogyo Kabushiki Kaisha. Balancer structure for three-cylinder engines. 4,565,169, Cl. 123-192.00B.

Svecia Silkscreen Maskiner AB: *See*—
Ericsson, Sylve J. D., 4,565,478, Cl. 414-71.000.

Sweeney Enterprises, Inc.: *See*—
Sweeney, John W., 4,565,159, Cl. 119-53.000.

Sweeney, John W., to Sweeney Enterprises, Inc. Animal feeder. 4,565,159, Cl. 119-53.000.

Swiss Aluminium Ltd.: *See*—
Zehnder, Jurg, 4,565,135, Cl. 105-420.000.

Sygnator, Henry A., to Illinois Tool Works Inc. Drill point milling machine and method. 4,565,475, Cl. 409-131.000.

Symonds, Richard D.; Clapp, Joseph E.; and Buckley, Kenneth, to Amax Inc. Purification of molten lead. 4,565,573, Cl. 75-77.000.

Syntex (U.S.A.) Inc.: *See*—
Verheyden, Julien P. H.; and Martin, John C., 4,565,868, Cl. 544-276.000.

Szajna, John L.; and Weissenstein, Harry, to Continental Plastic Containers, Inc. Mold for large capacity containers. 4,565,516, Cl. 425-540.000.

Szebeni, Rudolf: *See*—
Kovacs, Andras; Szebeni, Rudolf; and Koszegi, Bela, 4,565,694, Cl. 424-80.000.

Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , to CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara R.T. 7-Substituted PGI_2-derivatives and pharmaceutical compositions containing them. 4,565,827, Cl. 514-469.000.

Szentivanyi, Zsolt: *See*—
Buding, Hartmuth; Szentivanyi, Zsolt; and Thormer, Joachim, 4,565,614, Cl. 522-112.000.

Szomor nee Wundele, Maria: *See*—
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Szuts, Tamas: *See*—
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Szvoboda nee Kanzel, Ida: *See*—
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Tachikawa Spring Co. Ltd.: *See*—
Iwami, Masahide, 4,565,344, Cl. 248-429.000.
Suzuki, Hiroshi, 4,565,406, Cl. 297-284.000.

Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, to Hitachi, Ltd.; and Hitachi Chemical Company Ltd. Electrophotographic plate having a charge generating layer containing an organic pigment for charge generation. 4,565,758, Cl. 430-58.000.

Taiyo Seiki Iron Works Co., Ltd.: *See*—
Takaguchi, Hiroyuki, 4,564,984, Cl. 24-287.000.

Takada, Juichiro. Emergency locking seat belt retractor with automatic locking mechanism. 4,565,338, Cl. 242-107.40B.

Takada, Toshiya, to Toyoto Jidosha Kabushiki Kaisha; and Japan Bars Company Limited. Detergent composition for fuel-system parts. 4,565,547, Cl. 44-51.000.

Takagi, Masao: *See*—
Miyahara, Masayoshi; and Takagi, Masao, 4,565,102, Cl. 74-15.400.

Takagi, Shoyo: *See*—
Kobashi, Toshiyuki; Takagi, Shoyo; and Naka, Hideo, 4,565,832, Cl. 521-63.000.

Takagi, Toshinori: *See*—
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,565,741, Cl. 428-427.000.

Takaguchi, Hiroyuki, to Taiyo Seiki Iron Works Co., Ltd. Positioning cone for containers. 4,564,984, Cl. 24-287.000.

Takahara, Susumu. Method of forming building foundation with vents. 4,565,044, Cl. 52-741.000.

Takahashi, Hiroshi, to Ikegami Tsushinki Co. Ltd. Apparatus for automatically inserting electronic parts into printed circuit board. 4,566,071, Cl. 364-468.000.

Takahashi, Hiroshi: *See*—
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.

Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Kosugi, Tetuo, to Hitachi, Ltd. Ignition distributor for internal combustion engine. 4,565,907, Cl. 200-19.0DR.

Takahashi, Shuuji: *See*—
Isoi, Toshihiro; Yashima, Michio; and Takahashi, Shuuji, 4,565,750, Cl. 429-72.000.

Takahashi, Tomoji: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Takanashi, Masami: *See*—
Yashima, Michio; Takanashi, Masami; and Komatsu, Akihiro, 4,565,909, Cl. 200-61.850.

Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, to Zenyaku Kogyo Kabushiki Kaisha. 1,4-Thiazine derivatives. 4,565,813, Cl. 514-222.000.

Takasu, Yoshio: *See*—
Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, 4,565,761, Cl. 430-83.000.

Takata, Akira; and Matsuoka, Shigeki, to Ricoh Company, Ltd. Power supply switching circuit. 4,565,960, Cl. 323-317.000.

Takata, Junzo; Jinushi, Michio; and Hashizume, Mitsuo, to Takenaka Komuten Co., Ltd.; and Nankoso Ltd. Passive-type solar device. 4,565,186, Cl. 126-428.000.

Takatori Machinery Mfg. Co., Ltd.: *See*—
Nishikawa, Masao; and Saibe, Seiichi, 4,565,047, Cl. 53-137.000.

Takatsu, Norihiko; Kawahara, Atsushi; and Isogai, Masaki, to Nippon Kogaku K.K. Solid-state area imaging apparatus. 4,566,037, Cl. 358-213.000.

Takaya, Matsuhiko: *See*—
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,566,126, Cl. 382-48.000.

Takaya, Sueji: *See*—
Negishi, Hideo; Goto, Kaoru; and Takaya, Sueji, 4,565,471, Cl. 408-204.000.

Takeda Chemical Industries, Ltd.: *See*—
Azuma, Junichi; Watanabe, Koichi; and Hori, Masatake, 4,565,626, Cl. 210-138.000.
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,565,865, Cl. 544-110.000.

Takeda, Hiroyuki: *See*—
Hosoi, Kinji; Kobayashi, Hisao; Takeda, Hiroyuki; and Hibino, Mitsuyoshi, 4,565,358, Cl. 269-60.000.

Takeda, Keiso, to Toyota Jidosha Kabushiki Kaisha. Intake system for an internal combustion engine. 4,565,166, Cl. 123-52.00M.

Takei, Sakae: *See*—
Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, 4,565,712, Cl. 427-53.100.

Takemoto, Issei: *See*—
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.

Takenaka Komuten Co., Ltd.: *See*—
Takata, Junzo; Jinushi, Michio; and Hashizume, Mitsuo, 4,565,186, Cl. 126-428.000.

Takenaka, Yuuichi: *See*—
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,565,462, Cl. 400-625.000.

Takenouchi, Mutsuo: *See*—
Ozawa, Takashi; and Takenouchi, Mutsuo, 4,566,040, Cl. 358-293.000.

Takeoka, Yoshikatsu; Yasuda, Nobuaki; Hori, Akio; and Ozawa, Norio, to Tokyo Shibaura Denki Kabushiki Kaisha. Process of using radiation-sensitive carrier body to form stamper structure and subsequent use as a stamper to make optical disks. 4,565,772, Cl. 430-320.000.

Takeuchi, Hiroshi: *See*—
Jyomura, Shigeru; and Takeuchi, Hiroshi, 4,565,642, Cl. 252-62.900.

Takeuchi, Tomio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, 4,565,861, Cl. 536-6.400.

Takiguchi, Hideki: *See*—
Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, 4,565,778, Cl. 430-567.000.

Talbert, Norwood K. Method of producing fertilizer product containing sewage sludge. 4,565,563, Cl. 71-12.000.

Tamaki, Koichi: *See*—
Ohya, Yoshio; Sano, Junichi; and Tamaki, Koichi, 4,565,121, Cl. 99-281.000.

Tamburrino, Richard A.: *See*—
Pawlikowski, Stanley L.; Penird, Carl W.; and Tamburrino, Richard A., 4,565,945, Cl. 313-404.000.

Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, to Hitachi, Ltd. Method of producing single crystal film utilizing a two-step heat treatment. 4,565,584, Cl. 148-1.500.

Tamura, Masayoshi: *See*—
Hasegawa, Hirosi; Onuma, Tatsuro; Matsubayashi, Norio; and Tamura, Masayoshi, 4,566,079, Cl. 365-1.000.

Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Laser recording apparatus. 4,566,043, Cl. 358-300.000.

Tanaami, Yoshiaki: *See*—
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.

Tanabe, Kozo: *See*—
Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, 4,565,781, Cl. 435-88.000.

Tanabe, Osami: *See*—
Ogawa, Akira; Aoki, Kozo; Tanabe, Osami; and Umemoto, Makoto, 4,565,777, Cl. 430-552.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Wada, Hiroshi; Ishii, Kazuhiro; Tsumagari, Nobuchika; Matsuo, Masaaki; and Matsumoto, Mikio, 4,565,877, Cl. 548-530.000.

Tanabe, Takeo, to Nippon Felt Co., Ltd. Felt for paper manufacture and method for producing the same. 4,564,985, Cl. 28-142.000.

Tanagawa, Kouji, to OKI Electric Industry Co. Watchdog timer. 4,566,111, Cl. 377-28.000.

Tanaka, Akira: *See*—
Asai, Isao; Muramatsu, Shigeru; Morita, Takayuki; and Tanaka, Akira, 4,565,278, Cl. 198-400.000.

Tanaka, Hiroshi: *See*—
Ohtake, Yasuhisa; and Tanaka, Hiroshi, 4,565,755, Cl. 430-5.000.

Tanaka, Katsuake: *See*—
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, 4,565,295, Cl. 215-252.000.

Tanaka, Kunifusa, to Kabushiki Kaisha Ishida Koki Seisakusho. Method of counting parts. 4,566,070, Cl. 364-567.000.

Tanaka, Masaru; and Abe, Hideo, to Fuji Giken Kabushiki Kaisha. Bank note dispenser. 4,565,361, Cl. 271-10.000.

Tanaka, Shigeru: *See*—
Yano, Naomichi; Ito, Hajime; and Tanaka, Shigeru, 4,565,242, Cl. 165-10.000.

Tanaka, Takaharu: *See*—
Yoshizumi, Hajime; Amachi, Teruo; Kusumi, Takaaki; Tanaka, Takaharu; and Ishigooka, Hiroshi, 4,565,698, Cl. 424-93.000.

Tani, Masanori; Eto, Shin'ichi; Funakoshi, Takeshi; Nishikawa, Susumu; and Hashikura, Kiyoteru, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Brake system for vehicles. 4,565,067, Cl. 60-545.000.

Taniguchi, Hiroyuki; and Tsukahara, Hiroaki, to Yanmar Diesel Engine Co. Ltd. Unit injector of internal combustion engine. 4,565,320, Cl. 239-90.000.

Taniuchi, Keiji. Safe opening container lid. 4,565,298, Cl. 220-273.000.

Tanner, Hans: *See*—
Fischer, Kurt; and Tanner, Hans, 4,565,233, Cl. 164-37.000.
Fischer, Kurt; and Tanner, Hans, 4,565,235, Cl. 164-169.000.

Tapp, William T.; and Roberts, William M., to Elder, Inc. Wireline set tubing retrievable seal bore packer apparatus. 4,565,247, Cl. 166-123.000.

Taprogge Gesellschaft mbH: *See*—
Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, 4,565,631, Cl. 210-333.100.

Tassy, Tomas. Life preserver device. 4,565,535, Cl. 441-118.000.

Tatsumi, Masashi: *See*—
Uekama, Kaneto; Hanafusa, Mikio; Tatsumi, Masashi; and Hibi, Tohru, 4,565,807, Cl. 514-58.000.

Taylor, Charles H., to Super Brush Co., Inc. Molded mascara applicator. 4,565,205, Cl. 132-88.700.

Taylor, Harold E. Tool for holding a blade for installation and removal thereof. 4,564,991, Cl. 29-426.500.

Taylor, William L.: *See*—
Aertker, Walter P.; Taylor, William L.; and Medica, Frank, 4,565,529, Cl. 440-7.000.

Taylor, Zane S.: *See*—
Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., 4,565,353, Cl. 266-147.000.

Teape, John W.: *See*—
Zimmermann, Peter; and Teape, John W., 4,565,956, Cl. 318-721.000.

Teche, Andre : *See*—
Tessier, Jean; Teche, Andre ; and Girault, Pierre, 4,565,822, Cl. 514-351.000.

Technicon Instruments Corporation: *See*—
Malin, Michael J.; Loev, Bernard; and Hwang, Deng R., 4,565,688, Cl. 424-3.000.

Tecumseh Products Company: *See*—
Wise, Kennard L., 4,565,503, Cl. 417-372.000.

Tektronix, Inc.: *See*—
Anderson, Russell Y., 4,566,082, Cl. 365-230.000.
Davenport, William H., 4,565,977, Cl. 331-113.00R.

Temp. Systems, Inc.: *See*—
Theiss, John J.; and Durst, Paul T., 4,565,920, Cl. 219-513.000.

Templeman, Arthur R., to Peterson Manufacturing Company. Mirror assembly. 4,565,345, Cl. 248-481.000.

Tennessee Valley Authority: *See*—
Hsieh, Shuang-shii; and Lehr, James R., 4,565,625, Cl. 209-167.000.

Tension Envelope Corporation: *See*—
Kranz, Richard, 4,565,317, Cl. 229-73.000.

Tenyo Co., Ltd.: *See*—
Kondo, Hiroshi, 4,565,364, Cl. 272-8.00N.

Tepermeister, Gary: *See*—
Hatch, Richard G.; and Tepermeister, Gary, 4,565,632, Cl. 210-656.000.

Terada, Akihiro: *See*—
Nakashima, Seiichiro; Torii, Nobutoshi; and Terada, Akihiro, 4,565,400, Cl. 294-88.000.

Teraoka Seiko Co., Ltd.: *See*—
Matsuura, Yoshikazu, 4,565,254, Cl. 177-25.000.

Terashima, Kenji: *See*—
Kimura, Yoshio; Terashima, Kenji; Asada, Masao; and Sugano, Satoshi, 4,565,948, Cl. 313-487.000.

Teroson GmbH: *See*—
Sieger, Heinz; and Tomaschek, Heinz, 4,565,883, Cl. 549-475.000.

Terranova, Victor: *See*—
Liotta, Lance A.; Rao, Nageswara C.; and Terranova, Victor, 4,565,789, Cl. 436-504.000.

Terumo Kabushiki Kaisha: *See*—
Suzuki, Tatsuo, 4,565,545, Cl. 604-164.000.

Tessier, Jean; Teche, Andre ; and Girault, Pierre, to Roussel Uclaf. 2-Fluoro-2-cyanoethenyl cyclopropane carboxylates as pesticides. 4,565,822, Cl. 514-351.000.

Tex-nology Systems, Inc.: *See*—
Wiley, Robert T., 4,565,362, Cl. 271-225.000.

Texaco Inc.: *See*—
Davis, Marshall E.; and Sung, Rodney L., 4,565,548, Cl. 44-51.000.
Duranleau, Roger G.; Knifton, John F.; and Speranza, George P., 4,565,866, Cl. 544-176.000.
Frazier, Terry L.; and Dozier, Jan D., 4,565,246, Cl. 166-112.000.
Knifton, John F.; and Duranleau, Roger G., 4,565,896, Cl. 568-852.000.
Livingston, David R.; McEntire, Edward E.; and Nieh, Edward C., 4,565,889, Cl. 564-205.000.
Mims, Donald S.; and Allen, Richard S., 4,565,245, Cl. 166-50.000.

Texas A&M University System, The: *See*—
Chiou, George C. Y., 4,565,821, Cl. 514-327.000.

Texas Instruments Incorporated: *See*—
Clunn, Robert H., 4,566,125, Cl. 382-48.000.
Guttag, Karl M., 4,566,075, Cl. 364-754.000.
Southerland, Ebbin R., Jr., 4,565,934, Cl. 307-481.000.

Thatcher, Gordon: *See*—
Duncombe, Edward; and Thatcher, Gordon, 4,565,667, Cl. 376-246.000.

Theis, Ulrich, to Rheinmetall GmbH. Form-locking means, material for forming same and process for arranging the form-locking means in the peripheral region of a projectile made out of the heavy metal sinter alloy. 4,565,132, Cl. 102-517.000.

Theiss, John J.; and Durst, Paul T., to Temp. Systems, Inc. Fail safe thermal control device. 4,565,920, Cl. 219-513.000.

Thermacore, Inc.: *See*—
Ernst, Donald M.; and Sanzi, James L., 4,565,243, Cl. 165-104.260.

Thermax Wire Corporation: *See*—
Kuettner, Horst, 4,565,594, Cl. 156-47.000.

Therolf, Dieter: *See*—
Brinkmann, Dirk; Muller, Wolfgang; Sauerwald, Walter; Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,565,517, Cl. 425-451.200.

Thies, Curt, to Nimrod Press, Inc., The. Spirit duplicating with indicia formed by ink comprising dye means and smudge-resistant binder means soluble in spirit duplicating fluid. 4,565,841, Cl. 524-31.000.

Thigpen, Ben B., to Western Geophysical Company of America. Seismic timing control system. 4,566,083, Cl. 367-21.000.

Thomas, Roger E.; and Best, David E., to Melamine Chemicals, Inc. Anhydrous high-pressure melamine synthesis. 4,565,867, Cl. 544-201.000.

Thompson, E. Gordon, to Sutton Engineering Company. Straightening rolls. 4,565,083, Cl. 72-98.000.

Thomson-CSF: *See*—
Castera, Jean-Paul; and Dupont, Jean-Marie, 4,565,984, Cl. 333-202.000.
Gerard, Jean-Louis; and Loret, Marc, 4,566,091, Cl. 369-47.000.
Gerard, Jean-Louis; Lehureau, Claude; and Loret, Marc, 4,566,092, Cl. 369-59.000.
Heitzmann, Michel; and Boudot, Marianne, 4,566,027, Cl. 357-81.000.
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, 4,565,988, Cl. 336-192.000.

Thormer, Joachim: *See*—
Buding, Hartmuth; Szentivanyi, Zsolt; and Thormer, Joachim, 4,565,614, Cl. 522-112.000.

Thrush Incorporated: *See*—
Roberts, Peter, 4,564,987, Cl. 29-157.00R.

Tibbetts, Gary G.; and Devour, Michael G., to General Motors Corporation. Regulation of pyrolysis methane concentration in the manufacture of graphite fibers. 4,565,684, Cl. 423-447.300.

Tiefel, Guenter: *See*—
Grosse, Joachim; Tiefel, Guenter; and Haufe, Wolfgang, 4,565,590, Cl. 148-431.000.

Timbco Hydraulics Inc.: *See*—
Crawford, Patrick J.; and Klement, Larry G., 4,565,486, Cl. 414-729.000.

Timpte Industries: *See*—
Bartling, Jerry W.; and Hofstetter, James F., 4,565,071, Cl. 62-89.000.

Tinfow, Lionel. Threshold having a vertically adjustable flexible weatherstrip. 4,565,033, Cl. 49-468.000.

Titov, Mikhail I.: *See*—
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

TOA Nenryo Kogyo Kabushiki Kaisha: *See*—
Yamamoto, Tadashi; Furuhashi, Hiroyuki; Imai, Masafumi; Ueno, Hiroshi; and Inaba, Naomi, 4,565,798, Cl. 502-119.000.

Tobben, Johannes H.: *See*—
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, 4,565,988, Cl. 336-192.000.

Toczelowski, Hans: *See—*
Dussel, Klaus; Orlowski, Werner; Ott, Gerhard; and Toczelowski, Hans, 4,565,417, Cl. 339-94.00C.

Toda, Akitoshi: *See—*
Okada, Takao; Toda, Akitoshi; and Mimura, Yoshiyuki, 4,565,436, Cl. 355-3.00R.

Todd, Lanny E.; Burke, Philip E.; Smith, Danny L.; and Gleason, Carla T., to Stauffer Chemical Company. Recovery of phosphorus and aluminum from spent acid from the bright-dip aluminum finishing process. 4,565,680, Cl. 423-310.000.

Tojima, Hiromi; and Kajitani, Kouji, to Kabushiki Kaisha Daikin Seisakusho. Damper disk having hydraulic shock absorbers. 4,565,273, Cl. 192-106.200.

Tokico Ltd.: *See—*
Oguro, Sadao; Sakagami, Yukio; and Ando, Takayuki, 4,565,039, Cl. 52-167.000.

Tokunaga, Tomokazu; Izaki, Masataka; Kajino, Jirou; and Kamiyama, Toshibumi, to Matsushita Electric Industrial Co., Ltd. Tape cassette adapter. 4,566,048, Cl. 360-94.000.

Tokuyama, Takashi: *See—*
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Fujiki, Masao; and Seguchi, Kazukuni, 4,566,046, Cl. 360-78.000.
Kimura, Yoshio; Terashima, Kenji; Asada, Masao; and Sugano, Satoshi, 4,565,948, Cl. 313-487.000.
Nagano, Katsumi, 4,565,959, Cl. 323-315.000.
Nagano, Katsumi, 4,565,973, Cl. 330-288.000.
Nishikawa, Mineki, 4,566,074, Cl. 364-571.000.
Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, 4,565,712, Cl. 427-53.100.
Ochii, Kiyofumi, 4,566,081, Cl. 365-200.000.
Oguchi, Toshihiko; Kato, Hirohisa; Wada, Moriyasu; and Asano, Toshimitsu, 4,565,726, Cl. 428-328.000.
Ohtake, Yasuhisa; and Tanaka, Hiroshi, 4,565,755, Cl. 430-5.000.
Oya, Koichi, 4,566,039, Cl. 358-280.000.
Sakamoto, Shigemi; and Saito, Satoru, 4,565,992, Cl. 340-347.0AD.
Sekiya, Kunihiko; Sakai, Kunio; Hirai, Shoichi; Miyao, Shigeru; and Fukuda, Masatoshi, 4,566,127, Cl. 382-56.000.
Takeoka, Yoshikatsu; Yasuda, Nobuaki; Hori, Akio; and Ozawa, Norio, 4,565,772, Cl. 430-320.000.

Tomaschek, Heinz: *See—*
Sieger, Heinz; and Tomaschek, Heinz, 4,565,883, Cl. 549-475.000.

Tomita, Hitoshi: *See—*
Kimura, Hideyuki; and Tomita, Hitoshi, 4,565,065, Cl. 60-285.000.

Tomlin, Jerry B., to Koomey, Inc. Fail safe hydraulic piloted pressure reducing and regulating valve. 4,565,349, Cl. 251-29.000.

Torelli, Vesperto: *See—*
Nedelec, Lucien; Torelli, Vesperto; and Hardy, Michel, 4,565,656, Cl. 260-397.470.

Torii, Nobutoshi: *See—*
Nakashima, Seiichiro; Torii, Nobutoshi; and Terada, Akihiro, 4,565,400, Cl. 294-88.000.

Tornberg, Claes: *See—*
Aslund, Christer; and Tornberg, Claes, 4,565,668, Cl. 419-68.000.

Torrington Company, The: *See—*
Achee, John D.; and Cuozzo, Anthony, 4,565,458, Cl. 384-561.000.

Toshiba Heating Appliances Co., Ltd.: *See—*
Ohya, Yoshio; Sano, Junichi; and Tamaki, Koichi, 4,565,121, Cl. 99-281.000.

Toth, Kalman. Computer aided stenographic system. 4,566,065, Cl. 364-300.000.

Towers, Frederic C. Securities valuation system. 4,566,066, Cl. 364-408.000.

Toyama, Takeshi: *See—*
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.

Toyosawa, Takeshi: *See—*
Ayabe, Hideaki; Toyosawa, Takeshi; Ikeda, Shigeo; and Ohta, Ken-Ichiro, 4,565,918, Cl. 219-499.000.

Toyoshima, Isao: *See—*
Saksi, Katsumi; and Toyoshima, Isao, 4,565,942, Cl. 310-338.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Buma, Shuuichi, 4,565,151, Cl. 116-28.100.
Ito, Hiroshi, 4,565,110, Cl. 74-868.000.
Satoh, Masayuki; and Wada, Yoshisada, 4,565,164, Cl. 123-41.860.
Suzuki, Makoto; and Nomura, Kenichi, 4,565,174, Cl. 123-478.000.
Takeda, Keiso, 4,565,166, Cl. 123-52.00M.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Sumiyoshi, Masaharu, 4,565,106, Cl. 74-359.000.

Toyoto Jidosha Kabushiki Kaisha: *See—*
Takada, Toshiya, 4,565,547, Cl. 44-51.000.

Trak Incorporated: *See—*
Feichtlbauer, Werner, 4,565,387, Cl. 280-604.000.

Treadwell, Stephen S.: *See—*
Martell, Charles R.; Isett, Donald D.; and Treadwell, Stephen S., 4,565,140, Cl. 112-121.110.

Treiber, Helmut: *See—*
Benker, Gerhard; and Treiber, Helmut, 4,565,442, Cl. 355-68.000.

Trek Bicycle Corporation: *See—*
Isaac, Timothy S., 4,565,383, Cl. 280-276.000.

Trico Products Corporation: *See—*
Pethers, Peter C.; Duck, Ivan A.; and Carter, Malcolm A., 4,564,971, Cl. 15-250.350.

Trimnell, Lawrence J.: *See—*
Ardon, Menachem T.; Kennedy, James C.; Sand, Douglas S.; Trimnell, Lawrence J.; and Zola, Meyer J., 4,566,094, Cl. 370-58.000.

Troncoso, Fernando V., Jr.; and Troncoso, Vincent F. Hunting arrow and broadhead. 4,565,377, Cl. 273-422.000.

Troncoso, Vincent F.: *See—*
Troncoso, Fernando V., Jr.; and Troncoso, Vincent F., 4,565,377, Cl. 273-422.000.

Trotz, Samuel I.; and Fedynyshyn, Theodore H., to Olin Corporation. Pyrithione-containing bioactive polymers and their use in paint and wood preservative products. 4,565,856, Cl. 526-265.000.

Troxell, Lillian H.: *See—*
Johnston, Howard; and Troxell, Lillian H., 4,565,568, Cl. 71-94.000.

Trumbo, Leroy C.; and Feasel, Robert L., to Trumbo Welding & Fabricating Company, Inc. Pressure sealing closure system for retort vessels. 4,565,299, Cl. 220-323.000.

Trumbo Welding & Fabricating Company, Inc.: *See—*
Trumbo, Leroy C.; and Feasel, Robert L., 4,565,299, Cl. 220-323.000.

TRW Inc.: *See—*
Kaminskas, Rimvydas A., 4,565,745, Cl. 428-596.000.

Tsai, Yih-Wan: *See—*
Krumwiede, John F.; and Tsai, Yih-Wan, 4,565,560, Cl. 65-134.000.

Tsay, Chi-Chour. Instantaneous direction changing rotation mechanism. 4,565,109, Cl. 74-780.000.

Tsubone, Tsunehiko: *See—*
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.

Tsuchiya, Koji, to Precision Fukuhara Works, Ltd. Safety device for circular knitting machines. 4,565,076, Cl. 66-151.000.

Tsudakoma Kogyo Kabushiki Kaisha: *See—*
Tsuji, Kanji, 4,565,226, Cl. 139-435.000.

Tsuji, Eiji; Gotou, Akio; and Ichikawa, Kuniharu, to Matsushita Electric Works, Ltd. Electric hair curling iron with rotatable power cord. 4,565,916, Cl. 219-225.000.

Tsuji, Kanji, to Tsudakoma Kogyo Kabushiki Kaisha. Method and apparatus for shifting main nozzles on a fluid-jet type loom. 4,565,226, Cl. 139-435.000.

Tsuji, Nobuhiko; Nakamura, Keijiro; and Ike, Masanori, to Fuji Electric Company Limited. Diode failure detecting device in rotary rectifier. 4,565,998, Cl. 340-645.000.

Tsukada, Toshihisa: *See—*
Yamamoto, Hideaki; Baji, Toru; Tsukada, Toshihisa; and Sasano, Akira, 4,565,928, Cl. 250-578.000.

Tsukahara, Hiroaki: *See—*
Taniguchi, Hiroyuki; and Tsukahara, Hiroaki, 4,565,320, Cl. 239-90.000.

Tsumagari, Nobuchika: *See—*
Wada, Hiroshi; Ishii, Kazuhiro; Tsumagari, Nobuchika; Matsuo, Masaaki; and Matsumoto, Mikio, 4,565,877, Cl. 548-530.000.

Tsutsui, Kyoji, to Ricoh Co., Ltd. Plates for use in lithographic printing. 4,565,759, Cl. 430-66.000.

Tucker, Benjamin W.: *See—*
Oertel, Richard W., III; Tucker, Benjamin W.; and Richter, Reinhard H., 4,565,835, Cl. 521-155.000.

Tumlinson, James H., III: *See—*
Guss, Paul L.; Tumlinson, James H., III; Sonnet, Philip E.; and McLaughlin, John R., 4,565,695, Cl. 424-84.000.

TX RX Systems, Inc.: *See—*
Kaegebein, Daniel P., 4,565,972, Cl. 330-124.00D.

Uchida, Takeshi: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, 4,565,861, Cl. 536-6.400.

Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, to Kawasaki Steel Corporation; Research Development Corporation; and Solex Research Corporation of Japan. Process for treating and recovering pickling waste liquids for stainless steel. 4,565,675, Cl. 423-140.000.

Uchiyama, Kaoru; and Ichikawa, Koji, to Fuji Photo Film Co., Ltd. Film handling mechanism. 4,564,999, Cl. 29-806.000.

Uchiyama, Masaki; and Mitsuhashi, Yasuo, to Canon Kabushiki Kaisha. Process for producing toner. 4,565,763, Cl. 430-109.000.

Uchiyama, Masaki: *See—*
Mitsuhashi, Yasuo; and Uchiyama, Masaki, 4,565,766, Cl. 430-126.000.

Ueda, Yasuhiro, to Olympus Optical Co., Ltd. Connecting device for an endoscope. 4,565,423, Cl. 350-171.000.

Ueda, Yoshihiko; Saito, Ikuo; Sakae, Kazumasa; and Oogiri, Tetuo, to Onoda Cement Co., Ltd. Thermal decomposition furnace of waste tires. 4,565,138, Cl. 110-346.000.

Uekama, Kaneto; Hanafusa, Mikio; Tatsumi, Masashi; and Hibi, Tohru, to Ciba-Geigy Corporation. Medicinal composition containing pirprofen and cyclodextrin and a method of use. 4,565,807, Cl. 514-58.000.

Uemura, Isamu: *See—*
Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, 4,565,994, Cl. 340-542.000.

Uemura, Masakazu: *See—*
Seki, Nakanobu; Hayashi, Yoshimasa; and Uemura, Masakazu, 4,565,162, Cl. 123-41.080.

Uemura, Yukio: *See—*
Fujita, Masahiro; and Uemura, Yukio, 4,565,112, Cl. 81-56.000.

Ueno, Hiroshi: *See—*
Yamamoto, Tadashi; Furuhashi, Hiroyuki; Imai, Masafumi; Ueno, Hiroshi; and Inaba, Naomi, 4,565,798, Cl. 502-119.000.

Uhde GmbH: *See—*
Korner, Jorg-Peter; and Jekat, Herbert, 4,565,297, Cl. 220-254.000.

Uhen, Richard F., to General Electric Company. Dynamoelectric machine having improved lubricant slinger. 4,565,937, Cl. 310-90.000.

Uhlrich, David C.: *See—*
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.

Ukiana, Kazuoki: *See—*
Kawasaki, Hiroshi; and Ukiana, Kazuoki, 4,565,269, Cl. 192-70.120.

Umemoto, Makoto: *See—*
Ogawa, Akira; Aoki, Kozo; Tanabe, Osami; and Umemoto, Makoto, 4,565,777, Cl. 430-552.000.

Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, to Microbial Chemistry Research Foundation. Serirubicum. 4,565,861, Cl. 536-6.400.

Umino, Koji: *See—*
Matsui, Hiroshi; Mihara, Tadashi; and Umino, Koji, 4,565,990, Cl. 338-171.000.

Ungar, Bracha B. Numerical guessing game. 4,565,373, Cl. 273-265.000.

Union Oil Company of California: *See—*
Backlund, Peter S., 4,565,564, Cl. 71-28.000.
Ward, John W., 4,565,621, Cl. 208-111.000.
Young, Dean A., 4,565,802, Cl. 502-214.000.

Uniset Corporation: *See—*
Berry, Brian E., 4,565,312, Cl. 227-8.000.

United Kingdom Atomic Energy Authority: *See—*
Duncombe, Edward; and Thatcher, Gordon, 4,565,667, Cl. 376-246.000.

United States Gypsum Company: *See—*
Wendt, Alan C., 4,565,041, Cl. 52-288.000.

United States of America
Agriculture: *See—*
Guss, Paul L.; Tumlinson, James H., III; Sonnet, Philip E.; and McLaughlin, John R., 4,565,695, Cl. 424-84.000.
Army: *See—*
Bossle, Paul C.; Martin, John J.; Sarver, Emory W.; and Sommer, Harold Z., 4,565,787, Cl. 436-120.000.
Comminge, Hubert; Cunningham, John E.; and White, Howard R., Jr., 4,565,412, Cl. 305-53.000.
Stern, Richard A.; and Mariani, Elio A., 4,565,982, Cl. 333-157.000.
Energy: *See—*
Crane, Thomas W., 4,565,926, Cl. 250-390.000.
Laine, Edwin F., 4,566,084, Cl. 367-49.000.
Health and Human Services: *See—*
Liotta, Lance A.; Rao, Nageswara C.; and Terranova, Victor, 4,565,789, Cl. 436-504.000.
National Aeronautics and Space Administration: *See—*
Banks, Bruce A., 4,565,618, Cl. 204-298.000.
Hergenrother, Paul M., 4,565,886, Cl. 556-436.000.
Naumann, Robert J.; and Ethridge, Edwin C., 4,565,557, Cl. 65-1.000.
Navy: *See—*
Lewis, Bernard L.; and Kretschmer, Frank F., Jr., 4,566,011, Cl. 343-17.2PC.
Singer, Irwin L.; and Jeffries, Russell A., 4,565,710, Cl. 427-35.000.
Steinberg, Richard; and Shelton, J. Paul, 4,566,013, Cl. 343-372.000.

U.S. Philips Corporation: *See—*
Beurskens, Johannes H. H.; and Winkelmolen, Wilhelmus H. F., 4,565,944, Cl. 313-318.000.
Linde, Rolf; and Klotz, Erhard, 4,566,112, Cl. 378-2.000.
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, 4,565,988, Cl. 336-192.000.
Needs, Howard C.; and Blok, Lodewijk, 4,565,756, Cl. 430-7.000.
Nieuwendijk, Joris A. M.; Op de Beek, Franciscus J.; Sanders, Georgius B. J.; Van Gijsel, Wilhelmus D. A. M.; and Van Nieuwland, Jacob M., 4,566,120, Cl. 381-117.000.
Shannon, John M., 4,566,020, Cl. 357-15.000.
van der Steen, Antonie C. A. M., 4,566,076, Cl. 364-757.000.
Weissensteiner, Walter, 4,566,045, Cl. 360-77.000.

U.S. Product Development Company: *See—*
Adell, Robert, 4,565,032, Cl. 49-462.000.

United States Steel Corporation: *See—*
Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., 4,565,353, Cl. 266-147.000.

United Technologies Corporation: *See—*
Skonieczny, Joseph P.; Murphy, Richard D.; and Clelford, Douglas H., 4,566,101, Cl. 371-5.000.
Zwicke, Philip E., 4,566,073, Cl. 364-551.000.

Universite d'Aix-Marseille II: *See—*
Dussoubs, Daniele; Perichaud, Alain; and Savidan, Louis, 4,565,848, Cl. 525-331.500.

University of California, The Regents of the: *See—*
Hansma, Paul K.; Moreland, John M.; and Alexander, Sam, 4,566,023, Cl. 357-26.000.
Heath, Timothy D.; Shek, Pang; and Papahadjopoulos, Demetrios, 4,565,696, Cl. 424-88.000.

University of Florida: *See—*
Abbaschian, Gholamreza J., 4,565,571, Cl. 75-0.50C.
Bergeron, Raymond J., Jr., 4,565,874, Cl. 548-239.000.

University of Notre Dame Du Lac: *See—*
Miller, Marvin J., 4,565,654, Cl. 260-239.00A.

Uno, Naoki: *See—*
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.

UOP Inc.: *See—*
O'Hara, Mark J.; Imai, Tamotsu; Bricker, Jeffery C.; and Mackowiak, David E., 4,565,898, Cl. 585-441.000.

Upjohn Company, The: *See—*
Dolak, Lester A.; Laborde, Alice L.; Sebek, Oldrich K.; Castle, Thomas M.; and Brodasky, Thomas F., 4,565,699, Cl. 424-117.000.
Oertel, Richard W., III; Tucker, Benjamin W.; and Richter, Reinhard H., 4,565,835, Cl. 521-155.000.

Upton, Jenny, legal representative: *See—*
Errede, Louis A.; Stoesz, James D.; and Winter, George D., deceased, 4,565,663, Cl. 264-120.000.

Urakami, Toyozo: *See—*
Hirose, Kunio; Hukuta, Tadatoshi; Horiuchi, Hiroshi; Urakami, Toyozo; and Yoshida, Minoru, 4,566,047, Cl. 360-85.000.

Urakami, Yoshiharu: *See—*
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Uraken Canada Limited: *See—*
Choquette, Andre, 4,565,161, Cl. 122-32.000.

Ushiyama, Hisayuki: *See—*
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Usui, Minoru; and Oshima, Toshiaki, to Epson Corporation. Pitch-changeable, cam-actuated paper feed for serial printer. 4,565,461, Cl. 400-611.000.

USV Pharmaceutical Corp.: *See—*
Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, 4,565,825, Cl. 514-394.000.

Vairo, Silvana. Doll with ingestion system. 4,565,536, Cl. 446-305.000.

Valdez, Henry R., to Mr. Gasket Company. Universal battery holddown. 4,565,256, Cl. 180-68.500.

Vale, Wylie W., Jr.: *See—*
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,565,804, Cl. 514-15.000.

Valeo: *See—*
Lassiaz, Philippe, 4,565,271, Cl. 192-89.00B.

Valmet Oy: *See—*
Koski, Erkki, 4,565,155, Cl. 118-412.000.

van der Steen, Antonie C. A. M., to U.S. Philips Corporation. Method of attenuating a digital signal and device for carrying out said method. 4,566,076, Cl. 364-757.000.

Van der Veer, William R.: *See—*
Light, Glenn M.; and Van der Veer, William R., 4,565,095, Cl. 73-621.000.

van Doorn, Johannes A.: *See—*
Wife, Richard L.; van Oort, Aart B.; van Leeuwen, Petrus W. N. M.; and van Doorn, Johannes A., 4,565,892, Cl. 568-14.000.

Van Gijsel, Wilhelmus D. A. M.: *See—*
Nieuwendijk, Joris A. M.; Op de Beek, Franciscus J.; Sanders, Georgius B. J.; Van Gijsel, Wilhelmus D. A. M.; and Van Nieuwland, Jacob M., 4,566,120, Cl. 381-117.000.

VanHulle, Glenn J.: *See—*
Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., 4,565,708, Cl. 426-579.000.

Van Laar, Jacobus; Felthuis, Jacob; Butter, Jahannes A.M.; Rengersen, Jacob; and Sannes, Albert, to Hoogovens Groep B.V. Taphole construction of a shaft furnace. 4,565,525, Cl. 432-248.000.

van Leeuwen, Petrus W. N. M.: *See—*
Wife, Richard L.; van Oort, Aart B.; van Leeuwen, Petrus W. N. M.; and van Doorn, Johannes A., 4,565,892, Cl. 568-14.000.

van Linden, Jan H. L.; and Whitehead, James S., to Aluminum Company of America. Process for recovering metal from aluminum dross. 4,565,572, Cl. 75-24.000.

Van Nieuwland, Jacob M.: *See—*
Nieuwendijk, Joris A. M.; Op de Beek, Franciscus J.; Sanders, Georgius B. J.; Van Gijsel, Wilhelmus D. A. M.; and Van Nieuwland, Jacob M., 4,566,120, Cl. 381-117.000.

van Ommering, Gerrit; and Koehler, Charles W., to Ford Aerospace & Communications Corporation. Lightweight bipolar metal-gas battery. 4,565,749, Cl. 429-27.000.

van Oort, Aart B.: *See—*
Wife, Richard L.; van Oort, Aart B.; van Leeuwen, Petrus W. N. M.; and van Doorn, Johannes A., 4,565,892, Cl. 568-14.000.

Van Rijn, Barend C.; and Van Rijn, Cordell G. Movable curtain systems for greenhouses and components therefor. 4,565,230, Cl. 160-84.00R.

Van Rijn, Cordell G.: *See—*
Van Rijn, Barend C.; and Van Rijn, Cordell G., 4,565,230, Cl. 160-84.00R.

Varin, Michel, to Etablissements Georges Olivier. Roller or skid type vacuum cleaner nozzle attachment. 4,564,972, Cl. 15-359.000.

Varley, Willard D., to E. R. Squibb & Sons, Inc. Method and apparatus for removing veneer from reworked medicine tablets. 4,565,326, Cl. 241-24.000.

Vartiainen, Nuutti: *See—*
Haartti, Juhani; Heitto, Pertti; Helsto, Jaakko J.; and Vartiainen, Nuutti, 4,565,602, Cl. 162-56.000.

Vasko, Kent A., to Sorbo, Inc. Horse shoe pad. 4,565,250, Cl. 168-12.000.

Veb Werk fur Fernsehdektronik im Veb Kombinat Mikroelektronik: *See—*
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Matthias; Kresse, Horst; and Weissflog, Wolfgang, 4,565,881, Cl. 549-373.000.

Vellekoop, Linda J.: *See—*
Mulvey, Patricia S.; Barth, Jordan B.; and Vellekoop, Linda J., 4,565,692, Cl. 424-57.000.

Venetta, Henry J., to Inductotherm Corporation. Process for removing oil from metal chips. 4,565,583, Cl. 134-12.000.

Venus Scientific Inc.: *See—*
Gallios, George C.; Whitehead, Derek; and Seleski, Richard, 4,566,059, Cl. 363-17.000.

Verey, Peter: *See—*
Apperley, Norman; Edwards, Roger J.; Foster, Raymond L. J.; Haigh, David C.; Haslam, Michael; and Verey, Peter, 4,566,005, Cl. 340-771.000.

Verheyden, Julien P. H.; and Martin, John C., to Syntex (U.S.A.) Inc. Process for preparing guanine derivatives. 4,565,868, Cl. 544-276.000.

Verhoosel, Rudi W. Shunter and method for directing the longitudinal axis of a ship. 4,565,148, Cl. 114-242.000.

Vestergaard, Godtfred. Vehicle for deicing aircraft. 4,565,321, Cl. 239-172.000.

Vianova Kunstharz, A.G.: *See—*
Paar, Willibald; and Daimer, Wolfgang, 4,565,838, Cl. 523-414.000.

Vickers PLC: *See—*
Chalk, Anthony J.; Charnock, Graham; Gates, Allen P.; Murray, David E.; and Smith, Ian S., 4,565,757, Cl. 430-83.000.

Vidal, Henri. Bridge abutment. 4,564,967, Cl. 14-75.000.

Villa-Komaroff, Lydia J.: *See—*
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., 4,565,785, Cl. 435-317.000.

Vincent, Michel; Remond, Georges; and Laubie, Michel, to ADIR. Substituted imino diacids, their preparation and pharmaceutical compositions which contain them. 4,565,819, Cl. 514-307.000.

Vinogradov, Valentin A.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Roz-hanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Virag, Sandor: *See—*
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Vissers, Hermanus H.; and Wondergem, Jan, to Multinorm B.V. Device for picking up crop from the field. 4,565,057, Cl. 56-364.000.

Vitronics Corporation: *See—*
Furtek, Edward J., 4,565,917, Cl. 219-388.000.

Viva-Tech, Inc.: *See—*
Evans, William C.; and Noble, Haven D., 4,565,441, Cl. 355-37.000.

Vock, Manfred H.: *See—*
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,565,707, Cl. 426-535.000.

Voest-Alpine Aktiengesellschaft: *See—*
Jilek, Walter; and Poferl, Gunter, 4,565,355, Cl. 266-224.000.

Vogel, F. Lincoln, to Intercal Company. Graphite intercalation compounds. 4,565,649, Cl. 252-503.000.

Vogl, Wilfred: *See—*
Clasky, Richard; and Vogl, Wilfred, 4,565,149, Cl. 114-264.000.

Vogt, Peter: *See—*
Imfeld, Marquard; Ramuz, Henri; Vogt, Peter; and Muller, Jean-Claude, 4,565,869, Cl. 544-323.000.

Vollnhals, Friedemann: *See—*
Gegner, Peter; and Vollnhals, Friedemann, 4,565,975, Cl. 331-1.00A.

von Hein, Eduard, to Maschinenfabrik WIFAG. Folding apparatus for a web-fed rotary printing press. 4,565,359, Cl. 270-41.000.

von Poschinger-Camphausen, Florian. Plug connection for boards abutting at an angle. 4,565,042, Cl. 52-585.000.

Voorhies, Douglas A.: *See—*
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Vorbrodt, Hans-Matthias: *See—*
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Matthias; Kresse, Horst; and Weissflog, Wolfgang, 4,565,881, Cl. 549-373.000.

Vouyouka, Anastasia. Template for use in garment manufacture. 4,565,006, Cl. 33-11.000.

Vulink, Henricus H. M.: *See—*
Bekkering, Hendrik M.; and Vulink, Henricus H. M., 4,565,543, Cl. 604-135.000.

Vyse, Gerrard N., to Stratoflex, Inc. Quick connect coupling. 4,565,392, Cl. 285-23.000.

W. R. Grace & Co.: *See—*
Hansson, P. E. Anders; and Jachimowicz, Felek, 4,565,604, Cl. 162-168.200.

W. Schlafhorst & Co.: *See—*
Rohner, Joachim; Mauries, Reinhard; and Zumfeld, Heinz, 4,565,058, Cl. 57-22.000.

Wacker-Chemie GmbH: *See—*
Loskot, Stephen; Kratel, Gunter; Lang, Wilfried; and Muhlhofer, Ernst, 4,565,682, Cl. 423-336.000.

Wada, Hiroshi; Ishii, Kazuhiro; Tsumagari, Nobuchika; Matsuo, Masaaki; and Matsumoto, Mikio, to Tanabe Seiyaku Co., Ltd. Naphthalene derivatives and method for preparation thereof. 4,565,877, Cl. 548-530.000.

Wada, Moriyasu: *See—*
Oguchi, Toshihiko; Kato, Hirohisa; Wada, Moriyasu; and Asano, Toshimitsu, 4,565,726, Cl. 428-328.000.

Wada, Yoshisada: *See—*
Satoh, Masayuki; and Wada, Yoshisada, 4,565,164, Cl. 123-41.860.

Wade, James J., to Riker Laboratories, Inc. Substituted imidazo[1,2-c]pyrimidines. 4,565,864, Cl. 544-58.200.

Wagner, Heinz; and Schieler, Karl, to CP Schmidt-Verpackungswerk GmbH & Co., KG. Folding box having inside lining and also method and apparatus for the production thereof. 4,565,315, Cl. 229-17.00R.

Wagner, Heinz; Scharwaechter, Klaus; and Nee, Monika, to Gerhard Collardin GmbH. Aqueous electrolytes and method for electrodepositing nickel-cobalt alloys. 4,565,611, Cl. 204-44.500.

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Zimmerman, Harry K.: *See*—
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., 4,565,826, Cl. 514-447.000.

Zimmermann, Peter; and Teape, John W., to Robert Bosch GmbH. Fast-acting servo drive system. 4,565,956, Cl. 318-721.000.

Zinser Textilmaschinen GmbH: *See*—
Nickolay, Helmut, 4,565,062, Cl. 57-305.000.

Zipay, Albert J.; and Gorzegno, Walter P., to Foster Wheeler Energy Corporation. Steam separating apparatus and separators used therein. 4,565,554, Cl. 55-185.000.

Zola, Meyer J.: *See*—
Ardon, Menachem T.; Kennedy, James C.; Sand, Douglas S.; Trimnell, Lawrence J.; and Zola, Meyer J., 4,566,094, Cl. 370-58.000.

Zolnowsky, John; MacGregor, Douglas B.; and Eckert, Kim, to Motorola, Inc. Data processor which can repeat the execution of instruction loops with minimal instruction fetches. 4,566,063, Cl. 364-200.000.

Zucker, Jerry. Method for purifying ink. 4,565,638, Cl. 210-774.000.

Zumfeld, Heinz: *See*—
Rohner, Joachim; Mauries, Reinhard; and Zumfeld, Heinz, 4,565,058, Cl. 57-22.000.

Zwicke, Philip E., to United Technologies Corporation. Soft category classifier. 4,566,073, Cl. 364-551.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JANUARY, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bertin, Claude L., to International Business Machines Corporation. Resistive gate FET flip-flop storage cell. Re. 32,071, Cl. 365-182.000.

Emory, Edward P. Universal lawn spreader attachment for lawn mowers. Re. 32,067, Cl. 56-16.800.

International Business Machines Corporation: *See*—
Bertin, Claude L., Re. 32,071, Cl. 365-182.000.

Koch Process Systems, Inc.: *See*—
Ryan, James M.; and O'Brien, John V., Re. 32,068, Cl. 62-17.000.

Leveen, Harry H. Method for treating benign and malignant tumors utilizing radio frequency, electromagnetic radiation. Re. 32,066, Cl. 128-804.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Tomisawa, Norio, Re. 32,069, Cl. 84-1.010.

O'Brien, John V.: *See*—
Ryan, James M.; and O'Brien, John V., Re. 32,068, Cl. 62-17.000.

Ryan, James M.; and O'Brien, John V., to Koch Process Systems, Inc. Distillative separation employing bottom additives. Re. 32,068, Cl. 62-17.000.

Schlumberger Technology Corp.: *See*—
Vezin, Andre M., Re. 32,070, Cl. 324-347.000.

Tomisawa, Norio, to Nippon Gakki Seizo Kabushiki Kaisha. Device for detecting a key switch operation. Re. 32,069, Cl. 84-1.010.

Vezin, Andre M., to Schlumberger Technology Corp. Borehole apparatus for investigating subsurface earth formations including a plurality of pad members and means for regulating the bearing pressure thereof. Re. 32,070, Cl. 324-347.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Burk, John F.; and Spidel, Terry A., to General Motors Corporation. Ignition distributor. B1 4,470,385, 1-21-86, Cl. 123-146.50B.

Dalziel, Warren L., to Shugart Associates. Head positioning mechanism for recording/playback machine. B1 4,161,004, 1-21-86, Cl. 360-106.000.

General Motors Corporation: *See*—
Burk, John F.; and Spidel, Terry A., B1 4,470,385, Cl. 123-146.50B.

Hunter, Edwin J., to Toro Company, The. Sprinkler systems. B1 3,854,664, 1-21-86, Cl. 239-206.000.

Shugart Associates: *See*—
Dalziel, Warren L., B1 4,161,004, Cl. 360-106.000.

Spidel, Terry A.: *See*—
Burk, John F.; and Spidel, Terry A., B1 4,470,385, Cl. 123-146.50B.

Toro Company, The: *See*—
Hunter, Edwin J., B1 3,854,664, Cl. 239-206.000.

LIST OF DESIGN PATENTEES

Ahn, Chong T. Music box. 282,263, 1-21-86, Cl. D17-24.000.

American Hospital Supply Corporation: *See*—
McCord, Kenneth R.; Bullock, James K.; and Gille, Henrick K., 282,284, Cl. D24-53.000.

Arco Industries Ltd.: *See*—
Richards, Lawrence D., 282,266, Cl. D21-115.000.

Arco Products Corp.: *See*—
Warburg, Joseph H., 282,237, Cl. D8-71.000.

Artsana S.p.A.: *See*—
Catelli, Pietro, 282,218, Cl. D21-121.000.

Asa, Maurice. Culture spreader. 282,278, 1-21-86, Cl. D24-29.000.

AT&T Information Systems: *See*—
Felix, Cristian J.; Genaro, Donald M.; Gomes, Carl W., II; and Sylvester, Gordon E., 282,257, Cl. D14-60.000.

Bakic, Dieter. Cosmetic case. 282,300, 1-21-86, Cl. D28-83.000.

Basile, Peter A., to Johnson & Johnson Dental Products Company. Amalgam dispenser. 282,276, 1-21-86, Cl. D24-10.000.

Bates, Leon H. Roof tile. 282,288, 1-21-86, Cl. D25-80.000.

Becton, Dickinson and Company: *See*—
Nitzsche, Raymond P., 282,281, Cl. D24-31.000.

Bickley, William E. Hydraulic cylinder boom. 282,304, 1-21-86, Cl. D34-36.000.

Biosafety Systems, Inc.: *See*—
Gianni, Richard F., 282,286, Cl. D24-99.000.

Black & Decker, Inc.: *See*—
Verdier, Alain, 282,289, Cl. D26-46.000.

Blatherwick, William J.: *See*—
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,279, Cl. D24-31.000.
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,280, Cl. D24-31.000.

Bogin, Roger M.: *See*—
Serev, Peter G.; and Bogin, Roger M., 282,254, Cl. D13-35.000.

Branciforti, Vincent A. Entertainment center. 282,226, 1-21-86, Cl. D6-474.000.

Brinly-Hardy Co., Inc.: *See*—
Doering, Charles W., 282,261, Cl. D15-27.000.

British Gas Corporation: *See*—
Thomas, Richard C.; and Daniels, David J., 282,246, Cl. D10-47.000.

Brown, Wilbert C., to TIE/Communications, Inc. Base for a telephone set. 282,258, 1-21-86, Cl. D14-62.000.

Bullock, James K.: *See*—
McCord, Kenneth R.; Bullock, James K.; and Gille, Henrick K., 282,284, Cl. D24-53.000.

Burgess, Kenneth W., to E.C.K. Manufacturing Co., Ltd., The. Putter head. 282,270, 1-21-86, Cl. D21-217.000.

Buroff, Arthur N., to Spray-All, Inc. Spray gun casing. 282,274, 1-21-86, Cl. D23-18.000.

Bussell, Vanda J. Tumbler. 282,232, 1-21-86, Cl. D7-6.000.

Button Fronts Ltd.: *See*—
Valori, Peter, 282,214, Cl. D2-273.000.

Button Fronts (London) Limited: *See*—
Valori, Peter, 282,213, Cl. D2-273.000.

C & A Products, Inc.: *See*—
Serev, Peter G.; and Bogin, Roger M., 282,254, Cl. D13-35.000.

Carbajales Santa-Eulalia, Javier B.: *See*—
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 282,248, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 282,249, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a baby giraffe. 282,248, 1-21-86, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a baby fox. 282,249, 1-21-86, Cl. D11-158.000.

Carlson, Richard E.; and McCadden, Michael E., to Zycad Corporation. Housing for computer module. 282,260, 1-21-86, Cl. D14-114.000.

Catelli, Pietro, to Artsana S.p.A. Blackboard desk toy. 282,218, 1-21-86, Cl. D21-121.000.
Chernack, Milton P., to Extracorporeal Medical Specialties, Inc. Cardiotomy reservoir with filter. 282,282, 1-21-86, Cl. D24-51.000.
Clawson, Burrell E.: *See—*
Weigl, James; and Clawson, Burrell E., 282,283, Cl. D24-53.000.
Coyne, Patrick J., to Meritus Industries, Inc. Toy electric toothbrush holder. 282,267, 1-21-86, Cl. D21-122.000.
Coyne, Patrick J., to Meritus Industries, Inc. Toy toothpaste dispenser. 282,268, 1-21-86, Cl. D21-122.000.
Daniels, David J.: *See—*
Thomas, Richard C.; and Daniels, David J., 282,246, Cl. D10-47.000.
Doering, Charles W., to Brinly-Hardy Co., Inc. Trailing dethatcher. 282,261, 1-21-86, Cl. D15-27.000.
Doyel, John S. Sewing box. 282,216, 1-21-86, Cl. D3-20.000.
E.C.K. Manufacturing Co., Ltd., The: *See—*
Burgess, Kenneth W., 282,270, Cl. D21-217.000.
Eli, Alvin H. Conically shaped ice fishing box having an indicator mounted on a removable reel assembly. 282,272, 1-21-86, Cl. D22-22.000.
Eli, Alvin H. Ice fishing box having an indicator mounted on a removable reel assembly. 282,273, 1-21-86, Cl. D22-22.000.
Epson Corporation: *See—*
Kuroiwa, Chiaki; and Mizuno, Masahiko, 282,259, Cl. D14-109.000.
Mizuno, Masahiko, 282,256, Cl. D14-57.000.
Extracorporeal Medical Specialties, Inc.: *See—*
Chernack, Milton P., 282,282, Cl. D24-51.000.
Exxon Research and Engineering Company: *See—*
McKeagan, David J.; and Spinelli, Giuseppe, 282,287, Cl. D25-80.000.
Faris, Mark A.; Miller, John A.; and Wainwright, H. Kent, to In-Situ, Inc. Fluid level monitor. 282,247, 1-21-86, Cl. D10-101.000.
Felix, Cristian J.; Genaro, Donald M.; Gomes, Carl W., II; and Sylvester, Gordon E., to AT&T Information Systems. Telephone stand. 282,257, 1-21-86, Cl. D14-60.000.
Foreman, Ellen F. Belt buckle. 282,215, 1-21-86, Cl. D2-431.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Yamaguchi, Hiroshi; Ito, Yukinori; and Shibata, Mitsuhiko, 282,252, Cl. D13-2.000.
Genaro, Donald M.: *See—*
Felix, Cristian J.; Genaro, Donald M.; Gomes, Carl W., II; and Sylvester, Gordon E., 282,257, Cl. D14-60.000.
Gianni, Richard F., to Biosafety Systems, Inc. Medical waste station with hypodermic needle cutter. 282,286, 1-21-86, Cl. D24-99.000.
Gilford, Luther G. Gasoline pump lever holder. 282,240, 1-21-86, Cl. D8-349.000.
Gille, Henrick K.: *See—*
McCord, Kenneth R.; Bullock, James K.; and Gille, Henrick K., 282,284, Cl. D24-53.000.
Gomes, Carl W., II: *See—*
Felix, Cristian J.; Genaro, Donald M.; Gomes, Carl W., II; and Sylvester, Gordon E., 282,257, Cl. D14-60.000.
Groger, Julian J.: *See—*
Reynoso, Arturo; and Groger, Julian J., 282,302, Cl. D32-32.000.
Hamilton, Leslie: *See—*
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,279, Cl. D24-31.000.
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,280, Cl. D24-31.000.
Harvey, Franklin D. Comb. 282,291, 1-21-86, Cl. D28-21.000.
Harvey, Franklin D. Comb. 282,292, 1-21-86, Cl. D28-21.000.
Harvey, Franklin D. Combined comb and hair pick. 282,293, 1-21-86, Cl. D28-25.000.
Harvey, Franklin D. Combined comb and hair pick. 282,294, 1-21-86, Cl. D28-25.000.
Harvey, Franklin D. Comb. 282,295, 1-21-86, Cl. D28-29.000.
Harvey, Franklin D. Hair comb. 282,296, 1-21-86, Cl. D28-30.000.
Harvey, Franklin D. Comb. 282,297, 1-21-86, Cl. D28-30.000.
Harvey, Franklin D. Hair lift. 282,299, 1-21-86, Cl. D28-31.000.
Henderson, Scott R. Beverage insulator. 282,234, 1-21-86, Cl. D7-70.000.
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., to Johnson & Johnson Dental Products Co. Hinged container with component inserts. 282,279, 1-21-86, Cl. D24-31.000.
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., to Johnson & Johnson Dental Products Company. Hinged container with component inserts. 282,280, 1-21-86, Cl. D24-31.000.
Holloway, Thomas F., to Risdon Corporation. Cosmetic container for lipstick and the like. 282,301, 1-21-86, Cl. D28-85.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ito, Kentaro; Kuwahata, Shoichi; and Nakamura, Munehito, 282,250, Cl. D12-110.000.
Howmedica, Inc.: *See—*
Kenna, Robert V., 282,238, Cl. D8-94.000.
Kenna, Robert V., 282,277, Cl. D24-26.000.
Huldt, Johan, to Johan Huldt Design AB. Chair. 282,224, 1-21-86, Cl. D6-375.000.
Hyland, Joseph F.; Yee, Wayne J.; and Wurmnest, Louis W., to Milton Bradley International, Inc. Gameboard. 282,265, 1-21-86, Cl. D21-17.000.
Ianuzzi, Angelo J. Chair. 282,220, 1-21-86, Cl. D6-365.000.
In-Situ, Inc.: *See—*
Faris, Mark A.; Miller, John A.; and Wainwright, H. Kent, 282,247, Cl. D10-101.000.
International Business Machines Corporation: *See—*
Kusenberg, Elizabeth A., 282,305, Cl. D99-28.000.
Isham, Robert O.; and Reese, Wayne S., to TRA-TECH Corporation. Console for van conversion. 282,251, 1-21-86, Cl. D12-155.000.
Ito, Kentaro; Kuwahata, Shoichi; and Nakamura, Munehito, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 282,250, 1-21-86, Cl. D12-110.000.
Ito, Yukinori: *See—*
Yamaguchi, Hiroshi; Ito, Yukinori; and Shibata, Mitsuhiko, 282,252, Cl. D13-2.000.
Jessen, Lutz. Golf bag carrier. 282,303, 1-21-86, Cl. D34-15.000.
Johan Huldt Design AB: *See—*
Huldt, Johan, 282,224, Cl. D6-375.000.
John J. Madison Company, Inc.: *See—*
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 282,248, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 282,249, Cl. D11-158.000.
Johnson & Johnson Dental Products Company: *See—*
Basile, Peter A., 282,276, Cl. D24-10.000.
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,279, Cl. D24-31.000.
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,280, Cl. D24-31.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Kuroiwa, Chiaki; and Mizuno, Masahiko, 282,259, Cl. D14-109.000.
Mizuno, Masahiko, 282,256, Cl. D14-57.000.
Kanamaru, Yutaka: *See—*
Shohoji, Takeshi; and Kanamaru, Yutaka, 282,236, Cl. D8-61.000.
Kelley, Thomas P. Combined food organizer and serving tray. 282,233, 1-21-86, Cl. D7-27.000.
Kenna, Robert V., to Howmedica, Inc. Rasp handle. 282,238, 1-21-86, Cl. D8-94.000.
Kenna, Robert V., to Howmedica, Inc. Guide for femoral neck osteotomy. 282,277, 1-21-86, Cl. D24-26.000.
Koyo Electronics Industries Co., Ltd.: *See—*
Shimizu, Norio; and Watanabe, Yuichi, 282,253, Cl. D13-12.000.
Kuroiwa, Chiaki; and Mizuno, Masahiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Computer disc drive. 282,259, 1-21-86, Cl. D14-109.000.
Kusenberg, Elizabeth A., to International Business Machines Corporation. Automatic teller machine. 282,305, 1-21-86, Cl. D99-28.000.
Kuwahata, Shoichi: *See—*
Ito, Kentaro; Kuwahata, Shoichi; and Nakamura, Munehito, 282,250, Cl. D12-110.000.
Langmyr, Rita. Trousers. 282,212, 1-21-86, Cl. D2-28.000.
Lee, Yaun H. Chair. 282,223, 1-21-86, Cl. D6-368.000.
Levy, Aldo. Aspirator. 282,285, 1-21-86, Cl. D24-54.000.
Mariol, James F. Toy vehicle. 282,269, 1-21-86, Cl. D21-137.000.
Mason, Edwin W., to Mason-Keller Corporation. Gas producing and indicating package. 282,243, 1-21-86, Cl. D9-345.000.
Mason-Keller Corporation: *See—*
Mason, Edwin W., 282,243, Cl. D9-345.000.
Mazzaferro, Aldo J. Comb. 282,298, 1-21-86, Cl. D28-31.000.
McCadden, Michael E.: *See—*
Carlson, Richard E.; and McCadden, Michael E., 282,260, Cl. D14-114.000.
McCord, Kenneth R.; Bullock, James K.; and Gille, Henrick K., to American Hospital Supply Corporation. Transducer housing assembly for monitoring blood pressure and the like. 282,284, 1-21-86, Cl. D24-53.000.
McKeagan, David J.; and Spinelli, Giuseppe, to Exxon Research and Engineering Company. Shingle. 282,287, 1-21-86, Cl. D25-80.000.
Meritus Industries, Inc.: *See—*
Coyne, Patrick J., 282,267, Cl. D21-122.000.
Coyne, Patrick J., 282,268, Cl. D21-122.000.
Meyer Sound Laboratories, Inc.: *See—*
Ross, Robert, 282,255, Cl. D14-33.000.
Miller, John A.: *See—*
Faris, Mark A.; Miller, John A.; and Wainwright, H. Kent, 282,247, Cl. D10-101.000.
Milton Bradley International, Inc.: *See—*
Hyland, Joseph F.; Yee, Wayne J.; and Wurmnest, Louis W., 282,265, Cl. D21-17.000.
Mizuno, Masahiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Acoustically coupled modem. 282,256, 1-21-86, Cl. D14-57.000.
Mizuno, Masahiko: *See—*
Kuroiwa, Chiaki; and Mizuno, Masahiko, 282,259, Cl. D14-109.000.
Morrell, Dale. Archer's thigh-fastened bow support. 282,271, 1-21-86, Cl. D22-13.000.
Nakamura, Munehito: *See—*
Ito, Kentaro; Kuwahata, Shoichi; and Nakamura, Munehito, 282,250, Cl. D12-110.000.
Nishida, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for sorting and counting bank notes. 282,307, 1-21-86, Cl. D99-28.000.
Nitzsche, Raymond P., to Becton, Dickinson and Company. Case for syringes. 282,281, 1-21-86, Cl. D24-31.000.
Norcarl Products, Inc.: *See—*
Santoiemmo, Carl V., 282,244, Cl. D9-367.000.
Nordson Corporation: *See—*
Ramazzotti, Dario J., 282,262, Cl. D15-145.000.
Pendleton, Edward A. Storage rack for food processor blades. 282,235, 1-21-86, Cl. D7-74.000.

Persons, Charles, to Persons-Majestic Manufacturing Company. Cycle seat or similar article. 282,219, 1-21-86, Cl. D6-354.000.
Persons-Majestic Manufacturing Company: *See—*
Persons, Charles, 282,219, Cl. D6-354.000.
Platner, Warren. High back desk chair. 282,221, 1-21-86, Cl. D6-366.000.
Platner, Warren. Desk chair. 282,222, 1-21-86, Cl. D6-366.000.
Price, Edwin A. Waste heat recovery device. 282,275, 1-21-86, Cl. D23-136.000.
Ramazzotti, Dario J., to Nordson Corporation. Thermoplastic material extruder. 282,262, 1-21-86, Cl. D15-145.000.
Reese, Wayne S.: *See—*
Isham, Robert O.; and Reese, Wayne S., 282,251, Cl. D12-155.000.
Remenicky, Joseph M., to Sargent & Greenleaf, Inc. Combined case and cover for a quick mount combination lock. 282,239, 1-21-86, Cl. D8-330.000.
Reynoso, Arturo; and Groger, Julian J. Swimming pool skimmer. 282,302, 1-21-86, Cl. D32-32.000.
Richards, Lawrence D., to Arco Industries Ltd. Toy play van. 282,266, 1-21-86, Cl. D21-115.000.
Risdon Corporation: *See—*
Holloway, Thomas F., 282,301, Cl. D28-85.000.
Ross, Robert, to Meyer Sound Laboratories, Inc. Loudspeaker enclosure. 282,255, 1-21-86, Cl. D14-33.000.
Ryobi Ltd.: *See—*
Shohoji, Takeshi; and Kanamaru, Yutaka, 282,236, Cl. D8-61.000.
Sandy, Hal D. Magazine display rack. 282,225, 1-21-86, Cl. D6-474.000.
Santoiemmo, Carl V., to Norcarl Products, Inc. Liquid container. 282,244, 1-21-86, Cl. D9-367.000.
Sargent & Greenleaf, Inc.: *See—*
Remenicky, Joseph M., 282,239, Cl. D8-330.000.
Sauber, Charles J. Outrigger pad. 282,241, 1-21-86, Cl. D8-373.000.
Scarpa, Tobia. Table lamp. 282,290, 1-21-86, Cl. D26-93.000.
Scully, Vincent P.; and Waxman, Leon E., to Water & Wood Mfg. Headboard. 282,227, 1-21-86, Cl. D6-505.000.
Scully, Vincent P.; and Waxman, Leon E., to Water & Wood Mfg. Headboard. 282,228, 1-21-86, Cl. D6-505.000.
Scully, Vincent P.; and Waxman, Leon E., to Water & Wood Mfg. Headboard. 282,229, 1-21-86, Cl. D6-505.000.
Scully, Vincent P.; and Waxman, Leon E., to Water & Wood Mfg. Headboard. 282,230, 1-21-86, Cl. D6-505.000.
Scully, Vincent P.; and Waxman, Leon E., to Water & Wood Mfg. Headboard. 282,231, 1-21-86, Cl. D6-506.000.
Serev, Peter G.; and Bogin, Roger M., to C & A Products, Inc. Programmable limit switch unit. 282,254, 1-21-86, Cl. D13-35.000.
Seynhaeve, Andre, to Ste Delsey. Beauty case. 282,217, 1-21-86, Cl. D3-39.000.
Shibata, Mitsuhiko: *See—*
Yamaguchi, Hiroshi; Ito, Yukinori; and Shibata, Mitsuhiko, 282,252, Cl. D13-2.000.
Shimizu, Norio; and Watanabe, Yuichi, to Koyo Electronics Industries Co., Ltd. Programable controller. 282,253, 1-21-86, Cl. D13-12.000.
Shohoji, Takeshi; and Kanamaru, Yutaka, to Ryobi Ltd. Electric plane. 282,236, 1-21-86, Cl. D8-61.000.
Spinelli, Giuseppe: *See—*
McKeagan, David J.; and Spinelli, Giuseppe, 282,287, Cl. D25-80.000.
Spray-All, Inc.: *See—*
Buroff, Arthur N., 282,274, Cl. D23-18.000.
Ste Delsey: *See—*
Seynhaeve, Andre, 282,217, Cl. D3-39.000.
Sunlux Best Group, USA, Inc.: *See—*
Yeung, Yat K., 282,245, Cl. D9-425.000.
Sylvester, Gordon E.: *See—*
Felix, Cristian J.; Genaro, Donald M.; Gomes, Carl W., II; and Sylvester, Gordon E., 282,257, Cl. D14-60.000.
Thomas, Richard C.; and Daniels, David J., to British Gas Corporation. Portable transmitter unit for a metallic object detector. 282,246, 1-21-86, Cl. D10-47.000.
Thorpe, Donald, to Warner-Lambert Company. Disposable razor package. 282,242, 1-21-86, Cl. D9-337.000.
TIE/Communications, Inc.: *See—*
Brown, Wilbert C., 282,258, Cl. D14-62.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Nishida, Yoshiaki, 282,307, Cl. D99-28.000.
Torlone, John T. Religious chapel or the like. 282,306, 1-21-86, Cl. D99-25.000.
TRA-TECH Corporation: *See—*
Isham, Robert O.; and Reese, Wayne S., 282,251, Cl. D12-155.000.
Valori, Peter, to Button Fronts (London) Limited. Penguin boot. 282,213, 1-21-86, Cl. D2-273.000.
Valori, Peter, to Button Fronts Ltd. Boot. 282,214, 1-21-86, Cl. D2-273.000.
Verdier, Alain, to Black & Decker, Inc. Combined rechargeable flashlight and recharging stand therefor. 282,289, 1-21-86, Cl. D26-46.000.
Wainwright, H. Kent: *See—*
Faris, Mark A.; Miller, John A.; and Wainwright, H. Kent, 282,247, Cl. D10-101.000.
Warburg, Joseph H., to Arco Products Corp. Dowel jig. 282,237, 1-21-86, Cl. D8-71.000.
Warner-Lambert Company: *See—*
Thorpe, Donald, 282,242, Cl. D9-337.000.
Watanabe, Yuichi: *See—*
Shimizu, Norio; and Watanabe, Yuichi, 282,253, Cl. D13-12.000.
Water & Wood Mfg.: *See—*
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Scully, Vincent P.; and Waxman, Leon E., 282,228, Cl. D6-505.000.
Scully, Vincent P.; and Waxman, Leon E., 282,229, Cl. D6-505.000.
Scully, Vincent P.; and Waxman, Leon E., 282,230, Cl. D6-505.000.
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Waxman, Leon E.: *See—*
Scully, Vincent P.; and Waxman, Leon E., 282,227, Cl. D6-505.000.
Scully, Vincent P.; and Waxman, Leon E., 282,228, Cl. D6-505.000.
Scully, Vincent P.; and Waxman, Leon E., 282,229, Cl. D6-505.000.
Scully, Vincent P.; and Waxman, Leon E., 282,230, Cl. D6-505.000.
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Hyland, Joseph F.; Yee, Wayne J.; and Wurmnest, Louis W., 282,265, Cl. D21-17.000.
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Warriner, William A., 5,638, Cl. 11.000.
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ISSUED JANUARY 21, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

16 4,564,956
75 4,564,957
150 4,564,958
411 4,564,959
452 4,564,960

CLASS 4

443 4,564,961
543 4,564,962
597 4,564,963

CLASS 5

164 R 4,564,964
453 4,564,965

CLASS 12

146 B 4,564,966

CLASS 14

75 4,564,967

CLASS 15

21 R 4,564,968
147 A 4,564,969
230.11 4,564,970
250.35 4,564,971
359 4,564,972

CLASS 16

71 4,564,973
353 4,564,974
370 4,564,975

CLASS 17

11 4,564,976
4,564,977
71 4,564,978

CLASS 19

215 4,564,979

CLASS 24

68 CD 4,564,981
71 J 4,564,982
170 4,564,983
287 4,564,984

CLASS 28

142 4,564,985

CLASS 29

25.35 4,564,980
33 K 4,564,986
157 R 4,564,987
235 4,564,988
4,564,989
267 4,564,990
281.1 4,565,003
426.5 4,564,991
429 4,564,992
434 4,564,993
468 4,564,994
563 4,564,995
566.3 4,564,996
576 W 4,564,997
605 4,564,998
611 4,565,000
623.4 4,565,002
806 4,564,999
866 4,565,001

CLASS 30

314 4,565,004

CLASS 33

1 G 4,565,005
11 4,565,006
127 4,565,007
172 E 4,565,008
233 4,565,009
366 4,565,010
414 4,565,011
432 4,565,016
458 4,565,012
517 4,565,013

CLASS 34

36 4,565,014
182 4,565,015

CLASS 36

117 4,565,017

CLASS 37

232 4,565,018

CLASS 38

77.6 4,565,019
102.5 4,565,020
137 4,565,021

CLASS 40

442 4,565,022
486 4,565,023

CLASS 43

17 4,565,024
21.2 4,565,025
43.12 4,565,026
102 4,565,027

CLASS 44

51 4,565,546
4,565,547
4,565,548
4,565,549
62 4,565,550

CLASS 47

39 4,565,028

CLASS 48

92 4,565,551
197 A 4,565,552

CLASS 49

25 4,565,029
44 4,565,030
130 4,565,031
462 4,565,032
468 4,565,033

CLASS 51

401 4,565,034
434 4,565,035

CLASS 52

9 4,565,036
95 4,565,037
146 4,565,038
167 4,565,039
235 4,565,040
288 4,565,041
585 4,565,042
593 4,565,043
741 4,565,044

CLASS 53

64 4,565,045
114 4,565,046
137 4,565,047
201 4,565,048
415 4,565,049
441 4,565,051
453 4,565,052
491 4,565,050
516 4,565,053
517 4,565,054

CLASS 54

24 4,565,055

CLASS 55

59 4,565,553
185 4,565,554
288 4,565,555
460 4,565,556

CLASS 56

14.4 4,565,056
16.8 Re.32,067
364 4,565,057

CLASS 57

22 4,565,058
4,565,059
58.3 4,565,060
234 4,565,061
305 4,565,062
328 4,565,063
404 4,565,064

CLASS 60

285 4,565,065
533 4,565,066
545 4,565,067
602 4,565,068

CLASS 62

17 Re.32,068
66 4,565,069
81 4,565,070
89 4,565,071
196.2 4,565,072
373 4,565,073
457 4,565,074
507 4,565,075

CLASS 65

1 4,565,557
4,565,558
2 4,565,559
134 4,565,560
135 4,565,561
335 4,565,562

CLASS 66

151 4,565,076

CLASS 68

158 4,565,077

CLASS 70

95 4,565,078
134 4,565,079
215 4,565,080

CLASS 71

12 4,565,563
28 4,565,564
92 4,565,565
4,565,566
4,565,567
94 4,565,568
103 4,565,569
105 4,565,570

CLASS 72

19 4,565,081
45 4,565,082
98 4,565,083
387 4,565,084

CLASS 73

19 4,565,085
23 4,565,086
35 4,565,087
40.7 4,565,093
61.1 R 4,565,088
118 4,565,091
198 4,565,090
202 4,565,092
432 R 4,565,094
621 4,565,095
718 4,565,096
765 4,565,097
861.22 4,565,098
862.41 4,565,099
863.32 4,565,100
864.57 4,565,101

CLASS 74

15.4 4,565,102
60 4,565,103
89.15 4,565,104
119 4,565,105
359 4,565,106
473 P 4,565,107
475 4,565,108
780 4,565,109
868 4,565,110

CLASS 75

0.5 C 4,565,571
24 4,565,572
77 4,565,573
130.5 4,565,574

CLASS 78

82 4,565,089

CLASS 81

53.2 4,565,111
56 4,565,112

CLASS 84

1.01 Re.32,069

CLASS 89

1.4 4,565,113
35.01 4,565,114

CLASS 91

375 A 4,565,115
519 4,565,116

CLASS 92

20 4,565,117
68 4,565,118
125 4,565,119
130 R 4,565,120

CLASS 99

281 4,565,121
447 4,565,122

CLASS 100

43 4,565,123
117 4,565,124
214 4,565,125
4,565,126

CLASS 101

93.04 4,565,127
93.19 4,565,128
240 4,565,129
4,565,130

CLASS 102

444 4,565,131
517 4,565,132

CLASS 104

7 B 4,565,133

CLASS 105

199 C 4,565,134
420 4,565,135

CLASS 106

1.22 4,565,575
23 4,565,576
85 4,565,577
87 4,565,578
118 4,565,579
124 4,565,580
308 B 4,565,581

CLASS 110

245 4,565,136
264 4,565,137
346 4,565,138
347 4,565,139

CLASS 111

7 4,565,141

CLASS 112

121.11 4,565,140
260 4,565,142
262.1 4,565,143
437 4,565,144

CLASS 114

61 4,565,145
79 R 4,565,146
219 4,565,147
242 4,565,148
264 4,565,149
265 4,565,150

CLASS 116

28.1 4,565,151
50 4,565,152

CLASS 118

405 4,565,153
410 4,565,154
412 4,565,155
4,565,156
719 4,565,157
726 4,565,158

CLASS 119

53 4,565,159
159 4,565,160

CLASS 122

32 4,565,161

CLASS 123

41.08 4,565,162
41.44 4,565,163
41.86 4,565,164
51 BA 4,565,165
52 M 4,565,166
70 R 4,565,167
90.34 4,565,168
146.5 B B1 4,470,385
192 B 4,565,169
359 4,565,170
425 4,565,171
446 4,565,172
458 4,565,173
478 4,565,174
542 4,565,175
556 4,565,176
563 4,565,177
564 4,565,178
599 4,565,179
601 4,565,181
602 4,565,180

CLASS 124

25 4,565,182
26 4,565,183

CLASS 126

368 4,565,184
417 4,565,185
428 4,565,186

CLASS 127

46.1 4,565,582

CLASS 128

11 4,565,187
24.2 4,565,188
40 4,565,189
80 C 4,565,190
92 D 4,565,193
92 H 4,565,191
4,565,192
133 4,565,195
204.23 4,565,194
205.24 4,565,196
303.1 4,565,197
305 4,565,198
325 4,565,199
642 4,565,200
696 4,565,201
804 Re.32,066

CLASS 131

281 4,565,202
283 4,565,203

CLASS 132

39 4,565,204
88.7 4,565,205

CLASS 134

12 4,565,583
112 4,565,206

CLASS 137

1 4,565,207
38 4,565,208
116.3 4,565,209
219 4,565,210
321 4,565,211
486 4,565,212
494 4,565,213
512.15 4,565,214
538 4,565,215
561 A 4,565,216
625.41 4,565,218
625.5 4,565,217
625.65 4,565,219
835 4,565,220
885 4,565,221

CLASS 138

93 4,565,222

CLASS 139

91 4,565,223
370.2 4,565,224
434 4,565,225
435 4,565,226

CLASS 141

1 4,565,227

CLASS 144

27 4,565,228
154 4,565,229

CLASS 148

1.5 4,565,584
6.15 R 4,565,585
12.7 C 4,565,586
31.57 4,565,587
186 4,565,588
402 4,565,589
431 4,565,590

CLASS 156

47 4,565,594
51 4,565,591
64 4,565,592
4,565,593
156 4,565,595
215 4,565,596
250 4,565,597
601 4,565,598
603 4,565,599
608 4,565,600
643 4,565,601

CLASS 160

84 R 4,565,230
133 4,565,231

CLASS 162

56 4,565,602
123 4,565,603
168.2 4,565,604

CLASS 164

37 4,565,233
66.1 4,565,234
169 4,565,235
181 4,565,232
459 4,565,236
463 4,565,237
468 4,565,238
475 4,565,239
480 4,565,240
499 4,565,241

CLASS 165

10 4,565,242
104.26 4,565,243
181 4,565,244

CLASS 166

50 4,565,245
112 4,565,246
123 4,565,247
267 4,565,248
303 4,565,249

CLASS 168

12 4,565,250

CLASS 173

128 4,565,251

CLASS 174

3 4,565,900
17 GF 4,565,901

CLASS 175

269 4,565,252

CLASS 177

1 4,565,253
25 4,565,254
211 4,565,255

CLASS 179

5 R 4,565,902
18 B 4,565,903
107 E 4,565,904
115.5 PC 4,565,905

CLASS 180

68.5 4,565,256
135 4,565,257

CLASS 181

129 4,565,258
230 4,565,259
243 4,565,260

CLASS 182

113 4,565,261
116 4,565,262
184 4,565,263

CLASS 187

89 4,565,264

CLASS 188

72.6 4,565,265
322.5 4,565,266

CLASS 192

0.049	4,565,268
3.31	4,565,267
70.12	4,565,269
70.13	4,565,270
89 B	4,565,271
98	4,565,272
106.2	4,565,273
107 R	4,565,274

CLASS 194

97 R	4,565,275

CLASS 198

321	4,565,276
365	4,565,277
400	4,565,278
505	4,565,279
509	4,565,280
628	4,565,281
778	4,565,282
790	4,565,283
792	4,565,284
819	4,565,285
861.1	4,565,286

CLASS 200

1 V	4,565,906
19 DR	4,565,907
50 AA	4,565,908
61.85	4,565,909
85 R	4,565,910
148 A	4,565,911
157	4,565,912

CLASS 202

139	4,565,605

CLASS 204

20	4,565,606
38.1	4,565,607
44	4,565,608
44.4	4,565,609
	4,565,610
44.5	4,565,611
98	4,565,612
99	4,565,613
168	4,565,615
192 C	4,565,616
229	4,565,617
298	4,565,618
400	4,565,619

CLASS 206

213	4,565,287
328	4,565,288
443	4,565,289

CLASS 208

10	4,565,622
80	4,565,620
111	4,565,621
309	4,565,623

CLASS 209

40	4,565,624
167	4,565,625

CLASS 210

138	4,565,626
232	4,565,628
242.1	4,565,627
248	4,565,629
321.1	4,565,630
333.1	4,565,631
656	4,565,632
666	4,565,633
718	4,565,634
727	4,565,635
748	4,565,636
770	4,565,637
774	4,565,638

CLASS 211

41	4,565,290

CLASS 212

180	4,565,291
232	4,565,292

CLASS 215

246	4,565,293
251	4,565,294
252	4,565,295

CLASS 219

10.55 M	4,565,913
68	4,565,914
69 W	4,565,915
225	4,565,916
388	4,565,917
499	4,565,918
509	4,565,919
513	4,565,920
550	4,565,921

CLASS 220

94 R	4,565,296
254	4,565,297
273	4,565,298
323	4,565,299

CLASS 221

116	4,565,300

CLASS 222

5	4,565,301
38	4,565,302
103	4,565,303
108	4,565,304
368	4,565,305
383	4,565,306
386.5	4,565,307
632	4,565,308

CLASS 223

96	4,565,309

CLASS 225

2	4,565,310
94	4,565,311

CLASS 227

8	4,565,312
131	4,565,313

CLASS 228

180.2	4,565,314

CLASS 229

17 R	4,565,315
23 BT	4,565,316
73	4,565,317

CLASS 235

492	4,565,922

CLASS 239

3	4,565,318
88	4,565,319
90	4,565,320
172	4,565,321
206	B1 3,854,664
223	4,565,322
230	4,565,323
290	4,565,324
597	4,565,325

CLASS 241

24	4,565,326
56	4,565,327
65	4,565,328
95	4,565,329
236	4,565,330

CLASS 242

18 PW	4,565,331
18.1	4,565,332
54 R	4,565,333
	4,565,334
55.2	4,565,335
55.55	4,565,336
66	4,565,337
107.4 B	4,565,338

CLASS 244

3.13	4,565,339
3.28	4,565,340
113	4,565,341

CLASS 248

1	4,565,342
346	4,565,343
429	4,565,344
481	4,565,345
558	4,565,346

CLASS 249

1	4,565,347
122	4,565,348

CLASS 250

213 VT	4,565,923
227	4,565,924
352	4,565,925
390	4,565,926
560	4,565,927
578	4,565,928

CLASS 251

29	4,565,349
292	4,565,350

CLASS 252

8.55 B	4,565,639
8.55 R	4,565,640
8.75	4,565,641
62.9	4,565,642
70	4,565,643
92	4,565,644
182	4,565,645
183	4,565,646
354	4,565,647
397	4,565,648
503	4,565,649
518	4,565,650

CLASS 254

134.3 FT	4,565,351
344	4,565,352

CLASS 260

112 B	4,565,651
	4,565,652
112.5 R	4,565,653
239 A	4,565,654
245.2 R	4,565,655
397.4	4,565,657
397.47	4,565,656
465.3	4,565,658
925	4,565,659

CLASS 261

121 R	4,565,660

CLASS 264

34	4,565,661
113	4,565,662
120	4,565,663
130	4,565,664
267	4,565,665
	4,565,666

CLASS 266

147	4,565,353
171	4,565,354
224	4,565,355

CLASS 267

54 R	4,565,356

CLASS 269

32	4,565,357
60	4,565,358

CLASS 270

41	4,565,359

CLASS 271

4	4,565,360
10	4,565,361
225	4,565,362
315	4,565,363

CLASS 272

8 N	4,565,364
73	4,565,365
76	4,565,366
126	4,565,367
129	4,565,368
130	4,565,369
145	4,565,370

CLASS 273

73 J	4,565,371
84 R	4,565,372
265	4,565,373
272	4,565,374
401	4,565,375
408	4,565,376
422	4,565,377

CLASS 277

3	4,565,378
25	4,565,379
178	4,565,380
207 A	4,565,381

CLASS 280

47.18	4,565,382
276	4,565,383
279	4,565,384
289 WC	4,565,385
602	4,565,386
604	4,565,387
644	4,565,388
663	4,565,389
726	4,565,390
804	4,565,391

CLASS 285

23	4,565,392
107	4,565,393
141	4,565,394
282	4,565,395

CLASS 290

44	4,565,929

CLASS 294

1.2	4,565,396
34	4,565,397
52	4,565,398
74	4,565,399
88	4,565,400
159	4,565,401

CLASS 296

3	4,565,402

CLASS 297

	4,565,403
19	4,565,404
230	4,565,405
284	4,565,406
335	4,565,407
393	4,565,408
411	4,565,409

CLASS 299

81	4,565,410

CLASS 303

110	4,565,411

CLASS 305

53	4,565,412

CLASS 307

118	4,565,930
262	4,565,931
264	4,565,932
269	4,565,933
481	4,565,934
491	4,565,935

CLASS 310

62	4,565,936
90	4,565,937
156	4,565,938
177	4,565,939
326	4,565,940
328	4,565,941
338	4,565,942
357	4,565,943

CLASS 312

184	4,565,413

CLASS 313

318	4,565,944
404	4,565,945
408	4,565,946
467	4,565,947
487	4,565,948

CLASS 315

371	4,565,949

CLASS 318

85	4,565,950
317	4,565,951
345 E	4,565,953
345 R	4,565,952
603	4,565,954
696	4,565,955
721	4,565,956
723	4,565,957

CLASS 323

248	4,565,958
312	4,565,961
315	4,565,959
317	4,565,960
351	4,565,962

CLASS 324

51	4,565,963
	4,565,964
65 R	4,565,965
73 PC	4,565,966
95	4,565,967
309	4,565,968
347	Re.32,070
468	4,565,969

CLASS 329

50	4,565,970

CLASS 330

9	4,565,971
124 D	4,565,972
288	4,565,973
304	4,565,974

CLASS 331

1 A	4,565,975
57	4,565,976
113 R	4,565,977
117 D	4,565,979
117 R	4,565,978

CLASS 332

16 R	4,565,980

CLASS 333

138	4,565,981
157	4,565,982
193	4,565,983
202	4,565,984

CLASS 335

131	4,565,986
	4,565,987

CLASS 336

192	4,565,988

CLASS 337

311	4,565,989

CLASS 338

171	4,565,990

CLASS 339

32 R	4,565,414
50 R	4,565,415
59 M	4,565,416
94 C	4,565,417
97 C	4,565,418
154 L	4,565,419
193 P	4,565,420

CLASS 340

52 R	4,565,991
347 AD	4,565,992
	4,565,993
	4,565,994
542	4,565,995
571	4,565,996
572	4,565,997
576	4,565,998
645	4,565,999
706	4,566,000
709	4,566,001
711	4,566,002
727	4,566,003
764	4,566,004
771	4,566,005
	4,566,006
	4,566,007
825.8	4,566,008
941	

CLASS 343

6.5 LC	4,566,009
17.2 PC	4,566,010
	4,566,011
359	4,566,012
372	4,566,013

CLASS 346

1.1	4,566,014
107 R	4,566,015
108	4,566,016
140 R	4,566,017
	4,566,018
163	4,566,019

CLASS 350

6.8	4,565,421
96.19	4,565,422
171	4,565,423
349	4,565,424
350 R	4,565,425
401	4,565,426
530	4,565,427
579	4,565,428

CLASS 351

137	4,565,429

CLASS 353

61	4,565,430

CLASS 354

135	4,565,431
173.11	4,565,432
201	4,565,433
286	4,565,434

CLASS 355

3 DD	4,565,435
	4,565,437
	4,565,438
3 FU	4,565,439
3 R	4,565,436
27	4,565,440
37	4,565,441
68	4,565,442
99	4,565,443
113	4,565,985

CLASS 356

73	4,565,444
73.1	4,565,445
246	4,565,446
319	4,565,447
336	4,565,448
361	4,565,449
402	4,565,450

CLASS 357

15	4,566,020
	4,566,021
23.14	4,566,022
26	4,566,023
32	4,566,024
42	4,566,025
71	4,566,026
181	4,566,027

CLASS 358

21 R	4,566,028
90	4,566,029
94	4,566,030
90	4,566,031
103	4,566,032
115	4,566,033
194.1	4,566,034
210	4,566,036
213	4,566,037
244	4,566,035
256	4,566,038
280	4,566,039
284	4,566,041
293	4,566,040
300	4,566,042
	4,566,043

CLASS 360

40	4,566,044
77	4,566,045
78	4,566,046
85	4,566,047
94	4,566,048
106	4,566,049
	B1 4,161,004
113	4,566,050

CLASS 361

13	4,566,051
18	4,566,052
42	4,566,053
422	4,566,054

CLASS 362

162	4,566,055
297	4,566,056
364	4,566,057
430	4,566,058

CLASS 363

17	4,566,059
21	4,566,060

CLASS 364

146	4,566,061
200	4,566,062
	4,566,063
300	4,566,064
	4,566,065
408	4,566,066
426	4,566,067
431.05	4,566,068
431.12	4,566,069
468	4,566,071
520	4,566,072
551	4,566,073
567	4,566,070
571	4,566,074
754	4,566,075
757	4,566,076
845	4,566,077
900	4,566,078

CLASS 365

1	4,566,079
182	Re.32,071
185	4,566,080
200	4,566,081
230	4,566,082

CLASS 366

108	4,565,451
149	4,565,452
279	4,565,453

CLASS 367

21	4,566,083
49	4,566,084
139	4,566,085

CLASS 368

47	4,565,454

CLASS 369

13	4,566,086
34	4,566,087
44	4,566,088
45	4,566,089
46	4,566,090
47	4,566,091
59	4,566,092

CLASS 370

14	4,566,093
58	4,566,094
60	4,566,095
62	4,566,096
89	4,566,097
	4,566,098
100	4,566,099

CLASS 371

1	4,566,100
	4,566,101
11	4,566,102
12	4,566,103
15	4,566,104
37	4,566,105
67	4,566,106

CLASS 372

38	4,566,107

CLASS 373

108	4,566,108

CLASS 374

164	4,565,455
169	4,565,456

CLASS 376

246	4,565,667

CLASS 377

2	4,566,109
10	4,566,110
28	4,566,111

CLASS 378

2	4,566,112
57	4,566,113
88	4,566,114
097	4,566,115
121	4,566,116

CLASS 381

51	4,566,117
71	4,566,118
103	4,566,119
117	4,566,120

CLASS 382

7	4,566,121
	4,566,122
	4,566,123
15	4,566,124
21	4,566,125
48	4,566,126
	4,566,127
56	4,566,128

CLASS 383

5	4,566,129
15	4,566,130
44	4,566,131

CLASS 384

450	4,565,457
561	4,565,458

CLASS 400

110	4,565,459
490	4,565,460
611	4,565,461
625	4,565,462

CLASS 401

217	4,565,463

CLASS 403

290	4,565,464
407.1	4,565,465

CLASS 404

10	4,565,466
72	4,565,467

CLASS 405

270	4,565,468
288	4,565,469

CLASS 408

72 R	4,565,470
204	4,565,471
226	4,565,472
229	4,565,473

CLASS 409

51	4,565,474
131	4,565,475
225	4,565,476

CLASS 412

5	4,565,477

CLASS 414

71	4,565,478
199	4,565,479
225	4,565,480
285	4,565,481
353	4,565,483
462	4,565,482
686	4,565,484
704	4,565,485
729	4,565,486
730	4,565,487

CLASS 415

53 R	4,565,488
	4,565,489
114	4,565,490
160	4,565,491
175	4,565,492

CLASS 416

204 R	4,565,493
206	4,565,494
224	4,565,495

CLASS 417

46	4,565,496
53	4,565,500
63	4,565,497
68	4,565,498
174	4,565,499
267	4,565,501
334	4,565,502
372	4,565,503
401	4,565,504
407	4,565,505
440	4,565,506
564	4,565,507

CLASS 418

201	4,565,508

CLASS 419

68	4,565,668

CLASS 422

78	4,565,669
186.04	4,565,670
249	4,565,671

CLASS 423

15	4,565,672
112	4,565,673
137	4,565,674
140	4,565,675
210	4,565,676
219	4,565,677
235	4,565,678
239	4,565,679
310	4,565,680
328	4,565,681
336	4,565,682
447.3	4,565,683
	4,565,684
579	4,565,685
644	4,565,686

CLASS 424

1.1	4,565,687
3	4,565,688
10	4,565,689
	4,565,690
52	4,565,691
57	4,565,692
67	4,565,693
80	4,565,694
84	4,565,695
88	4,565,696
89	4,565,697
93	4,565,698
117	4,565,699
195.1	4,565,700

CLASS 425

101	4,565,509
113	4,565,510
146	4,565,511
190	4,565,512
289	4,565,513
328	4,565,514
381	4,565,515
451.2	4,565,517
540	4,565,516
568	4,565,518

CLASS 426

72	4,565,701
93	4,565,702
232	4,565,703
233	4,565,704
270	4,565,705
385	4,565,706
535	4,565,707
579	4,565,708
641	4,565,709

CLASS 427

35	4,565,710
50	4,565,711
53.1	4,565,712
54.1	4,565,713
	4,565,714
176	4,565,715
216	4,565,716
339	4,565,717
420	4,565,718

CLASS 428

34	4,565,719
35	4,565,720
36	4,565,721
	4,565,722
71	4,565,723
138	4,565,724
167	4,565,725
172	4,565,727
200	4,565,728
201	4,565,729
204	4,565,730
212	4,565,731
215	4,565,732
	4,565,733
216	4,565,734
234	4,565,735
286	4,565,736
321.5	4,565,737
328	4,565,726
349	4,565,738
	4,565,739
409	4,565,740
427	4,565,741
476.3	4,565,742
522	4,565,743
570	4,565,744
596	4,565,745
638	4,565,746
698	4,565,747

CLASS 429

10	4,565,748
27	4,565,749
72	4,565,750
94	4,565,751
	4,565,752
	4,565,753
213	4,565,754

CLASS 430

5	4,565,755
7	4,565,756
58	4,565,758
66	4,565,759
83	4,565,760
	4,565,757
	4,565,761
99	4,565,762
109	4,565,763
111	4,565,764
122	4,565,765
126	4,565,766
196	4,565,767
197	4,565,768
281	4,565,769
294	4,565,770
307	4,565,771
320	4,565,772
331	4,565,773
382	4,565,774
390	4,565,775
467	4,565,776
552	4,565,777
567	4,565,778
962	4,565,779

CLASS 431

46	4,565,519
	4,565,520
75	4,565,521
202	4,565,522
354	4,565,523

CLASS 432

59	4,565,524
248	4,565,525

CLASS 433

8	4,565,526

CLASS 434

248	4,565,527

CLASS 435

20	4,565,780
88	4,565,781
122	4,565,782
240	4,565,784
299	4,565,783
317	4,565,785

CLASS 436

26	4,565,786
120	4,565,787
137	4,565,788
504	4,565,789
537	4,565,790

CLASS 440

1	4,565,528
7	4,565,529
18	4,565,530
80	4,565,531
57	4,565,532
71	4,565,533
88	4,565,534

CLASS 441

118	4,565,535

CLASS 446

305	4,565,536
321	4,565,537
427	4,565,538
462	4,565,539

CLASS 455

66	4,566,132
277	4,566,133
607	4,566,134
614	4,566,135

CLASS 464

111	4,565,540
155	4,565,541

CLASS 501

56	4,565,791
104	4,565,792

CLASS 502

74	4,565,793
83	4,565,794
110	4,565,795
112	4,565,796
116	4,565,797
119	4,565,798
155	4,565,799
200	4,565,800
209	4,565,801
214	4,565,802
303	4,565,803

CLASS 514

15	4,565,804
17	4,565,805
54	4,565,806
58	4,565,807
88	4,565,808
112	4,565,809
182	4,565,810
	4,565,811
189	4,565,812
222	4,565,813
228	4,565,814
246	4,565,815
253	4,565,816
263	4,565,817
290	4,565,818
307	4,565,819
314	4,565,820
327	4,565,821
351	4,565,822
356	4,565,823
	4,565,824
394	4,565,825
447	4,565,826
469	4,565,827
	4,565,828
514	4,565,829
553	4,565,830

CLASS 518

700	4,565,831

CLASS 521

63	4,565,832
107	4,565,833
121	4,565,834
155	4,565,835

CLASS 522

112	4,565,614

CLASS 523

346	4,565,836
400	4,565,837
414	4,565,838

CLASS 524

8	4,565,840
31	4,565,841
57	4,565,842
89	4,565,843
108	4,565,844
458	4,565,839

CLASS 525

25	4,565,845
101	4,565,846
240	4,565,847
331.5	4,565,848
420	4,565,849
425	4,565,850
437	4,565,851
528	4,565,852
530	4,565,853

CLASS 526

214	4,565,854
247	4,565,855
265	4,565,856

CLASS 527

301	4,565,857

CLASS 528

172	4,565,858
365	4,565,859
422	4,565,860

CLASS 536

6.4	4,565,861
16.8	4,565,862
18.2	4,565,863

CLASS 544

58.2	4,565,864
110	4,565,865
176	4,565,866
201	4,565,867
276	4,565,868
323	4,565,869

CLASS 546

85	4,565,870
165	4,565,871
176	4,565,872

CLASS 548

110	4,565,873
239	4,565,874
336	4,565,875
426	4,565,876
530	4,565,877
531	4,565,878
	4,565,879

CLASS 549

256	4,565,880
373	4,565,881
399	4,565,882
475	4,565,883

CLASS 556

137	4,565,884
410	4,565,885
436	4,565,886

CLASS 564

85	4,565,887
179	4,565,888
205	4,565,889
216	4,565,890
298	4,565,891

CLASS 568

14	4,565,892
72	4,565,893
349	4,565,894
362	4,565,895
852	4,565,896

CLASS 585

415	4,565,897
441	4,565,898
445	4,565,899

CLASS 604

131	4,565,542
135	4,565,543
164	4,565,544
	4,565,545

CLASSIFICATION OF DESIGNS

D2—	12	282,212			282,229		425	282,245	D15—	27	282,261
	273	282,213			282,230	D10—	47	282,246		145	282,262
		282,214		506	282,231		101	282,247	D17—	24	282,263
	431	282,215	D7—	5	282,232	D11—	158	282,248	D19—	37	282,264
D3—	20	282,216		27	282,233			282,249	D21—	17	282,265
	39	282,217		70	282,234	D12—	110	282,250		115	282,266
D6—	354	282,219		74	282,235		155	282,251		121	282,218
	365	282,220	D8—	61	282,236	D13—	2	282,252		122	282,267
	366	282,221		71	282,237		12	282,253			282,268
		282,222		94	282,238		35	282,254		137	282,269
	368	282,223		330	282,239	D14—	33	282,255		217	282,270
	375	282,224		349	282,240		57	282,256	D22—	13	282,271
	474	282,225		373	282,241		60	282,257		22	282,272
		282,226	D9—	337	282,242		62	282,258			282,273
	505	282,227		345	282,243		109	282,259	D23—	18	282,274
		282,228		367	282,244		114	282,260		136	282,275
D24—	10	282,276			282,292
	26	282,277		25	282,293
	29	282,278			282,294
	31	282,279		29	282,295
		282,280		30	282,296
		282,281			282,297
	51	282,282		31	282,298
	53	282,283			282,299
		282,284		83	282,300
	54	282,285		85	282,301
	99	282,286	D32—	32	282,302
D25—	80	282,287	D34—	15	282,303
		282,288		36	282,304
D26—	46	282,289	D99—	25	282,306
	93	282,290		28	282,305
D28—	21	282,291			282,307

CLASSIFICATION OF PLANTS

P.—	9	5,637		17	5,639		43	5,641		44	5,642
	11	5,638		18	5,640						

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
January 28, 1986 Volume 1062 Number 4

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *PCT Gazette* on Oct. 24, 1985 and in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Feb. 9, 1986	750.00
if paid on or after Feb. 9, 1986	830.00
International fees	
Basic fee (first 30 pages):	
if paid before Jan. 1, 1986	280.00
if paid on or after Jan. 1, 1986	325.00
Basic Supplemental fee (for each page over 30):	
if paid before Jan. 1, 1986	6.00
if paid on or after Jan. 1, 1986	6.00
Designation fee for the first 10 national or regional offices:	
if paid before Jan. 1, 1986	70.00
if paid on or after Jan. 1, 1986	80.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Dec. 17, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of Dec. 1985

Affirmed	139
Affirmed in Part	20
Reversed	66
Total	225

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 25, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,369,526 through 4,370,753
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . $ 225.00
By other than a small entity . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . $ 55.00
By other than a small entity . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, NO PATENTS EXPIRED ON NOV. 10, 1985, DUE TO FAILURE TO PAY MAINTENANCE FEES.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,512,345, Re. S.N. 802,210, Filed Nov. 25, 1985, Cl. 128/325, SURGICAL CLIP APPLYING APPARATUS AND CLIPS AND CLIP TRAIN FOR USE THEREIN, David T. Green, Owner of Record: *United States Surgical Corp., Norwalk, Conn.,* Attorney or Agent: Charles B. Smith, et al., Ex. Gp.: 333

4,513,578, Re. S.N. 802,351, Filed Nov. 26, 1985, Cl. 62/149, WEIGHT-MONITORED AIR-CONDITIONER CHARGING STATION, Robert H. Proctor, et al., Owner of Record: *Murray Corp., Cockeysville, Md.,* Attorney or Agent: Irvin A. Lavine, et al., Ex. Gp.: 344

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Survey of Registered Practitioners in Patent Cases

Pursuant to 37 CFR 10.11(b), a survey letter was mailed on Nov. 18, 1985 from the Office of Enrollment and Discipline (OED) to all practitioners in patent cases whose last names begin with T through Z. Enclosed with the letter is a data sheet which must be completed and returned to OED as soon as possible. All data sheets returned to OED will be acknowledged. Failure by a practitioner to submit a completed data sheet within the time period specified in the survey letter will result in the practitioner being removed from the register in accordance with 37 CFR 10.11(b).

If your last name begins with T through Z and you have not received a data sheet or if you returned the data sheet to OED and you did not receive an acknowledgement within three (3) months after returning the data sheet to OED, please contact Patricia M. Jordan at (703) 557-1728.

CAMERON WEIFFENBACH,
Nov. 20, 1985. *Director, Office of Enrollment & Discipline.*

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by registered mail to the registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Michael Moss, dba Nu-Vue Hosiery Co., Chicago, Ill., Reg. No. 533,352, for the mark "NU-VUE", Canc. No. 15,077.

ERMA S. BROWN,
Administrator of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

United States Patent and Trademark Office Before the Commissioner of Patents and Trademarks

JOSEPH F. NAKAMURA,
Solicitor
U.S. Patent and
Trademark Office

v. Proceeding No. 84-2

HORACE S. HARPER, JR.
Respondent

FINAL ORDER

Upon consideration of the NOTICE OF PROCEEDING UNDER 35 U.S.C. §32 and the Solicitor's MOTION FOR ENTRY OF FINAL ORDER, it is ordered that said motion be and the same is hereby granted. It is further ordered that HORACE S. HARPER (Registration No. 28305) is hereby excluded from further practice before the U.S. Patent and Trademark Office. This FINAL ORDER is being entered pursuant to 35 U.S.C. §32.

DONALD J. QUIGG,
Dec. 5, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Department of Commerce Patent and Trademark Office 37 CFR Part 1 [Docket No. 50716-5116]

Variety Naming Requirements for Plant Patent Applications

Agency: Patent and Trademark Office, Commerce.
Action: Revision of proposed rules of practice; Public hearing.
Summary: Extensive comments have been received by the Patent and Trademark Office in response to proposed rules of practice for naming and registering the names of new plant varieties, published in the Federal Register, Vol. 50, page 33062 on Aug. 16, 1985. The proposed rules of practice will be revised in light of these comments. The revised rules will be published for comments and a public hearing will be announced.
For Further Information Contact: Mr. Stanley D. Schlosser, Office of Legislation and International Affairs, by telephone at (703) 557-3065 or by mail addressed to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.

DONALD J. QUIGG,
Dec. 11, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Status of PTO Services

The following is an update of the status of PTO services for December 1985:

Service Item	FY 1985 Goal (Calendar Days)	FY 1986 Goal (Calendar Days)	Monthly Average (Calendar Days)
Filing Receipts:			
Patents	22	22	27
Trademarks	30	30	33
Patent/Trademark Copies:			
Special Window Coupons	1	1	99% within 1 day
Window Coupons	5	5	94% within 5 days
Mail Coupons	29	26	99% within 26 days*
Letter Orders	34	26	99% within 26 days*
Date of oldest unfilled order			Dec. 24, 1985
Current Mail Date being processed			Dec. 27, 1985
Certified Copies:			
Trademark Registrations	30	30	20
Applications-As-Filed	20	10	99% within 7 days
File-Wrapper/Contents	N/A	N/A	85% within 7 days
Walk-up Certification	1	1	70% within 24 hours
Trademark Search Library:			
Filing Pending Marks	21	21	26
Filing Reg. Certificates	3	Issue Date	On schedule
Assignments:			
Patents	25	20	19
Trademarks	25	20	20
Avg. Days from Issue Fee Payment to Issue Date	90–100	90–100	93
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	4 weeks prior to Issue Date	On schedule
Patent Copies Available	Issue Date	Issue Date	99% on Issue Date
Trademark Copies Available	Issue Date	Issue Date	99% on Issue Date

*Figures include postal processing and delivery time.

IMPROVEMENTS IN SERVICES

- *Patent File Access* — In an effort to improve the integrity of the abandoned patent applications stored at the Federal Records Center, all remaining 1960 series files were retrieved, merged into one continuous numerical sequence and returned to the Center. Prior to this effort, the files were in numerous individual sequences as a result of having been forced into retiring files in small quantities. As such, Record Center employees retrieving files sometimes had to check multiple locations. The consolidation will allow Federal Record Center personnel to respond to 1960 series files requests in a more efficient manner.

- *Submission of Drawings* — As further clarification of the Official Gazette Notice of Oct. 29, 1985, drawings for patent applications do *not* need to be submitted on bristol board.

  Since corrections are now the responsibility of applicants, it is more convenient for the original drawings to be kept in their possession. Only copies need to be supplied to the Patent and Trademark Office. Whether or not bristol board is used for the copies is the applicant's choice. However, the copies that are submitted to the Office must be on strong, white, smooth, and non-shiny paper. High-quality copies are necessary not only for the patent examination process, but for printing purposes.

  If corrections are necessary, they should be made to the original drawings. Either a good copy of the corrected drawings of the corrected original can then be submitted after the Notice of Allowability is mailed.

  We will be revising 37 CFR to clarify the requirements for drawing submissions.

  In addition, we are planning to change 37 CFR 1.84 to allow submission of drawings in a third size, namely 8½ by 13 inches with a one inch (2.5 cm.) top margin and bottom and side margins of ¼ inch (6.4 mm.) from the edges. Pending the rule change, we will accept drawings in this size.

  This change is being made for the convenience of applicants and attorneys.

HELPFUL HINTS FROM THE PTO

- *Response to Final Rejection — Avoiding Extension Fees* — In regular applications wherein a three (3) month Shortened Statutory Period (SSP) is set for response to a Final Rejection, the response would best be filed within two (2) months of the date of the Office Action. If filed within two (2) months, any Advisory Action mailed after the SSP expires will reset the SSP to expire on the date of the Advisory Action for extension fee purposes, but never more than six (6) months from the date of the Final Rejection.

- *Response to Final Rejection — Expediting Processing and Reply by PTO* — In order to ensure the quickest reply to an amendment or response after Final Rejection the paper should be marked in the upper right portion:

  "RESPONSE UNDER 37 CFR 1.116
  EXPEDITED PROCEDURE
  EXAMINING GROUP (Insert Group Number)";

  and the envelope should be marked in the lower left corner:

  "BOX AF".

  The marking on the paper preferably should be written in, highlighted by, or encircled with, a bright color felt-point marker.

  If the paper is being hand-carried to the Examining Group (instead of mailing to Box AF), the envelope also should be marked:

  "RESPONSE UND ER 37 CFR 1.116
  EXPEDITED PROCEDURE
  EXAMINING GROUP (Insert Group Number)"

  Any questions should be directed to Al Lawrence Smith, Director, Group 350, on (703) 557–3414.

Jan. 7, 1986.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Jan. 28, 1986

3,522,110	4,517,589	4,537,905	4,547,528
4,260,556	4,517,606	4,538,178	4,547,701
4,307,447	4,518,026	4,538,265	4,547,764
4,348,553	4,518,605	4,538,616	4,547,877
4,373,949	4,519,751	4,538,711	4,548,311
4,407,673	4,522,702	4,539,127	4,548,362
4,412,001	4,527,558	4,539,827	4,548,548
4,435,403	4,527,797	4,539,849	4,548,807
4,446,279	4,530,161	4,540,037	4,549,415
4,448,085	4,530,162	4,541,569	4,549,605
4,452,171	4,530,894	4,541,655	4,549,618
4,460,150	4,531,018	4,542,102	4,549,866
4,460,151	4,531,079	4,542,130	4,550,031
4,463,951	4,531,243	4,542,711	4,550,103
4,475,010	4,531,449	4,542,812	4,550,280
4,478,068	4,531,558	4,543,406	4,550,426
4,479,949	4,532,105	4,543,414	4,550,508
4,483,287	4,533,494	4,543,693	4,551,224
4,486,096	4,534,657	4,543,733	4,551,523
4,486,566	4,534,827	4,544,209	4,551,574
4,489,714	4,535,124	4,544,496	4,551,822
4,495,067	4,535,519	4,544,687	4,552,187
4,500,461	4,535,767	4,544,737	4,552,237
4,500,536	4,535,892	4,544,758	4,552,517
4,501,234	4,535,967	4,545,114	4,552,759
4,504,373	4,536,309	4,546,187	4,552,811
4,507,187	4,536,398	4,546,772	4,553,912
4,512,498	4,536,573	4,547,119	4,554,463
4,514,346	4,536,806	4,547,508	4,556,622
4,515,924	4,537,603	4,547,515	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
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	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
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Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
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New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 7, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-14-84
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-14-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-11-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-30-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-19-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during December 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,413,656 to 3,419,906, inclusive
Plant Patents . . . . . Numbers 2,847 to 2,855 inclusive

REEXAMINATIONS

JANUARY 28, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,750,257 (447th)

SYSTEMATIZED APPARATUS FOR DRIVING FASTENERS

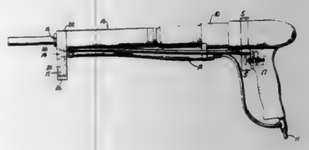
Imre Berecz, Yorba Linda, Calif., assignor to Kaynar Mfg. Co., Inc., Fullerton, Calif.

Reexamination Request No. 90/000,438, Aug. 29, 1983.

Reexamination Certificate for Patent No. 3,750,257, issued Aug. 7, 1973, Ser. No. 214,262, Dec. 30, 1971.

Int. Cl.[4] B23Q *7/10*; B23P *19/04*

U.S. Cl. 29—813



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

Claims **13** and **14** are cancelled.

New claims **15** and **16** are added and determined to be patentable.

1. A portable powered tool for individually delivering and drivably rotating threaded female fasteners, each fastener having an externally presented wrenching surface of non-circular configuration in cross-section, the tool comprising:

a. a supporting frame;

b. means connecting the tool to a source of power;

c. a tool socket having an internal wrenching surface of non-circular configuration in cross-section complementary to said external wrenching surface and being mounted in the frame for rotation about an axis;

d. supply means for said female fasteners carried by the frame and adapted to hold a plurality of said fasteners and to deliver same in a selected position of orientation at a discharge station;

e. powered transfer means carried by the frame and adapted to receive an individual fastener at said discharge station and to transport said fastener to a driving station;

f. drive motor means for drivably rotating said tool socket and any individual fastener held therein;

g. first power circuit means selectively actuable to establish communication with said source of power and for powering said transfer motor means to move said transfer means between said discharge and said driving station; and

i. second power circuit means operable responsively to movement of said transfer means for powering said drive motor means.

15. For use in a systematized nut driving apparatus comprising an elongate magazine defining an internal right circular cylindrical chamber having a first diameter, said magazine having a loading end provided with a magazine sealing surface extending radially outwardly from the chamber at a right angle to the central axis of said chamber to a second diameter greater than said first diameter, said magazine including a delivery station at an end opposite the loading end thereof, said magazine also including an air inlet communicating with the chamber thereof adjacent the loading end thereof for the introduction of pressurized air to effect delivery of nuts to the delivery station, a support bracket for said magazine having a loading gate therein aligned with but spaced from the sealing surface on said magazine, and a plurality of internally threaded nuts each comprising a body having a radially extending bearing surface and a circular radially outer periphery extending to a third diameter slightly smaller than said first diameter so as to be slidably accepted in the chamber of said magazine and propellable therethrough by pressurized air introduced into the chamber through the air inlet in said magazine, the body of each of said nuts having external wrenching surfaces axially spaced from the bearing surface thereof extending to a fourth maximum transverse dimension smaller than said third diameter, the body of each of said nuts having an internally threaded bore open at each end and having a fifth minimum internal diameter smaller than said fourth transverse dimension,

a multipurpose shipping, loading, delivery, and magazine sealing but carrier comprising an elongate shaft having a sixth transverse dimension smaller than said fifth minimum internal diameter and acceptable axially through the bore of each of said nuts for the slidable support thereof, said carrier having a rigid enlarged head longitudinally fixed to the shaft at one end thereof to limit axial movement of said nuts along the shaft toward the one end thereof, the head having a carrier sealing surface lying in a plane extending generally parallel to the sealing surface on said magazine and extending radially outwardly to a diameter greater than said first diameter and facing the end of the shaft opposite said one end so as to be engageable in pneumatic sealing relationship with the magazine sealing surface on the loading end of said magazine, the head on said carrier having a substantial longitudinal dimension and a radially extending end surface so as to be tightly accepted between the sealing surface on said magazine and the loading gate on said support bracket to preclude movement of said carrier out of said magazine, whereby an air pressure differential is created across said nuts upon the introduction of pressurized air through the magazine air inlet into the chamber thereof effective to urge said nuts toward the delivery station of said magazine, and

an entry tip secured to the shaft at the end opposite the head thereon to limit axial movement of said nuts toward said opposite end.

B1 4,231,105 (448th)

VENDOR CONTROL CIRCUIT

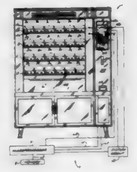
James T. Schuller, St. Louis County; Paul N. Albrecht, Ballwin, and Hugo M. Canizares, Bridgeton, all of Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Reexamination Request No. 90/000,754, Apr. 11, 1985.

Reexamination Certificate for Patent No. 4,231,105, issued Oct. 28, 1980, Ser. No. 921,960, Jul. 5, 1978.

Int. Cl.[4] G07F *11/62*; G06F *15/21*

U.S. Cl. 364—900



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–38** is confirmed.

1. Apparatus for controlling the functioning of a vendor for vending a plurality of items, each item having at least one parameter associated therewith, comprising:

a memory having a plurality of addresses for storing values of at least some of the parameters in predetermined memory addresses, the parameter values stored in the predetermined memory addresses being electrically alterable;

processing means responsive to a plurality of vendor status inputs, a plurality of inputs from the memory, and a plurality of control inputs, for performing arithmetic and logic operations with those inputs and with the values of the parameters associated with the items in a sequence controlled by a preselected set of instructions which constitute a program and for supplying output signals based upon results obtained from said operations to control functioning of the vendor, the predetermined memory addresses being accessible by the processing means and the parameter values stored therein being alterable by said processing means;

interrogation means operable by authorized personnel for retrieving from memory the values of at least some of the parameters stored therein; and

display means for visually displaying a parameter value retrieved from memory by the interrogation means independently of any other input of said processing means being equal in value to the value of the parameter retrieved from the memory, whereby authorized personnel may utilize the interrogation means to retrieve the value of a desired parameter from the memory.

B1 4,251,648 (449th)

PEROXIDE CURED EPIHALOHYDRIN POLYMERS

John T. Oetzel, Elyria, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Reexamination Request No. 90/000,634, Sep. 21, 1984.

Reexamination Certificate for Patent No. 4,251,648, issued Feb. 17, 1981, Ser. No. 810,654, Jun. 27, 1977.

Int. Cl.⁴ C08G *65/32*

U.S. Cl. 525—187

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

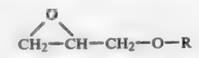
Claims **6**, **7**, **11–13**, **16** and **23** are cancelled.

Claims **1**, **3–5**, **8**, **9**, **14** and **17** are determined to be patentable as amended.

Claims **2**, **10**, **15** and **18–22**, dependent on an amended claim, are determined to be patentable.

New claims **24–30** are added and determined to be patentable.

1. A composition comprising a polymer of an epihalohydrin and an unsaturated ether of the general formula



wherein R is an ethylenically unsaturated radical**[**,**]**; an acid acceptor *selected from the group consisting of Group IA, IIA, IVA compounds, and mixtures thereof, but excluding lead oxides***[**,**]**; an unsaturated polyfunctional methacrylate; and a curing agent consisting an organic peroxide.

B1 4,270,606 (450th)

APPARATUS FOR SELECTIVE DISENGAGEMENT OF A FLUID TRANSMISSION CONDUIT AND FOR CONTROL OF FLUID TRANSMISSION FROM A WELL ZONE

David M. McStravick, Houston, and William M. Roberts, Deer Park, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Reexamination Request Nos. 90/000,593, Jul. 12, 1984 and 90/000,692, Dec. 18, 1984.

Reexamination Certificate for Patent No. 4,270,606, issued Jun. 2, 1981, Ser. No. 20,306, Mar. 14, 1979.

Int. Cl.⁴ E21B *33/129, 34/12*

U.S. Cl. 166—181

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **14**, **15**, **25–39**, **41** and **42** are cancelled.

Claims **1**, **3**, **13**, **16**, **24**, **40**, **43** and **50** are determined to be patentable as amended.

Claims **2**, **4–12**, **17–23** and **44–49**, dependent on an amended claim, are determined to be patentable.

New claims **51–61** are added and determined to be patentable.

REISSUES

JANUARY 28, 1986

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,072

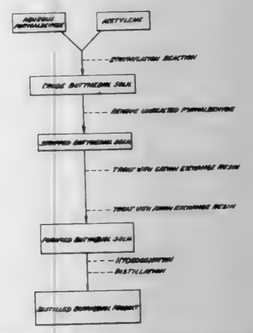
PROCESS OF PRODUCING A DISTILLED BUTANEDIOL PRODUCT OF HIGH QUALITY IN HIGH YIELD

Max E. Chiddix, League City, Tex., assignor to GAF Corporation, Wayne, N.J.

Original No. 4,371,723, dated Feb. 1, 1983, Ser. No. 290,548, Aug. 6, 1981. Continuation of Ser. No. 140,926, Apr. 16, 1980, abandoned, which is a continuation of Ser. No. 812,615, Jul. 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 675,686, Apr. 9, 1976, abandoned. Application for reissue Mar. 2, 1983, Ser. No. 471,320

Int. Cl.⁴ C07C *31/20*

U.S. Cl. 568—861 **15 Claims**



1. In the process of producing distilled butanediol product from an aqueous butynediol solution which contains metallic and formate ions, which process comprises hydrogenating said butynediol to butanediol and distilling said butanediol, the improvement which is characterized by:

treating said butynediol solution prior to said hydrogenation treatment with a cationic exchange resin to remove said metallic ion, and an anionic resin to remove formate ion, then hydrogenating and distilling the butanediol at **[**about 160°–200° C.**]** *a pot temperature of 110°–200° C. at a subatmospheric pressure of 40 mm Hg or less* to obtain a distilled butanediol product **[**having a purity of at least 99.7%,**]** in a yield of at least 93%, and a residue which is fluid and pumpable at the distillation temperature for recycling or disposal thereof.

Re. 32,073

DENTAL FILLING COMPOSITION UTILIZING ZINC-CONTAINING INORGANIC FILLER

Ronald M. Randklev, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 4,358,549, dated Nov. 9, 1982, Ser. No. 288,289, Jul. 30, 1981. Continuation-in-part of Ser. No. 184,916, Sep. 8, 1980, abandoned. Application for reissue Sep. 24, 1984, Ser. No. 654,190

Int. Cl.⁴ A61K *5/01, 5/06, 6/08;* **C08K** *3/40*

U.S. Cl. 523—117 **20 Claims**

9. A dental filling composition comprising a polymerizable resin binder and a finely divided inorganic glass filler which is X-ray opaque and single phase, wherein said X-ray opaque inorganic glass filler consists essentially of, in percent by weight:

Zinc oxide	*20 to 35%*
Silica	*45 to 65%*
Boric oxide	*3 to 15%*
Aluminum oxide	*combined weight of*
Aluminum fluoride	*at least about 10%*
Alkali metal oxide or alkaline earth metal oxide	*0 to 5%*

wherein the weight of aluminum floride is sufficient to contribute to the melt fluidity of the glass and enable it to be poured in the form of thin filaments for rapid cooling thereof, and wherein said glass exhibits an X-ray absorption characteristic of at least 1/16 inch.

Re. 32,074

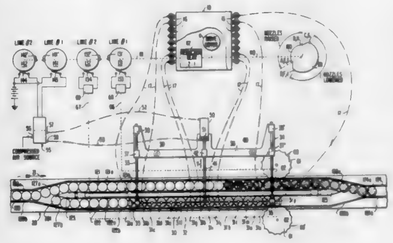
HIGH-SPEED FILLING MACHINE

Richard N. Bennett, Arbutus, Md., assignor to National Instrument Company, Inc., Baltimore, Md.

Original No. 4,073,322, dated Feb. 14, 1978, Ser. No. 735,034, Oct. 22, 1976. Application for reissue May 7, 1979, Ser. No. 36,745

Int. Cl.⁴ B65B *43/54*

U.S. Cl. 141—169 **42 Claims**



23. A filling machine with a filling station for filling containers with a fluid product by the use of several filling nozzles, which comprises two substantially parallel channel means within the area of the filling station, which are defined at least in part by a *conveyor belt* continuously running **[**,**]** in operation, **[**conveyor belt,**]** a number of filling units operatively connected with a corresponding number of filling nozzles, nozzle support means supporting thereon the filling nozzles in proper position, means for lowering and raising the nozzle support means and therewith the filling nozzles into and out of containers held under the filling nozzles, indexing means for said channel means for holding containers stationary in their filling positions during the filling operation on the conveyor belt and control means for the filling machine to control its operation including means for correlating the operation of the indexing means and the lowering and raising of the nozzle support means with the operation of the filling units, characterized in that reciprocating means which are operatively connected with the control means are provided for the nozzle support means to alternately place the filling nozzles over the containers to be filled in one channel means and after completion of the filling operation thereof, to move the nozzle support means transversely to the direction of movement of the conveyor belt over the other of the two channel means to fill the containers which have been brought into filling position in the meantime in said other channel *means* and which are held

stationary thereat during the filling operation by the respective indexing means.

Re. 32,075

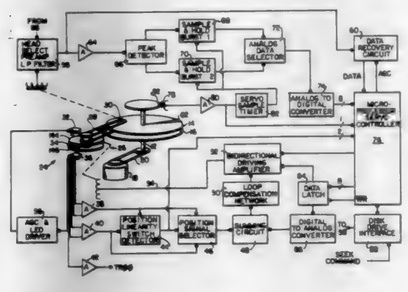
DATA TRANSDUCER POSITION CONTROL SYSTEM FOR ROTATING DISK DATA STORAGE EQUIPMENT

Joel N. Harrison, Campbell; Donald V. Daniels, Santa Cruz, and David A. Brown, Saratoga, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Original No. 4,396,959, dated Aug. 2, 1983, Ser. No. 190,198, Sep. 24, 1980. Application for reissue Apr. 3, 1984, Ser. No. 596,438

Int. Cl.⁴ G11B *21/10, 21/08;* **H02K** *37/00*

U.S. Cl. 360—77 **32 Claims**



1. In a data storage device including a frame, a data storage disk journalled to the frame and rotatingly driven by motor means at a constant velocity and characterized by a multiplicity of concentric data tracks on a major surface thereof, at least one data transducer head structure in close proximity to said disk surface, the improvement comprising:

a bidirectionally rotatable electromechanical rotor journalled to said frame adjacent to said disk,

a head mounting structure securing said head at one end thereof and secured to said rotor at the other end thereof for moving said head across said multiplicity of concentric data tracks,

*bi*directional rotor driver means connected to said rotor for rotating said structure to maintain it within a selected data track during read and/or write operations and to move said structure from a departure track to a destination track during track seeking operations.

a head position transducer providing a polyphase position signal in response to sensed actual position of said head structure relative to said frame,

head controller means connected to said head position transducer, said rotor driver and to an external source of track selection information, for recording the present track position of said head structure, for calculating a track seeking command in response to known head position and said track selection information, and for commanding said head to move from a known depature track to a requested destination track during a track seeking operation [by commanding at said rotor a first head position spatial increment of maximum forward direction acceleration followed by a similar head position spatial increment of maximum reverse direction acceleration and then by commanding adaptively a slewing rate] dependent upon said polyphase incremental head structure position information from said head position transducer until said destination track is reached,

a position dependent closed loop servo connected to said head position transducer and to said rotor driver for operatively controlling said driver to keep said head positioned within a selected one of said data tracks during read and/or write operations, said loop being open during track seeking operations until occurrence of adaptively commanded slewing,

a fine position closed loop servo connected to said driver and further including a single, data masked servo sector on a data surface of said disk containing track centerline servo control data therein readible by a head of said structure adjacent to said surface, a sample and hold circuit connected to said head during passes over said sector for holding control data read therefrom, and correction signal generator means for generating an offset signal for application to said driver to promote and maintain track centerline alignment of said head during read and write operations, said fine position loop being opened during track seeking operation.

PLANT PATENTS

GRANTED JANUARY 28, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,645

ROSE PLANT JACPO

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Jul. 16, 1984, Ser. No. 631,564

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its high production of light yellow buds on 12" to 14" stems, many of which are borne in clusters; its resistance to rose powdery mildew; its lack of fragrance.

5,646

ROSE PLANT

Pernille Olesen, and Mogens Olesen, both of 58 Kellerlisvej, DK 3490 Kvistgaard, Denmark

Filed Mar. 30, 1984, Ser. No. 595,416

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the grandiflora rose class, substantially as shown and described, characterized particularly by unique bright red and silver bicolor flowers with yellow lower petal segments producing an overall bright orange-red and silver bicolor effect.

5,647

ROSE PLANT JACFAR

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Jul. 16, 1984, Ser. No. 631,452

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of large plant producing long-stemmed blooms of a light yellow with no fragrance, approximately 27 petals, with numerous hooked prickles and numerous small prickles.

5,648

ROSE PLANT INTERVAL

G. Peter Ilsink, Leersum, Netherlands, assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Jun. 29, 1984, Ser. No. 626,160

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—23 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous plant, producing long stems bearing stiff petaled, near white buds, opening to near white fragrant blooms; its mildew resistance.

5,649

OLEA EUROPAEA CV. MONHER

Julian Herman, Irvine, Calif., assignor to Monrovia Nursery Company, Azusa, Calif.

Filed Jul. 23, 1984, Ser. No. 633,359

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—33 **1 Claim**

1. A new and distinct selection of *Olea europaea* as substantially shown and described herein, characterized particularly as to novelty by the unique combination of more corolla lobes per flower, a lighter green color of foliage, foliage which is longer, more narrow and thinner in texture and a finer and more open appearance to the overall habit of the tree and lack of fruit.

5,650

PLUM TREE "RAY'S HOPE"

Casselman, deceased, Arthur R., late of Exeter, Calif., and Jessie M. Casselman, legal representative, 257 S. Quince, Exeter, Calif. 93221

Filed Feb. 2, 1984, Ser. No. 576,487

Int. Cl.⁴ A01H *5/03*

U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree substantially as illustrated and described, broadly characterized by its general similarity to the unpatented Casselman Plum Tree, which it most nearly resembles and of which it is believed to be a sport but from which it is distinguished as to novelty by its fruit ripening four to five weeks later than that of the Casselman Plum Tree.

5,651

APRICOT TREE—HOMEDALE CULTIVAR

Garfield Shults, Homedale, Id., assignor to Stark Brothers Nurseries & Orchards Company, Louisiana, Mo.

Filed Apr. 23, 1984, Ser. No. 602,673

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—39 **1 Claim**

1. A new and distinct variety of apricot tree, substantially as illustrated and described, characterized by (a) a medium-small spreading growth habit, (b) an extended bloom period, (c) enhanced spring frost tolerance, (d) abundantly forms deliciously flavored medium-sized fruit which is meaty textured and juicy and bears an attractive orange skin color having a bright red blush, and (e) forms a sweet edible almond-type kernel.

5,652

DISCOVERED AND ASEXUALLY REPRODUCED A CERTAIN NEW AND DISTINCT VARIETY OF ASPARAGUS PLANT

J. Howard Ellison, Milltown, and John J. Kinelski, Princeton, both of N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Oct. 21, 1983, Ser. No. 544,649

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—89 **1 Claim**

1. A new and distinct variety of Asparagus Plant as herein shown and described, distinguished particularly as to novelty by its unique combination as a female plant which transmits high yield, resistance to rust (*Puccinia asparagi*) good field tolerance to root and crown rot (*Fusarium oxysporum*) and (*F. moniliforme*) provides a vigorous plant having an average of 24 stalks of mean diameter (three largest stalks) of 29.8 mm, and a stalk vigor index (Number×(Mean diameter)^2) of 21,313.

PATENTS

GRANTED JAN. 28, 1986

ERRATA

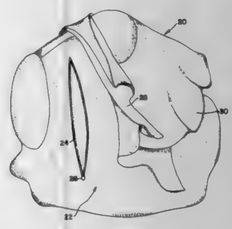
For CLASS	See PATENT NO.
036–011	4,566,197
244–012	4,566,699
180–008	4,566,707
426–326	4,567,030
132–070	4,567,039
264–243	4,567,301
346–058	4,567,459

PATENTS

GRANTED JANUARY 28, 1986

GENERAL AND MECHANICAL

4,566,136
NURSING BLOUSE WITH HIDDEN OPENING
Sylvia S. Echols, 4414 Cannon Rd., Loganville, Ga. 30249
Filed Aug. 12, 1983, Ser. No. 522,321
Int. Cl.⁴ A41D *1/20*
U.S. Cl. 2—104 **2 Claims**



1. A fabric nursing blouse for nursing mothers providing concealment for the breast in the nursing of an infant, said blouse having a front side with a breast panel having an elongated opening for exposing a breast for the nursing of the infant, a concealment flap connected to the front side of the blouse extending alongside of the opening and overlying the opening a sufficient extent to cover the breast while the infant is nursing through said opening and a zipper connected to an underside of said panel along said opening for opening and closing thereof, said breast panel opening in the closed position having opposite panel portions butted together to overlie and obsure said zipper, said opposite panel portions being each folded over at the blouse opening to provide an underlying fold strip and butted together at the aforementioned fold in the blouse opening closed position and the zipper being comprised of a pair of zipper strips adapted to be locked and unlocked together, said zipper strips being connected to said underlying fold strips, said zipper strips being provided with interlocking teeth on opposite sides of the zipper strips adapted to be locked together and unlocked and said teeth underlying and being connected to the folded edges of said panels and fold strips.

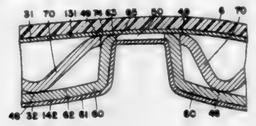
4,566,137
INFLATABLE BAFFLED LINER FOR PROTECTIVE HEADGEAR AND OTHER PROTECTIVE EQUIPMENT
Elwyn R. Gooding, 2989 W. North Territorial Rd., Ann Arbor, Mich. 48105
Filed Jan. 20, 1984, Ser. No. 572,529
Int. Cl.⁴ A42B *3/00*
U.S. Cl. 2—413 **25 Claims**

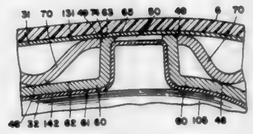
1. A liner for use in a protective helmet and other protective equipment, comprising:

(a) a first flexible plastic sheet;

(b) a second flexible plastic sheet fixedly attached to the first plastic sheet, the first and second attached sheets forming at least two spaced apart pre-formed air compartments with an integral pre-formed intercommunicating air channel therebetween;

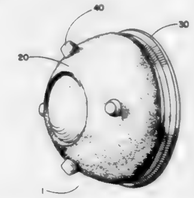
(c) at least one resilient bafflement positioned within the air compartments and in contact with at least one of the plastic sheets, the bafflement having formed thereon sidewall edges with protrusions sized to engage open ends of the corresponding intercommunicating air channel; the two air compartments and the resilient bafflement continually co-acting to control a variable rate of flow between the compartments in direct response to varying forces of impact to the air compartment, the variable rate of flow being regulated by the movement of the resilient bafflement against the open ends of the intercommunicating air channel responsive to the impact forces; and





(d) means, for inflating the two air compartments to a similar desired pressure, through the intercommunicating channel associated with one of the flexible sheets.

4,566,138
PROSTHETIC DEVICE WITH SPACERS
Edward L. Lewis, South Bend; Jack E. Parr, North Webster; Mark A. Fox, Leesburg, and Robert L. Fuson, Warsaw, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Continuation of Ser. No. 473,500, Mar. 8, 1983, abandoned. This application Apr. 24, 1985, Ser. No. 725,504
Int. Cl.⁴ A61F *1/04*
U.S. Cl. 623—22 **9 Claims**

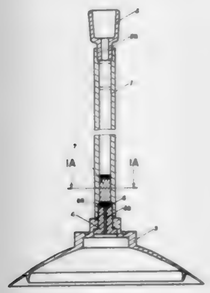


1. An acetabular cup to be secured to a supporting bone member by a thickness of acrylic bone cement applied therebetween comprising an inner ultra high molecular weight polyethylene member having a metal outer shell wherein said shell further includes a porous outer surface over at least a portion thereof and said porous surface having a plurality of spacers adhered thereto and projecting a predetermined distance therefrom, said spacers being composed at least in part of acrylic material.

4,566,139
PISTON PLUNGER
Chi-Cheng Jeng, No. 32 Chien Kuang Rd., Kaohsiung, Taiwan
Filed Dec. 6, 1983, Ser. No. 558,472
Int. Cl.⁴ E03D *11/00*
U.S. Cl. 4—255 **1 Claim**

1. A piston plunger comprising a suction cup, a connector at the base of the cup, a cylindrical tube extending from the connector, a handle on the end of the tube, and a piston inside

of the cylindrical tube, the connector having an air hole for connecting the interior of the cylindrical tube with the interior of the suction cup, the handle including an air vent communicating with the interior of the cylindrical tube, a pair of symmetrical piston-guiding rails on the internal wall of the cylindrical tube, a pair of guiding flutes on the piston interfitting with the guiding rails to enable the piston to move up and down in the cylindrical tube, each end of the piston having a rubber gasket, whereby pressing down on the plunger with the



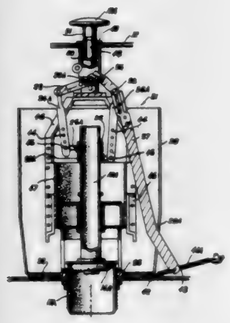
suction cup engaging over the opening of a clogged pipe or the like causes air in the suction cup to be forced through said air hole in the connector and into the cylindrical tube pushing the piston up the tube until the suction cup is suctioned against the opening, whereupon air in the tube can pass between the piston-guiding rail and the guiding flutes so that the piston may drop gravitationally down onto the connector and whereby repeating the action of pressing the plunger down against the opening is effective for unclogging the pipe or the like.

4,566,140

SELECTIVE FLUSH CISTERN

Neil R. Musgrove, New South Wales, Australia, assignor to James Hardie Industries Limited, New South Wales, Australia

Continuation-in-part of Ser. No. 547,745, Nov. 1, 1983, Pat. No. 4,527,296. This application Jun. 1, 1984, Ser. No. 616,313
Claims priority, application Australia, Jun. 8, 1983, PF9747
The portion of the term of this patent subsequent to Jul. 9, 2002, has been disclaimed.
Int. Cl.⁴ E03D *1/14*
U.S. Cl. 4—324 **4 Claims**



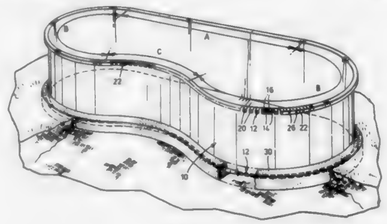
1. A selective-flush operating mechanism for use with apparatus comprising:
a cistern body having a bottom discharge drain aperture and a lid having a hole in it,
a closure valve normally seated on said drain,
a single press-button extending through said hole, valve lifting means which upon said press-button being depressed causes said closure valve to be lifted from said drain,
a float whereby said closure valve is held elevated once lifted and allowed to re-seat on said drain upon conclusion of a flush, and
float-controlled means for water-replenishment of said body; said selective-flush operating mechanism comprising:
an open-top partial-flush pot included within said cistern body, said partial-flush pot containing the aperture of said drain, said closure valve and said float, and having a doorway open to the inside of said body adjacent its bottom;
a normally open door for closing said doorway; and
a linkage operatively connecting said press-button with said closure valve and said door, such that on lifting said press-button said closure valve is lifted and said door is closed, wherein said linkage is length adjustable to permit adjustment of the overall height of the mechanism.

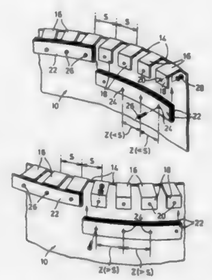
4,566,141

SWIMMING POOL WALL CONSTRUCTION IN POOLS OF THE TYPE USING A METAL SIDE WALL

Morgan D. Mahoney, P.O. Box 69, Hastings, Ontario, Canada (K0L 1Y0)

Filed Jun. 6, 1983, Ser. No. 501,613
Int. Cl.⁴ E04H *3/18*
U.S. Cl. 4—506 **8 Claims**





1. Swimming pool wall construction, comprising:
a metal wall for vertical disposition and designed to extend longitudinally in a horizontal direction and to define an inside and an outside relative to the pool to be enclosed by said wall,
a plurality of metal members attached to said wall adjacent the upper edge thereof to extend outwardly therefrom,
said members being spaced from each other in such longitudinal direction,
an extent on the end of each member remote from said wall, which is substantially parallel to said wall,

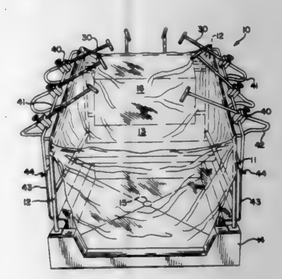
an aperture in each vertical extent,
a metal strip, designed to extend longitudinally along said wall for attachment to said parallel extents having a plurality of spaced apertures for respective location in respective registration with said vertical extent apertures,
shank members designed to pass through registering pairs of parallel extent apertures and strip apertures and to couple said extent and strip,
wherein over at least a part of said wall the longitudinal spacing of said extent apertures differs from that of said strip apertures whereby the wall at such part curves in plan view,
wherein said metal strip is a channel, hairpin shaped in section viewed perpendicular to said longitudinal direction, defining a pair of opposed webs,
said channel being designed so that said vertical extent is received between said webs and an aperture in each of said webs is designed to register with an aperture in said parallel extent and whereby each said shank member passes through aligned apertures of one web, the vertical extent, and the other web.

4,566,142

SEAT SHOWER

Timothy J. Roberts; Thomas J. Roberts, Jr.; Thomas J. Roberts, Sr., all of Wood Dale, and Robert P. Marinier, Jr., Glendale Heights, all of Ill., assignors to Hospital Therapy Products, Inc., Wood Dale, Ill.

Filed Jun. 6, 1983, Ser. No. 501,131
Int. Cl.⁴ A47K *3/22*
U.S. Cl. 4—604 **8 Claims**



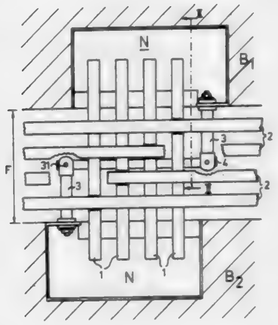
1. A shower bath for use in the treatment of patients highly susceptible to infection causing bacteria comprising, in combination,
a base adapted for support on a floor surface or the like, said base having relatively low-height side panels defining a shower flow area having a drain,
an open-sided framework supported on said base and including laterally opposite side frames each of which has an upstanding front corner post, an upstanding rear corner post, and an upper hand rail connected at either end to the upper ends of the corresponding front and rear corner posts and being disposed at a height approximating the waist height of a human being so as to enable a person to enter the shower area while grasping said upper hand rails,
liquid impermeable disposable liner means adapted to overlie said shower area and be removably supported by said framework so as to substantially enclose the periphery of said shower area to substantially waist height,
an elongated support rod mounted on each of said side frames in generally parallel outwardly spaced relation from the corresponding upper hand rail so as to facilitate grasping of said hand rails without interference by said support rods,
and a plurality of discrete shower nozzle assemblies mounted on each of said support rods, each shower nozzle assembly including support means selectively positionable along the length of the corresponding support rod, an elongated tubular nozzle rod supported by each support means so as to extend therefrom in cantilever fashion and being adapted for connection at one end to a fluid supply, each of said nozzle rods being rotatable and slidable about its own axis relative to its corresponding support means and rotatable together with its support means about the axis of the corresponding support rod while said nozzle rods are maintained in a plane substantially perpendicular to said support means, and a spray nozzle supported on the other end of each of said nozzle rods in fluid communication with the corresponding fluid supply so as to enable selective fluid discharge therefrom, said spray nozzles being selectively positionable to impinge fluid onto a patient disposed within said shower area from various angular directions.

4,566,143

BRIDGING SYSTEM FOR EXPANSION GAPS

Heinz Honegger, Wil, and Josef Ganz, Flaach, both of Switzerland, assignors to Honel Holding AG, Bulach, Switzerland

Filed Dec. 10, 1984, Ser. No. 679,731
Claims priority, application Austria, Dec. 9, 1983, 4292/83
Int. Cl.⁴ E01D *19/06*
U.S. Cl. 14—16.5 **18 Claims**



1. A gap bridging system for expansion gaps in roadways comprising: elastic sealing strips extending transversely to the longitudinal direction of the roadway, each of said sealing strips being arranged between spaced parallel bearers, the upper surfaces of which are level with the surface of said roadway and each of which bearers is connected to a crosspiece, said crosspieces being arranged in groups and supported in a manner to permit them to move longitudinally in recesses located beneath the roadway on both sides of said gap, the movement of said crosspieces being effected by a connecting rod, the ends of which are secured to opposite sides of said gap, said connecting rod passing through said crosspieces and a bearing incorporated in each of said crosspieces supporting said connecting rod such that it can pivot and move axially.

4,566,144

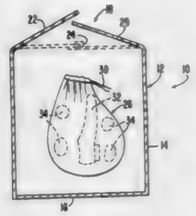
APPARATUS FOR BUFFING ARTICLES

Howard M. Arneson, Koch Rd., Corte Madera, Calif. 94925

Filed Jun. 9, 1983, Ser. No. 502,433
Int. Cl.⁴ A47L *23/00*
U.S. Cl. 15—3 **8 Claims**

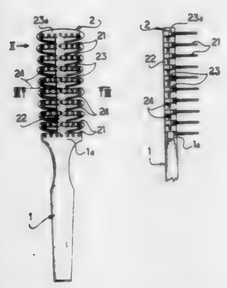
1. Buffing apparatus comprising: a container; a flexible bag for placement in the container and adapted for receiving an article capable of being buffed, said container adapted to be placed in a shiftable bin and moved about relative to a predetermined reference as the bin is shifted, there being a flexible,

hollow element for placement in the bag and having a buffing surface engageable with the article in the bag, said element adapted to receive and contain a material, said container being



of a size to permit the bag, the element and the article to move relative to the container as the container is moved relative to said reference.

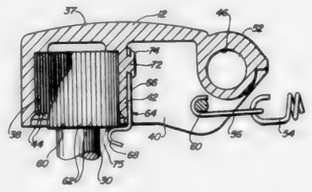
4,566,145
HAIRBRUSH
Jean-Louis Wachtel, Selestat, France, assignor to Celluloid S.A., France
Filed Jun. 19, 1984, Ser. No. 622,274
Claims priority, application France, Jun. 23, 1983, 83 10415
Int. Cl.[4] A46B *1/00, 15/00*
U.S. Cl. 15—201 **7 Claims**



1. A hairbrush including a handle, a head connected to said handle and having a face from which protrude pins for brushing the hair, said head being constituted by a longitudinal portion coaxial with said handle and by a plurality of bars extending from either side of said longitudinal portion in spaced arrangement with respect to one another along said portion, said protruding pins being located on said bars and said space defined between two consecutive bars being adapted to receive a hair lock during the brushing operation;

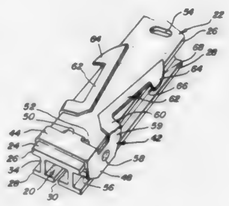
wherein each bar includes a flexible tongue protruding in each space between two consecutive bars located on a same side of said longitudinal portion and having a free end directed towards said longitudinal portion, each flexible tongue being arranged so as to guide therealong the hair lock into said space during the brushing operation and to hold it between its free end and the adjacent bar confronting it.

4,566,146
RETAINER CLIP FOR A WIPER ARM
William H. Harbison, Gary, Ind., assignor to The Anderson Company of Indiana, Michigan City, Ind.
Filed Apr. 30, 1984, Ser. No. 605,052
Int. Cl.[4] B60S *1/34*
U.S. Cl. 15—250.34 **7 Claims**



3. In a wiper arm having a mounting head, a channel shaped portion pivotally secured to the mounting head, an extension secured to the channel shaped portion and having means for removably connecting the wiper arm to a wiper blade, a socket in the mounting head; a chamber in the mounting head separated from the socket by a common wall, and retainer means in said chamber and extending into overlapping relation with said socket, the improvement characterized by said retainer means having a body portion and a latch portion, the body portion having one end portion staked to said common wall in said chamber for holding a major portion of said retainer means resiliently against said common wall, the latch portion comprising a rounded hook shaped member with a curved portion of the shaped member overlapping said socket, and means struck from the curved portion of the hook shaped member to provided a planar tab extending transverse to the axis of the socket and overlapping a portion of the socket.

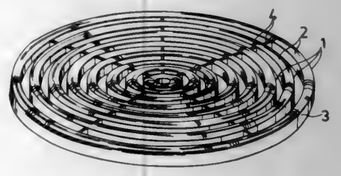
4,566,147
CLIP FOR A WIPER BLADE REFILL
Philip M. Baerenwald; Michael G. Mohnach, both of Valparaiso, and John J. Plisky, Munster, all of Ind., assignors to The Anderson Company of Indiana, Michigan City, Ind.
Filed Oct. 25, 1984, Ser. No. 664,698
Int. Cl.[4] B60S *1/38*
U.S. Cl. 15—250.42 **6 Claims**



1. A refill unit for removable attachment to a superstructure to form a windshield wiper blade, the refill unit having a resilient wiping element and a backing member carried by the wiping element, and said superstructure having at least two articulated holders with at least one of the holders having claws engaging flanges on said backing member, the improvement comprising clip means having a body portion and spaced downturned side portions engaging the flanges on the backing member, a tab projecting downwardly from a midportion of the body portion and engaging in one of at least two longitudinally spaced apertures in the midportion of the back of the backing member, detents and lugs on each side portion and

seating below the plane of the flanges, a pair of legs connected to the side portions and lying in a plane generally common with the plane of the body portion, latch means on each leg lying in the plane of the leg and extending outwardly beyond the side flanges, the claws on the at least one holder seating between the latch means and the side portions of the clip for holding the superstructure assembled on the refill.

4,566,148
DEVICE FOR SCRAPING OFF LIQUID
Oskar L. Rolin, 45, Chartwell Ct., Brighton, Sussex BN1 2EX, England
Filed Nov. 21, 1983, Ser. No. 554,022
Claims priority, application Sweden, Nov. 26, 1982, 8206765
Int. Cl.[4] B05C *21/00*
U.S. Cl. 15—257.05 **9 Claims**

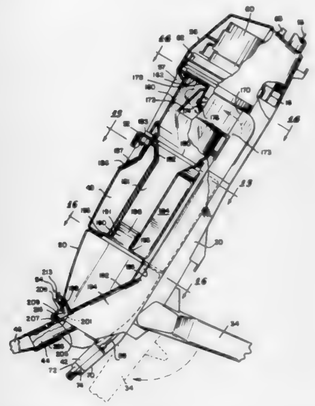


1. A device positioned in a liquid container for scraping liquid from a tool such as a brush, roller or the like, when the tool is dipped into and withdrawn from the container, the device comprising:

a body comprising a plurality of spaced apart co-planar strips arranged in a parallel or coaxial relationship, each strip having a U-shaped cross-section for forming channel-like buoyant bodies subdivided by intermediate walls into different sections, convex surfaces of the U-shaped strips providing a grid-like scraping surface on the upper surface of said body, and the concave surfaces of the U-shaped strips being at least partially immersed in the liquid for maintaining the device buoyant within the liquid so that the scraping surface remains substantially level with the top of the liquid in the container.

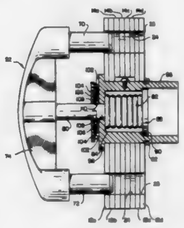
4,566,149
CAM LATCH FOR CLEANING DEVICES
Edwin Fitzwater, Rahway, N.J., assignor to Regina Corporation, Rahway, N.J.
Filed Mar. 2, 1984, Ser. No. 585,548
Int. Cl.[4] A47L *7/00*
U.S. Cl. 15—320 **14 Claims**

1. In a cleaning device having a liquid container removably mounted in said cleaning device, the improvement comprising: a collar receiving the top of said container; a cam having a rotatable camming surface engaging the bottom of said container, rotatably mounted on said cleaning device for moving said container into said collar by rotating said cam from a first to a second position; and latch means engaging said cam to



lock said cam in said second position to retain said container in said collar.

4,566,150
LADDER HINGE AND MULTI-POSITION LOCKING MECHANISM THEREFOR
Leland H. Boothe, Alpine, Utah, assignor to Little Giant Industries, Inc., Provo, Utah
Continuation of Ser. No. 333,229, Dec. 21, 1981, Pat. No. 4,407,045. This application Oct. 3, 1983, Ser. No. 538,475
The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.
Int. Cl.[4] E05D *11/10*
U.S. Cl. 16—332 **5 Claims**



1. An improved hinge for collapsible ladders, said hinge being of the type wherein first and second members are pivotally engaged for rotation about a pivot axis extending generally perpendicularly through said members and having respective locking apertures which are radially spaced from the pivot axis and can be selectively aligned and misaligned by rotation of said first and second members about the pivot axis, and at least one locking pin which is selectably translated through the locking apertures, when aligned, between an unlocked and a locked position so as to prevent mutual rotation of the first and second members, the improved hinge further comprising:

a hub member having a longitudinal axis corresponding to the pivot axis and having a guide aperture defined therein about the longitudinal axis, said hub member having an annular recess formed thereon;

a guide shaft disposed in the hub member for both axially slidable translation between extended and retracted posi-

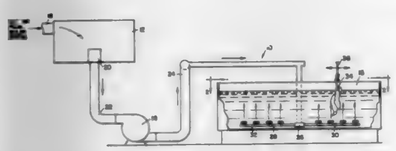
tions along the longitudinal axis through the guide aperture and rotation about the longitudinal axis;
a handle member securing together the guide shaft and a proximal end of the locking pin;
axial detent means for selectively maintaining the guide shaft in the extended position while permitting rotation of the guide shaft, the detent means comprising:
a at least one detent bore defined through said hub member the location of the annular recess formed in the hub member and at least one detent recess, configured so as to be capable of receiving a spherical detent member, defined in said guide shaft such that said at least one detent bore and said at least one recess are axially aligned when the guide shaft is in the extended position said spherical detent member disposed in the at least one detent bore and having a projective portion for engaging the first detent recess; and
spring means disposed in the at least one detent bore for urging the projecting portion of the detent member radially toward the detent recess disposed in said guide shaft; an annular ring disposed in said recess, so as to hold said spring means disposed in said at least one detent bore in position.

4,566,151

POULTRY DEFEATHERING APPARATUS AND PROCESS

Sanford E. Warren, 531 Mill St., Morton, Miss. 39117

Filed Sep. 15, 1983, Ser. No. 532,310
Int. Cl.⁴ A22C *21/04*
U.S. Cl. 17—47 **5 Claims**



1. Poultry defeathering apparatus for defeathering fowl in a body of water heated by boiler-generated steam, comprising:
a heat exchange means coupled to said boiler for heating a supply of air by transferring to said air supply a predetermined quantity of heat from the flue gasses emanating from the boiler;
hot air mixing means in fluid communication with said heat exchange means for receiving heated air from said heat exchange means, and vent means for introducing ambient air into said hot air mixing means in order to cool said heated air to reduce its heat energy to an appropriate level;
a water filled scalding tank for scalding fowl carcasses drawn through said tank;
a blower means in fluid communication with said hot air mixing means for receiving heated air from said mixing means, increasing the volumetric rate of flow of said heated air and increasing the temperature of the heated air received from said mixing means; and
hot air dividing means in fluid communication with said blower means for receiving heated air from said blower means said dividing means located at a level below fowl in said scalding tank and coupled to said heat exchange means for injecting said heated air into said water to further heat and to agitate said water and said fowl.

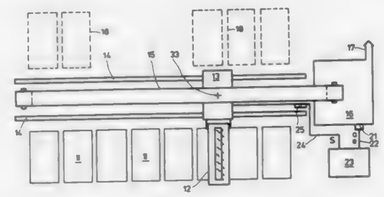
5. An improved process for defeathering fowl in a body of water heated by boiler-generated steam, comprising the steps of:
heating a supply of air by transferring to said air supply a predetermined quantity of heat from the flue gasses emanating from said boiler;
mixing the heated air with ambient air to reduce the temperature of the heated air to an appropriate level;
increasing the volumetric flow rate of the heated air;
increasing the temperature of the heated air; and
injecting said heated air into said body of water at a level below the fowl in said water to agitate and further heat said water and said fowl.

4,566,152

METHOD OF REMOVING FLOCKS FROM FIBER BALES

Marcel Zuend, Winterthur, Switzerland, assignor to Rieter Machine Works, Winterthur, Switzerland

Filed Apr. 12, 1983, Ser. No. 484,421
Claims priority, application Switzerland, May 4, 1982, 2719/82
Int. Cl.⁴ D01G *7/06, 13/00*
U.S. Cl. 19—81 **12 Claims**



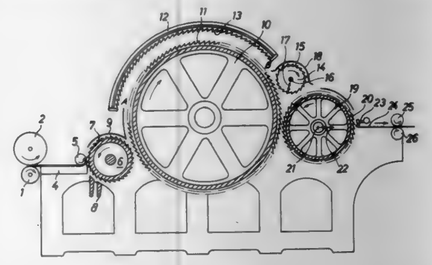
1. A method of removing flocks from at least one series of fiber bales disposed along a support surface, said method comprising the steps of
moving a flock removal member to and fro in a sequence of passes over the fiber bales;
lowering the flock removal member for each pass over the fiber bales;
feeding the removed flock into a storage receiver at a first quantity of weight per unit of time;
transporting the flock in the storage receiver to a processing stage at a second quantity of weight per unit of time less than said first quantity;
generating a stop signal for stopping said feeding step in response to the receiver reaching a maximum level of fill;
generating a start signal for re-starting said feeding step in response to the receiver reaching a minimum level of fill;
determining an operating time interval (Ta) lasting from one start signal to a succeeding stop signal and a non-operating time interval (Ts) lasting from each stop signal to a succeeding start signal;
comparing each said operating time interval with a non-operating time interval in a given operating cycle to obtain a monitoring signal (y) dependent on said time intervals of said cycle;
comparing each monitoring signal with a predetermined reference signal and forming a control signal in response to a difference between said monitoring signal and said reference signal; and
adjusting the movement of the flock removal member in response to said control signal to control the weight of the flock removed from the fiber bales per unit of time.

4,566,153

UNIVERSAL TEXTILE MACHINE FOR OPTIONALLY MANUFACTURING LONGITUDINALLY ORIENTED OR RANDOMLY ORIENTED FIBRE FLEECES

Werner Frosch, Schwanewede, Fed. Rep. of Germany, assignor to Hollingsworth GmbH, Fed. Rep. of Germany

Filed Sep. 12, 1984, Ser. No. 650,321
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3334912
Int. Cl.⁴ D01G *15/12, 15/46*
U.S. Cl. 19—98 **7 Claims**



1. A universal textile machine for optionally manufacturing a longitudinally oriented or a randomly oriented fibre fleece, comprising:
a main cylinder and associated carding elements;
a fibre feed-in-mechanism;
a doffer roller adjacent said main cylinder;
an additional intermediate roller furnished with a card clothing and located close to the contacting area of said main cylinder and said doffer roller upstream of the fibre flow;
a setting mechanism for varying the clearance between said doffer roller and said main cylinder, said intermediate roller being shiftable into two positions, in the first of said two positions the intermediate roller cooperating with both said main cylinder and said doffer roller, and in the other of said two positions the intermediate roller being distant from said main cylinder and said doffer roller, said doffer roller being distant from said main cylinder in said first position of the intermediate roller, and said doffer roller adjoining said main cylinder in said second position of the intermediate roller, and said main cylinder and said intermediate roller having the same direction of rotation.

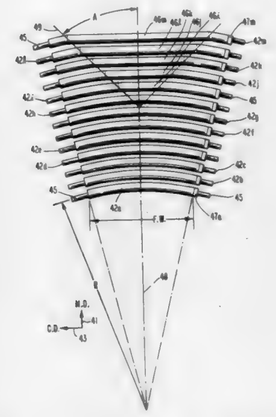
4,566,154

NONWOVEN WEB SPREADER

Leonard W. Streeper, Minotola, and Joseph R. Chille, Collingslake, both of N.J., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Aug. 2, 1983, Ser. No. 519,635
Int. Cl.⁴ D01G *25/00;* **D06C** *3/06*
U.S. Cl. 19—296 **8 Claims**

1. For use in an apparatus for forming a nonwoven fibrous web, an improved web spreading device comprising a set of spreader rolls, spaced from each other in a machine direction of web formation and having axles extending generally in a cross-machine direction of web formation, characterized in that the spreader rolls comprise an upstream group of curved rolls and a downstream group of rolls, each roll in the downstream group having a straight central region and opposed curved end regions, the length of each central region being less than or equal to the length of the central region of its adjacent downstream spreader roll whereby fibers that have passed



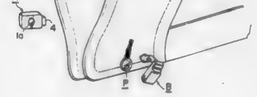
over a straight central region are not subjected to further spreading by a more downstream roll.

4,566,155

SEPARABLE SPRING-LATCHED CUFFLINK WITH TRANSVERSALLY PRESSABLE RELEASE LEVER

Hideo Kurashima, 5-12, Negishi 1-chome Taito-ku, Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,909
Claims priority, application Japan, Jun. 1, 1983, 58-83478[U]
Int. Cl.⁴ A44B *5/00*
U.S. Cl. 24—41 **3 Claims**



1. A separable, spring-latched cufflink with a transversally pressable release lever, said cufflink comprising:
a link member including a shank with a head provided at one end thereof and a cuff-engaging flange provided at an opposite end thereof;
said shank, being said head thereof, being of non-circular, elongated transverse cross-sectional shape so as to have a predisposed angular orientation relative to a set of shirt cuff button holes when inserted therethrough;
means providing a pair of two diametrically opposed, laterally outwardly opening grooved in said head of said shank, these grooves being oriented generally crosswise of said shank;
means defining a shoulder on said shank constructed and arranged for limiting incursion of said head into an opening;
a decorative member including a base plate having means defining an opening therethrough which is constructed and arranged to receive said head of said shank up to said shoulder means;

a decorative shell mounted to said base plate so as to frontally cover said decorative member externally of a shirt cuff against which said decorative member becomes abutted when in use;

a spring mounted on said base plate and covered by said decorative shell;

said spring comprising a resilient wire which is heart-shaped at one end and has two laterally spaced, generally parallel limbs integrally extending therefrom as intermediate portions thereof, these limbs terminating in obliquely angled-out feet an an opposite end of said spring, said spring at said one end being thereby provided with a medially located detent;

two pins mounted to said base plate medially thereof so as to extend within said decorative shell in the thickness direction of said decorative shell, near opposite ends of said shell;

one of said pins, located externally near one end of said decorative member engaging said spring within said recess of said spring;

means defining a slot into said decorative member at said opposite end thereof;

a push lever having means defining a medially located slot therein by means of which said push lever is penetrated by the other of said pins and held thereby for limited movement transversally of said decorative member;

said push lever having an end portion extending out of said decorative member through said slot in said opposite end of said decorative member;

means defining two divergent, laterally outwardly facing opposite side cam surfaces on said push lever within said decorative member, respective ones of these cam surfaces being in engagement between and with respective feet of said spring, so that while said push lever remains unpushed, said limbs of said spring remain disposed in partially obstructing relation with said opening through said base plate so that when said shank head, with said shank properly angularly oriented, is pushed into said opening, said spring legs are free to resiliently snap into said grooves in order to secure said cufflink together through the buttonholes of a shirtcuff, but so that said push lever when pushed, acting on said feet of said spring, temporarily cams the spring limbs apart sufficiently to permit said shank head to be withdrawn from said opening in order to detach said link member from said decorative member.

4,566,156

SLIDE FASTENER

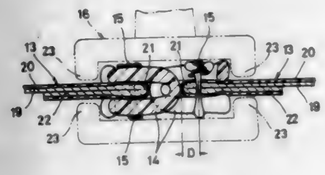
Hirotaka Sarasue, Ikoma, and Yoshitoki Tsubokawa, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 28, 1983, Ser. No. 517,898

Claims priority, application Japan, Aug. 2, 1982, 57-117498[U]

Int. Cl.⁴ A44B *19/40*

U.S. Cl. 24—398 **2 Claims**



1. A slide fastener comprising:

(a) a pair of stringer tapes each including a tape of paper or nonwoven fabric and a first film of thermoplastic synthetic resin and mounted on one surface of said tape, each of said stringer tapes having a folded longitudinal strip with said first thermoplastic resin film facing outwardly;

(b) a pair of rows of coupling elements mounted respectively on said stringer tapes along said folded strips;

(c) a slider movably mounted on said pair of rows of coupling elements and having guide flanges, said thermoplastic resin films being slidably engageable with said guide flanges, said folded strips of the two stringer tapes jointly having a width at least equal to the maximum width of the slider; and

(d) a second film of thermoplastic synthetic resin sandwiched between and bonded to said folded strip and an unfolded portion of said stringer tape.

4,566,157

CLIP WITH SLIDING LOCKING MEMBER

Sven E. Packendorff, Näckrosvägen 7, S-445 00 Surte, Sweden

Filed Jun. 21, 1984, Ser. No. 622,791

Claims priority, application Sweden, Jun. 23, 1983, 8303624

Int. Cl.⁴ A44B *21/00*

U.S. Cl. 24—536 **5 Claims**



1. A substantially U-shaped clip having a web and two legs having upper and lower surfaces and edges, said legs protruding from the web, between which legs clothes or the like are placed, and furthermore having a locking member slidable along the legs and extending across the legs for clamping the legs to the clothes or the like, characterised in that the locking member is detachable from and attachable to the two legs and is substantially E-shaped, the intermediate cross-bar of the center pin of the E-section being adapted to project into a space formed between the legs and being slidable in this space between two end positions determined by abutment surfaces, said two legs each including a beveled portion extending from the upper surface on one leg toward an adjacent edge and from the lower surface on the other leg towards its adjacent edge to provide a locating at which said locking member may be installed on and removed from said legs.

4,566,158

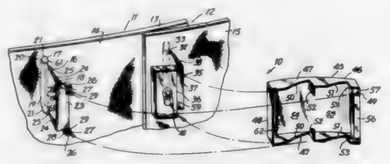
ADJUSTABLE BUCKLE

Wah Lau, 41-31 149th Pl., Flushing, N.Y. 11355

Continuation-in-part of Ser. No. 557,059, Dec. 1, 1983. This application Oct. 16, 1984, Ser. No. 661,450

Int. Cl.⁴ A41F *1/00;* **A44B** *11/10*

U.S. Cl. 24—580 **9 Claims**



1. An adjustable buckle comprising: a first member comprising means to attach said first member to a first material flap, and having engagement means oppositely disposed from said attachment means and means for effecting engagement with said engagement means at a plurality of positions; said means for effecting engagement comprising a base formed with teeth and a rim formed with teeth to cooperatively engage said base teeth in said plurality of positions; a second member comprising means to attach said second member to a second material flap and having engagement means oppositely disposed from said second attachment means; and a cover formed so as to cover said first member; whereby said first member engages said second member in one of said plurality of positions of said first member so that the buckle secures the flaps in an overlying manner.

4,566,159

SAFETY CLASP FOR A NECKLACE OR BRACELET CHAIN

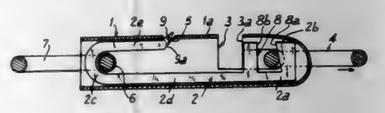
Jacques Leroux, 3 et 5 rue de la République, 60100 Creil, France

Filed Jul. 19, 1983, Ser. No. 515,120

Claims priority, application France, Aug. 3, 1982, 82 13512

Int. Cl.⁴ A44B *13/00*

U.S. Cl. 24—599 **18 Claims**



1. A safety clasp for a necklace or bracelet chain, said clasp comprising two pieces sliding one in the other, one of said pieces comprising an outer sleeve to which a first end link of the chain is hooked, in its front part, and which is provided in its rear part with a slot for the introduction of a second end link of the chain, said slot being L-shaped with a transverse slot arm opening in the wall of the sleeve and a longitudinal arm extending in the direction of the rear part of the sleeve opposite to that where the first end link is hooked, the longitudinal arm portion of said slot terminating spaced apart from the rear end of said sleeve, said sleeve having a hole in its outer surface located between its front part and said slot, the other one of said pieces comprising a slide element housed inside said sleeve and adapted to move longitudinally with respect thereto, said slide element, in its rear part, having a notch for receiving the second end link of the chain, said notch opening laterally in the slide element and adapted to be brought opposite the transverse arm opening of the slot in the sleeve and in alignment therewith upon longitudinal movement of said slide element to allow the introduction of the second end link, said inner slide element presenting, in its front part opposite to that part where the notch is provided, an elastically deformable arm terminating in a tooth adapted to engage the hole in said sleeve for locking said pieces together, whereby when said slide element is moved longitudinally to a position of closure, said tooth is engaged in said hole for locking and said notch is positioned out of alignment with the transverse arm of the slot and in registry with the longitudinal arm of the slot in said sleeve, the second end link being retained by the rear edge of the notch in said sliding element within the longitudinal arm of the slot in said sleeve, and maintained spaced apart from the end of said longitudinal arm when said sliding element is in its position of closure.

4,566,160

END RELEASE INVERSE CLEVIS BUCKLE

James A. Gavagan, Centerline, and William E. Brennan, Troy, both of Mich., assignors to Irvin Industries, Inc., Rochester Hills, Mich.

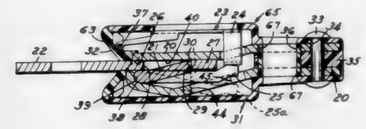
Continuation-in-part of Ser. No. 253,200, Apr. 13, 1981, Pat. No. 4,413,385. This application Sep. 9, 1983, Ser. No. 531,272

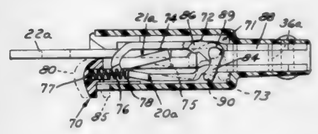
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.⁴ A44B *11/25*

U.S. Cl. 24—637 **16 Claims**

1. A safety belt buckle characterized by a sheet metal loop formed clevis having apertured ends for attachment to a first belt end, a fully surrounded slot in the clevis loop end extremity, a connector having an apertured end for attachment to a second belt end and a tongue insertable through said slot into close proximity with one side of said clevis, said tongue having an apertured end adapted for latch engagement, a latch having a reaction end extending beyond both extremities of said slot pivotally seated against slotted and unslotted portions of said





loop end extremity within said clevis adajcent said slot having a latch projection engageable with said tongue apertured end and said one side of said clevis, resilient means biasing said latch toward said engaging position deflectable in response to manual insertion of said tongue, and manually operable means including an end release push button to deflect said latch and resilient means to a tongue releasing position.

4,566,161

BUCKLES FOR VEHICLE SEAT BELT SYSTEM

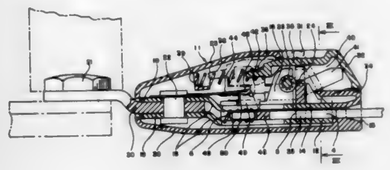
Roger A. Ashworth, Thursby; Brian E. Aiston, Wigton, and John D. Temple, Carlisle, all of England, assignors to ASE (UK) Limited, Carlisle, England

Continuation of Ser. No. 67,521, Aug. 17, 1979. This application Dec. 4, 1981, Ser. No. 327,592

Claims priority, application United Kingdom, Aug. 17, 1978, 33743/78

Int. Cl.⁴ A44B *11/26*

U.S. Cl. 24—642 **39 Claims**



1. A buckle for use in a vehicle seat belt system comprising tongue means and cooperating socket means;

said tongue means having a tongue and a latch formation on the tongue, and

said socket means having means providing a socket for receiving said tongue therein,

latch means having a latching position extending into said socket for engagement with said latch formation to latch said tongue within said socket, said latch means being movable from said latching position to a release position out of engagement with said latch formation to permit said tongue to enter and leave said socket,

first spring means urging said latch means to said latching position thereof,

ejector means slidably received in said socket and engageable by said tongue on entry into said socket,

second spring means acting on said ejector means to oppose movement thereof with said tongue on entry thereof into said socket and to thereby provide a force for ejection of said tongue from said socket,

antilatching means movable to a condition retaining said latch means in said release position thereof on movement of the latch means to said release position thereof, and

means on said ejector means engageable with said antilatching means on movement of said ejector means with said tongue on entry thereof into said socket to move said antilatching means to a second condition permitting movement of said latch means by said first spring means to said latching position to latch said tongue within said socket.

4,566,162

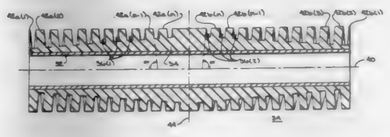
STRETCHER/EXPANDER ROLLER

George Brands, Wilmette, Ill., assignor to American Roller Company, Union Grove, Wis.

Continuation of Ser. No. 436,842, Oct. 26, 1982, abandoned. This application Oct. 15, 1984, Ser. No. 660,261

Int. Cl.⁴ D06C *3/06*

U.S. Cl. 26—105 **2 Claims**



1. A stretcher/expander roller for cross-stretching and separating the constituent strips of a slit web, comprising:

(a) a rigid inner core suitable to be rotationally mounted downstream from where the web is slit; and

(b) an elastomeric covering around said rigid core, said elastomeric covering defining a generally cylindrical exterior surface having a constant outer diameter and which is suitable for rolling contact with the slit web;

(c) wherein at least one pair of helical grooves are formed in the exterior surface of the elastomeric covering, each of said helical grooves subtending a slant angle θ with a line which is perpendicular to the roller axis and each of said grooves spiraling outwardly away from the center of the roller;

(d) wherein the helical grooves are inclined outwardly at an acute depth angle α away from the center of the roller, said depth angle α being constant from the center of the roller to the ends and said helical grooves defining a corresponding number of continuous helical lands of elastomeric material which are inclined outwardly away from the center of the roller at said acute depth angle α; and

(e) wherein the depth of each helical groove increases progressively from the center to the adjacent edge of the roller so that the lands are increasingly flexible from the center to the ends of the roller.

4,566,163

AUTOMATIC SUPERVISORY SYSTEM FOR A WARPER

Syozsburo Makino, Kawasaki; Keiji Yoshikawa, Yokohama, and Tukayo Nakazho, Nishikasugai, all of Japan, assignors to Nippon Selen Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1984, Ser. No. 592,588

Claims priority, application Japan, Jun. 21, 1983, 58-111412

Int. Cl.⁴ D02H *13/08*

U.S. Cl. 28—187 **1 Claim**

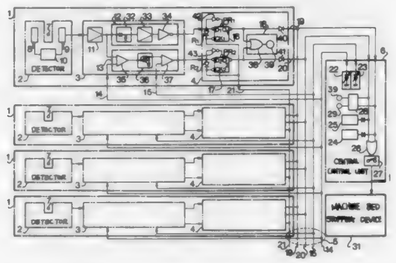
1. An automatic supervisory system for a warper comprising:

at least one detection unit; and

a central control unit;

said detection unit comprising a detector provided for each yarn to be wound on a warp beam to convert a variation in diameter of the yarn into an electrical signal, an amplifier including a yarn run signal discrimination circuit and a double ends signal discrimination circuit which serve to separate an output signal of said detector into a yarn run signal and a double ends signal, and a priority indication device including an end break priority circuit and a double ends priority circuit respectively receiving output signals from said yarn run signal discrimination circuit and double ends signal discrimination circuit, a logical operation circuit for indication and an indicator;

said central control unit comprising a switching mechanism for actuating a warping bed stopping device by means of an output signal from said detection unit, an end break indicator for indicating the occurrence of end break of a yarn and a double ends indicator for indicating the occurrence of double ends of a yarn, an end break counter for counting the number of end breaks which occurred and a double ends counter for counting the number of locations of doubles ends which occurred, and a control power source for variably setting the waveform shaping of said double ends signal discrimination circuit in said amplifier of said detection unit;



wherein upon the occurrence of end break or double ends of said yarn, said end break priority circuit or double ends priority circuit carries out the priority indication depending upon an output signal from said end break priority circuit or double ends priority circuit in said priority indication device to cause said end break counter or double ends counter to carry out the counting operation, and said indicator in said priority indication device selectively carries out the priority indication of said detection unit which has detected the end break or double ends and concurrently operates said warping machine bed stopping device through said switching mechanism.

4,566,164

APPARATUS FOR CONNECTING ELECTRICAL CONNECTORS TO FLAT MULTI-CONDUCTOR CABLE

Christopher K. Brown, Camp Hill; Lex D. Kensinger, Annville; Gregory S. Klopp, Hummelstown; Alden O. Long, Jr., Carlisle; Carl L. Moyer, Mt. Penn; William R. Over, Harrisburg, and Herman D. Walter, Camp Hill, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 8, 1985, Ser. No. 699,963

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—33 M **19 Claims**

1. Apparatus for connecting to the conductors of a flat multi-conductor cable, electrical connectors having electrical terminals provided with cable conductor receiving portions, the apparatus comprising:

a base;

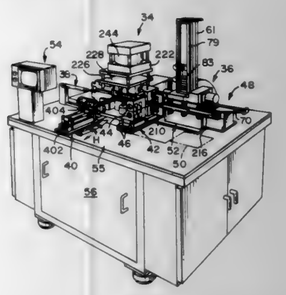
connector orienting means on the base, for placing electrical connectors at loading locations in different selected orientations;

a press on the base, for inserting the cable conductors into said conductor receiving portions;

means for feeding the cable intermittently through the press;

a shuttle for receiving connectors from said loading locations and being movable on the base along a path extending between the orienting means and the press;

means for loading connectors at said loading locations into the shuttle in said selected orientations;



means for inserting connectors in the shuttle into the press in said selected orientations;

means for moving the shuttle between connector loading and connector insertion positions along said path; and

means for actuating the press to force the cable conductors into the conductor receiving portions of the terminals of connectors inserted into the press by the inserting means.

4,566,165

METHOD OF MANUFACTURING A CYLINDER FOR A SUGAR MILL

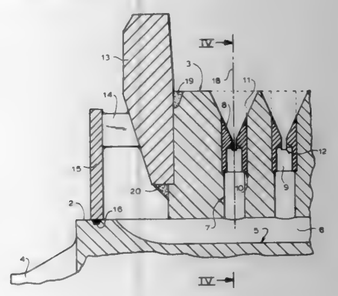
Jean-Pierre Georget, Douchy-les-Mines, France, assignor to Fives-Cail Babcock, Paris, France

Filed Oct. 27, 1983, Ser. No. 545,969

Claims priority, application France, Nov. 3, 1982, 82 18387

Int. Cl.⁴ B02C *4/30*

U.S. Cl. 29—121.6 **6 Claims**



1. A method of manufacturing a cylinder having an exterior surface defining circular grooves of a cross section having the shape of a triangle, each triangle having an apex at a bottom of the groove in a respective transverse plane extending substantially perpendicularly to the axis of the cylinder, and the bottom of each groove being in communication with longitudinal channels extending substantially parallel to the axis in the cylinder, which comprises the sequential steps of

(a) first boring cylindrical radial channels in the cylinder in a plurality of the transverse plane until the radial channels are in communication with the longitudinal channels,

(b) fitting a plug having a blind hole at an inner end thereof in each one of the radial channels, the plugs having outer ends flush with the exterior cylinder surface and the blind holes being in communication with the longitudinal channels,

(c) cutting the circular grooves in the exterior surface of the cylinder and the plugs, the bottoms of the grooves extending into the plugs fitted into the radial channels, and

(d) making a circular slot in the bottom of each groove of a sufficient length to connect the bottom of each groove at the apex to the blind hole in each plug whereby the hole is opened and the bottom of each groove is in communication with a respective one of the horizontal channels.

4,566,166

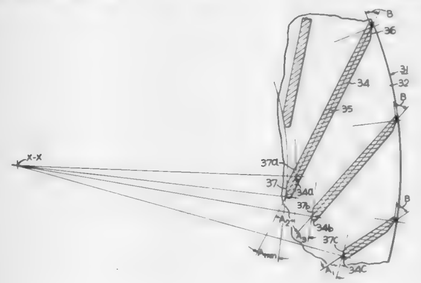
METHOD FOR MANUFACTURING A STAY RING BEARING STATIONARY GUIDE VANES FOR A NONGATED TURBINE

Richard K. Donelson, Aurora, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 3, 1984, Ser. No. 657,256

Int. Cl.⁴ B23P *15/02*

U.S. Cl. 29—156.8 R **7 Claims**



1. A method of manufacturing a stay ring adapted for a hydraulic turbine installation comprising:

forming a plurality of stay vanes;

securing said stay vanes to a ring member with said stay vanes circumferentially arranged on said ring member and extending axially therefrom with each of said vanes presenting a trailing edge on a radially inner portion of said vanes;

determining a desired discharge angle for said stay vanes based upon a predetermined desired angular momentum for fluid entering a runner of a given turbine installation;

trimming said trailing edge of said stay vanes an amount sufficient for said vanes to present said desired discharge angle.

4,566,167

METHOD FOR ASSEMBLY OF ANTI-STATIC SWITCH LOCK

Stanley C. Wolnik, Broadview; Herbert Kincaid, Libertyville; Elbert M. Spencer, Wildwood, and Ronald L. Brown, Waukegan, all of Ill., assignors to The Eastern Company, Naugatuck, Conn.

Division of Ser. No. 411,259, Aug. 25, 1982, Pat. No. 4,427,852. This application Oct. 3, 1983, Ser. No. 538,338

Int. Cl.⁴ B23P *11/00;* **B21D** *39/00*

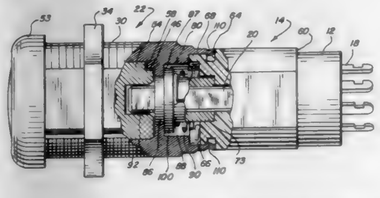
U.S. Cl. 29—437 **6 Claims**

1. A method for assembling a switch lock of the type having a terminal assembly attached to one end of a hub, a lock assembly including a key-operated plug rotatable to operate the terminal assembly for switching and a barrel to receive the plug, said barrel having an end adapted to receive a portion of the other end of said hub, said method comprising:

inserting said portion of the other end of the hub into the barrel end to a limit defined by abutment of a radial stop

surface on the hub with a distal end of said barrel end and abutment of a distal end of the hub portion with a radial stop surface on the barrel end;

staking said barrel end directly to said hub portion to interconnect said hub and barrel, said hub end defining a radially opening recess intermediate said hub end stop surface and hub end distal end, said step of staking comprising radially inwardly deforming said barrel end into said



recess at a location spaced from said barrel end distal end to cause the deformed portion of the barrel end distal end to bear against the hub end at the edge of the recess most remote from said hub end stop surface and with the barrel end distal end abutting said hub end stop surface remaining substantially undeformed; and

positioning said key-operated plug in said barrel interconnected with the hub for operation of said terminal assembly.

4,566,168

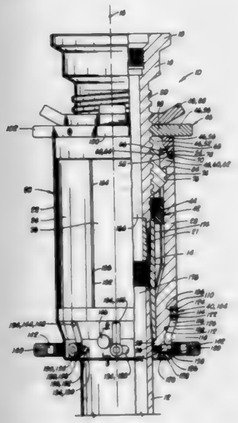
QUICK CONNECT ADAPTER

James L. Stromberg, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 9, 1985, Ser. No. 690,016

Int. Cl.⁴ B21D *39/00*; F16L *39/00*

U.S. Cl. 29—517 **20 Claims**



1. A coupling apparatus for connection to a cylindrical member having a radially outward extending shoulder, said coupling apparatus comprising:

a body member;

a collet means including a plurality of collet fingers disposed around said body member, each of said collet fingers including a radially inward extending flange adapted to engage a longitudinally inward facing surface of said shoulder of said cylindrical member;

an actuating means, operably associated with said collet means, for moving said flanges of said collet fingers between a radially expanded open position and a radially contracted closed position;

annular seal means for sealing between said body member and said cylindrical member; and

adjustable collet positioning means, operably associated with said body member and said collet means, for adjusting a longitudinal position of said flanges of said collet fingers relative to said body member.

4,566,169

SET OF PARTS FOR BUILDING SMALL MACHINE TOOLS

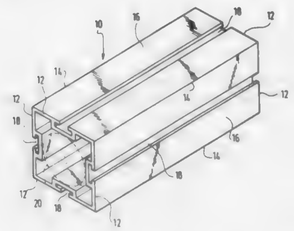
Gottfried Vesely, Groedig, Austria, assignor to Maier & Co., Hallein, Austria

Filed Dec. 9, 1983, Ser. No. 559,904

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1983, 3300553

Int. Cl.⁴ B23B *47/00*

U.S. Cl. 29—560 **2 Claims**



1. A building set for small tool machines with at least a drive motor, a spindle stock and a support element for holding these parts, characterized in that the drive motor, the spindle stock and the support element are formed as independent parts, that the parts of the building set to be joined with one another each have a bearing surface in which at least one undercut clamping groove is formed, and in that the clamping grooves of two of the building set parts which are to be joined to one another are provided with an insertable connecting element which can be rigidly clamped in place in the clamping grooves by means of at least one tightening element, said connecting element consisting of two individual sections connected to one another the cross section of which sections corresponds to the cross section of a clamping groove, said connecting element further having at least two portions which are pivotal relative to one another by means of said tightening element about an axis perpendicular to the longitudinal direction of said sections, and said connecting element being formed of a unitary piece of plastic with said joint between said two portions being formed from a material bridge having a small thickness with respect to that of said portions.

4,566,170

METHOD OF PRODUCING A LIGHT EMITING DIODE ARRAY

Donald T. Dolan, Ridgefield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

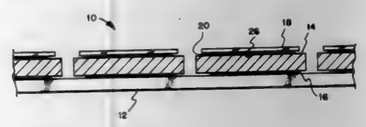
Filed May 10, 1983, Ser. No. 493,189

Int. Cl.⁴ H01L *21/98, 33/00*

U.S. Cl. 29—569 L **5 Claims**

1. A method of producing a light emitting diode (LED) array, the steps comprise:

placing an adhesive upon a plurality of metallic pallets, placing a monolith composed of a semiconductor material and having a plurality of LED sites thereon upon each of the metallic pallets so that adhesive is therebetween, curing the adhesive and securing the metallic pallets with LED monoliths thereon end-to-end upon a substrate.



4,566,171

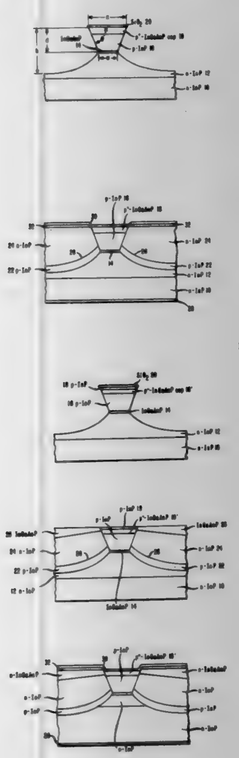
ELIMINATION OF MASK UNDERCUTTING IN THE FABRICATION OF INP/INGAASP BH DEVICES

Ronald J. Nelson, Berkeley Heights, and Randall B. Wilson, Maplewood, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 20, 1983, Ser. No. 505,993

Int. Cl.⁴ H01L *21/20, 21/302*

U.S. Cl. 29—569 L **19 Claims**



1. A method of fabricating a buried heterostructure semiconductor device comprising the steps of:

(a) epitaxially growing a plurality of essentially lattice-matched semiconductor layers which include an InP/InGaAsP double heterostructure and at least one contact-facilitating layer on said heterostructure,

(b) forming a stripe masking layer on said contact-facilitating layer,

(c) etching said plurality of layers to form an elongated mesa under said masking layer, and

(d) regrowing at least one epitaxial layer along each side of said mesa, characterized in that

step (a) includes epitaxially growing and contact-facilitating layer of InGaAsP with a bandgap in the range of approximately 1.05–1.24 eV, and

step (b) includes plasma depositing SiO_2 to form said masking layer.

4,566,172

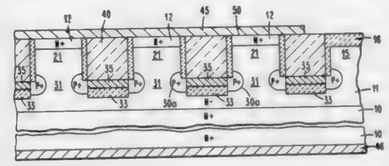
METHOD OF FABRICATING A STATIC INDUCTION TYPE RECESSED JUNCTION FIELD EFFECT TRANSISTOR

Izak Bencuya, Needham, and Adrian I. Cogan, Waltham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 24, 1984, Ser. No. 583,512

Int. Cl.⁴ H01L *21/425*

U.S. Cl. 29—571 **22 Claims**



1. The method of fabricating a junction field effect transistor comprising

providing a body of semiconductor material including a first layer of semiconductor material of one conductivity type of relatively low resistivity, a second layer of semiconductor material of said one conductivity type of relatively high resistivity contiguous said first layer, and a third layer of semiconductor material of said one conductivity type of relatively low resistivity contiguous said second layer, said first layer having a surface at a surface of the body;

forming a layer of a first protective material adherent to said surface;

forming a plurality of parallel grooves through said layer of first protective material and into said body of semiconductor material providing interposed ridges of semiconductor material, said grooves extending through said first layer of semiconductor material into said second layer of semiconductor material, each of said grooves having side walls formed by the adjacent ridges of semiconductor material and an end wall;

treating the body of semiconductor material to convert semiconductor material except at the surfaces of the ridges of semiconductor material protected by said first protective material to a second protective material thereby forming a layer of said second protective material at the side walls and end walls of said grooves;

removing the layer of said second protective material from the end walls of said grooves to expose said second layer of semiconductor material;

introducing conductivity type imparting material of the opposite conductivity type into said second layer of semiconductor material at the end walls of said grooves to convert zones of said second layer of semiconductor material to said opposite conductivity type, each of said zones having portions extending laterally toward the laterally extending portions associated with adjacent grooves to produce channel regions of the one conductivity type of relatively high resistivity between portions associated with adjacent grooves, the width of said channel regions

being less than the width of the semiconductor material of said ridges of semiconductor material;

removing semiconductor material of said zones of opposite conductivity at the end walls of said grooves to form extensions of said grooves, each of said extensions having side walls in said laterally extending portions of said zone and having an end wall;

converting regions of said zones of semiconductor material exposed at the end walls of said extensions of said grooves to said second protective material, said regions extending through said zones to underlying semiconductor material of said second layer of the one conductivity type to electrically isolate the laterally extending portions of each zone from each other;

applying conductive material to the end walls and to the side walls of the extensions of the grooves to form first electrical connections in ohmic contact with the laterally extending portions of the zones of the opposite conductivity type;

exposing semiconductor material of the one conductivity type of said first layer in said ridges of semiconductor material; and

applying conductive material to form a second electrical connection in ohmic contact with the semiconductor material of the one conductivity type of said first layer in said ridges of semiconductor material.

4,566,173

GATE INSULATION LAYER AND METHOD OF PRODUCING SUCH A STRUCTURE

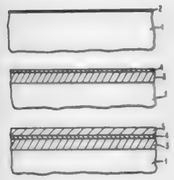
Werner Gösler, Herrenberg, Fed. Rep. of Germany; Anneliese Strube, Essex Jct., Vt., and Manfred Zurheide, Herrenberg, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1982, Ser. No. 384,855

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122382

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 29—571 **11 Claims**



1. A method of forming a gate insulation of an FET formed on a semiconductor substrate, comprising:

treating the substrate with a basic solution having up to approximately 400 ppb of aluminum, so as to deposit up to approximately 250 pg/cm² of aluminum on the substrate; and

oxidizing the substrate and said aluminum thereon in order to simultaneously form a first dielectric layer comprised of silicon dioxide on the substrate and a second dielectric layer comprised of aluminum oxide and silicon dioxide on said first dielectric layer, said second dielectric layer having a thickness of from about 1.0 to 1.5 nm,

whereby said second dielectric layer has an aluminum content sufficient to produce an upward threshold voltage shift of up to approximately 470 millivolts.

4,566,174

SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING THE SAME

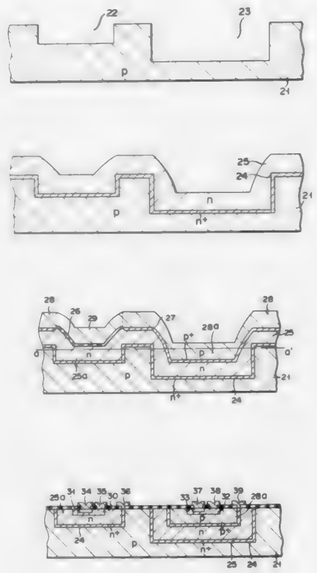
Seiji Yasuda, Yokohama; Yutaka Koshino, and Toshio Yonezawa, both of Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 26, 1983, Ser. No. 545,545

Claims priority, application Japan, Oct. 27, 1982, 57-188608

Int. Cl.⁴ H01L *21/76*

U.S. Cl. 29—576 W **6 Claims**



1. A method for manufacturing a bipolar semiconductor device comprising vertical npn and pnp transistors, comprising the steps of:

(a) forming at least a pair of grooves having different depths in a surface of a semiconductor substrate of a first conductivity type;

(b) diffusing a high concentration of impurity of a second conductivity type in a surface including said at least a pair of grooves;

(c) forming an epitaxial layer of the second conductivity type on said surface including said at least a pair of grooves such that said epitaxial layer has a thickness greater than a depth of a shallow groove of said at least a pair of grooves and such that an upper surface of said epitaxial layer in a deep groove of said at least a pair of grooves is substantially lower than said surface of said semiconductor substrate;

(d) diffusing a high concentration of impurity of the first conductivity type in said upper surface of said epitaxial layer of the second conductivity type after a mask layer is formed on a portion of said epitaxial layer which corresponds to said shallow groove;

(e) forming an epitaxial layer of the first conductivity type on said surface including said at least a pair of grooves;

(f) etching an entire surface to be level, to expose said surface of said semiconductor substrate, thereby to leave epitaxial layers of the first and second conductivity types in said at least a pair of grooves, respectively, said epitaxial layers of the first and second conductivity types having the same depth and width;

(g) forming a base region and an emitter in said epitaxial layers in said at least a pair of grooves, respectively, thereby to form the npn and pnp transistors; and

(h) forming base and emitter electrodes, each connected respectively to the base and emitter regions, and collector electrodes connected respectively to the impurity diffusion layers formed in the step (c) and the step (d).

4,566,175

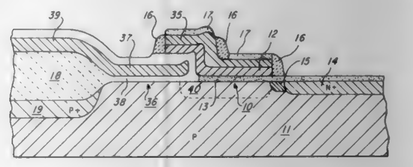
METHOD OF MAKING INSULATED GATE FIELD EFFECT TRANSISTOR WITH A LIGHTLY DOPED DRAIN USING OXIDE SIDEWALL SPACER AND DOUBLE IMPLANTATIONS

Michael C. Smayling, Missouri City, and Michael P. Duane, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 30, 1982, Ser. No. 412,753

Int. Cl.⁴ H01L *21/265, 21/308*

U.S. Cl. 29—576 B **8 Claims**



1. A method of making an insulated gate field effect transistor with a lightly-doped drain comprising the steps of:

(a) applying a conductive gate layer to a face of a semiconductor body, the gate layer being insulated from the face by a gate insulator, and patterning said gate layer to leave a conductive gate on said face,

(b) creating an oxide layer on said face extending over the top of the gate and over a sidewall of the gate,

(c) selectively removing the oxide layer from the face and from the top of the gate but leaving the oxide at said sidewall to produce a sidewall spacer, and thereafter

(d) introducing a first impurity of one conductivity-type into said face using the gate and sidewall spacer as masking to create a heavily-doped drain region in the face laterally spaced from the gate by a gap, the semiconductor body being of the opposite type, and

(e) implanting a second impurity of said one conductivity-type into said face and laterally diffusing the second impurity ahead of the first impurity to create a lightly-doped drain region beneath said sidewall spacer to bridge said gap,

(f) said first impurity having a much lower diffusion coefficient than the second impurity, the second impurity producing a graded junction, the first and second impurities not penetrating through said gate during said steps of introducing;

(g) wherein said steps of applying said gate layer, patterning said gate layer, creating said oxide layer, and selectively removing said oxide layer to leave said sidewall spacer, are all performed prior to said steps of introducing first and second impurities.

4,566,176

METHOD OF MANUFACTURING TRANSISTORS

Petrus M. A. W. Moors, and Teunis H. Uittenbogaard, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 23, 1984, Ser. No. 612,987

Int. Cl.⁴ H01L *21/265*

U.S. Cl. 29—578 **5 Claims**

1. A method of manufacturing a high frequency bipolar transistor comprising the steps of

providing a first insulating layer on a surface of a collector region of a first conductivity type,

forming at least one aperture in said first insulating layer,

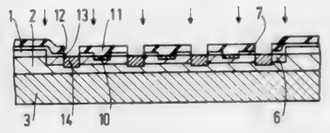
introducing dopant of a second conductivity type into said surface through said aperture in said first insulating layer to form a base region of said second conductivity type,

providing a second insulating layer at least on said base region,

forming a plurality of windows in said second insulating layer,

introducing dopant of said first conductivity type into said plurality of windows to form a plurality of emitter regions embedded into said base region,

providing a masking layer onto said second insulating layer and said plurality of emitter regions,



forming a second plurality of windows in said masking layer above said base region and exclusive of said emitter windows,

etching said second insulating layer at said second plurality of windows in said masking layer,

introducing dopant of said second conductivity type through said second plurality of windows to form a plurality of base contact zones in said base region, said base contact zones being more highly doped than said base region,

removing said masking layer, and

forming a plurality of emitter contacts contacting said plurality of emitter regions and a plurality of base contacts contacting said plurality of base contact zones through said first plurality of windows and said second plurality of windows respectively.

4,566,177

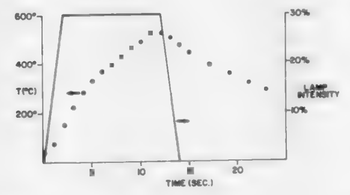
FORMATION OF ELECTROMIGRATION RESISTANT ALUMINUM ALLOY CONDUCTORS

Everhardus P. G. T. van de Ven, Muko, Japan, and Janet M. Towner, Palo Alto, Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed May 11, 1984, Ser. No. 609,268

Int. Cl.⁴ H01L *21/324, 21/477*

U.S. Cl. 29—590 **15 Claims**



1. A method of providing a semiconductor device with aluminum containing conductors of improved electromigration resistance, said method comprising;

(a) depositing, on a substrate of said device, a thin conductive layer of an alloy of aluminum containing at least 90% by weight of aluminum;

(b) heating said thus coated substrate to a peak temperature of 520° C.–580° C. from ambient temperature and then cooling said heated substrate to ambient temperatures all

within a period of 5 seconds to about 30 seconds by exposing said coated substrate to a source of heat capable of raising the temperature of said coated substrate to said peak temperature from ambient temperature and then allowing said thus heated substrate to return to ambient temperature all within the same period and

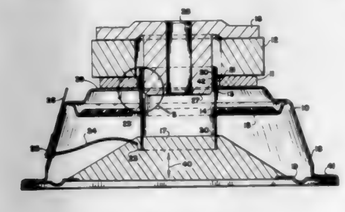
(c) forming a conductive pattern on said substrate by removing portions of said conductive layer from said substrate.

4,566,178

PROCESS FOR ASSEMBLING A CONE SPEAKER

William Hecht, Orange Park, and Pablo Reyes, Jacksonville, both of Fla., assignors to Phase Technology Corporation, Jacksonville, Fla.

Filed Dec. 28, 1984, Ser. No. 687,444
Int. Cl.⁴ H04R *31/00*
U.S. Cl. 29—594 **16 Claims**



1. A process for assembling a cone speaker which comprises the steps of:

(1) attaching a truncated conical basket frame, having a open forward face and a closed rearward face with a passageway therethrough, to a flat ring-shaped forward plate having its central round opening smaller than and concentric to the passageway, and attaching to the forward plate a flat ring-shaped magnet with its central opening larger than and generally concentric to the central opening of the forward plate;

(2) inserting into the central opening of the forward plate a voice coil of electric wire wrapped spirally around the rearward portion of a tubular bobbin and spaced apart concentrically within the central opening of the forward plate by a removable voice coil shim means for accurately spacing the bobbin and voice coil;

(3) attaching the inside of a ring-shaped, flexible spider to the outside of the voice coil bobbin and the outside of the spider to the frame;

(4) attaching a truncated speaker cone at its small face to the forward end of the voice coil bobbin and its large face connected to the inner edge of a flexible skiver which is attached at its outer edge to the open forward face of the frame;

(5) removing the voice coil shim means through the central opening of the forward magnet plate and the central opening of the magnet;

(6) inserting into the central opening of the magnet and into the inside of the tubular coil bobbin the pole piece of a rearward magnet plate comprising a rear plate and a cylindrical pole piece projecting outwardly from one side of the rear plate, the pole piece being spaced apart concentrically from the inside of the bobbin by about 0.015 inch radially; and

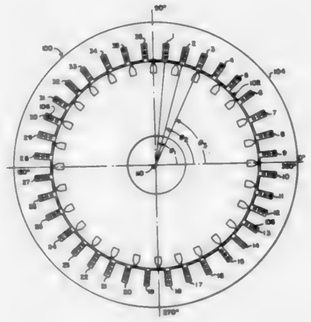
(7) attaching the rear plate to the upper face of the magnet.

4,566,179

CORE ELEMENT FOR ELECTRODYNAMIC ROTARY MACHINE

Carleton E. Sawyer, Littleton, and Hugh C. Masterman, Westford, both of Mass., assignors to Display Components, Inc., Westford, Mass.

Division of Ser. No. 495,962, May 19, 1983, Pat. No. 4,508,989.
This application Oct. 18, 1984, Ser. No. 662,391
Int. Cl.⁴ H02K *15/00*
U.S. Cl. 29—596 **13 Claims**



1. A method of making a slotted core element for use in a ϕ-phase electrodynamic rotary machine of the type including a pair of magnetic core elements coaxially mounted and rotatable relative to one another about a common axis, said slotted core element including a plurality of slots "s" and a plurality of coil windings respectively wound in said slots, said slots and coil windings being circumferentially spaced in a predetermined pattern around said slotted core element about said common axis so that as said elements rotate relative to one another at a substantially constant speed in response to a balanced sinusoidal excitation signal, the particular energy distribution around said slotted core element will exhibit a sinusoidal pattern around said slotted core element, said pattern providing a peak value for each of said phases ϕ, said peak values of said phases being equiangularly distributed around said one core element, said method comprising the steps of:

forming said core element with said slots so that (1) said slots in each 90° quadrant of said one core element, defined by mutually perpendicular radial axes extending normal to said common axis, are nonuniformly angularly spaced within said quadrant and symmetrically arranged with corresponding slots in each adjacent 90° quadrant about the radial axis disposed therebetween so as to reduce the even harmonics in said energy field to substantially zero; (2) each of said 90° quadrants is divided into $90°/\phi$ segments; and (3) the slots in each of said segments are symmetrically arranged with slots in each of the adjacent segments about a radially-directed line between adjacent segments so as to reduce at least the third and fifth harmonics of said balanced sinusoidal field to substantially zero; and

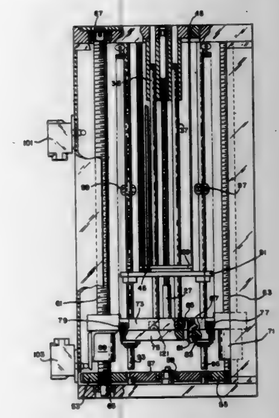
winding said coil windings in said slots so that the number of turns of each of the coil windings associated with each phase of said 0-phases are such that the $(6c+3)$ harmonics of said energy distribution for that phase are reduced to substantially zero, wherein c=any interger including zero.

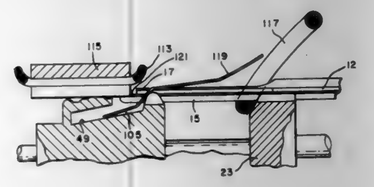
4,566,180

METHOD AND APPARATUS FOR PLACING COILS AND INTERMEDIATE INSULATORS IN CORES

Keith A. Witwer, Fort Wayne, and Robert G. Walker, Ossian, both of Ind., assignors to Industra Products, Inc., Fort Wayne, Ind.

Filed Sep. 30, 1982, Ser. No. 429,470
Int. Cl.⁴ H02K *15/00*; B23P *19/00*
U.S. Cl. 29—596 **23 Claims**





1. In a coil placing machine for placing prewound coils in selected slots of a slotted dynamoelectric machine stator core the improved method of positioning insulating material within the core slots radially outwardly of at least some of the coils comprising the steps of:

initially moving both the insulating material and said at least some of the coils toward the core;

interrupting coil movement while continuing to move the insulating material into the core; and

resuming coil movement after insulating material placement has been accomplished to complete placing of the coils.

4,566,181

ROTATIONAL VIBRATORY VISCOMETER TRANSDUCER AND CIRCUIT

Frank J. Matusik, Piscataway, and Donald W. Nelson, Voorhees, both of N.J., assignors to National Metal and Refining Company, Ltd., Metuchen, N.J.

Division of Ser. No. 483,142, Apr. 8, 1983, Pat. No. 4,488,427.
This application Aug. 31, 1984, Ser. No. 646,696
Int. Cl.⁴ H01F *41/00*
U.S. Cl. 29—602 R **3 Claims**

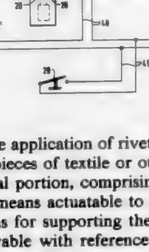
1. A method for manufacturing a transducer assembly for a torsional mode rotational vibratory viscometer, comprising the steps of:

providing a metal support plate having opposed major surfaces with a hole extending through the plate between said surfaces;

providing a hollow cylindrical metal sheath having torsional elasticity;

welding the outer surface of an upper end part of said sheath to said plate at the portions of both of said major surfaces adjacent said hole, so that said sheath is substantially coaxial with said hole;

securing an immersible tip member to a lower end part of said sheath below said plate;



providing a rigid cylindrical metal rod disposed within, spaced from and substantially coaxial with said sheath;

welding a lower end part of said rod to the lower end part of said sheath, so that said rod extends through said hole and has an upper end above said plate; and

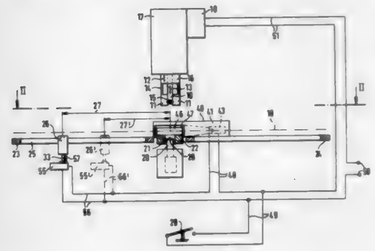
securing a metal crossbar comprising magnetically permeable material to the upper end of said rod.

4,566,182

ACTUATING ASSEMBLY FOR THE PRIME MOVERS OF RIVETING PRESSES AND THE LIKE

Gerd Altwicker, Eschweiler, and Wilhelm Eiringhaus, Stolberg, both of Fed. Rep. of Germany, assignors to William Prym-Werke KG, Stolberg, Fed. Rep. of Germany

Filed Apr. 11, 1984, Ser. No. 598,989
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1983, 3313652
Int. Cl.⁴ B23P *21/00*; B23Q *15/00*; D05B *3/12*
U.S. Cl. 29—715 **18 Claims**



1. A machine for the application of rivets and other articles of hardware to workpieces of textile or other material of the type having a marginal portion, comprising article supplying means; prime mover means actuatable to operate said article applying means; means for supporting the workpiece so that the workpiece is movable with reference to said supporting means and selected portions thereof can be located in the range of said article applying means; at least one first actuating means, said actuating means being stationary when the machine is in use and being activatable by an applied article on the workpiece and being disposed at a preselected distance from said article applying means such as corresponds to desired mutual spacing of two articles on the workpiece; at least one second actuating means activatable by the marginal portion of the workpiece and disposed at a predetermined distance from

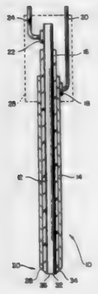
said article applying means; and means for operatively connecting said first and second actuating means with said prime mover means so as to actuate said prime mover means in response to simultaneous activation of both said actuating means while the workpiece is held at a standstill with reference to said actuating means.

4,566,183

METHOD FOR MAKING BI-POLAR ELECTROCAUTERY NEEDLE

William G. Bloom, Menlo Park, and Gary I. Geschwind, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 272,853, Jun. 12, 1981, Pat. No. 4,483,338. This application Nov. 15, 1984, Ser. No. 672,444
Int. Cl.⁴ H01R *43/00*
U.S. Cl. 29—825 **4 Claims**



1. The method for making a bi-polar electrocautery needle, the steps comprising:
providing an inner electrode;
stretching insulating-locking means over the inner electrode so as to axially expand and radially reduce the means;
placing an outer electrode over the means such that it is concentric with the inner electrode; and
recovering the insulating-locking means toward its unstretched condition, so that the means expands radially against both the inner and outer electrodes, locking the electrodes in fixed position relative to one another, spacing apart the electrodes, and electrically insulating the electrodes.

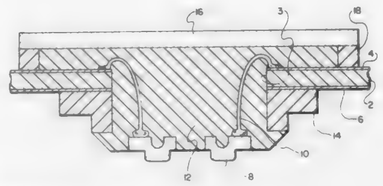
4,566,184

PROCESS FOR MAKING A PROBE FOR HIGH SPEED INTEGRATED CIRCUITS

J. Aiden Higgins, Westlake Village, and Emory R. Walton, Jr., Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 295,879, Aug. 24, 1981, abandoned. This application Nov. 19, 1984, Ser. No. 672,173
Int. Cl.⁴ H05K *3/34*
U.S. Cl. 29—840 **2 Claims**

1. A process of making a probe for integrated circuits, comprising:
selectively etching a substrate to form a mold having a depression at a predetermined probe tip location;
depositing metal in said depression to form a probe tip;
placing a spacer on said substrate around said probe tip;
placing a board of insulating material on top of said spacer, said board having a conductive deposit on its surface and having a hole adjacent said probe tip which extends through said board;
bonding one end of a wire to said probe tip and the other end to said conductive deposit;



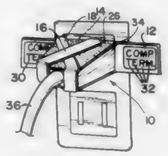
encapsulating said wires; and
removing said substrate.

4,566,185

DEVICE AND METHOD FOR FIRMING-UP A PLUG-SOCKET CONNECTION

Horace Bryan, 12, Brighton La., Brooklyn, N.Y. 11235

Filed Jun. 4, 1984, Ser. No. 616,715
Int. Cl.⁴ H01R *13/639*
U.S. Cl. 29—845 **7 Claims**



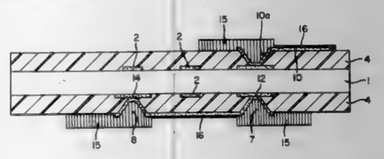
1. A flexible plug-to-socket connection firming-up device partly foldable from an initially substantially flat and inoperative state to at least a partly folded operative state,
comprising in combination
attachment means including a carrier and adhesive means affixed to said carrier, said adhesive means being adapted to adhere at least to a socket holder, said carrier and said adhesive means including an adhesive strip extending along a longitudinal direction, and further including a backing material normally adhering to an external side of said adhesive strip, but being capable of readily being peeled off therefrom prior to the attachment of said carrier to said socket holder, and
connecting means having two major sides, and being connected to said attachment means, and including wrap-around means adapted to at least partially surround the plug, while substantially clearing a wire connected to said plug,
said wrap-around means including first and second flaps extending normally outwardly from said longitudinal strip on respective opposite elongated sides thereof, and being releasably securable to one another at least near respective ends thereof,
each flap including adhesion-enhancing means for facilitating adhesion of one flap to the other flap, while being substantially free from any adhesion-facilitating means enabling adhesion of one of said flaps to said attachment means, said adhesion enhancing means being applied to said first flap on a side thereof coinciding with one of said major sides, and being applied to said second flap on a side thereof coinciding with the other of said major sides,
at least one of said flaps being formed with a V-shaped or U-shaped recess so as to subdivide said one of said flaps into two elongated flap portions normally extending transversely to said longitudinal direction,
whereby, upon passing the plug from a side of the firming-up device opposite to said backing material through said elongated adhesive strip, thereafter peeling off said backing material from said elongated adhesive strip, thereafter plugging the plug into the socket, thereafter attaching the elongated adhesive strip at least to a holder of the socket, thereafter crossing said flap portions over one another, so that one flap portion lies over the other flap portion, and connecting the adhesion enhancing means of the flap portions and of the remaining flap to one another, so as to wrap said flap portions at least partially around the plug, while substantially clearing said wire attached to the plug, the plug is restrained from being unintentionally unplugged from said socket.

4,566,186

MULTILAYER INTERCONNECT CIRCUITRY USING PHOTOIMAGEABLE DIELECTRIC

Charles E. Bauer, Cornelius, and William A. Bold, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 29, 1984, Ser. No. 626,560
Int. Cl.⁴ H01K *3/10*
U.S. Cl. 29—852 **15 Claims**



1. A method of fabricating printed circuit boards having multiple predetermined conductor patterns, multiple dielectric layers between said conductor patterns and multiple predetermined points of interconnection between said conductor patterns and through said dielectric layers, the method comprising the steps of:
(a) forming a conductor pattern on a non-conducting substrate by applying a conductive polymer thick film to said substrate in a predetermined pattern and curing said film;
(b) applying a layer of photoimageable photopolymerizable dielectric material over said conductor pattern;
(c) forming a dielectric layer defining vias by selectively exposing in a predetermined pattern said layer of photoimageable photopolymerizable dielectric material;
(d) forming vias through said layer of dielectric material, by removing monomeric portions of dielectric material corresponding to said vias, said vias communicating with predetermined points of interconnection between conductor patterns;
(e) forming another conductor pattern on said dielectric layer and simultaneously forming conductive interconnections between conductor patterns and through said dielectric layer between conductor patterns by applying another conductive polymer thick film to said dielectric layer in a predetermined pattern whereby said vias are also coated with said conductive polymer thick film, and curing said film; and
(f) repeating steps (b) through (e) to form multiple electrically interconnected layers of circuitry separated by multiple layers of dielectric material.

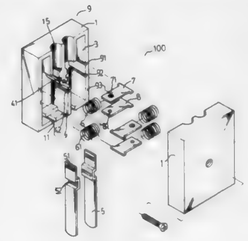
4,566,187

METHOD FOR FIXING ELECTRIC CORD AND AN ELECTRICAL CONNECTOR

Kun S. Chen, No. 3, Alley 3, Lane 418, Hsin-Hsing Rd., Tainan City, Taiwan

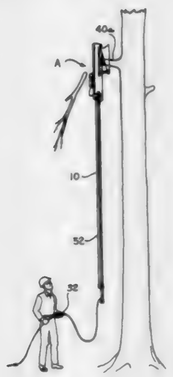
Filed May 9, 1984, Ser. No. 608,650
Int. Cl.⁴ H01R *43/00, 13/62, 33/05*
U.S. Cl. 29—857 **3 Claims**

1. A method of fixing an electric cord to an electrical connector, comprising the steps of:
a. positioning a prong having a first slot and a second slot at an upper part thereof within a casing of said connector;
b. inserting a spring-loaded insulator-fixing plate into the first slot of said prong, said spring-loaded insulator-fixing plate having a toothed hole which allows a wire of said cord to pass through, said toothed hole being partially shielded by said prong when said prong is in a first position;
c. inserting a spring-loaded bare wire-fixing plate into the second slot of said prong, said spring-loaded bare wire-fixing plate having an aperture which only allows a bare conductive portion of said wire to pass through, said hole being partially shielded prong when said prong is in said first position;
d. moving said prong against spring bias from said first position to a second position and inserting said wire having said bare portion into the toothed hole of the insulator-fixing plate and the aperture of the bare wire-fixing plate;
whereby when said prong is moved to said second position with respect to said spring-loaded insulator-fixing plate and said spring-loaded bare wire-fixing plate, said toothed hole of said insulator-fixing plate and said hole of said bare wire-fixing plate will no longer be shielded by said prong so that said wire may pass through said toothed hole while the bare portion of the wire may pass through said hole, and when said prong is released to return to said first position a rubber covering of said wire will be clamped by the toothed hole and said prong while the bare portion of the wire will be clamped by said hole and said prong.



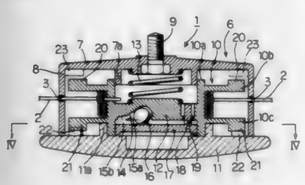
2. An electrical connector, comprising:
a casing the interior of which is divided into two chambers by a partition, said casing being provided on its top with two holes each communicating with one of said chambers and provided on its bottom with two passageways each communicating with one of said chambers;
two prongs respectively mounted into said two chambers in such a way that a lower part of each said prong extends out of said casing through one of said passageways, each said prong having an upper slot and a lower slot disposed at an upper part thereof;
two insulator-fixing plates respectively inserted through the upper slots of said prongs and embedded at opposite ends of each plate into said casing, each said insulator-fixing plate being surrounded by a first spring and having a toothed hole which allows a wire to pass through, said first spring forcing a corresponding one of said prongs to shield a part of said toothed hole in a first position of the prong; and
two bare wire-fixing plates respectively inserted through the lower slots of said prongs and embedded at both ends in said casing, each said bare wire-fixing plate being surrounded by a second spring and having a hole which only allows the bare portion of said wire to pass through, said second spring forcing a corresponding one of said prongs to shield a part of said second hole in said first position, each said prong movable against spring bias to a second position to allow insertion of said wire through said holes in the associated insulator-fixing and wire-fixing plates.

4,566,188
POWER SAW PRUNING DEVICE
Tock A. Wilson, Seminole Point Rd., Fairplay, S.C. 29643
Filed Jul. 12, 1984, Ser. No. 630,106
Int. Cl.⁴ B27B *19/09*
U.S. Cl. 30—166 A **22 Claims**



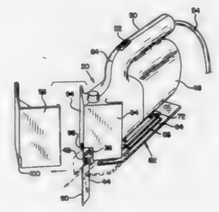
1. A power tree pruning device comprising:
an elongated pole for reaching overhead tree limbs having a first end and a second end;
base means carried by said elongated pole adjacent said first end for slideably carrying a power saw with a blade of said power saw extending to one side of said base;
rack means carried by said base means for carrying said power saw on said base and guiding said power saw in a one-dimensional sliding motion;
angle arm means carried by said base means opening outwards to a mouth for receiving a tree limb and tapering from said open mouth toward said base means;
said angle arm means tapering toward said base means to form a crevice between an edge of said angle arm and a surface of said base means in which said tree limb is gripped as said power saw blade cuts through said limb;
said angle arm means being offset on said base means to one side of said saw blade so that a stump of said tree limb remaining after said tree limb is cut is retained in said crevice whereby said angle arm means retains said pruning device suspended from said stump after the cut tree limb falls to the ground.

4,566,189
FILAMENT-TYPE TRIMMING APPARATUS
Goro Muto, 112-6 Futawa-cho, Funabashi-shi, Chiba, Japan
Filed Oct. 10, 1984, Ser. No. 659,264
Claims priority, application Japan, Oct. 15, 1983, 58-193192
Int. Cl.⁴ B26B *7/00*
U.S. Cl. 30—276 **14 Claims**



1. In a filament-type trimming apparatus comprising a casing having a base portion and a rim portion, a spool having a hub portion and upper and lower flanges, at least one filament wound on said spool and a cover releasably mounted to the lower end of the rim portion of the casing and adapted to support the spool, the improvements comprising:
a first engaging means for engaging the upper flange of the spool with the underside of the base portion of the casing when the spool is pressed upwardly against the action of a spring,
a second engaging means for engaging the lower flange of the spool with the upper surface of the cover when the spool is pressed downwardly by the action of the spring, and
a spool engaging and disengaging mechanism including a plurality of radially outwardly extending inclined ball guides in the form of a slot formed on the underside of a press member of the spool and a corresponding plurality of balls adapted to be moved along said ball guides by reason of centrifugal force generated responsive to the speed of rotation of the casing.

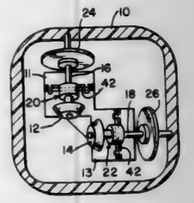
4,566,190
RECIPROCATING BLADE CUTTING DEVICE
Stig A. Isakson, 5751 SW. 54th, Portland, Oreg. 97221
Continuation of Ser. No. 524,929, Aug. 22, 1983, abandoned.
This application Feb. 4, 1985, Ser. No. 697,729
Int. Cl.⁴ B23D *51/10*
U.S. Cl. 30—373 **10 Claims**



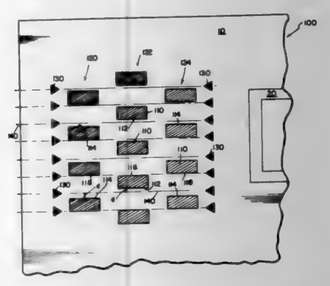
8. An attachment for mounting onto a conventional reciprocating blade saw having a reciprocating shaft, said attachment comprising; a housing body having a cylindrical seat formed therein, a guide cylinder fixedly contained within said seat and a reciprocating shaft slideably contained within said guide cylinder and having one end projected out of the guide cylinder and out of the housing body, a pair of guide surfaces on the housing body defining intersecting planes having an established angle therebetween, the extension of which angle encompasses the attachment and blade saw to which it is attached, and a chuck fastened to the exposed end of the reciprocating shaft, a planar saw blade having a linear cutting edge adapted to be mounted on the chuck to be reciprocated in line with the cutting edge and for cutting in a cutting direction perpendicular to the cutting edge, means for mounting a saw blade to the chuck in the plane defined by one of said guide surfaces with the cutting edge positioned along the line of intersection of the planes, means for mounting the housing body to the reciprocating blade saw and means for fastening the reciprocating shaft of the housing attachment to the reciprocating shaft of the reciprocating blade saw to be reciprocated therewith.

4,566,191
X-Y POSITION INDICATOR FOR A DISPLAY SYSTEM
John B. Moseley, Norfolk, Conn., assignor to The Torrington Company, Torrington, Conn.
Filed Apr. 18, 1984, Ser. No. 601,566
Int. Cl.⁴ G01B *7/02*
U.S. Cl. 33—1 M **5 Claims**

1. A position indicator device for use with a system for electronically representing the positional movement of said position indicator device over a surface comprising: a housing adapted to be moved along said surface; a first position wheel rotatably mounted in said housing; a second position wheel rotatably mounted in said housing; the axes of said first position wheel and said second position wheel being in perpendicular planes; each position wheel being mounted on a separate rotatable shaft adjacent one end of said shaft, said shaft being loosely mounted in a wall of said housing axially spaced from said wheel and spaced upwardly from the bottom of the housing; mechanical-to-electrical tranducers means actuated by rotation of each of said first position wheel and said second position wheel for generating electric signals indicating the amount of rotation of each of said wheels; and bias means mounted in said housing and resiliently urging each of said wheels toward said surface, said housing being constructed to permit a rim portion of each wheel to extend past the bottom of said housing into contact with the surface.

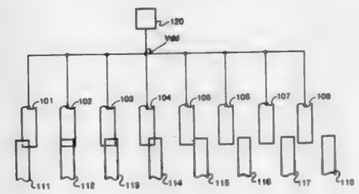


4,566,192
CRITICAL DIMENSION MEASUREMENT STRUCTURE
Kevin T. Hankins, and Anthony L. Rivoli, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.
Filed Dec. 28, 1983, Ser. No. 566,399
Int. Cl.⁴ G01B *5/00*
U.S. Cl. 33—1 B **23 Claims**



1. An apparatus for indicating dimensions of projected figures, comprising pattern means, disposed on a mask means for producing projected figures, for scaling dimensional variation of said projected figures from the dimensions of figures on said mask means, said pattern means including a plurality of spaced scaling figures disposed within said pattern means such that alignment of opposing edges of at least two of said scaling figures after projection from said mask means represents a measure of said dimensional variation, said aligning opposing edges scaling figures being offset from each other along the axis of alignment.

4,566,193
USE OF AN ELECTRONIC VERNIER FOR EVALUATION OF ALIGNMENT IN SEMICONDUCTOR PROCESSING
David E. Hackleman, Monmouth; Richard F. Adams, and Wayne P. Richling, both of Corvallis, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jul. 31, 1984, Ser. No. 636,480
Int. Cl.⁴ G01B *7/00*; **G08C** *21/00*
U.S. Cl. 33—1 D **8 Claims**



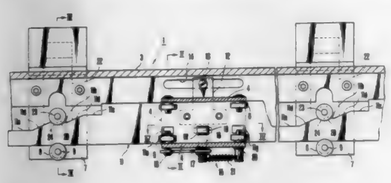
1. A device for evaluating alignment of a first layer on an integrated circuit with a second layer on the integrated circuit, the device comprising:
a detecting means for electrically detecting misalignment between the first layer and the second layer, the detecting means including,
a first plurality of conducting material sections on the first layer, and
a second plurality of conducting material sections on the second layer, wherein each section of a first group of the first plurality of conducting material sections is electrically coupled to a corresponding section of a first group of the second plurality of conducting material sections, and each section of a second group of the first plurality of conducting material sections is electrically insulated from a corresponding section of a second group of the second plurality of conducting material sections; and
an output means, coupled to the detecting means for producing an output which is an encoded representation of a quantity of misalignment, wherein the output means detects which sections are within the first group of the first plurality of conducting material sections and which sections are within the second group of the first plurality of conducting material sections in order to produce the encoded representation of the quantity of misalignment.

4,566,194
PRESS PLATE POSITIONING APPARATUS FOR AUTOMATIC DRAWING MACHINE
Teruo Tsunoda, Nagareyama; Hiromitsu Numauchi, Higashikatsushika; Hironobu Kurata, Hiratsuka; Yoichi Kawaguchi; Satoshi Ishii, both of Yokohama; Masanori Seki, Kamakura; Masahiro Iwasaki, Fujisawa, and Fukumasa Enomoto, Yokohama, all of Japan, assignors to Komori Printing, Tokyo, Japan
Filed Mar. 7, 1985, Ser. No. 709,160
Int. Cl.⁴ G01B *5/25*
U.S. Cl. 33—18.1 **8 Claims**

1. A press plate positioning apparatus for an automatic drawing machine so as to form punch holes at a punch hole forming edge of a press plate placed and fixed on a drawing board and draw registration marks at predetermined positions, comprising:
an elongated cam plate extending in parallel with a positioning edge of the press plate which extends from said drawing board and which is perpendicular to the punch hole forming edge, said elongated cam plate being moved by manual control means in a direction parallel to the positioning edge and being provided with a plurality or cam surfaces which are arranged in a longitudinal direction

thereof and each of which has a plurality of stepwise horizontal surfaces and at least one inclined surface connecting said stepwise horizontal surfaces; and

a plurality of positioning blocks, each of said positioning blocks being adapted not to be moved by block holding means with respect to the positioning edge, being biased



downward by block biasing means, being guided by block guide means together with a corresponding gripper block such that said each positioning block is vertically moved by a behavior of said cam surface upon reciprocal movement of said cam plate so as to bring the positioning edge into contact with one of stepwise vertical surfaces, and being locked by clicking means in position.

4,566,195

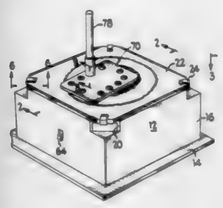
MAGNETIC DRAWING TOY

Ralph J. Kulesza, Chicago; Walter J. Wozniak, Addison; Harry Disko, South Barrington, and Burton C. Meyer, Downers Grove, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 17, 1985, Ser. No. 692,122

Int. Cl.⁴ B43L *13/00*

U.S. Cl. 33—27.11 **9 Claims**



1. A design drawing toy comprising:

a housing;

a substantially flat platen supported atop the housing;

a motor positioned within the housing below the platen;

a rotating magnetizable shaft, the axis of which is substantially transverse to the plane of the platen, projecting up through the platen;

a magnet mounted for rotation with the shaft below the platen; and

a removable templet with at least a portion being magnetic and defining a periphery positionable over the platen with the periphery abutting the shaft.

4,566,196

VARIABLE POINT POSITION DETERMINING ARRANGEMENT

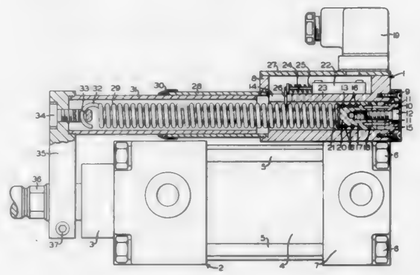
Walter Brausfeld, Hanover; Helmut Göttling, Isernhagen; Rudolf Möller, Gehrden; Peter Müller, Hanover, and Gerhard Scharnowski, Gehrden, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Steuerungstechnik GmbH & Co., Hanover, Fed. Rep. of Germany

Filed Sep. 4, 1984, Ser. No. 647,092

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1983, 3331720

Int. Cl.⁴ G01B *5/00*

U.S. Cl. 33—125 R **14 Claims**



1. A variable point position determining arrangement secured in a stationary manner on one end to a fixed point member, and on a second end to a member movable in relation to the fixed point member, said variable point position determining arrangement comprising:

(a) a housing having a stationary portion secured to the fixed point member and an extendable portion secured to the movable member;

(b) a bracket member secured between said extendable portion of said housing and the movable member;

(c) tracking means having at least a portion formed of an elastic material connected on one end to said bracket member and on a second end to the fixed point member for following movement of the movable member in at least one plane;

(d) adjusting means connected between said tracking means and the fixed point member for adjusting a tension value of said elastic portion of said tracking means;

(e) following means having a rod portion connectable to said elastic portion for following said tracking means a proportionate distance in relation to movement of the movable member, said following means further outputting a distance signal as a function of such proportionate following movements; and

(f) evaluating means for receiving such distance signal and deriving a position value of the movable member in relation to the fixed point object therefrom.

4,566,197

SHOE CONSTRUCTION

Fred B. Sitzes, Cape Girardeau, Mo., assignor to Interco Incorporated, St. Louis, Mo.

Filed Aug. 1, 1983, Ser. No. 519,339

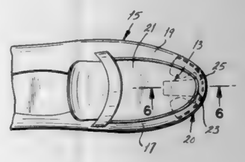
Int. Cl.⁴ A43B *3/14*

U.S. Cl. 36—011 **3 Claims**

1. A shoe of the moccasin type having a crush- and deformation-resistant toe, the shoe including a shoe upper, and a sole part, and characterized by a premolded box toe stiffener for stiffening the toe region of the upper, the stiffener being of heat-formable material and flexible but resiliently stable character, the stiffener comprising an upstanding flange of curved configuration for lying against and providing securement to the corresponding interior surface of the upper within the toe region thereof, a principal tab extending rearwardly from the bottom edge of the flange for securement to the sole part, the flange having a front, outer surface coated with a heat-activated adhesive for adhesive securement to said interior surface, the flange having a rear, inner surface and directed toward the interior of the shoe;

(i) said box toe stiffener including side tabs extending rearwardly from the bottom edge of the flange at opposite sides of the principal tab for securement also to the sole part;

(ii) said box toe stiffener being formed from a flat blank of resilient formable sheet material, the blank having a substantially rectilinear forward edge, a forward portion of



substantial width for defining and forming said flange, a central rearwardly extending portion of reduced width for defining and forming said principal tab;

(iii) said flat blank having ear-like enlarged regions at opposite sides of the forward portion extending rearwardly for part of the rearward length of the rearwardly extending portion for defining and forming the side tabs, the principal tab being centrally located between the side tabs, and

(iv) said side tabs being directed toward the principal tab in converging relation, but separated therefrom by rearwardly opening narrow recesses, the side and principal tabs being coplanar, the box toe stiffener including regions of reduced material thickness at opposite side edges of the flange.

4,566,198

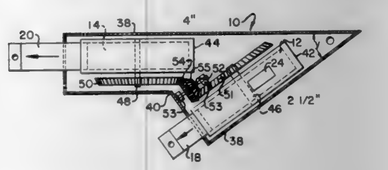
TAPE SQUARE

Ralph A. Vitale, P.O. Box 15736, Sarasota, Fla. 33579

Filed Aug. 9, 1984, Ser. No. 639,677

Int. Cl.⁴ G01B *3/10*

U.S. Cl. 33—138 **19 Claims**



1. A squaring device, comprising:

a support;

two reels of tape, said reels each being rotatable about a separate axis and mounted on said support with the axes of the two reels inclined to each other to enable a tape to unreel from each reel with an acute angle between the two tapes; and

gearing operatively connected between the two tapes to effect simultaneous unreeling thereof, whereby the two tapes unreel in a predetermined ratio to each other,

wherein said gearing has a gear ratio which is a function of said acute angle.

4,566,199

SLIDING CALIPER

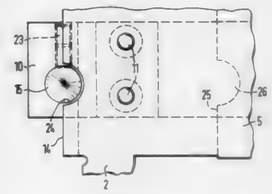
Siegfried Gruhler, Vohringen, and Michael Wolf, Oberndorf, both of Fed. Rep. of Germany, assignors to Societe Anonyme des Ets. Pierre Roch, France

Filed Nov. 16, 1984, Ser. No. 672,370

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341450

Int. Cl.⁴ G01B *3/38*

U.S. Cl. 33—143 M **5 Claims**



1. A sliding caliper for measuring an article, comprising a scale having a front end measuring edge adapted to be positioned on the article to be measured, a slide movable over said scale and having an opening defining a readout display of said scale, and a measuring tip depending from said scale and having an axis of symmetry passing through the measuring edge, a holder carried by said scale having a bore in an axis of symmetry passing through the measuring edge of said measuring tip being engaged in said bore and protruding through a semicircular opening of said scale edge, said tip having a radius which starts at the measuring edge and is at least equal to the radius of the cylindrical part of the measuring tip which is coincident with a semicircular opening on the measuring edge of the slide.

4,566,200

LONG RULERS

Leon Brady, and George Spector, both of 233 Broadway Rm 3615, New York, N.Y. 10007

Filed Nov. 16, 1984, Ser. No. 671,996

Int. Cl.⁴ G01B *3/08*

U.S. Cl. 33—161 **4 Claims**



1. A folding extension ruler which comprises:

(a) a plurality of arms, each said arm having a hinge and a joint at each end so that said arms can be foldably attached together;

(b) means for extending each said arm to twice its length from middle of said arm;

(c) means for locking each said arm in its fully extended position; and

(d) appropriate measuring indicia located on each said arm and said extending means, wherein said means for extending each said arm to twice its length from middle of said arm comprises:

(a) said arm having a longitudinal slot therein said arm split vertically down the middle thus forming two halves; and

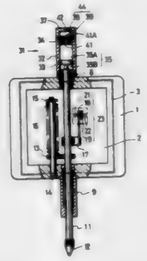
(b) an extension slide to engage said slot in each said half of said arm so that said arm can extend to twice its length from middle of said arm.

4,566,201

DIGITAL INDICATING TYPE DIMENSION MEASURING INSTRUMENT

Munenori Ishii, Tochigi, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1984, Ser. No. 588,859
Claims priority, application Japan, Mar. 16, 1983, 58-44652
Int. Cl.⁴ G01B *3/22, 7/02*
U.S. Cl. 33—172 E **8 Claims**



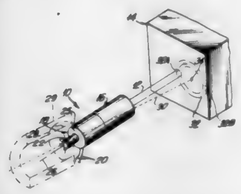
1. In a digital indication type dimension measuring instrument, wherein a spindle having a measuring element is resiliently biased in one direction on the axial line thereof, said spindle is provided with a dashpot type shock absorbing mechanism using air as a pressure fluid, means is provided for converting a displacement value of said spindle into an electric signal and digitally indicating same, the improvement comprising wherein said shock absorbing mechanism is provided with pressure adjusting means for exhausting said pressure fluid to the atmosphere in accordance with the inclination of said spindle to adjust the pressure of said pressure fluid.

4,566,202

LASER APPARATUS FOR EFFECTIVELY PROJECTING THE AXIS OF ROTATION OF A ROTATING TOOL HOLDER

Martin R. Hamar, 118 Old Ridgefield Rd., Wilton, Conn. 06897

Filed Dec. 6, 1983, Ser. No. 558,624
Int. Cl.⁴ G01C *1/00*
U.S. Cl. 33—286 **16 Claims**



1. A laser apparatus for effectively projecting the axis of rotation of a rotating tool or work piece holder onto an object spaced therefrom, said apparatus comprising;

a housing having first and second opposed ends;

a generally elongated mounting stud fixedly connected to and extending from the first end of said housing, said mounting stud being of a size and shape to be held by the rotating tool or work piece holder such that the longitudinal axis of the mounting stud is approximately aligned with the axis of rotation of the rotating tool or work piece holder;

a lasing element mounted in said housing and disposed to project a laser beam out of the second end of said of housing and substantially collinear with the longitudinal axis of the mounting stud; and

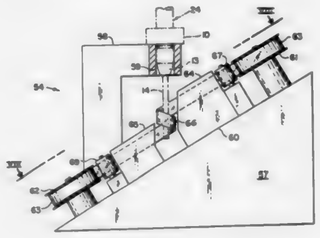
a target disposed on said object, said target including photocell means responsive to the laser beam to produce electrical output signals capable of identifying locations of the points at which the target is impinged by the laser beam projected by the lasing element whereby when the mounting stud is held by the rotating tool or work piece holder, the laser beam projected by the lasing element will trace an annulus on the target disposed on the object, with the center of the annulus defining a point on a projection of the axis of rotation of the rotating tool or work piece holder.

4,566,203

APPARATUS AND METHOD USEFUL FOR REMOVING LIQUID FROM THE OUTER SURFACE OF CYLINDRICAL PIPETTE TUBE OR THE LIKE

Leighton C. Johnson, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 306,206, Sep. 28, 1981, Pat. No. 4,488,814.
This application Aug. 6, 1984, Ser. No. 637,965
Int. Cl.⁴ F26B *5/16*
U.S. Cl. 34—9 **18 Claims**



1. Apparatus useful for removing liquid from the outer surface of a cylindrical tube or the like comprising means for supporting at least one extent of dry bibulous material with first portions thereof in standby positions at a work station wherein said portions are sufficiently spaced apart to permit ready interposition of a cylindrical tube in an operative position therebetween spaced from each of said first portions; actuating means for moving said first portions from said standby positions into contact with outer surface portions of a cylindrical tube in said operative position and for thereafter retracting said first portions from contact with such tube to said standby positions; and means for substituting for the retracted first portions of bibulous material replacement second portions of dry bibulous material in said standby positions.

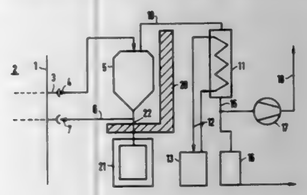
4,566,204

TREATING WEAK-TO MEDIUM-ACTIVE ION EXCHANGER RESINS IN A DRYING VESSEL

Karl Friesner, Bamberg; Dietmar Bege, Erlangen; Dietmar Erbse, Rodenbach, and Siegfried Meininger, Altenstadt, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Sep. 24, 1984, Ser. No. 653,933
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335394
Int. Cl.⁴ F26B *3/20, 5/04*
U.S. Cl. 34—15 **7 Claims**

1. Method for treating weak-to medium-radioactive ion exchanger resins in a drying container by means of heat and in a vacuum which comprises, passing wet radioactive ion exchanger resin into a drying container enclosing an insert made of metal with good heat conduction, having a cylindrical jacket, a screen bottom, and radial ribs extending inwardly from the jacket into the bulk of the resin leaving a core of at most 100 mm thickneas, and dividing the cylindrical volume of the insert which receives the wet resins to be dried into sectors each of small volume relative to the volume of the drying chamber to provide a large metal heating surface of the insert in contact with the resin in the drying chamber and to subdivide the resin in the drying chamber into small volumes of sector shape with each small sector shaped volume of resin in direct heat transfer contact on three sides with the metal heating surface of the insert, introducing heat by heat conduction



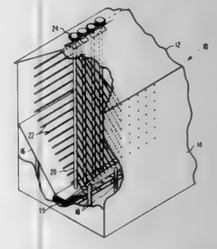
via the metallic heat transfer surfaces into the resin while maintaining the drying chamber under a pressure of 300 mbar or less to effect vaporization of water in the wet resin unitl the resin is dried to a residual moisture of at most 5% by weight, and discharging water vapor from the drying container through a discharge line into a condenser maintained at a pressure of 300 mbar or less to effect condensation of the water vapor.

4,566,205

GRAIN DRYING AND STORAGE STRUCTURE

Lester Schlagel, P.O. Box 8157, Loveland, Colo. 80539

Filed Jan. 30, 1984, Ser. No. 574,866
Int. Cl.⁴ E04H *7/24;* **F26B** *19/00*
U.S. Cl. 34—232 **27 Claims**



1. A grain storage structure which is adapted to dry grain stored therein, said storage structure comprising:

(a) a floor portion;

(b) a roof portion;

(c) upright wall portions disposed between said floor and roof portions; wherein said wall portions have a plurality of openings therein;

(d) at least one vertical tubular stack extending between said floor and said roof portions and further having an open end which extends through said roof portions;

(e) a plurality of elongated perforated tubes disposed between said stack and said wall portions; said tubes having interior ends and exterior ends, wherein said tubes extend upwardly from said exterior ends to said interior ends at an inclined angle of at least about 60°, wherein the interior ends of said tubes communicate with said stack and the exterior ends communicate with said openings in said wall portions; wherein said tubes are perforated except on the underside thereof in a manner such that said tubes are adapted to direct condensed moisture through said openings in said wall portions; and wherein the spacing between adjacent tubes is not greater than about 18 inches; and wherein said storage structure is adapted to permit air to pass upwardly through said perforated tubes into said stack and then through said stack and out of said structure.

4,566,206

SHOE HEEL SPRING SUPPORT

Milton N. Weber, 20655 Audette, Dearborn, Mich. 48124

Filed Apr. 16, 1984, Ser. No. 600,886
Int. Cl.⁴ A43B *3/10*
U.S. Cl. 36—7.8 **8 Claims**





1. A springy heel shoe comprising:

a shoe formed for receiving a wearer's foot and having a bottom which is generally formed as a forward sole portion and a rearward heel portion;

an undamped, compression spring means provided at the heel portion for resiliently compressing under the pressure of the rear, heel portion of the wearer's foot directed towards the ground support, and for resiliently expanding upon release of such pressure for returning a substantial portion of the energy of such pressure;

said spring means being formed of an integral V-shape, made of a stiff, springy material, providing an upper leaf-like leg and a lower, leaf-like leg integrally joined together at a forwardly directed acute angle apex with the free ends of the legs located at, and being beneath, the rear of the shoe;

and a leaf-like intermediate leg located within the V-shape, between and integrally joined with one, and extending towards the other, of the upper and lower legs, and having a free end portion which is normally spaced from, but under sufficient pressure moves towards and bottoms out against a portion of the leg with which it is not joined;

wherein the free end portions of the upper and lower legs resiliently compress together under wearer foot pressure at a predetermined, generally uniform spring rate, until the intermediate leg bottoms out and thereafter, under further pressure, the spring means continues compressing at a predetermined increased spring rate which is considerably more resistant to compression.

4,566,207

SPORTS SHOE

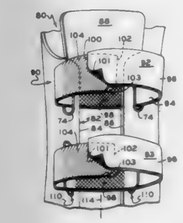
Bernard J. Struntz, 1002 Woodbridge St., St. Paul, Minn. 55117

Filed Aug. 4, 1983, Ser. No. 520,415
Int. Cl.⁴ A43B *11/00;* **A43C** *5/00, 9/00*
U.S. Cl. 36—50 **2 Claims**

1. A shoe having an opening to facilitate entry of the foot, lace receiving means on opposite sides of the opening, said lace receiving means comprising at least one pair of eyelets, each eyelet of each such pair being located opposite the other on opposite sides of the opening for the foot, at least one single length of strap material, each length pass-

ing through one pair of eyelets and folded so as to be closed in a loop upon itself when in use and being removable from the shoe and replaceable in the nature of a shoelace,

said strap having end portions with opposite surfaces of said end portions being placed in overlapping mating relationship and defining mating surfaces on each end of the strap composed of cloth areas of different compositions on opposite surfaces comprising hooks on one mating cloth

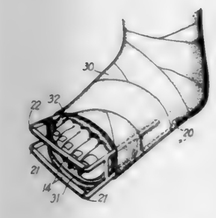


surface and loops on the other mating cloth surface adapted to stick together when placed in contact with each other,

the opposite ends of said strap being thereby secured to each other to hold the shoe tightly on the foot whereby the opening in the shoe is held together solely by the bond between the ends of the strap and

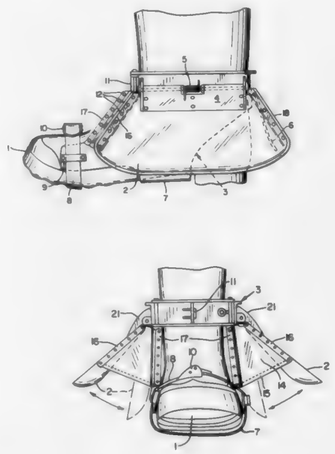
each said strap being otherwise unconnected to the shoe whereby it can be withdrawn from the eyelets when the ends thereof are freed from one another.

4,566,208
TOE PROTECTOR
Richard L. Shaffner, 1640 Damon Ct., Atlanta, Ga. 30338
Filed May 24, 1984, Ser. No. 613,273
Int. Cl.[4] A43B *7/00*
U.S. Cl. 36—110 **11 Claims**



1. A toe protector comprising, in combination, two elongated guard rails adapted for positioning adjacent opposite sides of a human foot, at least one elongated front rail adapted for positioning in front of the toes of the human foot, and means for releasibly coupling opposite ends of said front rail with end portions of said two guard rails so as to form a generally U-shaped toe protector having guard rails that are mountable to the sides of a foot covering and a front rail that is releasibly mountable to the two guard rails while the guard rails remain mounted to the foot covering.

4,566,209
BOOT WITH EXPANDING WEBS
James R. Johnson, 4361 Ivory Way, NE., Salem, Oreg. 97305
Filed Jul. 5, 1984, Ser. No. 627,914
Int. Cl.[4] A43B *5/00*
U.S. Cl. 36—116 **4 Claims**

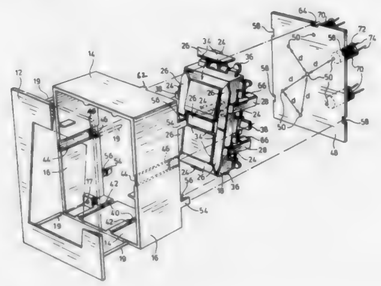


1. In a boot or boot add-on the improvement comprising:

a. a front expanding web attached to a foot support by means of a front web-foot support mounting plate and attached to a wing by means of a front web-wing mounting plate where said foot support is pivotably attached to said wing; and

b. a rear expanding web attached to said foot support by means of a rear web-foot support mounting plate and attached to said wing by rear web-wing mounting plate.

4,566,210
DISPLAY DEVICE
Donald Winrow, Weston, and Kenneth G. Copeland, Oakville, both of Canada, assignors to Nei Canada Limited, Toronto, Canada
Filed Jun. 13, 1983, Ser. No. 503,515
Int. Cl.[4] G09F *9/00*
U.S. Cl. 40—449 **3 Claims**



1. A display device comprising:

a housing comprising a front wall facing a viewing direction,

a side wall assembly extending rearwardly therefrom, an opening in the front wall of said housing,

a plurality of pivotal elements pivotally mounted in said housing,

each element comprising:

a lever arm extending generally forwardly and rearwardly from said pivot point,

a relatively thin member mounted adjacent the forward end of the lever with its thin dimension approximately radially oriented relative to the pivotal axis, and attached adjacent one edge thereof to the lever,

means mounted on said pivotal element holding a magnet on the opposite side of said pivot point from said thin member,

said pivotal elements being mounted in said housing to mvoe between two limiting positions, one limiting position corresponding to the display of said thin member in said aperture and there being, when said pivotally mounted element is in said other limiting position, means associated with said housing for eclipsing said thin element, in the viewing direction,

said thin member being coloured to contrast with the background of the opening when viewed in said viewing direction,

said magnet being magnetized to define a magnetic axis roughly perpendicular to the radius from said pivot axis and in a plane having a component perpendicular to said pivot axis,

a rear wall for said housing releasably attached to said side walls by a resilient deflectable connection located to be spaced rearwardly from but adjacent to the locus of magnet movement,

an aperture in said rear wall corresponding to each magnet,

a reversible permanently magnetizable core mounted in a corresponding aperture in said rear wall,

the forward end of each said core being adjacent to and a predetermined distance from the forward surface of said rear wall,

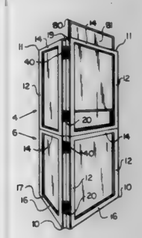
said core extending rearwardly from said rear wall,

an energizing coil mounted on each said core,

means for fixedly locating said rear wall relative to said side wall assembly and said magnets,

each said core when so located in the corresponding aperture being designed when polarized in one sense to exert a force on the corresponding permanent magnet over its entire range of movement between limiting positions, and when polarized in the other sense to exert a force in the opposite sense on the corresponding permanent magnet over its entire range of movement between limiting positions.

4,566,211
MODULAR DISPLAY UNIT
John A. Gustafson, Barrington, and D. Richard Dahlstrom, Chicago, both of Ill., assignors to Dahlstrom Display, Inc., Chicago, Ill.
Filed Oct. 25, 1984, Ser. No. 664,543
Int. Cl.[4] G09F *7/00*
U.S. Cl. 40—605 **8 Claims**



1. For use in a knock down-type modular display apparatus embodying quadrangular display frames adapted to receive display panels wherein the frames are hingedly interconnected side-to-side allowing them to be incrementally folded about a vertical axis, the combination comprising: one or more flexible unitary hinge connectors and two or more adjacent quadrangular frames having side rails, each such side rail having an outer peripheral face formed with one or more openings into which the hinge-connectors may be inserted and detachably interlocked therewith; the connectors each comprising a flexible elongated central portion operatively extending between adjacent frames from one of said openings in the outer peripheral face of a first frame side rail, across a connective region between the frames and into an opposing one of said openings in the outer peripheral face of a second frame side rail; the flexible central portion of each connector having enlarged terminal ends defining connector locking members; each of said openings in each frame side rail comprising a keyhole slot receptive of a said connector locking member therein via a widened opening portion thereof and operable to removably lock said locking member behind a narrowed opening portion thereof; the keyhole slots being of substantially less lengthwise extent than the length of a said frame side rail and located intermediate the ends thereof.

4,566,212
CARTRIDGE CLIP
M. Gaines Chesnut, 17219 W. 57th Pl., Golden, Colo. 80401
Filed Oct. 24, 1983, Ser. No. 544,683
Int. Cl.[4] F41C *25/02*
U.S. Cl. 42—50 **8 Claims**



1. A firearm cartridge clip for housing a number of cartridges, each of the cartridges having a rim, comprising:

a case for storing cartridges, said case including a top portion, first and second side walls, and first and second end walls joining said first and second side walls together to define a cavity, each of said first and second side walls having a width greater than the width of each of said first and second end walls, each of said first and second end walls having an outer surface and an inner surface;

first inner projections extending from each of said first and second side walls to provide surfaces spaced from and facing portions of said inner surface of said first end wall so as to form opposed grooves in said first and second side walls;

an opening formed adjacent to said top portion of said case through which the cartridges may be moved;

said inner surface of said first end wall extending in an arcuate direction substantially throughout the entire extent of said first end wall;

said second end wall including a discontinuity, said discontinuity being in the form of an aperture located substantially between first and second portions of said second end wall, said first portion extending in a first plane from said opening in said case top portion to said discontinuity, said discontinuity being parallel to said first plane and providing communication between said cavity and the exterior of the clip;

said inner surface of said second end wall second portion extending in an arcuate direction;

a portion of said outer surface of said first end wall extending away from said opening in a substantially linear direction;

a portion of said outer surface of said second end wall extending away from said opening in a substantially linear direction;

a follower mounted for sliding movement in said case and adapted to contact a lowermost cartridge in said case; and

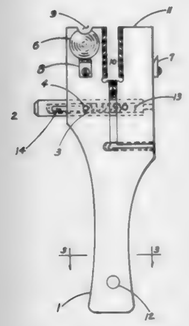
spring means for providing a force resisting movement of said follower into the case and for urging said follower in a direction out of said case as the cartridges are loaded into or moved out of said case.

4,566,213

FISH LINE KNOT TYING JIG

George E. Cossin, 627 E. Oleander Cir., Barefoot Bay, Fla. 32958

Filed May 4, 1984, Ser. No. 607,215
Int. Cl.⁴ A01K *91/04*
U.S. Cl. 43—1 **2 Claims**



1. A line Knot Tying Jig comprising, a body having a fixed jaw at one end and a handle at the other end; a laterally movable jaw parallel to said fixed jaw, and in co-operation therewith for holding fishing gear for use in affixing a resilient line thereto; a hollow plunger rod secured to said movable jaw and slidably guided within said body; spring means in said plunger rod operatively biasing said movable jaw toward the fixed jaw to hold said fishing gear; an anchor post mounted on said fixed jaw and extending perpendicularly thereto, said anchor post having a relief groove in one side, whereby a line can be secured to the fishing gear held between the jaws and a knot tied by wrapping the line in relation to the anchor post and relief groove.

4,566,214

FEEDING WILDFOWL DECOY

Michael L. McCrory, 279 Southwick, Southaven, Miss. 38671, and Roy E. McCrory, 4044 Bishops Bridge Rd., Memphis, Tenn. 38118

Filed Feb. 27, 1984, Ser. No. 583,649
Int. Cl.⁴ A01M *31/06*
U.S. Cl. 43—3 **9 Claims**

1. An electromechanical wildfowl decoy comprising a floatable hollow body being formed in the image of a wildfowl and housing therein means for establishing an eccentric rotatable center of gravity, for the purpose of imparting life-like motion to said decoy, said means for establishing an eccentric rotatable center of gravity comprising an electric motor and shaft located at substantially the horizontal center of said hollow body, weight means and coupling means for coupling said



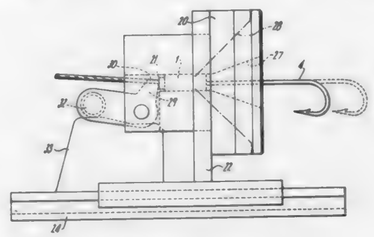
weight means to said shaft for eccentric rotational motion about said horizontal center.

4,566,215

APPARATUS FOR THE RELEASE OF A FISH HOOK FROM A SNOOD HEAD

Kolbjörn Björshol, N-6560, Langöyneset, Norway

PCT No. PCT/No83/00030, § 371 Date Mar. 27, 1984, § 102(e) Date Mar. 27, 1984, PCT Pub. No. WO84/00469, PCT Pub. Date Feb. 16, 1984
PCT Filed Aug. 1, 1983, Ser. No. 598,328
Claims priority, application Norway, Aug. 3, 1982, 822650
Int. Cl.⁴ A01K *83/00, 91/04*
U.S. Cl. 43—4 **3 Claims**



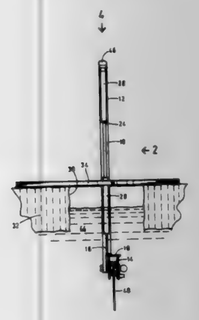
1. An apparatus for the release of a fish hook from an elongated snood head of the type which has a transversely-extending opening and which includes a substantially U-shaped leaf spring that is movable in the opening in the longitudinal direction of the snood head, the substantially U-shaped spring having branches which are adapted to cooperate with an annular face on the leg of a fish hood and, in part, to be spread apart when each cooperates with an oblique surface in the transversely-extending opening for the purpose of releasing the engagement between the hook leg and the leaf spring; the apparatus comprising a movable housing having a longitudinal cavity that has a cross section that corresponds to the cross section of said snood head and a conical entry portion, a plurality of wire springs which extend obliquely towards said cavity, said wire springs having inner ends which extend into said cavity and through the transversely-extending opening in said snood head and capable of abutting said substantially U-shaped leaf spring, a cock which is pivotally mounted to said housing, said cock having a point portion which extends into said cavity and a caster, and a stationary cam along which said caster of said cock moves when said housing is moved in parallel with the longitudinal cavity therein, the pivotal movement of said cock due to its caster moving over said cam causing said snood head to move relative to said substantially U-shaped leaf spring to spread each of its branches along the oblique surface in said opening to release the engagement between said hook leg and said leaf spring.

4,566,216

ICE FISHING RIG

Thomas G. Randall, P.O. Box 3810, East Livermore, Me. 04228

Filed Nov. 8, 1984, Ser. No. 669,639
Int. Cl.⁴ A01K *97/12*
U.S. Cl. 43—17 **6 Claims**



1. An ice fishing rig comprising

an elongated, hollow waterproof tube

a fishing line reel rotatably mounted at one end of such tube

means for holding said tube in fishing position suspended vertically through a hole in the ice with its reel submerged

a rod pivotally held within said tube with its lower end projecting therefrom at a location adjacent said reel

coacting means on said reel and the projecting portion of said rod for pivoting said rod when said reel is rotated

at least the upper end portion of said tube being transparent

a distinctive signal mounted in the upper end of said tube and visible therethrough

an opaque shield slidably held in the upper portion of said tube

said shield in its upper position surrounding and hiding said signal from view and in its lower position exposing said signal to view, and

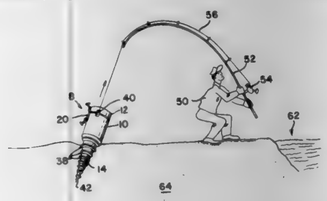
retractable means on said rod operable by pivotal motion of said rod and adapted when extended to retain said shield in its upper position and to release the same when retracted so that said shield can drop by gravity within said tube to reveal said signal.

4,566,217

BAIT CASTING DEVICE AND METHOD

Nelse Geary, Sr., 18 Cannon Dr., Trenton, N.J. 08690

Filed Apr. 6, 1982, Ser. No. 366,044
The portion of the term of this patent subsequent to May 28, 2001, has been disclaimed.
Int. Cl.⁴ A01K *91/02*
U.S. Cl. 43—19 **10 Claims**



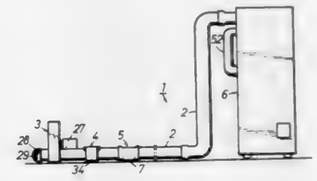
1. A casting device comprising an enclosure having an aperture and a coverable opening, attachment means connected to said enclosure for attaching said enclosure to earth, cover means for covering said opening connected to said enclosure, means for demountably attaching said cover means to said enclosure whereby said cover means is demounted by the application of a remote force conveyed through said aperture during casting and applied to said cover means from within said enclosure.

4,566,218

APPARATUS FOR AUTOMATICALLY TRAPPING AND PROCESSING RATS OR THE LIKE

Toshishige Kurosawa, Tokyo; Satoru Ishisaka, Yokohama; Kazuki Yasutomi, and Takanobu Ishiwatari, both of Kawasaki, all of Japan, assignors to Ikari Corporation, Tokyo, Japan

Filed Dec. 5, 1984, Ser. No. 678,305
Int. Cl.⁴ A01M *23/08*
U.S. Cl. 43—58 **8 Claims**



1. An apparatus for automatically trapping and processing rats or the like, comprising:

(a) a tube defining a passage and a delivery path and having an entry opening for rats or the like;

(b) first means mounted on an end of said tube for supplying a spherical carrier into said tube when a rat or the like is to be delivered through said delivery path;

(c) second means mounted in said entry opening for closing the same when the rat or the like has entered into said passage in the tube;

(d) third means mounted on said tube for detecting the entry of the rat or the like into said tube; and

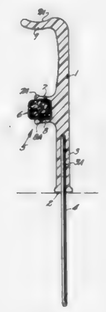
(e) fourth means connected to an opposite end of said tube for generating a vacuum air flow in said tube for delivering the rat or the like and the carrier into a bag-shaped film and closing the bag-shaped film.

4,566,219

GARDEN PEST BARRIER

Milton D. Firth, P.O. Box 464, Dutch Harbor, Ak. 99692

Filed Jun. 25, 1984, Ser. No. 624,207
Int. Cl.⁴ A01M *1/10*
U.S. Cl. 43—107 **6 Claims**

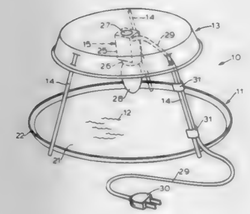


1. A garden pest barrier comprising,

a wall structure of elongate shape adapted for rested edgewise placement along a ground surface adjacent a garden,

means retaining the wall structure in place said wall structure includes a water shield disposed substantially normal to the remaining wall structure and having a lengthwise oriented concave upper surface to serve as a gutter, and
pesticide retention means including upper and lower horizontal flanges disposed lengthwise along said wall structure and integral therewith, said flanges being spaced from one another and thereby adapted to frictionally receive and retain a pesticide body inserted therebetween.

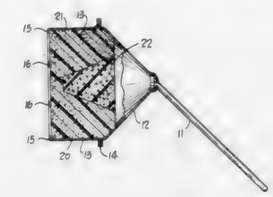
4,566,220
INSECT TRAP
Steve Justice, Parkton, N.C., assignor to Clarence Orville Williams, Rocky Mount, N.C.
Filed Aug. 29, 1984, Ser. No. 645,415
Int. Cl.[4] A01M *1/04*
U.S. Cl. 43—113 **6 Claims**



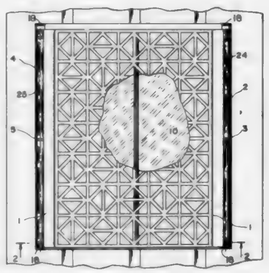
1. A trap for catching wingless non-flying fleas, comprising:
(a) a shallow pan having and supported by a flat bottom wall enabling said pan to be accessible to a source of fleas to be trapped;
(b) a sticky substance disposed in said pan and providing a sticky landing surface above said bottom wall for live fleas to be trapped and killed;
(c) a cover supported in vertically spaced relation over said pan, having a light reflective surface opposing the said bottom wall of said pan and located to provide open unobstructed space between said cover and pan to permit said fleas to jump through said space into said pan to contact said sticky landing surface; and
(d) an electrically energized visible green light source, said green light source being secured to said cover below said light reflective surface thereby generating and exposing to the fleas sought to be trapped both reflected downwardly transmitted green light mixed with downwardly and outwardly transmitted directly radiated green light from said source.

4,566,221
FLOWER SUPPORT FOR WEDDING BOUQUETS AND THE LIKE
Jacqualine Kossin, 9805 Columbia Rd., Olmsted Falls, Ohio 44138
Filed Aug. 3, 1984, Ser. No. 637,493
Int. Cl.[4] A01G *5/00*
U.S. Cl. 47—41.12 **3 Claims**

1. A flower holder in combination with live cut flowers comprising:
a moisture retentive block of hydrophilic water absorbent synthetic resin foam, a supportive core of expanded, synthetic resin foam inside of said block, said core being shaped and located in position so that it is penetrated by floral picks on the ends of flower stems inserted into said block, and said core being non-friable and stronger than said block, whereby live cut flowers are held securely in said holder by penetration of the floral picks into said core, with the cut ends of the stems terminating within said block short of said core and are kept fresh by maintaining the cut ends of the flower stems exposed to moisture in said block.



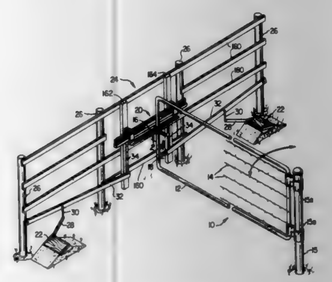
4,566,222
ONE PIECE WINDOW OR DOOR GUARD
Charles C. Hatvany, 526 La Tierra Dr., Angwin, Calif. 94508
Filed Feb. 6, 1984, Ser. No. 577,595
Int. Cl.[4] E06B *3/68*
U.S. Cl. 49—56 **21 Claims**



1. A guard for an opening in a wall or the like comprising: a generally planar guard element;
pivotal mounting means along one edge of said guard element for mounting said guard element upon said wall to cover the exterior of said opening when said guard element is in a substantially coplanar orientation to said wall;
said pivotal mounting means allowing said guard element to be pivotally moved away from said wall and out of a substantially coplanar orientation to said wall;
said pivotal mounting means allowing said guard element to be repetitively removed from attachment to said wall and to be repetitively remounted upon said wall, both without a tool or a key;
said pivotal mounting means being inaccessible and blocked from sight from the exterior of said guard element;
fastening means for securing said guard element to said wall, preventing either the removal or opening of said guard element and access to the interior of said opening;
said fastening means comprising:
a tubular member carried on the opposite edge of said guard element;
at least one slot in said tubular member;
at least one locking bolt carried on said wall to extend through said slot;
a head on said locking bolt;
said bolt being rotatable about its own axis between a locking position wherein said head may not be disengaged from said slot, and an opening position wherein said head will pass radially through said slot; and
opening means for unlocking and allowing the pivotal opening of said guard element to allow egress from the interior of said opening;

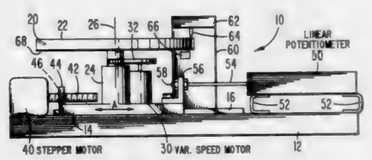
said opening means not being capable of activation from the exterior of said guard element,
said opening means comprising:
operating means accessible from the interior of said guard member and wall for rotating said lock bolt through about 90° between said locking and opening positions;
said unlocking and opening not requiring a tool or key or exceptional strength.

4,566,223
PEDAL ACTUATED GATE
Felix B. Romberg, P.O. Box 218, Holland, Tex. 76534
Filed May 7, 1984, Ser. No. 607,772
Int. Cl.[4] E05F *13/00*
U.S. Cl. 49—264 **5 Claims**



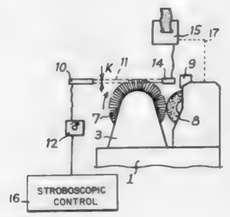
1. A pedal actuated gate comprising:
a gate mounted to pivot laterally between a normal closed position and open positions in two opposite directions from said closed position, said gate having an openable end;
an assembly mounted adjacent the openable end of the gate at its closed position;
said assembly having means for applying thrust in two lateral directions against said openable end of said gate to fling the gate to open positions in said two directions;
first and second pedal mechanisms engageable by a vehicle wheel, located one on each side of said gate and so connected with said means for applying thrust laterally to said gate that vehicle wheel engagement with a pedal mechanism actuates said assembly to fling the gate open in the direction away from said engaged pedal mechanism;
a pedal mounted on an elevated base and spanning an opening defined by said base;
said pedal being hinged at a hinge line near one side of said opening and having an arm extending beyond the distal end of said pedal from said hinge line;
said base having narrow edges along the side of said opening near said hinge line and along the thereto distal side of said opening for the pedal to rest on when depressed by wheel weight;
said pedal comprising extensions for resting on and extending beyond said edges;
said base sloping downward away from under said extensions of said pedal;
a lever pivotally mounted above said arm;
means connecting said arm and said lever; and
means connecting said lever with said means for applying lateral pressure to said gate for flinging it to an open position.

4,566,224
LAPPING APPARATUS
Anton G. Moldovan, E. Windsor Township, Mercer County, and Randall E. McCoy, Willingboro Township, Burlington County, both of N.J., assignors to RCA Corporation, Princeton, N.J.
Filed Oct. 24, 1984, Ser. No. 664,219
Int. Cl.[4] B24B *19/16*
U.S. Cl. 51—56 R **4 Claims**



1. An improved lapping apparatus having:
(a) a disc shaped lap journaled for rotation about an axis, said disc shaped lap having a lapping surface perpendicular to said axis;
(b) means for rotating said disc shaped lap;
(c) holder means for positioning and holding a part to be lapped in contact with said lapping surface;
(d) means for effecting movement of one of said holder means and said disc shaped lap thereby causing said holder means to track a series of substantially continuous positions with respect to said axis so that said part while in contact with said lapping surface traverses a portion thereof in either a direction toward said axis or a direction away therefrom;
the improvement comprising control means for effecting control of said means for rotating said lap so that the relative linear speed of said lapping surface with respect to said part at the point of contact with said part is substantially constant while said part traverses said portion of said lapping surface.

4,566,225
PROCESS AND APPARATUS FOR THE PRECISION MEASUREMENT OF ROTOR BLADE-HEIGHT
Henri Bizot, Paris; Jean Dautremont, Vaux-le-Penil, and Alain Sylvian, Thibault des Vignes, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France
Filed Apr. 18, 1984, Ser. No. 601,726
Claims priority, application France, Apr. 20, 1983, 83 06416
Int. Cl.[4] B24B *49/12*
U.S. Cl. 51—165.72 **10 Claims**



5. Apparatus for determining the height of turbine rotor blades under operating conditions comprising:
(a) rotating means to rotate the turbine rotor at a velocity sufficient to centrifuge all of the blades such that they obtain their maximum radially outward position;
(b) laser beam generating means to direct a laser beam hav-

ing a finite beam height tangentially onto the rotating turbine rotor such that the tips of the blades extend at least partially into the beam;

(c) control means to stroboscopically control the laser beam generating means such that the laser beam illuminates only a single blade at a time;

(d) measuring means to measure the luminous intensity of the laser beam passing beyond the rotor blade; and,

(e) means to determine the height of the blade based upon the measured luminous intensity connected to the measuring means.

4,566,226

SYSTEM FOR CORRECTING THE POSITION OF A SPINDLE FOR A PROCESSING MACHINE

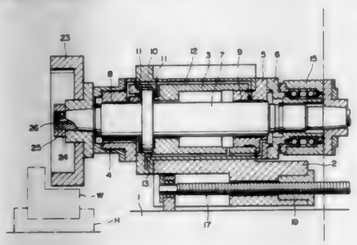
Sosaku Kimura, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1984, Ser. No. 662,675

Claims priority, application Japan, Oct. 20, 1983, 58-195269

Int. Cl.⁴ B24B *49/12*

U.S. Cl. 51—165.72 **5 Claims**



1. a system for correcting the position for a processing machine having a bed and a holder operatively mounted on the bed, comprising:

a spindle rotatably mounted by bearings, and having an axial hole and an end portion;

first means for changing the relative position of said end portion and said holder;

a reflector provided in said hole at the end portion;

an interferometer provided adjacent the other end of said spindle opposite the reflector;

a laser unit for emitting a laser beam to said reflector and receiving the reflected laser beam through said interferometer and for producing a first output signal dependent on the position of said end potion;

comparing means for comparing said first output signal with a reference value and for producing a second output signal dependent on the difference between said first output signal and said reference value; and

second means responsive to said second output signal for operating said first means to correct the relative position.

4,566,227

AUXILIARY DEVICE FOR RE-GRINDING OF SPIRAL DRILLS

Robert Wolff, Im Kiesacker 12, 5446 Engeln, Fed. Rep. of Germany

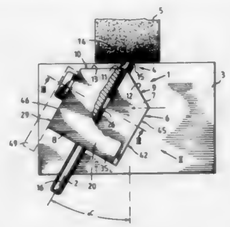
Filed Jun. 27, 1984, Ser. No. 625,236

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1983, 3338910

Int. Cl.⁴ B24B *19/00*

U.S. Cl. 51—219 R **8 Claims**

1. An auxiliary device for re-grinding a spiral drill by a stationary grinding disc mounted with a horizontally rotating axis and by a horizontal grinding table, the spiral drill having a center angle inclined with respect to cutting edges thereof, the auxaillary device comprising a polyhedronal shaped body means, a channel means provided in said body means for accommodating the spiral drill, a pair of clamping jaws, means for clamping the spiral drill in the body means, said pair of clamping jaw means being divided substantially along said channel means, means for enabling the clamping jaws to be displaced towards and away from each other to respectively effect a clamping and a release of the spiral drill, two sight-edges for visually orienting the cutting edges of the spiral drill parallel to a grinding surface said sight edges being formed at an outlet end of said channel means and including an angle equal to the center angle, a bottom surface of the body means forms a supporting surface for supporting the body means on a grinding table at a predetermined front clearance angle with respect to a longitudinal center axis of the drill, whereby said center axis is inclined upwardly with respect to the outlet end



of said channel means, a top surface forming a further supporting surface for supporting the body means in a position turned through 180° on the grinding table and inclined at a same but mirror inverted front clearance angle with respect to said center axis of the drill, one of said sight edges being on the top surface and the other sight edge being on the bottom surface of the body means, wherein for regrinding one of said cutting edges the body means is shifted with its bottom surface on the grinding table toward the grinding surface orthogonally to one of said sight edges, and wherein for regrinding the other cutting edge, the body means is turned upsidedown and shifted with the top surface lying on the grinding table towards the grinding surface orthogonally to the other one of said sight edges.

4,566,228

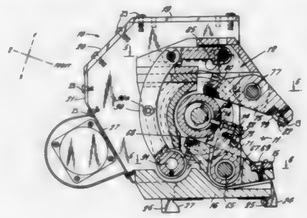
WORKPIECE GUIDES

Stanley G. Wheeler, Peterborough, United Kingdom, assignor to The Newall Engineering Company Limited, Peterborough, United Kingdom

Filed Feb. 22, 1984, Ser. No. 582,551

Int. Cl.⁴ B24B *41/06*

U.S. Cl. 51—238 S **22 Claims**



1. A workpiece guide for supporting a rotary workpiece comprising a base, three jaw members movably mounted on the base to embrace and support a workpiece for rotation about a central axis defined by the positions of the jaw members, drive means drivably connected to the three jaw members for moving the jaw members toward the central axis thereof for closing the jaw members to grip the workpiece and for moving the jaw members away from the central axis to automatically release the jaw members by a predetermined amount to permit the workpiece to rotate therein while still supported coaxially with the axis by the jaw members irrespective of the workpiece diameter, and means for shifting as a unit the drive means and the jaw members drivably connected thereto relative to the base and transversely relative to the central axis, to adjust the central axis to coincide with an axis of a machine tool on which the guide is to be used whereby a workpiece supported by the guide has the axis thereof coincident with the machine tool axis whatever the workpiece diameter.

4,566,229

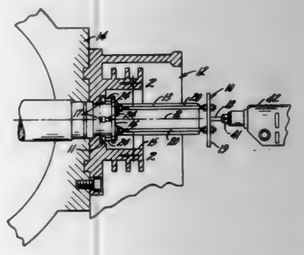
HONING TOOL

James D. Lillie, 4657 Straw La., Roscoe, Ill. 61073, and Rodney D. Skibbe, 20381 Manton Rd., Sterling, Ill. 61081

Filed Jul. 12, 1984, Ser. No. 629,991

Int. Cl.⁴ B24B *15/03*

U.S. Cl. 51—241 VS **6 Claims**



1. A tool for honing an annular work surface surrounding an axially projecting member, said tool having, in combination, a flat annulus adapted to encircle said member and having a forward side opposing said surface, a plurality of honing stone holders mounted on the forward side of said annulus and angularly spaced around the latter, a plurality of honing stones, one for each of said holders and each mounted in the associated holder and facing axially away from said annulus, a plate parallel to said annulus and spaced behind the other side of the latter, a plurality of elongated rods extending between and fixed to said plate and said annulus and rigidly connecting the plate to the annulus, said rods being angularly spaced around the longitudinal axis of said annulus thereby to permit said axially projecting member to project through said annulus and toward said plate when said honing stones engage said work surface, and a drive shaft rigid with and extending rearwardly from said plate, said shaft being axially alined with the axis of said annulus and adapted to be connected to a power actuator to turn said plate and said annulus bodily therewith and revolve said stones about said axis and around said work surface.

4,566,230

IMPACT BLASTING SYSTEM FOR ETCHING METAL SURFACES

James H. Carpenter, Jr., Hagerstown, Md., assignor to Kennecott Corporation, Cleveland, Ohio

Continuation of Ser. No. 354,916, Mar. 4, 1982, abandoned. This application Jun. 18, 1984, Ser. No. 621,483

Int. Cl.⁴ B24C *3/14*

U.S. Cl. 51—420 **21 Claims**

1. Apparatus for etching the surface of a metal workpiece for lithographic purposes, comprising:

a treating chamber;

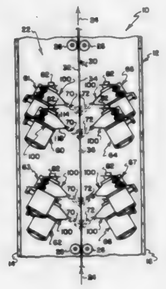
positioning means for positioning a workpiece within the treating chamber;

a centrifugal throwing wheel for receiving and projecting fine-grained, lightweight impact blasting media along a path of discharge onto the surface of a workpiece positioned within the treating chamber, the path of discharge being elongate in cross-section and extending along a first plane; and

shroud means connected to the centrifugal throwing wheel and extending about the discharge path for ducting the impact blasting media from the centrifugal throwing wheel toward the workpiece, the shroud means including:

first and second side walls extending in overlying but non-parallel relationship along opposite sides of the discharge path;

first and second end walls interconnecting the first and second side walls and cooperating therewith to define a closed-wall duct which is open at one end to receive the impact blasting media from the centrifugal throwing wheel, and which defines an elongate discharge opening at the other end thereof for discharging the impact blasting media toward the workpiece;



the first and second side walls being inclined relative to each other in a converging relationship for funneling and dampening the flow of blasting media as it moves along the discharge path between the first and second side walls to narrow the width of flow of the media in one dimension as the media travels through the duct;

the first and second side walls having opposed portions which are disposed on opposite sides of the first plane and which extend in spaced, parallel relationship to each other and to the first plane so as to define opposite sides of the discharge opening, the opposite sides of the discharge opening extending in a second plane substantially perpendicular to the first plane; and

the discharge opening being spaced from the surface of the workpiece a distance close enough so that the surface is etched, but great enough that non-uniform etching is avoided.

4,566,231

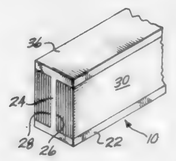
VIBRATION DAMPING STIFFENER

Francis X. Konsevich, Federal Way, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 27, 1983, Ser. No. 536,555

Int. Cl.⁴ E04B *1/98*

U.S. Cl. 52—145 **16 Claims**



1. In combination:

a member which in use is caused to vibrate and which has a

structural makeup resulting in it wanting to vibrate at a relatively low frequency with a relatively large displacement;

a stiffening beam secured to a surface of said member, to span across the member and stiffen the member and increase its frequency of vibration while at the same time decreasing the displacement of vibration, said beam having at least one side surface extending generally perpendicular to the surface of the member; and

a plurality of layers of sheet damping material secured to each other and to said side surface of the stiffening beam by an adhesive material, said layers being attached to said side surface of said beam in a manner so that they are positioned generally perpendicular to the surface of the member, for damping vibration of the member by absorbing member vibrational energy which is transmitted to said stiffening beam from said member when it vibrates.

4,566,232

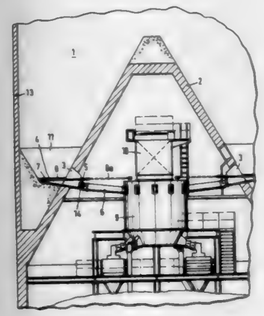
LARGE VOLUME SILO FOR BULK MATERIAL, PARTICULARLY RAW CEMENT POWDER

Heinrich Klein-Albenhausen, Hamburg, Fed. Rep. of Germany, assignor to Ibau Barcelona, S.A., Barcelona, Spain

Filed Dec. 21, 1983, Ser. No. 563,778

Int. Cl.⁴ B65G *65/40*

U.S. Cl. 52—195 **5 Claims**



1. A large volume silo for bulk material, particularly raw cement powder, having an annular silo base formed by a conical dome with an inner dome area and discharge openings in the conical dome between the silo area and inner dome area, and a storage tank in the inner dome area, the silo comprising:

(a) open air conveyor chutes passing radially inwards to the discharge openings in the conical dome and being selectively controllable;

(b) closed air conveyor chutes in the inner dome area operatively connecting the open air conveyor chutes to the storage tank; and

(c) cover slides for covering the open air conveyor chutes and separating the open air conveyor chutes in the silo area from the inner dome area.

4,566,233

CEILING CONSTRUCTION

Hiromitsu Naka, Yashio, Japan, assignor to Kabushiki Kaisha Naka Gijutsu Kenkyusho, Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,263

Claims priority, application Japan, Jul. 11, 1983, 57-127260

Int. Cl.⁴ E06B *3/00*

U.S. Cl. 52—208 **6 Claims**

1. A ceiling construction for buildings, comprising:

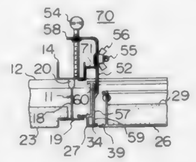
a plurality of flanged main beams disposed in a predetermined spaced relationship to each other and positioned for bridging wall moldings opposed and spaced from each other;

a plurality of flanged cross beams connected to said main beams in a predetermined spaced relationship to each other are right angles to the main beams so as to form a ceiling framework;

a ceiling wall mounted in said ceiling framework and having an access opening in a predetermined position;

a pair of auxiliary beams each positioned on the upper side of the ceiling wall and each bridging the flanges of one of a pair of opposed main beams adjacent to and spaced from each other and a pair of opposed cross beams adjacent to and spaced from each other, said auxiliary beams extending along the edges of said access opening;

an access door means positioned in said access opening and having a stationary frame having an outwardly extending



flange, a movable frame hingedly connected to said stationary frame, and a cover plate fixedly secured to said movable frame; and

a plurality of hanger means securing said access door to said auxillary beams, said hanger means including a carrier plate mountable on said stationary framework for supporting said stationary framework from said hanger means, a clamping plate adjustably mounted in said carrier plate, a threaded fastening means for securing the clamping plate to the carrier plate in an adjusted position thereon, and a threaded clamping bar threaded through said clamping plate and cooperating with said clamping plate for securing the carrier plate to the auxiliary beam.

4,566,234

WINDOW FRAME WITH LAMINATED SURFACES

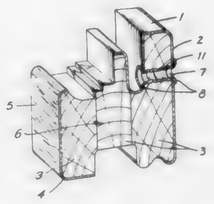
Kurt Held, Alte Str. 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Jan. 17, 1984, Ser. No. 571,448

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1983, 3301894

Int. Cl.⁴ E06B *3/26*

U.S. Cl. 52—209 **10 Claims**



1. Window frame formed in part of one of wood and wood materials, such as cemented chipboard and the like, with a pressure setting laminate coating, said window frame comprises frame sides each having an interior surface exposed to the conditions within the interior of a building and an exterior surface exposed to the weather conditions on the exterior of a building, said frame sides being joined together at mitered corner joints, each said frame side having a wood core, a metal foil laminate coated on the exterior surface of said wood core, said metal foil laminate comprising a laminated base formed of a plurality of layers of binder-impregnated thick paper heat and pressure bonded to said wood core, and a metal foil adhered to said laminated base, a molding formed of a thin metal foil extends over the mitered corner joints on the exterior corners of said frame side with said molding extending away from the mitered corner joint, said molding being soldered to said metal foil laminate at spaced locations from the mitered corner joints, said molding being corrugated in the region of the mitered corner joint and being free from said metal foil laminate adjacent said mitered corner joints, at least certain of said frame sides having drain bores therein and thin metal pipes lining said drain bores, said thin metal pipes being corrugated in the circumferential direction for affording longitudinal expansion thereof, said thin metal pipes having opposite ends flanged over and soldered to said metal foil laminate, and a decorative laminate coated on the heat and pressure bonded to the interior surface of said frame sides.

4,566,235

TILE BLOCK

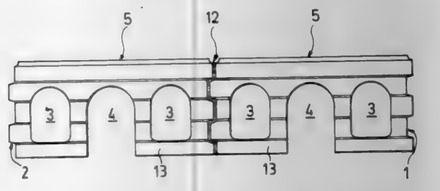
Hartmut Groll, Rettigstr. 4, 7570 Baden-Baden, Fed. Rep. of Germany

Filed Nov. 7, 1983, Ser. No. 549,616

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1982, 3242942

Int. Cl.⁴ E04B *5/48*

U.S. Cl. 52—220 **16 Claims**



1. A tile block for covering surface areas such as floors and walls, said tile block having a surface section and a lower body portion extending from the tile surface and having downwardly extending side walls so as to define said tile block, said body portion having a plurality of channels formed therein, of which channels some are closed at the tile bottom and some are open but all extend across said lower body portion and are so arranged as to be in alignment with corresponding channels of adjacent tiles when disposed on a support surface, at least two of said channels which are open at the tile bottom extending in a direction normal to one another so as to be capable of receiving pipes disposed on said supporting surface in either of the tiles major orientations to permit variations in the tiling pattern, said side walls being provided with accurately machined tongues and grooves for close interlocking engagement between adjacent tile blocks.

4,566,236

GREENHOUSE STRUCTURE ELEMENT

John A. Pound, 2131 Piedmont Way, Pittsburg, Calif. 94565

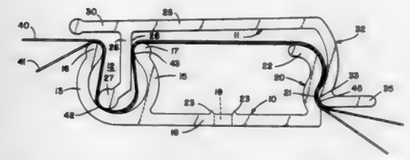
Filed Feb. 9, 1984, Ser. No. 578,750

Int. Cl.⁴ E04B *1/00*

U.S. Cl. 52—222 **2 Claims**

1. An assembly to hold the edge of a flexible sheet to a structure comprising:

a fixed piece including means to be fixed to said structure, said fixed piece having a cavity opening between an edge and a bearing edge, a first intrinsic lock element spaced from said cavity opening, a locking piece including a sheet engaging element extending from one end thereof, said sheet engaging element including a cavity bearing portion and a cavity edge bearing portion, and a second intrinsic lock element spaced from said sheet engaging element to engage said first lock element in locking relationship when said sheet engaging element is engaged with the interior of said cavity, one of said first intrinsic lock element and second intrinsic lock element having a detent and the



other of said lock elements having a nose spaced and dimensioned to snap into said detent.

4,566,237

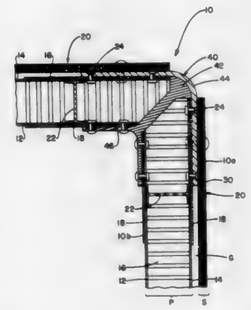
ARMORED PANEL

Patrick E. Turner, Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 8, 1983, Ser. No. 483,345

Int. Cl.⁴ E04B *1/18;* **E04H** *9/10*

U.S. Cl. 52—269 **7 Claims**



1. A configuration for a lightweight and portable shelter having wall and roof panels armored against ballistic fragment and thermal radiation threats comprises in combination:

vertical and horizontal aluminum alloy corner extrusions defining a cove angle at an inward extent and forming a skeleton framework of the shelter;

inner structural panels supported in the corner extrusions, said structural panels comprising inward and outward facing aluminum alloy sheets bonded to a lightweight honeycomb core, the inward facing sheet mechanically fastened to the cove angle in the corner extrusion;

an extruded aluminum alloy cap angle mechanically fastened to the outward facing sheet of the inner structural panel and covering the corner extrusions forming the framework; and

an outer face panel comprised of a multi-ply laminate of at least seven plies of an aramid fiber fabric in a resin matrix, said face panel overlapping and mechanically fastened to the cap angle extrusion such that a gap of at least 1.5 mm (0.6 inch) is defined as between the face panel and the outward facing aluminum sheet of the inner structural panel.

4,566,238

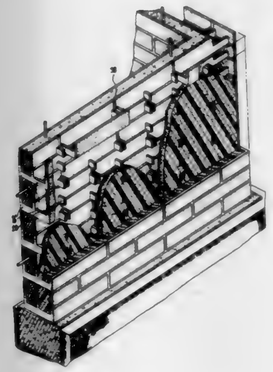
ENERGY CONSERVING CONCRETE MASONRY UNIT, WALL CONSTRUCTION AND METHOD

Peter Janopaul, Jr., 1301 Payne Ave., Modesto, Calif. 95351

Continuation-in-part of Ser. No. 499,674, Jun. 6, 1983, abandoned, which is a continuation of Ser. No. 337,817, Jan. 7, 1982, abandoned. This application Nov. 28, 1983, Ser. No. 555,654

Int. Cl.⁴ E04B *2/26*

U.S. Cl. 52—407 **3 Claims**



1. An energy conserving exterior wall structure of a building for use in passive solar heating and nocturnal cooling of the interior of the building comprising a plurality of masonry units stacked forming a wall in a manner including mortar joints between adjacent stacked units, each masonry unit being defined by an inner side wall, an outer side wall and a partition disposed in spaced relation between the side walls, a plurality of cross webs joining the partition to the side walls in a spaced substantially parallel disposition wherein the partition defines an open inner cell with the inner side wall and an open outer cell with the outer side wall, the cross-sectional area of the cross webs occupying less than substantially ten percent of the overall area of the side walls for minimizing heat transfer between the side walls, the inner cells collectively defining a continuous interior wall space, a fluid material settable to form a thermal mass and structural body disposed within and substantially filling the entire interior wall space, said structural body in conjunction with said inner side walls and said partitions forming the structural portion of said exterior wall, the outer cells collectively defining a continuous exterior wall space, and an expansible insulation material foamed in place within and substantially filling the entire exterior wall space, said insulation material serving to seal said exterior wall space in response to expansion of said insulation.

4,566,239

INSULATION SYSTEM

Robert L. Smigel, 700 Brick Mill Run, Westlake, Ohio 44145, and Kenneth J. Paliwoda, 16937 Lanier Ave., Strongsville, Ohio 44136

Filed Oct. 3, 1983, Ser. No. 538,511

Int. Cl.⁴ E04B *1/74*

U.S. Cl. 52—407 **12 Claims**

1. An insulation system for use in a building having a plurality of roof panels connected with longitudinally extending structural members, said insulation system comprising a body of insulating material, an elongated flexible sheet means forming a vapor barrier, said flexible sheet means having a central portion for supporting said body of insulating material beneath a roof panel and having first and second longitudinally extending edge portions projecting outwardly from opposite longitudinal edges of said body of insulating material for distances which are greater than the thickness of the body of insulating



material, and connector means for releasably connecting the first and second edge portions of said flexible sheet means with a pair of adjacent structural members to thereby adjustably suspend said body of insulating material beneath a roof panel.

4,566,240

COMPOSITE FLOOR SYSTEM

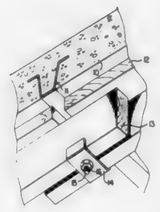
Herbert K. Schilger, 32 Castleglen Ct., NE., Calgary, Alberta T3J 2B8, Canada

Filed Mar. 8, 1984, Ser. No. 587,542

Claims priority, application Canada, Mar. 11, 1983, 423447

Int. Cl.⁴ E04B *1/18*

U.S. Cl. 52—414 **5 Claims**



1. A composite floor system comprising a concrete slab and a metallic reinforcing and support section mechanically embedded in said slab, said support section comprising an elongated unitary strip having a substantially flat central web portion containing a plurality of spaced holes, a pair of substantially flat leg portions extending away from the sides of said web, and an edge flange extending outwardly from the outer end of each leg portion and at least the leg portions and the edge flanges being embedded in the concrete with the web being adjacent a face of the slab and support bolts mounted within said web portion holes and extending outwardly from said slab, said edge flanges being mechanically interlocked with the concrete in both longitudinal and lateral directions, providing shear strength and rigidity for the floor system.

4,566,241

PROGRESSIVE DEMOUNTABLE PARTITION

Joseph W. Schneller, Williamsville, N.Y., assignor to National Gypsum Company, Dallas, Tex.

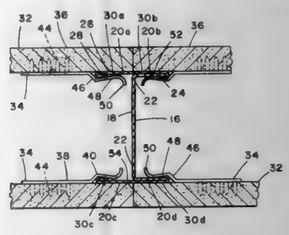
Filed Apr. 4, 1984, Ser. No. 596,635

Int. Cl.⁴ E04H *1/00*

U.S. Cl. 52—481 **10 Claims**

1. A wallboard fastener clip comprising a single almost flat sheet metal body from which a plurality of short tangs are partially cut and bent perpendicularly therefrom, said almost flat body including a wallboard-engaging rearward flat portion and a flange-engaging forwardly extending, forward, almost flat portion disposed slightly out of the plane of said rearward flat portion and extending away from said rearward portion, said plurality of tangs being elongate, narrow strips of sheet metal cut from the sheet metal of said rearward flat portion and extending perpendicularly from said rearward flat portion in a

direction opposite to the side of said flat portion on which said forwardly extending portion is disposed, said forwardly extending portion having a stud flange contacting portion which is disposed slightly outside of the plane of said rearward flat portion.



4,566,242

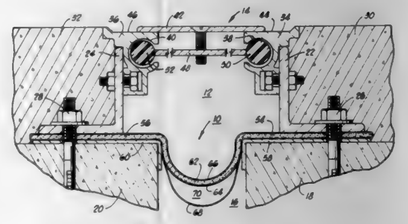
SMOKE AND HEAT BARRIER

Charles L. Dunsworth, Midwest City, Okla., assignor to Metalines, Inc., Oklahoma City, Okla.

Filed Dec. 2, 1983, Ser. No. 557,483

Int. Cl.⁴ E04B *1/68*

U.S. Cl. 52—573 **7 Claims**



1. An expansion joint assembly including fire barrier for disposition across an expansion void between expansible, adjoining first and second panel strutures, comprising:

an expansion joint including first and second brackets and guide members secured along first and second panel structures with guidebar means slidingly secured to said first and second panel structures and pivotally secured to said expansion cover to maintain the expansion cover in secure sliding engagement over said first and second bracket and guide members; a resilient ceramic felt sheet sealingly secured by said first and second bracket and guide members to extend between said first and second panel structures in spaced relationship from said expansion cover; and

a first refractory cloth sheet sealingly secured between said first and second panel structures and disposed generally contiguous to said ceramic felt sheet;

whereby the widths of said ceramic felt sheet and refractory cloth sheet is each markedly greater than the distance across the expansion void.

4,566,243

PLANK GRATING ASSEMBLY

Robert D. Dahlin, Hillsborough County, Fla., assignor to Benchcraft, Inc., Brentwood, Mo.

Continuation of Ser. No. 403,029, Jul. 29, 1982. This application Nov. 21, 1984, Ser. No. 673,861

Int. Cl.⁴ E04C *2/42*

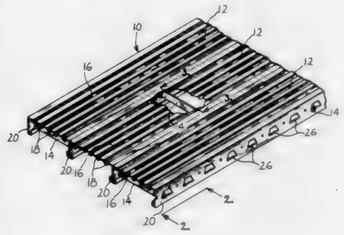
U.S. Cl. 52—584 **12 Claims**

1. A plank grating arrangement comprising:

a plurality of elongate planks each having a deck panel and flanges on opposite sides of each panel, said planks being adapted to be arranged side by side with the panels cooperating to form a substantially continuous load bearing deck surface and with flanges of adjacent planks being disposed against one another;

a plurality of spaced apart openings in the flanges of each plank, each opening having a lateral dimension defined between side edges of the opening and a vertical dimension defined between upper and lower edges of the opening; and

a plurality of removable braces each long enough to span the flanges of each plank and each having opposite end portions presenting slot means therein, each brace being insertable through aligned openings in the plank flanges



with a heat dimension of the brace oriented generally parallel to the lateral dimensions of the openings and being thereafter rotatable in the openings to an assembled position wherein the height dimension of the brace is oriented generally parallel to the vertical dimensions of the openings and said upper and lower edges of the openings in adjacent flanges fit closely in said slot means to rigidly connect the planks together for formation of the load bearing deck surface with the braces immediately underlying and in contact with the deck panels to receive loads applied thereto and the adjacent flanges of the planks held together in contact with one another by the fit of said upper and lower edges of the openings in said slot means, said braces being removable from said slot means.

4,566,244

PAPER SHEET GRIP AND TRANSFER APPARATUS

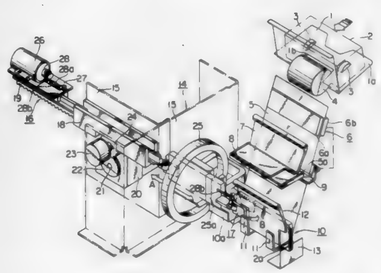
Hikaru Kawano, Odawara, and Koji Sato, Hiratsuka, both of Japan, assignors to Musashi Engineering Kabushiki Kaisha, Tokyo and Hitachi Denshi Engineering Kabushiki Kaisha, Kanagawa, both of, Japan

Filed Apr. 19, 1984, Ser. No. 601,795

Claims priority, application Japan, Apr. 30, 1983, 58-76488

Int. Cl.⁴ B65B *35/50*

U.S. Cl. 53—588 **4 Claims**



1. In a paper sheet counting and half-wrapping device of the type comprising a stack unit for receiving a plurality of paper

sheets supplied thereto and stacking them as a bundle to be wrapped, said stack unit providing exposure of a free end of the bundle when stacked thereon, counting means for counting the number of said sheets in said bundle, and a half-wrapper unit including a half-wrapper ring mounted adjacent to said stack unit for receiving said bundle and wrapping the same when said bundle is transferred to within said ring from said stack unit, the improvement comprising a sheet bundle grip and transfer apparatus comprising a longitudinally movable member having an end carrying an openable and closable gripping chuck thereon, said movable member being mounted substantially on said half-wrapper unit for reciprocal movement through said half-wrapper ring between a first position wherein said chuck is on one side of said ring adjacent to said bundle free end for gripping the same and a second position wherein said chuck is on the opposite side of said ring whereby said bundle gripped by said chuck is within said half-wrapper ring to be wrapped therein, means normally retaining said chuck in its opened position when said movable member is in its said first position, means actuatable responsive to said counting means for closing said chuck on said bundle to grip the same in said first position of said movable member when a predetermined number of said sheets are within said bundle, and drive means actuatable responsive to said closing of said chuck for moving said movable member from its said first position to its second position.

4,566,245

COLLAPSIBLE CONSTRUCTION ASSEMBLY

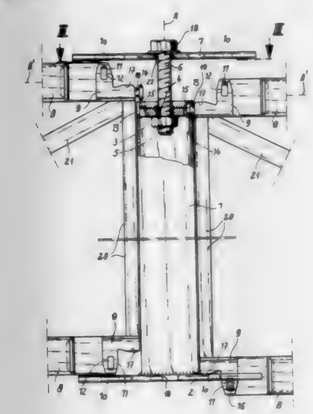
Ewald Rüter, Dortmund, Fed. Rep. of Germany, assignor to E. Rüter GmbH, Dortmund, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,257

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222811

Int. Cl.⁴ E04H *12/18*

U.S. Cl. 52—645 **6 Claims**



1. A construction assembly for making a collapsible structure, the assembly comprising:

an elongated post extending along and defining a normally upright post axis and having an upper end and a lower end, the upper end being formed with a transverse web having an axially centered threaded bore open in an upward axial direction away from the lower post end and with an axially upwardly open notch;

a lower planar plate fixed at the lower end of the post, extending generally perpendicular to the post axis, and formed with at least one axially throughgoing lower cutout offset from the post axis and radially offset relative thereto from the post;

a frame having

a lower fitting formed with an axial projection extending axially down through the lower cutout and formed directly underneath the lower plate with a passage that is throughgoing parallel to the lower plate, and

an upper fitting at the upper post end and formed with an upper projection extending axially upward away from the lower post end and provided with a stud extending through the notch and having inside the post a stud head larger than the notch, whereby the stud secures the upper fitting on the post against downward or horizontal movement relative thereto;

a locking member engaged through the passage and bearing axially upward toward the upper end on the lower plate;

an upper planar plate extending generally perpendicular to the post axis, formed at the axis with a throughgoing bore and offset from the axis with an axially throughgoing cutout through which extends the upper projection of the upper fitting; and

a bolt threaded in the bore of the web, passing through the bore of the upper plate, and having a bolt head bearing axially downward on the upper plate, whereby the bolt head presses the upper plate down on the upper fitting to lock the frame to the post.

4,566,246

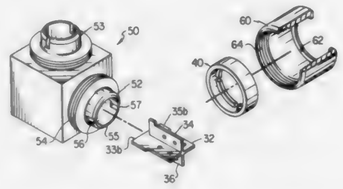
MODULAR STRUCTURE ASSEMBLIES

George F. Sanger, 211 Confederate Way, Seabrook, Harris, Tex. 77586

Filed Jun. 11, 1984, Ser. No. 619,230

Int. Cl.⁴ E04B *7/06*

U.S. Cl. 52—648 **8 Claims**



1. In a connector assembly for a modular construction, the combination comprising:

a. an elongated key member having a plurality of longitudinal ribs having radially extending detent protrusions at the ends thereof, at least one of said detent protrusions extending longitudinally rearwardly of the other of said detent protrusions;

b. an adapter collar having an annular internal shoulder provided with a plurality of slots therein conforming to the detent protrusions of said key member whereby said adapter collar is slideable over the end of said key member when said slots and detent protrusions are aligned and having at least one additional slot displaced angularly from said conforming slots and adapted to receive said at least one of said detent protrusions upon the angular displacement of said adapter collar relative to said key member whereby said adapter collar is secured against removal from the end of said key member;

c. a spode unit having a connecting joint;

d. a retaining collar adapted to fit over said key member and said adapter collar and having an internal shoulder adapted to abut against said adapter collar from the rear and a forward portion adapted to be connected to the union joint of the spode unit;

e. cooperative connecting means on said retaining collar and said spode unit connecting joint for securing said retaining collar and said connecting joint against relative movement longitudinally of said key member;

f. and means cooperatively associated with said spode unit connecting joint and at least one of said key member and said adapter collar for securing said key member and said spode unit joint whereby said key member and said spode unit joint are locked in a torsional stress bearing relationship.

4,566,247

CAPTIVE COLUMN

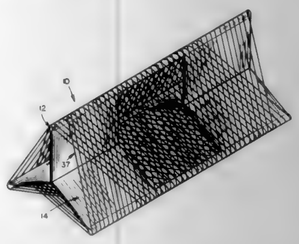
Gordon I. Overbo, 302 16th Ave. S., Devils Lake, N. Dak. 58301

Continuation-in-part of Ser. No. 519,980, Aug. 3, 1983, Pat. No. 4,539,785. This application Feb. 13, 1984, Ser. No. 579,270

The portion of the term of this patent subsequent to Sep. 10, 2002, has been disclaimed.

Int. Cl.⁴ E04C *3/10, 3/30*

U.S. Cl. 52—732 **5 Claims**



1. An elongated captive column structure comprising,

a plurality of transversely spaced-apart elongated column portions,

a plurality of longitudinally spaced-apart compression core members interconnecting said column portions along the lengths thereof,

and oppositely wound helical winding extending around the columns.

4,566,248

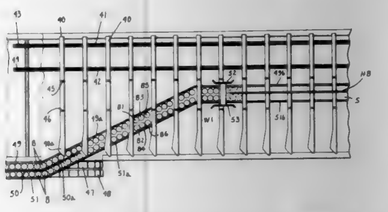
PACKAGING APPARATUS AND METHOD

Jack S. Cooley, Atlanta, Ga., assignor to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 538,174, Oct. 3, 1983, abandoned, which is a division of Ser. No. 318,828, Nov. 6, 1981, Pat. No. 4,481,750. This application Nov. 14, 1984, Ser. No. 671,031

Int. Cl.⁴ B65B *21/24, 35/44*

U.S. Cl. 53—48 **3 Claims**



1. A machine for packaging a group of articles in a wrap-around carrier blank which is horizontal initially and which is initially disposed above said group of articles, said machine comprising a horizontal elongated fixed support having infeed and outfeed ends, a plurality of transverse parallel spaced metering bars disposed above said fixed support and having corresponding ends on one side of said fixed support connected with endless means above said fixed support and on said one side for supporting and moving said bars in an advancing direction from a point adjacent the infeed end thereof toward the outfeed end thereof and with the free ends thereof on the other side of said fixed support, infeed conveyor means disposed on the side of said fixed support opposite from that on which said corresponding ends of said metering bars are disposed, fixed primary guide means disposed on the side of said fixed support which is opposite from that at which corresponding ends of said metering bars are secured to said endless means and said primary guide means being disposed at an acute angle to said advancing direction for receiving articles from said infeed conveyor means and for guiding said articles into the space between the free ends of said metering bars, fixed secondary guide means arranged in parallel relation to said elongated fixed support and disposed thereabove and in parallel relation to said advancing direction of each endless means for receiving the articles from said primary guide means, folding means disposed above said fixed secondary guide means for engaging the side walls of a carrier blank while horizontal and for folding the side walls and associated parts of the blank downwardly and between a pair of adjacent metering bars, and means movable in substantial unison with the carrier and the group of articles for tightening the blank about the articles while disposed between said metering bars and while moving on said support.

4,566,249

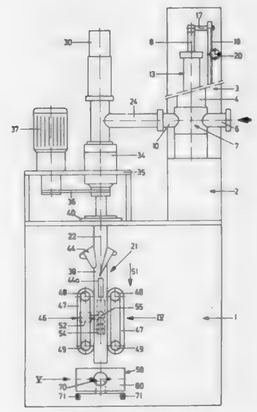
APPARATUS FOR THE DOSED FILLING OF HIGHLY VISCOUS MATERIAL

Ernst Schwerdtel, Am Blütenanger 24, D-8000 München 50, and Hans-Jörg Lang, Haus No. 61, D-8061 Biberbach, both of Fed. Rep. of Germany

Filed Mar. 15, 1984, Ser. No. 589,957

Int. Cl.⁴ B65B *3/02, 3/32, 9/20, 59/02*

U.S. Cl. 53—55 **6 Claims**



1. An apparatus for the dosed filling of highly viscous material, into tubular bags, said apparatus comprising:

a dosing device for said viscous material comprising a dosing cylinder, a drivable dosing piston mounted within said dosing cylinder, and a pick-up connected to said dosing piston to detect the exact position of said dosing piston, whereby the quantity of the dosed material is determined;

a material filling device, said filling device having a filling tube, a foil format tube and a rotary tube;

said filling tube having one end connected to the dosing device to receive said viscous material therefrom and a valve at the other end, said foil format tube being circumferentially arranged around said filling tube;

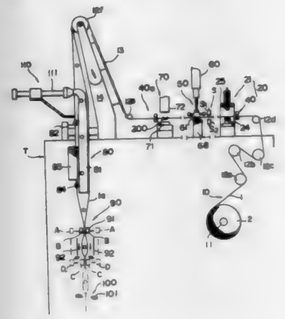
said rotary tube being arranged between said filling and the format tube, said rotary tube having at its lower end at least one cutting wire positioned at the other end of said filling tube; and

said filling tube valve being approximately flush with said cutting wire when said valve is closed;
a conveying means mounted adjacent said format tube to convey a formed foil tube along said format tube;
A transverse welding means having a cutting device and positioned below said filling device.

4,566,250
METHOD AND APPARATUS FOR PRODUCING BAG-SHAPED PACKAGES WITH CAP BODY AND CONTENT

Wakuo Matsumura, Hirakata; Noboru Kitazawa, Kyoto, and Yoshiaki Ohigashi, Uji, all of Japan, assignors to Unitika Ltd., Japan

Filed Oct. 17, 1983, Ser. No. 542,683
Claims priority, application Japan, Oct. 18, 1982, 57-181264; Nov. 18, 1982, 57-201171; Jan. 31, 1983, 58-12792; Feb. 14, 1983, 58-21603; Sep. 9, 1983, 58-165144
Int. Cl.⁴ B65B *61/00*
U.S. Cl. 53—128 **8 Claims**

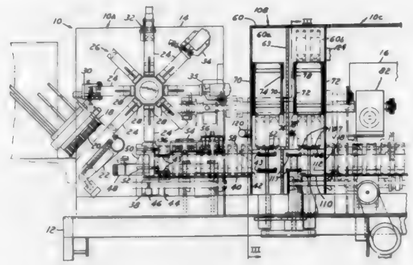


1. An apparatus for producing bag-shaped packages respectively with a cap body and filled with fluid content from an elongated thin film of synthetic resin which comprises:
a film supplying section having a film roller for feeding said film with marks at intervals defining respectively package forming areas;
a horizontally conveying section for said film from said film supplying section, said horizontally conveying section including a punching means for punching out a hole in said film one by one at each package forming area, a cap body feeding means for successively fitting cap bodies having a flange into each punched hole by passing a cap body through each punched hole and a cap securing means for heat sealing of said flange of said cap body to said film;
said horizontally conveying section further including a pair of film holder means between which are provided at least said cap body feeding means and said cap securing means for intermittently holding said film stationarily and means to open and close said holder means;
a sensor means for detecting said marks of said film for controlling the opening and closing of said film holder means; and
a vertically downwardly conveying section adapted to convey said film secured with said cap bodies at respective package forming areas vertically downwardly, said vertically downwardly conveying section including a longitudinal heat sealing means for shaping said film into tubular form, a transverse heat sealing means for making bottom and top sealing lines on said tubular film at respective package forming areas, a content supplying means for supplying fluid content to said tubular film after formation of said bottom sealing line, a driving means for downwardly sending the shaped package after forming the upper sealing line by said transverse heat sealing means when said holding means are open, and a cutting means for cutting along respective transverse sealing lines.

4,566,251
CARTON FORMING, STERILIZING, FILLING AND SEALING MACHINE

Anthony F. Spisak, Redford; Sava Stefanovic, Southfield, and Curtis H. Pawloski, Pontiac, all of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Jan. 7, 1985, Ser. No. 689,355
Int. Cl.⁴ B65B *55/10*
U.S. Cl. 53—167 **7 Claims**

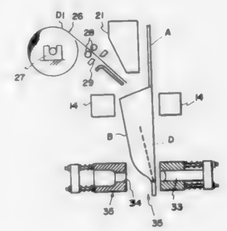


1. A modular forming, sterilizing, filling and sealing machine for containers, said machine comprising a front bottom forming and sealing section; an intermediate sterilizing section; and a rear filling, top forming and sealing section; and separate conveyor means in each section, said conveyor means in said sterilizing section adapted to receive the containers from said conveyor means in said bottom forming and sealing section in an upright, open-topped condition and conveying same transverse to the line of travel in said forming and sealing sections through a sterilant vapor atmosphere wherein the sterilant vapor condenses on all surfaces of each upright, open-topped container, and then rotating the containers from the upright position to an upside-down condition through a heated and air blown atmosphere, and back to an upright condition onto said conveyor means in said filling, top forming and sealing section.

4,566,252
METHOD FOR AUTOMATIC PACKING OF ARTICLES CAPABLE OF PROVIDING PLASTICS PACKING BAG WITH REINFORCED HANDLE PORTION

Hideyuki Watanabe, and Yoshimitu Ichikawa, both of Tokyo, Japan, assignors to Taiyo Shokai Co., Ltd., Japan

Filed Mar. 14, 1984, Ser. No. 589,334
Claims priority, application Japan, Mar. 18, 1983, 58-45691
Int. Cl.⁴ B65B *9/13, 9/20, 61/20*
U.S. Cl. 53—410 **6 Claims**



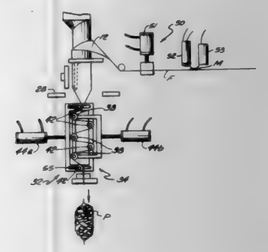
1. In a process for the automatic packing of articles comprising the steps of: intermittently moving a tubular bag material of

heat-sealable thermoplastic synthetic resin during active time periods having inactive periods therebetween by a distance corresponding to the length of a single bag to be formed using intermittent conveyor means; heat-sealing said bag material transversely thereacross with respect to a moving direction of said bag material to form at its leading end portion a depending foremost bag section for packing of articles during each inactive period of said intermittent conveyor means; charging goods into the depending foremost bag section of said bag material; heat-sealing an upper portion of the goods-charged depending foremost bag section transversely thereacross; and separating the sealed bag section from a subsequent bag section of said bag material, the improvement comprising the steps of; supplying a reinforcing material into the depending foremost bag section and placing the reinforcing material between opposite walls of the bag section at a region adjacent a transversely extending lower seal of said foremost bag section, said reinforcing material having greater material strength than that of said bag material so as to provide said region with a greatly reinforced handle portion; and forming an opening for suspension of an individual sealed bag section to be produced, by piercing through said walls and said reinforcing material placed therebetween by punch and die means; said steps of supplying a reinforcing material into said foremost bag section and placing it between said walls at said region and forming said opening being performed immediately before the goods are charged into said foremost bag section during each inactive period of said intermittent conveyor means, whereby individual sealed bag sections each having a reinforced handle portion with an opening for suspension can be automatically successively obtained.

4,566,253
PACKAGING SYSTEM WITH INTERDIGITATING FILM ADVANCE

Robert W. Jones, Atlanta, Ga., assignor to Kliklok Corporation, Greenwich, Conn.

Filed May 23, 1984, Ser. No. 613,229
Int. Cl.⁴ B65B *9/10, 41/12*
U.S. Cl. 53—451 **19 Claims**



1. An apparatus for the packaging of bulk material, comprising:
means for forming a continuous film into a tube;
means for delivering a charge of the bulk material to a package being formed from said tube;
means for sealing and cutting said tube containing the bulk material into the package; and
interdigitating means, positioned between said forming means and said cutting and sealing means, for engaging opposite sides of said tube and forming an elongated zig-zag path for advancing said film over said forming means.

4,566,254
BIT FOR HORSES

Reimer Nagel, Schulstrasse West 16, 2228 Friedrichskoog, Fed. Rep. of Germany

Filed Oct. 11, 1984, Ser. No. 659,646
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 8405615[U]; Jul. 13, 1984, 8420952[U]; Jul. 19, 1984, 8421548[U]; Sep. 21, 1984, 8427836[U]
Int. Cl.⁴ B68B *1/06*
U.S. Cl. 54—8 **8 Claims**

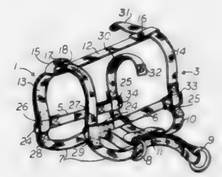


1. A bit for horses, having a one-piece bit bar, said bit bar comprising, in combination:
two outer portions, each having an inner end and an outer end, each of said outer portions widening from the corresponding inner end to the corresponding outer end in a lobar manner, and having a smooth, sliding face-like surface with a substantially round cross-section,
each of said outer portions being made of an elastic, material means having (a) a high abrasion resistance, (b) being pressure-deformable and (c) recovering its original shape free of any rebound elasticity,
each of said outer ends having a through bore adapted to accept a corrosion-resistant ring for passing reins therethrough, said outer portions being so oriented that the axes of said through bores lie in an imaginary plane, and
a narrow, small diameter, resilient, elastic web connecting said inner ends to one another so that said outer portions and said web together form a one-piece bit bar, said bit bar being provided on either side of the web with flattened horse tongue contact faces parallel to said imaginary plane defined by said axes of said through bores, said web being free of flattened contact faces.

4,566,255
TRAINING HALTER FOR CANINES

Alice A. DeGroot, 1768 Village Run North, Encinitas, Calif. 92024

Continuation-in-part of Ser. No. 467,316, Feb. 17, 1983, Pat. No. 4,483,275. This application Jul. 2, 1984, Ser. No. 627,011
Int. Cl.⁴ B68B *1/02*; A01K *15/00*
U.S. Cl. 54—24 **6 Claims**



1. A training halter for a dog, comprising:
(a) a loop member for encircling the dog's muzzle;
(b) a collar member for encircling the dog's head;
(c) a pair of side members for securing the collar member to the loop member on opposite sides of the dog's head; wherein the forward end of each side member comprises a slip loop, and wherein said loop member comprises an

upper portion and a lower portion, each portion having a loop at each end, and said slip loops at the forward ends of said side members engage through said loop on adjacent ends of said upper and lower portions on opposite sides of said muzzle;

(d) means for securing upper portions of the loop and collar members together;

(e) means for cinching the loop member;

(f) means for securing a leash to the cinched loop member.

4,566,256

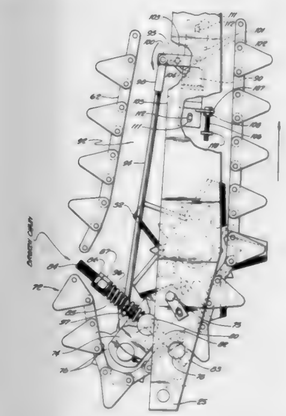
SAFETY INTERLOCK MECHANISM FOR CORN HEAD ASSEMBLY

Eugene A. Sousek, Appleton, Wis., assignor to Piper Industries, Inc., Dallas, Tex.

Filed Sep. 9, 1983, Ser. No. 531,151

Int. Cl.[4] A01D *45/02*

U.S. Cl. 56—10.2 **3 Claims**



1. A safety interlock system for a crop gathering and conveying apparatus on a support assembly of a row-crop harvester, comprising:

a pivotally mounted idler arm and guide means on said support assembly;

an endless gathering member engaged over said guide means;

drive means for moving said gathering member;

spring means urging against said idler arm and tensioning said gathering member;

circuit means including a safety switch responsive to the movement of said idler arm; and

interrupter means controlled by said safety switch to interrupt power from said drive means to said gathering member upon movement of said idler arm by said spring means when said gathering member becomes loose or breaks, thereby preventing damage to said harvester from said member;

said safety switch being connected to said idler arm by linkage means including a pivotally mounted actuator lever engaging said safety switch for activation when said gathering member is loose or broken and a tie rod extending along said support assembly between the actuator lever and the idler arm; said support assembly including an interior compartment, said actuator lever and safety switch being located substantially inside said compartment free from dirt and debris associated with the crop being harvested and protected from damage typically caused by battering from said crop as said crop is transported up said support assembly by said gathering member.

4,566,257

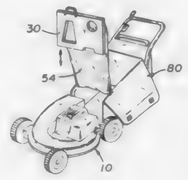
LAWN MOWER DISPOSABLE GRASS COLLECTION BAG ATTACHMENT

Mohammad Akrabawi, 1625 Carlisle La., DeKalb, Ill. 60115

Filed Jun. 29, 1984, Ser. No. 626,460

Int. Cl.[4] A01D *35/22*

U.S. Cl. 56—202 **8 Claims**



1. An attachment for a lawn mower of the type that propels clippings from an operating zone through a discharge opening, comprising:

transfer plate for easy manual releasable attachment to the mower for receiving propelled air and clippings from the mower when attached thereto; and

means for releasably affixing the marginal edge of the opening of a disposable bag to said transfer plate such that the bag receives the propelled air and clippings from said manually releasable transfer plate;

said manually releasable transfer plate also including vent means for allowing air to be vented from the disposable bag;

such that when attached to an operating lawn mower with a disposable bag so affixed, clippings are propelled through the transfer plate into the disposable bag and there accumulated so that they can be disposed of and removed by manually removing the transfer plate and its attached disposable bag, and thereafter detaching the filled bag from the transfer plate away from the lawn mower.

4,566,258

DEVICE FOR WORKING CROP LYING ON THE GROUND

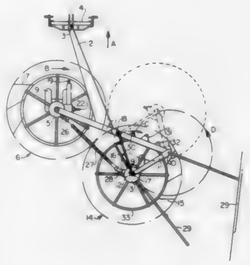
Petrus M. Quataert, Nuenen, Netherlands, assignor to P. J. Zweegers en Zonen Landbouwmachine Fabriek B.V., Geldrop, Netherlands

Filed Jun. 20, 1983, Ser. No. 505,736

Claims priority, application Netherlands, Jul. 9, 1982, 8202785

Int. Cl.[4] A01D *78/10*

U.S. Cl. 56—370 **11 Claims**



1. A device for working corp lying on the ground having a frame comprising a frame beam extending transverse to the intended direction of travel, and a draw bar fixed to said frame beam and extending forwardly from said frame beam, a first

gear box fixed to one end of said frame beam, an arm having one end pivotally coupled with the other end of said frame beam so as to be adjustable with respect to said frame beam about a substantially vertical pivot axis, a second gear box being pivotally mounted to the free end of said arm so as to be adjustable about a substantially vertical pivot axis with respect to said arm, a coupling rod coupled with said second gear box for fixing the arm and said second gear box in various positions on either side of said frame beam, a pair of tined rake wheels rotatable about upwardly extending rotary shafts and each drivable respectively via said gear boxes, means for reversing the direction of rotation of one of said driven rake wheels, the device being such that in a first position of said arm the rake wheel at the free end of the arm is disposed in front of the frame beam and said rake wheel can be driven in such a direction that viewed in the direction of movement the tines on the proximal sides of the rake wheels move to the rear, and in a second position of said arm viewed in the intended direction of travel the rake wheels are located obliquely one behind the other and can be driven in the same direction and the rake wheel on the free end of the arm is disposed behind the frame beam, the first gear box is provided with an input shaft to be coupled with the aid of an auxiliary shaft with the power take-off shaft of a tractor, said input shaft being coupled through a gear wheel transmission with a first output shaft, which protrudes out of the first gear box and which is provided at the other end with a first bevel gear wheel which is in mesh with a second bevel gear wheel located below the first bevel gear wheel and fastened to the respective rake wheel and with a neighbouring bevel gear wheel fastened to a second output shaft protruding out of the gear box and being arranged above the second gear wheel secured to the rake wheel in a manner such that it rotates free of the second gear wheel one of the ends of the output shafts emerging from the first gear box can be coupled selectively with the aid of an auxiliary shaft with one end of a shaft journalled in the second gear box secured to the first end of the arm.

4,566,259

METHOD AND APPARATUS FOR THE MANUFACTURE OF FANCY YARNS

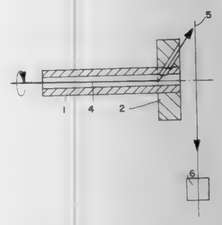
Marc Durand, Decines, France, assignor to Chavanoz S.A., Pont-de-Cheruy, France

Filed Feb. 7, 1984, Ser. No. 577,803

Claims priority, application France, Feb. 10, 1983, 83 02288

Int. Cl.[4] D02G *3/34, 3/36, 3/38*

U.S. Cl. 57—6 **3 Claims**



1. Apparatus for use in the production of a fancy yarn, said apparatus comprising means for feeding at least one yarn along a path, a rotating component positioned adjacent said path and rotatable about an axis which is trnsverse to said path, a yarn guiding portion on said rotating component which is spaced from said axis and means to feed a further yarn to said yarn guiding portion, whereby said further yarn is caused to perform a reciprocating, oscillating motion with respect to said at least one yarn, wherein said rotating component comprises a hollow shaft and a radial disc located at one end of said hollow shaft, adjacent said path, and wherein an oblique passage is formed between the hollow interior of said shaft and a point on said disc spaced from the axis of the shaft, whereby said further yarn may be guided through the hollow interior of said shaft and through said passage to said point which thus forms said yarn guiding portion.

3. A method for producing a slub fancy yarn, said method comprising the steps of feeding a core yarn along a path, feeding an effect yarn through a way comprising a hollow shaft of a rotating component and an oblique passage in a radial disc located at one end of said rotating component near the path of said core yarn and on an axis transverse to said path, and rotating said component and said radial disc, the rotation causing the effect yarn to perform a reciprocating, oscillating motion along the path of the core yarn in order to produce slubs periodically along the said core yarn.

4,566,260

PNEUMATIC YARN SPLICING DEVICE

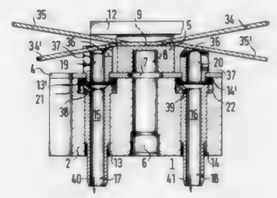
Wolfgang Irmen, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,563

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1983, 3326966

Int. Cl.[4] D01H *15/00*

U.S. Cl. 57—22 **5 Claims**



1. Pneumatic yarn splicing device for the production of a knotfree yarn joint by means of splicing, comprising a splicer head having at least one inlet formed therein for the injection of compressed air, said splicer head receiving the yarn ends to be spliced together and allowing the entanglement, interlocking, intermingling and/or intertwining of their fibres with one another, pneumatic holding devices arranged on either side of said splicing head, each respective pneumatic holding device having an inlet mouth and a tubular inlet for holding the respective yarn ends of the yarn to be spliced together during the yarn preparing process, the inlet mouths of the pneumatic holding device being provided with inserting aids for the yarn ends in the form of recesses of varying depth.

4,566,261

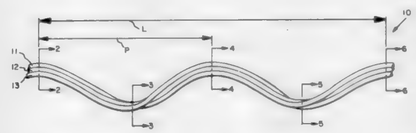
METALLIC CABLE AND APPARATUS FOR MANUFACTURING THE SAME

Dennis R. Brandyberry, Canton, and Grover W. Rye, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 14, 1984, Ser. No. 650,483

Int. Cl.[4] D02G *3/48;* **D07B** *1/00, 3/00*

U.S. Cl. 57—212 **10 Claims**



1. A metallic cable for reinforcing an elastomeric article comprising two or more substantially identical helically shaped metallic filaments positioned beside and against one other such that each filament is in contact with at least one

other filament, the helixes formed by said filaments having a pitch length, and said filaments being twisted together such that said cable has a lay length that is at least two times greater than said pitch length.

4,566,262

METHOD AND APPARATUS FOR MONITORING THE OPERATION OF A FRICTION FALSE-TWISTING UNIT

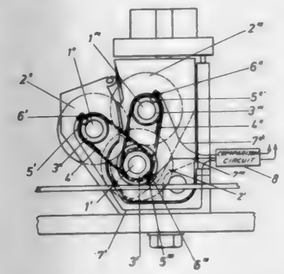
Wolfgang Schmucker, Hammelburg, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

Filed Nov. 16, 1983, Ser. No. 552,282

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245574

Int. Cl.⁴ D02G *1/04*; D01H *13/14*

U.S. Cl. 57—264 **23 Claims**



1. A method for monitoring the texturing process in a friction false-twisting unit wherein the unit has three drive shafts, the axes of the drive shafts forming a triangle, each drive shaft bearing at least one friction disk and the disks on the shafts being interleaved,

the method comprising:

rotating the shafts for rotating the disks; passing a thread through the interleaved friction disks in a zig-zag path;

sensing the respective speeds of rotation of at least two of the drive shafts and comparing each of the respective sensed speeds with a reference value; and

producing a fault signal when one of the respective sensed speeds differs from the reference value.

4,566,263

DEVICE FOR STORAGE OF EMPTY BOBBINS FOR A SPINNING FRAME

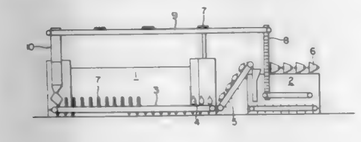
Tsutomu Miyazaki, Kariya; Tatemi Fukuda, Aichi, and Kazuya Yoshimine, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jan. 23, 1984, Ser. No. 573,046

Claims priority, application Japan, Nov. 4, 1983, 58-171467

Int. Cl.⁴ D01H *9/18, 9/14*; B07C *5/00*

U.S. Cl. 57—276 **9 Claims**



1. Empty bobbin storage device in a spinning frame comprising conveyor means mounted above the spinning frame and adapted for restoration to the spinning frame of empty bobbins discharged from a winder associated with the spinning frame, said bobbins having predetermined length and width dimensions and the length dimension being greater than the width dimension, guiding means having a passage for guiding the thus returned empty bobbins to empty-bobbin supply sections associated with automatic bobbin change means annexed to the spinning frame, said passage having an input end adjacent said conveyor and an output end and having a branch point intermediate said input end and said output end to provide left and right passage sections extending from said branch point towards left and right sides of the spinning frame, and distributing means associated with said branch point for selectively distributing the empty bobbins into one or the other of said passage sections, characterized in that, said left and right passage sections have, below said branch point, storage sections for storing a plurality of said empty bobbins, said storage sections, in a cross-section transverse to the direction of movement of the bobbins from said branch point to said output end, having a passage width dimension at least equal to the length dimension of a bobbin and a dimension transverse to said passage width dimension at least equal to the width dimension of a bobbin but less than the passage width dimension whereby each of the bobbins is stored in said storage sections with its length dimension extending in the horizontal direction.

8. Empty bobbin storage device in a spinning frame comprising conveyor means mounted above the spinning frame and adapted for restoration to the spinning frame of empty bobbins discharged from a winder associated with the spinning frame, and a passage for guiding the thus returned empty bobbins to empty-bobbin supply sections associated with automatic bobbin change means annexed to the spinning frame characterized in that, halfway in said passage, there are provided a branch point for branching said passage towards left and right sides of the spinning frame for providing two guide passage sections, and means associated with said branch point for selectively distributing the empty bobbins into one or the other of said guide passage sections, and in that, halfway in the left and right guide passage sections, and below said branch point, there are provided storage sections for storing said empty bobbins in horizontal position, said storage sections being zigzag-shaped conduits and each said storage section comprising an upper limit senser for empty bobbins, a lower limit senser for empty bobbins, and separation and forwarding means for empty bobbins extending downwardly of said upper and lower limit sensers.

4,566,264

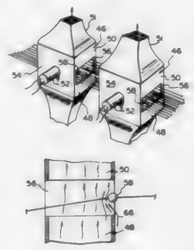
MANUFACTURE OF TELECOMMUNICATIONS CABLE CORE UNITS

John N. Garner, Kingston, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 3, 1984, Ser. No. 637,587

Int. Cl.⁴ B65H *57/06*; D01H *1/04, 7/48*

U.S. Cl. 57—314 **12 Claims**



1. Apparatus for forming a core unit from telecommunications conductor units, each formed of twisted together insulated conductors and in which the relative positions of the conductor units are changed along the core unit, the apparatus comprising in order, downstream along a feedpath for the units:

guide means to ensure that conductor units are not stranded together;

position changing means for conductor units including a plurality of independent guides for the units, the guides movable independently of each other in any direction and within confines of a certain space extending laterally of the feedpath under the influence of a fluid force, and fluid force producing means to apply a fluid force across the feedpath to cause the independent movement of the guides; and

a core unit forming and take-up means to draw the conductor units together to form the core unit.

4,566,265

TEXTILE PROCESSING APPARATUS

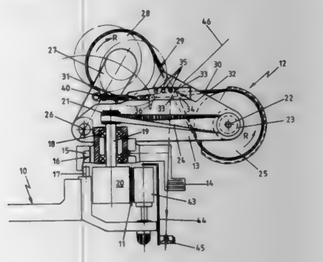
Geoffrey Naylor, Macclesfield, United Kingdom, assignor to Rieter-Scragg Limited, Cheshire, United Kingdom

Filed Jul. 16, 1984, Ser. No. 631,175

Claims priority, application United Kingdom, Aug. 6, 1983, 8321249; Feb. 16, 1984, 8404066

Int. Cl.⁴ D02G *1/04*

U.S. Cl. 57—336 **18 Claims**



1. Apparatus for twisting a running yarn comprising a support structure, first and second pulleys mounted on said support structure for rotation about spaced, substantially parallel respective first and second axes and each having a periphery lying substantially in alignment with the periphery of the other pulley, means for driving one of said pulleys in rotation, an endless belt passing around said peripheries so as to provide two runs each of which is twisted through substantially 180° and crosses the other of said twisted runs to form a nip therewith as it passes between the peripheries of said first and second pulleys, guide means for guiding a running yarn between said twisted belt runs in the region of said nip, an arm pivotally mounted on said support structure to pivot about a pivot axis thereof and on which one of said pulleys is mounted, biassing means operable to bias said arm in a direction away from the other pulley, said biassing means applying a force to said arm at a point spaced from said pivot axis and the axis of rotation of the pulley mounted on said arm by distances proportional to the diameters of said first and second pulleys.

2. Apparatus for twisting a running yarn comprising a support structure, first and second pulleys mounted on said support structure for rotation about spaced, substantially parallel respective first and second axes and each having a periphery lying substantially in alignment with the periphery of the other pulley, an endless belt passing around said peripheries so as to provide two runs each of which is twisted through substantially 180° and crosses the other of said twisted runs to form a nip therewith as it passes between the peripheries of said first and second pulleys, guide means for guiding a running yarn between said twisted belt runs in the region of said nip, and means for driving a driven one of said pulleys in rotation comprising an endless machine drive belt and a spindle on which said driven pulley is mounted, a shaft rotatably mounted in said support structure, a wharve on said shaft whereby said wharve may be driven by contact with said machine drive belt, a first drive pulley on said shaft, a second drive pulley on said spindle and an endless apparatus drive belt passing around said first and second drive pulleys.

4,566,266

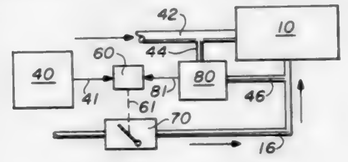
AUTOMATIC TEMPERATURE COMPENSATED FUEL FLOW REGULATION

Harry A. Kidd, Shinglehouse, Pa., and Thomas R. Edwards, Hinsdale, N.Y., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 13, 1984, Ser. No. 579,250

Int. Cl.⁴ F02C *3/22, 9/28*

U.S. Cl. 60—39.06 **23 Claims**



1. A method of achieving a desired fuel oxygen mass ratio in a gas turbine for an existing ambient air temperature comprising the steps of:

(a) determining a desired fuel/air differential pressure corresponding to the desired fuel/oxygen mass ratio for said gas turbine at any particular ambient air temperature;

(b) providing an adjustable fuel flow valve to regulate fuel flow to said gas turbine;

(c) generating a first electrical signal representing existing ambient air temperature;

(d) generating a second electrical signal from said first electrical signal representing a desired differential fuel/air pressure corresponding to the desired fuel/oxygen mass ratio for said existing ambient air temperature; and

(e) automatically adjusting said fuel valve in accordance with said second electrical signal to obtain the desired fuel/air differential pressure.

4,566,267

POWER GENERATING PLANT WITH AN INTEGRATED COAL GASIFICATION PLANT

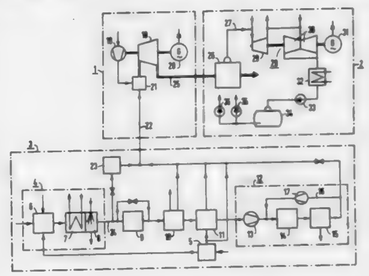
Rainer Müller, Erlangen, and Ulrich Schiffers, Eckental, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,330

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320228

Int. Cl.⁴ F02C *3/28*

U.S. Cl. 60—39.07 **4 Claims**



1. Power generating station with an integrated coal gasification plant and an ammonia synthesis plant comprising

(a) a coal gasification plant which includes a gasifier for gasification of coal to produce raw fuel gas containing a

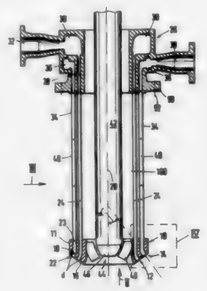
mixture of gaseous constituents including H_2, CO, CO_2 and H_2S,
(b) a heat exchanger in which the heat of the raw gas from the gasifier is utilized to generate steam,
(c) a dust removal plant wherein the raw gas is treated to remove dust particles from the raw gas,
(d) a gas turbine power plant which include a gas turbine, a combustion chamber of the gas turbine, an air compressor for introduction of air into the combustion chamber, and a generator coupled to the turbine,
(e) a steam generating station which includes a steam generator, and a high pressure and low pressure steam turbine,
(f) conduit means for the passage of steam from the heat exchanger of the coal gasification to the steam turbine,
(g) connecting means for passage of part of the raw gas from the dust removal plant to the combustion chamber of the gas turbine,
(h) a conversion plant for converting part of the carbon monoxide in the raw gas from the dust removal plant into carbon dioxide and hydrogen,
(i) a subsequent gas purification plant to remove carbon dioxide and hydrogen sulfide impurities from the resultant raw gas from the conversion plant,
(j) a gas separation plant wherein the gas from the gas purification plant is treated to remove all other gases with the exception of hydrogen and, at the same time the hydrogen is enriched with nitrogen to form synthesis gas containing hydrogen and nitrogen suitable for conversion into ammonia and a separated fraction of residual gases,
(k) an air separation plant for separation of air into oxygen and nitrogen together with connecting means from the air separation plant to supply the coal gasifier with oxygen and the gas separation plant with nitrogen,
(l) an ammonia synthesis plant for the conversion of the synthesis gas containing hydrogen and nitrogen, having an ammonia synthesis reactor and separating means for separating ammonia from the residual gases in the reaction products from the synthesis reactor,
(m) connecting means for conduction of said synthesis gas into the ammonia synthesis reactor, and
(n) conduit means for passage of part of the residual gases in the reaction products from the ammonia synthesis reactor together with the separated fraction of residual gases in the gas purification plant to the combustion chamber of the gas turbine.

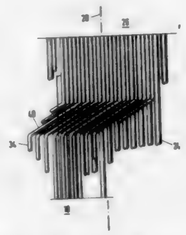
4,566,268
MULTIFUEL BURNER

Hans Hoffeins, Viernheim; Richard Kalbfuss, Mannheim, and Bora Ipek, Weinheim, all of Fed. Rep. of Germany, assignors to BBC Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed May 10, 1984, Ser. No. 608,986
Claims priority, application Fed. Rep. of Germany, May 10, 1983, 3317035
Int. Cl.⁴ F02C *7/22;* **F23D** *13/36;* **F23R** *3/36*
U.S. Cl. 60—39.463 **6 Claims**

1. Multifuel burner having outlet locations for a plurality of fuels respectively connected with associated fuel feeding spaces arranged at a head of the burner, at least two of the fuel feeding spaces being for fuel gas and encompassing a plurality of outlet nozzles arranged annularly in a nozzle head, comprising:
(a) a plurality of first tube conduits connecting respective ones of the outlet nozzles for fuel gas to one of the respective fuel feeding spaces associated therewith, and a plurality of second tube conduits connecting respective others of the outlet nozzles to the other of the respective fuel feeding spaces;
(b) the nozzle head having an annular shape and an outer edge formed with a chamfer inclined with respect to said longitudinal axis, the outlet nozzles having discharge openings extending perpendicularly through said chamfer and being inclined outwardly at an angle of 20° to 80° to said longitudinal axis;
(c) said first tube conduits extending rectilinearly and parallel to the longitudinal axis of the burner and being annularly disposed around said longitudinal axis;
(d) said second tube conduits being each formed with at least two changes in direction of the linear extension thereof in a manner that, starting from the nozzle head, said second tube conduits each extend initially rectilinearly and parallel to said longitudinal axis of the burner, then have a bend





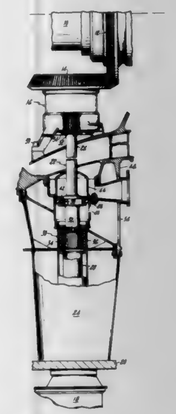
therein at an angle of 20° to 80° with respect to said longitudinal axis, and then have a bend therein bringing them again into the direction of said longitudinal axis;
(e) the outlet nozzles as well as the respective first and second tube conduits as well as the one and the other fuel feeding spaces, respectively, being of such dimensions with respect to the cross sections and the numbers thereof that a nominal full capacity of the burner is attainable during operation with said ones and said others of the outlet nozzles, respectively.

4,566,269
JET ENGINE REMOVABLE SUPPORT ASSEMBLY

Richard E. Gingras, Agawam, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 11, 1983, Ser. No. 540,935
Int. Cl.⁴ F02K *3/04;* **F02C** *7/20*
U.S. Cl. 60—226.1 **6 Claims**

1. In a fan jet engine having a fan casing and an intermediate casing, a gearbox attached to said fan casing, a rotor drive shaft and a drive connection for the gearbox extending from the drive shaft through a portion of said fan casing, said drive connection including a tower shaft assembly comprising an upper tower shaft member and a lower tower shaft member, first gear means between said drive shaft and said upper tower shaft, first slideable connecting means between said first gear means and said upper tower shaft, second slideable connecting means between said upper and lower tower shafts, means surrounding said upper tower shaft and attached to said intermediate casing for supporting and axially locating said upper tower shaft in a normal operating position, means for detaching said surrounding means from said intermediate casing so that said upper tower shaft can be moved axially to a first

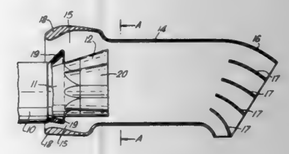


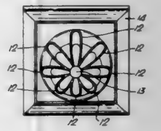
position free of connection with said first gear means, and means for detaching said upper tower shaft from said surrounding means so that said upper tower shaft can be moved axially to a second position free of connection with said lower tower shaft.

4,566,270
GAS TURBINE ENGINE INFRA-RED RADIATION SUPPRESSOR

John R. Ballard, Sarratt; Peter H. Timmis, and Michael J. Buller, both of Kings Langley, all of England, assignors to Rolls-Royce Limited, London, England

Continuation of Ser. No. 433,876, Oct. 13, 1982, abandoned.
This application Nov. 14, 1984, Ser. No. 671,336
Claims priority, application United Kingdom, Nov. 3, 1981, 8133087
Int. Cl.⁴ F02C *7/18*
U.S. Cl. 60—264 **5 Claims**



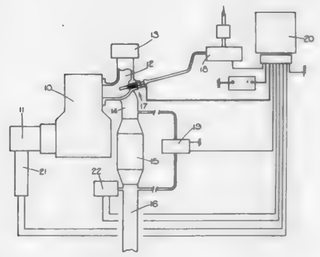


1. A gas turbine engine infra-red radiation suppressor comprising:
a circumferentially convoluted exhaust nozzle defining lobes and having a downstream end for discharge of an exhaust efflux;
a duct having an upstream end surrounding and extending upstream of said downstream end of said circumferentially convoluted exhaust nozzle, said duct extending downstream of said circumferentially convoluted exhaust nozzle and terminating in a downstream end, said upstream end of said duct being in spaced relationship to said circumferentially convoluted exhaust nozzle to define a gap for drawing of ambient air into said duct for rapid mixing with said exhaust efflux discharged from said circumferentially convoluted exhaust nozzle;
diffuser means positioned in said duct immediately adjacent the downstream end of said duct for diffusing said air and said exhaust efflux flowing from said duct, said diffuser means including a plurality of uncooled vanes extending across the downstream end of said duct, said vanes having upstream ends spaced a sufficient distance downstream of said downstream end of said convoluted exhaust nozzle to permit the rapid mixing of exhaust efflux from said exhaust nozzle and ambient air in said duct, said vanes further being arranged to prevent an axial direct line of sight of said circumferentially convoluted exhaust nozzle from said downstream end of said duct; and
means shielding a portion of said circumferentially convoluted exhaust nozzle from a direct line of sight through said gap between said circumferentially convoluted exhaust nozzle and said duct.

4,566,271
ENGINE SYSTEMS

Geoffrey R. French, Weybridge; Pierre H. Peltret, Greenford, and Brian J. Chalke, Feltham, all of England, assignors to Lucas Industries public limited company, Birmingham, England

Filed Nov. 14, 1983, Ser. No. 551,175
Claims priority, application United Kingdom, Dec. 1, 1982, 8234212
Int. Cl.⁴ F01N *3/02*
U.S. Cl. 60—286 **1 Claim**



1. An engine system for a road vehicle comprising an internal combustion engine having an exhaust manifold connected to an exhaust system of the vehicle by way of a treatment device which acts to purify the exhaust gas leaving the engine, a heating device operative to cause an increase in the temperature within said treatment device said treatment device being self cleaning when the exhaust gas temperature is above a predetermined value, the system including a control system responsive to engine speed and vehicle speed and arranged to cause operation of said heating device when the vehicle speed is above a predetermined value and the engine speed is below a predetermined value such that the engine exhaust gas temperature is below said predetermined value, and when the engine speed has been below said predetermined value for a specified period.

4,566,272

HYDRAULIC CONTROL APPARATUS FOR A SERVO-MOTOR, PARTICULARLY FOR VEHICLE STEERING

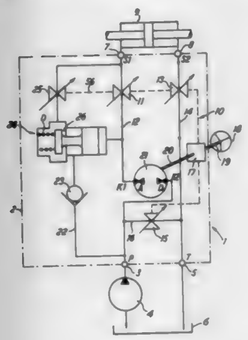
Hans C. Petersen, Nordborg, and Erik Kyster, Augustenborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Dec. 8, 1983, Ser. No. 559,301

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1982, 3248638

Int. Cl.[4] F01C *1/10*

U.S. Cl. 60—384 8 Claims



1. A hydrostatic steering control device, comprising, a housing having a plurality of ports including fluid inlet and outlet ports and two motor ports connectable to an external servomotor, said housing having first and second transversely extending end wall means and central wall means extending transversely between and in axially spaced relation to said end wall means, a metering motor having a casing rotatably mounted in said housing between said first and central wall means, said casing and one of said wall means forming directional switching valve means for controlling the direction of said servomotor by forming alternate supply and return paths via said fluid inlet and outlet ports and said motor ports, said directional valve means having first engaging valve surfaces therebetween forming a first set of adjustable throttling orifices, said metering motor having an outer member fixed relative to said casing and an inner member movable relative to and cooperable with said outer member to generate a metered fluid flow in said supply path corresponding to the movement of said inner member relative to said outer member, control shaft means for actuating one of said members, one of said metering motor member being connected to said directional valve means to rotate said directional valve means in either turning direction, resilient means for maintaining said directional valve means in a neutral position between two operating positions in the absence of a turning force on said shaft means, a bypass path in said housing between said fluid inlet port and either of said motor ports bypassing said directional valve means and said metering motor, rotary valve means in said bypass path between said housing central wall means and one of said housing end wall means, second engaging valve surfaces between said rotary valve means and one of said wall means forming a second set of adjustable throttling orifices in said bypass path, shaft means between one of said metering motor members and said rotary valve means for rotating said rotary valve means therewith and therby operate all of said adjustable throttling orifices in unison in response to turning of said control shaft means, and pressure regulating means in said bypass upstream of said second set of throttling orifices and responsive to pressure in said bypass and supply paths to maintain constant pressure drops across said throttling orifices in said bypass and supply paths.

4,566,273

PNEUMATIC SERVOMOTOR

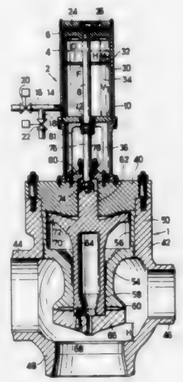
Markus Baumeler, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 11, 1983, Ser. No. 474,285

Claims priority, application Switzerland, Mar. 17, 1982, 1665/82

Int. Cl.[4] F15B *11/06*

U.S. Cl. 60—415 4 Claims



1. A pneumatic servomotor for a valve comprising

a cylinder having an inside diameter (D) and a pair of end faces;

a piston slidably mounted in said cylinder to move between a first position adjacent one end face of said cylinder and a second position spaced from said one end face;

a piston rod secured to said piston and extending through the other end face of said cylinder for connection to a valve outside said cylinder;

a partition in said cylinder to define a first chamber with said piston and a second chamber with said other end face of said cylinder, said second chamber having a volume larger than the volume of said first chamber;

a first control valve for controlling a flow of pressurized medium to said second chamber;

a second control valve for controlling a flow of medium from said second chamber;

said partition having an annular surface spaced about said piston rod to define a constriction communicating said first chamber with said second chamber to throttle a flow of pressurized medium from said second chamber into said first chamber, said constriction having a flow cross-sectional area (F_{id}) of not more than $F_{id}=0.02\ D^2$; and

an aperture communicating a third chamber between said piston and said one end face of said cylinder with a pressure medium sink.

4,566,274

CONTROL DEVICE FOR A HYDROSTATIC DRIVE

Joachim Heiser, Stuttgart, and Dieter Weigle, Urach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

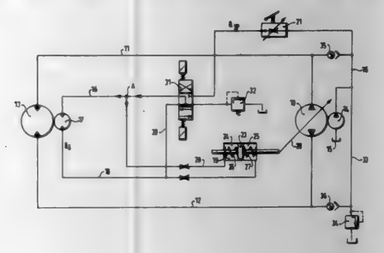
Filed Oct. 3, 1983, Ser. No. 538,415

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236580

Int. Cl.[4] F16H *39/46*

U.S. Cl. 60—444 13 Claims

1. A control device for a hydrostatic drive having an adjustable pump, a pressure responsive setting cylinder coupled to said pump, a hydraulic motor connected via pressure conduits to said pump, and a measuring motor coupled to the hydraulic motor to rotate with a proportional rotary speed, the measuring motor having an inlet and an outlet, the outlet being connected via a conduit to said setting cylinder, comprising a nominal flow generator connected via a conduit to the inlet of said measuring motor to produce an adjustable control flow which when attained by said measuring motor determines the desired rotary speed of said hydraulic motor; and means for



controlling flow difference between said nominal flow generator and said measuring motor, said controlling means being connected between the inlet and the outlet of said measuring motor to counteract pressure fluid supplied to said setting cylinder so as to keep adjusting said pump for so long as until the flow volume absorbed by said measuring motor equals the flow volume discharged from said nominal flow generator.

4,566,275

HYDRAULIC BOOSTERS FOR VEHICLE BRAKING SYSTEMS

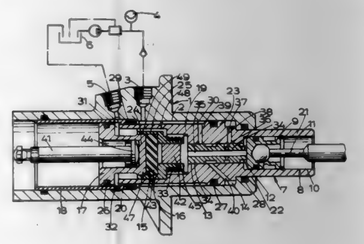
Glyn P. R. Farr, Leek Wooton, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Continuation of Ser. No. 391,354, Jun. 23, 1982, abandoned. This application Dec. 14, 1984, Ser. No. 881,696

Claims priority, application United Kingdom, Jul. 4, 1981, #120750

Int. Cl.[4] B60T *13/20*

U.S. Cl. 60—554 12 Claims



1. An hydraulic booster for a vehicle braking system comprising a housing provided with a bore, an inlet for connection to a source of high pressure hydraulic fluid and an outlet for connection to a reservoir for fluid, a pedal operated input member, an output member for applying an output force to a master cylinder assembly, a boost piston working in said bore, a boost chamber in said bore, said boost piston being advanced in said bore in response to pressurisation of said boost chamber by fluid from said source, said boost piston having forward and rearward relatively movable parts, said forward and rearward parts carrying seals each having slidable sealing engagement with a complementary portion of said housing bore, said rearward part of said boost piston having a forwardly extending portion of a diameter less than the portions of said bore complementary with said forward and rearward seals, a seal assembly fixed in said housing intermediate said forward and rearward seals and having slidable sealing engagement with the forwardly extending portion of the rearward part of said boost piston, a pressure chamber connected at all times with said inlet and defined between said intermediate and rearward seals and the forwardly extending portion of the rear part of said piston, an exhaust chamber connected with said outlet and defined between said forward and rearward piston parts and said forward and intermediate seals, the rearward part of said boost piston having a bore therein, a recess between the relatively movable parts of said boost piston, said input member working in said bore in the rearward part of said boost piston, a reducer mechanism located in said recess, and thrust transmission means which in operation feeds a reaction load from said master cylinder assembly back to said input member through said forward piston part and said reducer mechanism to provide a reaction which is substantially unaffected directly by the magnitude of the pressure in said boost chamber.

4,566,276

INLET ASSEMBLY FOR A BRAKE MASTER CYLINDER

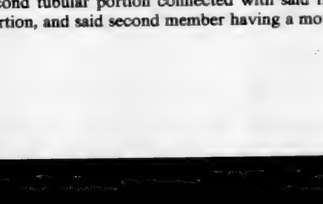
Junichi Komorizono, and Akihiko Miwa, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 13, 1984, Ser. No. 588,958

Claims priority, application Japan, Mar. 15, 1983, 58-38242[U]

Int. Cl.[4] F15B *7/00*

U.S. Cl. 60—585 6 Claims



1. A brake master cylinder having a reservoir, comprising:

a cylinder body having at least one inlet;

an inlet member mounted on said inlet of said cylinder body, said inlet member having at least one first member and a second member, said first and second members being formed of molded resin, respectively, and permanently interconnected with each other, said first member integrally forming a first tubular portion hermetically fitted into said inlet of said cylinder body and a second tubular portion connected to said first tubular portion, said second member having a mounting portion for mounting said inlet member on said cylinder body; and

a hose hermetically connected to said second tubular portion of said first member and in communication with said reservoir wherein said cylinder body further comprises a boss portion extending therefrom and within which said first tubular portion is mounted, said second member having a hole formed therein at one end thereof within which said first tubular portion is positioned such that said one end of said second member is positioned between said second tubular portion and said boss portion; and

means for positioning said second member above to a top portion of said boss portion.

2. A brake master cylinder having a reservoir, comprising:

a cylinder body having a pair of inlets;

an inlet member mounted on said pair of inlets of said cylinder body, said inlet member having a pair of first members and a second member, said pair of first members and said second member being formed of molded resin, respectfully, said second member permanently interconnecting said pair of first members, each of said first members integrally forming a first tubular portion hermetically fitted into a respective inlet of said cylinder body and a second tubular portion connected with said first tubular portion, and said second member having a mounting por-

tion for mounting said inlet member on said cylinder body; and

a pair of hoses hermetically connected to said second tubular portions, respectfully, of said first pair of member and in communication with said reservoir wherein said cylinder body further comprises a first and second boss portion extending therefrom and within which said first tubular portion of said pair of first members are respectfully positioned, said second member having a hole formed at opposite ends thereof and within which said pair of first members are respectively positioned such that said second member interconnects said pair of first members.

4,566,277

PRESSURIZED FLUID SUPPLYING ARRANGEMENT PARTICULARLY A MASTER CYLINDER OF A CLUTCH

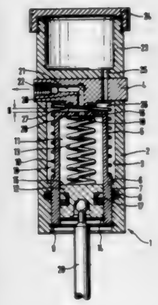
Alfred Birkenbach, Hattersheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,208

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120272

Int. Cl.⁴ B60T *11/26*; F15B *7/08*

U.S. Cl. 60—587 **14 Claims**



1. An arrangement for supplying pressurized fluid into a user circuit, particularly a master cylinder for supplying hydraulic fluid into a circuit leading to a slave cylinder of a clutch, in response to the application of an external force, especially a clutch pedal force, thereto, comprising

a cylinder housing defining a bore having an axis;

a cylinder sleeve sealingly accommodated in said bore for movement axially thereof between an inactive and an active position and bounding an external feeding compartment with said housing, and an internal pressure chamber;

a piston sealingly received in said pressure chamber for axial displacement relative to said sleeve and having an end face delimiting a pressure compartment in said pressure chamber;

means for applying the external force to said piston for displacing the same in said pressure chamber and for thus applying pressure to the fluid present in said pressure compartment;

a connecting port in one axial end of said cylinder sleeve remote from said piston for communicating said pressure compartment with said feeding compartment when said cylinder sleeve is in an inactive position, said connecting port being in communication with a supplying port for supplying fluid from said pressure chamber into the user circuit in the active position of said sleeve;

an auxiliary pressure port interconnecting said feeding compartment

with an auxiliary fluid reservoir for supply of fluid from said reservoir via said feeding compartment through said connecting port into said pressure chamber in the inactive position of said sleeve;

valve means on said sleeve and on said housing for respectively establishing and interrupting communication via said feeding compartment between said reservoir and said pressure chamber in said inactive and active positions of said sleeve; and

means for urging said sleeve toward said active position thereof in response to the displacement of said piston.

4,566,278

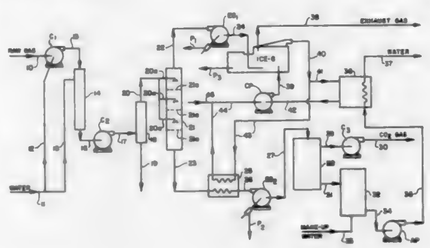
METHANE - CARBON DIOXIDE SCRUBBING METHOD AND SYSTEM

Louis W. Force, 718 North Dr., New Buffalo, Mich. 49117

Filed Oct. 29, 1984, Ser. No. 665,732

Int. Cl.⁴ F01K *23/10*

U.S. Cl. 60—618 **16 Claims**



1. In the method of up-grading the heating value quality of digester generated methane gas by removing carbon dioxide gas therefrom and using the up-graded methane gas as fuel in an internal combustion engine - generator system to produce electric power, the steps comprising:

(a) mixing raw digester methane gas and cold water absorbent under relatively high pressure and introducing the cold gas-absorbant mixture to a contact tower to separate methane gas and other non-condensible gases from said raw digester gas and to condense the carbon dioxide component and other condensible gases of said raw digester gas for absorption by said water absorbant;

(b) removing the methane gas and other non-condensible gases from said contact tower as an overhead gas mixture of higher heating value quality, and utilizing said gas mixture as combustible fuel in the engine of an internal combustion engine - generator system to produce electric power;

(c) removing the water absorbent with absorbed condensed carbon dioxide and other condensed gases from said contact tower as a relatively high pressure bottoms absorbent - condensed gas stream, and heating and expanding said stream to reduce the pressure thereof and vaporize and release carbon dioxide gas and other absorbed gases from said absorbent;

(d) introducing water coolant to the cooling section of the engine of said engine - generator system to cool said engine with the attendant conversion of said coolant to saturated steam;

(e) removing said saturated steam from the cooling section of said engine;

(f) utilizing said steam in part to generate refrigeration to cool the water absorbent after the release therefrom of carbon dioxide gas and other absorbed gases and before the recycle of said absorbent as the cold water absorbent for mixing with raw digester methane gas and in part to heat the bottoms absorbent-condensed gas stream removed from said contact tower before said stream is expanded to release carbon dioxide gas and other absorbed gases therefrom, said utilization of said steam resulting in the cooling thereof to form water condensate; and

(g) recycling said water condensate to the cooling section of the engine of said engine - generator system as the water coolant for said engine.

4,566,279

VEHICLE PROPULSION PLANT

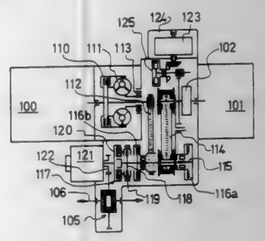
Sven O. Kronogard, deceased, late of Lomma, Sweden (by Allen Lindén, administrator); Clas O. Kronogard, Gråbo, and Hakan Kronogard, Lund, both of Sweden, assignors to AB Volvo, Gothenburg, Sweden

Division of Ser. No. 302,626, Sep. 15, 1981, abandoned. This application Nov. 9, 1984, Ser. No. 669,892

Claims priority, application Sweden, Sep. 29, 1980, 8006805

Int. Cl.⁴ F02B *72/00*

U.S. Cl. 60—718 **6 Claims**



1. A vechicle propulsion plant comprising first and second internal combustion engine parts mounted end to end having crank shafts aligned and connectable to a propulsion shaft, a continuously variable belt transmission connectable to at least one of said internal combustion engines, and gear means mounted with its axes of rotation parallel to said crank shafts, for connecting said belt transmission to said vehicle propulsion shaft, and means interconnecting said engine parts with respect to at least one secondary operating fluid.

4,566,280

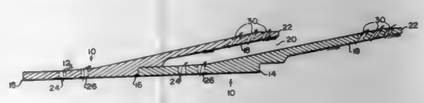
GAS TURBINE ENGINE COMBUSTOR SPLASH RING CONSTRUCTION

Donald N. Burr, 103 Woodfield Crossing, Glastonbury, Conn. 06033

Continuation-in-part of Ser. No. 477,903, Mar. 23, 1983, abandoned. This application May 15, 1984, Ser. No. 610,346

Int. Cl.⁴ F02C *7/00*

U.S. Cl. 60—757 **20 Claims**



1. A combustor subassembly for a gas turbine engine, which comprises:

a plurality of modular elements;

each modular element being generally annular and extending from a first axial portion to a second axial portion, said second axial portion being flared inwardly toward the geometric center line of said modular element;

said modular elements being disposed in nested, substantially coaxial relationship with successive modular elements spaced axially along a substantially common center line;

a plurality of said adjacent modular elements having respective first and second axial portions disposed in overlapping relationship;

the overlapping of said modular elements defining annular flow passages for directing cooling air into said combustor;

each of a plurality of modular elements including holes therein in said first axial portion at an axial portion thereof which overlaps said second axial portion of another modular element; and

each of a plurality of said modular elements including holes therein in said second axial portion.

4,566,281

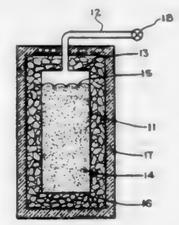
REACTION HEAT STORAGE METHOD FOR HYDRIDE TANKS

Gary D. Sandrock, Ringwood, N.J., and Edwin Snape, Suffern, N.Y., assignors to Ergenics, Inc., Wyckoff, N.J.

Filed Feb. 12, 1979, Ser. No. 11,194

Int. Cl.⁴ F17C *7/02, 11/00*; F26B *5/04*

U.S. Cl. 62—48 **4 Claims**



1. An absorption-desorption system comprising

a. hydridable material and hydrogen characterized by exothermicity during absorption and endothermicity during desorption; said hydridable material being confined in a containing means and said means including a conduit through which hydrogen as a gas is fed into said containing means at a specified feed pressure;

b. a heat storage medium in heat transfer connection with said hydridable material; and

c. a heat transfer barrier external said hydridable material and said heat storage medium

wherein the mass of said containing means, said hydridable material, and said heat storage medium is sufficient to absorb at least about 60% of the heat generated by absorbing the maximum capacity of said hydrogen in said hydridable material without the temperature of said hydridable material rising from an initial temperature to a temperature at which said hydridable material will have an equilibrium hydrogen pressure equal to said specified feed pressure.

4,566,282

METHOD AND APPARATUS FOR INERTING TRANSPORT CONTAINERS

Karl Knoblauch, Essen; Burkhard Harder, Oberhausen-Dellwig; Heinrich Heimbach, Essen-Heidhausen, all of Fed. Rep. of Germany, and Charles F. Cosentino, Wheaton, Ill., assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany and Nitrotec Corporation, New York, N.Y.

Filed Mar. 19, 1984, Ser. No. 591,401

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3310012

Int. Cl.⁴ F17C *11/00*

U.S. Cl. 62—48 **9 Claims**



1. A method of inerting transport containers comprising the steps of

inerting transport containers with a gas which contains nitrogen and a predetermined concentration of up to about 5 vol. % oxygen in a cyclic pressure-change adsorption process comprising from time to time

adsorbing oxygen in air on an adsorbent by conducting the air through a layer of the absorbent in which the oxygen in the air is adsorbed on the adsorbent at a pressure above atmospheric pressure and conducting a nitrogen-rich gaseous mixture still containing oxygen which discharges at the end of the layer of adsorbent into the transport container to be inerted,

desorbing the adsorbed oxygen from the air from the adsorbent by reduction of the pressure and,

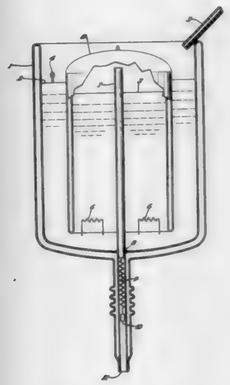
starting a next adsorption step comprising a first inerting phase with a multiple of predetermined amount of air necessary to maintain a desired oxygen concentration flowing through the layer of adsorbent and a second inerting phase with one time said amount of air flowing through the layer of adsorbent.

4,566,283

LOW TEMPERATURE DEVICE FOR COOLING SMALL SAMPLES

Roland Boese, Essen, Fed. Rep. of Germany, assignor to Nicolet Instrument Corporation, Madison, Wis.

Filed Aug. 30, 1984, Ser. No. 646,561
Int. Cl.⁴ F17C *13/02*
U.S. Cl. 62—49 **4 Claims**



1. A device for providing a low temperature gas stream for cooling small samples undergoing spectroscopic analysis comprising:

insulated outer container means for containing liquified gas;

hood means within the outer container means for trapping evaporated liquified gas;

means within said hood means for evaporating liquified gas therein; and

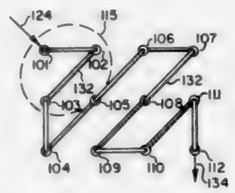
tube means extending from the evaporated liquified gas trapped within said hood means through said outer container means.

4,566,284

METHOD AND APPARATUS TO UPGRADE THE CAPACITY OF AMBIENT-AIR LIQUID CRYOGEN VAPORIZERS

Barry L. Werley, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 25, 1985, Ser. No. 715,430
Int. Cl.⁴ F17C *7/02*
U.S. Cl. 62—52 **5 Claims**



1. In a process for vaporizing a cryogenic fluid in an ambient-air vaporizer having at least twelve vertically disposed pipe lengths containing longitudinally placed heat exchange fins, said adjacent pipe lengths being approximately equally spaced from one another in a generally rectangular array with one side of the rectangle having four pipe lengths and the adjacent side having three pipe lengths, the improvement for upgrading the capacity of the vaporizer by minimizing ice build-up near the warmer pipe lengths which comprises:

(a) initially passing the cryogenic fluid to be vaporized through a first vertical pipe length located at one corner of the rectangle;

(b) removing the fluid from the first vertical pipe length and passing it through a second vertical pipe length located next to the first pipe length;

(c) removing the fluid from the second vertical pipe length and passing it through a third vertical pipe length located diagonal to the second pipe length and next to the first pipe length;

(d) removing said fluid from the third vertical pipe length and passing it through a fourth vertical pipe length located beside the third pipe length, and farthest from the first pipe length;

(e) removing the fluid from the fourth vertical pipe length and passing it through a fifth vertical pipe length located diagonal to the fourth pipe length and beside both the second and third pipe lengths;

(f) removing said fluid from the fifth vertical pipe length and passing it through a sixth vertical pipe length located diagonal to the fifth pipe length and beside the second pipe length;

(g) removing said fluid from the sixth vertical pipe length and passing it through a seventh vertical pipe length located beside said sixth pipe length;

(h) removing said fluid from the seventh vertical pipe length and passing it through an eighth vertical pipe length located diagonal to the seventh vertical pipe length and beside said fifth pipe length;

(i) removing said fluid from the eighth vertical pipe length and passing it through a ninth vertical pipe length located diagonal to the eighth pipe length and beside said fourth pipe length;

(j) removing said fluid from the ninth vertical pipe length and passing it through a tenth vertical pipe length located beside the eighth and ninth pipe lengths;

(k) removing said fluid from the tenth vertical pipe length and passing it through an eleventh vertical pipe length located diagonal to the tenth pipe length and beside the seventh and eighth pipe lengths;

(l) removing said fluid from the eleventh vertical pipe length and passing it through a twelfth vertical pipe length located at a corner of the rectangle beside the tenth and eleventh pipe lengths; and

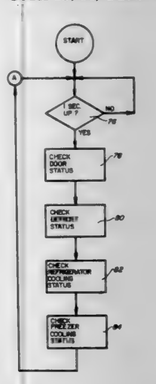
(m) removing said vaporized fluid from said twelfth vertical pipe length.

4,566,285

REFRIGERATOR DOOR AJAR ALARM WITH VARIABLE DELAY

Andrew T. Tershak, Center Township, Vanderburgh County, Ind., and Michael D. Thieneman, Lincoln Township, Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 26, 1984, Ser. No. 574,135
Int. Cl.⁴ G01K *13/00;* **F25B** *49/00*
U.S. Cl. 62—129 **18 Claims**



1. In a refrigeration apparatus having means defining a refrigerated compartment and a door for providing access to said compartment, an improved door ajar alarm comprising:

means for sensing when said door is open;

means for sensing an operating condition of said refrigeration apparatus other than the position of said door;

means for providing an alarm; and

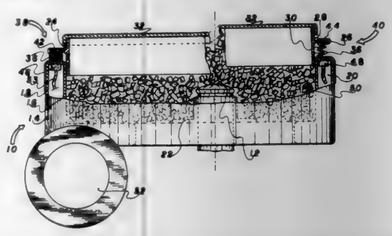
control means coupled to said door sensing means, said condition sensing means and said alarm means for actuating said alarm means in response to said door being open for a period of time which varies in accordance with the sensed operating condition of the refrigeration apparatus.

4,566,286

AUTOMATIC ICE HOPPER

Paul Keller, 1004 94th Ave., NW., Coon Rapids, Minn. 55433

Filed Apr. 27, 1984, Ser. No. 604,582
Int. Cl.⁴ F25C *5/18*
U.S. Cl. 62—135 **20 Claims**



1. An automatic hopper for an ice-making machine, comprising:

a container for receiving and storing pieces of ice from an ice-making mechanism, said container having substantially vertical walls and an open top bordered by said walls, said open top being as wide as said container,

means for conveying said pieces of ice into said container from said ice-making mechanism,

cover means for covering said container, said cover means comprising a rigid member which is as wide as said container and which covers the entire open top of said container,

said cover means being loosely fitted onto the top of said container and arranged such that when ice which is conveyed into said container builds up in any part of said container to a level above the level of said cover means, said ice will push said cover means up and away from said container,

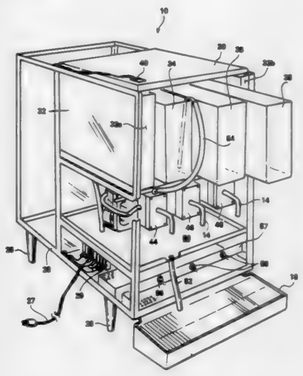
control means for controlling the operation of said ice-making mechanism, said control means being positioned such that when said cover means moves up and away from said container in response to the buildup of ice in any part of said container, said control means will switch off said ice-making mechanism.

4,566,287

POST MIX DISPENSING MACHINE

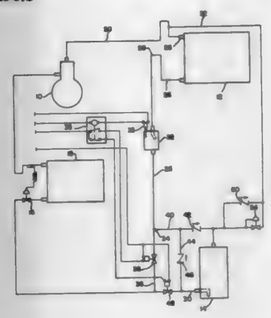
Richard J. Schmidt, 695 Trinity Ct., Longwood, Fla. 32750; Ronald R. Schmidt, 1416 Hartley Ave., Deltona, Fla. 32725; Walter E. Schmidt, 4 Stonegate N., Longwood, Fla. 32779, and Patrick J. Schmidt, 1710 Twin Oaks St., Deltona, Fla. 32725

Filed Dec. 5, 1983, Ser. No. 558,294
Int. Cl.⁴ F25D *17/02;* **B67D** *5/56*
U.S. Cl. 62—188 **32 Claims**



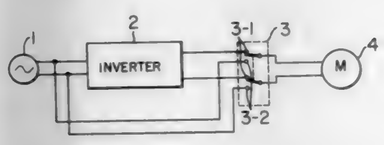
1. A machine for dispensing a freshly mixed cup of juice or other beverage made from concentrate mixed with water immediately prior to the dispensing, comprising a water reservoir, means attached to a water source for keeping an approximately constant head of water in said reservoir at all times, refrigeration coils disposed in the interior of said reservoir, and connected to means for causing the circulation of refrigerant through said coils, thus to chill the water to a temperature above the freezing point, at least one concentrate tank disposed closely adjacent said reservoir, with said refrigeration coils serving to keep the concentrate chilled, an electric pump connected to deliver concentrate from said concentrate tank to a mixing chamber, said pump having operator controlled actuating means, such that an operator can selectively cause a controllable quantity of concentrate to be delivered to said mixing chamber, water connection means from said reservoir to said mixing chamber, a power driven impeller located in said mixing chamber, with said impeller serving to mix such concentrate with a suitable quantity of water from said reservoir, adjustment means enabling the amounts of water and concentrate to be altered slightly from time to time as may be necessary to assure a selected ratio of these ingredients being maintained, and outlet means connected to said mixing chamber so that the properly mixed beverage can be dispensed into a cup or other drinking receptacle.

4,566,288
ENERGY SAVING HEAD PRESSURE CONTROL SYSTEM
Andrew W. O'Neal, 18517 8th Ave. NE., Seattle, Wash. 98155
Filed Aug. 9, 1984, Ser. No. 640,022
Int. Cl.⁴ F25B *41/00*
U.S. Cl. 62—196.1 **33 Claims**



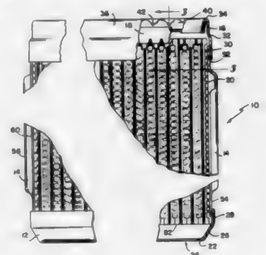
1. A refrigeration system including a closed refrigerant loop having a condenser, a receiver, an expansion device, an evaporator, and an air cooled compressor, further comprising:
(a) means for automatically maintaining adequate head pressure of the system during colder weather, including means for backflooding the condenser or shuttling liquid refrigerant from the receiver to the condenser to maintain a desired head pressure;
(b) reservoir means for accumulating liquid refrigerant flowing between the condenser and the receiver;
(c) sensor means for sensing the level of liquid refrigerant of the reservoir means; and
(d) diverting means for diverting subcooled liquid refrigerant from the condenser directly to the expansion device, thereby bypassing the receiver, the diverting means being responsive to the sensor means indicating a level of liquid refrigerant of the reservoir means above a predetermined level.

4,566,289
REFRIGERATOR CONTROL SYSTEM
Kenichi Iizuka, Ashikaga; Hideo Uzuhashi, Tochigi; Yoshihisa Uneyama, Tochigi; Michiya Matuda, Tochigi, and Minoru Kobayashi, Tochigi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 9, 1984, Ser. No. 669,800
Claims priority, application Japan, Nov. 16, 1983, 58-213962; Mar. 12, 1984, 59-45415
Int. Cl.⁴ F25B *1/00*; **H02P** *5/28*
U.S. Cl. 62—228.4 **6 Claims**



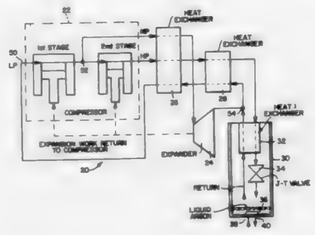
1. A control system for a refrigerator including a compressor for making up a freezing cycle and a motor driven by a commercial power supply for driving said compressor, said control system comprising an inverter circuit connected to said commercial power supply, a power switch connected to said commercial power supply, switching means connected to said motor and switchable between a first mode where said motor is connected to said commercial power supply through said inverter and a second mode where said motor is connected to commercial power supply through said power switch, and control means responsive to a predetermined external signal applied thereto for producing a control signal for turning off said power switch and then switching said switching means from said second mode to said first mode.

4,566,290
CAPILLARY FIN MEDIA
Roy T. Otterbein, Phoenix, Ariz., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed Mar. 28, 1983, Ser. No. 479,127
Int. Cl.⁴ B01F *3/04*; **F28D** *5/00*
U.S. Cl. 62—304 **5 Claims**



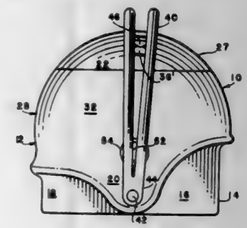
1. A generally plate-like structure for use as a media element in a wetted surface air-to-air heat exchanger comprising a water-impervious sheet for separating a first stream of cooling air and water from a second stream of air to be cooled, said sheet formed to have a plurality of fins having an outer surface extending outwardly into the second stream of air, each fin formed to contain a slot-like depression defining an inner surface of the fin generally similar to the outer surface of the fin, the depression being dimensioned thin enough to exhibit capillarity for drawing water from the first stream into the depression, and thick enough to exhibit good heat transfer characteristics when filled with water.

4,566,291
CLOSED CYCLE CRYOGENIC COOLING APPARATUS
Richard A. Halavais, Pompton Lakes, N.J., assignor to General Pneumatics Corporation, Orange, N.J.
Continuation of Ser. No. 466,016, Feb. 14, 1983, abandoned.
This application Oct. 15, 1984, Ser. No. 660,549
Int. Cl.⁴ F25D *9/00*
U.S. Cl. 62—402 **37 Claims**



1. Cooling apparatus comprising compressor means for compressing a gas, expander means for enabling expansion of a portion of the compressed gas and for enabling the expansion of the compressed gas to perform work, and fluid means connecting the expander means and the compressor means for applying said work of expansion to the compressor means to assist the compressor means in said compressing, wherein the compressor means is a diaphragm compressor comprising a housing having a cavity with a resilient diaphragm disposed therein, the diaphragm being displaceable by the fluid means for compressing gas within the cavity, wherein the fluid means comprises a fluid reservoir partially formed by a movable member, and fluid passageway means connecting the fluid reservoir to a first side of the diaphragm, and wherein the expander means comprises a portion of the movable member disposed within an expansion chamber in the housing, the movable member being movable in a direction to increase the volume of the expansion chamber while simultaneously decreasing the volume of the fluid reservoir so as to cause fluid in the reservoir to exert pressure against the diaphragm and to displace the diaphragm in a direction to compress gas within the cavity.

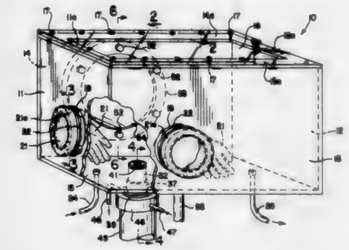
4,566,292
HELMET COOLER
Lawrence S. Parmet, 4358 Inveraray Walk, Roswell, Ga. 30075
Filed Nov. 5, 1984, Ser. No. 668,569
Int. Cl.⁴ F25D *3/08*
U.S. Cl. 62—457 **10 Claims**



1. In a helmet cooler which looks like a football or other helmet:
a helmet cooler housing,
a movable helmet top closure member on said housing,
a container space inside said cooler wherein a plurality of soft drink cans may be placed together with crushed ice,
a face mask pivotally mounted on pivots on opposite sides of said housing and being movable from a position extending in front of said housing corresponding to where the face would be in a football helmet to a position extending upwardly over said closure on said housing, to provide a handle, and
latch means between said face mask in handle position and said closure member.

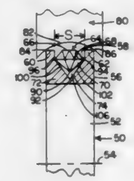
4,566,293
METHOD OF SAMPLE PREPARATION AND APPARATUS THEREFOR
Russell E. Arner, Brunswick; Ronald J. Emrich, Shaker Heights; James Gianelos, Lyndhurst, and Marion L. Haynes, Stow, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Dec. 3, 1984, Ser. No. 677,252
Int. Cl.⁴ F25B *19/00*
U.S. Cl. 62—514 R **4 Claims**

1. A freeze box capable of being hermetically sealed and suitable for use in association with a surface analysis instrument, said freeze box comprising air-impervious side wall panels, a front wall panel, a back wall panel, a floor panel and a cover panel, at least one of said panels containing an air-impervious transparent segment to permit an operator to view into the interior of said freeze box when said freeze box is in operation, said freeze box having at least two outwardly protruding hollow, generally cylindrical glove mounting rings extending through openings in the walls of said freeze box and communicating with the interior of said freeze box at one end and with the ambient atmosphere at the other end, an air-impervious glove with a cuff portion associated with each said glove mounting ring, said cuff portion of said glove being disposed over the exterior outwardly protruding cylindrical surface of the said glove mounting ring with which it is associated, means for clamping said cuff portion of said glove to said exterior cylindrical surface of said glove mounting ring with which it is associated to form a hermetic seal between said cuff portion of said glove and said glove mounting ring, means in



said floor panel adjacent on said side wall for introducing an inert purging gas into the interior of said freeze box, means adjacent the other said side wall for allowing the escape of purging gas from the interior of said freeze box, cooling means extending through said floor panel, said cooling means having a freeze rod provided with means for associating a sample to be cooled therewith, said cooling means having means for cooling said freeze rod to temperatures below −110° C., and said freeze box with a surface analysis instrument, said freeze box having an opening to permit a sample cooled in said freeze box to be transferred into the surface analysis instrument.

4,566,294
METHOD FOR THE MOUNTING OF GEMS AND RESULTING PRODUCT
Jan Brzozowski, 150 E. 69th St., New York, N.Y. 10021
Filed Feb. 2, 1984, Ser. No. 576,214
Int. Cl.⁴ A44C *9/0*, *17/02*
U.S. Cl. 63—15 **15 Claims**



1. A method for the mounting of gems, said method comprising forming a groove in a metallic support with rims upstanding on opposite sides of the groove, arranging the gems in a row in said groove, and deforming the rims to peripherally overlap the gems in the groove, the gems having apices, said apices being spaced above the bottom of the groove, the gems having girdles, the girdles of adjacent gems in said row abutting each other, the groove being formed with a symmetrical generally V-shaped base against which the girdles are forced during the deforming step, the gems having pavilions of generally similar angles and the V-shaped base being formed with a smaller angle, the rims prior to the deforming step being spaced apart at a distance which is at least as great as the size of the gems at the girdles thereof.

15. A ring comprising a toroidal body of precious metal

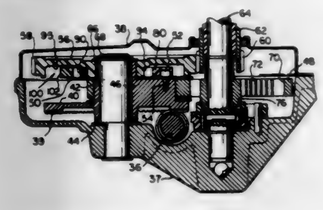
provided with a peripheral annular groove of substantially uniform cross-section having a symmetrical V-shaped base, gems, all of said gems including girdles and pavilions of substantially similar angles, said gems being mounted in said groove with the pavilions extending towards said base, the gems having apices spaced above the bottom of said base, the base being of an angle smaller than that of said pavilions, the girdles resting against said base, and rims on said body on opposite sides of said groove and clamping the gems in said groove, the gems being positioned adjacent to one another in a row with said girdles of adjacent gems in abutting relationship.

4,566,295

NEUTRAL PUMP-OUT FOR AUTOMATIC WASHER

Anthony Mason, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 452,285, Dec. 22, 1982, Pat. No. 4,491,210.
This application Sep. 4, 1984, Ser. No. 630,871
Int. Cl.⁴ D06F *37/40*
U.S. Cl. 68—12 R **5 Claims**



1. In an automatic laundry appliance, including
a tub for receiving wash liquid,
a receptacle within said tub for receiving a clothes load,
a motor selectively coupled to a first drive means in a first direction of rotation for agitating a clothes load and in a second direction of rotation to a second drive means for spinning said receptacle containing said clothes load,
a pump means driven by said motor for removing said wash liquid from said tub,
a presettable sequential control means for controlling a cycle of operation including a period when said first drive means is decoupled followed by a period when said second means is coupled to said motor,
a delay means for delaying coupling of said second drive means until said pump means has removed a quantity of said wash liquid from said tub, said delay means comprising:
an automatically actuatable rotating engagement means for drivingly engaging said second drive means; and
an automatically actuable latch means preventing engagement of said engagement means with said second drive means after said engagement means has been automatically actuated by rotation of said motor in said second direction until said control means interrupts said motor operation in said second direction.

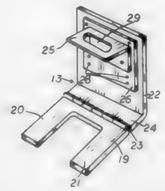
4,566,296

PADLOCK SECURITY COVER

Donald G. Kochakis, 95 E. Prospect St., Chula Vista, Calif. 92011

Filed Aug. 6, 1984, Ser. No. 633,059
Int. Cl.⁴ E05B *67/38*
U.S. Cl. 70—56 **8 Claims**

1. In cooperation with a padlock having a shackle engaging at least one eye of a lock or link of a chain for securing a door, gate or the like, a cover comprising:
a first plate shaped and dimensioned for mounting against the door, or gate;
a second plate hinged to the forward edge of the first plate for pivoting between an open position and a closed position generally parallel to and distal from said first plate and covering at least the shackle of the padlock;



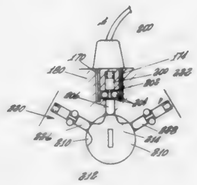
said second plate including an eye member projecting from its inner face proximally to said eye or link in said closed position for locking engagement with said padlock shackle.

4,566,297

ELECTRICAL PLUG LOCKING DEVICE

Robert C. Hawley, 3079 Calle Pinon, Santa Barbara, Calif. 93105

Filed Jul. 22, 1983, Ser. No. 516,701
Int. Cl.⁴ E05B *65/00*; H01R *4/54*
U.S. Cl. 70—57 **20 Claims**



1. A locking device for use with an electrical plug having at least one tine having an aperture located at a selected end thereof, said locking device comprising
a housing having at least one opening therein which is adapted to position the selected end of a said tine at predetermined location along a predetermined path;
at least one releasable locking means located within said housing adjacent to the opening, said at least one releasable locking means including
an elongated member having a first end section and a second end section and a circumferentially extending continuous slot formed around the periphery thereof between said first end section and said second end section, said slot having a goemetrical dimension which is smaller than the geometrical dimension of the outer surface of said elongated member, said elongated member being slideably mounted within said housing for linear movement relative to said predetermined path between a first position wherein said slot is remote from the predetermined location and a second position wherein said slot is located along the predetermined path and positioned substantially in alignment with the aperture of a said selected tine located at said predetermined location; and
at least one spherical member having a diameter which is substantially equal to the distance between the outer surface of said elongated member and the location where a tine is adapted to be positioned within said opening, said at least one spherical member being adapted to be positioned in said housing and between said outer surface of said elongated member and the location of an aperture of said tine adapted to be positioned within said opening for applying a locking force between said outer surface of said elongated member and a said tine adapted to be positioned in said opening and being adapted to urge the spherical member into the aperture of and locking a said tine adapted to be positioned in the opening when said elongated member is in said first position, said at least one spherical member being adapted to be moved away from the aperture in a said tine adapted to be positioned in said opening when the same is located in said predetermined location and into said slot when said elongated member is in said second position enabling the tine adapted to be positioned in said opening to be free of the locking force of said spherical member in said aperture of said tine adapted to be positioned in said opening enabling the same to be removed from said housing opening.

4,566,298

PROFILE EXTRUDER INCLUDING PULL MEASURING MEANS

Friedrich W. Elhaus, Dorfstrasse 21, D-7761 Moos, Fed. Rep. of Germany

Filed Apr. 30, 1984, Ser. No. 605,177
Claims priority, application Fed. Rep. of Germany, May 3, 1983, 3316161
Int. Cl.⁴ B21C *35/01, 51/00*
U.S. Cl. 72—6 **5 Claims**

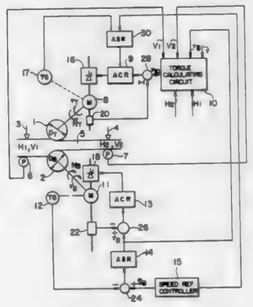
1. Apparatus for measuring the pull force applied by a puller head to an extrusion profile as it is extruded out of an extruder along a runout conveyor (1), comprising
(a) carriage means (4) mounted for displacement along the runout conveyor by controllable drive means (9);
(b) puller head means (14) including gripper head means (15,18) for gripping an extruded profile;
(c) means including a cantilever arm (13) connecting said puller head means with said carriage means for displacement between operable and retracted positions relative to said runout conveyor;
(d) said puller head means including a pair of relatively displaceable members (30,31) a first one (30) of which is connected with said cantilever arm and a second one (31) of which carries the profile gripping means, said second member (31) being movably connected to said first member; and
(e) force detecting means connected between said first and second puller head members for supplying a pull responsive control signal to said drive means, comprising
(1) a force detector (34) connected with one of said puller head members; and
(2) a tension member (39) connected with the other of said puller head members for transmitting the pull force to said force detector.

4,566,299

CONTROL METHOD AND APPARATUS FOR ROLLING MILL

Hiroshi Koyama, Hitachi, and Keiji Saito, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 28, 1984, Ser. No. 625,592
Claims priority, application Japan, Jun. 29, 1983, 58-115908
Int. Cl.⁴ B21B *37/00*
U.S. Cl. 72—8 **6 Claims**



1. A control apparatus for controlling at least a pair of rolls of a rolling mill for rolling a material to be rolled by passing said material through a pressure gap defined between said rolls, said apparatus comprising:
a pair of motors connected to respective work rolls;
speed control means connected to one of said motors and controlling the speed of said one of said motors driving one of said rolls so as to drive said one roll at a predetermind peripheral speed;
first means connected to said one roll for determining and outputting a signal representing an actual torque produced by said one roll;
second means for determining and outputting a signal representing a total torque required for rolling said material under a predetermined rolling condition;
third means connected to the output of said first and second means for producing a torque signal representing a difference between said total torque determined by said second means and said actual torque of said one roll determined by said first means; and
fourth means connected to said third means and said other roll for controlling a current of the other of said motors for driving said other roll so as to cause said other roll to produce a torque corresponding to said torque signal.

4,566,300

METHOD FOR THE MANUFACTURE OF A CONICAL TUBULAR MEMBER

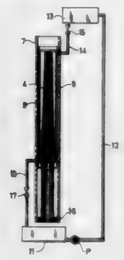
Sven R. V. Gebelius, Drottningholmsvägen 195, Bromma, Sweden (S-161 36)

PCT No. PCT/SE83/00110, § 371 Date Oct. 27, 1983, § 102(e) Date Oct. 27, 1983, PCT Pub. No. WO83/03374, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 25, 1983, Ser. No. 557,139
Claims priority, application Sweden, Mar. 26, 1982, 8201959
Int. Cl.⁴ B21D *15/03*
U.S. Cl. 72—63 **9 Claims**

1. A method for the manufacture of a conical tubular member comprising:
forming a tubular member having a substantially non-tapered configuration along its length and at least one profiled groove extending longitudinally along the length of the tubular member and inwardly with respect to the surface thereof;
placing said tubular member in at least partial surrounding

relationship onto a conical mandrel having at least one groove in the outer surface extending along the length thereof corresponding to said profiled groove in said tubular member to receive said profiled groove therein;

maintaining said tubular member in substantially fixed position on said mandrel; and



applying a fluid pressure force to the exterior of said tubular member to compress said tubular member onto said mandrel and said at least one profiled groove into said at least one groove in the mandrel to conform said tubular member to the conical shape of said mandrel by changing the cross-section of said at least one profiled groove as it is pressed into said at least one groove in the mandrel.

4,566,301

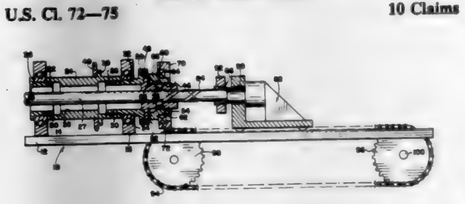
METHOD AND MEANS OF MANUFACTURING SPIRALLY FLUTED TUBES

Donald E. O'Dell, Tulsa, Okla., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Continuation of Ser. No. 415,163, Sep. 7, 1982, abandoned. This application Dec. 13, 1984, Ser. No. 681,005

Int. Cl.⁴ B21D *15/04*

U.S. Cl. 72—75 **10 Claims**



1. A method of forming spirally-fluted tubing which comprises moving a tube longitudinally through a rotatable forming die, applying the formable pressure against the outer periphery of the tube during movement of the tube through the rotating forming die, and varying the pressure applied against the outer periphery of the tube during the forming operation without interruption thereof and as required for controlling the depth of deformation during the spiral fluting operation, wherein the forming die comprises sleeve means having a plurality of circumferentially spaced bores and ball means disposed within said bores, and cylindrical chuck means having a central passageway therethrough and disposed in surrounding relation to said sleeve means, said passageway having an outwardly flared surface adapted to engage said ball means for applying tube deforming pressure thereto and including the step of selectively-moving said cylindrical chuck means relative to said ball means during movement of said tube through said forming die so that differential portions of said surface will engage said ball means to modify the pressure thereon, so that the depth of deformation will be modified.

4,566,302

TREATMENT PRIOR TO DISPOSAL OF A SHEATHING TUBE OF A SPENT FUEL BOX OF A NUCLEAR REACTOR FUEL ASSEMBLY

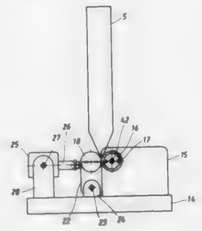
Antti Suvanto, Västerås, Sweden, assignor to AB Asea-Atom, Västerås, Sweden

Filed Nov. 12, 1982, Ser. No. 440,945

Claims priority, application Sweden, Sep. 20, 1982, 8205362

Int. Cl.⁴ B21C *47/14*

U.S. Cl. 72—146 **4 Claims**



1. An apparatus for flattening a tubular member which contains a spent fuel box of a nuclear fuel assembly, said tubular member including a lower end which includes a bead, said apparatus being usable beneath the surface of a tank of radiation-protecting water, said apparatus comprising

a base plate,

a first roll fixedly mounted in cantilever fashion on said base plate, said first roll including a groove in its circumferential surface for containing the bead at the lower end of the tubular member containing the spent fuel box, said groove extending longitudinally of said first roll,

drive means connected to said first roll to rotate said first roll,

a second roll mounted in cantilever fashion on said base plate,

support means pivotally connected at its lower end to said second roll to enable said second roll to move toward and away from said first roll, and

adjustment means connected to said support means to control the positioning of said second roll with respect to said first roll.

4,566,303

EXTRUSION MACHINERY

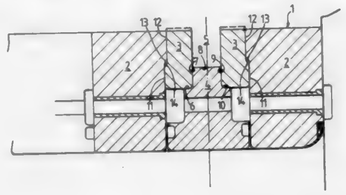
Owen P. McKenna, London, England, assignor to BICC Public Limited Company, London, England

Filed Jun. 13, 1984, Ser. No. 620,372

Claims priority, application United Kingdom, Jun. 23, 1983, 8317072

Int. Cl.⁴ B21C *23/00;* **B21D** *37/16*

U.S. Cl. 72—262 **5 Claims**



1. Conform machinery for continuous friction-effected extrusion having a wheel comprising:

two cheek members;

a central hub;

two separate ring members each located between said central hub and a respective said cheek, said rings having external diameters larger than said central hub so that a working passageway is formed with said central hub and each said ring defining a wall thereof;

abutting slip surfaces on said cheek members and said rings, said abutting slip surface on each cheek member being in driving engagement with said abutting slip surface on the corresponding ring, said abutting slip surface on each cheek member having at least one annular surface facing inwardly toward an axis of the wheel and said abutting slip surface of each ring having at least one annular surface facing outwardly away from the axis of the wheel and disposed radially inwardly from the at least one annular surface of the corresponding cheek member, thereby to allow relative thermal radial expansion of said rings with respect to said cheek members until said annular surfaces engage one another, said radial expansion at any particular place on the circumference of said rings being limited to a distance less than the relative expansion in the diameter of the rings between ambient temperature and the expected working conditions of the machine.

4,566,304

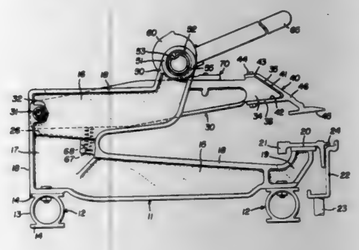
SHEET METAL BENDING BRAKE

Van Cleave, Eugene H., Orchard Lake, and Douglas G. Break, Farmington Hills, both of Mich., assignors to Van Mark Products Corporation, Farmington Hills, Mich.

Filed Jan. 18, 1983, Ser. No. 458,958

Int. Cl.⁴ B21D *5/04*

U.S. Cl. 72—319 **5 Claims**



1. In a sheet metal bending brake having at least two laterally spaced prime support elements and frame means fixedly securing said elements in assembly, each element including (a) a lower arm portion terminating in a horizontal support surface for a sheet metal workpiece and a hinged bending leaf underlying said workpiece, and (b) an upper arm portion terminating short of said horizontal support surface; the improvements of a clamping arm for each prime support element with each arm having one end pivotally secured to said prime support element and its other end projecting toward said horizontal support surface, means on said other end of each clamping arm overlying said horizontal support surface and cooperable therewith for clamping a workpiece therebetween, a rotatable shaft bridging said prime support elements and journalled in the upper arm portions thereof, respectively, cams corotatably secured to said shaft, one cam being aligned with each of said clamping arms, a cam contact plate carried by each clamping arm and having a tapered extension interposed between the associated arm and cam, respectively, and means for slidably and individually adjusting each of said cam contact plates along the associated arm to vary the thickness of the extension interposed between the respective arms and the overlying cams, thereby varying the extent of arm actuation upon rotation of the associated cam.

4,566,305

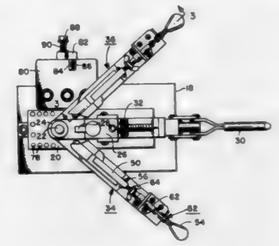
SWEEP-ARM BENDER FOR FORMING ORTHODONTIC ARCHES

Arthur L. Wool, 1402 Penn Ave., Wyomissing, Pa. 19610

Filed May 11, 1984, Ser. No. 609,288

Int. Cl.⁴ B21D *11/04*

U.S. Cl. 72—321 **10 Claims**



1. A sweep-arm bender for forming orthodontic arches from straight wire blanks comprising:

a die having a cylindrical surface and a wire-receiving groove in said surface, the groove being situated in a plane perpendicular to a die axis about which the cylindrical surface is symmetrical;

clamping means, connected to the die and movable toward and away from said cylindrical surface, for temporarily engaging a wire blank and applying a clamping force to the wire blank, thereby firmly holding a portion of the wire blank in the groove of the die;

first and second sweep arms, each pivoted on said die axis;

a slide on each of said sweep arms, and guide means on each of said arms constraining its slide to movement toward and away from said die axis;

bearing means on each slide and a circular cylindrical roller carried by each slide, each roller being mounted in the bearing means on its slide for rotation about a roller axis which is parallel to the die axis, and each roller being positioned so that it is intersected by said plane in which the wire-receiving groove is situated; and

means on each arm for temporarily locking its roller in a position such that the outer roller surface is capable of pressing the wire blank into the wire-receiving groove as the arm sweeps about the die axis;

each of the arms being pivotable from a position in which its roller is located adjacent to the clamping means to a position beyond the position in which its roller is directly opposite the clamping means.

9. A sweep-arm bender for forming orthodontic arches from straight wire blanks comprising:

a die having a cylindrical surface and a wire-receiving groove in said surface, the groove being situated in a plane perpendicular to a die axis about which the cylindrical surface is symmetrical;

clamping means, connected to the die and movable toward and away from said cylindrical surface, for temporarily engaging a wire blank and applying a clamping force to the wire blank, thereby firmly holding a portion of the wire blank in the groove of the die;

at least one sweep arm pivoted on said die axis; and

a positioning block having a face, and means, connected to the die, for mounting the block for movement from a first position, in which it would interfere with sweeping movement of the arm and in which the face is positioned at a location such that it can be engaged by an end of a wire blank tangent to the die and extending through the wire-receiving groove, to a second position in which the block permits clear sweeping movement of the sweep arm, the means for mounting the block also insuring that the face of the block is always at a predetermined distance from the

point at which the wire blank is tangent to the die when the block is in its first position.

4,566,306

METHOD AND APPARATUS FOR FEEDING MATERIALS TO BE PRESSED

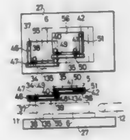
Masaru Orii, Machida, Japan, assignor to Yugengaisha Kyodo-giken, Tokyo, Japan

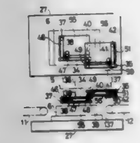
Filed Mar. 8, 1984, Ser. No. 587,535

Claims priority, application Japan, Mar. 17, 1983, 58-43130; Mar. 17, 1983, 58-43131

Int. Cl.⁴ B21D *43/10, 45/00*

U.S. Cl. 72—346 **14 Claims**





1. An apparatus for feeding materials to be pressed in an upper and lower metal mold, said apparatus having a carry-in arm and a carry-out arm, which have an infeed terminating position and an outfeed starting position, respectively, and which are provided with gripper means and moved pivotally in a horizontal direction and linearly in a vertical direction to feed a material to be pressed to and withdraw a pressed material from a press, comprising a fulcrum for a pivotal movement of at least one of said carry-in arm and said carry-out arm mounted on a rear surface of a bolster of said press, first gripper means provided on said carry-in arm for gripping a material to be pressed at peripheral positions thereof, said first gripper means and said material to be pressed entering a zone of movement of said upper metal mold in such a position that is in the vicinity of a dead point of pivotal movement of said carry-in arm at the infeed terminating position thereof, second gripper means provided on said carry-out arm for gripping a pressed material at peripheral positions thereof, said second gripper means and said pressed material entering a zone of movement of said upper metal mold in such a position that is in the vicinity of a dead point of pivotal movement of said carry-out arm at the outfeed starting position thereof, and means for timing the movements of the carry-in and carry-out arms so that the pressed material removed from said lower metal mold by the carry-out arm and the material to be pressed which is inserted into the press by the carry-in arm are aligned in a predetermined, vertically spaced relationship in a position above said lower metal mold in said press.

4,566,307

PIPELINE FLOW MEASUREMENT PROVING SYSTEM

John C. Boykin, Dallas, Tex., assignor to Electronic Flo-Meters, Inc., Garland, Tex.

Division of Ser. No. 429,610, Sep. 30, 1982, abandoned. This application Oct. 29, 1984, Ser. No. 666,122

Int. Cl.⁴ G01F *25/00*

U.S. Cl. 73—3 **6 Claims**

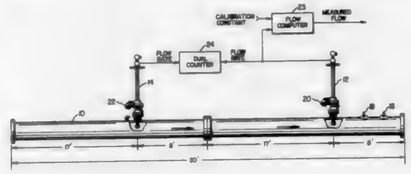
4. A method for proving the metering of a fluid passing through a main pipeline, comprising the steps of:

providing a continuous flow of said fluid through said main pipeline;

custody transfer metering the flow of said fluid through said main pipeline by use of a custody flow meter mounted on said pipeline, said custody transfer metering providing a custody transfer fluid measurement for a selected time period;

inserting a proving turbine flow meter turbine head into said fluid passing through said pipeline without stopping or rerouting the flow of said fluid through said pipeline;

calibration metering the flow of said fluid through said main pipeline by use of said insertion turbine flow meter having



said turbine head certified by means traceable to a standard at the National Bureau of Standards and mounted on said main pipeline at a distance of at least ten times the diameter of said main pipeline from said custody flow meter, said calibration metering producing a calibrated fluid measurement for said selected time period; and

comparing said custody transfer fluid measurement and siad calibrated fluid measurement to produce a calibration constant for calibrating said custody transfer metering.

4,566,308

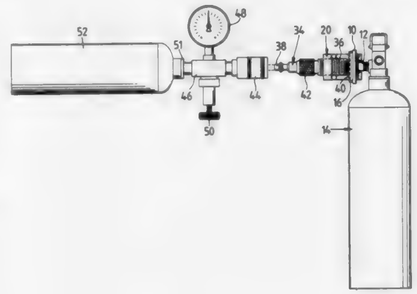
PORTABLE PRESSURE GAUGE TESTER

Robert F. Powell, Mount View, England, assignor to Amerex Corporation, Trussville, Ala.

Filed Nov. 5, 1984, Ser. No. 667,988

Int. Cl.⁴ G01F *27/00*

U.S. Cl. 73—4 R **8 Claims**



1. An apparatus for insitu testing of a gas pressure gauge having at least one pressure equalizing perforation therein comprising, in combination:

(a) a connector unit adapted to engage said gas pressure gauge and cooperate with said pressure equalizing perforation, including a generally U-shaped bracket having first and second extending members connected by a base member with said first extending member having a threaded bore therethrough perpendicular to the adjacent surface of said second extending member and with said second extending member having an outwardly opening slot therein;

(b) a conduit connector externally threaded at one end thereof for threaded engagement with said threaded bore;

(c) injecting means carried by said connector unit in communication with said pressure equalizing perforation for injecting pressurized gas into said gauge through said pressure equalizing perforation; and

(d) means operatively connected to said injecting means for indicating the pressure of said gas injected into said gauge.

4,566,309

APPARATUS AND METHOD FOR MONITORING A PRESSURE SENSOR

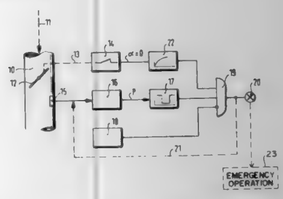
David van Belzen, Hemmingen; Gerhard Lotterbach; Jan F. van Woudenberg, both of Markgröningen, and Udo Zacker, Gü glingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 5, 1983, Ser. No. 511,056

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226849

Int. Cl.⁴ G01L *27/00*

U.S. Cl. 73—4 R **33 Claims**



1. An apparatus for monitoring a pressure sensor disposed downstream of a throttle valve in an intake tube of an internal combustion engine comprising, a throttle valve switch means for generating a logic signal when said throttle valve is closed, means for supplying an abnormal pressure signal from said pressure sensor, and means responsive to the simultaneous occurrence of said logic signal ($\alpha=0$) and said abnormal pressure signal for triggering an alarm means.

4,566,310

METHOD OF INSPECTING THE OPERATION OF A VALVE AND MECHANICAL TEST BENCH FOR PERFORMING THE METHOD

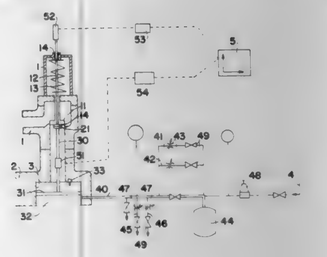
Serge Cohen, Meudon la Foret, and Gilbert H. K. Nguyen, Paris, both of France, assignors to Framatome & Cie, Courbevoie, France

Filed Mar. 10, 1983, Ser. No. 474,093

Claims priority, application France, Mar. 31, 1982, 82 05543

Int. Cl.⁴ G01M *19/00*

U.S. Cl. 73—9 **1 Claim**



1. Mechanical test bench for a valve consisting of a flap (**11**) fixed to a rod (**12**) for sliding movement within a housing (**1**) by the action of a spring drive mechanism (**13**), comprising

(a) a support frame (**2**) for the valve to be tested, which has been dismounted with its drive mechanism;

(b) a jack (**3**) for the movement of said valve at adjustable speed, counter to the action of said spring, in the opening and closing direction of said valve, associated with a means (**51**) of measuring the force applied to said valve (**11**);

(c) a supply circuit (**4**) for supplying said jack (**3**) with a fluid, comprising two parallel branches (**41**, **42**) supplying said jack (**3**) in two different flow ranges, each branch being equipped with a flow regulator (**43**);

(d) a drain circuit for evacuating said fluid from said jack during the closing movement of said valve under the effect of said spring, said drain circuit comprising two branches (**45**, **46**) respectively corresponding to the flow ranges of the two branches (**41**, **42**) of said supply circuit, each of said branches (**45**, **46**) of said drain circuit being equipped with a flow regulator (**47**);

(e) a movement pick-up (**52**) to measure the position of said valve (**11**); and

(f) a plotting table (**5**) to which representative signals of the movement and of the force applied are passed in order to plot a representative test curve (C).

4,566,311

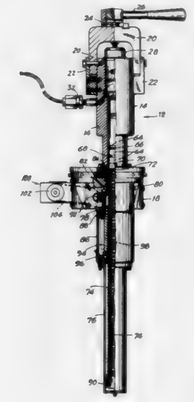
MERCURY PUMP

Harold T. Barnaby, Duncanville, Tex., assignor to Core Laboratories, Inc., Dallas, Tex.

Filed Sep. 10, 1984, Ser. No. 649,120

Int. Cl.⁴ G01N *7/14*

U.S. Cl. 73—19 **10 Claims**



1. Mercury pump for testing the gas content of a geological core sample, comprising

a pump body having a vertically oriented chamber therein, a lower portion of which defines a mercury displacement chamber section and an upper part of which forms a sample chamber section into which the core sample can be inserted;

a removably securable sample chamber cap for sealing the top of said pump body;

a pressure transducer disposed in communication with the interior of said chamber and providing an output pressure signal;

a piston disposed in said mercury displacement chamber section and arranged to move vertically to displace mercury in said section;

drive means for driving said piston vertically in said mercury displacement chamber section, the drive means including an elongated vertical drive screw having said piston mounted on an upper end thereof; a drive housing; a hand wheel; a threaded, horizontally disposed input worm shaft coupled to said hand wheel; a drive sleeve mounted in said drive housing about said screw and rotationally driven by said input worm shaft; a threaded-race ball nut disposed about said screw and connected to said drive sleeve; a plurality of balls disposed in the threaded race of said ball nut defining therewith a return-ball race lifting mechanism for said vertical drive screw; and means holding said drive screw against rotation relative to said drive housing;

a displacement encoder rotationally coupled to said input worm shaft providing data indicating the direction of rotation of said worm shaft and a count for each predetermined increment of rotation thereof, said encoder providing on the order of one count for each one-thousandth of a cubic centimeter of displacement of said piston; and

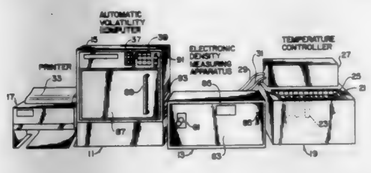
microprocessor-controlled volume measuring means having inputs coupled to said displacement encoder and to said pressure transducer for processing data determined from the counts from said displacement encoder to provide data relating to the gas content of said core sample.

4,566,312

APPARATUS AND PROCESS FOR AUTOMATICALLY DETERMINING FAT CONTENTS OF FOODS

Michael J. Collins, Matthews, and Ronald J. Goetchius, Charlotte, both of N.C., assignors to CEM Corporation, Matthews, N.C.

Filed May 2, 1984, Ser. No. 606,352
Int. Cl.[4] G01N *9/04, 25/56*
U.S. Cl. 73—32 A **18 Claims**



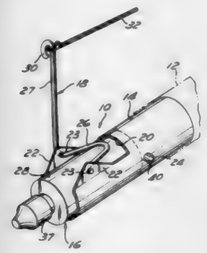
1. An apparatus for determining the fat content of a food which comprises means for automatically measuring a density characteristic of a food and producing an electronic signal corresponding to the density of the food, means for automatically measuring a solids content characteristic of a food and producing an electronic signal corresponding to the solids content of the food, computer means to determine the fat content of the food from the electronic signals, means for transmitting the electronic signals to the computer means, and means for reporting the fat content of the food.

4,566,313

WATER VESSEL LEAK DETECTOR AND METHOD OF DETECTING LEAKS

Gordon A. Monten, 25828 Fore Dr., Hemet, Calif. 92343

Filed May 11, 1984, Ser. No. 609,548
Int. Cl.[4] G01M *3/20*
U.S. Cl. 73—40.7 **4 Claims**



1. A leak detecting device for removably releasing colorimetric dye under water comprising:

an elongate telescoping pole for positioning said leak detecting device beneath the surface of said water;

a tubular member adapted to releasably mount to said pole, said tubular member having first and second ends and including a pair of opposing radially extending apertures therein;

mounting means disposed within said first end of said tubular member for releasably engaging said pole, said mounting means comprising a biased-spring member having a pair of pins extending through said apertures;

a deformable fluid reservoir for storing a quantity of dye, said reservoir sized to be received in said second end of said tubular member, said fluid reservoir having a single aperture through which said dye may be expelled; and

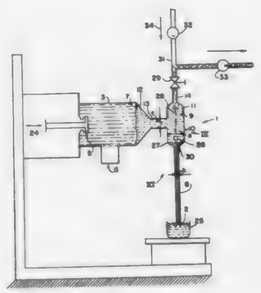
actuating means for dispensing dye from said fluid reservoir, said actuating means comprising an actuating lever having an attached string for effectuating movement of the actuating lever from the other end of said pole, said lever including a portion adapted to contact and moderately deform said reservoir in response to said effectuation of said actuating lever.

4,566,314

DEVICE AND METHOD OF MEASURING THE VISCOSITY AND/OR VISCO-ELASTICITY OF A FLUID

George B. Thurston, 1000 Madrone Rd., Austin, Tex. 78746

Filed Nov. 28, 1984, Ser. No. 675,522
Claims priority, application Netherlands, Dec. 2, 1983, 8304154
Int. Cl.[4] G01N *11/08*
U.S. Cl. 73—55 **26 Claims**



1. Apparatus for measuring the viscosity and/or the visco-elasticity of a fluid comprising: a measuring chamber that can be filled with a standard fluid and is provided with pressure generating means and with pressure sensing means and at least one measuring tube connected through a flexible diaphragm with the measuring chamber for receiving the fluid to be measured, and a coupling chamber that can be filled with a coupling fluid, the coupling chamber being interposed between the measuring tube and the diaphragm.

4,566,315

METER FOR MEASURING ERYTHROCYTE SETTLING RATES

Robert N. O'Brien; Philip M. McOrmond; Martin B. Hocking, and Kenneth R. Thornton, all of Victoria, Canada, assignors to University of Victoria, Victoria, Canada

Continuation-in-part of Ser. No. 389,252, Jun. 17, 1982, Pat. No. 4,474,056. This application Aug. 6, 1984, Ser. No. 638,248
Claims priority, application Canada, Aug. 18, 1981, 384115
Int. Cl.[4] G01N *15/04*
U.S. Cl. 73—61.4 **16 Claims**

1. A meter for measuring erythrocyte settling rates, comprising:

(a) a base providing a rack adapted to hold an array of tubes at an optimum settling angle;

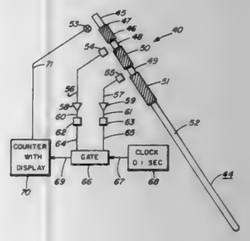
(b) at least one tube to be held in said rack, said tube being adapted to contain a blood sample whose erythrocyte settling rate is to be determined, said tube wehn in said rack providing an upper window of predetermined length at the upper end thereof, said upper window permitting passage of ambient light therethrough, a lower window of predetermined length adjacent the upper end thereof but below said upper window, said lower window permitting passage of ambient light therethrough, and an opaque section separating said lower window from said upper window;

(c) timing means actuated by the passage of ambient light through said windows when said tube contains blood, to determine the erythrocyte settling rate, said timing means comprising

(i) an upper photodiode activated by the passage of ambient light through said upper window when the erythrocytes in the blood in said tube settle, to commence cumulative time interval counting representative of the erythrocyte settling rate; and

(ii) a lower photodiode activated by the passage of ambient light through said lower window to stop the cumulative time interval counting representative of the erythrocyte settling rate;

said erytyrocyte settling rate being determined by the exact interval of time which has elapsed between when ambient light passes through said upper window, indicative of the substantial absence of erythrocytes in the area of said upper window, and when ambient light passes through said lower window, indicative of the substantial absence of erythrocytes in the area of said lower window.

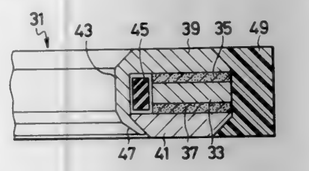


4,566,316

WASHER TYPE PRESSURE SENSOR

Kiyoshi Takeuchi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 10, 1984, Ser. No. 569,586
Claims priority, application Japan, Jan. 10, 1983, 58-1412[U]
Int. Cl. G01L *9/08;* **G01M** *15/00*
U.S. Cl. 73—754 **7 Claims**



1. A washer type pressure sensor for detecting a pressure applied thereto by an ignition plug inserted into the washer-type sensor, comprising:

at least one ring-shaped piezoelectric element;

a ring-shaped electrode plate in close contact with said piezoelectric element;

a first ring-shaped pressure receiving plate adapted to engage an ignition plug;

a second ring-shaped pressure receiving plate adapted to engage a cylinder head, said piezoelectric element and said electrode plate being positioned between said first and second ring-shaped receiving plates;

a metallic inner cylindrical protecting portion integrally formed with said first pressure receiving plate and extending from the inner periphery of said first pressure receiving plate to said second pressure receiving plate, saidmetallic protecting portion having a thickness sufficient to protect the inner peripheries of said piezoelectric element and said electrode plate from shock; and

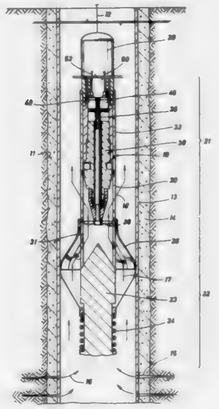
an outer cylindrical portion comprising a plastic extending from the outer periphery of said first pressure receiving plate to said second pressure receiving plate.

4,566,317

BOREHOLE FLOW METER

Farid J. Shakra, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jan. 30, 1984, Ser. No. 575,117
Int. Cl.[4] E21B *47/10*
U.S. Cl. 73—155 **12 Claims**



1. Wellbore fluid flow measuring apparatus comprising,

an elongated body adapted for passage through a wellbore and having a given portion through which wellbore fluids may pass,

a disk comprising at least three substantially flat vanes rotatably mounted in said body in a plane perpendicullar to the axis of the body and in isolation from said borehole fluid,

non-magnetic means for turning said disk in proportion to the rate of fluid flow through said given body portion,

sensing means in isolation from said borehole fluids, comprising two spaced apart detectors disposed in close proximity to the surface of said disk for respectively generating for each detector a pulse train signal indicative of the disk's turning rate,

the spacing of the detectors relative to the axis of the body and the width and number of the vanes being selected so as to generate a phase difference of about ninety degrees between the two pulse train signals in response to the rotation of the disk, and

means for communicating said pulse train signals to the surface.

4,566,318

METHOD FOR OPTIMIZING THE TRIPPING VELOCITY OF A DRILL STRING

M. Vikram Rao, and John E. Fontenot, Jr., both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,284
Int. Cl.⁴ E21B *45/00*
U.S. Cl. 73—151 **20 Claims**

1. A method for optimizing the tripping velocity of a drill string useful to increase the efficiency of a drilling operation while maintaining the hydraulic fluid pressure of the drilling fluid in the borehole within an aceptable range, comprising:

measuring during tripping the hydraulic fluid pressure of the drilling fluid in the borehole near the drill bit in a plurality of intervals longitudinally spaced along the borehole;

measuring the tripping velocity of the drill string in said intervals;

comparing said measured fluid pressure for each of said intervals in the borehole with predetermined acceptable fluid pressure ranges for each corresponding interval; and

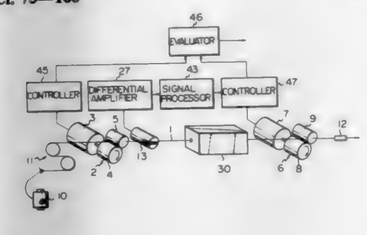
adjusting for subsequent trips the tripping velocity in each of said intervals in order to maximize the tripping velocity while maintaining the measured pressure within the acceptable fluid pressure range for each interval.

4,566,319

PROCESS AND APPARATUS FOR MEASURING THERMAL SHRINKAGE PROPERTIES OF YARN

Chikayasu Yamazaki; Jun Torikai, both of Otsu, and Ichiro Kumo, Shiga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 8, 1983, Ser. No. 483,431
Claims priority, application Japan, Apr. 9, 1982, 57-58022
Int. Cl.⁴ G01N *33/36*
U.S. Cl. 73—160 **23 Claims**



1. A process for measuring thermal shrinkage properties of yarn, which comprises the steps of:

traveling a yarn through a substantially straight and horizontal yarn path between a feed roller maintained at a desired constant peripheral speed V_1 and a draw roller;

applying heat treatment to the traveling substantially straight yarn during straight yarn travel along said path between the feed roller and the draw roller by contacting said straight traveling yarn with hot water so that the traveling yarn thermally shrinks;

detecting tension of the straight traveling yarn downstream of the feed roller;

driving the draw roller at a peripheral speed V_2 by obtaining the difference of the desired constant tension T_0 minus the detected tension T, subjecting the difference to a proportional and integral circuit, driving the draw roller in response to an output of the proportional and integral circuit and regulating a control gain of the proportional and integral circuit in proportion to the output thereof so that the detected tension T of the traveling yarn becomes equal to a desired constant tension T_0; and

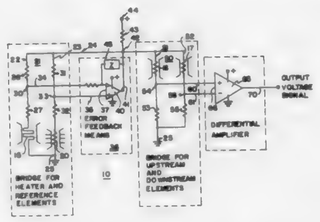
obtaining the thermal shrinkage S(%) of the traveling yarn by the equation of $S=[(V_1-V_2)/V_1]\times 100$.

4,566,320

FLUID FLOW SENSING MEANS WITH AMBIENT TEMPERATURE COMPENSATION

Philip J. Bohrer, Minneapolis, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed May 7, 1984, Ser. No. 607,547
Int. Cl.⁴ G01F *1/68*
U.S. Cl. 73—204 **20 Claims**



1. A flow supporting means to sense fluid ambient temperature having a defined flow path including means supporting at least two resistors affected by a fluid flow in said path, including: first bridge means having two branches connected to a source of variable potential; said first bridge means having output means intermediate said branches; a first resistor of said two resistors affected by said fluid flow connected in a first of said branches; said first resistor acting as a heater resistor; a temperature responsive resistor mounted in a heat exchange relationship with said supporting means to sense fluid ambient temperature said temperature responsive resistor connected in a second of said branches; error feedback means having input means connected to said output means of said first bridge means; said error feedback means having output means connected to said two parallel branches to provide said source of variable potential to in turn controllably energize said first bridge means; second bridge means having two branches with said two branches connected to said output means of said error feedback means; said second bridge means having a branch including said second of said two resistors with said second resistor being a temperature dependent resistor in said flow path; and said second bridge means having output means connected intermediate said branches of said second bridge means.

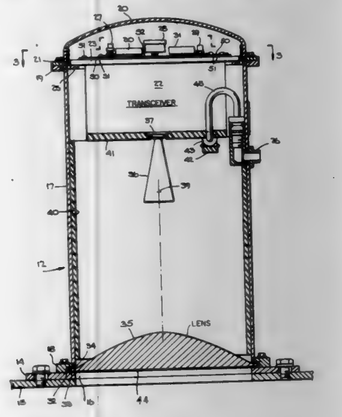
4,566,321

MICROWAVE TANK-CONTENTS LEVEL MEASURING ASSEMBLY WITH LENS-OBTURATED WALL-OPENING

Joseph M. Zacchio, Wethersfield, Conn., assignor to Transamerica Delaval Inc., Princeton, N.J.

Filed Jan. 18, 1985, Ser. No. 692,576
Int. Cl.⁴ G01F *23/28*; G01S *13/08*
U.S. Cl. 73—290 R **12 Claims**

1. A microwave tank-contents level measuring assembly comprising in combination a housing, a microwave transmitter-receiver system coupled to a horn radiator-receptor for emitting a microwave preselected ranging signal to be reflected from the surface of the tank-contents for detection and level determination, said housing having a wall with an opening, said system and horn being mounted within said housing for transmitting and receiving said ranging signal through said wall opening, a dielectric microwave lens, impermeable to fluid, disposed over said opening and joined to said housing with at least a fluid-tight seal, said lens being geometrically shaped and constructed so as to collimate said preselected ranging signal during its outward passage and, on the return passage, to focus said preselected ranging signal at a point substantially coincident with the effective phase center of said horn, and means for securing said housing with said lens-obturated wall-opening over an opening in a top wall of a tank with said lens establishing at least a fluid-tight seal over said tank opening whereby the level of any contents of the tank is monitored by the measuring assembly.

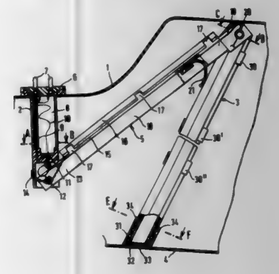


4,566,322

APPARATUS FOR ELECTRICALLY MEASURING THE LEVEL OF A LIQUID IN A CONTAINER, PARTICULARLY IN THE GASOLINE TANK OF A VEHICLE

Karl Rau, Mühlheim; Heinz Kalk, Neu-Isenburg, and Gerhard Metzger, Glasshütten, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 13, 1984, Ser. No. 601,452
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1983, 3314901
Int. Cl.⁴ G01F *23/24, 23/26*
U.S. Cl. 73—295 **28 Claims**



1. In a device for electric measurement of the level of a liquid in a container, particularly the gas tank of a vehicle, having a conductive foil enclosed and supported by a conductive-foil support which is formed as a protective tube, which foil may serve as a temperature-dependent, externally heated resistor or an electrode of a measurement capacitor, and wherein the device has comprises a spring which presses the support against a bottom of the container, the improvement wherein

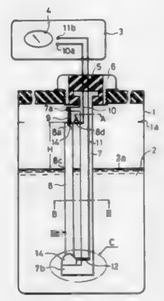
said support is divided into three approximately rigid sections, namely, an inner section, a central section, and an outermost section; said inner and said central sections as well as said central and said outermost sections being pivotally connected together and being spring loaded such that the outermost section of the support can rest against the bottom of the container and against a top side of the container.

4,566,323

LIQUID HELIUM LEVEL INDICATING GAUGE

Tsuyoshi Masumoto; Akihisa Inoue, both of Sendai; Yoshimi Takahashi, Shiraishi; Akira Hoshi, Izumi, and Uichiro Mizutani, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 29, 1983, Ser. No. 518,523
Int. Cl.⁴ G01F *23/24*
U.S. Cl. 73—295 **4 Claims**



1. A sensing device for indicating the level of liquid helium within a container including in combination, a resistance wire sustained vertically within said container and an electrical indicating device for producing an indication which varies with the electrical resistance of said resistance wire,

said resistance wire being made of a superconductive material of which more than 20 volume % is in an amorphous phase and which is composed of a parts of element Z, b parts of element M, and c parts of a composition of elements Q, R and Al,

said Z being one selected from the group consisting of the elements of Zr, Hf and Ti, said M being one selected from the group consisting of elements of V, Nb, Ta and the mixture thereof, said Q being one selected from the group consisting of the elements of Si, Ge and the mixture thereof, said R being one selected from the group consisting of C, B, Sn and the mixture thereof, said a ranging from 10 to 90 atomic %, said b being below 80 atomic %, said c ranging from 10 to 25 atomic %, and

the composition ratio of said Q being more than 2 atomic % inclusive, the composition ratio of Al being in a ranges from 0.1 to 15 atomic % and the composition ratio of said R being less than 12 atomic % inclusive.

4,566,324

METHOD AND DEVICE FOR DETERMINATION OF RHEOLOGICAL CHARACTERISTICS OF POLYMER AND DISPERSE SYSTEMS

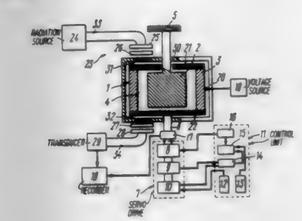
Georgy V. Vinogradov, Leninsky prospekt, 70/11, kv. 99, Moscow; Jury F. Deinega, ulitsa Tverskaya, 6, kv. 19, Kiev; Jury G. Yanovsky, Okruzhnoi proezd, 22/64, kv. 92; Olga V. Vasilieva, Michurinsky prospekt, 10, kv. 157, both of Moscow; Alexandr A. Konstantinov, ulitsa Donskaya, 3, kv. 12, and Mikhail M. Chernysh, Leninsky prospekt, 44, kv. 143, both of Moscow, all of U.S.S.R.

Filed Dec. 26, 1984, Ser. No. 686,217

Claims priority, application U.S.S.R., Jan. 5, 1984, 3708254

Int. Cl.⁴ G01N *11/14*

U.S. Cl. 73—60 **2 Claims**



1. A method for determination of rheological characteristics of polymer and disperse systems comprising the steps of:

(a) placing one of said systems to be investigated in a gap between a first and a second coaxial cylinder;

(b) subjecting said system to mechanical deformation of a restricted shear flow by tangentially displacing said first cylinder in relation to said second cylinder and applying three conditions, the first of said conditions including a continuous constant-rate shear deformation, a second condition including harmonic oscillations, and a third condition including a superimposition of harmonic oscillations of said shear deformation at a continuous rate;

(c) exposing said system to an electrical field having force lines which are perpendicular to a direction of a flow of said system and whose intensity does not exceed a breakdown strength of said system; and

(d) measuring a magnitude of a double refraction of said system exposed to said mechanical deformation, said electrical field force and said applied magnitude of deformation to determine the rheological characteristics of said system.

4,566,325

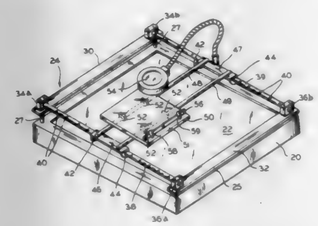
HANDS-ON INSPECTION BOARD FOR PRINTED CIRCUIT CARDS

John Rante, 406 E. Ravine, Willow Springs, Ill. 60480

Filed Jan. 14, 1985, Ser. No. 691,423

Int. Cl.⁴ G01M *19/00*

U.S. Cl. 73—432 R **15 Claims**



1. A hands-on inspection board comprising a spaced parallel pair of side rails, each of said side rails having a series of uniformly spaced stops distributed along the length thereof, a sliding support having upper and lower sliding bearings associated with each of said side rails, said side rails being threaded through openings in said sliding bearings, the opening in one of said sliding bearings having a cross section conforming to the cross section of said side rail, the opening in the other of said sliding bearings being elongated so that either gravity may make the top of said elongated bearing opening rest on the top of said side rail or an inspector may lift said other slide bearing to make the bottom of said elongated bearing opening rest on the bottom of said side rail, latch means associated with the top of said elongated opening for engaging said stop means, and a platen mounted on rods extending between said sliding supports for enabling a back and forth platen traverse across said rods and between said side rails.

4,566,326

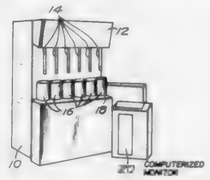
AUTOMATIC VOLUMETRIC SORPTION ANALYZER

Seymour Lowell, Albertson, N.Y., assignor to Quantachrome Corporation, Syosset, N.Y.

Filed Jul. 9, 1984, Ser. No. 628,918

Int. Cl.⁴ G01N *15/08*

U.S. Cl. 73—432 PS **5 Claims**



1. An analyzer for performing independent measurement analyses on a plurality of powder samples, said analyzer comprising a common manifold, a plurality of sample cells for holding a powder sample to be analyzed, a plurality of valve means respectively interposed between said manifold and said plurality of sample cells, control means operatively connected to said plurality of valve means for selectively effecting fluid communication between said manifold and said plurality of sample cells, a first pressure sensor in communication with said manifold, and a plurality of additional second pressure sensors in respective communication with said plurality of sample cells for respectively determining the pressure in said sample cells, said control means being effective to close a selected one of said valve means while pressure equilibrium is being established in an associated one of said sample cells and to open selectively others of said valve means to allow gas to be transferred from said manifold to associated others of said sample cells.

4,566,327

SYSTEM AND TECHNIQUE FOR BANDWIDTH IMPROVEMENT IN MULTIFUNCTION SENSORS

Billie F. Rider, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 435,516, Oct. 20, 1982, and a continuation-in-part of Ser. No. 370,641, Apr. 21, 1982, Pat. No. 4,444,053. This application Jan. 13, 1984, Ser. No. 570,479

Int. Cl.⁴ G01P *15/09*

U.S. Cl. 73—510 **7 Claims**

1. A transducer and signal demodulating system comprising:

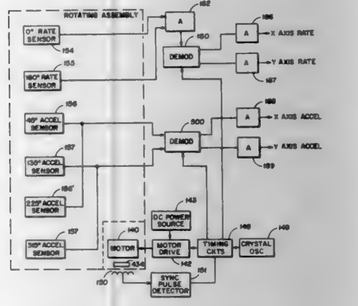
at least one first acceleration sensor and at least one second acceleration sensor mounted for rotation about a common axis, said at least one first and said at least one second sensor being angularly spaced by an angle of 90° with respect to one another about said axis;

means for providing a first signal from said at least one first sensor and means for providing a second signal from said at least one second sensor;

means for receiving and varying the amplitude of each of said first and second signals for providing first and second transducer signals, respectively;

means coupled to said first transducer signal for providing an inverted first transducer signal and means coupled to said second transducer signal for providing an inverted second transducer signal;

first and second switch means for providing first and second demodulation outputs, each of said first and second switch means including a first switch having an input and output with the input of said first switch being coupled to receive said first transducer signal, a second switch having an input and an output with the input of said second switch being coupled to receive said inverted first transducer



signal, a third switch having an input and an output with the input of said third switch being coupled to receive the second transducer signal, and a fourth switch having an input and an output with the input of said fourth switch being coupled to receive the inverted second transducer signal, the output of each of said first, second, third, and fourth switches of said first switch means being coupled in common to provide a first demodulation output and the output of each said first, second, third and fourth switches of said second switch means being coupled in common to provide a second demodulation output, each of said switches having a means for intermittently coupling the input of each switch to its output in response to a switching signal, wherein each of said demodulation outputs represents acceleration in an axis perpendicular to one another and to said common axis.

4,566,328

ELECTROSTATIC-SUSPENSION ACCELEROMETERS

Alain M. Bernard, Fresnes; Georges-Marie J. Le Clerc, Arpajon, and Bernard M. Foulon, Neuilly, all of France, assignors to Office National d'Etudes et de Recherche Aerospatiales (ONERA), France

Filed Apr. 20, 1984, Ser. No. 602,466

Claims priority, application France, Apr. 21, 1983, 83 06528

Int. Cl.⁴ G01P *15/125, 15/13*

U.S. Cl. 73—517 B **6 Claims**

1. An electrostatic triaxial accelerometer comprising:

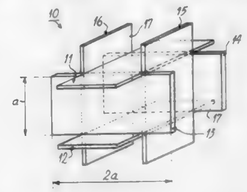
an accelerometer body;

a test weight movable with respect to said accelerometer body, electrically connected thereto by a highly flexible conductor lead;

said test weight including six planar plates regularly assembled such that the inside volume defined by said plates is a cube with a side smaller in length than the plates, said test weight thus carrying planar surface elements oppositely arranged in parallel two by two, forming three pairs of surface elements;

electrodes fixed to said body and forming capacitors with respect to said test weight surface elements;

means for detecting the test weight position by means of measurement voltages fed to said electrodes;



means for positioning said test weight by electrostatic forces developed from cueing voltages fed to said electrodes;

whereby this arrangement makes it possible to secure a high surface to weight ratio for the test weight needed for the electrostatic suspension.

4,566,329

VECTORIAL FORCE SENSOR WITH ELASTIC SURFACE WAVES

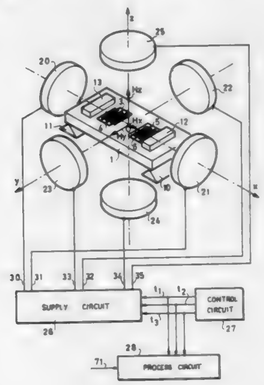
Jean P. Castera, Orsay, and Paul L. Meunier, Paris, both of France, assignors to Thomson CSF, Paris, France

Filed Jan. 18, 1985, Ser. No. 692,546

Claims priority, application France, Jan. 27, 1984, 84 01290

Int. Cl.⁴ G01P *15/08*; G01N *29/00*

U.S. Cl. 73—597 **3 Claims**



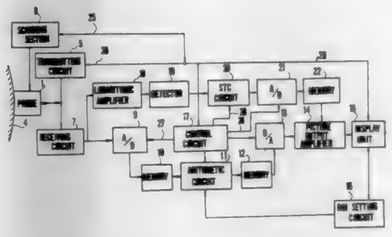
1. A vectorial force sensor with elastic surface waves, comprising a bar on which is exerted a stress to be measured and which possesses a measuring face; an assembly of oscillator means for elastic surface waves, arranged on the measuring face and maintaining an elastic wave of specific polarization direction (S); the said force sensor also incorporating: at least three magnetic means inducing magnetic fields in the bar, the first means inducing a first magnetic field (Hx) parallel to the direction of polarization (S) of the elastic surface wave, the second means inducing a second magnetic field (Hy) perpendicular to the direction of polarization (S) of the elastic wave and parallel to the measuring face, and the third means inducing a third magnetic field (Hz) perpendicular to the measuring face; a sequential control circuit making it possible to control the magnetic means sequentially; and measuring means connected to each measuring oscillator means and supplying results of measurement of the propagation speed of the elastic waves for each operating sequence provided by the sequential control circuit, process circuits receiving the results of measurement of the propagation speeds and supplying the vectorial

value of the stress exerted on the bar on the basis of a vectorial combination of the three measurements.

4,566,330
ULTRASONIC MEASUREMENT METHOD, AND APPARATUS THEREFOR

Tadashi Fujii, Fujinomiya, and Yoshinori Hayakawa, Ibaraki, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1984, Ser. No. 657,028
Claims priority, application Japan, Dec. 7, 1983, 58-229853
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—599 **10 Claims**

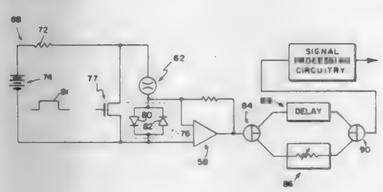


1. An ultrasonic measurement method for obtaining quantitative information relating to ultrasonic characteristics of an object under investigation, comprising the steps of:
(a) transmitting ultrasonic pulses having a plurality of different frequencies into the object under investigation,
(b) detecting echos of the ultrasonic pulses reflected from within the object,
(c) subjecting the detected echos, which exhibit a plurality of frequencies, to information processing to derive a mean value of attenuation coefficients measured on the basis of two different frequencies, and a mean value of attenuation coefficients measured on the basis of three different frequencies inclusive of the first two frequencies; and
(d) deriving information relating to an attenuation coefficient of the object from said mean value of attenuation coefficients measured on the basis of two different frequencies, and said mean value of attenuation coefficients measured on the basis of three different frequencies inclusive of the first two frequencies.

4,566,331
ULTRASONIC DRIVER AND RECEIVER

Eugene Schroeder, Indianapolis, Ind., assignor to Indianapolis Center for Advanced Research, Indianapolis, Ind.

Filed Apr. 6, 1984, Ser. No. 597,343
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—632 **15 Claims**

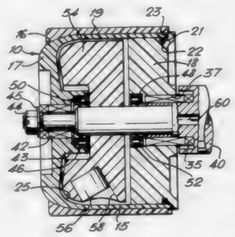


1. A system for driving an ultrasonic transducer for use in ultrasound imaging of a target, the system comprising means for generating a charging voltage, a first impedance for coupling the charging voltage generator to a terminal of the transducer to permit the transducer to charge sufficiently slowly from the charging voltage source so that charging strain is not coupled from the transducer to the target, a switch, and means for coupling the switch to the transducer, closing of the switch permitting the transducer to discharge sufficiently rapidly that discharging strain is coupled from the transducer to the target.

4,566,332
WHEEL PROBE

John C. Collingwood, East Hagbourne, England, assignor to British Gas Corporation, London, England

Filed Jul. 10, 1984, Ser. No. 629,480
Claims priority, application United Kingdom, Aug. 4, 1983, 3321025
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—639 **8 Claims**



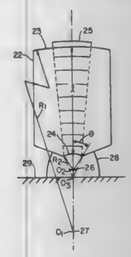
1. A wheel probe for ultrasonically inspecting a component, comprising a hollow wheel having spaced end walls and an annular wall defining a rim, the inner surfaces of the end walls and the rim defining a chamber containing an acoustic coupling liquid, stationary mounting means supporting the wheel for free rotation, the mounting means including an annular mounting member supporting an ultrasonic transducer for directing and receiving ultrasound through the rim of the wheel, the mounting member comprising material for attenuating sound, being located within the chamber so as to substantially fill the same and having end surfaces and an annular outer surface respectively spaced from the inner surfaces of the end walls and the rim so as to define a small gap therewith, thereby to inhibit ultrasound from reaching the transducer, the small gap being filled with the coupling liquid.

4,566,333
FOCUSING ULTRASONIC TRANSDUCER ELEMENT

Noriyoshi Chubachi, 4-6-203, Katahira 1-chome, Sendai-shi, Miyagi-shi; Junichi Kushibiki, 48, Aza Nakazaike, Arai, Sendai-shi, Miyagi-ken, and Kouichi Nakanishi, Aichi, all of Japan, assignors to Keisuke Honda; Noriyoshi Chubachi and Junichi Kushibiki, all of Aichi, Japan

Filed Jul. 18, 1984, Ser. No. 632,206
Claims priority, application Japan, Aug. 8, 1983, 58-144728
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—642 **8 Claims**

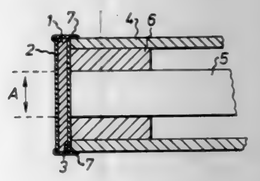
1. A focusing ultrasonic transducer element comprising an ultrasonic propagating medium having a convex spherical portion with a convex spherical surface in one end thereof and a concave spherical portion with a concave spherical surface in the other end thereof and an ultrasonic transmitting and receiving transducer attached on the surface of said convex spherical portion, an axis of symmetry of said convex spherical portion being aligned with that of said concave spherical portion and a center point of said convex spherical portion being offset from that of said concave spherical portion.



4,566,334
ULTRASONIC DETECTOR DEVICE

Hans A. W. Persson, Ilíongränd 90, S-223 71 Lund, Sweden

Filed Jun. 8, 1984, Ser. No. 618,481
Claims priority, application Sweden, Jun. 14, 1983, 8303366
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—649 **10 Claims**



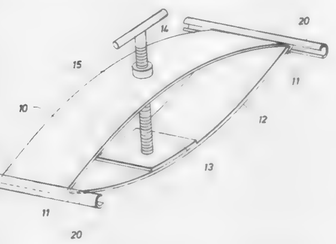
1. An ultrasonic detector device for converting ultrasonic signals into electrical signals, comprising
an electrode,
an electrically conductive casing enclosing the electrode so as to form a shield therefor,
an opening in the casing around a distal end of the electrode,
a piezoelectric film applied on and extending beyond the entire end surface of the distal end of the electrode,
a thin, electrically conductive layer exclusively on the side of the film opposite to the electrode, and
connection means electrically connecting the shield and the electrically conductive layer.

4,566,335
METHOD AND APPARATUS FOR TESTING FIBER REINFORCED PLASTIC LAMINATES

Surendra N. Singhal, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 16, 1984, Ser. No. 641,154
Int. Cl.[4] G01N *3/20*
U.S. Cl. 73—849 **3 Claims**

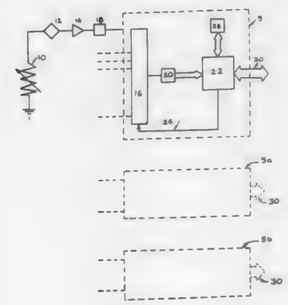
1. An apparatus for applying a variable bending load to a fiber reinforced plastic test specimen, said apparatus comprising:
an elongated rectangular metal frame member, said frame member having an arcuate shape with the ends of said frame member being shaped to retain said test specimen;
means secured to the center of the frame for applying a bending load, said means comprising a threaded member that engages a threaded opening dispersed in said frame; and
a pair of elongated tubular members, one of said tubular members being attached to each end of said frame member with the axis of the tubular member at substantially a right angle to the axis of the frame member.



4,566,336
NAVIGATIONAL AID ALERTING SYSTEM

John G. German, Mont St. Hilaire; Abraham Benjamin, Montreal, and James F. Stirling, Dorval, all of Canada, assignors to Canadian Patents & Development Ltd. Société Canadienne des Brevets et d'Exploitation Limited, Ottawa, Canada

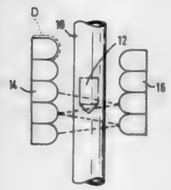
Filed Jun. 27, 1983, Ser. No. 508,458
Int. Cl.[4] G01B *7/16*
U.S. Cl. 73—772 **10 Claims**



1. A scanning device for use with an array of sensors, said scanning device comprising:
A. At least one remote data acquisition unit comprising:
(a) a microprocessor;
(b) an analog multiplexer having a plurality of inputs, each input connected in a one-to-one correspondence with a sensor of said array, said microprocessor controlling the sequential scanning of said multiplexer;
(c) an analog-to-digital converter connected to an output of said multiplexer for converting analog signals generated by said sensor array into corresponding digital data signals, the output of said analog-to-digital converter being connected to said microprocessor; and
(d) a RAM connected to said microprocessor, wherein said microprocessor stores an address identifying a sensor of said array and the magnitude of said digital data signals from said array, and wherein said microprocessor sequentially codes said addresses and said digital data signals in said RAM for transmission on a data bus;
B. A master control unit comprising:
(a) a master microprocessor, connected to said data bus, wherein said master microprocessor compares said data signals with two predetermined levels for producing first, second and third status signals; and

(b) a display means for displaying said first, second and third status signals.

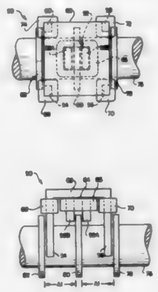
4,566,337
OPTO-ELECTRONIC POSITION SENSING
Michael G. Smart, Camberley, England, assignor to G. A. Platon Limited, Hampshire, England
Filed Jul. 24, 1984, Ser. No. 634,024
Claims priority, application United Kingdom, Jul. 28, 1983, 8320405
Int. Cl.⁴ G01F *1/26*; G01N *21/84*
U.S. Cl. 73—861.56 **21 Claims**



1. An opto-electronic position-sensing system comprising:
a series of emitting sources for generating radiation,
a series of radiation detectors for receiving said radiation,
a movable member located between said emitting sources and said detectors for affecting radiation reception of various affected elements of said detectors by blocking radiation from said sources to said elements according to a longitudinal position of said member relative to said sources, each affected element being adapted to produce an analog output signal having a magnitude varying from a minimum to a maximum and responsive to said position of said member in such a manner that output signals of at least two of said elements of said detectors vary in accordance with movement of said member,
first means for identifying said affected elements having low outputs by digital analysis of said output signals from said detectors so as to indicate the position of said member in said system, and
second means for subsequently precisely determining said position of said member by analog analysis of said output signals from said affected elements identified by said first means.

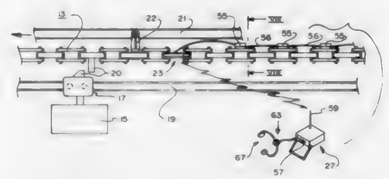
4,566,338
NONCONTACT TORQUE SENSOR
William J. Fleming, Rochester, and Dumitru Raceu, Warren, both of Mich., assignors to TRW Inc., Cleveland, Ohio
Filed Jul. 20, 1984, Ser. No. 633,057
Int. Cl.⁴ G01L *3/10*
U.S. Cl. 73—862.36 **22 Claims**

2. Apparatus as set forth in claim 1, wherein said shaft has first and second radially extending surfaces facing in opposite axial directions, said means for generating includes at least two pole means each disposed adjacent to a corresponding one of said first and second radially extending surfaces, and said means for detecting including means for detecting magnetic flux in said pole means and providing an output signal indicative of the total amount of flux in both said pole means, said



output signal being unaffected by axial and radial movements of said shaft.

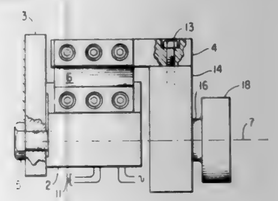
4,566,339
CHAIN PULL MONITOR SYSTEM
Marion A. Davidson, and David B. Kiss, both of Memphis, Tenn., assignors to Southern Systems, Inc., Memphis, Tenn.
Filed Dec. 23, 1983, Ser. No. 565,150
Int. Cl.⁴ G01L *5/10*
U.S. Cl. 73—862.39 **12 Claims**



12. A chain pull monitor system for monitoring the tensile stresses of a conveyor chain while under load and in operation, said system comprising:
(a) sensing means mounted directly to said chain for sensing the strain experienced by said chain while under load and in operation and for producing an electrical signal based on said strain; said sensing means including a body member interposed in said chain and including first and second active resistor elements for producing resistance proportional to the stress applied to said body member; said sensing means including a source of electrical energy coupled to said resistor elements for coacting with said resistor elements to produce a low voltage electrical signal proportional to the resistance produced by said resistor elements and including a voltage-to-frequency converter means for producing a voltage output proportional to the electrical signal produced by the coaction between said source of electrical energy and said resistor elements;
(b) transmitting means mounted on said chain and coupled to said sensing means for receiving said electrical signal from said sensing means, converting said electrical signal into a radio signal for the transmission thereof;
(c) receiving means for receiving said radio signal from said transmitting means and for presenting said radio signal in an intelligible form;
(d) a track;
(e) trolleys for supporting said chain from said track; and
(f) containers in which said transmitting means, said source of electrical energy and said voltage-to-frequency converter means are housed; said containers being attached to said chain and being of a sufficiently small size and so

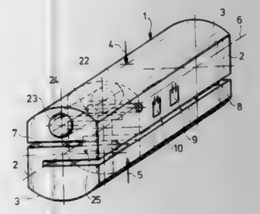
positioned to fit within the transverse silhouette of said trolleys.

4,566,340
FORCE TRANSDUCER
William H. Compton, Valley View, and Joseph M. Likozar, Highland Heights, both of Ohio, assignors to Comptrol Incorporated, Cleveland, Ohio
Filed Feb. 16, 1984, Ser. No. 580,940
Int. Cl.⁴ G01L *5/10, 1/26*
U.S. Cl. 73—862.48 **4 Claims**



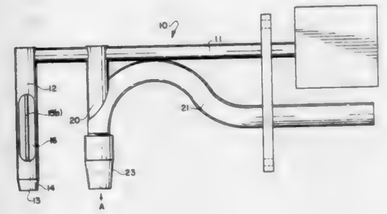
1. In a transducer generating an output signal corresponding to the magnitude of a force, a force receiving member cantilevered through a spring flexure from a base angularly adjustable about an axis whereby the moment impressed on said flexure by a force applied to said force receiving member and the resulting displacement of said force receiving member from a null position is a function of the magnitude of the force and the angular adjustment of the transducer, and a control couple having relatively movable elements operatively connected to said base and force receiving member respectively generating an output signal corresponding to the displacement of the force receiving member from the null position.

4,566,341
ELECTROMECHANICAL MEASURING CONVERTER PIN
Sándor Kovács, Budapest, Hungary, assignor to Vasipari Kutato es Fejleszto Vallalat, Budapest, Hungary
Filed Apr. 30, 1984, Ser. No. 605,638
Claims priority, application Hungary, Apr. 29, 1983, 1473/83
Int. Cl.⁴ G01L *1/22*
U.S. Cl. 73—862.65 **6 Claims**



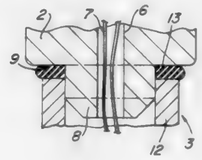
1. Electromechanical measuring converter pin, particularly for measuring force of varying influence line, characterized in that it has a pair of two opposite cylindrical and flat surfaces (2,3), where the points or lines of application of force and reaction force (4,5) are on the cylindrical surfaces (3) and recesses (7,8) are machined along the full length of both flat surfaces parallel with and extending over the geometric axis (6) of the pin (1), the walls of the recesses (7,8) are parallel with each other and at least two deformation sensors (9,10,11,12) connected to measuring bridge (13) are arranged on the flat surface and below the recesses (7,8) starting from the given flat surface (2).

4,566,342
ISOKINETIC EXTRACTIVE SAMPLING PROBE
Jerome L. Kurz, 33 Losrobles Dr., Carmel Valley, Calif. 93924
Filed May 5, 1983, Ser. No. 491,881
Int. Cl.⁴ G01N *1/20*
U.S. Cl. 73—863.03 **16 Claims**



1. An isokinetic extractive sampling probe comprising in combination:
an elongated probe conduit including,
a first thermal flow sensor contained within a first tubular section depending from said probe conduit, said first flow sensor directed towards monitoring the velocity of a fluid stream passing thereby,
a second thermal flow sensor contained within a second tubular section depending from said probe conduit, said second thermal flow sensor directed towards monitoring the velocity of an extractive sample of the fluid being withdrawn from the fluid stream through an extractive conduit,
said second thermal flow sensor being parallel to the first thermal flow sensor and axially aligned with said second tubular section and
a first and second temperature sensor to register changes in the ambient temperature of the fluid stream, whereby the differential output between said first thermal flow sensor monitoring the velocity of the fluid stream, and said second thermal flow sensor monitoring the velocity of the extractive sample is used to automatically adjust the flow-rate of the extractive sample being withdrawn through said extractive conduit by pumping means so that velocity of the extractive sample within said extractive conduit is equal to the velocity of the fluid stream, thereby ensuring isokinetic sampling of the fluid streams at the point of measurement.

4,566,343
SAMPLING AND/OR MEASURING APPARATUS FOR IMMERSION IN MOLTEN METAL
Alfons L. Theuwis, Zonhoven, and Joseph M. Maes, Hechtel, both of Belgium, assignors to Electro-Nite Co., Philadelphia, Pa.
Filed May 18, 1984, Ser. No. 611,788
Claims priority, application Belgium, Nov. 28, 1983, 2/60271
Int. Cl.⁴ G01N *1/12*
U.S. Cl. 73—864.59 **12 Claims**



1. Apparatus for immersion into molten metal comprising a lance supporting a disposable probe, said probe being tele-

scoped over an immersion end of said lance, said lance having a shoulder adjacent one end of said probe, means for protecting the shoulder while permitting contact between said probe and shoulder, said means including an elastic ring seal between said shoulder and an adjacent end portion of said probe, said seal being disposable after a single use.

4,566,344

CLUTCH MECHANISM IN PUSHBUTTON TUNER

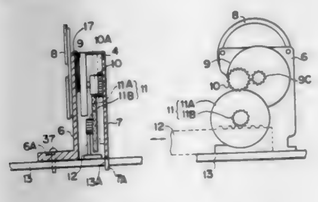
Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1983, Ser. No. 561,864

Claims priority, application Japan, Dec. 16, 1982, 57-190733[U]; Dec. 16, 1982, 57-190734[U]; Dec. 16, 1982, 57-190735[U]; Dec. 16, 1982, 57-190736[U]; Dec. 16, 1982, 57-190737[U]

Int. Cl.⁴ H03J *5/12*

U.S. Cl. 74—10.33 **2 Claims**



1. A clutch mechanism in a pushbutton tuner which comprises:

a clutch base plate having at least one hole therethrough;

a manually rotatable tuning gear disposed on one side of said clutch base plate and adapted for effecting manual tuning of the tuner, said tuning gear having a rotation axle extending through said hole;

an inner gear disposed on the opposite side of said clutch base plate from said tuning gear and being drivingly engaged with said tuning gear so that rotational movement of said tuning gear can be transmitted to a tuning circuit element to change a constant of said circuit element;

a horseshoe-shaped stopper engaging said rotation axle on said opposite side of said clutch base plate for securing said rotation axle with respect to said clutch base plate while permitting rotation of said tuning gear;

a clutch plate spaced from said clutch base plate;

an idler gear connected for simultaneous rotation with said inner gear; and

a wheel gear having a friction surface for frictionally engaging said idler gear so that said wheel gear is rotatable with said idler gear, said friction surface being provided with a number of grooves that extend parallel to the axis thereof, both said idler gear and said wheel gear being located between said clutch plate and said clutch base plate.

4,566,345

TOOL CARRIER ASSEMBLY

Kenneth W. Erikson, 73 Spaulding Dr., Merrimack, N.H. 03054, and Keith W. Erikson, 7 Quarry Circle Dr., Milford, N.H. 03055

Filed Jul. 23, 1984, Ser. No. 633,338

Int. Cl.⁴ F16C *33/20*

U.S. Cl. 74—89.15 **2 Claims**

1. A tool carrier assembly comprising: a carrier supporting a tool for reciprocating motion;

guide rails;

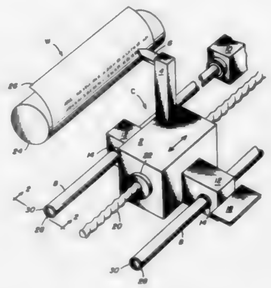
means for reciprocating the carrier along the guide rails;

the guide rails comprising a core of metal rod stock with a sheath of plastic material surrounding the core,

the sheath having a ground surface;

sleeve bearings on the carrier engageable with the guide rails;

the plastic sheath being made of extruded nylon containing approximately 20% of polytetrafluoroethylene,



the bearings being made of molded acetyl copolymer containing approximately 20% of polytetrafluorethylene.

4,566,346

AUTOMATED TOOL MANIPULATING STRUCTURE WITH X-Y MOVEMENT INCLUDING A BELT AND PULLEY DRIVE ARRANGEMENT

Maurice R. Petiteau, 7, rue Sancey, F-25000 Besancon, France

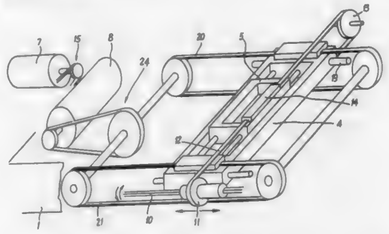
PCT No. PCT/FR82/00041, § 371 Date Nov. 8, 1982, § 102(e) Date Nov. 8, 1982, PCT Pub. No. WO82/03044, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 9, 1982, Ser. No. 441,532

Claims priority, application France, Mar. 10, 1981, 81 04747

Int. Cl.⁴ B25J *11/00*; F16H *19/06*

U.S. Cl. 74—89.22 **6 Claims**



1. An automated tool manipulating structure comprising:

a support means;

a first frame mounted on said supported means, said first frame slides in its plane along a first axis F_1;

a first means for actuating said first frame, said first means for actuating being affixed to said support means and said first frame;

a second frame mounted inside said first frame, said second frame slides in its plane along a second axis F_2, said second axis F_2 is perpendicular to said first axis F_1 and said plane of said first frame and said plane of said second frame are parallel; and

a second means for actuating said second frame, said second means for actuating being affixed to said support means and said second frame, said second actuating means includes:

a rotating shaft extended parallel to said first axis F_1;

a pulley slidably mounted on said rotatable shaft; and

a belt operated by said pulley.

4,566,347

PROGRAMMER

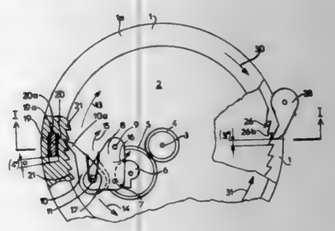
Francis Thomas, Cluses, France, assignor to Societe Industrielle de Bellevaux, SIBEL, Cluses, France

Filed Jul. 18, 1984, Ser. No. 631,860

Claims priority, application France, Jul. 19, 1983, 83 12502

Int. Cl.⁴ F16H *29/12*; H01H *43/10*

U.S. Cl. 74—125 **4 Claims**



1. A programmer comprising a programme cam unit, means for rotating said cam unit manually in a first direction comprising a manually rotatable control shaft, means for resiliently positioning said control shaft, as it is rotated, in successive stable angular positions spaced apart by the angular value of one step, while passing in each instance through an intermediate limiting unstable angular position and thereafter bringing said control shaft resiliently from a limiting unstable angular position to the next stable angular position, automatic drive means for rotating said cam unit step by step in said first direction and means for connecting said cam unit to rotate with said control shaft with an angular clearance which is less than the angle through which the control shaft travels between one of its stable angular positions and the limiting unstable intermediate angular position which follows.

4,566,348

TRANSMISSION WITH DRIVEN SHAFT AND TWO CLUTCHING DEVICES AT THE SAME ENDS OF TWO PARALLEL DRIVING SHAFTS

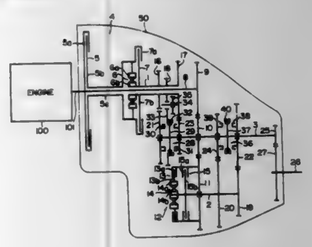
Teruo Akashi; Hiroshi Ito, and Shigemichi Yamada, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 1, 1983, Ser. No. 470,941

Claims priority, application Japan, Jun. 18, 1982, 57-104731

Int. Cl.⁴ F16H *3/08*

U.S. Cl. 74—359 **6 Claims**



1. A transmission mechanism for a vehicle, for receiving input of rotational power from a power supplying member which rotates in a particular rotational direction and for outputting rotational power to a power receiving member, comprising:

a rotatable input member connected to said power supply member and which receives a supply of said rotational power from said power supplying member;

a first driving gear wheel shaft;

a second driving gear wheel shaft mounted generally parallel to said first driving gear wheel shaft;

a driven gear wheel shaft mounted generally parallel to said first and second driving gear wheel shafts, said driven gear wheel shaft being rotationally connected to said power receiving member;

a first pair of gear wheels, one of which is fixedly mounted one one of said first driving gear wheel shaft and said driven gear wheel shaft and the other of which is rotatably mounted on the other of said first driving gear wheel shaft and said driven gear wheel shaft and which are in a mutually geared power transmitting relationship, so as to provide a first reduction gear ratio from said first driving gear wheel shaft to said driven gear wheel shaft;

a second pair of gear wheels, one of which is fixedly mounted on one of said second driving gear wheel shaft and said driven gear wheel shaft and the other of which is rotatably mounted on the other of said second driving gear wheel shaft and said driven gear wheel shaft and which are in a mutually geared power transmitting relationship, so as to provide a second reduction gear ratio smaller than said first reduction gear ratio from said second driving gear wheel shaft to said driven gear wheel shaft;

a third pair of gear wheels, one of which is fixedly mounted on one of said first driving gear wheel shaft and said driven gear wheel shaft and the other of which is rotatably mounted on the other of said first driving gear wheel shaft and said gear wheel shaft and which are in a mutually geared power transmitting relationship, so as to provide a third reduction gear ratio smaller than said second reduction gear ratio, one of said third pair of gear wheels being fixedly mounted on its said shaft which is the same shaft as the one on which one of said first pair of gear wheels is fixedly mounted, and the other of said third pair of gear wheels being rotatably mounted on its said shaft which is the same shaft as the one on which one of said first pair of gear wheels is rotatably mounted;

a fourth pair of gear wheels, one of which is fixedly mounted on one of said driving gear wheel shaft and said driven gear wheel shaft and the other of which is rotatably mounted on the other of said second driving gear wheel shaft and said driven gear wheel shaft and which are in a mutually geared power transmitting relationship, so as to provide a fourth reduction gear ratio from said second driving gear wheel shaft to said driven gear wheel shaft, one of said fourth pair of gear wheels being fixedly mounted on said shaft which is the same shaft as the one on which one of said second pair of gear wheels is fixedly mounted, and the other of said fourth pair of gears wheels being rotatably mounted on said shaft which is the same shaft as the one on which one of said second pair of gear wheels is rotatably mounted;

a first synchromesh device which engages said rotatably mounted one of said first pair of gear wheels with said shaft on which it is thus rotatably mounted when said first synchromesh device is shifted to one side of a neutral position thereof and which engages said rotatably mounted one of said third pair of gear wheels with said shaft on which it is thus rotatably mounted when said first synchromesh device is shifted to the other side of a neutral position thereof opposite to said one side;

a second synchromesh device which engages said rotatably mounted one of said second pair of gear wheels with said shaft on which it is thus rotatably mounted when said second synchromesh device is shifted to one side of a neutral position thereof and which engages said rotatably mounted one of said fourth pair of gear wheels with said shaft on which it is thus rotatably mounted when said second synchromesh device is shifted to the other side of a neutral position thereof opposite to said one side;

a first clutching device comprising a rotational power input member and a rotational power output member, mounted

proximate to an end of said first driving gear wheel shaft that is closest to said input member with its rotational power output member rotationally coupled to said first driving gear wheel shaft, which according to selective control thereof is able selectively either to disengage said first driving gear wheel shaft with said input member in either relative rotational direction or to couple said first driving gear wheel shaft to said input member in one relative rotational direction only, said one relative rotational direction being the one in which rotational power is required to be transmitted through said first clutching device in order to rotationally power said first driving gear wheel shaft from said power supplying member via said input member and said first clutching device when said power supplying member is being rotated in said particular rotational direction;

a second clutching device comprising a rotational power input member and a rotational power output member, mounted proximate to an end of said second driving gear wheel shaft that is closest to said input member with its rotational power output member rotationally coupled to said second driving gear wheel shaft, which according to selective control thereof is able selectively either to disengage said second driving gear wheel shaft with said input member in either relative rotational direction, or to couple said second driving gear wheel shaft to said input member in one relative rotational direction only, said one relative rotational direction being the one in which rotational power is required to be transmitted through said second clutching device in order to rotationally power said second driving gear wheel shaft from said power supplying member via said input member and said second clutching device when said power supplying member is being rotated in said particular rotational direction;

one of said rotational power input members of said first and second clutching devices being coaxially rotationally coupled to said input member; and

rotational power transfer means which includes a first power transfer gear wheel coaxially rotationally coupled to said one of said rotational power input members of said first and second clutching devices, a second power transfer gear wheel coaxially rotationally coupled to the other of said rotational power input members of said first and second clutching devices, and an intermediate power transfer gear wheel rotatably mounted on said driven gear wheel shaft and meshed with said first and second power transfer gear wheels.

4,566,349

CHATTERLESS SHIFTER

Dwain Van der Loon, Wyoming, and Gary Curtha, Grandville, both of Mich., assignors to Alofs Manufacturing Company, Grand Rapids, Mich.

Filed Oct. 6, 1983, Ser. No. 539,697
Int. Cl.⁴ B60K *20/02, 20/00*
U.S. Cl. 74—475 **4 Claims**



1. A chatterless shifter combination comprising:

a stamped metal index plate having arcuately disposed notches on the upper edge thereof and stop means for each;

a stamped metal shifter bracket pivotally connected to said index plate by means of a tubular swage-connected buffered insulating bushing and stud attached to said shifter bracket;

a stamped metal shifter extension having a tab extension to operably engage said index plate and nestable in said shifter bracket and limitedly tiltable against said shifter bracket;

an insulating mat between said shifter bracket and said shifter extension; and

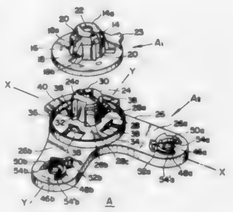
means urging said shifter extension into nesting contact in said shifter bracket and into normal selected engagement of said tab with said index plate.

4,566,350

LEVER ASSEMBLY

Issei Miyamoto, Yokohama, and Yuichi Kato, Tokyo, both of Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

Filed Jan. 25, 1984, Ser. No. 573,624
Claims priority, application Japan, Jan. 27, 1983, 58-9081[U]; Oct. 15, 1983, 58-159577[U]; Oct. 15, 1983, 58-159578[U]
Int. Cl.⁴ G05G *1/04;* **F16C** *11/00*
U.S. Cl. 74—526 **22 Claims**



1. A lever assembly mounted on a panel for linking driving and driven device through connecting rods, comprising:

a lever holder which includes a tubular portion inserted through an opening of the panel, the outer diameter of the lever holder being substantially equal to the diameter of said opening, and further including an annular base portion integral with and concentrically disposed on an open end of said tubular portion;

a lever which includes a hollow shaft portion inserted in said tubular portion of said lever holder, the outer diameter of said hollow shaft being substantially equal to the inner diameter of said tubular portion, and further including first and second arms linked to driving and driven devices through connecting rods;

first means for providing a locking connection between said tubular portion of said lever holder and the panel;

second means for providing a locking connection between said hollow shaft portion of said lever and said tubular portion of said lever holder while permitting rotation of said hollow shaft portion relative to said lever holder; and

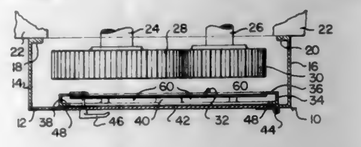
third means for suppressing excess rotation of said hollow shaft portion of said lever relative to said tubular portion of said lever holder by contacting a portion of said lever with a portion of said lever holder.

4,566,351

GEAR HOUSING DEVICE FOR PREVENTING OIL LEAKAGE

Eugen Skipor, Chicago, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 28,762, Apr. 9, 1979, abandoned. This application Oct. 13, 1983, Ser. No. 541,636
Int. Cl.⁴ F16H *57/02*
U.S. Cl. 74—606 R **1 Claim**



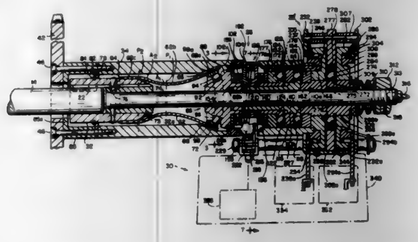
1. An improved liquid tight housing for gears and the like comprising walls defining an enclosure for retaining a liquid gear lubricant therein, at least one of said walls having an outer surface, being vertical and having an access opening formed therein and a door for closing the access opening to prevent escape of lubricant contained within the housing, characterized in that the access opening is formed by a lip extending inwardly of said one wall at a right angle thereto and terminating at an inner end and extending completely about said opening, first and second spaced apart parallel flanges rigid with said lip and extending inwardly thereof at right angles thereto completely about said opening, said first flange being formed on the inner end of said lip and said second flange being disposed intermediate said first flange and the outer surface of said wall and forming a seat for said door, said first flange being of a width greater than the width of said second flange, said first and second flanges together with said lip forming a generally U-shaped groove for receiving lubricant, a baffle plate mounted on said door and spaced inwardly therefrom and the periphery thereof extending into said groove, there being a clearance between said baffle plate and said first flange to provide a passage for the flow of lubricant deposited on said baffle plate downwardly into said groove, and means provided in the portion of said U-shaped groove below said baffle plate to define openings permitting the flow of lubricant from the groove into said enclosure.

4,566,352

ROTARY SHAFT CONTROL APPARATUS

Bernard Stiff, 1350 Main St., Lynnfield, Mass. 01940

Division of Ser. No. 468,156, Feb. 22, 1983, which is a division of Ser. No. 268,840, Jun. 1, 1981, Pat. No. 4,382,391, which is a division of Ser. No. 965,236, Dec. 1, 1978, Pat. No. 4,286,476. This application Nov. 5, 1984, Ser. No. 669,637
Int. Cl.⁴ F16H *37/02, 33/04*
U.S. Cl. 74—640 **8 Claims**



1. Torque coupling apparatus for use particularly for rotary shaft control comprising

A. a first bearing unit mounted for rotation about an axis, said first bearing unit having an array of bearing elements projecting out from both faces of said first bearing unit;

B. a second bearing unit mounted for rotation about said axis adjacent said first bearing unit, said second bearing unit having an array of bearing elements projecting out from both faces of said second bearing unit;

C. a first plate mounted for rotation about said axis adjacent said first bearing unit, said first plate being formed with a race in one face for engaging the bearing elements projecting out from one face of said first bearing unit;

D. a second plate mounted for rotation about said axis between said two bearing units, said second plate being formed with races in its opposite faces, one of said races receiving the bearing elements projecting out from the other face of said first bearing unit and the other of said races receiving the bearing elements projecting out from one face of said second bearing unit;

E. a third plate mounted for rotation about said axis adjacent said second bearing unit, said third plate being formed with a race in one face for receiving the bearing elements projecting out from the other face of said second bearing unit;

F. a tractive-type lubricant coating said bearing elements, said lubricant exhibiting a significant amount of shear strength when subjected to pressure,

G. means for axially loading the plates and bearing units together so as to exert pressure on the lubricant;

H. means for rotatively coupling the first and third rings together;

I. means for applying torque to the first and third rings;

J. torque take-off means coupled to the first bearing unit; and

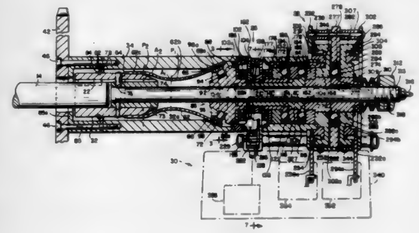
K. means for rotating the second bearing unit relative to the first and second rings so as to control the rotary speed of the first bearing unit.

4,566,353

ROTARY SHAFT CONTROL APPARATUS

Bernard Stiff, 1350 Main St., Lynnfield, Mass. 01940

Division of Ser. No. 268,840, Jun. 1, 1981, Pat. No. 4,382,391, which is a division of Ser. No. 965,236, Dec. 1, 1978, Pat. No. 4,286,476. This application Feb. 22, 1983, Ser. No. 468,156
Int. Cl.⁴ F16H *1/44, 15/26;* **F16D** *13/00*
U.S. Cl. 74—710.5 **10 Claims**



1. Torque coupling apparatus for use particularly for rotary shaft control comprising

A. a rotary shaft for rotating in a given direction,

B. a rotary bearing unit rotatively fixed to said shaft and having an array of bearing elements projecting out from both faces of the bearing unit,

C. a first plate rotatively mounted on said shaft coaxially with respect to the bearing unit, said plate being formed with a race in one face thereof engaging the bearing elements projecting from one face of the bearing unit,

D. a second plate rotatively mounted on said shaft coaxialy with respect to the bearing unit, said second plate being formed with a second race in one face thereof engaging the bearing elements projecting out from the other face of the bearing unit,

E. torque take-off means rotatively mounted on said shaft and coupled to the second plate, said torque take-off means including rotary output means,

F. a tractive-type lubricant applied to the bearing elements, said lubricant exhibiting significant shear strength when subjected to a selected pressure,

G. means on said shaft for axially loading the plates against the bearing unit so as to exert said selected pressure so that torque may be coupled between the bearing unit and the plates,

H. means for slowing or stopping the rotation of said first plate when said shaft is rotating in said given direction whereby the output means are advanced in phase relative to said shaft, and

I. means for slowing or stopping the rotation of the second plate when said shaft is rotating in said given direction whereby said output means are retarded in phase relative to said shaft.

4,566,354

METHOD AND APPARATUS FOR CONTROLLING REDUCTION RATIO OF CONTINUOUSLY VARIABLE TRANSMISSION WITH ENGINE COOLANT TEMPERATURE COMPENSATION

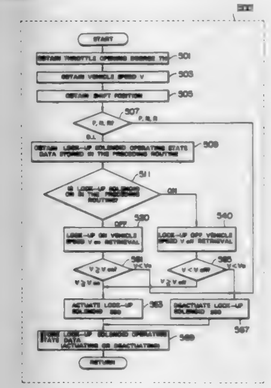
Haruyoshi Kumura, Yokohama; Keiju Abo, Yokosuka; Yoshikazu Tanaka, Yokohama; Hiroyuki Hirano, Yokosuka; Sigeaki Yamamuro, Zushi, and Yoshiro Morimoto, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 19, 1983, Ser. No. 486,331

Claims priority, application Japan, Apr. 19, 1982, 57-63867; May 20, 1982, 57-83928

Int. Cl.⁴ B60K *41/16*

U.S. Cl. 74—866 **16 Claims**



1. A method for controlling a reduction ratio of a continuously variable transmission of an automotive vehicle having an internal combustion engine, comprising:

(a) generating an actual engine coolant temperature indicative signal representing an actual engine coolant temperature;

(b) comparing the engine coolant temperature indicative signal with a predetermined temperature value indicative signal representing a predetermined temperature value;

(c) detecting an operating condition under which the automotive vehicle is operating;

(d) generating a desired optimum reduction ratio indicative signal representing a desired optimum reduction ratio for the operating condition detected in said detecting step, the desired optimum reduction ratio indicative signal varying in a first pattern when the engine coolant temperature indicative signal is at least equal to said predetermined temperature value and in a second pattern when the engine coolant temperature indicative signal is less than the predetermined temperature value indicative signal, said second pattern giving a desired optimum reduction ratio larger than a desired optimum reduction ratio given by the first pattern for the same operating condition detected in said detecting step;

(e) adjusting the actual reduction ratio of the continuously variable transmission toward a value which agrees with the desired optimum reduction ratio; and

(f) repeating the steps (a), (b), (c), (d) and (e) until the actual reduction ratio agrees with said desired optimum reduction ratio, wherein the desired optimum reduction ratio given by the first pattern is determined based upon an operating variable indicative signal partly representing the operating condition detected in said detecting step, and the desired optimum reduction ratio given by the second pattern is determined based upon a corrected signal given by correcting said operating variable indicative signal by a predetermined value.

4,566,355

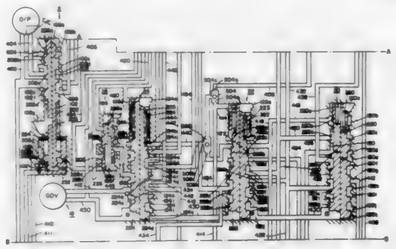
SHIFT VALVE FOR AUTOMATIC TRANSMISSION

Kazuhiko Sugano, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 29, 1983, Ser. No. 518,746

Int. Cl.⁴ B60K *41/16, 41/06*

U.S. Cl. 74—869 **3 Claims**



1. A hydraulic control system for an automatic transmission for a motor vehicle having an engine including a throttle which opens in degrees, the transmission being shiftable between a plurality of forward speed ratios the hydraulic control system comprising:

a source of fluid pressure;

means communicating with said source of fluid pressure for producing a governor fluid pressure variable with the vehicle speed;

means communicating with said source of fluid pressure for producing a throttle fluid pressure variable with the degree of throttle opening;

means for producing a downshift position hold signal fluid pressure;

a shift valve including means for defining a valve bore, a spool slidably disposed in said valve bore for movement between a downshift position and an upshift position and having at least one pressure acting area which is exposed to said governor fluid pressure, a plug having a pressure acting area which is exposed to said throttle fluid pressure, and a spring disposed between said spool and plug and acting therebetween, said governor pressure acting area, when acted upon by said governor pressure urging said spool to move from said downshift position thereof to said upshift position thereof against said spring, said throttle pressure acting area, when acted upon by said throttle fluid pressure, urging said plug to move said spool from said upshift position thereof to the downshift position thereof;

said spool having a first signal pressure acting area and said plug having a second signal pressure acting area;

said valve bore defining means being formed with a bias port opening into said valve bore, said bias port providing communication between said downshift position hold signal fluid pressure producing means and said first and second signal pressure acting areas so as to allow said downshift position hold signal fluid pressure to act upon said first and second signal pressure acting areas,

said first signal pressure acting area, when acted upon by said downshift position hold signal fluid pressure, urging said spool to move from said upshift position thereof to the downshift position thereof, said second signal pressure acting area, when acted upon by said downshift position hold signal fluid pressure urging said plug to move away from said spool

said valve bore opening means being formed with a first group of ports comprising first, second and third ports, and also with a second group of ports comprising fourth, fifth and sixth ports;

said spool being formed with axially spaced first, second and third control lands, said first and second control lands cooperating with said first group of ports to connect said second port selectively to said first or third port, said second and third control lands cooperating with said second group of ports to connect said fifth port selectively to said fourth or sixth port.

4,566,356

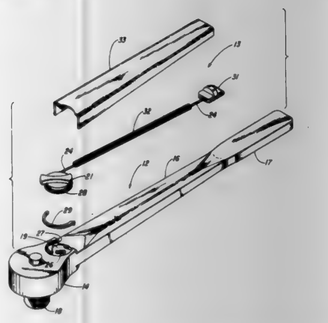
RATCHET WRENCH ASSEMBLY

Rosh N. Herota, Yuba City, Calif., assignor to Tom Tateyama and K & H Distributors, both of Woodland, Calif.

Filed Jun. 5, 1984, Ser. No. 617,492

Int. Cl.⁴ B25B *13/46*

U.S. Cl. 81—62 **2 Claims**



1. In a ratchet wrench having a shank with a face and side walls and with a handle at one end and a head at the other end and having in said head a socket stud adapted to rotate in either of two directions and having in said head means including a control knob movable into either of two positions in engagement with a pawl and ratchet means for correspondingly controlling the direction of rotation of said stud, the combination of a ratchet wrench assembly comprising a crank pin eccentrically mounted on and upstanding from said control knob, a sheet-like sheath in part clipped on said side walls of said shank and in part separated from said face of said shank to leave a space therebetween, a tubular shroud located within said space and confined against said shank face by said sheath, a thumb tab embracing one end of and slidably mounted on said sheath, a rod slidably mounted within said shroud, means at one end of said rod for securing said rod to said thumb tab, and means at the other end of said rod journalling the other end of said rod on said crank pin, wherein said thumb tab is for remotely and alternatively controlling the direction of rotation of said stud.

4,566,357

UNIVERSAL TOOL-HOLDER

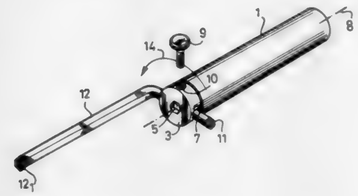
Patricia Carossino, 16, Chemin Dupuis Vert, 95000 Cergy, France

Filed Dec. 23, 1983, Ser. No. 564,846

Claims priority, application France, Jan. 5, 1983, 83 00071

Int. Cl.⁴ B25B *23/16*

U.S. Cl. 81—177.2 **9 Claims**



1. A universal tool holder for receiving and applying torque to a tool for tightening or untightening a screwable member, comprising a grip member defining an axial bore, a rotary head member secured axially to said grip member in said bore and freely rotatable about the axis of said grip member relative to said grip member without relative axial movement between said head and grip members, said head member presenting an axial aperture opening along the axis of said grip member and at least one radial aperture opening normal to the axis of said grip member, each of said apertures being adapted to receive alternatively a part of said tool, and locking means for releasably engaging said part of said tool in the aperture to secure the tool therein.

4,566,358

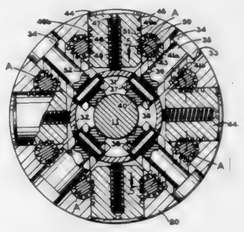
BAR STOCK GUIDE ARRANGEMENT FOR SCREW MACHINES

Paul Ducanis, 17401 NW. 2nd Ave., Miami, Fla. 33169

Filed Mar. 16, 1984, Ser. No. 590,347

Int. Cl.⁴ B23B *15/00, 13/08*

U.S. Cl. 82—38 A **17 Claims**



1. In a bar stock guide arrangement at the inlet side of a screw machine, said guide arrangement comprising:

a plurality of rigid cross plates spaced apart at intervals along the path of the bar stock at the inlet side of the screw machine and having substantially horizontal openings therethrough for passing the bar stock;

a plurality of annular fittings defining a longitudinal passageway for the bar stock;

means rotatably mounting each fitting in a corresponding cross plate at said opening therein for permitting the fitting to rotate in unison with the bar stock when the bar stock is rotated by the screw machine;

and a plurality of rollers mounted in each fitting at circumferentially spaced locations around said longitudinal passageway for rolling engagement with the bar stock at different circumferential locations thereon;

the improvement which comprises:

a plurality of weights slidably mounted in each fitting at circumferentially spaced locations around said longitudinal passageway for the bar stock to be urged laterally outward by centrifugal force as said fitting rotates;

means acting between said weights and said rollers to hold the rollers laterally inward against the bar stock in response to the urging of said weights outward by centrifugal force;

each of said weights being positioned between a pair of said rollers circumferentially around said longitudinal passageway for the bar stock;

and said means acting between said weights and said rollers comprising:

a holder for each roller slidably mounted in the corresponding fitting for movement laterally of said longitudinal passageway and having rack teeth on its opposite sides circumferentially around said longitudinal passageway;

rack teeth on the opposite sides of each of said weights circumferentially around said longitudinal passageway;

and respective pinion gears engaged between said holders and the neighboring weights and meshing with the rack teeth thereon to force said holders inward when centrifugal force urges said weights outward.

4,566,359

METHOD OF STACKING FINS OF HEAT EXCHANGERS

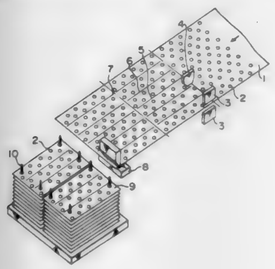
Masahiro Miyagi; Katsuharu Uehara; Yoshio Nozawa, and Takahiko Deguchi, all of Tochigi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 15, 1984, Ser. No. 580,237

Claims priority, application Japan, Feb. 16, 1983, 58-22777

Int. Cl.⁴ B26D *9/00, 7/00;* **B65H** *35/06*

U.S. Cl. 83—23 **4 Claims**



1. A method of producing and stacking fins of heat exchangers comprising the steps of:

forming in a strip of metal a multiplicity of apertures for inserting tubes therein;

cutting said strip of metal lengthwise to form a continuous line of cut extending from a leading edge of the strip to a trailing edge thereof, cutting a plurality of intermittent lines of cut disposed parallel to one another lengthwise of the strip while leaving uncut portions at opposite ends of the intermittent lines, said continuous line and intermittent lines being spaced apart widthwise of the strip by an interval corresponding to the width of fins to be produced as end products;

drawing said strip by suction to cause same to adhere to a suction plate;

cutting across said strip at points spaced apart lengthwise of said strip at the uncut portions of the intermittent lines of cut by a distance corresponding to the length of the fins to provide a multiplicity of groups of fins; and

forcing said apertures of the fins of each said group of fins onto stacking bars to stack one group of fins after another to provide a stack of the groups of fins.

4,566,360

CUTTING DEVICE FOR SHEETS WITH AT LEAST ONE ROTATING CUTTING KNIFE AND CONVEYER

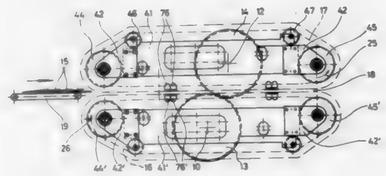
Gunthart Lehmann, Lautern, Fed. Rep. of Germany, assignor to Maschinenbau Oppenweiler GmbH, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,448

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1982, 3244422

Int. Cl.⁴ B26D *7/06*

U.S. Cl. 83—409 **13 Claims**



1. A cutting device for folded and unfolded sheets, as well as booklets, with at least one rotating cutting knife and one conveyer which transports the material to be cut at least during the cutting process, said device comprising:

a first endless conveyer element which is pressed onto the material along a part of its length by spring pressure exerted on its side opposite the material to be cut,

a pressure device extending in the lengthwise direction of the conveyer, said pressure device including pressure pieces individually installed in the direction of the conveyer element, each pressure piece being spring loaded, independently from the others, and movable in a direction, perpendicular to a plane of the conveyer element as the conveyer element passes adjacent to the pressure device,

wherein each pressure piece is fixed laterally, relative to the running direction of the conveyer element;

wherein each pressure piece is installed in a manner allowing it to swivel around an axis extending crosswise to the running direction of the conveyer element;

further comprising a slit-plug connection for connecting each pressure piece to a support on a frame, wherein the slit extends in the direction of the pressure and at least one pre-stressed spring is supported in the running direction of the conveyer element on each side of the slit-plug connection by the pressure piece on the one hand, and by the support on the other hand;

further comprising a second endless conveyer element, one from above and the other from below, which presses onto the material by means of the pressure devices, and which are arranged facing each other with the material between them, in order to form a clamping gap;

wherein each endless conveyer element has an endless roller chain which has plugs that protrude on both sides, and that in the area of the pressure pieces there are two guide rails mounted firmly to the frame, which receive these plugs, whereby each rail has a guide slit, the lower delineating lateral side surface of the slit, located closest to the material to be cut, determines the shortest distance from the material to be cut for the plugs extending into them, while the upper delineating surface determines the largest distance.

4,566,361

APPARATUS FOR SHEARING IRRADIATED FUEL ASSEMBLIES

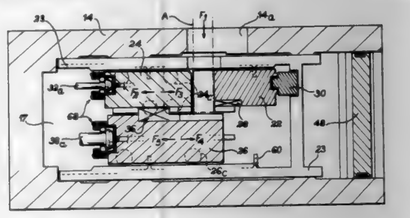
René Dubost, Saint Gervois; Robert Fiori, Connaux, and Philippe Seyfried, Bagnols sur Ceze, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 16, 1983, Ser. No. 494,932

Claims priority, application France, May 18, 1982, 82 08701

Int. Cl.⁴ B23D *23/00;* **B26D** *7/02*

U.S. Cl. 83—454 **4 Claims**



1. An apparatus for shearing irradiated fuel assemblies, comprising a confinement cell, provided with a supporting member for supporting at least one fixed counterblade, at least one side-clamping carriage adapted to engage an assembly to be sheared by the counterblade and at least one blade holder carriage adapted to move in a direction perpendicular to said counterblade in order to shear said assembly, the counterblade being mounted on a counterblade carriage which normally bears against a detachable member, the counterblade carriage, the side-clamping carriage and the blade holder carriage being arranged on rails disposed in a direction perpendicular to the counterblade, an intervention cell, said confinement cell communicating with said intervention cell by a passage normally sealed by a cover, said rails being extendable into said intervention cell within said passage, the dimensions of said passage being sufficient to permit the carriages to travel in said intervention cell when said detachable member and said cover are removed.

4,566,362

SYNCHRONIZING SIGNAL GENERATOR

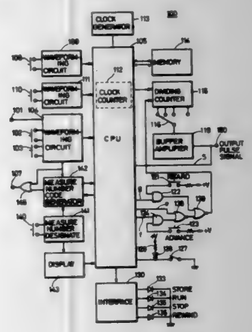
Tadao Kikumoto, Osaka, Japan, assignor to Roland Corporation, Osaka, Japan

Filed Jul. 10, 1984, Ser. No. 629,561

Claims priority, application Japan, Jul. 14, 1983, 58-110067[U]

Int. Cl.⁴ G10F *1/00*

U.S. Cl. 84—1.03 **5 Claims**



1. A synchronizing signal generator comprising: code signal generating means for generating a code signal representing a position on the score of a musical piece in response to a manually entered instruction, said code signal generating means comprising position designating means for designating an absolute position on said score; and for producing a code signal representing said absolute position on said score as designated by said designating means for starting a synchronous performance from any arbitrarily selected position of a musical piece; said signal generator further comprising clock signal generating means for generating clock signals; counting means connected to an output terminal of said code signal generating means and to an output terminal of said clock signal generating means, by which an interval of application of the code signals is measured based on the clock signals from said clock signal generating means in response to application of the code signals from said code signal generating means; calculating means connected to an output terminal of said counting means for making a calculation based on a count output from said counting means and a predetermined calculation formula in response to an application of said count output; storage means connected to an output terminal of said calculating means for storing the result of said calculation in response to said calculation by said calculating means; and synchronizing signal output means connected to the output terminal of said calculating means for providing synchronizing signals based on the fact that said counting means counts the number of clock signals corresponding to the result of said calculation, in response to the fact that said calculating means reads the result of said calculation from said storage means.

4,566,363

ELECTRONIC MUSICAL INSTRUMENT

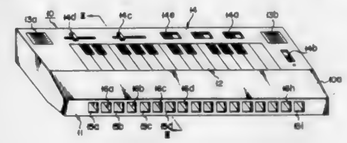
Yoneaki Arai, Chichibu, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1984, Ser. No. 583,121

Claims priority, application Japan, Mar. 2, 1983, 58-28908[U]; Dec. 27, 1983, 58-246814

Int. Cl.⁴ G10H *1/34, 1/46*

U.S. Cl. 84—1.08 **13 Claims**



1. An electronic musical instrument, comprising:

a case;

a plurality of sound holes arranged in the case;

openings formed individually in the walls of the sound holes;

elastic members of an elastic material closing the openings and adapted to be deformed in accordance with the change of the pressure inside the sound holes caused by exhalation or inhalation;

contact mechanisms disposed outside the sound holes and having contacts operatively coupled to the elastic members and adapted to be driven in accordance with the deformation of the elastic members;

input signal generating means connected to the contact mechanisms for generating input signals in accordance with the drive of the contacts;

musical sound producing means contained in the case for producing musical sounds in accordance with the input signals;

a power source in the case for supplying electric power to at least said musical sound producing means; and

volume control means for collecting air flowing through said plurality of sound holes in one communicating passage formed in said case, and for controlling the volume of the musical sounds in accordance with the flow quantity of the collected air through said communicating passage.

4,566,364

ELECTRONIC MUSICAL INSTRUMENT CONTROLLING A TONE WAVESHAPE BY KEY SCALING

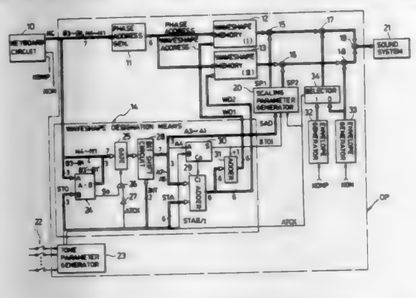
Mitsumi Katoh, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 12, 1984, Ser. No. 619,839

Claims priority, application Japan, Jun. 14, 1983, 58-104949; Jun. 14, 1983, 58-104950

Int. Cl.⁴ G10H *1/02*

U.S. Cl. 84—1.19 **13 Claims**



1. An electronic musical instrument comprising:

tone pitch designation means for designating the tone pitch of a tone to be generated;

plural tone generation channels associated with a single generated tone, each of the channels including a respective means for generating a waveshape signal selectable from among waveshape signals of plural kinds;

waveshape designation means for designating which of said plural selectable waveshape signals is to be selectively generated in each of said respective waveshape generating means associated with the respective tone generation channels in accordance with the tone pitch designated by said tone pitch designation means; and

weighting means for weighting the waveshape signals selectively generated by the respective channel associated waveshape generating means in response to said designation, said single tone being generated from said weighted selectively generated waveshape signals.

4,566,365

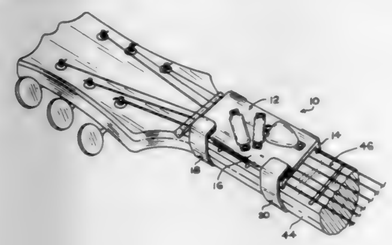
CHORD PLAYING ATTACHMENT FOR STRINGED MUSICAL INSTRUMENTS

Roy E. Huston, Jr., 2 Alkaid St. NW., Rome, Ga. 30161

Filed Oct. 5, 1984, Ser. No. 658,358

Int. Cl.⁴ G10D *3/00*

U.S. Cl. 84—317 **1 Claim**



1. A chord playing attachment for musical instruments having a neck and a plurality of strings associated with said neck, said attachment comprising:

an L shaped base having a shorter leg adapted to abut a first side portion of said neck and a longer leg adapted to overlie said plurality of strings and said neck, said base being provided with spacer means to space said longer leg from said neck and said strings, said spacer means including at least one spacer attached to a lower surface of said longer leg of said base which extends between an adjacent pair of said strings to contact said neck;

strap means having one end attached to said shorter leg, said strap means being adapted to encircle said neck such that said second end may attach to said longer leg, said strap means including a pair of straps, each having a first end attached to said shorter leg and each having a first cooperating member attached to a second end for engagement with a second cooperating member attached to said longer leg;

a plurality of pushbutton assemblies supported by said longer leg, each pushbutton assembly having a distinctly colored pushbutton and three fingers coupled to said pushbutton and extending through said longer leg of said base to a position overlying three individual strings, said pushbutton being biased away from said longer leg such that pressing said pushbutton causes said fingers to press said strings against said neck and releasing said pushbutton allows said fingers to disengage from said strings, wherein each of said pushbutton assemblies includes a pair of spaced apart guide members attached to said longer leg and provided with stops proximate their upper ends, a support member vertically guided by said guide members, said fingers extending downwardly from said support member, and means biasing said support member towards said stops of said guide members, and wherein each of said pushbutton assemblies further includes an arcuate leaf spring abutting an upper surface of said support member, and a flexible, colored material covering said leaf spring; and

sheet music including a sequential pattern of colored indicia corresponding to a particular musical chord, said colored indicia indicating which of said colored pushbuttons should be pushed for a particular musical composition, said sheet music further including lyrics associated with said colored indicia such that the proper chords for words within said lyrics are indicated by said colored indicia.

4,566,366

HAND HELD CARTRIDGE RELOADING PRESS

Richard J. Lee, 3146 Kettle Moraine, Hartford, Wis. 53027

Filed Sep. 7, 1984, Ser. No. 648,307

Int. Cl.⁴ F42B *33/10, 33/04*

U.S. Cl. 86—24 **1 Claim**



1. A hand held cartridge case reloading press comprising:

a first elongated handle body having nominally upper and lower ends, said body having a first laterally extending member at its lower end and a second laterally extending member intermediate of said first member and said upper end, said second member having a bore containing a female thread for receiving a mating male thread ¾ of an inch in diameter and 14 threads per inch on a standard die element for performing operations on a cartridge case, said first member having a bore coaxial with the bore in said second member whose axis is juxtaposed to said first handle body,

a reciprocable ram extending through the bore in said first laterally extending member, said ram having means at an end above said first member to retain a shell holder and having a lower end below said first laterally extending member;

a second elongated handle body having nominally upper and lower ends and means pivotally connecting said second elongated handle body to said lower end of the ram at a place on said handle body spaced from its lower end,

link means having a first pivotal connection to the lower end of said first handle body offset laterally from said ram and a second pivotal connection to the lower end of said second handle body such that said second handle body pivots on said second pivotal connection for permitting said handle bodies to be swung toward and away from each other to thereby reciprocate said ram, and

a stop element projecting from said second handle body for striking said second laterally extending member to thereby limit the swing of one handle body toward the other so that a safe mechanical advantage can not be exceeded.

4,566,367

UNDERWATER WEAPON SYSTEMS

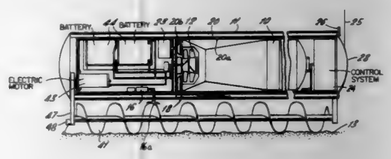
Christopher D. D. Hickey, Haywards Heath, United Kingdom, assignor to Underwater Storage Limited, Sussex, United Kingdom

Filed Dec. 8, 1983, Ser. No. 559,275

Claims priority, application United Kingdom, Dec. 10, 1982, 8235284

Int. Cl.⁴ F42B *22/00;* **F41F** *3/08, 3/10*

U.S. Cl. 89—1.810 **14 Claims**



1. An underwater weapon system comprising a self-propelled weapon, an elongate container for the weapon, ejection means for expelling the weapon from the container and a rotary material displacing means disposed along the length of the container to form the lower part of the system when the container is disposed horizontally, said material displacing means being arranged for cutting into and displacing material on the sea bed underneath the container.

4,566,368

LEAK DETECTOR FOR SEAL RING OF GUN BREECH MECHANISM

Rolf Bartolles, Korschenbroich, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 22, 1984, Ser. No. 623,552

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1983, 3322437

Int. Cl.⁴ F41F *11/00*

U.S. Cl. 89—26 **10 Claims**

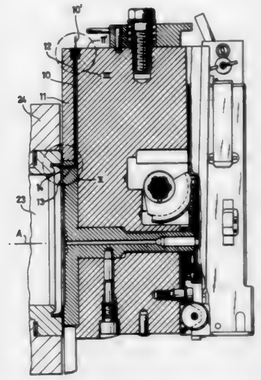
1. In a gun breech mechanism having:

a barrel formed with a backwardly open shell chamber,

a breech block displaceable into a position rearwardly closing the chamber, and

a seal ring between the block and the barrel and having an inner face exposed in the chamber and an outer face lying against the block and barrel, the improvement comprising:

means including a passage opening at the outer seal-ring face for detecting thereat a gas pressure in excess of a predetermined superatmospheric pressure and for generating an alarm signal when such excess pressure is detected.



4,566,369

LOADING TRAY MECHANISM FOR A TANK CANNON

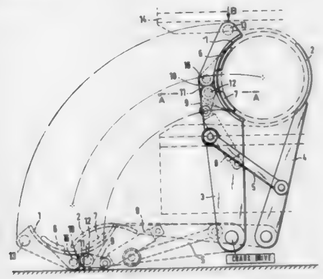
Adolf P. Bierwirth, Kaarst, and Erich Zielinski, Haan, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 15, 1984, Ser. No. 580,534

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1983, 3306935

Int. Cl.⁴ F41F *9/06*

U.S. Cl. 89—45 **6 Claims**



1. An improved loading tray mechanism for loading a cartridge into a gun barrel of a weapon which is pivotally mounted in said weapon so as to be operatively pivotally movable between a first loading position in alignment with the recoil path of the gun barrel and a second firing position angularly removed from said first position in which said loading tray mechanism is not in said recoil path, the improvement comprising

said loading tray mechanism including a first lower loading tray, a first pivot arm pivotally supporting said first loading tray at one of its ends and being pivotally mounted on a non-recoiling part of said weapon at the other of its ends, said first pivot arm pivoting transversely with respect to the longitudinal axis of the gun barrel,

a second upper loading tray, a second pivot arm being fixedly connected to said second loading tray at one of its ends and being pivotally connected on a non-recoiling part of said weapon at the other of its ends, said second

pivot arm also pivoting transversely with respect to the longitudinal axis of the gun barrel,

said lower tray and upper second tray when in said first loadng position jointly defining a gun barrel quasi extension having an internal diameter which corresponds to the exterior diameter of the cartridge bottom, and

said lower first and upper second trays when in said second firing position folding into each other.

4,566,370

PISTON PUMP ARRANGEMENT

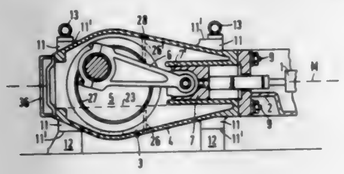
Nabil Hanafi, Urach, Fed. Rep. of Germany, assignor to Uraca Pumpenfabrik GmbH & Co. KG, Uraca, Fed. Rep. of Germany

Filed Jan. 17, 1984, Ser. No. 571,486

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1983, 3301380

Int. Cl.⁴ F04B *21/00*

U.S. Cl. 92—59 **17 Claims**



1. Piston pump arrangement comprising:

a crank drive housing having a top half and a bottom half relative to a horizontal plane extending through the housing;

a crank drive shaft rotatably supported in said crank drive housing;

a drive coupling connection means at one end face of the crank drive shaft for accommodating a driving connection to a motor or the like to rotatably drive the crank drive shaft; and

at least one horizontally disposed pump piston drivingly connected to said crank drive shaft to reciprocate along a pump piston axis which extends substantially perpendicular to the rotational axis of the crank drive shaft;

wherein the top and bottom halves of the crank drive housing are functionally symmetrical so as to allow the crank drive housing to be inverted, and the top half to serve as the bottom half, and vice versa, to convert the piston pump from a right hand drive to a left hand drive.

4,566,371

VARIABLE PNEUMATIC PRESSURE FORCE-TRANSMITTING MECHANISM

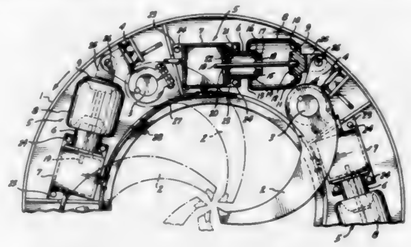
Ray B. Jorgensen, and Robert T. Ackerman, both of Seattle, Wash., assignors to Nicholson Manufacturing Company, Seattle, Wash.

Filed Nov. 29, 1982, Ser. No. 444,955

Int. Cl.⁴ F01B *19/04*; B27L *1/00*

U.S. Cl. 92—92 **4 Claims**

1. Variable pneumatic pressure force-transmitting mechanism comprising a force-transmitting member, pivot means mounting said force-transmitting member for arcuate movement, a closed composite pneumatic chamber including a reciprocable head pivotally connected to said force-transmitting member, a rigid pneumatic chamber section remote from said reciprocable head and a contractable and extensible pneumatic chamber section connected between said rigid pneumatic chamber section and said reciprocable head in communication with said rigid pneumatic chamber section, and attitude control means including a cantilever stem carried by said head, housed entirely within said closed composite pneumatic chamber, which does not pierce the wall of said closed composite pneumatic chamber, said stem extending through the interior of said contractable and extensible pneumatic chamber section from said reciprocable head into said rigid pneumatic chamber section and guiding said reciprocable head for limiting tilting relative to said rigid pneumatic chamber section as the spacing



between said reciprocable head and said rigid pneumatic chamber section decreases during contraction of said contractable and extensible pneumatic chamber section and arcuate movement of said force-transmitting member about said pivot means.

4,566,372

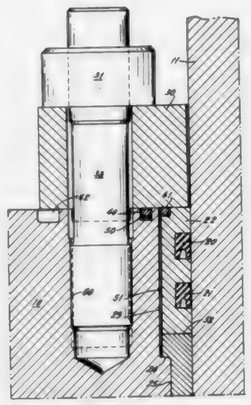
PRESSURE SEAL FOR ULTRA-HIGH PRESSURE APPARATUS

Adam Zandel, Forest Hills, and Alexander Zeitlin, White Plains, both of N.Y., assignors to A. Zeitlin & Associates, Mamaroneck, N.Y.

Filed Aug. 12, 1982, Ser. No. 407,426

Int. Cl.⁴ F16J *15/18*

U.S. Cl. 92—168 **8 Claims**



1. A compensated seal structure for high pressure hydraulic apparatus which employs a high pressure fluid having a pressure of greater than about 10,000 pounds per square inch and a cylindrical ram having a smooth, elongated, outer surface having a diameter greater than about 100 inches; said hydraulic apparatus comprising said cylindrical ram, a main cylinder which receives said ram in sliding relation and means to apply high pressure fluid to the interior of said main cylinder and to an end of said ram to cause said ram to move along its axis relative to said main cylinder, the exterior diameter of said ram being less than the interior diameter of said main cylinder; said compensated seal structure comprising a seal holder cylinder having seal means fixed to its interior surface; said main cylinder having a constant interior diameter, interrupted by an increased interior diameter section; said interior diameter section being disposed adjacent one of the ends of said main cylinder and being removed from the other of its ends; said seal holder cylinder disposed within said increased diameter section of said main cylinder and being retained between a shoulder which defines one end of said increased diameter section and a gland ring whereby said seal holder is fixed against tilting with respect to said main cylinder; the interior diameter of said seal holder cylinder being approximately equal to said constant interior diameter of said main cylinder, and being approximately equal to said outer diameter of said ram whereby said seal means sealably engages said outer surface of said ram; the outer diameter of said seal holder cylinder being spaced from said interior diameter of said main cylinder, thereby to define a thin annular chamber of predetermined uniform gap size surrounding said seal holder cylinder; and fluid paths for said seal holder cylinder which communicate between its inner and outer diameters whereby said high pressure fluid acting on said ram is applied to said annular chamber and reduces the differential force across the wall thickness of said seal holder cylinder when said main cylinder is pressurized.

4,566,373

VENTILATION ARRANGEMENT FOR AUTOMOTIVE VEHICLE OR THE LIKE

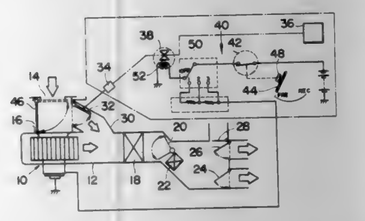
Toshio Ohashi, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 5, 1983, Ser. No. 557,883

Claims priority, application Japan, Dec. 7, 1982, 57-213427

Int. Cl.⁴ B60H *1/00*

U.S. Cl. 98—2.01 **5 Claims**



1. A ventilation arrangement for a vehicle having a cabin, comprising:

a duct leading to said cabin from a first opening through which fresh air from outside of the vehicle may be inducted;

a blower disposed in said duct for forcing air to flow toward said cabin when energized;

a passage which leads from said duct upstream of said blower and which merges with said duct downstream of said blower;

first means for controlling the flow of air through said passage;

a second opening in said duct upstream of said blower through which air from said cabin may be inducted;

a second means for selectively controlling the amount of air inducted through said first and second openings; and

control means for operating said first means to open said passage and permit air to flow therethrough when said blower is not energized and when said second means opens said first opening.

4,566,374

COFFEE MAKER

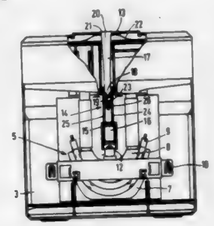
Pieter W. Medema, and Elmo I. Benjamins, both of Groningen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 7, 1984, Ser. No. 648,201

Claims priority, application Netherlands, Apr. 2, 1984, 8401032

Int. Cl.⁴ A47J *31/00*

U.S. Cl. 99—281 **2 Claims**



1. A coffee maker comprising a housing; a water tank supported by the housing; a filter device; a flow heater including a heating element for heating water from the water tank and feeding the same to the filter device, said flow heater being positioned within the housing; a thermal cut-out associated with the flow heater; an on/off indicator lamp situated adjacent the thermal cut-out; and means for actuating the thermal cut-out, said actuating means including an actuator button having an opening and an actuating arm made of a transparent material and serving as a light guide when the indicator lamp is on, one end of said actuating arm being located near the indicator lamp and the other end of said actuating arm projecting through the opening in the actuator button.

4,566,375

COVER CONSTRUCTION FOR A STEAM PEELING APPARATUS

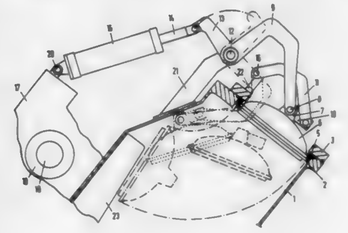
Peter W. C. van der Schoot, Groot Ammers, Netherlands, assignor to Goudsche Machinefabriek B.V., Gouda, Netherlands

Filed Nov. 9, 1984, Ser. No. 670,247

Claims priority, application Netherlands, Nov. 10, 1983, 8303867

Int. Cl.⁴ A23N *7/00*; B65D *43/14*

U.S. Cl. 99—348 **3 Claims**



1. In a steam peeling or boiling apparatus for crops, such as potatoes, carrots, celery, apples and the like, or for meat, comprising a substantially cylindrical peeling vessel arranged for rotation around horizontal stub shafts, having a supply and discharge opening disposed eccentrically or non-eccentrically in one of the end faces, said opening being closable by an inwardly movable cover and means for moving the cover between a closed position and an open position inside the vessel including a first lever rotatably connected at one end to

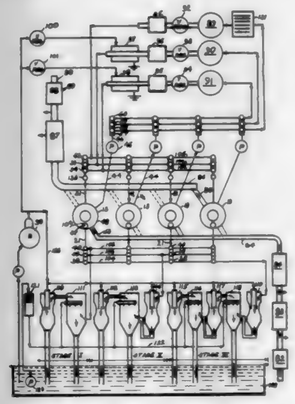
the cover and rotatably connected at the other to the exterior of the vessel, the improvement wherein the means for moving the cover further comprises a second operating lever connected to the cover and co-active with the first lever to displace the cover along the inner wall of the vessel during movement between the open and closed positions.

4,566,376

SYSTEM FOR PRODUCING CRISP FRUIT CHIPS

Wells A. Webb, 214½ E. Pine St., Lodi, Calif. 95240

Filed Jun. 8, 1984, Ser. No. 619,205
Int. Cl.⁴ A23L *1/212, 3/00*
U.S. Cl. 99—468 **11 Claims**



1. A system for dehydrating food particles comprising in combination:

a pressure vessel having an elongated vertically cylindrical chamber, particle inlet means for introducing particles into said chamber, and particle outlet means for removing particles from said chamber;

an elongated vertically oriented shaft rotatably mounted coaxially within said chamber, said shaft is vertically moveable;

a plurality of circular trays mounted in vertical spaced relation on said shaft for rotation therewith and for containing food particles;

means for selectively introducing a heat transfer liquid into said vessel for selectively heating and cooling food particles in said chamber;

means for evacuating said vessel and thereby establishing a pressure in said vessel below atmospheric pressure for enhancing the dehydration of food particles contained therein;

means defining a loading and an unloading zone adjacent the top of said vessel;

means for moving said trays along the axis of said shaft through said loading and unloading zones in a first direction for loading food particles onto said trays and in a second direction for unloading food particles from said trays;

cylindrical screen means surrounding said trays and mounted for rotation therewith and axially fixed within said vessel for confining food particles on said trays within a selected zone within said vessel; and

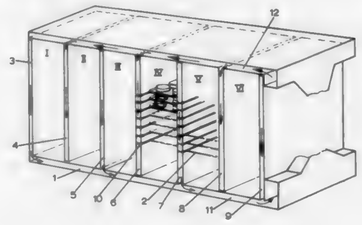
said system further comprises means for selectively moving said shaft for moving said trays through said respective zones.

4,566,377

APPARATUS FOR STORING AND VENTILATING CHEESES

Arie J. van Buytene, Santpoort-Zuid, Netherlands, assignor to Esmil Hubert B.V., Sneek, Netherlands

Filed Jun. 25, 1984, Ser. No. 624,208
Claims priority, application Netherlands, Jun. 29, 1983, 8302305
Int. Cl.⁴ A01J *25/00, 25/16*
U.S. Cl. 99—474 **10 Claims**



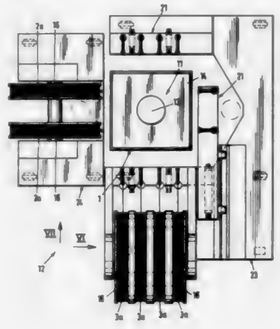
1. Apparatus for storing and ventilating cheeses, having a plurality of shelves for supporting the cheeses, each said shelf having two opposite longitudinal ends, and two hollow side walls supporting said shelves respectively at said ends thereof so that the shelves are arranged vertically one above another, the hollow side walls having passages within them for supply and discharge of ventilating air to the spaces above the respective shelves, wherein each said shelf has at least one longitudinal extending duct for conducting ventilating air along the shelf, which duct is connected at one end of the shelf to a passage in the respective side wall and has, spaced longitudinally along the shelf, a plurality of openings for the ventilating air located at the underside of the shelf.

4,566,378

APPARATUS FOR HOOPING A FIBER BALE IN A FIBER BALE PRESS

Gerold Fleissner, Egelsbach, Fed. Rep. of Germany, assignor to Vepa Aktiengesellschaft, Riehen/Basel, Switzerland

Continuation of Ser. No. 643,742, Aug. 21, 1984, abandoned, which is a continuation of Ser. No. 489,115, Apr. 27, 1983, abandoned. This application May 3, 1985, Ser. No. 730,249
Claims priority, application Fed. Rep. of Germany, May 6, 1932, 3216883; Jul. 17, 1982, 3226832
Int. Cl.⁴ B65B *13/04*
U.S. Cl. 100—26 **7 Claims**



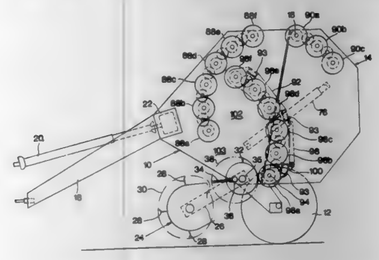
1. A fiber bale wire hooping apparatus for surrounding a fiber bale in a baling press with a metal wire the ends of which are held together by a crimped metal sleeve, comprising a strapping mechanism including wire supply means (16) having wire feeding and tensioning means (17, 25) for supplying lengths of wire, wire guide means (21, 31, 41, 44) forming a guide channel along at least three sides around said fiber bale for guiding a length of wire around said fiber bale, wire end holding means (22) at an end of said guide channel for temporarily holding a forward free end of a wire, wire clamping and bending means (20) arranged downstream of said wire feeding and clamping means (17, 25) as viewed in a wire feed advance direction from said wire supply means (16) to said holding means, wire cutting means (18) arranged downstream of said feeding and tensioning means (17, 25) and upstream of said wire clamping and bending means (20) for cutting a wire after a wire has been first tensioned by said feeding and tensioning means (17, 25) and then clamped by said clamping and bending means (20), means (51) for automatically applying a metal sleeve (6) onto a cut end of a wire, means (19, 36, 35) for tilting said clamping and bending means (20) holding a wire end with a sleeve on said wire end toward said holding means (22), whereby a wire end protruding from said holding means is also inserted into said sleeve alongside said cut wire end, and means (70, 71) arranged for crimping said sleeve for tightly securing said wire ends to each other.

4,566,379

ROUND BALER WITH VERTICALLY ELONGATED STARTING CHAMBER

Frans J. G. C. Decoene, and Marc G. Vansteelant, both of Zedelgem, Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed May 18, 1984, Ser. No. 612,101
Int. Cl.⁴ B30B *3/04*
U.S. Cl. 100—89 **14 Claims**



1. In a round baler having a base frame, a rear frame pivotally connected to said base frame, a first set of rollers rotatably mounted in fixed positions in said base frame and extending transversely of said base frame, the improvement comprising:

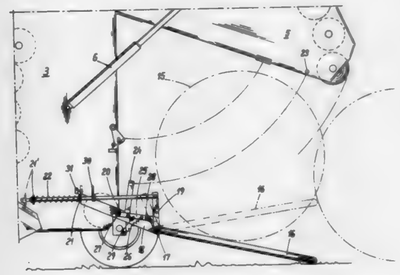
arm means pivoted on said rear frame for movement between a bale starting position and a full bale position, a second set of rollers rotatably carried on said arm means and extending transversely of said rear frame, said second set of rollers cooperating with only part of the rollers of said first set of rollers to define a bale starting chamber which is elongated in a generally vertical direction when said arm means is in said bale starting position, and said second set of rollers cooperating with all of the rollers of said first set of rollers to define a bale forming chamber which is generally cylindrical when said arm means is in said full bale position.

4,566,380

ROUND BALING PRESS FOR AGRICULTURAL PRODUCTS

Gerhard Clostermeyer, Gütersloh, and Werner Müller, Harsewinkel, both of Fed. Rep. of Germany, assignors to Claas Ohg, Harsewinkel, Fed. Rep. of Germany

Filed Apr. 16, 1984, Ser. No. 601,152
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1983, 3314314
Int. Cl.⁴ B30B *3/04, 15/32*
U.S. Cl. 100—89 **8 Claims**



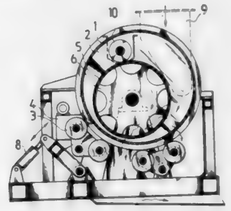
1. A round baling press for agricultural stalk products, comprising a housing forming a pressing chamber and including a stationary front housing part and a rear housing part turnable about a horizontal axis relative to said front housing part; a plurality of transporting elements arranged in said pressing chamber; hydraulic means arranged to move said rear housing part between a closed position in which it approaches said front housing part and closes said inner chamber, and a discharging position in which it is withdrawn from said front housing part and opens said inner chamber; and sensing means arranged to sense a free space between a discharged bale and a turning region of said rear housing part and releasing a switching step when the bale is at a sufficient distance from said housing, said sensing means including a check valve arranged in an oil circulation circuit of said hydraulic means, a pressure spring, a rod turnable in a discharge region of the finished bales by a rolling-out bale against the forces of said pressure spring, an abutment displaceable by said rod, and a switch actuated by said abutment for said check valve.

4,566,381

DRUM PRESS FOR SEPARATING LIQUID FROM SOLID SUBSTANCE

Matti J. Nikulainen, Pietarsaari, Finland, assignor to Kone Oy, Helsinki, Finland

Filed May 21, 1984, Ser. No. 612,243
Int. Cl.⁴ B30B *9/20*
U.S. Cl. 100—121 **5 Claims**



1. A drum press for separating liquid from solid substance, said drum press comprising: an outer cylindrical perforated drum rotatable by a support means;

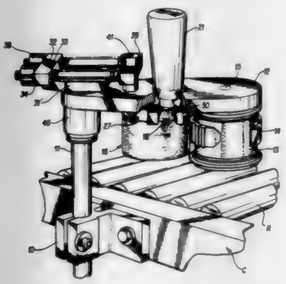
an inner perforated drum rotating within said outer drum and each drum rotating around different centers, so that between the envelope surfaces of the two drums a liquid is pressed out from the solid substance being pressed, said outer drum being provided with non-rotating end plates disposed with requisite clearance in relation to the rotating outer drum, wherein the inner drum is provided with a shaft and with end plates and a shell which passes through the non-rotating end plates of the outer drum with requisite clearance, the inner drum being provided in its shell and in its end plates fixed on the shaft with apertures towards the shell, through which apertures the liquid that has entered the inner drum during the solids substance pressing operation is enabled freely to flow out from the inner drum.

4,566,382

LINE CODER SYSTEM FOR USE ON EITHER SIDE OF CONVEYOR LINE

James C. Bronson, Lakeland, and Donald C. Wright, Jr., St. Petersburg, both of Fla., assignors to Lakeland Rubber Stamp Company, Inc., Lakeland, Fla.

Filed Feb. 13, 1985, Ser. No. 701,251
Int. Cl.⁴ B41F *17/26*
U.S. Cl. 101—35 **5 Claims**



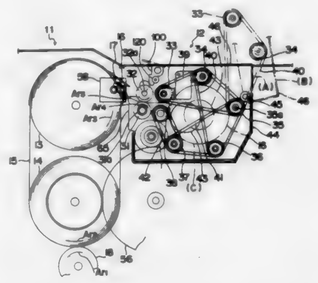
1. A marking device for use with a conveyor carrying successive containers past the device to apply markings to one or more surfaces of each of the successive containers, said marking device comprising post means mounted adjacent to one side of the conveyor, an arm having an end portion rotatably mounted on the post means above the level of the conveyor, said arm carrying a printing roller having printing means and rotatably mounted below its outer end and an inking roller rotatably mounted inwardly of the printing roller and in engagement with the printing means on the printing roller during rotation of the printing roller, ink supply means mounted on the arm and in engagement with the inking roller, a cross head fixed to the upper end of said post means above said arm, said cross head having a portion spaced from the axis of said post means, pin means mounted in said spaced portion, a spring assembly, said spring assembly comprising a first cross block extending transversely of said arm and having its central portion pivotally carried by said support arm, rod means extending from each side of said first cross block and substantially parallel with said support arm, a second cross block extending transversely of said arm and having its central portion rotatably engaged with said pin means and having spaced openings which receive said rod means, said rod means extending beyond said second cross head, the ends of said rod means having adjustably mounted retaining means for shifting the position of the second cross block along said rod means, and compression spring means mounted on each of said rod means and tending to urge said first and second cross blocks apart, whereby engagement of a container with said printing roller causes said arm to pivot out of the path of said container whereby said second cross block is moved closer to said first cross block thereby compressing said springs and whereby when said container has passed, said springs cause said support arm to return to the initial position.

4,566,383

WINDING APPARATUS FOR REMOVING USED STENCIL

Ken Matsushita, and Tetsuo Onishi, both of Wakayama, Japan, assignors to Duplo Seiko Corporation, Wakayama and Duplo Manufacturing Corporation, Tokyo, both of, Japan

Filed Aug. 20, 1984, Ser. No. 642,164
Int. Cl.⁴ B41L *13/08*
U.S. Cl. 101—121 **7 Claims**



1. A winding apparatus for removing a used stencil in a printing machine having means for lifting a leading end of the used stencil from a printing drum assembly in the printing machine and means including a pair of transporting rollers for transporting the used stencil into said winding apparatus, which apparatus comprises:

a generally cylindrical floating core for taking up the used stencil therearound;

support means for rotatably supporting the core in contact therewith, said support means contacting said core through the used stencil when the core is at least partially wound with said used stencil; and

said support means including drive means comprising at least first to fourth rollers disposed around the core for rotating the core about a longitudinal axis thereof at a speed substantially synchronized with the speed of transport of the used stencil, said first to fourth rollers cooperating with at least first to third endless spring members in the form of coiled wire members, said first to third endless spring members being entrained between said first and second rollers, said second and third rollers, and said third and fourth rollers, respectively.

4,566,384

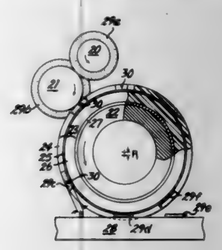
INTAGLIO PRINTING PLATE AND PRINTING METHOD

Katsutoshi Matsumoto, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto and Toray Industries, Inc., Tokyo, both of, Japan

Continuation of Ser. No. 458,981, Jan. 18, 1983, abandoned, which is a continuation of Ser. No. 213,114, Dec. 4, 1980, abandoned. This application Oct. 12, 1984, Ser. No. 660,251
Int. Cl.⁴ B41C *1/00;* **B41N** *1/00;* **B41M** *1/10;* **B41F** *9/00*
U.S. Cl. 101—170 **8 Claims**

1. An intaglio printing plate for clear, substantially flawless, direct printing on to an object comprising: an ink-repellent outer layer which comprises an ink-repellent material selected from the group consisting of a silicone rubber and a rubber material containing a fluorine compound, a photosensitive layer laminated beneath the outer layer and an elastic layer laminated beneath said photosensitive layer, the plate having ink-accepting recesses corresponding to the image lines, which

are formed by removing imagewise at least the ink-repellent outer layer, and the elastic layer having a thickness of 100 to 1000 microns and a hardness of 30 degrees to 90 degrees on the Shore scale A, wherein the elastic layer is compressible in



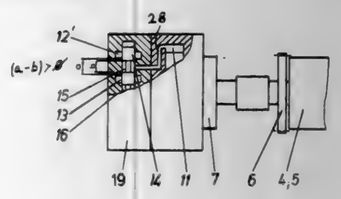
response to printing pressure applied through the ink accepted in the recesses and the ink-repellent outer layer to thereby substantially prevent the ink accepted in the recesses from being forced out of the sides of the recesses.

4,566,385

HYDRAULIC DRIVE FOR MULTI-COLOR SHEET-FED ROTARY PRINTING MACHINES

Hans-Jürgen Tappert; Johannes Naumann, both of Coswig; Karl-Heinz Förster, Dresden; Herbert Doliner, Niederau; Fritz Pieper; Werner Frenzel, both of Radebeul, and Klaus Schanze, Coswig, all of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 384,767, Jun. 3, 1982, abandoned, which is a continuation-in-part of Ser. No. 353,588, Mar. 1, 1982, abandoned. This application May 25, 1984, Ser. No. 614,727
Int. Cl.⁴ B41F *5/02, 13/00*
U.S. Cl. 101—183 **3 Claims**



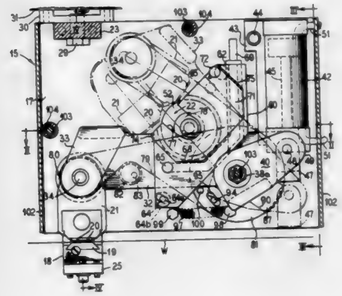
1. In a multi-color, sheet-fed rotary printing machine including a plurality of consecutively arranged press units each having a plurality of sheet-processing cylinders, and gear trains for interconnecting said cylinders, a hydraulic driving device comprising a plurality of constant-flow radial piston type hydraulic motors each having an intake port and a discharge port for admitting and discharging pressure fluid and means for distributing the pressure fluid to respective radial pistons, a power output member directly connected to one of said cylinders in the assigned press unit for driving the same; an adjustable pump for supplying pressure fluid into said hydraulic motors; an electric motor for driving said pump; a first hydraulic control means including a main control valve and a switching control valve connected between said pump and said hydraulic motors; and second hydraulic control means provided in each of said hydraulic motors, said second hydraulic control means including a cylindrical bore, said ports communicating with said bore and forming with its inner wall control edges spaced apart in axial direction, a conduit opening into said bore between said control edges and leading to said distributing means, a reciprocating piston movable in said bore past said ports, said piston being formed on its jacket with an annular control groove which during the movement of said piston alternately connects one of said ports with said conduit, the axial clearance of said groove being shorter than axial spacing between said control edges so that during the reversal of working phase into discharging phase of respective radial pistons, said reciprocating piston positively overlaps for a short period of time the control edges of both ports.

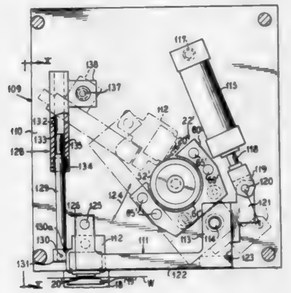
4,566,386

HOT INK IMPRINTER WITH SWINGING PRINT HEAD

Charles F. Davison, Brookfield, Ill., assignor to Norwood Marking & Equipment Co., Inc., Downers Grove, Ill.

Filed Nov. 30, 1983, Ser. No. 556,279
Int. Cl.⁴ B41F *1/08, 1/46*
U.S. Cl. 101—305 **15 Claims**





1. A hot ink imprinter, comprising:

anvil means for supporting a workpiece to be imprinted;

a rotatably mounted free-wheeling hot ink applicator roll;

an elongate operating rocker arm having two end portions and mounted on a pivot intermediate said end portions of the arm;

actuator means attached to one end portion of said arm for rocking said arm cyclically about said pivot intermediate said end portions;

a print head carrying imprinting means and mounted swingably on the opposite end portion of said arm;

a pulley mechanism including a timing belt connecting said arm and said actuator means for causing said print head to swing back and forth cyclically toward and past said arm as said arm is rocked for, in a first phase of the cycle causing said imprinting means to roll on said hot ink applicator roll in a first direction for applying ink to said imprinting means, in a second phase of the cycle causing said imprinting means to roll on said hot ink applicator roll in a second opposite direction with said hot ink applicator

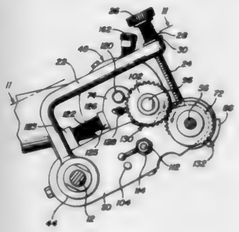
roll thereafter freely rotating for randomly orienting a portion thereof for a next roll of said imprinting means thereon, and in a third phase of the cycle effecting imprinting of the workpiece on said anvil means.

4,566,387

ARTICLE IMPRINTER AND CARTRIDGE INKER

Alfred A. Marozzi, 3 Cheryl Pl., Pine Brook, N.J. 07058

Filed Mar. 22, 1984, Ser. No. 592,374
Int. Cl.⁴ B41K *1/42*; B41F *31/24*
U.S. Cl. 101—330 **9 Claims**



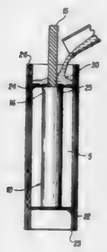
1. In an article imprinter including a pivotal mounting arm; a printing wheel rotatably mounted on said arm; an inking device carried by the mounting arm having an ink storing cartridge, a transfer roller mounted in operative relation to the cartridge and the printing wheel and wiper means for removing excess ink transferred from the cartridge to the transfer roller; transmitting means connected to the printing wheel for powered rotation thereof in one direction, intermittently engaged gear means including a first gear wheel connected to the transfer roller having a continuous toothed rim, and a second gear wheel connected to the printing wheel having at least one toothed rim segment of less than 360°, the improvement comprising means supporting the inking device on the mounting arm in adjustably positioned relation to the printing wheel for maintaining optimum meshing of the gear wheels of the intermittently engaged gear means, at least two of the gear teeth of the rim segment, leading in the one direction of rotation, being progressively reduced in addendum, whereby operational wear and depletion of ink stored by the inking device is minimized.

4,566,388

METHOD OF MAKING FIREWORKS

Lew W. Loyd, Jr., So. Pittsburg, Tenn., assignor to Space Age Manufacturing Co., Inc., Richard City, Tenn.

Filed Aug. 9, 1984, Ser. No. 638,931
Int. Cl.⁴ F42B *4/04*
U.S. Cl. 102—361 **1 Claim**



1. A method of converting conventional Class C fireworks having an explosive body portion and a safety fuse which extends therefrom into safer and louder firecrackers comprising the steps of:

(A) forming a housing having a cylindrical side wall and first and second end portions of a size to completely receive the body portion of a conventional Class C firecracker therein so that an air space is created between the side walls of the cylindrical housing and the body portion of a conventional Class C firecracker,

(B) inserting the conventional Class C firecracker within the cylindrical housing so as to be spaced inwardly of said side walls thereof and spaced inwardly of said end portions thereof and in such a manner that the safety fuse extends outwardly of said housing adjacent one end portion thereof,

(C) closing the end portions of the cylindrical housing by inserting first and second material disks therein so as to firmly abut the conventional Class C firecracker and simultaneously engage the cylindrical side walls of said housing,

(D) sealing the material disks to the cylindrical side walls of the housing by filling the end portions of said housing with a glue.

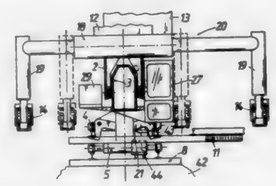
4,566,389

MOBILE APPARATUS AND METHOD FOR RECEIVING AND TRANSPORTING AN ASSEMBLED TRACK SECTION

Josef Theurer, Vienna, and Friedrich Oellerer, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Dec. 5, 1984, Ser. No. 678,763
Claims priority, application Austria, Apr. 10, 1984, 1208/84
Int. Cl.⁴ E01B *29/02*
U.S. Cl. 104—3 **16 Claims**





1. A mobile apparatus for replacing an assembled section of track in a track renewal section, the assembled track section consisting of rails fastened to ties defining spaces therebetween, which comprises

(a) a succession of transport vehicles having undercarriages capable of running on the track for moving therealong,

(b) vertically adjustable means for gripping and carrying the assembled track section on said transport vehicles,

(c) an elongated overhead girder extending in a plane above the transport vehicles and having longitudinally extending sides defining therebetween a guide track for moving the succession of transport vehicles therealong,

(d) drive means for moving the vehicles along the guide track, and

(e) a succession of vertically and laterally adjustable supports for the overhead girder, the supports being laterally adjustable to selected lateral positions spaced from the girder sides whereby a wide enough space extending transversely to the track is left to permit the free passage

of an assembled track switch section carried by the transport vehicles moving along the girder, the supports including

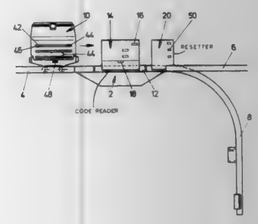
(1) power drives for adjusting the supports.

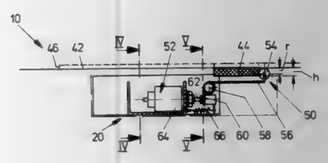
4,566,390

CODE-RESETTING DEVICE FOR A CAR-TYPE TRANSPORTER

Karl W. Pforte, Munich, Fed. Rep. of Germany, assignor to Buro Patent AG, Spielhof, Switzerland

Filed Jun. 5, 1984, Ser. No. 617,349
Claims priority, application Switzerland, Jun. 6, 1983, 3094/83
Int. Cl.⁴ B65G *47/48*, *47/50*
U.S. Cl. 104—88 **15 Claims**





1. In a conveyor installation wherein cars circulate along a track and each car is provided along a side thereof with at least one code-setting marker displaceable along a guide from a starting position at an end of said guide in the direction of travel of the car and stations are provided along the track with code readers responsive to the position of said code-setting marker and with means for transferring a car carrying the appropriate code representing a particular station to a siding from said track the improvement which comprises resetting means along said track including:

a retaining abutment displaceable in a direction transverse to the direction of movement of said marker along said guide into a position wherein said retaining abutment can intercept said marker and into a position wherein said retaining abutment is retracted from interception of said marker;

actuating means connected with said retaining abutment for shifting same from one of said positions into the other of said positions; and

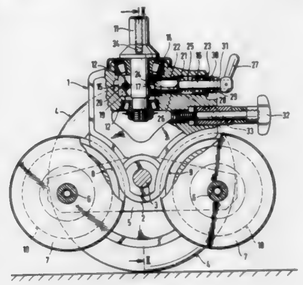
yieldable means acting upon said retaining abutment and effective with a force exceeding the resistance displacement of movement of said marker along said guide but less than the force with which said car travels along said track for yielding upon engagement by said retaining abutment with said marker and the shifting of said marker along said guide into said starting position by the movement of said car relative to said retaining abutment, whereby said marker thereafter clears said retaining abutment.

4,566,391

SUPPORT WHEEL FOR A CAMERA DOLLY

Karl Haberl, and Klaus Resch, both of Munich, Fed. Rep. of Germany, assignors to Schmidle & Fitz, Film-Gerate-Verleih, Munich, Fed. Rep. of Germany

Filed Feb. 3, 1984, Ser. No. 576,756
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1983, 3303822
Int. Cl.⁴ B61F *1/00*
U.S. Cl. 105—215 R **17 Claims**



1. A suspension support for a camera dolly comprising:

a support member;

a ground wheel axle mounted in said support member;

at least one ground wheel rotatably mounted on said ground wheel axle to movably support said dolly on the ground;

at least one rail wheel axle mounted on said support member;

at least one rail wheel rotatably mounted on said at least one rail wheel axle to movably support and guide said dolly on a rail;

a steering shaft rotatably mounted on said support member with its axis of rotation extending substantially perpendicular to said ground wheel axle; and

a releasable coupling means to fixedly couple said steering shaft to said support member when said support member is movable on said at least one ground wheel and to release said steering shaft for free rotation when said support member is movable and guided on said at least one rail wheel comprising, a locking ring rotatably mounted on said steering shaft, and clamping means operatively associated with said ring to releasably clamp said ring non-rotatably onto said shaft, said locking ring being provided with an opening having a central axis extending substantially radially with respect to said shaft, and a locking pin slidably guided in said support member for reciprocating movement in a direction substantially radially with respect to said shaft and having an inner end aligned with said locking opening, so that said inner end is engageable in said locking opening to lock said steering shaft in a non-rotatable locked position with respect to said support member and is retractable out of engagement with said locking opening in an unlocked position for free rotation of said shaft.

4,566,392

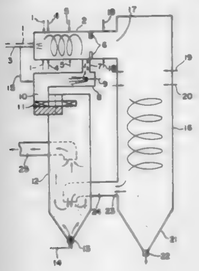
SLAG TAP COMBUSTION APPARATUS

Takao Ishihara, Tokyo, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1985, Ser. No. 732,238
Claims priority, application Japan, Jun. 14, 1984, 59-120657
Int. Cl.⁴ F23J *1/00*
U.S. Cl. 110—165 R **3 Claims**

1. A slag tap combustion apparatus which is characterized by comprising a slag tap combustion furnace, a slag granulation chamber for granulating a slag discharged from said slag tap combustion furnace, a slag grain accumulation tower

which is filled with slag grains discharged from said slag granulation chamber, a secondary reactor provided with an inlet and an outlet for a waste gas from said slag tap combustion furnace and provided with means for introducing finely powdered lime, a duct for connecting said waste gas outlet of said secondary reactor to said slag grain accumulation tower, and another duct for allowing the waste gas to discharge from said slag accumulation tower.



4,566,393

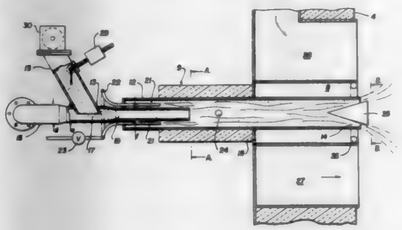
WOOD-WASTE BURNER SYSTEM

Ralph M. Connell, 2401 Bayou Blvd., Pensacola, Fla. 32503, and Edward O. Dawson, R.R. 4, Box 187, Brewton, Ala. 36426

Filed Feb. 15, 1984, Ser. No. 580,329

Int. Cl.[4] F23C *1/10*; F22B *5/00*

U.S. Cl. 110—261 **7 Claims**



1. A waste burner for burning a fuel comprising combustible, solid, divided wood-waste, said burner comprising

(A) an elongated cylinder having a longitudinal axis, a fuel inlet proximate one end thereof and an outlet at the other end thereof;

(B) means for supplying air to said burner for combusting said fuel, wherein said air supply means is positioned upstream of said fuel inlet such that the air initially mixes with said fuel in a turbulent mixing zone to form a fuel/air mixture;

(C) means for igniting said fuel/air mixture in said cylinder comprising a multiplicity of pilot flame nozzles substantially uniformly spaced around the circumference of said cylinder;

(D) diffuser means in said outlet for directing unburned fuel and combustion products away from said axis as said fuel and products exit said cylinder;

(E) means for detecting flame in said burning fuel/air mixture;

(F) conduit means for feeding fuel to said inlet;

wherein said diffuser means is of conical shape and said diffuser is positioned such that the longitudinal axis of said cone coincides with the longitudinal axis of said cylinder and the apex of said cone is inside said cylinder; and

wherein said cylinder has a length:diameter ratio between about 18:1 to 12:1 sufficient to partially combust said fuel therein, and wherein the length of the cylinder is equal to the distance between the pilot flame nozzles and the outlet of the cylinder.

4,566,394

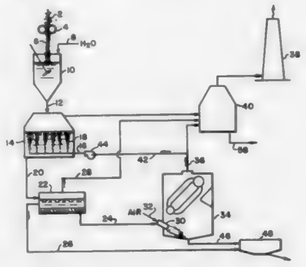
INTEGRATED COAL CLEANING PROCESS

Donald C. Borio, New Britain; Richard W. Borio, Somers; Gilbert L. Hale, Granby, all of Conn.; Arun K. Mehta, Los Altos, Calif., and Arnold L. Tyler, Torrington, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 625,271, Jun. 27, 1984. This application Jun. 3, 1985, Ser. No. 740,683

Int. Cl.[4] F23G *5/04*

U.S. Cl. 110—347 **5 Claims**



1. A process for beneficiating a sulfur-bearing coal by removing at least a portion of any alkali metals present therein, comprising the steps of:

comminuting said coal;

forming an acidic liquid-solid slurry of the comminuted coal and water by comingling an SO_2-bearing gas with the water to induce the formation of a sulfur-based acid therein;

maintaining the pH of said acidic liquid-solid slurry to a value equal to or less than 5 for a period of time sufficient to dissociate any alkaline metals present within the coal by forming dissolved sulfur compounds in the liquid portion of said slurry by reaction with the sulfur-based acid;

separating the liquid portion of said acidic slurry containing the dissolved alkali metal compounds from the solid portion of said slurry containing the now beneficiated coal; and

combusting the beneficiated coal in air to oxidize any sulfur compounds present therein, forming an SO_2-bearing gas of which a portion is used to form said acidic liquid-solid slurry.

4,566,395

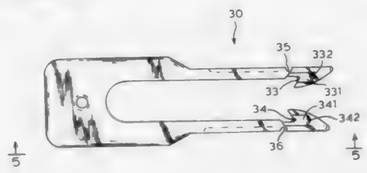
SEWING MACHINE NEEDLE THREAD CAPTURING AND SEVERING MECHANISM

John Tummino, Maywood, N.J., assignor to Clinton Industries, Inc., Carlstadt, N.J.

Filed Nov. 5, 1984, Ser. No. 667,990

Int. Cl.[4] D05B *65/02*

U.S. Cl. 112—292 **4 Claims**



1. In a sewing machine having two bobbins, two sewing needles, and means for capturing and severing bobbin threads comprising a stationary blade, a picker having means forming two hooks for capturing bobbin threads and means for moving the picker towards the blade to sever the bobbin threads, the improvement wherein the means forming the two hooks comprising a fork-shaped portion with two outer straight edges; and further comprising means disposed on the picker for capturing two needle threads and cooperative with the blade for severing the needle threads upon movement of the picker towards the blade, comprising a notch in each straight edge.

4,566,396

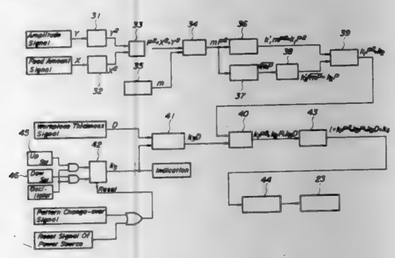
THREAD FEED MECHANISM IN SEWING MACHINE

Kuniharu Sakuma, and Sumio Goto, both of Tokyo, Japan, assignors to Tokyo Juki Industrial Co., Ltd, Chofu, Japan

Filed Sep. 27, 1984, Ser. No. 655,345

Int. Cl.[4] D05B *45/00*

U.S. Cl. 112—302 **2 Claims**



1. In a thread feed mechanism in a sewing machine in which thread in a length corresponding to a set signal is payed out of a supply source by a paying-out device which operates based on said set signal each time a seam is to be formed and fed to a thread take-up lever, characterized by:

a first signal generation device for producing a feed amount signal X corresponding to a workpiece pitch for one seam and an amplitude signal Y corresponding to the amplitude of a needle bar in response to the operation of said sewing machine before said lever completes the straining of said thread in said seam;

a second signal generation device for detecting the thickness of a workpiece at the sewing area of said sewing machine and producing a workpiece thickness signal D corresponding to said thickness before said thread take-up lever completes the straining of the thread in said seam;

first means **31**, **32** and **33** for adding square values of said feed amount and amplitude signals together and outputting the resulting value;

second means for multiplying a square root of the output of said first means by a coefficient k'_2 and outputting the resulting value;

third means for producing a signal k_3 which varies depending upon the operation mode of said third means;

fourth means for multiplying said workpiece thickness signal by the output of said third means and outputting the resulting value; and

fifth means for adding the outputs of said second, third and fourth means together and outputting the resulting value, whereby the output of said fifth means is made a set signal or the reference data for said set signal.

4,566,397

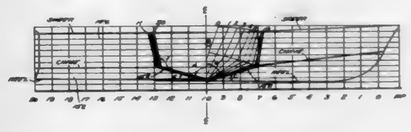
CREW BOAT

Glenn L. Cavanaugh, and William C. Raffield, both of Panama City, Fla., assignors to Trio Corporation and Cavanaugh Marine Corp., both of South Port, Fla.

Continuation of Ser. No. 318,561, Nov. 5, 1981, abandoned. This application May 6, 1985, Ser. No. 731,337

Int. Cl.[4] B63B *1/16, 3/00*

U.S. Cl. 114—56 **16 Claims**



1. A crew boat capable of servicing offshore installations comprising the combination of a hull having a rear portion defined by a chine line that remains substantially horizontal from midships rearwardly to the transom and a slight V-shaped bottom with the bottom surfaces defined thereby remaining substantially flat throughout and being angled at a substantially constant angle relative to the vertical center line of said boat, said hull further including side walls extending upwardly from the perimeter of the bottom surfaces with the angle therebetween from midships rearwardly in said rear portion being substantially constant, and a progressively increasing V-shaped hull extending from midships forward, means defining interior tankage space integrally formed with the hull and internal framing thereof for transporting liquid supplies, crew quarters for housing the boat crew and at least a full crew for the offshore installation, fore and aft deck means respectively for defining a multi-story deck house in the fore part of the crew boat and a cargo area aft of the deck house, said interior tankage means including a first portion formed integrally with the hull and extending from midships forward a predetermined distance beneath said deck house means for carrying off-loadable liquid supplies for the off-shore installation and a second portion formed integrally with the hull beneath said cargo area for carrying on board liquid supplies, fire fighting means for fighting a variety of types of fires, a pumping system for suitably pumping liquid supplied on board and off board of said boat and engine means for controlling operation of said boat.

4,566,398

ANCHORING APPARATUS

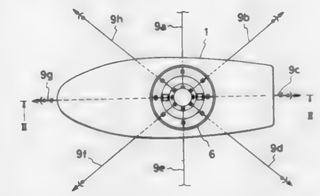
Masahiko Sasaki; Kenji Watanabe, and Seiichi Kitamura, all of Tamano, Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1984, Ser. No. 637,197

Claims priority, application Japan, Feb. 9, 1984, 59-22283

Int. Cl.[4] B63B *21/24*

U.S. Cl. 114—293 **6 Claims**



1. An anchoring apparatus for a floating offshore structure comprising: a mooring plug rotatably fitted relative to said floating offshore structure, a plurality of pairs of diametrically opposed anchor cables radially stretched from said mooring plug to the seabed, and a pair of mobile windlasses mounted on

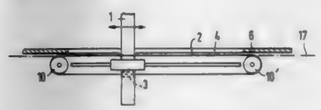
said mooring plug and movable to respective positions under any pair of said diametrically opposed cables, each of said windlasses carrying a warping drum and a pressing drum for engaging and clamping onto the corresponding cable when said windlass is so positioned with respect thereto to haul said clamped cable.

4,566,399

SLIDER CONTROL

Reinhard Hildebrand, and Bernd Waldmann, both of Redwitz, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 478,344, Mar. 24, 1983, abandoned.
This application Dec. 5, 1984, Ser. No. 678,373
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211319
Int. Cl.⁴ B60Q *9/00*; B61D *27/00*; H01H *9/04*
U.S. Cl. 116—28 R **3 Claims**



2. In a slider control of a heating and ventilating system of an automotive vehicle having a passenger compartment and a control panel facing thereinto, said slider control comprising illumination means including a light source on a side of said control panel opposite said passenger compartment for providing a visual display indicating the operating state of said heating and ventilating system, said slider control further comprising actuating means including an operating lever traversing a slot in said control panel for modifying the operating state of said heating and ventilating system, the improvement comprising an endless web attached to the operating lever and a pair of rolls about which said web is partially wound, said rolls being disposed at opposite ends of the slot in the control panel, said web having a length at least twice the length of a complete stroke of said lever along a linear path defined by the slot in the control panel, said web having at all times a web portion disposed in a plane parallel to and proximate to said slot, said portion having a width at least equal to the width of said slot and being movable with said lever in a longitudinal direction parallel to said slot, whereby passage of light and dust particles through said slot is prevented by said web and said lever, said web having a pair of edges extending at least partially in a longitudinal direction parallel to said slot, said web being attached to said lever proximately toone of said edges, said web being provided with an aperture disposed proximately to the other of said edges and transversely across said web from said lever, said lever including an enlarged portion on a side of said slot opposite the passenger compartment, said enlarged portion being wider than said slot and said web and provided with an opening traversed by a portion of said web spaced from said slot.

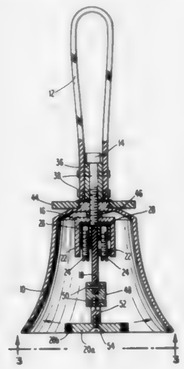
4,566,400

HANDBELL

Charles E. Keenan, Perkasie; Richard E. Mattern, Souderton, and Charles A. Vaccaro, Ambler, all of Pa., assignors to Schulmerich Carillons, Inc., Sellersville, Pa.

Filed Jul. 29, 1983, Ser. No. 518,627
Int. Cl.⁴ G10K *1/071, 1/10, 1/36*
U.S. Cl. 116—171 **8 Claims**

2. A handbell comprising
(1) a bell body member
(2) a clapper suspension comprising an elongated resilient shaft member which flexes more easily in a first plane than in the plane perpendicular thereto; and
(3) a clapper having a substantially circular periphery and comprising an inner member of a hard material and an outer member of a resilient material for contacting said bell body member, the radial extent of said resilient material between said inner member and the periphery of said clapper varying substantially continuously around said clapper;
wherein said clapper suspension defines a fixed perferred plane of swing of said clapper substantially identical to said first plane of easy flex; wherein said clapper is rotatably adjustable such that different points on the periphery of said clapper may be selected to contact said bell body member, whereby the hardness of the contact between



said clapper and said bell body member and tonal quality produced by said contact may be varied with respect to a given physical force exerted on the handbell, said rotatable adjustability being provided by affixing said clapper to said shaft member by a polygonal core member fitting into a corresponding-shaped orifice in a resilient bushing member carried in a bushing retainer so that upon application of a torque to said clapper, the bushing member is compressed permitting relative movement of the bushing member with respect to the shaft member, whereby variation between a number of predetermined relative positions of said clapper and the plane of swing of said shaft member is provided.

4,566,401

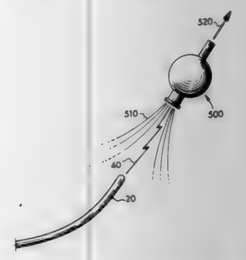
DYNAMIC CURRENT INTERRUPTION-TYPE INDICATORS AND METHOD THEREFOR

Masao Tomita, Nagoya, Japan, assignor to Kinki Denki Co., Ltd., Nagoya, Japan

Filed Aug. 26, 1983, Ser. No. 526,633
Claims priority, application Japan, Apr. 4, 1983, 58-59085; Apr. 4, 1983, 58-59087
Int. Cl.⁴ G01D *3/04*
U.S. Cl. 116—207 **7 Claims**

1. An improved dynamic current interruption-type indicator responsive to lightning strikes having a base (**110**), with one end of said base being closed and having a formed orifice (**150**) therein, a globe (**100**) disposed over said base, and a separation plate (**120**) wherein said separation plate closes off a hollow cylindrically-shaped passageway (**140**) located on the interior of said base, said improvement comprising:
a cylindrical tube (**300**) having an outside diameter slightly less than the inside diameter of said passageway (**140**) and said tube extending the longitudinal length of said passageway,
a propellant (**320**) having water of hydration as a part of its chemical make-up disposed in the interior of said tube (**300**), said propellant (**320**) having a hole formed at the

center of said tube (**300**) and said formed hold (**330**) extending the entire length of said tube, and
a conductive wire (**340**) contained in said formed hole, said conductive wire (**340**) extending the longitudinal length of



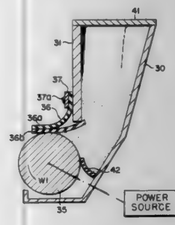
said tube (**300**), said wire being receptive of the arc from said lightning strike for melting and for uniformly causing the water of hydration of said propellant (**320**) to vaporize along the entire length of said formed hole.

4,566,402

DEVELOPING APPARATUS

Takashi Shimazaki, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 26, 1984, Ser. No. 665,344
Claims priority, application Japan, Oct. 28, 1983, 58-200763
Int. Cl.⁴ G03G *15/08*
U.S. Cl. 118—653 **8 Claims**



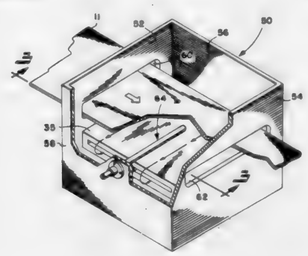
1. A developing apparatus for use in developing a latent image within a photocopying machine comprising:
developing agent carrier means for carrying a developing agent thereon;
housing means for housing said developing agent therein and supplying said developing agent to said developing agent carrier means; and
elastic member means for pressing against the surface of said developing agent carrier means to apply the developing agent thereto, so that said developing agent is applied to said surface of said developing agent carrier means by said elastic member means and for forming a layer of said developing agent on said surface of said developing agent carrier means;
wherein said elastic member means comprises a fixed plate and a contact plate which are both constructed of elastic material, and are fixed to each other at one end thereof, the other end of said fixed plate being fixed to said housing means, and a central portion of said contact plate being pressed against the surface of said developing agent carrier means.

4,566,403

APPARATUS FOR MICROWAVE GLOW DISCHARGE DEPOSITION

Eugene Fournier, Garden City, Mich., assignor to Sovonics Solar Systems, Solon, Ohio

Filed Jan. 30, 1985, Ser. No. 696,389
Int. Cl.⁴ C23C *11/00*
U.S. Cl. 118—718 **21 Claims**



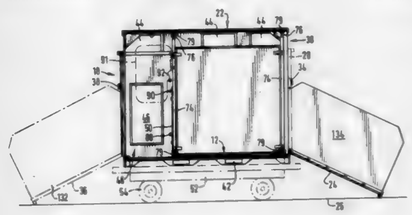
1. Apparatus for depositing a material onto a substrate from a microwave energy excited plasma, said apparatus comprising:
a deposition chamber;
microwave energy source means for producing radio frequency energy at a microwave wavelength;
a microwave antenna disposed within said chamber;
coupling means for coupling energy from said microwave energy source means to said antenna, wherein said antenna includes a conducting sheath approximately one half said wavelength long and an inner conductor coaxially disposed within said sheath, and means for electrically connecting said sheath and inner conductor at their respective distal ends.

4,566,404

ANIMAL CONVEYANCE CAPABLE OF CONVERSION INTO AN AIR FREIGHT CONTAINER

Giles A. Instone, and Jeremy A. Instone, both of London, England, assignors to Solindo Equipment Leasing Ltd., London, England

Filed Apr. 16, 1984, Ser. No. 600,624
Int. Cl.⁴ A01K *1/00*
U.S. Cl. 119—8 **20 Claims**



1. A reusable conveyance for the transportation by air of at least two horses or like-sized quadrupeds, the conveyance being formed of strong and lightweight materials for compliance with regulations governing the carriage by air of both livestock and freight and comprising an internal chamber defined by four walls, a base and a roof, a first wall portion of said chamber formed to be selectively utilizable as a ramp for loading horses into said chamber, a second wall portion of said chamber at a different part of said chamber formed to be selectively utilizable as a ramp for off-loading horses from said chamber, and partitioning demountably secured within said

chamber for defining at least two compartments wherein horses may be housed separately from one another and a further compartment for an attendant servicing horses in said at least two compartments, said partitioning enabling an attendant in said further compartment to access each of said at least two compartments from said further compartment, selectably releasable cooperating fixing means provided on said partitioning and in said chamber providing for the demountable securement of said partitioning at locations appropriate for use of the conveyance for the carriage of animals and enabling said partitioning to be demounted to free substantially the entire chamber of internal divisions for readily adapting the conveyance for the carriage of freight when not being used for the carriage of animals, and door means for providing access to said further compartment from outside of said conveyance when said ramps are not deployed.

4,566,405

ROTATABLE PLATFORMS

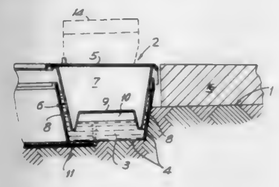
John A. Graham, 38 Hogan St., Hamilton, New Zealand

Filed Mar. 14, 1983, Ser. No. 475,097

Claims priority, application New Zealand, Mar. 12, 1982, 200001; Sep. 21, 1982, 201960; Nov. 18, 1982, 202541

Int. Cl.⁴ A01K *1/12*

U.S. Cl. 119—14.04 **5 Claims**



1. A rotatable platform comprising a base and rotating member having a loading deck arranged to be supported from the base by a fluid, said rotating member being rotatable with respect to the base whilst being supported above the base by said fluid wherein the platform is supported by fluid pressure developed by mechanical means and the base is a raised disk-like member and the loading deck is arranged to be supported over the base, there being provided sealing means at the periphery of said disk-like member such that fluid chambers are defined between the upper surface of the disk-like member and the lower surface of said loading deck and sealing means and pumping means is arranged to supply fluid under pressure to said fluid chambers.

4,566,406

SLUDGE REMOVING APPARATUS FOR A STEAM GENERATOR

Robert H. Appleman, Pleasant Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 13, 1983, Ser. No. 513,209

Int. Cl.⁴ F22B *37/48*

U.S. Cl. 122—405 **3 Claims**

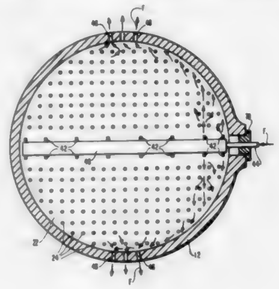
1. A nuclear steam generator comprising:

a generally cylindrical outer shell;

a generally flat tubesheet disposed in said outer shell;

a plurality of U-shaped tubes disposed within said outer shell and mounted in said tubesheet for conducting a nuclear reactor coolant therethrough and defining a tubeless lane on said tubesheet extending along a diameter of said tubesheet and defining a peripheral lane on said tubesheet and between said tubes and said outer shell; and

a manifold attached to said tubesheet and disposed in said tubeless lane with said manifold having a plurality of independent internal first conduits with each of said first conduits terminating near the outer surface of said manifold in alignment between rows of said tubes and with each of said first conduits having at last two terminal ports with a nozzle disposed in each of said ports and directed from said manifold in generally opposite directions for simultaneously discharging fluid therefrom in substantially opposite directions and for selectively and independently directing fluid streams against said tubesheet for dislodging sludge deposits therefrom, and with said manifold having an independent internal second conduit with said second conduit terminating near said outer surface of said manifold with a nozzle disposed therein and in alignment with said peripheral lane for selectively and independently directing a fluid stream against said tubesheet for entraining said dislodged sludge deposits for removal from said steam generator.



4,566,407

COOLING ARRANGEMENT FOR AN AUTOMOTIVE VEHICLE, ESPECIALLY A PASSENGER CAR

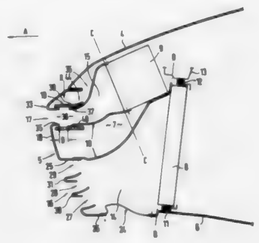
Dietmar Peter, Hemmingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 16, 1984, Ser. No. 661,568

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1983, 3338466

Int. Cl.⁴ F01P *3/18*

U.S. Cl. 123—41.48 **28 Claims**



1. Automotive vehicle, especially a passenger car, having a bumper, at least two radiators and an air guidance system for guiding a cooling air stream the radiators, said air guidance system comprising:

a separate air duct for each radiator, each said air duct having an inlet port,

each said air duct extending from said inlet port to said radiator, and

each said inlet port having means for directing a flow of cooling air.

4,566,408

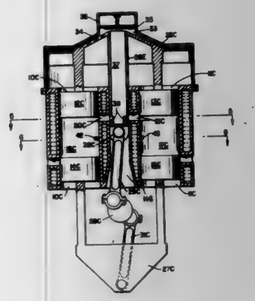
INTERNAL COMBUSTION ENGINE

James M. Lapeyre, 13 Richmond Pl., New Orleans, La. 70151

Continuation of Ser. No. 97,955, Nov. 28, 1979, abandoned, which is a continuation of Ser. No. 890,980, Mar. 28, 1978, abandoned. This application Feb. 24, 1981, Ser. No. 237,667

Int. Cl.⁴ F02B *25/08*

U.S. Cl. 123—51 B **4 Claims**



1. A two cycle internal combustion diesel engine comprising in combination:

(a) a minimum of two side by side spaced apart axially parallel cylinders,

(b) a hollow guideway positioned between, parallel to and axially coplanar with said spaced apart cylinders,

(c) one variable volume combustion chamber contained within each of said cylinders,

(d) air intake porting located in each cylinder wall at a first end of said combustion chamber,

(e) air compressing means in communication with said porting for simultaneously forcing air into each of said combustion chambers via said air intake porting,

(f) exhaust porting located in each cylinder wall at a second end of said combustion chamber,

(g) means for delivering fuel into said cylinders approximately midway of the length of said combustion chamber, when said combustion chamber is at its approximate minimum volume, said means including a pre-combustion chamber common to and in communication with said combustion chamber of each of said cylinders, said pre-combustion chamber being positioned outside of the plane of the axes of said cylinders,

(h) one cylindrical single headed pressure sealing valveless air intake controlling piston coaxial with and slidably mounted within each of said cylinders, said piston having its head end facing the combustion chamber and its connector end facing a first non-combustion end of said cylinder, said piston being adapted to open and close said air intake porting as it slides past said air intake porting,

(i) a rigid non-pivotal piston bridging means spanning from piston axis to piston axis of said air intake controlling pistons,

(j) dual rigid and operationally non-pivotal piston connector means extending from said piston bridging means, said piston connector means being adapted to link said piston bridging means with said air intake controlling pistons at said pistons' connector ends,

(k) bridge guide means extending from said piston bridging means into said hollow guideway, said bridge guide means terminating in a connecting rod pivot means,

(l) one cylindrical single headed pressure sealing valveless exhaust controlling piston coaxial with and slidably mounted within each of said cylinders, said piston having its head end facing said combustion chamber and its connector end facing a second non-combustion end of said cylinder, said piston being adapted to open and close said exhaust porting as it slides past said exhaust porting,

(m) a second rigid non-pivotal piston bridging means spanning from piston axis to piston axis of said exhaust controlling pistons,

(n) second dual rigid and operationally non-pivotal connector means extending from said second piston bridging means, said second piston connector means being adapted to link said second piston bridging means with said exhaust controlling pistons at said pistons' connector ends,

(o) a single crankshaft located between said parallel axes of said cylinders and between the two piston bridging means, the axis of said crankshaft being at right angles to the plane of said cylinders' parallel axis,

(p) at least two connecting rods between the two piston bridging means, one of said connecting rods being connected to pivot means of said bridge guide means and to said crankshaft, and a second connecting rod connected to said second piston bridging means and to said crankshaft,

(q) said connections to said crankshaft being made to angularly spaced cranks carried by said single crankshaft, said angular spacing of said cranks being such that as the crankshaft rotates through 360°, the two piston bridging means and their respectively connected pistons are forced to move in opposite directions, the two air intake controlling pistons being reciprocated n unison and the two exhaust controlling pistons likewise being reciprocated in unison and wherein said air intake controlling pistons are forced to lag behind said exhaust controlling pistons in such a manner that said exhaust porting is forced to open prior to the opening of said air intake porting and said exhaust porting is forced to close prior to the closing of said air intake porting.

4,566,409

TWO-CYCLE ENGINE

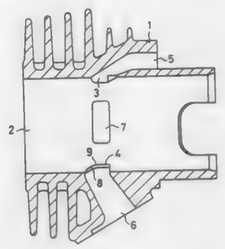
Yoshinobu Yashiro, and Takeshi Ito, both of 2822 Nishikaizuka, Iwata-shi, Shizuoka-ken, Japan

Filed Dec. 3, 1982, Ser. No. 446,652

Claims priority, application Japan, Dec. 15, 1981, 56-201864

Int. Cl.⁴ F02B *25/04*

U.S. Cl. 123—65 PE **12 Claims**



1. In a two-cycle internal combustion engine which includes a cylinder having a central axis, an internal cylindrical cylinder wall and an exhaust port, said exhaust port having a cross section substantially contant along its length and an internal peripheral wall which intersects and opens into said cylinder wall, forming a junction therewith, the said junction having a pair of lateral edge segments extending generally axially, and an upper and lower edge segment joining said lateral edge segments to form said junction substantially as a quadrilateral, the improvements comprising: a groove formed in said exhaust port wall extending to said junction, extending along at least both lateral edge segments and said upper edge segment, said junction at said last mentioned three segments lying in the cylindrical surface of the cylinder wall, said groove having a first sloping boundary wall on its side closest to said cylinder which lies at a dihedral angle on greater than 90 degree with

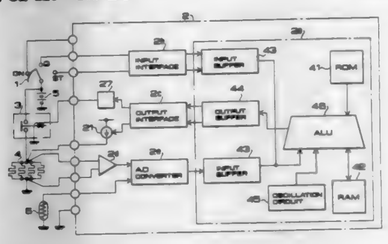
said cylinder wall and forming an edge with said junction, the cross section of said exhaust port being equal to that at said junction edge.

4,566,410

DIESEL ENGINE GLOW PLUG CONTROLLING DEVICE

Akira Demizu, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1984, Ser. No. 633,016
Claims priority, application Japan, Jul. 21, 1983, 58-133943
Int. Cl.⁴ F02P *19/02*
U.S. Cl. 123—179 BG **10 Claims**



1. A glow plug controlling device for a diesel engine having a plurality of cylinders comprising:
- glow plugs of a fixed resistance temperature characteristic attached to the cylinders;
- a glow relay connected in series to a power supply circuit for supplying a fixed current to the glow plugs;
- detection current supply means to supply a detection current to the glow plugs in order to detect the temperature of the glow plugs while the glow relay is opened;
- a water temperature sensor of a fixed resistance temperature characteristic for detecting the temperature of the cooling water of the engine;
- a key switch for generating a glow plug controlling operation starting signal;
- analog-to-digital conversion means for converting the analog values both of a temperature detection signal corresponding to a voltage drop caused by the glow plugs under the detection current and of a detection signal given by the water temperature sensor into digital values; and
- a computer adapted to decide whether or not the engine needs to be preheated on the basis of the detection signal given by the water temperature sensor when the glow plug controlling operation starting signal is given by the key switch, to calculate a current supply time necessary to heat the glow plugs to a predetermined temperature when the preheating is necessary, to generate an OFF-signal to interrupt the function of the detection current supply means and an ON-signal to close the glow relay during said current supply time, and to generate periodically ON- and OFF-signals for starting and interrupting the operation of the detection current supply means after the passage of said current supply time until the temperature of the glow plugs drops to a temperature below a predetermined temperature.

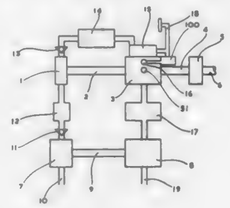
4,566,411

SPLIT CYCLE ENGINE

Frederick A. Summerlin, "The Spinney", Rose La., Wheathampstead, St. Albans, Hertfordshire, England

Filed Mar. 14, 1983, Ser. No. 475,178
Claims priority, application United Kingdom, Apr. 2, 1982, 8209934
Int. Cl.⁴ F02B *53/08*
U.S. Cl. 123—213 **2 Claims**

1. A split cycle engine adapted to drive a load, which engine comprises, in combination:
- first and second positive displacement compression units for compressing working fluid therein;
- first and second positive displacement expansion units, adapted to be driven by the expansion of working fluid therein;
- the first expansion unit having a variable cut-off ratio;
- a transfer passage connected between the first compression unit and the first expansion unit for transferring working fluid which has been compressed by the first compression unit to the first expansion unit to drive the first expansion unit by expanding therein;
- variable heat-supply means for supplying heat at a variable rate to the working fluid in one of the transfer passage and the first expansion unit;
- a first driving connection connecting the first expansion unit to the first compression unit for driving the first compression unit from the first expansion unit, the first driving connection also being effective to drive the aforesaid load;
- a first working fluid connection connected between the first expansion unit and the second expansion unit to deliver



working fluid which has been expanded in the first expansion unit to the second expansion unit to drive the second expansion unit by further expanding therein;
- a working fluid exhaust connected to the second expansion unit for the outlet of working fluid which has been expanded therein;
- a second driving connection drivingly decoupled from said first driving connection and from said load and, connecting the second expansion unit to the second compression unit for driving the second compression unit from the second expansion unit;
- a working fluid inlet connected to the second compression unit for supplying work fluid thereto;
- a second working fluid connection between the second compression unit and the first compression unit to deliver working fluid which has been compressed by the second compression unit to the first compression unit to be further compressed thereby; and
- cut-off ratio varying means associated with the first expansion unit for varying the cut-off ratio of the first expansion unit.

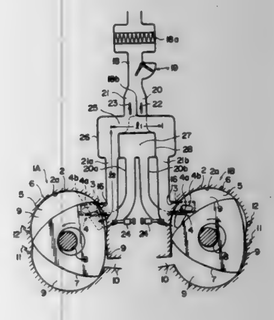
4,566,412

INTAKE SYSTEM FOR ROTARY PISTON ENGINE

Tomoo Tadokoro; Hideo Shiraishi, and Haruo Okimoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 28, 1983, Ser. No. 555,534
Claims priority, application Japan, Nov. 27, 1982, 57-208152
The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.
Int. Cl.⁴ F02B *53/04*
U.S. Cl. 123—216 **15 Claims**

1. A two rotor type rotary piston engine comprising:
- a casing comprised of
  - a pair of rotor housings, each rotor housing having an inner wall of trochoidal configuration,
  - an intermediate housing located between the rotor housings, and
  - a pair of side housing secured to outer sides of the respective rotor housings to define rotor cavities in the respective rotor housings,
- a pair of substantially polygonal rotors disposed in the respective rotor cavities with apex portions in sliding engagement with the inner walls of the respective rotor housings to define working chambers of cyclically variable volumes,
- eccentric shaft means carrying said rotors so that said rotors are rotated with 180° phase difference in terms of angle of rotation of said eccentric shaft means,
- intake means including
  - two individual intake port means provided in at least one of said intermediate and side housings and opening to the respective rotor cavities and being cyclically closed by said rotors as the rotors rotate, each of said two individual intake port means including main port means and auxiliary port means, said auxiliary port means being closed later than said main port means,
  - intake passage means including throttle valve means, said intake passage means including two individual passage



means leading respectively to said two individual intake port means,
  - communicating passage means communicating with said two individual passage means and being located downstream of said throttle valve means,
- control valve means for opening and closing said auxiliary port means,
- said two individual intake port means having an opening period of 230° to 290° in terms of angle of rotation of said eccentric shaft means when the control valve means is closed and an opening period of 270° to 320° in terms of angle of rotation of said eccentric shaft means when the control valve means is opened,
- said communication passage means and said two individual passage means leading to the respective rotor cavities having an overall length between 0.57 and 1.37 m for transmitting a compression wave produced in one of said two individual passage means in opening timing of one of said two individual intake port means to the other of said two individual intake port means just before said other of said two individual intake port means is closed to obtain an additional intake charge.

4,566,413

MIXTURE-COMPRESSION INTERNAL COMBUSTION ENGINE

Rudolf Maly, Sindelfingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 19, 1984, Ser. No. 662,689
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338216
Int. Cl.⁴ F02B *19/10*
U.S. Cl. 123—256 **8 Claims**



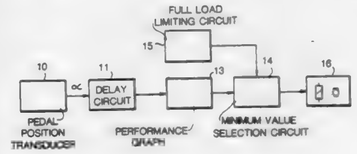
1. A mixture-compression internal combustion engine having a combustion space with auxiliary chambers, of which a first auxiliary chamber having an ignition unit is located in the cylinder head and a plurality of further auxiliary chambers located in the piston, and having injection ducts each of which connects a further auxiliary chamber to the combustion space, the injection ducts of the further auxiliary chambers open on a surface of the piston head and are aligned in a direction to produce a flame front propagated in a peripheral direction, and in which arrangement the injection duct of a first of said further auxiliary chambers points in the direction of an injection duct of a second auxiliary chamber, characterized in that the piston is provided with peripherally disposed proturberances each encompassing an auxiliary chamber extending into the combustion space, in which each of said ducts of further auxiliary chamber points in the direction of a piston trough located between each of the protuberances.

4,566,414

CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Albrecht Sieber, Böblingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 366,272, Apr. 7, 1982, abandoned. This application Oct. 18, 1984, Ser. No. 662,534
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114836
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—357 **14 Claims**



1. A control system for controlling fuel quantity in an internal combustion engine, comprising:
- a driving-pedal position transducer for generating a pedal position signal indicating the position of an engine driving pedal;
- a performance graph means, connected to receive said pedal

position signal, for generating a control signal in accordance with said pedal position signal;

an engine control device, connected to receive said control signal, for controlling an operation of said engine in accordance with said control signal;

at least one signal delay circuit means for delaying a signal supplied thereto;

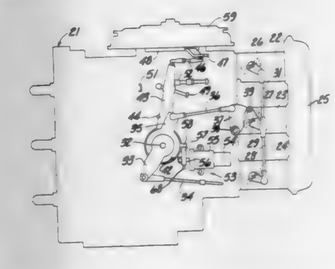
said at least one signal delay circuit means being dependent on one output signal of at least one switching means and being controlled thereby in accordance with a selected engine operating parameter for either (1) connecting in series said signal delay circuit means in a series circuit between said driving-pedal position transducer and said performance graph means, or (2) disconnecting said delay circuit means from said series circuit.

4,566,415

SPEED CONTROLLER FOR MARINE PROPULSION DEVICE

Tomio Iwai, Hamamatsu, and Katsumi Torigai, Shizuoka, both of Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 27, 1983, Ser. No. 565,239
Claims priority, application Japan, Dec. 28, 1982, 57-227558
Int. Cl.⁴ F02D *31/00*
U.S. Cl. 123—361 **16 Claims**



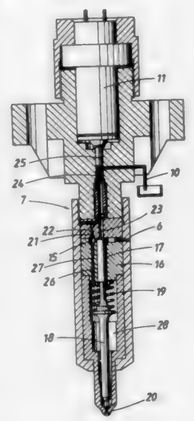
1. In a speed control mechanism for an internal combustion engine having an engine speed control for controlling the operational speed of the engine and movable through a range of positions, an operator controlled speed selector movable through a range of positions and means for interrelating said speed selector and said engine speed control for positioning said engine speed control in response to an operator input to said speed selector for setting the running speed of said engine, the improvement comprising said interrelating means including means for permitting said engine speed control to move independently of said speed selector, means for measuring the actual speed of said engine and means for moving said engine speed control independently of said speed selector for varying the actual running speed of the engine if the measured speed is not of a predetermined value, said means for moving said engine speed control being effective to move said engine speed control in a speed reducing direction if the measured engine speed is above a preset maximum desired engine speed and is effective to move the engine speed control in a speed increasing direction if the measured engine speed is below a preset minimum desired engine speed, said preset minimum and maximum desired engine speeds defining a range that includes the predetermined value.

4,566,416

ACCUMULATOR NOZZLE FUEL INJECTION SYSTEM

Max Berchtold, Zurich, Switzerland, assignor to Stanadyne, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 400,237, Jul. 21, 1982, abandoned. This application May 1, 1984, Ser. No. 605,856
Claims priority, application Austria, Jul. 31, 1981, 3371/81
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—458 **5 Claims**



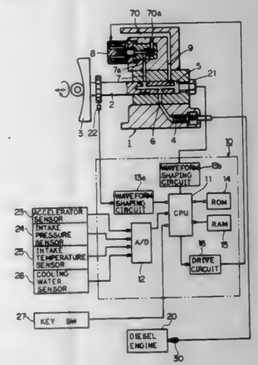
1. In a method for the momentary injection of a discrete charge of fuel, of a selected volume within a range having a maximum volume and at a predetermined rate of injection, into a cylinder of a internal combustion engine with a fuel injector having a fuel injector body with a fuel injection valve opening and a valve seat surrounding the injection valve opening, an elongated valve member mounted within the valve body for engagement with the valve seat for closing the valve opening and to be momentarily shifted in opposite axial opening and closing directions thereof to be momentarily lifted from the valve seat for momentarily opening the valve member for said momentary injection of a discrete charge of fuel, the fuel injector body having a fuel inlet for receiving fuel at a continuous high inlet pressure, a first fuel pressure chamber connected to the fuel inlet to be pressurized to said high inlet pressure and in communication with the injection valve opening on the upstream side thereof for delivering fuel under pressure for fuel injection when the valve member is momentarily lifted from its valve seat, the valve member being hydraulically biased in its opening direction by said first fuel chamber pressure, closing bias means, including a second fuel pressure chamber connected to the fuel inlet to be pressured to said high inlet pressure to hydraulically bias the valve member in its closing direction at said high inlet pressure, said closing bias means with said closing hydraulic bias at said high inlet pressure being operable to hold the valve member in engagement with its valve seat against said opening hydraulic bias at said high inlet pressure, the fuel injection method comprising the steps of providing said first fuel chamber as an accumulator chamber with an accumulator volume substantially larger than said maximum volume, connecting said accumulator chamber to the fuel inlet by a first passage restriction to accumulate said substantially larger accumulator volume of fuel in said accumulator chamber at said high inlet pressure prior to said momentary fuel injection and so that the pressure of said accumulator volume of fuel in said accumulator chamber is isolated from the continuous high inlet pressure at the fuel inlet during the momentary opening of the valve member so as to decrease to substantially below said high inlet pressure during the momentary opening of the valve member for said momentary fuel injection and therefore so that the fuel injection rate is dependent on the volume of the accumulator chamber and the accumulator chamber pressure prior to said momentary fuel injection, connecting said second pressure chamber to the fuel inlet by a second passage restriction to pressurize said second chamber to said high inlet pressure, and momentarily reducing said second chamber pressure to substantially below said high inlet pressure to rapidly open the valve member by said accumulator chamber pressure and then, after the pressure of said accumulator volume of fuel in said accumulator chamber decreases to substantially below said high inlet pressure, rapidly close the valve member by said second chamber pressure to produce said momentary injection of a discrete charge of fuel and selecting the volume of the injected charge and rate of fuel injection by controlling said continuous inlet pressure and the interval of momentary reduction of said second chamber pressure.

4,566,417

FUEL INJECTION CONTROL APPARATUS FOR DIESEL ENGINES

Yutaka Suzuki, Nishio; Nobuhito Hobo, Inuyama; Yoshihiko Tsuzuki, Toyota; Takashi Naito, Oubu; Mikio Kumano, Anjo; Tetsuya Nakamura; Satoshi Haseda, both of Kariya, and Akira Masuda, Chita, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 10, 1984, Ser. No. 598,593
Claims priority, application Japan, Apr. 18, 1983, 58-68030
Int. Cl.⁴ F02D *5/02*
U.S. Cl. 123—478 **5 Claims**



1. A fuel injection control apparatus for a diesel engine having a fuel injection pump with a fuel pressurizing chamber for injecting fuel into the engine through an injection nozzle connected with said fuel injection pump, comprising:

an overflow passage having a first end in communication with said fuel pressurizing chamber and a second end to communicate with a low pressure side of said pump;

a solenoid valve, disposed in said overflow passage between said first and second ends for controlling flow of fuel through said overflow passage;

an injection start detector for detecting, based on fuel pressure, an actual start time of fuel injection to the diesel engine and providing an injection start signal indicative thereof;

operating condition detector means for detecting at least one operating condition of said engine and providing an operating condition electric signal indicative thereof; and

a control circuit for controlling, responsive to said operating condition electric signal and said injection start signal, the opening and closing of said solenoid valve, said control circuit including:

means response to said operating condition electric signal, for calculating a target injection amount of fuel for injecting into said engine in a single injection;

means for calculating a target injection period of time corresponding to said target injection amount said target injection period extending from the time of said injection start signal to the opening of said overflow passage by said solenoid valve; and

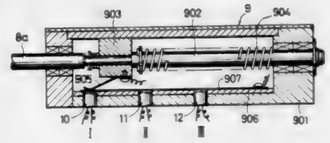
means for driving said solenoid valve to open said overflow passage when said target injection period has elapsed from the time of said injection start signal.

4,566,418

ELECTRONICALLY CONTROLLED INTERNAL COMBUSTION ENGINE PROVIDED WITH AN ACCELERATOR POSITION SENSOR

Minato Yamamoto, and Shunji Takahashi, both of Chigasaki, Japan, assignors to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1984, Ser. No. 645,766
Claims priority, application Japan, Aug. 30, 1983, 58-158872; Aug. 30, 1983, 58-158874
Int. Cl.⁴ F02D *41/22*
U.S. Cl. 123—479 **3 Claims**



1. An electronically controlled internal combustion engine comprising an accelerator position sensor provided with an electrical contact wiper operatively connected to an accelerator pedal, an idling switch for indicating the position of said pedal at which a throttle valve is opened to the idling position, an intermediate switch for indicating the position of said pedal at which the throttle valve is opened to the middle position a fully opening switch for indicating the position of said pedal at which the throttle valve is opened to its fully open position, said respective switches being arranged along the moving track of said wiper within said accelerator position sensor and respectively issuing signals when said wiper crosses them, a first means connected to said accelerator position sensor and said respective switches, judging as a failure in case the output from said accelerator position sensor is not within a normal range previously memorized when a signal is generated by any of said respective switches and putting out a failure sensing signal, and a second means connected to said first means, judging a desirable running state on the basis of a combination of signals from said respective switches without accepting signals from said accelerator position sensor when said accelerator position sensor is judged to fail by said first means, and controlling an injector so that the desirable running state is obtained.

4,566,419

APPARATUS AND METHOD FOR CONTROLLING AIR-TO-FUEL RATIO FOR AN INTERNAL COMBUSTION ENGINE

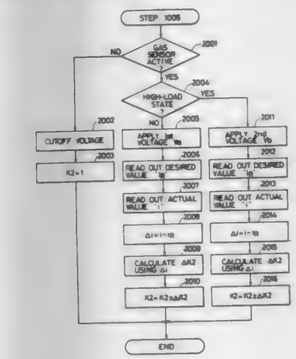
Masakazu Ninomiya; Hideya Fujisawa; Norio Omori, all of Kariya, and Atsushi Suzuki, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

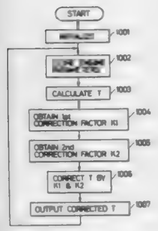
Filed Aug. 15, 1984, Ser. No. 640,987
Claims priority, application Japan, Aug. 20, 1983, 58-152064; Aug. 20, 1983, 58-152063
Int. Cl.⁴ F02B *3/00*; G01N *27/58*
U.S. Cl. 123—489 **6 Claims**

1. An air/fuel ratio control apparatus for an internal combustion engine, comprising:

(a) means for detecting operating conditions of said engine;

(b) a gas sensor of constant-current type for detecting and outputting a signal indicative of a gas component includes in exhaust gases from said engine so that air/fuel ratio of an air-fuel mixture fed to said engine is detected at least when said air/fuel ratio is richer than a stoichiometric value or a value close thereto;
(c) voltage source means for applying a predetermined voltage to said gas sensor, said predetermined voltage being set to a value so that said gas sensor does not exhibit a constant-current characteristic;
(d) air/fuel ratio control means for controlling the air-fuel mixture fed to said engine; and





(e) computing means, responsive to said detected operating conditions and said signal from said gas sensor,
for determining whether said engine is required to receive an air-fuel mixture which is richer than said stoichiometric value or said value close thereto or not,
for causing said voltage source means to apply said predetermined voltage to said gas sensor only when said engine requires a rich mixture, and
for causing said air/fuel ratio control means to supply to said engine an air-fuel mixture of a desired air/fuel ratio, based on said detected operating conditions and said signal from said gas sensor, when said engine requires a rich mixture.

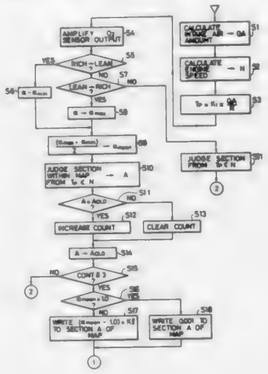
4,566,420

ELECTRONIC CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Masahide Sakamoto, Katsuta, and Masami Shida, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1985, Ser. No. 695,246
Claims priority, application Japan, Jan. 27, 1984, 59-11822
Int. Cl.⁴ F02M *7/00, 51/00*
U.S. Cl. 123—489 **2 Claims**

1. In a control apparatus for an internal combustion engine of the type in which a deviation value of a feedback control value from a reference value for each of predetermine engine operating condition sections of said engine is stored in a region in a memory in the form of a map and is read out in order to be used as a correction value when control is effected in relation to the corresponding predetermined engine operating condition section,
an electronic control apparatus for an internal combustion engine comprising an operating arrangement wherein the number of regions in said memory into which deviation



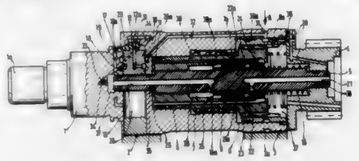
values for said operating condition sections have already been written are examined, and when said number of regions reaches a predetermined value, a deviation value is written into each of the said regions in said memory into which no deviation values have yet been written, said deviation value already being stored in the adjacent region in which writing of said deviation data has been completed.

4,566,421

APPARATUS FOR THE RPM-DEPENDENT ADJUSTMENT OF THE TIMING OF AN INJECTION PUMP

Otto Bauer, Munich; Lernhard Eberl, Lohhof; Gerhard Geyer, Munich, and Max Straubel, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 7, 1983, Ser. No. 539,881
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3238926
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—502 **13 Claims**



1. An apparatus for the rpm-dependent adjustment of the timing of an injection pump for internal combustion engines, embodied as a shaft-type injection adjuster, comprising a driven part connected with a rotationally driven driving part via an axially displaceable, sheath-like adjusting piston in a rotationally coupled manner with a relative rotary angle between the driven and the driving part being adjustable, said adjusting piston being axially displaceable thereby effecting a variation of the rotary angle between the driving and the driven part, said adjusting piston being supplied with a hydraulic pressure medium controlled at least indirectly by rpm via the influence of centrifugal force, an auxiliary piston which

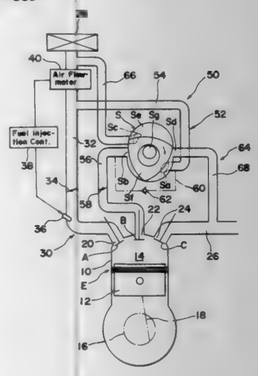
directly under the influence of said centrifugal force forms a centrifugal force control piston and is connected in such a manner to a pressure medium supply means that a control flow of pressure medium effected by the displacement of said centrifugal force control piston generates a pressure medium required for an axial displacement of the adjusting piston, wherein the control pressure generated by the centrifugal force control piston acts upon a control piston, which by means of an effected displacement permits a supply of the pressure medium to a working face of the adjusting piston.

4,566,422

FUEL INTAKE SYSTEM FOR A SUPERCHARGED ENGINE

Tomoo Tadokoro; Haruo Okimoto, and Ikuo Matsuda, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 418,746, Sep. 16, 1982, abandoned. This application Nov. 19, 1984, Ser. No. 672,857
Claims priority, application Japan, Sep. 22, 1981, 56-149939; Sep. 28, 1981, 56-154439
Int. Cl.⁴ F02B *33/36*
U.S. Cl. 123—559 **6 Claims**



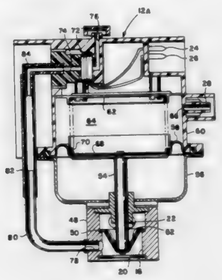
1. A fuel intake system for a supercharged internal combustion engine having at least one engine cylinder defined therein, which system comprises, in combination:
primary intake passage means for supplying at least a suction air to the combustion chamber; and
auxiliary intake passage means including a supercharger for supplying at least a supercharged air to the combustion chamber, said supercharger being constituted by a displacement air pump, said displacement air pump having a suction port, an exhaust port and a working chamber and being operable to exert a substantially pulsating flow of air from the exhaust port in correspondence with change in volume of the working chamber, means for driving said displacement air pump from the engine and for supplying the supercharged air into the combustion chamber at least during the period in which the combustion chamber is held under the compression stroke, said supercharger having first and second pairs of suction and exhaust ports, the suction and exhaust ports of the first pair being in communication with respective passage portions of the auxiliary intake passage means, and further comprising secondary air supply passage means for supplying a secondary air to an exhaust system of the engine, the suction and exhaust ports of the second pair being in communication with respective passage portions of the secondary air supply passage means.

4,566,423

ELECTRONIC FEEDBACK EGR VALVE

Andrew A. Kenny, Roselle; Robert G. Sokalski, Wheaton; Lawrence E. Egle, Itasca, and Daniel C. Stahly, Elmhurst, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 20, 1983, Ser. No. 563,474
Int. Cl.⁴ F02M *25/06*
U.S. Cl. 123—571 **3 Claims**



1. An improved EGR valve controller comprising:
(a) body means defining an exhaust gas recirculation passage having an inlet, an outlet and a valve seat disposed in said passage intermediate said inlet and said outlet;
(b) a valve member disposed in said EGR passage, said valve member moveable with respect to said valve seat for controlling flow through said passage;
(c) pressure responsive means defining in cooperation with said body means a vacuum signal chamber;
(d) means defining a vacuum connector having a port communicating with said vacuum signal chamber, said connector adapted for connection to a vacuum source;
(e) actuator means operatively interconnecting said pressure responsive means and said valve member for effecting movement of the latter in response to pressure changes in said vacuum chamber;
(f) means defining an EGR flow limiting orifice in said EGR passage upstream of said valve seat;
(g) means defining a pressure tap in said EGR passage intermediate said valve seat and said flow limiting orifice;
(h) pressure transducer means having a sensing port and mounted on said body means remote from said EGR passage with said sensing port vertically at a level above said pressure tap when said controller is installed on an engine;
(i) conduit means extending externally of said body means and interconnecting said pressure tap and said transducer sensing port said conduit means including a section thereof disposed externally of said body means and operative to thermally isolate said transducer port from said pressure top, wherein said transducer means is operative to emit an electrical signal having certain characteristics thereof indicative of the pressure sensed in said tap.

4,566,424

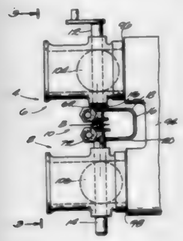
FLEXIBLE COUPLING FOR CARBURETORS

Henry C. Billingsley, Waukegan, and Chester G. DuBois, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 30, 1984, Ser. No. 635,568
Int. Cl.⁴ F02B *13/00*
U.S. Cl. 123—583 **26 Claims**

1. A fuel supply assembly comprising a first carburetor having a throttle shaft, and a second carburetor having a separate throttle shaft, said pair of carburetor throttle shafts having axes of rotation in general alignment, and a generally U-shaped coupling for flexibly connecting said pair of separate carbure-

tor throttle shafts so as to accomodate said shafts being axially offset or out of alignment, said coupling including a bight connected to a pair of legs each having a free end including a generally U-shaped member having a pair of arms with apertures for receiving one of said carburetor throttle shafts, each of said U-shaped members also including an arcuate bight having arcuate side portions separated by a centrally located



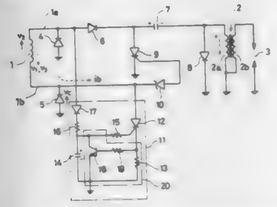
slot communicating with said arm apertures, and also including clamping means for squeezing together said arcuate side portions of said arcuate bight to reduce the opening size of said slot and arm apertures, whereby said pair of arms of each of said U-shaped members engages a separate one of said carburetor throttle shafts so that said pair of carburetor throttle shafts are flexibly coupled for common rotation.

4,566,425

IGNITION SYSTEM OF THE CONDENSOR-DISCHARGE TYPE FOR INTERNAL COMBUSTION ENGINE

Hiroyasu Nitou, Fuji; Kiyoshi Shirai, and Osamu Takahashi, both of Numazu, all of Japan, assignors to Kokusan Denki Co., Ltd., Shizuoka, Japan

Filed Jul. 2, 1984, Ser. No. 626,922
Int. Cl.⁴ F02P *9/00*
U.S. Cl. 123—600 **8 Claims**



1. An ignition system of the condensor-discharge type for an internal combustion engine, comprising:
- an ignition coil having a primary winding and a secondary winding;
- an exciter coil arranged in a magneto which is adapted to be rotated in synchronism with the rotation of an internal combustion engine, said exciter coil being adapted to generate output voltages each comprising a first half wave voltage of negative polarity, a second half wave voltage of positive polarity and a third half wave voltage of negative polarity in sequence at predetermined angular intervals when said engine is rotated in the positive direction;
- an ignition energy accumulating condensor arranged on the primary winding side of said ignition coil to be charged to have one polarity by said second half wave voltage generated from said exciter coil;
- a discharge control thyristor provided to allow said ignition energy accumulating condensor to be discharged through said primary winding of said ignition coil when it is turned on;
- a turn-on signal supply circuit for supplying a turn-on signal to said thyristor by means of said half wave voltages of negative polarity at the ignition position of said engine;
- a signal control condensor connected to be charged to have one polarity by said second half wave voltage generated from said exciter coil;
- a signal control thyristor provided to substantially short-circuit the output of said exciter coil when it is turned on and adapted to allow the anode-cathode circuit thereof to be biased in the forward direction by said first and third half wave voltages; and
- a discharge circuit for permitting said signal control condensor to be discharged through the gate-cathode circuit of said signal control thyristor.

4,566,426

METHOD AND DEVICE FOR SHARPENING A GRINDING DISK

Heinrich Schleich, Stolberg, and Kemal Yegenoglu, Aachen, both of Fed. Rep. of Germany, assignors to Ernst Winter & Sohn (GmbH & Co), Hamburg, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 513,976
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233609
Int. Cl.⁴ B24B *53/04*
U.S. Cl. 125—11 R **6 Claims**

2. A device for sharpening and scouring a grinding disk with a grinding medium, comprising a sharpening block operated in contact with the grinding disk, and drive means connected to the sharpening block for applying the sharpening block to the grinding disk with an adjustable feeding velocity and adjustable feeding force, said drive means including a first drive (12) and a second drive (10) coupled to the first drive, said first drive controlling the feeding velocity of the sharpening block and said second drive controlling the feeding force of the sharpening block so that the adjustable feeding velocity is reduced when the feeding force reaches its maximum allowable value.

4,566,427

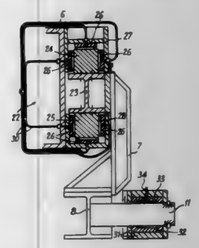
DEVICE FOR CUTTING BLOCKS OF GRANITE, MARBLE, STONE AND THE LIKE MATERIALS

Roger Maréchal, Nuits sur Armancon, and Lucien Jeantet, Enghien, both of France, assignors to Rocamat, Puteaux, France

Filed Dec. 14, 1983, Ser. No. 561,020
Claims priority, application France, Dec. 15, 1982, 82 21040
Int. Cl.⁴ B28D *1/02*
U.S. Cl. 125—16 R **13 Claims**

1. A device for cutting blocks of granite, marble, stone and similar materials, comprising:
- a plurality of sawing blades;
- a blade-carrying frame into which at least two sawing blades are fixed and having slide means for directing horizontal motion of said frame;
- a drive motor unit connected to said blade-carrying frame for displacing said sawing blade in a reciprocating motion,
- a slide-carrying frame of generally rectangular cross-section, upright supports,

- a guide unit on each upright support connected to said slide-carrying frame for directing vertical movement of said slide-carrying frame,
- said slide means of said blade-carrying frame being adapted to fit within said slide-carrying frame, and



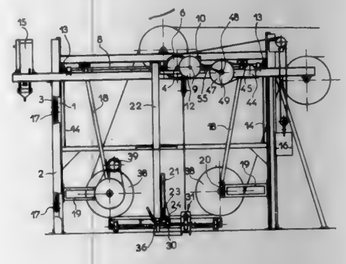
vibration damping means for creating pressure on the top, bottom, and each side of said slide means to urge said slide means away from contact with said slide-carrying frame, thus providing a vibration dampened connection between said slide-carrying frame and said blade-carrying frame, whereby propogation of vibrations to the sawing blades is minimized.

4,566,428

WIRE SAW FOR SHAPING GRANITE AND OTHER STONE

Auguste Roujon, 28, Place Frederic Bompaire, 12100 Millau, France

Filed Apr. 27, 1984, Ser. No. 604,520
Claims priority, application France, Apr. 27, 1983, 83 05479
Int. Cl.⁴ B28D *1/30*
U.S. Cl. 125—21 **25 Claims**



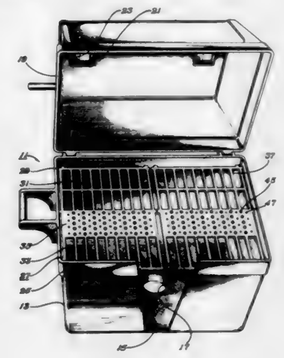
1. An apparatus for shaping a stone comprising:
- (a) a fixed vertical frame;
- (b) a chassis vertically displaceable in said fixed frame and adapted to carry an endless wire band saw for sawing said stone;
- (c) a carriage supporting said stone, wherein said carriage is adapted to be displaced;
- (d) a means for automatically lowering said movable chassis to saw said stone on said carriage;
- (e) a means for automatically displacing said carriage during sawing of said stone;
- (f) a guide arm comprising first and second ends, wherein said first end is attached to said chassis and wherein said second end comprises a roller, wherein said guide arm extends downwardly from said chassis; and
- (g) a guide panel attached to said carriage, wherein said guide panel comprises a profile line thereon, wherein said profile line comprises a first end and a second end, wherein said first end is vertically higher than said second end, wherein said roller comprises means for engaging said first end of said profile line before said stone is sawed and for traveling along said profile line from said first end to said second end as said stone is sawed, thereby controlling the velocity of said carriage and said chassis during sawing.

4,566,429

COOKING GRID

Leonard E. Williams, P.O. Box 15448, Fort Worth, Tex. 76119

Continuation of Ser. No. 637,017, Aug. 2, 1984, abandoned. This application Jul. 31, 1985, Ser. No. 761,350
Int. Cl.⁴ F24C *15/00*; A47J *27/00*
U.S. Cl. 126—14 **5 Claims**



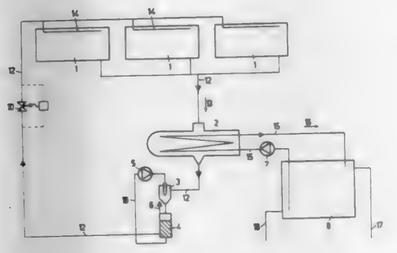
1. An improved cooking grid for use with a cooking grill having a receptacle for containing a heat source for providing heat and smoke, and support means for engaging edges of the grid to support the grid above the heat source, the grill being of the type having two grids located side-by-side, each grid comprising in combination:
- a rectangular cast metal member having integrally formed therein a grid portion and a griddle portion, both located substantially in the same plane;
- the grid portion being two rectangular sections located on the front and back of the grid separated by the griddle portion, which is also rectangular, the grid and griddle portions each having a length from one side to the other side that is the same as the grid, one of the grid sections having a width measured from front to back that is greater than the widths of the other grid section and the griddle portion, the griddle portion having a width that is about 20% to 30% the width of the grid, measured front to back;
- the grid portion having in each grid section a plurality of rectangular elongated openings separated by support metal, defining rows of openings extending across the length of the grid from one side to the other side, the openings having a total surface area greater than the total surface area of the support metal of the grid portion; the grid section the larger width having more rows of openings than the grid section having the smaller width;
- the griddle portion having a plurality of circular apertures separated by support metal, the apertures having a total surface area that is less than the total surface area of the support metal of the griddle portion.

4,566,430

SUN HEATING EQUIPMENT

Paul Vandeplas, Mol, and Lucien Kinnaer, Herentals, both of Belgium, assignors to Studiecentrum voor Kernenergie, "S.C.K." , Brussels, Belgium

Filed Mar. 17, 1983, Ser. No. 476,127
Claims priority, application Belgium, Mar. 17, 1982, 2/59632
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—433 **4 Claims**



1. A sun heating equipment comprising:

a sun collector which comprises:

an upwardly-directed hollow tightly-closed absorbing plate,

inlet means for fluid into the absorbing plate at a top of this plate, and

outlet means for fluid from the absorbing plate at a bottom of this plate,

said absorbing plate comprising two panels which are secured with the edges thereof to one another and which have depressions extending in a first direction over part of the absorbing plate width and thus forming flow channels extending in this first direction, said flow channels connecting said inlet means with said outlet means inside said absorbing plate, the inner walls of said absorbing plate being moistenable at least in the location of the flow channels,

a line for fluid connecting outside the absorbing plate the outlet means from the absorbing plate to the inlet means into the absorbing plate,

heat-transfer fluid inside said line and inside said flow channels of said absorbing plate, said heat-transfer fluid vaporizing at the temperature reached within said flow channels under sun irradiation of said collector,

a heat exchanger comprising as a primary part a condenser inside said line and a secondary part, said fluid condensing in said condenser,

a vacuum pump directly mounted in said line between said condenser and said inlet means, said vacuum pump being of a type which can pump gaseous as well as liquid fluid,

a venting cylinder between said vacuum pump and said inlet means,

a distributing device which extends in a direction perpendicular to the above-mentioned first direction of the flow channels and which feeds the fluid in liquid form with a limited flow rate to said flow channels, so as to have the moistenable walls regularly irrigated at least at the top with a thin film of liquid fluid, and

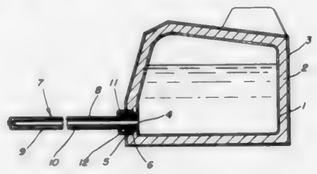
a flow control device between said venting cylinder and said outlet means which lets through a flow rate which can be vaporized in the absorbing plate with a determined sun radiation on said absorbing plate so that the fluid does not fill completely at any height whatsoever said flow channels and is vaporized at least for the most part before reaching the bottom of said absorbing plate.

4,566,431

SPONTANEOUS CIRCULATION TYPE SOLAR HEAT COLLECTOR

Hirosato Takeuchi, and Toshio Mikiya, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1984, Ser. No. 622,251
Claims priority, application Japan, Sep. 8, 1983, 58-138438[U]
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—437 **2 Claims**



1. A spontaneous convection type solar heat collector arrangement comprising:

a reservoir in which a fluid is disposed, said reservoir including an upper portion, a lower portion and an inner surface;

at least one double-tubing type solar heat collecting tube having an open end and a closed end;

at least one connecting opening being provided in the lower portion of said reservoir for mounting the open end of said double-tubing type solar heat collecting tube;

insulating means being operatively positioned around said reservoir for protecting and insulating said reservoir;

said open end of said double-tubing type solar heat collecting tube being positioned in a fixed fluid-tight manner to said connecting opening and being flush with the inner surface of said reservoir for increasing the area of fluid circulation within said reservoir;

an externally threaded member positioned within said connecting opening and an internally threaded nut;

said double-tubing type solar heat collecting tube being disposed within said externally threaded member and said threaded nut for affixing said open end of said double-tubing type solar heat collecting tube to be flush with the inner surface of said reservoir and a packing member operatively positioned between said externally threaded member and said nut for sealing said tube in said opening of said reservoir.

4,566,432

METHOD FOR MASS PRODUCING SOLAR RADIATION REFLECTORS

Isidore F. Sobczak; William C. Cleveland, Jr., both of Santa Ana, and Robert L. Pons, Mission Veijo, all of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Division of Ser. No. 355,409, Mar. 8, 1982, Pat. No. 4,535,961. This application Apr. 6, 1984, Ser. No. 597,789
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—438 **2 Claims**

1. Method for mass producing a solar radiation reflector comprising the steps of:

mass producing many identical reflective facets each having the contour of a portion of a sphere;

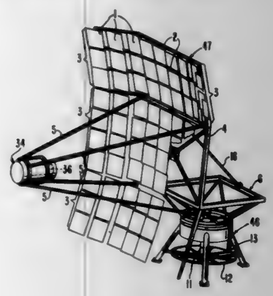
mounting a row of said facets between two horizontal parallel beams such that each facet can partially rotate about a vertical axis and can partially rotate about a horizontal axis;

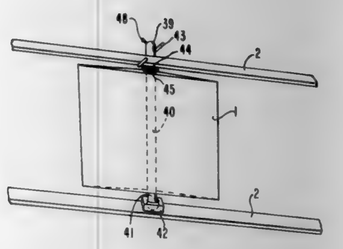
assembling at least one module comprising at least two horizontal beams fixedly positioned with respect to each other;

mounting the modules onto a test fixture;

aligning all of the facets so that they focus radiation from a distant point upon an aperture a distance from each facet equal to one half the radius of curvature of each facet;

removing the modules from the test fixture;





transporting the modules to the site where the concentrator is located; and

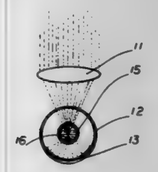
affixing the modules onto a reflector support structure so as to make a prefocused solar radiation reflector.

4,566,433

SOLAR COLLECTOR

Robert F. Amundsen, 4051 NE. 13th Ave., Fort Lauderdale, Fla. 33334

Filed Aug. 9, 1984, Ser. No. 639,181
Int. Cl.⁴ F24J *2/18*
U.S. Cl. 126—439 **6 Claims**



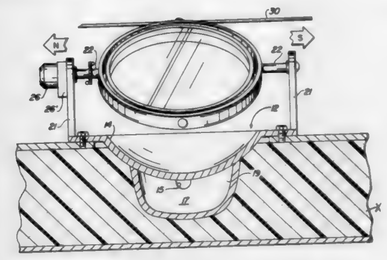
1. A solar collector comprising in combination a transparent conduit, a dark, heat-absorbant fluid within said conduit, an evacuated transparent chamber surrounding said conduit, reflective means on one side of said evacuated chamber, and elongated focusing means aligned with said conduit; said collector being characterized in that said focusing means will focus the sun's rays that it receives into an upper focusing line in said fluid, the rays then passing through to said reflective means which focus said rays back into a second lower focusing line in said fluid.

4,566,434

SOLAR ENERGY COLLECTOR

Leo K. Lindenbauer, P.O. Box 1372, Wickenburg, Ariz. 85358

Filed Dec. 24, 1984, Ser. No. 685,557
Int. Cl.⁴ F24J *2/08*
U.S. Cl. 126—440 **4 Claims**



1. A solar energy collector comprising:

a block of heat absorbing material,

at least one lens pivotally mounted on a surface of said block for receiving the rays of the sun,

an indentation comprising a spherical configuration formed in said surface of said block juxtapositioned to said lens,

said indentation providing clearance for the lens as it is pivoted about its mounting axis,

a fluid conducting passageway traversing said block and comprising an expanded portion formfitting around at least a portion of the base of said indentation,

said expanded portion comprising an elongated first segment extending in an east-west direction when said block is exposed to the sun and encompassing a greater volume than a second smaller segment extending in a north-south direction substantially perpendicular to said first segment, said first segment receiving a greater concentration of solar energy each day of the year than said second segment, thereby causing the fluid passing through said passageway to more effectively absorb the heat of the walls of said indentation,

said passageway comprising inlet and outlet pipes extending into and out of said first segment, and

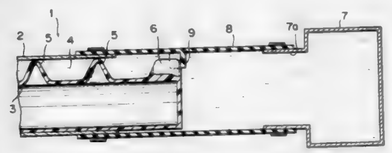
sun tracking means for pivotally rotating said lens to follow the sun.

4,566,435

SOLAR HEAT COLLECTING APPARATUS

Kanichi Kadotani, Atsugi, and Yogaku Iwamoto, Hiratsuka, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 15, 1982, Ser. No. 434,499
Claims priority, application Japan, Oct. 15, 1981, 56-152221[U]; Oct. 15, 1981, 56-152222[U]; Feb. 19, 1982, 57-21377[U]; Feb. 26, 1982, 57-25812[U]; Apr. 9, 1982, 57-50582[U]
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—443 **4 Claims**



1. A solar-heat collecting apparatus, comprising:

a casing;

a plurality of solar-heat collecting tube units arranged in parallel with each other within the casing, each tube unit comprising a transparent outer tube and an inner tube mounted within said outer tube with a bottom face of said inner tube being in contact with an inner face of said outer tube, both ends of said inner tube being closed to form a hermetically sealed tube, and both ends of said outer tube being open thereby forming a fluid passage between said outer and inner tubes;

a pair of headers mounted in said casing, one of said headers being connected with a first end of each of said outer tubes and the other header being connected with a second end of each of said outer tubes whereby solar-heat collecting fluid is adapted to flow within said fluid passages,

each of said inner tubes having formed thereon a plurality of protrusions arranged at intervals in a longitudinal direction thereof, the height of each of the protrusions being so formed that the diameter of the inner tube at the protrusion is slightly less than the inner diameter of said outer tube,

a plurality of flexible connector tubes each having one end connected to one end of each outer tube and the other end connected to one of said headers,

each of said inner tubes having two stoppers each formed at one of the closed end portions thereof, and

each of said flexible connector tubes having an inwardly projecting slotted retainer having at least one closed end portion for receiving and engaging said stopper thereby preventing each of said inner tubes from rotating as well as from moving in a longitudinal direction thereof.

4,566,436

METHOD FOR APPLYING AND/OR KEEPING AN ISCHAEMIC AREA DURING SURGERY ON THE LIMBS

Johan Loefqvist, Finspång, Sweden, assignor to HB Varix, Finspång, Sweden

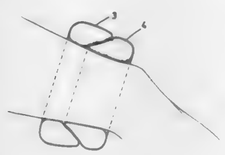
PCT No. PCT/SE82/00303, § 371 Date May 24, 1983, § 102(e) Date May 24, 1983, PCT Pub. No. WO83/01192, PCT Pub. Date Apr. 14, 1983

PCT Filed Sep. 30, 1982, Ser. No. 499,757

Claims priority, application Sweden, Oct. 2, 1981, 8105819

Int. Cl.⁴ A61B *17/12*

U.S. Cl. 128—1 R **1 Claim**



1. A method of producing an ischaemic region in a limb during surgery, comprising the steps of: rolling onto the limb a proximal elastic annular tube which is filled with a fluid; thereafter rolling onto the limb a distal elastic annular tube which is filled with a fluid; and thereafter rolling said proximal tube partly onto a portion of said distal tube until a position of equilibrium therebetween is reached in which said tubes are positionally locked against movement along the limb.

4,566,437

ENDOSCOPE

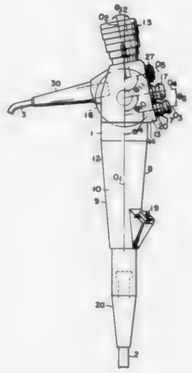
Tatuya Yamaguchi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 371,271, Apr. 23, 1982, abandoned. This application May 2, 1984, Ser. No. 605,991

Claims priority, application Japan, May 1, 1981, 56-66541

Int. Cl.⁴ A61B *1/00*

U.S. Cl. 128—4 **4 Claims**



1. An endoscope comprising: an elongated insert section including a distal end portion to be inserted into a body cavity and a proximal end portion; an operation section connected to the proximal end of the insert section, and including a holding portion which is gripped by the third and little finger of a single hand of an operator, a central axis extending along the longitudinal direction of the holding portion and means for permitting operation of the endoscope without requiring unnatural movements of an operator's fingers, said means including a mounting surface located adjacent to the holding portion and within reach of at least one finger of the operator's hand; a rising wall on the operation section between the mounting surface and the holding portion to enable the third finger gripping the holding portion to abut against the rising wall to define a holding position; an eyepiece section mounted on one end portion of the operation section such that the optical axis of the eyepiece section is inclined from the central axis of the holding portion toward the side opposite to that on which the mounting surface is located; said mounting surface having a first end located adjacent to said rising wall and a second end located adjacent to said eyepiece section and being inclined from said first end toward said central axis so that said second end is closer to the central axis than said first end; and operating buttons mounted on the mounting surface to extend outwardly from said inclined mounting surface such that they can be depressed toward said mounting surface in the direction of the central axis of the operating buttons, said inclined mounting surface orienting said buttons such that they are lower in height relative to the central axis of the holding portion as they are positioned further away from the rising wall, said buttons being positioned in a row along the central axis of the holding portion; in which the central axis of the operating buttons are at an angle of between greater than 90° and less than 150° to the central axis of the holding portion wherein the operating buttons are provided on the holding portion in a manner such that the central axis of the operating buttons intersects the central axis of the holding portion at an angle of greater than 90° for access by an operator.

4,566,438

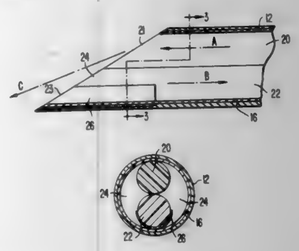
FIBER-OPTIC STYLET FOR NEEDLE TIP LOCALIZATION

Grover J. Liese, 1301 Punch Bowl St., Honolulu, Hi. 96813, and William Pong, 3317 Huelani Dr., Honolulu, Hi. 96822

Filed Oct. 5, 1984, Ser. No. 658,312

Int. Cl.⁴ A61B *1/06*

U.S. Cl. 128—6 **24 Claims**



1. A fiber-optic stylet for use with a diagnostic or surgical needle, said stylet comprising:

(a) an elongated casing adapted for insertion into a body, said casing having a first end and a second end;

(b) transmitting fiber-optic means comprising at least one transmitting light fiber having one bevelled end extending adjacent said first casing end;

(c) receiving fiber-optic means comprising at least one receiving light fiber having one bevelled end extending adjacent said first casing end, wherein said bevelled end of said transmitting light fiber and said bevelled end of said receiving light fiber are positioned at the same end of said flexible casing; and

(d) wherein said receiving light fiber is generally cylindrical and has a reflective surface thereon which is located adjacent to said bevelled end of said receiving light fiber and said first casing end.

4,566,439

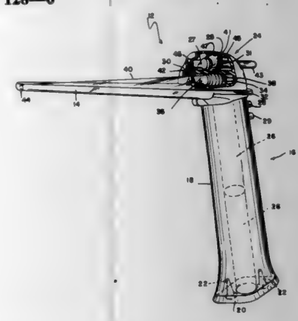
ACRYLOOPTIC EXAMINATION DEVICE WITH AUXILIARY LIGHT

Kermit H. Burgin, P.O. Box 334, Whitestown, Ind. 46075

Filed Jul. 16, 1984, Ser. No. 631,240

Int. Cl.⁴ A61B *1/06*

U.S. Cl. 128—6 **8 Claims**



1. A medical examination device comprising an examination head, a base unit having a handle portion and a head portion, a first stationary light source mounted in the head portion for providing light around the examination head, a second light source, and means for movably mounting the second light source in the head portion, the examination head including a portion constructed from an optical wave-guiding material cooperatively aligned with said first light source, such that light from said first light source is directed through said optical wave-guiding portion of said examination head.

4,566,440

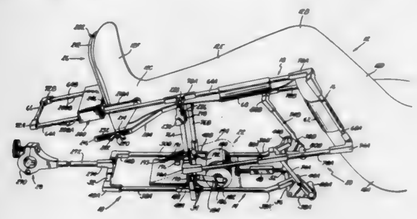
ORTHOSIS FOR LEG MOVEMENT WITH VIRTUAL HIP PIVOT

John M. Berner, Golden Valley; Patricia M. Derus, Osseo, and James P. Berner, Richfield, all of Minn., assignors to Empi, Inc., Fridley, Minn.

Filed Feb. 9, 1984, Ser. No. 578,731

Int. Cl.⁴ A61H *1/02*

U.S. Cl. 128—25 R **20 Claims**



1. A leg exercise apparatus for supporting a leg of a patient through a range of movement, the apparatus comprising:

a frame;

femur support means indirectly connected to the frame for supporting an upper portion of the leg through the range of movement;

tibia support means for supporting a lower portion of the leg through the range of movement, the tibia support means being pivotally connected to the femur support means; and

linkage means pivotally connected to the frame, the femur support means and the tibia support means at distinct points thereon for guiding motion of the femur and tibia support means through the range of movement so that the femur support means pivots about essentially a virtual pivot axis which is proximate a hip joint of the patient and is spatially separated from the frame, the femur support means, the tibia support means and the linkage means.

4,566,441

PERCUSSOR SUBASSEMBLY FOR GENERATING GAS BURSTS

Harold R. Havstad, Eagle Point, Oreg., assignor to Hudson Oxygen Therapy Sales Co., Temecula, Calif.

Continuation-in-part of Ser. No. 223,355, Jan. 8, 1981, Pat. No. 4,445,503, which is a continuation-in-part of Ser. No. 50,685, Jun. 21, 1979, abandoned. This application Apr. 19, 1984, Ser. No. 602,146

Int. Cl.⁴ A61H *9/00*

U.S. Cl. 128—40 **17 Claims**

1. A percussor assembly comprising:

a rigid body member having a gas inlet passageway and a gas outlet passageway, said gas outlet passageway having a restricted portion and an enlarged portion,

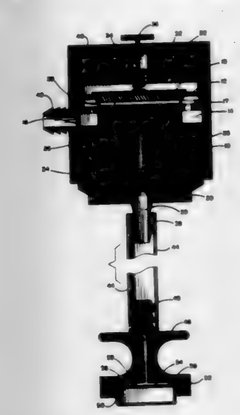
a gas sealing member and biasing means cooperating therewith for urging said gas sealing member to provide a gas-tight seal between said gas inlet and outlet passageways,

a gas pressure chamber between said gas inlet passageway and said gas sealing member,

an applicator pneumatically connected to said enlarged portion of said gas outlet passageway for receiving bursts of gas therefrom,

means for delivering pressurized gas to said gas pressure

chamber sufficient to overcome the biasing force of said biasing means whereby said gas-tight seal is temporarily broken and a burst of gas passes from said gas pressure



chamber through said gas outlet passageway to said applicator; and

a vent passageway communicating from said enlarged portion of said gas outlet passageway to atmosphere.

4,566,442

MASSAGER

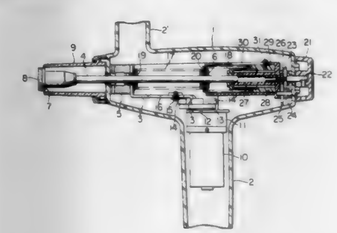
Kenichi Mabuchi, Matsudo, and Masao Yagi, Kashiwa, both of Japan, assignors to Bio Mobuchi Co. Ltd., Japan

Filed Apr. 18, 1983, Ser. No. 486,101

Claims priority, application Japan, Apr. 28, 1982, 57-71724; May 24, 1982, 57-87599

Int. Cl.⁴ A61H *7/00*

U.S. Cl. 128—52 **7 Claims**



1. A massager having a device body, a drive unit housed in said device body, a connecting arm driven by said drive unit, energy storage means comprising at least two compression springs connected in series for storing energy when compressed by said connecting arm driven by said drive unit, energy releasing means for rapidly releasing the energy stored in said energy storage means, an actuator driven by said energy storage means and said energy releasing means, a plate member mounted on said actuator, a space guide mounted on said device body for defining an area through which said plate member can travel, and adjusting means for adjusting the amount of energy stored in said energy storage means, characterized in that said adjusting means is constructed so as to adjust the amount of energy stored in said energy storage means and limit the amount of energy stored in at least one of said springs to a predetermined value, said plate member being caused to move to a location apart from a skin surface essentially in contact with said space guide in a state where energy is stored in said energy storage means, and said plate member hits against said skin surface when the energy thus stored is released by said energy releasing means, whereby patting action is repeatedly effected by said plate member onto the skin surface, said actuator being constructed of a retractable rod member, said adjusting means having a spring compression portion, an intermediate spring seat movable in said body and slidably supported by said rod-shaped actuator and connecting said at least two compression springs in series; one end of said compression springs connected in series being supported by said connecting arm and the other end therof by said spring compressing portion; and said compression springs being adapted to be compressed between said connecting arm and said spring compressing portion of said adjusting means when said connecting arm is driven.

4,566,443

AIR BUBBLE HYDROMASSAGING APPARATUS

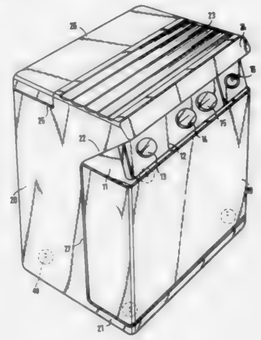
Heinz Bucher, Rottweil, Fed. Rep. of Germany, assignor to Metronic Electronic GmbH, Rottweil, Fed. Rep. of Germany

Filed Feb. 28, 1984, Ser. No. 584,513

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311103

Int. Cl.⁴ A61H *9/00*

U.S. Cl. 128—66 **23 Claims**



1. An air bubble hydromassaging apparatus, comprising a control unit enclosing functional elements comprising a blower, a heater and having control members thereon, and a foldable air bubble grid adapted to be connected by an air hose to the compressed air outlet of said control unit, said air bubble grid having air channels and air jet orifices, all parts of said apparatus when not in use capable of being stored in a single housing, a vertical side wall of said housing being provided with a recessed compartment, said control members of said control unit being located in the upper region of said housing, and said housing having an interior compartment which is accessible from above and is adapted to be closed by a cover, characterized in that said control unit is constructed as a self-contained unit separate from said housing, that said recessed compartment in said vertical side wall of said housing is formed to serve as space into which said control unit is placed, that said control members of said control unit are disposed in said upper region of an exposed panel of said control unit placed in said recessed compartment, that an overhanging portion of the top of said housing extending over said control unit is shaped to form a seat, and that the remaining area of said housing is closed by said cover which covers the compartment for storing said air bubble grid and said air hose.

4,566,444

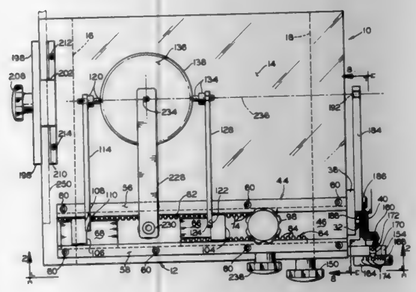
PORTABLE ROENTGENOGRAPHIC CEPHALOSTAT

John L. Spolyar, 2769 Homewood Dr., Troy, Mich. 48098

Filed Dec. 28, 1982, Ser. No. 453,949

Int. Cl.⁴ G03B *41/16*

U.S. Cl. 128—303 B **13 Claims**



1. A portable cephalostat, comprising portable body means, first means defining a non-resilient fixed reference plane of elevation carried by said body means and against which the back of a patient's head is to be directly located, second means for locating first unexposed film at a preselected elevation below the back of the patient's head and said fixed reference plate of elevation, third means for locating second unexposed film to one side of the patient's head when the back of said patient's head is located against said fixed reference plane of elevation and fourth means for guidingly positioning said patient's head along said fixed reference plane of elevation as to thereby have the mid-sagittal plane of said patient's head situated at a preselected distance from said second unexposed film and for determining the elevation above the plane of said first film of the axis of said patient's auditory canals when the mid-sagittal plane of the patient's head is at said preselected distance, wherein said second means comprises reference surface means carried by said body means, wherein said third means comprises support means carried by said body means, wherein said support means is effective to support said second unexposed film in a generally vertical position generally parallel to said mid-sagittal plane, wherein said fourth means comprises first and second arm-like means, first ear canal locating means carried by said first arm-like means and extending generally toward said second arm-like means, second ear canal locating means carried by said second arm-like means and extending generally toward said first arm-like means, said first and second arm-like means being adjustable through an arcuate path of movement simultaneously toward and away from said fixed reference plane of elevation as to enable said first and second ear canal locating means to be at an appropriate elevation with respect to said fixed reference plane of elevation as to enable the respective reception of said first and second ear canal locating means by the auditory canals of the patient's head, wherein said arcuate path of movement is about an axis of rotation, wherein said axis of rotation is parallel to said fixed reference plane of elevation, said first and second arm-like means also being simultaneously movable toward and away from each other as to thereby respectively generally contain and release said patient's head.

4,566,445

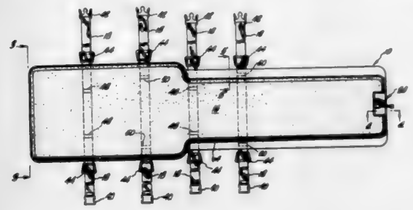
STRETCHER FOR PERSONS WITH SPINAL INJURIES

Richard K. Jeisma, 102 Wampum Rd., Louisville, Ky. 40207; Charles H. Choi, 5279 Kelvin Ave., Apartment 11, Canoga Park, Calif. 91306, and Thomas G. Hynes, 20440 Celtic, Chatsworth, Calif. 91311

Filed Jul. 29, 1983, Ser. No. 518,352

Int. Cl.⁴ A61F *5/00*; A61G *1/00, 13/00*; A47C *19/16*

U.S. Cl. 128—70 **16 Claims**



1. A rigid, portable, radiolucent stretcher suitable for transporting and supporting a traumatized patient and suitable for radiographic examination of a traumatized patient, the stretcher comprising:

(a) an elongated rigid board having a top surface, a substantially flat bottom surface, a torso portion, and a leg portion, the board having a longitudinal centerline and comprising a laminate having a central core of polyimide foam and a skin of graphite reinforced epoxy material, the board having an aluminum equivalency of less than 1 mm;

(b) adjustable straps for holding a patient on the board;

(c) a cushion pad on the top surface of the board, the aluminum equivalency of the pad and board together being less than 1.5 mm;

(d) means for applying traction to a patient and means for securing the traction applying means to the board at the head thereof;

(e) a first set of stops and a second set of stops on the bottom surface of the board, each stop of the first set of stops being separated a first distance from the centerline of the board so the stretcher can sit securely on a first concave surface, each stop of the second set of stops being positioned a second distance from the longitudinal centerline of the board so that the stretcher can sit securely on a second concave surface, the first distance being different from the second distance, and the curvature of the first concave surface being different from the curvature of the second concave surface; and

(f) means for lifting the stretcher.

4,566,446

PENILE PROSTHESIS DEVICE

Terence M. Fogarty, Lakeland, Minn., assignor to Mentor Corporation, Minneapolis, Minn.

Filed Apr. 8, 1983, Ser. No. 483,184

Int. Cl.⁴ A61F *5/00*

U.S. Cl. 128—79 **12 Claims**

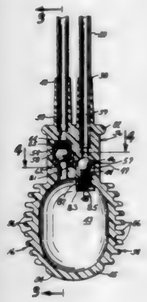
1. A prosthetic penile device comprising:

fluid fillable penile prosthetic means;

a fluid reservoir for storing a fluid;

means for pumping fluid from the reservoir to the prosthetic means including a housing having a longitudinal axis and having a valving section defined along the longitudinal axis for controlling fluid flow between the fluid reservoir and the prosthetic means, the housing of the valving section being made of a flexible deformable material with a fluid supply inlet having a fluid inlet passage fluidly connected to the fluid reservoir and first and second fluid outlets fluidly connected to the prosthetic members, each outlet having a fluid outlet passage, the fluid inlet and the

outlets having check valve means disposed in the fluid passages, the fluid passages of the inlet and outlets being disposed from each other in a substantially triangular configuration in cross-section substantially perpendicular to the longitudinal axis, and a pumping section fluidly communicating with the valving section for pumping the fluid from the reservoir to the prosthetic means, the valving section when in a normal position with the check valve means properly seated permitting fluid flow only from the reservoir, through the pumping section to the



prosthetic means, and when in an inoperable position with the check valve means of the fluid inlet and at least one fluid outlet unseated by deformation of the valving section, permitting fluid to flow back to the reservoir from the prosthetic means through the pumping section and the check valve means;

first conduit means for fluidly connecting the reservoir and the means for pumping; and

second conduit means for fluidly connecting the means for pumping and the prosthetic means.

4,566,447

DROP FOOT CORRECTIVE DEVICE

Bert C. Deis, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 876,298, Feb. 9, 1978, abandoned. This application Jun. 30, 1981, Ser. No. 280,152

Int. Cl.⁴ A61F *3/00*

U.S. Cl. 128—80 E **4 Claims**



1. An apparatus for assisting a person having a footdrop type disability, comprising;

a leg attachment member;

an elastomeric support strap secured to said leg attachment member; and

a shoe with a cooperating means for attaching said support strap to said shoe, said means for attaching further comprising a loop, said loop being secured to said shoe of the wearer at a point generally on the forward portion of said shoe and on the lateral side of said shoe, while the other end of said loop is secured to said elastomeric support strap which, in turn, is secured to said leg attachment means at a point on the lateral side of the wearer's leg so that when said apparatus is worn said strap contracts to raise the wearer's foot during the time said wearer is not forcibly extending said strap by the downward extension of said foot and simultaneously effects eversion when said strap operates to raise said foot.

4,566,448

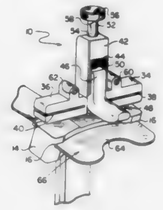
LIGAMENT TENSOR AND DISTAL FEMORAL RESECTOR GUIDE

William L. Rohr, Jr., 1521 Kimberly Woods, El Cajon, Calif. 92020

Filed Mar. 7, 1983, Ser. No. 473,066

Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—92 H **9 Claims**



1. A ligament tensor for tensioning the ligaments in a knee structure during knee surgery, comprising:

a support frame,

first mounting means for mounting said support frame to a tibia;

second means for noninvasively engaging a distal end of a femur and

means interacting between said first mounting means and second means for moving said second means relative to said first mounting means for tensioning the ligaments in said knee structure, said means interacting comprising:

(a) a threaded hole extending through said second means;

(b) a threaded screw threadably extending through said threaded hole and engagable with said first mounting means;

(c) said second means being constrained from rotation about an axis defined by said threaded hole whereby rotation of said threaded screw with respect to said threaded hole in a first direction tensions said ligaments while rotation of said threaded screw with respect to said threaded hole in a second direction contracts said ligaments.

4,566,449

ELEVATED INFANT POSITIONER

Jan E. Smith, 6936 Garden Grove Ave., Reseda, Calif. 91335

Filed Oct. 31, 1983, Ser. No. 547,009

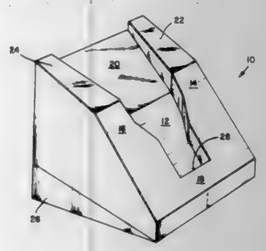
Int. Cl.⁴ A61F *13/00*

U.S. Cl. 129—133 **12 Claims**

1. A device for safely holding and supporting an infant in either a prone or supine position at a given angle relative to the horizontal comprising:

a first member in the form of an inclined plane having a first flat surface at a given angle of substantially 30 degrees and adapted to support an infant,

a second bifurcated member having a U-shaped cross-section in contact with said flat surface and having a thickness adapted to prevent vertical and lateral movement of the infant, and



said first and second member being contstructed of a resilient foam material having a density for supporting and restraining the infant.

4,566,450

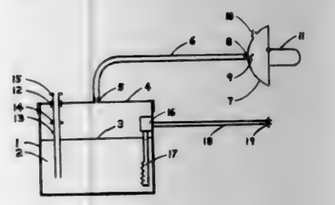
DEVICE TO DISCOURAGE GROWTH OF RESPIRATORY VIRUSES

Harold A. Brossman, Jr., 4249 Kutztown Rd., Temple, Pa. 19560

Filed Feb. 15, 1984, Ser. No. 580,254

Int. Cl.⁴ A61M *15/00*

U.S. Cl. 128—200.11 **1 Claim**



1. An inhalation device for delivering heated and humidified air to a user at an optimum temperature of 108° F. comprising a container for holding a predetermined depth of water, an electric resistance type water heating element mounted in said container below the water level, air-bubbling means in said container, said container having a detachable lid with first and second ports therethrough, said air bubbling means comprising an air intake tube slidably mounted in said first port and having a first end extending above said lid and a second end extending into said container below the water level wherein said air intake tube is adjustable to permit easier inspiration with somewhat less humidification if desired, a breathing tube having a first end attached to said second port and a second end, a cleanable facemask detachably connected to the second end of said breathing tube, said facemask also having inhalation and exhalation valve means for directing the flow of air from said breathing tube, through the facemask and into the surrounding atmosphere, an elastic headband mounted on said facemask for holding the facemask to the head of a user, and thermostat means mounted in said container above the water level for regulating the heater such that air drawn into said container through said air intake tube and bubbled through said water would be delivered to the nose and throat of a user at an optimum temperature of 108° F.

4,566,451

VAPOR INHALATION DEVICE

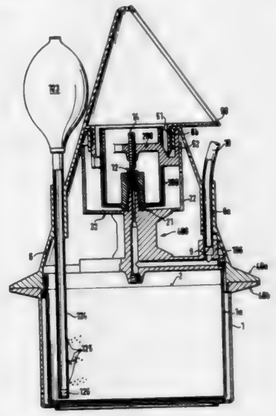
Reinhard Badewien, Veenhusen, Fed. Rep. of Germany, assignor to Plantorgan Werk Heinrich G. E. Christensen KG, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,233

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224849

Int. Cl.⁴ A61M *11/02*

U.S. Cl. 128—200.21 **2 Claims**



1. In a vapor inhalation apparatus including a first container having first means for vaporizing medicated liquid therein and a cover mounted over said first container and having outlet means adapted to communicate with a breathing mask positionable over at least one of the mouth and nose of the user, the improvement comprising:

means associated with said apparatus for enchancing the rate of vaporization of medicated liquid therefrom including conduit means for introducing a gaseous medium under pressure into said apparatus, and second means within said apparatus for atomizing medicated liquid therein and directing it to said outlet means, said atomizing means being in fluid communication with said conduit means,

said atomizing means including a first tubular member having a bore extending therethrough defining a discharge opening situated above the surface level of the medicated liquid in said first container, and a second tubular member cooperating with said first tubular member to define at least one liquid intake opening,

said atomizing means further including a second container having an open upper end mounted on said first tubular member such that said liquid intake opening is adapted to communicate with the bottom interior of said second container,

wherein said second container includes an upwardly axially extending tapered pipe constituting at least a part of said first tubular member, said tapered pipe having said bore formed therethrough and a substantially conical exterior surface in which at least one longitudinal groove is formed which terminates at an upper end of said pipe, said bore of said tapered pipe having one end terminating at the upper end of said pipe and an opposite end in fluid tight communication with said conduit means,

wherein said second tubular member includes a jacket member disposed upon said tapered pipe and having a conical bore formed therethrough complementary with said conical exterior surface of said pipe, said tapered pipe being received in said conical jacket bore such that said at least one longitudinal groove forms a liquid conduit which terminates at the upper end of said pipe, the end of said

liquid conduit proximate to the enlarged end of said tapered pipe constituting said liquid intake opening,

whereby when gaseous medium is introduced through said conduit means into said first tubular member to discharge from said discharge opening, liquid situated within said second container is drawn through said at least one liquid intake opening to be atomized as the gaseous medium is discharged through said discharge opening,

wherein said means for enhancing the vaporization rate of the medicated liquid further comprise baffle means arranged in opposed relationship to said discharge opening,

further comprising a baffle component, and wherein said baffle means are adjustably mounted on said baffle component,

an external jacket skirt member disposed around said jacket member,

a base plate connected to and surrounding said jacket member and extending laterally therefrom, said external jacket skirt member being connected to said base plate, said base plate having openings formed therein communicating with the interior space within said external jacket skirt member and said baffle component being mounted on said external jacket skirt member,

wherein said baffle means are mounted on said baffle component by a threaded connection and wherein said baffle component comprises a sleeve member fixed within said external jacket skirt member by a friction fit.

4,566,452

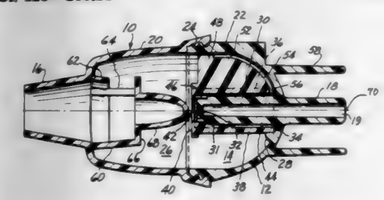
NEBULIZER

James I. Farr, deceased, late of Upland, Calif. (by May S. Farr, administrator), assignor to American Hospital Supply Corporation, Evanston, Ill.

Continuation of Ser. No. 397,669, Jul. 12, 1982, abandoned. This application Aug. 17, 1984, Ser. No. 641,927

Int. Cl.⁴ A61M *16/00*

U.S. Cl. 128—200.21 **14 Claims**



1. A nebulizer for converting liquid into aerosol comprising:

a housing having a liquid reservoir formed by a sidewall of the housing and an outlet opening through which aerosol passes;

a cylindrical spray nozzle within the reservoir having an end wall defining a spray orofice and having a liquid inlet means in communication with the reservoir for introducing liquid inlet means includes an outwardly extending arm attached to the spray nozzle providing liquid passage means for drawing liquid in the reservoir into the liquid inlet means, which liquid passage means is open to the reservoir and extends conformingly, openly along and spaced from at least a portion of the sidewall of the housing;

a cylindrical gas nozzle attached to the housing and positioned within the spray nozzle having gas inlet means for introducing gas and an end wall defining a gas orifice, which gas orifice is spaced from and coaxial with the spray orifice, the spray nozzle and gas nozzle defining a liquid passage therebetween extending from the liquid inlet means to the space between the spray and gas orifices; and

means for preventing the aspiration of air through the liquid passage between the spray nozzle and gas nozzle when liquid is present in the nebulizer reservoir and the nebulizer is oriented in either a vertical position or a horizontal position with the liquid passage means extending radially downwardly, said means for preventing aspiration comprising an annular ring on the sidewall in the reservoir extending circumferentially around the cylindrical spray nozzle and providing a fluid seal between the annular ring and the cylindrical spray nozzle for preventing air from flowing between the annular ring and cylindrical spray nozzle, which annular ring includes a gap which provides a liquid port between the liquid passage means and the liquid passage positioned between the cylindrical spray nozzle and cylindrical gas nozzle.

4,566,453

VASCULAR ANASTOMOSIS APPARATUS

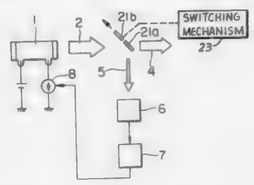
Masafumi Kumano; Ikue Kawashima; Masayuki Hirama, all of Miyagi, and Yasuhiro Tsuji, Saitama, all of Japan, assignors to Tohoku Ricoh Co., Ltd., Miyagi and Chugai Seiyaku Kabushiki Kaisha, Tokyo, both of, Japan

Filed Dec. 8, 1983, Ser. No. 559,207

Claims priority, application Japan, Dec. 23, 1982, 57-224990

Int. Cl.⁴ A61B *17/36*

U.S. Cl. 128—303.1 **4 Claims**



1. A vascular anastomosis apparatus, comprising:

carbon dioxide laser means comprising a gas laser tube for emitting a laser beam from one end thereof, said gas laser tube having longitudinally spaced anode and cathode electrodes therein,

said cathode electrode having a first end relatively proximate to said anode and a seond end relatively remote from said anode, with a needle portion at said first end thereof,

said cathode electrode having a tilt portion adjacent said needle portion, said tilt portion having an electron emission surface the area of which increases with increasing distance from said anode;

optical means for (i) collimating said laser beam emitted from one end of said gas laser tube so as to obtain a collimated operation laser beam having a relatively large beam diameter and for (ii) converging the collimated operation laser beam upon a desired area;

means for emitting a visible guide beam;

optical path control means for spatially synchronizing said collimated operation laser beam and said visible guide beam so that the guide beam illuminates the area upon which the laser beam is converged;

means for extracting from said laser beam a monitor laser beam the intensity of which is dependent upon the intensity of said laser beam; and

laser output controlling means, including a photosensor for detecting the monitor laser beam, for regulating the intensity of the laser beam output of said carbon dioxide laser means,

whereby a blood vessel may be anastomosed with the operation laser beam by converging the collimated operation laser beam on a desired area of said blood vessel.

4,566,454

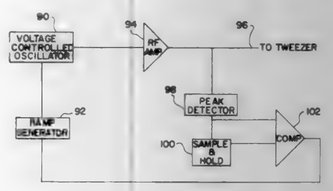
SELECTED FREQUENCY HAIR REMOVAL DEVICE AND METHOD

Thomas L. Mehl, 1961 SW. 56th Ave., Plantation, Fla. 33317, and William S. Burdick, Kissimmee, Fla., assignors to Thomas L. Mehl, Pompano Beach, Fla.

Filed Jun. 16, 1981, Ser. No. 274,270

Int. Cl.⁴ A61B *17/41*

U.S. Cl. 128—303.13 **21 Claims**



1. A hair removal device, comprising:

(a) radio frequency energy applying means for conveying radio frequency energy to a hair for conduction to the hair papilla

(b) radio frequency energy generating means connected to the radio frequency applying means for producing radio frequency energy at a given frequency and voltage, and

(c) radio frequency selection means connected to the radio frequency energy generating means and to the radio frequency applying means for providing a radio frequency scan over a wide range of hair conduction frequencies and finding a frequency at which the impedance of a given hair to transmission of radio frequency energy at that frequency is substantially lower than for the other radio frequencies in that frequency range.

17. A method for removing hair, comprising the steps of:

(a) grasping the hair to be removed at a point adjacent the skin surface with a radio frequency energy transmitting tweezer,

(b) selecting and applying successive radio frequency energy values which are in the range of from 1 to 200 Megahertz to the tweezer for transmission to the hair;

(c) determining the frequency within such range at which the hair impedance is substantially less than for other frequencies,

(d) applying voltage at such frequency through the tweezer to the hair for a period of time, and

(e) removing the hair by withdrawing the tweezer from the skin surface.

4,566,455

SKIN TEMPERATURE CONTROL

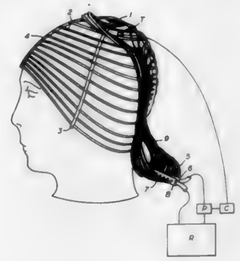
Robert W. Kramer, League City, Tex., assignor to H. Mervin Hughes, II, Houston, Tex.

Filed Mar. 27, 1984, Ser. No. 593,861

Int. Cl.⁴ A61F *7/02*

U.S. Cl. 128—380 **2 Claims**

1. A scalp cover for controlling scalp temperature by means of a liquid coolant circulating within said scalp cover comprising a series of individual, flexible, elastomeric tubes positioned horizontally on top of and around the scalp in a close, spaced apart relationship with regard to each other and in as close a relationship with the skin as permitted by the hair of the scalp, each tube around the scalp being of a length such that it will circle the scalp twice with an intermediate adjusting loop extending from and free of the back of the scalp; each tube on top of the scalp being positioned in a horizontal spiral; one end of all of said tubes being attached to a manifold providing an inlet for incoming liquid coolant and the other end of all of said tubes being attached to a manifold for the outflow of said liquid coolant; said tubes affixed to flexible elastomeric retainer strips positioned at the front, top and each side of the scalp cover to maintain a variable, spaced apart, relationship of the tubes to accomodate varying scalp sizes; the end portions of each tube positioned around the scalp and the corresponding adjusting loop being affixed to a flexible elastomeric retainer at the back



of the scalp cover permitting adjusting and maintaining the circumferential dimension of the tubes around the scalp to accomodate varying scalp sizes.

4,566,456

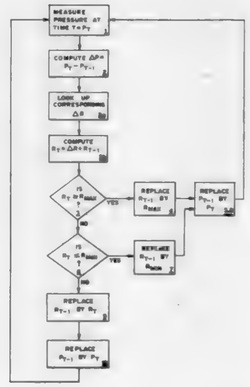
APPARATUS AND METHOD FOR ADJUSTING HEART/PACER RATE RELATIVE TO RIGHT VENTRICULAR SYSTOLIC PRESSURE TO OBTAIN A REQUIRED CARDIAC OUTPUT

Gerrit Koning, Vries, Netherlands, and Edward A. Schroeppel, Miramar, Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Oct. 18, 1984, Ser. No. 662,277

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—419 PG **29 Claims**



1. An apparatus for pacing a heart in accordance with the heart/pacer rate needed to produce a required cardiac output while the person is exercising, comprising:

a pacer adapted to be implanted in a human body and having a pulse generator and control circuitry therein;

a pacing lead adapted to be implanted in a heart and having a distal electrode adapted to engage and supply pacing pulses to a right ventricle of a heart;

pressure sensing means mounted on said pacing lead for sensing right ventricular systolic pressure; and

said control circuitry further including means for relating said sensed right ventricular systolic pressure and/or the time derivative thereof with the required rate needed to supply a desired cardiac output and for causing said pacer to pace the heart at the required rate when the heart is not naturally paced.

4,566,457

DEFIBRILLATOR CIRCUIT AND ELECTRODES THEREFOR

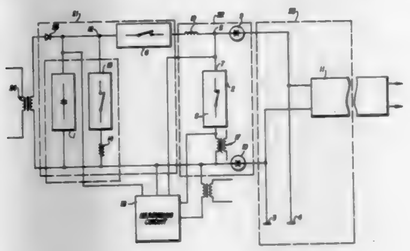
Gunter Stemple, Thorstrasse 13, D-8912 Kanfering, Fed. Rep. of Germany

Continuation of Ser. No. 519,843, Aug. 3, 1983, abandoned. This application Jul. 24, 1985, Ser. No. 757,775

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1982, 3229134

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—419 D **24 Claims**



1. An electrical circuit for generating energy pulses at shock electrodes of a defibrillator, comprising an energy storage means comprising a plurality of capacitors for storing electrical energy, an operating switch between said capacitors and said shock electrodes, said operating switch being closable to discharge the stored energy from the storage means to the shock electrodes in the shock treatment of a patient, a shunt contact means which is connected in parallel with the energy storage means and to a junction on the output side of the operating switch and which is normally closed condition shunts the shock electrodes, means for opening said shunt contact means only for the duration of ths shock treatment, and inductance means, a generator as a power source for said inductance means, said inductance means being connected in series with said shunt contact means, whereby a monitoring voltage signal is produced at said shunt contact means responsive to a high-frequency voltage drop generated at said inductance means, which occurs only when said shunt contact means is closed, and a monitoring means for said monitoring voltage signal.

4,566,458

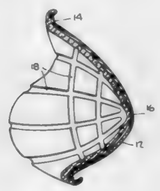
THORAX PROTECTOR

Marc S. Weinberg, 82 Talbot Way, Seekonk, Mass. 02771

Filed Nov. 21, 1983, Ser. No. 553,952

Int. Cl.⁴ A41C *3/10;* **A61F** *13/00;* **A41D** *13/00*

U.S. Cl. 128—478 **12 Claims**



1. A thorax protector which comprises:

rigid cup means anatomically contoured to fit over a corresponding breast of a wearer and having a flange means contoured to follow the curve of the thorax of said wearer for distributing forces directed at said thorax protector along the lines of support of the rib cage of said wearer, the contour of said rigid cup means being arranged so that said flange means, starting at the apex of said flange means and moving to the lateral aspect, crosses diagonally across the pectoral muscle of said wearer, turns downward following the fifth rib to the medial aspect and travels upward parallel to the sternum of said wearer, crossing the fourth and third rib, until said flange means again reaches its apex.

4,566,459

ULTRASONIC DIAGNOSIS SYSTEM

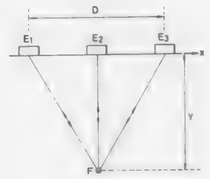
Shinichiro Umemura, Hachioji; Kageyoshi Katakura, Meguro, and Toshio Ogawa, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 14, 1984, Ser. No. 580,166

Claims priority, application Japan, Feb. 14, 1983, 58-23548

Int. Cl.⁴ A61B *10/00*

U.S. Cl. 128—660 **9 Claims**



1. An ultrasonic diagnosis system comprising:

a transducer array having a plurality of transducer elements;

transmitting means for driving said transducer elements so that a pulse-like ultrasonic wave is transmitted from said transducer array to an object;

receiving means for receiving reflection signals from said transducer elements, the reflection signals being indicative of reception at said transducer elements of waves reflected from said object;

signal generating means for generating an adjustable signal representative of an assumed acoustic velocity for said object;

indicating means for indicating the assumed velcoity of said object;

focusing means for delaying respective reflection signals in accordance with a delay amount distribution and for summing the delayed reflection signals, the delay amount distribution being determined in accordance with the assumed acoustic velocity so that a receiving ultrasonic beam of said transducer elements is focused to a predetermined focal point; and

display means for displaying an image of said object by converting an output of said focusing means to a visual signal;

whereby an actual acoustic velocity of said object is indicated by said indicating means when said adjustable signal of said signal generating means is adjusted so that an image of a reflector on said image of said object displayed by said display means has the highest intensity.

4,566,460

MEASURING METHOD AND APPARATUS FOR NON-LINEAR PARAMETER OF ACOUSTIC MEDIUM AND ITS APPLICATION

Takuso Sato, Tokyo; Nobuyuki Ichida, Machida, and Hirohide Miwa, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 8, 1984, Ser. No. 587,522

Claims priority, application Japan, Mar. 10, 1983, 58-39907

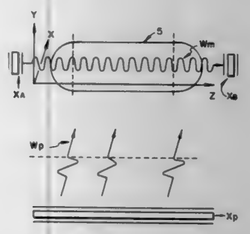
Int. Cl.⁴ A61B *10/00;* **G01N** *29/00*

U.S. Cl. 128—660 **29 Claims**

1. A measuring method for a non-linear parameter of an acoustic medium comprising the steps of:

(A) projecting a probing beam as a probing wave which is a continuous ultrasonic wave propagating through said acoustic medium;

(B) projecting a pumping wave which is an ultrasonic pulse wave propagating through said acoustic medium to interact with said probing wave;



(C) detecting a phase change in said probing wave which is caused by said pumping wave; and

(D) determining the non-linear parameter of said acoustic medium from said phase change by deconvolution.

4,566,461

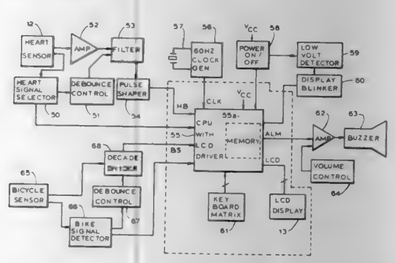
HEALTH FITNESS MONITOR

Michael Lubell, 1504 Jefferson St., and Stephen Marks, 603 Sunderland Rd., both of Teaneck, N.J. 07666

Filed Feb. 15, 1983, Ser. No. 466,671

Int. Cl.⁴ A61B *5/02*

U.S. Cl. 128—668 **17 Claims**



1. In a personal fitness level monitor system for monitoring fitness parameters of an animate subject as a function of heat rate during exercise training, of the type comprising heart beat sensor means worn on said animate subject to sense said subject's heart beat; data entry means for entering selected data peculiar to said subject; display means for displaying said entered selected data and one or more fitness parameters calculated on the basis of said entered selected data and the detected heart beats of said subject; and microprocessor means for storing said entered data and calculations exercise heart rate HRE from said detected heart beats and calculating said one or more fitness parameters based on the entered data and heart rate data, said system including timing means for use in measuring the heart rate of the subject on the basis of said detected heart beats; and indicator means providing an indication to said subject of the level of training exercise; the improvement wherein said fitness parameters include a maximal oxygen uptake parameter VO_{2max} as a fitness index; and said microprocessor means includes:

(1) means for establishing an exercise protocol in which the subject exercises at a first relatively low effort level for a first period, and at progressively higher effort levels for corresponding successive periods, means for continuously measuring the heart rate in said microprocessor means based on said detected heart beat of said subject while the latter is exercising at each of said effort levels according to said protocol;

(2) means for halting the exercise protocol when the exercise heart rate HRE of said subject reaches a maximum heart rate HR_M predetermined from said selected data, and means for storing the maximum heart rate HR_M and elapsed time T from the commencement of said exercise protocol until said maximum heart HR_M rate is attained;

(3) means for calculating and storing said fitness index according to a relationship

$$VO_{2max}=aT+b$$

where a and b are experimentally derived coefficients; and

(4) means for causing said display means to display the calculated fitness index VO_{2max}.

4,566,462

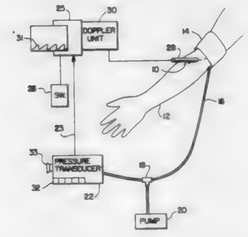
VENOUS PRESSURE MEASURING METHOD AND APPARATUS

Herbert F. Janssen, Shallowater, Tex., assignor to School of Medicine Texas Tech. Univ. Health Servcs. Ctr., Lubbock, Tex.

Filed Nov. 21, 1983, Ser. No. 553,951

Int. Cl.⁴ A61B *5/02, 10/00*

U.S. Cl. 128—677 **8 Claims**



6. An apparatus for measuring substantially constant venous pressure in a human patient comprising

fluid flow sensor means for producing an electrical signal representative of the flow of liquid through a vein when placed adjacent the skin outside of said vein;

means for exerting increasing pressure on said vein to stop liquid flow therein; and

means connected to said means for exerting pressure for measuring and recording the pressure applied by said means for exerting pressure in rsponse to said signal from said sensor means when said flow stops;

said means for exerting pressure being responsive to the measurement of pressure to stop exerting pressure on said vein for a predetermined short interval after the pressure is measured and recorded and to re-exert pressure thereon for making a new measurement.

4,566,463

APPARATUS FOR AUTOMATICALLY MEASURING BLOOD PRESSURE

Satoru Taniguchi, Seto; Hideo Nishibayashi, Kakamigahara, and Masahiro Uemura, Komaki, all of Japan, assignors to Nippon Colin Co., Ltd., Aichi, Japan

Filed Apr. 17, 1984, Ser. No. 601,222

Claims priority, application Japan, Apr. 25, 1983, 58-072678

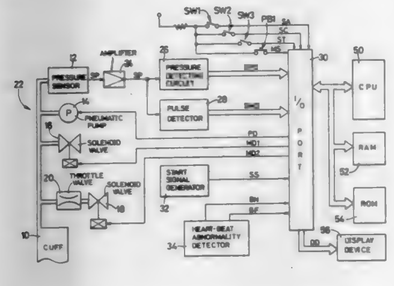
Int. Cl.⁴ A61B *5/02*

U.S. Cl. 128—682 **12 Claims**

1. An apparatus for automatically measuring blood pressure of a living subject, including an occluding device having a cuff for applying a pressure force to a body member of the subject, and blood-pressure determining means for determining the

blood pressure according to a variation in a pulse wave generated at the body member in relation to a change in the pressure force applied thereto by the occluding device, said apparatus comprising:

abnormality detecting means for monitoring a blood circulatory system of said subject for normal functioning thereof, and generating an abnormality signal representing an abnormality associated with said blood circulatory system;



control means, responsive to said abnormality signal, for actuating said occluding device to apply said pressure force to said body member, and causing said blood-pressure determining means to execute a predetermined series of blood-pressure measuring steps to measure the blood pressure, thereby permitting an automatic measurement of the blood pressure of the subject when the blood circulatory system is found abnormal by said abnormality detecting means.

4,566,464

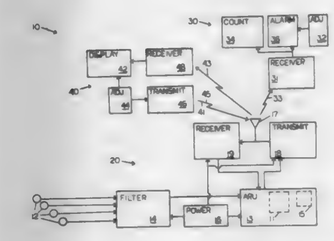
IMPLANTABLE EPILEPSY MONITOR APPARATUS

Vincent A. Piccone; John N. Piccone; Louis A. Piccone, all of 377 Gansvoort Blvd., Staten Island, N.Y. 10314; Robert F. LeVeen, 312 Lombard St., Philadelphia, Pa. 19147, and Eric G. LeVeen, 3-3 Woodlake Rd., Albany, N.Y. 12200

Filed Jul. 27, 1981, Ser. No. 286,851

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—732 **4 Claims**



1. A personal epilepsy seizure warning system comprising an implantable monitor meand adaptable to detect brain potentials indicating the onset of an epileptic seizure at a predetermined sensitivity level, said monitor means further comprising means to transmit an alarm signal when said brain potentials indicating an epileptic seizure are detected, and an external warning means adapted to receive said alarm signal and notify the patient when said alarm signal is received, and further including external program transceiver means adapted to adjust said predetermined sensitivity level.

4,566,465

PROBE WITH VARIABLE GEOMETRY FOR MEASURING THE RADIAL STRAINS IN A SPHINCTER OF A LIVING ORGANISM

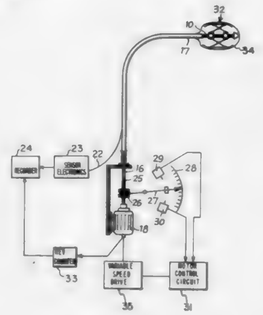
Pierre J. Arhan, Paris, and Marc R. Héro, Pontoise, both of France, assignors to Universite Rene Descartes Paris V, Paris, France

Filed Apr. 6, 1984, Ser. No. 597,535

Claims priority, application France, Apr. 7, 1983, 83 05678

Int. Cl.⁴ A61B *19/00*

U.S. Cl. 128—778 **10 Claims**



1. A probe having a variable width for measuring the radial strain of a sphincter of a living organism, comprising:

a rotatable threaded rod;

at least three pressure sensors;

at least three flat rigid elements each carrying one of said pressure sensors for engaging and for measuring the radial strain of said sphincter of a living organism;

a pair of threaded block elements carried by said threaded rod, said block elements including inner threads such that the blocks move in opposite directions along said threaded rod during rotation thereof;

means for connecting said rigid elements to said block elements such that rotation of said threaded rod causes the distance between said threaded rod and said rigid elements to vary;

motor means for rotating said threaded rod at a constant rate; and

means responsive to said pressure sensors for indicating the radial strain of said sphincter of a living organism.

4,566,466

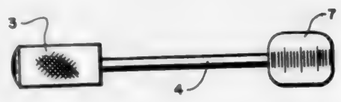
SURGICAL INSTRUMENT

Dale B. Ripple, 1130 Singingbrook Dr., NW., and David W. Smith, 5685 Arlington Ave., NW., both of Massillon, Ohio 44646

Filed Apr. 16, 1984, Ser. No. 600,970

Int. Cl.⁴ A61B *5/10*

U.S. Cl. 128—781 **12 Claims**



1. A set of surgical instruments for sizing a graft to be removed from the iliac crest for insertion into a space between distracted vertebral bodies, each of said instruments including, a template head and handle means for inserting the head into the the space formed between the distracted vertebral bodies, said template head having a generally rectangular configuration formed by a pair of spaced parallel flat surfaces separated a predetermined distance by a generally flat planar outer end surface, an inner end surface, and a pair of flat planar side surfaces connected to the outer end surface by rounded corners to provide a desired thickness for each template head for determining the width of the space between the vertebral bodies with the thickness of the individual template heads varying in thickness with respect to each other to provide a range of template head thicknesses.

9. The set of surgical instruments defined in claim 1 in which the handle means is a cylindrical-shaped member having a knurled outer surface; and in which said handle member is connected to the head by a cylindrical rod.

4,566,467

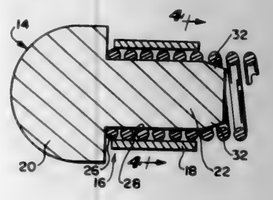
ELECTRICAL CONNECTION BETWEEN COILED LEAD CONDUCTOR AND LEAD TIP ELECTRODE

Abel DeHaan, Pembroke Pines, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Jun. 20, 1984, Ser. No. 622,669

Int. Cl.⁴ A61N *1/04*

U.S. Cl. 128—784 **40 Claims**



1. A method for manufacturing a tip electrode assembly for a pacing lead including the steps of: providing bared end coils of a coiled conductor of the pacing lead; forming a shank of a tip electrode with at least two circumferentially spaced, axially extending sharp edges; positioning the shank of the tip electrode adjacent a distal end of said bared end coils; positioning a conductive sleeve of a transitional, temperature activated, mechanical memory metal material between said distal end of said bared end coils and said shank, said sleeve being formed to have a predetermined initial inner diameter greater than an outer diameter of said coils; positioning said bared end coils around said shank and said sleeve around said bared and coils surrounding said shank; and changing the temperature of said sleeve made of the transitional, temperature activated, mechanical memory material thereby to shrink said sleeve and force said bared end coils into embedded engagement with said sharp edges as the diameter of said sleeve is shrunk to effect radially inward movement of said coils into the shank edges to form a substantially low impedance, oxide-free and gas-tight electrical connection between said coils and said shank.

4,566,468

PROCESS AND SYSTEM FOR MAKING A BLENDED TOBACCO PRODUCT

Leroy R. Sachleben; Kevin R. Korte; Daniel D. Snyder, all of Louisville, Ky., and Terry L. Allen, North Augusta, S.C., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed May 25, 1983, Ser. No. 498,000

Int. Cl.⁴ A24B *15/24, 15/26*

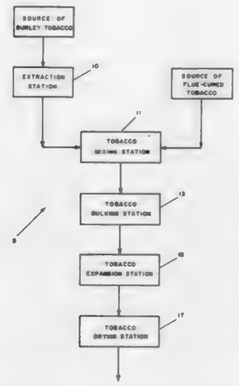
U.S. Cl. 131—297 **34 Claims**

1. A process for making a blended tobacco product of at least two different tobaccos, said process comprising the steps of:

extracting soluble material from a first one of the two different tobaccos by dissolution;

mixing the first tobacco resulting from said extraction step with the second one of the two different tobaccos;

expanding the tobacco mixture resulting from the mixing step; and,



drying the expanded tobacco mixture to a moisture content suitable for a smoking product.

4,566,469

PROCESS FOR DISSIMILATORY DENITRIFICATION OF TOBACCO MATERIALS

Bernard A. Semp, and Daniel M. Teng, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 900,044, Apr. 25, 1978. This application Aug. 13, 1979, Ser. No. 66,273

Int. Cl.⁴ A24B *3/14, 15/02*

U.S. Cl. 131—308 **21 Claims**

1. A process for dissimilatory denitrification of nitrate in tobacco material comprising:

a. inoculating tobacco material with a sufficient amount of a microorganism capable of dissimilatory denitrification to provide an initial concentration of at least 1×10^7 cells per milliliter of said microorganism; and

b. incubating the inoculated tobacco material with agitation under conditions such that nitrate in the tobacco material is reduced to nitrogen gas via dissimilatory denitrification while maintaining a vaccum up to a maximum level of about 500 mm Hg.

4,566,470

TOBACCO LEAF PROCESSING

Warren A. Brackmann, Mississauga, Canada, assignor to Rothmans of Pall Mall Canada Limited, Don Mills, Canada

Filed Oct. 27, 1983, Ser. No. 545,859

Claims priority, application United Kingdom, Oct. 28, 1982, 8230812

Int. Cl.⁴ A24B *3/18*

U.S. Cl. 131—312 **7 Claims**

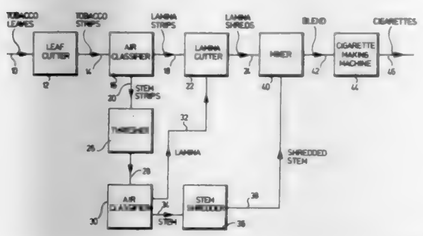
1. A method of processing leaf tobacco, which comprises:

cutting said tobacco leaf into a plurality of tobacco strips;

classifying said plurality of strips into a heavier fraction and a lighter fraction;

threshing said heavier fraction strips to separate stem material from lamina material; and

cutting said lighter fraction strips and said lamina material to form lamina shreds,



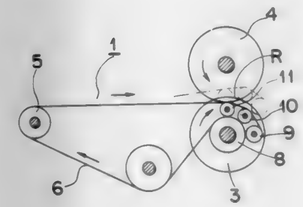
said tobacco leaf being oriented so that the first-mentioned cutting step is effected longitudinally of the leaf.

4,566,471

CUTTING APPARATUS

Takeo Kumasako, Tokyo; Kiyomi Sato, Hiratsuka; Akira Kawakatsu, Hiratsuka; Akinori Sato, Tokyo, and Isamu Mamiya, Tokyo, all of Japan, assignors to The Japan Tobacco & Salt Public Co. and Tokyo Shisetsu Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 12, 1983, Ser. No. 531,369
Claims priority, application Japan, Dec. 24, 1982, 57-225968
Int. Cl.⁴ A24B *3/07*; B26D *7/06, 1/24*; B23D *19/04*
U.S. Cl. 131—317 **10 Claims**



1. A cutting apparatus comprising:

a feed belt conveyer including a plurality of parallel narrow endless belts, said feed belt conveyor having a head section and a tail section;

a pulley provided at said head section;

a plurality of lower rotary cutting blades coaxially mounted on said pulley and having a diameter greater than that of said pulley, each said lower rotary cutting blade projecting from between adjacent narrow endless belts of said feed belt conveyor; and

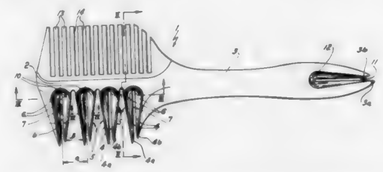
a plurality of upper rotary cutting blades provided above said lower rotary cutting blades, said lower and upper rotary cutting blades defining therebetween an overlap section such that each upper rotary cutting blade partly overlaps a lower rotary cutting blade corresponding thereto, said narrow endless belts of said feed belt conveyor being led to proceed from said pulley at said head section while not passing beyond outfeeding edges of said lower rotary cutting blades and back to said tail section after said narrow endless pass said overlap section.

4,566,472

APPARATUS FOR APPLYING A COLOR MEDIUM TO HAIR

Siegfried Mueller, Bauschengasse 14, and Eberhard Schäfer, Hammerbuehl 23, both of 7737 Bad Duerrheim, Fed. Rep. of Germany

Filed Jun. 1, 1983, Ser. No. 499,929
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221410
Int. Cl.⁴ A45D *24/22*
U.S. Cl. 132—112 **17 Claims**



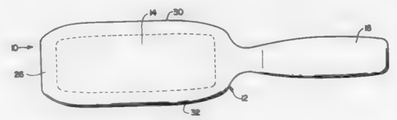
1. A hair coloring apparatus, comprising a color-applying comb having several teeth arranged on a comb back and having gaps which lie between said teeth, wherein said teeth are spaced by relatively large distances from one another, are substantially triangularly shaped in a top view, and taper toward their tips, wherein said gaps are substantially triangularly shaped in a top view and taper toward said comb back, wherein each said tooth has in an enlarged part thereof near said comb back a color chamber which is a recess provided in an upper side surface of said comb, and wherein each said tooth has a narrow slot therein which extends substantially perpendicular to said comb back from the tooth tip into the color chamber, said slot opening through a lower side surface on the opposite side of said comb from said upper side surface.

4,566,473

AIR BAFFLED HAIRBRUSH

Richard M. Hyman, 18 Glendale Ct., Iowa City, Iowa 52240

Filed Apr. 5, 1983, Ser. No. 482,065
Int. Cl.⁴ A45D *24/16*
U.S. Cl. 132—120 **12 Claims**



1. A hairbrush comprising

an elongated rigid brush block having a face surface,

a plurality of bristles mounted on said brush block and projecting outwardly from said face surface,

a pair of elongated air baffles formed on and extending longitudinally of said brush block,

said air baffles being located on adjacent block side edge portion of said face surface in outwardly spaced relation to said bristles and extending from said face surface in outwardly diverging relation to one another and cooperating with said face surface to form a trough extending longitudinally of said brush block for confining and redirecting the flow of air from a separate blow dryer.

4,566,474

CRUTCH

Edmund T. Burke, R.R. #2, Kilworthy, Ontario, Canada (Poeigo)

Filed Apr. 13, 1984, Ser. No. 600,137
Int. Cl.⁴ A61H *3/02*
U.S. Cl. 135—69 **1 Claim**



1. An adjustable crutch generally of the wishbone shape comprising:

(a) a top portion having a pair of spaced vertically extending support members, each support member having two ends, an upper and lower end, said pair of spaced support members being spaced from each other at their upper ends by a horizontally extending underarm rest, the lower end of each support member being spaced from the lower end of the other support member, each support member carrying a plurality of apertures therethrough, aligned with the apertures in the oppositely spaced support member;

(b) a bottom portion having a pair of vertically extending support members, spaced apart at the top of the bottom portion, each support member carrying a plurality of apertures therethrough aligned with the apertures in the oppositely spaced support member, the vertically extending support members converging together towards the bottom to be affixedly joined together in a "Y-shaped" configuration whereby only one of the support members continues down to form the foot of the crutch of the same diameter and material as the one support member, comprising the bottom of the "Y-shaped" configuration;

(c) the top portion and the bottom portion being telescopical with respect to one another so as to permit adjustment of the height of the crutch and permit alignment of the apertures through the support members, and;

(d) a handgrip having means for co-operating with the apertures through the support members whereby the height of the crutch and the position of the handle may be adjusted in a single adjustment of affixedly joining the handgrip between the pair of telescoped members.

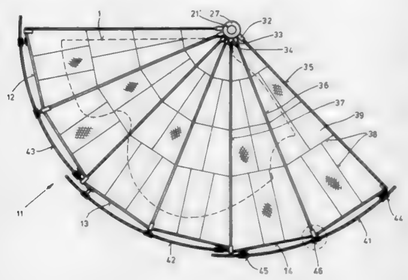
4,566,475

OUTDOOR RECREATION AREA COVER

Josef Wund, Ifenstrasse 12, D-7990 Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 653,875
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334371; Jun. 30, 1984, 3424160
Int. Cl.⁴ E04H *15/26, 15/60*; E04B *1/346*; A47F *5/02*
U.S. Cl. 135—99 **14 Claims**

1. A covering device comprising a pylon support, a plurality of circular segment-shaped cover members having inner apices pivotally supported on said pylon support and outer ends, roller means connected to said cover members at a spaced location from said pylon support and supporting said cover members for rotation around said pylon support, said cover members being foldable one under the other, when contracted, and being spreadable fan-like into an extended position, a support member for each of said cover members rotatably



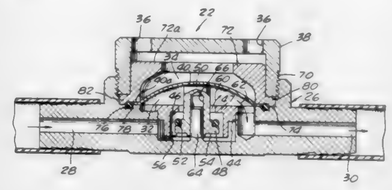
mounted on said pylon and gimbal suspension means for each of said cover members rotatably engaged on said support members.

4,566,476

FLOW CONTROL DEVICE

Merton R. Fallon, Thousand Oaks, Calif., and Thomas Clements, Ambler, Pa., assignors to Draft Systems, Inc., Northridge, Calif.

Filed Mar. 29, 1985, Ser. No. 717,446
Int. Cl.⁴ F16K *17/14*
U.S. Cl. 137—71 **10 Claims**



1. A flow control device for interconnection between a source of pressurized fluid and a container to be pressurized, comprising:

(a) a housing having an inlet adapted to communicate with the source of pressurized fluid and an outlet adapted to communicate with the container, said housing having a pressure chamber in communication with said inlet and said outlet and a vented chamber in communication with atmosphere;

(b) a frangible membrane separating said pressure chamber and said vented chamber, said frangible membrane being adapted to fail when a predetermined pressure is reached within said pressure chamber; and

(c) valve means disposed in said housing in cooperative association with said frangible membrane for blocking the flow of fluid from said inlet into said pressure chamber when said frangible membrane fails.

4,566,477

FLUID FLOW CONTROL APPARATUS

Charles A. Barker, Indianapolis, and Jim L. Rau, Lafayette, both of Ind., assignors to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 361,851, Mar. 25, 1982, abandoned.
This application Oct. 9, 1984, Ser. No. 659,026
Int. Cl.⁴ F15B *13/06*
U.S. Cl. 137—101 **6 Claims**

1. A priority valve for controlling fluid flow from a source

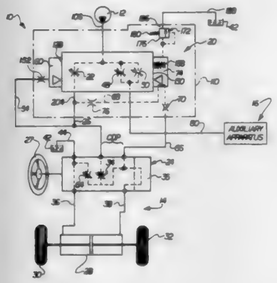
of fluid to a steering circuit and an auxiliary circuit, said priority valve comprising

a housing having an inlet port for connection to a source of fluid, a priority port for connection to a steering circuit, an auxiliary port for connection to an auxiliary circuit, and a pilot port for connection with a pilot flow control means in the steering circuit, the housing also having a plurality of fixed valve surfaces that at least partially define a fluid chamber communicating with said inlet port,

means defining a pilot conduit communicating with said pilot port for directing a pilot flow of fluid thereto,

a valve member disposed and movable in said fluid chamber to control fluid flow between said inlet port and said priority and auxiliary ports, said valve member having a plurality of axially extending lands which cooperate with said fixed valve surfaces to define a plurality of variable size orifices,

said plurality of axially extending lands comprising a first land cooperating with one of said fixed valve surfaces to define a first one of said plurality of variable size orifices communicating with said inlet port and said priority port, a second land cooperating with another of said fixed valve surfaces to define a second one of said plurality of variable size orifices communicating with said inlet port and said auxiliary port, and a third land cooperating with a third one of said plurality of fixed valve surfaces to define a



third one of said plurality of variable size orifices communicating with said inlet port and said auxiliary port and establishing a fluid flow parallel to the fluid flow through said second variable orifice, said second and third lands defining an axially extending circumferential groove in said valve member between said second and third lands that communicates said third variable orifice with said auxiliary port,

means for exposing a first end portion of said valve member to a first fluid pressure,

means for exposing a second end portion of said valve member to a second fluid pressure which is taken from the pilot flow of fluid,

said valve member being movable in a first direction under the influence of a variation in a difference between the first and second fluid pressures to decrease the size of said first variable orifice and to open said second variable orifice, thereby decreasing flow to said priority port and increasing fluid flow to said auxiliary port,

said valve member being movable farther in the first direction under the influence of a further variation in the difference between the first and second fluid pressures to decrease further the size of said first variable orifice, to increase the size of said second variable orifice, and to open said third variable orifice, thereby further decreasing flow to said priority port and increasing flow to said auxiliary port.

4,566,478

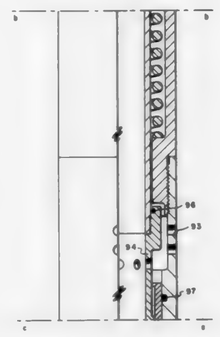
WELL SAFETY AND KILL VALVE

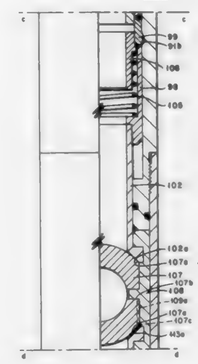
Thomas M. Deaton, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 372,134, Apr. 27, 1982, abandoned. This application May 24, 1984, Ser. No. 613,439

Int. Cl.⁴ F16K *17/00*

U.S. Cl. 137—112 **10 Claims**





1. A valve device for use in tubing above a packer set in casing above a formation in a well comprising:

a. a housing connectable in well tubing and having a longitudinal flow passage therethrough and a flow passage through said housing wall intersecting said longitudinal flow passage;

b. an operator, including an upper operator tube, having a piston thereon, said piston sealingly engaging said housing and forming a variable volume chamber therewith, a lower operator tube connected to said upper operator tube, said operator tubes mounted for longitudinal movement in the housing, and a spring disposed around said upper operator tube in said housing between a shoulder in the housing and said piston;

c. an upper sleeve valve, controlling flow through the wall flow passage between the valve device exterior and the longitudinal flow passage, including a resilient seal in the housing below the wall flow passages, sealingly engaging the lower operator tube and at least one port in the lower operator tube;

d. a lower ball valve controlling flow through the longitudinal flow passage, having upper and lower seats and a valve ball member therebetween, said seats slidably sealed at substantially equal diameters in the housing and sealingly engageable with the valve ball member at seal diameters larger than said equal seat-housing seal diameters; and

e. a releasable lock in said housing, for locking the lower valve closed after upward movement of the operator, closing said lower valve and opening the upper valve, said lock including a profiled recess in the housing, at least one dog pivotally mounted in an extension of the lower valve upper seat and profiled to engage said housing recess, a spring biased dog expander slidably mounted in said upper seat extension, said lock releasable during downward movement of the operator opening said lower valve and closing said upper valve.

4,566,479

SPOOL MEMBER OF A MULTI-WAY-VALVE

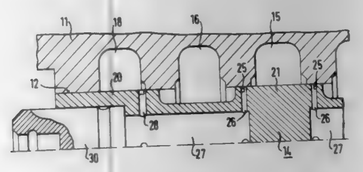
Hermann J. Rotte, Partenstein, and Emil Bögl, Sulz-Hopfau, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Fed. Rep. of Germany

Filed Feb. 29, 1984, Ser. No. 584,715

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1983, 3309065

Int. Cl.⁴ F15B *13/04*

U.S. Cl. 137—312 **2 Claims**



1. A multi-way-valve comprising a valve housing having a bore formed therein intersected by a pressure port, an operating port, and a reservoir port, a valve spool slidably supported within said bore and having a pair of axially spaced lands with an interposed relief for selectively communicating said pressure port with said operating port or said operating port with said reservoir port, the improvement comprising a pair of annular grooves formed in said lands adjacent to said relief, a blind radially extending bore extending through said spool and radially extending passages extending from said annular grooves to said blind bore, said radially extending passages having a substantially greater diameter than the width of said annular grooves.

4,566,480

MEDICAL STOPCOCK VALVE ASSEMBLY

Allan M. Parham, 302 Plantation Dr., New Bern, N.C. 28560

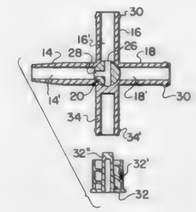
PCT No. PCT/US83/01709, § 371 Date Jun. 14, 1984, § 102(e) Date Jul. 1, 1984, PCT Pub. No. WO84/01805, PCT Pub. Date May 10, 1984

Continuation-in-part of Ser. No. 438,410, Nov. 1, 1982, abandoned. This PCT application Oct. 28, 1983, Ser. No. 648,238

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 137—271 **37 Claims**

1. In a medical stopcock valve assembly of the type including a valve body having formed therein a plurality of fluid ports, an operating member in said valve body for selectively controlling fluid communication through said valve body between said fluid ports, and at least one closure means having engagement means formed for selective engagement with said valve body at at least one of said fluid ports for closure thereof, the improvement comprising blind closure-receiving means formed integrally on said valve body closed to operative communication with said fluid ports and formed for engagement by a stored closure means having engagement means identical to said at least one closure means to receive and retain said stored closure means for storage thereof when not in portclosing use



to prevent loss thereof and to provide ready access thereto for portclosing use when desired.

4,566,481

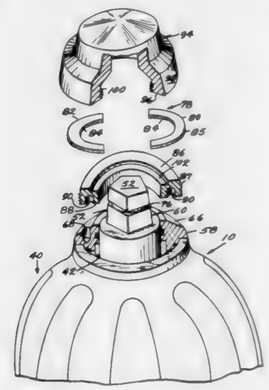
TAMPERPROOF FIRE HYDRANTS

Wilbur R. Leopold, Jr., and Dennis W. Humes, both of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Filed May 22, 1985, Ser. No. 736,830

Int. Cl.⁴ F16K *35/06*; **E03B** *9/06*

U.S. Cl. 137—296 **9 Claims**



1. A tamperproof fire hydrant comprising:

a barrel member having an open end portion;

valve means positioned in the lower portion of said barrel member;

reciprocating valve stem means extending from said valve means upwardly within said barrel member and having a threaded end portion;

a top closure member secured to the open upper end of said barrel member, said top closure member having an aperture therethrough with an inwardly extending shoulder therein and threads positioned outwardly of said shoulder;

a rotatable operating nut having a polygonal end portion projecting out of the aperture of said top closure member, said rotatable operating nut having an exterior flange thereon operatively abutting said shoulder in said aperture of said top closure member, said rotatable operating nut having threads thereon cooperating with the upper threaded end portion of said valve stem means whereby said nut member can be rotated to actuate said valve stem means;

a tubular hold-down nut threaded into said apertured top closure member and operatively abutting said exterior flange of said operating nut to position said operating nut against axial movement, said hold-down nut having a portion extending out of said top closure member, said

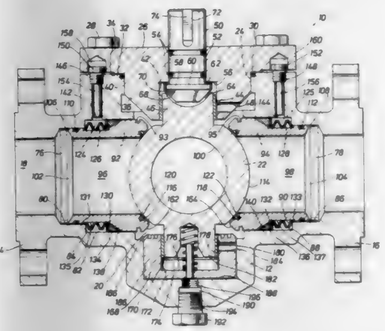
outwardly extending portion having a frusto-conical outwardly facing surface provided with at least two inwardly axially extending and circumferentially spaced holes;
a retaining ring groove extending about said polygonal end portion of said operating nut;
an annular retainer member having an inside diameter sufficient to loosely fit over and rotate relative to said polygonal end portion of said operating nut, said annular retainer member having a bottom face with at least a pair of upwardly axially extending and circumferentially spaced holes, said retainer member further having an external peripheral threaded surface and an upper face with an annular recess extending about an inner periphery thereof;
a retaining means loosely carried in the annular groove on said polygonal upper portion of said operating nut, said retaining means bearing loosely in said recess on said upper face of said retainer member to prevent axial movement of said retainer member outwardly therefrom; and
a dome shaped cap covering the operating nut having a skirt depending downwardly therefrom with an interior threaded surface for cooperating with the exterior threaded surface of said retainer member, said dome shaped cap when threaded onto said retainer member being freely rotatable relative to the polygonal portion of said operating nut with a lower edge of said skirt permitting only limited access to said polygonal end portion, said holes in said hold-down nut and said holes in said retainer member.

4,566,482

TOP ENTRY TRUNNION BALL VALVE

Gerald A. Stunkard, P.O. Box 748, Gladewater, Tex. 75647

Filed Jun. 27, 1985, Ser. No. 749,436
Int. Cl.⁴ F16K *43/00*
U.S. Cl. 137—315 **37 Claims**



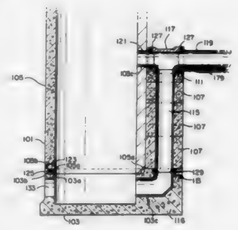
1. A top entry ball valve, comprising:
(a) body means defining a valve chamber and flow passage means intersecting said valve chamber, said body means forming an access passage to said valve chamber oriented substantially transverse to said flow passage means;
(b) bonnet means being removably connected to said body means and forming a sealed closure for said access passage means;
(c) a generally spherical valve member being rotatably supported within said valve chamber and defining a spherical sealing surface and a flow port and being rotatable substantially 90° between the open and closed positions thereof;
(d) a pair of seat members being movably disposed in sealed relation within said body means and having sealing portions thereof in sealing engagement with said spherical surface of said valve member;
(e) means urging said seat members into sealing engagement with said valve member; and
(f) a bearing assembly disposed within said valve body and surrounding at least a portion of said valve member, said bearing assembly comprising seat retractor means disposed within said valve body and being controllably movable into engagement with said seat members, movement of said seat retractor means inducing retraction of said seat members away from said valve member sufficiently that said valve member is clear for insertion into and extraction from said valve chamber through said access passage.

4,566,483

DROP MANHOLE PRECAST ENCASEMENT

Jack Ditcher, Langhorne, Pa., assignor to A-Lok Products, Inc., Tullytown, Pa.

Filed Oct. 15, 1984, Ser. No. 660,650
Int. Cl.⁴ E02D *29/12*
U.S. Cl. 137—372 **14 Claims**



1. A supporting assembly of precast modular sections for use in surrounding and supporting the vertical pipe section in a drop manhole assembly, said vertical pipe section extending between the base of the drop manhole assembly and a supply conduit external to said manhole assembly and along the exterior of the drop manhole assembly for delivering effluent to the interior of said drop manhole assembly base, said supporting assembly comprising:
a plurality of precast modular sections arranged to be stacked one upon the other along the exterior of the manhole assembly;
each of said sections having a substantially U-shaped configuration and having mating means along the upper and lower surfaces thereof wherein the mating means of the lower surface of each section engages and interfits with the mating means of the upper surface of the adjacent section, said mating means cooperating to facilitate initial alignment between stacked sections and prevent the stacked sections from being laterally slidably separated from one another.

4,566,484

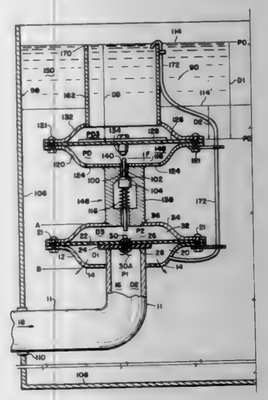
LIQUID LEVEL CONTROL APPARATUS

Daniel Silverman, Tulsa, Okla., assignor to William R. Walters, Cleveland, Okla.

Filed Dec. 28, 1984, Ser. No. 687,578
Int. Cl.⁴ F16K *21/18, 31/128*
U.S. Cl. 137—403 **7 Claims**

1. In a non-float operated, double diaphragm apparatus for controlling the flow of a pressurized liquid from the end of a pipe or conduit into a tank or receptacle open to the atmosphere to maintain a constant given level therein,
(a) first valve means having a first flange on said conduit near its end, and a second flange having an axial opening, clamping a first diaphragm therebetween, said first diaphragm having a first small opening of first selected size through its center, and adapted to close off the end of said conduit except for said first small opening;
(b) a short axial pipe attached and sealed at its first end to said

axial opening in said second flange, and having at least a second small opening of selected second size in its second end; the improvement comprising:
(c) second valve means in said second small opening adapted to be normally closed and opened responsive to a pressure sensitive means which is itself responsive to the hydrostatic pressure in said liquid at the depth of immersion of said pressure sensitive means; and in which
(d) said pressure sensitive means comprises a second diaphragm, spaced above and coaxial with said first diaphragm; said diaphragm clamped between a third lower flange having at least one opening therethrough and a fourth upper flange having an opening therethrough; the lower side of said second diaphragm, exposed to a variable hydrostatic pressure in said liquid in said receptacle plus atmospheric pressure, and the upper side of second diaphragm exposed to atmospheric pressure plus a contained substantially hydrostatic force;
(e) means to maintain said substantially constant hydrostatic force from the flow of said pressurized liquid when said first valve is open to keep second valve open until said hydrostatic pressure on said upper and lower sides of said second diaphragm is substantially equal.



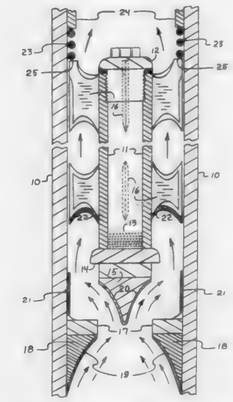
4,566,485

FREE-FLOATING NEUTRALLY-BUOYANT RECIPROCATING PUMP VALVE FOR ABRASIVE FLUIDS

James L. Ruhle, 2535 E. Balfour Ave., Fullerton, Calif. 92631

Filed Nov. 19, 1984, Ser. No. 673,125
Int. Cl.⁴ F16K *15/02*
U.S. Cl. 137—375 **1 Claim**

1. A free-floating neutrally-buoyant reciprocating-pump valve for abrasive fluids comprising:
a cylindrical valve throat which encloses a free-floating valve,
a neutrally-buoyant valve which responds quickly to pressure-gradient reversals in the fluid conveyed through the valve,
a ballast system which allows the buoyancy of the valve to be adjusted so as to correspond with changes in the density of the fluid conveyed through the valve,
a means to guide the valve consisting of a plurality of radial fins which are affixed to the valve, and centralize and guide the valve through the valve throat and directly into the valve seat,
a valve seat, which is affixed to the valve throat,
a hardfaced fluid deflector which is affixed to the valve throat and the valve seat just upstream from the valve seat,
a hardfaced cone-shaped fluid deflector, which is situated just upstream from a sealing surface of the valve,
a hardfaced region in the valve throat which is situated just downstream from the valve seat,



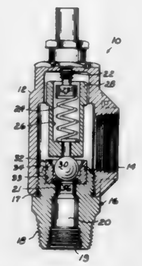
a coil spring and internal shoulder situated inside the valve throat just downstream from the trailing edges of the radial valve fins.

4,566,486

SOFT SEAT FOR SAFETY VALVE

Julian S. Taylor, and Wesley L. Taylor, both of 8300 SW. 8th, Oklahoma City, Okla. 73128

Continuation-in-part of Ser. No. 355,981, Mar. 8, 1982, Pat. No. 4,446,886. This application Mar. 5, 1984, Ser. No. 585,970
Int. Cl.⁴ F16K *17/20*
U.S. Cl. 137—469 **7 Claims**



1. In a relief valve of the poppet-type including a housing having an inlet passageway communicating with an outlet port and having resilient means biasing a valve toward the inlet passageway, the improvement comprising:
a cylindrical seat support having an axial bore therethrough axially disposed in the housing inlet passageway and having a valve huddling chamber in its downstream end portion and a rigid valve seat intermediate its ends facing the valve, the upstream end portion of the seat support having a concentric counterbore defining a cylindrical wall surface on a diameter at least greater than the diameter of the valve housing inlet passageway and terminating in an inwardly and downstream directed frusto-conical surface intersecting the wall forming the axial bore in close spaced relation with respect to the rigid valve seat;
a resilient seal ring having an outer cylindrical surface and a downstream inwardly directed frusto-conical surface

contiguously bonded to the seat support respective upstream counterbored cylindrical and inwardly and downstream directed frusto-conical surfaces, said seal having a first upstream cylindrical inner wall surface diametrically substantially equal with the diameter of the housing inlet passageway and having a second cylindrical inner wall surface spaced downstream from said seal first cylindrical inner wall surface and concentric with and of smaller diameter than the seat support axial bore intersecting downstream the seal outer downstream and inwardly directed frusto-conical surface for forming an annular soft valve seat concentric with said rigid valve seat for sealing with said valve before said valve contacts the rigid valve seat,

the space between said seal first and second cylindrical inner wall surfaces being spanned by an intermediate inwardly and downstream directed frusto-conical surface; and,

means securing said seat support within the valve housing.

4,566,487

CYLINDRICAL PISTON-TYPE SLIDE VALVE FOR PNEUMATIC JIGGING MACHINES

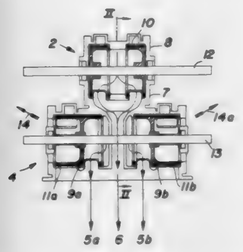
Alexander Lotz, Wetter, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg, Fed. Rep. of Germany

Filed Jan. 8, 1985, Ser. No. 689,651

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1984, 3400659

Int. Cl.⁴ F16K *11/22;* **B03B** *5/20*

U.S. Cl. 137—597 **2 Claims**



1. A rotary valve construction, comprising a housing having a first central upper valve housing portion, a central additional stroke air passage extending from one side of said first central upper valve housing portion, a first rotary piston valve controlling the flow through said central additional air stroke passage located in said first central upper valve housing, a first shaft extending through and rotatably supported in said first central upper valve housing and carrying said first rotary piston valve, a double rotary piston slide housing portion below said first central upper valve housing portion and having two housing parts symmetrically arranged with respect to said first central upper valve housing portion and with a stroke air passage on each side of said central additional stroke air passage, said central additional stroke air passage extending through said double rotary piston slide housing portion between said housing portion between said housing parts, a second and third rotary piston valve in respective ones of said housing parts, a second shaft extending through said valve housing parts and rotatably supported therein and carrying said second and third rotary piston valves for controlling the flow through said stroke air passage on each side of said central additional stroke air passage.

4,566,488

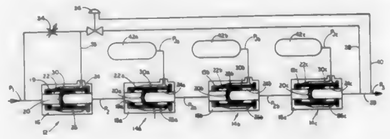
MULTI-STAGE PRESSURE REDUCING SYSTEM

Peter C. M. Chow, Newark, and Walter L. Connolly, Moraga, both of Calif., assignors to Grove Valve and Regulator Company, Oakland, Calif.

Filed Oct. 28, 1980, Ser. No. 201,444

Int. Cl.⁴ G05D *16/16;* **F16K** *7/02*

U.S. Cl. 137—613 **10 Claims**



1. A multi-stage pressure reducing system comprising:

a main pressure-responsive valve in a pipeline conditioned to open progressively in accordance with the extent to which upstream pressure therein overcomes pressure in a main chamber therein;

a load line connecting a source of line-control pressure fluid to said main chamber;

a bleed line connecting said main chamber to a zone of low pressure

a pilot in said bleed line conditioned to enable bleeding from said main chamber through said bleed line to control the level of pressure in said main chamber so as to maintain a pipeline fluid flow characteristic sensed thereby at a desired level, by reducing pressure in said main chamber through increased bleeding when said sensed characteristic indicates a need for increased flow to a location downstream of said main valve and by increasing pressure in said main chamber through reduced bleeding when said sensed flow characteristic indicates a need for decreased flow to said downstream location;

at least one pipeline fluid flow characteristic sensing conductor to said pilot from a selected location in said pipeline;

an auxiliary pressure responsive valve in said pipeline intermediate said main valve and said downstream location, conditioned to open progressively in accordance with the extent to which inlet pressure therein overcomes pressure in a chamber therein; and

a source of gas at a fixed intermediate pressure lower than pressure in said main chamber and uninfluenced by fluid flow characteristics in said pipeline, connected to said auxiliary valve chamber.

4,566,489

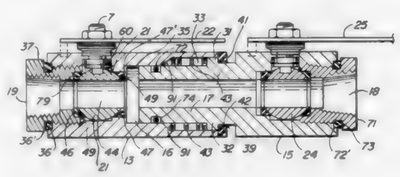
QUICK DISCONNECT COUPLING APPARATUS

Frank W. Knapp, and Caroline M. Knapp, both of Box 289, Mineral Point, Wis. 53565

Filed Mar. 6, 1984, Ser. No. 586,684

Int. Cl.⁴ F16L *37/28*

U.S. Cl. 137—614 **1 Claim**



1. A quick-disconnect high pressure hydraulic coupling assembly for interconnecting first and second hydraulic lines, said coupling assembly comprising:

relatively elongated male and female coupler members each connectable at one end thereof to a different one of said hydraulic lines and each having a longitudinally extending bore defining a passageway through the associated coupler member, each of said bores being of substantially the same diameter except for a cylindrical enlargement adjacent said one end and said female coupler member having a sleeve portion defined by an increased diameter of its bore at the other end thereof,

said male coupler member having a tip portion defined by a reduced outer diameter at the said other end thereof

said sleeve portion being adapted to receive said tip portion of said male coupler member in telescoping engagement with the passageways of the coupler members in alignment defining a fluid passageway through the coupling apparatus,

locking means for retaining said tip portion within said sleeve portion when the male and female coupler members are coupled together, said locking means including a radially outward extending, partially circumferential projection formed on said tip portion and a retainer channel formed in the inner surface of said sleeve portion for receiving said projection and defining a radially inward extending stop surface at said other end of said female coupler member extending partially around the periphery of said sleeve portion, and spring bias means in said channel for urging said projection into engagement with said stop surface when the coupler members are coupled together,

each of said coupler members including fluid flow control means operable between flow permitting and flow preventing positions to control fluid flow through the associated coupler member,

said flow control means for each coupler member including a valve in its associated enlargement operable to interrupt the flow path through the bore of its coupler member when the valve is operated at its flow preventing position, and to complete the flow path through its coupler member when the valve is operated to its flow permitting position, the valve when in flow permitting position defining an unrestricted fluid passageway through its coupler member,

said valve for each coupler member including a ball and two valve seats spaced longitudinally in its associated enlargement,

each of the balls being mutually operable and including a handle located externally of its associated coupler member and removably coupled to the ball located within the coupler member for moving the ball between a flow permitting position in which its bore is aligned with the port of the valve seat and a flow preventing position in which the ball seals off the port, fitting means at each coupler member one end for connecting said apparatus to a hydraulic line threadably connecting to its associated coupler member and having a flow passage extending therethrough of a size at least as large as said bore, said fitting means having one end adjacent said enlargement whereby said ball is readily introduced into said enlargement after removal of said fitting means, and a circular seal interposed between said tip portion and inner surface of said sleeve portion.

4,566,490

DIRECT SOLENOID OPERATED VALVE WITH MINIMAL TOLERANCE ACCUMULATION

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to MAC Valves, Inc., Wixom, Mich.

Filed Nov. 12, 1981, Ser. No. 320,506

Int. Cl.⁴ F15B *13/044*

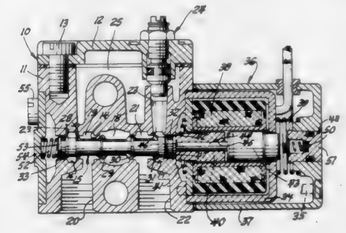
U.S. Cl. 137—625.65 **9 Claims**

1. A directional flow control valve including a valve body having a valve spool bore in which is slidably mounted an elongated valve spool provided with a plurality of annular valve members for sliding sealing engagement with a plurality of lands in said valve bore, and wherein said valve spool is shiftable directly by a solenoid in a short stroke, between a first position and a second position, to control the flow of pressurized air through the valve in one direction and the exhaustion of air through the valve in another direction, characterized in that:

(a) the valve includes means engageable with one end of said valve spool for moving said valve spool to said first position;

(b) a solenoid is mounted on said valve body for direct engagement with said valve spool to move it to said second position, and the solenoid includes a pole piece having one end seated against one end of the valve body adjacent one end of said valve bore, and the tolerances for forming the valve spool lengthwise, and the valve bore through the valve body lengthwise, and the length of the solenoid pole piece and push rod are determined from said one end of the valve body;

(c) the solenoid includes means for resiliently biasing said pole piece to the position seated against the valve body;



(d) the other end of said valve spool is seated against said solenoid pole piece when the valve spool is in said first position;

(e) said solenoid includes an armature movable into shifting engagement with said other end of the pole piece when the solenoid is energized; and,

(f) a pusher rod is movably mounted through an axial bore in said solenoid pole piece, and it has one end in operative engagement with said other end of said valve spool and the other end in engagement with said armature, whereby, when said solenoid is energized, said armature moves the pusher rod and the valve spool through a short stroke, from said first position with the annular valve members in sealing engagement with a first set of said lands to said second position with the annular valve members in sealing engagement with another set of said lands, and when said solenoid is de-energized, said means engageable with said one end of said valve spool moves the valve spool back to the first position.

4,566,491

VALVE ESPECIALLY SUITABLE FOR USE IN FILLING MACHINES

Franco Aiuola, and Paolo Nipoti, both of Bologna, Italy, assignors to Azionaria Costruzioni Macchine Automatiche - A.C.-M.A. - S.p.A., Bologna, Italy

Filed Jan. 18, 1984, Ser. No. 571,776

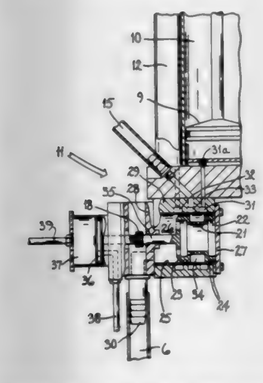
Claims priority, application Italy, Jan. 28, 1983, 3323 A/83

Int. Cl.⁴ G01F *11/04*

U.S. Cl. 137—625.66 **2 Claims**

1. A slide valve suitable for use in controlling the flow of fluid products in volumetric filling machines, comprising a valve slide which slides inside a first closed cylindrical chamber and has a projection which extends through a sealed passage in one of the ends of the cylindrical chamber, the projection being connected to a double-acting piston controlled by fluid under pressure, the double-acting piston sliding inside a second cylindrical chamber separated and sealed from the first,

said valve slide being spool-shaped and having two opposite end shoulders provided peripherally with means for sealing against the internal walls of said first cylindrical chamber in which the slide is slideable, said shoulder delimiting a part of the slide of reduced section which forms a sealed region for the passage of fluid product, said slide being hollow inside and open at either end so as to be internally in direct communication with the first cylindrical chamber, an inlet to the first cylindrical chamber for a product supplied from a supply source, the inlet being located in a position in which it cannot



be blocked by the slide during its displacements, and outlet for the product to delivery apparatus which opens into the sealed region delimited by the shoulders of the slide, and first and second ports for the product, said slide being movable by said piston between first and second positions, in said first position said inlet being in communication with said first port and said reduced section providing communication between said second port and said outlet, and in said second position, said inlet being in communication with said second port and said reduced section providing communication between said first port and said outlet.

4,566,492

FLUID DISTRIBUTING DEVICE, MORE ESPECIALLY FOR REMOTE CONTROL

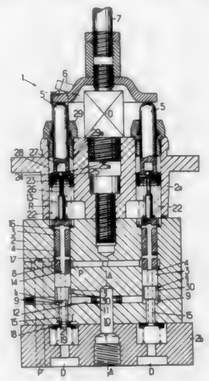
Michel Bessard, Saint-Priest, France, assignor to Rexroth Sigma, Venissieux, France

Filed Feb. 13, 1984, Ser. No. 579,585
Claims priority, application France, Feb. 15, 1983, 83 02397
Int. Cl.⁴ F15B *13/04*
U.S. Cl. 137—636.1 **11 Claims**

1. A fluid distributing device for remote control, comprising a body having bores with parallel axes in which are slidably mounted slide valves associated in pairs symmetrically with respect to an axis of the body, these slide valves being controlled by push-rods actuated by an oscillating cam so as to establish desired communications between a pressurized fluid intake, a low pressure fluid reservoir and an outgoing orifice towards a user device, each slide valve bore comprising a groove connected to the pressurized fluid intake, each slide valve being combined with a chamber limited by at least one transverse annular surface of the slide valve and connected to the reservoir by a constriction,

wherein the device comprises return means (R) for each push-rod (5), adapted for maintaining a first push-rod in permanent abutment against the cam (6) when this cam tends to move away from said push-rod during a driving in movement of a second associated push-rod, the slide valve (4) corresponding to the first push-rod being driven by this first push-rod in its movement,

and wherein each slide valve comprises, on its periphery, towards an end (15) remote from the push-rod, a recess (g) whose arrangement and length are such that before an end of a complete movement of the slide valve (4) when this slide valve is driven by the first push-rod, said recess establishes a connection between the pressurized fluid intake (P,8) and said chamber (9), such that there is a



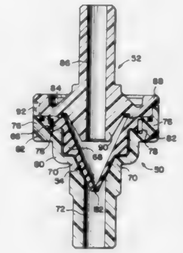
pressure rise of the fluid in this chamber (9) which provides locking of the slide valve (4) and of the first push-rod (5) in a high position and, consequently, locking of the other push-rod and of the corresponding slide valve in a low position.

4,566,493

VALVE ASSEMBLY

Floyd V. Edwards, Cedarville, and Dennis A. Boehmer, Xenia, both of Ohio, assignors to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Feb. 21, 1985, Ser. No. 703,850
The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.
Int. Cl.⁴ F16K *15/14*
U.S. Cl. 137—846 **7 Claims**



1. Valve assembly for use within a flow path for permitting relatively free flow in said flow path in a first direction and for preventing flow in said path in a second, opposite direction, comprising:

a flow regulator constructed as a single piece from a resilient material, said regulator including a pair of lips, each of said lips having a lip base and an outer end;

said lips being arranged in a converging relationship to define for said regulator an open end adjacent said lip bases, and a normally closed end at said lip outer ends whereat said lips are disposed adjacent each other to define a normaly closed slit therebetween, said regulator further including at least one side wall interconnecting said lips and an annular flange extending outwardly at said open end;

a housing outlet portion defining a housing interior approximating the shape of said regulator, said housing interior having a pair of planar surfaces corresponding to said pair of lips, each of said planar surfaces having a planar surface base, said surfaces being arranged in a converging relationship from said planar surface bases toward an outlet end, said housing outlet portion further including an outlet port communicating with said outlet end and an annular collar disposed outwardly adjacent said planar surface bases; and

a housing inlet portion having a cover plate and an inlet port communicating therethrough;

said regulator being disposed within said housing outlet portion with said annular flange contained within said annular collar and said lip outer ends extending toward said outlet end of said housing interior, and with said lips being substantially adjacent to but not in contact with said planar surfaces;

said regulator further including a tab formed on at least one of said lips and extending outwardly therefrom near said lip base;

said housing outlet portion further including a recess formed within at least one of said planar surfaces for receiving said tab therein when said regulator is properly positioned within said outlet portion, and further including at least one first notch defined within said collar whereby said notch may be engaged for proper orientation of said outlet portion for receiving said regulator; and

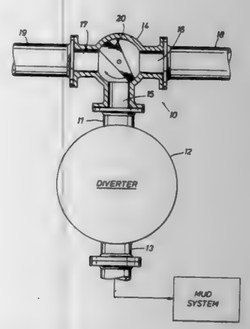
said cover plate being attached to said annular collar for securing said regulator by contact with said flange and for sealing said housing interior.

4,566,494

VENT LINE SYSTEM

Joseph R. Roche, Humble, Tex., assignor to Hydril Company, Los Angeles, Calif.

Continuation of Ser. No. 458,206, Jan. 17, 1983, abandoned. This application Mar. 1, 1985, Ser. No. 707,521
Int. Cl.⁴ E21B *33/035*
U.S. Cl. 137—872 **8 Claims**



1. A diverting system for directing drilling fluid away from a drilling rig in the event of a kick while drilling a well, the system comprising,

a drilling conduit through which the drilling fluid returns to the drilling rig,

an uninterruptible vent line,

a flow diverter means connected to said drilling conduit and to one end of said vent line for directing drilling fluid to said vent line in the event of a kick in the well,

two uninterruptible deflect lines directed in different directions away from the drilling rig, and

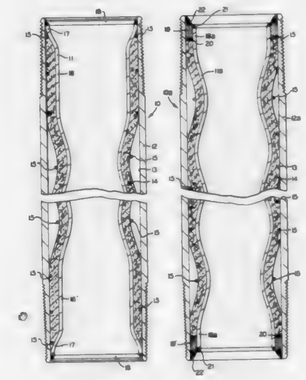
deflecting means connected to one end of each of said two deflect lines and to the other end of said vent line for directing fluid in said vent line to at least one of said two deflect lines while assuring against inadvertent simultaneous closure of said two deflect lines.

4,566,495

CONCENTRIC WALLED CONDUIT FOR A TUBULAR CONDUIT STRING

John R. Baker; David V. Chenoweth, and David M. McStravick, all of Houston, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Continuation of Ser. No. 264,728, May 18, 1981, abandoned. This application Mar. 8, 1984, Ser. No. 587,560
Int. Cl.⁴ F16L *9/18, 59/14*
U.S. Cl. 138—149 **4 Claims**



1. A concentric walled tubular conduit for forming a tubular string in a subterranean well to transport a fluid between the surface and a subterranean producing formation in an oil well, the temperature of the fluid being greater than the surrounding temperature in the well, comprising: an outer tubular member prestressed in compression; an inner tubular member prestressed in tension, and concentrically received within and spaced from the inner periphery of said outer tubular member; means for respectively rigidly securing the ends of said prestressed inner tubular member to said outer tubular member and for transmitting, between said inner and outer tubular members, forces due to differential thermal expansion and contraction along the entire length thereof, thereby reducing the prestress in both the inner and outer tubular members; and insulating material surrounding said inner tubular member, said inner tubular member having at least one of its ends outwardly flared with each end thereof sealably secured to the adjacent end of said outer tubular member, to define a sealed cavity between said tubular members.

4,566,496

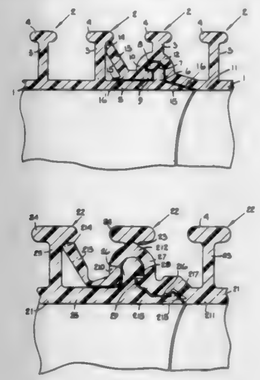
TUBULAR PLASTICS OBJECTS

Stanley W. O. Menzel, San Diego; David E. Mominee, Alpine, and Gilbert W. Vance, Jamul, all of Calif., assignors to J-M Manufacturing Company, Inc., Stockton, Calif.

Continuation of Ser. No. 310,693, Oct. 13, 1981, abandoned. This application May 5, 1983, Ser. No. 491,744
Int. Cl.⁴ F16L *9/16*
U.S. Cl. 138—154 **6 Claims**

1. In a tube comprising an elongated strip having a body portion with two longitudinal edges, the strip being spirally wound to overlap and interlock said two longitudinal edges, a first of said longitudinal edges including a locking rib and a second of said longitudinal edges including a longitudinal socket sized to mechanically receive and engage said locking

rib, the improvement comprising one of said longitudinal edges has a sealing flap extending laterally from said generally parallel to said body portion, said sealing flap being resilient relative to said body portion, said sealing flap having a surface for sealing engagement with the other of said longitudinal edges,



said surface having a locking protuberance extending therealong, the other of said longitudinal edges including a mating surface on said body portion in engagement with said surface of said sealing flap, said mating surface comprising a recess which is shaped to conform to said surface of said flap whereby said tube includes a helically extending, fluid-tight seam.

4,566,497

AIR DISCHARGE DEVICE FOR A WEAVING MACHINE

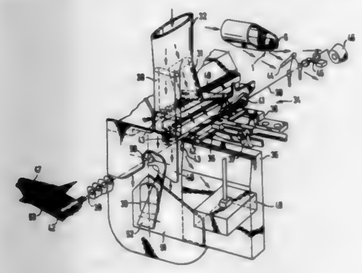
Andreas Schachenmann, Schaffhausen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 27, 1984, Ser. No. 655,211

Claims priority, application European Pat. Off., Oct. 11, 1983, 83110111.8

Int. Cl.⁴ D03J *1/04*

U.S. Cl. 139—1 C **10 Claims**



1. An air discharge device for a work station in a weaving machine, said device comprising

a housing defining a chamber for receiving a flow of compressed air and having a slot communicating with said chamber to discharge a stream of air therefrom; and

a rotatable body for periodically diverting the stream of air discharged from said slot to create periodic unilateral deflections of the stream of air.

4,566,498

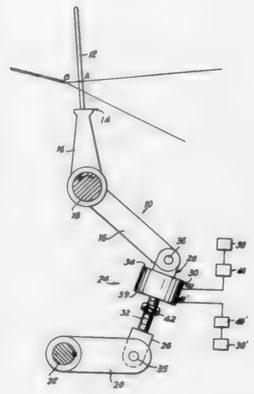
REED CONTROL MECHANISM FOR TERRY LOOM

Gilmer A. Williams, Rte. 5, Box 57, Kannapolis, N.C. 28081, and Douglas Burgess, Rte. 1, Box 278, Woodleaf, N.C. 27054

Continuation of Ser. No. 460,441, Jan. 24, 1983, abandoned. This application Sep. 19, 1984, Ser. No. 652,418

Int. Cl.⁴ D03D *39/22*

U.S. Cl. 139—26 **8 Claims**



1. In a loom for weaving pile-type fabric, an improved reed control mechanism for enabling a reed mounted on a lay beam to perform a multi-pick cycle involving partial beat-up of at least a first pick of weft and full beat up of at least a second pick of weft, said reed control mechanism comprising:

means for imparting reciprocating movement to said lay beam and said reed;

a driving means coupled to said loom; and

a mechanical linkage connecting said driving means to said reciprocating movement imparting means for enabling said driving means to drive said reciprocating movement imparting means, the improvement being characterized in that said mechanical linkage comprises first and second spaced apart elements and a pressure operated control element for maintaining a first spacing between said elements during said first pick of weft and a second spacing between said elements during said second pick of weft, thereby adjusting the terminal point of said reed during reciprocation to enable said partial beat up of at least said first pick and said full beat up of at least said second pick, wherein said pressure operated element is a pneumatic piston-cylinder whose piston-rod is fastened to one of said elements and whose base is fastened to the other of said elements.

4,566,499

JACQUARD MECHANISM

Hiroshi Kitagawa; Masaaki Sato; Mitsumasa Sawai, all of Nagoya; Takeo Yamamoku, Iwakura; Koichi Akatsuka, Tokyo, and Toshio Metoki, Kawasaki, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo and Yamada Dobby Co., Ltd., Aichi, both of, Japan

Filed Nov. 23, 1984, Ser. No. 674,166

Claims priority, application Japan, Nov. 24, 1983, 58-221336

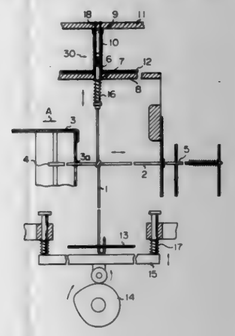
Int. Cl.⁴ D03C *3/20*

U.S. Cl. 139—59 **8 Claims**

1. In a jacquard mechanism for controlling a shedding motion or warps set on a loom, comprising a plurality of axially displaceable dropper needles, each associated with a horizontal needle relating to a group of said warps, and a plurality of solenoid, each corresponding to one of said dropper needles, said control being carried out by selectively energizing said solenoids to hold the corresponding dropper needles by a command from a computer, an improvement comprising,

a printed board on which a circuit for transmission of a command signal from said computer to said solenoids is printed,

solenoids comprising stationary cores, accommodated in housings secured, along with coils, directly on said printed board and disposed at predetermined position along extensions of axes of said dropper needles, and movable cores fixed to ends of said dropper needles closer to said stationary cores;



means for periodically reciprocating all of said dropper needles along each longitudinal axis thereof from a first position where said movable and stationary cores are apart from each other at a predetermined distance to a second position where said movable and stationary cores substantially come into contact with each other;

a guide plate provided with a plurality of holes for stably guiding said movable cores during said reciprocation of said dropper needles; and

means for urging said dropper needle toward said first position for facilitating the return thereto.

4,566,500

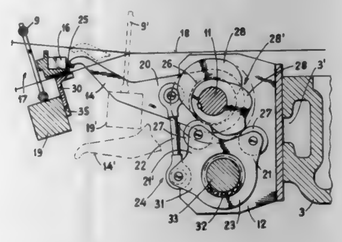
APPARATUS FOR THE CONSTRAINED ACTUATION OF THE CLAMPING SYSTEM OF FILLING-YARN INSERTION DEVICES IN SHUTTLELESS WEAVING MACHINES

Franklin Rodgers, Cham, Switzerland, assignor to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Feb. 6, 1985, Ser. No. 698,858

Int. Cl.⁴ D03D *47/18*

U.S. Cl. 139—446 **8 Claims**



1. In an apparatus employed in a shuttleless weaving machine wherein filling-yarn is inserted by gripper systems which are bilaterally advanced into the shed and then retracted and which are provided with clamping means for the filling-yarn for constrained actuation of the clamping means by control levers controlled by cam means and entering through the warp threads of the shed from the exterior, the improvement which comprises:

pivot means defining a pivot axis for pivotably mounting said control levers at a fixed location below a path of travel of a fabric being woven in the weaving machine;

a control shaft carrying the pivot means and the control levers and extending beneath said path of travel of said fabric and substantially coincident with said pivot axis;

said cam means comprising at least one mutually complementary cam wheel pair mounted on said control shaft in driven relationship thereto;

actuation means comprising at least one double-lever rocker arm, sensing rolls cooperating therewith for operatively following said cam means, and rocking means defining a rocking axis extending substantially parallel to said control shaft for pivotably mounting said at least one double-lever rocker arm;

said cam means and said actuating means conjointly defining a constrained-control cam system; and

linkage means operatively connecting said control levers with said actuation means for pivoting said control levers out of an operative position entering said shed into an idle position beneath a path of motion of a reed stay of a reed of the weaving machine.

4,566,501

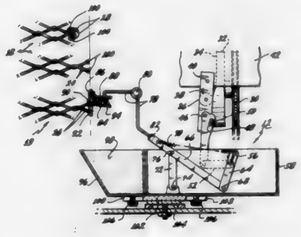
AUTOMATIC END COATING ATTACHMENT FOR A CHAIN LINK WEAVER

Herbert E. Rohrbacher, Whittier, Calif., assignor to Bergandi Manufacturing Co., Inc., South El Monte, Calif.

Continuation of Ser. No. 483,098, Apr. 8, 1983, abandoned. This application May 16, 1985, Ser. No. 734,663

Int. Cl.⁴ B21F *21/00*; **B05C** *1/00*

U.S. Cl. 140—1 **14 Claims**



5. A wire weaver including a coating attachment for dabbing cut ends of chain link formed by the wire weaver with a protective coating, including

coiling means for coiling lengths of wire for weaving into chain link,

weaving means coupled to the coiling means for weaving the lengths of coiled wire together to continuously form the chain link,

cutting means for cutting each length of wire after weaving,

means for mounting the coating attachment at a position adjacent cut ends of chain link after the forming of the chain link by the weaving means,

the coating attachment including,

a receptacle containing a supply of the protective coating,

a dabber member for transferring the protective coating from the receptacle to cut ends of chain link and wherein the dabber member is formed as a plate member,

first means coupled to the dabber member for moving the dabber member between a first position within the receptacle for transferring coating material to the dabber member and a second position in contact with the cut ends for transferring coating material from the dabber member to the cut ends,

the plate member coupled to the first means by a universal

joint to provide for the plate member adjusting in position when in contact with the cut ends, and

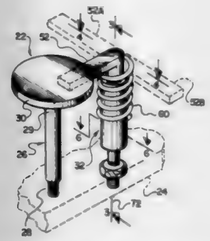
second means coupled to the first means and to a drive mechanism for driving the first means to move the dabber member in synchronism with the forming of the chain link by the wire weaver.

4,566,502

WIRE-GUIDE LATCHING DEVICE FOR A WIRE-HARNESS ASSEMBLY FORM BOARD

James A. Kellogg, Thousand Oaks, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jun. 29, 1984, Ser. No. 626,347
Int. Cl.⁴ B21F *3/00*
U.S. Cl. 140—92.1 **2 Claims**



1. A wire-guide latching assembly for a wire-harness assembly forming board comprising:

a first post having first and second ends, said first end coupled to the board and said second end terminating in a circumferentially disposed laterally extending flange assembly;

a second post assembly having first and second ends, said first end coupled to the board and having an arm rotatably mounted to said second end, said arm having a free end rotatable from a first position, wherein said free end of said arm is in overlapping relationship with said flange assembly, to a second position free of said flange assembly and, further, moveable to a third position in the opposite direction of said second position, also free of said flange assembly;

a detent assembly mounted within said second post assembly releasably holding said arm in said first or third positions; and

spring means having a first end coupled to said second post, and a second end in contact with said arm for biasing said arm to said first position when said arm is moved toward said second position.

4,566,503

APPARATUS AND METHOD OF SETTING UP APPARATUS FOR SHAPING AND TRIMMING THE LEADS OF INTEGRATED COMPONENTS

Martin G. Heller, 68 Harvey Dr., Short Hills, N.J. 07078; Edward Pecha, Fairlawn, N.J.; Douglas Smith, Pompton Lakes, N.J., and Philip Alcock, Morris Plains, N.J., assignors to Martin G. Heller, Short Hills, N.J.

Filed Dec. 13, 1983, Ser. No. 560,846
Int. Cl.⁴ B21F *1/02*
U.S. Cl. 140—140 **27 Claims**

1. Apparatus for processing the leads of dual in-line IC components which includes gravitational feeding of said components from a carrier to a processing station, this gravitational feeding along a path disposed at a slope of at least thirty degrees to the horizontal whereat processing of the leads is performed and after which by gravity these now processed components are fed to an accumulation carrier, said apparatus including:

(a) a base plate in operation disposed at a slope of at least thirty degrees and providing above and below areas;

(b) a variable speed motor carried by said base plate and a pair of driven shafts rotatably mounted so as to be substantially normal to said base plate and rotated by drive means also carried by said base plate;

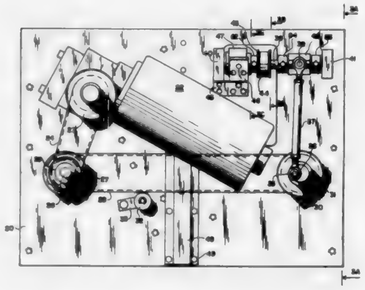
(c) a Pitman arm connected to one of said pair of driven shafts and moved by said drive means and programmed to move a first end in a circular orbital path around an axis of a driven shaft and with the other end of said Pitman arm operably connected to a clutch housing which is moved in a reciprocated manner, said clutch housing operably mounted on a clutch shaft rotatably carried in bearings attached to said base plate;

(d) a one-way clutch carried in and by said clutch housing, this clutch carrying and adapted to rotate said clutch shaft in substantially identical incremental movements and in only a selected direction;

(e) means for rotatably carrying said clutch shaft in a below area of said base plate;

(f) a pivotally mounted feed wheel arm fixedly secured to said clutch shaft and swingably movable around said clutch shaft;

(g) a feed wheel shaft rotatably carried by said pivotally movable arm, said feed wheel shaft disposed in and at the swingable end of the arm, with this shaft carrying a feed wheel on which is a resilient tire attached to the periphery



of said feed wheel, said feed wheel and the attached resilient tire having means to selectively position and secure said feed wheel along said feed wheel shaft;

(h) belt means operatively connected to the clutch shaft and feed wheel shaft and having means for positively rotating said feed wheel in like selected increments, speed and direction so that the resilient tire of the feed wheel when brought into driving engagement with the bodies of the IC components engages only a top portion of the component body to provide a positive advancing and metering means;

(i) a first tube holder which is replaceably and removably carried by the base plate, said holder when secured to the base plate in a position and condition adapted to receive an IC carrier in which the components have like determined center spacing between leads, said first tube holder disposed so that in secured mounted condition like IC components are delivered by gravity to subsequent operations;

(j) a removable infeed slide guide adapted to receive said IC components from a holding carrier and feed said components gravitationally to subsequent operations;

(k) a processing station including die means and means for retaining an IC component in a held-in-place position, said die means including die guide and retaining means removably secured to the above area of the base plate;

(l) a pair of opposed arms each operatively connected to the die means in the processing station and reciprocably moved in said guide and retaining means, each die means moved by one of said shafts and drive means and in timed relationship to the intermittent rotation of the resilient tire on the feed wheel, each arm and connected die means disposed to move to and from said held-in-position IC component;

(m) a removable lower slide guide adapted to receive the processed IC component, this guide carried by the base plate, and

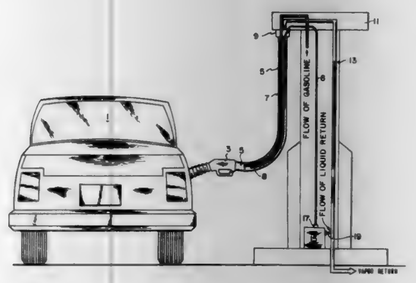
(n) a second tube holder which is removably carried by the base plate, said holder adapted to receive an IC carrier with the processed IC components still retaining their determined lead spacing and length.

4,566,504

INSERTION TUBE LIQUID EVACUATOR SYSTEM FOR VAPOR RECOVERY HOSE

Roger W. Furrow, High Point, and Hal C. Hartsell, Kernersville, both of N.C., assignors to Gilbarco Inc., Greensboro, N.C.

Filed Sep. 15, 1983, Ser. No. 532,290
Int. Cl.⁴ B65B *3/18*
U.S. Cl. 141—59 **7 Claims**



1. In a vapor recovery system for a liquid fuel distribution system, apparatus for evacuating liquid fuel from the vapor path of at least one vapor recovery hose coaxial about a fuel product hose, said vapor path being the space between the product and vapor recovery hoses, comprising:

tubing means for providing a pathway for evacuating fuel from said vapor recovery hose, said tubing means being partially inserted within the vapor path between said vapor recovery hose and fuel product hose, one open end of said tubing means being positioned in an area of said vapor path which tends to be a low point where liquid fuel may accumulate during a refueling operation; and

pumping means having at least one inlet port connected to the other end of said tubing means, and an outlet port connected to a fuel storage tank of said fuel distribution system, for sucking liquid fuel from said vapor recovery hose via said tubing means, and delivering this liquid from said outlet port back into said fuel storage tank, thereby keeping said vapor path of said vapor recovery hose substantially free of liquid fuel accumulations tending to block said vapor path.

4,566,505

PACKAGING MACHINE

Walter Ruf, Sandy, and Robert G. Kelley, South Jordan, both of Utah, assignors to St. Regis Corporation, New York, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,766
Int. Cl.⁴ B65B *3/04*
U.S. Cl. 141—83 **13 Claims**

1. A packaging machine comprising in combination:

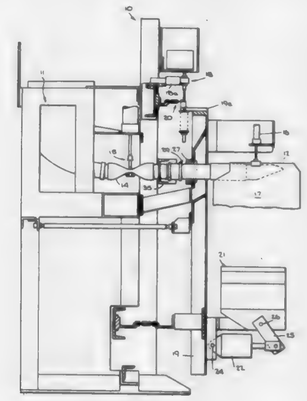
a bin for containing material to be packaged and having material discharge means including a dispensing outlet, conduit means defining a material flow path and a tubular filling spout adapted for introduction into a container to be filled and having a portion adapted to receive said spout;

weighing means for supporting a bag in material receiving position relative to said filling spout;

cut-off means associated with said discharge means and operative when said weighing means records a predetermined gross bag weight to close said discharge means;

adjustable means for isolating forces generated by said cut-off means from said weighing means when said cut-off means are operated to close said discharge means;

an inflatable, tubular sleeve surrounding a portion of said spout and being arranged so that, upon introduction of



said spout into said bag, a portion of said sleeve is also introduced into said bag;

means for introducing fluid under pressure into said sleeve to expand the same and provide a seal between said spout and that portion of the bag surrounding said spout, and to relieve said pressure to deflate said sleeve to permit said spout to be disengaged from the bag; and

reinforcing means at a marginal portion of the upstream end of said sleeve relative to the direction of material flow, thus to prevent that portion of said sleeve from expanding under the influence of pressure introduced into said sleeve.

4,566,506

SYSTEM FOR DISPENSING FLOWABLE FOOD MATERIALS

Clarence W. Cramer, Burlington, and Alfred R. Brewin, III, Moorestown, both of N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Oct. 24, 1984, Ser. No. 664,223
Int. Cl.⁴ B65B *3/04*; B05C *11/00*
U.S. Cl. 141—160 **7 Claims**

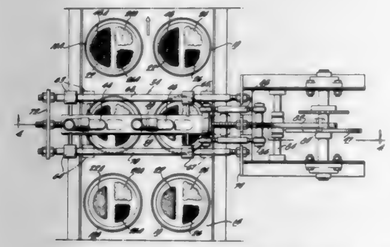
1. In a dispensing system for dispensing a flowable food material from a dispenser onto a predetermined area of a subjacent food container moving on a conveyor beneath said dispenser, said area having non-uniform length dimensions in a direction normal to the direction of motion of said container, the improvement wherein:

said dispenser comprises an adjustable dispensing aperture means and a passageway for receiving said food material and for passing it through said dispenser to said aperture means,

said dispensing aperture means extending substantially directly over the path taken by said area of said container as it is moved by said conveyor, having a maximum length dimension normal to said direction of motion of said con-

tainer which is at least as great as the corresponding maximum dimension of said area, and having a width dimension along said direction of motion which is small compared with the corresponding width dimension of said container area;

movable closure means for said aperture means, controllably movable with respect to said aperture means along a direction transverse to the direction of motion of said food container to vary the length of the portion of said aperture means which is open at any time; and



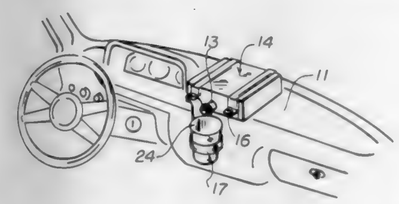
control means responsive to changes in the position of said container with respect to said dispenser for controlling said transverse motion of said movable closure means to change said length of said open portion of said aperture means as a function of said position of said container, so that said material is dispensed through said aperture means over substantially the entirety of said area of said container, but not substantially outside of said area, as said container passes beneath said dispenser.

4,566,507

LIQUID BEVERAGE DISPENSER

George P. Rauchwerger, 147 Cromart Ct., Sunnyvale, Calif. 94087

Filed Feb. 9, 1984, Ser. No. 578,494
Int. Cl.[4] B65B 3/04
U.S. Cl. 141—271 4 Claims



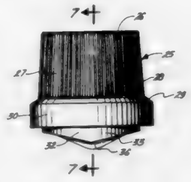
1. In combination, a vehicle dashboard ledge, a top thermal insulating container portion having a bottom surface, a bottom thermal insulating portion having a top surface shaped to fit tightly against said top surface, said portions being internally recessed to form a chamber, a flexible bag within said chamber having a dispenser spout at one end, at least one said portion being formed with a notch through which said spout extends, at least one strap around said portions to detachably secure said portions together, a lug on said strap in proximity to said spout, a cup holder, means pivotally mounting said cup holder on said lug, and attachment means securing said strap to said ledge.

4,566,508

SELF-DRAINING CLOSURE

Edward E. Bowyer, North Vernon, Ind., assignor to Ethyl Molded Products Company, Richmond, Va.

Filed Dec. 17, 1984, Ser. No. 682,088
Int. Cl.[4] B65D 51/24
U.S. Cl. 141—381 2 Claims



1. A closure for a container having a cylindrical neck portion comprising:

(a) a circular top wall portion;

(b) an integral upper sidewall portion depending from said top wall portion and extending above said container neck portion;

(c) an integral lower sidewall portion depending from the lower end of said upper sidewall portion;

(d) mean for coupling said lower sidewall portion to the outside of said neck of said container;

(e) an integral annular collar member depending from said lower end of said upper sidewall portion and extending into the inside of said cylindrical neck portion and spaced away from said inside of said neck portion;

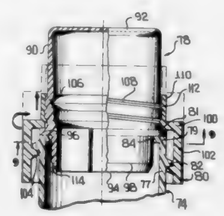
(f) a generally triangular shaped pour lip extension integral with the lower end of said annular collar member and which has a reduced thickness compared thereto.

4,566,509

CLOSURE UNIT INCLUDING MEASURING CUP

John L. Szajna, Norridge, Ill., assignor to Continental Plastic Containers, Inc., Stamford, Conn.

Filed Jul. 9, 1984, Ser. No. 628,940
Int. Cl.[4] B65D 45/30
U.S. Cl. 141—381 7 Claims



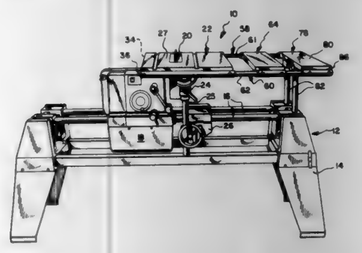
1. A closure unit comprising a measuring cup and a ring member, said measuring cup including a generally cylindrical body having an open end and a bottom, said body being of an external diameter to be received in a neck of a container to be closed by said closure unit, a combined positioning and sealing flange carried by the exterior of said body in sealed relation to said body for engaging in sealed relation a sealing lip of a container to be closed, said flange being disposed adjacent to but positively spaced from said body open end, said ring member including an annular flange and a depending skirt, said annular flange defining an opening receiving said mesuring cup with said annular flange overlying said measuring cup flange for clamping said measuring cup flange against a container sealing lip, and retaining means on said skirt for interlocking engagement with a container neck finish, said body having a sliding close fit within said ring member opening, said body open end being recessed within said skirt when said annular flange is engaged with said measuring cup flange, and said ring member being slidable on said body to a position wherein said body open end projects axially beyond said skirt whereby said ring member in no way interferes with the pouring of a product from said measuring cup.

4,566,510

WORKPIECE SUPPORT SYSTEM FOR A POWER TOOL

Robert L. Bartlett, Dayton; Charles J. Haas, Middletown, and John G. Legler, Huber Heights, all of Ohio, assignors to Shopsmith, Inc., Dayton, Ohio

Filed Nov. 16, 1983, Ser. No. 552,596
Int. Cl.[4] B27C 9/02
U.S. Cl. 144—1 C 7 Claims



6. For use with a multipurpose power tool of the type having a frame, a headstock mounted on the frame, and a power-driven tool member attached to an output shaft of the headstock, a workpiece support system comprising:

a main table adapted to be mounted on a frame;

first rail means attached to opposing longitudinal sides of said main table and having a continuous, hollow interior;

rod means telescoping within said interiors of said first rail means;

an auxiliary table having second rail means attached to longitudinal sides thereof and having a continuous, hollow interior receiving said rod means therein and sized such that said auxiliary table is slidable relative to said main table;

said first and second rail means including first and second pairs of tubular rails, respectively; and rod means including a pair of tubular rods;

locking means including a plurality of capstan screws having shanks displaceably attached to said main and said auxiliary tables and opposite ends extending through adjacent ones of said rails, means for displacing said screws sidewardly and outwardly from said table, said displacing means including a plurality of capstan portions, each attached to one of said screws such that said extensions may be locked against said associated rails to prevent relative movement between said tables and said extensions, or displacing said screws inwardly, thereby releasing said extensions from locking engagement;

said tables including means threadedly engaging said shafts;

a secondary table adapted to be mounted on a frame supporting said main table and having a third pair of rails with continuous, hollow interiors, said rails receiving ends of said rods such that said auxiliary table is supported between said main table and said secondary table;

a second secondary table having a fourth pair of rails; one of said rods being sized to extend through said rails of said secondary tables such that ends thereof protrude outwardly from said rails; and

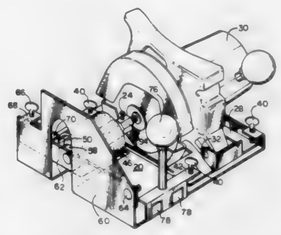
a pair of end sections attached to and extending sidewardly from said ends, a side section attached to and extending between said end sections, and leg means for supporting said end and side sections.

4,566,511

SANDER ATTACHMENT FOR ROTARY POWER SAW

James L. Robinson, 4706 Hazel Ave., Philadelphia, Pa. 19143

Filed May 11, 1984, Ser. No. 609,497
Int. Cl.[4] B27C 9/02
U.S. Cl. 144—1 F 16 Claims



1. An apparatus for attachment to a portable rotary saw of the type having a housing with a motor and means for removably attaching a saw blade to a motor shaft thereof, the saw drive unit also having a platform and means for positioning the motor shaft relative to the platform, the apparatus comprising:

a support plate having clamping means to engage the platform;

an adjustment arm attached to the support plate and movable toward and away from the support plate; and,

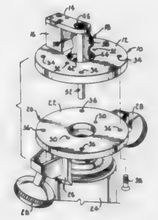
a working wheel mounted on a shaft rotatably fixed to the adjustment arm and engageable at one end to the means for attaching the saw blade, in place of said saw blade.

4,566,512

ROUTER ATTACHMENT

Basil L. R. Wilson, 2860 Porter, Wichita, Kans. 67204

Filed Mar. 11, 1985, Ser. No. 710,029
Int. Cl.[4] B25F 5/00
U.S. Cl. 144—134 D 8 Claims



8. An attachment for a router having a relatively large diameter, circular sole plate provided with positioning holes therein, an electric motor secured to the sole plate and means for releasably coupling a cutting bit to the motor shaft, said attachment comprising:

a circular disc having a pair of parallel, flat surfaces, one of said surfaces being adapted to fit against said router sole plate in close fitting abutting relationship thereagainst, said disc being provided with a central circular aperture extending therethrough, said aperture having a first portion of reduced diameter communicating with the router abutting flat surface, and a second portion of greater diameter than said first portion and concentric therewith communicating with said first portion and with the opposite face of said disc;

a plurality of positioning studs carried by said disc and projecting from said router abutting flat surface, there being a stud for each sole plate hole respectively, the respective

studs being aligned with corresponding alignment holes for holding the disc in concentric alignment with said router sole plate;

means for releasably securing the disc in said close fitting, concentrically aligned abutting relationship against the router sole plate;

an elongated, rigid end element having a circular opening adjacent one end thereof extending through the member;

a massive block of rigid material having a pair of parallel, opposite ends and a width dimension less than the radial distance between the periphery of said aperture second portion and the outer periphery of the disc;

means rigidly securing the block between the disc and the element with one end of the element disposed in flat, abutting relationship against said disc opposite surface and extending between the aperture second portion and the outer periphery of the disc;

means rigidly securing the element to the other end of the block in disposition extending parallel with said disc opposite surface and cantilevered from the block with the element opening disposed in spaced apart, axial alignment with the disc aperture;

bearing means positioned in the element opening; and

an elongated rotatable cutting tool, said tool having an elongated shaft having one end mounted for rotation in said bearing means, the other end of the bit shaft extending through the disc aperture and adapted to be coupled by said coupling means with the shaft of said router for rotation thereby, and a plurality of elongated blades rigidly secured to the bit shaft and projecting radially therefrom, each blade having an outer cutting edge configured to provide an ornamental configuration to an object to be shaped with the attachment, each blade cutting edge partially extending into said second aperture portion of the disc to eliminate the possibility for ridges in the object between the plate and the blade cutting edge.

4,566,513

ARRANGEMENTS IN BARKING MACHINES

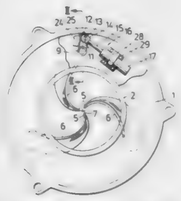
Erik Sundberg, Hofors, Sweden, assignor to Weller Innovation AB, Hofors, Sweden

Filed Aug. 13, 1984, Ser. No. 639,790

Claims priority, application Sweden, Mar. 2, 1984, 84-01178

Int. Cl.⁴ B27L *1/00*

U.S. Cl. 144—208 E **8 Claims**



1. In an improved log barking machine for scraping bark from logs of various sizes and shapes, said machine having a frame, an annular rotor adapted to receive a log therethrough, means mounted on said frame and supporting said rotor for rotation, a plurality of barking tools each carried by an arm, each arm is pivotally mounted on the rotor for generally radial movement, the improvement comprising a gas spring cylinder for each arm biasing the barking tool into contact with the log, said gas spring cylinder having a self-contained supply of pressurized gas, a double acting differential piston and rod located in the cylinder, and a gas passage extending through the cylinder to equalize pressure on opposite sides of the piston to maintain a constant bias on the arm.

4,566,514

PNEUMATIC VEHICLE TIRE

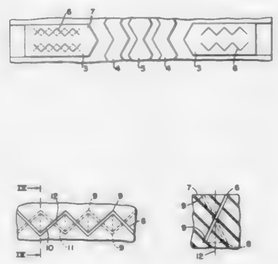
Gerhard Maiik, Wunstorf, and Heinrich Huinink, Garbsen, both of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jul. 6, 1984, Ser. No. 628,349

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1983, 3324649

Int. Cl.⁴ B60C *11/12*

U.S. Cl. 152—209 R **11 Claims**



1. A pneumatic vehicle tire which includes a tread in which are disposed fine slits which are inclined relative to the circumferential direction of said tire, and which are twisted about a twist axis which extends at least approximately radially.

4,566,515

WHEEL AND SOLID TIRE ASSEMBLY HAVING LOCKING RING

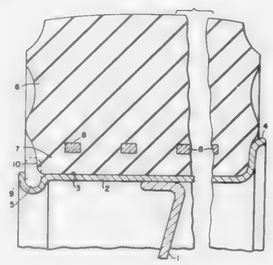
Heinz Kühn, Waldeck, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jan. 18, 1985, Ser. No. 693,008

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1984, 3402811

Int. Cl.⁴ B60C *7/24*

U.S. Cl. 152—402 **5 Claims**



1. A wheel and tire assembly for a vehicle, including a solid tire of rubber or rubber-like synthetic material, and a wheel body which has a rim with at least one edge thereof as well as a seating surface on which said tire can be mounted as well as optionally including a retaining ring therewith if necessary; said at least one edge of said rim being provided with a circumferential groove for selectively and subsequently receiving said retaining ring if necessary in a region over said circumferential groove for holding said tire; said tire being adapted to be mounted on said rim with such a tension that said solid tire can be secured on the latter via diameter prestressing of the material of the tire itself without said retaining ring;

the improvement therewith wherein said solid tire has a base with a predetermined diameter which is adapted to be seated on said rim seating surface, and which has a width of such a dimension that when said retaining ring is omitted, said tire base itself under tension exerted as to tire diameter extends slightly into the region located over said circumferential groove, which would otherwise be occupied by said retaining ring so that said solid tire is held by the width thereof under tension along with diameter prestressing securely positioned on said rim seating surface and securely positioned relative to said circumferential groove.

4,566,516

JOINTED ARM MECHANISM FOR AN AWNING

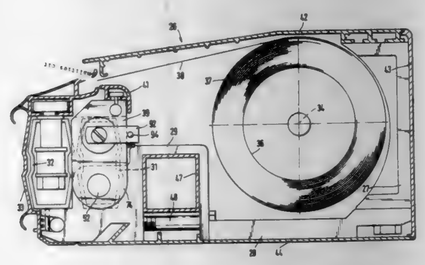
Viktor Lohausen, Goldmühlestrasse 99/2, D-7032 Sindelfingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 469,728, Feb. 25, 1983, abandoned. This application Nov. 21, 1984, Ser. No. 673,913

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3206963

Int. Cl.⁴ E04F *10/06*

U.S. Cl. 160—22 **14 Claims**



1. In a joint arm mechanism for an awning

support means defining

a horizontal tilting axis, and

a horizontal swivel axis;

shaft means for receiving a coil of the awning, said shaft means extending parallel to said tilting axis and being supported by said support means;

bearing block means tiltable from an initial position, in which said awning is fully coiled onto said shaft means, about said horizontal tilting axis, said bearing block means including

joint means defining a pivot axis extending substantially normally to said tilting axis, and

abutment means for limiting the tilting movement which comprises a recessed body;

joint arm means pivoted by said joint means and comprising

a first joint arm section having two ends and being connected to said joint means with one of these ends,

an intermediate joint at the free other end of said first arm section, and

a second joint arm section connected to said intermediate joint;

tilting limiter means for limiting the tilting movement of the bearing block means about said tilting axis, said tilting movement from said initial position of said bearing block means occurring when said awning is uncoiled, said tilting limiter means including

screw means defining a longitudinal axis and being rotatably about said longitudinal axis and swingably supported on said swivel axis, but substantially undisplaceable in axial direction,

actuating means to rotate said screw means through one of their ends which is averted from said bearing block means, and

counter-abutment means on said screw means for engaging said abutment means, said counter-abutment means including a body of rotation generated about said longitudinal axis and being located within the range of the other end of said screw means that faces said bearing block means, said body of rotation having a periphery which fits into the recessed body of said abutment means;

in the initial position, said abutment means and counter-abutment means being out of engagement and said counter-abutment means being directed towards said abutment means.

4,566,517

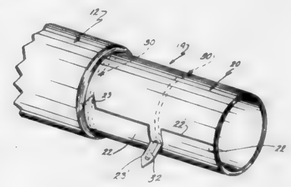
WINDOW SHADE ROLLER WITH MANUAL SEVERING MEANS

Terry L. Simon, Goshen, Ind., assignor to The Breneman Company, Norcross, Ga.

Filed Mar. 28, 1983, Ser. No. 479,838

Int. Cl.⁴ E06B *9/20*

U.S. Cl. 160—263 **11 Claims**



1. A tubular roller for window shades, comprising: an elongated cylindrically-shaped roller member; means at each end of said roller member for suspending it between a pair of spaced mounts; said roller member having an integrated and unitary internal structure which provides sufficient beam strength to support both said roller member and an elongated sheet of window shade material coiled around the roller member without substantially bowing or drooping; said integrated and unitary internal structure consisting of on the order of about six wraps of sheet material wound upon themselves and adhesively secured together to substantially prevent relative slippage between the adjacent surfaces of successive wraps, said sheet material forming said adhered wraps having the structural characteristics of 90-to-120 pound test Stress Kraft including non-directional tearability and a sheet thickness on the order of about 0.010 inch, said adhered wraps constituting integrated laminar supports which together provide substantially all of the beam strength of said roller required to substantially prevent bowing or drooping medially of the roller when the latter has a window shade wound thereupon and is suspended from its opposite ends.

4,566,518

METHOD OF HEAT RETENTION IN A BLIND RISER

Jun Kawamura, Nikko, and Sakuzo Fukano, Tokyo, both of Japan, assignors to Aikoh Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1983, Ser. No. 531,048

Int. Cl.⁴ B22D *27/04*

U.S. Cl. 164—53 **4 Claims**

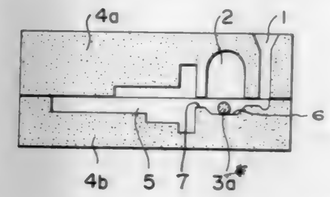
1. The method of heat retention in a blind riser in a metal casting method by using a cope and drag sand mould having a blind riser and a mould cavity, comprising the steps of:

loosely placing a briquette-like exothermic moulded composition in the drag below the blind riser in the cope;

said exothermic moulded composition having a bulk specific gravity less than that of the molten metal of the casting method; creating a holding cavity in the drag below the blind riser in the cope;

said exothermic moulded composition being of a size larger than a gate between the holding cavity and the mould cavity to preclude escape of the exothermic moulded composition from the blind riser; and

thereafter introducing molten metal into the mould cavity to contact the exothermic moulded composition and cause it to float up into the blind riser to generate an exothermic



reaction, thereby increasing the heat retention of the melt in the blind riser and the feeding effect of the melt into the mould cavity.

4,566,519

METHOD OF MAKING A CONNECTING ROD

Keisuke Ban, and Yasuo Ohashi, both of Fujimi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

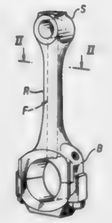
Filed Dec. 2, 1982, Ser. No. 446,360

Claims priority, application Japan, Dec. 2, 1981, 56-194134

The portion of the term of this patent subsequent to Aug. 13, 2002, has been disclaimed.

Int. Cl.⁴ B22D *18/02, 19/14*

U.S. Cl. 164—97 **5 Claims**



1. A method of making a connecting rod for an internal combustion engine, the rod having a smaller annular end portion, a larger end portion, and a rod portion therebetween, the rod portion having a longitudinal axis, the method comprising the steps of:

shaping a bundle of inorganic reinforcing fibers; placing the bundle in a mold, the mold having cavities to form the annular end portions and a rod portion having a circular cross-section, the bundle being placed along the longitudinal axis of the rod portion cavity, the mold being sized such that there is a predetermined near uniform annular gap between the bundle and the cavity wall for the rod portion; squeeze casting a molten light metal alloy into the mold, forming a matrix annular layer of the alloy around the bundle in said gap; machining the matrix annular layer to a predetermined shape thereby removing a predetermined machining allowance from the rod portion.

4,566,520

METHOD AND APPARATUS FOR REMOVING A CASTING FROM A SANDBOX

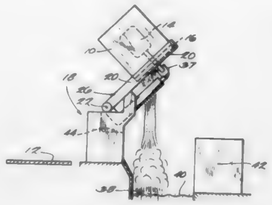
Robert C. Shebuski, Hubertus, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 15, 1984, Ser. No. 621,204

Int. Cl.⁴ B22D *29/00*

U.S. Cl. 164—131 **9 Claims**

1. A method for removing a casting from a sandbox, the method comprising the steps of rotating a sandbox including therein a casting embedded in sand so as to dump the sand from the sandbox, holding the casting while the sand is being dumped so as to maintain a substantially stationary relationship



between the casting and the sandbox, and removing the casting from the sandbox after a portion of the sand has been dumped.

4,566,521

MOULDING APPARATUS FOR MAKING GAS HARDENED SAND MOULD

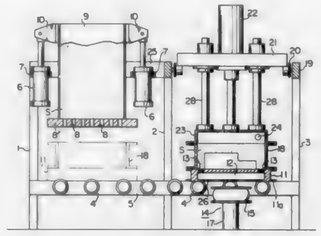
Nagato Uzaki, Toyohashi; Toshihisa Komori, Toyokawa; Kazuharu Matui, Toyokawa, and Shigehiro Toyoda, Toyokawa, all of Japan, assignors to Sintokogio Ltd., Nagoya, Japan

Filed Sep. 17, 1982, Ser. No. 419,306

Claims priority, application Japan, Sep. 28, 1981, 56-154542

Int. Cl.⁴ B22C *9/12, 15/22*

U.S. Cl. 164—160.1 **1 Claim**



1. A moulding apparatus for making gas hardened sand moulds comprising:

a pattern plate having an upper wall on which a pattern is placeable and having a plurality of vent holes therein, a bottom wall, a peripheral side wall and at least one flange, said upper wall, side wall and bottom wall defining a hollow chamber having means connectible to a source of vacuum,

a hollow flask having an open upper end, an open lower end, and a peripheral side wall, said flask being releasably laid on the upper wall of said pattern plate and, when laid thereon, forming an enclosure with a closed side wall periphery around a pattern placed on said pattern plate with the upper end of said enclosure open,

conveyor means for reciprocally and horizontally moving said pattern plate with said flask so laid thereon between a first position for filling moulding sand into said flask surrounding a pattern on said pattern plate and a second position for hardening the filled moulding sand,

means for clamping said pattern plate in said second position for preventing upward movement of said pattern plate, said means for clamping comprising a stopper disposed above said pattern plate flange and at least a pneumatic spring for urging said pattern plate upward such that the upper face of said pattern plate flange forcibly engages said stopper,

hopper means for providing moulding sand disposed above said flask at said first position and having a top open to the atmosphere and a bottom plate with a surface large enough to close said upper open end of said flask, said bottom plate having a plurality of through holes for discharging moulding sand contained in said hopper means into said hollow flask through said flask end and fill said flask without pressure above atmospheric pressure being applied to said hopper means and said sand therein,

means for reciprocally and vertically moving said hopper means relative to said flask,

a rigid cover member disposed above said flask at said second position and being releasably and sealably layable upon said open upper end of said flask, said cover member having an open bottom, a closed top and defining with said flask when sealably laid thereon a chamber for receiving hardening gas, and means on said cover member connectible to a source of hardening gas, and

means for reciprocally and vertically moving said cover member relative to said flask for sealably laying said open bottom of said cover member over said upper open end of said flask;

whereby, when said pattern plate with said flask so laid thereon are in said first position, moulding sand can be filled from said hopper means and drawn into said flask solely by vacuum by lowering the hopper means onto the flask and applying a vacuum to said hollow chamber to pull the sand down into and fill the flask and compact the sand without application of additional pressure to the sand and, when said pattern plate with said flask so laid thereon and with said sand therein are in said second position, the hardening gas can penetrate the moulding sand solely by vacuum by lowering the cover member to seal said open upper end of said flask and applying a vacuum to said hollow chamber to draw hardening gas down through the sand.

4,566,522

HOT CHAMBER DIE CASTING MACHINE

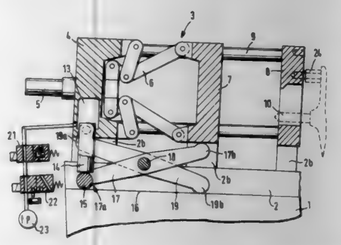
Roland Fink, Winterbach, and Walter Klingenstein, Urbach-Nord, both of Fed. Rep. of Germany, assignors to Oskar Frech GmbH and Co., Fed. Rep. of Germany

Continuation of Ser. No. 263,063, May 13, 1981, abandoned. This application Nov. 28, 1983, Ser. No. 555,446

Claims priority, application Fed. Rep. of Germany, May 13, 1980, 3018288

Int. Cl.⁴ B22D *17/04, 17/26*

U.S. Cl. 164—316 **21 Claims**



1. A hot chamber die casting machine for processing molten metals, the machine comprising

machine frame means, and a mold closing means mounted on the machine frame means and having a crosshead,

a control piston means slidable with respect to the crosshead,

a mold mounting table means displaceable with respect to said machine frame means,

a scissors-type linkage means arranged below the closing means for adjusting a position of the mold closing means relative to the machine frame means,

the scissors-type linkage means comprising at least a pair of levers, each of which is a two armed lever,

means for pivotally connecting the levers to each other arranged in a center area of each of the levers,

one arm of a first of the levers mounted at the crosshead with the second arm of the first lever resting on a guide surface means of the machine frame means,

one arm of a second of the levers being arranged so as to be acted upon by said control piston means, with the second arm of said second lever resting against a bottom surface of said displaceable mold mounting table, and

drive means for spreading the scissors-type linkage means so as to enable an adjustment of the mold closing means.

4,566,523

ADJUSTABLE SLIDING MOLD FOR MULTIPLE-STRAND CASTING DEVICES

Gert Vaubel, Warburg, Fed. Rep. of Germany, assignor to Benteler-Werke AG Werk Neuhaus, Paderborn, Fed. Rep. of Germany

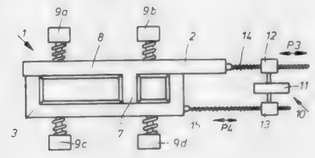
Filed Jun. 3, 1983, Ser. No. 500,761

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1982, 3224065

The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.

Int. Cl.⁴ B22D *11/00*

U.S. Cl. 164—420 **8 Claims**



1. An adjustable sliding mold for use in continuous casting installations, comprising two angular mold parts slidably engaging each other at two contact surfaces to form an adjustable extrusion channel of a substantially rectangular cross section; one of said two mold parts being formed with at least one arm projecting into said extrusion channel and slidably engaging the opposite mold part at an additional contact surface to subdivide the extrusion channel into a plurality of parallel extrusion passages.

4,566,524

METHOD OF AND APPARATUS FOR CASTING A COMPOUND METAL BAR

E. Henry Chia, and Ronald D. Adams, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Dec. 2, 1982, Ser. No. 446,128

Int. Cl.⁴ B22D *11/00, 19/08*

U.S. Cl. 164—461 **4 Claims**

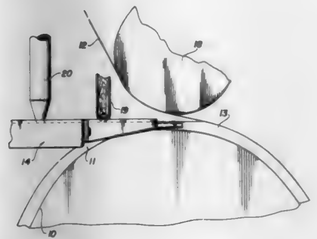
1. A method of continuously casting a compound metal bar having a core metal encased in a clad metal comprising the steps of:

continuously advancing a metal casting mold;

continuously substantially horizontally pouring a first molten metal into said mold from an opening in a side wall of a tundish;

continuously substantially horizontally discharging a second

molten metal into the mold at a point submerged beneath the surface level of the first molten metal; and



continuously solidifying said first and second metals to form said compound metal bar with substantially no oxidation at the interface between two molten metals.

4,566,525

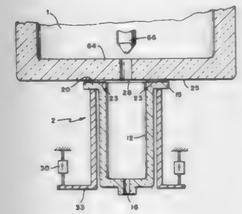
NOZZLE ASSEMBLY

Hsin L. Li, Parsippany; Thomas K. Morris, Cedar Knolls; David B. Seal, North Caldwell, and Edward V. Limoncelli, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 491,471, May 4, 1983, abandoned. This application Feb. 14, 1985, Ser. No. 701,791

Int. Cl.⁴ B22D *11/00*

U.S. Cl. 164—463 **12 Claims**



1. An apparatus for casting continuous metal strip comprising:

(a) nozzle means for extruding molten metal, which has a nozzle body, a nozzle inlet opening, a nozzle exit orifice and a substantially planar nozzle mounting surface located on a nozzle flange proximate to said nozzle inlet;

(b) reservoir means in fluid communication with said nozzle means for containing said molten metal, said reservoir means having a reservoir outlet opening for flowing said molten metal therethrough and having a substantially planar reservoir mounting surface located proximate to said reservoir outlet which is adpated to mate with said nozzle mounting surface and allow a relative, sliding-type movement therebetween due to a differing thermal expansion of said nozzle means relative to said reservoir means;

(c) resilient, heat resistant sealing means located between said nozzle mounting surface and said reservoir mounting surface for minimizing molten metal leakage therebetween;

(d) heater means disposed about said nozzle for heating molten metal contained therein; and

(e) force means for moving said heater means into contact with said nozzle flange and resiliently urging said nozzle mounting surface toward said reservoir mounting surface to mate said nozzle and reservoir means together.

4,566,526

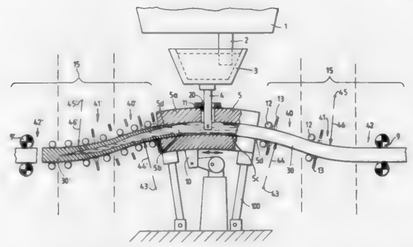
METHOD AND APPARATUS FOR SEMI-HORIZONTAL CONTINUOUS CASTING

Herbert Fastert, Wyckoff, N.J., and Carl Langner, Monsey, N.Y., assignors to Concast, Incorporated, Montvale, N.J.

Filed Sep. 27, 1982, Ser. No. 425,119

Int. Cl.⁴ B22D *11/04*

U.S. Cl. 164—478 **18 Claims**



1. A method of continuously casting metal strands, especially steel strands, comprising the steps of:

introducing molten metal to be cast into an essentially horizontally extending, metallic continuous casting mold through a mold inlet opening at an upper wall of the metallic mold, said metal being introduced in a direction substantially normal to the longitudinal axes of the cast strands;

withdrawing two partially solidified strands from opposite lateral outlet openings of the continuous casting mold;

guiding each of the withdrawn cast strands along two strand guide tracks curved in opposite direction to a level which is lower than the level of the continuous casting mold;

cooling the thus withdrawn cast strands;

thereafter straightening the withdrawn cast strands;

employing as the continuous casting mold a curved continuous casting mold having a predetermined center of curvature; and

said step of guiding each of the withdrawn cast strands includes guiding at least one of the withdrawn cast strands along its strand guide track such that at least a portion of said at least one withdrawn cast strand is curved so as to possess a predetermined center of curvature which is located on an opposite side of said withdrawn cast strand than the location of said predetermined center of curvature of said curved continuous casting mold.

4,566,527

ISOTHERMAL HEAT PIPE SYSTEM

Kynric M. Pell, R.F.D. 2, Soldier Springs Rd., and John E. Nydahl, 1666 Diamond Head Ct., both of Laramie, Wyo. 82070

Filed Sep. 15, 1980, Ser. No. 186,913

Int. Cl.⁴ F28D *13/00*

U.S. Cl. 165—1 **10 Claims**

1. Apparatus for transferring heat from a primary heated fuild isothermally to divers portions of a different medium to be heated, comprising:

container means for containing a volatile liquid in an enclosed chamber;

a volatile liquid in said container means and only partially filling said container means such that a portion of the interior of said container means extends above the surface of said volatile liquid;

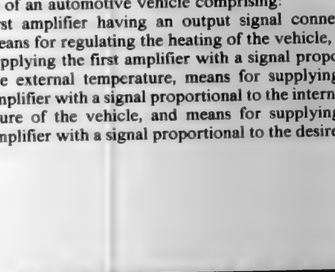
distribution means for distributing vapor of said volatile liquid to divers portions of said medium to be heated, said distribution means including a plurality elongated extensions of said container means connected in fluid-flow relation to and extending outwardly from said portion of said container means above the surface level of said volatile liquid in said container means into divers portions of said medium to be heated in spaced-apart relation to each other in such a manner that there is a continuous downward gradient in each of said extensions from the distal end thereof to said container means; and

heat exchanger means in said container means for transferring heat from the primary heated fluid to the volatile liquid in said container means.

10. The method of transferring heat from a primary heated fluid isothermally to divers portions of a pavement slab to be heated, comprising the steps of:

positioning a container for containing a volatile liquid in an enclosed chamber adjacent to and lower than the pavement to be heated;

placing a volatile liquid in the enclosed chamber of said container in such a manner as to only partially fill said chamber leaving a portion at the top of said chamber unfilled;



positioning a plurality of elongated extensions of said container that are in fluid-flow communication with said portion of said chamber above the surface level of said volatile liquid in dispersed, spaced-apart relation in said pavement to be heated with a continuous downward gradient in each of said extensions from the distal end thereof to said chamber;

circulating said heated primary fluid through a hollow conduit positioned inside said enclosed chamber in close physical contact with said volatile liquid to effect a heat transfer but not a fluid transfer from said primary fluid through said hollow conduit to said volatile fluid sufficient to cause at least a portion of said volatile liquid in said chamber to vaporize; and

allowing the vapor to migrate from any portion of said container into any of said extensions as determined by the differential pressure gradients therein.

4,566,528

REGULATOR CIRCUIT FOR VEHICLE AIR CONDITIONER

Theodor Helmle, Ellwangen, and Kurt Weber, Stuttgart, both of Fed. Rep. of Germany, assignors to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co KG, Stuttgart, Fed. Rep. of Germany

Filed May 3, 1984, Ser. No. 606,577

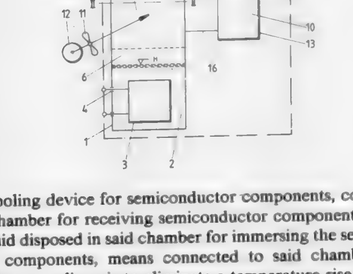
Claims priority, application Fed. Rep. of Germany, May 3, 1983, 3316060

Int. Cl.⁴ F25B *29/00*

U.S. Cl. 165—26 **14 Claims**

1. A regulator circuit for controlling the cooling and heating system of an automotive vehicle comprising:

a first amplifier having an output signal connected to a means for regulating the heating of the vehicle, means for supplying the first amplifier with a signal proportional to the external temperature, means for supplying the first amplifier with a signal proportional to the internal temperature of the vehicle, and means for supplying the first amplifier with a signal proportional to the desired temperature for the vehicle, a second amplifier having an output signal connected to a means for regulating the cooling of the vehicle, means for supplying an input of the second



amplifier with the output signal of the first amplifier, and means for supplying the input of the second amplifier with a signal proportional to the external temperature of the vehicle.

4,566,529

COOLING DEVICE, IN WHICH CONVERTERS OR RECTIFIERS OR OTHER SEMICONDUCTOR COMPONENTS ARE IMMERSED IN BOILING LIQUOR

Erwin Klein, Heddesheim, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Sep. 29, 1983, Ser. No. 537,354

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236612

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 165—32 **5 Claims**

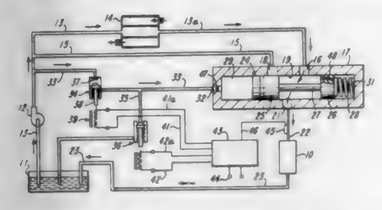
1. Cooling device for semiconductor components, comprising a chamber for receiving semiconductor components, boiling liquid disposed in said chamber for immersing the semiconductor components, means connected to said chamber for supplying a cooling air to eliminate a temperature rise of said boiling liquid and to remove a maximum power loss at a normal maximum ambient temperature, a thermal energy accumulator connected to said chamber, and means for switching off said cooling air supply means and means for switching on said thermal energy accumulator if the ambient temperature of the cooling air rises.

4,566,530

PRESSURE OPERATED SHUTTLE VALVE

Richmond A. Gooden, Kettering, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed May 11, 1983, Ser. No. 493,568
Int. Cl.⁴ F28F *27/02*
U.S. Cl. 165—36 **5 Claims**



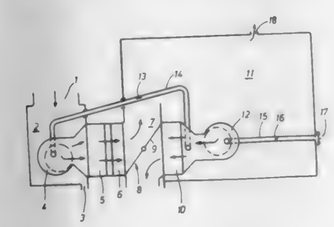
1. In a fluid circulating system including fluid conducting lines a pump, a reservoir, a heat producing component, a heat exchanger and a valve body, said pump circulating fluid through said fluid conducting lines from the reservoir through the heat exchanger and the valve body and the heat producing component and back to the reservoir respectively and the system providing another parallel fluid conducting line leading in by-passing relation to said heat exchanger, said valve body having a plurality of fluid inlets receiving fluid respectively from said fluid conducting lines and said another parallel line and a common fluid outlet, a spool type valve slidable longitudinally in said body and variably positionable therein to control the flow of fluid from said inlets to said outlet, said valve at its one end defining with an end of said body an interior pressure chamber, the pressure in which is applied in a direction to urge said spool valve in one direction, means for diverting a portion of the circulated fluid to said pressure chamber, resilient means urging said spool valve in the opposite direction, and means responding to a changing temperature of the fluid exiting said outlet to admit the said directed portion of circulated fluid to said pressure chamber and separately and non-simultaneously to connect said pressure chamber to said reservoir.

4,566,531

VEHICLE AIR CONDITIONING ARRANGEMENT

Albert Stolz, Tübingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 5, 1983, Ser. No. 539,139
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237275
Int. Cl.⁴ B60H *1/12*; F25B *29/00*
U.S. Cl. 165—42 **17 Claims**



1. A system for heating a utility space such as a passenger space of a vehicle, the system comprising:

air inlet means for conducting fresh incoming air from a first source of air to the utility space,

air outlet means for conducting outgoing air from the utility space to the outside atmosphere,

a heat exchanger unit disposed in the air inlet means and connected to a cycle that exchanges heat with an engine of the vehicle,

a compression-type air-conditioning unit including an evaporator unit disposed in the air outlet means, a condensor unit disposed in the air inlet means to lie upstream of the heat exchanger unit to aid selectively the heating of the fresh incoming air, and refrigeration line means for transferring heat from the evaporator unit to the condensor unit,

recirculatd air pipe means for selectively conducting outgoing utility space air from a point in the air outlet means upstream of the evaporator unit to a point in the air inlet means upstream of the condensor unit and the heat exchanger unit to mix at least a certain portion of the utility space outgoing air with the fresh incoming air to provide an air mixture, and

an air stream directing means disposed intermediate the air outlet means and the air inlet means for separably and selectively directing the air streams from the air outlet means and the air inlet means into the utility space and the atmosphere, said air stream directing means including means for selectively operating the system to operate in at least:

a regular heat condition with the air conditioning unit disabled and the recirculating air pipe means operating so that the air mixture is heated by the heat exchanger unit when the atmospheric temperature outside of the vehicle is low, and

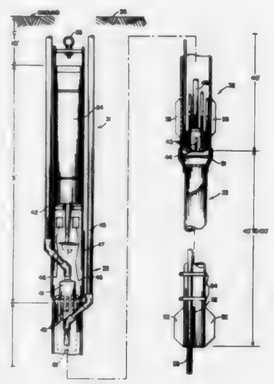
a maximum heat condition with the air conditioning unit operating and the recirculating air pipe means disabled so that only the incoming air is heated sequentially by the condensor unit and the heat exchanger unit when the atmospheric temperature outside of the vehicle is unusually low.

4,566,532

GEOTHERMAL HEAT TRANSFER

Vahan V. Basmajian, Concord, Mass., assignor to Megatech Corporation, Billerica, Mass.

Continuation of Ser. No. 248,964, Mar. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 948,760, Oct. 5, 1978, abandoned. This application Oct. 11, 1983, Ser. No. 540,693
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 165—45 **12 Claims**



1. Geothermal heat transfer apparatus comprising,

heat exchanging means for orientation in the earth below ground substantially vertically and having a hollow conduit of length from top to bottom much greater than the span across said hollow conduit orthogonal to its length having a top portion near said top, bottom portion near said bottom and an intermediate portion contiguous and communicating with said top and bottom portions for allowing thermally conductive fluid to flow freely between said top, intermediate and bottom portions for immersion in thermally conductive fluid in the region around said heat exchanging means for increasing the heat flow between the latter and earth when inserted into a substantially vertical borehole in the earth with said top portion above said bottom portion,

said heat exchanging means comprising heat exchanging conduit means in said intermediate portion for carrying refrigerant,

said heat exchanging conduit means comprising a plurality of tubes of thermally conductive material for carrying said refrigerant and extending along the length of said hollow conduit for a tube length that is less than said length of said hollow conduit.

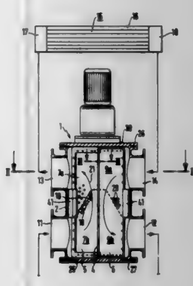
said hollow conduit being formed with port means between said top and said plurality of tubes for allowing said thermally conductive fluid to pass in a flow path embracing said plurality of tubes, said bottom portion, an outer channel around said hollow conduit and said port means.

4,566,533

APPARATUS FOR CLEANING HEAT EXCHANGER PIPES AND METHODS OF OPERATING AN APPARATUS OF THIS TYPE

Rolf Bochinski, Duisburg; Klaiis Eimer, Ratingen; Harald Littek, Essen, and Johannes Nasse, Hattingen, all of Fed. Rep. of Germany, assignors to Taprogge Gesellschaft mbH, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 471,014
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207466
Int. Cl.⁴ F28G *1/12*
U.S. Cl. 165—95 **28 Claims**



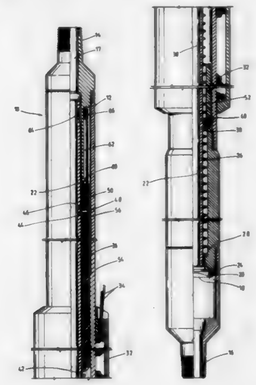
1. An apparatus for cleaning heat exchanger pipes by means of elastic, spherical balls, comprising a vertical cylindrical housing, three rotatable dividing walls radially-extending from a vertical axis and defining three chambers each occupying substantially 120° in said housing, said dividing walls separating said housing into three chambers of substantially equal size each having a given cross-sectional area, a sieve plate disposed substantially horizontally across said dividing walls, said sieve plate dividing said chambers into an upper group of sub-chambers for receiving the balls and a lower group of sub-chambers, a lower cooling water supply connection and a lower cooling water removal connection in communication with said lower group of sub-chambers at opposite locations on said housing, an upper cooling water supply connection and an upper cooling water removal connection being in communication with said upper group of sub-chambers at opposite locations on said housing, and means for communicating said upper connections to the heat exchanger pipes, all of said connections each having substantially said given cross-sectional area, and said connections each having a diameter being less than the length of a chord of the circumference of said housing described by a central angle of at most 60°, whereby one of said sub-chambers of said upper group may be positioned as an idle chamber wherein the balls therein are out of communication with the heat exchanger pipes.

4,566,534

SOLENOID ACTUATED WELL SAFETY VALVE

Walter S. Going, III, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Feb. 1, 1985, Ser. No. 697,544
Int. Cl.⁴ E21B *34/06, 34/16*
U.S. Cl. 166—66.4 **13 Claims**



1. A solenoid actuated well safety valve comprising,

a housing having a bore,

a valve closure member in the bore moving between open and closed positions,

a tubular member telescopically movable in the housing for controlling the movement of the valve closure member,

biasing means acting on said tubular member for moving the tubular member in a direction to close said valve,

an armature movable in the housing,

a solenoid coil positioned adjacent the housing for moving the armature,

first releasable lock means for connecting the armature to the tubular member whereby movement of the armature by the solenoid will open the valve, and said first lock means being released when the valve is opened, and

second releasable lock means for locking the tubular member in the open position prior to the release of the first lock means.

4,566,535

DUAL PACKER APPARATUS AND METHOD

Lawrence Sanford, 4047 Hollister, Houston, Tex. 77080

Filed Sep. 20, 1982, Ser. No. 420,324
Int. Cl.⁴ E21B *23/06, 33/124, 43/00*
U.S. Cl. 166—113 **36 Claims**

1. Dual packer apparatus comprising:

a tubular outer assembly having an inner diameter which varies along its length and comprising

an upper packer,

a lower packer,

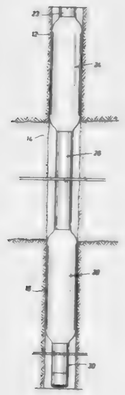
and tubular spacer means interconnecting said upper and

lower packers and longitudinally spacing said packers from each other;

said outer assembly further defining a respective packer set chamber associated with each of said packers for receipt of fluid whereby said packers may be set;

and a tubular inner assembly having an interior throughbore and an exterior periphery, said inner assembly having an outer diameter which varies along its length, said inner assembly being disposed generally coaxially within said outer assembly and interconnected with said outer assembly for relative telescopic movement of said assemblies between a plurality of relative positions, said inner assembly being adapted for coaxial connection to a well conduit whereby fluid may be directed through such well conduit into said interior throughbore, and said inner assembly defining fluid passage means communicating the interior throughbore with the exterior periphery of said inner assembly, and said fluid passage means further being selectively communicatable with said packer set chambers;

and wherein for each of said relative positions, the inner diameter of said outer assembly, at each point along its



length, is greater than the outer diameter of said inner assembly at an adjacent point along its length and all points therebelow.

33. A method of assembling a dual packer apparatus comprising the steps of:

assembling a tubular outer assembly comprising upper and lower packers interconnected and longitudinally spaced apart by tubular spacer means;

supporting said outer assembly on first support means;

assembling a tubular inner assembly, through which said packers may be inflated, separately from said outer assembly;

supporting said inner assembly on second support means as assembled;

lowering said inner assembly generally coaxially into said outer assembly as assembled;

interconnecting said inner and outer assemblies after the entirety of said inner assembly has been so lowered;

and releasing said first support means and supporting said interconnected inner and outer assemblies on said second support means.

4,566,536

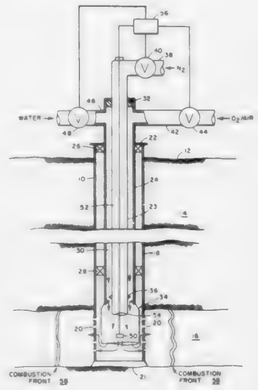
METHOD FOR OPERATING AN INJECTION WELL IN AN IN-SITU COMBUSTION OIL RECOVERY USING OXYGEN

Billy G. Holmes, Lancaster, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 553,925, Nov. 21, 1983, abandoned. This application Oct. 29, 1984, Ser. No. 665,869

Int. Cl.⁴ E21B *47/00, 43/243*

U.S. Cl. 166—251 **13 Claims**



1. A method for operating an injection well to control hazardous conditions in an in-situ combustion operation utilizing high concentrations of oxygen for the recovery of oil from a subterranean, oil-containing formation penetrated by at least one injection well and at least one spaced-apart production well comprising the steps of:

(a) completing the injection well with a casing means containing passages throughout a substantial portion of the vertical thickness of the oil-containing formation to allow fluids to flow from the casing means to the oil-containing formation, and dual concentric tubing strings disposed within said casing means comprising an inner tubing and a larger diameter outer tubing the lower ends of which are in fluid communication with the portion of the casing containing passages, said inner tubing forming a first flow path and the inner tubing cooperating with the outer tubing to form a second flow path;

(b) initiating an in-situ combustion front into the formation by injecting air into the portion of the casing containing the passages through one of the flow paths and from there through the passages into the formation;

(c) continuing injection of said air into the formation until the combustion front has been moved a predetermined distance into the formation;

(d) terminating injection of air and injecting oxygen enriched air into the portion of the casing containing the passages through one of the flow paths and from there through the passages into the formation;

(e) simultaneously injecting nitrogen at a predetermined injection rate into the portion of the casing containing passages via the other flow path where it combines with the oxygen enriched air and then flows into the formation through the passages of said casing means;

(f) continuously measuring the bottomhole temperature of the injection well within the casing means in the vicinity of the oil-containing formation and located below the first flow path;

(g) increasing the oxygen concentration of the oxygen enriched air to essentially pure oxygen;

(h) terminating the injection of the oxygen enriched air or essentially pure oxygen through its respective flow path when the bottomhole temperature rises to an upper specific temperature and simultaneously increasing the flow rate of nitrogen through its respective flow path into the formation to a maximum rate; and

(i) continuing injection of nitrogen through its respective flow path at a maximum rate until the bottomhole temperature is lowered to a lower specific temperature.

4,566,537

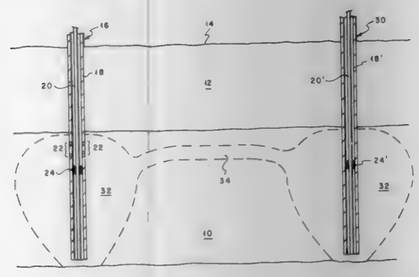
HEAVY OIL RECOVERY

Gene L. Gussis, Plano, Tex., assignor to Atlantic Richfield Co., Los Angeles, Calif.

Filed Sep. 20, 1984, Ser. No. 652,380

Int. Cl.⁴ E21B *43/243*

U.S. Cl. 166—261 **12 Claims**



1. A method for the recovery of viscous, immobile oil from a subsurface formation bearing said oil wherein there are at least two wells completed into said formation comprising:

(a) injecting steam into said formation by way of a first of said wells for a period of time;

(b) ceasing injection of steam by way of said first well;

(c) producing fluids from said formation through said first well, thereby creating voidage in said formation adjacent said first well;

(d) injecting steam into said formation by way of a second of said wells for a period of time;

(e) ceasing injection of steam by way of said second well;

(f) producing fluids from said formation through said second well, thereby creating voidage in said formation adjacent said second well;

(g) subsequently injecting an oxygen-containing combustion supporting gas into the top of said formation and creating a combustion front in the top of said formation;

(h) continuing injection of said oxygen-containing combustion-supporting gas into the top of said formation at least until measurable oxygen breaks through at said second well;

(i) ceasing injection of said oxygen-containing combustion supporting gas;

(j) thereafter injecting steam into the lower part of said formation by way of said first well, and

(k) producing oil at said second well.

4,566,538

FAIL-SAFE ONE TRIP PERFORATING AND GRAVEL PACK SYSTEM

Elmer R. Peterson, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Mar. 26, 1984, Ser. No. 593,426

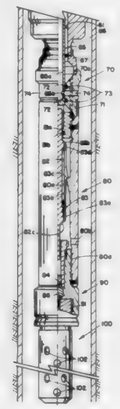
Int. Cl.⁴ E21B *43/08, 43/116*

U.S. Cl. 166—278 **17 Claims**

1. A combined gravel packing and perforating apparatus insertable in a cased well by a tubing string, said apparatus including: a fluid pressure operated packer, a screen dependent therefrom and a perforating gun and firing assembly suspended below said screen; said packer being settable by fluid pressure in said casing string; means responsive to internal fluid pressure in said firing assembly for firing said perforating gun; and a crossover tool disposed below said packer to direct casing annulus fluid pressure to the interior of said firing assembly, whereby said perforating gun may be fired by fluid pressure without setting said fluid pressure operated packer.

10. The method of perforating and gravel packing the production zone of a subterranean well with one trip of a tubing conduit, comprising the steps of:

assembling at the surface for attachment to the end of a tubing conduit: first and second packer means carried on said tubing conduit; screen means dependent from said tubing conduit; a perforating gun and firing assembly suspended below said screen means; and means responsive to said fluid pressure and said firing assembly for firing said perforating gun whereby said perforating gun may be fired by fluid pressure without setting said packer means; lowering the tubing conduit with the above listed compo-



nents thereon into the well until the perforating gun is positioned adjacent to the desired production zone;

setting the first packer means in a position above the desired production formation with said perforating mechanism adjacent the desired production zone;

increasing the fluid pressure in the well annulus to a level sufficient to actuate said firing assembly;

releasing said first packer and lowering the tubing string to position said screen adjacent the perforated production zone, and then resetting said first packer; increasing the fluid pressure in the tubing string to a level sufficient to cause setting of said second packer; and

introducing gravel carrying fluid through the tubing string to flow downwardly along the casing annulus between the first and second packers, through the screen, and upwardly through the tubing string to the casing annulus at a point above said second packer.

4,566,539

COAL SEAM FRACING METHOD

William Perlman, 2302 Niels Esperson Bldg., Houston, Tex. 77002

Filed Jul. 17, 1984, Ser. No. 631,592

Int. Cl.⁴ E21B *43/267, 43/27*

U.S. Cl. 166—307 **34 Claims**

1. A method for fracturing a gas-containing subsurface coal formation penetrated by a well, comprising the steps of:

injecting a fracing fluid into the formation adjacent the well in a multiplicity of stages, said fracing fluid having suspended therein fine proppants with a particle size distribution substantially between 60 and 140 mesh, said fine

proppants added to said fluid at a rate ranging from about 2 to about 12 pounds per gallon of said fluid; and

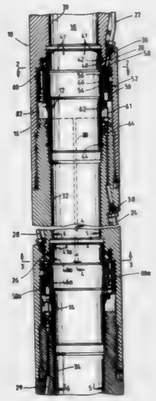
injecting an acidizing solution into the formation adjacent the well immediately following each of said fracing fluid injection stages, said injections of fracing fluid and acidizing solution being at a rate of from about 15 to about 35 barrels per minute and continuing until at least 3,000 pounds of said fine proppants have been deposited in the formation fracture per linear vertical foot of the formation.

4,566,540

HYDRAULICALLY ACTUATED CONTROL FLUID COMMUNICATION NIPPLE

Ronald E. Pringle, and William D. Eatwell, both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.

Filed Jun. 25, 1984, Ser. No. 624,431
Int. Cl.⁴ E21B *34/10*
U.S. Cl. 166—317 **12 Claims**



1. A hydraulic control fluid communication nipple for switching control fluid from one location to a second location in a well tool comprising,

a body having a longitudinal bore therethrough,

a fluid passageway in the body offset from the bore adapted to be connected to the well surface for receiving hydraulic control fluid for normally supplying control fluid to a first location,

vertically moving means in the body for opening communication of said fluid passageway to the bore,

a hydraulic piston vertically movable in the body and connected to said vertically moving means, said piston movable in said passageway, said piston including means responsive to control from the well surface for moving the vertically moving means and switching control fluid from the fluid passageway to the bore, and

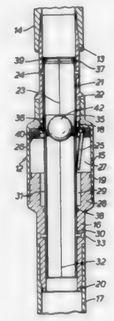
said piston includes a bypass opening therethrough, and said opening including a seat adapted to receive a valve element therein for closing said opening.

4,566,541

PRODUCTION TUBES FOR USE IN THE COMPLETION OF AN OIL WELL

Jacques L. Moussy, Boulogne, and Jean A. Lescoeur, Paris, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Oct. 15, 1984, Ser. No. 660,671
Claims priority, application France, Oct. 19, 1983, 83 16613
Int. Cl.⁴ E21B *34/10, 34/14*
U.S. Cl. 166—318 **5 Claims**



1. A connector for insertion in a production tube for use in the completion of an oil well by installation in a casing of the oil well, the production tube being provided with a sealing device, called a packer, to close the annular space between the production tube and casing, and by installation of a well head for production purposes, said connector being intended to be inserted in the production tube below the packer and comprising a first retractable ball seat which, when closed by a ball, makes it possible to admit a pressurised fluid into the inner space within the production tube and which is adapted to be moved away as a result of axial displacement and radial expansion under the action of an excess pressure in the inner space, a closing flap arranged so as to close when said first seat is moved away under the action of the said excess pressure, in order to provide a safety device during the installation of the well head, and, above said flap, a second seat which, when closed by a second ball and subjected to a pressurised fluid in the inner space, is adapted to be moved away as a result of axial displacement and radial expansion and to cause said flap to open and be maintained in the open position, in order to put the well in a state of production.

4,566,542

FIRE PROTECTION SYSTEM FOR AIRCRAFT

William A. Enk, 1213 Horizon, Blue Springs, Mo. 64015, and Ronald P. Migis, Blue Springs, Mo., assignors to William A. Enk, Blue Springs, Mo.

Division of Ser. No. 324,698, Nov. 25, 1981, Pat. No. 4,482,018.
This application Aug. 3, 1984, Ser. No. 637,543
Int. Cl.⁴ A62C *35/12*
U.S. Cl. 169—62 **8 Claims**

1. A fire protection system for a vehicle such as an aircraft presenting therein at least first, second and third fire zones, said system comprising:

first and second three way valves each having an inlet port for receiving extinguishant, a first outlet port connected with the inlet port when the valve is in a first state, and a second outlet port connected with the inlet port when the valve is in a second state;

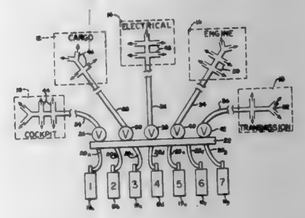
means for continuously connecting said first outlet port of the first valve with the inlet port of the second valve and the second outlet port of the first valve continuously with the first fire zone;

means for connecting the first and second outlet ports of the second valve with the respective second and third fire zones;

a plurality of containers each holding extinguishant;

a manifold line connected with each container to receive the extinguishant discharged therefrom, said manifold line being continuously connected with the inlet port of the first valve to apply extinguishant thereto when a container is discharged;

switch means for selecting one of the fire zones to receive extinguishant, said switch means being selectively operable to effect the second state of said first valve to establish



an extinguishant flow path from said manifold line through the first valve to the first fire zone, to effect the first state of both valves to establish an extinguishant flow path from said manifold line through both valves to the second fire zone, and to effect the first state of the first valve and the second state of the second valve to establish an extinguishant flow path from said manifold line through both valves to the third fire zone; and

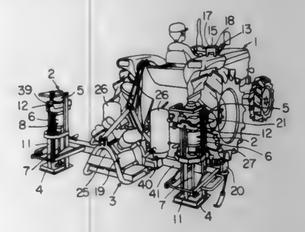
means for discharging each container to apply the extinguishant therein to said manifold line and said inlet port of the first valve and from there to the fire zone selected by the switch means.

4,566,543

AERATOR CARRIED BY AUTOMOTIVE VEHICLE AND CONTROL SYSTEM THEREFOR

Masutoshi Kotani, Osaka, Japan, assignor to Iwatani & Co., Ltd., Japan

Filed Aug. 10, 1983, Ser. No. 521,932
Int. Cl.⁴ A01B *45/02, 63/114;* A01C *23/02*
U.S. Cl. 172—4 **4 Claims**



1. An aerator which is carried by an automotive vehicle, and movable vertically, which aerator comprises:

(a) a spike pipe;

(b) a spiking means for driving the spike pipe from a "high" position above the ground into the soil said spiking means including an air hammer means for driving the spike pipe into the ground after the spiking means has lowered the spike pipe into ground contact;

(c) an extraction means for pulling the spike pipe out of the soil to a predetermined height above the ground; and

(d) a control system including:

i. a "start" commanding device for sending a "start" command for actuating the spiking means,

ii. an aeration depth detector for detecting when the spike pipe has been driven a predetermined depth into the soil and for stopping the actuation of the spiking means upon such detection,

iii. an "end" commanding device for sending an "end" command for actuating the extraction means to pull the spike pipe out of the soil to a predetermined height above the ground,

iv. a compressed air source including an air compressor, an air tank connected with the air compressor, an accumulator, an air supply channel connecting the air tank with the accumulator, and an air channel connecting the air tank with the air hammer means and the extraction means, and

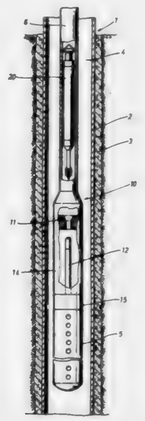
v. a check valve disposed in the air supply channel for preventing backflow of air to the air tank.

4,566,544

FIRING SYSTEM FOR TUBING CONVEYED PERFORATING GUN

James T. Bagley, Sugar Land, Tex., and Maurice L. Simon, Breaux Bridge, La., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Oct. 29, 1984, Ser. No. 665,795
Int. Cl.⁴ E21B *43/11*
U.S. Cl. 175—4.56 **8 Claims**



1. A system for firing a tubing conveyed perforating gun suspended in a well utilizing a drop bar and comprising:

(a) a percussion activated firing means attached between a tubing string and at least one perforating gun, said firing means including a first end adjacent the tubing string for receiving an activating force and a second end adjacent said at least one perforating gun for transmitting an explosive force to said at least one perforating gun;

(b) a drop bar for introducing into the tubing and contacting the first end of said firing means, said drop bar including a housing with an attached stop means, a mandrel movably attached to the housing, and a contacting end attached to the mandrel and movable in relation to the stop means, said drop bar further comprising a retracting means for moving the contacting end toward the stop means after the retracting means is activated;

(c) guide means for receiving said drop bar and directing said contacting end toward the first end of said firing means; and,

(d) abutment means fixed in relation to said firing means for receiving said stop means, whereby after said retracting

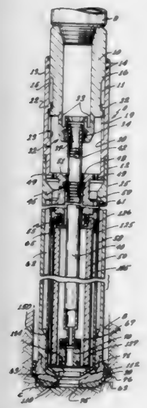
means is activated said retracting means moves the contacting end of said drop bar toward said stop means to such an extent that contact of the stop means and the abutment means prevents the contacting end of the drop bar from reaching and detonating the firing means, so that the drop bar may be safely fished from the tubing or the guns safely removed from the well in the event of a misfire.

4,566,545

CORING DEVICE WITH AN IMPROVED CORE SLEEVE AND ANTI-GRIPPING COLLAR WITH A COLLECTIVE CORE CATCHER

Arthur L. Story, Butte, Mont., and Michael Filshtinsky, Salt Lake City, Utah, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Sep. 29, 1983, Ser. No. 537,115
The portion of the term of this patent subsequent to Apr. 23, 2002, has been disclaimed.
Int. Cl.[4] E21B *25/06*
U.S. Cl. 175—226 18 Claims



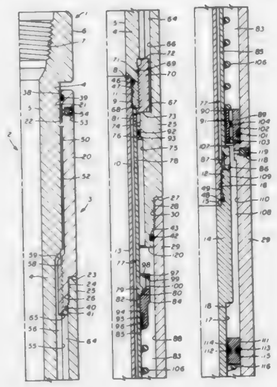
1. An improved coring apparatus used in combination with a coring bit and drill string comprising:
an outer driving structure adapted to be connected at one end to said coring bit for cutting a core in a bore hole, and at the other end to the lower end of said drill string in telescoping and co-rotatable manner therewith;
an inner barrel disposed within said outer driving structure and including a lower end portion adjacent to said bit;
first means supporting said inner barrel in spaced relationship to said outer driving structure while permitting rotation of said driving structure with respect to said inner barrel;
a woven metal mesh sleeve mounted in surrounding relation on at least a portion of the exterior surface of said inner barrel, said sleeve including a leading portion adapted to be positioned within the inner barrel and initially to receive a core as it is cut, said sleeve having a predetermined normal diameter which is greater than the diameter of the sleeve in tension;
second means, connected to a free end of said sleeve opposite said leading portion of said sleeve, for maintaining the portion of said sleeve which surrounds said inner barrel in compression and to maintain an inside diameter greater than the outside diameter of said inner barrel of said portion of said sleeve surrounding said inner barrel while the portion of said sleeve positioned inside said inner barrel being in tension to grip and compress a core received within said sleeve and having an outside diameter less than the inside diameter of said inner barrel when in tension, wherein said second means is also for engaging said core when said means is drawn into said inner barrel, and
third means positioned within said inner barrel and connected to the leading portion of said sleeve to draw said sleeve within said inner barrel and to apply tension to the portion of said sleeve within said barrel to encase and grip said core as it is cut.

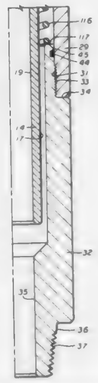
4,566,546

SINGLE ACTING HYDRAULIC FISHING JAR

Robert W. Evans, Elkins Lake Box 428, Huntsville, Tex. 77340

Continuation of Ser. No. 443,605, Nov. 22, 1982, abandoned.
This application Sep. 10, 1984, Ser. No. 648,711
Int. Cl.[4] E21B *4/14*
U.S. Cl. 175—297 20 Claims





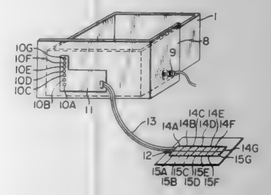
1. A fluid actuated fishing jar comprising
a pair of tubular members positioned in telescoping relation for limited longitudinal movement of one relative to the other and adapted for connection of one tubular member to a drill pipe and the other tubular member to an object to be dislodged from a well,
means defining a chamber between said tubular members,
piston means closing said chamber and operatively connected to one of said tubular members for movement thereby,
a substantially incompressible hydraulic fluid filling said chamber and resisting relative movement of said piston means,
said piston means being movable in one direction to apply pressure to fluid in said chamber upon relative movement between said tubular members in one direction,
one of said tubular members having a valve opening positioned between said piston means and the end of said chamber,
valve means initially closing said valve opening,
fixed abutment means on the other tubular member operatively engagable with said valve means upon a first predetermined relative movement of said piston means in said one direction,
said valve means being movable to open the same on engagement with said abutment means to release fluid from said chamber upon said first predetermined relative movement of said piston means in said one direction and thereby reduce substantially the resistance to further relative movement of said piston means and movement of said tubular members therewith,
means permitting a relatively minute flow of fluid from said chamber during said first predetermined relative movement of said piston means, and
hammer and anvil means engagable with a jarring impact upon said further relative movement of said tubular members.

4,566,547

REMAINING AMOUNT INDICATOR

Hideaki Furukawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 363,517, Mar. 30, 1982, abandoned.
This application Mar. 21, 1984, Ser. No. 591,885
Claims priority, application Japan, Apr. 10, 1981, 56-52911
Int. Cl.[4] G01G *23/18, 19/52, 23/30;* G03G *15/00*
U.S. Cl. 177—46 12 Claims



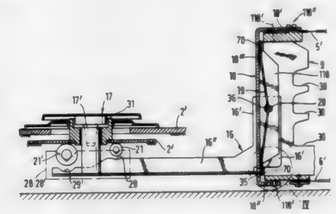
1. A remaining amount indicator comprising:
detecting means for detecting a remaining amount of recording paper by sensing a position of a loading member on which the recording paper is loaded, wherein said position varies in accordance with the amount of recording paper on said loading member;
display means for displaying the remaining amount of recording paper; and
control means for controlling said display means in accordance with the output of said detecting means so that said display means performs a progressive display of the remaining amount of recording paper on said loading member.

4,566,548

ANALYTICAL BALANCE

Walter Södler, Göttingen; Erich Knothe, Bovenden; Günther Maaz, Uslar-Wiensen, and Joachim Mädge, Brunswick, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Aug. 27, 1984, Ser. No. 644,344
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1983, 3330988
Int. Cl.[4] G01G *3/08, 21/00, 21/10, 1/18*
U.S. Cl. 177—229 8 Claims



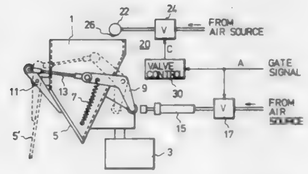
1. Analytical balance with pan on top with a four-bar mechanism which keeps the balance pan parallel horizontally during its vertical travel, the one vertical side of which is held fast to the housing, the other vertical side of which, in the form of a coupling piece, carries an extension which receives the pan, and both horizontal sides of which are connected in an articulated manner by an upper and a lower rod to the vertical sides, whereby the four-bar mechanism is loaded by the restoring force of a load converter, characterized in that the extension (**16**) which receives the pan (**17**) is L-shaped, the horizontal L-shank (**16''**) carries the pan (**17**) rigidly connected to its free end and the vertical L-shank bearing arm (**16'**) is mounted on the bar (**18'''**) of a U-shaped arm bearing (**18**) which projects above and below over the vertically movable end (**9**) of the four-bar mechanism (**5, 6, 7, 8, 9**) with its two horizontal U-shanks (**18, 18''**) in the rod planes and is rigidly fastened to it in two vertically superposed bearings (**118'**).

4,566,549

WEIGHING HOPPER CLEANING DEVICE

Yasushi Oshima, Akashi, Japan, assignor to Yamato Scale Company, Limited, Japan

Filed Mar. 23, 1984, Ser. No. 592,418
Claims priority, application Japan, Mar. 28, 1983, 58-45505
Int. Cl.[4] G01G *13/18, 19/00, 23/00*
U.S. Cl. 177—245 4 Claims



1. A weighing hopper having a discharge gate, gate control means responsive to a gate control signal for opening the gate for unloading of product from the hopper, at least one air jetting nozzle directed toward the interior of the hopper, and jetting nozzle control means responsive to said gate control signal to initiate operation of said air jetting nozzle to blow air into the interior of the hopper only after a predetermined delay following opening of the gate sufficient to permit completion

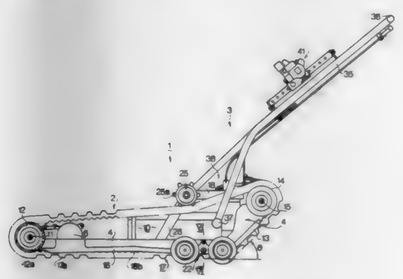
of unloading of product from the hopper whereby said nozzle is adapted to blow air into the interior of the hopper after it has unloaded to clean it.

4,566,550

STAIR-CLIMBING WHEELCHAIR CARRIER

Rintaro Misawa, Tokorozawa, Japan, assignor to Sunwa Sharyo Manufacturing Co., Ltd., Tokyo, Japan

Filed May 3, 1984, Ser. No. 606,801
Claims priority, application Japan, Oct. 7, 1983, 58-188112
Int. Cl.⁴ B62B *5/02*
U.S. Cl. 180—8.2 **3 Claims**



1. A stair-climbing wheelchair carrier comprising:
a frame body;
a pair of rail frames formed in a lower portion of said frame body, rear ends of said rail frames having sleigh-like upward portions;
wheels disposed on said frame body;
a handle portion provided on said frame body;
a wheelchair holding device provided on said handle portion for holding a wheelchair;
a pair of endless belt crawlers engaged with said wheels on said frame body and with said rail frames;
said endless belt crawlers having a predetermined span extending two steps of a stairway and an oblique overhang portion at one end of said frame body which has predetermined height higher than the usual height of a step of the stairway;
a travelling wheel mechanism provided on each of said rail frames, said travelling wheel mechanism comprising a lever rotatably mounted on said rail frame, a pair of travelling wheels provided on both ends of said lever, and a spring for maintaining said travelling wheels in a position, the travelling wheels being so disposed that contact points thereof with the ground are at lower positions than a grounding surface of said crawlers.

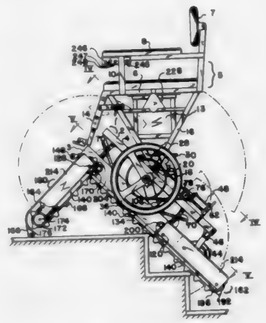
4,566,551

STAIR-CLIMBING CONVEYANCE

Jack M. Feliz, 2110 Southridge Dr., Palm Springs, Calif. 92264

Filed Aug. 30, 1983, Ser. No. 527,766
Int. Cl.⁴ B62D *55/04*
U.S. Cl. 180—9.1 **24 Claims**

1. In a load carrying conveyance, the combination of:
(a) a platform to receive the load;
(b) main drive and caster wheels supporting the platform for mobility;
(c) main endless belt tractor means supporting the platform for mobility;
(d) lever means carrying auxiliary endless belt tractor means disposed on pivots forwardly and rearwardly on the platform and outwardly off-set from the main tractor means and said platform to be operatively clear of said main tractor means and platform to permit rotation of said auxiliary tractor means without interference contact with said main tractor means or platform;
(e) power mechanism manually controllable by an operator for driving the drive wheels and the several tractor means, with said power mechanism operatable at a constant speed;
(f) rotational means for rotating said lever means concentrically positioned with said pivots and means for driving said rotational means; and



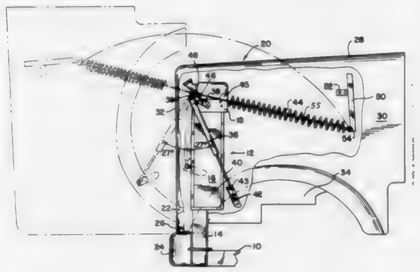
(g) mode conversion jack means manually controllable by the platform occupant for lowering the main endless belt tractor means until said main endless tractor belt means are in contact with the floor, and subsequently raising the main drive and caster wheels above the roots of the main endless tractor belt means, thus simultaneously converting the conveyance from a higher speed, level surface mode, to a lower speed, higher torque, stair climbing mode or vice versa, while remaining engaged to the main power mechanism operating at constant speed.

4,566,552

HOOD TILT RETARDATION SYSTEM

Lawrence A. Hoffman, Hoagland; Jay P. Hacker, and William M. Miller, both of Fort Wayne, all of Ind., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 16, 1983, Ser. No. 552,582
Int. Cl.⁴ B62D *25/10*
U.S. Cl. 180—69.21 **12 Claims**



1. A hood tilt assist system for a motor vehicle including a supporting framework, said system comprising:
an engine covering hood pivotally mounted at its front lower portion to an immobilized part of said framework and reciprocably moveable through a hood-over-center position between open and closed positions;
stop means operatively associated with said hood to stop the travel of said hood and defining respectively said open and closed positions;

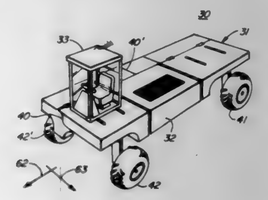
upstanding means rigidly attached to and extending upwardly from said framework to a level disposed substantially above the lowest portion of said hood in both its open and closed positions;
dashpot retardation means secured to said upstanding means and said hood for reducing the speed of hood travel toward both said open and said closed positions, said retardation means being operative between said hood-over-center position and said open and closed positions defined by said stop means, said retardation means providing an unrestricted displacement of said hood prior to said hood passing said hood-over-center position; and
means for equiangular and equidistant displacement of said retardation means relative to said hood-over-center position in either direction.

4,566,553

AGRICULTURAL WORK VEHICLE

Arnold E. McCutcheon, 627 Churchill Dr., Winnipeg, Manitoba, Canada (R3L 1W4)

Filed Sep. 6, 1984, Ser. No. 647,653
Claims priority, application Canada, Oct. 17, 1983, 439086
Int. Cl.⁴ B60K *17/30*
U.S. Cl. 180—237 **35 Claims**



1. An agricultural work vehicle having an extensible load supportive frame, an operator's cab rotatably mounted on the frame and adapted to face the direction of travel, motive power means carried by the frame and ground engaging wheel means selectively controllable from the cab and drivable by the power means for rollably supporting the frame, comprising:
a fixed frame member having a coplanar first sleeve portion;
a slidable frame member having a longitudinal arm portion adapted to slidably engage the sleeve;
an articulated frame member hingedly connected with individual ones of the fixed and slidable frame members in the plane of the sleeve and extending orthogonally thereto; and
hydraulic ram means controllable from the cab for interconnecting and mutually displacing the fixed and slidable frame members, thereby altering the dimensions of the frame.

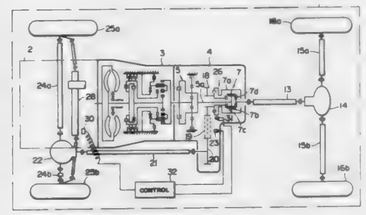
4,566,554

FOUR WHEEL DRIVE SYSTEM WITH CENTER DIFFERENTIAL UNLOCK CONTROL RESPONSIVE TO STEERING ANGLE

Kunihiko Suzuki, Sagamihara, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Apr. 16, 1984, Ser. No. 597,707
Claims priority, application Japan, May 9, 1983, 58-81583
Int. Cl.⁴ B60K *17/35*
U.S. Cl. 180—249 **11 Claims**

1. A four-wheel drive vehicle comprising:
an engine,
front wheels and rear wheels,
a four-wheel drive system for transmitting power from said engine to said front wheels and said rear wheels, said four-wheel drive system comprising a center differential, connected between said front wheels and said rear wheels, for absorbing a rotational speed difference between said front wheels and said rear wheels, and center differential restraining means capable of holding said center differential in a first condition in which the function of said center differential is restrained and in a second condition in which said center differential is released, and
a control system comprising:
means for sensing a steering angle of at least one steerable wheel of the vehicle,
condition sensing means for detecting whether said center differential is in said first condition or not, and
control means, connected with said steering angle sensing means and said condition sensing means, for controlling said center differential by actuating said center differential restraining means in accordance with signals of said steering angle sensing means and said condition sensing means,



said control means being arranged to command said center differential restraining means to bring said center differential from said first condition toward said second condition if the sensed steering angle is equal to or larger than a predetermined angle and at the time said center differential is in said first condition,
said center differential comprising a front-side rotating member connected to said front wheels for driving said front wheels and a rear-side rotating member connected to said rear wheels for driving said rear wheels, said center differential being capable of allowing said front-side and rear-side rotating members to rotate at different speeds, said front-side and rear-side rotating members being prevented from rotating at different speeds when said center differential is in said first condition.

4,566,555

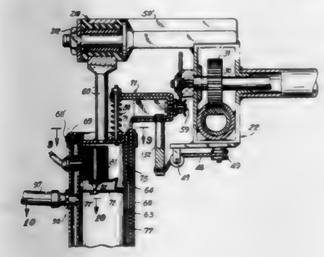
VEHICLE CONTROL SAFETY SYSTEM

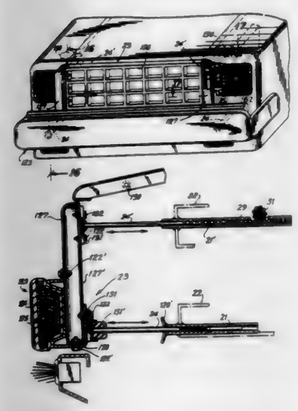
Samuel L. Schlanger, 140 Cheyenne Way, Wayne, N.J. 07470

Filed Feb. 13, 1984, Ser. No. 579,690
The portion of the term of this patent subsequent to Oct. 25, 2000, has been disclaimed.
Int. Cl.⁴ B60R *21/00*
U.S. Cl. 180—274 **28 Claims**

1. A safety system for a vehicle having a chassis with two parallel substantially horizontal spaced-apart lower chassis frame extension legs and two parallel substantially horizontal spaced-apart upper chassis frame extension legs associated with the front and rear ends of said vehicle and an axle assembly for each of the wheels, comprising:
a suspension assembly for each axle assembly including a cylinder and an air piston normally movable in said cylinder, said cylinder being pivotably coupled to said chassis and said air piston being pivotably coupled to said axle assembly, said cylinder being formed with at least one air port opening;
valve means for selectively opening and closing said at least one air port opening so as to arrest the movement of said air piston in said cylinder, and to maintain said piston in a relatively rigid, non-compressible state when said air port opening is closed, including biasing means urging said valve means to open said air port opening;
means for activating the closing of said valve means; and
at least one bumper assembly including a short stroke re-

tractable bumper slidably mounted on said chassis for movement between a normal, extended position and a retracted position, by means of a first pair of generally parallel, spaced-apart hollow support arms, each of which being mounted to one of said lower chassis frame extension legs and a second pair of generally parallel, spaced-





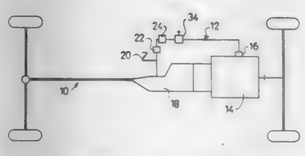
apart hollow support arms, each of which being mounted to one of said upper chassis frame extension legs, and a pair of lower and a pair of upper generally parallel, spaced-apart rods connected to said bumper, each of which being telescopically received in a corresponding one of said hollow support arms.

4,566,556

ANTI-THEFT APPARATUS FOR MOTOR VEHICLES

Josef Wodeslavsky, Tenafly, N.J., assignor to Autoloc Corporation, Tel Aviv, Israel

Continuation-in-part of Ser. No. 430,591, Sep. 30, 1982, abandoned. This application May 4, 1984, Ser. No. 607,801
Claims priority, application Israel, Aug. 19, 1983, 69527
Int. Cl.⁴ B60R *25/04*
U.S. Cl. 180—287 **14 Claims**



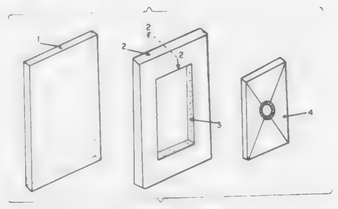
1. Anti-theft apparatus for a motor vehicle, including a vacuum source for generating a vacuum when the vehicle engine is running, said anti-theft apparatus comprising: a disabling device for disabling normal operation of the vehicle; a releasing device for releasing said disabling device to permit normal operation of the vehicle; and a vacuum control device between said vacuum source and said releasing device, said vacuum control device including a cylinder and a piston receivable therein, one of said cylinder and piston constituting a key manually removable by the operator whenever it is desired to disable the normal operation of the vehicle, and a vacuum connection from said vacuum source to said releasing device via said cylinder, said cylinder and piston including bores located so as to become aligned, and thereby to establish a vacuum connection through said cylinder, only when said key is in said vacuum control device.

4,566,557

FLAT ACOUSTIC DIFFUSER

Guy Lemaitre, 7 Chemin de la Foux Le Revest des Eaux, 83200 Toulon, France

Filed Mar. 9, 1984, Ser. No. 588,008
Claims priority, application France, Mar. 9, 1983, 83 04176
Int. Cl.⁴ H05K *5/00*
U.S. Cl. 181—150 **13 Claims**



1. An acoustic device comprising:
a frame bordering an area open to the front and rear of the frame;
a speaker located within the area bordered by the frame, said speaker corresponding in size to said area and having a front side and a rear side;
a cover positioned over only the front of the acoustic device so that said front side is covered and said rear side is uncovered, said cover being a direct wave attenuator whereby unattenuated sound waves are emitted from the rear side of the speaker.

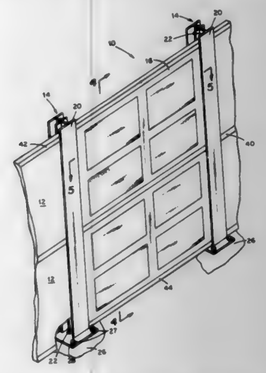
4,566,558

NOISE BARRIER

Julian V. Link, Jr., and Ronald E. Cronan, both of Knoxville, Tenn., assignors to Marine Systems, Inc., Knoxville, Tenn.

Filed Feb. 21, 1985, Ser. No. 703,728
Int. Cl.⁴ B64F *1/26*
U.S. Cl. 181—210 **16 Claims**

1. A noise barrier panel for the abatement of transportation-related noise comprising a slab of rigid plastic foam secured to and sandwiched between a first sheet of plastic defining a traffic face and a second sheet of plastic defining a residential face, said slab having two major surfaces and minor surfaces with edges at the intersection of said major and minor surfaces, a plurality of reinforcing members secured to said slab at both of said major surfaces, said reinforcing members extending along each of the edges, at least one recess formed into said slab adjacent said first sheet to form a chamber, said recess having a perimeter spaced-apart from said reinforcing members, and a sound absorption material contained in said chamber.



4,566,559

SAWING TRESTLE

Christianus M. A. J. van Asten, Energiestraat 5, 5753 RN Deurne, Netherlands

Filed Aug. 28, 1984, Ser. No. 645,101
Claims priority, application Netherlands, Aug. 30, 1983, 8303017
Int. Cl.⁴ F16M *11/00*; B27B *21/02*
U.S. Cl. 182—224 **4 Claims**



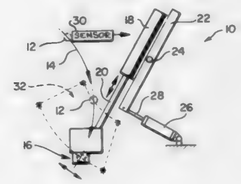
1. A sawing trestle for elongate wooden bodies, comprising:
a single, upwardly extending frame part;
a supporting means having a V-shape when seen along a first direction, said supporting means having a width of about 10 cm in said first direction and being secured to a top end of said frame part, whereby said elongate wooden bodies may be positioned and supported on said V-shaped supporting means with elongate axes of said bodies generally extending in said first direction; and
means for clamping said elongate bodies on said supporting means, said means for clamping comprising two belts, each of said belts having one end attachable to said frame part and a second end, said second ends being connected to a stretching member such that said belts can extend between ends of said supporting means in said first direction and be stretched around bodies supported on said supporting means and adjusted by said stretching member to clamp said bodies.

4,566,560

MOVABLE LUBRICATOR APPARATUS

Kirk W. Elliott; Christian J. Garver; John P. Kayser, all of Madison, and Robert M. Dombroski, McFarland, all of Wis., assignors to Madison-Kipp Corporation, Madison, Wis.

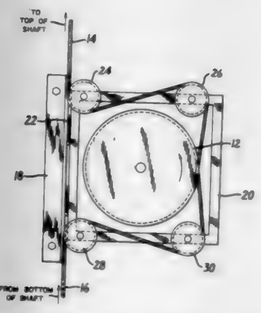
Continuation of Ser. No. 297,988, Aug. 31, 1981, abandoned. This application Apr. 18, 1984, Ser. No. 601,119
Int. Cl.⁴ F16N *13/22*; B65G *45/02*
U.S. Cl. 184—15.1 **5 Claims**



1. Lubricating apparatus for supplying lubricant through a lubrication coupler to a nonlinearly traveling lubrication point on a conveyor moving along an extended non-linear path, said apparatus comprising:
a frame positionable adjacent said moving conveyor;
coupler means including a coupler assembly having a lubrication coupler at one end thereof to move said coupler into engagement with said lubrication point for dispensing lubricant into said point during movement of said conveyor;
platform means including a platform pivotally mounted to said frame along a pivot axis including longitudinal rod means slidably mounted on said platform and mounted to said coupler assembly for enabling said coupler to move over an extended path over about 50% of the length of said longitudinal rod means in a linear direction with respect to the platform, and restraining means engaged between said platform and said frame to yieldably restrain pivotal movement of said platform;
locating means for locating said non-linearly traveling lubrication point during conveyor movement and adapted for placing said lubrication coupler immediately adjacent said lubrication point into a lubrication ready position;
said locating means including a V-block mounted to said coupler assembly at said one end thereof and having a pair of convergent surfaces defining a nesting position therebetween aligned with said lubrication coupler for nestably, engageably receiving said lubrication point when said lubrication coupler is placed in said lubrication ready position;
said locating means further including fluid operated cylinder means operatively connected to said V-block to move said V-block towards said moving conveyor and into said lubrication ready position immediately prior to said dwell time, and to move the V-block away from the moving conveyor and out of said lubrication ready position at the end of the dwell time;
said coupler being moved by said lubrication point while nestably engaged with said lubrication point, and being enabled by said platform means, rod means and restraining means to move angularly about said platform pivot axis as well as radially with respect to said pivot axis in an outwardly linear direction with respect to the platform in direct engagement response to the non-linear traveling of said lubrication point so as to maintain engagement with said non-linearly traveling lubrication point for a dwell time sufficient to adequately supply lubricant thereto; and
said coupler assembly further including second fluid oper-

ated cylinder means adapted to move said coupler into and out of engagement with said lubrication point at said nesting position in accordance with the desired dwell time.

4,566,561
SELECTOR CABLING ARRANGEMENT
Richard E. Atkey, Memphis, Tenn., assignor to Dover Corporation, New York, N.Y.
Filed Mar. 28, 1984, Ser. No. 594,232
Int. Cl.⁴ B66B *11/04*
U.S. Cl. 187—20 **11 Claims**



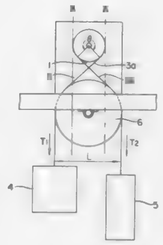
1. In an elevator system having a selector mechanism, for simulating the position and movements of the elevator car, and means for actuating the selector mechanism including cable means connected to the car and a take-up drum for winding or unwinding the cable means in sequential rows across the drum, wherein the drum is rotatable about a rotational axis and the lead of the cable means travels across the drum in the axial direction as the drum is rotated; a selector cable guide comprising:

a frame pivotable about a pivot axis generally perpendicular to the rotational axis, the frame having a portion extending from the pivot axis;

a first pulley means mounted to the frame adjacent to the pivot axis; and

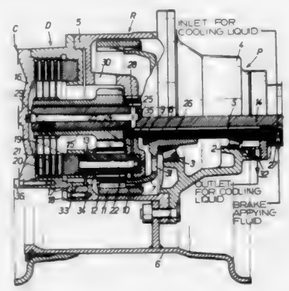
a second pulley means mounted to the frame on the extending portion; wherein the cable means is guided about the first pulley means, the second pulley means, and then onto the drum; wherein the position of the second pulley means adjusts to the lead position of the cable as it travels across the drum, wherein the position of the first pulley means remains substantially stationary, in the direction of the rotational axis, regardless of the position of the second pulley means, and wherein further the cable means comprises a cable having portions extending in opposite directions from the car, the oppositely extending cable portions being connected to the drum to wind in opposite rotational directions of the drum, each being arranged to wind and unwind in sequential rows across the drum, wherein the first pulley means comprises a pair of first pulleys mounted to the frame adjacent the pivot axis, and wherein the second pulley means comprises a pair of second pulleys mounted to the frame on the extending portion, wherein each cable portion is guided about one of the first pulleys and one of the second pulleys and thereafter onto the drum.

4,566,562
TRACTION ELEVATOR APPARATUS
Katsuhiko Suzuki, Nagoya, and Takenobu Honda, Inazawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Jan. 25, 1983, Ser. No. 460,798
Claims priority, application Japan, Feb. 5, 1982, 57-14905[U]
Int. Cl.⁴ B66B *11/04*
U.S. Cl. 187—22 **5 Claims**



1. A traction elevator apparatus comprising a driving sheave on which a rope is wound, said rope connected to a cage at a first end and to a balance weight at a second end, a deflector wheel having a diameter larger than said driving sheave, said first and second ends of said rope crossing each other on the lower side of said driving sheave intermediate said driving sheave and said deflector wheel and extending over and contacting opposite sides of the circumferential surface of said deflector wheel, a part of the circumferential surface of said deflector wheel being located outside a vertical tangent to said driving sheave a sufficient distance to prevent said cage and said balance weight from interfering with each other.

4,566,563
COMBINED LIVE AXLES AND BRAKE ASSEMBLIES FOR VEHICLES
Jean-Marc Chauveau, Viroflay, and Michel Schmitt, Fresnes, both of France, assignors to Lucas Industries Limited, Birmingham, England
Continuation of Ser. No. 338,879, Jan. 12, 1982, abandoned. This application Nov. 15, 1984, Ser. No. 671,806
Claims priority, application France, Jan. 21, 1981, 81 01035
Int. Cl.⁴ B60T *1/06*; F16D *55/18*; B60B *27/02*
U.S. Cl. 188—18 A **8 Claims**

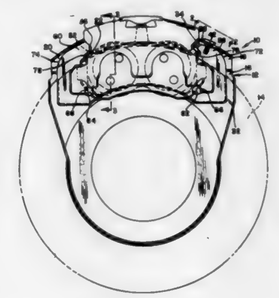


1. A combined live axle and brake assembly for vehicles comprising a wheel, a drive shaft, a relatively stationary axle tube within which said drive shaft is housed, inner and outer axially spaced wheel bearings mounted on said axle tube, a hub journalled for rotation on said wheel bearings, said hub being adapted to be driven by said shaft and comprising a mounting for the wheel, and said brake comprising a housing, relatively rotatable first and second sets of friction members associated with said axle and disposed within said housing in a position outboard of said wheel bearings, said first set of friction members being driven by said shaft, reduction gearing through which said second set of friction members is driven from said shaft at a different speed, first and second axially spaced braking faces provided on outboard and inboard sides respectively of said brake and between which said friction members are adapted to be clamped to apply said brake, an end cover forming an externally removable part of said housing, removal of said end cover providing direct access to said brake, and said end cover comprising the only part of said assembly which has to be removed to achieve said direct access, said end cover having an inner face which constitutes said first braking face, a movable member which is subjected to a brake-applying force, said movable member having an inner face which constitutes said second braking face, and a fluid control system which extends from the interior of said assembly inboard of said bearings to said brake, said fluid control system including at least one piston for producing a brake applying force, a bore in said housing in which said piston works, said bore being disposed outboard of said outer wheel bearing and inboard of said friction members, between said brake and said reduction gearing, whereby said piston is accessible after removal of said cover and said braking members without first demounting said wheel from said hub but leaving said reduction gearing intact, an inlet port for brake-applying fluid located inboard of said wheel bearings, and a duct extending from said inlet port to said bore to supply fluid under pressure to said piston.

7. A combined live axle and brake assembly for vehicles comprising a wheel, a drive shaft, a relatively stationary axle tube within which said drive shaft is housed, inner and outer axially spaced wheel bearings mounted on said axle tube, a hub journalled for rotation on said wheel bearings, said hub being adapted to be driven by said shaft and comprising a mounting for the wheel, and said brake comprising a housing, relatively rotatable first and second sets of friction members associated with said axle and disposed within said housing in a position outboard of said wheel bearings, said first set of friction members being directly driven by said shaft, reduction gearing through which said second set of friction members is driven from said shaft at a different speed, first and second axially spaced braking faces provided on outboard and inboard sides respectively of said brake and between which said friction members are adapted to be clamped to apply said brake, an end cover forming an externally removable part of said housing, removal of said end cover providing direct access to said friction members, and said end cover comprising the only part of said assembly which has to be removed to achieve said direct access, said end cover having an inner face which constitutes said first braking face, a movable member which is subjected to a brake-applying force, said movable member having an inner face which constitutes said second braking face, and a fluid control system which extends from the interior of said assembly inboard of said bearings to said brake, said fluid control system including at least one piston for producing a brake applying force, a bore in said housing in which said piston works, said bore being disposed outboard of said outer wheel bearing and inboard of said friction members, an inlet port for brake-applying fluid located inboard of said wheel bearings, and a duct extending from said inlet port to said bore to supply fluid under pressure to said piston.

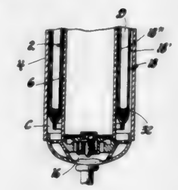
4,566,564
DISC BRAKE ASSEMBLY
Daniel L. Bolenbaugh, and Robert E. Herzog, both of South Bend, Ind., assignors to Allied Corporation, Morristown, N.J.
Continuation of Ser. No. 383,663, Jun. 1, 1982, abandoned. This application Aug. 8, 1984, Ser. No. 638,793
Int. Cl.⁴ F16D *65/02*
U.S. Cl. 188—73.33 **2 Claims**

1. A disc brake assembly comprising a torque member fixedly disposed adjacent a rotor to be braked and including a pair of arms extending axially over the periphery of the rotor, a caliper assembly movably carried by the pair of arms and cooperating with an inner friction element and an outer friction element to urge the elements into engagement with the rotor during braking, and the caliper assembly including a pair of axially extending grooves for receiving the pair of arms, each one of said pair of grooves including a slot and said outer friction element including ears received through said slot and disposed in interlocking relation with the walls of said grooves to attach said outer friction element to said caliper assembly, said inner friction element being carried by said torque member in spaced relation to said pair of axially extending grooves, said caliper assembly carrying a hydraulic actuator on one side of



said rotor adjacent said inner friction element, said caliper assembly including a reaction leg extending radially on the other side of said rotor adjacent said outer friction element, said slots intersecting said grooves at points disposed in spaced proximal relationship to said reaction leg, said caliper assembly being movable relative to said torque member in response to wear of said pair of friction elements and said pair of arms overlapping said slots when said pair of friction elements are worn a predetermined amount, and said ears being complementary to and extending, respectively, into said grooves and said ears being provided with substantially arcuate outer edges in alignment with said torque member arms when said outer friction element is attached to said caliper assembly.

4,566,565
SELF-PRESSURIZED DAMPER
Brian G. Wicke, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 30, 1984, Ser. No. 605,628
Int. Cl.⁴ F16F *9/43*
U.S. Cl. 188—322.21 **4 Claims**



1. In a method of forming a self-pressurized, hydraulic damper having a working cylinder in flow communication with an adjacent hydraulic fluid reservoir containing a cushioning gas pocket, said method including the principal steps of positioning a dormant gasifiable substance in the reservoir and activating the substance, after assembly of the damper, to generate at least 2 room temperature atmospheres of noncondensible gas in said pocket, the improvement wherein:

said substance comprises a volatile condensed phase of said

gas which is contained under pressure within a rupturable capsule; and

rupturing said capsule to vaporize said substance to generate said gas.

4,566,566

DEVICE FOR TEMPORARILY UNCOUPLING TWO COAXIAL ROTATING ELEMENTS

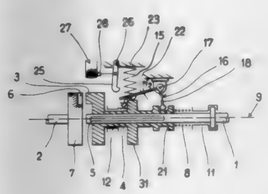
Jean-Pierre Vuillet, Mulhouse, France, assignor to Societe Alsacienne de Construction de Material Textile, France

Filed Sep. 7, 1984, Ser. No. 648,323

Claims priority, application France, Sep. 19, 1983, 83 14835; Jan. 16, 1984, 84 00710

Int. Cl.⁴ F16D *11/06*

U.S. Cl. 192—24 **11 Claims**



1. Device for temporarily uncoupling two coaxial rotating elements, at least one of which is a drive element, by means of a positive clutch which slides on the drive element and which is subjected, in the coupling direction, to the action of a return spring and, in the uncoupling direction, to the effect of an electromagnet, comprising:

(a) an energy storage spring capable of acting on the sliding positive clutch in the direction in which uncoupling is performed, with a force greater than the force of the return spring,

(b) a cam connected to the drive element and designed to tension the said energy storage spring,

(c) a pawl designed to keep the energy storage spring tensioned,

(d) and a mechanical linkage between the pawl and the mobile armature (**28,128**) of the electromagnet designed to cause the release of the energy storage spring in response to the action of the electromagnet.

4,566,567

OVERRUNNING ROLLER CLUTCH

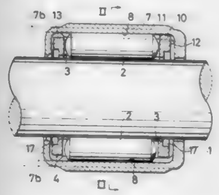
Kiyoshi Miyatake, Osaka, Japan, assignor to Koyo Seiko Company Limited, Osaka, Japan

Filed Oct. 12, 1983, Ser. No. 542,251

Claims priority, application Japan, Oct. 26, 1982, 57-162894[U]

Int. Cl.⁴ F16D *3/34*

U.S. Cl. 192—45 **10 Claims**



1. An overrunning roller clutch comprising rollers each thereof retained in a roller pocket of a cage formed by column portions and annular portions at both ends of the column portions, spring elements assembled with said cage for urging said rollers against corresponding camming surfaces provided in an outer race and an engaging means for engaging said outer race with said cage in the direction of rotation, wherein at least one annular portion of said cage is formed separate from its column portions, there are provided mating projections and recesses in the end faces of said column portions and that of said annular portion to be joined thereto, said projections are fitted in said mating recesses for joining said column portions with said annular portions to form said cage having said roller pockets therein, there are provided a plurality of radial grooves in said ends of said cage and bent lugs provided at both ends of each spring element are engaged in said groove to thereby secure said spring elements to said cage.

4,566,568

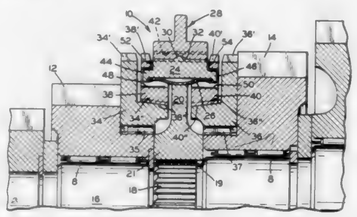
STRUT SYNCHRONIZER FOR TRANSMISSIONS

Kenneth B. Yant, Oregon, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Jun. 28, 1983, Ser. No. 508,796

Int. Cl.⁴ F16D *11/00;* **F16H** *3/38*

U.S. Cl. 192—53 F **8 Claims**



8. A transmission synchronizer comprising a shifting sleeve non-rotatably mounted over a rotatable annular sleeve carrier, said carrier having an axially extending notch in the outer circumference thereof, a pair of blocker rings disposed axially with respect to said carrier, one on either side of said carrier, a strut positioned within said notch, said strut axially engageable with said shifting sleeve for axial movement of said strut into engagement with either of said blocker rings, each of said rings including a slot for receiving respective slot engaging opposed ends of said strut, said strut comprising a pair of opposed axially spaced, radially extending bearing surfaces, each disposed for axially bearing against one side of one of said blocker rings, each of said bearing surfaces separate and distinct from said slot engaging ends of said strut, a leaf spring radially disposed between said strut and said sleeve carrier, said slot engaging ends of said strut defining radially inwardly extending axially spaced abutments for retaining said spring, wherein each of said bearing surfaces comprises an inwardly stepped wall relative to one of said respective slot engaging opposed ends of said strut, each slot comprising a radially outermost enclosure portion for containment and retension of said slot engaging end of said strut under centrifugal and spring forces on said strut, each of said separate bearing surfaces being disposed only for engaging an outer radially extending surface of one of said blocker rings, said radially extending surface being separate and apart from said slot.

4,566,569

SYNCHRONIZING MECHANISM IN A VEHICLE GEARBOX

Leif K. S. Eriksson, Stockholm, Sweden, assignor to Saab-Scania Aktiebolag, Sodertalje, Sweden

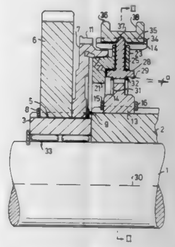
PCT No. PCT/SE83/00257, § 371 Date Mar. 5, 1984, § 102(e) Date Mar. 5, 1984, PCT Pub. No. WO84/00405, PCT Pub. Date Feb. 2, 1984

PCT Filed Jun. 20, 1983, Ser. No. 598,302

Claims priority, application Sweden, Jul. 13, 1982, 8204297

Int. Cl.⁴ F16D *11/00*

U.S. Cl. 192—53 G **6 Claims**



1. A synchronizing mechanism in a gearbox, preferably a vehicle gearbox, including a synchronizing muff (**14**) rotationally fixed to a shaft (**1**) and having external engagement teeth (**34**) coacting with internal engagement teeth (**35**) on an engagement sleeve (**36**) surrounding the synchronizing muff (**14**), this sleeve being axially displaceable for engaging engagement teeth (**11**) on a first synchronizing ring (**7**) rotatably mounted on the shaft (**1**) and unrotatably joined to a gear (**6**) and formed with a conical friction surface (**12**) for coaction with a complementary conical friction surface (**22**) on a second synchronizing ring (**21**) for synchronizing the rotation of the gear (**6**) and the shaft (**1**), the periphery of the synchronizing muff (**14**) being formed with a number of radial recesses (**17**) in which radial locating abutments (**23**) on the second synchronizing ring (**21**) engage, characterized in that each abutment is formed with a radial hole (**24**) in which a detent body (**25**) is displaceably mounted and adapted for being brought by spring means (**31,32**) into coaction with an interior annular groove (**37**) in the engagement sleeve (**36**), the second synchronizing ring (**21**) being axially centered relative the synchronizing muff (**14**) by the detent bodies and the spring means (**31,32**).

4,566,570

OVERLOAD CLUTCH

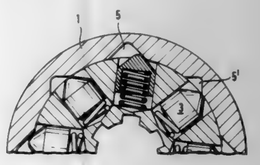
Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH

Filed Aug. 18, 1983, Ser. No. 524,302

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1982, 3230817

Int. Cl.⁴ F16D *43/20*

U.S. Cl. 192—56 R **10 Claims**



1. An overload clutch particularly for drive lines connecting agricultural implements to a power takeoff shaft of a tractor comprising: a clutch hub; a clutch sleeve; a plurality of recesses in said clutch sleeve; and a plurality of spring-loaded driving members mounted in said clutch hub to engage and disengage said recesses to effect engagement and disengagement of said clutch; said recesses and said driving members being configured to effect disengagement of certain individual ones of said plurality of driving members at different torque transmission levels than remaining driving members of said plurality of driving members.

4,566,571

CLUTCH DRUM OF AUTOMATIC TRANSMISSION

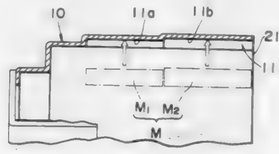
Kazuyoshi Fujioka, Sagamihara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 10, 1984, Ser. No. 578,814

Claims priority, application Japan, Feb. 25, 1983, 58-30557

Int. Cl.⁴ F16D *13/52*

U.S. Cl. 192—70.2 **10 Claims**



1. In a clutch mechanism of an automatic transmission including an improved clutch drum wherein the improved clutch drum comprises:

a hollow cylindrical member for transmitting rotation to at least one clutch plate having spline projections;

a plurality of spline slots, disposed in said hollow cylindrical member, for engaging the spline projections of the clutch plate, wherein each of the spline slots extends longitudinally from a first slot end to a second slot end, wherein each of the spline slots includes a plurality of longitudinally extending slot portions, wherein the slot portions have varying widths, and wherein the slot portions are arranged in order of increasing width from the first slot end to the second slot end.

4,566,572

CLUTCH WITH A PILOTED AND SPRING LOADED DRIVEN DISC HUB

Richard A. Flotow, Butler, and William M. Tennant, Auburn, both of Ind., assignors to Dana Corporation, Toledo, Ohio

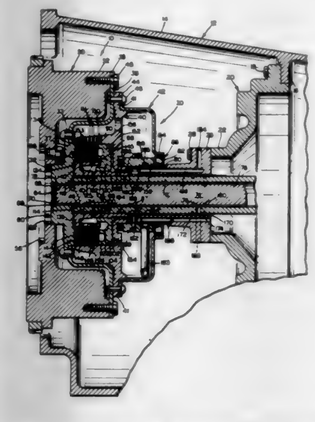
Filed Jan. 9, 1984, Ser. No. 569,362

Int. Cl.⁴ F16D *25/061, 13/72*

U.S. Cl. 192—70.12 **19 Claims**

15. In a multiple disc oil cooled and lubricated clutch including a clutch cover, a disc pack disposed within said cover with some members of the pack drivingly connected to said clutch cover and other members of said pack drivingly connected to a driven clutch hub, the latter being adapted for driving connection to a transmission input shaft, means for engaging said disc pack and passage means for conducting fluid into and out of said clutch cover for cooling and lubricating the contents thereof, the improvement comprising a piloting bore formed in said clutch cover adjacent to said clutch hub, the adjacent end of said clutch hub being abuttingly received in said piloting bore and containing radially extending lubricant grooves in the abutting end of said hub, a piloting groove formed in the end of said hub opposite to said abutting end of said hub, and a wave

washer disposed in said piloting groove and compressed between said hub and a portion of said clutch cover axially



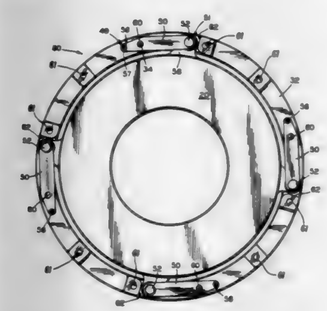
spaced from said piloting bore for biasing said hub into piloting engagement with said piloting bore.

4,566,573

PRESSURE PLATE STRAP DRIVE APPARATUS AND METHOD

Wendell C. Lane, Jr., Laurinburg, N.C., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 15, 1982, Ser. No. 449,961
Int. Cl.[4] F16D *13/44, 13/69, 13/70*
U.S. Cl. 192—70.18 **6 Claims**



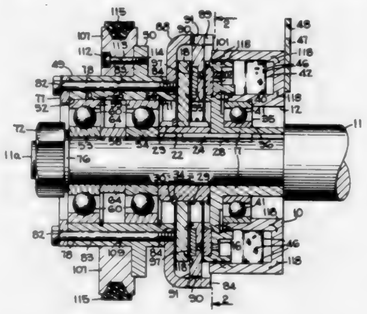
1. In a friction plate clutch comprising a cover assembly disposed for mounting to a rotatable flywheel, a pressure plate contained within and axially movable relative to said cover assembly, and a flexible pressure plate strap drive connected to said pressure plate; an improvement wherein said pressure plate strap drive comprises primary and secondary connection means to said cover assembly, both of said connection means comprising direct and positive contacts between said strap drive and said cover assembly, said secondary connection means providing the sole means for insuring concentricity of said pressure plate with respect to said cover assembly, said cover assembly comprising a clutch cover, and an axially extending adapter ring secured thereto, said primary connection means comprising a joint connection of said strap drive to both said adapter ring and cover, and said secondary connection means comprising a separate connection solely to said adapter ring.

4,566,574

MULTIPLE-DISC ELECTROMAGNETIC CLUTCH

Jeffrey F. Marshall, Waukesha, Wis., assignor to PT Components, Inc., Indianapolis, Ind.

Continuation of Ser. No. 309,370, Oct. 7, 1981, abandoned. This application Feb. 6, 1984, Ser. No. 577,244
Int. Cl.[4] F16D *27/10*
U.S. Cl. 192—84 C **9 Claims**



1. A magnetic clutch for selectively connecting a rotatable input shaft to a rotatable output hub, said clutch comprising:
- a first input disc fixedly mounted on said input shaft for rotation therewith;
- a second input disc axially movably mounted on said input shaft for rotation therewith;
- an output disc coaxial with said input shaft supported by said output hub for floating axial movement between said first and said second input discs;
- outer annular means on said first input disc and said output disc forming first magnetic poles;
- inner annular means on said first input disc and said output disc forming second magnetic poles;
- annular, rigid insulation means separating said first and said second magnetic poles;
- single spring means for biasing said first and said second input discs axially away from said output disc;
- connecting means supporting said output disc for rotation with said output hub; and
- means for developing a magnetic flux that is directed through said first magnetic poles in said first input disc and said output disc to said second input disc and returns through said second magnetic poles in said output disc and said first input disc, whereby said second input disc and said output disc are drawn towards said fixed first input disc to clamp said output disc between said first and said second input discs so that the torque between said input shaft and said output hub is greatly increased.

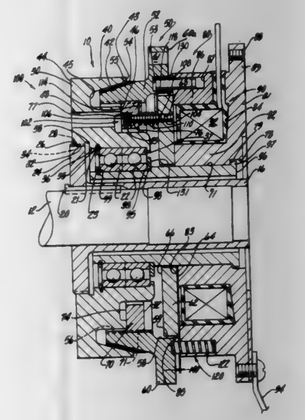
4,566,575

SELF-ADJUSTING ELECTROMAGNETIC CONE BRAKE

T. Curran Sekella, Elmira, N.Y., assignor to Facet Enterprises, Inc., Okla.

Filed Dec. 30, 1981, Ser. No. 336,103
Int. Cl.[4] F16D *13/75, 27/10, 65/52*
U.S. Cl. 192—84 C **20 Claims**

1. An electromagnetic friction device for torque transmission comprising:
- input means;
- output means coaxially disposed with said input means;
- means for translating torque from said input means to said output means, said torque translating means further comprising:
  - a friction ring member disposed adjacent to said input means;
  - an inner ring member coaxially disposed with said friction ring member, said inner ring member further being movable rotatably and axially relative said friction ring member;
- means for electromagnetically biasing said friction ring member out of engagement with said input means, said electromagnetic biasing means being selectively operable and concentrically disposed with respect to said output means to form a partial circuitous flux path therewith, said electromagnetic biasing means comprising
- a first magnetic means mounted to said output means;
- a second magnetic means mounted to said friction ring member, said first and second magnetic means forming a complete circuitous flux path therebetween;
- means for axially adjusting said second magnetic means relative to said friction ring member, said means for axially adjusting further comprising:
- means for connecting said inner ring member to said second magnetic means; and



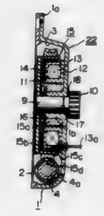
helical biasing means mounted to a portion of said connecting means, said helical biasing means comprising a first radial end portion slidably engaging said friction ring member, a second radial end portion abutting said friction ring member, and a body portion between said first radial and second radial end portion, said body portion further being mounted to said connecting means, whereby said body portion of said helical biasing means biases said inner ring member in an axial direction away from said second magnetic means, said first radial end portions biased said friction ring member to create a predetermined rotational drag between said inner ring member and said friction ring member to prevent over-adjustment and said second radial end portion of said helical biasing means abuts said friction ring member to provide undirectional rotation between said inner ring member and said friction ring member.

4,566,576

REDUCTION GEAR HAVING A MAGNET CLUTCH MECHANISM

Masaichi Moriya, Chigasaki; Haruo Mochida, and Yoshimitsu Takeda, both of Yokohama, all of Japan, assignors to Ohi Seisakusho Co., Ltd. and Nissan Motor Co., Ltd., both of Yokohama, Japan

Filed Oct. 21, 1982, Ser. No. 435,691
Claims priority, application Japan, Oct. 23, 1981, 56-169717
Int. Cl.[4] F16D *27/10;* **F05F** *15/12*
U.S. Cl. 192—84 C **4 Claims**



1. A reduction gear mechanism having a magnet clutch mechanism, comprising:
- (a) a casing having a front side and a rear side;
- (b) an output power shaft supported for rotation on said casing;
- (c) an armature mounted to said output power shaft within said casing adjacent said casing rear side;
- (d) an annular yoke made of magnetic material having a front side fixed to said casing front side and upper and lower sides extending rearward therefrom towards said casing rear side and defining an opening on the rear side of said yoke;
- (e) an annular coil housed within said annular yoke in an opposing relationship to said armature;
- (f) a non-magnetic annular member extending between the upper and lower sides of said annular yoke at the rear side of said yoke adjacent to said coil;
- (g) a worm wheel which is interposed between said yoke and said armature and is rotatably mounted to said casing, so as to be rotated freely apart from said coil and said armature when the coil is not energized, said worm wheel comprising a cylindrical hub portion, an end wall extending from a rear side end of the hub portion and being interposed between said coil and said armature, a ring portion extending forwardly from an outer circumferential edge of said end wall and an annular toothed member integrally fitted on an outer periphery of the ring portion, wherein said hub portion, end wall and ring portion of said worm wheel define an annular hollow in which said annular yoke is matingly housed; and
- (h) a worm which is rotatably mounted to said casing in a meshed relationship with the annular toothed member of said worm wheel, whereby, upon energization of said coil, said armature is magnetically attracted to said worm wheel thereby to connect transmission of rotation of said worm to said armature and said output power shaft.

4,566,577

CLUTCH RELEASE DEVICE FOR MOTORIZED CYCLES

Masaharu Tsuboi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1983, Ser. No. 455,519
Claims priority, application Japan, Jan. 8, 1982, 57-1417
Int. Cl.[4] F16D *25/08*
U.S. Cl. 192—85 CA **4 Claims**

1. A clutch release device for a motorized cycle including an engine, at least one rear wheel, transmission means for transmitting the power of said engine to said rear wheel, and said

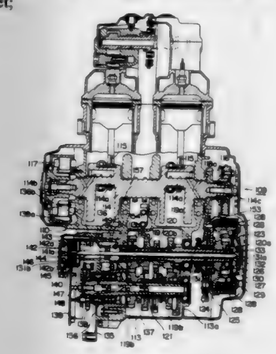
transmission means comprising a friction clutch mechanism connected with said engine, a sprocket for chain-driving said rear wheel, a speed change mechanism of a gearing type having a tubular main shaft connected with said clutch mechanism and a counter shaft connected to said sprocket, said main shaft and said counter shaft being arranged to be substantially parallel with each other, and said clutch mechanism and said sprocket being disposed on either end side of said main shaft and on the opposite end side of said counter shaft, respectively, comprising:

a push rod member arranged for advancing and retreating movement through said main shaft;

said push rod member having either end portion thereof adapted to release said clutch mechanism as said push rod member advances or retreats;

a hydraulic cylinder acting on the other end portion of said rod member, thereby causing same to advance or retreat;

said hydraulic cylinder being disposed more remote from the axial center line of said motorized cycle than said sprocket;



said power transmission means having a chain cover member covering the outside of said sprocket;

said hydraulic cylinder being supported by said chain cover member;

said speed change mechanism having a transmission case member bearing respective both end portions of said main shaft and said counter shaft;

said chain cover member being disposed so as to be spaced from said transmission case member with a spacer member sandwiched therebetween;

said spacer member comprising a chain guide substantially covering the inside of said sprocket;

said chain guide having a tubular portion;

said push rod member having an extended end portion extending through said tubular portion to outside of said chain guide member; and

said hydraulic cylinder being arranged to act on the distal end of said extended end portion.

4,566,578

CLUTCH THROW-OUT BEARING AND BEARING CARRIER ASSEMBLY

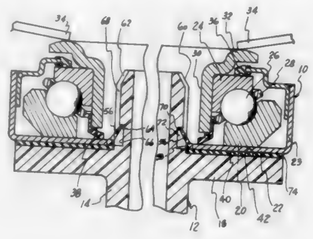
Keith V. Leigh-Monstevens, Troy, and David L. Wrobleski, Fraser, both of Mich., assignors to Automotive Products plc, Warwickshire, England

Filed Jun. 4, 1984, Ser. No. 616,713

Int. Cl.⁴ F16D *19/00*

U.S. Cl. 192—98 **18 Claims**

1. A clutch release bearing and bearing carrier assembly comprising a carrier member in the form of a tubular sleeve member, a radial flange proximate an end of said tubular sleeve member, and a bearing member having a housing rear wall supporting a race of said bearing member, said housing rear wall having a radially and angularly projecting lug, said sleeve body member having a frusto-conical end portion for elastically deflecting said lug when said bearing member is pressed onto the end of said sleeve body member, and a pocket formed



in the peripheral surface of said sleeve body member having an abutment for engagement by said lug when said bearing housing rear wall engages said flange.

4,566,579

MULTIPLE BISCUIT CLUTCH OR BRAKE WITH CIRCULATED IMMERSION COOLING

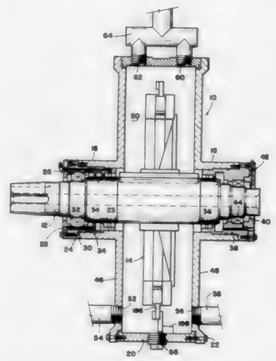
Earl R. Johnson, Tulsa, Okla., assignor to Loffland Brothers Company, Tulsa, Okla.

Filed May 29, 1984, Ser. No. 614,999

The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.

Int. Cl.⁴ F16D *13/72, 25/063*

U.S. Cl. 192—113 B **8 Claims**



1. A friction apparatus adapted for installation on a rotatable shaft and comprising hub means concentrically disposed around the shaft and secured thereto for rotation simultaneously therewith, a rotatable annular disc means concentrically disposed around the shaft and adapted for connection with the shaft for selected simultaneous rotation therebetween, a pair of annular flanges disposed outboard of the disc means and spaced slightly from the opposite sides thereof, piston means carried by the disc means and operable between extended and retracted positions between the annular flanges for alternate frictional engagement and disengagement with respect thereto, means secured to the annular flanges for supporting thereof independent of the disc means whereby the disc and annular flanges coact simultaneously in the frictional engaged position of the piston means and act independently in the disengaged position of the piston means, fluid chamber means disposed around the disc means and pistons and flanges for receiving and circulating a coolant therearound for dissipation

of heat created by the frictional engagement between the piston means and annular flanges.

4,566,580

AMMUNITION REORIENTING PROCESS

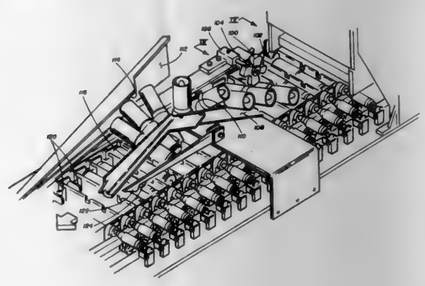
Anthony J. Aloi, Richmond; George D. Brooks, So. Burlington, and Ronald E. Prince, Colchester, all of Vt., assignors to General Electric Company, Burlington, Vt.

Division of Ser. No. 336,791, Jan. 4, 1982, Pat. No. 4,434,700.

This application Dec. 23, 1983, Ser. No. 564,861

Int. Cl.⁴ F42B *39/10;* **B65B** *35/56*

U.S. Cl. 193—48 **1 Claim**



1. A process of sorting a plurality of fixed cased rounds of ammunition, contained in a receptacle in non-uniform end to end orientation, each round having a center of gravity which is spaced a first distance from a first end thereof, and a second distance from the second end thereof the first distance being greater than the second distance, comprising:

discharging the rounds sequentially into a train of such rounds flowing along a first surface downstream with each round lying transverse to the direction of flow in either of a first or second end to end orientation;

passing each round in the train over a recess so that a round in said first orientation has its respective center of gravity over said recess and the second end of said round tilts downwardly into said recess while a round in said second orientation has its respective center of gravity over said first surface and does not tilt;

providing the end, which passes over the recess, of each round of ammunition as it commences passing over the recess with an initial positive limited displacement into said recess whereby rounds in said first orientation continue to tilt into the recess, while rounds in said second orientation restore themselves to an untilted disposition;

shifting the angle of tilt beyond the perpendicular of any tilted round to change its orientation from said first orientation to said second orientation and restoring any tilted round back to said first surface so that all rounds in the train are in the second orientation.

4,566,581

COIN OPERATED DISPENSERS FOR DISPENSING HORIZONTALLY DISPOSED ARTICLES SUCH AS NEWSPAPERS FROM THE UPPER END OF A STACK

Dennis R. Martin, Saginaw, Mich., assignor to Draper Technologies, Inc., Saginaw, Mich.

Filed Sep. 15, 1983, Ser. No. 532,380

Int. Cl.⁴ G07F *11/22*

U.S. Cl. 194—248 **15 Claims**

15. In a coin operated newspaper and like article vending machine for dispensing articles on a one-at-a-time basis:

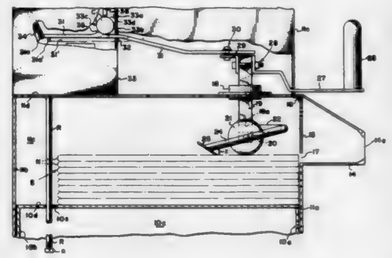
a. a housing forming a cabinet for containing a vertical stack of horizontally disposed newspapers having front, rear and side edges, and like articles to be vended;

b. wall means incorporated with the housing providing a dispensing slot for passing one article at a time laterally out from the top of said stack;

c. means for supporting successive articles in the stack in a broadside position with their front edges facing the dispensing slot;

d. dispensing elements actuable to engage the uppermost article in the stack and move one side edge of the topmost article at least partly out the opening comprising a fulcrum shoe mounted to rotate about its own generally vertical axis of rotation and having a projecting arm mounted for swinging travel about said axis in generally a horizontal plane;

e. generally vertical pivot means providing said generally vertical axis, mounted on said housing inward of said slot above a corner portion of said support means and the articles supported thereon, and supporting the fulcrum shoe for rotation about said axis;



f. a curvilinear fulcrum surface on the lower end of said shoe depending to engage the topmost newspaper on said platform at a corner thereof;

g. an article edge-engaging claw mounted by said arm at a spaced distance inwardly from said axis and fulcrum surface for movement in sliding engagement with the topmost article and for vertical downward movement when it has cleared the topmost article in its return travel to a position facing an edge of the article;

h. operating linkage operable to swing said arm substantially about the fulcrum surface and turn said claw to turn a topmost article disposed broadside on said support means to generally an endwise position projecting out said slot; and

i. coin controlled latch means normally preventing operation of said linkage except when proper coins are inserted.

4,566,582

APPARATUS FOR CHANGING THE DIRECTION OF ADVANCEMENT OF A STREAM OF PAPER SHEETS OR THE LIKE

Heinz Linder, Zofingen, Switzerland, assignor to Grapha-Holding Aktiengesellschaft, Hergiswil, Switzerland

Filed Oct. 26, 1983, Ser. No. 545,657

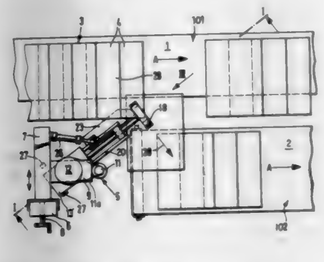
Claims priority, application Switzerland, Nov. 2, 1982, 6363/82

Int. Cl.⁴ B65H *29/60*

U.S. Cl. 198—367 **14 Claims**

1. Apparatus for diverting flat objects of a stream of such objects, particularly selected sheets of a stream of partially overlapping sheets, comprising first conveyor means defining a substantially horizontal first path and arranged to normally advance the stream along such first path in a predetermined direction; second conveyor means defining a substantially horizontal second path having a portion adjacent to a portion of said first path, said first and second paths being essentially coplanar and being adjacent and substantially parallel to each other; and means for diverting objects from said portion of said first path into said portion of said second path, including a pair of rotary elements disposed at a level above said first path,

defining a nip and being movable to and from operative positions adjacent to said portion of said first path about an axis which is substantially normal to the plane of said portion of said first path, a deflecting member disposed at a level above said first path and upstream of said rotary elements, as considered in said direction, and movable between a first position remote from the objects in said first path and a second position in which said deflecting member extends into said first path and directs the oncoming objects into said nip, and means for rotating said rotary elements in directions to advance the objects entering said nip into said portion of said second path.

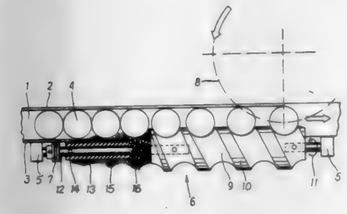


4,566,583

VESSEL SEPARATING APPARATUS FOR USE IN PARTICULAR IN VESSEL HANDLING MACHINES

Egon Schneider, Neutraubling, Fed. Rep. of Germany, assignor to Krones AG Hermann Kronseder, Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Continuation of Ser. No. 407,181, Aug. 11, 1982, abandoned.
This application Mar. 11, 1985, Ser. No. 710,537
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1981, 3132048
Int. Cl.⁴ B65G *47/26*
U.S. Cl. 198—459 **7 Claims**



1. A vessel separating apparatus for use in particular in vessel handling machines, comprising:

a conveyor belt;

a lateral guide means along one side of said conveyor belt and a worm conveyor along an opposite side of said conveyor belt;

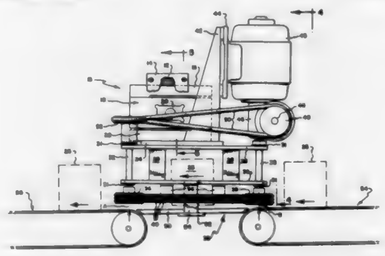
said worm conveyor being provided at least in the entrance region thereof with a rigid core having a resilient jacket thereon consisting only of a plurality of radially extending, resiliently flexible bristles, the inner ends of which are secured to said core, the outer ends of which are formed to a worm conveyor thread, the flights of which are adapted to enter between said vessels to effect a conveyance of said vessels in response to a rotation of at least said entrance region of said worm conveyor, all of said radially extending flexible bristles being made of the same flexible material so that the radially outermost ends of said bristles forming said worm conveyor thread are capable of yielding in the event that one of said vessels is temporarily wedged between said worm conveyor thread and said laterial guide means.

4,566,584

WEIGHING CONVEYOR

John W. Lindstrom, Newfield, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.

Filed Oct. 29, 1984, Ser. No. 666,209
Int. Cl.⁴ G01G *11/00*
U.S. Cl. 198—504 **17 Claims**



1. A machine system for transporting and weighing or checkweighing articles passing in succession therethrough, such as for use in conjunction with weight-signal transmitting-/converting/calculating printout devices or the like for visual display and price labeling operations or the like; said system comprising in combination:

article delivery and take-away means;

a weighing machine support device;

a weighing machine including a vertically flexible weight-measuring means attached to and suspended from said support device;

a truss type structure of inverted U-shaped sectional form attached to and suspended from said weight-measuring means and having oppositely disposed side wall portions thereof defining in aligned combination with said article delivery and take-away means an article-to-be-weighed passageway through said machine system;

oppositely paired article transport means carried upon said truss structure at opposite in-board side wall portions thereof for carrying therebetween articles to be weighed in vertically suspended succession through said passageway; and

means powering said article transport means mounted upon said truss structure comprising a tare weight component of said weighing machine.

4,566,585

SELF-CENTERING DRIVER FOR OBLONG MATERIAL

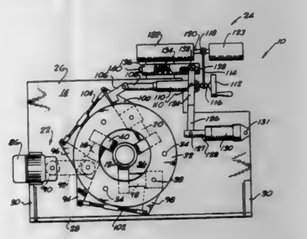
Ulrich Dreher, Trochtelfingen, and Helmut Reitz, Metzingen, both of Fed. Rep. of Germany, assignors to Institut Dr. Friedrich Förster, Reutlingen, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,364
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1983, 3222104
Int. Cl.⁴ B65G *29/00*
U.S. Cl. 198—624 **9 Claims**

1. Driver for self-centering driver of oblong-shaped semifinished material of a cylindrical or polygonal cross section, said drive being in longitudinal direction of the material along a track, including a mounting body having a passage for the material being driven along the track, at least three arms attached to the mounting body, at the nearest part of the arms to the material one rotation element each is arranged, at least one of said rotation elements being driven and in driving contact with the material, and means for simultaneous and uniform adjustment of the three arms relative to the material, comprising:

the arms are swingable about an axis in a plane vertical to the track of the material and the rotary movement for the driven rotation elements is provided by a shaft coaxial with the swing axis and is transferred to the rotation elements via a miter gear attached to the arms;

said arms including lever projections facing away from the semifinished material, said projections being connected to each other by bar structures for enabling common adjustment and setting of the arms;



motor-driven adjustment means connected to one of said arms for a common adjustment and setting of the arms; and

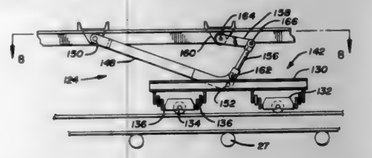
a drive engaging, on one hand, one of the lever projections and on the other hand a lever, which lever is pivoted directly at the mounting body and is pressed by a spring arrangement towards a stop in a sense setting the rotation elements.

4,566,586

PRESSURE DEVICE FOR CONVEYOR

Tommie E. Robertson, Guin, Ala., assignor to The Continental Conveyor & Equipment Co., Inc., Winfield, Ala.

Filed Aug. 17, 1983, Ser. No. 524,057
The portion of the term of this patent subsequent to Dec. 31, 2002, has been disclaimed.
Int. Cl.⁴ B65G *15/14*
U.S. Cl. 198—628 **3 Claims**



1. For use in a high angle conveying apparatus having a conveyor belt and a cover belt trained for movement in endless configurations through a lifting zone whereat said belts are moved into operative association with each other so that material on said conveyor belt will be held in contact therewith by said cover belt, improved pressure means for applying essentially fully equalized pressure to the back surface of said cover belt including:

(a) a module of rollers,

(b) at least one row of rollers mounted within said module, each row of rollers positioned to contact the back surface of the cover belt along a line transverse to the direction of movement of the cover belt, each said row of rollers comprising a plurality of freely rotatable individual rollers contacting the cover belt across the major extent of the line across the cover belt, with each roller being on an individually moveable axis of rotation to permit conformance of each roller to the cover belt independent of its adjacent roller,

(c) support means pivotally coupled at a first end to a framing member of the conveying apparatus and at a second end to said module of rollers for movement of the module as a whole relative to said framing member,

(d) a torsion spring means between said framing member and said support means at said second end to bias each said row of rollers into contact with the back surface of the cover belt for applying essentially fully equalized pressure thereto, and

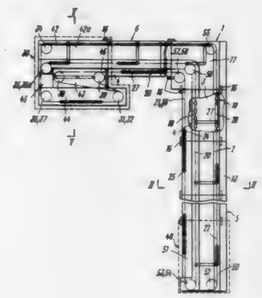
(e) said torsion spring means including a torsion spring mounted on said framing member at a position adjacent the module of rollers, an upper link member connected to said torsion spring for rotation about an axis to transfer torsion from said spring, a lower link member pivotally connected to said upper link member and to said support means for transferring torsion from said upper link member to said support means.

4,566,587

ANGLE SCRAPER CHAIN FACE CONVEYOR

Viktor M. Gorlov, Donetsk; Evgeny I. Kiselev, Kopeisk; Alexandr G. Levin; Valentin I. Kutovoi, both of Donetsk; Jury F. Tverezy, Kopeisk, and Igor V. Spivak, Donetsk, all of U.S.S.R., assignors to Donetsky Nauchno-Issledovatelsky Ugolny Institut, Donetsk, U.S.S.R.

Filed Jun. 24, 1982, Ser. No. 391,680
Int. Cl.⁴ B65G *19/26*
U.S. Cl. 198—732 **7 Claims**



1. An angle scraper chain face conveyor comprising: a pan line which includes pans that couple one another in a separable fashion and form a conveying channel and a return channel; a face part of said pan line; a gate part of said pan line; an angle section adapted to couple in a separable fashion said face part with said gate part and having attachment elements adapted to couple it with said face part and said gate part which attachment elements permit the installation of said face part in place of said gate part in the process of assembling the conveyor in an opposite mine face; two chain assemblies closed horizontally, each of said chain assemblies having a conveying run situated in said conveying channel of said pan line and a return run situated in said return channel of said pan line; means for driving said chain assemblies along said pan line; flights implemented in the form of two parts which are joint-coupled with each other and with said chain assemblies; a drive section provided with drive and deflector pulleys for said chain assemblies and coupled with an end of said gate part which is most distant with respect to said face part; drive pulleys of said drive section coupled kinematically with said drive means; said drive section having three parts which couple with one another in a separable fashion, including a first part of said three parts of said drive section adapted to mount respective deflector pulleys and having a portion whose shape is the same as that of said conveying channel of said pan line, the first part of said drive section being located adjacent to said conveying channel; said first part of said drive section having attachment means for releasably coupling said first part with said gate part and said

face part; a second part of said drive section adapted to mount respective deflector pulleys and having a portion whose shape is the same as that of said return channel, said second part being situated adjacent to said return channel and between said first part and a third part of said drive section; a third part of said drive section adapted to mount respective drive and deflector pulleys; said second and third parts of said drive section each having an axis of symmetry that is parallel with the geometric longitudinal axis of said gate part; a tail section having deflector pulleys for said chain assemblies and coupled with that end of said face part which is most distant with respect to said gate part; said tail section having two parts which are coupled together in a separable fashion, a first part of said two parts of said tail section adpated to mount deflector pulleys and implemented as a mirror reflection of said first part of said three parts of said drive section and situated adjacent to said conveying channel of said pan line; said first part of said tail section having attachment means for releasably coupling said first part of said tail section with said gate part and said face part; and a second part of said tail section whose shape is the same as that of the return channel of said pan line, said second part being located adjacent to said return channel.

4,566,588

AMMUNITION STORAGE SYSTEM AND CONTAINER FOR USE THEREIN

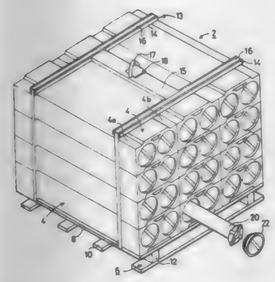
Nachman Kataczynski, Natanya, Israel, assignor to Urdan Industries Ltd., Natanya, Israel

Continuation of Ser. No. 356,356, Mar. 9, 1982. This application Nov. 2, 1983, Ser. No. 548,036

Claims priority, application Israel, Mar. 20, 1981, 62441

Int. Cl.⁴ F42B *37/00*

U.S. Cl. 206—3 **14 Claims**



1. An ammunition storage system including a supporting pallet, a plurality of like containers in stacked relationship on said supporting pallet and arranged in a plurality of vertical columns and horizontal rows to form a multi-layer honeycomb construction, each container having at least one internal compartment configured to receive a round of ammunition, the lower face of each container being formed with a foot at each end, and the upper face of each container being formed with a socket at each end of a configuration to nestably receive the foot of another like container and to prevent both sidewise and longitudinal movements therebetween, and a strap applied circumferentially around an intermediate portion of said containers and supporting pallet to secure them in said honeycomb construction, thereby facilitating: the transportation to the vehicle of the plurality of rounds of ammunition, their storage within the vehicle in a condition providing a high degree of mechanical protection because of the cushioning effect of the honeycomb construction, and the individual use of the ammunition rounds by their individual removal from one end of their respective containers in the honeycomb construction.

4,566,589

GAS CONTAINER

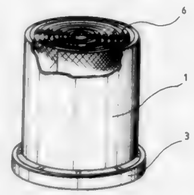
Udo Poschinger, Neu Esting, Palsweiser Strasse 3n, D-8037 Olching, Fed. Rep. of Germany

Filed Feb. 28, 1984, Ser. No. 584,328

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1983, 3307797; Jun. 22, 1983, 3322328

Int. Cl.⁴ F17C *13/12*

U.S. Cl. 206—0.6 **7 Claims**



1. A cylindrical container for liquid gas comprising walls including a main cylindrical wall portion, wherein said walls enclose said container and are formed of an aluminum alloy and a heat-conductive filler inlay arranged within said cylindrical container, said heat-conductive filler inlay being formed of a three-dimensional metallic grid structure of a cylindrical shape formed of at least two coils of expanded metal nested within each other, wherein said expanded metal is made of an aluminum foil having a thickness within the range of about 0.02 mm to 0.1 mm.

4,566,590

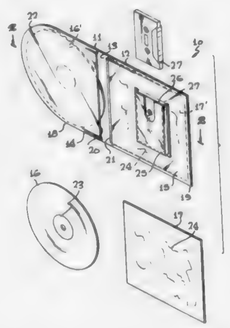
RECORDED AND PRINTED MESSAGE CARRIER

Larry F. Manning, 4706 Kester, Sherman Oaks, Calif. 91403, and Andrea Stanley, 409 Winchester Ave., Glendale, Calif. 91201

Filed Sep. 6, 1984, Ser. No. 648,000

Int. Cl.⁴ B65D *85/57, 85/62, 85/672*

U.S. Cl. 206—232 **1 Claim**



1. A recorded and printed message carrier comprising:
- a record medium having audio recorded data carried thereon;
- a printed message medium having visible indicia carried thereon;
- an elongated backing sheet of pliable, transparent material having a hinge portion mid-way between the opposite ends constituting a hinge for folding said backing sheet over upon itself;
- a first and a second front sheet of material attached to the edge marginal regions adjacent to the peripheral edge of said backing sheet;

said front sheets having exterior outer edges corresponding to and following said backing sheet at its opposite ends and separated from each other by said hinge portion so as to constitute a pair of open pockets for insertably receiving said record medium and said printed message medium respectively;

said record medium disposed in one of said pair of open pockets and said printed message medium disposed in said other open pocket of said pair;

said first and second sheets include unattached opposing edges in spaced apart parallel relationship separated by said hinge portion which constitutes entrances leading into each of said respective pockets;

said first and second sheets are composed of transparent material for visually exposing said record and printed message mediums therethrough;

said record medium is a circular disk having pictorial indicia carried thereon and said printed message medium is square cornered;

each of said backing sheet ends and corresponding front sheets defining said pockets is configured to conform to the external circular shape of said record medium and said square cornered printed message medium respectively;

said backing sheet carrying said pocket insertably receiving said circular record medium is substantially longer in length than said pocket insertably receiving said square cornered record medium;

a third front sheet of material attached along its edge marginal regions to a selected one of said first and second front sheets and having an opening normal to said first and second sheets opposing edges and to said hinge portion for insertably receiving a recorded medium taking the form of a magnetic tape cassette;

said tape cassette having a thickness substantially greater than the thickness of said disk record medium and said printed message medium;

said third sheet constituting a third pocket having its opening in alignment normal to said opening of said pocket sheet on which it is carried;

said backing sheet is composed of a transparent material visually exposing the sides of said record and printed message mediums opposite to their sides visually exposed through said front sheets;

said hinge portion is of a width at least equal to the thickness of said first mentioned pocket and said third pocket so as to accommodate said medium thicknesses when folded over upon themselves; and

a plurality of scorelines carried laterally across said hinge portion defining pivotal axis for rotating said backing sheet.

4,566,591

MULTIPLE PACKAGING DEVICE

Alfons Turtschan, Schwaebisch Hall, and Herbert Drechsler, Vellberg, both of Fed. Rep. of Germany, assignors to Gasti-Verpackungsmachinen GmbH, Schwaebisch Hall, Fed. Rep. of Germany

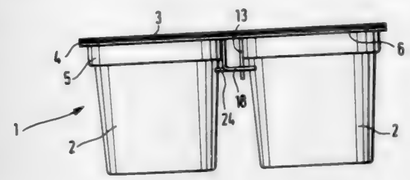
Filed Aug. 27, 1984, Ser. No. 644,779

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 3330777

Int. Cl.⁴ B65D *75/00*

U.S. Cl. 206—427 **10 Claims**

1. A multiple packaging system for containers which have edge flanges and are closable with covers, wherein containers are held together by a connecting element which grips the containers, said connecting element comprising a flat cut-out which supports the edge flanges of the containers from the underside and is firmly connected to the covers of the containers, wherein the covers comprise a cover sheet which is sealable to the containers and is attached to the containers, and the length and width of the cover sheet have the same dimensions as those of the cut-out and the containers are of tubular configuration and the cut-out and the cover sheet are attached to each other in the corners on the sides of the containers.



4,566,592

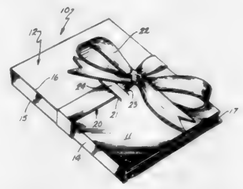
DECORATIVE PACKAGE

Colette M. Klukos, 10030 - 152nd St., West Olive, Mich. 49460

Filed Oct. 3, 1984, Ser. No. 657,181

Int. Cl.⁴ B65D *85/62*

U.S. Cl. 206—449 **9 Claims**



1. A decorative package for planar objects such as cards comprising:
- a first panel and a second panel joined along an adjacent edge of each panel to define a pocket between said panels, said first panel having joined edge joined to said second panel and a free edge opposite said joined edge;
- binding means surrounding said panels in a direction orthogonal to said edges for holding the panels together and confining objects placed in the pocket, said binding means including an elongated binding element having two ends, said two ends tied in a decorative bow adjacent said first panel; and
- said first panel including two spaced apertures therethrough said apertures defining tab means therebetween, said binding element extending under said tab means, and said decorative bow being disposed between said free edge and said apertures and adjacent said apertures.

4,566,593

CARTON FORMED FROM A PLURALITY OF PACKAGES

Rolf Muller, Mehring, Fed. Rep. of Germany, assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 23, 1985, Ser. No. 693,713

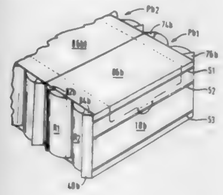
Claims priority, application United Kingdom, Jan. 23, 1984, 8401658

Int. Cl.⁴ B65D *5/54*

U.S. Cl. 206—611 **6 Claims**

1. A unitized shipping and display carton comprising a plurality of packages each having a top wall and a base interconnected by a pair of spaced side walls so as to form a tubular structure, end wall means to prevent endwise movement of the contents through the ends of said tubular structure, a removable opening panel provided in each top wall and extending at least partially in at least one of said side walls and defined by tear lines, characterised in that said packages are joined one to

the next in side-by-side relationship at least along the side wall portions of said opening panels and in that said tear lines defining the top wall portion of the opening panel of one package



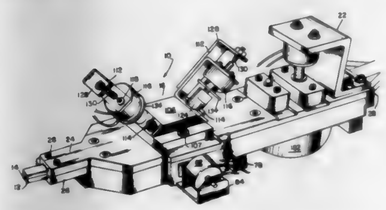
are in registry with those of the next adjacent package whereby removal of the opening panel of an endmost package of said carton can be continued to cause removal of the opening panels of the other packages in said carton.

4,566,594

COMPONENT VERIFIER

Leon F. Sieger, Wakefield, and Robert D. DiNozzi, Beverly, both of Mass., assignors to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 451,917, Dec. 27, 1982, abandoned. This application Jan. 8, 1985, Ser. No. 689,507
Int. Cl.⁴ B07C 5/02
U.S. Cl. 209—539 **11 Claims**



1. A verifier operable in response to a computer control for testing the acceptability of a chip type component passing down an enclosed air track conveyor having a passageway in which the component is transported, comprising:

(a.) means positioned exterior of the conveyor and insertable into the passageway for arresting the travel of the component in the conveyor;

(b.) means mounted exterior of the conveyor and including means extending into the conveyor passageway for electrically contacting the electrical contacts on the component to test whether the proper component is present and whether the electrical value is acceptable;

(c.) means for releasing said arresting means and said electrical contacting means to permit the component to pass down the conveyor; and

(d.) means downstream from the verifier including a rotary switch having a slot in communication with the conveyor passageway when a component tests acceptable and an inclined rejection slot in communication with the conveyor passageway for rejecting the component if it is unacceptable.

4,566,595

DEVICE FOR CLASSIFYING HANDLED OBJECTS

Guy Fustier, 5, rue de Reims, 94230 Cachan, France

Filed Apr. 8, 1983, Ser. No. 483,170
Claims priority, application France, Apr. 15, 1982, 82 06480
Int. Cl.⁴ B07C 1/18, 3/18
U.S. Cl. 209—545 **4 Claims**

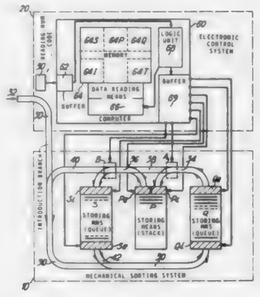
1. A device for classifying objects, wherein it comprises a mechanical classification system and an electronic control system, the classification system comprising:

(A) a first means for the storage of objects, organised in the form of a queue, i.e. enabling the objects to be removed in the order in which they entered, said means being provided for this purpose with a member for introducing the objects into the queue and a member for extracting the first object from the queue;

(B) a second means for the storage of objects, organised in the form of a stack, i.e. enabling the objects to be removed in the opposite order from that in which they were inserted, said means being consequently provided with a member for introducing objects to the stack and member for extracting the first object from the stack;

(C) a third means for storing objects, organised in a queue, i.e. able to remove the objects in the order in which they entered, said means being provided for this purpose with a member for introducing the objects into the queue and a member for extracting the first object from the queue;

(D) means for conveying the objects to be classified, comprising an introduction branch located between an intake and the introduction member in the first storage means, a branch between the extraction member of the first means and the introduction member of the second storage means, said branch having first switching means, a branch between the extraction member of the second storage means and the introduction member of the third storage means,



said branch having a second switching means, a branch between the first switching means and the second switching means, a branch between the second switching means and the introduction branch, a branch between the extraction member of the third storage means and the introduction branch, and wherein the electronic control system comprises:

(E) means for reading a numerical code on the object passing on the introduction branch,

(F) a control computer comprising:

(a) a buffer input circuit connected to the reading means

(b) a memory able to receive the codes of the different objects introduced into the classification system, said memory comprising a first zone operating in a queue in accordance with the first-in-first-out procedure, a second zone operating in a stack according to the last-in-first-out procedure, a third zone functioning as a queue, a fourth memory zone in which is stored information indicating whether there is an inversion of each code with respect to the code immediately following and a fifth zone comprising instructions, the stored codes being arranged in the first, second and third memory zones in the same way as the processed objects are respectively arranged in the first, second and third storage means;

(c) a circuit for reading the data and instructions stored in the memory;

(d) a logic unit performing instructions and able to control the transfer of codes from one memory zone to another in order to classify the codes in a given order in the first memory zone and for supplying control instructions able to displace the objects corresponding to said codes from one storage means to another in order to finally obtain, in the first storage means, the objects classified in the desired order;

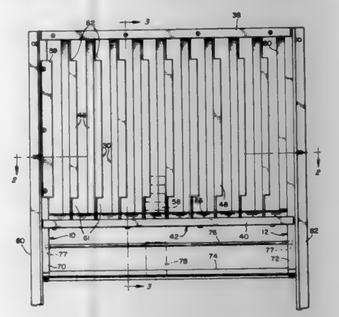
(e) an output buffer circuit connected to the logic unit and having 8 outputs connected to the introduction members, to the extraction members and to the two switching means.

4,566,596

KNOCK-DOWN DISPENSER PACK FOR STACKED ARTICLES

Kurt C. Hennig, 2 Arlie Dr., Annapolis, Md. 21401

Filed Mar. 9, 1984, Ser. No. 587,912
Int. Cl.⁴ A47F 7/00
U.S. Cl. 211—59.2 **10 Claims**



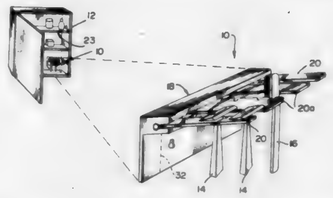
1. A knock-down rack for dispensing articles stacked in side-by-side vertical rows in said rack comprising a pair of end panels and top and bottom panels adapted to be connected in horizontal relationship to said end panels, said top and bottom panels having horizontal parallel side edges, a plurality of slots in the side edges of said top and bottom panels normal to said side edges, the spacing between any two adjacent slots being the same in each edge of both of said panels whereby when said horizontal panels are assembled to said end panels all of the slots in one side edge of a panel align horizontally with the slots in the other side edge of said panel and also align vertically with the slots in the side edges of the other of said panels, a plurality of front and rear retainer members each having end parts for reception in a pair of vertically aligned slots in the respective panels, strips engageable with the respective side edges of said horizontal panels for loosely trapping the end parts of at least the front retainer members within said slots, means for assembling together said top, bottom and end panels, and means for assembling said strips to said panels over said slots following insertion of said end parts of at least said front retainer members into said slots, said retainer members being channels having side walls at right angles to each other, the end parts for reception in said slots being one of said side walls, each of said front retainer members when assembled on one side of said rack having its other side wall facing in one direction parallel to the side edges of the top and bottom panels, each of said rear retainer members when assembled on the other side of said rack having its other side wall facing in the opposite direction parallel to the side edges of the top and bottom panels whereby the side walls of a retainer member on one side of the rack defines with the side walls of a diagonally disposed retainer on the other side of the rack a rectangular open sided vertical chute corresponding to the cross section of articles stacked in said chute.

4,566,597

MODULAR SUPPORT UNIT

Mario A. Caputo, 4905 Avenue "M", and Jeffrey C. Caputo, 4903 Avenue "M", both of Brooklyn, N.Y. 11234

Filed Aug. 8, 1983, Ser. No. 521,159
Int. Cl.⁴ A47F 5/08
U.S. Cl. 211—87 **6 Claims**



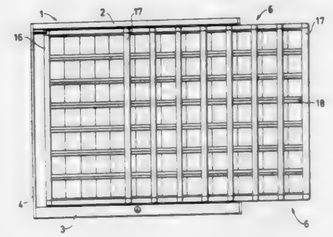
1. A modular support unit for stackable storage of safety razors and other personal articles comprising a base member having a backplate attachable to a substantially vertical surface, a flange portion extending from said backplate, said flange portion defining a channel coextensive therewith and having at least one open end, said channel further defining a recess therein, a plurality of interchangeable modular support arms having attachment means along a transverse edge, said support arms being substantially planar and slidably positionable within said channel through an open end, said attachment means interfitting within the recess for securing the support arm with the support arm projecting from the channel and being downwardly inclined toward the backplate, said support arms further defining an article receiving slot between a pair of confronting longitudinal edges, said slot having a width dimension being variably adjustable by substantially parallel slidable positioning of the support arms within the channel, said slot further having a length dimension adaptable for accepting a plurality of articles, with said articles being storable in gravity-assisted stacked relationship, said longitudinal confronting edges of the slot defining a plurality of complementary notch means for providing additional width dimension along the length of the slot for adjustable positioning of said articles within the slot.

4,566,598

ARRANGEMENT IN DISPLAY AND STORAGE RACKS

Henry Fors, Sundbyberg, Sweden, assignor to Forss Union AB, Sweden

Filed Aug. 26, 1983, Ser. No. 526,650
Claims priority, application Sweden, Aug. 27, 1982, 8204913
Int. Cl.⁴ A47F 5/08
U.S. Cl. 211—96 **6 Claims**



1. Arrangement in display and storage racks with swingable frames, particularly for easily stolen and difficulty displayed articles, a frame including at least one shelf space having a depth and a free height closely compatible with the extension in depth and height of an article (A) and defined laterally by

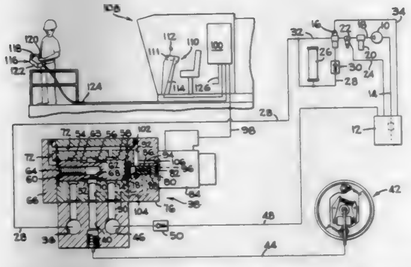
two side members (16, 17) and vertically by a top member (14;18) and bottom member (15; 18), said defining members (14–18) having means (19–22) for preventing removal of the article (A) from the shelf space, characterized in that the means for preventing removal of the article (A) from the shelf space comprise projections (19–20) from the opposing surfaces of the top and bottom members extending in the area of the top and bottom portions of the article and a distance along the front and rear sides of the article, at least one (22) of said projections (19–22) is movable vertically from a position in which a portion, or the whole, of its length engages against the front or rear side of the article (A) and prevents its removal from the shelf space, and to a position in which substantially the whole of its length is away from the vertical extension of the article (A) such that the article (A) placed in the shelf space is removable therefrom by tipping out the top or bottom portion of said article (A); the side, top and bottom members (14–18) comprising hollow sections joined at their corner portions with corner fittings (24) in a manner known per se to form a frame (6), each top member (14;18) including the projections (19, 20), forming a U-shape with the opening downwards, and each bottom member (15;18) including two members (21, 22) of L-shaped cross section with one leg vertical, one of said L-shaped members (22) being vertically movable.

4,566,599

TELECONTROL SYSTEM FOR CRANES

Ferruccio Villa, Turate, and Fabio Castelli, Sesto San Giovanni, both of Italy, assignors to FMC Corporation, Chicago, Ill.

Filed Aug. 4, 1983, Ser. No. 520,261
Claims priority, application Italy, Sep. 9, 1982, 23184 A/82
Int. Cl.⁴ B66C *13/40*
U.S. Cl. 212—160 **3 Claims**



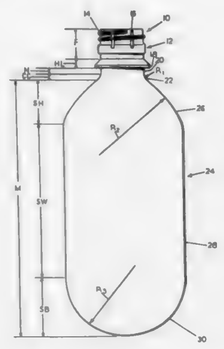
1. In a crane having a swingable upper works including a cab, a rotating joint and a pressure actuated clutch for controlling a crane function, the improvement comprising;
a cab control panel mounted in said cab and including a cab control lever moveable to provide a cab control input;
a cab encoder in said cab control panel for producing a cab output signal related to said control input;
a lightweight portable control panel including a remote control lever moveable to provide a remote control input;
a remote encoder in said portable control panel for producing a remote output signal related to said remote control input;
an umbilical cord connecting said remote encoder in said rotating joint;
an operational amplifier;
a switch for selectively connecting said amplifier to one of said rotating joint and said cab encoder;
a decoder connected to receive the output from said amplifier;
a variable current source means connected to said decoder and producing a current flow related to the selected one of said control input;
a solenoid means connected to said source means and producing a solenoid force related to current;
a hydraulic valve means operatively connected to said solenoid means for modulating pressure to said clutch as a function of said solenoid force; and
both said cab and said remote encorders producing redundant output signals and said operational amplifier selects the output signal with less noise to amplify.

4,566,600

PLASTIC CONTAINER

Long F. Chang, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 628,014, Jul. 5, 1984, abandoned. This application Mar. 12, 1985, Ser. No. 710,825
Int. Cl.⁴ B65D *23/00*
U.S. Cl. 215—1 C **11 Claims**



1. A hollow oriented container formed from a parison composed of an organic, thermoplastic, strain hardenable polymeric resin, said container comprising:
a finish portion;
a finish ledge portion integral with and disposed below said finish portion;
a generally cylindrical hollow neck portion integral with and disposed below said finish ledge portion;
a concave blending portion integral with and disposed below said neck portion; and
an oriented main body portion including a closed bottom portion integral with and disposed below said concave blending portion wherein said concave blending portion is less than five percent of the container surface area, the container being defined by the following relationship:

$$E \geq 0.9$$

wherein:

$$E = \frac{S/(W)}{\int \frac{1}{W}\, da}$$

S=the container surface area
(W)=average wall thickness of the container excluding the finish portion and ledge portion.

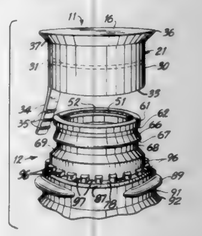
4,566,601

TAMPERPROOF CONTAINER NECK CONSTRUCTION

Ernest O. Kuenzig, 32 Waverly St., Glen Head, N.Y. 11545

Filed Aug. 13, 1984, Ser. No. 640,341
Int. Cl.⁴ B65D *41/48*
U.S. Cl. 215—31 **13 Claims**

1. A container construction for engagement with a snap-on cap having a skirt having a lower edge and neckengaging means comprising a cylindrical neck, cap-engaging means on said neck including at least one external circumferential bead on said neck a shoulder extending outward from said neck a plurality of circumferentially spaced protuberance extending upward from said shoulder and outward from said neck, said lower edge of said skirt fitting tightly against the tops of said spaced protuberances when said cap-engaging means engages said neck-engaging means, said protuberances being separated by spaces, said spaces being narrow so that one's fingernails



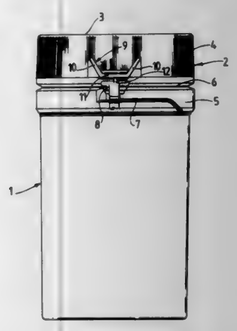
cannot be inserted under said lower edge to pry said cap off said neck, a downward extending surface formed below said protrusions with a plurality of outward bulging gripper bumper sections which lie in a common plane and are separated by straight surfaces between said gripper sections, each of said bumper sections being elongated circumferentially, whereby downward pressure of said cap on said neck is resisted by said straight surfaces to resist collapse of said gripper sections.

4,566,602

TAMPER-RESISTANT CLOSURE

Eugene E. Davis, Ilford, United Kingdom, assignor to Johnsen & Jorgensen (Plastics) Limited, London, England

Filed Dec. 26, 1984, Ser. No. 686,302
Claims priority, application United Kingdom, Jan. 3, 1984, 8400033
Int. Cl.⁴ B65D *41/46*
U.S. Cl. 215—256 **9 Claims**



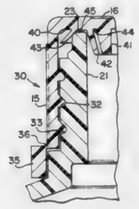
1. A closure for a container wherein the closure has a top, a skirt depending from the top, a tear-away tamper-resistant band connected by frangible means to the skirt and a tear tab on the band characterised in that the tear tab is arranged so that it is inclined outwardly and upwardly so that if the tear tab contacts the rim of a carton when a container, including the closure in position thereon, is being packed into a carton bottom end first the tear tab slides over the rim and does not catch or become hooked on the rim.

4,566,603

LINERLESS CLOSURE

David N. Moore, Plainfield, Ill., assignor to Phoenix Closures, Inc., Naperville, Ill.

Filed Jul. 12, 1984, Ser. No. 630,002
Int. Cl.⁴ B65D *53/00*
U.S. Cl. 215—329 **9 Claims**



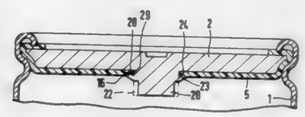
1. A threaded closure cap having a skirt portion surrounding an upper portion, said upper portion having an inner surface with a series of annular depending flanges concentric about a common central axis, said depending flanges including a generally flexible outer sealing flange, a generally flexible inner sealing flange and a generally inflexible buttress means, each of said sealing flanges having generally parallel side walls; a ridge located between said inner sealing flange and said outer sealing flange and spaced from each, said buttress means being an innermost flange and spaced from said inner sealing flange to create a channel therebetween while providing a means for conforming said ridge and an upper land surface of a bottle, each of said inner sealing flange and said outer sealing flange providing sealing surfaces upon contact with a bottle mouth wall, said ridge providing a sealing surface upon contact with an upper bottle mouth surface whereby one of said inner sealing flange and said outer sealing flange makes contact with a bottle mouth wall at all times, and said ridge makes a sealing contact with said upper bottle mouth surface at all times, said buttress means providing generally inflexible support to said inner sealing flange upon contact with an irregular bottle having an undersized mouth wall portion, whereby said inner sealing flange is conformed to said bottle mouth wall configuration.

4,566,604

METAL CLOSING DISK AND A PROCESS

Franz J. Wolf, Sprudelallee 19, 6483 Bad Soden-Salmünster, and Rudolf Klaschka, Tannenweg 9, 7896 Wutöschingen, both of Fed. Rep. of Germany

Filed Dec. 14, 1983, Ser. No. 561,162
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1983, 3246890
Int. Cl.⁴ H01G *9/10*
U.S. Cl. 220—68 **14 Claims**



1. A metal closure for closing an electrolytic capacitor having a can housing, said closure comprising a disk with a substantially bar-shaped metal extension of smaller diameter secured at the base thereof to a first surface of the disk and a plastic or elastomeric insulating layer applied at least to said first surface, said insulating layer covering the first surface substantially completely and being applied so as to abut the base of the extension, said extension having at least one flange-

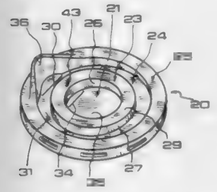
like projection, said projection spaced from the first surface approximately the distance amounting to the thickness of the insulating layer, said projection being turned down onto the insulating layer in press-sealing contact against the first surface of the disk when said closure is positioned in the can housing with a portion of the insulating layer extending between the disk and the housing.

4,566,605

LID FOR DRINKS CONTAINER

J. David Rogers, Toronto, Canada, assignor to Amhil Enterprises Ltd., Mississauga, Canada

Filed Jul. 12, 1985, Ser. No. 754,164
Int. Cl.[4] A47G *19/22*; B65D *41/26*
U.S. Cl. 220—90.2 **13 Claims**



1. A lid for a container of liquids, where the lid is vacuum formed in thin sheet plastic;

where the lid includes a depressed well, which is surrounded by a raised ridge, which is in turn surrounded by a depressed trough, which is in turn surrounded by a raised rim;

where the side walls and top of the ridge are of such height and radial width that a person's thumb and forefinger can be easily placed well in contact with the respective side walls, one inside and one outside the ridge;

where two formed cuts are provided in the material of the lid, each disposed alongside the ridge, where one cut is in the well, and the other cut is in the trough; and

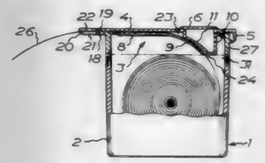
where the side walls and top of the ridge are continuous and extend circumferentially without interruption at least in the region of the ridge that lies beteen the lengths of the cuts.

4,566,606

DISPENSER FOR CONTAINING AND DISPENSING A PREMOISTENED WEB OF MATERIAL

Thord Kling, Svampstigen 8 E, S-671 00 Arvika, Sweden

PCT No. PCT/SE81/00262, § 371 Date May 11, 1983, § 102(e) Date May 11, 1983, PCT Pub. No. WO83/01054, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 15, 1981, Ser. No. 499,764
Int. Cl.[4] G07F *11/66*
U.S. Cl. 221—25 **7 Claims**



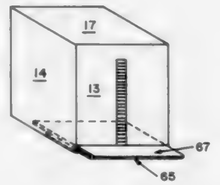
1. A dispenser for containing and dispensing a premoistened web of material (26), comprising a container (2) for containing the web of material and a dispensing portion (3) associated with the container and having an opening (20) for dispensing the web of material, wherein a passage (23) having boundary walls (4, 8) extends between the container (2) and the dispensing opening (20) and is adapted to take up the web of material such that the web of material in the passage (23) constitutes a seal in the passage which prevents drying of said web (26) and wherein the weight of the passage (23) is slightly less than the thickness of the web of material (26), whereby the sealing power of said web in said passage is ensured and friction is brought about between said web and the boundary walls (4, 8) of the passage, said friction facilitating tearing off said web at the dispensing opening (20), said dispensing portion (3) including an inner cover which has a frame member (27) sealingly applicable to the container and a plate (29) which is formed integrally with said frame member and which has a countersunk portion (8) extending in a longitudinal direction of said plate, an opening to the interior of the container which is disposed in said portion (8), and a tongue (9) associated with said countersunk portion and extending downward from said countersunk portion into the interior of the container adjacent said opening, and an outer cover (4) which by hinge means (5) is pivotally connected to the inner cover and which has an inner surface on its side facing the inner cover, said inner surface having a shoulder (10) which, when said two covers are interconnected, is adapted to project into said opening to form, together with said tongue, an inlet opening for the web material (26) into the passage (23) defined between said countersunk portion and the inner side of the outer cover.

4,566,607

BAG DISPENSER

David L. Smith, 101 Sherman St., Albany, N.Y. 12206

Filed May 24, 1984, Ser. No. 613,789
Int. Cl.[4] B65D *5/72*
U.S. Cl. 221—155 **2 Claims**



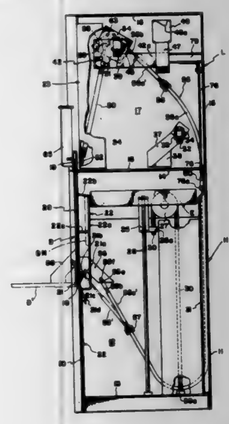
1. A bag dispenser for the storing therein and drop-down dispensing therefrom of shopping bags, said bag dispenser being reopenable and reclosable for refill storage of shopping bags therein; said bag dispenser comprising a blank divided by fold lines and slit lines to form it into said bag dispenser, said blank defining a front wall, left and right side walls, a back wall, a back wall seal flap, left and right side bottom flaps, a bottom seal flap, a top cover, a top cover lock flap, and left and right side top flaps, said front wall having a fold line dividing it from said left side wall, said front wall having a fold line dividing it from said right side wall, said front wall having a fold line dividing it from said top cover, said left side wall having a fold line dividing it from said back wall, said left side wall having a fold line dividing it from said left side top flap, said left side wall having a fold line dividing it from said left side bottom flap, said back wall having a fold line dividing it from said bottom seal flap, said back wall having a fold line dividing it from said back wall seal flap, said right wall having a fold line dividing it from said right side top flap, said right side wall having a fold line dividing it from said right side bottom flap, said top cover having a fold line dividing it from said top cover lock flap, said top cover having a fold line dividing it from said left side top flap, said top cover having a fold line dividing it from said right side top flap, said right side top flap and top cover being slit along a common line and separating each from the other, said left side top flap and top cover being slit along a common line separating each from the other, said left side bottom flap and bottom seal flap being slit along a common line separating each from the other, said back wall seal flap and bottom seal flap having self-adhesive portions; in the assembly of said bag dispenser: said back wall, left side wall, front wall and right side wall being appropriately folded to form a box-like structure with said adhesive portion of said back wall seal flap retentively engaged with said right side wall; said right and left side bottom flaps having common edges, said right and left side bottom flaps being folded up with their said common edges disposed in abutting relationship with said adhesive portion of said bottom seal flap disposed in retentive engagement with said right and left side bottom flaps; said right and left side top flaps having first common edges and second common edges, said back wall having a edge, said right and left side top flaps being folded down with their said first common edges disposed in abutting relationship and with their said second common edges being aligned and with said top cover folded down upon said right and left side top flaps and with said top cover lock flap removably inserted in retentive wedging relationship between said edge of said back wall and said aligned second common edges of said right and left side top flaps; said front wall having an inverted T-shaped panel formed by the removal of a weakened tear-line corresponding in configuration thereto providing upon its removal a horizontal slot portion from which said shopping bags stored in said bag dispenser can be dispensed one at a time and providing a vertical slot for visual indication of the number of stored shopping bags; and said bag dispenser being reopenable for refill storage of shopping bags therein by appropriate disengagement of said top cover lock flap from its retentive wedging relationship between said edge of said back wall and said aligned second common edges of said right and left side top flaps and appropriate raising up of said top cover and right and left side top flaps to provide access to said bag dispenser.

4,566,608

SYSTEM FOR CONVERTING STACK ACCESS NEWSPAPER VENDING MACHINES AND THE LIKE TO APPARATUS FOR DISPENSING PRODUCTS ONE AT A TIME

Reed T. Draper, and Kenneth J. Pol, both of Saginaw, Mich., assignors to Draper Technologies, Inc., Saginaw, Mich.

Continuation-in-part of Ser. No. 613,641, May 24, 1984. This application Jul. 30, 1984, Ser. No. 635,664
Int. Cl.[4] G07F *11/14*
U.S. Cl. 221—229 **22 Claims**



1. In a coin operated newspaper and like article vending machine for dispensing newspapers and like articles on a one-at-a-time basis:

a. a housing forming a cabinet for containing newspapers and like articles to be vended;

b. a door hinged on one side of the cabinet;

c. coin operated lock mechanism for automatically releasably locking the door to the cabinet when the door is swung shut;

d. partition means incorporated with the housing as a wall thereof situated behind the door and providing a dispensing slot behind the door for passing one article at a time;

e. elevator mechanism for assuring the delivery of newspapers successively to a location opposite the dispensing slot;

f. newspaper dispensing elements actuable to engage and move the newspaper partly out the opening;

g. linkage mechanism connecting the door and dispensing elements, operable when the door is swung open, to move the newspaper at least partly out of the opening;

h. members incorporated with the linkage mechanism and dispensing elements for preventing return movement of the newspaper dispensing elements to dispensing position prior to locking of the door via the lock mechanism; and

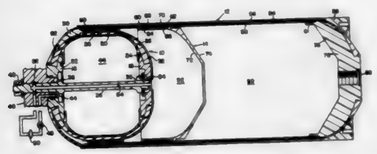
i. means operating independently of the closing movement of the door for moving the dispensing elements to dispensing position after the door is swung shut and locked.

4,566,609

COMPOSITE TANKAGE ARRANGEMENT FOR LIQUID FUEL EXPULSION

Lawrence D. Hoffmeister, New Market, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 3, 1984, Ser. No. 596,341
Int. Cl.[4] B67D *5/42*
U.S. Cl. 222—130 **5 Claims**



1. A composite tankage arrangement comprising a first tank having dome shaped members at opposite ends with a cylindrical intermediate portion between said dome shaped members and said first tank having composite reinforcing materials for allowing a chamber therein to contain high pressure fluid, said first tank having at one end an epoxy dome-like structure of a second tank bonded to an outer surface of the dome structure of said first tank to define a dome structure for said second tank, a cylindrical metal member extending over a portion of said first tank and having one end bonded to said epoxy dome-like structure and having at an opposite end of said cylindrical member a dome structure telescoped and sealed thereto, and a multiplicity of helical layers of composite materials mounted over said epoxy dome-like structure, said cylindrical member and said telescoped dome structure, and hoop layers mounted over a cylindrical portion of the helical layers that extend from over a portion of said epoxy dome-like structure to over a portion of said telescoped dome structure to complete said second tank that completely surrounds said first tank and is integral with said first tank for providing a fuel expulsion tankage arrangement with said first tank within said second tank.

4,566,610

HAND-HELD DEVICE FOR DISPENSING A MULTI-COMPONENT SUBSTANCE

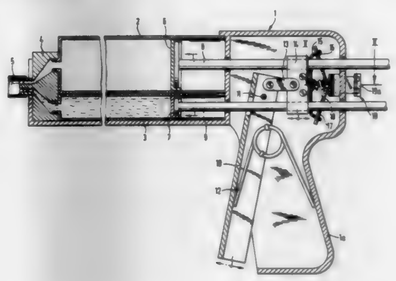
Armin Herb, Peissenberg, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan Fürstentum, Liechtenstein

Filed Sep. 15, 1983, Ser. No. 532,578

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1982, 3234250

Int. Cl.[4] G01F *11/00*

U.S. Cl. 222—137 3 Claims



1. A hand-held device for the measured dispensing of a putty-like or paste-like multi-component substance where the components are held in at least two separate containers, comprising a housing member for holding the separate containers, a piston for each said container for displacement through said container for pressing out the contents of the container, a piston rod for each said piston, said piston rods mounted in said housing and being axially displaceable for pressing said pistons into the containers for dispensing the contents of the containers, means associated with each said piston rod for holding said piston rods against displacement in the direction opposite to the direction in which the contents of the containers are dispensed, means for displacing said piston rods and said pistons in the dispensing direction, said means for displacing said piston rods including a drive member engageable with said piston rods, a web member located within said housing adjacent said drive member on the opposite side of said drive member from said pistons, said web member having openings therethrough through which said piston rods extend, said means for holding said piston rods comprising a stop member for each said piston rod, each said stop member being pivotally supported adjacent one end by said web member, and a releasing member in contact with the opposite ends of said stop members from the ends pivotally engageable with said web member, a spring extending between said web member and said stop members for biasing said stop members into holding engagement with said piston rods, and said releasing member mounted on said housing and in contact with said stop members so that by displacing said releasing member against the biasing action of said stop members can be displaced out of holding engagement with said piston

4,566,611

METERING OR ATOMIZING PUMP WITH A PUMP CASING AND AN OPERATING PUSHER

Hans Sukopp, Orsenhausen, Fed. Rep. of Germany, assignor to Firma Ing. Erich Pfeiffer GmbH & Co., Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,105

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 3225911

Int. Cl.[4] B65D *83/14*

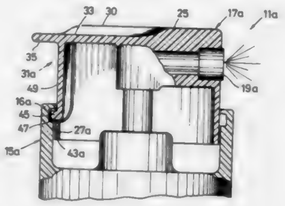
U.S. Cl. 222—153 8 Claims

1. A pump for dispensing fluids and like media, comprising:

a pump casing including structure forming a counter locking means;

a pusher for operating the pump, movable from a rest position into the pump casing to deliver a pumping stroke responsive to manual depression of an operating surface formed in an end face of the pusher, the operating pusher being formed by an inverted cup-shaped member;

locking means for the pusher formed by the operating surface and a locking portion rigidly affixed to the operating surface, the locking means being pivotally attached to the pusher to enable movement of the locking portion into and inwardly of a locking position relative to the counter locking means of the pump casing, whereby each pumping



stroke must be preceded by pivotal movement of the locking means and the locking means being formed by a portion of the cup-shaped member which is separated from the remainder of said pusher by slots; and,

resilient means for automatically urging the locking portion outwardly, into the locking position, after each pumping stroke, whereby pressure exerted upon any portion of the end face other than the operating surface will be ineffective for accidentally operating the pump and delivering an unwanted pumping stroke.

4,566,612

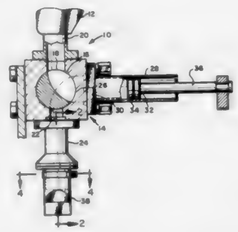
APPARATUS FOR DISPENSING FLOWABLE MATERIAL

Alan von Kreuter, Darien, Conn., assignor to Popsicle Industries, Inc., Englewood, N.J.

Filed Sep. 15, 1983, Ser. No. 532,638

Int. Cl.[4] G01F *11/04*

U.S. Cl. 222—309 1 Claim



1. An apparatus for dispensing a non-homogeneous flowable material containing interspersed solids from a flowable material source comprising:

dispensing means for receiving the material from the material source and for dispensing the material under pressure;

conduit means comprising a generally cylindrical manifold pipe in communication with the dispensing means for receiving the dispensed material, the manifold pipe including a groove extending around the outer surface thereof and an outwardly projecting annular shoulder extending around at least a portion of the outer surface thereof;

a self-closing, elastomeric flap valve having a generally cylindrical body portion which surrounds and is sealed against the manifold pipe, before being installed around

the manifold pipe, the body portion having an inside diameter slightly smaller than the outside diameter of the manifold pipe, the body portion being stressed when installed around the manifold pipe to provide a tight seal, the body portion including an outwardly extending annular flange, the annular flange abutting the annular shoulder when the flap valve is installed on the manifold pipe, the flap valve having a closure portion which is prestressed to remain closed to prevent leakage of the material when no pressure is applied to the dispensed material and which opens to substantially the same dimension as the manifold pipe to permit unobstructed flow of material therethrough upon the application of sufficient pressure upon the dispensed material to force the dispensed material through the closure portion, the closure portion including a pair of generally flat elongated lips which are prestressed to remain in abutting engagement with each other when no pressure is applied to the dispensed material, the length of the lips being such that if any solids remain in the closure portion when no pressure is applied, the lips surround and conform to the shape of the solids to contain the solids and to form a tight seal to prevent leakage of the material; and

clamping means extending around the flap valve body portion axially aligned with the groove for securing the flap valve to the manifold pipe.

4,566,613

MULTIPLE OPENING STRUCTURE RECEPTACLE

Timothy Anscomb, Chalfey, Nr. Lewes, England, assignor to Schering-Prebbles Limited, Bootle, United Kingdom

Filed Aug. 3, 1983, Ser. No. 519,960

Claims priority, application United Kingdom, Aug. 3, 1982, 8222426

Int. Cl.[4] B65D *47/10*

U.S. Cl. 222—541 24 Claims



1. A hand-held receptacle for storing pourable contents comprising:

(a) receptacle storage means comprising a storage portion and a generally tapered end portion through which contents stored therein may be discharged, the generally tapered end portion having a top and a base;

(b) dual opening means arranged on said generally tapered end portion, said dual opening means being comprised of a first pre-defined breaking point situated toward the top of the tapered end portion, and a second pre-defined breaking point situated toward the base of the tapered end portion, said second pre-defined breaking point being located proximate said storage portion, said first and second breaking points providing a user with the option of releasing the contents by the application of a twisting or snapping motion to said first breaking point, or by the application of pressure to the second breaking point to break open the receptacle at one of the breaking points as desired;

(c) said second breaking point being an abrupt neck portion of a small diameter than the tapered end portion said abrupt neck portion having a wall extending between a pair of opposed surfaces on the tapered end portion, said opposed surfaces extending radially with respect to the axis of the tapered portion; and

(d) spaced web members adjoining both the wall of the neck portion and the opposed surfaces for strengthening the neck portion and determining the direction of breakage of the neck portion.

4,566,614

CASTING NOZZLE

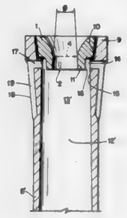
Björn Frykendahl, Ljungvalls väg 6, 683 00 Hagfors, Sweden

Filed Oct. 12, 1983, Ser. No. 541,053

Claims priority, application Sweden, Oct. 15, 1982, 8205881

Int. Cl.[4] B22D *37/00*

U.S. Cl. 222—603 9 Claims



1. A casting nozzle and casting pipe combination for metallurgical process, through which nozzle a metal bath is intended to flow out, where gas, such as argon or nitrogen gas or a mixture of gas and powderous material, is intended by means of an injection lance or the like to be injected as a jet stream into the bath in connection to the nozzle, characterized in that the through hole (2) of the nozzle (1) is shaped substantially conically, with a cross-sectional area increasing in the intended flow direction, said pipe having (1) a seat (10) or the like at the upper end (9) of the casting pipe (8) to enable said nozzle to co-operate with the casting pipe (8), so that a lower portion (11) of the casting nozzle (1) comprising the outlet opening of the through hole (2) freely projects down in an upper portion (13) of the through passageway (12) of the casting pipe, and that said upper portion (13) has such a width, that a gap (14) is formed between the wall (15) of the through passageway (12) and outer wall (16) of the downward projecting portion (11) of the nozzle, and that the casting pipe at the upper portion (13) comprises at least one evacuation hole (17) for gas.

4,566,615

APPARATUS FOR TURNING A CIRCULAR KNIT HOSE INSIDE OUT AND SECTIONING SAME INTO UNIT HOSES

Tomotake Nakahira, 140-5, Tsukiyama, Yamatotakadashi, Naraken, Japan

Filed Jan. 17, 1984, Ser. No. 571,485

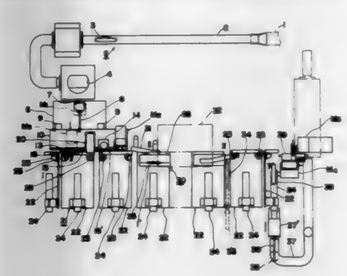
Int. Cl.[4] A41H *43/00*

U.S. Cl. 223—43 1 Claim

1. An apparatus for turning a circular knit hose inside out, sectioning the knit hose into unit hoses, and linking each toe portion thereof with stitches, the apparatus comprising:

an air suction pipe for pulling a long knit hose by air suction therethrough, a cutter unit mounted on a movable carrier, the cutter unit having means whereby the knit hose is stretched so as to ensure an easy cutting, an apron conveyor having slats transversely provided, each of the slats including a hollow cylinder for allowing a circular knit hose to be supported thereon, and a clamp unit located at the opposite side to the cylinder, the clamp unit being capable of tilting toward the cylinder, a linking device located at a position where the clamp unit is tilted, means for releasing the knit hose from the clamp unit, and a

suction duct for pulling the unit knit hose by suction, the suction duct being communicatable with the rear end of



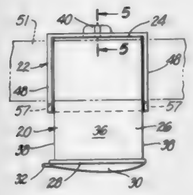
the cylinder which comes to the turning point of the conveyor.

4,566,616

CONTAINERS AND HOLDERS FOR USE IN SECURING SUCH CONTAINERS TO BELTS

Leif Rise, 7748 Westlawn Ave., Los Angeles, Calif. 90045

Filed Jun. 7, 1984, Ser. No. 618,062
Int. Cl.⁴ A45F *5/00*
U.S. Cl. 224—253 **5 Claims**



1. In the combination of a container and a holder which is used to secure the container to a belt so that the container can be easily attached to or detached from the belt through the use of the holder the improvement which comprises:

said container having ends and a body portion extending between and separating said ends,

said holder being shaped so as to include an open end, a closed end and a body portion extending between said ends and shaped so as to fit around at least a portion of said body portion of said container, said holder is formed of a material capable of being temporarily deformed,

coacting means for removably securing one of said ends of said container to said closed end of said holder, one of said coacting means being located on said one of said ends of said container and the other of said coacting means being located on said closed end of said holder, said coacting means in said container comprises ratchet means, said coacting means on said holder comprises pawl means,

said container is capable of being secured to said holder by moving said container through said open end of said holder so that said ratchet means engage said pawl means so as to be held thereby,

said body portion of said holder is temporarily deformed when said pawl means contacts said ratchet means and reverts back to its initial position when said, ratchet means are engaged by said pawl means,

said body portions of said holder are capable of being manipulated so as to be deformed to a sufficient extent to disengage said pawl means from said ratchet means,

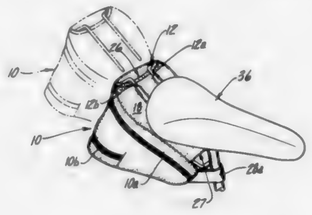
said holder also including belt engagement means for use in securing said holder to a belt.

4,566,617

SEAT PACK ASSEMBLY

W. Shaun Jackson, 2860 Tessmer Rd., Ann Arbor, Mich. 48103

Filed Jul. 13, 1984, Ser. No. 630,856
Int. Cl.⁴ B60R *7/00*; **B62J** *7/00*
U.S. Cl. 224—275 **11 Claims**



1. A removable underseat pack assembly for cycles comprising:

A. a pack;

B. a first mounting bracket defining one or more elongated finger portions;

C. a second mounting bracket defining one or more elongated tubular portions having an inner diameter slightly larger than the diameter of the finger portion of the first mounting bracket for removable telescopic receipt of said finger portion;

D. means for securing one of said mounting brackets to said pack; and

E. clamp means for rigidly securing the other of said mounting brackets to the rear underside portion of the bicycle seat,

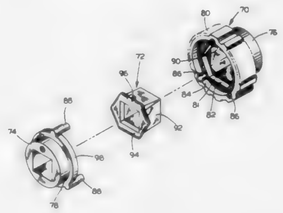
whereby the pack may be mounted on the bicycle by securing the pack to said one mounting bracket, rigidly securing said other mounting bracket to the rear underside portion of the bicycle area, and telescopically inserting the elongated finger portion of the first mounting bracket into the elongated tubular portion of the second mounting bracket.

4,566,618

PAPER FEED TRACTOR WITH COMPENSATING PULLEY ASSEMBLY UTILIZING CANTABLE INSERT

Alan F. Seitz, New Hartford, and Karl G. Seitz, Goshen, both of Conn., assignors to Data Motion, Inc., Torrington, Conn.

Filed Nov. 10, 1983, Ser. No. 550,362
Int. Cl.⁴ B65H *17/40*
U.S. Cl. 226—74 **22 Claims**



1. In a drive tractor for web material, the combination comprising:

A. a chassis having a pair of spaced transversely extending apertures therein, at least one of said apertures being adjacent an end thereof;

B. a flexible endless belt extending about said chassis generally perpendicularly to the axes of said apertures, said belt

defining a closed path of travel thereabout and having an outer driving surface to engage the web material and an inner driven surface; and

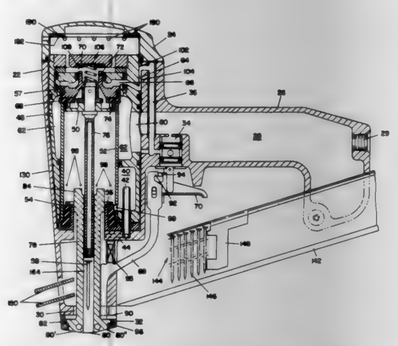
C. a pulley rotatably mounted in said one of said chassis apertures for rotation within said one chassis aperture with its peripheral surface portion in engagement with said driven surface of said belt, said pulley having a passage therethrough for receiving a drive shaft to effect rotation of said pulley and thereby said belt, said pulley having a body with a passage therethrough extending along an axis perpendicular to the radius defining said peripheral surface portion of said pulley and substantially coaxial with said one chassis aperture, said pulley also having a cantable insert received within said body passage and cantable in said body passage relative to said body, said insert having a passage therethrough providing at least a portion of said shaft receiving passage extending through said pulley, said portion of said shaft receiving passage provided by said insert passage being configured and dimensioned to grip the associated drive shaft at all times, whereby the associated drive shaft may produce canting of said cantable insert within said body passage to accommodate irregularities in the associated drive shaft and variations in spacing between the axes of the associated shafts during operation of the tractor, the radius of the peripheral surface portion of said pulley being substantially perpendicular to the closed path of travel of said belt during rotation of said pulley.

4,566,619

PNEUMATIC FASTENER-DRIVING TOOL AND METHOD

Edward O. Kleinholz, Yucca Valley, Calif., assignor to The Kiesel Co., St. Louis, Mo.

Continuation of Ser. No. 171,720, Jul. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 84,367, Oct. 12, 1979, abandoned, which is a continuation of Ser. No. 899,514, Apr. 24, 1978, abandoned. This application Oct. 26, 1984, Ser. No. 664,944
Int. Cl.⁴ B25C *1/04, 7/00*
U.S. Cl. 227—8 **20 Claims**



1. Apparatus for effecting single-stroke driving of a fastener into a workpiece, said apparatus comprising:

(a) a relatively light-weight, portable housing,

(b) piston means movably mounted in said housing and associated with fastener-driver means for single-stroke driving of a fastener into a workpiece when said piston means is pneumatically actuated in a direction toward said workpiece,

(c) means to deliver high-pressure air to the side of said piston means remote from said workpiece, to thus effect said pneumatic actuation,

(d) reciprocator means movably mounted in said housing for movement in a direction away from said workpiece in response to said delivery of high-pressure air, and

(e) means, operative when (1) said fastener has been substantially completely driven into said workpiece, and (2) said reciprocator means is moving in a direction away from said workpiece to provide a mechanical stopping relationsip between said piston means and said reciprocator means,

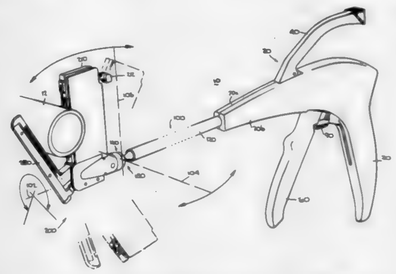
said mechanical stopping relationship being such that said piston means, when at or near the bottom of its stroke and relatively adjacent said workpiece, provides at least a substantial degree of stopping action on said thus-moving reciprocator means.

4,566,620

ARTICULATED SURGICAL FASTENER APPLYING APPARATUS

David T. Green, Norwalk, and Ernie Aranyi, Shelton, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 19, 1984, Ser. No. 662,677
Int. Cl.⁴ A61B *17/04*; **B25C** *5/00*
U.S. Cl. 227—19 **32 Claims**



1. Surgical fastener applying apparatus comprising:

a distal fastener applying assembly including (a) a fastener holding part initially containing at least one surgical fastener, (b) an anvil part movable relative to the fastener holding part for clamping tissue to be fastened between the fastener holding part and the anvil part, and (c) first means for driving the fastener from the fastener holding part at least partly through the clamped tissue to the anvil part;

a proximal actuator assembly including second means for producing the work necessasry to operate the first means; and

a longitudinal shaft assembly for connecting the fastener applying assembly to the actuator assembly, for supporting the fastener applying assembly relative to the actuator assembly, and for operatively transmitting the work produced by the second means to the first means, the shaft assembly including a joint for allowing rotation of the fastener applying assembly relative to the actuator assembly about each of three mutually orthogonal axes.

4,566,621

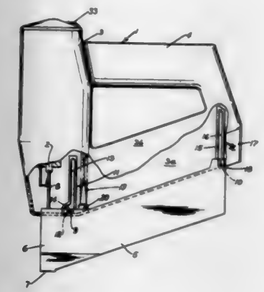
MEANS FOR ASSOCIATING A DRIVER, CONSTITUTING A PART OF A REPLACEABLE FASTENER CONTAINING MAGAZINE, WITH THE DRIVER OPERATING MECHANISM OF A FASTENER DRIVING TOOL

Carl T. Becht, Cincinnati, Ohio, assignor to Sencorp, Cincinnati, Ohio

Filed Jul. 3, 1984, Ser. No. 627,411
Int. Cl.⁴ B25F *1/02, 3/00*; **B25C** *5/00*
U.S. Cl. 227—109 **13 Claims**

1. In a fastener driving tool of the type comprising a body, a driving element said driving element having a free end within said body, a fastener-containing magazine manually attachable

and detachable from said tool, the improvement comprising a fastener driver constituting a part of said magazine and having a free end outside said magazine and a driving end within said magazine, and means for associating said fastener driver with said driving element, said last mentioned means comprising at



least one resilient member, said at least one resilient member having a first end affixed to one of said tool body and said tool driving element, said resilient element having a second end releasably engageable with said fastener driver and configured to maintain said free end of said fastener driver adjacent to and slightly spaced from said free end of said tool driving element.

4,566,622

STRIKING APPARATUS FOR FASTENERS

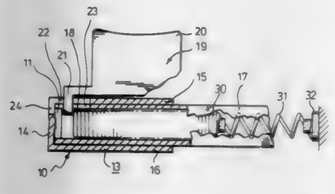
Bruno Ghibely, Ahrensburg, Fed. Rep. of Germany, assignor to Esco Metallwaren Martin Hühnken

Filed Apr. 20, 1984, Ser. No. 602,443

Claims priority, application Fed. Rep. of Germany, May 6, 1983, 8313386[U]

Int. Cl.⁴ B25C *7/00*

U.S. Cl. 227—120 **6 Claims**



1. A fastener striking apparatus for fasteners, especially for staples, nails, etc., comprising a housing with a power-driven plunger arranged therein, a tool portion containing a fastener channel with the plunger guided therein during the operation of striking, and a magazine for the fasteners with the fasteners advanced therein with the aid of a spring-biased feeder in the direction of the fastener channel, characterized in that an adjustable resetting member **(19)** is provided which when in the normal position has a cam **(21)** projecting into a recess **(24)** of the tool portion **(10)** on the side of the fastener channel **(11)** opposite the magazine **(17)** and which upon adjustment against the feeding direction of the fasteners **(18)** in the magazine is adjustable to such an extent that the respective foremost staple **(18)** together with the cam **(21)** is disposed outside the fastener channel **(11)**.

4,566,623

METHOD OF PRODUCING A METAL TUBE AND FLANGE ASSEMBLY

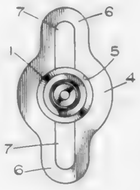
Jurgen Dufft, Kenilworth, England, assignor to Lucas Industries Limited, Birmingham, England

Division of Ser. No. 375,192, May 5, 1982, Pat. No. 4,477,010. This application Jun. 26, 1984, Ser. No. 624,838

Claims priority, application United Kingdom, May 27, 1981, 8116113

Int. Cl.⁴ B23K *31/00*

U.S. Cl. 228—138 **4 Claims**



1. A method of producing a pressure cylinder assembly for use in an hydraulic master cylinder comprised of a metal tube and a flat plate-like mounting flange member attached to the tube, comprising the steps of forming in the flange member an opening which includes a part generally matching the external contour of the tube and being, when the flange member is unstressed, large enough to surround with clearance a portion of the external periphery of the tube at the position where the flange member is to be attached, said opening also including a slot extending outwardly from said matching part and being open at its end remote from said matching part and being arranged and dimensioned to permit contraction of said matching part by resilient deformation of the flange member by application of a force in the region of the slot, passing the tube through said opening part to a desired position of attachment to the tube, deforming the flange member by applying a force in the region of the slot to radially inwardly contract said matching part into engagement with the tube, holding said matching part in engagement with the tube, and securing the flange member in position by welding it to the metal tube during said holding step.

4,566,624

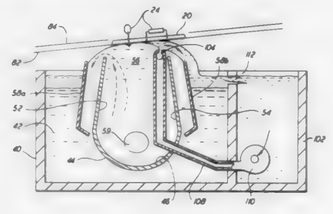
MASS WAVE SOLDERING SYSTEM

Matthias Comerford, Newton Highlands, Mass., assignor to Hollis Automation, Inc., Nashua, N.H.

Filed Dec. 16, 1983, Ser. No. 562,407

Int. Cl.⁴ H05K *3/34*

U.S. Cl. 228—180.1 **34 Claims**



1. A method of reducing the incidence of solder shorts, icicling and/or bridging in a mass soldering process in which a quantity of molten solder is deposited onto the underside of a component-carrying printed circuit board and onto those parts of said components which extend below said board underside so as to at least partially fill with molten solder any holes in said board, said method comprising the steps of:

depositing a quantity of molten solder onto the underside of said board and said component by passing the underside of said board and said component parts at least in part in contact with a wave of molten solder, and, substantially immediately following said depositing, flowing oil into contact with the underside of said board, said component parts and molten solder thereon thereby to relocate or remove a portion of the molten solder deposited on said board and component parts before said molten solder solidifies thereon, said supply of oil being flowed through said solder wave into contact in part with the underside of said board and said component parts to create a stream of substantial thickness to substantially completely immerse the joints being formed, said immersion of said joints occurring substantially immediately following removal of said board underside from contact of said board and component parts with said solder wave.

2. A method according to claim **1**, wherein said oil in contact with said board has a temperature at least equal to that of solder in said wave.

4,566,625

METHOD FOR DIFFUSION WELDING

Per H. Moe, Amtmann Bangs gate 7, N-3000 Drammen, Norway

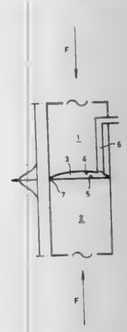
PCT No. PCT/NO83/00010, § 371 Date Dec. 12, 1983, § 102(e) Date Dec. 12, 1983, PCT Pub. No. WO83/03565, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 13, 1983, Ser. No. 568,195

Claims priority, application Norway, Apr. 13, 1982, 821208; Apr. 12, 1983, 831296

Int. Cl.⁴ B23K *20/00*

U.S. Cl. 228—265 **8 Claims**



1. An improved method for joining one metal part to another metal part by diffusion welding, said metal parts being elongate and having a generally constant first cross section, comprising the steps:

establishing a joint between opposed bounding surfaces on said one and said other parts, said opposed surfaces defining therebetween, before welding, a cavity with generally increasing height from the periphery of said cavity toward the middle thereof, said one part having a connecting conduit passing through said part and communicating with said cavity, said parts each having a reduced cross section in the area of said joint, before welding;

heating said one and said other parts to a predetermined temperature at least in areas of said parts bordering said joint;

pressing said one and said other parts together toward said joint;

supplying a reducing flushing gas to said cavity via said conduit during said heating and said pressing until said joint is tightly closed, said opposed surfaces being diffusion welded at at least said periphery of said cavity;

further pressing said parts together, with a predetermined speed, until said areas having initially reduced cross sections have second cross sections, after welding, substantially equal to said generally constant first cross section of said elongate parts; and

cooling said parts.

4,566,626

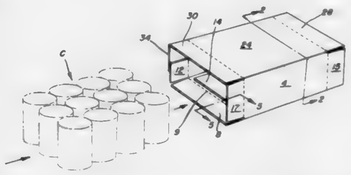
END LOADING CAN CARTON

Prentice J. Wood, Hapeville; James R. Oliff, Austell, and Richard K. Watkins, Lithonia, all of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 26, 1985, Ser. No. 716,163

Int. Cl.⁴ B65D *5/02*

U.S. Cl. 229—37 R **6 Claims**



1. An end loading can carton comprising a normally horizontal bottom wall, a pair of side walls foldably joined respectively to opposite side edges of said bottom wall, a normally horizontal top wall foldably joined along the side edges thereof to the upper edges of said side walls respectively to form a sleeve with said side walls and the axes of the packaged cans in normal relation to said bottom and said top walls, an end flap foldably joined to each end of said bottom, top and side walls along a fold line which defines the associated end edge of the associated wall, and a reinforcing panel secured in flat face contacting relation to the inner surface of one of said normally horizontal walls for directly engaging the adjacent ends of the packaged cans, the fold line adjoining the end flap at one end of said one normally horizontal wall being inwardly embossed for engaging the adjacent ends of cans to be packaged during loading of the cans into the carton thereby to minimize possible disruptive engagement of the adjacent can ends with the adjacent end edge of said reinforcing panel.

4,566,627

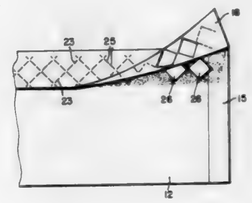
TAMPER DETECTION ENVELOPE

Wilfred H. Gendron, Wilbraham, Mass., assignor to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 536,347, Sep. 27, 1983, abandoned. This application Apr. 2, 1985, Ser. No. 719,224

Int. Cl.⁴ B65D *27/14, 27/30*

U.S. Cl. 229—81 **2 Claims**



1. In a tamper detectable envelope, the combination of a body portion formed from a front panel and rear panel with side flaps foldably connected to one of said panels and adhered to the other of said panels, a closure flap foldably connected along a score line to the top edge of one of said panels and adapted to be adhered to the other of said panels, said closure flap including:

(a) opposed side edges and a straight free edge opposite said score line;

(b) a plurality of spaced apart and parallel lines of slits applied to the closure flap which extend substantially from one side edge thereof to the other, and which criss cross one another at substantially right angles to produce a plurality of subpanels within the closure flap of generally diamond shaped configuration, each of said slits being separated from the next succeeding slit in its line and from the adjacent slits in the criss cross lines by normally unbroken connectors, said connectors comprising uncut segments of the closure flap located at least at each point of each diamond shaped subpanel, said parallel lines of slits extending from the general area of said score line to a point substantially near the free edge of said closure flap; and,

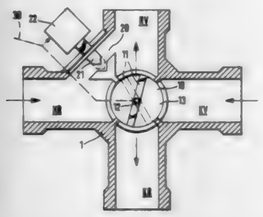
(c) adhesive material applied between the closure flap and said other panel so that after the envelope is closed and sealed, any attempt to open the envelope by lifting the closure flap will sever one or more of the connectors between said slits and leave attached to said other panel one or more of the generally diamond shaped subpanels of said closure flap to provide visual evidence that the envelope has been tampered with.

4,566,628

METHOD OF AND SYSTEM FOR CONTROLLING THE RATIO BETWEEN THE WATER FLOW RATE IN THE PRIMARY CIRCUIT AND THE WATER FLOW RATE IN THE SECONDARY CIRCUIT OF A HOT WATER HEATING SYSTEM

Hans R. Latarius, Essen, Fed. Rep. of Germany, assignor to Tekmar Angewandte Elektronik GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 2, 1984, Ser. No. 585,897
Int. Cl.⁴ F24D *3/00*; E03B *7/07*
U.S. Cl. 237—8 C **21 Claims**



1. In a hot water heating system comprising a primary circuit, a secondary circuit and a multi-way mixing device connected with the primary and secondary flow and return pipework for mixing primary circuit and secondary circuit water and fitted with control means for changing or adjusting the water flow rates in said primary and secondary circuits, a method of controlling the ratio between the water flow rate in the primary circuit and the water flow rate in the secondary circuit comprising the steps of:

providing an adjustable bypass in communication with the secondary circuit return piping suitable for feeding an additional quantity of return water into the secondary circuit flow piping bypassing said mixing device;

mixing said additional quantity of return water with the secondary circuit flow water passing through said mixing device; and

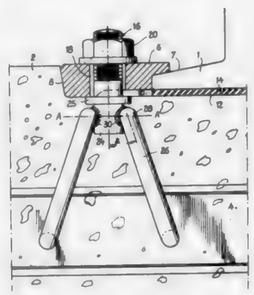
controlling said bypass in response to the position of the mixing device control means and substantially closing said bypass when the way from the primary circuit flow piping through said mixing device to the secondary circuit flow piping is fully opened, thereby achieving good control characteristics over substantially the entire control range of said mixing device and fast control response.

4,566,629

STRUCTURE FOR FIXING A RAIL TO A TIE

Roger P. Sonneville, Annapolis, Md., assignor to Sonneville International Corporation, Washington, D.C.

Filed Sep. 22, 1983, Ser. No. 534,623
Claims priority, application France, Mar. 2, 1983, 83 03426
Int. Cl.⁴ E01B *9/28, 3/28*
U.S. Cl. 238—117 **12 Claims**



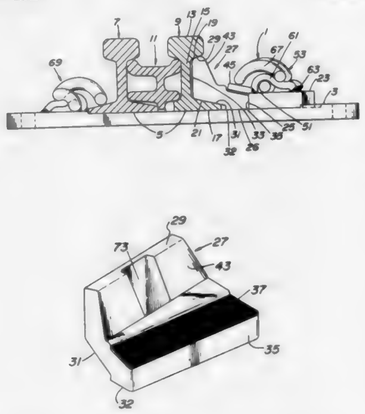
1. A structure for use in fixing a rail to a tie, and in particular a composite tie comprising two concrete blocks interconnected by a steel strut, which strut is axially extended into each of the blocks, said structure comprising a screwthreaded member having a lower end which is intended to be embedded in the respective concrete block above said strut and in alignment with the axis of symmetry of the strut, four rods extending in a divergent manner from said lower end for assuming positions on each side of the strut and having such lengths as to terminate in the vicinity of the level of the neutral axis of the strut, said rods comprising branches of two divergent arch elements having upper portions welded to diametrically opposed parts of said lower end of said member.

4,566,630

BOLTLESS, FRICTION-FIT, ADJUSTABLE RAIL BRACE

Tilghman H. Keiper, Jr., Camp Hill, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Apr. 23, 1984, Ser. No. 602,776
Int. Cl.⁴ E01B *9/60, 9/48*
U.S. Cl. 238—292 **4 Claims**



1. A boltless, friction-operated, adjustable brace for bracing a single rail or a pair of parallel, spaced-apart rails, the brace, in combination, comprising:

(a) a tie plate having a bed longitudinally crossing the tie plate, for carrying the rails;

(b) a stop block affixed to the tie plate adjacent the bed, the stop block having an upstanding front frictional surface extending longitudinally of the tie plate and angled toward the bed;

(c) the tie plate having a horizontal frictional surface adjacent to the upstanding front frictional surface of the stop block; and

(d) a removable side brace contacting one of the rails, the side brace having:

(i) means for frictionally engaging the rail, said means including a top surface for frictionally engaging a fishing area on a rail, and a slanted bottom surface for frictionally engaging a flange portion on a rail;

(ii) means for frictionally engaging the tie plate, said means including an upstanding front surface extending longitudinally of the tie plate, the surface extending parallel to and frictionally engaging the stop block front frictional surface; and a horizontal bottom surface extending longitudinally of the tie plate, the surface extending parallel to and frictionally engaging the tie plate horizontal frictional surface;

(iii) means for interference engagement between the side brace and the stop block; and

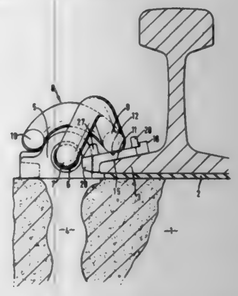
(e) spring clip means for resiliently holding the side brace and stop block together.

4,566,631

ELECTRICALLY INSULATING RAILWAY RAILS FROM RAIL-FASTENING MEANS

Trevor P. Brown, Orpington, England, assignor to Pandrol Limited, London, England

Filed Feb. 15, 1983, Ser. No. 466,495
Claims priority, application United Kingdom, Feb. 15, 1982, 8204364
Int. Cl.⁴ E01B *9/30, 9/34*
U.S. Cl. 238—349 **5 Claims**



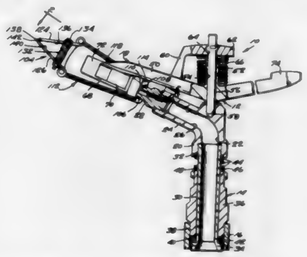
1. A device which is suitable for use in a railway track to electrically insulate a flange-footed railway rail from a rail clip, which bears downwardly upon the upper surface of the rail flange, and from an anchorage, at one side of the rail flange, for the rail clip, the device comprising an electrically insulating member having a first portion which is to be interposed between the rail clip and the upper surface of the rail flange and also having a second portion which is to be interposed between the edge of the rail flange and the anchorage and which extends downwardly from one side of the first portion and terminates in a terminal edge of the electrically insulating member vertically below said one side, the device also comprising a metallic reinforcing member comprising an elongate portion, which has a flat lower surface and is to be interposed between the rail clip and the first portion of the insulating member, first and second spaced-apart and substantially parallel reinforcing ribs which extend along and upwardly from said elongate portion near opposite sides thereof, the first rib being the nearer to the second portion of the electrically insulating member, two spaced-apart projections extending sideways from the remainder of said reinforcing member, between which part of the anchorage is to lie so that said reinforcing member cannot move far along the rail, and no part below said flat lower surface, there being near one end or each end of the reinforcing member a further rib projecting upwardly from said elongate portion, perpendicular to the reinforcing ribs and less tall than the latter.

4,566,632

STEP-BY-STEP ROTARY SPRINKLER HEAD WITH IMPROVED STREAM DIFFUSING ASSEMBLY

George L. Sesser, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.

Filed May 5, 1983, Ser. No. 492,031
Int. Cl.⁴ B05B *3/08*
U.S. Cl. 239—230 **9 Claims**



1. A step-by-step rotary head comprising

a sprinkler body having an inlet and at least one outlet communicating with said inlet,

means mounting said sprinkler body for rotational movement about a generally vertical axis and for communicating the inlet of said sprinkler body with a source of water under pressure,

nozzle means in said at least one outlet for directing water under pressure communicated with said inlet outwardly of said nozzle means in a cylindrical water stream flowing in an upward and outward direction,

means mounted for rotational movement with said sprinkler body and for cyclical movements with respect thereto between a position of stream engagement and a spaced position out of stream engagement for effecting step-by-step rotational movements of said sprinkler body in conjunction with said cyclical movements, and

stream diffusing means disposed outwardly of the position of stream engagement of said step-by-step movement effecting means for engaging the cylindrical water stream when the latter is out of said position of stream engagement and diffusing said cylindrical water stream into a fan-shaped spray which is fanned out in a generally horizontal direction,

said stream diffusing means including a pair of vertically spaced upper and lower stream engaging plates, the lower of said stream engaging plates providing an upwardly and inwardly facing stream engaging surface means disposed in a position to engage a lower portion of the cylindrical water stream so that said fan-shaped spray flows in an upwardly and outwardly extending direction after disengagement therefrom.

4,566,633

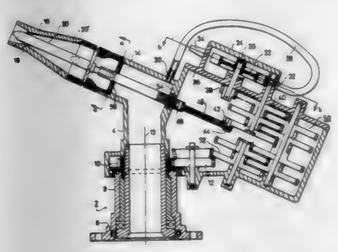
LONG RANGE SPRINKLER WITH CONTROLLED APPLICATION RATE

Isaac Rinkewich, 12 Fishman Maimon St., Tel-Aviv, Israel

Filed Mar. 29, 1984, Ser. No. 594,727
Claims priority, application Israel, Aug. 4, 1983, 69428
Int. Cl.⁴ B05B *3/04*
U.S. Cl. 239—237 **19 Claims**

1. A water sprinkler, comprising: a housing having an inlet connectable to a pressurized water supply line, and a nozzle through which the water issues in the form of a jet; a control member cyclically movable between a first limit position

wherein the nozzle is open with an enlarged area to thereby increase the range and rate of water flow therethrough, and a second limit position wherein the nozzle is still open but its



area is restricted to thereby decrease the range and rate of water flow therethrough; and a drive driven by the energy of the water in the pressurized water supply line for cyclically driving said control member to enlarge and restrict the nozzle.

4,566,634

INJECTION DEVICE FOR A DIESEL ENGINE

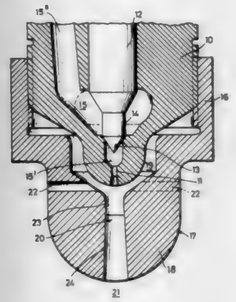
Herbert Wiegand, Cologne, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Sep. 7, 1983, Ser. No. 529,978

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1982, 3234829

Int. Cl.⁴ F02M *61/16*

U.S. Cl. 239—410 **19 Claims**



1. An injection device for a diesel engine having a combustion chamber, in particular a diesel engine with direct injection, the injection device having a nozzle body which has a duct that is blockable and releasable by a controlledly movable valve needle, wherein the nozzle body duct opens into at least one discharge nozzle, the improvement wherein the nozzle is surrounded by an ejector attachment which has (a) a mixing duct oriented axially with respect to the discharge nozzle, and leading from the discharge nozzle outlet into the combustion chamber, and (b) at least one lateral air duct opening leading from the combustion chamber into the mixing duct, whereby the injection jet leaving the discharge nozzle entrains air drawn in by suction from the combustion chamber via the air duct.

4,566,635

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

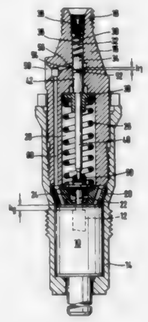
Dietrich Trachte, Leonberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 13, 1984, Ser. No. 600,044

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1983, 3328824; Dec. 8, 1983, 3344396

Int. Cl.⁴ F02M *47/02*

U.S. Cl. 239—533.8 **10 Claims**



1. A fuel injection nozzle for internal combustion engines having a nozzle housing and a valve needle pre-tensioned by a closing spring, said valve needle having a first pressure shoulder engaged continuously by fuel pressure in an opening direction of said valve needle and further having means for opening an auxiliary fuel conduit to allow said fuel pressure to act upon a spring-loaded reservoir piston and a second pressure shoulder of said valve needle upon termination of a pre-injection phase, said second pressure shoulder being arranged to point in an opposite direction from the first pressure shoulder, and said means for opening said auxiliary fuel conduit opens said conduit in accordance with a stroke of said valve needle.

4,566,636

PRODUCING LIQUID DROPLETS BEARING ELECTRICAL CHARGES

Kenneth S. Sachar, Brookline, and Stanley R. Rich, Wellesley Hills, both of Mass., assignors to Micropure, Incorporated, Natick, Mass.

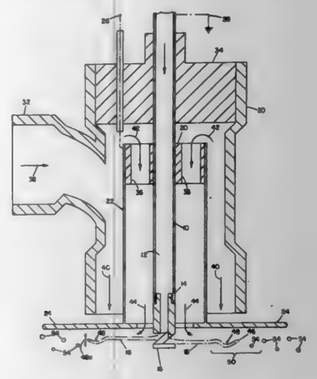
Continuation of Ser. No. 512,746, Jul. 11, 1983, abandoned, which is a continuation of Ser. No. 278,660, Jun. 29, 1981, abandoned. This application Mar. 4, 1985, Ser. No. 707,531

The portion of the term of this patent subsequent to Oct. 8, 2002, has been disclaimed.

Int. Cl.⁴ B05B *5/02*

U.S. Cl. 239—698 **16 Claims**

1. Apparatus for producing liquid droplets bearing electrical charges comprising means to produce an unsupported flowing area-wise expanding sheet of liquid which is bounded by a pair of surfaces and which becomes thinner as it expands in the direction of flow into a randomly-fluctuating zone-of-instability extending a substantial distance in said direction of flow wherein said sheet becomes unstable and breaks into droplets, charge-inducing means nearby and spaced from one surface of said sheet and conforming in shape generally with the flow of said expanding sheet for inducing an electric charge on at least said one surface of said sheet, said charge-inducing means extending continuously over said sheet prior to and including said zone-of-instability including the region in which said droplets are formed and said droplets immediately after they are formed so as to maintain said electric charge on the surfaces of said droplets as they are formed and immediately thereafter without regard to fluctuation in the instantaneous



location within said zone-of-instability of the separation of said droplets from said sheet.

4,566,637

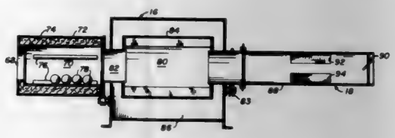
THERMAL SAND RECLAMATION SYSTEM

Vagn Deve, East Washington, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 369,069, Apr. 16, 1982, Pat. No. 4,487,372. This application Jun. 27, 1984, Ser. No. 625,286

Int. Cl.⁴ B02C *19/12*

U.S. Cl. 241—23 **8 Claims**



1. A method of reclaiming used foundry sand that contains organic matter, dust, fines and ferrous metal comprising the steps of:

(a) providing a supply of used foundry sand containing organic matter, dust, fines and ferrous metal and having a temperature approximately that of ambient temperature;

(b) heating the used foundry sand containing organic matter, dust, fines and ferrous metal to raise the temperature of the used foundry sand from approximately ambient temperature to a temperature of approximately 1300° F. to effect the thermal removal of organic matter from the used foundry sand while leaving the dust, fines and ferrous metal therein;

(c) removing through heat transfer to a cooling medium and subsequent to the thermal removal of the organic matter heat from the used foundry sand containing dust, fines and ferrous metal to effect a cooling of the used foundry sand;

(d) separating through mechanical separation and subsequent to both the thermal removal of organic matter and the cooling of the used foundry sand ferrous metal from the used foundry sand containing dust, fines and ferrous metal while leaving the dust and fines therein; and

(e) scrubbing through the interaction of the sand particles and subsequent to the thermal removal of the organic matter and the cooling of the used foundry sand and the separation of the ferrous metal the used foundry sand containing dust and fines to dislodge the dust therefrom.

4,566,638

CONE CRUSHER

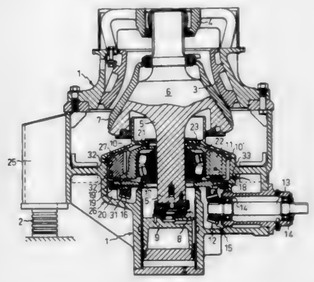
Sven-Ake Lundin, Malmö, and Arvid Svensson, Vintrie, both of Sweden, assignors to Svedala-Arbra AB, Svedala, Sweden

Filed Oct. 19, 1983, Ser. No. 543,265

Claims priority, application Sweden, Oct. 22, 1982, 8206003

Int. Cl.⁴ B02C *2/06*

U.S. Cl. 241—37 **9 Claims**



1. A cone crusher comprising a shaft mounted in a frame for gyratory oscillating movement, a rotor rotatably mounted on the shaft, and a drive adapted to rotate the rotor on said shaft, said rotor having an out-of-balance weight so that the rotation of the rotor in conjunction with centrifugal force sets the shaft in a gyratory oscillating motion, whereby a conical crushing head carried by the shaft is caused to roll on the inner side of an annular conical crushing mantle carried by the frame, characterised by a movable counterweight which is adapted to be driven by the drive in a circular movement about and radially spaced from said shaft and which is maintained in a position always angularly displaced substantially 180° relative to the movement of the eccentrically located point of gravity of the rotor, said counterweight being carried radially displaceably relative to the shaft on a support member movable in an orbit about the shaft by means of the drive.

4,566,639

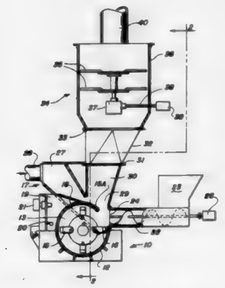
CENTER FEED MATERIAL GRINDING MILL

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Filed Aug. 27, 1984, Ser. No. 644,579

Int. Cl.⁴ B02C *13/288*

U.S. Cl. 241—52 **6 Claims**



1. Material grinding mill comprising:

a mill base frame having spaced side walls;

a rotary shaft operatively carried by an opposed pair of said side walls and a group of material grinding elements car-

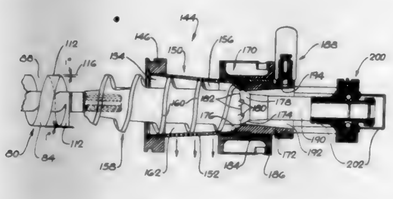
ried by said shaft in positions to be spaced from said pair of side walls;
a closed semi-cylindrical liner extending between said pair of side walls and enclosing the group of grinding elements;
a scroll liner forming a cylindrical shaped continuation of said closed liner and having side margins spaced from said pair of side walls, said scroll liner and said closed liner forming a generally cylindrical material grinding chamber having axially spaced openings adjacent said pair of side walls above said closed liner and said scroll liner having a marginal edge spaced above said closed liner to form a venturi opening to said grinding chamber;
a material feeder connected into said mill base frame to open centrally of said grinding chamber between said pair of side walls and adjacent said venturi opening of said scroll liner, said material feeder cooperating with said material grinding elements in said grinding chamber to cause material in said grinding chamber to progressively move axially and emerge at said axially spaced openings adjacent said pair of side walls;
a mill superstructure on said base frame providing a drying air inlet plenum in communication with said grinding chamber at said scroll liner venturi opening, and with ground material emerging at said axially spaced openings;
an expansion chamber in said mill superstructure in position to receive ground material air moved from said grinding chamber and positioned to generally direct air and ground material away from said grinding chamber; and
ground material classifying means communicating with said expansion chamber for returning oversize material for passage back to said grinding chamber through said venturi inlet opening along with the drying medium.

4,566,640

SEPARATING MACHINE HAVING OVERLAPPING SCREW PUMP

Archie R. McFarland, Salt Lake City, and Bruce L. Preece, Taylor, both of Utah, assignors to Beehive Machinery, Inc., Sandy, Utah

Filed Jan. 18, 1984, Ser. No. 572,155
Int. Cl.⁴ B02C *19/12, 19/22*
U.S. Cl. 241—74 **22 Claims**



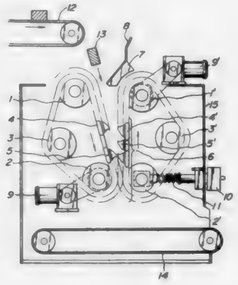
1. A deboning machine for receiving pieces of bony meat or fish and for separating meat and other soft components from bone and other relatively hard components of such pieces, said machine comprising
a hopper for receiving the pieces of meat or fish,
said hopper having an exit opening,
a pair of overlapping oppositely rotating feed screws for feeding such pieces out of said hopper and into said opening,
a pump casing connected to said hopper and having overlapping pump bores with entrance ends connecting with said exit opening,
said pump bores also having exit ends,
said pump casing otherwise being substantially imperforate,
a pair of overlapping oppositely rotating pump screws rotatably received in said pump bores for pumping said pieces along said bores between said entrance and exit ends thereof to develop pumping pressure,
said pump screws connecting coaxially with said feed screws,
drive means for driving said feed screws and said pump screws in opposite directions of rotation,
said pump screws having close clearances with said pump bores and with each other for developing pumping pressure at said exit ends of said pump bores,
a hollow separating casing having an entrance end connecting substantially directly with said exit ends of said pump bores for receiving said pieces therefrom,
said separator casing also having an exit end,
said separator casing having a generally tubular separator screen disposed between said entrance and exit ends of said separator casing,
said screen having a multiplicity of perforations through which meat and other soft components are pressed while said screen retains bones and other hard components,
a pressure auger rotatable in said separator casing and having close clearance with said separator screen for pressing meat and other soft components through said perforations while transporting bone and other hard components past said separator screen to said exit end of said separator casing,
additional driving means for rotating said pressure auger,
and discharge means at said exit end of said separator casing for discharging the bone and other hard components therefrom while maintaining pressure in said separator casing.

4,566,641

SHEET BREAKING APPARATUS

Magoji Okamoto, Nagoya, and Norio Maekawa, Tokyo, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed May 18, 1982, Ser. No. 379,477
Claims priority, application Japan, May 22, 1981, 56-76693
Int. Cl.⁴ B02C *13/20*
U.S. Cl. 241—200 **2 Claims**



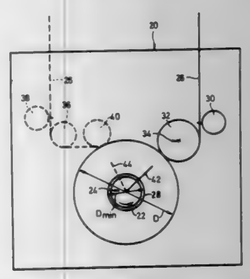
1. A breaking apparatus for cutting and breaking plastic or fibrous sheet materials supplied to said apparatus, comprising;
a pair of endless belt rotating cutting bodies having a plurality of cutting blades fixed respectively thereto;
a first of said pair of rotating cutting bodies being driven in a downward direction, which is a feeding direction for sheet materials to be cut, at a speed faster than a speed of a second of said pair of rotating cutting bodies, said second rotating cutting body being driven in an upward direction, opposite the feeding direction of said sheet materials;
a region of active cutting by said blades comprising a narrow V-shaped region between said pair of rotating cutting bodies, said rotating cutting bodies being arranged such that said cutting blades fixed to said rotating cutting bodies are somewhat separated from each other at upper portions of the region and closely aligned at a lower portion of the region, but laterally spaced from each other so that the cutting blades do not contact one another;
said cutting blades fixed to said first rotating cutting body being arranged in rows extending substantially horizontally across a width of said first rotating cutting body, each row being spaced from its immediately adjacent row by an interval which is substantially equal to an interval that spaces any other row from its immediately adjacent row, each blade contained in a row being spaced from its immediately adjacent blade contained in that row by an interval which is substantially equal to an interval that spaces any other blade contained in any other row from its immediately adjacent blade contained in that same row, and each blade being in alignment with corresponding blades in the circumferentially adjacent rows, all of said blades of said first rotating cutting body being positioned to cut in said downward direction;
said cutting blades fixed to said second rotating cutting body being arranged in rows extending substantially horizontally across a width of said second rotating cutting body, each row on said second rotating cutting body being spaced from its immediately adjacent row by an interval which is substantially one-half of the interval by which each row of said first rotating cutting body is spaced from its immediately adjacent row, each blade contained in a row of said second rotating cutting body being spaced from its immediately adjacent blade contained in that row by an interval which is substantially equal to an interval that spaces any other blade contained in any other row from its immediately adjacent blade contained in that same row, each blade on said second rotating cutting body being in non-alignment with the blades in immediately adjacent rows as viewed in the direction of rotation of said second rotating cutting body, and also each blade being in non-alignment with any blades on the first rotating cutting body, all of said blades of said second rotating cutting body being positioned to cut in said upward direction; and
stationary cutting blades arranged above said second rotating body and aligned with said cutting blades of said second rotating cutting body to cut said sheet materials without contacting said cutting blades of said second rotating cutting body.

4,566,642

METHOD AND APPARATUS FOR MONITORING CHUCK OVERSPEED

Hans-Jörg Sommer, Zurich; Hansruedi Lamparter, and Maurizio Wermelinger, both of Winterthur, all of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Dec. 7, 1984, Ser. No. 679,489
Int. Cl.⁴ B65H *63/00*
U.S. Cl. 242—18 R **8 Claims**



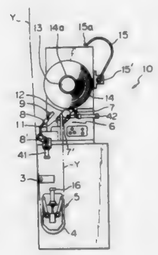
1. A method of detecting an overspeed in winding of thread by a chuck-driven winder, comprising the steps of:
producing a first signal which is representative of an instantaneous chuck rotation speed;
producing a second signal which is representative of an instantaneous limit rotational speed for the chuck and which is a function of package diameter;
comparing said first and said second signals; and
producing a third signal indicating an overspeed condition if the instantaneous chuck rotation speed represented by the first signal exceeds the instantaneous limit rotational speed represented by the second signa1.

4,566,643

YARN FEEDING MEANS AND A YARN WINDER INCLUDING THE SAME

Katsumi Hasegawa, and Hiromitsu Kanamori, both of Kusatsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 2, 1984, Ser. No. 606,180
Claims priority, application Japan, May 2, 1983, 58-76283
Int. Cl.⁴ B65H *54/02*
U.S. Cl. 242—18 R **12 Claims**



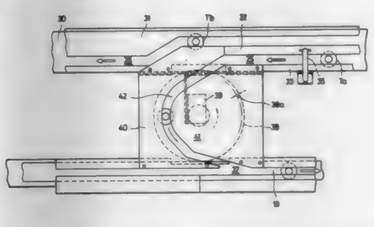
1. A yarn winder for taking up a yarn continuously fed from a supply source onto a yarn package, comprising
(a) a yarn winding means which comprises
(a-1) a bobbin supporting means including at least a spindle for rotatably supporting a bobbin on which a yarn package is formed,
(a-2) a yarn traversing means for reciprocatingly guiding the yarn in the direction of the axis of said spindle,
(a-3) a means for rotating the bobbin, and
(b) a yarn feeding means which comprises
(b-1) at least a positively rotating feed roller for receiving the yarn moving from said supply source and feeding the received yarn in the direction toward the bobbin by bringing the yarn into contact with a partial periphery of said feed roller;
said feed roller being provided in a position below said yarn traversing means to receive the yarn coming down from said supply source, and
(b-2) a yarn detaching guide positioned in the vicinity of said feed roller and capable of selectively occupying either of two positions, one being a first position where said yarn detaching guide is disengageable from the yarn causing the yarn to pass around said feed roller while touching at least a part of the periphery of said feed roller and the other being a second position where said yarn detaching guide is engageable with the yarn to competely detach the yarn passing thereby from said feed roller.

4,566,644

SYSTEM FOR SUPPLYING VARIOUS KINDS OF COPS TO WINDER

Masaharu Kiriake, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Oct. 20, 1983, Ser. No. 543,780
Claims priority, application Japan, Oct. 26, 1982, 57-188459
Int. Cl.⁴ B65H *54/20, 67/06*
U.S. Cl. 242—35.5 A **20 Claims**



1. A system for supplying various kinds of cops to a winder, said system comprising:

an automatic winder having a multiplicity of winding units;

a cop feeding means for conveying cops to said multiplicity of winding units, said cop feeding means defining a cop feeding passage and being disposed on one side of said winding units while extending along said winding units;

a bobbin ejecting means for conveying unwound bobbins away from said winding units, said bobbin ejecting means defining a bobbin ejecting passage and being disposed on the other side of said winding units while extending along said winding units; and

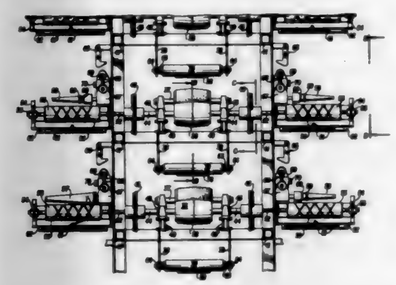
dividing devices provided in said cop feeding passage and said bobbin ejecting passage, said dividing devices dividing said cop feeding passage and said bobbin ejecting passage into at least two passages at any desired positions along said winding units to permit the cop feeding means and bobbin ejecting means to convey cops to and from different wind-up sections comprised of one or more winding units, thereby making it possible to change the numbers of said winding units in each wind-up section.

4,566,645

APPARATUS FOR WINDING YARN

Julius Hermes, Martinsville, Va., assignor to Martin Processing, Inc., Martinsville, Va.

Continuation of Ser. No. 482,984, Apr. 7, 1983, abandoned. This application Feb. 20, 1985, Ser. No. 702,446
Int. Cl.⁴ B65H *54/20, 59/00*
U.S. Cl. 242—35.5 R **13 Claims**



1. An apparatus for winding a thread of yarn onto a spool comprising:

a spindle adapted to receive a spool;

a grooved cam roller positioned to rotate said spool received by said spindle and wind yarn on said spool;

a rotatable drive means to rotate said grooved cam roller; and

means for coupling said drive means to said grooved cam roller comprising an eddy current coupling unit arranged so that the rotation of said drive means induces a magnetic flux and causes said grooved cam roller to turn thereby rotating said spool and winding yarn on said spool;

said eddy current coupling unit comprising a first drive plate with a layer of current carrying material; and

a second drive plate with a layer of magnetic material, said drive plates being arranged so that they face each other and define an air gap between said layer of current carrying material and said layer of magnetic material;

said current carrying material comprising copper or aluminum;

said means for coupling further comprising a first shaft connecting said first drive plate and said rotatable drive means, and a second shaft upon which is mounted said second drive plate and said grooved cam roller; and

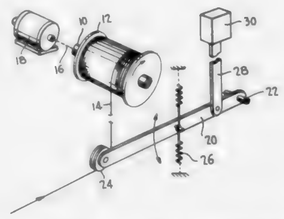
means for moving said second drive plate, said second shaft and said grooved cam roller toward or away from said first drive plate so that the size of said air gap can be varied.

4,566,646

TAKE-UP MACHINE MOTOR CONTROL

Kenneth A. Benjamin, Greensboro, N.C., assignor to Leesona Corporation, Warwick, R.I.

Filed May 11, 1984, Ser. No. 609,113
Int. Cl.⁴ B65H *59/38*
U.S. Cl. 242—45 **18 Claims**



1. In a take-up machine of the type for winding fiber and yarn on spools and tubes with said take-up machine comprising a rotating spindle for receiving tubes and spools, an AC electric motor coupled to said spindle for rotating said spindle, and a tension take-up mechanism for controlling the speed of said electric motor in accordance with tension on fiber and yarn being wound; the improvement comprising said motor having plural windings, said windings being connected to a rectifier circuit, solid state control means for controlling current flow through said rectifier circuit and thereby current flow through each of said motor windings down to zero, said solid state control means including a linearly movable control element connected to said tension take-up mechanism for positioning thereby.

4,566,647

DECORATIVE WINDING METHOD FOR MAGNETIC TAPE OR THE LIKE

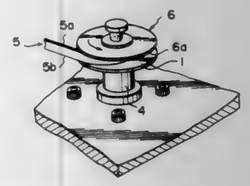
Shoji Iwamoto, and Kazuo Kubota, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1984, Ser. No. 633,335
Claims priority, application Japan, Jul. 26, 1983, 58-136643
Int. Cl.⁴ B65H *17/02*
U.S. Cl. 242—67.1 R **4 Claims**

1. A decorative winding method for winding a magnetic tape or the like onto a reel having a lower flange and an integral reel shaft having a free end onto which a transparent flange is secured after the magnetic tape or the like has been wound onto the reel shaft, the method resulting in a flat, even coil of said tape or the like having an attractive, even appearance, the method comprising the steps of:

(i) supporting said lower flange and said reel shaft so that said free end of said reel shaft faces upwards;

(ii) clamping one end of the tape to said reel shaft;



(iii) placing a weighted disc-like cap on the free end of the reel shaft;

(iv) winding up said tape on said reel shaft while said tape is biased downward against the lower flange by the weight of said cap;

(v) removing said cap; and

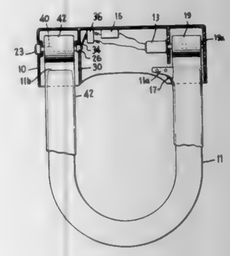
(vi) thereafter securing said upper flange to said free end of said reel shaft to complete the tape reel.

4,566,648

DEVICE FOR APPLYING AND CONVEYING A PROTECTIVE COVER FOR A TOILET SEAT

Dipl.-Ing. B. Hefty, Beckenried, and Arpad Hefty, Richenthal, both of Switzerland, assignors to Hygolet AG, Hergiswil, Switzerland

Filed Oct. 3, 1984, Ser. No. 657,324
Int. Cl.⁴ A47K *13/14, 13/20, 10/38*
U.S. Cl. 242—67.3 R **14 Claims**



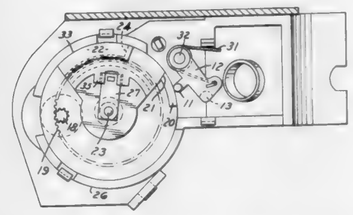
1. A device for applying and conveying a hose-shaped protective covering for a toilet seat, the device having a housing containing an unwinding spool, from which the protective covering is drawn off, and a take-up spool, a battery-operated electro motor operatively connected to the take-up spool, the protective covering being rolled up on the take-up spool after use, a push button protruding laterally from the housing on the side of the unwinding spool, a switch opposite the unwinding spool operatively connected to the electro motor, the improvement comprising means for actuating said switch comprising a switch tube axially moveable in the housing, the unwinding spool being rotatable and axially movable on the switch tube, said push button engageable with said switch tube for moving said switch tube axially to actuate said switch.

4,566,649

CONVERSION CONTROL FOR COMBINATION VSI AND ALR RETRACTOR

Carl M. Petersen, III, Drayton Plains, Mich., assignor to Irvin Industries Inc., Rochester Hills, Mich.

Filed Jun. 25, 1984, Ser. No. 624,228
Int. Cl.⁴ B60R *22/36;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **6 Claims**



1. Combination vehicle sensitive inertia, and automatic locking retractor, comprising a vehicle sensitive inertia retractor having spring wind-up webbing reel means with a ratchet and a latch bar normally actuated by inertia means for locking the reel means against webbing extraction, and supplemental means biasing the latch bar toward extraction locking ratchet engagement in response to full webbing exrtraction beyond occupant restraining position to cause said retractor upon webbing ratcheting spring wind-up to a passenger restraining position to automatically lock in an automatic locking retractor mode without inertia actuation, said supplemental means including gearing responsive to reel rotation for sensing full webbing extraction and retraction, a projection from said gearing operative at the extremity of webbing extraction to retain the vehicle sensitive inertia mode of operation until a predetermined amount of reverse actuation of said gearing moves said projection to an inoperative position, thereby delaying transfer to automatic locking retractor mode during a slight retraction of webbing from full extension, and means for restoring normal vehicle sensitive inertia operation upon full belt retraction beyond occupant restraining position, where, in the combination, pivoted slide means actuated by said projection establishes the prevailing vehicle sensitive inertia and automatic locking retractor modes of operation, said pivoted slide means including an arcuate segment actuated in either clockwise or counter-clockwise direction by said projection at the extremities of gearing travel corresponding to webbing extraction and retraction, means within a predetermined range of travel of said segment for establishing said vehicle sensitive inertia mode of operation, and means operative when said segment is outside of said predetermined range of travel for extablishing said automatic locking retractor mode of operation, said projection having mounting means allowing lost motion travel between extremities where it engages said segment.

4,566,650

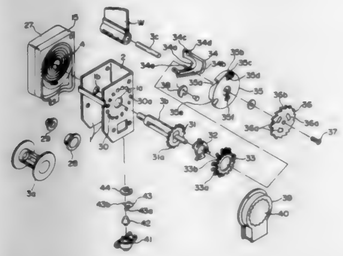
EMERGENCY-LOCKING TYPE RETRACTOR PROVIDED WITH A TAKE-UP FORCE LOCKING MECHANISM

Masaru Morinaga, Yamato, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,131
Claims priority, application Japan, Jul. 30, 1982, 57-114735[U]
Int. Cl.⁴ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **3 Claims**

1. A retractor having reel shaft means biased in a belt take-up direction and rotatably supported by a base member, a belt take-up force locking mechanism capable of assuming an initial operative position in which the rotation of said reel shaft means

in the belt take-up direction is prevented while rotation of said reel shaft means in a belt draw-out direction is allowed, the reel shaft means tending to rotate in the belt draw-out direction in reaction to return of the belt take-up force locking mechanism to its initial operative position after it has been moved from its initial operative position by the rotation of the reel shaft means in the belt draw-out direction, an emergency-locking mechanism for sensing at least one of a draw-out speed change of the belt above a predetermined value and a vehicle speed change above a predetermined value and for connecting said reel shaft



means to said base member to prevent the rotation of said reel shaft means in the belt draw-out direction, said emergency-locking mechanism including a first means which moves due to its inertia upon said return of the belt take-up force locking mechanism to its initial operative position, and a second means responsive to said movement of said first means for attempting to connect the reel shaft means to the base member, and means for preventing said second means from connecting the reel shaft means to the base member upon said return of the take-up force locking mechanism to its initial operative position.

4,566,651

ASSEMBLY OF A SUPPORT AND THREAD TENSIONERS FOR A BOBBIN CREEL

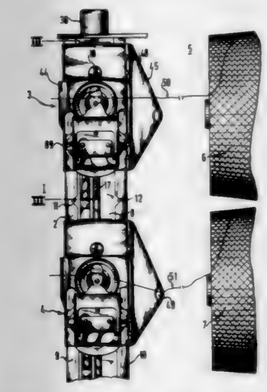
Wilhelm Küpper, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 29, 1983, Ser. No. 518,366

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228282

Int. Cl.⁴ B65H *59/22*

U.S. Cl. 242—150 R **42 Claims**



1. Assembly for a bobbin creel comprising a rod-shaped support and thread tensioners connected to the support, said support being a rod with a hollow profile and formed with a longitudinal slot; each of said thread tensioners having a drive unit, a loading unit and at least one cut-type thread break; said cut-type thread brake being formed of a plurality of cups having a substantially horizontal axis of rotation; means for connecting said drive units, respectively, to at least one of the cups of the respective thread brakes for rotating said one cup; said drive units of said thread tensioners being disposed in the interior of said rod with said hollow profile; a common drive element connecting said drive units to one another; said loading unit having means engageable with said thread brake for tensioning a thread extending through the respective thread tensioner; and a releasable clamping element connecting said cup-type thread brake to said support, said drive unit having a support body with forward-directed discontinuities of the surface thereof; said cup-type thread brake having a support body with rearwardly-directed surface discontinuities; said surface discontinuities of said two support bodies engaging one another in a positively locking and releasable manner.

4,566,652

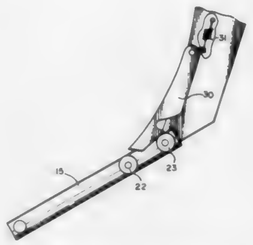
TAPE DRIVE HAVING SWING ARM BUFFERS AND AUTOMATIC THREADING

Ronald Permut, Boulder County, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Nov. 18, 1983, Ser. No. 553,481

Int. Cl.⁴ G11B *15/32, 15/66;* **B65H** *17/02, 17/32*

U.S. Cl. 242—189 **8 Claims**



1. A magnetic tape drive of the type in which magnetic tape is driven past a magnetic read/write head between a machine reel and a file reel by a capstan comprising:

first and second pivoted swing arms respectively positioned between said file reel and said capstan and between said machine reel and said capstan and respectively biased away from said file reel;

fixed rollers positioned adjacent each of said first and second swing arms;

a pair of rollers on each of said swing arms, said tape passing between a fixed roller and the pair of rollers on the adjacent swing arm so that the bias on said first and second swing arms respectively decouple the inertia of tape on said file and machine reels from said capstan;

pneumatic means for transporting tape along a path between said file reel and said machine reel for automatically threading tape;

first and second members respectively connected to said first and second swing arms, said members being movable to retract said swing arms toward said file and machine reels and out of said path during threading; and

a pivoted deflector adjacent one of said swing arms, said deflector being movable to a position between the pair of fixed rollers on said swing arm to prevent tape from passing between said pair of rollers during threading.

4,566,653

TAPE CASSETTE COMPRISING A SUBSTANTIALLY RECTANGULAR TWO-PART HOUSING

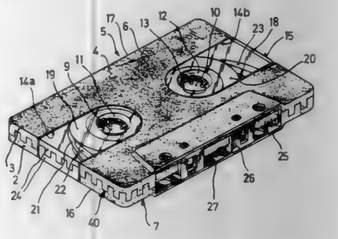
Guenter Bettinger, Schifferstadt; Dietmar Pfefferkorn, Hemsbach, and Bozidar Pavelka, Willstaett, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 18, 1983, Ser. No. 543,061

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 8229387[U]

Int. Cl.⁴ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—199 **2 Claims**



1. A magnetic tape cassette comprising at least one magnetic tape roll within an essentially right parallelpipedic, two-part housing consisting of a cover part and a bottom part which together have a bottom wall, a top wall, a front wall with apertures for scanning, and side walls and a rear wall, the front wall, the rear wall and the side walls consisting of wall sections which are at right angles to the bottom and top walls and abut one another in a substantially horizontal parting plane of said housing, said wall sections having interlocking connecting means,

wherein as connecting means on the side surfaces of at least the wall sections forming the rear wall there are provided a series of teeth on each of the bottom part and the cover part, said teeth being integral with said sections, whereby in the closed housing each tooth on one of said wall sections is engaged in an opposite matching recess on the opposite wall section, said teeth and recesses being in the form of prism-shaped projections which are triangular in cross-section, and matching recesses, the inclined side of the triangle being at an angle to the plane of the tape cassette, and

wherein the end faces of both the teeth and the matching recesses are disposed in horizontal planes oppositely spaced from the horizontal parting plane of the housing so that straightthrough communicaton in any of said horizontal planes at the location of said teeth and recesses is avoided.

4,566,654

WEB TRANSPORT DEVICE

Masami Maetani, Ohmiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1984, Ser. No. 634,440

Claims priority, application Japan, Jul. 28, 1983, 58-138166; Jul. 28, 1983, 58-138167; Jul. 28, 1983, 58-138168; Jul. 28, 1983, 58-138169; Jul. 28, 1983, 58-138170

Int. Cl.⁴ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—204 **18 Claims**

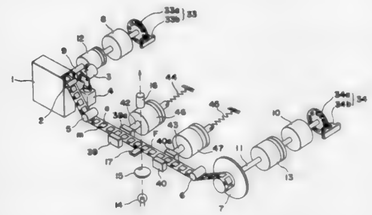
1. A web transport device for transporting a web wound on a supply shaft to a take-up shaft, comprising:

drive means for rotating said take-up shaft for transporting the web to said take-up shaft;

first brake means for stopping rotation of said supply shaft;

second brake means for stopping rotation of said take-up shaft; and

brake control means for controlling said first brake means and said second brake means, wherein said brake control means operates both said first and second brake means, thereafter renders said first brake brake means inoperative for a predetermined time and then operates said first brake means again, so that the web can be stopped while providing slack in the web between said supply shaft and said take-up shaft.



4,566,655

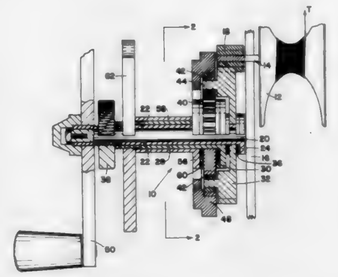
TWO-SPEED DRIVE FOR A FISHING REEL

John N. Young, Fairfax, Calif., assignor to Charles C. Worth Corporation, Kentfield, Calif.

Filed Nov. 9, 1984, Ser. No. 670,022

Int. Cl.⁴ A01K *89/015*

U.S. Cl. 242—215 **7 Claims**



1. A two-speed drive for a fishing reel comprising:

a frame;

a first shaft rotatable on said frame;

a first clutch collar on said first shaft;

a drive shaft slidable on said first shaft and keyed thereto to rotate therewith;

a second clutch collar on said drive shaft;

a main drive gear rotatable between said first and second clutch collars;

high speed clutch adjustment means for moving said first and drive shafts axially relative to each other to squeeze said main drive gear between said first and second collars so that said first and second collars form a high speed, low drag clutch;

a secondary drive gear driven by said drive shaft;

at least one planetary gear rotatably carried on one side of said main drive gear and meshing with said secondary drive gear; and

a ring gear surrounding and engaged by said planetary gear; said ring gear being rotatable on said frame;

interengaging means on said ring gear and said frame enabling rotation of said ring gear in one direction only to rotate with said main drive gear when said high speed, low drag clutch is effective; and

an output pinion driven by said main drive gear, directly from said drive shaft at high speed ratio when said high

speed clutch is effective, and through said secondary drive gear at high power ratio when said high speed clutch is overcome.

4,566,656

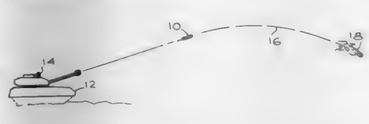
STEERING MECHANISM FOR AN EXPLOSIVELY FIRED PROJECTILE

Inge Maudal, Huntington Beach; Byron M. Niemeier, Claremont, and Larry D. Wedertz, Mira Loma, all of Calif., assignors to General Dynamics Pomona Division, Pomona, Calif.

Division of Ser. No. 418,142, Sep. 15, 1982. This application Mar. 6, 1984, Ser. No. 586,740

Int. Cl.⁴ F41G *7/30*

U.S. Cl. 244—3.11 **8 Claims**



1. A system for correcting the trajectory of a projectile while in flight, the projectile being propelled by a powder charge fired from a cartridge shell in a gun at a ground position, the system comprising:

means remote from the projectile for sensing the position of the projectile in flight;

said remote means including:

(a) means responsive to said sensing means for determining the correct trajectory for said projectile and generating command signals for controlling the projectile to follow said correct trajectory; and

(b) means for transmitting said command signals to an antenna mounted to said projectile; and

means coupled to the antenna for generating signals in response to said command signals to cause an elongated member extending rearwardly from said projectile to deflect off-axis in the air stream interacting therewith, said elongated member extending into said powder charge prior to firing and being selectively deflectable relative to the longitudinal axis of the projectile in response to said generated signals, thereby steering said projectile to the correct trajectory.

4,566,657

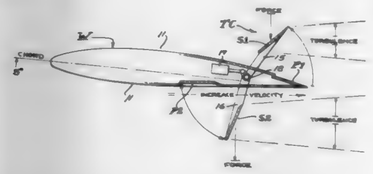
SPAN LOADED FLYING WING CONTROL

Harlow B. Grow, 16530 Chatsanooga Pl., Pacific Palisades, Calif. 90272

Continuation of Ser. No. 40,663, May 21, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 211,517

Int. Cl.⁴ B64C *9/20, 9/32, 9/00*

U.S. Cl. 244—90 A **14 Claims**



1. A flying wing aircraft control for inducing angle of attack and controlling the line of flight, and including;

a wing having upper and lower cambered surfaces and a center of lift substantially forward of a trailing edge establishing a moment arm therebetween,

upper and lower trailing edge pitch control surfaces aft of the center of lift and retractile substantially coincidental with the upper and lower cambered surfaces of the wing,

lever means to space said upper and lower pitch control surfaces into the air stream above and below said upper and lower cambered surfaces of the wing and inclined upwardly with respect to the air stream continuing to flow over and under the wing for reaction downwardly at the trailing edge of the wing,

and means positioning the lever means to extend and retract said pitch control surfaces for adjusting the downward force reaction on said moment arm and resultant pitch control of the flying wing aircraft.

4,566,658

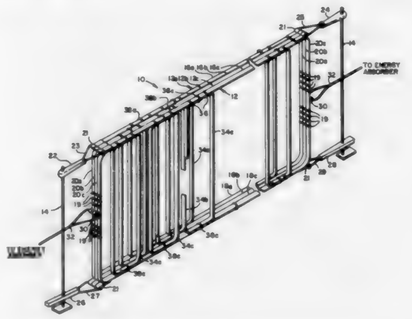
AIRCRAFT BARRICADE

Perry R. DiGiovanniantonio, Philadelphia, and William J. Zimmer, Morton, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 1, 1983, Ser. No. 519,421

Int. Cl.⁴ B64F *1/02*

U.S. Cl. 244—110 R **12 Claims**



1. A webbing system for arresting the forward motion of a landing aircraft comprising:

a plurality of first rectangular loops juxtaposed in substantially parallel planes and adapted to be extended substantially vertically across the path of the aircraft; and

a plurality of second rectangular loops arranged within said first rectangular loops in alternating transverse rows substantially coplanar with the respective planes of said first loops, said second loops being slidably connected to respective ones of said first loops to permit a lateral movement along the entire length thereof and equalize loading on the aircraft's wings, said second loops furthermore positioned side-by-side in the transverse rows, those in alternate rows being substantially aligned with each other and those in adjacent rows being laterally offset from each other by approximately one-half the width of said loops.

4,566,659

PIVOTABLE SUPPORT RESCUE HOIST

John C. Luckachina, Shelton, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 18, 1984, Ser. No. 662,122

Int. Cl.⁴ B64C *1/22;* **B64D** *9/00*

U.S. Cl. 244—137 R **2 Claims**

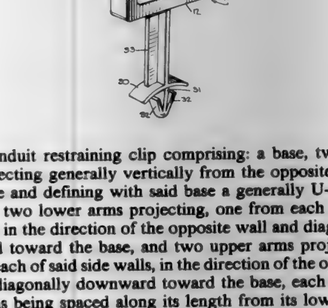
1. A support structure for pivotably mounting a rescue hoist on the main structure of a helicopter, comprising:

an airframe flange, fixedly attached to said main structure, for providing a cylindrical mounting protrusion for said support structure;

a support member, fixedly attached to said airframe flange, said support member having a male cylindrical protrusion on one end thereof and a channel shaped protrusion on the opposite end thereof, said male protrusion being slidably engaged within said mounting flange protrusion and oriented such that said channel shaped protrusion opens generally downward;

a first fastening means, attached through said male protrusion and said mounting flange protrusion, for fixedly connecting them together;

a support arm, pivotably attached to said support member within said channel protrusion, for permitting said arm to swing in a vertical plane through an arc of predetermined angle α;



a second fastening means, connecting said support arm to said support member channel protrusion, for providing a pivot member for said support arm; and a third fastening means, connecting said support arm to said support member channel protrusion when said support arm is in its full upright position, for supporting and securing, in conjunction with said second fastening means, said rescue hoist in its operable position.

4,566,660

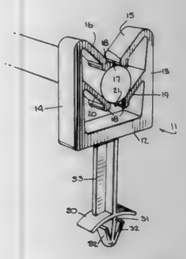
CRADLE CLIP

Joseph Anscher, Farmingdale, N.Y., and Dale Smous, Coral Springs, Fla., assignors to National Molding Corporation, Farmingdale, N.Y.

Filed Jan. 20, 1983, Ser. No. 459,595

Int. Cl.⁴ F16L *3/08*

U.S. Cl. 248—74.2 **14 Claims**



1. A conduit restraining clip comprising: a base, two side walls projecting generally vertically from the opposite edges of the base and defining with said base a generally U-shaped enclosure, two lower arms projecting, one from each of said side walls, in the direction of the opposite wall and diagonally downward toward the base, and two upper arms projecting, one from each of said side walls, in the direction of the opposite wall and diagonally downward toward the base, each of said upper arms being spaced along its length from its lower arm counterpart which projects from the same wall, the distal ends of said upper arms extending to positions juxtaposed from and closely adjacent to each other thereby defining a gap therebetween, the distal ends of said lower arms extending to positions juxtaposed from and closely adjacent to each other thereby defining a gap therebetween, said upper arms being adapted to resiliently flex downwardly and toward the side walls of the clip to enable the passage of a conduit between said upper arms into the clip enclosure and to resiliently return to substantially their unstressed positions when the conduit has passed into the clip, said lower arms being adapted to resiliently flex downwardly and toward the side walls of the clip to enable the clip to receive a conduit and to resiliently seek their unstressed positions thereby urging a conduit within the clip toward said upper arms so that a conduit once inserted into the clip is held between said upper and lower arms which upper and lower arms are adapted to flex to absorb movements of a conduit inserted into the clip.

4,566,661

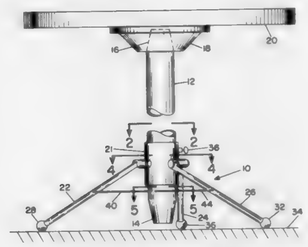
FOLDING TABLE SUPPORT

Donald C. Mestler, 5 Potter Ct., Smithtown, N.Y. 11787

Filed Jul. 31, 1984, Ser. No. 636,306

Int. Cl.⁴ F16M *11/38*

U.S. Cl. 248—171 **12 Claims**



1. Support apparatus for use with a table arrangement including a table-top having a tapered receiving socket mounted on one side and a cylindrical table support tube having tapered ends for insertion into said table-top socket and another socket, comprising a cylindrical collar having an axis and a central axial bore arranged to surround said tube, said collar having means for engaging said tube to selectively axially fix said collar on said tube, at least three support legs, extending radially from said collar and pivotably mounted thereto by pivot axes which are circumferential with respect to said collar axis to fold in planes which are tangential to said tubes, and at least three support struts arranged for pivotal connection to said tube and to said legs at a selected position between said collar and the radially outer ends of said legs for limiting the outward pivoting of said legs.

4,566,662

BATH ACCESSORIES, AND DECORATIVE WALL FLANGES THEREOF

Yoshinori Toshishige, Tokyo, Japan, assignor to Reliance Incorporated, Tokyo, Japan

Filed Jun. 6, 1984, Ser. No. 617,923

Int. Cl.⁴ F16M *13/00*

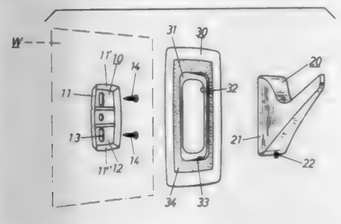
U.S. Cl. 248—222.1 **1 Claim**

1. A bathroom accessory, comprising the combination of

a generally boat-shaped wall plate having a plane bottom wall one surface of which is disposed to be fixed against a bathroom wall, and the other surface of which has projecting therefrom an integral side wall which surrounds said bottom wall and diverges outwardly therefrom,

a fixture having a generally rectangular base disposed to be fixed at one end to said wall plate, and having projecting from its opposite end an integral projection engagable with an article releasably to support the latter on said fixture, said base having in said one end thereof a substantially rectangular recess surrounded by a shoulder of such

dimension as to allow said recess concealingly to accommodate therein said boat-shaped wall plate,
fastening means disposed to act between said shoulder and said side wall of the wall plate for removably securing said fixture fixedly to said wall plate, and
a generally flat, decorative wall flange having therethrough a central opening similar in configuration to and larger than the outer peripheral dimension of said wall plate, and having in one surface thereof a recessed area of substantially rectangular shape, and a decorative plate secured in and and covering part of said area and having therethrough a central opening which corresponds in configu-



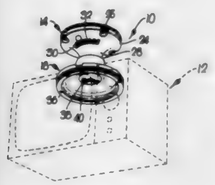
ration to the circumferential outer periphery of said shoulder on said fixture base, and which forms in said wall flange an internal shoulder that is spaced outwardly from and surrounds said central opening in said wall flange,
said wall flange being disposed to be inserted over said wall plate with the surface thereof opposite its recessed area being seated against the wall on which said wall plate is fixed, and with said shoulder on said base being positioned in said central opening in said decorative plate and seated securely against the remaining portion of said recessed area in the wall flange, thereby to secure said wall flange in proper orientation with respect to said fixture.

4,566,663

OVERHEAD PIVOTAL MOUNTING ASSEMBLY FOR TELEVISION SET

David D. Barchus, 4406 NE. 49th Ter., Kansas City, Mo. 64119, assignor to David Duane Barchus, Kansas City, Mo.

Filed Mar. 29, 1984, Ser. No. 594,998
Int. Cl.⁴ F16M *11/14*
U.S. Cl. 248—324 **2 Claims**



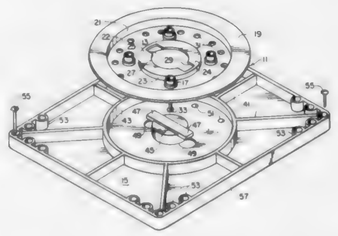
1. An article mount comprising:
a first bracket having a socket;
a second bracket having a ball in said socket, presenting a ball-and-socket joint between the brackets,
said ball and said first bracket having normal relative movement in a plurality of directions, permitting relative swinging movement of said first bracket and said second bracket to and from any one of a number of preselected positions;
a threaded bolt associated with said ball and said socket;
a nut threadably engaging said bolt for releasably clamping said first bracket and said second bracket in any one of said positions;
an elongated handle coupled to said nut for selective tightening of the latter, said handle being swingable in an arc to turn said nut about said bolt; and
an elongated channel associated with said second bracket,
said channel having a plurality of spaced, aligned teeth extending transversely therein,
a portion of said handle being movable longitudinally of said channel for turning said nut about said bolt,
said portion of said handle also being movable toward a position between an adjacent pair of said teeth such that the latter precludes rotation of said nut relative to said bolt.

4,566,664

ROTATABLE MOUNTING UNIT

Jimmie W. Donald, O. W. Donald Co., 2800 N. 50th, Fort Smith, Ark. 72904

Filed Jun. 4, 1984, Ser. No. 617,062
Int. Cl.⁴ A47B *49/00*
U.S. Cl. 248—349 **18 Claims**



1. A rotatable mounting unit for a cabinet or box comprising
a base having a cylindrical projection comprising a recessed portion forming a flange with an opening in the center thereof,
a plurality of equally spaced first detent elements around the top of said projection,
at least one notch extending outwardly into said flange,
a mounting platform having a circular rim thereon forming a recess to receive said projection, and
a post having at least one lug extending radially therefrom which aligns with and passes into said notch for one rotational relation of said base and platform causing said lug to engage said flange and couple said platform to said base,
said lug being positioned on said post so that it does not extend entirely through said notch and is resiliently deformable to pass out of said notch and onto said flange,
said platform having a plurality of second detent elements located to match with said first detent elements for at least six relative rotational positions of said base and said platform.

4,566,665

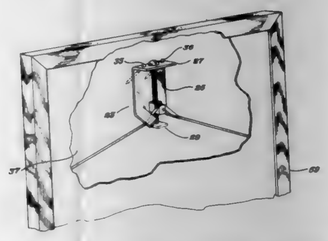
ADJUSTABLE HANGER

Fred L. Rynearson, 111 N. State, Decatur, Tex. 76234

Continuation of Ser. No. 344,368, Feb. 1, 1982. This application Jul. 23, 1984, Ser. No. 632,692
Int. Cl.⁴ A47G *1/24*
U.S. Cl. 248—495 **1 Claim**

1. An adjustable hanger for mounting a picture or the like to a generally vertical mounting surface, the picture or the like having a flexible support line, comprising:
a body comprising a rear wall having spaced first and second walls at first and second ends respectively extending outward from one side of said rear wall,
said body being adapted to be secured to the mounting surface with said first and second walls extending outward therefrom,
aligned apertures formed through said first and second walls respectively,

a slide member having a threaded aperture formed therethrough,
an elongated threaded member extending through said apertures formed through said first and second walls and threaded through said threaded aperture formed through said slide member such that upon rotation of said elongated threaded member, said slide member engages said body and moves between said first and second walls,
said slide member comprising holding means for receiving the flexible support line of a picture or the like,
said rear wall near said second end being formed into first and second members located on opposite sides of a central end portion with said second wall extending outward from said central end portion at said second end,
said first and second members having outer edges and inner edges,
said first and second members extending outwardly from said one side of said rear wall from first and second positions respectively between said first and second ends,



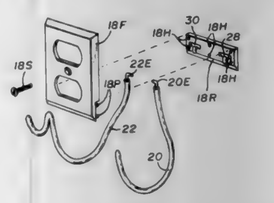
said first and second members extending obliquely outwardly from said rear wall such that said first and second members define acute angles respectively relative to said central end portion of said rear wall,
said inner edges of said first and second members being located closer to said first end than said outer edges respectively of said first and second members,
said inner edges of said first and second members and said central portion of said rear wall near said second end forming two slots respectively for receiving the flexible support line of a picture or the like whereby when said elongated threaded member is rotated in a direction to move said sliding member toward said first wall, the flexible support line of a picture or the like when received by said holding means of said slide member and in said two slots, is moved through said two slots toward said first wall.

4,566,666

SMALL APPLIANCE WALL BRACKET

Robert J. Meaks, and Mary F. Bishop, both of P.O. Box 21, Michigan City, Ind. 46360

Filed Jun. 1, 1984, Ser. No. 616,075
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—558 **12 Claims**



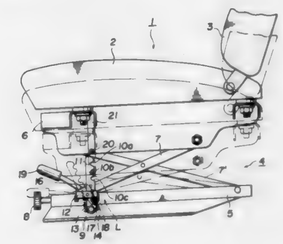
1. A wall bracket kit for holding any one of a large number of small electrical appliances such as a hair dryer, of different configurations, comprising:
a base that is securable to a wall;
a first and a second elongated support member, each of which has two ends, and one end securable to said base; and
said elongated members being formed of a malleable material that is malleable enough to be hand-formed into a desired contour to conformly receive a particular small appliance, but stiff enough to hold that shape and the appliance without material deformation.

4,566,667

SEAT SUSPENSION

Hiroshi Yanagisawa, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1983, Ser. No. 529,682
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—561 **3 Claims**



1. A seat suspension including a base frame adapted to being fixed to a vehicle floor, a movable frame, mounting means for mounting said movable frame for vertical movement between raised and lowered positions, relative to said base frame, and lock means operatively disposed between said base frame and said movable frame for locking said base frame to said movable frame to thus prevent vertical movement thereof, wherein said lock means includes:
a lock piece provided in one frame of said movable and base frames;
a lock pin provided in the other frame of said movable and base frames;
means defining at least one lock recess in said lock piece to establish said lowered position of said movable frame and engageable with said lock pin to lock said movable frame to said base frame at said lowered position;
coupling means for coupling said lock piece to said one frame for pivotal movements between (a) a disengaged position wherein said lock recess and lock pin are disengaged from one another to permit said vertical movement of said movable frame and (b) an engaged position wherein said lock recess and said lock pin are engageable with one another to prevent said vertical movement of said movable frame;
manually-operated handle means connected to said lock piece for permitting manual movement of said lock piece between said engaged and disengaged positions;
said coupling means including biasing means for biasing said lock piece in a first rotational direction to releasably maintain said lock piece in said disengaged position and a second rotational direction, opposite to said first rotational direction, to assist in pivotal movement of said lock piece from said disengaged position and into said engaged position; wherein
an upper end of said lock piece includes means defining an inclined surface slidably engageable with said lock pin when said lock piece is in said engaged position, said inclined surface-defining means for pivoting said lock piece from said engaged position, in said first rotational

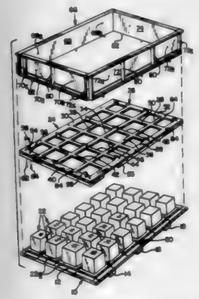
direction towards said disengaged position, in response to said lock pin being slidably engaged therewith when said movable frame is downwardly vertically moved from said raised position and towards said lowered position, said biasing means thereafter causing said lock piece to be pivotally moved, in said second pivotal direction, back into said engaged position when said lock pin and said lock recess are in registry with one another thereby causing said lock pin and said lock recess to be engaged with one another.

4,566,668

APPARATUS FOR CASTING CONCRETE

Bruce G. Koppenberg, 9674 Mt. Baker Hwy., Deming, Wash. 98244

Filed Mar. 29, 1984, Ser. No. 594,539
Int. Cl.⁴ B28B *7/18, 7/28*
U.S. Cl. 249—60 **5 Claims**



1. Apparatus for casting concrete comprising

a platform element adapted to be supported on the ground having a work-supporting essential non-perforate upper face,

plural box-like molds each having a top, sides and a base, said molds being distributed over said platform element with their bases facing against said upper face of said platform element,

a lattice frame paralleling and supported by the platform element comprising a planar element with plural openings extending therethrough, each opening snugly receiving bottom margins of the sides of a mold, said lattice frame further positioning said molds on the platform element, each mold comprising a tub mold having a perimeter flange adjacent its base integral with the sides of the mold and projecting outwardly from the mold sides, said flange disposed between the lattice frame and the platform element, and

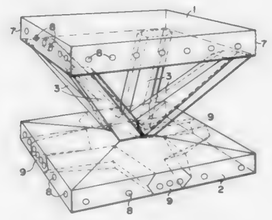
a knockdown encompassing frame with sides extending upwardly from adjacent the periphery of said lattice frame, said encompassing frame overlying said lattice frame around the periphery of the lattice frame, and clamps securing the encompassing frame, the lattice frame, and the platform element together, thereby establishing a concrete-leakage inhibiting seal between said lattice frame and the encompassing frame and between the base of the tub molds and the lattice frame.

4,566,669

MOLD FOR CASTING REINFORCED CONCRETE PANEL ASSEMBLY ELEMENTS

Josef Rottmayr, Munich, Fed. Rep. of Germany, assignor to Aloisius Assmann, Enger, Fed. Rep. of Germany, a part interest

Continuation-in-part of Ser. No. 552,854, Nov. 17, 1983, which is a continuation of Ser. No. 291,803, Aug. 10, 1981, abandoned. This application Dec. 12, 1983, Ser. No. 560,604
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1980, 3031868
Int. Cl.⁴ B28B *7/20*
U.S. Cl. 249—160 **4 Claims**



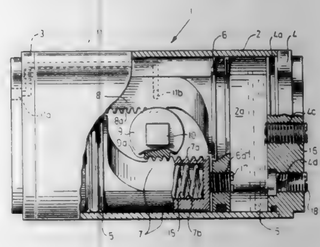
1. A mold system for casting a one piece three-dimensional assembly element for steel reinforced concrete truss-work panels including upper and lower chords extending in two planes which are parallel to each other in space, said upper and lower chords being interconnected by three, four or six struts which form a single junction in the center of one of the chords and fan out toward an edge zone of the other of said chords, comprising a substantially horizontally extending flat support surface (**19**) and means for forming a mold cavity on said flat support surface (**19**), said mold cavity forming means consisting exclusively of a plurality of mold sections corresponding in number to the number of said struts, means for moving said mold sections in parallel to said flat support surface, each strut having such a cross-sectional shape that it is free of any back taper for permitting a free substantially horizontal opening movement of said mold sections, said mold sections comprising first wall means forming separation surfaces enclosing the same angle as the directions of the struts projected into a horizontal plane defined by said flat support surface, said first wall means enclosing strut cavities therein for defining said struts, said first wall means having wall sections without any back tapers therein and extending only in directions permitting a withdrawal movement of the respective mold section in parallel to said flat support surface, said mold sections forming an open bottom closed by said flat support surface (**19**) and an open top for pouring a concrete mix into said mold and for screeding off excess concrete mix, and wherein said mold sections comprise second wall means defining an upwardly open upper chord mold cavity (**23**) for molding an upper chord, third wall means defining a downwardly open lower chord mold cavity (**24**) for molding a lower chord, said first wall means (**16**) enclosing said strut cavities (**21**) so that said strut cavities operatively interconnect said upper and lower chord mold cavities for filling both chord mold cavities and said strut cavities substantially simultaneously, whereby it is possible to cast the upper chord, the lower chord and all struts as a one piece unit which, upon hardening of the concrete mix, remains standing on said flat support surface (**19**) when said mold sections are moved substantially horizontally away from each other.

4,566,670

FLUID PRESSURE ACTUATOR HAVING POSITION SETTING MEANS

Sven Nordlund, Vällingby, Sweden, assignor to Wm Regele AB, Vällingby, Sweden

PCT No. PCT/SE84/00049, § 371 Date Sep. 19, 1984, § 102(e) Date Sep. 19, 1984, PCT Pub. No. WO84/03129, PCT Pub. Date Aug. 16, 1984
PCT Filed Feb. 10, 1984, Ser. No. 653,270
Claims priority, application Sweden, Feb. 11, 1983, 8300757
Int. Cl.⁴ F16K *21/04*
U.S. Cl. 251—58 **3 Claims**



1. A fluid pressure actuator comprising:

a cylinder (**2**) having axially disposed end walls (**3, 4**), at least one side wall, and an inner chamber (**2***a*) bounded longitudinally by said end walls and transversely by said at least one side wall;

first and second pistons (**5, 6**) located in said inner chamber. said pistons being simultaneously movable in opposite directions along the longitudinal axis of said cylinder in response to fluid pressure introduced into said inner chamber, each of said pistons having a toothed rack portion (**7, 8**) extending longitudinally toward the interior of the inner chamber;

a toothed wheel (**9**) having teeth which mesh with the teeth of said toothed rack portions, said toothed wheel being mounted on an actuating member (**10**) journaled for rotation in a side wall of said cylinder **2**;

at least one fluid passage (**11**) for supplying pressure fluid to said inner chamber (**2***a*) between said two pistons to thereby extend said pistons to their respective outer terminal positions;

means for causing said pistons to retract to their fully retracted, zero-position upon release of said pressure fluid from between said two pistons;

first adjusting means (**16**) passing through at least one of said end walls such that it projects past the end wall into the inner chamber while being accessible from the exterior of the cylinder, for adjusting the maximum outer terminal positions of said pistons;

second adjusting means (**17**), passing through one of said pistons such that it projects into the inner chamber between said two pistons and into engagement with the toothed rack portion of the other of said pistons, while being accessible from that portion of the inner chamber between said one piston and its juxtaposed end wall, for adjusting the relative positions of said pistons in their fully retracted, zero-position; and

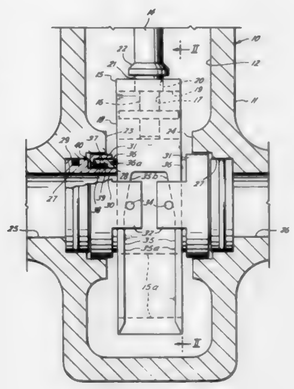
means in the end wall juxtaposed to said one piston for providing access to said second adjusting means without removal of said juxtaposed end wall.

4,566,671

GATE VALVE HAVING A SECONDARY SEAL

John Beson, 1330 Sherwood Forest, #205, Houston, Tex. 77043

Filed Nov. 14, 1983, Ser. No. 551,589
Int. Cl.⁴ F16K *25/00*
U.S. Cl. 251—159 **15 Claims**



1. A gate valve, comprising:

(a) a valve body having a valve chamber therein and a pair of flow passages aligned at opposite sides of the valve chamber, and additionally having a recess around the inner end of each of the aligned flow passages;

(b) a gate member having an imperforate section and a section having a flow passage therethrough, the gate member being disposed within the valve chamber and being reciprocably movable along a line substantially transverse to the valve chamber flow passages between a gate position in which the valve is open and the flow passage of the gate member aligns with the valve chamber flow passages and a gate position in which the valve is closed and the imperforate section aligns with the valve chamber flow passages;

(c) a valve seat in each of the recesses around the inner end of the flow passages, at least one of the valve seats comprising a ring-shaped seat against which the gate member slides between the open and closed positions such that the gate forms a primary seal with the ring shaped seat when the gate is in the valve closed position;

(d) a seal support ring slidably disposed around said ring-shaped seat, the seal support ring having an inner recess therearound at the end adjacent the gate;

(e) an elastomeric seal member disposed in the inner recess of the seal support ring; and

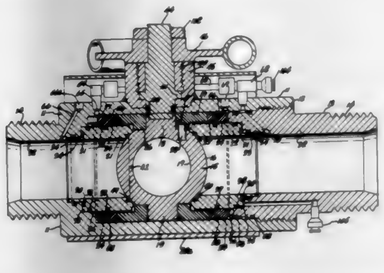
(f) means associated with said seal support ring and said gate for drawing the seal support ring toward the gate when the gate is moved from the valve open position toward the valve closed position to force the elastomeric seal member into sealing engagement with the gate after the gate has reached the closed position to form a secondary seal after the formation of the primary seal, and for moving the seal support ring such that the secondary seal is deenergized prior to substantial movement of the gate across the elastomeric seal member whereby drag and wear of the elastomeric seal member by the gate are minimized upon the movement of the gate to the open position.

4,566,672

PRESSURE BALANCED BALL VALVE

James F. Giebeler, 3655 El Camino Dr., San Bernardino, Calif. 90204

Filed Nov. 9, 1983, Ser. No. 550,485
Int. Cl.⁴ F16K 25/00
U.S. Cl. 251—192 6 Claims



1. In a pressure balanced valve assembly, the combination of: a tubular body having a longitudinal axis, a valve member in said body mounted to turn about a transverse axis, a cage mounted for axial movement longitudinally within said body, first and second annular pistons mounted on opposite sides of said valve member, said pistons being mounted for axial movement within said cage toward and away from the outer surface of said valve member, the effective cross sectional area of the contact between each piston and the surface of said valve member being equal to the effective cross sectional area of each end of said cage, first pressure transfer means, a first end thereof communicating with the interior of said body near said first piston, second pressure transfer means, a first end thereof communicating with the interior of said body said second piston, a first pressure chamber within said body adjacent one end of said cage, a second pressure chamber within said body adjacent the other end of said cage, first hydraulic means establishing communication between said first pressure transfer means and said second pressure chamber, and second hydraulic means establishing communication between said second pressure transfer means and said first pressure chamber, whereby pressure in said body upstream from said valve member is balanced by pressure on the downstream end of said cage.

4,566,673

HYDRAULIC DEVICE FOR RERAILING VEHICLES

Siegfried Smuda, Erlangen; Peter Horner, Nuremberg; Karl Kögel, Erlangen, and Peter Zeitler, Fürth, all of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 528,084, Aug. 31, 1983, abandoned. This application Sep. 17, 1984, Ser. No. 651,444
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1982, 3233752
Int. Cl.⁴ B66F 3/00
U.S. Cl. 254—84 11 Claims

1. A hydraulic device applicable for use under temperature conditions which may vary unpredictably over the full range available in a particular climate for lifting and rerailing an overturned rail vehicle, comprising:

a rerailing bridge;

at least one hydraulic lift cylinder, adapted for lifting the overturned vehicle;

a roller carriage rolling along said rerailing bridge, this carriage being adapted for transporting the upright vehicle;

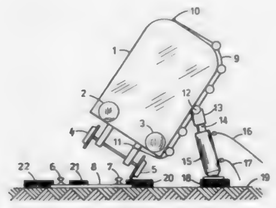
at least one traversing cylinder adapted for moving said roller carriage;

at least one of said cylinders having a piston therein which is displaceable along said cylinder; a pressure chamber in said cylinder at one side of the piston for being pressurized to bias the piston to be displaced to provide lift against the load; a second chamber in the cylinder at the other side of the piston;

a vacuum generator;

a hydraulic pressure generating unit, comprising a high pressure source with high pressure connection, and a first low pressure connection for feeding to the vacuum generator;

control valve means for selectively connecting the pressure chamber of the one cylinder with the high pressure connection for pressurizing the pressure chamber for biasing



the piston for lifting a load and for selectively connecting the pressure chamber with the first low pressure connection for the vacuum generator to reduce pressure in the pressure chamber for moving back the piston when the piston is not under load;

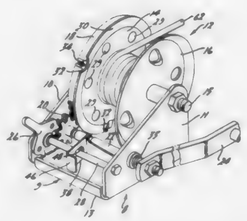
a low pressure source with a second reduced pressure connection connected to the second chamber of the cylinder for pressurizing the second chamber for biasing the piston contrary to the bias exerted by pressurizing the pressure chamber and for cooperating with the vacuum generator for returning the piston when the piston is not loaded, said hydraulic structure being usable over a full range of climatic temperature variations.

4,566,674

NEUTRAL WINCH

Edward Ebey, Nashotah, and Karl E. Richter, Sheboygan, both of Wis., assignors to Fulton Manufacturing Corporation, West Allis, Wis.

Filed Nov. 5, 1984, Ser. No. 667,982
Int. Cl.⁴ B66D 1/14
U.S. Cl. 254—345 9 Claims



1. A winch characterized by:

a frame having two parallel wall sections;

a drum rotatably mounted to said frame with a mounting axle extending between said two wall sections;

a drum gear rigidly secured to said drum;

an operating shaft rotatably mounted on said frame parallel to said drum;

a handle operatively connected to said shaft;

a pinion gear mounted on said shaft for driving engagement to said drum gear when in a driving position;

said shaft being axially slideable on said frame to axially slide said pinion gear from said driving position to a disengage position to disengage from said drum gear and place said winch in a neutral mode;

an annular detent on said shaft;

a lock means attached to the frame and being receivable in said detent for locking said shaft in one axial position that positions said pinion gear in engagement with said drum gear;

said lock means including a spring member having one mounting end attached to one of said wall sections;

said spring member having an intermediate folded section which is receivable in said annular detent;

said spring member having a distal tab section that is manually engageable to be moved such that said spring member can flex and exit said detent to allow said shaft member to axially move; and

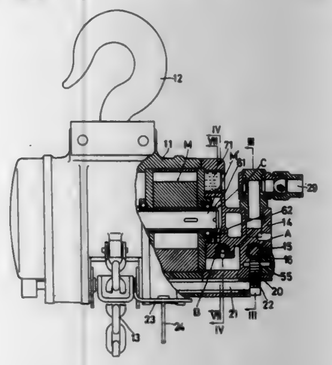
said spring member being biased to enter said detent when said shaft is in the engaged position.

4,566,675

CONTROL DEVICE FOR AN AIR HOIST

Yoshiharu Kotone, Nishinomiya, and Masaaki Hirsoka, Nara, both of Japan, assignors to Nippon Pneumatic Manufacturing Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 468,993, Feb. 23, 1983, abandoned. This application Mar. 5, 1985, Ser. No. 708,037
Claims priority, application Japan, Dec. 1, 1982, 57-211803
Int. Cl.⁴ B66D 1/08, 5/02
U.S. Cl. 254—360 2 Claims



1. A control device for an air hoist for lifting a load, comprising:

a main body housing therein a driving air motor;

a compressed air source;

an air circuit means for feeding air from the compressed air source to said air motor and for driving said air motor in the direction of normal rotation for lifting the load;

operating valve means, arranged in the air circuit means, for actuating the air motor;

a remote control tool means, provided in the air circuit means between the compressed air source and the operating valve means, for operating said operating valve means;

control valves and a check valve which are opened and closed by air, provided in the air circuit means between said air motor and said operating valve means;

a first adjustable throttle valve means, arranged in the remote control tool means, for controlling air to said check valve and said control valves;

a second throttle valve means, arranged in the remote control tool means upstream of the adjustable throttle means, for slow speed lowering of the load and for controlling air to said adjustable throttle valve means;

third and fourth throttle valve means, arranged in the remote control tool means and in the air circuit means parallel to said throttle valve means for slow speed lowering and lifting respectively, by feeding air to opposite sides of the operating valve means; and

two lever means for either individually or simultaneously operating said second and third throttle valve means;

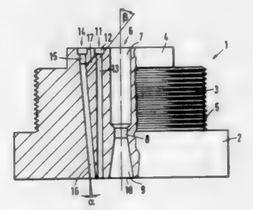
one of said two lever means being connected to said second throttle means for slow speed lowering and the other of said two lever means being connected to said third throttle valve means for normal lowering.

4,566,676

SHORT TIP FOR A TORCH AND A TORCH TYPE TOOL

Horst K. Lotz, Kiefernweg 13, DE-6200 Wiesbaden-Delkenheim, Fed. Rep. of Germany

Filed Jun. 27, 1983, Ser. No. 507,982
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1982, 8218358[U]; Sep. 17, 1982, 8226246[U]; Jan. 11, 1983, 8300552[U]
Int. Cl.⁴ B23K 7/00
U.S. Cl. 266—48 32 Claims



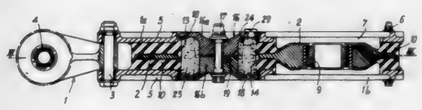
1. A short tip for a torch, comprising a central oxygen passage; disposed adjacent the central oxygen passage, combustible gas feed passage means extending substantially parallel to said passage; and, disposed outside the combustible gas feed passage means, heating oxygen feed passage means which have at least a substantial portion extending at an inclined angle to the discharge end of the combustible gas feed passage means and issuing directly therebeside.

4,566,677

VIBRATION DAMPER AND IN PARTICULAR FREQUENCY ADAPTER FOR A HELICOPTER BLADE

Gildas Le Pierres, La Ferte Alais, France, assignor to Vibrachoc, France

Filed Jun. 8, 1983, Ser. No. 502,236
Claims priority, application France, Jun. 11, 1982, 82 10198
Int. Cl.⁴ F16F 9/14
U.S. Cl. 267—140.1 4 Claims



1. A vibration damping device comprising a first rigid element for connection to a first part such as for example a rotor, wherein the first rigid element has two substantially parallel parts spaced apart from each other and each provided with a first passage and a second passage, a second rigid element for connection to a second part such as for example a helicopter blade, wherein said second rigid element has a part which

extends between said two parts of said first element and carries bearing means within a first of said passages in said parts of said first element and a substantially oblong passage in axial alignment with a second of said passages of said two parts of said first element, and a mass of elastomer material interposed between and combined with said elements so as to be deformed when said elements are moved relative to each other substantially in a direction parallel to said first and second elements, the confronting surfaces of said parts of said two rigid elements being interconnected by said elastomer material, said oblong passage in said mass of elastomer material in axial alignment with said second passage of said two parts of said first element, a restriction element secured to one of said first and second rigid elements and inserted in said oblong passage in said mass of elastomer material so as to define substantially two chambers whose volumes vary inversely upon relative movement of said first and second rigid elements in said direction, wherein said restriction element has flanges which close said oblong passage in said elastomer material and a central part which defines said two chambers and throttling passage means putting said chambers in communication with each other, a viscous material filling said two chambers and said throttling passage means so as to produce a damping effect in said throttling passage means when the viscous material flows from one chamber to the other.

4,566,678

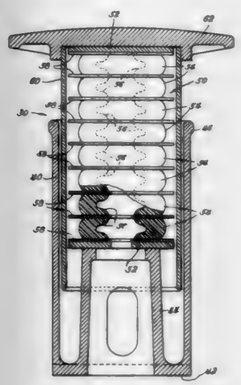
POLYMERIC APPARATUS AND METHOD OF MAKING THE SAME

David G. Anderson, Chesterton, Ind., assignor to Miner Enterprises, Geneva, Ill.

Filed Aug. 27, 1982, Ser. No. 412,119

Int. Cl.⁴ B60F *11/00*; B29C *17/00*

U.S. Cl. 267—141.1 **34 Claims**



23. A compression spring member comprising a body of thermoplastic elastomeric material having a selected transverse configuration and axial free height and transversely expanded hollow central core opening extending substantially therethrough, the material and said opening being uniform in cross-sections perpendicular to a central axis, said material being such that upon being axially compressed at least 30% of said initial axial length the material will permanently retain a substantial portion of the length reduction after being compressed, defined by axially compressing said body having the uniform said core opening, by an extent equal to at least thirty percent of the initial height of he uncompressed elastomeric material such that the configuration of the core opening is permanently expended transversely outwardly.

4,566,679

METHOD OF CLAMPING TUBE-LIKE MEMBERS AND APPARATUS FOR CARRYING OUT THE METHOD

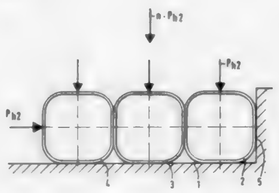
Karl H. Ehm, Duisburg, and Roderich R. Orendi, Düsseldorf, both of Fed. Rep. of Germany, assignors to Tremag Trennmaschinen-Gesellschaft mbH, Duisburg, Fed. Rep. of Germany

Filed Mar. 29, 1984, Ser. No. 594,575

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3312384

Int. Cl.⁴ B23D *47/04*

U.S. Cl. 269—23 **10 Claims**



1. Apparatus for clamping at least one tube-like member in position for processing thereof, comprising: a clamping support means having a support surface on which said at least one member rests; clamping means which is displaceable in a direction parallel to said support surface, adapted to engage said at least one member which in operation of the apparatus is disposed on said support surface, to clamp same on respective oppositely disposed sides thereof; a clamping member which is displaceable towards said support surface and adapted to engage said at least one member carried thereon, to urge same towards said support surface for clamping of said at least one member against said support surface; measuring means operatively associated with said clamping means and said clamping member for measuring geometrical deformation of said at least one member which occurs during a clamping operation and adapted to produce a signal to trigger the end of a respective clamping operation when deformation of said at least one clamped member reaches a specified value without being permanent.

4,566,680

VERTICALLY ADJUSTABLE DEVICE

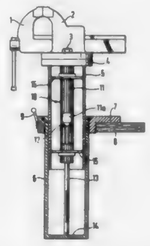
Wolfgang Schlegel, Oehringen; Arthur Wilke, Bad Friedrichshall-Jagstfeld, and Roland Stein, Oehringen, all of Fed. Rep. of Germany, assignors to Schlegel GmbH, Oehringen, Fed. Rep. of Germany

Filed Apr. 11, 1983, Ser. No. 483,537

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215217

Int. Cl.⁴ B25B *1/00*

U.S. Cl. 269—74 **9 Claims**



1. A vertically adjustable device comprising a vertical support tube for carrying a vise or assembly platform, a mounting for attachment of the support tube to a work bench or support,

said mounting comprising a guide tube accommodating the support tube for vertical adjustment and a clamping device for clamping the support tube in place in any vertical position, and further comprising a gas spring comprising a cylinder and a piston movable therein and a piston rod extending from the piston, said gas spring being arranged between said support tube and said guide tube to exert an upwardly directed force on the support tube, wherein the cylinder of the gas spring is arranged within the support tube and held therein by at least one disk having an inner and an outer periphery between the cylinder and the support tube, said inner periphery being in frictional engagement with the outer surface of the cylinder and said outer periphery being in frictional engagement with the inner wall of the support tube, and the piston rod removably abuts against the guide tube so that the gas spring is withdrawn simultaneously with support tube when the support tube is removed from the guide tube thereby leaving the workbench or support clear for other work without interference by the gas spring.

4,566,681

COLLATING MACHINE WITH ERROR-INDICATING REJECTION DEVICE

Rolf Böttcher, Markkleeberg, and Hans-Jürgen Lindner, Lützschena, both of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Aug. 27, 1982, Ser. No. 412,320

Claims priority, application German Democratic Rep., Oct. 26, 1981, 234352

Int. Cl.⁴ B65H *39/02, 39/055*

U.S. Cl. 270—58 **6 Claims**

1. In a binding apparatus for the formation of book blocks of the type wherein individual sheets are fed to be formed into book blocks, and including a plurality of control devices for monitoring the formation of book blocks by signalling the faulty deposition of more than one sheet at a time and/or a missing sheet, the improvement comprising a programmable microcomputer having a digital input port, said microcomputer being connected to receive signals from said control devices at said input port, and a sliding device comprising a station number indicator, said sliding device being adjustable in response to signals from said microcomputer to successively receive a plurality of defectively formed book blocks each containing more than one of the same sheet or missing a sheet, said station number indicator having a plurality of fields for separately indicating the control device of the faulty formation each defective book block whereby the defect of each defective book block is readily determined.

4,566,682

ARRANGEMENT FOR REMOVING PHOTOSENSITIVE SHEETS FROM A CONTAINER

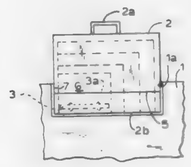
Jürgen Müller, Munich, and Werner Ihm, Schwaben, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 384,160, Jun. 1, 1982, abandoned. This application Oct. 3, 1984, Ser. No. 657,395

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122585

Int. Cl.⁴ B65H *3/08, 1/02*

U.S. Cl. 271—90 **10 Claims**



1. An arrangement for removing sheets through an opening of a container, especially X-ray film sheets from a light-tightly closable container, which receives the sheets next to one another substantially parallel to a common plane, at least some of the sheets being so dimensioned as to be movable in the container along the common plane toward and away from an abutment surface, comprising means for supporting the container in a predetermined position in which the opening is accessible; means for moving at least the next sheet to be removed along the common plane into abutment with the abutment surface, including at least one roller mounted for rotation about an axis and engaging at least the next sheet during the operation of the moving means, and means for rotating said roller about said axis so as to maintain said roller in contact with said next sheet and to urge the sheet engaged by said roller to move toward the abutment surface; and means for engaging the next sheet and withdrawing the same through the opening, said moving means further includes a carrier member mounted on said engaging and withdrawing means for movement relative thereto, said roller being mounted on said carrier member for rotation about an axis which is substantially parallel to the common plane.

4,566,683

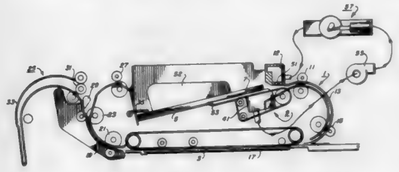
SHEET FEEDING APPARATUS AND VALVE THEREFOR

Kenneth P. Moore, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 26, 1983, Ser. No. 526,924

Int. Cl.⁴ B65H *3/14*

U.S. Cl. 271—98 **2 Claims**



1. A bottom sheet separator/feeder for separating and forwarding sheets seriatim having a stack tray adapted for supporting a stack of sheets, comprising:

air injection means adapted to provide a layer of air between the tray and the bottom sheet in the stack in between the bottom sheet and the remainder of the sheets in the stack,

a pressure source associated with said air injection means for providing positive air pressure to said air injection means,

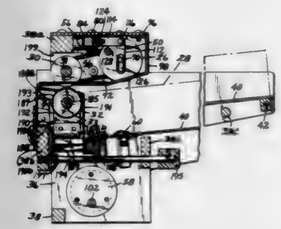
valve means associated with said air injection means being adapted to control the flow of air thereto from said source means and having a plurality of rotatable cylindrical valve elements each being arranged to provide a different air flow to said injection means, each of said valve elements being formed with a different flow restrictive opening relative to air flow through said valve means when said element is rotated into the air flow, said valve means including control means for selectively rotating said elements into the air flow.

4,566,684

AUTOMATIC SHEET FEED MECHANISM

Walter Gysling, Excelsior, Minn., assignor to National Computer Systems, Edina, Minn.

Filed Jan. 12, 1984, Ser. No. 570,164
Int. Cl.⁴ B65H *3/06*
U.S. Cl. 271—117 **13 Claims**



1. An automatic sheet feeding apparatus for feeding sheets in a forward direction; comprising:

(a) frame means for supporting a stack of sheets having a top surface and a bottom surface and including an uppermost sheet, said frame means including a hopper table member, having a back edge and a forward edge facing in the direction of sheet movement, for supporting said stack of sheets during feeding thereof, said hopper table member being pivotally mounted proximate said back edge for pivotal movement about a horizontal axis;

(b) mechanical lift means interconnected to said hopper table member for raising said front edge of said hopper table member whereby said hopper table member is pivoted about said horizontal axis;

(c) pick roller means arranged for engaging the top surface of said stack of sheets to advance the uppermost sheet of said stack of sheets in the forward direction and for detecting when the top surface of said stack of sheets is below a predetermined height, said pick roller means being interconnected to said lift means so as to mechanically actuate said lift means upon detecting the top surface of said stack of sheets as being below the predetermined height;

(d) means interconnected to said pick roller means for raising and lowering said pick roller means;

(e) sheet separating means for separating said uppermost sheet from any of said sheets inadvertently moved forwardly therewith, said sheet separating means including first and second separating rollers positioned forwardly of said stack of sheets and cooperating with one another; and

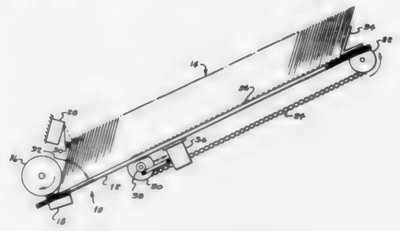
(f) integral drive means comprising single drive motor means operatively interconnected to said pick roller means, said sheet separating means and said lift means for driving said pick roller means, said sheet separating means, and said lift means.

4,566,685

DOCUMENT FEEDING DEVICE

Robert Irvine, Riverside; Frank T. Roetter, Westport, and Willis R. Stearns, Darien, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 6, 1984, Ser. No. 577,000
Int. Cl.⁴ B65H *1/02*
U.S. Cl. 271—150 **5 Claims**



1. A document feeding device, comprising:

a hopper oriented at an acute angle with respect to a horizontal plane, said hopper having a lower end, an upstream aperture and a downstream aperture and able to support a pack of documents to be fed therefrom;

means situated at the lower end of the hopper for feeding documents seriatim from the hopper;

a first pulley whose outer surface extends slightly through said downstream aperture and a second pulley whose outer surface extends slightly through said upstream aperture;

a double sided timing belt mounted on said first and second pulleys and riding on the upper surface of said hopper;

a switch in contact with the lead document of said pack of documents, said switch having contacts which close when the angle of repose of said pack of documents relative to the hopper is sufficiently decreased; and

a solenoid operatively connected to one of said pulleys and to said switch, wherein when said contacts are closed, said solenoid is energized to index said one pulley, whereby said timing belt is indexed forward, thereby moving said pack of documents forward and maintaining said pack of documents at an optimum pack pressure and angle of repose for seriatim feeding.

4,566,686

APPARATUS FOR FORMING A SPIRAL-LAYERED COILED STACK FROM SUBSTANTIALLY TWO-DIMENSIONAL FLAT STRUCTURES CONTINUOUSLY ARRIVING IN IMBRICATED FORMATION

Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

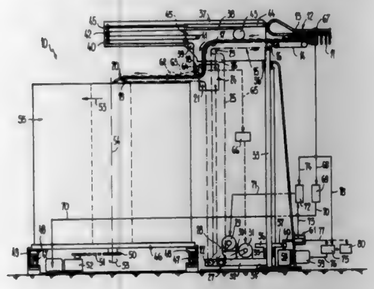
Filed Apr. 3, 1985, Ser. No. 719,721
Claims priority, application Switzerland, Apr. 19, 1984, 1984/84; Sep. 21, 1984, 4533/84
Int. Cl.⁴ B65H *29/50*
U.S. Cl. 271—201 **25 Claims**

1. An apparatus for forming a spiral-layered coiled stack from substantially two-dimensional flat structures, especially printed products, continuously arriving in imbricated formation, comprising:

a delivery conveyor for delivering the imbricated formation; said delivery conveyor being provided with a conveyor discharge station;

a rotary driven stack support arranged beneath said conveyor discharge station and defining an upright axis of rotation;

said rotary driven stack support and at least said conveyor discharge station being adjustable in height in relation to one another; and



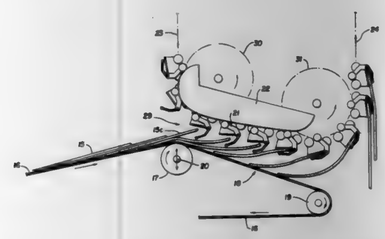
means for periodically displacing said conveyor discharge station and said upright axis of rotation relative to one another alternatingly toward and away from one another.

4,566,687

TRANSFERRING NEWSPAPERS OR THE LIKE FROM A MOVING BELT TO A SERIES OF CLAMPS

Hans G. Faltin, York, Pa., assignor to Custom-Bilt Machinery, Inc., York, Pa.

Filed May 11, 1984, Ser. No. 609,326
Int. Cl.⁴ B65H *29/66*
U.S. Cl. 271—202 **6 Claims**



1. In a conveyance system for transporting newspapers or the like by a succession of individual clamps, improved means for transferring the newspapers from a shingled array on a conveyor belt into the clamps for further transport thereby, comprising in combination,

conveyor belt means for transporting a shingled array of said newspapers along a conveyor belt path into a transfer station at a speed presenting the leading edges of the newspapers spaced by a distance X for a given increment of time,

clamp conveyance means for transporting a succession of spaced clamps in a path approaching the conveyor belt means and passing substantially parallel with a conveyor belt path section of the transfer station in the same direction before diverging therefrom at the end of a transfer zone encompassing a plurality of clamps, wherein the clamps are transported at a speed spacing the clamps a distance less than X for said increment of time, thereby permitting individual newspapers on the belt to move towards and overtake individual clamps within said transfer zone,

cam means synchronously operable to open the clamp jaws and to close them gradually over said transfer zone to receive thereinto said newspaper leading edges and clamp them in place for transport by the clamp conveyor means as they are conveyed in part on said belt through the transfer zone and means operable after the newspapers pass the conveyor belt path transfer zone diverging the paths of the conveyor belt path and the clamp conveyance means to remove the newspapers from the belt in the grasp of the individual clamps, and

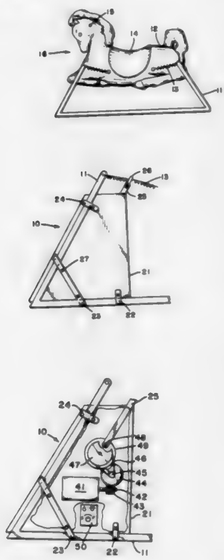
insertion means comprising conveying solely by frictional contact of a shingled array of newspapers on the conveyor belt over a roller where the direction of the belt path is changed to a downwardly inclined direction for registering the leading edge of newspapers carried on the belt into the open clamps in the initial part of the transfer zone.

4,566,688

ACTUATION FOR SPRING MOUNTED HOBBY HORSE

Thomas A. Monica, Rte. 1, Cartersville, Ga. 30120

Filed Mar. 21, 1984, Ser. No. 591,955
Int. Cl.⁴ A63G *13/08*
U.S. Cl. 272—53.1 **18 Claims**



1. Apparatus for rocking a children's riding toy suspended from a frame having a plurality of generally upright members by a plurality of retractile springs each of which is attached at one end to said toy and at the other end to a frame member; comprising:

(a) at least one reciprocating arm means for imparting rocking motion perpendicular to the longitudinal axis of at least one of the retractile springs,

(b) clamp means for securing said reciprocating arm to at least one of the retractile springs along the longitudinal axis thereof, and

(c) drive means for reciprocating said reciprocating arm, wherein the reciprocating arm travel is within a range of from one-fourth inch to about three inches.

4,566,689

ADJUSTABLE MOTOR MOUNT ARRANGEMENT FOR EXERCISE TREADMILLS

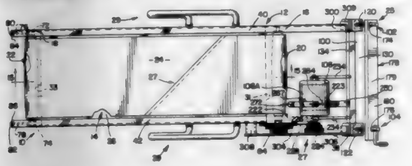
Ralph Ogden, Munster, Ind., assignor to Ajay Enterprises Corporation, Delavan, Wis.

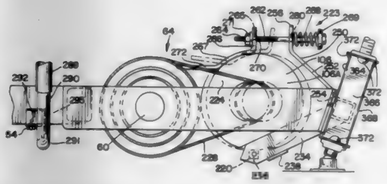
Division of Ser. No. 562,803, Nov. 17, 1983, and a continuation of Ser. No. 452,300, Dec. 22, 1982, abandoned, which is a division of Ser. No. 378,627, May 17, 1982, Pat. No. 4,445,683, which is a continuation-in-part of Ser. No. 226,766, Jan. 21, 1981, Pat. No. 4,374,587, said Ser. No. 552,803, is a continuation-in-part of Ser. No. 378,627,. This application Dec. 10, 1984, Ser. No. 679,862

The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.

Int. Cl.[4] A63B *23/06*

U.S. Cl. 272—69 **4 Claims**





1. In an exercise treadmill including a generally planar slider bed having a head end, a tail end, and a top surfacing extending substantially between said ends thereof, an endless treadmill belt trained over said slider bed top surfacing and a lower run passing under said slider bed, and means for driving said belt for movement of said belt upper run from said head end to said tail end of said slider bed,

the improvement wherein:

said slider bed has a cross member extending transversely thereof adjacent and forwardly of said head end thereof,

said belt driving means comprising:

a head roller journalled in said slider bed adjacent the head end of same over which the belt is trained,

said head roller being journalled for rotation about an axis paralleling said cross member,

an electric drive motor assembly mounted on the cross member between said cross member and said head roller for pivotal movement about an axis substantially paralleling said cross member,

said drive motor assembly including a drive motor driving a drive shaft about an axis substantially paralleling said motor assembly pivot axis and having keyed to same a first drive stepping pulley for rotation about said drive shaft axis,

with said head roller having keyed to same a second drive stepping pulley for rotation about said head roller axis,

a pulley belt in drive transmitting relation between said pulleys, with said pulleys being in substantially coplanar stepping-reverse stepping relation,

said head roller axis and said drive shaft axis being in substantially coplanar relation in a plane substantially paralleling said slider bed,

said drive motor assembly pivot axis being disposed below said plane and said motor and disposing said drive motor assembly in cranking relation to said head roller axis about said drive motor assembly pivot axis for shifting said drive shaft axis toward said head roller axis in one direction of movement about said drive motor assembly pivot axis, and for shifting said drive shaft axis away from said head roller axis in the opposite direction of movement about said drive motor assembly pivot axis,

and means for subjecting said drive motor assembly to uniform spring biasing action in said opposite direction about its said pivot axis for uniformly tensioning said pulley belt into said drive transmitting relation with said pulleys and for spring absorption of load surges imposed on said pulley belt,

said drive motor assembly including a handle crank means for pivoting said drive motor assembly in said cranking relation in said one direction about its said pivot axis in opposition to said subjecting means for manually relieving the tensioning of said pulley belt for freeing same from said drive transmitting relation with said drive pulleys for adjusting said pulley belt relative to said pulleys for changing the speed of movement of said treadmill belt, as driven by said drive motor, stepping pulley fashion,

said biasing action of said subjecting means, on manual release of said handle crank means with said pulley belt positioned for said drive transmitting relation with said pulleys in the changed speed relation of same to said pulleys, acting on said drive motor assembly for pivoting said drive motor assembly in said cranking relation in said opposite direction about its said pivot axis for restoring said uniform tensioning of said pulley belt into said drive transmitting relation with said pulleys in the adjusted speed relation of same and for said spring absorption of load surges imposed on said pulley belt.

4,566,690

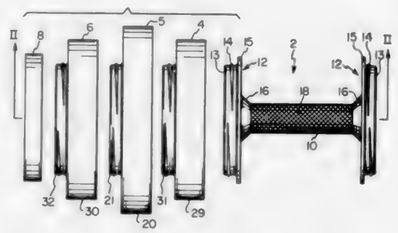
DUMBELL AND BARBELL EXERCISE EQUIPMENT

Michael N. Schook, 121 Lycoming Dr., Coraopolis, Pa. 15108

Filed May 10, 1984, Ser. No. 608,997

Int. Cl.[4] A63B *13/00*

U.S. Cl. 272—123 **20 Claims**



1. Weight training apparatus comprising:

(a) an elongated handle having a cylindrical male connector on each end of said handle,

(b) a plurality of weights adapted to be mounted both to said handle and to each other, each of said weights including a substantially right cylindrical body with a cylindrical male connector extending outwardly from one face of the body and a cylindrical female connector recessed into the opposite face of the body, said male connector of each weight adapted to be joined to the female connector of another weight and thereby join said weights together, and said female connector of each weight adapted to engage said male connector on the handle and thereby join a weight to said handle,

(c) the diameter of the male connector of each weight and the male connector of the handle being at least about one-half of the diameter of the body of each of said weights,

whereby the weights are easily assembled and disassembled and are supported by said connectors without bending or twisting or placing damaging stress on said connectors.

4,566,691

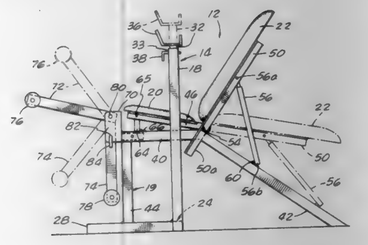
EXERCISE BENCH

Parker E. Mahnke, Studio City, Calif., assignor to Marcy Gymnasium Equipment Co., Alhambra, Calif.

Filed Nov. 9, 1983, Ser. No. 550,298

Int. Cl.[4] A63B *13/00*

U.S. Cl. 272—123 **12 Claims**



1. An exercise bench for use by a trainee in the performance of free weight exercises using a barbell type apparatus having an elongate bar with weights carried on either end thereof, comprising:

(a) a first frame assemblage having a pair of spaced apart upstanding members, including support means for supporting the elongate bar of the bar bell apparatus;

(b) a second frame assemblage cooperatively associated with said first frame assemblage including a seat portion and an inclined back portion, a substantial portion of said seat portion being disposed forwardly of the plane of said upstanding members and a portion being disposed rearwardly thereof and said back portion being spaced apart therefrom, whereby with the barbell apparatus being supported on said support means the trainee can sit on said seat portion facing the elongate bar of the apparatus and engage said back portion with his back, his upper torso being positioned between the elongate bar and said back portion.

4,566,692

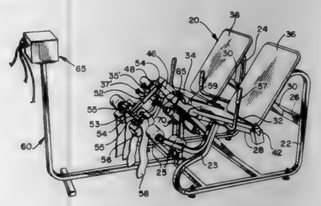
COMPUTERIZED EXERCISING DEVICE

Jerry D. Brentham, 2121 Industrial Park Rd., Belton, Tex. 76513

Filed May 18, 1983, Ser. No. 495,806

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—130 **24 Claims**



1. A double acting hydraulic cylinder comprising first and second tubular members, the second tubular member extending through the first tubular member forming an annulus between walls of the first and second tubular members; a single piston in said second tubular member; spaced closure means in said annulus forming a reservoir; check valve means having a passage communicating with the reservoir and the inside of the second tubular member, said check valve means being adapted to permit flow of fluid from the reservoir to the inside of the second tubular member and to block flow of fluid from each end of the second tubular member to the reservoir; first valve means arranged to meter flow of fluid from a first end of the cylinder to said reservoir upon movement of said piston in the second tubular member in a first direction; second valve means arranged to meter flow of fluid from a second end of the cylinder to sadi reservoir upon movement of said piston in the second tubular member in a second direction; a valve element in each of said valve means to independently and selectively meter fluid flow from each end of the second tubular member to the reservoir upon movement of said piston in opposite directions.

4,566,693

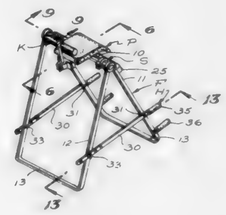
GRAVITY TRACTION APPARATUS

Alfred T. Seidentop, Santa Maria, and John E. Johnson, Villa Park, both of Calif., assignors to Stretch Forming Corporation, Fountain Valley, Calif.

Filed Jun. 7, 1982, Ser. No. 385,682

Int. Cl.[4] A63B *23/04*

U.S. Cl. 272—144 **3 Claims**



1. A gravity traction apparatus for human users, comprising:

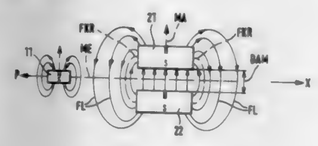
a vertically-extending frame with front and rear sides for mounting on a floor or like surface and including a horizontally disposed, transversely-extending beam member supported adjacent the upper end thereof;

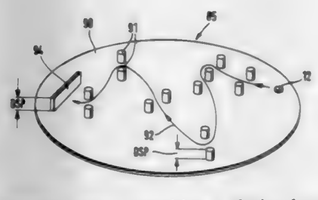
a thigh-pad structure with a generally flat, thigh-engaging surface having front and rear portions, supported on said beam member for pivotal movement between an inoperative position in which said surface is generally vertically disposed and an operative position in which said surface is generally horizontally disposed; and

a knee-stop member and supporting means therefor carried by the thigh-pad structure, said knee-stop member including a transversely-extending leg-engaging portion which is spaced downwardly and rearwardly relative to the rear portion of said thigh-engaging surface when the thigh-pad structure is in the inoperative position, said supporting means being at a fixed distance relative to the rear portion of said thigh-pad structure, the amount of the spacing of the knee-stop member from said supporting means causing the leg-engaging portion to engage the legs of a user in the areas in back of the knees when the user is standing on the surface on which the frame is mounted and between said knee-stop member and said thigh-engaging surface,

in which the frame includes spaced-apart front legs and stop means for limiting the pivotal movement of the thigh-pad structure between the inoperative position and the operative position, which stop means includes a tie-bar connected to and extending between the front ends adjacent to the beam member.

4,566,694
MAGNETIC GAME
Kurt Ehrat, Grebweg 17, CH-8162, Steinmaur, Switzerland
Filed Aug. 10, 1983, Ser. No. 522,060
Claims priority, application Switzerland, Aug. 14, 1982, 4903/82
Int. Cl.⁴ A63F *7/06, 7/24;* **A63H** *30/00*
U.S. Cl. 273—1 GB **41 Claims**

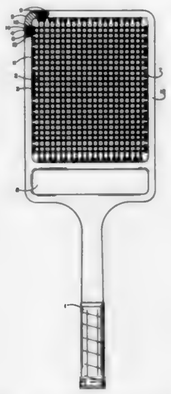




1. A magnetic game, comprising a playing board having spaced apart, substantially parallel top and botton walls, at least said top wall consisting of light-transmitting material; at least one playing piece disposed between said walls and including at least one permanent magnet, said playing piece being movable between and along said walls, and said walls being arranged to hold said playing piece against tilting so that the polar axis of said magnet is invariably at least nearly perpendicular to said walls; and impeller means including a first shifting member situated outwardly adjacent to and manually movable along said top wall, and a second shifting member situated outwardly adjacent to and movable along said bottom wall, said first shifting member comprising a first permanent magnet arranged so that the polar axis thereof is at least nearly perpendicular to said walls, and said second shifting member comprising a second permanent magnet arranged so that the polar axis thereof is at least nearly perpendicular to said walls, said first and second magnets being coupled to one another for movement along the respective walls substantially as a unit, and the polar axes of said first and second magnets being at least substantially coincident all of said magnets having the same direction of magnetization.

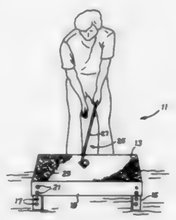
4,566,695
GAME RACKET HAVING ADJUSTABLE STRING MOUNTS
Phillip J. Melby, Box 656, Mason City, Iowa 50401
Filed Mar. 17, 1983, Ser. No. 476,034
Int. Cl.⁴ A63B *51/12*
U.S. Cl. 273—73 D **1 Claim**

1. A racket for tennis, wherein the improvement comprises a racket handle and rectangular racket frame head and means for adjusting string loop tautness, said means consisting of an adjustable mounting stud with a threaded section, mounted in said racket frame head, a threaded nut for engagement with said threaded stud section mounted in said racket frame head,



and stud legs of said mounting stud fitting in blind holes in said racket frame head.

4,566,696
GOLF CLUB SWING TRAINING METHOD
Floyd D. Horgen, 1046 Fairlawn Dr., Rockledge, Fla. 32955
Filed Jul. 29, 1983, Ser. No. 518,625
Int. Cl.⁴ A63B *69/36*
U.S. Cl. 273—193 A **1 Claim**

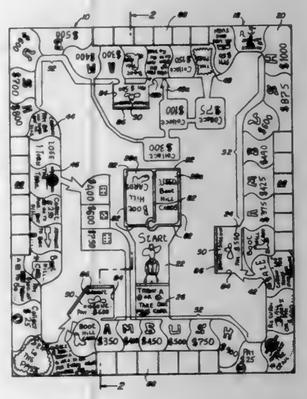




1. A method of practicing a golf swing using a shortened shaft golf club and a raised generally horizontal surface capable of supporting a golf ball, the method comprising:
(a) hitting a ball off of the raised surface using a shortened swing of the golf club while gripping the golf club with a left hand only to experience during the shortened swing a feeling of a straight to slightly convex position of the back of the left wrist;
(b) hitting a ball off of the raised horizontal surface using a shortened swing of the golf club while gripping the golf club with both hands to repeat the feeling experienced in step (a);
(c) hitting a ball off of the raised horizontal surface using a shortened swing of the golf club while gripping the club with the right hand only to experience during the swing a feeling of a natural pivoting action of the body on the right leg and hip during back swing and down swing

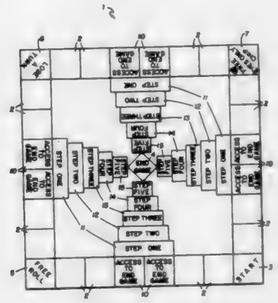
portions of the shortened swing and experiencing the natural pivoting action of the body on the left leg and hit during a follow-through portion of the shortened swing;
(d) hitting a ball off of the raised horizontal surface using a shortened swing of the golf club while gripping the club with both hands to repeat the feeling experienced during step (c);
(e) hitting a ball off of the raised horizontal surface using a full swing of the golf club while gripping the club with the right hand only to repeat the feeling experienced during steps (c) and (d); and
(f) hitting a ball off of the raised horizontal surface using a full swing of the golf club while gripping the club with both hands to repeat the feeling experienced during steps (c), (d) and (e).

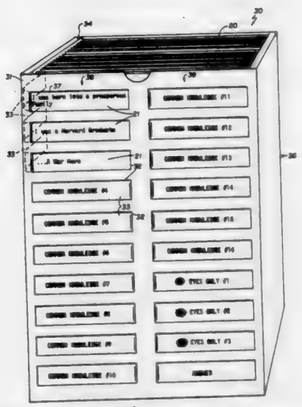
4,566,697
WESTERN GAME OF SKILL AND RISK
Kenny B. Vickers, 147-33 229th St., Rosedale, N.Y. 11413
Filed Jan. 6, 1984, Ser. No. 568,789
Int. Cl.⁴ A63F *3/00*
U.S. Cl. 273—241 **12 Claims**



1. In a game apparatus, the combination of a game board having a continuous path around its perimeter divided into consecutive spaces having alternate paths and bearing instructions representing amounts to be paid or received during the game, each of said spaces defining a playing position, a plurality of playing pieces one for each of the game players, said playing pieces being of a size to fit within said playing positions, play money of different denominations for distribution of part thereof to each player, one deck of cards bearing instructions means, a raised tray means on the game board for each player, said raised tray means including a plurality of storage spaces for displaying some of said cards, a chance determining device to represent the number of playing positions to be moved by the playing pieces, said game board further comprising a card area for storing said deck of cards, said card area being encased by upstanding vertical walls so that said cards will remain in order, the spaces positioned between at least some of the junctions between said alternate paths being depressed spaces and including raised guard walls about a portion of said depressed spaces projecting above the game board.

4,566,698
CHARACTER IDENTITY GAME
Marcia A. Snedes, 27 Colony Rd., Lexington, Mass. 02173
Filed Jan. 23, 1985, Ser. No. 694,124
Int. Cl.⁴ A63F *3/00, 9/18*
U.S. Cl. 273—249 **6 Claims**





1. A competitive character identification board and card game for a plurality of players, comprising:
a game board having a plurality of blocks defining a main path delineated about the periphery of the board and defining a plurality of subsidiary paths leading from the main path to a block in the center of the board;
a plurality of differently identified tokens sufficient in number to provide each player with a token whereby each player's position on the game board may be identified;
a number selection device adapted to determine order of play among the players and the number of blocks to which a player's token is to advance;
a plurality of resumes each of which contains on one side a plurality of biographical entries providing clues to the identity of a particular character and one entry providing the identity of the character whereby one or more of said clues are provided a player whose token lands on a block in the main path and whereby a player's continued advancement about the game board is determined by correctly identifying the character on a resume from clues contained thereon;
a box for holding resumes which box contains on one face a plurality of windows with individual means for covering each window, whereby a window is opened revealing an entry on a resume for each player whose token lands on a block in the main path on the board;

a plurality of chips which are used to obtain additional clues on a resume, some of which chips a player is given at the beginning of the game and others of which a player obtains by guessing the identity of a resume character or by landing on a particular block in the main path on the game board;

a plurality of pins one of which is obtained by a player each time the player guesses the identity of a resume character and which are attached to the token of the player correctly guessing; and

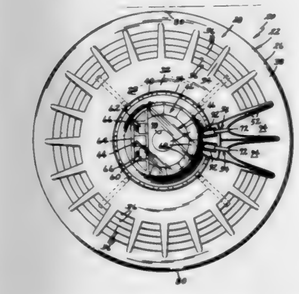
a plurality of cards containing a plurality of biographical entries providing clues to the identity of a particular character and one entry providing the identity of the character, whereby a player having a certain number of pins and having gained access to a subsidiary path is given clues from the card and his advancement towards the block in the center of the board determined by the number of clues given before the character is identified by said player.

4,566,699

FLYING APPARATUS AND METHOD

Joseph R. Cucuzza, Bellevue, Wash., assignor to Richards Aerospace Research Corporation, Burnsville, Minn.

Filed Dec. 27, 1982, Ser. No. 453,241
Int. Cl.⁴ B64C *39/06*
U.S. Cl. 244—12.2 **27 Claims**



27. In combination with an annular airfoil having an upper wall defining therein an annular portion having a multiplicity of outwardly venting louvers; a plurality of radially extending, equi-angularly spaced engines disposed about the airfoil to direct exhaust through said louvers and over an upwardly facing surface of said wall, each of said engines having its air intake situated in a common chamber, and wherein, during movement of the combination structure in an intended direction of forward movement, engines forwardly disposed can be shut off and function as ram air ducts through which air can pass into said common chamber and to air intakes of operating engines said engines each comprising a three-stage combustion air intake, and wherein operation of said engines occurs without movement of component elements thereof.

4,566,700

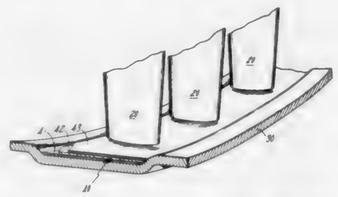
ABRASIVE/ABRADABLE GAS PATH SEAL SYSTEM

Lawrence T. Shiembob, Rocky Hill, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 9, 1982, Ser. No. 406,404
Int. Cl.⁴ F01D *5/06, 11/00*
U.S. Cl. 277—53 **17 Claims**

1. In an apparatus which operates under conditions where titanium combustion can occur, and which includes closely spaced titanium components between which relative motion occurs and between which clearances and fluid flow must be minimized while direct rubbing contact must be avoided, the improvement which comprises:

providing on one component a composite plasma sprayed sealing coating which includes a plasma sprayed abrasive layer on said component and a plasma sprayed abradable layer on said plasma sprayed abrasive layer, wherein, during rubbing contact between an uncoated component and the abrasive layer, greater than 80% of wear occurs in the uncoated component and less than 20% occurs in the abrasive layer while, during rubbing contact between an uncoated titanium alloy component and an abrasive layer greater than 60% of the resultant wear occurs in the



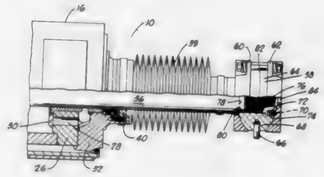
abradable layer and less than 40% occurs in the uncoated component, with the thicknesses of the abrasive and abradable layers and the component clearances being such that in normal operation, the uncoated component encounters and abrades the abradable layer without being significantly abraded itself, while under abnormal operating conditions the uncoated component encounters and is abraded by the abrasive layer and does not directly contact the coated component substrate.

4,566,701

CUSHIONING UNIT SHAFT SEAL

Charles T. Bomgardner, Burleson, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Sep. 19, 1983, Ser. No. 533,844
Int. Cl.⁴ F16J *15/32*
U.S. Cl. 277—58 **6 Claims**



1. An improved combination of piston shaft oil seals for sealing a piston shaft of an end-of-car hydraulic cushioning unit to allow the efficient substantially leak-free sealing of said piston shaft while maintaining a film of oil on said piston shaft over a wide range of environmental operating conditions, the combination comprising:

a first annular piston shaft oil scraper seal of resilient materials, the seal having an inner most lip which sealingly engages said piston shaft having, in turn, a hardness of substantially ninety durometer;

a second annular piston shaft oil scraper seal of resilient material, the seal having an inner most lip which sealingly engages said piston shaft to remove or scrape oil therefrom to help prevent oil loss from said end-of-car hydraulic cushioning unit; and

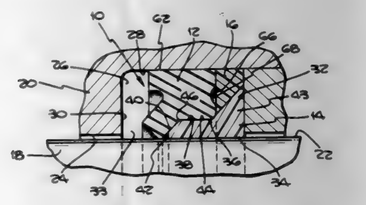
a third annular piston shaft oil scraper seal of resilient material, the seal having an inner most lip having, in turn, a harness of substantially seventy durometer, the third annular piston shaft oil scraper seal sealingly engaging said piston shaft to allow the efficient substantially leak-free sealing of said piston shaft when sealingly engaging said piston shaft in conjunction with the first annular piston shaft oil scraper seal and the second annular piston shaft oil scraper seal while maintaining a film of oil on said piston shaft over a wide range of environmental operating conditions.

4,566,702

SEAL ASSEMBLY WITH IMPROVED LOW PRESSURE SEALING RING

Henry A. Traub, Pacific Palisades, Calif., assignor to W. S. Shamban & Company, Santa Monica, Calif.

Filed Mar. 18, 1985, Ser. No. 712,667
Int. Cl.⁴ F16J *15/24, 15/32*
U.S. Cl. 277—121 **14 Claims**



1. A low pressure seal ring adapted for use in combination with a high pressure seal ring to provide a seal assembly which is capable of sealing first and second relatively reciprocating surfaces at both high and low pressures, wherein said high pressure seal ring includes an inner sealing surface for sealing contact with said first reciprocating surface and a low pressure seal ring support portion, said low pressure seal ring support portion including an outer low pressure seal ring support surface having an inclined seal lip support surface which tapers inward towards said inner sealing surface, said seal lip support surface having a left end which terminates at said inner sealing surface to provide a high pressure seal apex adjacent said first reciprocating surface and a right end, said low pressure seal ring support surface further including an axial low pressure seal body support surface which is substantially parallel to said inner sealing surface, said seal body support surface having a left end which meets the right end of said seal lip support surface, wherein said low pressure seal ring comprises:

an annular seal ring body comprising:

a seal lip portion having a bottom seal lip surface adapted to be supported by the seal lip support surface of said high pressure seal ring, said seal lip surface including an annular sealing tip at its left end said sealing tip extending out past and adjacent to the apex of said high pressure seal ring for sealing contact with said first reciprocating surface; and

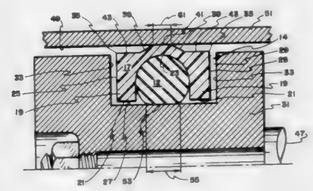
a seal body portion having a left part integral with said seal lip portion and a right part, said seal body portion further including an outer surface and an inner surface, said outer surface adapted to sealingly contact said second reciprocating surface and said inner surface adapted to be supported by the support surface of said high pressure seal ring, wherein said outer and inner surfaces diverge from each other from said seal body left part to said seal body right part to provide an increase in the radial width of the cross section of said seal body to thereby increase the compressive forces exerted on said seal body right part when said low pressure seal ring is positioned between said second reciprocating surface and said high pressure seal ring.

4,566,703

SEAL ASSEMBLY

Gordon T. Zitting, Sandy, Utah, assignor to Microdot Incorporated, Chicago, Ill.

Continuation-in-part of Ser. No. 257,045, Apr. 24, 1981, abandoned, which is a continuation of Ser. No. 58,341, Jul. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 883,448, Mar. 6, 1978, abandoned. This application Jun. 13, 1983, Ser. No. 503,941
Int. Cl.⁴ F16J *9/06, 15/24*
U.S. Cl. 277—165 **8 Claims**



1. A compression high pressure/low pressure seal assembly, solely made up of two elements in combination with two closely spaced relatively reciprocable machine parts, the first of the machine parts having a peripheral groove comprising spaced sidewalls and a base between the sidewalls, the assembly comprising:

an endless relatively soft annular spring element of yieldable material with memory and having a yieldable solid cross-sectional configuration;

an endless annular sealing element comprising a house-shaped body of relatively hard wear resistant synthetic resinous material having a generally U-shaped cross-sectional configuration;

said sealing element further comprising spaced radially directed anti-spring contact elongated anti-extrusion and anti-roll legs, which comprise a size, shape and thickness to, at all times within a predetermined high-to-low pressure range, (a) keep the spring element from touching either groove sidewall and (b) maintain an essentially stable radial alignment between the spring element and the sealing element, the length of each of said elongated legs being coextensive with substantially the entire adjacent sidewall, a thin space separating the end of each elongated leg and the base of the groove;

the spring element being positioned between and having a radial dimension extending beyond the ends of the elongated legs across said thin space to compressively engage the base of the groove while preserving the thin space thereby accommodating creation of a first static seal solely and directly between the extended part of the spring element and the base of the groove in the first machine part while prohibiting any sealing relation between the sealing element and the base of the groove;

the interior surface formed by and between the elongated legs comprising saddle region means which comprises a contiguous nested relationship with the exterior surface of the spring element;

a second static seal being formed solely and directly between one exterior elongated leg surface and substantially all of one sidewall of the groove while prohibiting any sealing relationship between the spring element and either groove sidewall whereby at all times, when under pressure from one side or the other of the seal assembly, the elongated leg away from the pressure is caused to be contiguous with essentially the entire surface of the adjacent sidewall and at all times said elongated legs maintain the spring element in spaced relationship with both sidewalls of the groove and in direct radial alignment with the sealing element;

said house-shaped portion of the sealing element, which at all times isolates the spring element from contact with the

second machine part, comprising an anti-drift delta-shaped projection having central disposed narrow apex means retained in radial alignment with the spring element, the projection extending radially opposite to the direction of said anti-extrusion and anti-roll legs and beyond said groove, the apex compressively engaging the surface of a second machine part in such a fashion so as to cause said apex to no more than slightly flatten solely at the tip region thereof and to create an annular line dynamic seal solely along the entirety of the 360 degrees of said slightly flattened tip region and in direct radial alignment with the centerline of the spring element, the width of said line seal being several times less than the width of the groove whereby a surprisingly stable high pressure resistance is developed in excess of any hydraulic or pneumatic pressure applied to the seal assembly.

4,566,704

SEALING BODY FOR A PIPE CONNECTION

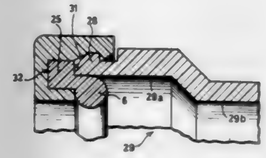
Jan P. van Dongeren, Bergentheim, Netherlands, assignor to Wavin B. V., Zwolle, Netherlands

Division of Ser. No. 570,695, Jan. 13, 1984, abandoned, which is a division of Ser. No. 398,234, Jul. 14, 1982, abandoned, which is a division of Ser. No. 133,792, Mar. 25, 1980, abandoned. This application Mar. 18, 1985, Ser. No. 712,650

Claims priority, application Netherlands, Mar. 30, 1979, 7902516

Int. Cl.⁴ F16L *11/08*

U.S. Cl. 277—207 A **1 Claim**



1. A socket pipe part (**29**), the outer side of the socket snappingly engaging a retaining ring thus forming an outer annular groove chamber, a head portion (**25**) of a sealing sleeve (**6**) being retained in said groove chamber said head portion being chemically intimately bonded to the inner surface of said retaining ring so that no leakage will occur between the bottom (**32**) and the surface of head portion (**25**) engaging said bottom when liquid reaches the region between the front end (**31**) of said socket and part of the head portion opposite its free end.

4,566,705

TOOL RETAINER HAVING AXIALLY AND RADIALLY MOVABLE CLAMPING MEMBERS

Werner Jessy, Münsingen, Fed. Rep. of Germany, assignor to TBT Tiefbohrtechnik GmbH & Co. KG, Dettingen, Fed. Rep. of Germany

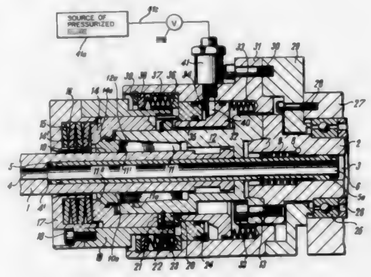
Filed Jun. 4, 1984, Ser. No. 616,958

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1983, 3320612

Int. Cl.⁴ B23B *31/30*

U.S. Cl. 279—4 **17 Claims**

1. Apparatus for releasably holding the tubular shank of a drilling tool, comprising a stationary housing; a rotary member mounted in said housing and including a substantially sleeve-like portion having a conical internal surface; a clamping device movable axially of said rotary member and having a shank-receiving axial passage and a plurality of substantially radially movable claws surrounding at least a portion of said passage and having conical external surfaces complementary to and adjacent to said internal surface, said rotary member having an axial bore in communication with the interior of the tubular shank in said clamping device; resilient means for urging said clamping device axially in a first direction to thereby bias said claws against the tubular shank in said passage through the medium of said internal surface; a separate axially movable motion transmitting means interposed between said resilient means and said clamping device to move said clamping device axially of said rotary member under the action



of said resilient means; and fluid-operated motor means actuatable to move said clamping device in a second direction counter to said first direction through the medium of said motion transmitting means and to thereby relax the bias of said claws upon the tubular shank in said passage, said motor means comprising a cylinder fixedly attached to said housing.

4,566,706

EASY-ADJUST STAIR CLIMBER FOR WHEELCHAIR

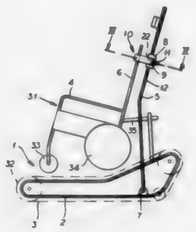
Franz Bihler, and Anton Abele, both of Augsburg, Fed. Rep. of Germany, assignors to Kleindienst GmbH, Augsburg, Fed. Rep. of Germany

Filed Jul. 7, 1983, Ser. No. 511,790

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1982, 3225770

Int. Cl.⁴ B62B *5/02, 9/02;* B62D *55/00;* A61G *5/00*

U.S. Cl. 280—5.22 **4 Claims**



1. An apparatus for moving a wheelchair having a pair of upright rear frame members, the apparatus comprising:

a support adapted to engage underneath the wheelchair in an upright condition of same, the wheelchair being pivotal on the support between erect and inclined positions;

two endless tracks on the support and supporting same and the wheelchair carried thereon, whereby the tracks allow the wheelchair to move on an incline;

a frame element pivotal on the support about a horizontal axis transverse to the tracks;

a transverse mount vertically displaceable on the frame element and having outer ends respectively juxtaposed with the wheelchair frame members;

an adjustment spindle extending along and rotatable about a horizontal axis through the mount ends adjacent the frame members and having oppositely threaded ends at the outer ends;

respective mounting blocks axially slidable in the outer mount ends and threaded on the adjustment-spindle ends, whereby rotation of the spindle in one direction about its axis moves the two blocks axially apart and opposite rotation moves them axially together, the mounting blocks being formed with seats to fit with the respective wheelchair frame members, whereby the blocks can be moved together and apart by means of the spindle to fit to chairs of different sizes;

respective clips pivotal on the blocks about respective upright axes between holding positions securing the respective wheelchair frame members in the respective seats and releasing positions out of engagement with the respective wheelchair frame members, and

respective means for securing the clips in the holding positions, the securing means including respective spring-loaded pins parallel to and offset from the respective upright clip axes, the pins being axially displaceable into and out of engagement with the respective clips.

4,566,707

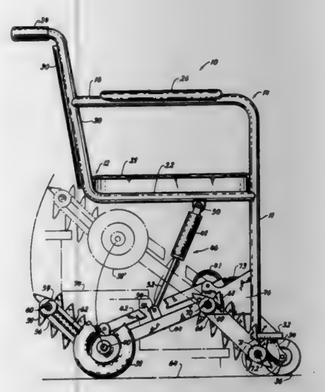
WHEEL CHAIR

Leonard R. Nitzberg, 1413 Buckeye La., Knoxville, Tenn. 37919

Continuation-in-part of Ser. No. 318,631, Nov. 5, 1981, Pat. No. 4,432,425. This application Feb. 21, 1984, Ser. No. 582,066

Int. Cl.⁴ B62D *57/02*

U.S. Cl. 180—8.2 **17 Claims**



1. Apparatus for moving an object over substantially varying terrain, including stairs having stair treads, which comprises:

a frame for supporting said object, said frame having opposite sides and a front portion and a rear portion;

first wheel means mounted from said front portion of said frame having a front wheel proximate each side of said frame for engagement with said terrain;

second wheel means mounted from said rear portion of said frame having a rear wheel proximate each side of said frame for engagement with said terrain;

drive means connected to at least one of said first and said second wheel means for rotating corresponding of said wheels against said terrain;

first level sensing means carried by said frame for continuously sensing any change in pitch of said frame from a pre-set pitch value;

means responsive to said first level sensing means connected between said frame and at least one of said first and second wheel means for correcting said pitch to said pre-set pitch value;

rotatable means carried by said frame for engaging said stair treads and for moving said frame ascending and descending said stairs, said rotatable means comprising a plurality of flexible endless members supported from said frame in a plane substantially perpendicular to said terrain, means for rotating said endless members, and stair tread engaging lugs attached to and extending outwardly from said endless members in said plane; and

means for selectively varying the relative rotational speed of said flexible endless members to facilitate the positioning of said tread engaging lugs of said endless members in supportive contact with said stair treads.

4,566,708

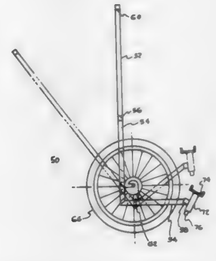
GENERAL PURPOSE DOLLY FOR CAMPGROUNDS

Roy L. Specie, P.O. Box 635, Bradenton, Fla. 33506

Continuation of Ser. No. 452,412, Dec. 23, 1982, Pat. No. 4,505,489. This application Dec. 24, 1984, Ser. No. 686,035

Int. Cl.⁴ B62B *1/12*

U.S. Cl. 280—47.13 R **8 Claims**



1. A general purpose dolly, comprising:

(a) a pair of parallel, elongated L-shaped handle elements;

(b) a pair of parallel, shorter L-shaped frame elements, said shorter L-shaped frame elements being parallel to said elongated L-shaped handle elements;

(c) a plurality of spacer elements interconnecting said elongated L-shaped handle elements and said shorter L-shaped frame elements at the upper ends of said frame elements and a first cross bar interconnecting said elongated L-shaped handle elements and said shorter L-shaped frame elements at the lower ends thereof such that said elongated L-shaped handle elements are positioned between said shorter L-shaped frame elements;

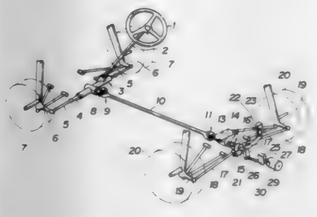
(d) a slotted plate fixedly positioned in the corner of each L-shaped handle element and each L-shaped frame element;

(e) a pair of rubber tired bicycle wheels, each rotatably mounted in the slots of said slotted plates between one of said elongated L-shaped handle elements and one of said shorter L-shaped frame elements above the level of the lower portions of said elongated L-shaped handle elements and said shorter L-shaped frame elements;

(f) a coupler fixedly attached to said first cross bar, said coupler being suitable for use with attachments having either male or female coupling means; and

(g) a second cross bar interconnecting the upper ends of said elongated L-shaped handle elements, said second cross bar functioning as a hand grip for the person using the general purpose dolly.

4,566,709
STEERING SYSTEM FOR VEHICLES
Shoichi Sano, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 10, 1984, Ser. No. 659,323
Claims priority, application Japan, Oct. 17, 1983, 58-193663
Int. Cl.⁴ B62D *7/00*
U.S. Cl. 280—91 **7 Claims**



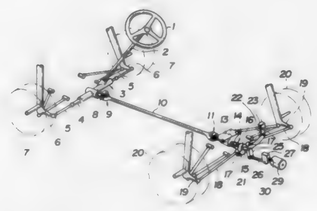
1. In a steering system for vehicles, in which a rear wheel is steerable in relation to the steering operation of a front wheel, and the steered angle ratio of said rear wheel to said front wheel is controlled in accordance with the vehicle speed, an improvement comprising deviation detecting means for detecting the relative deviation between the steered angle ratio the vehicle actually has and a steered angle ratio set in accordance with the vehicle speed, and speed control means for controlling to decrease or hold constant the vehicle speed when said relative deviation is larger than a predetermined value.

4,566,710
STEERING SYSTEM FOR VEHICLES
Yoshimi Furukawa, Saitama, and Shoichi Sano, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 10, 1984, Ser. No. 659,322
Claims priority, application Japan, Oct. 17, 1983, 58-193661
Int. Cl.⁴ B62D *7/00*
U.S. Cl. 280—91 **6 Claims**



1. A steering system for vehicles including a steering wheel, a front wheel, front steering means for steering said front wheel, a rear wheel, rear steering means for steering said rear wheel, ratio changing means for changing the steered angle ratio of said rear wheel to said front wheel, control means for controlling said ratio changing means, ratio detecting means for detecting the steered angle ratio, said ratio detecting means cooperating with said control means, speed detecting means for detecting the vehicle speed, and said speed detecting means cooperating with said control means, in which said rear wheel is steered at relatively low vehicle speeds in the opposite direction to said front wheel or substantially at an angle of zero degree and at relatively high vehicle speeds in the same direction as said front wheel, wherein means for detecting a straight travelling condition of the vehicle is operatively connected to said control means, so that a correction of the steered angle ratio in accordance with the vehicle speed is effected only when said straight travelling condition of the vehicle is maintained for a predetermined period of time.

4,566,711
STEERING SYSTEM FOR VEHICLES
Yusuke Koizumi; Yoshimi Furukawa, both of Saitama, and Shoichi Sano, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 17, 1984, Ser. No. 661,680
Claims priority, application Japan, Oct. 17, 1983, 58-193669
Int. Cl.⁴ B62D *7/00*
U.S. Cl. 280—91 **4 Claims**



1. A steering system for vehicles including a steering wheel, a front wheel, means for steering said front wheel, a rear wheel, means for steering said rear wheel, ratio changing means for changing the steered angle ratio of said rear wheel to said front wheel, control means for controlling said ratio changing means, ratio detecting means for detecting the steered angle ratio, said ratio detecting means cooperating with said control means, signal providing means for providing an information signal in relation to the vehicle speed, and said signal providing means cooperating with said control means, in which the steered angle ratio is controlled to be variable in accordance with said information signal, wherein said signal providing means comprises sensor means adapted for detecting the shift position of a speed change gear of the vehicle and connecting to said control means.

4,566,712
STEERING STABILIZER FOR VEHICLES
Donald L. Motrenec, 410 11th St., Huntington Beach, Calif. 92648
Filed Dec. 12, 1984, Ser. No. 680,748
Int. Cl.⁴ B62K *21/08*
U.S. Cl. 280—272 **16 Claims**

1. A steering stabilizer for vehicles of the type having at least one steerable front wheel affixed to a front wheel turning assembly controlled by a steering column, said steering stabilizer providing viscous damping to the turning of the front wheel turning assembly thereof, said stabilizer comprising:

a steering column housing affixed to the frame of a vehicle, said housing having a generally cylindrical chamber axially located therein;

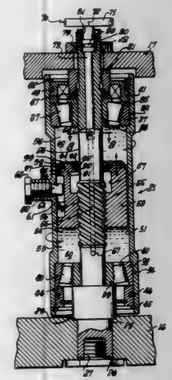
a steering column rotatably held axially within said steering column housing; said steering column being affixed to the front wheel turning assembly of the vehicle, said steering column having a threaded portion thereon within said steering column housing;

a piston threadably held on the threaded portion of said steering column within said steering column housing, said piston being sealed within said generally cylindrical chamber and being axially slideable within said chamber said piston forming an upper fluid compartment within said chamber above said piston and a lower fluid compartment within said chamber below said piston;

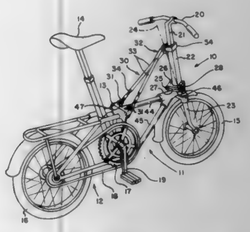
means for preventing the turning of said piston within said generally cylindrical chamber;

oil means sealingly held within said generally cylindrical chamber said oil means completely filling said upper and lower fluid compartments; and

oil passageway means between said upper and lower compartments, whereby the turning of said front wheel assembly causes said piston to move longitudinally within said generally cylindrical chamber forcing the oil means to pass through said passageway causing viscous damping to the turning of the front wheel assembly.



4,566,713
FOLDING BICYCLE WITH RELEASABLE BRACE ASSEMBLY
David T. Hon, Los Angeles, Calif., assignor to Hon Folder Development Ltd., Los Angeles, Calif.
Filed Jan. 7, 1983, Ser. No. 456,410
Int. Cl.⁴ B62B *7/06*
U.S. Cl. 280—287 **19 Claims**



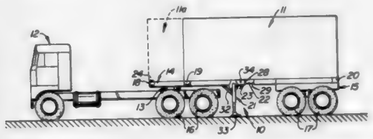
1. In a folding bicycle having a front frame section with front and rear ends, and an elongated folding handlebar assembly rotatably mounted on said frame section to turn about a predetermined steering axis, and including an elongated steering post normally extending upwardly from said front end in an upright steering position and having a lower end that is pivotally connected to said front end for tilting of the post downward to a folded position, an improved brace assembly, comprising:

first and second elongated, longitudinally rigid brace bars having front upper ends that are disposed in side-by-side relation behind the upper end of said post, said brace bars being inclined downwardly and rearwardly toward the rear end of said frame section and diverging laterally to rear lower ends that are spaced apart transversely of said frame section;

a first coupler for releasably joining the upper ends of said brace bars to said post along said steering axis, said coupler comprising a first coupling element secured to said post and defining an axis for the coupler that lies on said steering axis, a second coupling element secured to the upper ends of said brace bars, and manually operable quick-connect and quick-release coupling means for connecting and disconnecting said first and second coupling elements;

and second couplers pivotally connected to said rear end of said frame section in laterally spaced relation to swing about a common transverse folding axis, said second couplers being secured to the rear lower ends of said brace bars to provide a secure base therefor on said frame section against both transverse and longitudinal yielding and to permit downward folding of the brace bars when said first coupler is released.

4,566,714
UNIVERSAL CHASSIS FOR HAULING CONTAINERS
Nick De Witt, Portola Valley, and Lindsey C. Greene, Foster City, both of Calif., assignors to X-Ten Corporation, San Francisco, Calif.
Continuation-in-part of Ser. No. 491,142, May 3, 1983. This application Sep. 2, 1983, Ser. No. 529,073
The portion of the term of this patent subsequent to Dec. 31, 2002, has been disclaimed.
Int. Cl.⁴ B62D *53/06*
U.S. Cl. 280—404 **3 Claims**



1. A process for adjustably extending a universal shipping container chassis comprising:

providing a rear wheel assembly including a load bearing portion adapted to securely receive and support a first end portion of a shipping container;

providing a fifth wheel assembly including a load bearing portion adapted to securely receive and support a second end portion of said shipping container;

providing an elongate extensible stinger assembly for adjustably coupling said rear wheel assembly to said fifth wheel assembly said stinger including a stinger coupled to one of said rear wheel assembly and said fifth wheel assembly and a tube for receiving said stinger coupled to the other of said rear wheel assembly and said fifth wheel assembly whereby shipping containers of different lengths can be accommodated by said chassis;

placing in said adjustable stinger a plurality of first apertures, said first apertures being vertically and horizontally spaced from each other;

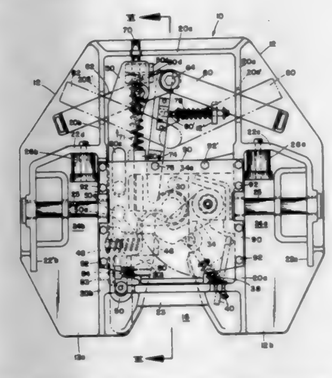
placing in said tubes a plurality of second apertures, said second apertures being spaced vertically to correspond to the vertical spacings of said first aperture;

registering a pin for engaging one of said first apertures and one of said second apertures;

locking said rear wheel assembly;

moving said fifth wheel assembly towards and away from said locked rear wheel assembly until said pin engages one of said first apertures and one of said second apertures to provide a selected extension of said stinger assembly corresponding to a shipping container's length.

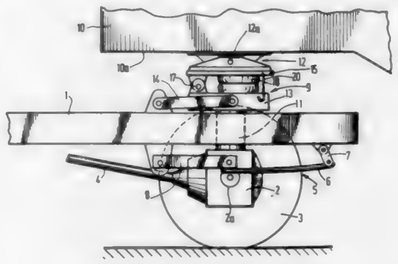
4,566,715
FIFTH WHEEL
John T. Buckley, Holland, Mich., assignor to Holland Hitch Company, Holland, Mich.
Filed Aug. 22, 1983, Ser. No. 525,439
Int. Cl.⁴ B62D *53/12*
U.S. Cl. 280—434 **9 Claims**



4. A fifth wheel hitch assembly having a bearing plate with opposite lateral portions and with a rearwardly opening mouth and throat to receive a kingpin having a reduced diameter hitch portion and an enlarged lower head; and a pair of jaws at said throat on the underside of said bearing plate, to receive a kingpin, said jaws having arcuate surfaces to cooperatively receive the reduced diameter portion of the kingpin, one of said jaws being fixed and the other being shiftable between an open position and a closed position relative to said fixed jaw; said shiftable jaw being mounted to shift from an open position to a closed position by a kingpin entering said throat, a locking plunger shiftable between an unlock position and a lock position, in the latter of which said locking plunger lies in the path of said shiftable jaw when closed, to prevent said shiftable jaw from shifting to said open position, and characterized by a fore-to-aft can slide having reset camming means for shifting said locking plunger to said unlock position; said cam slide comprising a plate having a camming slot and pin connection to said locking plunger for said camming means; and actuator means for shifting said cam slide to move said locking plunger to said unlock position.

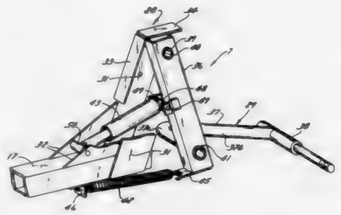
4,566,716
DEVICE FOR CONNECTING A TRACTOR TO A SEMITRAILER
Bernard Modat, Villette de Vienne, France, assignor to Renault Vehicules Industriels, Lyons, France
Filed Jan. 16, 1984, Ser. No. 571,070
Claims priority, application France, Jan. 14, 1983, 83 00530
Int. Cl.⁴ B62D *53/08*
U.S. Cl. 280—439 **4 Claims**

1. A tractor for a tractor-semitrailer combination, said tractor comprising:
a tractor frame;
a rear tractor axle;
suspension means, including spring means, connected between said rear axle and said frame for supporting said frame and a first link connected to said spring means and articulated to said frame in front of said rear axle;
a fifth wheel adapted for supporting a complementary support element for a semitrailer; and
means for directly supportingly connecting said fifth wheel to said rear axle, whereby said fifth wheel is directly supported by said rear axle, wherein said means for directly supportingly connecting comprise:
(a) means for positioning said fifth wheel substantially directly above said rear axle; and
(b) at least one generally vertically extending support column fixed between said fifth wheel and said rear axle and passing through said frame for supporting said rear



axle, wherein said means for positioning said fifth wheel comprise an arm above each said first link and extending substantially parallel to said first link, each said arm being articulated between said fifth wheel and said frame.

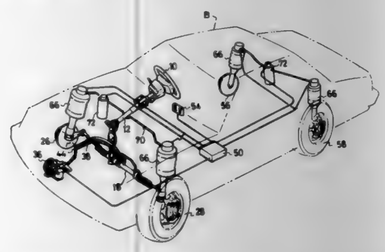
4,566,717
LIGHT TRAILER WITH INDEPENDENT WHEEL SUSPENSIONS
Gregory L. Arthur, Mukwanago, and Wayne E. Hunnicutt, Big Bend, both of Wis., assignors to G & J Industries, Inc., Genesee Depot, Wis.
Filed Mar. 12, 1984, Ser. No. 588,651
Int. Cl.⁴ B60G *11/16*
U.S. Cl. 280—701 **7 Claims**



1. In a trailer having two laterally opposite wheels and having a rigid frame which supports a body and which has a side portion adjacent to each wheel, a shock absorbing independent suspension for each wheel, of the type comprising a rigid wheel arm having a pivotal connection with the frame that defines a laterally extending axis about which the wheel arm swings and carrying a laterally extending axle on which the wheel is rotatable and which is spaced behind said axis so that the wheel can move vertically relative to the frame, said suspension being characterized by:
A. a rigid support fixed on said side portion of the frame and projecting upwardly therefrom, said support having pivot means near its top that defines said axis;
B. said wheel arm being substantially L-shaped and having
(1) an elongated vertical element which has top and bottom ends and which has means near its top end cooperating with said pivot means to provide said pivotal connection, and
(2) an elongated horizontal element which projects rearward from the bottom of said vertical element and to the rear end of which said axle is fixed;
C. said horizontal element being in laterally inwardly offset

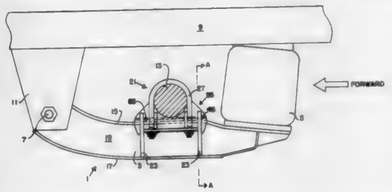
relation to said vertical element, and said axle projecting laterally outwardly from said horizontal element, so that the wheel on the axle is rearwardly aligned with said pivotal connection; and
D. shock absorbing means connected between said side portion of the frame and said vertical element, in downwardly spaced relation to said pivotal connection and extending forwardly from the vertical element, for yieldingly opposing swinging motion of the wheel arm out of a position in which said vertical element is oriented substantially vertically and said horizontal element is oriented substantially horizontally.

4,566,718
SUSPENSION AND STEERING CONTROL OF MOTOR VEHICLES
Seita Kanai, and Hirotaka Kanazawa, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Nov. 29, 1983, Ser. No. 555,962
Claims priority, application Japan, Nov. 30, 1982, 57-211016; Dec. 16, 1982, 57-220987; Dec. 16, 1982, 57-220988
Int. Cl.⁴ B60G *17/08*
U.S. Cl. 280—708 **9 Claims**



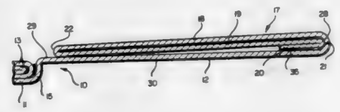
1. A motor vehicle comprising: a body, wheels for supporting said body and including steerable wheels, a plurality of suspension means between said body and respective ones of said wheels, manually operated steering means for steering said steerable wheels, said suspension means including variable resistance means for providing resistance to vertical movements of said body with respect to said wheels, first adjusting means for simultaneously adjusting the resistance of all of said resistance means to change the resistance in the same way, second adjusting means for adjusting the operating force necessary to operate said steering means, control means for providing a control signal to said first adjusting means for adjusting the resistance of said suspension means and for providing a control signal to the second adjusting means to adjust the operating force necessary to operate said steering means in predetermined relationship to the adjustment of the resistance of all of the suspension means, and switch means operatively connected to said control means for selectively providing desired adjustment of said variable resistance means and desired adjustment of the force necessary to operate said steering means, whereby the vehicle body movement and the steering force required to turn the steerable wheels can be changed by changing the resistance of the suspension means and the operating force necessary to operate the steering means to selectively provide handling characteristics of vehicles having high suspension resistance and requiring high steering operating force or to provide handling characteristics of vehicles having lower suspension resistance and requiring lower steering operating force.

4,566,719
SPACED AXLE-TO-BEAM CONNECTION FOR SUSPENSION OF THE RIGID BEAM TYPE
Ervin K. Van Denberg, Massillon, Ohio, assignor to Turner Quick Lift Corporation, Canton, Ohio
Filed Feb. 17, 1984, Ser. No. 581,128
Int. Cl.⁴ B60G *11/26*
U.S. Cl. 280—711 **26 Claims**



1. In an axle suspension system of the rigid, longitudinal beam-type for a wheeled vehicle, wherein said longitudinal beam is provided with a first means for connecting the beam to a frame member of the vehicle and a second means for connecting an axle to the beam at a location spaced from said first means, the improvement comprising as said second means, a pair of longitudinally spaced members extending laterally across and being rigidly attached to said beam, and an axle seat having a first and a second surface, said first surface forming a rigid connection with said pair of longitudinally spaced members without contacting the beam, and said second surface rigidly connecting the axle to said axle seat, thereby to provide a rigid axle-to-beam connection in which said axle seat does not come into direct contact with said beam.

4,566,720
BOOKLET WITH DETACHABLE ENVELOPE
Michael B. Goldman, Deerfield, and Frederick Price, Chicago, both of Ill., assignors to The Wessel Company, Elk Grove Village, Ill.
Filed Jan. 27, 1984, Ser. No. 574,459
Int. Cl.⁴ B42D *1/00*; **B41L** *1/20*; **B65D** *27/06*
U.S. Cl. 281—15 R **11 Claims**



1. A booklet comprising:
a front cover page;
a back cover page;
a plurality of inner pages;
each page being longitudinally coextensive with the other pages and having inner and outer longitudinal edges;
means securing together all of said inner longitudinal edges along a spine of said booklet;
the outer longitudinal edges of one cover page and of said inner pages being free and unattached;
and a detachable envelope having a back panel, a front panel and a flap;
each of said panels having a pair of lateral edges and first and second longitudinal edges;
said panels being longitudinally coextensive with each other;
the back panel of the envelope being detachable secured to the other cover page of the booklet along a perforated fold line also defining the outer longitudinal edge of the booklet's other cover page and the first longitudinal edge of the envelope's back panel;

said perforated fold line constituting means for folding the envelope into a folded position, when the booklet is closed, on the inside of the other cover page and means for folding the envelope into a folded position, when the booklet is closed, on the outside of the other cover page;

said front panel and said back panel being joined at a longitudinal fold line defining the second longitudinal edge of each;

means securing said front panel to said back panel adjacent their lateral edges;

an envelope opening adjacent the first longitudinal edge of the back panel;

said flap being longitudinally coextensive with said panels and joined to the front panel at a longitudinal fold line defined by the first longitudinal edge of the front panel;

said other cover page having a lateral dimension which is less than the lateral dimension of the one cover page and of the inner pages;

said envelope having a lateral dimension, defined by the lateral distance between the first and second longitudinal edges of the back panel, which is less than the lateral dimension of said other cover page;

the lateral distance between said spine and said perforated fold line being less than the lateral dimension of the one cover page and the inner pages and greater than the lateral dimension of said envelope;

said perforated fold line being indented relative to the outer longitudinal edges of the one cover page and the inner pages, when the other cover page is folded closed and the envelope is folded on the inside of the other cover page, to facilitate thumbing for easy access to the envelope and to the one cover page and inner pages.

4,566,721

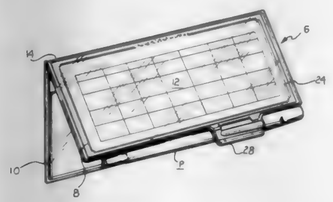
FOLDER WITH REWRITABLE SURFACE FOR CHECKBOOKS AND THE LIKE

Harvey W. Friedman, Longmeadow; Jerry L. Kohli, Feeding Hills, both of Mass., and Cynthia L. DeMur, Enfield, Conn., assignors to Buxton, Inc., Agawam, Mass.

Filed Feb. 9, 1984, Ser. No. 578,553

Int. Cl.⁴ B42D *3/00, 3/02, 3/12*

U.S. Cl. 281—31 **1 Claim**



1. Folder for checkbooks and the like comprising a generally rectangular outer ply of transparent, synthetic plastic sheet material, said outer ply having a transversely extending hinge line defined by a plurality of spaced, parallel lands and grooves at approximately its center, at least two pocket-forming inner plies of synthetic plastic sheet material, each disposed in superposed edge-to-edge relation with opposite edge portions of the outer ply and bonded along at least two peripheral edges thereof to the corresponding edges of the outer ply, each of said inner plies having a free inner edge parallel to and on opposite sides of said hinge line to provide access openings into pockets formed between the inner and outer plies and an opaque insert disposed between said outer and inner plies and having indicia imprinted thereon on at least one side, said insert being a unitary rectangular sheet having a transverse fold line which is disposed to register with said hinge line of the outer ply, said insert being slightly smaller than the outer ply of said folder and being formed of a fibrous material treated to be tear resistant despite repeated folding and unfolding along said fold line thereof, said insert being inserted within said pockets such that said indicia are visible when viewed through said outer ply, said synthetic plastic material being receptive to ink applied thereto by a felt-tip pen and being adapted to be wiped clean by a tissue or the like, said folder including as an integral extension thereof, a pen holding tab.

4,566,722

PIPE JOINT CONSTRUCTION FOR REMOTELY CONTROLLED CONNECTION AND DISCONNECTION

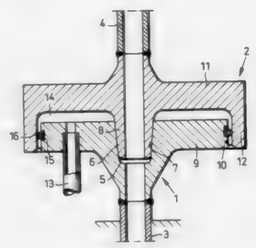
Johann Huber, and Lutz Lorenz, both of Dortmund, Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 684,809

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346069

Int. Cl.⁴ F16L *17/02*

U.S. Cl. 285—18 **5 Claims**



1. Pipe joint comprising a female pipe end having an axially extending tubular passage and a male pipe end engageable with said female pipe end and having an axially extending tubular passage in general axial alignment with said female pipe end tubular passage, said female pipe end having a conically shaped engagement surface and said male pipe end having a correspondingly shaped engagement surface for engagement with said engagement surface on said female pipe end, remotely controllable means for connecting and disconnecting said female and male pipe ends, each of said female pipe end and male pipe end having an end surface extending transversely of the axial direction of the tubular passages therethrough, said end surfaces combining to form a chamber when said conically shaped engagement surfaces are in contacting engagement, and means for establishing a vacuum within said chamber for placing said conically shaped engagement surface in closely fitting relation and for introducing a pressurized medium into said chamber for displacing said conically shaped engagement surfaces axially apart.

4,566,723

COUPLER FOR HOSE LINES OF HIGH-PRESSURE CLEANING AND SPRAYING EQUIPMENT

Werner Schulze, Winnenden-Höfen; Josef Gerich, Winnenden; Emil Scheef, Waiblingen, and Heinz Dautel, Backnang, all of Fed. Rep. of Germany, assignors to Alfred Kärcher GmbH & Co., Winnenden, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 512,938

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1982, 3226571

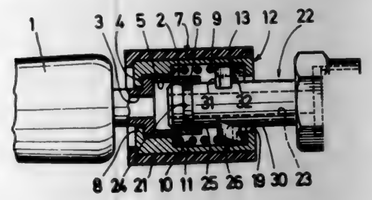
Int. Cl.⁴ F16J *15/00*

U.S. Cl. 285—86 **8 Claims**

1. A coupler for hose lines of high pressure cleaning equipment and high-pressure spraying equipment comprising

a nipple attached to the end of a first hose and having an inner throughhole forming an inner sealing surface, said nipple being surrounded by a sleeve which is open at its end facing a second hose, secured against displacement in the direction of the second hose, and bears on its inner side catch projections which extend into the interior of said sleeve and are separated by a wall area free of said catch projections, said catch projections characterized by a recess on the side facing the first hose which has a surface inclined in relation to the longitudinal axis of said sleeve,

a connecting piece attached to the end of the second hose and having an outer sealing surface which lies in sealing contact with the inner sealing surface of said nipple when said connecting piece is inserted into said nipple, said connecting piece having on its outer wall outwardly projecting catches which are complementary to the catch projections of the sleeve, extending circumferentially over an area maximally as great as the area on the inner wall of the sleeve free of the catch projections, and which have



on their side facing the second hose, locking lugs which slip into the recesses in the catch projections of said sleeve, and

a compression spring between said nipple and said connecting piece, characterized in that the compression spring is located between the inner wall of the sleeve and the nipple and is supported by an inward projection of the sleeve adjacent the first hose and by the catch projections on the connecting piece, said projections having locating faces for the compression spring against which the compression spring rests when the connecting piece is inserted into the sleeve the locking lugs on the catches on the connecting piece being bounded on their front edge relative to the direction of turning by a surface inclined relative to the longitudinal axis of the connecting piece towards its free end.

4,566,724

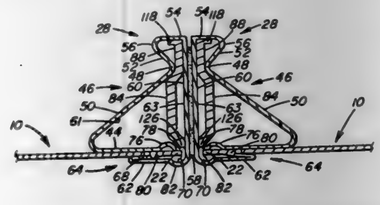
DUCT JOINT FRAME

Peter J. Arnoldt, Clairton, Pa., and Waldemar H. Greiner, Hamilton, Canada, assignors to Ductmate Industries, Inc., Pittsburgh, Pa.

Filed Dec. 20, 1982, Ser. No. 451,415

Int. Cl.⁴ F16L *23/00*

U.S. Cl. 285—364 **18 Claims**



1. A duct joint frame for connection to the end portion of a generally rectangular duct comprising,

a plurality of flange members,

each of said flange members having a front wall, said flange members formed by a thin walled sheet of material including a first leg having an end portion and a second leg having an end portion,

said first leg end portion being laterally spaced from said second leg end portion,

said leg portions beng bent relative to one another to form a plurality of wall sections,

a first wall section terminating at said first leg end portion,

a second wall section terminating at said second leg end portion,

said first and second wall sections being positioned in overlying relation to receive an end portion of a duct therebetween,

said first wall section including an abutment shoulder for receiving and restraining forward advancement of the duct end portion between said first and second wall sections,

said abutment shoulder abutting a portion of said second wall section at a fixed distance from the front wall of said flange member,

said second leg end portion forming stop means for engaging protuberances on the surface of the duct adjacent the duct end portion to prevent retraction of the duct end portion from between said first and second wall sections, and

said stop means being laterally spaced a fixed dimension from said abutment shoulder to maintain the duct end portion rigidly secured between said stop means and said abutment shoulder with said duct end portion a preselected fixed distance from said flange member front wall and said duct end portion connecting said first leg end portion to said second leg end portion and rigidifying said flange member.

4,566,725

DEADLOCK MECHANISM

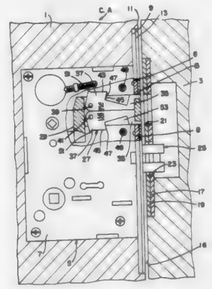
David Klein, Montreal, Canada, assignor to Almet Hardware Limited, Canada

Filed Feb. 10, 1984, Ser. No. 579,193

Claims priority, application Canada, Jan. 30, 1984, 446296

Int. Cl.⁴ E05C *5/02*

U.S. Cl. 292—191 **6 Claims**



1. A deadlock assembly for mounting in a closure member for locking the closure member to an associated frame, the assembly comprising:

(a) a casing including a facing plate provided with a bolt aperture, and having an inner wall portion circumscribing the aperture;

(b) a bolt having a longitudinal axis and mounted within the casing for reciprocal movement along the longitudinal axis between an unlocked rearward position wherein the bolt is disposed within the casing and a locked forward position wherein the bolt extends out of the casing through the bolt aperture;

(c) a pair of levers, the levers being disposed on opposite sides of the longitudinal axis, with each lever including a forward end provided with a locking ear and a rearward end provided with a camming lug spaced from the locking

ear, the locking ear and camming lug extending laterally away from the longitudinal axis;

(d) means for mounting the rearward end of each lever on the bolt for pivotal movement about an axis extending transversely of the longitudinal axis;

(e) each camming lug being configured to define, when the bolt is moved to the unlocked rearward position, a longitudinal camming edge disposed substantially parallel to the longitudinal axis and a rearward inclined radial camming edge, the longitudinal and radial camming edges converging to form a cammng point for engaging the inner wall portion; and

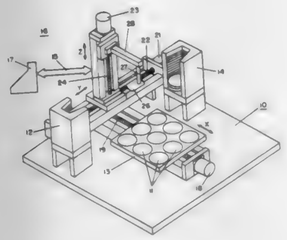
(f) a cam follower means disposed within the casing on either side of the levers and spaced from the inner wall portion, each cam follower means being positioned to engage the longitudinal camming edge of a corresponding camming lug for maintaining the longitudinal camming edge parallel to the longitudinal axis until the camming point engages the inner wall portion, thereby causing the locking ear to be moved away from the longitudinal axis when the bolt is moved towards the locked forward position.

4,566,726

METHOD AND APPARATUS FOR HANDLING SEMICONDUCTOR WAFERS

Albert D. Correnti, Hamilton Township, Mercer County, and James Potechin, Cranbury, both of N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jun. 13, 1984, Ser. No. 620,247
Int. Cl.⁴ B66C *1/02*
U.S. Cl. 294—64.3 **10 Claims**



1. A wafer pickup device for handling a semiconductor wafer comprising:

means for lifting and supporting the semiconductor wafer on a flow of pressurized fluid utilizing the Bernoulli effect; and

means for gently contacting a plurality of predetermined portions of the wafer by means of a vacuum so that once the flow of pressurized fluid is interrupted, the wafer is held at its predetermined portion only by the vacuum.

4,566,727

ROBOTIC GRIPPER

Lawrence F Yuda, P.O. Box 176, Westminster, S.C. 29693

Continuation of Ser. No. 472,714, Mar. 7, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 672,861
Int. Cl.⁴ B25B *15/08*
U.S. Cl. 294—88 **1 Claim**

1. A robotic gripper having a cylinder within a housing containing a fluid actuator supplying a limited axial power stroke to a clevis bracket carried within a reduced portion of the housing comprising:

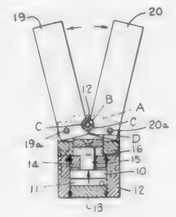
a transverse cylindrical bushing carried within said clevis bracket;

said cylindrical bushing having a shaft extending from each end and being journated within said clevis bracket;

a pair of opposed fingers each pivotally mounted adjacent one end thereof within said housing on opposite sides of said bushing about spaced respective pivot points;

said fingers having opposed surfaces each having an arcuate recess therein substantially entirely conforming to and receiving said bushing; and

a relieved portion on each of said fingers carried within said housing extending from said arcuate recesses tapering outwardly to an extent that outward movement of said fingers is permitted through a full power stroke of said fluid actuator; and



said bushing and said pivot points being in substantial alignment when said fingers are approaching closed position with said opposed surfaces tapering outwardly permitting further forceful movement of the bushing beyond the pivot points providing overgripping and forceful engagement of the oppose tapering surfaces of the fingers;

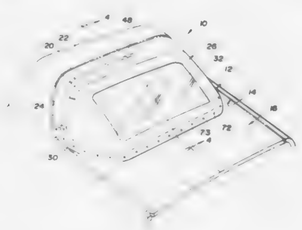
whereby said relieved portions may act as stops to limit further opening of the fingers.

4,566,728

HATCHBACK VEHICLE BODY INCLUDING HATCH HAVING OPENING WITH SOFT TOP CONVERTIBLE CLOSURE

Chris P. Theodore, Whitmore Lake, Mich., assignor to Cars & Concepts, Inc., Brighton, Mich.

Filed Jul. 13, 1984, Ser. No. 630,703
Int. Cl.⁴ B62D *25/00*
U.S. Cl. 296—76 **8 Claims**



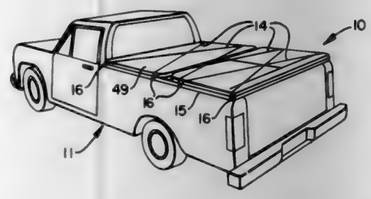
1. In a vehicle body including a rear hatchback having a rear opening in the vehicle body and also having a rear hatch mounted for movement between open and closed positions with respect to the rear opening, the invention comprising: a hatch opening in the rear hatch; said hatch opening having side edges and also having front and rear edges between which the side edges extend; a soft top convertible closure mounted on the rear hatch and movable between closed and open positions with respect to the opening thereof; the convertible closure including a frame movable between raised and stored positions; said frame including a main bow having opposite ends pivotally mounted on the hatch adjacent the side edges of the hatch opening; said frame also including an auxiliary bow having opposite ends pivotally mounted on the main bow; the convertible closure also including a soft top that is moved between the closed and open positions thereof upon movement of the frame between the raised and stored positions; the soft top having a front edge secured to the main bow and having a rear edge secured to the hatch adjacent the rear edge of the opening in the hatch; and a connection that secures the soft top to the auxiliary bow with the auxiliary bow being movable to an overcenter position on the main bow with the frame in the raised position to position the soft top in the closed position.

4,566,729

QUICK ERECTION TENT FOR PICKUP TRUCKS

Toney L. Magnino, 1821 Burning Tree La., Carrollton, Tex. 75006

Filed Oct. 9, 1984, Ser. No. 658,565
Int. Cl.⁴ B60P *3/32*
U.S. Cl. 296—159 **20 Claims**



1. A quick erection tent mountable and useable above the bed of vehicles comprising: a quick erection tent with a base frame having opposite side frame members and opposite end frame members mountable on the tops of a vehicle bed side and front walls with the rear end frame member fastened to the rear ends of said opposite side frame members and spanning the space between said opposite side members and with storage beneath the tent structure accessable when a tail gate is open even with the tent mounted on the vehicle in both the erected state and collapsed flat stowed state; bolt and washer means extended through sides of said base frame engaging vehicle wall flanges for fastening said tent base in place on said vehicle; front and rear "U" shaped tent supporting brackets pivotally mounted on the front and rear of said tent base frame for pivotal movement from the folded down collapsed state to the vertical erected state for tent erection and return back to the folded down collapsed state to return the tent to the collapsed stowed state; spacer bar means pivotally connected to said front "U" shaped tent supporting bracket and having connection means for connection to said rear "U" shaped tent supporting bracket; flexible resiliently extendable front and rear cross tie means connected, respectively, from the rear of said base frame to the top portion of said front "U" shaped tent supporting bracket, and from the front of said base frame to the top portion of said rear "U" shaped tent supporting bracket; and a fabric tent enclosure supported by said "U" shaped tent supporting brackets in the tent erected state.

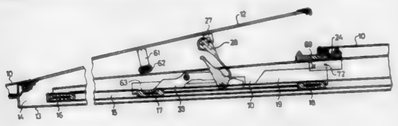
4,566,730

SLIDING ROOF FOR VEHICLES

Martin Knabe, Berlin, and Wolfgang Anzenhofer, Olching, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,716
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1982, 3238454
Int. Cl.⁴ B60J *7/00*
U.S. Cl. 296—221 **28 Claims**

25. In a roof assembly of the type wherein a rigid cover is slideably displaceable between positions closing and opening an opening in the roof of a vehicle, and is displaceable by a tilt-out mechanism in a pivotable manner, from the closed position, about a transverse axis disposed in the vicinity of a front edge of the panel, upwardly to a first position and downwardly to a second position and having the improvement for providing stable guidance and suppression of tendencies to vibrate and rattle, comprising said tilt-out mechanism having, at each side of the roof opening, a single tilt-out lever, that is pivotally connected to the cover, a link that is displaceable in the sliding direction of the cover and is connected to the tilt-



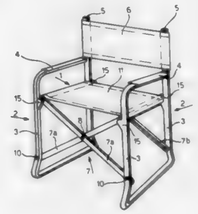
out lever in a manner permitting relative pivoting and sliding motions therebetween, and a forcing guide means, that is operative at least in a range of movements of said cover from said closed position to said second position, for creating a three-point interconnection between the tilt-out lever and the link that eliminates play between the link and the tilt-out lever.

4,566,731

DISMOUNTABLE FOLDING CHAIR

Sisto Marchesini, Vicenza, Italy, assignor to Royal Plastic S.A., Riva San Vitale, Switzerland

Filed May 24, 1984, Ser. No. 613,282
Claims priority, application Italy, May 27, 1983, 21337 A/83
Int. Cl.⁴ A47C *4/28*
U.S. Cl. 297—45 **8 Claims**



1. A folding chair comprising:

two side frames, each side frame including interconnected front and rear legs, an armrest, and upright portions for supporting a backrest;

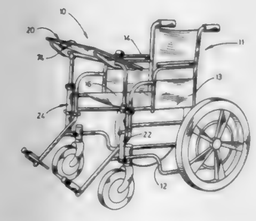
four elongated members, two of said four elongated members each being pivotably mounted at one end to a different one of said front legs and the other two of said four elongated members each being pivotably mounted at one end to a different one of said rear legs, said two elongated members crossing over one another and said other two elongated members crossing over one another, the other end of said four elongated members including a first connecting means, said first connecting means having a fork-shape portion;

second connecting means defined by each of said front legs and each of said rear legs, said second connecting means having a fork-shaped portion; and

two side bars, each side bar interconnecting the second connecting means of one rear leg with the second connecting means of an opposed front leg and portions of each of said side bars having a diameter greater than the distance between the ends of the tongs of said fork-shape portion of said second connecting means for releasably holding said side bar within said second connecting means and other portions of each of said side bars having a diameter greater than the distance between the end of the tongs of said fork-shape portion of said first connecting means for releasably holding said side bars within said first con-

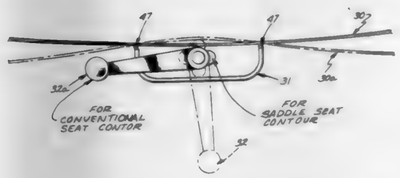
necting means when said side bars are releasably held by said second connecting means.

4,566,732
ADJUSTABLE WHEELCHAIR TABLE
James R. Ostergaard, II, and Dwight L. Donaldson, both of Fresno, Calif., assignors to James R. Ostergaard, Sr., Fresno, Calif., a part interest
Filed Dec. 27, 1983, Ser. No. 565,889
Int. Cl.[4] A47B 39/00
U.S. Cl. 297—174 11 Claims



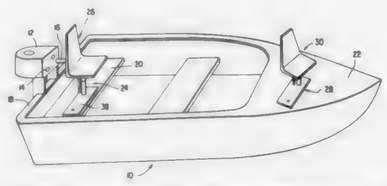
1. A table for use with a wheelchair having a frame supported on wheels and mounting a seat portion adapted to support a person thereon, the table comprising a table portion having a substantially flat surface; and a mounting assembly adapted detachably to mount the table portion on the wheelchair and having a portion adapted to define a substantially horizontal first pivotal axis and the table portion is adapted to be mounted on the mounting assembly for pivotal movement thereof about said first pivotal axis and the mounting assembly having a portion adapted to define a second pivotal axis substantially normal to the first pivotal axis and the table portion is adapted to be mounted for pivotal movement thereof about said second pivotal axis.

4,566,733
CHAIR FOR WORK ENVIRONMENT
Arthur M. Compton, Grand Rapids YMCA, 33 Library St., Grand Rapids, Mich. 49503
Filed Nov. 28, 1983, Ser. No. 555,815
Int. Cl.[4] A47C 3/00, 7/14
U.S. Cl. 297—284 5 Claims



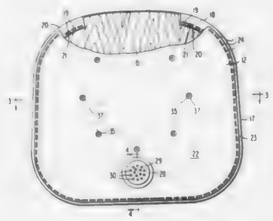
1. A chair seat construction comprising: a flexible seat plate, U-shaped structural member extending fore and aft of the seat plate, a pair of hinges, each hinge pivotally joining the longitudinal upper edge of one leg of the U-shaped structural member to the seat plate, a cam means operatively interconnected between the seat plate and the U-shaped structural member for flexing the seat plate and varying its contour, and an actuation means located mainly outside the U-shaped structural member and operatively connected to said cam means so that said cam means may be actuated to flex the seat plate and thereby change its contour.

4,566,734
ADJUSTABLE BOAT SEAT PEDESTAL
Andrew L. Bruner, 5924 Chaucer La., Little Rock, Ark. 72209
Filed Aug. 24, 1984, Ser. No. 643,721
Int. Cl.[4] A47C 1/02
U.S. Cl. 297—346 9 Claims



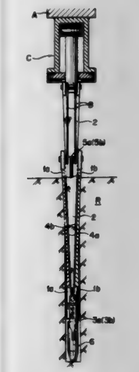
1. A mounting pedestal for a boat seat movable between an elevated seating position and a lowered seating position comprising:
a base adapted to be secured to said boat, said base including a first, open-ended tube the axis of which is vertically oriented;
a mounting plate adapted for connection to a seat, said mounting plate having a second, downwardly extending, open-bottomed tube affixed thereto;
a column assembly including a first cylindrical member adapted to be telescopingly received in and secured to said tube, a second cylindrical member, and a third cylindrical member adapted to be telescopingly received in said first tube, said first and second members and said second and third members, respectively, being pivotally connected, the connection between said first and second members being such as to maintain said seat in a seating position in both the upper and lower positions thereof; and
a tubular sleeve telescopingly received over said column assembly, the length of said sleeve being less than that of said column member.

4,566,735
UPHOLSTERED SEAT FOR CLEAN ROOMS
James W. Frobose, Haskins, Ohio, assignor to The Jasper Corporation, Easton, Md.
Filed Nov. 15, 1983, Ser. No. 551,913
Int. Cl.[4] A47C 7/18
U.S. Cl. 297—452 3 Claims



1. In upholstered furniture for industrial clean rooms, a body support portion comprising a substantially rigid panel member, a yielding cushion on and substantially covering one face of said panel member, an air impermeable sheet material cover for said body support portion surrounding and enclosing said panel member and cushion and being in hermetically sealed relationship to said panel member, said panel member and cover sheet having registering openings formed therethrough, a filtering means within said registering openings and being in hermetically sealed relationship with the panel member and said cover, said filtering means including an apertured filtering element housing, and a filtering element held within said housing in covering relationship to the apertures thereof and being formed as a disc of thin hydrophylic sheet material capable of preventing the passage therethrough of particles substantially as small as 0.2 microns.

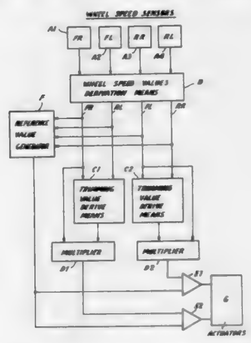
4,566,736
APPARATUS FOR MECHANICALLY BREAKING UP ROCK
Shigetake Akanuma, Chigasaki; Minoru Nakajima, Hiratsuka; Satoshi Takashima, Kanagawa; Haruo Imamura, Hiratsuka; Yoshitaka Ojiro, Hiratsuka; Hiroshi Kakuta, Hiratsuka, and Masato Matsumoto, Minami-ashigara, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed May 10, 1984, Ser. No. 608,682
Claims priority, application Japan, May 10, 1983, 58-68484[U]
Int. Cl.[4] E21C 37/06, 37/02
U.S. Cl. 299—23 8 Claims



1. A wedge type rock breaking apparatus comprising wedge guide members divided into halves and adapted to be inserted into a hole which has previously been drilled in the rock to be broken up, said haves defining oppsite respective divided surfaces; a slider wedge adapted to be thrusted in between said wedge guide members to thereby spread or move the latter away from each other; and a pair of dust-proof membranes adapted to be attached across both ends of the opposite respective divided surfaces of said wedge guide members, chartacterized by that said dust-proof membranes each have projections formed as an integral unit along both longitudinal sides edges thereof, each of said projections being adapted to be thrusted into each of longitudinally extended grooves of "C"-shaped cross-section formed along the respective divided surfces of said wedge guide members on both sides thereof and whose both side surfaces extend at right angles to the bottom surface therof.

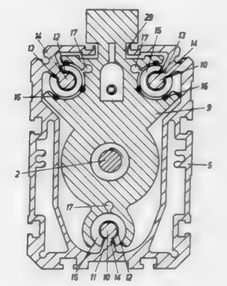
4,566,737
ANTISKID CONTROL WITH WHEEL-SPEED DIFFERENCE COMPENSATION
Syouichi Masaki; Kimio Tamura, both of Anjo; Teruyoshi Wakao, Nagoya; Noriyuki Nakashima, Nagoya; Ken Asami, Nagoya, and Kazunori Sakai, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kairya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan
Filed Aug. 8, 1984, Ser. No. 638,720
Claims priority, application Japan, Aug. 9, 1983, 58-145258
Int. Cl.[4] B60T 8/68
U.S. Cl. 303—109 13 Claims

1. An antiskid control system for the hydraulic braking system of a wheeled vehicle having at least first and second wheels, first and second wheel speed sensors respectively associated with said wheels, and means for decreasing the fluid pressure of the braking system in response to a pressure control signal applied thereto, comprising:
means for deriving from the outputs of said wheel speed sensors first and second wheel speed values respectively representing the rotational speeds of said first and second wheels;
means for deriving a trimming value from the difference between said first and second wheel speed values;



means for multiplying said first wheel speed value by said trimming value to compensate for the deviation of the speed of said first wheel from the speed of said second wheel; and
means for comparing said compensated first wheel speed value with a variable threshold that is a function of the speed of said vehicle and generating said pressure control signal.

4,566,738
POSITIONING APPARATUS
Ulf K. F. Fasth, Skolgatan 14, S-302 32 Halmstad, Sweden
Filed Oct. 12, 1983, Ser. No. 541,135
Claims priority, application Sweden, Oct. 19, 1982, 8205923
Int. Cl.[4] F16C 29/00, 29/02
U.S. Cl. 308—3 A 5 Claims



1. In an improved positioning apparatus comprising an elongate housing formed from a lightweight metal and defining an axially extending internal cavity, a threaded spindle rotatably mounted in said internal cavity of said housing and extending axially therein, a runner mounted on said spindle and threaded thereto for longitudinal movement in response to rotation of said spindle, a member fixed axially on said runner at least in part within said housing and projecting outwardly therefrom in the transverse direction of said positioning apparatus, at least three spaced longitudinally extending guide members arranged

in said housing around and parallel with said spindle and said internal cavity, at least two of said guide members being formed at opposite corners of said housing on one side of a plane containing the axis of said spindle, at least one of the remaining of said guide members being positioned on the opposite side of said plane and lying on a plane perpendicular to the first mentioned plane and containing said spindle axis, said runner traveling backwards and forwards in said housing cavity along said guide members, said guide members being integral parts of said housing, means forming bearing slide surfaces on said guide members and engaged with said runner member projection for reducing friction on said runner's movement on said slide surfaces.

4,566,739

CROSS-SLIDE GUIDE FOR A MICROFILM READER

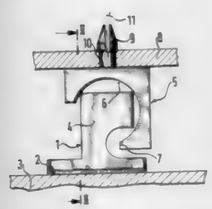
Andrzej Walczak, Ober-Morlen, Fed. Rep. of Germany, assignor to Map Mikrofilm Apparatebau Dr. Poehler GmbH & Co. KG, Fed. Rep. of Germany

Filed Aug. 3, 1984, Ser. No. 637,271

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1983, 3328800

Int. Cl.⁴ F16C *29/02*

U.S. Cl. 308—3 R **6 Claims**



1. A cross-slide guide in which slides located on sliding pads can be traversed on at least one guide rail on which they are supported, the cross-slide guide comprising:

(a) at least one elongated guide rail having, at the upper portion thereof, a guide section of greater width than height with rectangular cross-section, and having an undercut on at least one side below said guide section;

(b) a sliding pad having an inner arcuate guide surface slidingly resting on said guide section and embracing the guide section in such a manner that said guide surface makes contact only with the two upper longitudinal edges of the guide section, and having a lower portion reaching under the guide section into said undercut with clearance between said guide rail and said guide surface.

4,566,740

KINETIC WHEEL ARRANGEMENT INCORPORATING MAGNETIC SUSPENSION PROVIDED WITH MEANS FOR CAGING ITS ROTOR

Jean F. Beau, St. Ouen-L'Aumone, and Michel Gauthier, Verneuil-Sur-Seine, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Jul. 9, 1984, Ser. No. 629,215

Claims priority, application France, Jul. 19, 1983, 83 11903

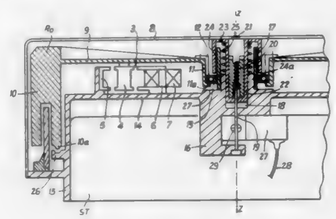
Int. Cl.⁴ F16C *39/00*

U.S. Cl. 308—10 **10 Claims**

1. In a kinetic wheel arrangement comprising a stator, a rotor and a magnetic suspension formed by cooperating parts respectively connected to the stator and to the rotor to be adapted to suspend the rotor magnetically with respect to the stator, the axis of rotation of the rotor being defined by the stator,

said rotor comprises a central recess about said axis of rotation,

there is disposed in said central recess of the rotor a pressure system provided with a screw which is connected to the stator and of which the axis merges with said axis of rotation of the rotor, this pressure system being adapted to take a first position for which said rotor is free to rotate



about its axis of rotation whilst being suspended by its magnetic suspension, and a second position for which it presses said rotor against said stator to immobilize it,

and remotely-controlled means are provided to cut said screw between said stator and said rotor.

4,566,741

SUPERVISORY DESK

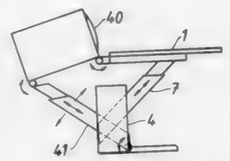
Stig Eriksson; Bengt Granberg, and Erik Westberg, all of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Division of Ser. No. 413,827, Sep. 1, 1982, abandoned. This application Jan. 18, 1985, Ser. No. 692,340

Claims priority, application Sweden, Sep. 4, 1981, 8105258; May 3, 1982, 8202760

Int. Cl.⁴ A47B *17/02*

U.S. Cl. 312—194 **5 Claims**



1. A supervisory desk, comprising a top section having a front edge, a stand section having at least one leg of adjustable length which supports said top section for adjustment in height thereof relative to said stand section, said at least one adjustable leg inclined in a forward direction relative to a vertical plane at an angle between 15° and 75° such that said front edge of said top section moves in said forward direction relative to said stand section upon an increase in the length of said at least one adjustable leg, and a display unit pivotally mounted on said top section, a support leg of variable length inclined in a rearward direction and having an upper end and a lower end, said lower end pivotally mounted on said stand section, and said upper end pivotally mounted to said display unit.

4,566,742

CONSTRUCTION SET FOR THE ERECTION OF MOUNTING STRUCTURES

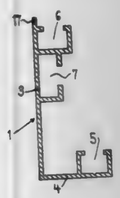
Samuel Schmied, Uetendorf, Switzerland, assignor to S. Schmied & Co., elektrotechnische Bedarfsartikel en gros, ASM-Tableaubau, Uetendorf, Switzerland

Filed Jan. 6, 1984, Ser. No. 568,640

Claims priority, application Switzerland, Jan. 10, 1983, 108/83

Int. Cl.⁴ A47B *43/00*

U.S. Cl. 312—257 SK **13 Claims**



1. A construction set for erecting a mounting structure, comprising first wall-forming members having a cross-section which includes first and second branches and a corner, said first and second branches extending from said corner in mutually perpendicular directions, said second branch being longer than said first branch and forming a wall of said mounting structure, said first branch extending generally parallel to a first plane and including a groove having an opening directed generally orthogonally with respect to said first plane, said second branch extending generally parallel to a second plane and having a first groove with an opening directed generally parallel with respect to said second plane and a second groove disposed between the first groove and said corner, said second groove having an opening directed generally orthogonally with respect to the second plane, mounting members operable for mounting a first means on said mounting structure by means of fasteners, wherein the groove of said first branch is positioned to support said mounting members at a predetermined depth in said mounting structure.

4,566,743

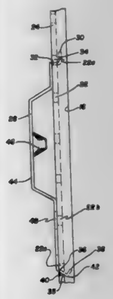
DRAWER SLIDE CLIP

Jay M. Henriott, Jasper, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Filed Jun. 11, 1984, Ser. No. 619,027

Int. Cl.⁴ A47B *88/00*

U.S. Cl. 312—350 **5 Claims**



1. A drawer slide clip detachably connectable to a track having a plurality of apertures, the clip comprising:

a body having opposite ends;

tab means, at one of said ends, for engaging a selected aperture in the track so as to correctly position the clip relative to the track;

clip means, at the other of said ends, for engaging a selected aperture so as to detachably connect the drawer slide clip to the track, said clip means including a flexible leg having an attachment cam surface means for engaging an inner peripheral edge of its corresponding aperture and flexing said leg upon the exertion of force towards the track to permit said leg to enter the corresponding aperture, said leg further having detachment cam surface means for engaging an inner peripheral edge of the corresponding aperture and flexing said leg upon the exertion of force away from the track thereby permitting said leg to disengage from the corresponding aperture; and

engagement means for engaging a drawer slide.

4,566,744

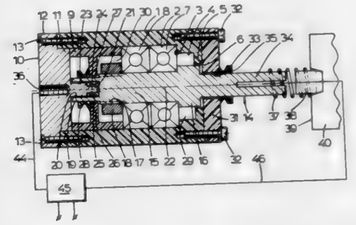
CURRENT COLLECTOR FOR ROTATING SHAFT

Hendrik v Engelenburg, Driebergen, Netherlands, and Rugerus S. Heemskerk, Pfandhausen, Fed. Rep. of Germany, assignors to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

Filed Jun. 28, 1983, Ser. No. 508,611

Int. Cl.⁴ H01R *39/00*

U.S. Cl. 339—8 L **20 Claims**



1. In a current collector, provided with a housing, wherein is rotatably supported an electrical contact shaft which, by an end projecting from one end of the housing, may be brought into contact with an independently rotating shaft in order thereby to be brought into rotation and likewise make electrical contact therewith, where mercury is contained in the housing in order to bring about electrical connection between the contact shaft and a contact member attached in the housing, the improvement wherein the housing is closed off at its other end by a removable sealing cover, the contact shaft having a terminal part which faces the sealing cover, the terminal part having a cylindrical blind hole which is coaxial with the contact shaft, means fixedly provided on said cover for sealing the hole and forming a closed space for the mercury when said cover is fastened to said housing, said closed space being subject to addition and removal of said mercury upon separation of said sealing cover from said housing.

4,566,745

CONNECTOR ASSEMBLY

Ronald R. Maros, Itasca, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Aug. 20, 1984, Ser. No. 642,384

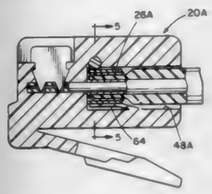
Int. Cl.⁴ H01R *13/652*

U.S. Cl. 339—14 P **10 Claims**

1. A connector assembly for use in interconnecting a pair of electrical components, said assembly comprising:

a connector including an insulative housing defining a connection chamber and a cable-receiving passageway communicating with said chamber, and further including at least one metallic terminal element disposed in said chamber, said element having a conductor termination portion and a component connection portion;

a shielded cable disposed in said passageway, said cable including a metallic conductor engaged by said conductor termination portion with a metallic shield disposed about and insulated from said conductor and an insulative jacket disposed about said shield;



a resilient metallic band, at least partially encompassing said cable and engaging a portion of said shield folded back over said jacket, disposed in said passageway and electrically isolated from said terminal element; and

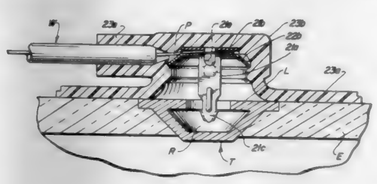
a metallic grounding pin extending inside said passageway and compressing said band.

4,566,746

ELECTRICAL CONNECTOR

Ervin J. Hobson, Chicago, Ill., assignor to Hobson Bros., Inc., Chicago, Ill.

Filed Jun. 5, 1984, Ser. No. 617,398
Int. Cl.[4] H01R *11/22*
U.S. Cl. 339—60 R **14 Claims**



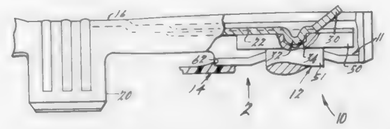
1. An electrical connector for use with a surface-mounted terminal in a high voltage circuit, the terminal having a recess provided with an inwardly projecting lip deliminating an entry to the recess, said connector comprising a clip of electrically conductive material and having a pair of elongated protruding elements connected at one end by a bail section, the opposite end portions of said elements being free and adapted to extend into the terminal recess entry and make resilient interlocking electrical contact with the terminal lip; an insulated electrical lead having a bare conductor end portion straddled by the coaction of said bail section and adjacent portions of said protruding elements; a shield member having a portion thereof disposed intermediate the protruding elements of said clip and coacting with the clip bail section to resiliently sandwich therebetween the bare conductor end portion of said lead and make electrical contact therewith; and an insulated cover piece accommodating said clip, said shield member, and an insulated segment of the electrical lead and the bare conductor end portion extending therefrom; said cover piece including an inner skirt section encompassing the clip protruding elements and being adapted to overlie and resiliently engage a portion of the surface circumjacent the terminal, and an outer section protruding from said skirt section, said outer section being provided with an interior cavity having an open side adjacent said skirt section, and an opening for accommodating the insulated segment of the electrical lead, said opening having an exposed outer end and a restricted inner end communicating with said cavity; said cavity being provided with protruding means in offset spaced relation relative to the opening inner end and in resilient interlocking engagement with a peripheral portion of said shield member and retaining the bare conductor end portion in resilient sandwiched relation between said shield member and said clip bail section and in electrical contact therewith.

4,566,747

ELECTRICAL CONNECTION SYSTEM

Robert P. Peers, Rochester, Mich., assignor to Microdot Inc., Darien, Conn.

Filed Jul. 26, 1984, Ser. No. 634,605
Int. Cl.[4] H01R *13/635*
U.S. Cl. 339—74 R **6 Claims**



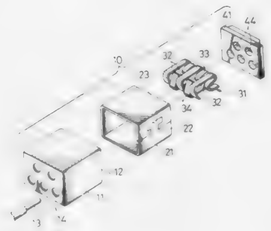
1. An electrical connection system comprising a fixed post-type male terminal having a T-shaped end portion defined by a post having a relatively larger diameter flange at the end thereof, and a female connector of hollow parallelepiped configuration comprising a top wall, a bottom wall and spaced side walls defining an opening for the acceptance of the flange of said male terminal, the bottom wall of said female connector comprising two spaced cutout portions for the acceptance of the post of the male terminal, the spacing of the cutouts in the bottom wall of said female connector being smaller than the flange on the end portion of said male terminal to preclude movement of the female connector away from the male terminal in a direction parallel to a central longitudinal axis of said male terminal, said female connector having means at one end thereof for attachment to a flexible electrical conductor and an elastically deflectable locking tab in the top wall thereof provided with means engageable with said male terminal to effect locking therewith.

4,566,748

CONNECTOR

Tokio Tanishi, Mie, and Hideki Yokoyama, Tsu, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 17, 1984, Ser. No. 651,259
Int. Cl.[4] H01R *9/24*
U.S. Cl. 339—95 D **12 Claims**



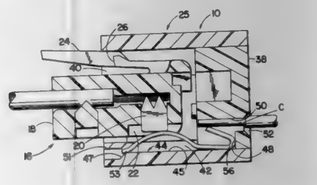
1. A connector comprising a casing of a tubular shape open at one end and bottomed at the other end, contact means of a tubular shape having both open ends and assembled inside said casing with said both open ends disposed adjacent said open and bottomed ends of the casing, a plurality of resilient means arranged within said contact means to be in parallel to a direction of inserting the contact means into the casing for holding respective wire ends to be interconnected at a position between said resilient means and an inner surface of the contact means, a lid secured to said open end of the casing, and means provided in one of the bottomed end of the casing and said lid to be opposed to respective said resilient means for inserting said wire ends respectively into said holding position, said resilient means comprising respectively an elongate strip bent to have at one end of a central flat portion an S-shaped resilient portion and at the other end of said flat portion a wedge portion sloped to be on the side of said resilient portion, said wire ends respectively being held resiliently in said holding position by free ends of said resilient and wedge portions.

4,566,749

ELECTRICAL CONNECTOR RECEPTACLE

James J. Johnston, Old Saybrook, Conn., assignor to Brand-Rex Company, Willimantic, Conn.

Filed Aug. 9, 1984, Ser. No. 639,242
Int. Cl.[4] H01R *11/05*
U.S. Cl. 339—95 D **11 Claims**



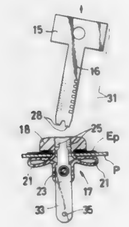
1. An electrical connector receptacle comprising a dielectric housing having top, bottom, side, and rear walls defining a generally rectangular longitudinally extending forwardly opening plug receiving cavity, said bottom and rear walls cooperating to define a plurality of contact receiving channels communicating with said plug receiving cavity, each of said channels having an upwardly facing lower surface including a main portion and a ramp portion forming a first junction with said main portion and inclined forwardly and downwardly from said first junction and away from said main portion, a pair of opposing side surfaces and a forwardly facing rear surface forming a second junction with said lower surface, said rear wall further defining an upper surface of each of said channels, a plurality of unitary resilient spring contact members supported in generally parallel side-by-side relation to each other within said housing, each of said contact members being disposed within an associated one of said channels between said side surface thereof, each of said contact members having a front end portion supported on said main portion proximate said first junction and inclined upwardly and rearwardly from said main portion, an arcuately upwardly bowed contact portion integrally connected at its forward end to the rear end of said front end portion for engaging an associated plug contact on a plug having a body supporting the plug contact and received within said cavity, a rear transitional portion integrally connected at its forward end to the rear end of said contact portion and extending downwardly and rearward therefrom, said transitional portion including an upwardly reversely bent rear end portion supported at said second junction by said lower surface and said forwardly facing rear surface, and a rear terminal portion integrally connected at its rear end to a forward end of said reversely bent rear end portion and extending generally forwardly and upwardly away from said second junction and terminating at a free end, said free end exerting biasing force upon said upper surface, and a plurality of connector receiving apertures extending through said rear wall, each of said apertures communicating with an associated one of said channels said front end portion of each contact member engaged with an associated contact on a plug received within said housing being supported by said main portion, said front end portion of each contact member engaged with an associated portion of the body of a plug received within said cavity being generally supported by said ramp portion forward of said first junction.

4,566,750

PLASTIC INSERT-MOLD ELEMENT CONTAINING A METAL-PIECE INSERT

Hideo Umezu, 5-39-6 Shonan Takatori, Yokosuka-shi, Kanagawa-ken, Japan

Filed Mar. 28, 1983, Ser. No. 479,455
Claims priority, application Japan, Jul. 12, 1982, 57-119877
Int. Cl.[4] H02B *1/02*
U.S. Cl. 339—126 R **27 Claims**



1. A fastener, comprising:

a female member fabricated by means of a molding process;

a male member, insert-molded within said female member and including a head portion and a shank portion, movably disposed, under the influence of a first force, within said female member between a first position at which said female and male members are relatively disposed with respect to each other so as not to achieve a fastening operation, and a second position at which said female and male members are relatively disposed with respect to each other such that a fastening operation is achieved;

frangible means, provided upon said shank portion of said male member and defining a boundary line between a first section of said shank portion of said male member which is disposed interiorly of said female member when said male member is disposed at said second fastening position relative to said female member, and a second section of said shank portion of said male member connected to said head portion of said male member which is disposed exteriorly of said female member when said male member is disposed at said second fastening position relative to said female member, for facilitating the separation of said second section of said shank portion of said male member from said first section of said shank portion of said male member along said boundary line defined by said frangible means under the influence of a second force which is greater than said first force required to move said male member from said first position to said second position within said female member;

male claw means defined upon said male member at a position upstream of said frangible means as viewed in the direction of movement of said male member from said first position to said second position;

female mold indent means defined upon said male member at a position downstream of said frangible means as viewed in the direction of movement of said male member from said first position to said second position; and

male stepped means, defined upon said female member by means of said female mold indent means of said male member as a result of said molding of said female member, for engagement by said male claw means of said male member when said male member is disposed at said second position so as to retain said male member at said second fastened position relative to said female member.

4,566,751

DISTRIBUTOR CAP WITH IGNITION CABLE

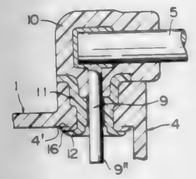
Ryuichi Yoshida; Shigeru Suzuki; Hirotoshi Koishikawa, all of Seroka; Yoshimi Miyamoto, Toyota, and Kazuhide Kawai, Oobu, all of Japan, assignors to Tokai Electric Wire Company Limited, Japan

Filed Dec. 26, 1984, Ser. No. 685,920

Claims priority, application Japan, Dec. 27, 1983, 58-203320[U]

Int. Cl.⁴ H01R 4/24, 13/44

U.S. Cl. 339—218 S 6 Claims



1. A distributor cap comprising:

an ignition cable having at one end thereof a terminal member;

a bonding member molded from a hot-melt adhesive resin such as to bury a portion of both of said terminal member and said ignition cable therein in the vicinity of said one end;

a connecting member, which is not molded from the same body of material as said bonding member integrally secured to said bonding member, said connecting member receiving a longitudinally intermediate portion of said terminal member such that a distal end portion of said terminal member is exposed to the outside of said connecting member; and

a tower portion, which is not molded from the same bodies of material as said bonding member and said connecting member, formed with a recess which receives said connecting member, and molded from a resin having the same quality as that of the resin employed to form said connecting portion,

said connecting member being fitted into said recess and is integrally welded to said tower portion.

4,566,752

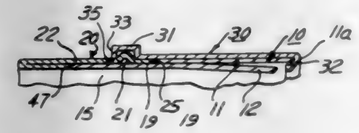
CONTACT ASSEMBLY FOR AN ELECTRICAL CONNECTOR

Valentine J. Hemmer, Sidney, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 499,689, May 31, 1983, abandoned. This application Feb. 15, 1985, Ser. No. 701,909

Int. Cl.⁴ H01R 13/11, 4/10

U.S. Cl. 339—262 R 5 Claims



4. In a three-piece contact assembly of the type having a one-piece inner sleeve including a forward end adapted to receive a pin contact and a rearward end having a diameter sized to receive an electrical conductor, a first outer sleeve mounted to said rearward end, and a second outer sleeve mounted to said forward end, said forward end including a plurality of deflectable tine the ends of which extend radially inward to mate with the pin contact, the improvement wherein said inner sleeve comprises a tubular hood having a rearward portion secured to said inner sleeve and a forward portion consisting of a plurality of hood portions, each said hood portion being spaced from and circumposing said tines.

4,566,753

OPTICAL STAR COUPLER

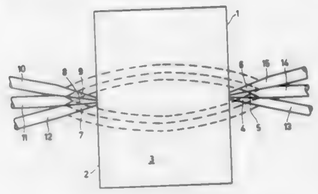
Lothar Mannschke, Eckental, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 515,705, Jul. 20, 1983, abandoned. This application May 22, 1985, Ser. No. 736,976

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1982, 3229571

Int. Cl.⁴ G02B 5/172

U.S. Cl. 350—96.16 10 Claims



1. A star coupler comprising:

a first group of optical waveguides having tapered portions, each tapered portion terminating in an end face of the waveguide, said tapered portions being arranged adjacent to one another so that the end faces of the waveguides form a first group end face having a periphery;

a second group of optical waveguides having tapered portions, each tapered portion terminating in an end face of the waveguide, said tapered portions being arranged adjacent one another so that the end face of the waveguides form a second group end face having a periphery; and

a graded index rod lens having first and second opposite end faces having peripheries;

characterized in that:

the first group end face is connected to the first end face of the graded index rod lens;

the second group end face is connected to the second end face of the graded index rod lens; and

the entire periphery of the first end face of the graded index rod lens surrounds and is spaced from the entire periphery of the first group end face, and the entire periphery of the second end face of the graded index rod lens surrounds and is spaced from the entire periphery of the second group end face, such that radiation emerging from the tapered portions of the first group of waveguides will be incident on the first end face of the graded index rod lens and will be focused by the graded index rod lens onto the tapered portions of the second group of waveguides.

4,566,754

OPTICAL FIBRES

Keith J. Beales, Ipswich; Clive R. Day, Suffolk; Benjamin J. Ainslie, and James D. Rush, both of Ipswich, all of United Kingdom, assignors to British Telecommunications, London, England

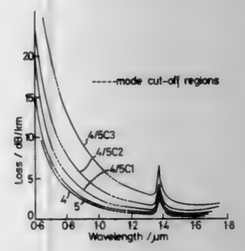
Filed Mar. 23, 1982, Ser. No. 361,093

Claims priority, application United Kingdom, Apr. 8, 1981, 8111013

Int. Cl.⁴ G02B 5/172

U.S. Cl. 350—96.30 19 Claims

1. In a method of producing an optical fibre having a core comprised of a silica-based glass having silica and germanium dioxide as the main constituents and a cladding comprised of a silica-based glass having silica as the main constituent, wherein the optical fibre is formed by drawing a preform at an elevated temperature, wherein the preform comprises a core portion and a cladding portion which correspond to the core and cladding of the formed optical fibre, and wherein the materials and dimensions of the core portion and cladding portion of the preform and the drawing ratio are such that the formed optical fibre is capable of monomode transmission in the 1.55 μm window and has a wavelength of zero dispersion in the 1.55 μm window, the improvement which comprises drawing the preform at a temperature in the range of from 1900° C. to 2000° C.



4,566,755

COPOLYMERS FOR OPTICAL FIBERS

Akira Ohmori, Ibaraki; Nobuyuki Tomihashi, Takatsuki, and Takahiro Kitahara, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Japan

Continuation of Ser. No. 522,257, Aug. 11, 1983, abandoned. This application Oct. 4, 1984, Ser. No. 657,479

Claims priority, application Japan, Aug. 24, 1982, 57-147405

Int. Cl.⁴ C08F 214/18; G02B 5/172

U.S. Cl. 350—96.34 1 Claim

1. In an optical fiber comprising a cladding and a core, the improvement wherein said cladding comprises a copolymer comprising

(a) 100 parts by weight of fluoroalkylmethacrylate, said fluoroalkylmethacrylate giving, when singly polymerized, a homopolymer having the properties of a glass transition temperature and a refractive index satisfying the following formulae (I) and (II), respectively:

$$(1/Tg \leqq 9.47\times10^{-3}-4.556\times10^{-3}\times n^{20}) \quad (I)$$

$$n^{20} \leqq 1.42 \quad (II)$$

wherein Tg represents the glass transition temperature and n^{20} represents the refractive index of said homopolymer and

(b) 0.5 to 10 parts by weight of methacrylic acid.

4,566,756

PROJECTION SCREEN

Werner A. L. Heijnemans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,564

Claims priority, application Netherlands, Mar. 7, 1983, 8300817

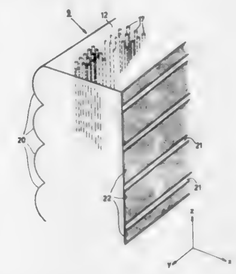
Int. Cl.⁴ G03B 21/60

U.S. Cl. 350—126 9 Claims

1. A projection screen for use in a color television projection system, comprising:

a plate including a substrate formed of a transparent first material, the substrate having a first surface for entry of projected light projected from an image source and also having a second surface for exit of projected light which has traveled through the substrate, the second surface being oriented generally parallel to the first surface, characterized in that

the substrate comprises diffusers for diffusing, in a first direction, projected light, the diffusers including filamentary particles disposed within the first material of the substrate, the filamentary particles being formed of a transparent second material having a refractive index differing from the refractive index of the first material, the longitudinal axes of the filamentary particles being oriented substantially in a second direction, the second direction being transversely to the first direction, so that projected light entering the first surface, traveling through the substrate and exiting the second surface is diffused in the first direction by means of the diffusers.



4,566,757

HOLOGRAPHIC OPTICAL PROCESSING METHOD AND APPARATUS

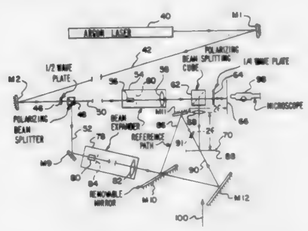
Richard L. Fusek, Dayton; James S. Harris, Centerville, and Kevin G. Harding, Dayton, all of Ohio, assignors to University of Dayton, Dayton, Ohio

PCT No. PCT/US83/00184, § 371 Date Sep. 23, 1983, § 102(e) Date Oct. 12, 1983, PCT Pub. No. WO83/02831, PCT Pub. Date Aug. 18, 1983

Continuation-in-part of Ser. No. 348,461, Feb. 12, 1982, Pat. No. 4,478,481. This PCT application Feb. 14, 1983, Ser. No. 548,892

Int. Cl.⁴ G03H 1/16

U.S. Cl. 350—162.12 21 Claims



1. A method of performing optical processing on optical information corresponding to a subject disposed within a subject plane, comprising the steps of:

directing a first coherent beam of light at the subject such that said light is diffracted, reflected and/or transmitted thereby, whereafter said beam contains optical information regarding the subject;

focusing said beam containing said subject information so as to define a Fourier transform plane and to image said information within an image plane beyond said transform plane;

disposing means for recording a hologram thereon at or near said image plane so as to receive thereon said beam containing said subject information;

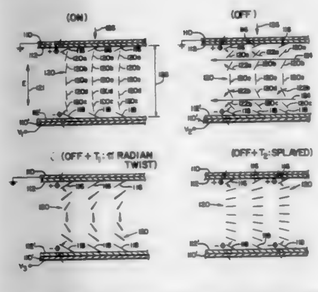
directing a second coherent beam of light onto said recording means from a first direction so as to form an interference pattern with said first beam containing said subject information;
recording a hologram of said subject information on said recording means;
directing said second beam to said recording means from a direction conjugate to said first direction for diffraction thereby to the subject plane in a direction exactly opposite to that travelled by said first beam containing said subject information, whereby said Fourier transform is redefined at said transform plane and said subject information is carried within said second beam to the subject plane; and
manipulating said subject information contained within one of said beams at said transform plane.

4,566,758

RAPID STARTING, HIGH-SPEED LIQUID CRYSTAL VARIABLE OPTICAL RETARDER

Philip J. Boe, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 9, 1983, Ser. No. 493,107
Int. Cl.[4] G02F *1/13, 1/137*
U.S. Cl. 350—346 5 Claims



1. A rapid starting, high-speed liquid crystal variable optical retarder comprising:
a liquid crystal cell which includes a pair of generally parallel electrode structures that contain a mixture of a chiral agent and a nematic liquid crystal material which has directors, the inner surface of each electrode structure including a director alignment layer which has been conditioned so that the directors of the liquid crystal material in contact therewith become substantially uniformly aligned to form tilt bias angles with the conditioned surface, the tilt bias angles of the directors in contact with the conditioned surface of one electrode structure being defined in a rotational sense opposite to the tilt bias angles of the directors in contact with the other conditioned surface of the other electrode structure and the projections of the directors in contact with the conditioned surfaces being aligned so that the projections onto one of the conditioned surfaces are parallel to the projections onto the other conditioned surface; and
the liquid crystal cell being operable in response to an applied electric field to cause a substantial number of the surface noncontacting directors to align in substantially end-to-end relation in a direction generally normal to the conditioned surfaces to provide a first amount of optical retardation through the cell of light incident to one of the surfaces of the electrode structures, in rapid response to a substantial diminution of the magnitude of the electric field to cause at least some of the surface noncontacting directors within the interior of the cell to rotate about axes that are perpendicular to the normal to the conditioned surfaces to provide a second amount of optical retardation of light incident to one of the surfaces of the electrode structures, and in response to a relatively prolonged absence of the electric field to inhibit director relaxation to a splayed state.

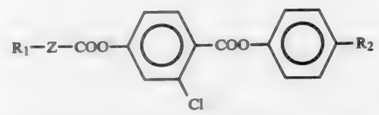
4,566,759

LATERALLY FLUORINATED LIQUID CRYSTAL MATERIALS AND FREQUENCY CHANGE DEVICES

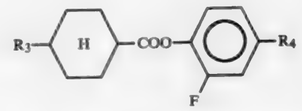
Damien G. McDonnell, and Robert A. Smith, both of Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 309,511, Oct. 7, 1981, abandoned. This application Apr. 24, 1984, Ser. No. 603,979
Claims priority, application United Kingdom, Oct. 13, 1980, 8032944
Int. Cl.[4] C09K *19/20, 19/30, 19/32;* G02F *1/13*
U.S. Cl. 350—346 13 Claims

1. A liquid crystal composition suitable for use as a two-frequency material in a two-frequency switching device, the composition comprising a mixture of:
i. a first component A having a positive dielectric anisotropy and consisting of one or more compounds having a general formula:



wherein R_1 and R_2 are independently n-alkyl groups having from 3 to 7 carbon atoms; and Z is selected from 1,4-phenylene, trans-1,4-cyclohexyl, and 2,6-naphthyl; and
ii. a second component B having a low viscosity and consisting of one or more compounds having a general formula:



wherein R_3 and R_4 are independently n-alkyl groups having from 3 to 7 carbon atoms.

4,566,760

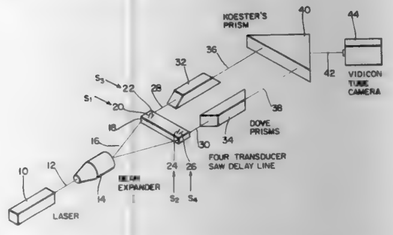
MULTI-PRODUCT ACOUSTO-OPTIC TIME INTEGRATING CORRELATOR

Irwin J. Abramovitz; Norman J. Berg, both of Baltimore, Md., and Michael W. Casseday, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1984, Ser. No. 599,365
Int. Cl.[4] G02F *1/33;* G06G *9/00*
U.S. Cl. 350—358 17 Claims

1. A device for processing signals to obtain a multi-product, time integrated, correlated output signal, comprising:
(a) means for producing a laser light beam;
(b) means for expanding said laser light beam into a first sheet beam;
(c) an acousto-optic medium having an axis and a planar surface extending between opposite first and second ends which is disposed in the path of said sheet beam such that the sheet beam traverses the medium between the medium ends along and parallel to the medium;
(d) a first acoustic transducer, disposed at the first end of the acousto-optic medium;

(e) a second acoustic transducer, disposed at the second end of the acousto-optic medium;
(f) a third acoustic transducer, disposed at the first end of the acousto-optic medium;
(g) a fourth acoustic transducer, disposed at the second end of the acousto-optic medium;
(h) a first signal, supplied to said first acoustic transducer, for propagating said first signal on the surface of said acousto-optic medium in the direction of the second end of the acousto-optic medium;
(i) a second signal, supplied to said second acoustic transducer, for propagating said second signal on the surface of said acousto-optic medium in the direction of the first end of the acousto-optic medium;
(j) a third signal, supplied to said third acoustic transducer, for propagating said third signal on the surface of said acousto-optic medium in the direction of the first end of the acousto-optic medium;



(k) a fourth signal, supplied to said fourth acoustic transducer, for propagating said fourth signal on the surface of said acousto-optic medium in the direction of the first end of the acousto-optic medium;
(l) wherein said first and second signals diffract said sheet beam to produce a first, product diffracted beam of light, said first product diffracted beam containing the product of said first signal with said second signal;
(m) wherein said third and fourth signals diffract said sheet beam to produce a second, product diffracted beam of light, said second product diffracted beam containing the product of said third signal with said second signal;
(n) means for rotating said first product diffracted beam and said second product diffracted beam so that they are orthogonal to each other;
(o) means to combine said orthogonal, product diffracted beams; and
(p) time integrating photodetecting means disposed in the path of the combined beam for generating a multi-product, time integrated, correlated output signal.

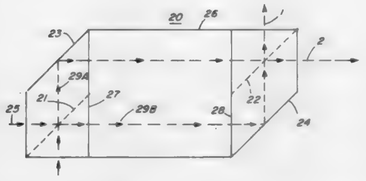
4,566,761

BIREFRINGENT OPTICAL WAVELENGTH MULTIPLEXER/DEMULTIPLEXER

W. John Carlsen, Boston, and Paul Melman, Newton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 13, 1984, Ser. No. 650,012
Int. Cl.[4] G02B *5/30;* H04J *1/08*
U.S. Cl. 350—401 8 Claims

1. A birefringent optical wavelength multiplexer/demultiplexer comprising
first polarization beam splitting means for splitting an applied collimated beam of light into two linearly polarized beams whose directions of propagation are perpendicular to one another;
first reflecting means for reflecting one of said linearly polarized beams parallel to the other polarized beam;
a birefringent element having a pair of opposed parallel surfaces, with an optical axis oriented nominally parallel to said surfaces, said element being oriented with said parallel surfaces perpendicular to the direction of propagation of said linearly polarized beams, said optical axis being oriented half way between the two polarized beams incident upon said element, 45° from the polarization axis of each said beam, wherein
one electric field component of each of said polarized beams which is parallel to an "extraordinary" axis of said element propagates at a different rate of speed, dependent upon the material of said element, than the other electric field component which is parallel to an "ordinary" axis of said element;
second reflecting means for reflecting the other of said linearly polarized beams, following propagation of said other beam through said element, in a direction perpendicular to that of said one of said polarized beams following propagation of said one polarized beam through said element; and
second polarization beam splitting means oriented to receive both said reflected other beam and the propagated one beam, wherein



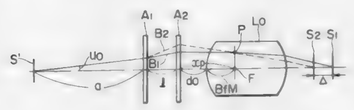
(1) when the propagated other beam and the propagated one beam have polarization states which are linearly polarized parallel to said respective applied polarized beams, said reflected other beam is transmitted by said second polarization beam splitting means, and said propagated one beam is reflected by said second polarization beam splitting means, whereby said reflected other beam and said propagated one beam are combined and transmitted outwardly from a first port; and
(2) when the propagated other beam and the propagated one beam have polarization states which are linearly polarized perpendicular to said respective applied polarized beams, said reflected other beam is reflected by said second polarization beam splitting means, and said propagated one beam is transmitted by said second polarization beam splitting means, whereby said reflected other beam and said propagated one beam are combined and transmitted outwardly from a second port.

4,566,762

DUAL FOCUS OPTICAL SYSTEM

Kinya Kato, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 29, 1983, Ser. No. 527,388
Claims priority, application Japan, Sep. 2, 1982, 57-153070
Int. Cl.[4] G02B *5/30, 27/28*
U.S. Cl. 350—411 12 Claims



7. A dual focus optical system for causing the images of first and second objects separate from each other on the optical axis to be formed on the same image plane at the same magnification, comprising:

an objective lens having an image side focal Plane for converging a first light ray and a second light ray, said first light ray forming an image of said first object and said second light ray forming an image of said second object;

a diverging element provided between said image plane and said objective lens for causing the second light ray to diverge relative to the first light ray; and

a converging element provided between said diverging element and said objective lens for causing the second light ray to converge relative to the first light ray, said converging element being spaced apart from said diverging element;

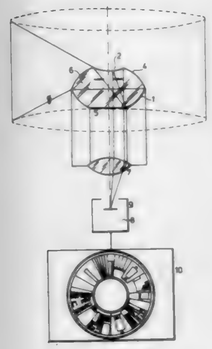
the optical characteristics and positions of said diverging element and said converging element causing said second light to intersect with said first light ray at the object side of said converging element at a position of intersection that is coincident with said image side focal plane of said objective lens.

4,566,763

PANORAMIC IMAGING BLOCK FOR THREE-DIMENSIONAL SPACE

Pál Greguss, Budapest, Hungary, assignor to Budapesti Muszaki Egyetem, Budapest, Hungary

Filed Jan. 30, 1984, Ser. No. 574,902
Claims priority, application Hungary, Feb. 8, 1983, 434/83
Int. Cl.⁴ G02B *13/06, 17/00*
U.S. Cl. 350—441 **5 Claims**



1. Panoramic imaging block for three-dimensional space based on flat cylindrical perspective, having reflective and refractive surfaces to be described with a mathematical function, said imaging block comprising at least four surfaces for influencing the propagation of waves, said surfaces are formed as reflective surfaces and refractive surfaces of equal number for producing an annular image from the approximately cylinder-symmetrical space-part around the concentric-symmerical axis of the imaging block, wherein said reflective surfaces are aspherical surfaces which can be described with the mathematical function $x=y^2/4f$, wherein:

x=the distance measured from predetermined base points of the reflective surfaces;

y=the distance of predetermined sursfacial points measured from the concentric axis of symmetry;

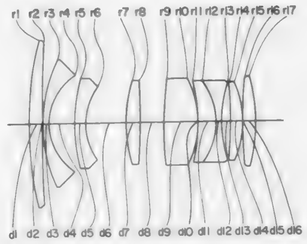
f=the focal distance of the aspheric reflective surfaces.

4,566,764

WIDE-ANGLE LENS

Hirohumi Matsuo, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1984, Ser. No. 597,458
Claims priority, application Japan, Apr. 6, 1983, 58-60617
Int. Cl.⁴ G02B *9/64*
U.S. Cl. 350—459 **6 Claims**



1. A retro-focus type wide-angle lens comprising nine component lenses which are numbered consecutively from one to nine when viewed from the object side and which satisfy the conditions below,

the first lens being a positive meniscus whose convex surface faces the object side,

the second and third lenses being negative menisci whose convex surfaces face the object side,

the fourth lens being a positive lens whose surface of a smaller radius of curvature faces the object side,

one of the fifth and sixth lenses being a double-convex lens whose surface of a smaller radius of curvature faces the image side, the other being a positive meniscus whose surface of a smaller radius of curvature faces the image side,

the seventh lens being a double-concave lens, the sixth and seventh lenses being cemented together,

the eighth lens being a positive meniscus whose surface of a smaller radius of curvature faces the image side,

the ninth lens being a double-convex lens whose surface of a smaller radius of curvature faces the image side,

whereby the wide-angle lens comprises eight sets of elements and satisfies the following conditions,

(1) $1.0f<|f_{1,2,3}|<1.3f$, $f_{1,2,3}<0$

(2) $1.1f<r_6/(n_3-1)<1.5f$

(3) $0.4f<d_6+d_7<0.7f$

(4) $(n_4+n_5)/2>1.65$

(5) $n_6<n_7$

(6) $0.6f<|r_{12}|<0.9f$, $r_{12}<0$

where f is the focal length of the whole system, $f_{1,2,3}$ is the composite focal length from the first lens to the third lens, n_i is the refractive index of the i-th lens with respect to d lines, r_i is the radius of curvature of the i-th surface, and d_i is the distance between the i-th surface and the (i+1)-th surface.

4,566,765

APPARATUS FOR SUMMING SEVERAL RING-SHAPE LASER BEAMS

Tateoki Miyauchi; Mikio Hongo; Katsuro Mizukoshi, all of Yokohama; Hiroshi Yamaguchi, Fujisawa, and Akira Shimase, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 13, 1983, Ser. No. 541,439
Claims priority, application Japan, Oct. 15, 1982, 57-179821
Int. Cl.⁴ G02B *5/08, 27/14;* B23K *9/00;* G01B *11/26*
U.S. Cl. 350—619 **15 Claims**

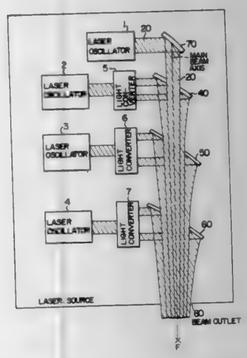
1. A laser source apparatus comprising:

n-laser oscillators of a predetermined type ($n \geqq 2$, an integer)

for generating laser beams to be aligned along a main beam axis;

(n−1) light converters coupled with (n−1) ones of said laser oscillators, each converting a laser beam generated from the corresponding laser oscillator into a substantially ring-shaped laser beam;

(n−1) reflecting mirrors disposed on the main beam axis at an angle and adapted to receive the ring-shaped laser beams from said (n−1) light converters, respectively,



each of said reflecting mirrors having a through-hole of dimensions of enough to transmit an entering laser beam;

a non-ring-shaped laser beam emitted from one laser oscillator other than said (n−1) laser oscillators being transmitted to travel on the center of said main beam axis,

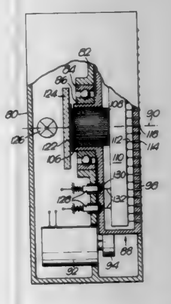
whereby the laser beams reflected by said reflecting mirrors and the non-ring-shaped beam emitted from said one laser oscillator are arranged coaxially of the main beam axis to produce a combined laser beam of on output power of the sum of said laser beams at an output end of the apparatus.

4,566,766

IMAGE TRANSMISSION DEVICES

Yehoshua Gur, Jerusalem, Israel, assignor to Gur Optics and Systems, Ltd., Jerusalem, Israel

Filed Apr. 29, 1983, Ser. No. 489,903
Claims priority, application Israel, Mar. 18, 1983, 68176
Int. Cl.⁴ G03B *21/28*
U.S. Cl. 353—122 **26 Claims**



1. A compact image transmission and modification device in which an object is mountable in the optical path between a light source and a first surface on which the light from said source, modulated by the different optical densities of said object, is capable of constituting a first image thereof, and on which first surface said first image is transformed into electrical signals which are transmitted to a second surface where said electrical signals are transformed into light signals capable of constituting a second, modified, image of said object, said device further comprising:

a base element incorporating said first surface and said second surface, and defining on said first surface at least one first array of locations having a first interlocation spacing, and on said second surface at least one second array of locations corresponding to said first array of locations and having a second interlocation spacing;

photodetector means at said locations of said first array for producing said electrical signals;

electrical-to-light signal-transforming means at said locations of said second array for producing said light signals;

a plurality of electrical-signal transmission means, each of said means electrically coupling a location of said first array with a corresponding location of said second array; and

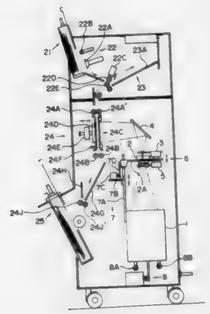
means for imparting to said base element a continuous rotary movement about a rotation axis defined therein, to cause said first array to scan said first image, wherein the image modification produced by said device is substantially a function of the ratio between said first interlocation spacing and said second interlocation spacing.

4,566,767

MULTIPLE IMAGE TYPE PHOTOGRAPHING APPARATUS

Masahide Akisada; Norio Ookawa, and Yuji Takamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 2, 1984, Ser. No. 596,171
Claims priority, application Japan, Apr. 1, 1983, 58-57048
Int. Cl.⁴ G03B *29/00*
U.S. Cl. 354—76 **7 Claims**



1. A multiple image photographing apparatus comprising:

a picture displaying device for displaying an image to be photographed;

a projecting optical system for forming the image of a picture displayed on said picture displaying device on a film sheet; and

a film conveying mechanism for conveying film sheets from storing means to a photographing position;

a mirror arranged on an optical axis of said projecting optical system and a magnification changing auxiliary lens selectively movable into alignment with said optical axis;

means for moving said picture displaying device in a horizontal direction through a distance determined in accordance with a selected photographing magnification;

means for moving said film conveying mechanism to move said film at said photographing position in a vertical direction through a distance determined in accordance with said selected photographing magnification;

means for selectively positioning said lens in alignment with or away from said optical axis in accordance with said

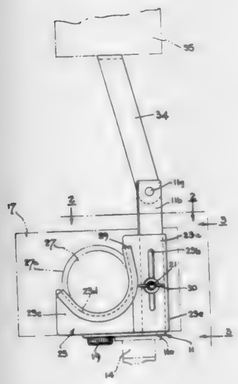
selected photographing magnification, and means for masking said film sheet at said photographing position with a mask size determined in accordance with said selected photographing magnification.

4,566,768

MOUNT FOR SUPPORTING CAMERA HAVING ELONGATED LENS

Charles L. Bosdet, 310 S. Prospect, #6, Redondo Beach, Calif. 90277

Filed Oct. 24, 1983, Ser. No. 544,737
Int. Cl.⁴ G03B *17/12, 17/56*
U.S. Cl. 354—81 **8 Claims**



1. A camera mount for supporting a camera having an elongated barrel-shaped lens on a stand comprising
an L-shaped bracket having first and second arms substantially at right angles to each other,
means for removably attaching said first arm to said stand,
means for removably and adjustably attaching the body of the camera to said first arm at a selected position therealong,
a lens support bracket member having first and second portions, said second portion having an arcuate cutout formed therein,
means for removably and adjustably attaching said lens support bracket to said second arm at a selected position along the first portion thereof,
resilient liner means along the edge of said arcuate cutout,
the barrel of said lens being aligned with said arcuate cut out and the end portion of said barrel and being seated in said arcuate cutout against said liner means.

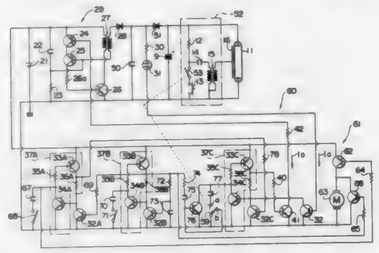
4,566,769

POWER SUPPLY UNIT FOR ELECTRONIC FLASH

Akira Inoue, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1983, Ser. No. 535,027
Claims priority, application Japan, Dec. 29, 1982, 57-229859; Feb. 15, 1983, 58-023626
Int. Cl.⁴ G03B *1/18, 15/05*
U.S. Cl. 354—145.1 **2 Claims**

1. A power supply unit for electronic flash, comprising:
a converter for converting an output from a low voltage output source to a high d.c. voltage;
a main discharge capacitor adapted to be charged by an the d.c. output from the converter;
means for detecting when the main discharge capacitor has been charged to a given voltage;
a manual main switch for starting the converter;
a converter driving latch circuit activated by an operation of the main switch to deliver a drive signal to the converter so that the converter may charge the main discharge capacitor and deactivated by a signal from the detecting means to cease to drive the converter
a film winding initiate switch which is mechanically interlocked with a completion of a shutter operation;
a winding latch circuit activated by an operation of the film winding initiate switch to deactivate the converter driving latch circuit and to deliver a drive signal to a film winding motor;
a winding complete switch which is mechanically interlocked with a completion of a film winding operation;



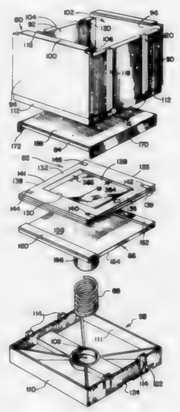
a brake latch circuit activated by an operation of the winding complete switch to deactivate the winding latch circuit and to deliver a brake signal to the film winding motor;
means for supplying a start signal to the converter driving latch circuit which activates the latter circuit when initiating the operation of the brake latch circuit; and
means for deactivating the brake latch circuit at a given time interval after the initiation of operation of the brake latch circuit.

4,566,770

MOUNT FOR TRANSPARENCY FILM FRAME

Frank M. Czumak, Salem, N.H., and Joseph H. Wright, Andover, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 28, 1984, Ser. No. 675,651
Int. Cl.⁴ G03B *17/26;* **G03D** *5/06*
U.S. Cl. 354—276 **10 Claims**



1. A mount for supporting a section of unexposed self-developing type photographic film, said mount comprising:

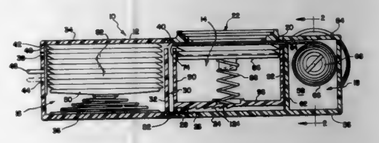
a substantially rigid member having a leading end, a trailing end, and front and rear surfaces;
first means defining an exposure aperture in said member, said first means including first and second surfaces which are parallel with said leading and trailing ends, respectively, said first and second surfaces being inclined outwardly from each other as each of said surfaces extends from said rear surface to said front surface;
second means defining a recessed area in said rear surface, said recessed area including a first area for supporting a section of self-developing type photographic film in alignment with said exposure aperture, and a second area which extends around the periphery of said first area, said first area being located closer to said rear surface than is said second area so as to define a means for receiving liquid which may be expressed outwardly from the edges of the section of film during its processing; and
means formed in said leading end of said member for engaging and deflecting a support of a roller, having a length substantially equal to the width of said exposure aperture, so as to cause the roller to move initially into engagement with said member at said front surface at a location before or at said first surface as said member is moved leading edge first during processing of the film in a processor.

4,566,771

PHOTOGRAPHIC FILM ASSEMBLAGE

Joseph H. Wright, No. Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 28, 1984, Ser. No. 675,857
Int. Cl.⁴ G03B *17/26*
U.S. Cl. 354—283 **8 Claims**



1. A photographic film assemblage comprising:
a stack of individual elements including a plurality of film units and a dark slide for protecting the uppermost film unit from premature exposure to ambient light; and
a housing for enclosing said stack, said housing including an exposure aperture through which image bearing light is adapted to travel during exposure of a film unit, an egress through which said elements are adapted to be sequentially moved to the exterior of said housing, and an ingress through which a film advancing member is adapted to pass during loading of said film assemblage into an exposure chamber so as to engage and progressively move said dark slide through said egress while simultaneously progressively uncovering said uppermost film unit; and
means on said housing adapted to cooperate with a member in the exposure chamber for preventing premature withdrawal of said film assemblage from the exposure chamber during its loading.

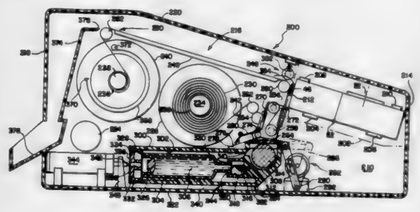
4,566,772

FILM PROCESSOR FOR PREMOUNTED TRANSPARENCY FRAMES

Donald J. Sulesky, Arlington, and Joseph H. Wright, No. Andover, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 28, 1984, Ser. No. 675,856
Int. Cl.⁴ G03D *5/06*
U.S. Cl. 354—303 **11 Claims**

1. Apparatus for processing exposed premounted transparency frames so as to produce visible images within the frames, said apparatus comprising:
means for defining a support for receiving a container having therein at least one exposed premounted transparency frame;
first means including a supply reel containing a length of flexible sheet material;
second means including a take-up reel upon which said flexible sheet material is adapted to be wound after its use in processing exposed premounted transparency frames;
a processing liquid applicator for applying a coating of processing liquid to a section of said flexible sheet material;
a laminating station to which an exposed premounted transparency frame is adapted to be moved from the container and into engagement with said coated section;



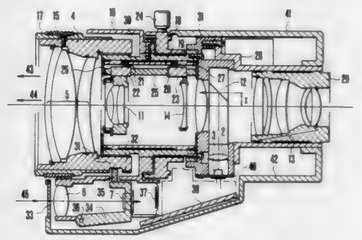
a stripping station at which said coated section is removed from the exposed premounted transparency frame;
means for driving said take-up reel in a first direction so as to move said coated section of said flexible sheet material from said processing liquid applicator, into engagement with the exposed premounted transparency frame at said laminating station, and then toward said stripping station and said take-up reel; and
said second means being adapted to be driven in a second direction for stripping said coated section of said sheet material from the exposed premounted transparency frame after a period of time sufficient to initiate the formation of a visible image within the premounted transparency frame while simultaneously directing the latter toward a station at which it may be retrieved.

4,566,773

FOCUS DETECTING DEVICE

Naoya Kaneda, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1984, Ser. No. 622,686
Claims priority, application Japan, Jun. 24, 1983, 58-96702[U]
Int. Cl.⁴ G03B *3/00*
U.S. Cl. 354—403 **4 Claims**



1. A lens mounting comprising:
(a) a taking lens including a focusing lens and a lens holder for said taking lens;

(b) light emitting means having a light emitting element housed within said lens holder and a reflection mirror for reflecting the light beam projected from said light emitting element toward an object to be photographed, wherein said reflection mirror is placed at a position opposing said light emitting element, sandwiching the optical axis of said focusing lens therebetween, and the optical axis of projected light beam, after being reflected, is offset from the optical axis of the focusing lens; and

(c) means for receiving a reflected light beam which has also been reflected by the object, said light receiving means being placed at a position at the outside of an effective diameter of said taking lens and at a side of the optical axis of said taking lens at which said light emitting element is placed.

4,566,774

AUTOMATIC EXPOSURE CAMERA

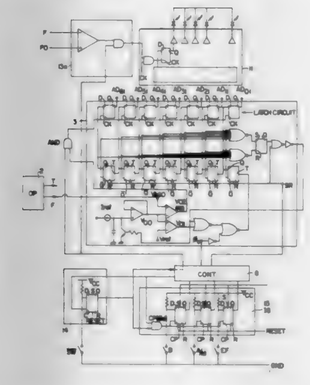
Kazuo Shiozawa, and Kijiro Suzuki, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 484,296, Apr. 15, 1983, abandoned, which is a continuation of Ser. No. 267,389, May 26, 1981, abandoned. This application May 17, 1984, Ser. No. 611,377

Claims priority, application Japan, May 27, 1980, 55-70603

Int. Cl.⁴ G03B *17/18*

U.S. Cl. 354—413 **2 Claims**



1. In an automatic exposure camera which includes a lens having an open aperture value associated therewith, means for detecting the brightness of light reflected from a subject to be photographed and for generating an optimum aperture value for the photographing operation in accordance therewith, a circuit for controlling the photographing operation in accordance with the optimum aperture value generated by said means and having a plurality of inputs thereto, and an AE locking circuit actuatable prior to a photographing operation to cause said circuit to control a subsequent photographing operation in accordance with the optimum aperture value generated by said means on actuation of said AE locking circuit by causing said control circuit to be blocked against responding to changes in the plural inputs thereto subsequent to actuation of said AE locking circuit and until completion of a subsequent photographing operation, the improvement comprising:

warning means for comparing at least the optimum aperture value and the open aperture value and for outputting a warning signal in accordance with said comparison when the detected light reflected from the subject is either too low or too bright for automatic exposure photography,

said AE locking circuit being connected to said warning means to inhibit the outputting of said warning signal when the AE locking circuit is actuated so as to thereby prevent presentation of a false light level warning during use of the AE locking circuit.

2. In an automatic exposure camera in accordance with claim 1, said plural inputs to the control circuit including inputs indicative of user-specified operating modes, said user-operating modes including a self-timing shutter release feature, a flash exposure feature, and switching between automatic and manual operating modes, whereby the control circuit is rendered unreponsive to changes in said user-specified operating modes on actuation of the AE locking circuit.

4,566,775

EXPOSURE CONTROL APPARATUS BASED ON A MULTIMETERING SYSTEM

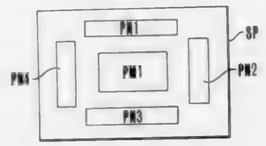
Tokuichi Tsunekawa, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

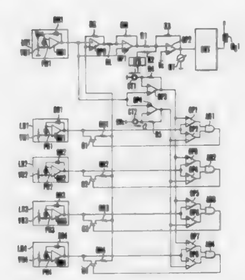
Continuation of Ser. No. 513,153, Jul. 13, 1983. This application May 21, 1985, Ser. No. 736,540

Claims priority, application Japan, Jul. 16, 1982, 57-124183; Jul. 16, 1982, 57-124184; Jul. 22, 1982, 57-127953

Int. Cl.⁴ G03B *7/08*

U.S. Cl. 354—432 **2 Claims**





1. A light metering system for a camera including:

(a) first light metering means for measuring the central portion of an object, said means generating an electrical signal corresponding to the brightness of the central portion of the object;

(b) a plurality of second light metering means for metering brightness of the surrounding portion of the object, each of said second light metering means generating an electrical signal corresponding to the brightness of the surrounding portion of the object;

(c) computing means for computing an output of said first light metering means and outputs of said second light metering means;

(d) exposure control means for controlling the amount of exposure in accordance with an output of said computing means;

(e) comparison means for comparing the outputs of the first light metering means with those of the second light metering means; and

(f) prevention means for preventing the output of each of said second light metering means from being added to said computing means, said prevention means preventing the

operation of one or more of said second light metering means whose output is greater than a predetermined difference from the output of the first light metering means on the basis of the signal from the comparison means.

4,566,776

MAGNETIC TONER DEVELOPING DEVICE

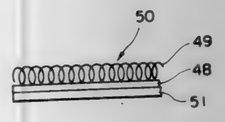
Shiroh Kondoh, Sagamihara, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Mar. 31, 1983, Ser. No. 481,068

Claims priority, application Japan, Mar. 31, 1982, 57-50978; Mar. 31, 1982, 57-50979

Int. Cl.⁴ G03G *15/09*

U.S. Cl. 355—3 DD **16 Claims**



1. A device for developing an electrophotographic latent image formed on an imaging surface using electrically insulating and magnetically attractable toner particles, comprising:

carrier means for carrying thereon said toner particles, said carrier means being driven to move along a predetermined path which passes through a developing region where said latent image is developed by said toner particles carried on said carrier means;

means for producing a magnetic field causing said toner particles to be attracted to said carrier means; and

film forming means for forming a film of said toner particles on said carrier means before said carrier means enters into said developing region, said film forming means including a doctor blade which is resiliently pressed against said carrier means and said doctor blade being provided at its forward end with an edge portion having an inclined face opposite to said carrier means thereby forming a wedge shaped entrance section having an angle in the range of 15°±15° between said inclined end face and said carrier means convergent in the direction of movement of said carrier means.

4,566,777

PROCESS KIT FOR IMAGE FORMING APPARATUS

Haruhisa Honda; Shigeyoshi Onoda, both of Yokohama, and Fumio Nishino, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1983, Ser. No. 523,365

Claims priority, application Japan, Aug. 23, 1982, 57-145803; Aug. 23, 1982, 57-145804

Int. Cl.⁴ G03G *21/00*

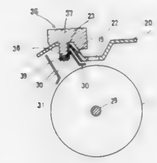
U.S. Cl. 355—3 R **16 Claims**

1. A process kit detachably mountable into an image forming apparatus, comprising:

process means for image formation, said process means including corona discharging means or the like having a first opening opposed to a surface to be subjected to the corona discharging operation;

a casing for containing said process means as a unit, said casing being provided with means defining a casing opening along said corona discharging means at a position different from that of said first opening of said corona discharging means, wherein said means defining said casing opening is for allowing a cleaning device access to said corona discharging means and for allowing the cleaning device to move along said corona discharging means to effect a cleaning of said corona discharging means; and





a cover movable between a first position for covering said casing opening and a second position wherein said cover is retracted from said first position.

4,566,778

PRESSURE FIXING DEVICE

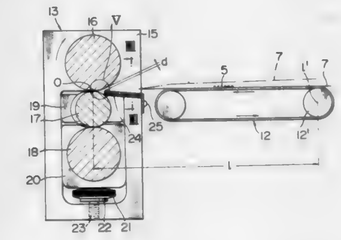
Yoshitaka Sasaki, Kumagaya, Japan, assignor to Hitachi Metals, Ltd., Japan

Filed Apr. 15, 1985, Ser. No. 485,510

Claims priority, application Japan, Apr. 20, 1982, 57-66128; Aug. 4, 1982, 57-135903

Int. Cl.⁴ G03G *15/20*

U.S. Cl. 355—3 FU **8 Claims**



1. In a pressure fixing device having

at least a pair of fixing rolls each having peripheral velocity V_1 and maintained in a pressing engagement with each other such that their axes cross each other at a small angle θ_1 to allow a supporter supporting a toner image thereon to move in a direction therebetween at a velocity V_2, one of the fixing rolls contacting and fixing the toner image on the supporter during movement of the supporter between the rolls; and

a guide member located anterior to the fixing rolls with respect to the direction of movement of the supporter and having a forward end located in spaced juxtaposed relation to peripheral surfaces of the fixing rolls;

wherein the improvement comprises that:

the peripheral velocity V_1 of the fixing rolls is set such that $V_2 \geqq V_1$ and the ratio V_1/V_2 is above about 0.95;

A guide member is arranged such that a gap between the forward end of the guide member and the surface of that one of the fixing rolls disposed to contact the toner image is of a dimension about 5–20 times greater than the thickness of the supporter before fixing of the toner image is

effected, said gap dimension occurring at least at a central portion of the length of the fixing rolls; and

a line of contact between the fixing rolls is inclined at a small angle θ' with respect to a straight line perpendicular to the direction of movement of the supporter.

4,566,779

REPRODUCING MACHINE HAVING A REMOVABLE PROCESS UNIT

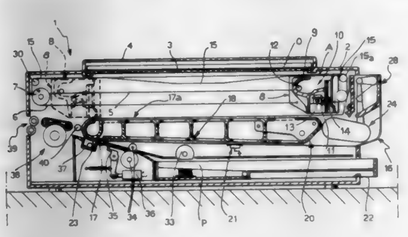
Giuseppe Coli, Pavone, and Luciano Rattin, Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Feb. 6, 1984, Ser. No. 577,357

Claims priority, application Italy, Feb. 10, 1983, 67147 A/83

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 R **3 Claims**



1. A reproduction machine to reproduce an original on a substrate, comprising:

a structural housing,

means in said housing for supporting said original, a scanning device for optically scanning said original, a process unit including a photoconductive member, a toner supply means and a developing device, said process unit being conditioned by said scanning device for forming a latent image of said original on said photoconductive member,

said developing device carrying the toner supplied by said supplying means to develop said latent image, wherein the improvement includes a cartridge for supporting said process unit including a support structure for supporting said photoconductive member in a closed loop arrangement therearound, having a substantially flattened form and upper and lower faces rigidly connected to and parallel to each other and to said original, said photoconductive member forming over said upper face a planar surface on which said latent image is formed,

said structure also comprising drive means for advancing said member at one end of said flattened structure and a resilient channel-shaped portion integral with the structure and placed opposite with respect to said driving means to tension said member around said structure and means for removably mounting said cartridge in said housing together with said process unit so that it can be replaced when said supply means has exhausted the toner.

4,566,780

SHELL-TYPE ELECTROSTATIC COPYING APPARATUS

Hiroshi Kajita, Kobe, and Tadanobu Nakajima, Sakurai, both of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Feb. 7, 1984, Ser. No. 577,916

Claims priority, application Japan, Feb. 21, 1983, 58-26283

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 R **8 Claims**

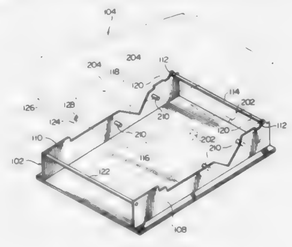
1. A shell-type electrostatic copying apparatus comprising a lower supporting frame, an upper supporting frame mounted for free pivotal movement about a pivot axis extending in the front-rear direction of said apparatus between an open position and a closed position, said upper supporting frame having a vertical front base plate and a vertical rear base plate spaced from each other in said front-rear direction, and a unit detachably mounted on the upper supporting frame, said unit including a unit frame having a front wall and a rear wall spaced from each other in said front-rear direction and a rotating drum rotatably mounted on the unit frame;

a provisional unit placing means provided on the lower supporting frame for supporting the unit frame of said unit for free movement over a predetermined range in said front-rear direction;

one of the front wall of the unit frame and the vertical front base plate of the upper supporting frame having formed therein at least two laterally spaced engaging openings, and the other of the front wall of the unit frame and the vertical front base plate of the upper supporting frame having formed therein at least two laterally spaced engaging projections, and one of the rear wall of the unit frame and the vertical rear base plate of the upper supporting frame having formed therein at least two laterally spaced engaging projections and the other of the rear wall of the unit frame and the vertical rear base plate of the upper supporting frame having formed therein at least two laterally spaced engaging openings, and

a restraining means for releasably restraining the movement of the unit frame in said front-rear direction with respect to the upper supporting frame,

when the unit frame is placed at a first predetermined position on the provisional unit placing means and the upper supporting frame is pivoted from the open position to the closed position, the engaging openings formed in said one of the front wall of the unit frame and the vertical front



base plate of the upper supporting frame are brought into alignment in said front-rear direction with the engaging projections formed in said other of the front wall of the unit frame and the vertical front base plate of the upper supporting frame and the engaging projections formed in said one of the rear wall of the unit frame and the vertical rear base plate of the upper supporting frame are brought into alignment in said front-rear direction with the engaging openings formed in said other of the rear wall of the unit frame and the vertical rear base plate of the upper supporting frame,

when the unit frame is moved rearwardly or frontwardly from said first predetermined position to a mounting position, the engaging openings formed in said one of the front wall of the unit frame and the vertical front base plate of the upper supporting frame are engaged with the engaging projections formed in said other on the front wall of the unit frame and the vertical front base plate of the upper supporting frame and the engaging projections formed in said one of the rear wall of the unit frame and the vertical rear base plate of the upper supporting frame are engaged with the engaging openings formed in said other of the rear wall of the unit frame and the vertical rear base plate of the upper supporting frame,

when thereafter the movement of the unit frame in said front-rear direction with respect to the upper supporting frame is releasably restrained by the restraining means, the unit is detachably mounted on the upper supporting frame.

4,566,781

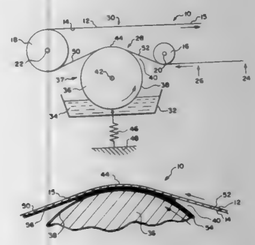
METHOD OF APPARATUS FOR LIQUID DEVELOPING OF ELECTROSTATIC IMAGES IN AN ELECTROPHOTOGRAPHIC IMAGING SYSTEM INCLUDING A LOOPED IMAGE CARRIER

Manfred R. Kuehnle, New London, N.H., assignor to Coulter Systems Corporation, Bedford, Mass.

Continuation-in-part of Ser. No. 328,809, Dec. 9, 1981, Pat. No. 4,410,260. This application Jul. 1, 1983, Ser. No. 510,281

Int. Cl.⁴ G03G *15/10*

U.S. Cl. 355—10 **8 Claims**



1. A method of toning the latent image formed on the exterior of a looped electrophotographic belt having a photoconductive layer on its exterior surface, said belt extending between and looped around a plurality of rollers supporting the same including two spaced apart rollers, the belt moving in a reach between the two spaced apart rollers which would define a flat tangential plane if passed directly between the two rollers without being disturbed, in which the latent image is formed on the belt and appears on the exterior surface of said reach and is adapted to pass along said reach toward one of the two spaced apart support rollers, there being a toning station adjacent said reach and located between the two spaced apart support rollers, the latent image being required to pass through said toning station before passing around said one support roller, said method comprising:

A. providing a sump at said toning station, said sump containing a body of liquid toner material and a resiliently biased toning roller having its axis parallel with the axes of said support rollers, one portion of said toning roller being engaged in said body of liquid toner material,

B. spreading the spaced apart rollers and also pressing the toning roller while still in said body of liquid toner material toward said reach to such an extent that a second portion of said toning roller circumferentially spaced from said one portion intrudes past said plane inwardly of the loop and engages said belt to establish an inward bow offset from said plane defining a nip and a free section of the belt providing reach portions of said belt extending between said second portion of said toning roller and each of said support rollers, the reach portions being under tension and free of said rollers, a substantial area of said reach being so engaged with an arcuate segment of said second portion of said toning roller at a wrap angle between 15° and 110° relative to the arcuate segment,

C. driving one of said plurality of rollers to cause movement of said belt to bring the latent image into said toning station and

D. rotating the toning roller at a speed which provides a circumferential movement when engaged with the belt that is at least equal to the movement of the belt, such toning roller acting to pick up onto said one portion of its surface toner material from said body bringing it into the nip between the toning roller and the belt as the belt engages said second portion of said toning roller defining an entrance to said nip, the entrance having a wedge-shaped configuration leading to the nip whereby to apply a gradual force to the toner carried by the toner roller into the entrance leading toward the nip before squeeze thereof is initiated to develop the latent image primarily within said entrance as the belt passes through the toning station.

4,566,782

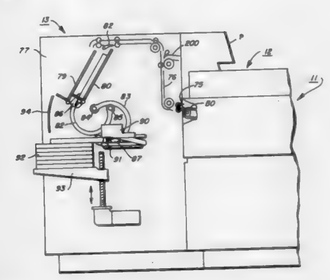
VERY HIGH SPEED DUPLICATOR WITH FINISHING FUNCTION USING DUAL COPY SET TRANSPORTS

James E. Britt, Penfield; Kenneth W. Laskowski, Pittsford; Jeffrey L. Sisson, Macedon, all of N.Y., and Stephen A. Rinehart, Vienna, Va., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 22, 1983, Ser. No. 564,584

Int. Cl.⁴ G03G *15/00*; B65H *39/10*

U.S. Cl. 355—14 SH **12 Claims**



1. In a reproduction system having a copy sheet processor for reproducing information from document sheets onto copy sheets and means for producing the information in the form of an individual light image onto one or both sides of each copy sheet, the improvement including:

means for effecting the production of two successive light images of a side of each document sheet whereby the copy sheet processor produces an output of successive duplicate copy sheets,

a pair of sheet collecting trays arranged to receive copy sheets from the processor and to collate the same into sets of copies of different images,

means for transporting the copy sheet output of the processor and directing the same to said collecting trays alternately, and

a finishing apparatus adapted to receive the collated sets of copy sheets from said collecting trays alternately in timed sequence relative to the light images being reproduced and to bind the sets.

4,566,783

FIXING DEVICE

Peter P. Schwierz; Adolf Rebhan, both of Wiesbaden, and Roland Moraw, Wiesbaden-Naurod, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,424

Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317418

Int. Cl.⁴ G03G *15/20*

U.S. Cl. 355—14 FU **11 Claims**

1. A device for thermally fixing a toner image developed on a copying sheet with liquid developer in a copying apparatus, comprising:

a curved heating plate;

a guide roller disposed such that it guides the copy sheet carrying the toner image along the surface of said heating plate;

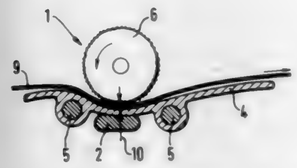
a temperature controlled, electric main heating means which is switched on when the copying process begins;

an electric standby heating means which maintains the heating plate at a constant temperature during standstill of the

copying apparatus, wherein both of said means are in contact with the heating plate; and

a control circuit;

wherein the standby heating means is connected to the supply voltage by a relay circuit and said relay circuit can be actuated by means of a main switch of the copying apparatus; and



wherein the relay circuit includes a biopolar relay for connecting the standby heating means to the supply voltage and the bipolar relay includes a low-voltage contactor with a self-holding contact as an operating contact and with a rest contact which remains closed until opened by the actuated low voltage contactor.

4,566,784

PHOTOGRAPHIC ROLLER COPYING APPARATUS WITH A DEVICE FOR THREADING A NEW PAPER TAPE

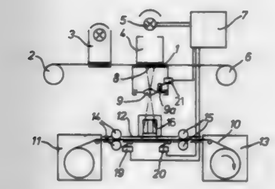
Wilhelm Nitsch, Munich, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 22, 1984, Ser. No. 663,992

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3339975

Int. Cl.⁴ G03B *27/58*

U.S. Cl. 355—72 **6 Claims**



1. A photographic copying apparatus for copying a roll film, comprising a printing station, platform for a negative, means for advancing a film over said printing station; drive means and guide means for advancing a tape copying material below said printing station; threading means for threading a starting end of a new tape of a copying material and provided on said drive and guide means, said threading means including a pivotable flap which periodically closes the tape in the region below said printing station when the advancement of the copying material is interrupted for duration of a threading process, said flap being formed with an opening for producing a test copy exposed in said opening in a contact process; and exposure control means for producing a test copy, said exposure control means exposing said test copy in said flap to empirically determined amounts of light when no negative is placed on said platform for a negative.

4,566,785

MAGAZINE FOR SUPPLYING A STRIP OF PHOTOGRAPHIC PRINTING PAPER

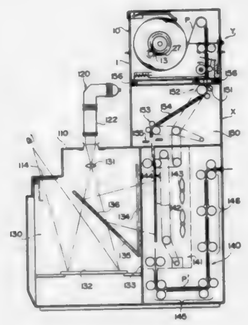
Toru Takenouchi, Wakayama, Japan, assignor to Noritsu Kenkyu Center Co., Ltd., Japan

Filed Mar. 21, 1984, Ser. No. 591,806

Claims priority, application Japan, Mar. 24, 1983, 58-41258[U]

Int. Cl.⁴ G03B *27/58*

U.S. Cl. 355—72 **11 Claims**



1. A detachable or replaceable magazine for supplying a strip of photographic printing paper to a photographic printer of photographic processor comprising;

a case constituting the magazine body,

a cover turnably mounted on the top of said case,

a printing paper delivering port formed on the case with a light shielding member displaceably fitted thereto,

a detachable or replaceable reel supporting member for supporting a reel wound with printing paper, said reel supporting member being adapted to rotate also in the direction of rewinding of the printing paper by the movement of a manual actuation member disposed outside the case,

a guide member for guiding movement of the printing paper strip while the side edges of said strip are fitted into vertically extending grooves formed on said guide member,

a printing paper delivering roller means including a pair of rollers and a ratchet wheel fixedly mounted on a roller shaft, said rollers being adapted to rotate to deliver the printing paper by the movement of a manual actuation member disposed outside the case and said ratchet wheel inhibits rotation of said roller in the reverse direction as required,

a printing paper detecting roller means for detecting the presence of printing paper and displacing a stopper plate in the direction of locking when no printing paper is present, said stopper plate serving to inhibit rotation of said printing paper delivering roller means in the reverse direction when it is brought into engagement with said ratchet wheel, and

an unlocking member adapted to be actuated in operative association with opening operation of the cover for unlocking said stopper plate from said ratchet wheel.

4,566,786

METHOD OF COPYING COLOR EXPOSURES

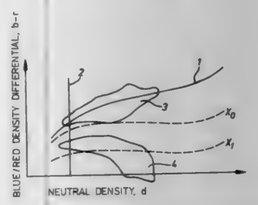
Manfred Fürsich, Taufkirchen; Helmut Treiber, Munich; Berthold Fergg, Taufkirchen; Günter Findeis, Sauerlach, and Wolfgang Zahn, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,323

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1984, 3412881

Int. Cl.⁴ G03B *27/32, 27/80*

U.S. Cl. 355—77 **17 Claims**



1. A method of copying color exposures comprising the steps of:

(a) measuring the densities of a multiplicity of regions of a selected exposure in each primary color;

(b) deriving a density differential for a selected region of a group of said regions by calculating the difference between the blue and red densities of said selected region, said selected region having a blue density which is a maximum for said group;

(c) classifying said selected exposure as to the probable type of illumination used to make the same by comparing a first value which includes said density differential with at least one reference value;

(d) assigning a correction factor to said selected exposure based on the result of the classifying step; and

(e) copying said selected exposure using said correction factor.

4,566,787

PHOTOCOPYING MACHINE

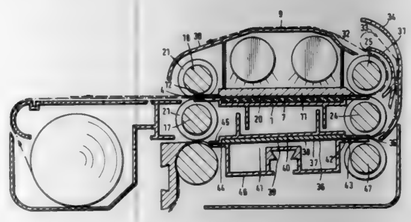
Georg Lüllau, Hofkamp 2, 2123 Bardowick, Fed. Rep. of Germany

Filed Jan. 18, 1984, Ser. No. 572,162

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1983, 3302475

Int. Cl.⁴ G03B *27/30*

U.S. Cl. 355—100 **10 Claims**



1. A photocopying machine comprising a plain rigid light-transmitting plate (**11**), a flexible cellular plate (**7**) spaced from the light-transmitting plate to form a guide gap (**20**) therebetween, the surfaces forming the guide gap consisting of extremely low-friction material, feed elements comprising a pair of driving rollers (**17, 18**) for feeding copy material to the guide gap, said driving rollers forming a roller gap (**19**) therebetween and having peripheral grooves (**22**) selectively enlarging portions of the roller gap, and guide gap extenders (**4, 12**) having tongues (**5, 13**) projecting through said roller gap at said grooves, said tongues on opposite sides of said guide gap being spaced sufficiently for introducing copy material to said roller gap, said cellular plate including a flexible film (**8**) and flexible supporting means urging said film toward the light-transmitting plate over its entire surface.

4,566,788

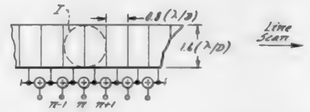
DETECTOR ARRAY

Carl J. Buczek, Encinitas, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Nov. 22, 1982, Ser. No. 443,844

Int. Cl.⁴ G01C *3/08;* **H01J** *40/14*

U.S. Cl. 356—4 **15 Claims**



1. A detector array for sensing electromagnetic radiation of a predetermined wavelength directed thereto by an associated optical system including:

a plurality of individual detector elements, in a contiguous arrangement, each producing an electrical charge in response to the amount of electromagnetic radiation being direct to said individual detector elements; and

means for summing the electrical charge present on each detector element with the charge present on its immediately adjacent detector element and providing a summed output signal for each pair of adjacent elements.

4,566,789

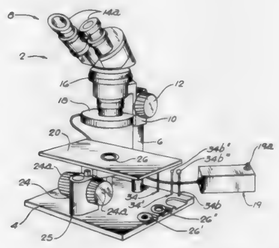
PANORAMIC VIEW BORE EXAMINING APPARATUS

William E. Weber, Highland Park, Ill., assignor to Radiation Equipment Company, Inc., Highland Park, Ill.

Filed Jul. 18, 1983, Ser. No. 514,574

Int. Cl.⁴ G01N *21/88, 21/01*

U.S. Cl. 356—241 **9 Claims**



1. In a bore examining apparatus for examining the interior walls of articles having a through hole or bore passing completely therethrough along a bore axis, said apparatus including:

support means for supporting an article to be examined, said support means allowing free access to both ends of the bore passing through said article;

a reflector support disposed on one side of said article support means;

a reflector mountable on said reflector support, said reflector having a size and said support being located so that when the reflector is supported on said support said reflecting surface thereof can be positioned within the through hole of the article supported on said platform;

image magnifying means disposed on the other side of said article support means and positioned to be directable along said bore axis into the other end of said bore, said magnifying means being movable toward and away from said support means to focus on the image of the walls of said bore produced by said reflector; and

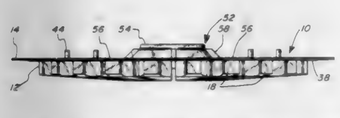
means for moving only said article support means relative to said reflector and said magnifying means to vary the field of view of said bore without varying the relative spacing of said reflector and magnifying means.

4,566,790

CUVETTE ARRAY

Richard M. Mandle, Pompton Lakes, N.J., assignor to Electro-Nucleonics, Inc., Fairfield, N.J.

Filed Apr. 15, 1983, Ser. No. 485,174
Int. Cl.⁴ G01N *1/10*
U.S. Cl. 356—246 **4 Claims**



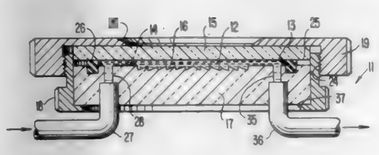
1. In a cuvette array for a centrifugal analyzer in which the array is formed from upper and lower discs of flexible thermoplastic material, the lower disc is formed with a plurality of compartments circumferentially spaced about a first central hub, and the upper disc is bonded to the outer periphery of the lower disc and closes off an outer peripheral portion of said compartments, the improvement wherein said upper disc is formed with a central portion that includes a second central hub positioned above said first central hub, and an intermediate web that bridges said second central hub to the outer peripheral portion of the upper disc so as to close off the inner peripheral portion of said compartments, and in which said second central hub is formed with indexing ribs thereon to engage corresponding channels in the lower disc of another cuvette array that is nested on top of the first-mentioned array, to restrain said arrays from relative rotation in the nested condition.

4,566,791

FLUID SAMPLE CELL COMPRISING FRESNEL SECTORS

Herbert Goldsmith, Rockville, Md., assignor to Pacific Scientific Company, Anaheim, Calif.

Filed Oct. 31, 1983, Ser. No. 547,239
Int. Cl.⁴ G01N *1/10, 21/00, 15/06*
U.S. Cl. 356—246 **10 Claims**



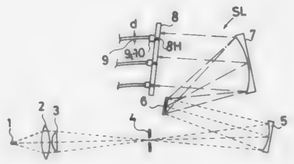
1. A fluid sample cell for the spectroscopic analysis of a fluid sample comprising a fluid-tight compartment for the containment of a fluid sample, said compartment being defined by a radiant energy transmissive top, a side wall and a bottom, wherein said bottom comprises a plurality of sectors of a Fresnel disc, whereby radiant energy passing through said compartment impinges upon at least one of said sectors and is specularly reflected from a reflecting surface of said sectors to respective focal points of said sectors.

4,566,792

MULTI-CHANNEL SPECTROPHOTOMETRIC MEASURING DEVICE

Jugoro Suzuki, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Feb. 4, 1983, Ser. No. 463,961
Int. Cl.⁴ G01J *3/18, 3/42*
U.S. Cl. 356—319 **4 Claims**



1. A multi-channel spectrophotometric measuring device comprising:

a source of white light,

a slit plate provided with a slit extending in the X direction,

an optical system disposed between said source of white light and said plate for converging the white light from said light source through said plate,

spectral diffraction means for dispersing the light that travels through said slit plate into a spectral band,

an apertured plate having a front face and rear face for receiving on said front face thereof said spectrum band,

an array of holes through said plate for the passage therethrough of substantially monochromatic light of certain wavelengths,

said array of holes including a plurality of rows of holes, the holes of each row being spaced apart in the X direction along substantially the same band of the spectrum for the passage of substantially monochromatic light of the same wavelength and the rows being spaced apart in the Y direction so that the holes of different rows permit passage of substantially monochromatic light of different wavelengths,

a plurality of optical fibers for transmitting each substantially monochromatic light of different wavelength, the incident ends of said fibers being detachably mounted onto said holes provided on said rear face of said apertured plate,

a sector having a front face and rear face arranged with said front face facing the light emitting ends of the plurality of optical fibers for selectively transmitting each monochromatic light of different wavelength,

a separate optical fiber arranged on the side of said rear face of said sector for transmitting the substantially monochromatic light,

a separate optical system disposed between said sector and said separate optical fiber for directing the substantially monochromatic light selectively transmitted through said sector towards said separate optical fiber,

a sample cell at the light emitting end of said separate optical fiber, and

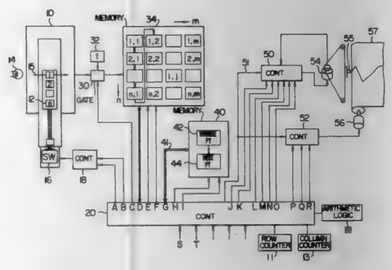
detector means for detecting the intensity of the light transmitted through said sample cell.

4,566,793

RECORDING APPARATUS FOR A SPECTROPHOTOMETER

Shigeo Tohyama, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 17, 1983, Ser. No. 552,762
Claims priority, application Japan, Nov. 17, 1982, 57-201752
Int. Cl.⁴ G01J *3/42*
U.S. Cl. 356—319 **7 Claims**



1. A spectrophotometer to draw time changes of a plurality of spectrophotometric data by one recording pen, comprising:

a plurality of sample cells for accommodating samples to be optically measured, each of said samples being repeatedly optically measured in a certain time interval;

a timer for providing a time when said sample is measured;

a first memory section for respectively memorizing each pair of said repetitive measured data and time;

a second memory section for memorizing data indicative of a source point of the movement of said pen and data representative of a destination point among each of said pairs memorized in said first memory section;

an arithmetic unit to calculate a difference between both measurement data for said destination point and source point and a time difference between said both measurement data and to provide an output of the calculation;

a controller for moving the pen in response to the output of said arithmetic unit; and

a controller for receiving the time difference from said arithmetic unit and for moving a recording sheet by an amount corresponding to the time difference synchronously with the movement of the pen by said controller after moving the recording sheet to a position corresponding to the previous measurement time for a currently measured sample with the pen in an up-state.

4,566,794

APPARATUS FOR INTERFERENCE FRINGE SHIFT SENSING

Joel G. Hanse, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 22, 1981, Ser. No. 256,631
Int. Cl.⁴ G01C *19/64*
U.S. Cl. 356—350 **1 Claim**

1. A fiber optic rate sensor comprising:

a source of radiation emitting at least one monochromatic electromagnetic wave;

an optical fiber wound around a defined input axis;

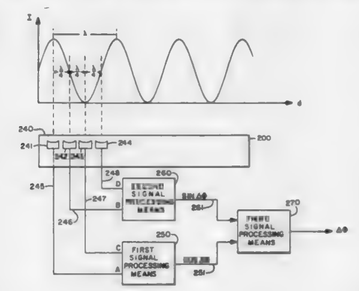
means for directing first and second portions of said wave to travel through said fiber in opposite directions and recombining said first and second portions after travel through said fiber so as to be capable of establishing an interference fringe pattern which varies in relation to rotation of said optical fiber;

detector means having at least first, second, third, and fourth detectors responsive to said interference fringe pattern for generating first, second, third, and fourth detector signals such that said first and second detector signals are substantially in phase quadrature to each other, said third and fourth detector signals are substantially in phase quadrature to each other, and said first and third detector signals are in opposite phase with each other; and

signal processing means having, first function means for providing an output signal indicative of the sum of said first and third detector signals,

second function means for providing an output signal indicative of the difference between said third and first detector signals,

third function means for providing an output signal indicative of the sum of said second and fourth detector signals,



fourth function means for providing an output signal indicative of the difference between said second and fourth detector signals,

fifth function means for providing an output signal indicative of the ratio of said output signals of said first and second funcion means, and

sixth function means for providing an output signal indicative of the ratio of said output signals of said third and fourth function means; and

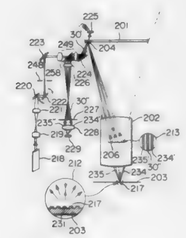
means for obtaining the arc tan value of the ratio of said fifth and sixth function means output signals thereby producing an output signal representative of the magnitude of movement of said interference fringe pattern movement.

4,566,795

ALIGNMENT APPARATUS

Toshio Matsuura, Koshigaya, and Kyoichi Suwa, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 348,716, Feb. 16, 1982, abandoned.
This application Mar. 6, 1984, Ser. No. 586,639
Claims priority, application Japan, Feb. 20, 1981, 56-22951
Int. Cl.⁴ G01B *11/27*
U.S. Cl. 356—400 **4 Claims**



1. An alignment apparatus for aligning a first substrate and a second substrate, comprising:

(a) first alignment mark means provided at a predetermined position on said first substrate and having a plurality of

short line segments arranged in a stripe pattern extended in a linear direction;

(b) second alignment mark means provided at a predetermined position on said second substrate and having a plurality of short line segments arranged in a stripe pattern extended in a linear direction;

(c) scanning means generating a scanning beam which scans said first alignment mark means along a scanning line having a predetermined angle with respect to said linear direction of said first alignment mark means and scans said second alignment mark means along a scanning line having a predetermined angle with respect to said linear direction of said second alignment mark means;

(d) means for receiving a part of said scanning beam divided by said first and second alignment mark means for form an output showing relative positional relation between said first and second alignment mark means;

(e) means responsive to said output showing relative positional relation to move at least one of said first and second substrates relative to the other; and

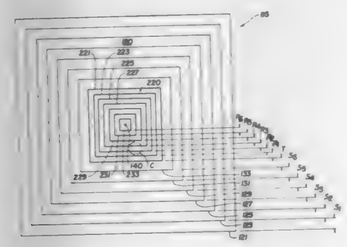
(f) an image-forming optical system disposed between said first end second substrates for projecting a pattern formed on said first substrate onto said second substrate, said scanning means projecting said scanning beam on said first substrate at a surface facing said image-forming optical system.

4,566,796

METHOD OF DETERMINING POSITION ON A WAFER

David H. Leebrick, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 24, 1983, Ser. No. 526,066
Int. Cl.⁴ G01B *11/00*; G01N *21/86*
U.S. Cl. 356—401 **19 Claims**



1. A method for determining relative position and direction on a wafer comprising:

providing a target pattern on said wafer, said target pattern including at least one series of concentric figures, each of said figures having a particular dimension such that the difference between such particular dimensions of each pair of adjacent figures may be represented by a unique magnitude;

scanning said target pattern so as to determine said particular dimension of a first figure and the corresponding particular dimension of a second adjacent figure; and

determining the sign and magnitude of the difference of said first and corresponding particular dimensions with respect to said first figure and providing signals indicative of the position of said first figure with respect to a reference point in said target pattern from said determined sign and magnitude.

6. A target pattern for acquiring positional data from a wafer comprising:

a first and a second concentric series of concentric geometric figures, each of said figures in each of said series being spaced from adjacent figures by a predetermined amount and having at least one dimension whose differences in magnitude, with respect to corresponding dimension of adjacent figures, represents unique values and increases from the inner to the outer pair of adjacent figures;

said differences in magnitude being repeated in corresponding pairs of both of said series such that said increase in said differences in magnitude is also repeated in both of said series; and

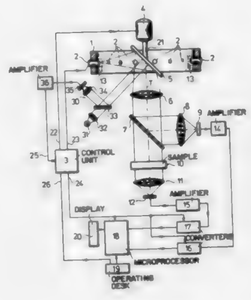
said spacing from adjacent figures being distinct between corresponding adjacent figures of each of said series.

4,566,797

SPECTROPHOTOMETER OPERATING AT DISCRETE WAVELENGTHS

Károly Kaffka; Béla Nádai; András Czabaffy, and Loránd Horváth, all of Budapest, Hungary, assignors to Kozponti Elelmiszeripari Kutato Intezet, Budapest, Hungary

Filed Jun. 9, 1983, Ser. No. 502,734
Claims priority, application Hungary, Jun. 9, 1982, 1869/82
Int. Cl.⁴ G01J *3/42*
U.S. Cl. 356—402 **7 Claims**



1. A spectrophotometer operating at discrete wavelengths comprising in combination

several radiation emitting diodes emitting substantially monochromatic radiations of different wavelengths,

a holder for supporting said diodes,

an optical arrangement for transmitting the radiations emitted by said diodes towards a sample to be tested,

means for changing the angular position of said optical arrangement thereby to transmit said radiation toward said sample successively,

means for operating said diodes corresponding to the angular position of said optical arrangement and providing operational data about the diodes,

a first radiation detector sensing the intensity of the radiation reflected or transmitted by the sample,

a beam splitter positioned before the sample in the path of the radiation beam transmitted towards the sample,

a second radiation detector sensing the intensity of the radiation diverted by the beam splitter,

a first analog-to-digital converter to produce a digital signal corresponding to the signal of the first radiation detector,

a second analog-to-digital converter to produce a digital signal corresponding to the signal of the second radiation detector,

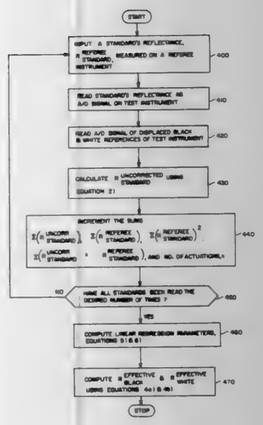
a data processing unit connected to the output of the first and second analog-to-digital converters, said unit computing spectrum data on the basis of the digital signals of said first and second analog-to-digital converters and said operational data.

4,566,798

METHOD FOR CALIBRATING A REFLECTOMETER CONTAINING BLACK AND WHITE REFERENCES DISPLACED FROM THE SAMPLE POSITION

Daniel D. Haas, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 10, 1983, Ser. No. 550,692
Int. Cl.⁴ G01N *21/55*; G01J *1/02*
U.S. Cl. 356—448 **3 Claims**



1. A method of calibrating a reflectometer containing a black reference and a white reference that are detected in a first location that is placed at a distance from the light source of the reflectometer that is optically different from the distance of the location of test elements from said light source when positioned for detection, said method featuring calibration factors representing the effective reflectances for each of said references which compensate for said optically different distances of such test elements and said black and white references,

said method comprising the steps of

(a) selecting a dark standard and a light standard;

(b) ascertaining, on a second reflectometer, the reflectance of the dark standard and the light standard;

(c) measuring an analog or digital signal for both of said standards at a distance from said light source that is optically the same as said test element distance location using said first reflectometer;

(d) calculating a linear relationship between the reflectances of step (b) and the signals of step (c);

(e) measuring on said first reflectometer an analog or digital signal for both of said references while in said first location;

(f) ascertaining the corresponding effective reflectances from said linear relationship, using said signals measured in step (e); and

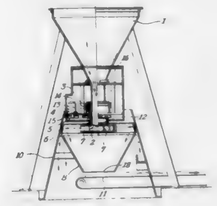
(g) calibrating said reflectometer using said effective reflectances as said calibration factors.

4,566,799

APPARATUS FOR ADJUSTING THE QUANTITY OF LIQUID DEPOSITED ON FINE GRANULAR MATERIALS AND METHOD OF PREPARING MORTAR OR CONCRETE

Yasuro Ito, 38-16, Numabukuro 4-chome, Nakano-ku, Tokyo, and Yoshiro Higuchi, Tokyo, both of Japan, assignors to Yasuro Ito and Taisei Corporation, both of Tokyo, Japan

Continuation of Ser. No. 468,294, Feb. 22, 1983, abandoned, which is a division of Ser. No. 134,210, Mar. 26, 1980, Pat. No. 4,384,787. This application Apr. 1, 1985, Ser. No. 717,593
Claims priority, application Japan, Jun. 28, 1979, 54-80807; Oct. 1, 1979, 54-126587; Oct. 29, 1979, 54-138645; Nov. 16, 1979, 54-147628
Int. Cl.⁴ B28C *7/00*
U.S. Cl. 366—1 **26 Claims**



1. An apparatus for adjusting the water content of fine aggregate comprising:

means for continuously supplying a quantity of fine aggregate having a quantity of water deposited on a surface thereof;

projecting means for imparting a velocity energy to the supplied fine aggregate, thereby projecting said fine aggregate in a predetermined direction or directions;

an impact body having a continuous surface with which the projected fine aggregate comes into collision to apply thereto an impact force stronger than the adhesive force of the water to said fine aggregate at the time of collision, thereby separating an excessive portion of said quantity of water deposited on the surface of said fine aggregate such that after collision said fine aggregate from which said excessive quantity of water has been removed is collected and said separated water is first deposited on said surface of said impact body and then discharged to the outside of said apparatus;

a receptacle for collecting said fine aggregate from which said quantity of water has been separated; and

a trough for receiving said separated water which flows down along said surface of said impact body.

4,566,800

SONIC DEVICE FOR EXTRACTING MINERALS FROM ORE

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Jan. 13, 1984, Ser. No. 570,394
Int. Cl.⁴ B01F *11/00*; B06B *1/16*
U.S. Cl. 366—118 **5 Claims**

1. A device for generating sonic energy for use in extracting minerals from ore placed in a liquid such as a leaching solution contained in a tank, and the like, said device being mounted in said tank, and comprising

a housing,

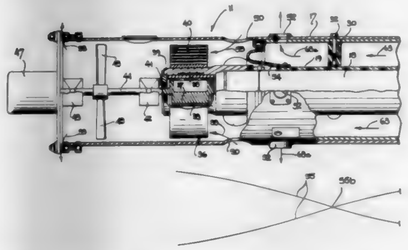
an elongated bar member,

means for supporting said bar member in said housing,

an orbiting mass oscillator attached to one end of said bar member, and

means for driving said oscillator at a frequency such as to set up resonant standing wave vibration of said bar member, said means for supporting said bar member in said housing

comprising a bore formed in the bottom end of said bar member along the longitudinal axis thereof, support means supported at one end thereof on said housing, said support means being fitted in said bore and in contact with said bar member solely at a point therealong where a node of said standing wave pattern appears, said support means comprising a support rod having cylindrical separator sleeves at the opposite ends thereof, said sleeve having a greater diameter than that of said support rod, receptacle means mounted on the bottom of said housing for receiving one of said sleeves, the other of said sleeve fitting snugly within an upper portion of the bore formed in said bar member, and cushioning means for cushioning said sleeves against said receptacle means and said bore and cushioned spoke means extending from said housing and in abutment against said bar member at at least one point therealong



where a node of the standing wave pattern appears for centering said bar member and preventing the rotation thereof.

3. A method for extracting minerals from ore comprising the steps of

feeding ore material mixed in a liquid to a container,

generating sonic energy with an orbiting mass oscillator,

coupling the sonic energy to one end of an elastic bar to resonantly vibrate said bar to effect a quadrature nutating standing wave vibration pattern therein,

said bar having a longitudinal bore formed therein, and being supported in a vertical orientation by means inserted in said bore, said bar being supported in gravity compression against said means inserted in said bore which means contacts said bar only at a node of the standing wave vibration pattern established therein.

4,566,801

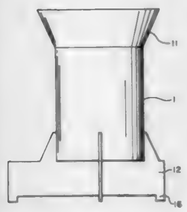
SUBMERSIBLE MIXER ALIGNABLE IN A HORIZONTAL OR VERTICAL MODE

Ronald N. Salzman, Rochester, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Oct. 18, 1984, Ser. No. 662,323

Int. Cl.[4] B01F *5/10*

U.S. Cl. 366—343 **8 Claims**



1. A submersible mixer which comprises a housing, an impeller rotatably mounted on said housing, a drive means for said impeller in said housing, a support for said housing, said support having a plurality of vanes at one end of said support defining a stand for aligning said housing with the axis of rotation of said impeller vertical, said support having an extension at the end of said support opposite to said vanes, said extension defining at least one point of support in a horizontal plane, said vanes defining at least two other points of support in said horizontal plane for aligning said housing with said axis of said impeller horizontal.

4,566,802

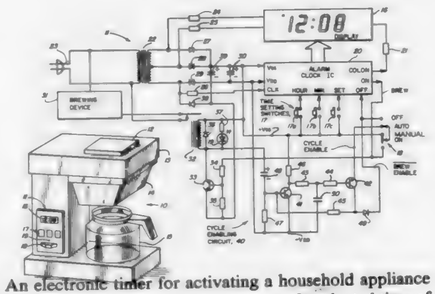
ELECTRONIC CYCLE TIMER FOR A HOUSEHOLD APPLIANCE

Gerald C. Koehler, Peru, Ill., assignor to Worldtronics International, Inc., Oglesby, Ill.

Filed Aug. 16, 1984, Ser. No. 641,789

Int. Cl.[4] A23F *0/00*

U.S. Cl. 368—9 **20 Claims**



1. An electronic timer for activating a household appliance for a limited duration upon the occurrence of a selected time of day, said timer having an integrated circuit including

(a) an internal clock registering the time of day and means for setting the registered time to the correct local time,

(b) an internal register storing a preset activation time and means for setting the activation time to a selected time, and

(c) means for generating an activation signal for said limited duration upon the coincidence of the time of day registered by the internal clock and the preset activation time when an activation enable signal is present,

wherein the improvement comprises means for preventing said household appliance from being activated on a daily basis in the absence of manual intervention including, in combination,

means for receiving from the user a cycle enable signal, and

cycle enabling means for generating the activation enable signal in response to the cycle enable signal, said cycle enabling means including a bistable circuit determining the logic state of the activation enable signal, wherein said bistable circuit is set upon the occurrence of the cycle enable signal being received from the user to generate an active activation enable signal, and said bistable circuit is automatically reset by said activation signal to generate an inactive activation enable signal thereby preventing said household appliance from being reactivated unless a cycle enable signal is thereafter received from the user.

4,566,803

POWER SOURCE OFF DELAY TIMER WITH LIQUID CRYSTAL DISPLAY

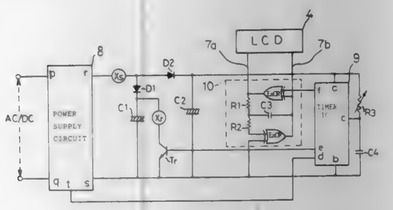
Tetuya Waniisi; Hiroshi Sato, both of Okayama, and Isao Nanba, Kurashiki, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Sep. 26, 1984, Ser. No. 654,490

Claims priority, application Japan, Sep. 27, 1983, 58-149161[U]

Int. Cl.[4] G04B *9/00;* **G04F** *8/00*

U.S. Cl. 368—66 **5 Claims**



1. A power source off delay timer, for generating an off delay output after passage of a determinate time delay period from when an input power source is switched off, comprising:

(a) a main body;

(b) a liquid crystal display mounted to said main body so as to display the operational condition of said timer; and

(c) a liquid crystal display drive unit for driving said liquid crystal display during the time that said power source is on and also during said determinate time delay period between the time instant at which said power source is switched off and the time instant at which said timer generates said off delay output.

4,566,804

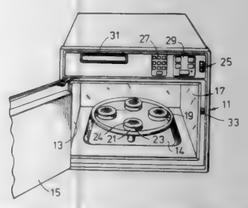
APPARATUSES, PROCESSES AND ARTICLES FOR CONTROLLABLY HEATING AND DRYING MATERIALS BY MICROWAVE RADIATION

Michael J. Collins, and Wyatt P. Hargett, Jr., both of Matthews, N.C., assignors to CEM Corporation, Matthews, N.C.

Filed Dec. 16, 1982, Ser. No. 450,198

Int. Cl.[4] G01N *25/00;* **G01G** *23/18*

U.S. Cl. 374—14 **9 Claims**



1. A process for analyzing a thermally sensitive material for its content of volatilizable component(s) without causing degradation of such material so as to cause removal of more than the volatilizable component(s) therefrom which comprises making a mixture of the thermally sensitive material to be analyzed and a compatible inert and thermally stable dispersant material by dispersing such material to be analyzed, in particulate or powder form, in such dispersant material, which is in particulate or powder form, placing the mixture of such materials on a movable support, at least a portion of which is microwave absorptive so that it is heated by microwave radiation and heats the thermally sensitive material being analyzed, and becomes microwave transmissive at a temperature below that at which the thermally sensitive material is degraded, weighing such mixture of thermally sensitive material and dispersant material, on or off the support, controllably heating such mixture of materials by microwave radiation to drive off the volatilizable component(s) without causing thermal degradation of the thermally sensitive material, and weighing the remaining mixture of materials, on or off the support, which mixture is that from which the volatilizable component(s) had been driven off.

4,566,805

DEVICE FOR DETERMINING AND CHECKING CONDITION STATE AND OTHER PARAMETERS OF A PRESSURE FLUID

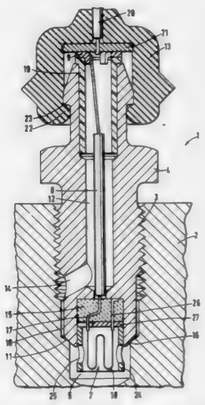
Hans-Christof Klein, Hattersheim, and Hans Hohmann, Fulda, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed May 10, 1984, Ser. No. 608,787

Claims priority, application Fed. Rep. of Germany, May 14, 1983, 3317638

Int. Cl.[4] G01N *25/08*

U.S. Cl. 374—16 **8 Claims**



1. A device for mounting a hydraulic pressure fluid condition measuring device in a hydraulic system of a vehicle comprising:

a body in the form of a bleeder screw adapted to be screwed into a component of the hydraulic system and including an axial bore defining a vent line, said bleeder screw including means for connecting said hydraulic system to said vent line when partially screwed into said component and for disconnecting said hydraulic system from said vent line when fully screwed into said component;

a first electrical contact element at an outermost end of said screw, said first contact element electrically insulated from said body and electrically coupled to said measuring device;

a second electrical contact in the form of a metallic disc within an electrically insulative, protective cap on the outermost end of said screw over said axial bore, said disc in electrical contact with said first contact and electrically coupled to an external lead extending through said cap;

said screw including means at an end opposite said outermost end thereof for mounting said measuring device in flow communication with said pressure fluid.

4,566,806

METHOD AND DEVICE FOR CONTROLLING THE CURING RATE OF CONCRETE

Dick DeBondt, No. 6, De Ruyterstraat, Rujssen, Netherlands

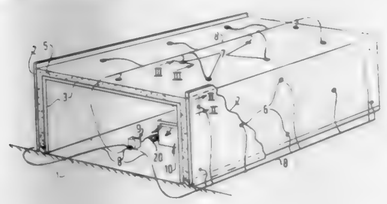
PCT No. PCT/NL82/00038, § 371 Date May 31, 1983, § 102(e) Date May 31, 1983, PCT Pub. No. WO83/01411, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 22, 1982, Ser. No. 504,044

Claims priority, application Netherlands, Oct. 23, 1981, 8104811

Int. Cl.⁴ G01N *3/26*

U.S. Cl. 374—53 **8 Claims**



1. A method of curing concrete to a desired value of cure accumulated over a specified period of time subsequent to pouring thereof, which desired value of cure would not be accumulated over said specified period of time under normal conditions, which comprises the steps of:

(a) controlling the temperature of the concrete over an initial period of time while the concrete progressively cures to an assessed degree of partial cure thereof which, when augmented by that additional curing calculated to occur by the end of said specified period of time on the basis of an expected temperature variation of the concrete in the absence of such control, will yield said desired value of cure; and

(b) monitoring further progressive curing of the concrete after said initial period of time and in the absence of said control by measuring temperature variation of the concrete and comparing it with said expected temperature variation to detect disparity between said further progressive curing and said additional curing as calculated, and further controlling the temperature of said concrete when such disparity is detected as would otherwise cause the concrete to accumulate a further progressive curing significantly different from said additional curing as calculated.

4,566,807

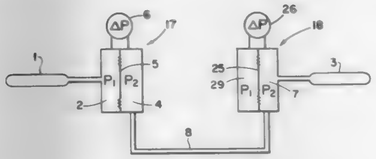
APPARATUS AND METHOD FOR ACCURATELY MEASURING TEMPERATURES AND TEMPERATURE DIFFERENCES

Johannes L. A. Koolen, Terneuzen, Netherlands, assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 9, 1984, Ser. No. 578,441

Int. Cl.⁴ G01K *3/00*

U.S. Cl. 374—112 **2 Claims**



1. An apparatus for accurately measuring differences in temperature, which comprises:

a first cell that comprises a bulb in fluid communication with a first chamber, the bulb and chamber contains a fluid (F_1), at least a portion of one wall of the first chamber defines a diaphragm, the side of said wall opposite to the first chamber provides at least a portion of the wall of a second chamber;

a means for measuring the difference in pressure between the first and second chambers of the first cell;

a second cell that comprises a bulb in fluid communication with a first chamber, the bulb and chamber contains a fluid (F_2), at least a portion of one wall of the first chamber defines a diaphragm, the side of said wall opposite to the first chamber provides at least a portion of the wall of a second chamber having a known pressure;

a means for measuring the difference in pressure between the first and second chambers of the second cell; and

the second chamber of the first cell is in fluid communication with the first chamber of the second cell.

4,566,808

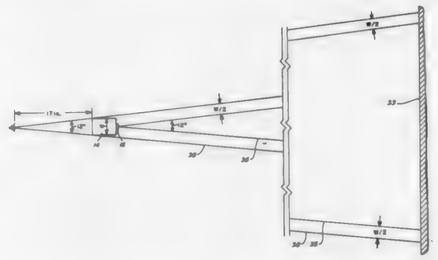
SCANNING RADIATION DETECTOR

Francesco Pompei, Wayland, and Shiraz Daya, Franklin, both of Mass., assignors to Exergen Corporation, Natick, Mass.

Filed Feb. 16, 1983, Ser. No. 466,789

Int. Cl.⁴ G01K *1/02;* **G01J** *5/10*

U.S. Cl. 374—124 **20 Claims**



15. A method of detecting radiation from a surface area comprising holding a radiation detector housing in the field of view between the user's eye and the surface area from which radiation is being detected, a predetermined transverse dimension of the housing across the line of sight in said field of view, with the housing held a predetermined distance within arm's length from the user's eye, defining a field of view which approximates the predetermined field of view of a radiation sensor centrally positioned relative to said transverse dimension at an end of the housing opposite to the user's eye, and detecting radiation from the surface area by display means of the radiation sensor.

4,566,809

INFRA-RED RADIATION TEMPERATURE MEASUREMENT OF A MOVING WIRE

Robert Arnaud, La Celle-Saint-Cloud, France, assignor to Mecilec, France

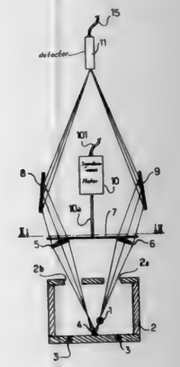
Continuation-in-part of Ser. No. 323,770, Nov. 20, 1981, abandoned. This application Feb. 13, 1984, Ser. No. 579,591

Claims priority, application France, Jan. 16, 1981, 81 00831

Int. Cl.⁴ G01J *5/10, 5/62*

U.S. Cl. 374—126 **4 Claims**

1. A process of measuring by infra-red thermometry means the temperature of a body, such as a wire, bar or the like, in lengthwise movement in a black background of a heated insulated high thermal conductive enclosure constituting a black body and emitting infra-red radiation, said process comprising the steps of: effecting a pair of optical emissive radiation paths through two spaced windows of the enclosure, one of said optical paths located in a portion of said body with said wire interrupting a first one of said paths and a zone of said black background encompassing said portion of the body, and another second path of said optical paths located in a zone of said black background equivalent to said zone encompassing said body; directing by a first and second reflective mirror means onto the sensitive surface of an infra-red detector the infra-red emissive radiation coming from said body and the zone of said black background encompassing it, and the infra-red emissive radiation coming from said equivalent zone of said black background only when there is no wire present in the black background body; successively interrupting with a notched disc said two infra-red radiations; processing with an electronic circuit the output signal of said infra-red detector representative of the temperature of said body with respect to the temperature of said zone of the black background, said electronic circuit delivering a positive, negative or zero output signal depending on whether said body is hotter or colder than, or at the same temperature as, said zone of black background; wherein said process further comprises the steps of effecting



each of said optical paths that first pass through said windows to then pass through two infra-red transparent convergent lenses; directing the infra-red radiation resulting from each of said optical paths on said infra-red detector with a separate plane mirror; placing said notched disc close by said lenses; rotating said notched disc so that the notches cause the image transmitted from a first path of said optical paths to progressively appear on said infra-red detector while causing the image transmitted from the second path to progressively disappear in a synchronized manner until the instant where there appears on said detector only the image from the first path which immediately disappears progressively, whereas there appears progressively on said infra-red detector the image from the second path, until the instant when there appears on said infra-red detector only the image of the second path, said disc notches being arranged so that an obstructed surface of one of said lenses being equal to an open surface of the other lens, and wherein, in the absence of said body, said process further comprises the step of leading said two optical paths to a same region of said black background.

4,566,810

STEAM TURBINE ROTOR SHAFT

Takatoshi Yoshioka; Seishin Kirihara; Masao Shiga; Katsumi Iijima; Katsukuni Hisano, and Ryoichi Kaneko, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

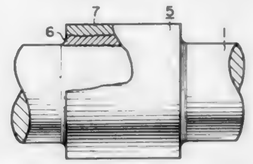
Filed Apr. 12, 1983, Ser. No. 484,204

Claims priority, application Japan, Apr. 14, 1982, 57-61009

Int. Cl.⁴ F16C *33/04, 33/08, 33/14*

U.S. Cl. 384—280 **2 Claims**

1. A steam turbine rotor shaft comprising a shaft formed of forged and precipitation-hardened austenite steel consisting essentially, by weight, of 0.01–0.10% C, not more than 1.0% Si, not more than 2.0% Mn, 12–16% Cr, 24–27% Ni, 0.5–1.5% Mo, 1–2.5% Ti, 0.2–0.4% Al, 0.1–0.4% V and the balance substantially Fe, said austenite steel having as a whole austenite structure having a γ' phase precipitated therein, and a metal member of better bearing characteristics than such forged austenite steel provided on an outer surface of a bearing portion of a journal section of said shaft, said metal member comprising a plurality of layers of build-up welding applied directly to said shaft including a first layer formed by use of a welding rod of a Ni base alloy consisting essentially, by



weight, of 0.01–0.1% C, 0.5–3.5% Mn, 0.2–1.0% Si, 0.2–1.0% Cu, 60–75% Ni, 0.2–1.0% Al, 1.5–3.0% Ti, 10–20% Cr, 0.5–1.5% Nb and the balance substantially Fe, while a second layer and succeeding layers are formed by use of welding rods of low alloy steel consisting essentially, by weight, of not more than 0.1% C, not more than 1.0% Si, not more than 2.0% Mn, 0.3–3.0% Cr, nor more than 2.0% Mo and the balance substantially Fe such that a surface of said metal member to be in contact with a bearing is formed of low alloy steel containing Cr of 0.3–3.0 weight percent.

4,566,811

DEVICE FOR SEALING A SELF-ALIGNING ROLLING BEARING

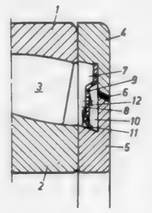
Bengt Lundgren, Lerum, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed Feb. 25, 1985, Ser. No. 705,131

Claims priority, application Sweden, Apr. 24, 1984, 8402234

Int. Cl.⁴ F16C *33/78*

U.S. Cl. 384—484 **5 Claims**



1. A device for sealing a self-aligning rolling bearing having an outer (1) and an inner (2) ring, one of which having a spherical raceway surface, and a number of rolling bodies (3) arranged between the rings and rolling against raceways provided on the rings, the device comprising annular sealing bodies (4, 5) arranged co-axially on the end surfaces of the respective bearing rings, the bodies co-operating with each other for sealing the space between the raceways and being provided with opposing, mainly spherical surfaces which delimit a gap (6) separating the sealing bodies, characterized in that the sealing bodies are provided with co-axial annular recesses (7, 8) connecting to each other and constituting an axial extension of the space between the raceways in connection to said gap, and that an annular member (9) in said recesses delimits an annular space (10) therein, the member (9) being fixed to one sealing body (4) and provided with a sealing lip

(11) co-operating with a mainly spherical surface on the other sealing body (5).

4,566,812

SEALING MEANS FOR A BEARING FOR STRUT-TYPE SUSPENSION

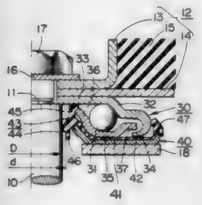
Kenji Takei, Hiratsuka, and Yukihiro Akabane, Fujisawa, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,974

Claims priority, application Japan, Aug. 31, 1983, 58-135265[U]

Int. Cl.⁴ F16C *33/76, 33/58*

U.S. Cl. 384—484 **4 Claims**



1. A sealing means for a rolling bearing for a strut-type suspension comprising:
- a piston rod for a shock absorber, the piston rod having an outer surface;
- a rubber mount fixed to the piston rod, the rubber mount having an upper and a lower plate;
- a coil spring which encircles the piston rod;
- an upper spring for a first end of the coil spring, the upper spring seat being mounted about the piston rod;
- a stationary bearing ring having an arcuate outer radial portion defining an interior curve and a radial inner marginal portion, the marginal portion secured to the piston rod in fixed contact with the lower plate of the rubber mount;
- a rotary bearing ring fixed to the upper spring seat and being rotatable therewith, the rotary bearing ring having a radial inner end portion and a radial outer portion which extend into the interior curve defined by the arcuate outer radial portion of the stationary bearing ring, the rotary bearing ring and the stationary bearing ring cooperating to define a bearing assembly; and
- a sealing member for the bearing assembly integral therewith, the sealing member having (1) a first lip formed at a radial inner side thereof, the first lip slidably contacting the outer surface of the piston rod, the first lip including a coupling head which couples with the radial inner end portion of the rotary bearing ring to render the sealing member integral with the bearing assembly and (2) a second lip formed at the radial outer side of the sealing member, the second lip contacting the stationary bearing ring.

4,566,813

DOT-MATRIX PRINT CONTROLLER

Toyohiro Kobayashi; Shoji Mochizuki; Mitsuru Murata; Shunji Tsuboi, and Hideto Sakurai, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

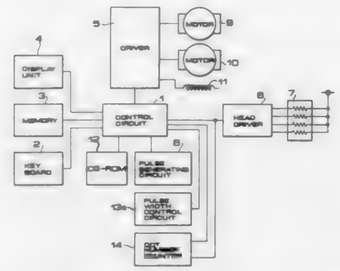
Filed Sep. 26, 1984, Ser. No. 654,496

Claims priority, application Japan, Sep. 27, 1983, 58-178487; Oct. 3, 1983, 58-184617; Oct. 14, 1983, 58-159009[U]

Int. Cl.⁴ B41J *3/20*

U.S. Cl. 400—120 **6 Claims**

1. A print controlling for a dot-matrix printer having a keyboard for entering characters to be printed, a memory for storing temporarily print data entered through said keyboard, a display unit for displaying the contents of said memory, a pulse generating circuit for generating current pulses applied to a print head, a dot-matrix thermo-sensitive print unit and a control circuit for controlling said memory, display unit, pulse generating circuit and print unit, said print unit having an operational mode of printing a keyed-in character immediately and an operational mode of storing keyed-in characters in said memory and printing the stored characters continuously, said print controller further comprising a counter for counting the



number of dots of one character in accordance with the print data stored in said memory, and a pulse width control means for reducing the width of the pulse applied to said print head when the count value of said counter is large and incressing the width of the pulse applied to said print head when the count value of said counter is small in order to make the thickness of printing constant, and said pulse width has an upper limit and a lower limit for control of increasing or decreasing the width of the applied pulses.

4,566,814

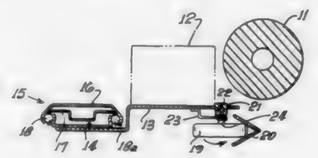
PRINT HEAD CARRIAGE ASSEMBLY

John E. Papp, Anaheim, and Bienvenido Nepomuceno, Diamond Bar, both of Calif., assignors to Standard Precision, Inc., Santa Fe Springs, Calif.

Filed Apr. 6, 1983, Ser. No. 482,458

Int. Cl.⁴ B41J *19/00*

U.S. Cl. 400—354.1 **15 Claims**



1. In a printing device of the type having a platen mounted on a frame and a moveable print head mounted on a platform of a carriage assembly which is driven in a path parallel to the platen wherein the improvement comprises:
- a precision, linear, ball-bearing slide having an outer race member, an inner race member having said platform of said carriage assembly affixed thereto and a ball retainer, said slide being mounted on said frame so that said slide is parallel to said platen;
- platen receiving means affixed to said frame;
- a support arm affixed to said platform of said carriage assembly;
- guide means including channel means which channel means is affixed to said frame, said channel means of said guide means being mounted so that said guide means is parallel to both said platen and said slide, said guide means further having roller means engaging said channel means and said roller means being moveable along said channel means

and being rotatably affixed to the support arm of said platform; and
- biasing means between said inner race member and the roller means of the guide means.

4,566,815

STRUCTURE FOR MOUNTING ROLLER ON SHAFT

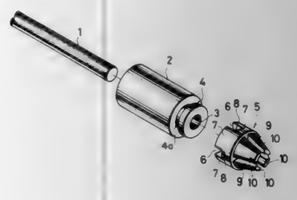
Hiroshi Matsumoto, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,181

Claims priority, application Japan, Nov. 19, 1982, 57-175146

Int. Cl.⁴ B41J *13/02*

U.S. Cl. 400—641 **10 Claims**



1. A structure for mounting a roller on a shaft, comprising:
- a shaft,
- a roller mounted on the shaft, and
- a retaining element mounted on the shaft so as to be opposed to the roller for retaining the roller in a given axial position on the shaft,
- the roller being loosely mounted on the shaft so as to be rotatable thereon, the roller having a flange at one end thereof,
- the retaining element having a plurality of resilient retaining arms at one end thereof to retain the flange rotatably, the retaining element also having a plurality of resilient arms at the other end thereof, the latter resilient arms being in frictional engagement with the outer periphery of the shaft.

4,566,816

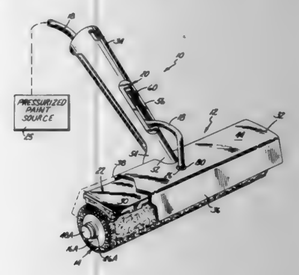
PRESSURE FED PAINT ROLLER

Robert I. Janssen, St. Paul, Minn., assignor to Padco, Inc., Minneapolis, Minn.

Filed Aug. 29, 1983, Ser. No. 527,412

Int. Cl.⁴ B05C *17/02*

U.S. Cl. 401—219 **21 Claims**



1. A pressure fed paint roller apparatus comprising:
- a paint roller having a paint applying outer covering;
- means for mounting the paint roller for rotation of the paint roller about an axis;
- a paint supply tube for supplying paint under pressure;
- a manifold having an inlet connected to the paint supply tube, a concave paint spreading surface facing the paint roller, a chamber within the manifold which includes an elongated main channel extending generally parallel to the axis of the paint roller and an auxiliary channel which communicates with the inlet and which is connected to the main channel at a plurality of spaced locations, and a row of spaced discharge openings extending from the main channel to the paint spreading surface through which paint is discharged from the chamber; and wherein the manifold comprises:
  - a first member which has the inlet connected thereto and has a first mating surface;
  - a second member having the concave paint spreading surface, having a second mating surface for mating with the first mating surface and having the row of spaced discharge openings therein;
  - wherein the main and auxiliary channels are formed in one of the mating surfaces; and
  - means for releasably connecting the first and second members together so that when joined together in normal operating position, the first and second mating surfaces and the main and auxiliary channels define the chamber, and so that the upper and lower manifold plates are separable to expose the paint distribution channel and the first and second mating surfaces for cleaning; and
- means for urging the manifold toward the roller to cause the paint spreading surface to engage the paint roller for spreading paint evenly onto the outer covering of the paint roller.

4,566,817

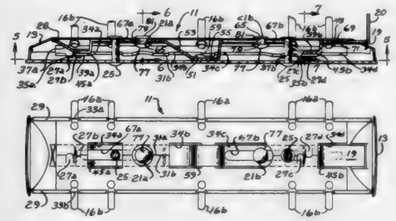
RING BINDER

Arthur M. Barrett, Jr., 950 Telegraph Rd., Lake Forest, Ill. 60045

Filed Jan. 16, 1984, Ser. No. 570,840

Int. Cl.⁴ B42F *3/04, 13/16, 13/30*

U.S. Cl. 402—38 **19 Claims**



1. A loose-leaf binding mechanism, of the type affixed to covers and a backbone structure, comprising:
- a housing adapted to be affixed to a backbone structure and having an upper wall extending the length of said housing and spaced apart from the backbone structure;
- a pair of hinge plates, each hinge plate pivotally coupled to said housing for movement between a first position with said hinge plates positioned in proximity to said housing and a second position with said hinge plates positioned distally from said housing;
- ring binding means having two opposing portions, each of said opposing portions affixed to opposite hinge plates in cooperating relationship to open and close with the movement of said hinge plates;
- control bar means slideably affixed to said housing, moveable between a first control bar position and a second control bar position, said control bar means further including cam means, said cam means positioned to engage said hinge plates for applying a force in one direction to move said hinge plates toward said housing as said control bar means is moved to said first position, and positioned to engage said hinge plates for applying a force in the opposite direction to move said hinge plates away from said

housing as said control bar means is moved to said second position; and

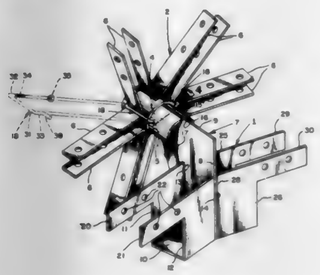
control bar affixing means suspending said control bar means from said upper wall of said housing for sliding movement therealong between said control bar positions whereby said control bar works against said upper wall of said housing through said control bar affixing means and independent of said backbone structure in applying forces to said hinge plates.

4,566,818

LEDGER HANGER FOR GEODESIC DOMES

Victor M. Schwartz, Berkeley, and Robert G. Miller, San Mateo, both of Calif., assignors to Timberline Geodesics, Inc., Berkeley, Calif.

Filed Aug. 1, 1983, Ser. No. 519,385
Int. Cl.⁴ E04B *1/32*
U.S. Cl. 403—172 **2 Claims**



1. A pair of hangers for supporting a ledger member adjacent to the upstanding inwardly slanting sidewall forming the structural shell of a geodesic dome in combination with at least two spaced metal hub connectors positioned at approximately the same elevation and used in constructing said structural shell wall, said metal hub connectors being formed with an elongated hub having an elongated inner opening and said hub being connected to metal arms which are attached to wood strut members forming said structural shell wall for said geodesic dome, said hanger comprising:

a. a flange member having a hanger supporting portion and a hub connection portion projecting therefrom;

b. a first hanger seat connected at a generally right angle to said hanger supporting portion of said flange for supporting an end of said ledger member;

c. first hanger sidewall members extending from said first hanger seat and connected to said seat and said flange member;

d. adaptor means connected to said hub connection portion of said flange member and releasably connected to said elongated hub of said hub connector within said elongated inner opening of said hub;

e. said adaptor means and said flange member dimensioned to position said hanger seat a selected distance from said structural shell to prevent interference of said ledger member and floor beam members with said inwardly slanting structural shell of said dome;

f. coupling means releasably coupling said adaptor means to said elongated hub of said hub connector;

g. first strap members connected to said first hanger sidewall members and extending outwardly therefrom and having bolt holes formed therein for receipt of bolts therethrough;

h. said bolts connect each end of said ledger member to said hangers thereby structurally stiffening said geodesic shell;

i. a second hanger seat connected to said hanger supporting portion of said flange member disposed on the opposite side of said flange member from said first hanger seat and disposed at an angle thereto;

j. second hanger sidewall members extending from said second hanger seat and connected to said second seat and said spline member;

k. second strap members connected to said second hanger sidewall members and extending outwardly therefrom and having bolt holes formed therein for receipt of bolts therethrough;

l. said bolts connect each end of said ledger member to said hangers;

m. said adaptor means includes a tubular cylinder connected to said flange member;

n. said coupling means consists of at least one U-shaped pin member formed with a substantially straight base member and two angularly related parallel legs having at least one threaded end and said base member having a length greater than the length of said elongated hub; and

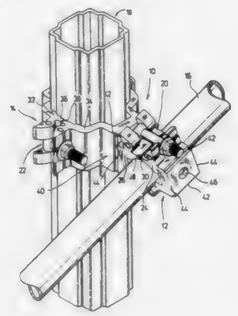
o. said tubular cylinder is formed with at least one pair of openings spaced for registered receipt of said legs of said U-shaped pin.

4,566,819

CLAMP FOR SHORING AND SCAFFOLDING FRAMES

Ronald J. Johnston, Georgetown, Canada, assignor to Aluma Systems, Incorporated, Downsview, Canada

Filed Mar. 1, 1982, Ser. No. 353,424
Int. Cl.⁴ F16B *7/00*
U.S. Cl. 403—385 **55 Claims**



1. A clamp arrangement for connecting elongate rigid structural elements comprising two clamps which are capable of being interconnected either for rotation between the two clamps or for positioning of the clamps in at least one predetermined fixed relative position, each clamp having a clamp body which is releasably closeable to surround and clamp a respective structural member, at least one of said clamps in the area of interconnection having at least one portion which is adapted to be secured to position said clamps in said at least one predetermined fixed relative position, and means cooperating with and containing said at least one portion for securing said clamps in said at least one position.

4,566,820

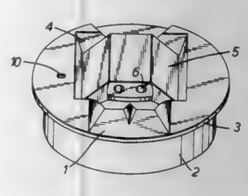
CATSEYE MOUNTINGS

Paul F. Egan, Greensleeves House, Bluebell La., Harescombe, Gloucestershire; William D. Broadfoot, Twin Banks House, Station Rd., Andoversford, Cheltenham, Gloucestershire, and Peter Alden, 57 Portland St., Cheltenham, Gloucestershire, all of England

Filed Dec. 20, 1983, Ser. No. 563,511
Int. Cl.⁴ E01F *9/00*
U.S. Cl. 404—14 **9 Claims**

1. A mounting for a reflective roadstud insert in the form of a rubber pad incorporating reflecting studs, the mounting

comprising a housing defining an internal cavity, mounting projections extending inwardly of the side walls of the cavity to receive and hold the insert within the cavity, the housing



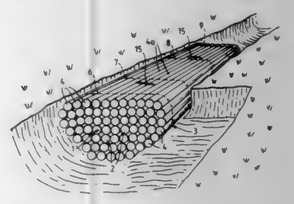
also defining a base part of circular external cross-section, and a circular rim above the base part of larger diameter than the base part, and wherein the circumferential outer wall of the base part tapers outwardly down from below the circular rim.

4,566,821

CONFORMABLE FASCINE

Derek I. Knight, Bournemouth, and Gilbert Sullivan, Highcliffe-on-Sea, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 26, 1984, Ser. No. 674,801
Claims priority, application United Kingdom, Dec. 6, 1983, 8332525
Int. Cl.⁴ E01C *9/08*
U.S. Cl. 404—35 **8 Claims**



1. A conformable fascine including a core comprising a multiplicity of tubular core members each capable of elastic cross-sectional deformation when subject to transverse compression forces, and all freely disposed in axially parallel relationship, and a sleeve circumjacent the core comprising a multiplicity of axially parallel tubular sleeve members each of which is capable of elastic cross-sectional deformation when subject to transverse compression forces, all of said sleeve members being transversely and continuously interconnected by at least two axially spaced flexible tie means each disposed as a continuous loop, said sleeve members being conjointly maintained in transverse compression by said tie means.

8. A method of constructing a conformable fascine including the steps of:

a. providing a multiplicity of identical plastics material tubes with diametrical perforations at at least two axially spaced loctions, thereby to comprise sleeve members,

b. arranging the sleeve members side by side on a level surface with their diametral perforations in alignment,

c. threading a length of chain through each aligned set of perforations,

d. securing one protective extremity of one of the chains to a tensioning means operative against the adjacent end sleeve member and applying an open-ended, slotted stop plate to the other protrusive extremity,

e. straining the chain into tension with the tensioning means so as to compress all the sleeve members conjointly,

f. applying a second open-ended slotted stop plate to the chain adjacent the end sleeve member nearest the tensioning means so as to maintain the compression,

g. removing the tensioning means and the excess chain beyond the stop plates,

h. repeating the steps c to g for each chain,

i. bringing the two stopped ends of each chain together and joining them to form a continuous loop, thereby to form the sleeve members into a sleeve,

j. removing the slotted stop plates from each chain, and

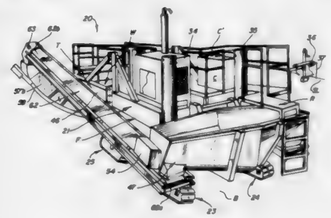
k. loosely filling the interior of the sleeve with a multiplicity of core members comprised by plastics material tubes of thinner wall-section that those of the sleeve members.

4,566,822

CONSTRUCTION MACHINE

Charles P. Miller, McHenry, Ill., assignor to Miller Formless Co., Inc., McHenry, Ill.

Continuation of Ser. No. 305,204, Sep. 24, 1981, abandoned. This application Feb. 21, 1984, Ser. No. 580,290
Int. Cl.⁴ E01C *19/18*
U.S. Cl. 404—84 **21 Claims**



16. An apparatus for placing formable concrete on an elongated base surface, said apparatus comprising: a movable main frame for movement along such a surface in overlying relation thereto; propelling means mounted beneath said main frame and adapted to be supportingly engaged by the base surface as the said frame moves over said base surface; a mule spaced a substantial distance rearward of the rear distal end of said main frame for overlying said base surface and having a hopper with an undersurface conforming substantially to the predetermined configuration of the base surface; support means spaced laterally of said main frame and fixed to said main frame for cantilevered support of said mule in such substantially rearwardly spaced position, and for providing substantial workspace for placement of reinforcing materials on the base surface between said main frame and said mule, said mule subtending said support member; and conveying means carried on said support member for controlled rearward transfer of concrete from said main frame to the hopper of said mule.

4,566,823

CURB EXTRUSION APPARATUS WITH INTERCHANGEABLE MOLDS

George N. May, 9 Francis St., Cardiff, Newcastle, New South Wales, Australia

Filed Nov. 15, 1983, Ser. No. 551,879
Int. Cl.⁴ E01C *19/48*; B28B *3/24*
U.S. Cl. 404—98 **14 Claims**

1. A manually maneuverable curb extrusion apparatus for receiving concrete, cement or other building materials and for molding curbs, barrier walls, and gutters from such materials, comprising:

a body frame having a hopper with an open top and an open bottom portion for receiving the concrete, cement or other building material;

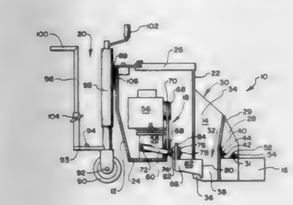
a compacting chamber adjacently subtending the open bottom portion of said hopper and communicating therewith such that the concrete, cement or other building material

falls under the force of gravity from said hopper into said compacting chamber;

at least one extrusion mold having open forward and rearward ends and an open bottom; each said extrusion mold for disposition adjacent to and communicating with said compacting chamber; each said extrusion mold being removable from disposition adjacent said compacting chamber and being interchangeable with another extrusion mold;

means for interchangeably securing, one at a time, said extrusion molds adjacent said compacting chamber;

a power driven feed mechanism operating from a power source comprising at least one reciprocating arm which reciprocates from a first position to a second position, a compacting member, and a connector for attaching said reciprocating arm to said compacting member such that



the power driven reciprocating action of said reciprocating arm is imparted to said compacting member; said compacting member being at least partially disposed within said compacting chamber and engaging concrete, cement or other building material within the compacting chamber in compacting engagement when said reciprocating arm is in its first position and permitting cement or other building material to fall into said compacting chamber when said reciprocation arm is in its second position;

said compacting member further being removable from said connector and being interchangeable with another compacting member, wherein said connector adjustably permits the vertical and lateral disposition of said interchanged compacting member prior to tightening said connector to said interchanged compacting member; and

means for steering said body frame.

4,566,824

SYSTEM FOR DRILLING FROM A WATER SURFACE, WHICH IS INSENSITIVE TO THE SWELL

Jean Minier, Limours; Hervé Barthélemy, La Celle Saint Cloud, and Vincent Foglia, Aulnay sous Bois, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 16, 1983, Ser. No. 552,299

Claims priority, application France, Nov. 19, 1982, 82 19395

Int. Cl.⁴ E02B *17/00*; E21B *7/128*

U.S. Cl. 405—202 **6 Claims**

1. A system for drilling from a water surface, of the type having means for exerting a bearing stress on a drilling tool along a direction normal to a sea bed surface to be drilled which is constant during swells, comprising a drilling apparatus including:

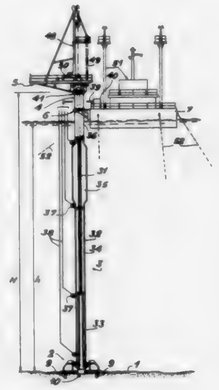
(a) a drill pipe string connected to said drilling tool;

(b) a base having a central bore for passage of said drill pipe string, said base being formed to rest on said sea bed;

(c) a column comprising a cylindrical tubular central guide for guiding said drill pipe string and an external cylindrical tubular envelope surrounding said central guide, said central guide and said envelope forming a hollow annular space which is subdivided into a tight chamber at the foot of said column having a first predetermined length and constituting the lower ballast, a tight intermediate chamber having a length determined as a function of the mean depth of water at a drilling site, a tight chamber having a second predetermined length and constituting an upper ballast, and a head chamber at the head of said column, the total length of said column being greater than the maximum depth of water at said drilling site;

(d) a platform for installation and operation of said drilling apparatus, said platform being supported on said head of said column;

(e) elastic coupling means arranged between said column and said base, with said base having reception means formed therein for receiving said elastic coupling means; and wherein



(f) an adjacent, but separate barge, from said drilling apparatus having anchor lines also independent of said drilling apparatus, for mooring at said drilling site and having an annular collar for receiving the head of said drilling apparatus column, said annular collar and said head having a clearance therebetween for enabling axial sliding and tilting of said head with respect to the vertical direction of said head member.

4,566,825

METHOD OF HARDENING SOFT GROUND

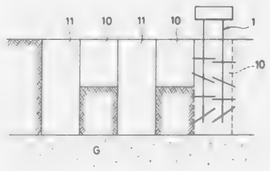
Yoshihisa Hirai, Kokubunji; Masanori Shima, Murayama, and Hirohiko Aoki, Tokyo, all of Japan, assignors to Toa Harbor Works Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1985, Ser. No. 695,032

Claims priority, application Japan, Mar. 21, 1984, 59-52271

Int. Cl.⁴ E02D *3/12*, *5/18*; E01C *7/36*

U.S. Cl. 405—267 **6 Claims**



1. A method of hardening a soft ground, comprising the following steps (a) to (f), these steps being performed in sequential order:

(a) introducing a slurry of a cement-based hardener in water under pressure into a soft ground by a ground improvement machine and mixing the slurry with soft soil to form a deep pile,

(b) repeating the above step (a) to form a plurality of deep piles in a manner such that every adjacent pile is joined together, whereby a deep wall is formed by the plurality of deep piles,

(c) repeating the above steps (a) and (b) to form a plurality of deep walls spaced from one another,

(d) introducing the slurry under pressure into soft ground between two adjacent deep walls and mixing the slurry with soft soil to form a short pile joined to said two adjacent deep walls,

(e) repeating the above step (d) to form a plurality of short piles joined to one another and to said two adjacent deep walls, so that a short wall, joined to said two adjacent deep walls, is formed by the plurality of short piles, and

(f) repeating the above steps (d) and (e) to form a plurality of short walls each joined to two adjacent deep walls.

4,566,826

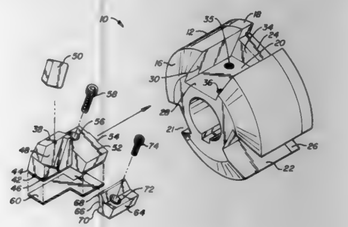
ADJUSTABLE INSERT SUPPORT

Lawrence C. Dickinson, 2255 Eva Adams, Reno, Nev. 89504

Filed Feb. 17, 1984, Ser. No. 581,390

Int. Cl.⁴ B23P *15/34*

U.S. Cl. 407—37 **8 Claims**



1. Apparatus for supporting a cutting insert comprising:

a cylindrical head having an axial and a radial direction and including at least one peripheral slot having a generally flat bottom and a pair of sides which are parallel to one another and tilted relative to the bottom when viewed axially so that the bottom of the slot forms an acute corner with one side and an obtuse corner with the other side;

an insert seat having a bottom and a back side which meet at an acute angle conformed to the acute corner of the slot, said seat further having a front side with a recess in a generally radial posture, whereby the recess may receive the cutting insert;

means for securing the seat in the slot with the back side of the seat flush with the side of the slot forming the acute corner with the location of the bottom of the seat relative to the bottom of the slot being adjustable;

a wedge insertable between the insert and the side of the slot forming the obtuse corner; and

means for forcing the wedge radially inwardly to confine the insert between the wedge and the seat.

4,566,827

BALLNOSE END MILL AND INSERT THEREFOR

Ronald L. Neumueller, Rockford, Ill., assignor to Ingersoll Cutting Tool Company, Rockford, Ill.

Continuation of Ser. No. 676,685, Nov. 30, 1984, abandoned, which is a continuation of Ser. No. 428,286, Feb. 22, 1983, abandoned. This application May 24, 1985, Ser. No. 737,576

Int. Cl.⁴ B23C *5/02*

U.S. Cl. 407—42 **2 Claims**

2. A ballnose end mill comprising

a tool holder in the form of a generally cylindrical shank having at its cutting end at least two chip gullets each followed by an on-edge cutting insert seated and secured in a recess formed in the shank,

each of said inserts having a first major face which is cylindrically convex,

an opposite major face which is plane, rhomboidal in outline, with its opposite major edges in chordal relation to said cylindrical major face, and upon which the insert is adapted to be seated in a recess in said shank,

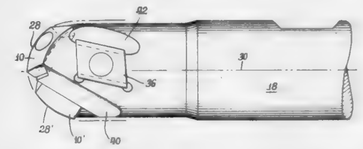
a first pair of opposed, plane, minor boundary surfaces which intersect said plane rhomboidal face on said two major edges and diverge therefrom at equal angles to intersect said convex major face at an acute included angle to form therewith two substantially circular cutting edges on said boundary faces,

a second pair of opposed, plane, minor boundary surfaces which intersect said plane rhomboidal face perpendicularly on its two minor edges, and

a central bore extending between the major faces to receive a securing fastener,

said first and second pairs of minor boundary surfaces, by their acute-angle intersection, forming edges which intersect each of said substantially circular cutting edges in a point,

said inserts each being positioned with one of said first pair



of plane boundary faces disposed as rake faces facing in the direction of rotation of the tool holder and with their respective said cutting edges disposed to sweep portions of a cutting path which is a substantially circular quadrant in projection to a radial plane through the axis of the shank and is continuous from the axis of the shank to the maximum radius of said path measured from said axis,

said one rake face of one of said inserts being positioned substantially radially of the shank with its associated point located at the axis of the shank as a centering point and with the cutting edge associated with said point extending from said point along a major portion of said quadrant,

said one rake face of the other of said inserts being positioned with negative radial rake and positive axial rake and with the cutting edge thereof extending along a major portion of said quadrant from said maximum radius toward said centering point,

the said one rake faces of said inserts being disposed on opposite sides of said axis, and

the cutting paths of said inserts positioned as aforesaid overlapping at the mid-portion of said quadrant by a major portion of the length of each thereby to apportion the heavier cutting load between the inserts.

4,566,828

BALL TRACK MILLING CUTTER TOOL

Josef Reinauer, Sigmaringen, Fed. Rep. of Germany, assignor to Gottlieb Guhring, Ebingen, Fed. Rep. of Germany

Filed Dec. 13, 1983, Ser. No. 560,828

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1982, 3247138

Int. Cl.⁴ B23C *5/22*

U.S. Cl. 407—48 **31 Claims**

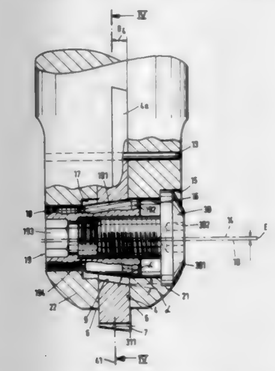
1. A cutting tool for milling grooves of semicircular cross-section comprising:

a holder having at one end a slot forming cooperative first and second clamping jaws, an indexable cutting disc clamped between the first and second jaws, the cutting disc having cutting edges and adjacent flank faces and the slot having abutment surfaces for supporting the cutting

disc within the slot such that the flank faces of the cutting disc abut against the abutment surfaces in the slot;

an opening in the holder passing through the first and second clamping jaws and an opening in the cutting disc having an inner conic surface; the opening of the first jaw being smaller than the opening of the second jaw and the opening of the first jaw having an internal thread;

a positioning nut extending into and through the second jaw opening and protruding through the disc opening and having a thread at one end thereof engaging with the



internal thread of the first jaw opening, the positioning nut having an outer surface forming a sloping conic surface entirely in contact engagement with the inner conic surface of the disc opening, the conic surfaces of the disc opening and the nut being complementary; the positioning nut having an internal thread at another end thereof;

a clamping screw extending into the second jaw opening and into the disc opening, the screw having a threaded portion which engages with the internal thread of the positioning nut to tighten the first and second jaws on the cutting disc and urge the disc against the slot abutment surfaces.

4,566,829

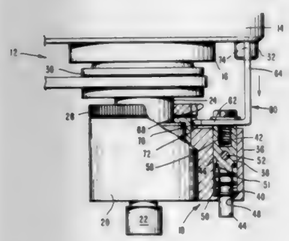
TAPPING ATTACHMENT AND INDEXING MECHANISM THEREFOR

Allan S. Johnson, Newport Beach, Calif., assignor to Tapmatic Corporation, Irvine, Calif.

Filed Feb. 4, 1985, Ser. No. 697,666

Int. Cl.⁴ B23B *31/10*; B23G *1/00, 5/14*

U.S. Cl. 408—239 R **11 Claims**



9. A tapping attachment of the type used in conjunction with the machining center having a base which is a source of rotational drive, comprising:

a first housing having a dovetail mortise on the outer surface thereof;

an input shaft means for receiving rotational drive from the machining center, said input shaft being received within said first housing for rotation therein;

a collar having a recess therein secured to said input shaft for rotation therewith;

an output shaft mechanically connectable to said input shaft for transmitting rotational drive to a tool to do work upon a workpiece;

a second housing having an elongated dovetail tenon, on the outer surface thereof, said tenon being slidably positioned in said mortise of said first housing to form a compact and rugged assembly;

a spring biased plunger received within said second housing for constrained limited movement therein;

an "L" shaped bracket having radially and axially extending arms, said bracket being secured to said plunger for movement therewith, said radially extending arm having a stop engagable with, the recess of said collar to prevent rotation thereof to non-rotatably lock said input shaft in a predetermined angular orientation when said bracket is in a first position, and movable to a second position of disengagement with said collar; said axially extending arm engagable with the base of the machine to move said stop to said second position and prevent rotation of said housings and to permit movement of said stop to said first position when said axially extending arm is not engaged with the base of the machine.

4,566,830

ROUTER WITH QUICK DEPTH OF CUT ADJUSTMENT

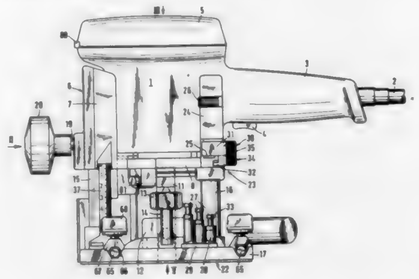
Peter Maier, Gerokstrasse 1, 7311 Neidlingen; Karl Attinger, Seestrasse 21, 7311 Holzmaden; Albert Sigel, Scholderplatz 21, 7315 Weilheim; Gernot Hänsel, Gerstenstrasse 31, 7000 Stuttgart 70; Erwin Kutscher, Hohenstaufenstr. 24, 7333 Ebersbach-Bünzwangen, and Hartmut Walter, Im Saemann 71, 7050 Waiblingen, all of Fed. Rep. of Germany

Filed Apr. 18, 1984, Ser. No. 601,634

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1983, 3314419

Int. Cl.⁴ B23C *1/12*

U.S. Cl. 409—182 **6 Claims**



1. A router with depths of cut adjustment comprising:

a drive unit (1);

a drive unit cage (6) for carrying said drive unit;

a cutter shaft (1) connected to and rotatable by said drive unit, said cutter shaft having an end for receiving a cutter;

guide column means (15,16) extending out of said cage in the same direction as said cutter shaft;

a rest plate (17) guided on said guide column means for movement toward and away from said cage and having an aperture therethrough for the passage of a cutter connected to said cutter shaft to a selected depth beyond a bottom of said rest plate;

a threaded spindle guide (24) connected to said cage and having opposite open ends;

a hollow threaded spindle (25) threadably engaged in said spindle guide, said spindle having one open end spaced away from said rest plate and an opposite end facing said rest plate, said splindle being rotatable in said guide for movement toward and away from said rest plate;

a movable plate (29) movably connected to said rest plate;

a plurality of threaded stop pins (27) threaded to said movable plate and each having a head portion (33), said stop pins being rotatable for movement of their head portions toward and away from said cage, said movable plate being movable to bring each of said stop pins separately into alignment with said hollow spindle;

a swing extension (30) swingably connected to said opposite end of said hollow spindle for movement into engagement with and under a head portion of a stop pin which is in alignment with said hollow spindle and which is brought into engagement with said hollow spindle for mechanically holding said stop pin to said hollow spindle, a top of said head portion being accessible through said one open end of said hollow spindle and through one of said open ends of said guide for rotation of said stop pin, said hollow spindle being rotatable in said spindle guide for adjusting a distance between said cage and said rest plate.

4,566,831

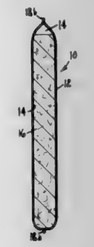
SHOCK ABSORBENT DUNNAGE DEVICE

John P. Groth, Stillwater, Minn., assignor to Andersen Corporation, Bayport, Minn.

Filed Feb. 1, 1980, Ser. No. 117,782

Int. Cl.⁴ B60P *7/14*

U.S. Cl. 410—117 **8 Claims**



1. An improved dunnage bag device for filling void areas between articles being packed for shipment comprising:

(a) an outer sealed envelope of thin flexible material, defining an internal cavity; and

(b) particulate shock absorption filler material comprising wooden by-products such as sawdust or wood shavings loosely packed within and filling at least 70 percent of said internal cavity, said filler material having a moisture content of less than or equal to 20 percent; wherein said bag is resiliently responsive to impact forces applied thereto regardless of extended exposure of the bag to freezing temperatures.

4,566,832

SLEEVE-SHAPED EXPANSION DOWEL

Helmut Mirsberger, Munich, and Franz Popp, Puchheim, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

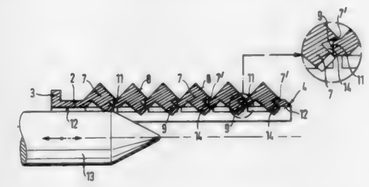
Filed Nov. 8, 1983, Ser. No. 550,239

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 3241596

Int. Cl.⁴ F16B *13/04*

U.S. Cl. 411—21 **5 Claims**

1. A sleeve-shaped expansion dowel comprising an axially extending sleeve defining an axially extending borehole and said sleeve having a first end and a second end spaced apart in the axial direction, expansion tongues formed in and articulated to said sleeve and said tongues being pivotably displaceable from an unexpanded position relative to said sleeve radially outwardly from said sleeve into an expanded position by axially displacing an expanding member through the borehole in said sleeve, said tongues arranged in a row one immediately following the other in the axial direction of said sleeve, each said tongue having a first end and a second end spaced apart in the axial direction of said sleeve and the first end being free for radially outwardly displacement from said sleeve into the expanded position and the second end being closely adjacent to the first end of the next said tongue in said row, said tongues



having an inside surface adjacent the second ends thereof in general alignment with the surface of the borehole in the sleeve and adjacent the first ends thereof having a projection extending radially inwardly from the inside surface into the borehole in said sleeve in the unexpanded position of said tongues, said expansion tongues are articulated to said sleeve at the second ends thereof and are pivotally displaceable about pivot axes extending normal of the axis of said sleeve, and said end of each said expansion tongue comprises a web connection said expansion tongue laterally thereof to said sleeve.

4,566,833

DEVICE TO BUNDLE ROLLED BARS OR ROLLED SECTIONS

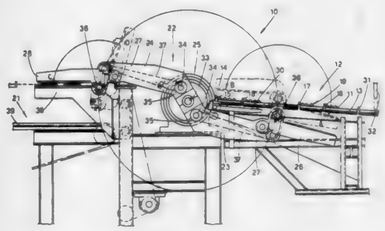
Sergio Gigante, Udine, Italy, assignor to Danieli & C. Officine Meccaniche S.p.A., Buttrio, Italy

Continuation of Ser. No. 508,195, Jun. 27, 1983, abandoned. This application May 1, 1985, Ser. No. 728,455

Claims priority, application Italy, Jul. 9, 1982, 83420 A/82

Int. Cl.⁴ B65G *57/04, 57/18*

U.S. Cl. 414—30 **5 Claims**



1. A device to bundle rolled bars which are advantageously flanged and channel sections coming from a delivery line, comprising a conveyor, retractable separating and sorting stops cooperating with said conveyor and transfer means able to take the bars from the conveyor and to place them in successive layers on suitable gathering and discharge means, said transfer means comprising a central shaft, a unidirectional rotatable symmetrical two-armed lever keyed to and supported on said central shaft, a swinging magnetic head having ends pivoted at one of its ends on an end of each of said arms around a horizontal axis substantially crosswise to said arm, said magnetic head rotatable multidirectionally and positionable so as to

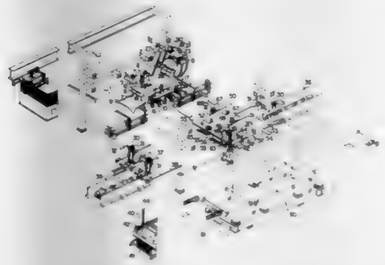
move towards and prolong the lengthwise axis of the relative arm when it is taking, carrying and laying down the bars.

4,566,834

AUTOMATIC PALLETIZING SYSTEM

Kiyokazu Baba; Shojiro Shirao, both of Komatsu; Kenji Nishida, Matsuto, and Hiroshi Kiyosawa, Komatsu all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 9, 1984, Ser. No. 578,764
Claims priority, application Japan, Feb. 15, 1983, 58-22090
Int. Cl.⁴ B65H *31/32*
U.S. Cl. 414—27 **1 Claim**



1. An apparatus for palletizing panels and like flat articles fabricated by a press, comprising:

conveyor means for discharging the panels from the press;

unloading means for unloading the panels from said conveyor means, said unloading means comprising a first carrier mounted above said conveyor means, said first carrier being horizontally reciprocable between a first position have above the discharging end of said conveyor means where unloading of the panels starts and a second position where unloading of the panels is completed, a second carrier mounted below said first carrier and movable up and down relative to said first carrier, and a turning arm mounted to the underside of said second carrier for pivotal movement in a vertical direction, said turning arm panel engaging means mounted thereto;

a pair of latch conveyor means provided on opposite sides of said unloading means at a position corresponding to said second position of said unloading means, said pair of latch conveyor means being adapted to move towards and away from each other and to receive and hold a plurality of panels with spacings between the panels when moved towards each other, each of said latch conveyor means comprising a pair of latch conveyors each including a pair of sprockets, a chain wound around said sprockets, a plurality of latches each movable between a projected position for supporting a panel and a retracted position, means for normally urging said latches to said retracted position, and means for knocking out each of said latches to said projected position;

first pallet means provided below said latch conveyor means for receiving the panels therefrom, said first pallet means comprising two pairs of pallet hook means each comprising a pallet hook member and a plurality of hooks mounted to said pallet hook member, each of said hooks being adapted to support respective panels transferred from said latch conveyor means;

means for lifting and lowering said first pallet means;

hanger means for receiving panels each having an opening formed therein from said turning arm after the panels are oriented vertically by a right angular pivoting of said turning arm from a horizontal position, said hanger means comprising a main hanger and a sub-hanger, both hangers being adapted to move up and down and back and forth and each comprising a pair of L-shaped members and a connection member for coupling said L-shaped members in a spaced relation, each L-shaped member having a chain mounted therein; and

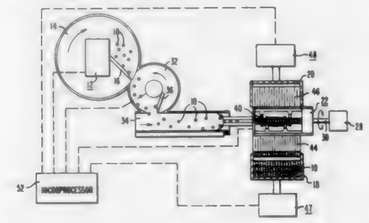
second pellet means for receiving the panels with openings from said hanger means.

4,566,835

NUCLEAR FUEL PELLET SINTERING BOAT LOADING SYSTEM

Theodore E. Raymond, Swansea; Thomas B. Huggins, Columbia, and George E. Vining, West Columbia, all of S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 28, 1983, Ser. No. 536,934
Int. Cl.⁴ B65G *57/08, 57/10*
U.S. Cl. 414—53 **10 Claims**



1. A system for loading nuclear fuel pellets into a first sintering boat from a pellet press which ejects newly-made said pellets, said system comprising:

(a) a generally horizonally disposed rotatable drum having two ends and having therebetween at least one generally circumferentially disposed and longitudinally aligned channel for holding a row of said ejected pellets, with said channel having an open end at one end of said drum;

(b) means for rotating said drum to rotate said channel from a generally upward vertical position to a first generally below-horizontal position and around to said upward vertical position;

(c) means for receiving said pellets ejected from said press, and for inserting said row of said ejected pellets into said channel from its said open end when said channel is disposed at its said upward vertical position;

(d) means for pushing said row of said held pellets radially outward from said channel to discharge them therefrom when said channel is disposed at its said first below-horizontal position;

(e) a first incline disposed with its upper end generally adjacent said channel, when said channel is disposed at its said first below-horizontal position, to slidingly receive said first position discharged pellets;

(f) means for relatively positioning said first sintering boat and the lower end of said first incline such that said first incline sliding pellets leave said first incline generally adjacent the position in said first sintering boat of the predetermined next-to-be-stacked said row of said pellets to be loaded into said first sintering boat; and

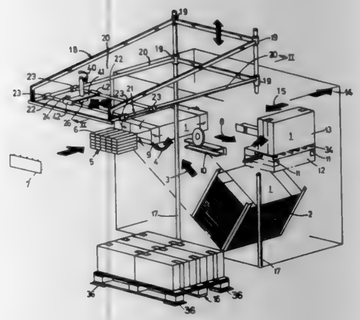
(g) means for controlling said pellet receiving and inserting means, said drum rotating means, said relative positioning means, and said pellet pushing means.

4,566,836

APPARATUS FOR HANDLING PACKED GOODS

Maurice Berger, Cortaillod; Jean-Francois Bernasconi, Collombier, and Michel R. Juillerat, Neuchatel, all of Switzerland, assignors to Fabriques de Tabac Reunies, S.A., Neuchatel, Switzerland

Continuation of Ser. No. 477,295, Mar. 21, 1983, abandoned.
This application Jun. 12, 1985, Ser. No. 743,888
Claims priority, application European Pat. Off., Mar. 31, 1982, 82810144.4
Int. Cl.⁴ B65G *57/04, 57/22*
U.S. Cl. 414—57 **10 Claims**



1. Apparatus for handling a plurality of packages, said apparatus comprising:

gripping means for individually gripping one of said plurality of packages situated in a presentation position;

support means for supporting said gripping means, said support means including:

fixed upright means,

a bridge adapted for vertical movement on said upright means,

a movable rig adapted for movement on said bridge in a longitudinal direction, and

a carriage adapted for movement on said movable rig in a transverse direction;

a free space between said bridge and a floor level under said bridge;

drive means for driving said carriage, said movable rig, and said bridge;

presentation means adapted for supporting a single one of said packages and for bringing said supported package from a checking position situated not under said bridge into a presentation position situated within said free space, said presentation means including a roller train movable at a first speed to convey said package being supported thereby at a second speed to said presentation position, said second speed being greater than said first speed; and

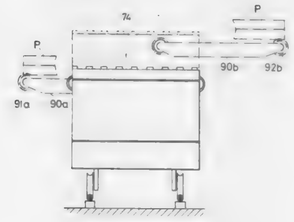
control means for controlling said gripping means, said drive means, and said presentation means to successively grip packages situated in said presentation position, drive said gripping means, and dispose said packages in successive layers according to a predetermined arrangement on a pallet located at a loading location on said foor in said free space.

4,566,837

AUTOMATIC WORK EXCHANGING APPARATUS

Tadataka Shiomi; Kouichi Nabika, both of Gifu, and Takashi Kawagoe, Shiga, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Continuation of Ser. No. 380,764, May 21, 1982, abandoned.
This application Oct. 12, 1984, Ser. No. 660,542
Claims priority, application Japan, May 24, 1981, 56-79006
Int. Cl.⁴ B25Q *7/02*
U.S. Cl. 414—222 **1 Claim**



1. An automatic work exchanging apparatus for transferring palletized workpieces between a transport truck, automatically conveying a palletized workpiece from a remote location to a position in front of a selectable one of a plurality of machine tools, and said machine tool, comprising:

a transfer truck laterally displacable along a set of rails in front of the machine tool, said transfer truck being positioned between and adjacent to said machine tool and said transport truck in response to an external command;

a generally rectangular platform vertically movable along supports positioned at the four corners and at the center of each of the longer sides of said platform, said rectangle being so oriented as to have the longer sides parallel with the direction of displacement of the transfer truck;

a pair of pistons, vertically disposed between said transfer truck and said platform, cooperatively operable to cause said vertical motion of said platform so as to maintain said platform in a substantially horizontal orientation; and

at least one pallet displacing device, positioned on and affixed to said platform;

wherein each said pallet displacing device further comprises:

a slidable member;

guide rails disposed on the platform for guiding said slidable member;

guide rollers supporting the slidable member enabling said slidable member to be moved in a direction perpendicular to the extent of the rails on which the transfer truck travels;

two pinions, one supported at each end of the slidable member, each of said pinions being capable of engaging a rack on a pallet carrying said workpiece;

switch means for detecting the position of the slidable member; and

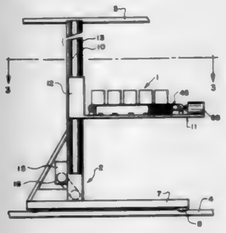
a driving device for operating the slidable member, said driving device having a second rack provided on a lower face of the slidable member and a third pinion driven by a motor mounted on the platform, said third pinion being engaged with the second rack, said one of the two pinions supported on said slidable member closer the transport truck being driven by a motor on the slidable member through sprockets and a first chain, and the other of the two pinions, supported on said slidable member closer to the machine tool, being driven by a second chain provided between a further sprocket coaxial with the former pinion and another sprocket so that said pinions are rotated in a same direction with an identical speed.

4,566,838

ACCUMULATOR PAN TRANSFER DEVICE

Ronald L. Binning, St. Petersburg, and Burton C. Sieder, Clearwater, both of Fla., assignors to Intech Systems, Inc., Hampton, Va.

Filed Aug. 10, 1983, Ser. No. 521,947
Int. Cl.⁴ B65G *1/04*
U.S. Cl. 414—278 **20 Claims**



1. An improved pan transfer system for a warehouse of the type having a shuttle movable along an aisle adjacent a storage rack having a plurality of storage compartments formed therein, said system including:

(a) pan means for containing stored articles adapted to be removably located in one of the storage compartments;

(b) a base vertically movably mounted on the shuttle;

(c) accumulated belt means mounted on the base for movement in a horizontal plane for transferring and accumulating a plurality of the pan means on said base;

(d) extractor means movably mounted on the base by wheels for individually transferring pan means between a storage compartment and the accumulator belt means; and

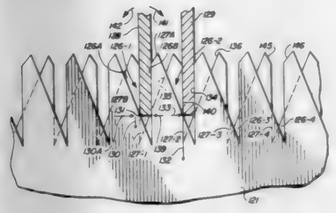
(e) drive means for moving the extractor means toward and away from a storage compartment, said drive means including guide tracks having V-shaped configurations mounted on the base and reversible motor means for moving the extractor means along the guide tracks toward and away from the storage compartment by the wheels which move in said guide tracks.

4,566,839

SEMICONDUCTOR WAFER DIFFUSION BOAT AND METHOD

Robert M. Butler, Tempe, Ariz., assignor to Microglass, Inc., Syracuse, N.Y.

Continuation-in-part of Ser. No. 495,642, May 18, 1983. This application Oct. 24, 1983, Ser. No. 544,588
Int. Cl.⁴ B65G *65/00*
U.S. Cl. 414—404 **11 Claims**



1. A boat for carrying thin semiconductor wafers, said boat comprising ih combination:

(a) first and second spaced, parallel rails, each having a longitudinal axis;

(b) means for rigidly connecting said first and second rails together in fixed relationship to each other;

(c) a first group of generally parallel wafer supporting grooves disposed in uniformly spaced relationship in an upper surface of said first rail, said wafer supporting grooves of said first group being generally perpendicular to said longitudinal axis of said first rail; and

(d) a second group of generally parallel wafer supporting grooves disposed in uniformly spaced relationship in an upper surface of said second rail, said wafer supporting grooves of said second group being generally perpendicular to said longitudinal axis of said second rail, each wafer supporting groove of said first group being aligned with a corresponding wafer supporting groove of said second group to cooperate therewith in engaging lower edge portions of a semiconductor wafer to support that semiconductor wafer,

wherein, a first wafer supporting groove of said first group includes a first flat, vertical groove wall surface for engaging a first peripheral portion of a first face of a first semiconductor wafer and a first steeply inclined groove wall surface opposed to said first flat vertical groove wall surface for supporting an edge point of a second face of said first wafer and exerting a horizontal force on said first semiconductor wafer, due to the weight of said first semiconductor wafer, to urge said first peripheral portion of said first face tightly against said first flat, vertical groove wall surface of said first wafer supporting groove of said first group, and

wherein a first wafer supporting groove of said second group includes a second flat, vertical groove wall surface for engaging a second peripheral portion of said second face of said first semiconductor wafer and a second steeply inclined groove wall surface opposed to said second flat, vertical groove wall surface for supporting an edge point of said first face of said first semiconductor wafer and exerting a horizontal force on said first semiconductor wafer, due to the weight of said first wafer, to urge said second peripheral portion of said second face tightly against said second flat, vertical groove wall surface of said first wafer supporting groove of said second group, whereby said first wafer is held firmly in a precisely vertical position by said first wafer supporting grooves of said first and second groups, respectively.

4,566,840

MECHANISM FOR DUMPING A CONTAINER INTO A REFUSE COLLECTION VEHICLE

Fred T. Smith, Palos Verdes Pennisula, Calif., assignor to The Heil Co., Milwaukee, Wis.

Continuation of Ser. No. 368,529, Apr. 15, 1982, abandoned. This application Aug. 22, 1984, Ser. No. 643,670
Int. Cl.⁴ B65F *3/04*
U.S. Cl. 414—408 **14 Claims**

5. A mechanism mounted on a refuse collection vehicle for lifting a container from a standing position at one side of the vehicle to an inverted position over the vehicle for dumping the contents of the container into the vehicle:

(a) a support frame assembly means (**18**), said support frame assembly means including a substantially vertically extending leg (**30**) and a substantially horizontal leg (**32, 34**) extending from the upper end of said vertical leg;

(b) a lift arm (**20**) supported from said horizontal leg of said support frame assembly means;

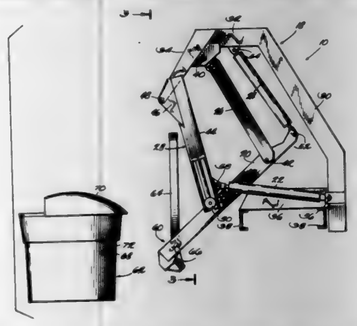
(c) support means (**26**) for supporting said lift arm from said horizontal leg of said frame assembly means, said support means including a link member pivotally connected at its upper end to said horizontal leg of said frame assembly and pivotally connected at its lower end to said lift arm at a point intermediate the ends of said lift arm;

(d) a container gripping means (**60**) mounted on one end of said lift arm, said container gripping means adapted to

move between a container gripping position and a container release position;

(e) a guide means (**28**) supported from said horizontal leg of said frame assembly and adapted to engage and guide the movement of said lift arm as said lift arm is moved between a position for gripping a container when in a standing position and a position wherein the container is inverted for dumping its contents, said guide means including a track member pivotally connected at its upper end to said horizontal leg of said frame assembly and adapted for engagement with a roller member mounted on said lift arm, said roller member mounted on said lift arm at a point intermediate the ends thereof;

(f) a power cylinder means (**24**) supported on said frame assembly and operatively connected to said lift arm, said



power cylinder means adapted to move said lift arm between a position for gripping a container when in an upright standing position to a second position in which the container assumes an inverted position for dumping the contents thereof, said power cylinder means being effective upon energization thereof to move the container from an upright standing position to an inverted dumping position; and

(g) a power track cylinder (**22**) pivotally connected at one end to said vertical leg of said support frame assembly and pivotally connected at its other end to said track member of said guide means, said power track cylinder adapted to move said lift arm so that the end thereof on which said gripping means is mounted will move in a direction substantially horizontal to the surface upon which the container is standing.

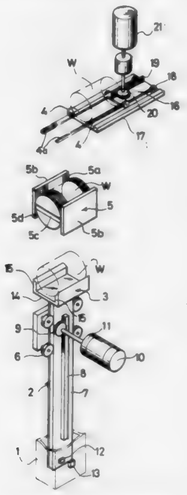
4,566,841

WAFERY WORKS RECEIVING OR DELIVERING DEVICE

Kenji Ohmura; Tsutomu Miyata; Yoshihiro Yamashita, and Minoru Noda, all of 31-1, Kameido 6-chome, Koto-Ku, Tokyo, Japan

Filed Nov. 30, 1983, Ser. No. 556,293
Claims priority, application Japan, Dec. 1, 1982, 57-210974
Int. Cl.⁴ B65G *65/34*
U.S. Cl. 414—417 **5 Claims**

1. Wafery works receiving or delivering device comprising: a work supporting means having plural pairs of opposed supporting grooves of a given pitch dimensioned to support a column of wafery works in erect positions; a transfer mechanism having said work supporting means mounted at the upper end thereof and reciprocable between a standby position and a work receiving or delivering position; a pair of forks located in the region of said work receiving or delivering position and having supporting grooves of the same pitch as that of the supporting grooves of said work supporting means; a fork advancing mechanism for advancing said forks to said work receiving or delivering position to enable said forks to overlap said work supporting means such that the supporting grooves of said forks align with those of said work supporting means; and means for collectively transferring the works supported in erect positions on said work supporting means to said forks or for collectively transferring the works supported in erect positions on said forks to said work supporting means in response



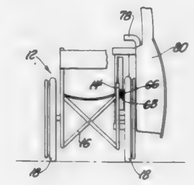
to movement of said work supporting means into and out of said work receiving or delivering position.

4,566,842

WHEELCHAIR DOCKAGE AND STORAGE SYSTEM

Robert A. Clarke, Madison Heights, Mich., assignor to Autodynamics Corporation of America, Madison Heights, Mich.

Filed Apr. 30, 1984, Ser. No. 605,302
Int. Cl.⁴ B60R *11/00*
U.S. Cl. 414—462 **20 Claims**



11. A wheelchair docking and storage assembly for collapsing and storing a wheelchair having a frame which folds as the frame is raised relative to the wheels thereof, said assembly comprising:

lifting means for engaging the frame of the wheelchair and lifting the wheelchair;

stop means for engaging a wheel of the wheelchair whereby said lifting means raises the wheelchair relative to the wheel thereof which engages said stop means to collapse the wheelchair;

said lifting means including arm means for engaging the wheelchair, raising means for selectively and reversibly raising said arm means, and drive means operatively connected to said raising means for driving said raising means;

said assembly being adapted to be mounted on a support wall;

said raising means including a screw member having an outer threaded surface operatively connected to said drive means to be selectively driven in a clockwise or counter clockwise direction, follower means fixedly connected to said arm means and threadably connected to said screw member so as to travel along said screw member as it is driven by said drive means, and guide means for guiding said follower means to turn relative to said screw member

and move said arm means against the support wall as said follower means is raised along said screw member and to move said arm means away from the support wall as said follower means is lowered along said screw member;

said follower means including at least one follower member having a threaded bore therethrough threadably engaging said screw member, an axle member extending therefrom, and a cam wheel rotatably mounted on said axle member;

said guide means being substantially U shaped in cross section defining an inner channel;

said cam wheel being rotatably mounted within said channel for movement there along;

said channel including a lower portion and an upper portion being twisted axially approximately 25 degrees counter clockwise relative to said lower portion and having a constant cross sectional dimension whereby said arm means is pivoted approximately 25 degrees as said follower member travels from said lower portion of said channel through said upper portion of said channel;

said arm means including an envelope member adapted to be connected to an arm of the wheelchair and having a pocket therein; and

said arm means further including a plate member connected to said follower member and having a predetermined shape for being inserted into said pocket.

4,566,843

MULTIARTICULATED MANIPULATOR

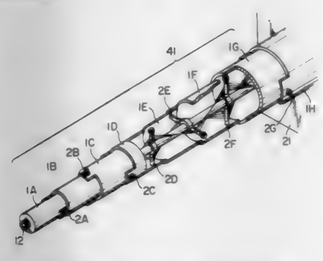
Nobuyoshi Iwatsuka; Fumio Tomizawa; Chikara Sato, all of Hitachi; Norihiko Ozaki, Mito; Yoshiaki Ichikawa, Hitachi, and Kenichiro Sadakane, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 20, 1983, Ser. No. 534,078

Claims priority, application Japan, Sep. 22, 1982, 57-163901

Int. Cl.⁴ B66C *23/00*

U.S. Cl. 414—680 **5 Claims**



1. A multiarticulated manipulator comprising:

a multijoint connecting mechanism including a plurality of arms, each arm having a joint capable of being bent in only one plane about a joint axis and all the arms being connected with one another in positions displaced from one another by a circumferential extent of an arbitrarily selected angle;

a multiplicity of wires each connected to one of the arms for moving the arms in swinging movement about the joint axis of their respective joints;

a plurality of wire guides for supporting and guiding the wires through the arms of said multijoint connecting mechanism to their arms to be moved in swinging movement, each of said wire guides being formed with apertures located on the joint axis of a respective one of the joints for the wires to extend therethrough, so that, when one arm is actuated for swinging movement about its joint axis by driving the wires connected thereto, no mutual interference occurs between the joints during operation whereby the swinging movement of the arm about its joint axis does not cause other arms to move in swinging movement about their joint axes; and

drive unit means for driving each of the wires.

4,566,844

BUCKET FOR MATERIAL

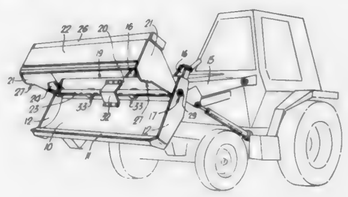
Joseph C. Campin, Le Tertre, Cidex 541bis, Theillay F-41300 Salbris, France

Filed Dec. 12, 1983, Ser. No. 560,363

Claims priority, application United Kingdom, Dec. 21, 1982, 8236292

Int. Cl.⁴ F02F *3/76*

U.S. Cl. 414—726 **7 Claims**



1. A bucket, for material handling apparatus including a bucket-supporting boom assembly disposed on a vehicle and projecting beyond one end thereof which assembly is so attached to the vehicle as to be pivotable relative thereto by power-operated means, said bucket having a back member adapted to be so mounted on the projecting end of the boom assembly as to be pivotable relative thereto by second power-operated means and a front member so mounted on the back member as to be moveable relative thereto about a pivot axis by third power-operated means which comprise a single, central hydraulic piston-and-cylinder assembly connected between a point on the back member and a lug fixed to a torsion bar which is connected only to the ends of the front member on the pivot axis thereof.

4,566,845

MEASURED-FORCE GRIPPER DEVICE OF ARTICULATED STRUCTURE HAVING SEVERAL DEGREES OF FREEDOM

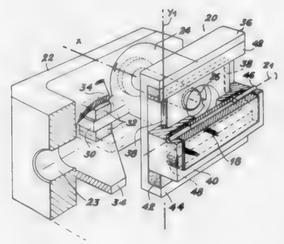
Mayez Al Mouhamed, Talkhalakh, Syria; Etienne Csakvary, Maurepas, France; Bertrand De Cosnac, Paris, France, and Jean-Paul Noel, Chatenay Malabry, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 12, 1983, Ser. No. 457,488

Claims priority, application France, Jan. 28, 1982, 82 01326

Int. Cl.⁴ B66C *1/00*

U.S. Cl. 414—735 **8 Claims**



1. A measured-force gripper device to be attached to the end of a manipulator arm, comprising;

two fingers, each being formed by a support;

a spindle connected to an end portion of the support and having a geometrical axis perpendicular to said end portion;

a bearing mounted to pivot on the spindle;

a flange connected to the bearing;

a table which can make a translational movement in relation to the flange and a contact plate which is adapted to contact an article to be handled and pivotedly fitted about an axis perpendicular to the geometrical axis of the spindle in relation to said mobile table;

a first displacement-measuring pickup being interposed between said support and said bearing to deliver an information related to the rotational movement of said bearing about the spindle axis;

a second displacement-measuring pickup being interposed between said flange and said mobile table to deliver an information related to the translational movement of said table; and

a third displacement-measuring pickup being interposed between said table and said contact-plate to deliver an information related to the rotational movement of said contact plate about its axis.

4,566,846

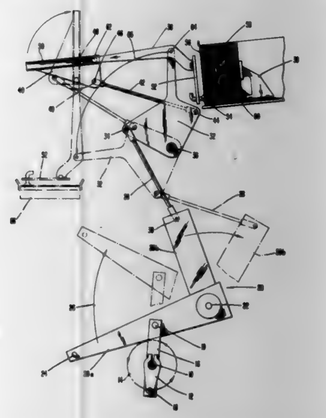
CARTON TRANSFER APPARATUS WITH EFFECTIVE CONSTANT LENGTH INVERTING ARM

Willard E. Cartwright, Los Altos, Calif., assignor to Kliklok Corporation, Greenwich, Conn.

Filed Dec. 17, 1982, Ser. No. 450,523

Int. Cl.⁴ B23Q *7/04*

U.S. Cl. 414—742 **13 Claims**



1. A carton transfer apparatus for transferring carton blanks between pickup and discharge locations by pivotally moving an inverting arm of fixed pivot length with a feed carrier on one end betwen the pickup and discharge locations and about a moving pivotal axis, comprising:

(a) a frame

(b) a drive arm pivotally secured to said frame for rotation about a first axis;

(c) a track pivotally secured to said frame;

(d) an inverting arm having a follower defining a pivotal axis, said inverting arm having a feed carrier at one end, the follower being positioned on said inverting arm and guided by said pivotal track which forms substantially the entire path of travel for said follower so as to control movement of the inverting arm, said inverting arm being pivotally connected to said drive arm and pivotally movable about the follower's pivotal axis in response to rotation of said drive arm about the first axis; and

(e) means for rotating said drive arm about said first axis and guidingly moving the follower freely along said track and simultaneously pivoting the inverting arm about the follower's pivotal axis as the feed carrier is moved between the pickup and discharge locations, wherby the inverting arm has an effective fixed pivot length and is pivoted about a moving pivotal axis to avoid imposing acceleration on said inverting arm and maintain control and smooth transfer movement of the carton blanks.

4,566,847

INDUSTRIAL ROBOT

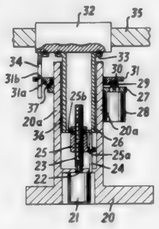
Takashi Maeda, and Masayuki Sato, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Feb. 28, 1983, Ser. No. 470,717

Claims priority, application Japan, Mar. 1, 1982, 57-32156

Int. Cl.⁴ B25J *9/00*

U.S. Cl. 414—744 R **7 Claims**



1. A positioning apparatus for use in positioning an arm of an industrial robot in angular and linear positions comprising: a frame member connectable to an arm of an industrial robot during use of the positioning apparatus; a frame-supporting member connected to and supporting the frame member; a base having an upstanding hollow sleeve portion; means mounting the frame-supporting member within the base hollow sleeve portion to undergo linear movement and angular movement, said means including bearing means between an outer peripheral surface portion of the frame-supporting member and an inner peripheral surface portion of the base hollow sleeve portion for slidably mounting the frame-supporting member to undergo linear and angular sliding movements; linear drive means for effecting linear driving movement of the frame-supporting member; and angular drive means for effecting angular driving movement of the frame-supporting member.

4,566,848

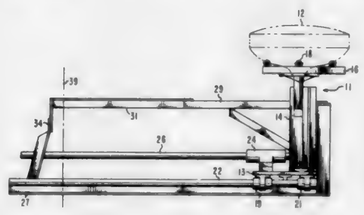
DEVICE FOR POSITIONING AND ORIENTING KINESCOPES

Merle E. Hertzler, Berks County, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 31, 1984, Ser. No. 636,257

Int. Cl.⁴ B65G *11/00*

U.S. Cl. 414—749 **11 Claims**



1. A device for accurately positioning and orienting a substantially rectangular envelope including a funnel having a neck portion at a preselected position comprising:

a first carriage for receiving said envelopes, said first carriage being vertically fixed and horizontally moveable between a first position and said preselected position;

a second carriage arranged at said preselected position, said

second carriage being horizontally fixed and vertically moveable whereby said second carriage removes said envelopes from said first carriage at said preselected position;

at least two guide members arranged on opposite sides of said first carriage and extending between said first position and said preselected position, at least a portion of said guide members converging toward said preselected position, said guide members being vertically positioned to urge the neck of an envelope carried by said first carriage to a position substantially centered between said guide members;

neck centering members moveably arranged on said second carriage, said neck centering members being configured to engage the neck of said envelope to center said neck at said preselected position and to vertically align the longitudinal axis of said neck; and

envelope orienting means arranged about said preselected position for engaging the sides of an envelope carried by one of said carriages to orient said envelope in a preselected orientation at said preselected position.

4,566,849

PRESSURE MEDIUM DRIVEN MACHINE TOOL

Claes H. Flink, Åmål, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

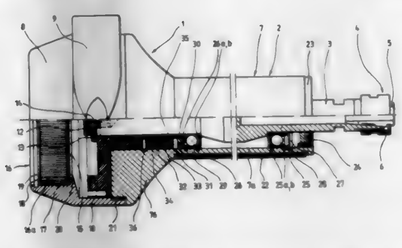
PCT No. PCT/EP83/00067, § 371 Date Oct. 21, 1983, § 102(e) Date Oct. 21, 1983, PCT Pub. No. WO83/03119, PCT Pub. Date Sep. 15, 1983

PCT Filed Mar. 8, 1983, Ser. No. 557,284

Claims priority, application Sweden, Mar. 8, 1982, 8201404

Int. Cl.⁴ F01D *15/16;* **B23Q** *5/06;* **B24B** *47/14*

U.S. Cl. 415—92 **11 Claims**



1. In a machine tool having a jet turbine driving a rotatable spindle with a tool holder, said spindle being rotatably supported in a spindle housing, said jet turbine having a disc-shaped turbine rotor closely rotatably enclosed by a turbine housing, said turbine rotor having peripherally arranged discrete recesses, each recess having a concave front actuation wall for the jet and one sidewardly arranged outlet opening which opens in the axial direction of the rotor, said housing having at least one inlet nozzle for the jet directed into the recesses and having at least one outlet opening for the spent jet medium, comprising the improvement wherein: the inlet nozzle is directed circumferentially of and tangentially to the rotor towards the deepest section of the concave front actuation wall; each recess is provided with a concave side wall opposite to the outlet opening and is also provided with a concave rear wall opposite to the front actuation wall; each recess is provided with a flat bottom wall surrounded by the front acutation wall, the side wall and the rear wall which are interconnected with each other; the turbine housing has an unrestricted exhaust opening disposed axially adjacent one end of the rotor in direct communication with the outlet opening; and the bottom wall is inclined backwardly relative to the flow direction of the jet when the jet initially impacts against the front wall so that said side, rear and bottom walls define an expansion space below the jet which is of increasing depth towards the rear wall and also define a guiding path towards the outlet opening for the expanding jet medium.

4,566,850

PUMP

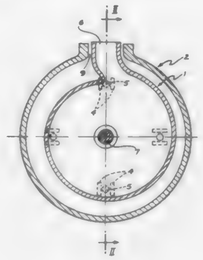
Anthony Grzina, Artarmon, Australia, assignor to Warman International Limited, Australia

Continuation of Ser. No. 184,075, Sep. 4, 1980, abandoned. This application May 2, 1984, Ser. No. 606,271

Claims priority, application Australia, Sep. 7, 1979, PE0412

Int. Cl.⁴ F04D *7/06;* **F01D** *25/26*

U.S. Cl. 415—128 **12 Claims**



1. A pump comprising an outer casing, an inner liner, a rotatable impeller mounted on a central shaft and means for affixing the liner within the casing to substantially secure the liner against rotational movement within said casing while providing clearance for the liner to expand, contract and deflect radially from the centreline of rotation of the impeller;

said affixing means comprising at least three sets of two radially aligned, axially extending projections located on one of the facing surfaces of the liner and the casing adjacent the ingress of the shaft of the impeller with corresponding mating, axially extending projections on the other of said facing surfaces, each mating projection being adapted to slidably fit between a corresponding set of two radially aligned, axially extending projections.

4,566,851

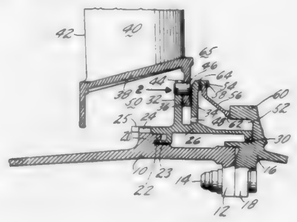
FIRST STAGE TURBINE VANE SUPPORT STRUCTURE

Roger J. Comeau, Ware, Mass., and Walter J. Baran, Jr., So. Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 11, 1984, Ser. No. 609,911

Int. Cl.⁴ F01D *25/24*

U.S. Cl. 415—139 **7 Claims**



1. A vane assembly for a turbine including:

a surrounding case having a mounting flange on its outer surface and a spacer flange on its inner surface spaced forwardly, axially from, the mounting flange,

a sleeve positioned within said case and supported radially and axially by said spacer flange adjacent its forward end,

spaced flanges on the inner surface of the sleeve, one of said flanges having radial slots in its inner periphery,

a turbine case secured to the mounting flange and engaging the rearward end of the sleeve to hold it in axial position only, and

a row of turbine vanes positioned within the sleeve, each vane having an outer shroud and a lug extending outwardly from said shroud, said lug being positioned between said spaced flanges in the sleeve, some of said lugs having axially extending torque pins thereon to engage in said slots, said flanges on the sleeve are upstream from one another and in which the upstream flange has the slots therein and the flange downstream thereof has cooling air passages closely spaced from the sleeve, and in which some of the slots are elongated to permit circumferential movement of the vanes for assembly, and said flange downstream of the lugs has a lateral flange at its inner end and an inner modular seal supported by said lateral flange.

4,566,852

AXIAL FAN ARRANGEMENT

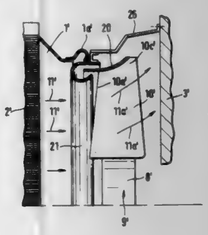
Kurt Hauser, Stuttgart, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 14, 1983, Ser. No. 475,038

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1982, 8207204[U]; Sep. 10, 1982, 3233622

Int. Cl.⁴ F01D *9/04;* **F04D** *29/54*

U.S. Cl. 415—182 **12 Claims**



11. An axial fan arrangement especially for the cooler or radiator of a water cooled internal combustion engine for vehicles and the like, comprising:

a rotatable fan hub,

fan blades carried by the hub,

and air guide structure surrounding the blades, which expands or widens toward the air exit region of the fan,

wherein the widening of the air guide structure begins in the region of the air inlet edges of the blades, and wherein the air guiding contour of the air guide structure conforms to the contours of the fan blades,

wherein the air guide structure is formed in part by the hub and by a guide ring fixedly connected with the ends of the blades,

wherein a fixed nozzles protrudes in the inlet opening formed at the inlet edge of the guide ring, and

wherein the inlet nozzle which protrudes into the guide ring expands in a curved shape in the flow direction from its smallest cross section advantageously located behind the inlet edge of the guide ring.

4,566,853

WINDMILL

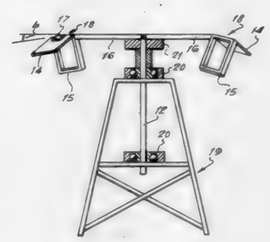
Chalerm Likitanupak, 16/25-26 Soi Watana (19), Sukhumvit Rd., Bangkok 11, Thailand

Filed Jun. 23, 1983, Ser. No. 507,431

Claims priority, application United Kingdom, Jun. 25, 1982, 8218529

Int. Cl.⁴ F03D *3/06*

U.S. Cl. 416—117 **8 Claims**



1. A vertical axis windmill comprising:

an upright central axis;

a plurality of horizontal arms mounted for rotation in a substantially horizontal plane about said upright central axis;

a plurality of frames, each frame being substantially vertical and coupled to a free end of one of said arms, each of said frames having an uppermost section extending downwardly from one of said arms at a tilt angle of from 20° to 80° from said arm and extending forwardly from said arm in the direction of rotation of said arm at a pitch angle in the same plane as said arm of from 5° to 30° from said arm; and

a plurality of blades, each blade being hinged at an edge thereof to said uppermost section of one of said frames, each blade being shaped so that upon rotation about said hinged edge said blade will contact said frame in said substantially vertical position thereby preventing further rotation of said blade.

4,566,854

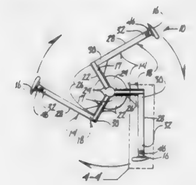
WIND ROTOR

Ray J. Slezak, 1110 - 28th St., West Des Moines, Iowa 50265

Filed May 21, 1984, Ser. No. 612,707

Int. Cl.⁴ F03D *7/06*

U.S. Cl. 416—119 **10 Claims**



1. A wind rotor for use with an electrical generator, comprising:

an elongated vertically disposed, rotatable shaft operatively connected to said generator;

a plurality of horizontally disposed and uniformly spaced inner arm members having a first end attached to said shaft and a second end extending radially outwardly therefrom;

a plurality of horizontally disposed outer arm members each being secured to said second end of one of said inner arm

members and being angularly disposed with respect to said one inner arm member;

a plurality of vertically disposed airfoil blades each having a leading edge, a trailing edge, and opposite first and second surfaces and each blade being connected to one of said outer arm members such that the chord line thereof is substantially parallel to the longitudinal axis of the respective inner arm member to which the outer arm member is attached, whereby the movement of a compressible gaseous fluid with respect to said blades generates aerodynamic lifting forces on said blades thereby rotating said rotor; and connection means for securing said blades to said outer arm members.

4,566,855

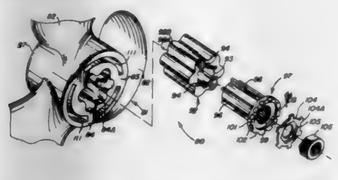
SHOCK ABSORBING CLUTCH ASSEMBLY FOR MARINE PROPELLER

John J. Costabile, 7037 E. Moreland, Scottsdale, Ariz. 85257; Arvid B. Costabile, 2716 E. Forrest Cir., Tempe, Ariz. 85281, and Ernest Costabile, 1833 E. Carven Rd., Tempe, Ariz. 85284

Continuation-in-part of Ser. No. 297,343, Aug. 28, 1981, Pat. No. 4,417,852. This application Nov. 23, 1983, Ser. No. 554,842

Int. Cl.⁴ B63H *1/20*

U.S. Cl. 416—134 R **8 Claims**



1. A marine propeller comprising in combination:

(a) a hub having therein an insert-receiving recess that is coaxial with the hub, the insert-receiving recess having a predetermined depth and a uniform, generally rose-shaped cross-sectional shape, with alternating longitudinal peaks and valleys on the inner wall extending from an open end of the insert-receiving recess to a bottom surface of the insert-receiving recess;

(b) a resilient insert disposed in the insert-receiving recess and having a predetermined length that is approximately equal to the predetermined depth of the insert-receiving recess, and having a uniform, generally rose-shaped cross-sectional shape with alternate longitudinal peaks and valleys that extend for the length of the resilient insert, the peaks of the insert extending into and mating closely with the valleys of the insert-receiving recess and the peaks of the insert-receiving recess extending into and mating closely with the valleys of the insert, the insert including an axial, cylindrical hole therein and a plurality of spaced longitudinal keyways in the surface of the cylindrical hole; and

(c) means for transmitting torque from a driveshaft to the resilient insert by means of the keyways thereof, the torque transmitting means including a plurality of elongated, longitudinal splines extending into the respective keyways,

each of the elongated keys being approximately aligned with a respective valley of the resilient insert to provide a substantial amount of mass of the resilient insert located between sloped walls of each of the peaks of the insert-receiving means and a side wall of a respective one of the splines in order to allow a substantial amount of compression of, and hence shock absorbing capability in that mass of the resilient insert.

4,566,856

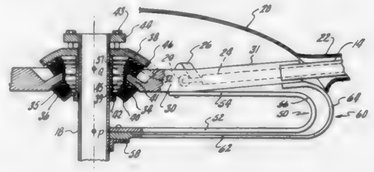
HELICOPTER GIMBAL ROTOR

Gordon G. Miller, Shelton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 27, 1984, Ser. No. 655,385

Int. Cl.⁴ B64C *27/33, 27/35*

U.S. Cl. 416—134 A **1 Claim**



1. A gimballed rotor system for a helicopter having a rotorshaft (**18**), a hub member (**28**) that is freely tiltable about a point (P) on the rotorshaft axis, and blades (**12**) that are radially attached to the hub member (**28**) in a rotor plane that nominally intersects the rotorshaft axis at a point (Q), which is above the point (P), characterized by;

a plurality of long flat U-shaped springs (**50**) for providing a hub moment, each spring having an outward leg (**52**), an inward leg (**54**) and a bight (**56**), wherein the inboard end of the outward leg is attached to the rotorshaft in-plane with the point (P) and the inboard end of the inward leg is attached to the hub member; and

a disc **60** for transmitting torque from the rotorshaft to the hub, having a resilient diaphragm portion (**62**) attached to the rotorshaft (**18**) in-plane with the point (P) and a rigid rim attached to the hub member (**28**).

4,566,857

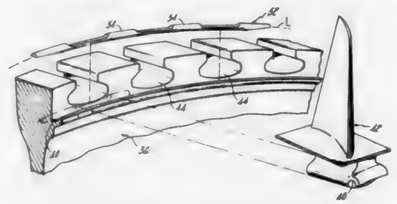
LOCKING OF ROTOR BLADES ON A ROTOR DISK

Claudio Brumen, Denver, Colo., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 218,241, Dec. 19, 1980, Pat. No. 4,389,161. This application Mar. 25, 1983, Ser. No. 478,949

Int. Cl.⁴ F01D *5/32*

U.S. Cl. 416—220 R **2 Claims**



1. A scalloped locking pin for trapping at least two blades in adjacent slots having a width W on a rotor disk of a rotor assembly of an axial flow rotary machine to prevent fore and aft movement of each blade, the pin having a first end, a second end, a longitudinal axis L which extends between the ends and a plurality of lugs extending laterally from one side of the pin and spaced one from another a distance greater than the width W to permit passage of the blade therethrough, and at least one of the lugs is disposed about the longitudinal axis L and has a cross-sectional shape which is symmetrically disposed about the axis L.

4,566,858

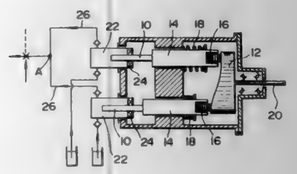
PULSATION-FREE VOLUMETRIC PUMP

Takashi Akiba, Tokyo, Japan, assignor to Nikkiso Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 309,579, Oct. 8, 1981, abandoned. This application Jun. 12, 1984, Ser. No. 619,738

Int. Cl.⁴ F04B *49/06, 49/08*

U.S. Cl. 417—22 **2 Claims**



1. A pulsation-free reciprocating volumetric pump comprising a pump housing having two plungers providing a combined discharge volume, a cam for driving said plungers, a direct current driving motor connected to said cam, a rotation setting means operatively connected to said driving motor for supplying thereto a predetermined direct current voltage for driving the motor at a predetermined rotational rate, a main amplifier operatively connected to said rotation setteing means for supply thereto as a first input the direct current voltage from the rotation setting means, said main amplifier having an output supplied to said drive motor, a tachogenerator operatively connected to said drive motor for drive thereby and supplying its output voltage as a second input to said main amplifier, and means for compensating for pressure pulsations produced during pumping, said last-named means comprising a pressure detector for detecting the pressure of said combined discharge volume and providing an output signal having a direct current component and an alternating current component representative of said pressure pulsations, means eliminating the direct current component of the pressure detector output signal and passing only the alternating current component, an amplifier circuit for amplifying the alternating current component, and adding means supplied with the direct current voltage from the rotation setting means and with the amplified alternating current component from the amplifier circuit for adding said alternating current component, after phase reversal, to the direct current voltage from the rotation setting means for modifying said first input voltage to said main amplifier in a sense to modify the rotation rate of the drive motor to compensate for said pressure pulsations.

4,566,859

METHOD FOR CARRYING LIQUID METAL BY TWO SERIES-CONNECTED ELECTRIC MAGNET PUMPS

Klaus Thissen, Cologne, and Joachim Barzantny, Kürten-Eichhof, both of Fed. Rep. of Germany, assignors to Interatom Internationale Atomreaktorbau GmbH, Bergisch-Gladbach, Fed. Rep. of Germany

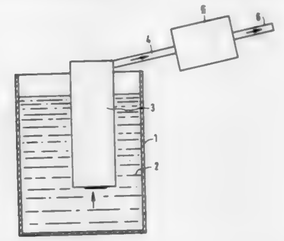
Filed Feb. 9, 1984, Ser. No. 578,548

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1983, 3322122

Int. Cl.⁴ H02K *44/02*

U.S. Cl. 417—50 **7 Claims**

1. Method for feeding controlled amounts of molten metal from a body of molten metal in a vessel, which comprises continuously operating an electromagnetic immersion pump immersed in the body of molten metal at a fixed output, discharging the output of the immersion pump through a conveying canal extending outside the body of molten metal, conveying the output from the conveying canal into an electromagnetic canal pump connected thereto, operating the canal pump at intervals to pump with a given output for a given time together with the immersion pump in the same direction of flow of molten metal, operating the canal pump at other intervals to pump in a reverse direction which is counter to the flow of metal from the immersion pump, and discharging controlled



amounts of molten metal from a discharge opening in the canal pump.

4,566,860

LIQUID PISTON COMPRESSION SYSTEMS FOR COMPRESSING STEAM

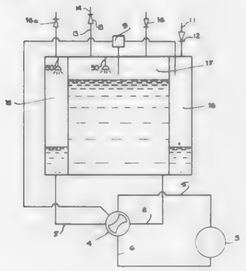
Ben Cowan, 5757 Cavendish Blvd., Montreal, Quebec, Canada (H4W 3W8)

Filed Apr. 9, 1984, Ser. No. 598,035

Claims priority, application Canada, Mar. 28, 1984, 450687

Int. Cl.⁴ F04F *11/00*

U.S. Cl. 417—102 **11 Claims**



1. An apparatus for compressing steam, comprising:

first and second compression chambers, each said chamber containing a quantity of compressing liquid, said liquid defining in each chamber a liquid level and a space above said liquid level;

unidirectional flow means in fluid communication with each said chamber, said flow means including a low pressure steam inflow conduit and a high pressure steam outflow conduit;

means for displacing the compressing liquid in said first chamber outwardly to thereby lower said liquid level therein and induce a suction stroke for admitting steam into said space in said first chamber, and simultaneously for displacing the compressing liquid in said second chamber inwardly to thereby raise said liquid level therein and induce a compression stroke for compressing steam in said second chamber;

means for reversing the displacement in cyclic fashion to thereby induce a compression stroke in said first chamber and a suction stroke in said second chamber;

means for desuperheating said steam during said compression strokes, said means including a separate water spray positioned in said space of each said chamber; and

wherein said steam inflow conduit admits low pressure steam during said suction stroke, and wherein said steam

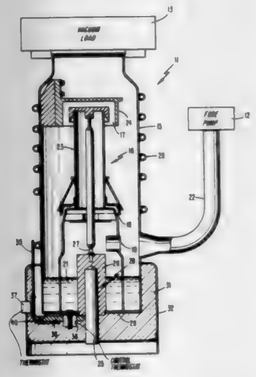
outflow conduit releases high pressure steam during said compression stroke.

4,566,861

METHOD OF AND APPARATUS FOR OPERATING A DIFFUSION PUMP

Arthur A. Landfors, Brookline, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 7, 1984, Ser. No. 607,867
Int. Cl.⁴ F04F *9/00*
U.S. Cl. 417—54 **11 Claims**



1. A method of operating a diffusion pump having a pool of liquid that is heated to a vapor and has a condensation surface for the vapor, the surface being supplied with a coolant fluid during normal operation of the pump, comprising the steps of determining the effectiveness of the fluid by: sensing the temperature of the pool, establishing a temperature gradient from the pool to the surface, and sensing the temperature at an intermediate location on the gradient; and controlling the rate of which the vapor is evaporated in response to an indication of the effectiveness of the fluid in cooling the condensation surface so that when the fluid is determined as being completely ineffective in cooling the surface liquid is vaporized from the pool but at a slower rate than when the fluid is effective in cooling the surface, the rate of evaporation being controlled by controlling the amount of power supplied to a heater for the liquid in response to both of the sensed temperatures.

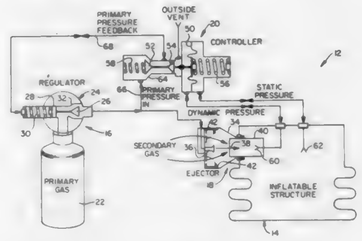
4. A diffusion pump comprising a pool of liquid, means for vaporizing liquid in the pool, a condensation surface on which the vaporized liquid is incident, means for cooling the condensation surface with a cooling fluid, means for sensing the effectiveness of the fluid in cooling the surface effectively to determine whether or not the cooling fluid is being supplied to the means for cooling, the means for sensing including means for sensing temperatures at two locations normally having disparate temperatures along a temperature gradient extending from the condensation surface to the pool, and means responsive to the sensed temperatures for controlling the vaporizing means to control the rate at which liquid is evaporated from the pool so that when the fluid is completely ineffective in cooling the surface liquid is vaporized from the pool but at a slower rate than when the fluid is effective in cooling the surface.

4,566,862

FLUID APPARATUS AND METHODS, AS FOR INFLATING INFLATABLE STRUCTURES

Richard A. Halavais, Pompton Lakes, N.J., assignor to General Pneumatics Corporation, Orange, N.J.

Continuation of Ser. No. 351,587, Feb. 23, 1982, abandoned.
This application Jul. 19, 1984, Ser. No. 632,267
Int. Cl.⁴ F04F *5/48*
U.S. Cl. 417—189 **8 Claims**



1. Apparatus for controlling the pressure of a primary gas supplied to a mass flow augmentation device of the type that employs the flow of the primary gas through a containment structure for entraining a secondary fluid to produce a combined fluid flow through the containment structure, comprising a housing having a portion adapted to be received within a base member of the mass flow augmentation device, pressure sensitive means disposed within the housing, means for applying a static pressure to the pressure sensitive means, and means responsive to the pressure sensitive means for supplying an output signal adapted for controlling the primary gas pressure dependent upon the static pressure, said housing comprising a cup-shaped member having an elongated tubular portion extending therefrom, the tubular portion being adapted to be received within an opening in the base member with an adjacent surface of the cup-shaped member in engagement with a surface of the base member, the static pressure applying means comprising a groove in said surface of the cup-shaped member adapted to be aligned with a hole in the surface of the base member that is in communication with a static pressure sensor, the cup-shaped member having another hole therein to provide a passageway between the groove and a chamber within the housing.

4,566,863

ROTARY COMPRESSOR OPERABLE UNDER A PARTIAL DELIVERY CAPACITY

Kunifumi Goto, Nagoya; Manabu Sugiura, Takahama, and Shinichi Suzuki, Okazaki, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Sep. 17, 1984, Ser. No. 651,612
Claims priority, application Japan, Sep. 16, 1983, 58-171969
Int. Cl.⁴ F04B *49/02, 49/08*
U.S. Cl. 417—295 **19 Claims**

1. A rotary compressor for compressing a refrigerant gas, comprising:

a housing;

a drive shaft rotatably supported in said housing and having a rotor thereon which is rotatable with said drive shaft;

means defining a plurality of compression chambers whose respective volumes sequentially and progressively increase from substantially zero to a maximum volume and thereafter decrease from said maximum volume to substantially zero responsive to rotation of said rotor;

means defining a suction chamber within said housing for containing refrigerant gas to be introduced into said compression chambers;

means defining a suction passage within said housing extending between said suction chamber and at least one of said compression chambers whose volume is being increased;

means defining a discharge chamber within said housing for receiving compressed refrigerant gas from at least one of said compression chambers whose volume is being decreased;

means defining a by-pass passage within said housing extending between said suction chamber and one of said compression chambers whose volume is being decreased;

control valve means within said housing including a valve member movable between a first position thereof opening



said suction passage and closing said by-pass passage and a second position thereof at least partially closing said suction passage and opening said by-pass passage, and means biasing said valve member towards its said second position;

means for exposing said valve member to compressed refrigerant gas pressure urging said valve member towards its said first position;

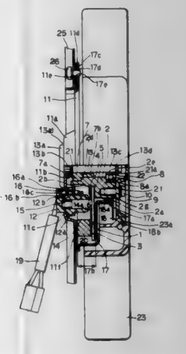
and means for exposing said valve member to suction chamber refrigerant gas pressure urging said valve member towards its said second position.

4,566,864

ELECTRIC FAN DEVICE FOR AUTOMOTIVE VEHICLE

Yosizi Yamamoto, Toyohashi, and Toshio Ishikawa, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 484,360, Apr. 12, 1983, abandoned.
This application May 29, 1985, Ser. No. 739,483
Claims priority, application Japan, Apr. 14, 1982, 57-54819[U]; Apr. 14, 1982, 57-54820[U]
Int. Cl.⁴ F04B *35/04;* **H02K** *1/28*
U.S. Cl. 417—353 **5 Claims**



1. An electrically-operated, automotive cooling fan device, comprising:

first and second housing members joined to define between them a motor chamber;

a shaft fixed to said first housing member and extending within said motor chamber;

bearing means mounted on said shaft;

a rotor rotatably supported on said shaft by said bearing-means, said rotor extending within said motor chamber and having an end exposed externally of said motor chamber;

an armature disk fixed to said rotor and extending radially outwardly therefrom within said motor chamber;

magnetic field means fixed to one of said housings and being thereby disposed to face said armature plate within said motor chamber for generating a magnetic flux as said rotor is turned;

a heat-radiating member fixed to said rotor at said exposed end of said rotor, so that said heat-radiating member is juxtaposed with said motor chamber but located externally of said motor chamber, said heat radiating member having a radially outer periphery; and

an annular, automotive cooling fan fixed to said heat-radiating member at said radially outer periphery of said heat-radiating member and extending therefrom, with said heat-radiating member thereby being constructed and arranged to function as a hub for said fan;

said heat-radiating member being made of heat-conductive metallic material and having an axially outer, radially central portion which is exposed externally of said device for radiating heat therefrom;

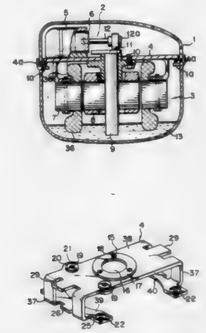
one of said housing members including contiguous portions made of heat-conductive metallic material juxtaposed with said armature disk and said heat-radiating member, whereby heat generated in said armature disk may be conducted to proximity of said heat-radiating member, radiate to said heat-radiating member, be conducted through said heat-radiating member and be radiated to externally of said device from said heat-radiating member.

4,566,865

CLOSED TYPE COMPRESSOR

Kazuichi Nishitsuji, Kawasaki; Eiichi Aikawa, and Yukio Haraguchi, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 26, 1984, Ser. No. 634,495
Claims priority, application Japan, Jul. 29, 1983, 58-137578
Int. Cl.⁴ F04B *35/04;* **F16M** *1/02*
U.S. Cl. 417—363 **7 Claims**



1. A closed type compressor comprising:

a case;

a frame provided within said case;

a compressor and an electric motor both attached to said frame;

said frame being U-shaped and comprising an elongated sheet material member and a plurality of embossed portions integrally formed at positions of said sheet material

member where said compressor and electric motor attach respectively thereto, and each of said portions having a through hole;

said sheet material member comprising a central portion, bent leg portions defined by end portions of said sheet material member which are substantially perpendicular, and ends defined by tip ends of said leg portions angled substantially perpendicular to said leg portions so as to face said central portion, with said embossed portions formed on said central portion and said ends of said sheet member, respectively, being formed at said positions so that said respective through holes thereof are not in axial alignment;

fixing means which pass through the through holes for fixing said motor and compressor on their respective embossed portions; and

means for supporting said frame within said case so that said central portion of said sheet member is pointed in a direction opposite to said ends thereof.

4,566,866

AGGREGATE FOR FEEDING OF FUEL TO INTERNAL COMBUSTION ENGINE PARTICULARLY OF POWER VEHICLE

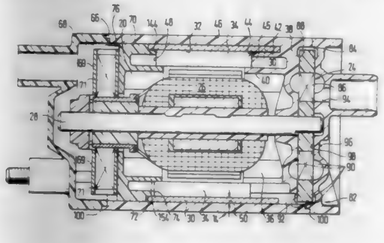
Ulrich Kemmner, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,561

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321241

Int. Cl.⁴ F04B *35/04;* **F04D** *5/00*

U.S. Cl. 417—366 **18 Claims**



1. An aggregate for feeding a fuel from a supply container to an internal combustion engine, particularly of a power vehicle, comprsing means forming a feeding chamber; a feeding pump having a feeding member rotatable in said feeding chamber; an electric drive motor for said feeding pump and having a motor armature connected with said feeding member of said feeding pump; means forming a space which surrounds said motor armature and through which a fuel flows; a weak magnetic tubular part surrounding said motor armature and having an inner wall; at least one permanent magnet having a substantially ring-segment shaped cross section and arranged on said inner wall of said part; an intermediate wall separating said feeding chamber from said space, said intermediate wall having a tubular projection which surrounds said part and a pocket provided on said intermediate wall inside said tubular projection for receiving a portion of said permanet magnet, said intermediate wall having a side facing away of said tubular projection and being provided at said side with an annular projection; and a closing cover mounted on said annular projection so that said closing cover and said side of said intermediate wall together form said means forming said feeding chamber for said feeding member of said feeding pump, said permanent magnet having another portion spaced from said first-mentioned portion, said tubular projection of said intermediate wall extending outwardly beyond said tubular part, said intermediate wall having a side facing away from said tubular projection; and a ring insertable from said side of said intermediate wall and axially abutting against said tubular part, said ring being provided with a receiving pocket for receiving the other portion of said permanent magnet.

4,566,867

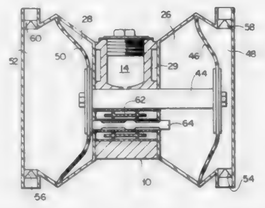
DUAL DIAPHRAGM PUMP

Alberto Bazan, 4928 Scott's Creek Trail, Duluth, Ga. 30136, and Donald M. Murphy, 739 Oak View Ct., Lilburn, Ga. 30093

Filed Jul. 2, 1984, Ser. No. 626,915

Int. Cl.⁴ F04B *43/06*

U.S. Cl. 417—393 **17 Claims**



1. A gas operated dual diaphragm pump comprising:

a gas inlet aperture for fluid communication with a supply of compressed gas;

a high pressure chamber in fluid communication with said inlet aperture;

an outlet aperture adapted for fluid communication to the atmosphere;

a low pressure chamber in fluid communication with said outlet aperture;

first and second diaphragm chamber;

a distribution valve in selective fluid communication with said high pressure chamber, said low pressure chamber and said diaphragm chambers; and

means for bleeding gas from said high pressure chamber to said low pressure chamber without passing through said gas distribution valve.

4,566,868

PRESSURE SOURCE

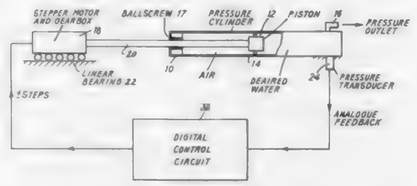
Bruce K. Menzies, Walton-On-Thames, England, assignor to Geotechnical Digital Systems Limited, Surrey, England

Filed Sep. 11, 1981, Ser. No. 301,084

Claims priority, application United Kingdom, Sep. 17, 1980, 8030082

Int. Cl.⁴ F04B *49/06, 49/08, 35/04;* **G01N** *3/10*

U.S. Cl. 417—572 **14 Claims**



1. A liquid pressure source comprising a piston and cylinder unit embodying a cylinder having at one end a pressure outlet, a piston in the cylinder movable reciprocally therein to generate a pressure at said outlet, a recirculating ball screw assembly at the other end of the cylinder, a threaded piston rod connected at one end to the piston, said threaded piston rod extending from the piston through said recirculating ball screw at said other end of the cylinder, a stepping motor, means non-rotatably supporting the stepping motor for rectilinear movement relative to the cylinder, said stepping motor including a rotor, means connecting the rotor to said piston rod such that rotation of the piston rod by way of the recirculating ball screw effects rectilinear movement of the stepping motor and piston, a pressure transducer at said one end of the cylinder operable to produce electric signals indicative of the fluid pressure generated at the outlet of the cylinder, means for generating signals representing the desired pressure, a digital feedback control means responsive to said transducer signals and to the signals representing said desired pressure to provide said stepping impulses to said stepping motor in a sense such as to reduce the difference between the actual and the desired pressure and a volume charge counter means coupled to said digital feedback control means to count said stepping pulses so as to indicate the change in volume.

4,566,869

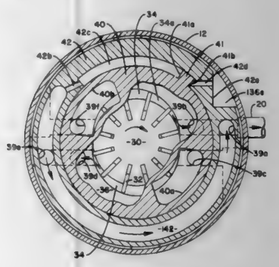
REVERSIBLE MULTI-VANE ROTARY COMPRESSOR

Prakash N. Pandeya, Clay, and Tsuwei Chu, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 18, 1984, Ser. No. 682,869

Int. Cl.⁴ F04C *25/00, 29/08;* **F25B** *13/00*

U.S. Cl. 418—15 **6 Claims**



1. A reversible hermetic compressor unit comprising:

shell means having first and second lines connected thereto;

rotary compressor means within said shell means;

motor means within said shell means for selectively driving said rotary compressor means in a clockwise or a counter-clockwise direction;

said rotary compressor means including:

a compressor chamber with a rotatable multi-vane rotor therein;

a first pair of fluid passage means fluidly connected to said first line and said compressor chamber;

a second pair of fluid passage means fluidly connected to said second fluid line and said compressor chamber; and

means including a pair of supplemental suction ports movable in response to the pressure differential between said first and second lines to position said pair of supplemental suction ports in communication with either said first pair of fluid passage means or said second pair of passage means and said chamber according to which of said first and second pair of fluid passage means are suction lines as determined by the direction in which said motor means drives said rotary compressor means.

4,566,870

ADJUSTABLE VANE-TYPE PUMP

Manfred Kahrs, Wiesbaden, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

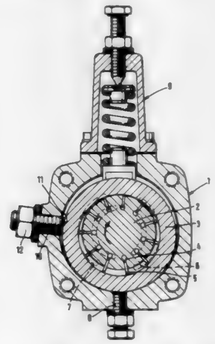
Filed Aug. 29, 1983, Ser. No. 527,250

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1982, 3240367

Int. Cl.⁴ F01C *21/16*

U.S. Cl. 418—30 **1 Claim**

1. An adjustable vane-type pump comprising an enclosing housing, a rotor rotatable on an axis within said housing past a suction port on one side of the rotor and a pressure port on the opposite side of said rotor, means in said rotor on rotation thereof for placing said ports in communication to pump fluid from the suction port to the pressure port, a cam ring eccentrically encircling said rotor and displaceable radially relative to said rotor, said cam ring comprising an outer curved surface resting within said housing, means for adjusting the position of said cam ring radially relative to said rotor for limiting the volume delivered by said pump, pressure control means diametrically opposite said position adjustment to set a bias pressure applied to said cam ring, and a further adjusting means at the pressure port side of the cam ring and positioned to bear against the cam ring to control the pre-compression of fluid



passing from said suction port to said pressure port, said further adjusting means comprising a planar surface applying a settable pressure against said cam ring, said planar surface comprising the end face of a bolt threaded through an opening in the enclosing housing to bear against said cam ring, said bolt being inclined at a single predetermined acute angle relative to the axis of the pressure control means with said planar surface applied generally at the axis of said rotor to the extension of said cam ring, to minimize noise over the operating range of the pump.

4,566,871

APPARATUS FOR MAKING A PARISON FOR BLOWMOLDING OF A HOLLOW ARTICLE

Norbert Höne; Claus Horwege, and Otto Rosenkranz, all of Hamburg, Fed. Rep. of Germany, assignors to Krupp Corpoplast Maschinenbau GmbH, Fed. Rep. of Germany

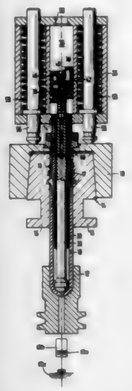
Division of Ser. No. 335,884, Dec. 30, 1981, Pat. No. 4,499,044. This application Jan. 25, 1984, Ser. No. 573,697

Int. Cl.⁴ B29D *23/03*

U.S. Cl. 425—525 **6 Claims**

1. In an improved apparatus for making a parison for blowmolding a hollow body of the thermoplastic material comprising; a holding means for locating and securing the parison in a molding position, a finish mold disposable around a portion of the parison and an elongated forming mandrel having a central bore, said forming mandrel being displaceable in the longitudinal axial direction of the parison and insertable into the parison, the improvement comprising: a stretching pin located in the central bore of said forming mandrel, said stretching pin being outwardly extendable from said forming mandrel and axially displaceable in said bore with respect to said parison into contact with the bottom of said parison, and an actuating means for said forming mandrel and said stretching pin for first moving said forming mandrel and said stretching pin into said parison after said finish mold is disposed around a portion of said parison for locking said parison in said finish mold and subsquently moving said stretching pin in said central bore of

said forming mandrel with respect to said parison and outwardly from said forming mandrel into contact with the bot-



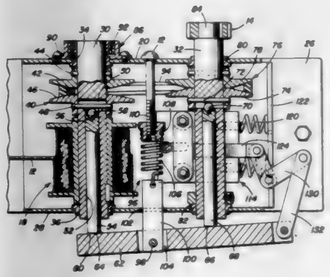
tom of said parison for stretching said parison by the contact with the bottom of the parison.

4,566,872

VARIABLE SPEED TRANSMISSION FOR PORTABLE WINCH

Norman D. Brockelsby, 1127 N. Sherman, Grand Island, Nebr. 68801

Filed Jun. 8, 1984, Ser. No. 619,309
Int. Cl.⁴ F16H *7/08*
U.S. Cl. 474—101 **12 Claims**



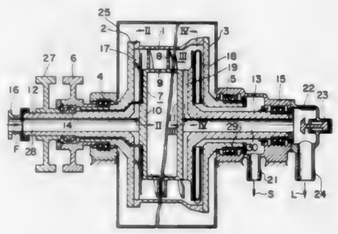
1. In a variable speed transmission having a housing, a pair of drive shafts rotatably mounted by the housing in spaced relation to each other, a pair of pulleys respectively connected to said drive shafts, an endless drive belt entrained about said pulleys and a belt tightening device operatively connected to said pulleys for maintaining the belt in operatively tensioned condition, the improvement residing in means for automatically varying the drive ratio between said drive shafts as functions of the torques applied thereto, comprising a belt tightening device for establishing a predetermined belt tensioning force, means for dividing said belt tensioning force into distributed force components, force transfer means for respectively transmitting the distributed force components to the pulleys to establish the tensioned condition of the drive belt and means for applying a load force to the force dividing means to establish said drive ratio.

4,566,873

SCREW DECANTER TYPE CENTRIFUGAL CONCENTRATING MACHINE

Toshiyuki Toda, Hiroshima, Japan, assignor to Kotobuki Engineering & Manufacturing Co., Ltd., Kure, Japan

Filed Mar. 28, 1984, Ser. No. 594,297
Int. Cl.⁴ B04B *1/20, 11/02*
U.S. Cl. 494—53 **5 Claims**



1. A screw decanter type centrifugal concentrating machine of the type including a bowl having side walls and a screw conveyor rotatably supported within said bowl in the coaxial relation relative to the latter by means of hollow shafts fixedly secured to both of said side walls of said bowl, said screw conveyor being rotated at a different rotational speed from that of the bowl, characterized in that liquid initially supplied prior to separating, concentrated liquid and residual liquid after completion of separation in the bowl are continously supplied and discharged through the hollow space in the hollow shafts of the bowl and the screw conveyor and that throttle valves are disposed in the discharge passages extending from the hollow shaft for at least one of concentrated liquid and residual liquid.

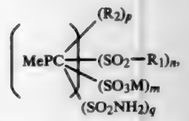
4,566,874

WATER-SOLUBLE ZINC AND ALUMINIUM PHTHALOCYANINES AND USE THEREOF AS PHOTOACTIVATORS

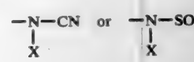
Gerd Hölzle, Liestal; Mirella Miotto, Basel; Gerhard Reinert, Allschwil, and Rudolf Polony, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 445,784, Dec. 1, 1982, Pat. No. 4,497,741.
This application Dec. 5, 1984, Ser. No. 678,314
Int. Cl.⁴ D06L *3/04*
U.S. Cl. 8—103 **17 Claims**

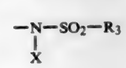
1. A process for bleaching and removing stains from textiles, which process comprises treating said textiles, in the presence of water and under irradiation with light, with a zinc or aluminum phthalocyananine compound of the formula



wherein MePc is the zinc or aluminium phthalocyanine ring system, M is hydrogen or the equivalent of a salt-forming cation, R_1 is hydrogen, M or a group of the formula



wherein X is hydrogen or ammonium or the equivalent of a monovalent, divalent or trivalent metal ion, and R_3 is unsubstituted or substituted C_1–C_2 alkyl, unsubstituted or substituted aryl or an unsubstituted or substituted and/or fused 5- or 6-membered aromatic heterocyclic ring containing one or two nitrogen, oxygen or sulfur heteroatoms; R_2 is independently halogen, aryl or cyano, n has any value from 1 to 4, each of m and q has any value from 0 to 3 and p has any value from 0 to 4, while the sum of n+m and n+q in each case is 1 to 4 and q is only different from 0 if R_1 is a group of the formula



and m is 0, and the substituents R_2 present in the molecule may be the same or different.

4,566,875

TWO-STAGE PROCESS FOR DYEING KERATIN FIBRES AND COMPOSITION FOR USE THEREIN

Jean F. Grollier, and Chantal Fourcadier, both of Paris, France, assignors to L'Oreal, Paris, France

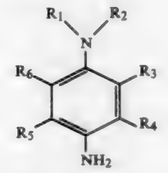
Filed Apr. 5, 1979, Ser. No. 27,400
Claims priority, application France, Apr. 6, 1978, 78 10276
Int. Cl.⁴ A45D *7/00;* **A61K** *7/13;* **D06P** *5/00*
U.S. Cl. 8—406 **7 Claims**

1. A process for dyeing hair which comprises applying to the hair for 5 to 45 minutes a first composition containing at least one mercaptan corresponding to the formula:



(I)

in which R denotes an alkylene group bonded to a group of the formula —COOH, —$CONH_2$, —OH, —SH or —COOR', R' denoting an unsubstituted alkyl group or hydroxy-substituted alkyl group, said alkylene group being unsubstituted or substituted by one or more lower alkyl, amino or COOH groups, an ammonium, alkali metal or alkaline earth metal salt thereof or an organic or inorganic acid addition salt thereof, present in an amount greater than 1% and less than 5% by weight and subsequently without intermediate rinsing applying to the hair for 5 to 40 minutes an oxidising composition so as to develop an oxidisable dyestuff applied to the hair, said oxidisable dyestuff being a paraphenylenediamine of the formula:



(II)

in which R_1 and R_2 independently of one another denote hydrogen; phenyl; furfuryl; tetrahydrofurfuryl; a linear or branched alkyl group which is unsubstituted or chain-terminated by a hydroxyl, alkoxy or a primary, secondary or tertiary amino group, acylamino, alkyl- or arylsulphonylamino, carbalkoxyamino, ureido, carboxyl, carbamyl in which the nitrogen atom is unsubstituted or mono- or di-substituted, sulpho, sulphonamido in which the nitrogen atom is unsubstituted or mono- or di-substituted, said alkyl groups including alkyl groups containing an oxygen or nitrogen atom and alkyl groups substituted by other hydroxy or amino groups; or R_1 and R_2 together form, with the nitrogen atom to which they are attached, a piperidino or morpholino ring; and R_3, R_4, R_5 and R_6 independently of one another denote hydrogen, halogen, linear or branched alkyl which is unsubstituted or substituted by one or more OH, amino or alkoxy groups, or a group OZ, Z denoting alkyl, hydroxyalkyl, alkoxyalkyl, acylaminoalkyl, carbalkoxyaminoalkyl, mesylaminoalkyl, ureidoalkyl, aminoalkyl or mono- or di-alkylaminoalkyl, with the proviso that if R_2 denotes phenyl, R_1, R_3, R_4, R_5 and R_6 denote hydrogen, and that if R_1 and R_2 are both different from hydrogen, R_3 and R_6 both denote hydrogen, and that if R_1 and R_2 simultaneously denote hydrogen, at least two of the substituents R_3, R_4, R_5 and R_6 are different from hydrogen; or an organic or inorganic acid salt thereof; a para-aminophenol, a 2,5-diamino pyridine, an amino benzomorpholine, or a N,N'-diarylalkylenediamine in which the aryl groups are substituted in the para position by an OH, amino or amino substituted by alkyl, unsubstituted or substituted on the nucleus by alkyl or halogen, and in which the alkylene group is uninterrupted or interrupted by O or N or is unsubstituted or substituted by OH or an alkyl group, the nitrogen atoms carried by the alkylenediamine groups being unsubstituted or substituted by an alkyl, hydroxyalkyl or aminoalkyl group, present in an amount of 0.005 to 10% by weight, or a 4,4'-diaminodiphenylamine, a 4-hydroxy 4'-aminodiphenylamine or a 4,4'-dihydroxydiphenylamine present in an amount of 0.005 to 4% by weight, or pyrogallol, 1,2,4-trihydroxybenzene, 1,3,5-trihydroxybenzene, 1,4,5-trihydroxynaphthalene, 2,4,5-trihydroxytoluene, alphajuglone, triaminobenzene, di- or tri-aminophenol, polyaminopolyhydroxybenzene present in an amount of 0.01 to 8% by weight.

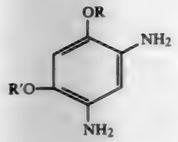
4,566,876

META-PHENYLENEDIAMINE COUPLER COMPOUNDS AND OXIDATIVE HAIR DYE COMPOSITIONS AND METHODS USING SAME

Keith C. Brown, New Canaan, and John F. Corbett, Norwalk, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

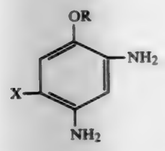
Filed Mar. 10, 1983, Ser. No. 474,110
Int. Cl.⁴ C07C *91/42;* **A61K** *7/13*
U.S. Cl. 8—411 **14 Claims**

1. An oxidation dye coupler compound of the formula:



wherein each of R and R' independently represent mono or poly-hydroxy (C_1–C_4) alkyl or an acid addition salt thereof.

6. A hair dyeing composition comprising an aqueous mixture of at least one oxidation dye coupler of the following formula:



wherein R and R' are independently mono or polyhydroxy (C_1–C_4) alkyl or an acid addition salt thereof, and X represents the group —OR' where R' has the same meaning as R', the groups —OR and —OR' may be the same or different; and at least one oxidation base developer compound, said coupler and said developer being reactive with each other in the presence of an oxidizing agent to form a colored dye on hair.

4,566,877

CARBON FOAM USABLE AS BLAST-FURNACE FUEL AND METHOD OF MAKING SAME

Richard Pazdej, Maizieres-les-Metz, and Albert Pavinato, Metz-Vallieres, both of France, assignors to Institut de Recherches de la Siderurgie Francaise, Saint-German-en-Laye, France

Filed Apr. 9, 1984, Ser. No. 598,574

Claims priority, application France, Apr. 7, 1983, 83 05826

Int. Cl.⁴ C10L *1/36*

U.S. Cl. 44—51 **13 Claims**

1. A mixture comprising:

at least 70% by weight of a solid carbon-rich material;

between 0.07% and 3.5% by weight of a foaming surfactant; and

balance gaseous bubbles and aqueous liquid capable of suspending the carbon-rich material.

4,566,878

REACTION PRODUCT OF BETA-MERCAPTOETHANOL AND COCONUT OIL AS DIESEL FUEL ANTIWEAR ADDITIVE

Thomas J. Karol, Norwalk, Conn., and Rodney L. Sung, Fishkill, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 11, 1985, Ser. No. 710,650

Int. Cl.⁴ C10L *1/24*

U.S. Cl. 44—57 **20 Claims**

1. A diesel fuel composition characterized by improved wear resistance which comprises a major portion of a diesel fuel; and a minor wear resistance portion of, as an additive, a hydroxy hydrocarbyl mercapto ester of a C_1–C_{40} fatty acid.

4,566,879

FUELS CONTAINING SULFURIZED ORGANIC ACID DIAMINE SALTS

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Company, New York, N.Y.

Division of Ser. No. 535,132, Sep. 23, 1983. This application Jun. 5, 1985, Ser. No. 741,429

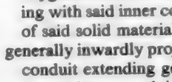
Int. Cl.⁴ C10L *1/22, 1/24*

U.S. Cl. 44—71 **11 Claims**

1. A liquid fuel composition comprising a major proportion of fuel and a friction reducing amount of an acid-amine salt prepared by reacting a sulfurized carboxylic acid of the formula

R-COOH

where R is a C_{10} to C_{20} unsaturated hydrocarbyl group, at from about 20° C. to about 120° C., with a diamine of the formula



wherein R^1 is a C_2 to C_4 hydrocarbylene group, R^2 is a C_{12} to C_{30} hydrocarbyl group and R^3 is hydrogen or a C_1 to C_6 hydrocarbyl group, using a molar ratio of sulfurized acid to diamine of from about 1:1 to about 4:1.

4,566,880

REACTOR FOR COAL GASIFICATION

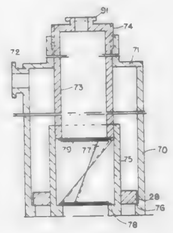
Jürgen Seipenbusch, Essen, and Hans Dohren, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Ruhrkohle AG, Essen, Fed. Rep. of Germany

Division of Ser. No. 98,917, Nov. 30, 1979, Pat. No. 4,352,675. This application Sep. 27, 1982, Ser. No. 424,638

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2852704

Int. Cl.⁴ C10J *3/50*

U.S. Cl. 48—73 **2 Claims**



1. A reactor for coal gasification wherein oxidation of a solid material containing carbon in the presence of water, produces a carbon monoxide and a hydrogen containing gas, comprising:

a vortex burner having an inner conduit for admission of oxygen or combustive air and an outer conduit cooperating with said inner conduit to define an annulus for receipt of said solid material and water, and .

generally inwardly projecting ribs disposed within said inner conduit extending generally adjacent to the inner surface of said inner conduit for establishing generally spiral motion to said oxygen or combustive air as it moves through said inner conduit, said ribs inclined relative to the longitudinal axis of the oxygen conduit or combustive air conduit and running in said inner conduit, wherein the inner conduit for the oxygen or the combustive air is a tube formed in several parts including lower and upper tube portions which can glide into one another, and wherein the lower tube portion in the operative position is maintained fixed in the vortex burner and the upper tube portion is adjustable longitudinally and glides in the lower tube portion and the ribs are maintained between the upper tube portion and a fixation structure in said lower tube portion.

4,566,881

PROCESS AND APPARATUS FOR PRODUCING OXYGEN WITH A LOW PROPORTION OF ARGON FROM AIR

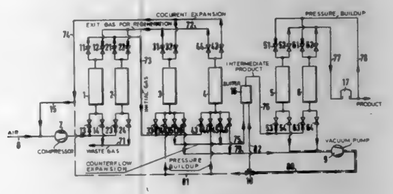
Ekkehard Richter; Karl Knoblauch, both of Essen; Rolf Schlegel, Gladbeck, and Werner Körbächer, Mühlheim, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Jan. 28, 1985, Ser. No. 695,394

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402533

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—25 **20 Claims**



1. A process for producing oxygen with a low proportion of argon from air, comprising the steps of:

adsorbing oxygen from the air by allowing the latter to flow past a first adsorption unit;

desorbing the sorbed oxygen under formation of an intermediate gas enriched with oxygen and depleted of argon and including evacuating of the adsorption unit;

adsorbing nitrogen from the intermediate gas by allowing the latter to flow past a second adsorption unit to obtain a product gas further enriched with oxygen; and

desorbing the removed nitrogen from the second adsorption unit under formation of a by-product gas by evacuating the second adsorption unit, said second adsorbing and desorbing step defining a working cycle lasting twice as long as the working cycle defined by said first adsorbing and desorbing step wherein said evacuation step of said second adsorption unit is temporarily interrupted when said evacuating step of the first adsorption unit occurs.

12. An apparatus for producing oxygen with a low fraction of argon from air, comprising:

a first adsorption unit having at least two adsorbers for treating the air to provide an intermediate gas enriched with oxygen and depleted of argon, each of said adsorbers operating in a working cycle having an adsorption phase and a desorption phase;

a second adsorption unit having at least two adsorbers connected to said first adsorption unit for removing nitrogen from said intermediate gas so as to provide a further enrichment with oxygen, each of said adsorbers of said second adsorption unit operating in a working cycle which has an adsorption phase and a desorption phase and which lasts twice as long as the working cycle of said adsorbers of said first adsorption unit; and

a vacuum pump cooperating with each of said adsorbers of said first adsorption unit for evacuating said adsorbers of said first adsorption unit, and cooperating with each of said adsorbers of said second adsorption unit for regenerating said adsorbers of said second adsorption unit, said vacuum pump cooperating with said first and second adsorption units such that regeneration of said adsorbers of said second adsorption unit is temporarily interrupted when evacuation of one of said adsorbers of said first adsorption unit is provided.

4,566,882

FILTER FOR CLEANING GASES

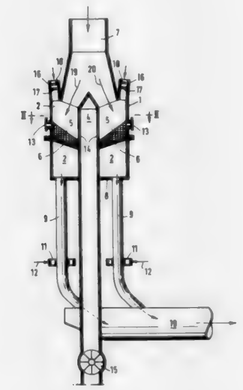
Harald Hoffmann, Much; Günter Henrich, Leverkusen, and Heinz-Dieter Waldhecker, Rösrath, all of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Mar. 20, 1984, Ser. No. 591,568

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311108

Int. Cl.⁴ B03C *1/02;* **B01D** *46/36*

U.S. Cl. 55—100 **11 Claims**



1. A filter for cleaning gases comprising:

a housing,

a raw gas feed conduit communicating with said housing,

a relatively large clean gas discharge conduit positioned adjacent said housing,

partition wall means defining a plurality of filter chambers annularly disposed within said housing,

a bulk material layer composed of granular solids disposed in said chambers,

a plurality of relatively smaller clean gas discharge conduits, one being connected to each filter chamber and each discharging into said relatively large clean gas discharge conduit,

a centrally disposed channel in said housing,

said bulk material layer in said chambers being disposed in annular fashion about said channel, and

said channel having openings therein above said bulk material layer providing fluid communication with said chambers.

4,566,883

APPARATUS FOR GAS/LIQUID SEPARATION

Stephanus Paardekooper, and Johan J. B. Pek, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 5, 1984, Ser. No. 586,482

Claims priority, application United Kingdom, Apr. 8, 1983, 8309633

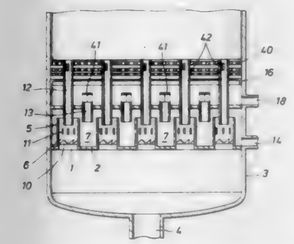
Int. Cl.⁴ B01D *50/00*

U.S. Cl. 55—329 **7 Claims**

1. An apparatus for separating gas/liquid mixtures comprising:

a vessel having a first transverse wall adjacent one end, an inlet means disposed in said one end for said gas/liquid mixture;

at least one swirl tube mounted in said first transverse wall for introducing a swirl flow in said gas/liquid mixture;
a second transverse wall disposed in said vessel above said first transverse wall, said first and second transverse walls confining an outer space around said at least one swirl tube;
a primary gas outlet tube disposed coaxially with said at least one swirl tube, said primary gas outlet tube passing through said second transverse wall;
at least one liquid discharge opening in the wall of said at least one swirl tube, said at least one discharge opening communicating with the enclosed space between said first and second transverse walls;



at least one secondary gas outlet, said at least one secondary gas outlet passing through the second transverse wall and establishing communication between the space above said second transverse wall and the space between said first and second transverse walls;
a demister mat positioned above said second transverse wall, said demister mat being formed of flow impinging material, said primary gas outlet tube extending substantially through an opening in said demister mat; and
an outlet formed in the portion of said primary gas outlet tube that extends into said demister mat and positioned and arranged for laterally discharging substantially all of the remaining liquid from the primary gas outlet tube into said demister mat.

4,566,884

VACUUM CLEANER BAG SUPPORT

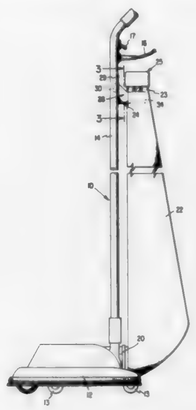
John E. Jones, Greenville, and W. K. Glenn, III, Anderson, both of S.C., assignors to The Singer Company, Stamford, Conn.

Continuation of Ser. No. 407,536, Aug. 12, 1982, abandoned. This application Jul. 16, 1984, Ser. No. 605,008

Int. Cl.⁴ B01D *46/02*

U.S. Cl. 55—357 **2 Claims**

1. An upright vacuum cleaner having a chassis movably supported on the floor, a handle pivotally attached thereto and extending upwardly therefrom, a bag extending from said chassis upwardly adjacent said handle to an upper terminus thereof, and means for detachably securing said bag to said handle comprising:
a bag support having a connector portion and an extension from said connector portion,
cooperating means on said handle and on the connector portion of said bag support for removably securing said bag support to said handle,
said bag being formed at said upper terminus with a slot,
said bag support extension extending through said collecting bag slot to the interior of said bag,
a bag top support coextensive with the interior of said upper terminus of said bag and located between said bag upper terminus and said bag support extension,
said bag top support including a post slidably engaging said bag support extension,
a compression spring encircling said post and extending between said bag support extension and said bag top support, and
a cover on the exterior of said upper terminus of said bag of which cover the external shape and appearance is uninhibited by presence of any means connecting said cover with said handle.



4,566,885

GAS LIQUEFACTION PROCESS

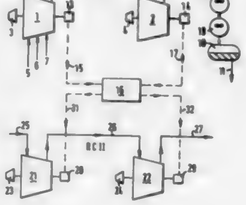
Frederik W. Haak, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 5, 1984, Ser. No. 657,856

Claims priority, application United Kingdom, Nov. 18, 1983, 8330762

Int. Cl.⁴ F25J *1/00*

U.S. Cl. 62—9 **8 Claims**



1. A method for liquefying a natural gas by cooling it under pressure in stages, comprising:
cooling the natural gas by means of at least two refrigerants having different compositions, said refrigerants being circulated by separate compressors in separate closed refrigeration systems;
driving a first compressor in a first one of the closed systems with a gas turbine and cooling the compressed refrigerant with ambient air;
driving, in addition to said first compressor, an electric generator and controlling said generator so that said turbine normally operates at substantially its designed load as the temperature of said ambient air varies; and
supplying the electric power generated to an auxiliary electric motor coupled to a second compressor in a second of said closed systems to deliver extra driving power to said second compressor.

4,566,886

PROCESS AND APPARATUS FOR OBTAINING PURE CO

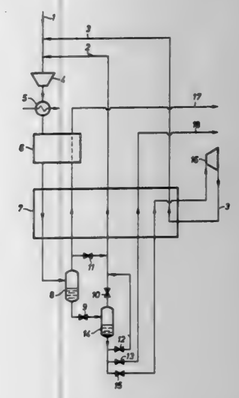
Rainer Fabian, Geretsried; Freimut Marold, Neubiberg, and Dieter Latzin, Munich, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 600,059

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313171

Int. Cl.⁴ F25J *3/06*

U.S. Cl. 62—11 **19 Claims**



1. A process for obtaining purified carbon monoxide from a gaseous mixture consisting essentially of hydrogen and carbon monoxide (H_2-CO), comprising compressing the H_2-CO gaseous mixture; cooling the compressed gaseous mixture to condense a predominant portion of the carbon monoxide containing dissolved hydrogen; pressure reducing resultant condensed carbon monoxide to evolve dissolved H_2 in the gaseous phase thereby obtaining purified liquid carbon monoxide; recycling resultant evolved H_2 into said gaseous mixture; vaporizing a fraction of resultant purified carbon monoxide, engine expanding resultant vaporized fraction, and recycling resultant engine expanded fraction to said gaseous mixture, and withdrawing another fraction of said purified carbon monoxide as product.

4,566,887

PRODUCTION OF PURE NITROGEN

Ronald D. Openshaw, Cheshire, England, assignor to Costain Petrocarbon Limited, Manchester, United Kingdom

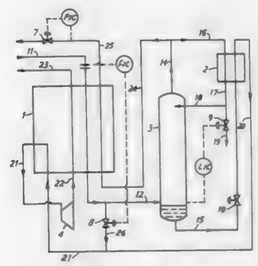
Filed Sep. 12, 1983, Ser. No. 531,252

Claims priority, application United Kingdom, Sep. 15, 1982, 8226290

Int. Cl.⁴ F25J *3/04*

U.S. Cl. 62—21 **17 Claims**

10. An apparatus for the production of nitrogen gas and liquid from air which comprises:
a distillation column;
means for introducing a flow of compressed air into said distillation column whereby a nitrogen-rich gas stream is recovered at the top of the distillation column and an oxygen-containing liquid stream is recovered at the bottom of the distillation column;
a valve means;
means for introducing at least a portion of said oxygen-containing liquid stream recovered from the bottom of the distillation column to the valve means for expansion therein;
means for effecting an indirect heat exchange between a portion of the nitrogen-rich gas stream recovered from the top of the distillation column and the expanded oxygen-containing liquid stream recovered from the value means whereby the expanded oxygen-containing liquid stream is evaporated and the portion of the nitrogen-rich gas stream recovered from the top of the distillation column is condensed and returned to the distillation column as reflux and a portion thereof optionally recovered as a liquid nitrogen product;
a work expansion means;
means for passing the evaporated oxygen-containing liquid stream through the work expansion means;
means for passing the work-expanded oxygen-containing stream in indirect heat exchange with the flow of compressed air to be introduced into the distillation column to refrigerate the flow of compressed air, and recovering the work-expanded oxygen-containing stream;
means for recovering a portion of the nitrogen-rich gas stream recovered at the top of the distillation column as a gaseous nitrogen product; and
means designed for regulating the output of nitrogen gas and liquid in accordance with a variable demand for nitrogen gas whereby the output of liquid nitrogen is increased in periods of reduced demand for nitrogen gas, said means including:
means for periodically diverting a portion of the flow of compressed air to be introduced into the distillation column, combining the diverted compressed air stream with the evaporated oxygen-containing liquid stream, passing the combined stream through the work expansion means,



passing the combined work-expanded stream in indirect heat exchange with the flow of compressed air to be introduced into the distillation column to refrigerate the compressed air, and recovering the combined stream.

14. An apparatus for the production of nitrogen gas and liquid from air which comprises:
a distillation column;
means for introducing a flow of compressed air into said distillation column whereby a nitrogen-rich gas stream is recovered at the top of the distillation column and an oxygen-containing liquid stream is recovered at the bottom of the distillation column;
a valve means;
means for introducing at least a portion of said oxygen-containing liquid stream to the valve means for expansion therein;
means for effecting an indirect heat exchange between a portion of the nitrogen-rich gas stream recovered from the top of the distillation column and at least a portion of the oxygen-containing liquid stream recovered from the bottom of the distillation column whereby the oxygen-containing liquid stream is evaporated and the portion of the nitrogen-rich gas stream recovered from the top of the distillation column is condensed and returned to the distillation column as reflux and a portion thereof optionally recovered as a liquid nitrogen product;
a first work expansion means;
means for passing the evaporated oxygen-containing stream through the first work expansion means;

means for passing the work-expanded oxygen-containing liquid stream in indirect heat exchange with the flow of compressed air to be introduced into the distillation column to refrigerate the flow of compressed air, and recovering the work-expanded oxygen-containing stream;

means for recovering a portion of the nitrogen-rich gas stream recovered at the top of the distillation column as a gaseous nitrogen product; and

means designed for regulating the output of nitrogen gas and liquid in accordance with a variable demand for nitrogen gas whereby the output of liquid nitrogen is increased in periods of reduced demand for nitrogen gas, said means including:

means for periodically diverting a portion of the flow of compressed air to be introduced into the distillation column, passing the diverted stream of compressed air through a second work expansion means, combining the diverted stream of compressed air which has been work-expanded with the work-expanded oxygen-containing stream and passing the combined stream in indirect heat exchange with the flow of compressed air to be introduced into the distillation column to refrigerate the flow of compressed air, and recovering the combined stream.

4,566,888

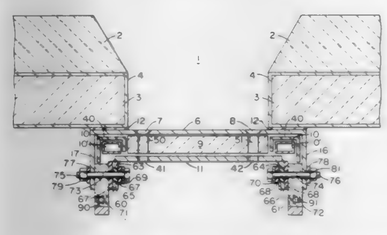
BUSHING CONSTRUCTION

William L. Schaefer, Butler, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 635,018, Jul. 27, 1984, abandoned. This application Jun. 5, 1985, Ser. No. 741,377

Int. Cl.⁴ C03B *37/09*

U.S. Cl. 65—1 **18 Claims**



1. A bushing assembly comprising a flat precious metal plate being provided with at least one hole therein, an insulation member positioned below said precious metal plate and having at least one hole therein surrounding the hole in said precious metal plate, a frame member surrounding said insulation member and having means to circulate cooling fluid therethrough, an insulator covering the upper surface and at least a portion of the sides of said frame, a support plate positioned below said insulation member and said frame and having at least one hole therein communicating with the holes of said precious metal plate and said insulation member, means to electrically connect said precious metal plate to a power source and means to attach said assembly to a source of molten glass with the precious metal plate surface facing said molten glass source.

4,566,889

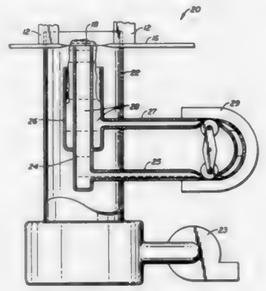
PROCESS OF FABRICATING A PORTION OF AN OPTICAL FIBER CAPABLE OF REFLECTING PREDETERMINED WAVELENGTH BANDS OF LIGHT

Donald C. Schmadel, Jr., Kensington, Md., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 546,608, Oct. 28, 1983, abandoned. This application Nov. 16, 1984, Ser. No. 672,540

Int. Cl.⁴ C03C *25/02, 25/06*

U.S. Cl. 65—3.2 **20 Claims**



1. A process of fabricating gratings in an optical fiber comprising:

removing the outer layers of an optical fiber to a depth wherein evanescent waves are encountered;

coating the fiber with a photoresist;

exposing the photoresist to interfering beams of light having a predetermined spatial separation so as to fabricate a plurality of exposure peaks in the photoresist;

developing the photoresist;

removing the soluble portions of the photoresist; and

etching the optical fiber with an ion beam.

4,566,890

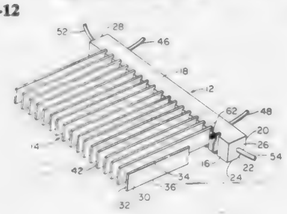
SELF PURGING FIN COOLER

Jonathan E. Hostler, Verona, and Richard P. Beaver, Library, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 17, 1984, Ser. No. 682,401

Int. Cl.⁴ C03B *37/02*

U.S. Cl. 65—12 **12 Claims**



1. A self purging fin cooler useable with a glass filament forming bushing, said self purging fin cooler comprising:

a fin cooler header block having a coolant liquid flow channel, a separate cleaning liquid flow channel, and a plurality of spaced, parallel cooling fins affixed at first ends to a front face of said header block and extending outwardly therefrom;

means to flow coolant liquid through said coolant liquid flow channel and means to flow cleaning liquid to said cleaning liquid flow channel;

cleaning liquid distribution passages extending from said cleaning liquid flow channel and terminating at said front face of said header block with one of said distribution passages terminating between each two adjacent ones of said cooling fins;

a removable spray nozzle secured in each of said liquid distribution passages at said front face of said header block; and

means to intermittently supply cleaning liquid at high pressure to said spray nozzles for impingement against said cooling fins.

4,566,891

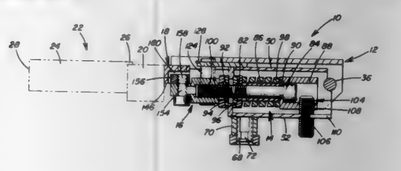
FIN COOLER CLAMP

Thomas J. Briar, Trafford, and William H. Retsch, Castle Shannon, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 24, 1984, Ser. No. 686,169

Int. Cl.⁴ C03B *37/02*

U.S. Cl. 65—12 **20 Claims**



1. A fin cooler clamp assembly useable to releasably and adjustable secure a fin cooler having a plurality of spaced cooling fins attached at first ends to an elongated header block beneath an elongated glass fiber forming bushing, said fin cooler clamp assembly comprising:

a fin support bracket attachable to a bushing frame generally beneath the bushing, said fin support bracket including a generally inverted U-shaped channel;

a fin adjusting housing releasably positionable within said U-shaped channel;

a fin attaching block attached to a forward portion of said fin adjusting housing; and

a fin block attached to said fin attaching block, said header block being secured to said fin block.

4,566,892

METHOD FOR FORMING GLASS TO METAL SEALS IN STRUCTURAL MEMBERS

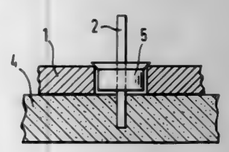
Gerhard Ertel, Tienfenbach, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Oct. 12, 1984, Ser. No. 660,187

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337037

Int. Cl.⁴ C03C *29/00*

U.S. Cl. 65—59.24 **16 Claims**



1. A method of locating a conductor in a bore through a metallic structural member, with a glass-to-metal seal between the interfacing surfaces of the bore, glass and conductor, the method comprising the steps of:

(a) providing a glass bead of a diameter less than the bore through the metallic structural member;

(b) surrounding the conductor with the glass bead;

(C) keeping the glass bead from touching the metallic structural member by decreasing the diameter of the bore at the location spaced from one side of the metallic structural member to a diameter less than that of the bead;

(d) orienting the metallic structural member with said one side facing downwardly;

(e) inserting the glass bead in the bore;

(f) abutting the bead with the reduced diameter portion of the bore;

(g) performing steps (a)–(f) to form an assembly of the metallic structural member, glass bead and conductor;

(h) heating at least the glass bead of the assembly to a temperature sufficient to fuse the bead to the surface of the bore; and

(i) allowing the glass to cool so as to form the glass to metal seal.

4,566,893

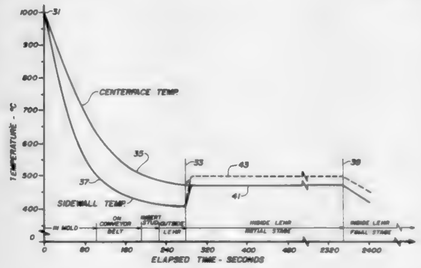
METHOD FOR FABRICATING A GLASS CRT PANEL

Maxwell M. Hopkins, Kendall Park, and Arthur Miller, West Windsor Township, Mercer County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 3, 1984, Ser. No. 657,085

Int. Cl.⁴ C03B *25/00*

U.S. Cl. 65—69 **12 Claims**



1. Method for fabricating a glass panel comprising a viewing window and peripheral sidewalls for a cathode-ray tube, which panel exhibits high compressive surface stress and low dimensional change when reheated from room temperatures to temperatures above 450° C. and then cooled to room temperature, said method comprising

A. forming said panel from a gob of molten glass,

B. permitting said panel to cool to temperature within an annealing range which will subsequently produce minimum compaction in said window whereby substantial stresses with relatively long relaxation times are induced in said window,

C. maintaining the window of said panel during the initial annealing stage for a prescribed period of time at about said temperatures within said annealing range that produce minimum compaction in said window, said combination of time and temperature being sufficient for relieving stresses with relatively short relaxation times while retaining stresses with relatively long relaxation times,

D. and then cooling said panel to room temperature.

4,566,894

DEFLECTOR ADJUSTMENT FOR A GLASSWARE FORMING MACHINE

Constantine W. Kulig, Windsor; Charles M. Kingsbury, and Bruce R. Beckwith, both of Unionville, all of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Continuation of Ser. No. 472,391, Mar. 4, 1983, abandoned. This application May 20, 1985, Ser. No. 736,514

Int. Cl.⁴ C03B *7/14*

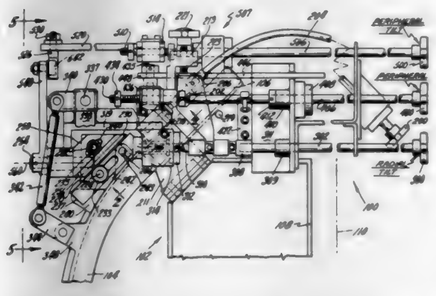
U.S. Cl. 65—304 **2 Claims**

2. In a glassware forming machine of the type including a plurality of blank molds, and for each blank mold a glass gob

delivery system incorporating a chute, a trough, and a deflector extending along a deflector axis for guiding glass gobs to said blank mold, and further including means for oscillating said deflector about a first axis along a predetermined arcuate path, the improvement comprising:

a pivot block fixed to said deflector near an infeed end thereof;

radial adjusting means for translating the pivot block and thereby translating said deflector within a radial plane substantially intersecting said deflector axis and said first axis;



radial tilt adjusting means for pivotally adjusting the position of an outfeed end of said deflector around a pivot point near the infeed end thereof, within the radial plane;

peripheral adjusting means for translating said pivot block along an arc in a plane essentially perpendicular to the deflector axis; and

peripheral tilt adjusting means for rotating said pivot block around an axis essentially perpendicular to its deflector axis and the radial, peripheral, and peripheral tilt adjusting means comprise mechanisms remotely operable from the glass gob delivery system for adjusting the position and orientation of the pivot block.

4,566,895

MOLDS USED FOR BLOWING GLASS ARTICLES

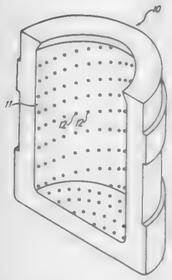
Masayoshi Kasakabe, Shiga, Japan, assignor to Nippon Electric Glass Company, Limited, Otsu, Japan

Continuation of Ser. No. 605,786, May 1, 1984, abandoned. This application Jun. 17, 1985, Ser. No. 745,381

Claims priority, application Japan, May 4, 1983, 58-77547

Int. Cl.⁴ C03B *9/347*

U.S. Cl. 65—319 **6 Claims**



1. A metallic mold for blowing glass article which consists of a water- and steam-impermeable met; wall having an inner molding surface and a multiplicity of small water-retaining and steam-impermeable blind holes mechanically formed in the metallic wall and distributed over the entire inner molding surface, each one of the blind holes extending from the inner surface to a bottom of the hole in the metallic wall.

4,566,896

METHOD AND MEDIA FOR STIMULATING GROWTH IN FOLIAGE PLANTS

William C. Firth, Jr., Robbinsville, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Continuation-in-part of Ser. No. 201,923, Oct. 29, 1980, Pat. No. 4,321,076, which is a division of Ser. No. 109,794, Jan. 7, 1980, Pat. No. 4,274,860, which is a continuation-in-part of Ser. No. 924,146, Jul. 13, 1978, abandoned. This application Nov. 6, 1981, Ser. No. 318,741

The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.

Int. Cl.⁴ C05F *11/02*

U.S. Cl. 71—24 **4 Claims**

1. In a conventional potting media for stimulating growth of foliage plants, the improvement which comprises, the presence of from 0.1 percent to 10 percent by volume of a humate, said humate being one which has in its composition a carbon to hydrogen ratio (weight to weight) of from 9.5–17.5:1.0; a carbon to oxygen ratio of 1.0–2.3:1.0; an aluminum content of 2.8 to 8.4 percent by weight; a titanium content of 0.5 to 3.5 percent by weight and a calcium content of less than 0.5 percent by weight; said humate being present in the potting media in an amount such that the potting media is effective to stimulate the growth of foliage plants selected from the group consisting of Calethea, Chamaedorea and Philodendron.

4,566,897

DIPHENYL ETHER DERIVATIVES AND HERBICIDES CONTAINING SAME

Takeo Yoshimoto; Akira Hosono; Joh Miki; Yasunobu Funakoshi; Takashi Fujita, and Yoshikata Hojo, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

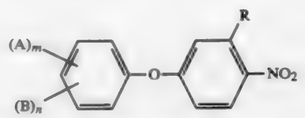
Division of Ser. No. 287,654, Jul. 28, 1981, Pat. No. 4,515,628, which is a continuation of Ser. No. 91,858, Nov. 6, 1979, abandoned. This application Mar. 15, 1984, Ser. No. 589,795

Claims priority, application Japan, Nov. 8, 1978, 53-136769

Int. Cl.⁴ A01N *43/46;* **C07D** *223/02*

U.S. Cl. 71—88 **4 Claims**

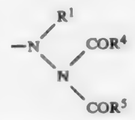
1. A diphenyl ether compound represented by the formula I,



(I)

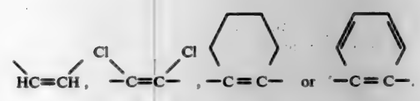
wherein A and B are each selected from the group consisting of a chlorine atom, a fluorine atom, $—CH_3$ and $—CF_3$; m and n each represent an integer 0~3 and $m+n=0\sim3$;

R represents

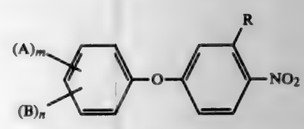


wherein R^1 represents hydrogen atom, $—CH_3$, C_2H_5 or $—C_3H_7(n)$;

R^4 and R^5 together represent $—(CH_2)_2—$, $—(CH_2)_3—$, $—(CH_2)_4—$,



4. A herbicidal composition containing, as an active ingredient a herbicidally effective amount of a diphenyl ether compound represented by the formula I,



I

wherein A, B, m, n and R are as defined in the formula I of claims 1, 2 or 3 and also containing an inert herbicidal carrier.

4,566,898

HERBICIDAL SULFONAMIDES

James J. Reap, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 7, 1984, Ser. No. 648,065

The portion of the term of this patent subsequent to May 10, 2000, has been disclaimed.

Int. Cl.⁴ C07D *251/42, 251/16;* **A01N** *43/66*

U.S. Cl. 71—93 **5 Claims**

1. A compound selected from 4-chloro-2-[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)aminocarbonyl]aminosulfonyl]benzoic acid (1-methylethyl)ester and its agriculturally suitable salts.

4,566,899

SELECTIVE HERBICIDAL BENZYLCARBAMOYLPYRIDINE DERIVATIVES

Dominique Ambrosi, Charbonnieres Les Bains, and Francois de Reinach Hirtzbach, Lyons, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

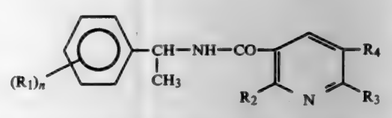
Filed Dec. 13, 1983, Ser. No. 560,922

Claims priority, application France, Dec. 13, 1982, 82 21078

Int. Cl.⁴ C07D *213/82, 401/06;* **A01N** *43/40, 43/64*

U.S. Cl. 71—93 **9 Claims**

1. A benzylcarbamoylpyridine derivative of the formula



(I)

or an agriculturally acceptable salt thereof wherein: R_1 represents a halogen atom, and alkyl radical containing from 1 to 6 carbon atoms, optionally substituted by one or more halogen atoms, or an alkoxyl radical containing from 1 to 4 carbon atoms;

R_2 and R_3, which are identical or different, represent an alkyl radical containing from 1 to 3 carbon atoms, an alkoxy radical containing from 1 to 4 carbon atoms or an alkoxyalkyl radical containing from 2 to 8 carbon atoms;

R_4 represents a radical selected from the group consisting of alkanoyl radicals containing from 1 to 6 carbon atoms, benzoyl radicals optionally substituted by one or more halogen atoms, azidomethyl radicals, alkoxy-carbonylmethyl radicals containing from 3 to 8 carbon atoms, hydroxyalkyl radicals containing from 2 to 5 carbon atoms, halogenalkyl radicals containing from 2 to 5 carbon atoms, straight or branched alkyl radicals containing from 1 to 4 carbon atoms optionally substituted by a triazolyl radical, alkynyloxyalkyl radicals containing from 4 to 8 carbon atoms, or a vinyl radical;

n is an integer from 0 to 5 inclusive, and when n is greater than 1, said R_1 substituents may be identical or different.

5. A herbicidal composition comprising a herbicidally effective amount of at least one compound according to claim 1, as the active ingredient and an agriculturally acceptable carrier or surface active agent.

4,566,900

ANILINE DERIVATIVES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Peter Plath, Ludwigshafen; Ulrich Schirmer, Heidelberg; Gernot Reissenweber, Ludwigshafen; Bruno Wuerzer, Otterstadt, and Guenter Retzlaff, Roemerberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

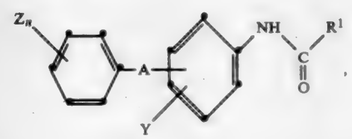
Filed Dec. 1, 1982, Ser. No. 445,702

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1981, 3148594

Int. Cl.⁴ C07C *155/02, 83/10;* **A01N** *37/00, 37/44*

U.S. Cl. 71—100 **8 Claims**

1. An aniline derivative of the formula



(I)

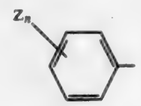
where R^1 is alkoxy, alkylthio or unsubstituted alkyl, halogen-substituted alkyl or C_1–C_4-alkoxy-substituted alkyl, each of which is of no more than 4 carbon atoms, or is cycloalkyl of 3 to 6 carbon atoms or the radical



where R^2 and R^3 independently of one another are each hydrogen, alkyl or alkoxy, each of no more than 4 carbon atoms, or cycloalkyl of 3 to 6 carbon atoms, Y is hydrogen, halogen, methyl, methoxy or trifluoromethyl, A is an alkylene chain of 2 to 9 carbon atoms which contains a carbonyl group or a carbinol group of the formula



and can be substituted by methyl, Z is hydrogen, halogen, alkyl, alkoxy, haloalkyl or haloalkoxy, each of no more than 6 carbon atoms, or phenyl or phenoxy, and n is 1, 2 or 3, and the radical



can be replaced by naphthyl which is unsubstituted or substituted by halogen, or by alkyl or alkoxy, each of no more than 4 carbon atoms.

5. A herbicide containing inert additives and from 0.1 to

95% by weight of an aniline derivative of the formula I as claimed in claim 1.

4,566,901

NOVEL OXIME ETHERS, THE PREPARATION THEREOF, COMPOSITIONS CONTAINING THEM AND THE USE THEREOF

Henry Martin, Allschwil, and Urs Fricker, Gelterkinden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

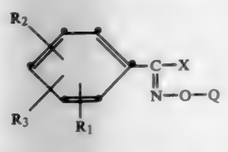
Filed Apr. 29, 1983, Ser. No. 490,055

Claims priority, application Switzerland, May 6, 1982, 2804/82

Int. Cl.⁴ A01N *37/34*; **C07C** *121/66*

U.S. Cl. 71—105 **19 Claims**

1. An oxime ether of the formula I



(I)

R_1 is hydrogen, halogen C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, C_1–C_4 haloalkylsulfonyl or nitro,

R_2 and R_3 are each hydrogen, halogen C_1–C_4 alkyl, C_1–C_4 alkoxy or C_1–C_4 haloalkyl,

Q is $—CH_2CONH_2$ or $—CH(CH_3)CONH_2$; and

X is a fluorinated C_1–C_3 alkyl radical, which may also contain chlorine.

15. A composition for protecting cultivated plants from damage caused by a herbicidal haloacetanilide, thiocarbamate, 1,2,4-triazinone or dinitroaniline, which composition contains an effective amount of an oxime ether of claim 1, together with an inert carrier.

4,566,902

PROCESS FOR REMOVING SULFUR DURING MELTING OF PIG IRON

Horst Sulzbacher, Leoben, Austria, assignor to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Apr. 30, 1984, Ser. No. 605,282

Claims priority, application Austria, May 4, 1983, 1646/83

Int. Cl.⁴ C22B *1/10*

U.S. Cl. 75—26 **8 Claims**

1. A process for removing sulfur during the melting of pig iron within a fluidized layer comprising introducing a desulfurating agent into the fluidized layer of sulfur-containing coal and pig iron, the desulfurating agent comprising a first grain size of 0.5 to 5 mm to selectively remove sulfur from the coal in the fluidized layer and a second grain size of 5 to 50 mm which passes through the fluidized layer to contact and thereby desulfurize the resulting molten slag.

4,566,903

METHOD FOR THE PYROMETALLURGICAL TREATMENT OF FINE GRAINED SOLIDS TO PRODUCE MOLTEN PRODUCTS

Gerhard Melcher; Friedrich Megerle, both of Cologne, and Wolfgang Wuth, Berlin, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Oct. 3, 1984, Ser. No. 657,122

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1983, 3335859

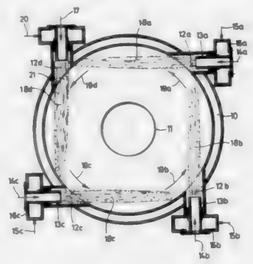
Int. Cl.⁴ C22B *15/00*

U.S. Cl. 75—26 **7 Claims**

1. In a method for the pyrometallurgical treatment of fine grained products which yield molten products at elevated temperatures upon treatment with oxygen which includes the steps of:

mixing said fine grained product with an oxygen-containing gas to form a suspension, and

blowing said suspension through a nozzle into a vertical melting cyclone where the solids are caused to react and are melted into a high mass flow velocity and high temperature stream, the improvement which comprises:



injecting said stream into said melting cyclone as a focused open particle jet having a mass flow velocity greater than 50 kg/m²-sec and a linear velocity greater than 35 m/sec such that the particle jet forms a generally horizontal secant to the cyclone circumference in spaced relation to the inside wall of said cyclone; and

igniting said particle stream as it enters said cyclone.

4,566,904

PROCESS FOR THE PRODUCTION OF IRON

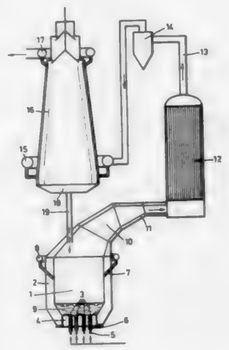
Ludwig von Bogdandy, Oberhausen-Sterkrade, and Karl Brotzmann, Sulzbach-Rosenberg, both of Fed. Rep. of Germany, assignors to Klockner CRA Technologie GmbH, Duisburg, Fed. Rep. of Germany

Filed May 18, 1984, Ser. No. 611,959

Claims priority, application Fed. Rep. of Germany, May 18, 1983, 3318005

Int. Cl.⁴ C21B *13/14*

U.S. Cl. 75—38 **18 Claims**



1. A process for producing iron from a compound containing iron and oxygen, said process comprising the steps of

(1) introducing a compound containing iron and oxygen into a reduction vessel,

(2) adding a cooled reduction gas to said reduction vessel to partially reduce said compound therein,

(3) transferring said partially-reduced compound obtained in step (2) from said reduction vessel to a melting crucible,

(4) adding a carbon-containing fuel and at least one oxygen-containing gas to said melting crucible,

(5) completely reducing and melting said partially-reduced compound in said melting crucible to form an iron melt,

(6) producing a reaction gas in said melting crucible,

(7) partially afterburning said reaction gas to obtain an after-burned gas and to generate heat,

(8) transferring said heat generated in step (7) to said iron melt,

(9) reducing and cooling said after-burned gas obtained in step (7) with a reducing agent to obtain the cooled reduction gas used in step (2), and

(10) removing portions of the iron melt from said melting crucible.

4,566,905

HIGH DENSITY BORON NITRIDE-CONTAINING SINTERED BODY FOR CUTTING TOOL AND A METHOD OF PRODUCING THE SAME

Tamotsu Akashi, Chita, and Masatada Araki, Handa, both of Japan, assignors to Nippon Oil and Fats Co., Ltd., Japan

Filed Sep. 20, 1983, Ser. No. 533,943

Claims priority, application Japan, Oct. 1, 1982, 57-172696

Int. Cl.⁴ B22F *3/14*

U.S. Cl. 75—244 **2 Claims**

1. A high density boron nitride-containing sintered body for use as a cutting tool, consisting essentially of 60–95% by volume of high density boron nitride and 40–5% by volume of metal alone or in admixture with a ceramic, said high density boron nitride consisting of 60–95% by volume of cubic boron nitride and 40–5% by volume of wurtzite-structured boron nitride, said cubic boron nitride having an average particle size of at least 5 times that of said wurtzite-structured boron nitride.

4,566,906

ANTI-FOULING PAINT CONTAINING LEACHING AGENT STABILIZERS

Vincent D. McGinniss, Delaware, and Richard J. Dick, Columbus, both of Ohio, assignors to Chugoku Marine Paints (USA) Inc., New York, N.Y.

Filed Apr. 19, 1984, Ser. No. 602,202

Int. Cl.⁴ C09D *5/14*

U.S. Cl. 106—15.05 **6 Claims**

1. In a marine anti-fouling coating composition of a thermoplastic binder, an organic solvent, a tin anti-fouling agent, a copper anti-fouling agent, and a water-soluble leaching agent, the improvement comprising, as said leaching agent,

a water-sensitive, solvent-soluble, non-cross-linked oligomer or polymer having an acid number of below about 50 and a χ value of between about 0.1 and 0.3 in an amount sufficient to increase can stability of the coating composition.

4,566,907

COLOR-DEVELOPING INK FOR NON-CARBON COPYING PAPER

Nobuhiro Kagota, Takasago, Japan, assignor to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Feb. 14, 1984, Ser. No. 579,880

Int. Cl.⁴ C09D *11/00*

U.S. Cl. 106—21 **5 Claims**

1. A color-developing ink for non-carbon copying paper, characterized by containing at least one color developer selected from the group consisting of phenolic resins, aromatic carboxylic acids and metal salts thereof as well as a higher chain dialkyl ether having total carbon atoms of 10 to 40.

4,566,908

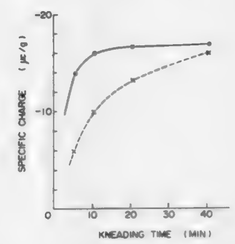
AZOIC PIGMENTS HAVING A SILICA CORE

Kaname Nakatani, Kawasaki; Nobuhiro Miyakawa, Abiko; Teruaki Higashiguchi, Tokyo, and Syoji Nakagama, Suita, all of Japan, assignors to Mita Industrial Company, Limited, Osaka, Japan

Filed Feb. 24, 1984, Ser. No. 583,424

Int. Cl.⁴ C09C *1/28, 3/12*

U.S. Cl. 106—308 N **10 Claims**



1. An azoic pigment having a silica core comprising a core of a fine powder of silica having a particle diameter of not more than 10 microns and a coating of a mono- or polyazoic dye chemically bound to the surface of the silica core through an aminosilane coupling agent.

4,566,909

HYDROLYZED YAM STARCH FLOCCULANTS

Raymond N. Yong, Beaconsfield, and Amar J. Sethi, Baie D'Urfe, both of Canada, assignors to Suncor, Inc., Toronto, Canada

Division of Ser. No. 562,353, Dec. 16, 1983, Pat. No. 4,507,209. This application Nov. 19, 1984, Ser. No. 672,515

Int. Cl.⁴ C08B *30/12*

U.S. Cl. 127—33 **3 Claims**

1. A composition comprising a hydrolyzed yam starch obtained by the aqueous hydrolysis of yam starch in the presence of about 10 to about 30 gms per 100 gms of starch of insoluble metal salts formed in situ, wherein the salts employed during the hydrolysis to form said insoluble salts are the soluble salts of metals selected from the group consisting of sodium, potassium, ammonium, magnesium, calcium, and aluminum, and the respective anions of said soluble salts are selected from the group consisting of sulfates, acetates, chlorides, nitrates, chlorates, bromides, iodides, thiocyanates, and phosphates, and wherein the yam starch is obtained from a yam selected from the group consisting of Cocoa Yam, Negro Yam and Sweet Yam.

4,566,910

STARCH PHOSPHATES AND AMPHOTERIC STARCH PHOSPHATES

E. Daniel Hubbard, West Liberty; Richard D. Harvey, and Mark L. Hogen, both of Muscatine, all of Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Filed Nov. 12, 1982, Ser. No. 441,388

Int. Cl.⁴ C08B *31/00*

U.S. Cl. 127—70 **32 Claims**

1. A process for preparing a starch derivative which comprises:

(1) treating an aqueous thinned starch paste with an alkali or alkaline material to give an alkaline pH,

(2) reacting with the alkaline starch paste while maintaining an alkaline pH a phosphate salt at a temperature of about 45° to 95° C. for a period of not more than about 120 minutes, and

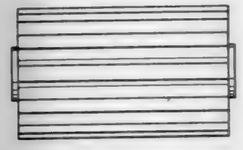
(3) recovering a starch phosphate paste.

4,566,911

METHOD FOR CLEANING ARTICLE BY SCRUBBING WITH CLEANING ROLL

Yogi Tomita, Ibaraki; Hisashi Yamamoto, Toyonaka, and Susumu Kitagawa, Neyagawa, all of Japan, assignors to Kanebo Limited, Tokyo, Japan

Filed Jul. 5, 1983, Ser. No. 510,988
Claims priority, application Japan, Jul. 5, 1982, 57-117432
Int. Cl.⁴ B08B *1/04*
U.S. Cl. 134—6 **6 Claims**



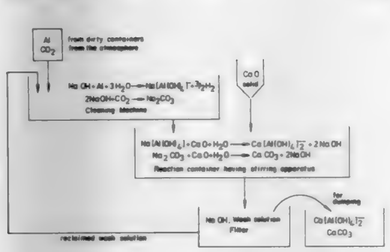
1. A method for thorough cleaning of a finely finished surface of an article of glass or metal by removing cuttings, shavings, turnings, abrasive grains and fine particles from said surface, comprising scrubbing said surface by means of a cleaning roll having a surface layer of polyvinyl acetal porous elastic material having a porosity of 85% to 95%, an average pore opening of 10 to 200 μm, and a 30% compression stress, at a water content of 100% based on the dry weight of the material, of 15 to 150 g/cm², whereby said surface is thoroughly cleaned of even fine particles without causing damage to the fine finish of said surface.

4,566,912

METHOD OF REGENERATING ALKALI-CONTAINING WASH SOLUTIONS UTILIZED FOR CLEANING CONTAINERS

Siegbert Borg, Bingen, Fed. Rep. of Germany, assignor to Seitz Enzinger Noll Maschinenbau Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,449
Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317571
Int. Cl.⁴ B08B *7/04*
U.S. Cl. 134—13 **8 Claims**



1. A method of regenerating wash solution for permanently maintaining wash force thereof and which contains sodium hydroxide and/or potassium hydroxide, and which is used during the mechanical cleaning of containers such as bottles; the wash solution contains, as impurities, dissolved aluminum, copper, or other heavy metals in the form of zinc, iron, nickel, or lead, which originated from the containers, and carbonates resulting during the cleaning, and organic substances which adhere to the containers; said method comprising the steps of:

adding directly to said impure wash solution at least one calcium compound in the form of one of the group consisting of solid calcium compounds and aqueous suspensions thereof, to thus form at least one precipitate to remove said impurities although maintaining wash force by having free alkali available therein; and

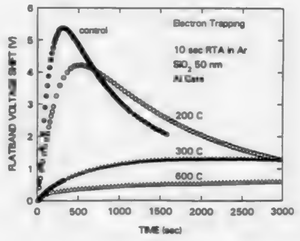
separating said precipitate from said wash solution especially removing salts therefrom to produce regenerated wash solution.

4,566,913

RAPID THERMAL ANNEALING OF SILICON DIOXIDE FOR REDUCED ELECTRON TRAPPING

Marc H. Brodsky, Mt. Kisco, and Zeev A. Weinberg, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1984, Ser. No. 636,042
Int. Cl.⁴ H01L *21/263*; B23K *27/00*
U.S. Cl. 148—1.5 **4 Claims**



1. A process for enhancing electronic properties of a thin silicon dioxide insulating layer on an integrated circuit wafer characterized by

(a) positioning the wafer inside an enclosure;

(b) charging said enclosure with a flowing inert gas; and

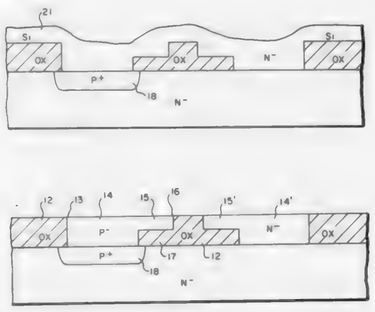
(c) quickly heating the wafer by radiation heating to a temperature range 300 C–800 C for a duration 3–15 seconds.

4,566,914

METHOD OF FORMING LOCALIZED EPITAXY AND DEVICES FORMED THEREIN

John H. Hall, San Jose, Calif., assignor to Micro Power Systems, Inc., Santa Clara, Calif.

Filed May 13, 1983, Ser. No. 494,124
Int. Cl.⁴ H01L *21/20, 21/265*
U.S. Cl. 148—1.5 **12 Claims**



1. A method for forming an isolated integrated circuit structure comprising the sequential steps of:

providing a silicon body having a surface;

forming an insulatory layer on the surface having at least one aperture exposing a portion of the surface of said body;

partially etching away the insulatory layer in at least one area adjacent to at least one of said apertures in said insulatory layer, said aperture and adjacent area together comprising a defined circuit area;

depositing a layer of silicon on the surface such that the deposit on the exposed area of silicon is epitaxial single crystal silicon; and

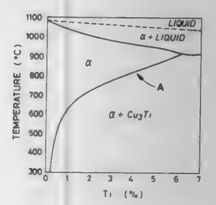
removing deposited silicon outside of said defined circuit area.

4,566,915

PROCESS FOR PRODUCING AN AGE-HARDENING COPPER TITANIUM ALLOY STRIP

Kazuo Ikushima; Yoshio Itoh, and Toshiaki Ishihara, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Nov. 13, 1984, Ser. No. 670,930
Claims priority, application Japan, Nov. 22, 1983, 58-220139
Int. Cl.⁴ C22F *1/08*
U.S. Cl. 148—11.5 C **12 Claims**



1. A process for producing an age-hardened copper titanium alloy strip, comprising:

preparing a copper titanium alloy melt;

casting said melt;

hot-working the cast alloy;

annealing the worked alloy at a temperature which is lower than a solid solution boundary temperature and lower than a recrystallization temperature; and

subjecting the annealed alloy to solution heat treatment, said solution heat treatment being terminated by water-cooling before or approximately as soon as a precipitated secondary phase has dissolved in a master phase and forms a solid solution with the master phase.

4,566,916

LOW-HYDROGEN, LOW-NITROGEN, LOW-OXYGEN WELDING FLUX

Kyoichi Nagano; Hiroshi Naganuma; Koichi Shinada; Motonori Tamura, and Shigenobu Soneda, all of Sagamiharashi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 6, 1984, Ser. No. 679,011
Claims priority, application Japan, Mar. 13, 1984, 59-47585
Int. Cl.⁴ B23K *35/34*
U.S. Cl. 148—26 **8 Claims**

1. A welding flux suitable for submerged arc welding, which comprises CaO, MgO, Al_2O_3 and SiO_2, wherein the proportions of the above four components to the total amount thereof taken as 100% fall in the following respective ranges:

CaO: 10 to 60%

MgO: Not more than 30%

Al_2O_3: 20 to 70%

SiO_2: 5 to 40%

and wherein the total amount of said four components accounts for not less than 35% of the total weight of said flux less any CO_2 component thereof, said flux further contains CaF_2 in an amount of from 25 to 60% of the total weight of said flux less the CO_2 component thereof, the basicity (B) of said flux is not less than 1.0 calculated in accordance with the formula (I)

$$B = 6.50N_{BaO} + 6.05N_{CaO} + 4.8N_{MnO} + 4.0N_{MgO} + \quad \text{(I)}$$

-continued

$$3.4N_{FeO} + 5.1N_{CaF_2} + 0.3N_{ZrO_2} - 0.2N_{Al_2O_3} - 2.2N_{TiO_2} - 6.3N_{SiO_2}$$

wherein N denotes the mol percentage of the respective components,

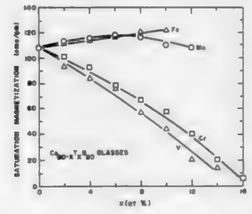
said flux contains both a fused substance and a non-fused substance, said fused substance has undergone a water-cooling treatment, and the basicity (B) of said fused substance calculated in accordance with the formula (I) is not more than 2.7.

4,566,917

LOW MAGNETOSTRICTION AMORPHOUS METAL ALLOYS

Robert C. O'Handley, Bedford Hills, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 133,775, Mar. 25, 1980, Pat. No. 4,482,400. This application Feb. 28, 1983, Ser. No. 470,863
The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.
Int. Cl.⁴ C22C *19/07*
U.S. Cl. 148—31.55 **4 Claims**



1. A magnetic alloy that is at least about 80 percent glassy and consists essentially of a composition having the formula $(Co_{1-x}T_x)_{100-b}(B_{1-y}Y_y)_b$, where T is at least one of carbon, silicon, phosphorous and germanium, Y is at least one of carbon, silicon, phosphorous and germanium, x ranges from about 0.05 to 0.25, y ranges from about 0 to 0.75, and b ranges from about 14 to 28 atom percent, plus incidental impurities, said alloy having a value of magnetostriction of about -6×10^{-6} to 4×10^{-6} and a saturation induction of about 0.2 to 1.0T.

4,566,918

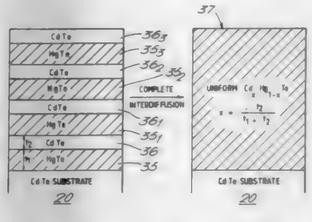
UTILIZING INTERDIFFUSION OF SEQUENTIALLY DEPOSITED LINKS OF HGTE AND CDTE

Stuart J. C. Irvine, Cradley; John B. Mullin, West Malvern, and Jean Giess, Colwall, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Great Britain

Filed Aug. 16, 1984, Ser. No. 641,483
Claims priority, application United Kingdom, Sep. 13, 1983, 8324531
Int. Cl.⁴ H01L *21/36, 21/477*
U.S. Cl. 148—175 **13 Claims**

1. A method of growing a layer of the ternary alloy $Cd_xHg_{1-x}Te$ onto a substrate comprises the steps of providing an atmosphere of mercury vapour at a required temperature and pressure inside a vessel; controlling the temperature of the substrate independently of the vessel temperature; providing separate supplies of a cadmium compound, a tellurium compound, and a dilutant gas into the vessel to grow a layer of HgTe t_1 thick and a layer of CdTe t_2 thick in either order; switching the supply of cadmium compound to the substrate on and off to grow a layer of CdTe and of HgTe, the combined thickness t_1+t_2 of the two layers being not greater than 0.5 μm thick, the arrangement being such that the Cd compound

decomposes preferentially with the Te compound in the region of the substrate to form CdTe as a layer on the substratre, the Te compound combines with the Hg vapour to form a HgTe



layer on the substrate, the thickness of both layers allowing diffusion during growth to give a layer of $Cd_xHg_{1-x}Te$ where $0<x<1$.

4,566,919

SENSITIZED CAST EMULSION EXPLOSIVE COMPOSITION

Harvey A. Jessop, Lehi, Utah, assignor to IRECO Incorporated, Salt Lake City, Utah

Filed Apr. 5, 1984, Ser. No. 597,415
Int. Cl.[3] C06B 45/08
U.S. Cl. 149—20 **12 Claims**

1. A cast explosive composition, which comprises a water-in-oil emulsion when formulated at an elevated temperature but which becomes cast upon cooling due to a weakening or breakdown of the emulsion, further comprising inorganic oxidizer salt primarily consisting of ammonium nitrate; a water-immiscible organic liquid fuel; less than about 5% water by weight of the total composition; a sensitizer to provide a critical diameter no larger than about 150 mm at a temperature of about 5° C.; and an emulsifier which allows the formation of a water-in-oil emulsion at an elevated formulation temperature but which allows the emulsion to become unstable and the inorganic oxidizer salt to crystallize at ambient temperature to produce a cast composition.

4,566,920

COMPOSITIONS OF THE EXPLOSIVE EMULSION TYPE, PROCESS FOR THEIR MANUFACTURE AND APPLICATION OF THESE COMPOSITIONS

Jean-Claude Libouton, Nieuwe 27 rue Tremouroux, Orbais-Perwez, Belgium (B-5923); Lucien Waterlot, Hoevenstraat 10, Mol, Belgium (B-2400), and Georges Van Roy, rue Victor Hugo 223, Bruxelles, Belgium (B-1040)

Filed Mar. 2, 1984, Ser. No. 585,554
Claims priority, application European Pat. Off., Mar. 18, 1983, 83 870026
Int. Cl.[4] C06B 45/02
U.S. Cl. 149—21 **25 Claims**

1. An explosive composition of the water-in-oil emulsion type, comprising at least one emulsified gel comprising an oxidising solution obtained from at least one inorganic salt dissolved in water and of a fuel phase containing at least one liquid hydrocarbon and an emulsifier, in combination with an inert or reactive lightening constituent characterised in that it contains texturizing means for facilitating cartridging, the texturizing means including from 4 to 55% of inert or semi-inert solids comprising a silicate associated with diatomaceous earths in proportion of 1 to 4 parts of silicate and 0 to 7 parts of diatomaceous earths, the inert or semi-inert solids being in a form other than microspheres and being free of entrapped gas, the composition having a non-sticky plastic to semi-plastic texture suitable for introduction to a paper cartridge on a conventional cartridging machine.

4,566,921

PRIMING COMPOSITION WHICH IS SENSITIVE TO PERCUSSION AND A METHOD FOR PREPARING IT

Jean Duguet, Tarbes, France, assignor to L'Etat Francais represente par le Delegue Ministeriel pour L'Armement, France

Filed Feb. 8, 1985, Ser. No. 699,472
Int. Cl.[4] C06B 43/00
U.S. Cl. 149—22 **10 Claims**

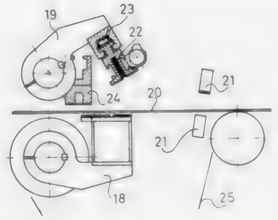
1. A percussion-sensitive priming composition with an elevated thermal stability comprising:
a primary explosive having a tetrazolic ring, and
a sensitivity additive, said sensitivity additive comprising an oxidizing agent and a reducing agent;
wherein said primary explosive comprises 40 to 95 weight percent of said priming composition, said oxidizing agent comprises 2.5 to 40 weight percent of said priming composition and said reducing agent comprises 2.5 to 40 weight percent of said priming composition.

4,566,922

METHOD AND APPARATUS FOR REMOVING DEFECTIVE CORRUGATED BOARD BY SPLICING

Manuel T. Martinez, Sancho et Fuerte, 21, Pamplona, Spain

Continuation-in-part of Ser. No. 436,788, Oct. 26, 1982, abandoned. This application Dec. 28, 1984, Ser. No. 687,386
Claims priority, application Spain, Oct. 28, 1981, 506652
Int. Cl.[4] B31F 1/24, 5/06; B65H 19/08
U.S. Cl. 156—64 **8 Claims**



1. A process for deleting defective sections in a web of a corrugated cardboard, said process comprising the steps of:
(a) accumulating a store of said web on a bridge of a corrugated cardboard production line, at least some portion of said production line being downstream with respect to said bridge;
(b) detecting a defective section in said web at a location upstream in said production line with respect to said bridge;
(c) closing two pairs of opposing jaws longitudinally displaced along said web at an input end of said bridge where said cardboard is accumulated in step (a), an upstream one of said pairs of jaws having a splicer with web holding and cutting capabilities associated therewith and a downstream set of said jaws having web holding brake means associated therewith;
(d) transversely cutting said web by said splicer at the start of a defective section and while said brake means hold the downstream cut end of said web;
(e) diverting the defective section of said web into a scrap storage area;
(f) transversely cutting the web by said splicer at the end of the defective section of said web;
(g) abutting and splicing together the upstream cut end of said web being held on said splicer jaws and the downstream cut end of said web being held in said brake means; and
(h) drawing said web from the storage accumulated in step (a) to maintain the operation of said portion of said downstream production line during steps (c) through (g) of said process.

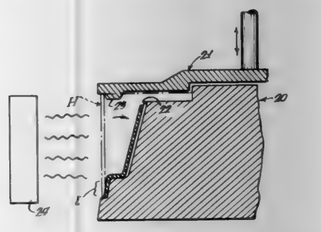
3. The process of claim 1 wherein said splicer has an associated member with a profile containing pulling means extending transversely across said web, and a roll of tape, said process step (g) including the step of causing said pulling means to move transversely across said web, while pulling said tape across said web, and sealing said tape across the cut and abutting ends of said upstream and downstream web.

4,566,923

METHOD AND APPARATUS FOR PREFORMING AND APPLYING A HEAT-SHRINKABLE MEMBER TO A CONTAINER

Martin Mueller, Wonder Lake, Ill., assignor to Osgood Industries, Inc., Northbrook, Ill.

Filed May 27, 1983, Ser. No. 498,973
Int. Cl.[4] B65B 7/00
U.S. Cl. 156—69 **13 Claims**



1. A method of applying a generally cylindrical, heat-shrinkable member to a container, wherein said container includes a lower portion having a downwardly inwardly tapered configuration and a lid portion fitted to said lower container portion, said method comprising the steps of:
providing preforming mandrel means at least partially configured like said container, wherein said mandrel means includes an inwardly tapered portion configured like said lower container portion;
providing said heat-shrinkable member in the form of a spirally-wound cylinder which is predominantly heat-shrinkable in a radial direction, wherein said cylinder comprises a strip of heat shrinkable material wound spirally at an angle to the axis of said cylinder;
positioning said heat-shrinkable member in association with said preforming mandrel means;
heating said heat-shrinkable member so that it conforms to said preforming mandrel means to form a preformed member from said heat-shrinkable member, and releasably retaining an edge portion of said heat-shrinkable member positioned furthest from said preforming mandrel means during said heating, said preformed member being at least partially configured like said container and, including an inwardly tapered portion;
moving said preformed member from association with said preforming mandrel means and positioning said preformed member in association with said container so that said tapered portion of said preformed member fits about the inwardly tapered lower portion of said container; and
applying said preformed member to said container by heating said preformed member so that is shrinks and further conforms to the configuration of said container to overlie said lid portion.

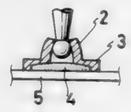
9. An apparatus for applying a heat-shrinkable member to a container wherein said container includes a lower portion having a downwardly inwardly tapered configuration and a lid portion fitted to said lower container portion, comprising:
means for preforming said heat-shrinkable member to form a preformed member having a pre-selected configuration comprising preforming mandrel means positionable in association with said heat-shrinkable member, said preforming mandrel means being at least partially configured like said container and including an inwardly tapered portion configured like said lower container portion, and means for heating said heat-shrinkable member while in association with said mandrel means;
means for releasably retaining an edge portion of said heat-shrinkable member positioned furthest from said mandrel means during heating thereof when the heat-shrinkable member is positioned in association with said preforming mandrel means to avoid premature shrinkage of said releasably retained portiqn of said heat-shrinkable member, to thereby form said preformed member with an inwardly tapered portion;
means for positioning said preformed member in association with said container so that said inwardly tapered portion of said preformed member fits about said inwardly tapered lower container portion; and
means for applying said preformed member to said container comprising means for heating at least a portion of said member to further conform said member to the configuration of said container so that said member overlies said container lid portion.

4,566,924

METHOD FOR FIXING STUD ON WORKPIECE

Kunio Hara, Kawasaki; Toshie Tanaka, Tokyo; Teruji Shibayama, Ohisomachi; Minoru Morisaki, Yokosuka, and Yoshio Kaneko, Chigasaki, all of Japan, assignors to Nifco, Inc., Yokohama, Japan

Filed Sep. 19, 1984, Ser. No. 652,070
Claims priority, application Japan, Sep. 21, 1983, 58-173231
Int. Cl.[4] B29C 65/06
U.S. Cl. 156—73.5 **20 Claims**



1. A method for fixing a first member upon a second member, comprising the steps of:
depositing hot-melt adhesive upon one surface of said first member to be bonded to one surface of said second member;
mounting said first member within a rotary tool for imparting relatively high-speed rotation to said first member;
moving said one surface of said first member, and said hot-melt adhesive deposited thereon, toward said one surface of said second member so as to contact said one surface of said second member with said hot-melt adhesive;
activating said rotary tool so as to rotate said first member and said hot-melt adhesive relative to said second member whereby only said hot-melt adhesive will be activated by means of the heat of friction generated between said hot-melt adhesive and said second member; and
stopping the rotation of said rotary tool and said first member after said activation of said hot-melt adhesive has attained a predetermined degree whereby said first member is able to be securely bonded to said second member by means of said activated hot-melt adhesive.

4,566,925

METHOD OF MOUNTING A METAL BAND ABOUT A COVER PLATE

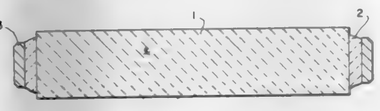
Jürgen Schnabel, and Jürgen Plath, both of Wiesbaden, Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Jan. 31, 1984, Ser. No. 575,937

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304938

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—86 **2 Claims**



1. A method of mounting a metal band about the peripheral surface of a ceramic sliding plate, for use with a sliding gate nozzle for controlling the discharge of molten metal from a vessel, and for ensuring a predetermined outer size of said metal band independent of variations in the size of the periphery of said ceramic sliding plate, and whereby said ceramic sliding plate can be mounted on a supporting frame by means of releasable clamps acting on said metal band, said method comprising:

covering said peripheral surface of said ceramic sliding plate with a layer of thermally setting mortar;

providing a steel ring of said predetermined outer size as said metal band, and heating and thereby expanding said steel ring;

positioning said heated steel ring around said mortar layer covering said peripheral surface of said ceramic sliding plate; and

cooling said steel ring, whereby said steel ring shrinks about said mortar layer to said predetermined outer size, while heating and thereby setting said mortar layer, such that said cooled steel ring is bonded about said peripheral surface by said mortar layer.

4,566,926

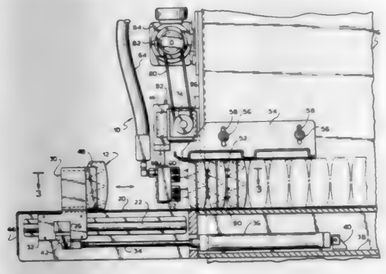
METHOD AND APPARATUS FOR MANUFACTURING INNERSPRING CONSTRUCTIONS

Walter Stumpf, Dunwoody, Ga., assignor to Simmons U.S.A. Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 586,867, Mar. 9, 1984. This application Jan. 28, 1985, Ser. No. 695,311

Int. Cl.⁴ B23K *19/04*

U.S. Cl. 156—165 **25 Claims**



1. An apparatus for manufacturing innerspring constructions from rows of pocketed coil springs, comprising:

support means for supporting a plurality of rows of pocketed coil springs;

applicator means for applying a bonding material to a row of pocketed coil springs;

moving means for moving said applicator means longitudinally along a row of pocketed coil springs supported by said support means; and

pressure means for applying pressure between two adjacent rows of pocketed coil springs after said applicator means has applied a bonding material between them.

4,566,927

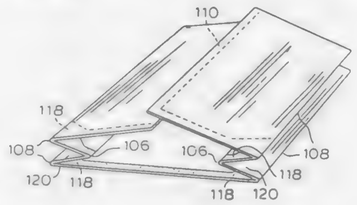
PATTERN BONDING OF WEBS BY ELECTRON BEAM CURING

James R. Wood, 103 Bedford Park Ave., Toronto, Ontario, Canada (M5M 1H9)

Continuation of Ser. No. 949,670, Oct. 10, 1978, abandoned. This application Dec. 2, 1980, Ser. No. 212,219

Int. Cl.⁴ B29D *23/10*; **B32B** *31/20*

U.S. Cl. 156—203 **8 Claims**



1. A method of manufacturing a square bottom bag having a pair of longitudinal side gussets each formed by a central gusset fold line located centrally between a pair of outer gusset fold lines, a bottom wall forming portion extending transversely of said web and a longitudinal lap joint, from a continious web of bag forming material having oppositely disposed side edges comprising the steps of:

(a) continuously driving a web through a printing device in a flat unfolded configuration, the printing device being operable to apply an E.B. curable coating in a predetermined pattern to selected portions of an inner face of said web, said selected portions comprising,

(i) a marginal edge portion extending along a first of said free edges of said web,

(ii) a plurality of longitudinally spaced transversely extending portions, said transversely extending portions being located on the bottom wall forming portions of successive bag forming lengths of said web,

(iii) a triangular shaped portion associated with each outer gusset fold line, each triagular shaped portion having an apex located on and its opposite side bridging its associated outer gusset fold line at said each of said transversely extending portions,

(b) folding the web upon itself along said gusset fold lines to form a sleeve with each central gusset fold line disposed inwardly from its associated outer gusset fold lines and the marginal edge portion overlying a second marginal edge portion of the web whereby the coated areas are located at an interface between two layers of said web,

(c) continuously driving the folded web through an E.B. radiation device to radiate the web and thereby bond the coated areas at their interface to close the bottom of the bag and secure the marginal edges,

(d) transversely severing the web to form a plurality of independent bags each of which, upon opening, will form a square bottom.

4,566,928

METHOD OF MANUFACTURING PACKING CONTAINER HAVING TEAR-UP OPENING ARRANGEMENT

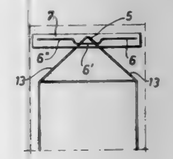
Hans A. Rausing, Lund, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Division of Ser. No. 225,602, Jan. 16, 1981, Pat. No. 4,410,128. This application Jul. 29, 1983, Ser. No. 518,489

Claims priority, application Sweden, Jan. 21, 1980, 8000471

Int. Cl.⁴ B29D *23/10*

U.S. Cl. 156—217 **6 Claims**



1. A method of manufacturing a plurality of packing containers, comprising:

piercing a web of packing material with a plurality of cut portions to form a cut line, first and second cut portions being arranged along a common, straight line with an interruption therebetween, a third cut portion extending along said interruption and parallel to and spaced from said first and second cut portions, and additional cut portions for joining ends of said third cut portion to a respective end of said first and second cut portions;

covering said cut line with strip means;

joining edge regions of said web of packing material to form a tube;

pressing flat and sealing discrete regions transversely to an axis of said tube to form individual packing containers, wherein said cut line is so situated on said web of packing material that a boundary line of one of said discrete regions generally coincides with a center of said interruption so that when said indidvidual packing containers are formed the first cut portion of said cut line is in facing parallel relationship to the second cut portion of said cut line; and

forming a triangular lug on each of said individual packing containers, said first and second cut portions of said cut line extending on either side of an apex of said triangular lug with said common, straight line of said first and second cut portions passing through said apex and said third cut portion of said cut line being spaced from said apex.

4,566,929

PROCESS FOR MAKING A TRIM STRIP FOR AUTOMOBILE BODIES

Robert E. Waugh, Columbus, Ohio, assignor to The D. L. Auld Company, Columbus, Ohio

Division of Ser. No. 468,721, Feb. 28, 1983, Pat. No. 4,446,179, which is a continuation-in-part of Ser. No. 380,783, May 21, 1982, abandoned. This application Apr. 2, 1984, Ser. No. 595,877

Int. Cl.⁴ B29C *65/48*; **B29B** *11/04, 11/06*

U.S. Cl. 156—242 **8 Claims**

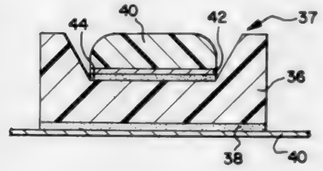
1. A process for forming a flexible trim strip suitable for application to an automobile body, comprising:

(a) forming a flexible elongate foil member having an upper surface and a lower surface and having sharply defined peripheral edges but no upstanding sidewalls,

(b) casting a fluent plastic composition onto said elongate foil member while said foil member is retained in a substantially flat condition free from surrounding side walls, such that said plastic flows to the sharply defined peripheral edges of said foil member and forms a positive meniscus,

(c) curing said plastic composition to form a flexible, weather-resistant clear plastic cap.

(d) forming an elongage flexible moulding having an elongate channel in one surface thereof,



(e) placing said foil member having said plastic cap thereon into said channel, and

(f) securing said foil member in said channel via the lower surface thereof.

4,566,930

PROCESS FOR PRODUCING OPTICAL MEMBERS

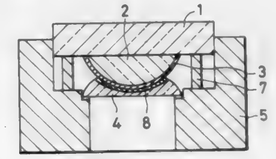
Haruo Uehara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1984, Ser. No. 653,727

Claims priority, application Japan, Sep. 30, 1983, 58-184137; Sep. 30, 1983, 58-184138; Sep. 30, 1983, 58-184139

Int. Cl.⁴ B32B *31/06, 31/12*

U.S. Cl. 156—280 **28 Claims**



12. A process for producing an optical member comprising forming a resin layer on the surface of a glass substrate by filling with a resin the gap between a master having a releasing layer on the surface and a glass substrate and separating the master to produce an optical member constituted of a glass substrate and a resin layer, characterized in that the releasing layer comprises a compound having a fluorine-substituted hydrocarbon group, and an alkoxysilane group or a silane halide group and the releasing layer is treated with an amine to make a strong adhesion between the compound forming the releasing layer and the surface of the master by chemical bonding.

4,566,931

HEAT SEALING TEXTILES WITH COPOLYAMIDES

Hans J. Panoch, Haltern; Rainer Feldmann; Hans Hinn, both of Marl; Siegfried Brandt, Haltern, and Hans-Jürgen Haage, Herne, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Dec. 20, 1983, Ser. No. 563,563

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1982, 3248776

Int. Cl.⁴ C09J *3/14*

U.S. Cl. 156—330.9 **23 Claims**

1. In the method for heat sealing textiles comprising applying a heat sealable adhesive to one side of a textile substrate; and securing said textile substrate to a textile upper fabric with heat and pressure applied to said heat sealable adhesive, the improvement comprising said heat sealable adhesive having a specific viscosity of about 1.3 to 1.6 and

flow points of about 85° C. to 140° C. and consisting essentially of copolyamides produced from:

(A) 20 to 80% by weight of compounds selected from the group consisting of aliphatic omega amino carboxylic acids having 6 to 12 carbon atoms, lactams having 6 to 12 carbon atoms, and mixtures thereof; and

(B) 80 to 20% by weight of equimolar amounts of:

(a) aliphatic dicarboxylic acids having 6 to 12 carbon atoms; with

(b) aliphatic alpha-omega diamines having 6 to 12 carbon atoms wherein at least 30% by weight of said diamines consist of singly branched aliphatic diamines having 6 carbon atoms.

4,566,932

FLEXIBLE DUCT FORMING APPARATUS

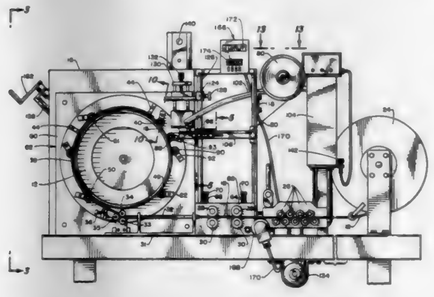
Hugh K. McGuire, 5220 Satsuma, North Hollywood, Calif. 91601

Continuation of Ser. No. 423,669, Sep. 27, 1982, which is a continuation-in-part of Ser. No. 161,425, Jun. 20, 1980, Pat. No. 4,351,682. This application Jun. 18, 1984, Ser. No. 621,560

The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

Int. Cl.⁴ B65H *81/00*

U.S. Cl. 156—429 **27 Claims**



1. A flexible duct forming apparatus comprising:

a base;

a mandrel;

support means on said base for rotatably supporting said mandrel;

drive means for rotatably driving said mandrel; said drive means comprising;

a pinion gear mounted on said base,

a gear mounted on the rear of said mandrel,

motor means for driving said pinion gear,

said mandrel support means adapted to move said mandrel to bring said mandrel gear in engagement with said pinion gear;

flexible strip material feed means for feeding flexible strip material to said mandrel;

wrapping means for wrapping said flexible strip onto said mandrel in a helical path with adjacent wraps having overlapping edges;

wire feed means comprising;

wire deforming means for deforming said wire to produce a predetermined coil diameter,

wire guide means forming a substantially fixed helical path of constant pitch and diameter for guiding and holding said wire on said substantially fixed helical path from said wire deforming means to between the overlapping edges of said flexible strip material,

sealing means for sealing the overlapping edges of said flexible strip material to encapsulate said wire whereby flexible wire reinforced duct is continuously formed on said mandrel.

4,566,933

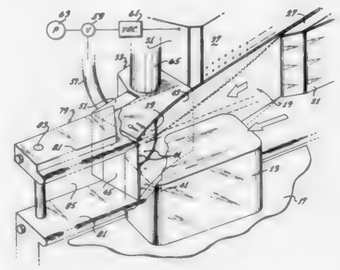
LABEL APPLICATOR FOR MULTIPLE PANEL WRAPPING

Michael Crankshaw, Santa Fe Springs, and George A. Allen, Irvine, both of Calif., assignors to Label-Aire Inc., Fullerton, Calif.

Filed May 23, 1984, Ser. No. 613,865

Int. Cl.⁴ B65C *9/28;* **B32B** *31/00;* **B65H** *26/00;* **B44C** *1/00*

U.S. Cl. 156—444 **14 Claims**



1. A label applicator for labeling articles moving along a path, said label applicator comprising:

means for releasably retaining a label at a label retaining station with the label being pullable along the retaining means;

label dispensing means for dispensing labels onto the label retaining means;

a wheel having a peripheral surface, at least a portion of said peripheral surface being resiliently deformable;

means for mounting said wheel for rotation with said wheel lying at least partially in the path of the articles at the label retaining station;

guide means adjacent said peripheral surface of said wheel for urging an article against the peripheral surface to resiliently deform the peripheral surface sufficiently to hold the article in a desired orientation at the label retaining station;

means for blowing a leading portion of the label on the label retaining means onto the article held in said orientation at the label retaining station while allowing the label retaining means to retain a trailing portion of the label whereby movement of the article past the label retaining station pulls the trailing portion of the label from the label retaining means; and

means downstream of said label retaining station for applying the trailing portion of the label to the article.

4,566,934

CLEANING TECHNIQUE FOR LPE MELT INGOTS

Daniel Brasen, Lake Hiawatha; Michael A. DiGiuseppe, Succasunna; Jose A. Lourenco, Elizabeth, and Subhash Mahajan, Summit, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 28, 1982, Ser. No. 437,472

Int. Cl.⁴ C30B *19/00*

U.S. Cl. 156—622 **12 Claims**

1. A method of manufacturing a device, which includes growing an epitaxial layer from the liquid phase, comprising the steps of:

(a) providing a solvent which is a solid at room temperature,

(b) heating the solid solvent above its melting point in an ambient of flowing gas for an extended period of time so that contaminants tend to coalesce on its surface,

(c) cooling the solvent to resolidify it,

(d) etching the solid solvent to remove the contaminants,

(e) adding solutes to the solvent,

(f) heating the solute and solvents to form a mixture,

(g) bringing the mixture into contact with a heated substrate to effect growth of the epitaxial layer thereon.

4,566,935

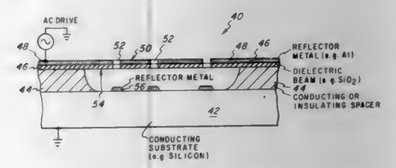
SPATIAL LIGHT MODULATOR AND METHOD

Larry J. Hornbeck, Van Alstyne, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 31, 1984, Ser. No. 635,967

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00, 25/06;* **C23F** *1/02*

U.S. Cl. 156—626 **6 Claims**



1. A method of fabrication of spatial light modulators, comprising the steps of:

(a) form electrical addressing circuitry on a substrate;

(b) deposit a spacer layer on said substrate and over said circuitry;

(c) deposit a reflecting layer on said spacer layer;

(d) pattern said reflecting layer to define a plurality of pixel elements connected to the remainder of said reflecting layer; and

(e) plasma etch said spacer layer to form wells under said pixel elements, thereby freeing said pixel elements from said spacer layer and permitting them to be electrostatically deflected by signals on said addressing circuitry.

4,566,936

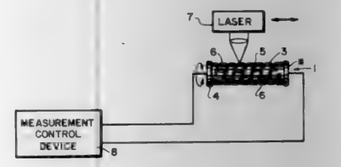
METHOD OF TRIMMING PRECISION RESISTORS

Stanley L. Bowlin, Weatherford, Tex., assignor to North American Philips Corporation, New York, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,443

Int. Cl.⁴ B23K *9/00;* **H01C** *10/00;* **B44C** *1/22;* **C23F** *1/02*

U.S. Cl. 156—627 **7 Claims**



1. A method for trimming precision resistors, wherein a resistive film is deposited onto a substrate compatible with said film, said method comprising the steps:

forming a helical groove in a surface of said resistor to increase the electrical resistance therethrough so that said electrical resistance is within a first tolerance below a desired electrical resistance;

forming small discrete depressions in the surface of said resistor to further increase the electrical resistance therethrough;

measuring the electrical resistance of said resistor during the forming of said small discrete depressions; and

terminating the forming of said small discrete depressions when the electrical resistance through said resistor is within a second tolerance of said desired electrical resistance.

4,566,937

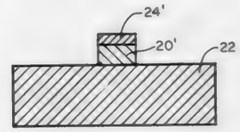
ELECTRON BEAM ENHANCED SURFACE MODIFICATION FOR MAKING HIGHLY RESOLVED STRUCTURES

John R. Pitts, Golden, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 10, 1984, Ser. No. 659,490

Int. Cl.⁴ C23F *1/02;* **B44C** *1/22;* **C03C** *15/00;* **H01L** *21/306*

U.S. Cl. 156—628 **25 Claims**



12. A method of forming submicron structures by electron beam enhanced surface modification of a substrate, including the steps of:

(a) locating a substrate surface within an atmosphere of a partial pressure of a selected gas phase material that is capable of forming as dissociation products a reactant fragment and a stable leaving group when subjected to an electron beam;

(b) writing a beam exposure pattern directly on said substrate surface by applying to the surface an electron beam of submicron width through the gas phase to cause dissociation of the gas phase and accumulation of the reactant fragment at the interface of the beam and the substrate surface;

(c) continuing application of the electron beam to said pattern for a time sufficient and in dose sufficient to form a bound surface compound structure of the reactant fragment and substrate material locally coating the substrate surface in the beam exposure pattern; and

(d) etching the substrate surface by a selective means for removing uncoated substrate material preferentially to the removal of said surface compound structure.

4,566,938

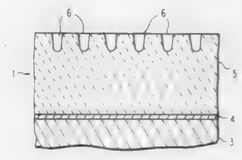
TRANSFER ROLL WITH CERAMIC-FLUOROCARBON COATING CONTAINING CYLINDRICAL INK HOLES WITH ROUND, BEVELED ENTRANCES

Jerome D. Jenkins, 4749 N. 118th St., Wauwatosa, Wis. 53225, and Neal G. Schultz, 8584 W. Appleton Ave., Milwaukee, Wis. 53218

Division of Ser. No. 192,080, Sep. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 35,514, May 3, 1979, abandoned. This application Feb. 17, 1984, Ser. No. 581,121

Int. Cl.⁴ B23K *9/00;* **B41F** *1/46;* **B44C** *1/22*

U.S. Cl. 156—643 **5 Claims**



1. A method of making a transfer roll comprising the steps of:

(a) providing a metal base;

(b) depositing a coating of ceramic-fluorocarbon material over said metal base; and

(c) forming ink holes in said ceramic-fluorocarbon coating said ink holes being generally cylindrical in shape, having a hemispherical bottom, a generally cylindrical intermediate portion and a rounded, beveled entryway.

4,566,939

SURFACE PREPARATION OF NICKEL BASE ALLOYS FOR BRAZING

Jule A. Miller, Derby; Jack W. Lee, Brookfield, both of Conn., and Jeffrey Thyssen, Montvale, N.J., assignors to Avco Corporation, Stratford, Conn.

Filed Jan. 25, 1985, Ser. No. 694,863

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00, 25/06;* **C23F** *1/00*

U.S. Cl. 156—655 **5 Claims**

1. A method for preparing for brazing the surface of nickel-base or nickel-iron base alloys containing at least one oxidizable metal selected from the group consisting of aluminum and titanium, the method comprising heating the alloy, prior to brazing, in air at an elevated temperature for a time sufficient to form on the alloy surface a bilayered film comprised of a first oxide top layer containing at least titanium or aluminum and a second layer beneath the first comprised of the alloy composition substantially depleted of the oxidizable metal and then cleaning the surface of the alloy to remove the first oxide layer.

4,566,940

MANUFACTURING PROCESS FOR SEMICONDUCTOR INTEGRATED CIRCUITS

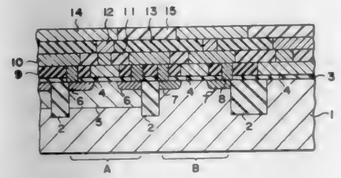
Manabu Itsumi, Hoya; Kohei Ehara, Kodaira; Susumu Muramoto, and Seitaro Matsuo, both of Hachioji, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan

Division of Ser. No. 369,234, Apr. 16, 1982, abandoned. This application Oct. 17, 1984, Ser. No. 661,700

Claims priority, application Japan, Apr. 21, 1981, 56-61070

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*

U.S. Cl. 156—643 **3 Claims**



1. A method for the manufacture of a semiconductor integrated circuit, comprising the step of:

forming a resist pattern on a first material layer of a semiconductor substrate;

removing a portion of said first material layer through using said resist pattern as a mask to form a recess in said first material layer;

forming a second material layer by a plasma deposition process to thickness substantially equal to the depth of said recess so as to fill said recess; and

removing said second material layer on said resist pattern by a lift-off process, along with said resist pattern;

wherein said steps are each carried out repeatedly at least four times.

4,566,941

REACTIVE ION ETCHING METHOD

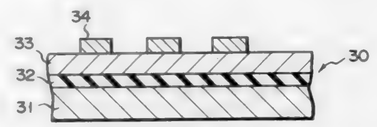
Yukimasa Yoshida, Kawasaki, and Tohru Watanabe, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 9, 1984, Ser. No. 608,449

Claims priority, application Japan, May 10, 1983, 58-81309; Sep. 14, 1983, 58-169889

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*

U.S. Cl. 156—643 **6 Claims**



1. A reactive ion etching method which comprises the steps of (a) mounting an object of etching comprising a 3-ply structure having a conductive material formed on a semiconductor body with a thin insulation layer interposed therebetween on a pair of mutually facing electrodes provided in a vacuum vessel on which high frequency power is impressed; (b) impressing said high frequency power between said mutually facing electrodes in an atmosphere of a reactive gas to etch said object body; (c) reducing gradually the cathode drop voltage arising in the proximity of the electrode being impressed with high frequency power, immediately before stopping the impression of high frequency power at the end of ion etching and thereby reducing the voltage impressed on the insulation layer included in said object of etching and caused by the reverse flow of an electric charge stored in the lower electrode to such an extent that a voltage impressed on the insulation layer included in the object of etching drops to a lower level than the breakdown voltage of said insulation layer at the stoppage of the impression of said high frequency power; and (d) thereafter stopping the impression of said high frequency voltage.

4,566,942

METHOD OF AND APPARATUS FOR TREATING WASTE PAPER

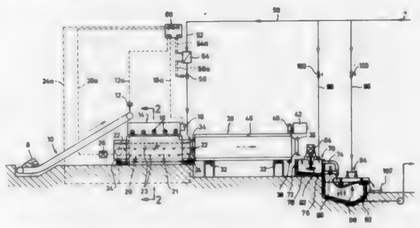
Emil Holz, Eningen, and Hagen Hutzler, Reutlingen, both of Fed. Rep. of Germany, assignors to Hermann Finckh Maschinenfabrik GmbH & Co., Pfullingen, Fed. Rep. of Germany

Division of Ser. No. 398,773, Jul. 16, 1982, Pat. No. 4,465,591, which is a continuation of Ser. No. 194,823, Oct. 7, 1980, abandoned. This application Jul. 12, 1984, Ser. No. 630,309

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941898

Int. Cl.⁴ D21D *5/04*

U.S. Cl. 162—4 **5 Claims**



1. A method of treating waste paper comprising dissolvable fibrous material and non-dissolvable material without comminution of the non-dissolvable material, the method comprising:

steeping the waste paper in water for between 10 and 120 minutes at a substance density of between 10% and 40%;

repeadedly lifting and dropping the waste paper as it is steeped;

adding sufficient diluting water to the steeped material to achieve a substance density of between 2% and 6%;

circulating and mixing the steeped material and the diluting water in order to obtain a fibrous suspension without comminution of the non-dissolvable material;

pressurelessly feeding said fibrous suspension and said non-dissolvable material to a screening station; and

pressurelessly sorting the fibrous suspension from the non-dissolvable material.

4,566,943

WET STRENGTH MATERIAL

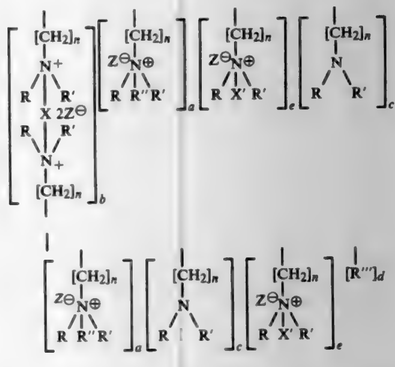
Per E. A. Hansson, and Felek Jachimowicz, both of Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 476,584, Mar. 18, 1983, Pat. No. 4,513,121. This application Nov. 21, 1984, Ser. No. 673,837

Int. Cl.⁴ D21H *3/40*

U.S. Cl. 162—168.2 **6 Claims**

1. A process of improving the wet strength properties of paper sheet products by contacting the cellulose material forming said paper sheet products with from 0.01 to 3 weight percent based on the dry weight of the cellulosic material of a water soluble polymer having a substantially completely saturated polymeric backbone chain with a pendant alkylene amine groups represented by the formula:



wherein

represents a substantially saturated hydrocarbon polymer chain, each R separately represents an unsubstituted or substituted C_1–C_6 alkyl, cycloalkyl or aryl; R′ represents hydrogen or an R group; R″ represents hydrogen or a C_1–C_3 alkyl; R‴ represents hydrogen or a comonomer pendant group or both, X is a residual organic group of a compound capable of covalently bonding with at least two nitrogen atoms of the polymer; X′ represents a residual organic group having at least one unreacted functional group capable of reacting with secondary or tertiary amine or secondary hydroxy group; Z is a counter-ion; n is an integer of from 1 to 3; a, b, c, d and e are each integers such that a, c and e is from about 1 to 90 percent, b is from about 1 to 30 percent and d is from about 1 to 60 percent of the total sum of a+b+c+d+e; and the sum of the groups of a+c+e is at least 4 weight percent of the polymer product; said polymer is formed by reacting under substantially anhydrous conditions an olefinic bond containing polymer with an amine selected from a primary or secondary amine, hydrogen and carbon monoxide in the presence of a Group VIII metal containing compound to form a polymeric material having pendant alkylene amine groups and further reacting a portion of the alkylene amine groups with an agent which is at least difunctional with respect to the pendant secondary and tertiary amino groups, said difunctional agent being in molar ratio of from 0.3 to 1.1 with respect to said secondary amine groups and from 0.5 to 2.2 with respect to said tertiary amino groups and causing the reactive group contained in X′ to further react with either the secondary and/or tertiary amino groups of said polymer or of the hydroxyl groups of the cellulosic material.

4,566,944

APPARATUS FOR CUTTING A LEAD-IN STRIP FROM A PAPER WEB IN A PAPER MACHINE

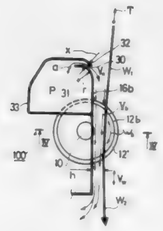
Pekka Mauranen, and Timo Vedenpää , both of Jyväskylä , Finland, assignors to Valmet Oy, Finland

Filed Apr. 26, 1983, Ser. No. 488,664

Claims priority, application Finland, Apr. 27, 1982, 821446

Int. Cl.⁴ D21F *1/36*

U.S. Cl. 162—286 **10 Claims**



1. Apparatus for forming a lead-in strip from a paper web in a multiple cylinder dryer section of a paper machine and for increasing the width of the lead-in strip by a so-called oblique draw, comprising:

a substantially transversely extending beam situated alongside a region of an unsupported draw of the web in the dryer section;

a carriage mounted on said beam for traversing movement thereon;

means mounted on said carriage for cutting the web to form the lead-in strip;

substantially planar guide surface means mounted on said carriage in association with said web cutting means, said guide surface means being substantially parallel to the run of the web over at least the unsupported web draw region, and

means for directing a gas flow onto said planar guide surface means into a space between said guide surface means and the web to stabilize the web run as it passes alongside said web cutting means;

wherein said planar guide surface means and said gas flow directing means are arranged such that the run of the web is spaced a substantially constant distance from said guide surface means.

4,566,945

HEADBOX TRAILING ELEMENT

James L. Ewald, Beloit, Wis., and José J. A. Rodal, Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Apr. 11, 1984, Ser. No. 598,968

Int. Cl.⁴ D21F *1/06, 1/02*

U.S. Cl. 162—343 **17 Claims**



1. A paper machine element for use in a headbox for deliver-

ing stock to a forming surface, the headbox having a slice chamber and a slice opening, the element comprising:

a trailing element for positioning in a slice chamber for stock flow induced movement;

said element to extend transversely of the headbox and having a greater structural strength and stiffness in the machine directin than in the cross-machine direction at an upstream end and having a greater structural stiffness in the cross-machine direction than in the machine direction at a downstream end to minimize instability so that the element resists deflection in the cross-machine direction by transient pressure variations and offers low resistance to deformation in the fluid flow stream for balancing pressure forces on opposite sides of the element;

and means for anchoring said element in the slice chamber at the upstream end with the downstream end to be unattached and constructed to be self-positionable so as to be responsive to forces exerted therein by the stock flowing over the surfaces of the element.

4,566,946

TRANSFER ARRANGEMENT FOR GUIDING THE PAPER WEB FROM THE PRESS SECTION OF A PAPER MACHINE TO IT'S DRYING SECTION

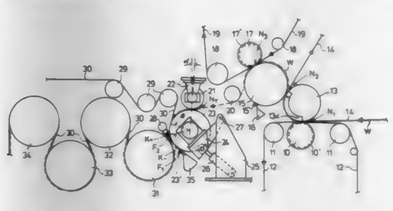
Martti Koponen, and Olli Tapio, both of Jyviskylä, Finland, assignors to Valmet Oy, Finland

Filed Oct. 31, 1983, Ser. No. 546,925

Claims priority, application Finland, Nov. 2, 1982, 823742

Int. Cl.⁴ D21F *3/04*

U.S. Cl. 162—359 **17 Claims**



1. In a paper making machine including a press section followed in the machine direction by a drying section including a lower row of drying cylinders and an upper row of drying cylinders and a drying wire passing over said drying cylinders, said drying section not including a lead-in drying cylinder, transfer apparatus for guiding a paper web from the press section to the drying section, comprising:

a smoothing press including a smoothing nip formed between upper and lower smoothing press rolls to which the paper web is passed from the press section, said smoothing press being situated between the press and drying sections with said lower smoothing press roll being situated at a position which is normally occupied by a lead-in drying cylinder of a conventional drying section substantially in the upper row of drying cylinders;

first guide roll means for guiding said drying wire of the drying section over an elongated angular sector of said lower smoothing press roll, said elongated angular sector having a size sufficiently large that the web is transferred onto said drying wire, said drying wire carrying the web as a closed draw to said drying section onto a first one of said drying cylinders and between drying cylinders of said lower and upper rows of the drying section; and

said upper and lower smoothing press rolls are smooth-faced press rolls, said lower smoothing press roll having a substantially larger diameter than that of said upper smoothing press roll, and wherein no fabric passes through said smoothing nip so that the web is in direct contact with the faces of said smoothing press rolls.

4,566,947

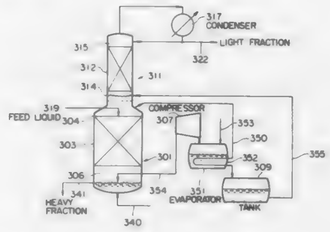
METHOD OF SEPARATING A MIXED LIQUID INTO LIGHT AND HEAVY FRACTIONS BY DISTILLATION

Hidemasa Tsuruta, 1-19-15, Minamitokiwadai, Itabashi-ku, Tokyo, Japan

Division of Ser. No. 424,561, Sep. 27, 1984, abandoned. This application Dec. 21, 1984, Ser. No. 684,712

Int. Cl.⁴ B01D *3/14, 1/28*

U.S. Cl. 203—26 **4 Claims**



1. A method of separating a mixed liquid into a light fraction having a first boiling point and heavy fraction having a second boiling point which is higher, under a given pressure than said first boiling point by at least 15° C., said mixed liquid having a boiling point nearer said second boiling point than said first boiling point, said method comprising:

rectifying said mixed liquid in a first distillation zone operated at said given pressure in such a manner as to obtain said heavy fraction as its bottom product and an intermediate fraction as its top product, said intermediate fraction having a boiling point higher than said first boiling point but lower than said second boiling point by less than 20° C.,

introducing said intermediate fraction into an evaporator for vaporizing a vaporizable liquid by indirect heat exchange therewith, thereby obtaining a vapor of said vaporizable liquid with the simultaneous condensation of said intermediate fraction,

compressing the vapor of said vaporizable liquid to a temperature higher than that of said heavy fraction in said first zone,

heating said heavy fraction in said first distillation zone by heat exchange with said compressed vapor to effect said rectification in said first distilllation zone, and

distilling said condensed intermediate fraction in a second distillation zone operated so as to obtain said light fraction as its top product.

4,566,948

SEPARATION OF ISOPROPYL ETHER FROM ISOPROPANOL AND WATER BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. 3rd. Ave., and An-I Yeh, 700 S. 12th Ave., both of Bozeman, Mont. 59715

Filed Dec. 20, 1984, Ser. No. 684,367

The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.

Int. Cl.⁴ B01D *3/40*

U.S. Cl. 203—51 **2 Claims**

1. A method for recovering essentially anhydrous isopropyl ether from a mixture of isopropyl ether, isopropanol and water, which comprises distilling a mixture of isopropyl ether, isopropanol and water in a rectification column in the presence of an extractive agent, recovering essentially pure isopropyl ether as overhead and obtaining the extractive agent and isopropanol and water from the stillpot or reboiler, the extractive agent comprises at least dimethylsulfoxide.

4,566,949

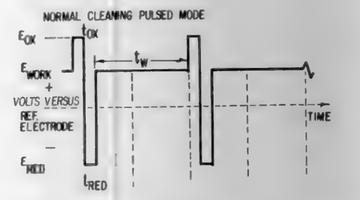
METHOD OF OPERATING A SELF CLEANING ELECTROCHEMICAL DETECTOR

Terry A. Berger, Landenberg, Pa., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 543,663, Oct. 19, 1983, Pat. No. 4,496,454. This application Oct. 11, 1984, Ser. No. 659,792

Int. Cl.⁴ G01N *30/62*

U.S. Cl. 204—1 T **11 Claims**



1. A method of detecting the concentration of electrochemical species in a fluid with an electrochemical cell with a working electrode comprising:

oxidizing the working electrode for a period less than or equal to 200 milliseconds;

reducing the working electrode for a period less than or equal to 200 milliseconds;

applying a working potential to the working electrode for a period less than or equal to 800 milliseconds; and

measuring a current produced by electrochemical reactions on the working electrode at the working potential for integer multiples of a main power line period.

4,566,950

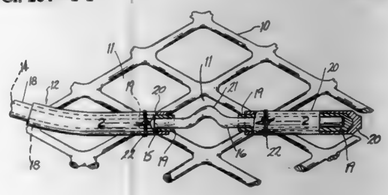
METHOD OF MONITORING AN ELECTROLYTIC CELL

Ronald C. Miles, Cleveland, Tenn., assignor to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 631,427, Jul. 16, 1984, abandoned, which is a division of Ser. No. 373,204, Apr. 29, 1982, Pat. No. 4,500,402. This application May 6, 1985, Ser. No. 730,883

Int. Cl.⁴ G01N *27/46*

U.S. Cl. 204—1 T **44 Claims**



1. A method of monitoring the operation of an electrolytic cell having at least one cathode and at least one anode, each cathode and anode being sandwiched about a separator and having anode and cathode surfaces, the method comprising:

(a) placing a first wire reference electrode with a first reference wire portion adjacent and between the cathode surface and separator, the reference wire !; portion extending at least partially into the plane of the cathode surface;

(b) connecting a first voltmeter to the first wire reference electrode and the cathode;

(c) placing a second wire reference electrode with a second reference wire portion adjacent and between the separator and the anode surface, the second reference wire portion extending into the plane of the anode surface;

(d) connecting a second voltmeter to the second wire reference electrode and the anode;

(e) connecting a third voltmeter to the anode and the cathode;

(f) recording a first potential reading of the cathode surface from the first voltmeter;

(g) recording a second potential reading of the anode surface from the second voltmeter; and

(h) recording a third potential reading from the third voltmeter;

(i) determining the potential of the separator and surrounding electrolyte from the difference between the third potential reading and the sum of the first potential reading and the second potential reading.

4,566,951

METHOD FOR CLEANING CATHODE OR ANODE PLATES

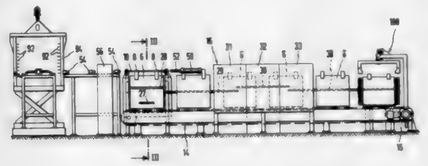
Gustav S. I. Norberg; Kjell E. L. Segerström, both of Karlstad, and Tommy E. Ahl, Kil, all of Sweden, assignors to Wenmec AB, Kil, Sweden

Filed Mar. 5, 1984, Ser. No. 586,276

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1983, 3307890

Int. Cl.⁴ C25D *1/04*; B08B *3/02*

U.S. Cl. 204—12 **12 Claims**



1. A method for cleaning cathode and/or anode plates obtained in an electrolytic refining of metals, the cathode plates being originally deposited on thin starting sheets consisting essentially of the same metal being refined and including loops for accommodating cathode bars to enable a suspension of the cathode plates in an electrolytic bath, the anode plates including suspension lugs, the method comprising the steps of:

lifting the cathode plates or anode plates from the electrolytic bath by the cathode bars or lugs in groups of plates;

transferring the cathode plates or anode plates from the electrolytic bath to a washing unit including supporting the cathode or anode plates at a lower edge thereof;

removing the cathode bars from the cathode plates prior to an entry of the cathode plates into the washing unit;

successively passing at least one of the cathode plates or at least one of the anode plates through the washing unit in a direction extending substantially parallel to flat sides of the plates; and

subjecting the cathode plate or anode plate to a washing operation in the washing unit by spraying the flat sides of the plates with wash liquid sprayed through nozzle means which execute a relative movement along the flat sides of the plates.

4,566,952

TWO-STAGE PROCESS FOR THE PRODUCTION OF ANODICALLY OXIDIZED ALUMINUM PLANAR MATERIALS AND USE OF THESE MATERIALS IN MANUFACTURING OFFSET-PRINTING PLATES

Gerhard Sprintschnik, Taunusstein; Walter Niederstätter, Eltville, and Joachim Stroszynski, Wiesbaden-Naurod, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 30, 1984, Ser. No. 595,538

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312497

Int. Cl.⁴ C25D *11/08, 11/12, 11/16, 11/18*

U.S. Cl. 204—27 **17 Claims**

1. A process for producing an aluminum or aluminum alloy material in the form of a plate, foil or strip, comprising the step of anodically oxidizing a support material in a two-stage oxidation process comprising the steps of:

(a) first treating said support material in an aqueous electrolyte comprising from about 60 to 180 g/l of phosphoric acid, at a temperature of from about 47° to 70° C. and a voltage of from about 36 to 80 V, and

(b) subsequently treating said support material in an aqueous electrolyte comprising from about 60 to 300 g/l of sulfuric acid, at a temperature of from about 30° to 65° C. and a voltage of from about 15 to 35 V.

4,566,953

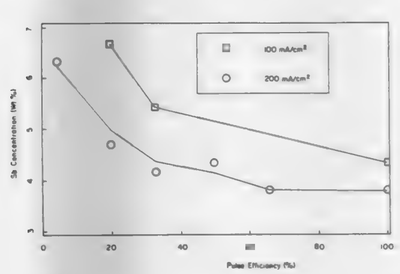
PULSE PLATING OF NICKEL-ANTIMONY FILMS

Tae Y. Kim, Carmel Township, Hamilton County, Ind., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Dec. 24, 1984, Ser. No. 685,774

Int. Cl.⁴ C25D *3/56, 5/18*

U.S. Cl. 204—28 **11 Claims**



1. A method for electroplating a nickel-antimony alloy onto a metallic substrate comprising from 1 to 12 weight percent antimony comprises electroplating the alloy from a solution containing a soluble nickel salt and a soluble mixed antimony-alkali metal salt at a pH of from about 1 to 6 by means of a pulsed current having an on-time of from 5 to 20 milliseconds and an off-time of from 150 to 300 milliseconds.

3. The method recited in claim 1, wherein the substrate is a wire which is drawn through the plating solution.

4,566,954

METHOD OF AND APPARATUS FOR SPLIT ROLLING OF STEEL SHEET

Tadahiko Nogami, Chiyoda, and Tadashi Nishino, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

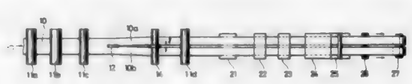
Filed Dec. 9, 1982, Ser. No. 448,074

Claims priority, application Japan, Dec. 9, 1981, 56-196862

Int. Cl.⁴ C25D *7/06;* **B21B** *1/00*

U.S. Cl. 204—28 **9 Claims**

5. A method according to claim 1, wherein said rolling rolls by a tandem rolling mill having a plurality of rolling stands, and said step of slitting said wide steel sheet in the breadthwise direction is conducted between at least two of said rolling stands; said step of plating being conducted to plate said slit steel sheets, after they have been rolled by said step of rolling, with a plating material been including zinc; and said step of



moving further maintaining a distance between adjacent slit steel sheets during subsequent rolling at least greater than 20 mm.

4,566,955

PREPARATION OF FINELY DIVIDED ELECTRICALLY CONDUCTIVE PYRROLE POLYMERS

Herbert Naarmann, Wattenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 18, 1984, Ser. No. 631,946

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1983, 3325893

Int. Cl.⁴ C25D *9/02;* **H01B** *1/12*

U.S. Cl. 204—59 R **2 Claims**

1. A process for preparing a finely-divided electrically conductive pyrrole polymer comprising the following sequential steps:

(A) carrying out a solution polymerization of an unsubstituted or substituted pyrrole monomer taken either alone or in an admixture with one another in the presence of from about 0.2 to 10 moles of an oxygen-containing oxidizing agent per mole of pyrrole monomer to produce a finely-divided pyrrole polymer, and

(B) effecting an electrochemical charging of said pyrrole polymer in a non-aqueous electrolyte system in the presence of a conductive salt, with said electrochemical charging being conducted at a current density of from 0.01 to 10 mA/cm^2, a voltage of from 0.1 to 100 V, and over a time period of from about 0.1 to 30 hours.

4,566,956

ELECTROCHEMICAL CONVERSION OF SOLUBLE SALTS OF INSOLUBLE ACIDS TO THEIR ACID FORM

Robert A. Cipriano, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 7, 1984, Ser. No. 679,503

Int. Cl.⁴ C25B *3/00;* **B01D** *57/02*

U.S. Cl. 204—72 **1 Claim**

1. A method for producing water insoluble organic acids from their water soluble salts, said salts produced under conditions wherein the ammonium salt thereof is not readily and efficiently produced during conventional production techniques or is incapable of being formed in a non-equilibrium cationic substitution reaction, which comprises

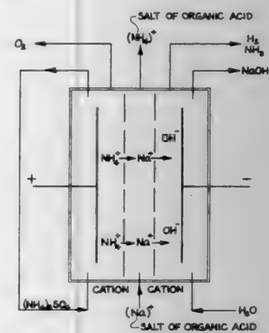
electrochemically converting the water soluble salt of the water insoluble organic acid to its ammonium salt by feeding:

the ammonium salt of a strong inorganic acid to an anolyte chamber of a three chamber electrochemical cell;

a water soluble salt of a water insoluble organic acid to the middle chamber of said electrochemical cell; and,

in the catholyte chamber of said cell, a hydroxide of the cation moiety of the organic acid salt; thereby electrochemically converting said organic acid salt to its ammonium salt, in the middle compartment, said strong inorganic acid to its free acid form in the anolyte chamber, and water to its hydroxyl and hydrogen components, in the catholyte chamber, the hydroxyl component reacting with the cation moiety of the water soluble salt of said organic acid fed to the middle compartment, and wherein, the ammonium salt of the organic acid and the inorganic

acid produced in the anolyte chamber are recovered from the cell and reacted with each other to form the free acid



ELECTROCHEMICAL CELL FOR MULTIPLE ION SUBSTITUTION

of the organic ammonium salt and the ammonium salt of the strong inorganic acid; and, returning the ammonium salt of the strong inorganic acid to the anolyte chamber.

4,566,957

USE OF GAS DEPOLARIZED ANODES FOR THE ELECTROCHEMICAL PRODUCTION OF ADIPONITRILE

John C. Trocciola, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 10, 1984, Ser. No. 680,405

Int. Cl.⁴ C25B *3/00*

U.S. Cl. 204—73 A **5 Claims**

1. A method of hydrodimerizing acrylonitrile to produce adiponitrile in an electrochemical system in cells that contain at least one aqueous electrolyte, reductant, an anode and a cathode comprising:

(a) maintaining the aqueous electrolyte in contact with the cathode and a gas depolarized anode;

(b) maintaining a supply of acrylonitrile at the cathode;

(c) maintaining a supply of reductant at the anode; and

(d) passing a direct electric current through said system causing hydrodimerization of the acrylonitrile to adiponitrile at the cathode and oxidation of the reductant at the anode;

requiring an anode voltage of less than about 400 millivolts at 100 milliamperes per square centimeter of electrode area.

4,566,958

PROCESS FOR ELECTROCHEMICAL ROUGHENING OF ALUMINUM USEFUL FOR PRINTING PLATE SUPPORTS, IN AN AQUEOUS MIXED ELECTROLYTE

Engelbert Pliefke, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 4, 1985, Ser. No. 689,002

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1984, 3400249

Int. Cl.⁴ C25F *3/04*

U.S. Cl. 204—129.75 **2 Claims**

1. A process for the electrochemical roughening of a plate of aluminum or an alloy thereof which is useful for a printing plate support, comprising the steps of (A) immersing the plate in an aqueous mixed electrolyte solution containing (i) from about 0.5 to 10% by weight HCl and (ii) a further inorganic acid comprising HF, such that said mixed electrolyte solution contains from about 0.05 to 5% by weight of HF; and (B) applying an alternating current to the plate to produce a uniformly roughened offset printing plate support.

4,566,959

PROCESS FOR THE ELECTROCHEMICAL ROUGHENING OF ALUMINUM USEFUL FOR PRINTING PLATE SUPPORTS, IN AN AQUEOUS MIXED ELECTROLYTE

Dieter Mohr, Schlangenbad, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 4, 1985, Ser. No. 689,001

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1984, 3400248

Int. Cl.⁴ C25F *3/04*

U.S. Cl. 204—129.75 **4 Claims**

1. A process for the electrochemical roughening of a plate of aluminum or an alloy thereof which is useful for a printing plate support, comprising the steps of (A) immersing the plate in an aqueous mixed electrolyte solution containing (i) from about 0.5 to 10% by weight of HCl and (ii) at least one further inorganic electrolyte comprising an inorganic fluorine compound which is present in the form of an acid or an alkali metal salt and which contains an anion comprised of fluorine and at least one further element, such that said mixed electrolyte solution contains from about 0.05 to 5% by weight of said fluorine compound; and (B) applying an alternating current to the plate to produce a uniformly roughened plate for use as an offset printing plate support.

4,566,960

PROCESS FOR ELECTROCHEMICAL ROUGHENING OF ALUMINUM USEFUL FOR PRINTING PLATE SUPPORTS, IN AN AQUEOUS MIXED ELECTROLYTE

Dieter Mohr, Schlangenbad, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 4, 1985, Ser. No. 689,003

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1984, 3400250

Int. Cl.⁴ C25F *3/04*

U.S. Cl. 204—129.75 **6 Claims**

1. A process for the electrochemical roughening of a plate of aluminum or an alloy thereof which is useful for a printing plate support, comprising the steps of (A) immersing the plate in an aqueous mixed electrolyte solution containing (i) from about 0.3 to 4% by weight of HNO_3 and (ii) at least one further inorganic electrolyte comprising an inorganic fluorine compound which is present in the form of an acid or an alkali metal salt and which contains an anion comprised of fluorine and at least one further element, such that said mixed electrolyte solution contains from about 0.05 to 5% by weight of said fluorine compound; and (B) applying an alternating current to the plate to produce a uniformly roughened offset printing plate support.

4,566,961

ELECTRIC ARC CONVERSION PROCESS

Henri Diaz, Dunkerque; Pierre Jorgensen, La Haye Les Roses, and Pierre Vernet, Martigues, all of France, assignors to The British Petroleum Company p.l.c., London, England

PCT No. PCT/GB84/00067, § 371 Date Oct. 18, 1984, § 102(e) Date Oct. 18, 1984, PCT Pub. No. WO84/03515, PCT Pub. Date Sep. 13, 1984

PCT Filed Mar. 1, 1984, Ser. No. 668,280

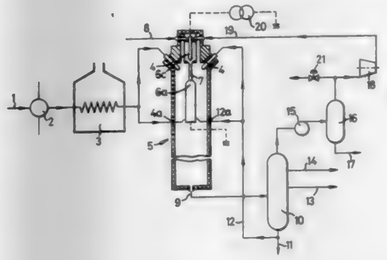
Claims priority, application France, Mar. 2, 1983, 83 03424

Int. Cl.⁴ C25C *3/24*

U.S. Cl. 204—168 **11 Claims**

1. A process for the electric arc conversion of high molecular weight carbonaceous material contained in a feed stream to low molecular weight products characterized in that a hydrocarbon feed stream containing a substantial proportion of

C_1–C_4 saturated hydrocarbon and a feed stream containing high molecular weight carbonaceous materials are brought into contact with an electric arc, said feed stream containing



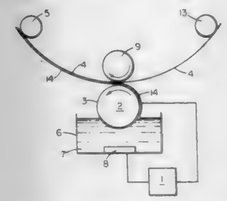
said high molecular weight carbonaceous material being brought into contact, in the vicinity of the arc, with a hot gas stream derived from the said hydrocarbon feed stream containing C_1–C_4 saturated hydrocarbon.

4,566,962

ELECTRODEPOSITED CONTINUOUS THIN FILM TRANSFER PROCESS FOR PRODUCING FILM FUNCTIONAL AS BARRIER COATINGS

Vincent McGinniss, Delaware, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Dec. 23, 1983, Ser. No. 565,071
Int. Cl.⁴ C25D *13/06, 13/10*
U.S. Cl. 204—180.9 **12 Claims**



1. A process for electrodepositing a thin continuous film coating of less than 1 mil thickness onto a first substrate and then transferring said deposited thin continuous film coating onto a second substrate which comprises:

(a) dispersing an anodic or cathodic electrodepositable polymer having at least 100% elongation, a surface energy of less than 50 dynes/cm., and, if anodic an acid number less than 100 or if cathodic an amine equivalency value less than 60;

(b) dispersing a release effective amount of an anodic or cathodic elastomeric additive into intimate blend with said electrodepositable polymer, said additive having an elongation of at least 100%, a glass transition greater than 0° C., and, if anodic an acid number less than 100 or if cathodic an amine equivalency value less than 60, so as to form an electrodepositable polymer-additive blend;

(c) electrodepositing said electrodepositable polymer-additive blend onto a first substrate forming a coated first substrate;

(d) contacting said coated first substrate to a second substrate so as to obtain greater adhesion between said electrodeposited polymer-additive blend and said second substrate than the adhesion between said first substrate and said electrodeposited polymer-additive blend;

(e) separating said electrodepositable polymer-additive blend from said first substrate by separating said coated first substrate from said second substrate so as to effect transfer of said electrodeposited polymer additive blend from said first substrate to said second substrate.

4,566,963

WATER-DISPERSIBLE BINDERS BASED ON MODIFIED EPOXIDE/AMINE ADDUCTS, AND THEIR PREPARATION AND USE

Günther Ott, Münster-Wolbeck; Arnold Dobbelstein; Michael Geist, both of Münster; Georg Schön, Everswinkel, and Klaas Ahlers, Münster, all of Fed. Rep. of Germany, assignors to BASF Farben + Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Feb. 25, 1985, Ser. No. 705,311
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1984, 3409189
Int. Cl.⁴ C08G *59/14;* **C25D** *13/00*
U.S. Cl. 204—181.7 **29 Claims**

1. A water-dispersible binder based on modified epoxide/amine adducts, which comprises the reaction product of:

A. a polyepoxide having an epoxide equivalent greater than 1 and a mean molecular weight $\overline{M}_n$ of 140 to 5,000 with

B. a diphenylolalkanoate ester and

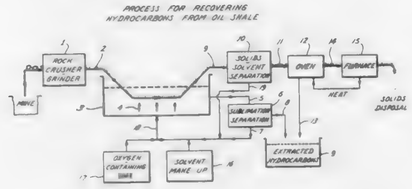
C. an amine.

4,566,964

METHOD OF RECOVERING HYDROCARBON FROM OIL SHALE

Robert H. Friedman, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 2, 1985, Ser. No. 751,343
Int. Cl.⁴ C10G *1/04*
U.S. Cl. 208—8 LE **23 Claims**



1. A method for recovering hydrocarbons from oil shale comprising mineral rock and kerogen materials comprising

(a) grinding the oil shale to a predetermined fineness;

(b) exposing the oil shale material to an oxidative environment comprising a free oxygen containing gas at a predetermined temperature for sufficient time to cause oxidative scission of a portion of the kerogen which produces organic fragments removed from the kerogen, said oxidative environment also including a liquid solvent for the organic fragments;

(c) separating the solvent and organic fragments from the residual solids; and

(d) separating the organic fragments from the solvent.

4,566,965

REMOVAL OF NITROGEN AND SULFUR FROM OIL-SHALE

William N. Olmstead, Berkeley Heights, N.J., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 453,729, Dec. 27, 1982, abandoned. This application Jul. 13, 1984, Ser. No. 630,892
Int. Cl.⁴ C10G *1/00, 1/02*
U.S. Cl. 208—11 R **7 Claims**

1. A process for enhancing the removal of nitrogen and sulfur from oil-shale, which process comprises:

(a) contacting the oil-shale with a sufficient amount of an aqueous base solution comprised of at least a stoichiometric amount of one or more alkali metal or alkaline-earth metal hydroxides based on the total amount of nitrogen and sulfur present in the oil-shale, and in an amount sufficient to form a two phase liquid, solid system, at a temperature from about 50° C. to about 350° C., and at pressures sufficient to maintain the solution in liquid form,

(b) separating the effluents from the treated oil-shale, wherein the resulting liquid effluent contains nitrogen moieties and sulfur moieties from the oil-shale and any resulting gaseous effluent contains nitrogen moieties from the oil-shale, and

(c) converting organic material of the treated oil-shale to shale-oil at a temperature from about 450° C. to about 550° C.

4,566,966

OCTANE CATALYTIC CRACKING PROCESS

Bernie J. Pafford, and Carl F. Bertsch, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 510,076, Jun. 30, 1983, abandoned. This application Aug. 28, 1984, Ser. No. 624,939
Int. Cl.⁴ C10G *11/00*
U.S. Cl. 208—113 **18 Claims**

1. In a method for cracking a hydrocarbon feedstock to lower molecular weight products in a cracking system comprising a reaction zone, a regeneration zone, and a passivation zone wherein:

(a) feedstock containing metal contaminant is passed to the reaction zone having cracking catalyst therein wherein the feedstock is cracked to lower molecular weight products and coke, coke and metal contaminant becoming deposited on the catalyst;

(b) coke and metal contaminated catalyst is passed from the reaction zone to a regeneration zone wherein coke is removed from the catalyst to regenerate the catalyst; and,

(c) regenerated catalyst from the regeneration zone is passed through a passivation zone prior to return to the reaction zone, the improvement comprising:

(i) monitoring the octane level of the cracked product; and

(ii) adjusting the metal contaminant level on the catalyst to maintain the octane level within a predetermined range by the addition to the cracking system of metal contaminated equilibrium cracking catalyst possessing a higher equivalent nickel content than the cracking catalyst in the reaction zone.

4,566,967

CATALYTIC REFORMING

Arthur W. Aldag, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 4, 1985, Ser. No. 708,143
Int. Cl.⁴ C10G *35/06*
U.S. Cl. 208—135 **16 Claims**

1. A process for the catalytic reforming of a feedstock which contains at least one reformable organic compound comprising the step of contacting said feedstock under suitable reforming conditions with a catalyst composition selected from the group consisting of a catalyst consisting essentially of zinc oxide and a spinel structure alumina and a catalyst consisting essentially of a physical mixture of zinc titanate and a spinel structure alumina in the presence of sufficient added hydrogen to substantially prevent the formation of coke, wherein insufficient zinc is present in said catalyst composition for the formation of a bulk zinc aluminate.

4,566,968

APPARATUS FOR LEADING OFF FROTH FROM THE TANK OF A FLOTATION CELL

Tuomo V. J. Kivistö, Outokumpu; Kai B. Fallenius, and Timo U. Niitti, both of Espoo, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Continuation of Ser. No. 545,616, Oct. 26, 1983, abandoned. This application Nov. 15, 1984, Ser. No. 671,801
Claims priority, application Finland, Nov. 16, 1982, 823919
Int. Cl.⁴ B01D *21/24*
U.S. Cl. 210—221.1 **10 Claims**



1. In combination, a flotation cell comprising a tank which has a wall, and apparatus for leading off froth from the tank, said apparatus comprising at least two launders placed inside the tank and each having a tubular lower part, means supporting the launders at respective support points close to the wall of the tank, and respective drain pipes connected to the tubular lower parts of the launders, the cell not including any member disposed within the tank above the launders and arranged to rotate in a horizontal plane in order to sweep froth into the launders.

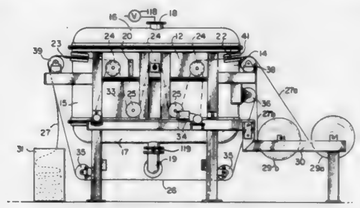
9. In combination, a flotation cell comprising a tank which has a wall, and apparatus for leading off froth from the tank, said apparatus comprising at least one launder placed inside the tank and having a tubular lower part, means supporting the launder at a support point close to the wall of the tank in such a manner that the launder is turnable in a horizontal plane about a vertical axis through its support point, and a drain pipe connected to the tubular lower part of the launder.

4,566,969

ROLLING FILTER APPARATUS

Max Klein, Schrewsbury, N.J., assignor to Crane & Co., Inc., Dalton, Mass., a part interest

Continuation-in-part of Ser. No. 482,618, Apr. 6, 1983, abandoned, which is a continuation-in-part of Ser. No. 306,694, Sep. 29, 1981, Pat. No. 4,394,146. This application Jan. 4, 1985, Ser. No. 689,019
The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.
Int. Cl.⁴ B01D *33/32, 33/38*
U.S. Cl. 210—387 **17 Claims**



1. A rolling filter apparatus having

a filter chamber with an inlet for receiving liquid medium, an

outlet for discharging filtered liquid medium, said filter chamber having opposite side walls defining between them a path for the liquid medium from said inlet to said outlet;

a filter medium spanning across said filter chamber between said side walls and having opposite edge portions disposed adjacent the respective side walls, said filter medium comprising a carrier web and filter material, said carrier web extending continuously across the full width of the filter chamber between said side walls and having imperforate longitudinal marginal edge portions and a medial foraminous zone, said filter material covering said foraminous zone with its side edges overlying said marginal edge portions of the carrier web, and means to guide said medium in a predetermined path through said filter chamber;

said filter chamber having an entrance end and an exit end for said filter medium, and flange means projecting inwardly of said chamber from said sidewalls, said flange means being disposed on said opposite side walls in alignment with said predetermined path to underlie the edge portions of said filter medium and occupy the space between said filter medium and said side walls;

means to advance said filter medium longitudinally through said filter chamber from its entrance end to its exit end, said medium spanning between said flange means with the side edges of said filter medium overlying the free edges of said flange means; and

means to assemble the filter material of said filter medium onto said carrier web adjacent said entrance end of the chamber and feed the assembled filter medium into the filter chamber with the edges overlying the upstream surface of the flange means in intimate engagement therewith, whereby liquid medium flowing through said filter chamber must pass through said filter material in its travel from said inlet to said outlet;

said means to guide said filter medium including a first series of parallel turning rolls disposed at a first level across the liquid inlet of said chamber and a second series of parallel turning rolls disposed at a second level across the liquid outlet of said chamber, said turning rolls being positioned and arranged so that said predetermined path extends in upright zig-zag runs alternately between said turning rolls of the first and second series;

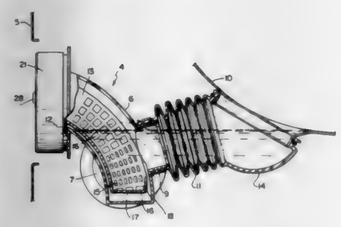
said inlet and outlet of said filter chamber having means to control the rates of flow through said inlet and outlet to maintain a reservoir of the liquid in the filter chamber having a liquid level above the upper ends of said upright zig-zag runs to completely immerse said upright runs.

4,566,970

WASHING MACHINE FILTER

Dino Piai; Renzo Rigoni, and Giovanni Paruzzolo, all of Treviso, Italy, assignors to Industrie Zanussi S.p.A., Pordenone, Italy

Filed Apr. 26, 1984, Ser. No. 604,363
Claims priority, application Italy, May 5, 1983, 45713 A/83
Int. Cl.⁴ B01D *35/02*
U.S. Cl. 210—409 **3 Claims**



1. A washing machine filter for filtering water discharged from a washing machine, particularly a household washing machine, said filter comprising:

a filter housing having an open first end adapted to be mounted adjacent a wall of a washing machine and a closed second end, said housing having a first connection adapted to be connected to a wash tub of the washing machine to receive therefrom water to be filtered and a second connection adapted to be connected to a pump of the washing machine for discharging the washing water, said second connection having an upper edge;

a filtering body extending through said open first end and into the interior of said housing, said body having an outer end sealed to said housing and an inner end extending freely into said interior of said housing, and said body having therethrough filtering openings for filtering water passing between said first and second connections of said housing;

a shut-off cover removably connected to said outer end of said body for hermetically sealing said open first end of said housing;

said filter housing and said filtering body being curved and extending obliquely downwardly and away from said open first end and said outer end thereof, respectively;

said open first end of said housing being defined by an opening having a lower edge higher than said upper edge of said second connection, whereby upon removal of said cover water is prevented from overflowing from said housing through said opening;

said filtering openings in said body comprising smaller openings in the area of said body on a level with said second connection of said housing, and larger openings in other areas of said body; and

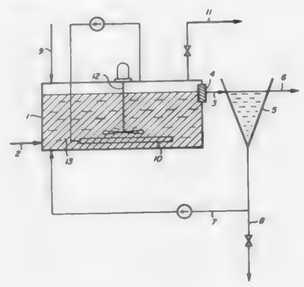
said interior of said housing including an upper portion for retaining an air pocket above the level of water in said housing, such that fibrous material floats on the surface of the water at a level above said second connection.

4,566,971

PROCESS AND APPARATUS FOR THE BIOLOGICAL PURIFICATION OF WASTEWATER

Hans Reimann, and Uwe Fuchs, both of Munich, Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 418,967, Sep. 16, 1982, abandoned. This application Jan. 24, 1985, Ser. No. 694,356
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3137055
Int. Cl.⁴ C02F *3/08*
U.S. Cl. 210—616 **13 Claims**



1. In a process for the biological purification of wastewater containing organic impurities, wherein the wastewater is aerated in a reactor, in the presence of activated sludge in part carried on a carrier material comprising particles of organic polymer compounds, with a gas containing molecular oxygen, and the wastewater activated sludge mixture thereafter being separated in a post-clarification stage into purified water and sludge with a partial stream of the thus-separated sludge being recycled into the reactor, the improvement comprising conducting the biological purification in the reactor in the presence of a carrier material comprising open cell macroporous particles having a specific gravity of 20–100 kg/m³, a volume of 0.1–125 cm³, a water absorption capacity of 30–70% after two minutes, a void ratio of 6–30 pores/cm, an air permeability of 150 to 350 l/dm²/min at 10 mm water column differential pressure per 50 mm of thickness, and having open macropores of 0.1–3 mm, said reactor being a continuous flow-stirred tank with carrier particles present in the reactor in an amount comprising a volume proportion of 5–40% of the reactor volume to permit substantially free movement of the carrier particles suspended in the wastewater, to achieve decentralized growth of the organisms in the activated sludge on the particles and maintaining a solids concentration in the reactor of 6–15 g/l, sparging gas bubbles into the reactor from the bottom thereof of achieve circulation of the particles throughout the reactor, and recycling separated sludge from the post-clarification stage in an amount sufficient to maintain 0.9–9 kg/m³ of free activated sludge in the reactor.

4,566,972

TREATMENT OF AQUEOUS SYSTEMS

John J. Bennison, Runcorn; Stuart W. Longworth, and John G. Baker, both of Warrington, all of England, assignors to Dearborn Chemicals, Ltd., Widnes, England

Continuation of Ser. No. 408,367, Aug. 16, 1982, abandoned. This application Jan. 15, 1985, Ser. No. 691,724
Claims priority, application United Kingdom, Aug. 18, 1981, 8125161
Int. Cl.⁴ C02F *5/12*
U.S. Cl. 210—698 **6 Claims**

1. A method of treating water in an aqueous steam generating boiler system to inhibit calcium carbonate scale formation which comprises incorporating in the water ethylenediaminetetraacetic acid or a salt thereof and a water-soluble copolymer of maleic acid and styrene sulfonic acid or a salt thereof in a weight ratio of ethylenediametetracetic acid or salt to copolymer or salt of from 50:1 to 1:10, said copolymer possessing a molecular weight of from 1,000 to less than 10,000 and maleic acid and styrene sulfonic acid recurring units in a molar proportion of about 75:25 to 5:95.

4. A composition suitable for inhibition of calcium carbonate scale in an aqueous steam generating boiler system which comprises ethylenediaminetetraacetic acid or a salt thereof and a water-soluble copolymer of maleic acid and styrene sulfonic acid or a salt thereof possessing a molecular weight of from 1,000 to less than 10,000 and maleic acid and styrene sulfonic acid recurring units in a molar proportion of 75:25 to 5:95, said composition having a weight ratio of ethylenediaminetetraacetic acid or salt to copolymer or salt of from 50:1 to 1:10.

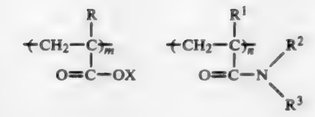
4,566,973

SCALE INHIBITION IN WATER SYSTEMS

William F. Masler, III, Hinckley, and Zahid Amjad, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 6, 1984, Ser. No. 638,158
Int. Cl.⁴ C02F *5/12*
U.S. Cl. 210—701 **15 Claims**

1. A method for inhibiting the precipitation of phosphate scale in an aqueous medium comprising the step of adding to the aqueous system about 0.05 to 500 ppm water-soluble non-crosslinked random copolymer of 50 to 90 weight parts of an acrylic acid and 10 to 50 weight parts of a substituted acrylamide, on the basis of a total of 100 weight parts of polymerized monomers, said copolymer having weight average molecular weight in the range of about 1,000 to 50,000 and the polymerized units of an acrylic acid and a substituted acrylamide are defined by the following formula:



where m is in the range of about 10 to 700 and n is in the range of about 0.1 to 350, subject to the molecular weight limitations; R and R¹ are individually selected from hydrogen and methyl; X is selected from hydrogen, sodium, potassium, calcium, ammonium, and magnesium moieties; and R² and R³ are individually selected from hydrogen, and substituted and unsubstituted groups each containing a total of 1 to 8 carbon atoms, wherein the substituents on R² and/or R³ are selected from alkyl, aryl, and keto groups, provided that either R² and/or R³ is other than hydrogen.

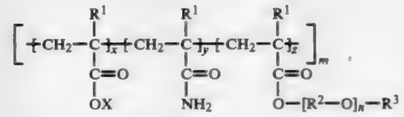
4,566,974

METHOD OF INHIBITING SCALE WITH COPOLYMER

William F. Masler, III, Hinckley, and Zahid Amjad, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 508,636, Jun. 28, 1983, Pat. No. 4,499,002. This application Dec. 24, 1984, Ser. No. 685,279
Int. Cl.⁴ C02F *5/12*
U.S. Cl. 210—701 **7 Claims**

1. A method for inhibiting the deposition of scale due particularly to calcium phosphate and magnesium phosphate formed in a system for treating process water, comprising, adding to said process water from 2 parts per million (ppm) to about 200 ppm of a water-soluble essentially non-crosslinked random copolymer consisting essentially of a copolymer of acrylic acid or methacrylic acid, acrylamide or methacrylamide, and an alkoxyalkyl primary alcohol ester of (meth)acrylic acid, the copolymer having the structural formula



wherein,

X represents H, or NH_4, or an alkali metal selected from the group consisting of sodium and potassium;

R^1 represents H, or methyl;

R^2 represents lower alkyl having from 2 to about 4 carbon atoms;

R^3 represents lower alkyl having from 1 to about 10 carbon atoms;

n is an integer in the range from 2 to about 6;

m is an integer in the range from about 3 to about 70; and, for each y (that is, y=1) x is an integer in the range from about 1 to about 8, and z is a number in the range from 1 to about 0.075; and x, y and z are present in relative heterogeneous order.

4,566,975

METHOD FOR PURIFYING AQUEOUS SOLUTIONS

Torkel Allgulin, Helsingborg, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Sep. 12, 1984, Ser. No. 649,712
Claims priority, application Sweden, Sep. 12, 1983, 8304858
Int. Cl.⁴ C02F *1/52*
U.S. Cl. 210—711 **12 Claims**

1. A method for purifying an aqueous solution including at least one of arsenic and phosphorous and containing an impurity selected from the group consisting of mercury, heavy

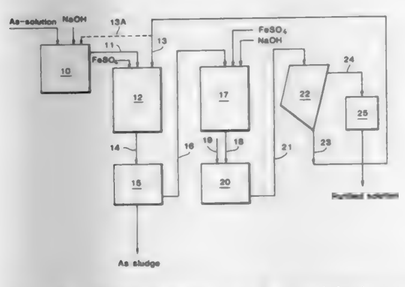
metals, solid matter and mixtures thereof which impurity is capable of being precipitated in a plurality of precipitating stages comprising:

(a) supplying the aqueous solution and precipitating agent comprised of metal ions capable of forming a substantially insoluble hydroxide precipitate to a first precipitating stage wherein the aqueous solution and precipitating agent are mixed at a pH of at least 9 and a precipitate is formed;

(b) separating at least a portion of the precipitate formed in the first precipitating stage containing a portion of the arsenic and/or phosphorus and impurity from the aqueous solution and removing said portion from the aqueous solution;

(c) transferring the aqueous solution to a last precipitating stage;

(d) adding precipitating agent comprised of metal ions capable of forming a substantially insoluble hydroxide precipi-



tate to the aqueous solution in the last precipitating stage at a pH between about 8 and 9 whereby a precipitate is formed;

(e) separating the precipitate formed in the last precipitating stage containing a further portion of the arsenic and/or phosphorus impurity from the aqueous solution wherein substantially purified aqueous solution is obtained;

(f) recycling the precipitate from step (e) to step (a) such that the amount of metal ions in the precipitate is greater than the amount of metal ions supplied by the precipitating agent of step (a) wherein the amount of precipitating agent added to the last precipitating stage is selected such that the ratio of equivalents of precipitating agent to moles of arsenic and/or phosphorus and impurity in the last precipitating stage is at least 2:1 and wherein said ratio in the first precipitating stage is at least 0.8:1 and is less than said ratio in the last precipitating stage.

4,566,976

VISCOUS HEAVY BRINES

Roy F. House, Houston, and Lonnie D. Hoover, Chappell Hill, both of Tex., assignors to NL Industries, Inc., New York, N.Y.

Continuation of Ser. No. 330,242, Dec. 14, 1981, Pat. No. 4,459,214. This application Jun. 20, 1984, Ser. No. 622,696

Int. Cl.⁴ C09K *7/02;* **E21B** *43/00*

U.S. Cl. 252—8.5 A **4 Claims**

1. A method of increasing the viscosity of a heavy brine solution containing one or more solouble salts selected from the group consisting of calcium chloride, calcium bromide, zinc bromide, and mixtures thereof, and which has a density greater than about 13.5 ppg, which comprises adding to said solution a viscosity increasing amount of a viscosifier selected from the class consisting of (1) hydroxyethyl cellulose, a solvating agent comprising a water miscible, polar organic liquid which when uniformly mixed with hydroxyethyl cellulose in a weight ratio of hydroxyethyl cellulose to solvating agent of 1:2 produces a mixture with substantially no free liquid solvating agent present after remaining quiescent for one week at ambient temperature in a sealed container, and a diluting agent comprising an organic liquid which is not a solvating agent; and (2) hydroxyethyl cellulose, a water soluble organic liquid, and an aqueous liquid, the organic liquid when uniformly mixed with the HEC in a weight ratio of HEC to organic liquid of 1:2 produces a mixture with free liquid present after remaining quiescent for one week at ambient temperature in a sealed container, the aqueous liquid having a pH greater than about 7.0, and from about 0.1 to about 7.0 pounds per 42 gallon barrel of sequestrant selected from the group consisting of polyhydroxy carboxylic acids and the water soluble salts thereof.

4,566,977

NON-AQUEOUS SLURRIES USED AS THICKENERS

James C. Hatfield, St. Albans, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 391,954, Jun. 24, 1982, abandoned, which is a continuation of Ser. No. 190,906, Sep. 25, 1980, abandoned. This application Feb. 28, 1985, Ser. No. 706,725

Int. Cl.⁴ C09K *7/02;* **E21B** *43/00*

U.S. Cl. 252—8.5 C **24 Claims**

1. A non-aqueous slurry suitable for use as a thickener or viscosifier in oil or gas drilling, fracturing, flow diversion, completion or workover aqueous fluids, which slurry consists essentially of:

(1) from about 1 to about 60 weight percent of a hydroxyethyl substituted, water-soluble cellulose ether polymer;

(2) from about 20 to about 95 weight percent of a water-insoluble liquid hydrocarbon;

(3) from 1 to about 10 weight percent of a non-ionic surfactant having an HLB of from about 7 to 14, represented by the structural formula:

$$R(OCH_2CH_2)_nOH$$

wherein:

R is an alkyl or aryl radical containing from 7 to about 20 carbon atoms, and

n is from 1 to about 15; and

(4) from 1 to about 4 weight percent of an organo modified colloidal clay.

4,566,978

HIGH TEMPERATURE DRILLING FLUIDS

Randel E. Stong, Gales Ferry, and Stanley W. Walinsky, Mystic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed May 21, 1984, Ser. No. 612,280

Int. Cl.⁴ C09K *7/02*

U.S. Cl. 252—8.5 C **12 Claims**

1. An aqueous drilling fluid suitable for high-temperature use comprising a water base, clay suspended in said base and from about 0.01–25 pounds per barrel total composition of a hydrolyzed terpolymer of maleic anhydride, styrene and a third monomer selected from acrylamide, methacrylamide, acrylic acid and methacrylic acid, the molar ratio of maleic anhydride to styrene to said third monomer being from about 30:10:60 to 50:40:10, and the alkali metal, ammonium and lower aliphatic amine salts thereof, the weight-average molecular weight of said hydrolyzed terpolymer being from about 500–10,000.

5. An aqueous drilling fluid suitable for high-temperature use comprising a water base, clay suspended in said base and from about 0.01–25 pounds per barrel total composition of a hydrolyzed copolymer of maleic anhydride and a second monomer selected from acrylamide, methacrylamide, acrylic acid and methacrylic acid, the molar ratio of said maleic anhydride to said second monomer being from about 25:75 to 75:25, and the alkali metal, ammonium and lower aliphatic amine salts thereof, the weight-average molecular weight of said hydrolyzed copolymer being from about 500–10,000.

4,566,979

STABLE MIXTURE OF CROSSLINKABLE COMPONENTS PROMPTLY ACTIVATABLE AS ACTING TREATING AGENTS

Charles J. Githens, 1604 N. Ridge Dr., Duncan, Okla. 73533, assignor to Charles J. Githens, Duncan, Okla.

Filed Nov. 7, 1983, Ser. No. 549,283

Int. Cl.⁴ C09K *3/00*

U.S. Cl. 252—8.55 C **10 Claims**

1. A storable dry mixture of readily activatable crosslinking components, said components comprising a dry, powdered mixture of SC-Composition and SH-Gelling Agent, said components made quickly activatable by addition of non-acidic water to form a gel, storable for at least a day, and the addition of acidic aqueous solution to effect quick crosslinking to form an active acidic treating fluid.

4,566,980

CARPET TREATING COMPOSITION

James A. Smith, Old Tappan, N.J., assignor to Creative Products Resource Associates, Ltd., Clifton, N.J.

Filed Jan. 16, 1985, Ser. No. 692,646

Int. Cl.⁴ D06M *11/00*

U.S. Cl. 252—8.6 **31 Claims**



1. A dry-type carpet treating composition comprising base particles of an inorganic carrier salt and an agglomerating agent, said base particles having applied thereto a polymeric coating comprising a film-forming latex and an amount of wax effective to substantially maintain the structural integrity of the base particles upon contact with water while not substantially inhibiting their ability to absorb said water.

4,566,981

FLUOROCHEMICALS AND FIBROUS SUBSTRATES TREATED THEREWITH: COMPOSITIONS OF CATIONIC AND NON-IONIC FLUOROCHEMICALS

Richard D. Howells, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 30, 1984, Ser. No. 595,349

Int. Cl.⁴ C08F *12/20*

U.S. Cl. 252—8.8 **15 Claims**

1. A fluorochemical composition comprising a mixture of

(a) a cationic fluorochemical having one or more monovalent fluoroaliphatic radicals having at least three fully fluorinated carbon atoms, one or more N-containing moieties selected from carbodiimido, urylene, and carbonylimino, said radicals and moieties being bonded together by hetero atom-containing or organic linking groups, said linking groups being free of active hydrogen atoms, and an organo amino nitrogen derived cationic moiety, said cationic moiety bonded to said N-containing moiety by hetero atom-containing or organic linking groups, and

(b) a non-ionic fluorochemical having one or more monovalent fluoroaliphatic radicals, having at least three fully fluorinated carbon atoms, and one or more N-containing moieties selected from carbodiimido, urylene, and carbonylimino, said radicals and moieties bonded together by hetero atom-containing or organic linking groups, said linking groups being free of active hydrogen atoms.

4,566,982

METAL DITHIOBENZOATES AS LUBRICANT ADDITIVES

Jacob J. Habeeb, Sarnia, Canada, and Keith Coupland, South Cliffe, England, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 395,596, Jul. 6, 1982, Pat. No. 4,456,509. This application Jan. 4, 1984, Ser. No. 568,055

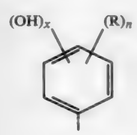
Int. Cl.⁴ C10M *1/54, 1/38*

U.S. Cl. 252—33.6 **5 Claims**

1. A lubricating hydrocarbon composition containing about 0.0001 to about 5.0 percent by weight of a metal dithiobenzoate having the formula:

$$[\phi C(S)S]_2M \quad (I)$$

where M is a metal of Groups IIA, IIIA, and IVA or a transition metal of the Periodic Table having a valence of 2 and ϕ has the structure:



where R is an alkyl of 1 to 18 carbons, n is 2 and x is 1, where the OH is in the 4 position from the open branch and where the R groups are in the 3 and 5 position from the open branch.

4,566,983

COMBINATION OF CARBOXYLIC ACYLATING AGENTS SUBSTITUTED WITH OLEFIN POLYMERS OF HIGH AND LOW MOLECULAR WEIGHT MONO-OLEFINS, DERIVATIVES THEREOF, AND FUELS AND LUBRICANTS CONTAINING SAME

Katsumi Hayashi, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 623,270, Jun. 21, 1984, Pat. No. 4,509,955, which is a division of Ser. No. 404,848, Aug. 9, 1982, Pat. No. 4,471,091. This application Feb. 7, 1985, Ser. No. 699,103

The portion of the term of this patent subsequent to Sep. 11, 2001, has been disclaimed.

Int. Cl.⁴ C10M *147/04*

U.S. Cl. 252—56 R **32 Claims**

1. A composition comprising

(A) the reaction product of

(A)(1) one or more alpha-beta olefinically unsaturated carboxylic acid reagents containing 2 to about 20 carbon atoms exclusive of the carboxyl-based groups, with

(A)(2) one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of homopolymers and/or interpolymers of monoolefins of from 12 to 30 carbon atoms, and chlorinated or brominated analogs thereof; and

(B) the reaction product of

(B)(1) one or more alpha-beta olefinically unsaturated carboxylic acid reagents containing 2 to about 20 carbon atoms exclusive of the carboxyl-based groups, with

(B)(2) one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of homopolymers and/or interpolymers of mono-1-olefins of from 2 to 8 carbon atoms and chlorinated or brominated analogs thereof.

17. A lubricant composition comprising a major amount of oil of lubricating viscosity and a minor amount of a composition comprising:

(A) The reaction product of

(A)(1) one or more alpha-beta olefinically unsaturated carboxylic acid reagents containing 2 to about 20 carbon atoms exclusive of the carboxyl-based groups, with

(A)(2) one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of homopolymers and/or interpolymers of mono-olefins of from 12 to 30 carbon atoms, and chlorinated or brominated analogs thereof; and

(B) the reaction product of

(B)(1) one or more alpha-beta olefinically unsaturated carboxylic acid reagents containing 2 to about 20 carbon atoms exclusive of the carboxyl-based groups, with

(B)(2) one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of homopolymers and/or interpolymers of mono-1-olefins of from 2 to 8 carbon atoms and chlorinated or brominated analogs thereof.

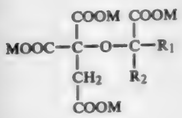
4,566,984

ETHER POLYCARBOXYLATES

Rodney D. Bush, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

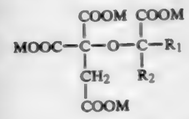
Filed Nov. 16, 1984, Ser. No. 672,302
Int. Cl.⁴ C07C *59/22, 69/66*
U.S. Cl. 252—140 **8 Claims**

1. Metal sequestering agent compounds represented by the chemical structure



wherein M is hydrogen or a cation wherein the resultant salt is water-soluble and R_1 and R_2 can be the same or different and are selected from the group consisting of H, CH_3, CH_3CH_2, OH, CH_2OH, CH_2CH_2OH, COOM, CH_2COOM, and CH_2CH_2COOM, M having the same meaning as above.

4. A detergent composition comprising from about 0.5% to about 98% by weight of a surfactant and from about 2% to about 99.5% by weight of a metal sequestering agent compound represented by the chemical structure



wherein M is hydrogen or a cation wherein the resultant salt is water-soluble and R_1 and R_2 can be the same or different and are selected from the group consisting of H, CH_3, CH_3CH_2, OH, CH_2OH, CH_2CH_2OH, COOM, CH_2COOM, and CH_2CH_2COOM, M having the same meaning as above.

4,566,985

METHOD OF CLEANING USING LIQUID COMPOSITIONS COMPRISING STABILIZED MIXTURES OF ENZYMES

Leonard C. Bruno, Menomonee Falls, and Mark M. Bruno, Milwaukee, both of Wis., assignors to Applied Biochemists, Inc., Milwaukee, Wis.

Filed Sep. 19, 1984, Ser. No. 651,890
Int. Cl.⁴ C11D *7/42*; D06M *16/00*
U.S. Cl. 252—174.12 **5 Claims**

1. A method of cleaning, comprising the steps of preparing a liquid enzyme composition having a water base and containing a mixture of enzymes dissolved in said water base, said enzymes including a protease and at least one other enzyme, said composition also including a benzamidine hydrohalide dissolved in said water base and present in a concentration at least equal to 0.003 molar solution, said benzamidine hydrohalide inhibiting the digestive effect of said protease on said other enzyme, diluting the composition with an additional quantity of water to reduce the concentration of said benzamidine hydrohalide to a value substantially less than 0.003 molar solution, and thereafter contacting the article to be cleaned with said diluted composition.

4,566,986

FLOCCULATING AGENTS AND PROCESSES FOR MAKING THEM

John J. Waldmann, 2129 Knickerbocker Dr., Charlotte, N.C. 28212

Filed Aug. 31, 1984, Ser. No. 646,012
Int. Cl.⁴ C02F *5/08*; C01F *7/16, 7/74*
U.S. Cl. 252—175 **21 Claims**

2. A process for making a flocculating adduct adapted for use in purification of liquids, comprising, in the order given, the steps of:

(a) charging a reaction vessel with a mixture of (1) from about 10 to about 20 mole percent of deionized water and (2) from about 2 to about 8 mole percent of alumunium oxide hydrate;

(b) heating the mixture, under agitation, to about 45° C.;

(c) adding from about 0.2 to 3.0 mole percent of sulfuric acid to the mixture over a period of about 40 minutes while maintaining the temperature of the mixture below about 110° C.;

(d) adding (1) from about 3.0 to about 10 mole percent of sulfuric acid and (2) from about 12 to about 25 mole percent of deionized water to the mixture and maintaining the temperature of the mixture between about 95° C. and about 110° C. for about 120 minutes; and

(e) adding from about 1 mole percent to about 5 mole percent of magnesium hydroxide to the mixture and maintaining the temperature of the mixture between about 85° C. and 95° C. for about 30 minutes.

4,566,987

SCINTILLATION GLASS

Georg Gliemeroth, Mainz-Finthen; Burkhard Speit, Mainz-Mombach, and Hans-Georg Krolla, Mainz, all of Fed. Rep. of Germany, assignors to Schott-Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jun. 16, 1983, Ser. No. 504,906
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222567
Int. Cl.⁴ C09K *11/463, 11/475*; C03C *3/10*
U.S. Cl. 252—301.4 F **9 Claims**

1. An essentially colorless, cerium- and phosphorous-containing barium silicate glass, of a density >3.3 g/cm², a radiation length <43.5 mm, with strong fluorescence at 415–430 nm and with good scintillation properties, consisting essentially of (in percent by weight):

SiO_2	20–60	- 21–60
B_2O_3	0–18	
P_2O_5	1–10	
Li_2O	0–10	
Na_2O	0–10	
K_2O	0–15	
MgO	0–10	
SrO	0–12	
BaO	30–60	- 30–60
La_2O_3	0–10	
Ce_2O_3	0.5–8	
(a) other oxides which are radiation-length shortening oxides (b) refining agents (c) other oxides which are UV-absorption edge adjusting oxides (d) other conventional components which are scintillating sensitizers,		0–20
Al_2O_3	0–2	

-continued

CaO	0–4.

4,566,988

PROCESS FOR THE OXIDATION OF GASEOUS HYDROCARBONS

Ronald A. Schneider, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 21, 1984, Ser. No. 591,751
Int. Cl.⁴ C01B *3/34*
U.S. Cl. 252—373 **12 Claims**

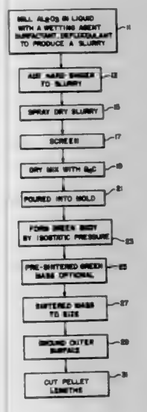
1. A process for the oxidation of natural gas which comprises contacting the natural gas with an oxidant comprising Ga_2O_3.

4,566,989

BURNABLE NEUTRON ABSORBERS

Kenneth C. Radford, Churchill, and William G. Carlson, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 26, 1982, Ser. No. 352,731
Int. Cl.⁴ G21C *7/04, 21/18*
U.S. Cl. 252—478 **8 Claims**



1. The method of making burnable neutron-absorber bodies for the burnable-poison assemblies of a nuclear reactor which comprises:

(a) producing a slurry of a powder of a refractory material including one or more of the class consisting of Al_2O_3 and ZrO_2;

(b) adding a binder to said slurry;

(c) drying said slurry to produce a powder of agglomerated particles of one or more of the class of Al_2O_3 and ZrO_2 including said binder;

(d) mixing said powder with a powder of the class of neutron-absorbers consisting of elements or compounds of boron, gadolinium, samarium, cadmium, europium, hafnium, dysprosium and indium, to form a mixture of said powders;

(e) isostatically compressing said mixture to form a green body;

(f) sintering said green body to form a sintered body; and

(g) forming said sintered body into a neutron-absorber body of appropriate shape and dimensions.

7. A burnable neutron-absorber body for use in the burnable-poison assemblies of a nuclear reactor, said body being formed of a porous matrix of Al_2O_3, said matrix including high-density polycrystalline particles of Al_2O_3 juxtaposed to pores in which pores there are particles of B_4C.

4,566,990

SYNERGISTIC EFFECT OF METAL FLAKE AND METAL OR METAL COATED FIBER ON EMI SHIELDING EFFECTIVENESS OF THERMOPLASTICS

Nan-I Liu, Mt. Vernon, Ind., and Roelof van der Meer, Bergen op Zoom, Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Filed Oct. 25, 1983, Ser. No. 545,339
Claims priority, application Netherlands, Nov. 5, 1982, 8204288
Int. Cl.⁴ C08K *7/06, 7/14, 7/00*
U.S. Cl. 252—503 **37 Claims**

1. A thermoplastic polymeric composition having high electromagnetic interference shielding effectiveness comprising:

(a) a thermoplastic resin or resin blend,

(b) from about 25 to about 50% by weight based on the total composition of metal flake, and

(c) from about 2 to about 12% by weight based on the total composition of metal or metal coated fiber,

wherein the weight ratio of flake to fiber is from about 4:1 to about 14:1.

27. The composition of claim 1 wherein the metal coated fibers are selected from the group consisting essentially of metal coated glass and carbon fibers.

30. The composition of claim 27 wherein the metal coated fiber is nickel coated graphite fiber.

4,566,991

PROCESS FOR PREPARING CONDUCTING POLYMERIC COMPOSITIONS

John P. Sibilia, Livingston, N.J.; Hyo-gun Kim, Pittsford, N.Y., and Arthur R. Paterson, Morristown, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 2, 1982, Ser. No. 394,752
Int. Cl.⁴ H01B *1/02*
U.S. Cl. 252—512 **21 Claims**

1. A process for improving the anti-static properties of polymer compositions, which comprises:

(a) forming a polymeric composition comprising an intimate mixture of one or more first metal salts and one or more polymers, each of said first metal salts being reactive with a reagent selected from the group consisting of:

(1) a mixture of vapors of a solvent which is capable of leaching at least one of said first metal salts from said composition and gaseous carbon dioxide;

(2) a mixture of said vapors and gaseous hydrogen sulfide;

(3) a solution comprising hydrogen sulfide and said solvent;

(4) a solution comprising carbonate ions and said solvent; and

(5) a combination of one or more of the reagents of subparagraphs 1,2,3, and 4, hereof to form the corresponding carbonate, sulfide, or oxide salt of said first metal salt, said corresponding carbonate, sulfide or oxide salt having an electrical resistivity which is less than the electrical resistivity of said one or more polymers, and being substantially insoluble in said solvent; and

(b) treating said composition with one or more of said reagents, thereby leaching said one or more first metal salts out of said one or more polymers such that said first metal salts react with said reagent forming said corresponding carbonate, sulfide or oxide salts thereof on, in or on and in the surface of said one or more polymers in an amount sufficient to decrease the electrical resistivity of said polymers.

4,566,992

SOLUTIONS FOR THE FUSION OF ONE METAL TO ANOTHER

Ady Joseph, Islington; Lily Mayer, Etobicoke, and Alexander Miutel, Toronto, all of Canada, assignors to Metafuse Limited, Ontario, Canada

Filed Dec. 28, 1981, Ser. No. 335,282
Int. Cl.⁴ H01B *1/14*
U.S. Cl. 252—518 **19 Claims**

1. A solution for the fusion of a second metal to a first metal consisting essentially of:

0.10 to 10% by weight of a first compound including said second metal in a dissociable polyvalent form;

0.30 to 10% by weight of a second compound capable of complexing with the first compound, the first compound and the second compound being either soluble in water or forming a complex which is soluble in water;

0.1 to 0.5% by weight of a stabilizing agent which maintains the first compound, the second compound and the complex thereof in solution;

0.1 to 0.5% by weight of a catalyzer for promoting the speed of reaction, reducing the valency of the polyvalent form of said second metal to a lower valency and catalyzing complexing action between the first and second compound; and

the remainder a solvent selected from the group consisting of water, an organic solvent or a mixture thereof whereby said solution has a resistivity in the range of 10 to 80 ohms cm at room temperature.

4,566,993

LIQUID DETERGENTS CONTAINING CELLULOSE ETHERS STABILIZED BY GLYCEROL

Isaac I. Secemski, Flushing, and Joseph J. Podgorsky, Slate Hill, both of N.Y., assignors to O'Donnell & Associates, Inc., Pittsburgh, Pa.

Filed Jun. 15, 1984, Ser. No. 621,288
Int. Cl.⁴ C11D *1/12, 1/755*
U.S. Cl. 252—559 **14 Claims**

1. An aqueous liquid detergent composition comprising:

(1) from about 0.5% to about 2% glycerol;

(2) from about 0.05% to about 1% cellulose ether;

(3) from about 3% to about 6% of a nonionic surfactant; and

(4) from about 10% to about 25% of an anionic surfactant wherein each of said components are based by weight on 100 percent of the total composition; and the balance being water.

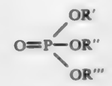
4,566,994

FLAME-RETARDANT ELECTRICAL INSULATING OIL COMPOSITION

Hiroshi Hasegawa; Akira Shinzawa, and Yoshiki Kohno, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Japan

Filed Jun. 6, 1983, Ser. No. 501,294
Claims priority, application Japan, Jun. 10, 1982, 57-99747
Int. Cl.⁴ H01B *3/24*
U.S. Cl. 252—574 **12 Claims**

1. A flame retardant electrical insulating oil composition comprising 100 parts by volume of the insulating oil and 5 to 80 parts by volume of a halogen-containing phosphoric ester of the formula



in which R', R'' and R''' are residues of halogenated hydrocarbon wherein said halogenated hydrocarbon residue is $-CH_2X$, $-CH_2CH_2X$, $-CH(CH_3)CH_2X$, $-CH(CH_3)CHX_2$, $-C_6H_4CH_2X$ or $-C_6H_4CHX_2$, where X represents a halogen atom.

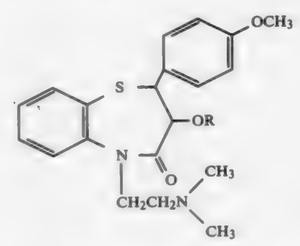
4,566,995

PROCESS FOR THE PREPARATION OF BENZOTHIAZEPINE DERIVATIVES

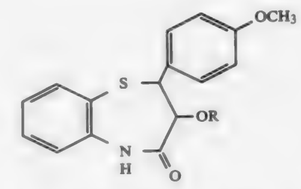
Chaim Simonovitch, Rishon Letzion; Theodor Hoffman, Netanya, and Sabar Sasson, Rehovoth, all of Israel, assignors to ABIC Ltd., Israel

Filed Apr. 1, 1985, Ser. No. 718,100
Claims priority, application Israel, Apr. 13, 1984, 71538
Int. Cl.⁴ C07D *281/02*
U.S. Cl. 260—239.3 B **11 Claims**

1. A process for the preparation of benzothiazepine derivatives of general formula I



wherein R stands for hydrogen and acetyl or of acid addition salts thereof in which a corresponding compound of general formula II



in which R has the same meaning as above is reacted with 2-(dimethylamino)-ethyl chloride in a biphasic system of water and a non-combustible aliphatic polychlorinated hydrocarbon solvent in the presence of calcium hydroxide or of barium hydroxide.

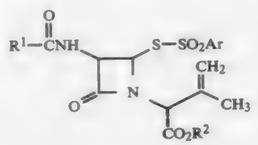
4,566,996

PROCESS FOR PREPARING AZETIDINONE DERIVATIVES

Sigeru Torii; Hideo Tanaka, both of Okayama; Takashi Shiroi, Tokushima; Michio Sasaoka, Tokushima; Norio Saito, Tokushima, and Kiyotoshi Matsumura, Tokushima, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

Filed Jan. 3, 1984, Ser. No. 567,736
Claims priority, application Japan, Jan. 19, 1983, 58-7630
Int. Cl.⁴ C07D *205/08, 405/12*
U.S. Cl. 260—239 A **8 Claims**

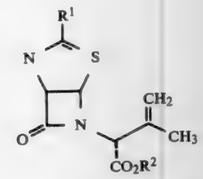
1. A process for preparing an azetidinone derivative represented by the formula



(1)

wherein R^1 represents phenyl, p-nitrophenyl, p-chlorophenyl,

phenylmethyl, p-nitrophenylmethyl, p-chlorophenylmethyl, diphenylmethyl, phenyldichloromethyl, phenylhydroxymethyl, phenoxymethyl, p-chlorophenoxymethyl or p-methoxyphenoxymethyl, R^2 represents a hydrogen atom or a group for protecting carboxylic acid, and Ar represents phenyl, p-methylphenyl, p-chlorophenyl, p-nitrophenyl, p-methoxyphenyl or 2,4-dinitrophenyl, the process comprising reacting a thiazolineazetidinone derivative represented by the formula



(2)

wherein R^1 and R^2 are as defined above with a sulfonyl bromide represented by the formula

$$Ar—SO_2—Br \quad (3)$$

wherein Ar is as defined above in water-containing organic solvent.

4,566,997

PROCESS FOR PREPARING RESIN METAL SALTS

Hisatake Satoh, Yokohama, and Shinichi Ota, Tokyo, both of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1984, Ser. No. 570,525
Claims priority, application Japan, Jan. 17, 1983, 58-5669
Int. Cl.⁴ C09F *9/00*; C08F *4/00*
U.S. Cl. 260—105 **6 Claims**

1. A process for preparing a resin metal salt characterized in that a resin containing an anhydride group and having a molecular weight ranging from 250 to 5000 in a state of a solution in a solvent is reacted with a hydroxide, oxide, or carbonate of a divalent metal in the presence of ammonia or an amine.

4,566,998

PRODUCTION OF HYDROGEN PEROXIDE

Victor M. Ochoa, and Ricardo Pueyo, both of La Zaida, Spain, assignors to Foret S.A., Barcelona, Spain

Filed Sep. 28, 1981, Ser. No. 306,101
Int. Cl.⁴ C07C *50/18*
U.S. Cl. 260—369 **10 Claims**

1. In a process of producing hydrogen peroxide by alternately hydrogenating and oxidizing an anthraquinone working solution, in which said working solution is regenerated by contacting the solution with an activated alumina, the improvement which comprises regenerating anthraquinone degradation products in said working solution by contacting a mixture containing both hydrogenated working solution and oxidized working solution with an alkaline activated alumina at a temperature of about 125° C. to 160° C., said alkaline activated alumina containing about 2.5 to 5% by wt. of Na_2O, and thereby regenerating anthraquinone-derived degradation products in said working solution.

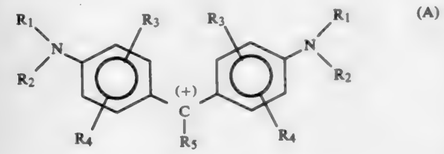
4,566,999

PROCESS FOR THE PREPARATION OF ACID DYESTUFFS OF LOW ELECTROLYTE CONTENT OF THE TRIPHENYLMETHANE SERIES

Axel Engelmann, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 15, 1984, Ser. No. 589,883
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1983, 3309726
Int. Cl.⁴ C09B *11/10, 11/6*
U.S. Cl. 260—392 **3 Claims**

1. A process for the preparation of a triphenylmethane dyestuff of low electrolyte content, of the formula (A)



(A)

in which R_1 and R_2 each denote a hydrogen atom, an alkyl group of 1 to 4 carbon atoms, a benzyl group or a sulfobenzyl group, R_3 and R_4 each denote a hydrogen atom, an alkyl group of 1 to 4 carbon atoms or a sulfonic acid group and R_5 denotes a phenyl, chlorophenyl, dialkylaminophenyl, alkyldialkylaminophenyl, alkoxyphenylaminophenyl, sulfanilido, sulfanilidophenyl, disulfobenzylaminophenyl, sulfophenyl disulfophenyl, disulfohydroxyphenyl, sulfonaphthyl, disulfonaphthyl, hydroxydisulfonaphthyl or alkylphenylaminosulfonaphthyl group, with the proviso that the dyestuff molecule contains at least one sulfonic acid group, can be prepared in the form of its ammonium or alkaline earth metal salts, which comprises dissolving each mole of the corresponding leuco-compound of the dyestuff of the formula (A) with n−1 moles of aqueous ammonia solution or n−1 moles of a mixture of aqueous ammonia solution and an aqueous alkali metal hydroxide solution, n representing the number of $—SO_3\ominus$-groups contained in the molecule of the said leuco compound, and then (a) establishing a pH value of 1–4.5 by addition of phosphoric acid and subsequently adding an aqueous suspension of about 100 to about 120 mole % based on this amount of leuco compound of manganese dioxide, or

(b) initially adding an aqueous suspension of about 100 to about 120 mole % based on the amount of leuco compound of manganese dioxide and then establishing a pH value of 1–4.5 by addition of phosphoric acid, or

(c) allowing the solution of the leuco-compound together with an aqueous suspension of about 100 to about 120 mole % based on the amount of leuco compound of manganese dioxide to run into the phosphoric acid, which has been initially introduced into the reaction vessel, in such an amount that the pH value of the mixture is 1 to 4.5,

it being necessary in each case for at least the equimolar amount, based on the manganese dioxide, of ammonia to be present, and subsequently oxidizing the leuco-compound at temperatures between 0° to 100° C. to give the corresponding triphenylmethane dyestuffs.

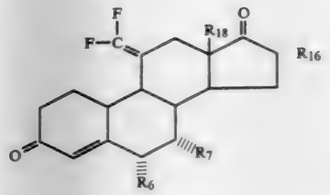
4,567,000

11-DIFLUOROMETHYLENE STEROIDS

Donald E. Ayer, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 31, 1984, Ser. No. 646,605
Int. Cl.⁴ C07J *1/00*
U.S. Cl. 260—397.3 **24 Claims**

1. A 11-difluoromethylene steroid of the formula



(V)

where

R_6 is a hydrogen atom or methyl group with the proviso that when R_6 is a methyl group, R_7 is a hydrogen atom;

R_7 is a hydrogen atom or methyl group with the proviso that when R_7 is a methyl group, R_6 is a hydrogen atom;

R_{16} is a hydrogen atom or methyl or ethyl group;

R_{18} is a methyl or ethyl group; and

~ indicates that the attached group can be in either the α or β configuration.

4,567,001

16-METHYLENE-17α-HYDROXY-PROGESTERONES

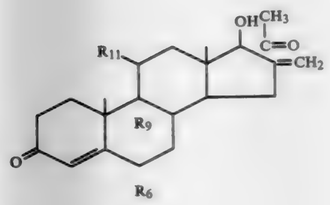
Verlan H. VanRheenen, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 419,668, Sep. 20, 1982, abandoned. This application Jun. 3, 1983, Ser. No. 501,032

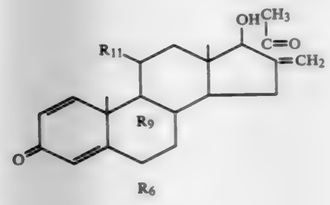
Int. Cl.⁴ C07J *5/00, 1/00*

U.S. Cl. 260—397.3 **79 Claims**

1. A 17β-hydroxy steroid selected from the group consisting of



(VAA)



(VB)

and C_3 protected forms thereof where

R_6 is a hydrogen or fluorine atom, methyl or methylene group, when R_6 is methylene, there are no 6–7 double bonds in formula (A) or 5–6 double bonds in formula (C);

R_9 is nothing or a hydrogen or fluorine atom, which includes the $\Delta 9(11)$ and $9\beta,11\beta$-epoxide functionality;

R_{11} is nothing or a hydrogen or oxygen atom, an α-hydroxy group, or a β-hydroxy group, which includes the $\Delta 9(11)$ and $9\beta,11\beta$-epoxide functionality;

~ indicates that the attached atom or group can be in either the α or β configuration; and

___ is a single or double bond.

4,567,002

PROCESS FOR THE PREPARATION OF 17-HALOETHYNYL STEROIDS, AND NOVEL 17-HALOETHYNYL STEROIDS

Helmut Hofmeister; Henry Laurent; Klaus Annen, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

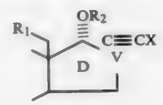
Filed Apr. 25, 1984, Ser. No. 603,855

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1983, 3315324

Int. Cl.⁴ C07J *5/00*

U.S. Cl. 260—397.4 **11 Claims**

1. A process for preparing a 17-haloethynyl androstane or estrane of the partial formula



wherein

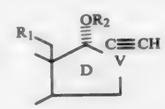
R_1 is hydrogen or methyl,

R_2 is alkyl of 1–4 carbon atoms, alkanoyl of 1–7 carbon atoms, trimethylsilyl, 2-tetrahydropyranyl, or nitrate,

X is bromine or iodine, and

V is methylene, ethylene, ethylidene, vinylene, vinylidene, or cyclopropylene,

comprising treating a corresponding ethynyl androstane or estrane of the partial formula



wherein R_1, R_2, and V are as defined above, in a reaction compatible solvent with an effective brominating agent or iodinating agent in the presence of a catalytically effective amount of silver cations.

4,567,003

2,3-DIBROMO-PENTAFLUOROPROPYL FLUOROSULFATE

Paul R. Resnick, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 22, 1984, Ser. No. 592,919

Int. Cl.⁴ C07C *141/02*

U.S. Cl. 260—458 F **1 Claim**

1. A compound having the formula $CF_2BrCFBrCF_2OSO_2F$.

4,567,004

PROCESS FOR THE PREPARATION OF MONOMETHYL-SUBSTITUTED METHYLENE COMPOUNDS

Heinz U. Blank, Odenthal, and Erich Wolters, Niederzier, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

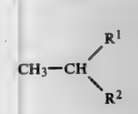
Filed Jul. 18, 1984, Ser. No. 632,134

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1983, 3326635

Int. Cl.⁴ C07C *121/66, 121/20, 121/34, 121/407*

U.S. Cl. 260—465 R **23 Claims**

1. A process for the preparation of a monomethyl-substituted methylene compound of the formula



which comprises contacting a methylene compound of the formula



wherein

R^1 and R^2 independently of one another represent —CN, —CO—R^3, —SO_2—R^3 and —NO_2 and

R^1 can additionally denote —aryl $(R^1)_n$

wherein

R^3 denotes —OH, alkyl, aralkyl, aryl, alkoxy, aralkoxy or aryloxy, or amino which is unsubstituted or substituted by alkyl and/or aralkyl and/or aryl, and furthermore two radicals R^3 together can be an alkylene group, the radical of an aliphatic diol or of an aliphatic diamine or the group —NH—CO—NH— and n represents 1, 2 or 3,

with formaldehyde and hydrogen in the presence of a condensation catalyst and a hydrogenation catalyst at elevated temperature, wherein the methylene compound is introduced into a liquid phase of the mixture of reactants over the course of the reaction.

4,567,005

ALLYLATION OF CARBON ACIDS

Edmund P. Woo, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 22, 1983, Ser. No. 487,481

Int. Cl.⁴ C07C *121/70, 49/203*

U.S. Cl. 260—465 D **12 Claims**

1. A process for allylating a carbon acid containing an ionizable carbon-hydrogen bond such that the pK of the carbon acid is equal to or less than 25 which process comprises reacting the carbon acid with an allyl carbonate in the presence of a molybdenum, tungsten, cobalt, nickel, ruthenium, rhodium, osmium, iridium, or platinum catalyst, under conditions such that the carbon acid is allylated.

4,567,006

METHOD FOR ENCAPSULATING MICROELECTRONIC SENSOR DEVICES

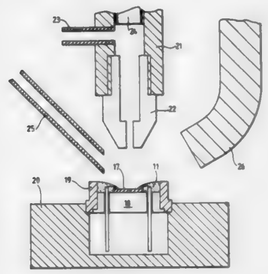
Arthur K. Covington, Newcastle upon Tyne, and Alastair Sibbald, Tyne and Wear, both of England, assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 366,722, Apr. 8, 1982, Pat. No. 4,502,938. This application Jun. 4, 1984, Ser. No. 617,271

Claims priority, application United Kingdom, Apr. 9, 1981, 8111199

Int. Cl.⁴ B29C *39/18*

U.S. Cl. 264—22 **4 Claims**



1. A method of encapsulating a microelectronic device comprising the steps of

affixing a collar around said device,

directing a jet of gas onto a predetermined area of said device that is to remain free from encapsulating material,

flowing said encapsulating material into said collar, said material flowing around said region upon which said jet impinges, and

curing said encapsulating material.

4,567,007

METHOD OF MAKING CARBON/CARBON COMPOSITES

Isaac E. Harder, Grand Prairie, Tex., assignor to LTV Aerospace and Defense Company, Dallas, Tex.

Filed Aug. 29, 1980, Ser. No. 182,570

Int. Cl.⁴ B32B *9/00, 31/20*

U.S. Cl. 264—29.5 **21 Claims**

1. The method of making a carbon/carbon composite structure, comprising the steps of:

(a) fabricating a pre-form body of the desired configuration from a graphite fabric impregnated with a carbonizable fluid comprising a phenolic resin;

(b) enclosing the pre-form body in a flexible bag;

(c) reducing the pressure within said flexible bag to a pressure less than atmospheric;

(d) enclosing said flexible bag in an enclosed containers

(e) forming a pressure within said enclosed container of about 45 psia;

(f) venting said flexible bag to atmosphere;

(g) heating said pre-form body to a first temperature at which said carbonizable fluid is liquid and begins to cure while maintaining said pressure within said enclosed container at about 45 psia; and

(h) thereafter reducing the pressure within said enclosed container to a pressure of at least about 30 psia and heating said pre-form body to a second temperature greater than the curing temperature of said carbonizable fluid.

4,567,008

PRODUCTION OF FOAMS

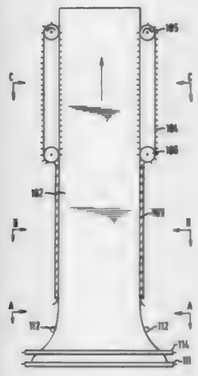
Anthony C. M. Griffiths, Brickhill, England, assignor to Hyman International Limited, Oldham, England

Continuation-in-part of Ser. No. 438,879, Oct. 5, 1982, Pat. No. 4,504,429. This application Aug. 25, 1983, Ser. No. 526,494

Claims priority, application United Kingdom, Feb. 18, 1981, 8105078; Jan. 2, 1983, 8301733

Int. Cl.⁴ B29C *67/22, 39/44, 39/06*

U.S. Cl. 264—40.5 **34 Claims**



1. A method of continuous production of foamed material, wherein foam forming materials are fed from below at a controlled rate and the foamed material formed is drawn away from above at a corresponding rate; wherein foaming takes place in a diverging expansion enclosure bounded by moving sheet material constrained to follow a diverging path and drawn away from above so as to travel with the foaming material at a rate corresponding to its rate of travel; wherein the enclosure is defined above by foam already expanded, at the sides by said sheet material, and below by a feed zone sealed to contain the foam forming materials, the enclosure leading into an upwardly directed take off path for the foam; and wherein the expansion closure is formed by flexible sheet material in tubular form which is fed flat with foam forming materials passing to the interior of the tube and then drawn away at a rate method to the rate of feed, guided externally to assume a predetermined cross section as the foam forming materials expand within it, and constituting both said feed zone and said expansion enclosure.

4,567,009

PRODUCTION OF MICROFILTRATION MEMBRANE FILTER

Charles T. Badenhop, and Joachim Fischer, both of Bad Kreuznach, Fed. Rep. of Germany, assignors to Seitz Filter Werke Theo & Geo Seitz GmbH & Co., Bad Kreuznach, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,379

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220376

Int. Cl.⁴ B29C *67/20*

U.S. Cl. 264—41 **8 Claims**

1. A method of making a microfiltration filter membrane which comprises the steps of:

(a) forming a solution of a copolymer of isophthalic acid and m-phenylenediamine in a solvent system containing at least two solvents selected from the group which consists of N-methylpyrrolidone, dimethylformamide and dimethylacetamide in which no one of said solvents is in an amount of more than 80% of the solvent system and the solvents of said system are in a proportion selected in accordance with a desired pore size of said membrane;

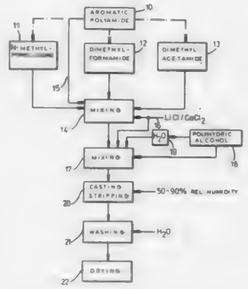
(b) forming a mixture which consists essentially of:

6 to 12 parts by weight of said copolymer in said solution formed in step (a),

2 to 6 parts by weight of an alkali chloride or alkaline earth chloride,

1 to 4 parts by weight of water, and

10 to 25 parts by weight of a polyvalent alcohol or water as a structure-loosening additive;



(c) casting the mixture of step (b) onto a smooth surface of a chemically inert material and gelling the cast mixture in an atmosphere having a relative humidity of 50 to 90% to form a membrane of a thickness of 0.05 to 0.15 mm, a pore size of 0.05 micron to 10 microns, and microporous on both surfaces of the membrane;

(d) washing said membrane upon the termination of gelling with a substance in which said copolymer is substantially insoluble to remove solvent therefrom; and

(e) drying the washed membrane.

4,567,010

GRANULATION

Denis A. Hutton, Sale, and Malcolm H. Millar, Widnes, both of England, assignors to Interox Chemicals Limited, London, England

Filed Aug. 24, 1982, Ser. No. 410,988

Claims priority, application United Kingdom, Sep. 8, 1981, 8127157

Int. Cl.⁴ C09C *1/56*

U.S. Cl. 264—117 **17 Claims**

1. A process for granulating particles of one or more magnesium salts of an organic peroxyacid carboxylate, comprising the steps of agitating the particles, thereby bringing them into contact with each other from time to time whilst simultaneously spraying onto the agitated particles an aqueous solution of an hydroxylated organic polymer selected from the group consisting of polyvinylalcohol and carboxylated derivatives thereof to provide at least 0.1% of polymer based on the dry product, and drying the product, maintaining the temperature of the particles throughout the process at not more than 65° C.

4,567,011

MANUFACTURE OF HELICAL NETS

George S. Nalle, Jr., 401 Inwood Rd., Austin, Tex. 78746

Filed Apr. 19, 1984, Ser. No. 602,126

Int. Cl.⁴ B29D *28/00*

U.S. Cl. 264—504 **8 Claims**

1. A process for making a plastic net with a partial to a multiplicity of spirals between the interstices or crossings of the net filaments comprising the steps of

extruding a multi-component sheet by the co-extrusion of at least two different plastic materials characterized by having different properties traction and orientation,

forming holes in the multi-component sheet at regular intervals to thereby define the filaments of the net, and



then orienting the multi-component sheet by stretching and releasing so that the individual filaments defined by the holes spiral.

4,567,012

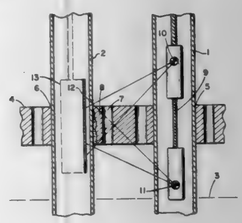
DUAL ISOTOPE METHOD TO RADIOGRAPH STRUCTURES IN NUCLEAR STEAM SUPPLY SYSTEMS

Frank T. Radcliff, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 12, 1982, Ser. No. 397,296

Int. Cl.⁴ G21C *17/00*

U.S. Cl. 376—245 **5 Claims**



4. In a steam generator having a vessel housing a plurality of open-ended tubes arranged laterally adjacent to one another and supported near their ends by a substantially continuous tube sheet extending across the vessel and supported by inter-tube structure periodically placed intermediate the tube ends, the method of interrogating a predetermined portion of the inter-tube structure for defects comprising the steps of:

a. inserting two radiation sources which are spaced from each other into a first tube to position each of the sources a predetermined vertical distance on each side of the plane of the inter-tube support structure portion,

b. and inserting a radiation responsive image recording means in a second tube adjacent the portion of the inter-tube support structure so that the support portion interrogated is between the two tubes to receive a uniform density of radiation from the two sources through the penetrated portion.

4,567,013

HYDROGEN MEASURING DEVICE

Robert Smith, Bethesda, Md., assignor to Scandpower, Inc., Bethesda, Md.

Filed Sep. 22, 1983, Ser. No. 534,717

Int. Cl.⁴ G21C *17/00*

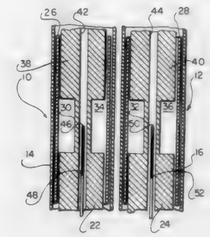
U.S. Cl. 376—247 **8 Claims**

1. A device for measuring free hydrogen concentration in the coolant of a nuclear reactor, the device comprising:

two gamma thermometers each comprising an elognated rod that is housed in a sheath, the rod is provided with a series of enclosed annular spaces formed between the rod and the sheath, a plurality of difference thermocouples are disposed along the rod and have hot and cold junctions, the hot junctions of the thermocouples are positioned adjacent the annular spaces and the cold junctions are positioned between the annular spaces;

whereby the annular spaces form annular heat insulating chambers for the hot junctions of the thermocouples, a vacuum is formed in the annular heat insulating chambers of the first of the two gamma thermometers for insulating the hot junctions and providing a space in which free hydrogen can collect, in the annular heat insulating chamber of the second of the two gamma thermometers a gas other than hydrogen is disposed therein to prevent hydrogen contamination of the annular space; and

the two gamma thermometers are positioned parallel and adjacent to one another so that the free hydrogen partial pressure can be calculated from the comparison of the indicated power generation rates of the two adjacent and parallel gamma thermometers.



4,567,014

CONTAINER FOR TRANSPORTING AND STORING NUCLEAR REACTOR FUEL ELEMENTS

Franz-Wolfgang Popp, Wedemark, and Kurt Feuring, Solms, both of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 436,065

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142646

Int. Cl.⁴ G21C *19/40*

U.S. Cl. 376—272 **11 Claims**

1. A container for transporting and storing irradiated nuclear reactor fuel elements, the container comprising:

a vessel made of nodular cast iron, the vessel having a base and a wall extending upwardly from said base, said wall having an upper end portion defining the opening of the vessel through which the fuel elements to be stored therein are passed;

an end ring mounted on said upper end portion, said end ring having a connecting extension cast-embedded into said upper end portion whereby said end ring is securely mounted to said vessel;

a sealing cover weldable to said end ring for sealing the container; and,

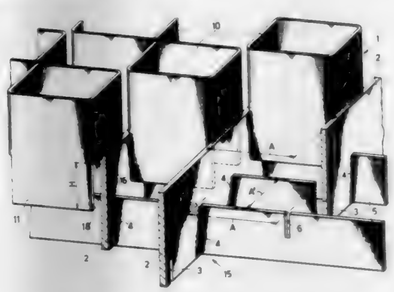
said end ring and said cover each being made of a material whereby said end ring upon being welded to said cover results in an effective gas-tight seal of said cover to said vessel without the necessity of subjecting said cover and said vessel to a follow-up heat treatment to remove unwanted microfissures from the weld.

4,567,015

FRAME FOR STORING NUCLEAR FUEL ELEMENTS

Ernst Bosshard, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 7, 1983, Ser. No. 472,491
Claims priority, application Switzerland, Mar. 12, 1982, 1528/82
Int. Cl.⁴ G21C *19/40*
U.S. Cl. 376—272 9 Claims



1. A frame for storing nuclear fuel elements, said frame comprising

a base having a plurality of intersecting interfitted metal strips, said strips being disposed in two mutually perpendicular groups; and

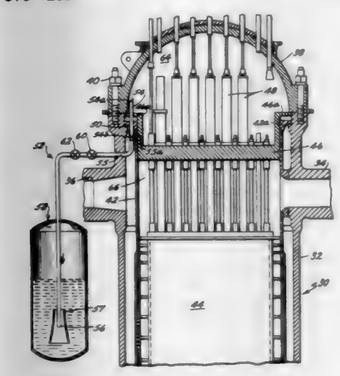
a plurality of square tubes secured to said base in upstanding manner; each said tube having a first pair of parallel walls parallel to one group of said metal strips with said strips of said one group disposed in planes coincident with the longitudinal axes of said tubes, each said tube having a second pair of parallel walls flush with a pair of strips of the other group of said metal strips.

4,567,016

VENTING MEANS FOR NUCLEAR REACTORS

Long S. Tong, 9733 Lookout Pl., Gaithersburg, Md. 20879

Filed Jun. 24, 1983, Ser. No. 507,464
Int. Cl.⁴ G21C *9/00*
U.S. Cl. 376—283 8 Claims



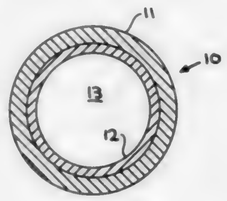
1. In a pressurized water reactor comprising a pressure vessel having a removable upper head attached to the top thereof with at least one pair of coolant inlet and outlet nozzles, the improvement comprising an internal venting conduit having one end disposed inside the space defined by said upper head, and the other end being connected to a high pressure container outside said reactor, the conduit passing through the wall of the pressure vessel or outlet nozzle of the reactor.

4,567,017

FUEL PIN CLADDING

Swaminathan Vaidyanathan, San Jose, and Martyn G. Adamson, Danville, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 16, 1983, Ser. No. 562,146
Int. Cl.⁴ G21C *3/00*
U.S. Cl. 376—417 16 Claims



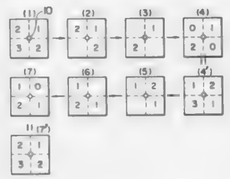
1. In a fuel pin containing high density fuel for a breeder reactor, the improvement comprising: means for preventing liquid metal embrittlement of austenitic stainless steel fuel pin cladding induced by the presence of a mixture of cesium and tellurium fission products, said means consisting of at least one layer of barrier material positioned adjacent an inner surface of said cladding and selected from the group consisting of nickel and ferritic material.

4,567,018

CORE CONSTRUCTION OF NUCLEAR REACTOR

Masaki Enomoto, Mito, and Michihiro Ozawa, Hitachi, both of Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 374,726, May 4, 1982, abandoned. This application Feb. 22, 1985, Ser. No. 704,149
Claims priority, application Japan, May 6, 1981, 56-66919
Int. Cl.⁴ G21C *3/32*
U.S. Cl. 376—435 27 Claims



1. A core construction of a nuclear reactor in which a multiplicity of core units each having four fuel assemblies disposed in a square pattern adjacent to a control rod are arranged to form a reactor core, wherein said reactor core comprises a central portion thereof in which the core units other than the core unit located at the center of the reactor core each include fuel assemblies of third-burning cyclic periods and fuel assemblies having other burning cyclic periods, said other burning cyclic periods including first-burning cyclic periods and second-burning cyclic periods, said first-, second-, and third-burning cyclic period fuel assemblies having experienced comparative degrees of burn-up proportional to their respective antecedent numbers, said core units other than said core unit located at the center of said reactor core being formed of a first pair of two of said fuel assemblies having the same first one of said other burning cyclic periods arranged along one of two diagonals of said square pattern on opposite sides of said control rod, and a second pair of two fuel assemblies including one of said fuel assemblies of third-burning cyclic periods arranged along the other of said two diagonals on the opposite side of said control rod from a fourth fuel assembly having a second one of said other burning cyclic periods, said second one of said other burning cyclic periods being different from said first one of said other burning cyclic periods.

4,567,019

COLOR REVERSING COMPOSITIONS

William R. Lawton, Orchard Park, N.Y., assignor to Graphic Controls Corporation, Buffalo, N.Y.

Filed May 11, 1977, Ser. No. 796,012
Int. Cl.⁴ G01N *31/22;* C09K *3/00*
U.S. Cl. 422—57 8 Claims

1. A heat-sensitive color-reversing composition comprising

(a) a 3,3-bis(p-aminophenyl)phthalide selected from the group consisting of
3,3-bis(p-aminophenyl)phthalide,
3,3-bis(p-dimethylaminophenyl)-5-dimethylamino phthalide,
3,3-bis(p-dimethylaminophenyl)-5-amino phthalide,
3,3-bis(p-dimethylaminophenyl)-6-dimethylamino phthalide,
3,3-bis(p-dimethylaminophenyl)phthalide,
3,3-bis(p-diethylaminophenyl)phthalide,
3,3-bis(p-di-n-propylaminophenyl)phthalide,
3,3-bis(4-dimethylamino-3-methylphenyl)phthalide,
3,3-bis(p-dimethylaminophenyl)-4,5,6,7-tetrachloro phthalide,
3,3-bis(p-diethylaminophenyl)-6-diethylamino phthalide,
3,3-bis(p-ethylaminophenyl)phthalide,
3,3-bis(p-methylaminophenyl)phthalide,
3,3-bis(p-benzylaminophenyl)phthalide, and
3,3-bis(p-chloromethylaminophenyl)phthalide;

(b) an organic acid selected from the group consisting of
thiosalicylic acid,
3-nitrosalicylic acid,
5-nitrosalicylic acid,
5-bromosalicylic acid,
3,5-dichlorosalicylic acid,
2,3-dihydroxybenzoic acid,
3,5-dibromosalicylic acid,
5-methylsalicylic acid,
5-methoxysalicylic acid, benzilic acid,
2,6-dihydroxybenzoic acid,
2-hydroxy-5-methoxybenzoic acid,
5-chlorosalicylic acid,
3,5-dinitrosalicylic acid,
1-hydroxy-2-naphthoic acid,
diglycolic acid, and
dithiodiglycolic acid;

said color-reversing composition being characterized in that it develops a color contrasting visibly with its original color upon heating, and returns to its original color upon cooling.

4,567,020

APPARATUS FOR LIQUID-LIQUID EXTRACTION USING A MIXING/SETTLING PROCESS

Louis Cognet, Le Vesinet; Christian Argoud, Vaulx en Velin; Francois Matray, Heyrieux, and Joël Mallevialle, Carrieres sur Seine, all of France, assignors to Societe Lyonnaise des Eaux et de l'Enclairage, Paris, France

Filed Apr. 27, 1984, Ser. No. 604,499
Claims priority, application France, May 2, 1983, 83 07253
Int. Cl.⁴ B01L *11/00*
U.S. Cl. 422—101 9 Claims

1. An apparatus for carrying out a liquid-liquid extraction process by co-current contact between a first extraction liquid and a second liquid from which impurities are to be extracted by said first liquid, said first liquid being heavier than said second liquid, said apparatus comprising:

a mixing compartment in the form of a vertical column having an open lower end;

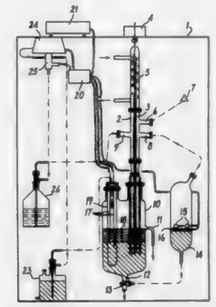
means for continuously introducing first and second liquids into said column such that said liquids pass co-currently downwardly through said column and are discharged from said open lower end thereof;

means for mixing said first and second liquids within said column to increase the contact therebetween so that impurities in said second liquid are extracted by said first liquid, said mixing means comprising a rotary element positioned within said column and extending throughout substantially the entire vertical length thereof, said rotary element having mixing surfaces extending perpendicularly or obliquely to the axis of said rotary element, and means for rotating said rotary element within said column;

a settling compartment in the form of a closed leak-proof container for receiving said liquids from said column and for allowing said liquids to separate by settling, with said heavier first liquid and extracted impurities settling to the bottom of said container and said second liquid collecting above said first liquid, said column extending into said container with said open lower end of said column being adjacent said bottom of said container;

first discharging means for discharging said collected second liquid from said container;

second discharging means for discharging said settled first liquid and extracted impurities from said bottom of said container;



means for receiving said first liquid and extracted impurities from said second discharging means, for separating said first liquid from said impurities, and for recirculating said first liquid back to said column, said means for continuously introducing said first liquid into said column, comprising said means for recirculating said first liquid;

means for removing samples of said first liquid and extracted impurities from said second discharging means for analysis;

a first storage tank containing make-up first liquid and connected to said container;

means for detecting the level of said first liquid in said container, said level decreasing as a function of losses of said first liquid during said process, and for generating a signal representative of a predetermined loss of said first liquid;

a second storage tank containing reagents employable to facilitate said extraction process and connected to said column;

a source of compressed air connected to said first and second storage tanks; and

electronic control means, connected to said compressed air source and to said detecting means, for operating said source to supply compressed air to said first storage tank to discharge therefrom make-up first liquid to said container in response to said signal from said detecting means, and for operating said source to supply compressed air to

said second storage tank to discharge therefrom reagents to said column.

4,567,021

U-SHAPED REACTION TUBE MADE OF ELASTIC MATERIAL

Toshio Sakagami, Chofu, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Oct. 18, 1982, Ser. No. 434,877
Claims priority, application Japan, Oct. 19, 1981, 56-165628
Int. Cl.⁴ B01L 3/00
U.S. Cl. 422—102 6 Claims



1. A U-shaped reaction tube for use in an automatic chemical analyzer, comprising:

a cup portion made of elastic material, having a first end and a second end, and an area between said first end and said second end having a predetermined first radius;

a U-shaped tube portion made of elastic material, said tube portion having a predetermined second radius less than said predetermined first radius of the cup portion, a first end of the U-shaped tube portion being coupled with said second end of said cup portion and a second end extending to a plane near said first end of said cup portion; and

a non-cupped end portion made of elastic materials and coupled with said second end of said U-shaped tube portion, whereby said cup portion, said U-shaped tube portion and said non-cupped end portion are a unitary body such that the cup portion can be twisted about its longitudinal axis and can be shifted laterally with respect to the non-cupped end portion;

wherein the elastic materials are of an analytical quality so that they will not react substantially with substances to be tested in the reaction tube, and the reaction tube is sized for use in large quantity in an automatic chemical analyzer.

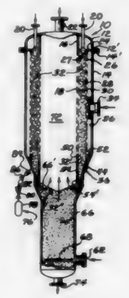
4,567,022

APPARATUS FOR FACILITATING SAMPLING OF PARTICULATE MATTER PASSING FROM ONE TREATMENT ZONE TO ANOTHER

Arthur R. Greenwood, Niles, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 24, 1984, Ser. No. 686,053
Int. Cl.⁴ B01J 38/42
U.S. Cl. 422—144 10 Claims

1. An apparatus for transferring or distributing particles of downwardly moving contact material from an upper annular zone, in which they are adapted to be contacted by a first gas flowing radially inwardly through them, to a lower zone in which they are adapted to be contacted by a second gas, characterized in that said upper annular zone is defined by axially elongated portions of a pair of coaxial, radially spaced screen elements, said elongated portions being formed so as to contain a plurality of gas flow openings of less width than the dimensions of the contact material in said annular zone, said lower zone being of generally cylindrical shape and having a vertically elongated, imperforate, external wall portion which radially confines the contact material within said lower zone, said external wall portion being joined to the radially outer one of said pair of screen elements by the outer wall of a generally annular transition element, said generally annular transition element including an outer wall portion joined to the external wall portion of said lower zone and to the outer screen element and a generally cylindrical, imperforate inner wall portion which is joined to the radially inner one of said pair of screen elements, the bottom end of said inner wall portion defining the upper height limit which contact material can reach within the lower zone after having passed downwardly through said annular transition element and into said lower, generally cylindrical zone, said lower, generally cylindrical zone being coaxial with, and in direct and open communication with, a generally cylindrical vapor collection zone positioned above it which has its side wall defined at its lower portion by said inner wall portion of said annular transition element, means for introducing a first gas at a selected pressure into an upper portion of said apparatus at at least one location adjacent said upper annular zone, means for introducing a second gas at a selected pressure into a lower portion of said apparatus so that



it may flow upwardly through said lower, generally cylindrical zone, said first and second gases each being adapted to flow first through a bed of contact particles in its respective zone and then into said vapor collection zone, said vapor collection zone being maintained at a pressure less than the selected pressure of either of said first and second gases whereby said second gas will pass directly out of the top of said lower, generally cylindrical zone and into said vapor collection zone, the inner wall portion of said generally annular transition element cooperating with an unperforated lower end portion of said radially inner screen element to which it is joined so as to define the vertical height of a transition zone between the upper and lower zones, said transition zone having a vertical height which is no less than the radial distance between the screen elements and which is sufficient to contain enough particles of contact material to generate a back pressure which will prevent said second gas from entering said transition zone.

4,567,023

MULTIPLE-STAGE REACTOR SYSTEM FOR A MOVING CATALYST BED

Arthur R. Greenwood, Niles; Jeffrey E. Burgard, Lombard, and Roger L. Throndson, Elk Grove Village, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 27, 1984, Ser. No. 584,207
Int. Cl.⁴ B01J 8/12; C10G 35/10
U.S. Cl. 422—192 9 Claims

1. A multiple-stage reactor system for effecting radial flow contact of a reactant stream with catalyst particles movable as an annular-form bed through said system by gravity flow, which comprises in combination:

(A) a vertically elongated confined chamber having vertical walls;

(B) at least two vertically spaced apart reactor sections in said chamber;

(C) at least the upper one of said reactor sections comprising:

(i) an enclosed inner tubular-form catalyst retaining screen coaxially disposed within an outer vertically positioned tubular-form catalyst retaining screen to form an annular-form catalyst retaining section, a bottom enclosing said annular-form catalyst retaining section, said catalyst retaining section having an inlet manifold space around the exterior thereof as defined by the chamber walls and said outer catalyst retaining screen, and an outlet manifold space within the inner space defined by said inner catalyst retaining screen;

(ii) an upper annular shaped partition means covering the top of sais annular-form catalyst retaining section;

(iii) a second transvers partition means below said catalyst retaining section and forming said bottom of said catalyst retaining section, said second transverse partition means being connected to said chamber walls and having an opening through which said inner catalyst retaining screen extends to form an annular-form catalyst passageway between said second transverse partition and said inner catalyst retaining screen;

(iv) a catalyst transfer means comprising:

(a) a tubular-form well extending below said opening in said second transverse partition means;

(b) a bottom transverse partition means supporting said inner catalyst retaining screen in said well to form an annular-form catalyst collecting zone bounded by said

well and said bottom transverse partition means, said catalyst collecting zone being below said annular-form catalyst retaining section and in communication with said annular-form catalyst passageway;

(c) a plurality of catalyst outlet means uniformly circumferentially spaced in the bottom of said annular-form catalyst collecting zone; and

(d) an elongated catalyst transfer conduit connected to each of with said outlet means and with a next lower catalyst retaining section whereby catalyst particles can move by gravity flow from said upper reactor section to a next lower reactor section;

(v) a reactant stream inlet means located in an upper portion of each of said at least one reactor sections, said inlet means being in open communication with said inlet manifold space around the exterior of said catalyst retaining sections therein; and

(vi) a reactant stream outlet means from each of said at least one reactor sections which is connected with the upper end of the inner catalyst retaining screen and in open communication with said outlet manifold space defined by said inner catalyst retaining screen;

(D) a catalyst inlet means connected with the upper portion of said chamber; and

(E) catalyst withdrawal means connected with the lower portion of said chamber.

4,567,024

ANALYTICAL ELEMENT

Mikio Koyama, and Kenichiro Okaniwa, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,837
Claims priority, application Japan, Jan. 14, 1982, 57-5192
Int. Cl.⁴ G01N 21/78, 33/52
U.S. Cl. 422—56 12 Claims

1. An analytical element comprising a light-transmissive and liquid-impervious support having thereon, in order from the support side, at least one reagent layer containing at least one kind of reagent reactive with a component in a fluid sample, a shielding layer and at least one porous spreading layer, said shielding layer comprising at least a white pigment and substantially water-dispersible reactive polymer which comprises a copolymer having (i) monomeric units which have a reactive group and (ii) at least one kind of hydrophobic monomer which is not said monomeric units (i).

4,567,025

CHEMICAL SEPARATION METHOD FOR URANIUM ISOTOPES

Steven H. Peterson, Murrysville, and D. Colin Phillips, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 28, 1983, Ser. No. 525,590
Int. Cl.⁴ B01D 59/00
U.S. Cl. 204—157.2 5 Claims

1. A process for isotopic enrichment of uranium comprising the steps of:

(a) preparing a solution of a uranium compound and solvent characterized in that said uranium compound involves a mixture of uranium isotopes wherein said isotopic mixture is to be enriched and said uranium compound is further characterized in that it possesses at least one excited state in solution wherein the respective isotopes in said excited state preferentially react at different rates by virtue of dissimilar nuclear magnetic moment contributions to the chemical kinetics of the excited state reactions and said chemical reactions of said excited state lead to the isolation of a phase that possesses a uranium isotopic distribution characteristic of enrichment, said uranium compound being the uranyl ion in the presence of at least one complexing ligand, said ligand being selected from the group consisting of CO_3^{2-}, O_2^{2-}, F_-, CH_3COO^-, $C_2O_4^{2-}$, and H_2O;

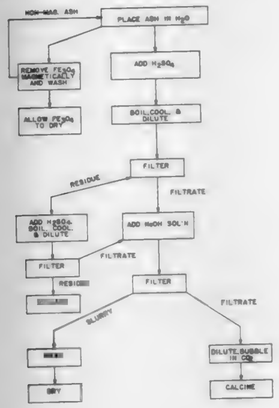
(b) exciting said uranium compound in solution thus promoting said chemical reaction that preferentially forms said isolated phase containing said enriched uranium isotopic distribution said excitation involving photolysis of the complexed uranyl ion; and

(c) separating said enriched phase thus recovering enriched uranium.

4,567,026
METHOD FOR EXTRACTION OF IRON ALUMINUM AND TITANIUM FROM COAL ASH

Bohdan Lisowyj, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.

Filed Oct. 24, 1984, Ser. No. 664,359
Int. Cl.⁴ C01G *23/04, 49/02;* **C01F** *7/02*
U.S. Cl. 423—81 **2 Claims**



1. A method for the recovery of iron, aluminum, and titanium from coal ash which comprises:
(a) magnetically extracting magnetite from the ash,
(b) leaching the ash with a solution of a mineral acid selected from the group consisting of sulfuric, hydrochloric, and nitric acids,
(c) precipitating and removing titanium and iron hydroxides from the leach solution by adding thereto a solution of a strong base selected from the group consisting of sodium, potassium, and ammonium hydroxides,
(d) precipitating aluminum hydroxide by contacting the remaining solution from step (c) with a precipitation agent selected from the group consisting of carbon dioxide, a weak mineral acid, and aluminum hydroxide seed, and
(e) removing the aluminum hydroxide.

4,567,027
PROCESS FOR DEFLUORINATING AN ACID SULPHATE SOLUTION

Jacquy J. C. Detournay, Overpelt, and Jozef V. M. Sterckx, Neerpelt, both of Belgium, assignors to Metallurgie Hoboken-Overpelt, Hoboken, Belgium

Filed Jul. 16, 1984, Ser. No. 631,168
Claims priority, application Luxembourg, Jul. 19, 1983, 84923
Int. Cl.⁴ C01G *9/06*
U.S. Cl. 423—101 **11 Claims**

1. A process for separating F^- ions from an acid aqueous solution of $ZnSO_4$, comprising the steps of
(a) adding Al^{3+} and PO_4^{3-} ions to the solution so that the solution contains at least about 1 g/l of Al^{3+} and at least about 3.5 g/l of PO_4^{3-};
(b) neutralizing the solution up to a pH higher than 4 and lower than that which causes a substantial precipitation of the Zn content of the solution in the form of at least one compound chosen from the group of hydroxides and basic salts, thereby producing a fluorinated precipitate, wherein the neutralization is carried out up to a pH lower than about 5 and a temperature of between about 45° and 90° C. thereby producing a fluorinated precipitate; and
(c) seperating said fluorinated precipitate from the solution, thereby producing a partially defluorinated solution.

4,567,028
PROCESS FOR THE PREPARATION OF PHOSPHONITRILE CHLORIDE OLIGOMER

Hiroshi Tanino, Hasuda; Tetsuhiko Okamoto, and Shinichiro Ueyama, both of Tokyo, all of Japan, assignors to Shin Nisso Kako Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1985, Ser. No. 700,663
Claims priority, application Japan, Feb. 24, 1984, 59-32525
Int. Cl.⁴ C01B *25/10*
U.S. Cl. 423—300 **12 Claims**

1. A process for the preparation of phosphonitrile chloride oligomer which comprises reacting phosphorus pentachloride with ammonium chloride in the presence of a polyvalent metal compound catalyst in an inert organic solvent, characterized by the presence in the reaction system of a catalytic amount of a basic organic compound selected from the group consisting of pyridine and alkyl-substituted pyridine derivatives which can react with phosphorus pentachloride to form chloropyridinium salts.

4,567,029
CRYSTALLINE METAL ALUMINOPHOSPHATES

Stephen T. Wilson, Shrub Oak, and Edith M. Flanigen, White Plains, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 15, 1983, Ser. No. 514,334
Int. Cl.⁴ C01B *25/26, 25/36;* **B01J** *27/18, 29/00*
U.S. Cl. 423—306 **55 Claims**

1. Crystalline metal aluminophosphates having a three-dimensional microporous framework structure of MO_2^{-2}, AlO_2^- and PO_2^+ tetrahedral units and having an empirical chemical composition on an anhydrous basis expressed by the formula

$$mR: (M_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the moles of "R" present per mole of $(M_xAl_yP_z)O_2$ and has a value of from zero to 0.3, "M" represents at least one metal of the group magnesium, manganese, zinc and cobalt, "x", "y" and "z" represent the mole fraction of the metal "M", aluminum and phosphorus respectively present as tetrahedral oxides, said mole fractions being such that they are within the tetragonal compositional area defined by points A, B, C and D of the ternary diagram which is FIG. 1 of the drawings.

48. Process for preparing a crystalline metal aluminophosphate of claim 1 which comprises forming a reaction mixture composition expressed in terms of molar oxide ratios as follows:

$$aR: (M_xAl_yP_z)O_2:bH_2O$$

wherein "R" is an organic templating agent; "a" has a value great enough to constitute an effective concentration of "R" and is within the range of greater than zero to 3; "b" has a value of from zero to 500; "M" represents a metal of the group zinc, magnesium, manganese and cobalt, "x", "y" and "z" represent the mole fractions, respectively, of "M", aluminum and phosphorus in the $(M_xAl_yP_z)O_2$ constituent, and each has a value of at least 0.01, and being within the hexagonal compositional area defined by points E, F, G, H. I, and J which is FIG. 3 of the drawings, and crystallizing the reaction mixture thus formed at a temperature of from 100° C. to 225° C. until crystals of the metal aluminophosphate are formed.

4,567,030
AMORPHOUS, SPHERICAL INORGANIC COMPOUND AND PROCESS FOR PREPARATION THEREOF

Shigeki Yuasa; Minshiro Okabayashi, both of Fujisawa; Hideki Ohno; Katsumi Suzuki, both of Sagamihara, and Koshi Kusumoto, Yokohama, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Filed Dec. 23, 1982, Ser. No. 452,735
Claims priority, application Japan, Dec. 23, 1981, 56-206862
Int. Cl.⁴ C01B *33/20*
U.S. Cl. 423—326 **14 Claims**


x 20,000

1. Spherical particles comprising an amorphous composition composed of (1) silica and (2) 0.01 to 20 mole %, based on silica, of an oxide of a metal of Group IV of the periodic table and having a particle size of 0.1 to 1.0 μm, said components (1) and (2) being present in the chemically bonded state and being inseparable from each other, said particles having a refractive index of from 1.35 to 1.70 and a narrow particle size distribution having a standard deviation value smaller than 1.30.

5. A process for producing an amorphous inorganic oxide composition, which comprises partially hydrolyzing a hydrolyzable organic silicon compound in an organic solvent, mixing the partially hydrolyzed product and a hydrolyzable organic compound of a metal (M) of Group IV of the periodic table in an organic solvent so that the proportion of MO_2 is 0.01 to 20 mole % based on SiO_2, adding the mixed solution to a hydrous alkaline solvent capable of dissolving the organic silicon compound and the organic compound of the Group IV metal but substantially incapable of dissolving the reaction product, reacting the partially hydrolyzed product of the organic silicon compound and the organic compound of the Group IV metal at a temperature of 0° to 40° C. under hydrolysis and precipitating spherical particles of an amorphous composition of silica and an oxide of a metal of Group IV.

6. A process for producing an amorphous inorganic oxide composition which comprises partially hydrolyzing a hydrolyzable organic silicon compound in an organic solvent, mixing the partially hydrolyzed product and a hydrolyzable organic compound of a metal (M) of Group IV of the periodic table in an organic solvent so that the proportion of MO_2 is 0.01 to 20 mole % based on SiO_2, adding the mixed solution to a hydrous alkaline solvent capable of dissolving the organic silicon compound and the organic compound of the Group IV metal but substantially incapable of dissolving the reaction product, reacting the partially hydrolyzed product of the organic silicon compound and the organic compound of the Group IV metal at a temperature of 0° to 40° C. under hydrolysis, thus precipitating spherical particles of an amorphous composition of silica and an oxide of a metal of Group IV, and thereafter adding a hydrolyzable organic silicon compound to the reaction system to perform hydrolysis and deposit silica on the surface of the spherical particles.

4,567,031
PROCESS FOR PREPARING MIXED METAL OXIDES

Brian Riley, Willimantic, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

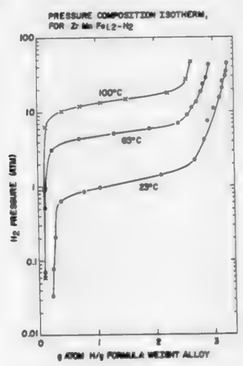
Filed Dec. 27, 1983, Ser. No. 565,964
Int. Cl.⁴ C01D *15/00;* **C01G** *51/00, 53/00*
U.S. Cl. 423—593 **18 Claims**

1. A process for preparing a mixed metal oxide having the formula $Li_xM_yO_z$ where M is cobalt or cobalt and nickel, x is a number from about 0.1 to about 1.1, y is a total number from about 1.1 to about 0.1, respectively, and z is a number from about 1.9 to about 2.1 which comprises
preparing a mixed solution containing x moles of a soluble oxygen-containing salt of lithium and y total moles of soluble oxygen-containing salt(s) of M in a solvent therefor, the soluble oxygen-containing salts being nitrates, oxalates or acetates;
concentrating the mixed solution;
co-crystallizing a mixed salt of lithium and of M from the concentrated mixed solution; and
calcining the co-crystallized mixed salt at a low temperature of from about 400° C. to about 500° C. for a short period of time of from about 1 hour to about 4 hours to form the mixed metal oxide.

4,567,032
ZIRCONIUM-MANGANESE-IRON ALLOYS

William E. Wallace, Pittsburgh, Pa., and Gui Y. Yu, Nanjing, China, assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 5, 1985, Ser. No. 741,580
Int. Cl.⁴ C01B *6/00;* **C22C** *30/00*
U.S. Cl. 423—644 **6 Claims**



1. A ternary alloy of the formula:

$$ZrMnFe_x$$

wherein x has a value from 1.2 to 1.3, and their hydrides.

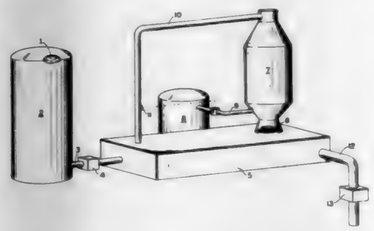
4,567,033
LOW-ENERGY METHOD FOR FREEING CHEMICALLY BOUND HYDROGEN

Arthur S. Kesten, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 25, 1984, Ser. No 664,825
Int. Cl.⁴ C01B *13/00*
U.S. Cl. 423—648 R **9 Claims**

1. A method for reducing the energy required for a dehydrogenation reaction by shifting the equilibrium of the hydrogenation-dehydrogenation equilibrium reaction system comprising:
(a) removing at least a portion of the generated equilibrium reaction hydrogen through a membrane;

(b) reacting the removed hydrogen with oxygen to produce water and heat; and



(c) adding substantially all the produced water and heat into the equilibrium reaction system.

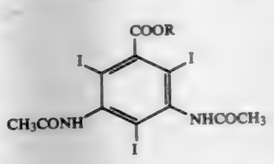
4,567,034

ESTERS OF DIATRIZOIC ACID AS X-RAY CONTRAST AGENTS

Isabel Charles, Wirral, and Malcolm Robinson, South Wirral, both of United Kingdom, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Sep. 7, 1984, Ser. No. 648,393
Int. Cl.[4] A61K *49/04*; C07C *101/68*
U.S. Cl. 424—5 14 Claims

1. An X-ray contrast agent having the structure



wherein R is an alkyl group of from 10 to 22 carbons.

4. An X-ray contrast medium comprising an X-ray contrast agent as defined in claim 1 and a carrier therefor.

7. A method for the X-ray visualization of body cavities and organs, which comprises administering to the body of the test object an effective contrast producing amount of an X-ray contrast medium as defined in claim 4.

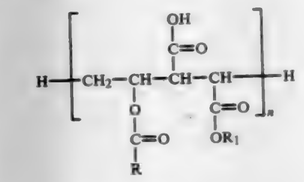
4,567,035

LOW MOLECULAR WEIGHT HAIR SPRAY

Burton H. Waxman, Rockaway, and I. Sioun Lin, Oak Ridge, both of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Aug. 22, 1983, Ser. No. 525,357
Int. Cl.[4] A61K *7/11*, *31/74*
U.S. Cl. 424—47 9 Claims

1. In a hair spray formulation containing a hair spray resin, the improvement which comprises using essentially the polymer having the formula



as the hair spray resin wherein R and R_1 are each independently alkyl having from 1 to 6 carbon atoms and n has a value of between about 40 and about 250, which resin has a relative viscosity of between about 1.12 and about 2.03 and is derived from a preformed vinyl ester-maleic anhydride alternating copolymer.

4,567,036

CHEMOTHERAPEUTIC METHOD FOR TREATING PERIODONTAL DISEASE, AND COMPOSITION THEREFORE

Gilbert I. Simon, 111 Midland Ave., Bronxville, N.Y. 10708, and Roy T. Witkin, 23 Broadview Rd., Westport, Conn. 06880

Division of Ser. No. 565,661, Dec. 30, 1983, Pat. No. 4,521,403, which is a continuation-in-part of Ser. No. 459,525, Jan. 20, 1983, abandoned, which is a continuation-in-part of Ser. No. 145,590, May 1, 1980, abandoned. This application Mar. 6, 1985, Ser. No. 708,688
Int. Cl.[4] A61K *7/20*, *31/79*, *33/18*, *31/755*
U.S. Cl. 424—51 13 Claims

1. A method of treating teeth in a human oral cavity to retard or reduce the formation of plaque thereon which comprises applying to the teeth and to plaque thereon an antimicrobial oral lavage in the form of an aqueous solution containing from about 0.5 to about 10.0% by weight of hydrogen peroxide and from 0.05 to about 2.0% by weight of iodine derived from a povidone-iodine complex in an amount and for a period of time sufficient to exert cidal action on microorganisms in or constituting said plaque and thereafter expelling the oral lavage from the oral cavity.

4,567,037

FATTY ACID DIESTERS

Joseph P. Claudelli, Ramsey, N.J., assignor to Revlon, Inc., New York, N.Y.

Filed Nov. 20, 1984, Ser. No. 673,301
Int. Cl.[4] A61K *7/027*, *7/42*; C07C *69/593*, *69/602*
U.S. Cl. 424—59 10 Claims

1. A fatty acid ester of the formula

$$CH_3(CH_2)_5CH(OCOR_1)(CH_2)_{10}COOR_2$$

wherein,

R_1 is a straight chain hydrocarbon radical having 17 carbon atoms with 1 to 3 double bonds therein; and

R_2 is a straight or branched chain hydrocarbon radical having 5 to 22 carbon atoms.

10. A cosmetic composition comprising by weight 1–20% of a fatty acid ester of the formula

$$CH_3(CH_2)_5CH(OCOR_1)(CH_2)_{10}COOR_2$$

wherein,

R_1 is a straight chain hydrocarbon radical having 17 carbon atoms with 1 to 3 double bonds therein; and

R_2 is a straight or branched chain hydrocarbon radical having 5 to 22 carbon atoms;

5–10% of an humectant;

0.2–1.0% of a thickener;

0.5–10% of an emulsifier; and

50–80% water.

4,567,038

SUNSCREEN COMPOSITION FOR HAIR PROTECTION

Joseph P. Claudelli, Ramsey, N.J., and Elizabeth Brand, New York, N.Y., assignors to Revlon, Inc., New York, N.Y.

Filed Mar. 6, 1985, Ser. No. 708,780
Int. Cl.[4] A61K *7/08*, *7/09*, *7/42*
U.S. Cl. 424—59 6 Claims

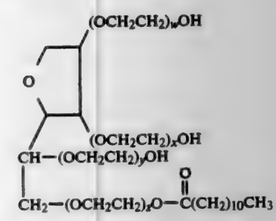
1. A sunscreen mousse composition comprising by weight:

0.001% to 15% of at least one sunscreen agent selected from the group consisting of ethoxylated p-amino benzoate, a diethanol amine salt of p-methoxycinnamic acid, 2-hydroxy-4-methoxybenzophenone-5-sulfonic acid, disodium 2,2'-dihydroxy-4-4'-dimethoxy-5-5'-disulfobenzophenone, 2,4-dihydroxy-benzophenone, 2-hydroxy-4-methoxybenzophenone, 2,2',4,4'-tetrahydroxybenzophenone, 2,2'-dihydroxy-4,4'-dimethoxy-benzophenone, a dimethylamino propyl amine salt of p-dimethylamino-benzoic acid, a diethanolamine salt of p-dimethylamino benzoic acid, and trimethyl-2-hydroxy propyl-p-dimethylamino benzoate ammonium chloride;

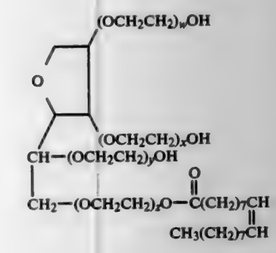
2.0 to 15.0% of an alcohol;

0.5% to 10.0% of a nonionic film-former;

0.1% to 2.0% of a nonionic surfactant selected from the group consisting of polythylene glycol ether of oleyl alcohol having the formula $CH_3(CH_2)_7CH{=}CH(CH_2)(OCH_2CH_2)_nOH$ wherein n has an average value of 20, polyethylene glycol ether of oleyl alcohol having the formula $CH_3(CH_2)_7CH{=}CH(CH_2)_7CH_2(OCH_2CH_2)_nOH$ wherein n has an average value of 10, polyethylene glycol ether of stearyl alcohol having the formula $CH_3(CH_2)_{16}CH_2(OCH_2)_nOH$ wherein n has an average value of 2, polyethylene glycol ether of stearyl alcohol having the formula $CH_3(CH_2)_{16}CH_2(OCH_2CH_2)_nOH$ wherein n has an average value of 20;



where w + x + y + z has an average value of 20; and



where w + x + y + z has an average value of 20;

0.01–0.5% of a protein conditioner

0.1% to 0.8% of the water soluble plasticizer dimethylsiloxane with polyoxyethylene and/or polyoxypropylene side chains;

0.1% to 5.0% of a cationic surfactant selected from the group consisting of minkamidopropyl dimethyl 2-hydroxy-ethyl ammonium chloride, decyl dimethyl octyl ammonium chloride and isododecylbenzyl triethanolammonium chloride; and

q.s. 100% water.

4,567,039

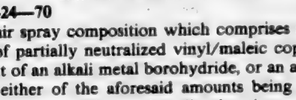
HAIR CONDITIONING COMPOSITION AND METHOD

Richard P. Stadnick, Blauvelt, N.Y., and Richard W. Schnetzinger, Hightstown, N.J., assignors to Revlon, Inc., New York, N.Y.

Filed Oct. 12, 1984, Ser. No. 660,158
Int. Cl.[4] A45D *7/00*; A61K *7/06*, *7/13*
U.S. Cl. 132—70 12 Claims

1. A hair conditioning composition comprising:

(a) an effective amount to render long-lasting conditioning effect to hair of an organosilicon quaternary ammonium halide having the formula:



wherein

Y is a hydrolyzable radical selected from the group consisting of alkoxy, halogen or hydroxy;

X is a halogen, sulfate, phosphate or carbonate;

R_1 is an alkyl radical of 1 to 4 carbon atoms;

R_2 is an aliphatic radical of 1 to 4 carbon atoms or an aromatic radical of 6 to 8 carbon atoms;

A is an aliphatic radical of 1 to 4 carbons or an aromatic radical of 6 to 8 carbons;

n is 1 to 6;

m is 1 to 18 and

z is 2 to 3;

(b) in an alkaline buffered aqueous/organic vehicle having a pH of about 8.0 to 10.0, said aqueous/organic vehicle comprises:

about 5 to 99% w/v of an organic solvent selected from the group consisting of methanol, ethanol, isopropanol, polyoxyethylene octyl phenyl ether having the formula $C_8H_{17}C_6H_4(OCH_2CH_2)_n{-}OH$, where n has an average value of 9, polyoxyethylene nonyl phenyl ether having the formula $C_9H_{19}C_6H_4(OCH_2CH_2)_n{-}OH$, where n has an average value of 12, polypropylene glycol myristyl ether having the formula



where n has an average value of 3, and acetylated polyoxyethylene lanolin alcohol with an average ethoxylation value of 9; and about 1 to 95% w/v of water.

4,567,040

STABILIZED HAIR SPRAY COMPOSITION AND PROCESS

Joseph J. Varco, Fairfield, and Carl E. Williams, Stratford, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Continuation of Ser. No. 313,093, Oct. 19, 1981, abandoned. This application Jan. 30, 1985, Ser. No. 696,852
Int. Cl.[4] A61K *7/11*, *7/135*
U.S. Cl. 424—70 8 Claims

1. A hair spray composition which comprises an alcoholic solution of partially neutralized vinyl/maleic copolymer and an amount of an alkali metal borohydride, or an amount of an oxidizer, either of the aforesaid amounts being effective to stabilize said composition against discoloration.

4,567,041

MUTANT STRAIN OF *LISTERIA MONOCYTOGENES* AND ITS USE IN PRODUCTION OF IGM ANTIBODIES AND AS AN IMMUNOTHERAPEUTIC AGENT

Vilas V. Likhite, 229 White St., Belmont, Mass. 02178

Continuation-in-part of Ser. No. 292,193, Aug. 12, 1981, abandoned, which is a division of Ser. No. 93,171, Nov. 13, 1979, Pat. No. 4,285,930, which is a continuation of Ser. No. 858,847, Dec. 8, 1977, abandoned. This application Aug. 2, 1983, Ser. No. 519,735
Int. Cl.[4] A61K *39/40*, *39/395*; C07G *7/00*
U.S. Cl. 424—87 10 Claims

1. Method of manufacture of high titers of IgM antibodies specific to an antigen comprising a killed mutant strain of *Listeria monocytogenes akka* having the identifying characteristics of NRRL B-11,233, said antibodies when recovered being

characterized by their appreciable retention of the original immunological specificity shown in the biological system in which they were produced, which method comprises:

(a) injecting an antigen comprising said killed mutant strain of *Listeria monocytogenes akka* into a host animal, to load the animal;

(b) allowing sufficient time for the antibody response to form and build up, after which the animal is again injected with booster doses of said antigen from time-to-time;

(c) bleeding said host animal to recover the antibody containing serum; and

(d) recovering the high molecular weight IgM antibodies produced to the said antigen from the serum.

4,567,042

INACTIVATED CANINE CORONAVIRUS VACCINE

William M. Acree; Bobby Edwards, both of Temple, Tex., and John W. Black, Milton, Tenn., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 504,434, Jun. 15, 1983. This application Jun. 7, 1984, Ser. No. 618,638

The portion of the term of this patent subsequent to Jan. 28, 2003, has been disclaimed.

Int. Cl.⁴ A61K *39/12*

U.S. Cl. 424—89 **19 Claims**

1. A vaccine composition comprising inactivated canine coronavirus having a pre-inactivation titer of at least 10,000 canine coronavirus particles per milliliter and a veterinary pharmaceutically acceptable carrier therefor.

7. A vaccine composition which comprises an amount of inactivated canine coronavirus strain ATCC VR-2068 sufficient to be effective against canine coronavirus in combination with a carrier suitable for dogs.

8. A vaccine composition comprising inactivated canine coronavirus present in an amount of about 10,000 to 10,000,000 virus particles per dose as measured by the $FAID_{50}$ method, an adjuvant selected from the group consisting of ethylene maleic anhydride and a copolymer of styrene with a mixture of acrylic acid and methacrylic acid, and a non-toxic pharmaceutically acceptable carrier.

4,567,043

CANINE CORONA VIRUS VACCINE

William M. Acree; Bobby Edwards, both of Temple, Tex., and John W. Black, Milton, Tenn., assignors to American Home Products Corporation (Del.), New York, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,434

Int. Cl.⁴ A61K *39/12*

U.S. Cl. 424—89 **23 Claims**

1. A vaccine composition comprising: a member selected from the class consisting of inactivated canine coronavirus and modified live canine coronavirus in an amount of at least 1000 virus particles per dose as measured by the $FAID_{50}$ method; and a non-toxic pharmaceutically acceptable carrier.

20. The method for protecting dogs from infection caused by canine coronavirus comprising: administering to a dog a vaccine composition containing a member selected from the class consisting of inactivated canine coronavirus ATCC No. VR 2068 and modified live canine coronavirus ATCC No. VR 2068, in an amount of at least 1,000 virus particles per dose as measured by the $FAID_{50}$ method.

4,567,044

LINIMENT COMPOSITION

Richard W. DeSantis, Monticello, N.Y., assignor to Victory Lane Ltd., Monticello, N.Y.

Filed Nov. 13, 1984, Ser. No. 670,943

Int. Cl.⁴ A61K *37/48*

U.S. Cl. 424—94 **8 Claims**

1. A liniment composition containing as active ingredients from 4–9 ounces of ammonium alum, 30–50 ounces of dimethyl sulfoxide, 10–20 ounces of goose oil, 5–15 ounces of mineral oil and 20–30 ounces of nitrofurazone (0.2% aqueous solution) and 4–10 grains of papain.

4,567,045

ISOTONIC GLYCEROL FREE INTRAVENOUS FAT EMULSION

Robert T. Lyons, Danville, Calif., assignor to Kabivitrum AB, Stockholm, Sweden

Filed Jan. 20, 1984, Ser. No. 572,714

Int. Cl.⁴ A61K *35/78, 31/685, 37/22*

U.S. Cl. 424—195.1 **9 Claims**

1. A lipid emulsion suitable for parenteral administration, the emulsion being substantially free of glycerol and including L-alanine in an amount sufficient to provide a pharmaceutically acceptable osmolality, and wherein the amount of alanine ranges from about 1.0 to about 5.0 w/v %.

4,567,046

BREAD OR OTHER CEREAL-BASED FOOD IMPROVER COMPOSITION INVOLVING THE ADDITION OF PHOSPHOLIPASE A TO THE FLOUR

Seijiro Inoue, Machida, and Shigenori Ota, Komae, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1983, Ser. No. 548,514

Claims priority, application Japan, Nov. 10, 1982, 57-197098

Int. Cl.⁴ A21D *8/04*

U.S. Cl. 426—20 **8 Claims**

1. A bread improver composition which contains effective amounts of wheat flour and phospholipase A substantially free from lipase and protease the mixture improving the quality of dough and bread.

4,567,047

CHEESE-CONTAINING CONFECTIONARY-LIKE COATING

SCM Corporation, 02, New York, N.Y.

Continuation-in-part of Ser. No. 402,844, Jul. 29, 1982, abandoned. This application Apr. 6, 1984, Ser. No. 597,557

Int. Cl.⁴ A23G *3/00;* **A23C** *19/09;* **A21D** *15/08*

U.S. Cl. 426—94 **13 Claims**

1. A cheese flavored confectionery product capable of being applied to a substrate and having the appearance, flavor, and texture of a hard cheese, comprising, based on total composition weight;

(a) about 10–60% powdered dry cheese;

(b) about 10–35% particulate fill having a flavor which is bland or compatible in flavor with the flavor of cheese powder;

(c) about 20–60% hard butter having a Wiley Melting Point in the range of about 84° to 120° F., said hard butter having an SFI at 92° F. of at least about 13;

(d) an amount of a gloss-forming emulsifier effective to resist surface fracture and bloom;

(e) about 2–12% stearine based on hard butter weight;

said composition being processed by milling or refining and conching and having a MacMichael viscosity of at least about 30° at the temperature of application of the composition to a substrate.

4,567,048

INDIGOID DYES

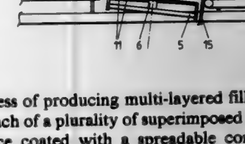
Gordon D. Gruetzmacher, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 453,635, Dec. 27, 1982, abandoned. This application Apr. 30, 1984, Ser. No. 605,316

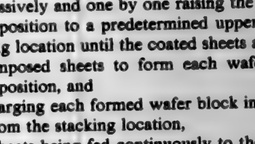
Int. Cl.⁴ A23L *1/275;* **C07D** *209/36*

U.S. Cl. 426—250 **10 Claims**

1. A compound selected from the group consisting of water-soluble sulfonated indoxyl derivatives of the formula:



and the base salts thereof with pharmacologically acceptable cations, wherein Z is sulfonylhydroxy and R is a moiety of the formula:



wherein Z is as previously defined and Ar represents a divalent aromatic radical chosen from the group consisting of 1,4-phenylene, 1,3-phenylene, 2,5-dimethoxy-1,4-phenylene, 4,6-dimethoxy-1,3-phenylene, 4-dimethylamino-1,3-phenylene, 1,4-naphthylene and 2,6-naphthylene.

10. A method for coloring foods which comprises incorporating therein an effective amount of a dye or coloring compound as claimed in claim 1.

4,567,049

PROCESS AND APPARATUS FOR PRODUCING FILLED WAFER BLOCKS

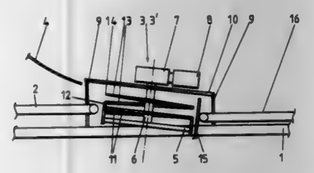
Franz Haas, Sr., Vienna; Franz Haas, Jr., Leobendorf, and Johann Haas, Klosterneuburg, all of Austria, assignors to Franz Haas Waffelmaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Dec. 17, 1984, Ser. No. 682,470

Claims priority, application Austria, Dec. 21, 1983, 4475/83

Int. Cl.⁴ A21D *13/00;* **A23G** *3/00*

U.S. Cl. 426—275 **20 Claims**



1. A process of producing multi-layered filled wafer blocks consisting each of a plurality of superimposed sheets having an upper surface coated with a spreadable composition and a cover sheet at the top thereof, which comprises

(a) successively and one by one feeding the cover sheet and the coated sheets of each wafer block to a predetermined lower position in a stacking location,

(b) successively and one by one raising the sheets from the lower position to a predetermined upper position in the stacking location until the coated sheets are joined to the superimposed sheets to form each wafer block in the upper position, and

(c) discharging each formed wafer block in the upper position from the stacking location,

(d) the sheets being fed continuously to the lower position and each sheet being fed into the lower position before a preceding one of the sheets has reached the upper position.

4,567,050

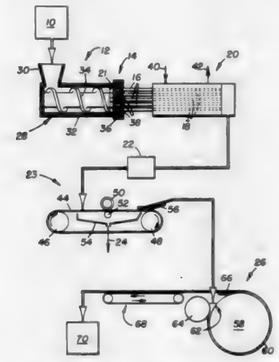
METHOD FOR PROCESSING MEAT PRODUCTS

Eldon N. Roth, 14565 Quaker Hill Rd., Nevada City, Calif. 95959

Continuation-in-part of Ser. No. 420,352, Sep. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 286,582, Jul. 24, 1981, abandoned. This application Apr. 19, 1984, Ser. No. 601,912

Int. Cl.⁴ A23L *1/317*

U.S. Cl. 426—417 **16 Claims**



1. In a method for processing a meat product material including muscle and connective tissue with minimum physical working thereof, said product characterized by the presence of individual pieces which cannot readily be caused to flow through restricted passages of processing equipment, the steps comprising

extruding the pieces of the meat product with extruding means and communicating said extruding means directly with outlet means comprising a plurality of die openings, communicating the die openings directly with corresponding passages in a shell-and-tube type heat exchanger,

passing the extruded meat product pieces through the heat exchanger passages in a first-in, first-out manner,

facilitating passage of the pieces of meat product into the die openings by knife means arranged for cutting movement adjacent inlet ends of the die openings in order to prevent blockage of the die openings by the meat product pieces, whereby said extruding step and said knife means cooperate to permit the pieces of meat product to be forced into and through said die openings and passages in said shell-and-tube type heat exchanger,

operating the heat exchanger to change the temperature of the meat product to a selected level during passage of the meat product through said heat exchanger, and

receiving the meat product from the heat exchanger at said selected temperture level for further processing.

4,567,051

METHOD FOR PRODUCING SNACKS FROM DOUGH

John E. Baker, Farmers Branch, and David P. Fowler, Irving, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Nov. 4, 1982, Ser. No. 439,214

Int. Cl.⁴ A21D *8/00*

U.S. Cl. 426—438 **15 Claims**

1. A method for forming snacks from sticky dough, comprising:

(a) forming sticky dough into a continuous elongated form, and

(b) thereafter continuously frying the dough in hot frying oil for a period of time sufficient to partially cook the dough, wherein, during the continuous partial frying of the dough, the continuous elongated form is first surrounded by and

transported by a stream of hot oil which partially fries the dough sufficiently to reduce the stickiness of the dough, then,

the continuous elongated form is cut into snack size pieces while being transported in the stream of hot oil and before the dough is fully cooked, then,

the snack size pieces are transported in the stream of hot oil to a further zone in the frying oil, then,

(c) the snack size pieces are submerged in the further zone of hot frying oil for a period of time sufficient to finish fry to form snacks.

4,567,052

3-PHENYL-4-CYANOPYRROLE DERIVATIVES, THE PREPARATION THEREOF, AND METHOD OF USE THEREOF AS MICROBICIDES

Robert Nyfeler, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 8, 1984, Ser. No. 618,867

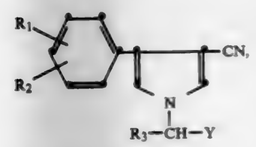
Claims priority, application Sweden, Jun. 17, 1983, 833331; May 10, 1984, 842304

Int. Cl.⁴ A23L *3/34;* **C07D** *207/30, 307/02, 407/00*

U.S. Cl. 426—532 **10 Claims**

1. A compound of the formula I

(I)



wherein

R_1 and R_2, each independently of the other, are hydrogen, halogen, methoxy or methylthio,

R_3 is hydrogen or C_1–C_8haloalkyl,

Y is hydroxy, halogen or the —O—C(O)—R_4 group, and

R_4 is hydrogen, C_1–C_8alkyl, C_1–C_8haloalkyl, C_2–C_6alkenyl, 2-tetrahydrofuryl, 2-tetrahydropyranyl, C_1–C_6alkoxycarbonyl or the —$CH(R_5)$—XR_6 group, wherein

X is oxygen or sulfur,

R_5 is hydrogen or C_1–C_3alkyl, and

R_6 is C_1–C_6alkyl, (C_1–C_6alkoxy)-C_1–C_6alkyl, C_3–C_6alkenyl, C_3–C_6alkynyl, phenyl or phenyl which is substituted by halogen, C_1–C_6alkyl, C_1–C_6alkoxy, and/or C_1–C_6alkoxycarbonyl.

9. A method of controlling phytopathogenic microorganisms or of protecting cultivated plants from attack by said microorganisms comprising applying to said plants, to parts of plants or to the locus thereof a microbicidally effective amount of a compound of the formula I of claim 1.

10. A method of preserving or protecting storable goods by applying a microbicidally effective amount of a compound of the formula I of claim 1 to said storable goods.

4,567,053

METHOD OF INHIBITING SWEETNESS

Michael G. Lindley, Crowthorne, England, assignor to Tate & Lyle Public Limited Company, England

Filed Apr. 11, 1984, Ser. No. 599,260

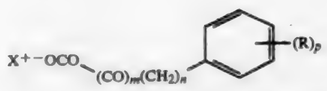
Claims priority, application United Kingdom, Apr. 12, 1983, 8309855

Int. Cl.⁴ A23L *1/22;* **C07C** *53/132;* **A61K** *9/20, 31/70*

U.S. Cl. 426—538 **14 Claims**

1. A method of reducing the sweetness of an ingestible product containing a sweetening sugar or sugar alcohol by incorporating therein a sweetness-reducing amount of at least one compound of the general formula:

(I)



in which m represents 0 or 1, and when m represents 0, n represents 1, 2 or 3, and p represents 1, 2, 3 or 4, and when m represents 1, n represents 1 or 2 and p represents 0, 1, 2, 3 or 4; the substitutents R individually represent a lower alkoxy group phenoxy group or a lower alkyl or trifluoromethyl group; two substituents R together represent an aliphatic chain linked to the phenyl ring at two positions, directly or via an oxa-group, or one substituent R represents a hydroxy group while at least one other substituent R represents an alkoxy group; and X^+ represents a physiologically acceptable cation.

4,567,054

SWEETENER COMPOSITION

Garyx Zimmerman, 2005 Pinehurst Rd., Los Angeles, Calif. 90068, and Donald E. Dickenson, 960 Larrabee St., Los Angeles, Calif. 90069

Filed May 6, 1985, Ser. No. 730,479

Int. Cl.⁴ A23L *1/22*

U.S. Cl. 426—548 **9 Claims**

1. A method for preparing a sweetener composition containing from about 92 to about 98 wt. % glycerol, from about 0.5 to about 3.0 wt. % glycine, and from about 2.0 to about 5.0 wt. % gum arabic, which comprises:

(a) heating and stirring a first mixture containing at least about 16 parts by weight of glycerol per 1.0 part by weight of glycine at a temperature from about 100° to about 115° C. to obtain a solution of glycine in glycerol;

(b) heating and stirring a second mixture containing at least about 8.8 parts by weight of glycerol per 1.0 part by weight of gum arabic at a temperature from about 100° to about 115° C. to obtain a solution of gum arabic in glycerol; and

(c) blending the glycerol solution of glycine and the glycerol solution of gum arabic at a temperature from about ambient temperature to about 115° C. to produce said sweetener composition.

4,567,055

EXTRUDED CONFECTIONS

Carl O. Moore, Rochester, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Mar. 6, 1984, Ser. No. 587,339

Int. Cl.⁴ A23G *3/00;* **A23L** *1/04, 1/195*

U.S. Cl. 426—578 **11 Claims**

1. A process for the manufacture of starch containing gel confections by extrusion comprising the steps of:

(a) mixing a nonbirefringent starch having a cold-water-solubility of greater than 25 percent, the starch being hydratable to function as a gelling colloid; and sweetener components including crystalline and liquid corn and sugar materials; and

(b) heating the mixture (a) and (b) at a temperature above the gelatinization point of the starch, but below the boiling point of the mixture to fully gelatinize the starch wherein said mixture has a moisture content between about 10 percent and about 25 percent; and

(c) extruding the mixture as a firm, transparent to translucent gel.

4,567,056

EDIBLE FAT AND A PROCESS FOR PRODUCING SUCH FAT

Werner J. Schmidt, Hamburg, Fed. Rep. of Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Jun. 19, 1984, Ser. No. 622,355

Claims priority, application Netherlands, Jun. 21, 1983, 8302198

Int. Cl.⁴ A23D *5/02*

U.S. Cl. 426—607 **8 Claims**

1. A process for producing an edible fat, comprising:

(1) randomly interesterifying a starting mixture of oils comprising 30–60 wt. % of oil (a) selected from the group consisting of soybean-, sunflower-, safflower-, rapeseed-, cottonseed-, maize- and olive oil, wherein said oil (a) is free from crystallized fat at 10° C.; 5–40 wt. % of a partially hydrogenated oil (b) selected from the group consisting of soybean-, sunflower-, safflower-, rapeseed-, cottonseed-, maize- and olive oil, wherein said oil (b) has been subjected to hydrogenation under conditions resulting in from 30 to 70 wt. % fatty acids in the trans-configuration and a melting Point of from 30° to 45° C.; and 25–45 wt. % of a saturated oil (c) selected from the group consisting of soybean-, sunflower-, safflower-, rapeseed-, cottonseed-, maize- and olive oil, wherein said oil (c) has an iodine value of less than 10;

(2) fractionating the interesterified mixture to obtain a higher melting stearin fraction having substantially all the S_3-triglycerides in said mixture, and a lower melting olein fraction containing 0–6 wt. % of said S_3-triglycerides;

(3) mixing 50–100 wt. % of said olein fraction with 0–50 wt. % of an oil selected from the group consisting of palm oil and a mixture of palm oil and palm oil hydrogenated to a melting point of from 38° to 45° C. to obtain edible fat.

4,567,057

METHOD OF MAKING MAGNETIC RECORDING MEDIUM

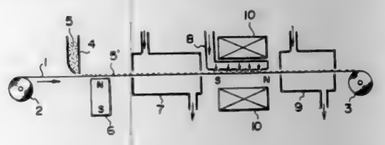
Kenichi Masuyama; Toshimitu Okutu; Takahito Miyoshi; Hiroshi Ogawa; Masahiro Utumi; Masaaki Fujiyama, and Sugihiko Tada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 26, 1984, Ser. No. 654,549

Claims priority, application Japan, Oct. 3, 1983, 58-184827

Int. Cl.⁴ H01F *10/02*

U.S. Cl. 427—48 **2 Claims**



1. A method of making a magnetic recording medium by applying a magnetic coating composition, which comprises a binder dissolved in a solvent and magnetic grains dispersed therein, onto a surface of a non-magnetic substrate continuously moved, and by subjecting a coating film thus overlaid on the surface of said non-magnetic substrate to a magnetic orientation processing and a drying processing, wherein the improvement comprises the steps of: after said magnetic coating composition is applied onto the surface of said non-magnetic substrate, conducting preliminary orientation by use of a magnetic field generation means exhibiting a means magnetic flux density with the range of 300 gauss to 5,000 gauss, conducting preliminary drying to such an extent that the ratio of a solvent remaining in a coating film overlaid on said non-magnetic substrate is within the range of 50% to 95% of the ratio thereof in the original magnetic coating composition, conducting final orientation while intermediate drying is carried out to such an extent that the ratio of a solvent remaining in a coating film overlaid on said non-magnetic substrate is within the range of 5% to 70% of the ratio thereof in the original magnetic coating composition, and then conducting final drying to such an extent that the ratio of a solvent remaining in a coating film overlaid on said non-magnetic substrate is less than 5% of the ratio thereof in the original magnetic coating composition.

4,567,058

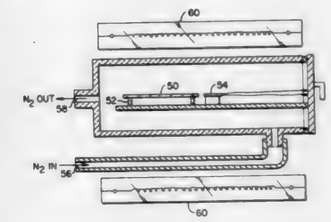
METHOD FOR CONTROLLING LATERAL DIFFUSION OF SILICON IN A SELF-ALIGNED $TISI_2$ PROCESS

Yun B. Koh, Sunnyvale, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Jul. 27, 1984, Ser. No. 634,937

Int. Cl.⁴ B05D *3/06, 5/12;* **B44C** *1/22;* **C03C** *15/00*

U.S. Cl. 427—55 **18 Claims**



1. A method for forming a titanium silicide layer on the surface of a silicon layer comprising the steps of:

overcoating the surface of the silicon layer with titanium;

placing said overcoated silicon layer in an ambient atmosphere of ultrapure nitrogen; and

exposing said overcoated silicon layer to radiation from a tungsten-halogen source to heat said overcoated layer.

4,567,059

ELECTRONCONDUCTIVE PASTE TO BE BAKED ON CERAMIC BODIES TO PROVIDE CAPACITORS, VARISTORS OR THE LIKE

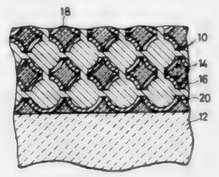
Nobutatsu Yamaoka, Harunamachi, and Kazuo Sasazawa, Maebashi, both of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Division of Ser. No. 349,312, Feb. 16, 1982, abandoned. This application Jul. 5, 1983, Ser. No. 510,725

Claims priority, application Japan, Feb. 27, 1981, 56-27880

Int. Cl.⁴ B05D *5/12*

U.S. Cl. 427—79 **6 Claims**



1. A method of forming a conductive electrode on a ceramic substrate to form a capacitor, varistor, thermistor, or piezoelectric element, comprising the steps of:

applying an electroconductive paste to said substrate, said paste comprising 100 parts by weight of zinc powder, from about 0.01 to 10.00 parts by weight of a glass frit, from about 0.01 to about 5.00 parts by weight of an additive selected from the class consisting of Pb, Bi, Pr, Cu, Cd and the compounds of these elements, and an organic

vehicle for pasting the mixture of the zinc powder, the glass frit and the additive; and

baking the paste on the ceramic substrate in order to drive off the organic vehicle and to cause the zinc powder particles to fuse to one another, whereby a conductor is formed.

4,567,060

METHOD OF PRODUCING A SEMICONDUCTOR LASER DEVICE

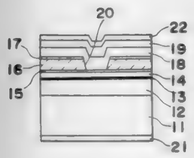
Toshiro Hayakawa, Nara; Takahiro Suyama, Tenri, and Saburo Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 16, 1984, Ser. No. 671,951

Claims priority, application Japan, Nov. 18, 1983, 58-218276

Int. Cl.[4] H01L *7/00*

U.S. Cl. 427—87 10 Claims



1. A method of producing a semiconductor laser device, comprising

depositing a first cladding layer, an active layer, and a second cladding layer successively, which three layers having heterojunctions each between neighboring two layers, said first and second cladding layers being made of mixed crystals of a semiconductor material composing the active layer and another semiconductor material containing aluminum,

depositing a fourth thin semiconductor layer on the second cladding layer, said fourth layer being made of material not including aluminum, and having charge carriers of the same type with that of the second cladding layer,

depositing a fifth semiconductor layer on said fourth layer, said fifth semiconductor layer having charge carriers of the type opposite to that of the second cladding layer,

forming a stripe-like groove by etching in said fifth semiconductor layer down to said fourth semiconductor layer, and

depositing a sixth semiconductor layer on said fifth semiconductor layer and on said groove, said sixth layer having charge carriers of the same type with that of the second cladding layer.

4,567,061

METHOD FOR MANUFACTURE OF INSULATING FILM AND INTERFACE BETWEEN INSULATION FILM AND SEMICONDUCTOR

Yutaka Hayashi, Tanashi; Iwao Hamaguchi, Yokohama, and Kiyohiko Kobayashi, Yamato, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Continuation of Ser. No. 190,971, Sep. 26, 1980, abandoned. This application Jul. 30, 1984, Ser. No. 635,477

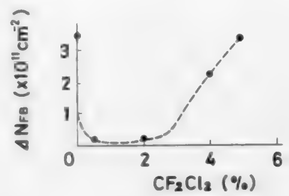
Claims priority, application Japan, Oct. 26, 1979, 54-138923

Int. Cl.[4] H01C *21/316*

U.S. Cl. 427—93 3 Claims

1. A thermal oxidation method for the manufacture of an insulating film and an interface between the insulation film and a semiconductor insulation film, which comprises:

heating a silicon substrate or a silicon dioxide based film having an interface state density to a temperature of about 800° C. to about 1200° C. in an atmosphere formed by incorporating a chlorine-containing carbon fluoride gas into an oxidizing gas in an amount of up to 6% by volume based on the combined volume of the chlorine containing carbon fluoride gas and the oxidizing gas, said treatment resulting in improved electrical properties of the semiconductor and of the interface between said insulation film and said semiconductor.



4,567,062

PROCESS FOR PHOTOFORMED PLASTIC MULTISTRATE USING TWO LAYER FILM

Roxy N. Fan, E. Brunswick, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 26, 1984, Ser. No. 665,002

Int. Cl.[4] H05K *3/18*

U.S. Cl. 427—96 9 Claims

1. A process for preparing two layer printed circuits having conductive interconnections which comprises

(a) laminating simultaneously or sequentially to a substrate bearing a circuit pattern two photopolymerizable layers, a tacky lower layer (1), 0.0005 to 0.010 inch (0.013 to 0.254 mm) in thickness, formulated for bulk response comprising an elastomeric polymeric binding having a Tg of −10° C. or lower, an ethylenically unsaturated monomeric compound, and a photinitiator or photoinitiator system, and a tacky upper layer (2) thinner than lower layer (1) and having a maximum thickness of 0.0005 inch (0.013 mm), tacky upper layer (2) formulated for surface response having an optical density in the range of 0.3 to 1.5 in at least a portion of the actinic spectral region, comprising a nonelastomeric polymer binder, an ethylenically unsaturated monomeric compound which is the same or different from the monomeric compound in layer (1), and a photoinitiator or photoinitiator system which is the same or different from the photoinitiator or photoinitiator system in lower layer (1);

(b) exposing the laminate to actinic radiation through a registered circuit image which is related to the underlying circuit pattern having at least one segment thereof overlying at least one segment of the conductive circuit pattern wherein the unexposed areas of upper layer (2) remain tacky and the exposed areas of upper layer (2) become nontacky;

(c) embedding finely divided metal, alloy, or plating catalyst to the unexposed areas;

(d) optionally heating the metallized or catalyzed laminate;

(e) exposing the metallized or catalyzed laminate to actinic radiation through a registered via image of at least one overlying segment of the conductive circuit pattern;

(f) removing the unexposed areas of the photopolymerizable layers with a solvent therefor to form vias through layers (1) and (2), the sides of the vias corresponding to exposed layer (1) remaining tacky, whereby segments of the underlying circuit patterns are uncovered;

(g) embedding finely divided metal, alloy or plating catalyst material to the vias, the metal or catalyst being embedded into the sides of the vias;

(h) optionally curing the laminate by exposing the laminate to actinic radiation, and/or heating;

(i) plating electrolessly the metallized or catalyzed vias, the uncovered segments, and overlying circuit image to form an electrically conductive circuit pattern interconnected with electrically conductive vias.

4,567,063

PROCESS FOR PRODUCING MAGNETIC RECORDING MEDIA

Takahito Miyoshi, Odawara; Toshimitu Okutu, Minami-Ashigara; Masahiro Utumi, Hadano, and Masaaki Fujiyama, Minami-Ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Apr. 25, 1985, Ser. No. 727,216

Claims priority, application Japan, Apr. 27, 1984, 59-83693

Int. Cl.[4] H01F *10/00;* B05D *5/12*

U.S. Cl. 427—128 11 Claims

1. A process for the production of magnetic recording media including a nonmagnetic support having a magnetic layer on one side thereof, and a backing layer obtained by dispersing a filler in a binder on the other side thereof, in which said backing layer is provided by:

a first step of kneading and dispersing a filler and a binder by means of a roll mill to form chips,

a second step of dissolving said chips in a solvent followed by dispersion effected with a sand grinder, and

a third step of adding a curing agent to the obtained liquid dispersion, followed by coating.

4,567,064

METHOD AND APPARATUS FOR THE MARKING OF GAS-PERMEABLE FABRIC OF CLOTH WEBS AND OTHER MATERIAL WEBS, ESPECIALLY FOR THE AUTOMATIC MARKING IN A MARKING STATION

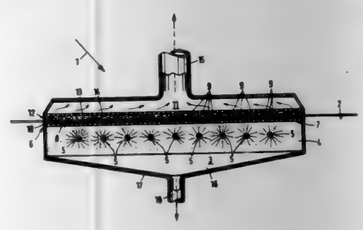
Josef Wöste, Greven, Fed. Rep. of Germany, assignor to Anton Cramer GmbH & Co. KG, Greven, Fed. Rep. of Germany

Filed Feb. 17, 1984, Ser. No. 581,089

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1983, 3305907

Int. Cl.[4] B05D *1/32, 3/00*

U.S. Cl. 427—157 13 Claims



1. A method for the marking of a gas-permeable fabric or cloth webs or other material webs for a marking station comprising:

guiding the fabric web including inserting the fabric web in marking apparatus and severing marked fabric sections;

contacting the web with a film as a stencil positioned on the gas-permeable lower side of the fabric and including the pattern to be marked off in the form of perforations;

sucking an atomized paint through the perforations in the film from below to above the fabric web and through the contacting fabric web by a vacuum compartment having a gas-permeable lower side comprising a grate;

interposing between the grate and the fabric web a resilient gas-permeable material layer as a cushion;

abutting the vacuum compartment and the atomizing chamber against each other with the fabric web interposed therebetween and pressed down by the grate and cushion.

4,567,065

DISPENSER GLOVES AND STOCKINETTS AND METHODS OF MANUFACTURING SAME

Charles I. Schneiderman, 10021 Sorrel Ave., Potomac, Md. 20854

Continuation-in-part of Ser. No. 265,249, May 19, 1981, abandoned. This application Jan. 21, 1983, Ser. No. 459,704

Int. Cl.[4] A61M *7/00, 31/00;* B05D *7/22*

U.S. Cl. 427—230 10 Claims



1. A method of filling a dispensing device for fitting around a portion of the user's body with a treating agent, comprising:

placing said treating agent into a hollow form having a plurality of millipore openings;

placing said dispensing device over said hollow form; and

injecting said treating agent onto the interior surfaces of said dispensing device by forcing it through said plurality of millipore openings;

whereby said treating agent is uniformly distributed throughout substantially the entire interior surfaces of said dispensing device.

4,567,066

ELECTROLESS NICKEL PLATING OF ALUMINUM

Paul B. Schultz, Farmington, and Eugene F. Yarkosky, Milford, both of Conn., assignors to Enthone, Incorporated, West Haven, Conn.

Continuation of Ser. No. 525,358, Aug. 22, 1983, abandoned. This application Oct. 23, 1984, Ser. No. 663,826

Int. Cl.[4] C23C *3/02*

U.S. Cl. 427—305 9 Claims

1. In the process for plating a zinc coated aluminum surface with nickel the improvement wherein the turnover life of the primary electroless nickel plating bath is increased, said improvement comprising:

(a) applying a first coating of nickel on the zinc coated aluminum surface from an electroless nickel plating bath separate from said primary electroless nickel plating bath, said bath having a pH of about 2 to 12;

(b) applying a second coating of nickel on the first coating of nickel from said primary electroless nickel plating bath, said primary bath having a pH of about 2 to 7;

(c) said first coating being thinner than said second coating; and

(d) both of said electroless nickel plating baths containing a source of nickel ions and a reducing agent to reduce the nickel ions.

4,567,067

METHOD OF SURFACE TREATMENT OF ALUMINUM KILLED STEEL IN PREPARATION FOR PORCELAIN COATING

Charles Keal, Jr., Connersville, Ind., assignor to Design & Manufacturing Corporation, Connersville, Ind.

Filed Apr. 24, 1985, Ser. No. 726,684

Int. Cl.[4] B05D *7/14, 1/02, 3/10*

U.S. Cl. 427—328 14 Claims

1. A surface treatment process for metallic parts in preparation for porcelain coating thereof comprising the following steps:

(a) mounting aluminum killed steel parts on a conveyor;

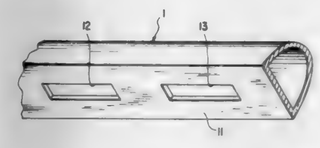
(b) spraying said parts with an aqueous non-silicate alkaline cleaning solution having a temperature of about 180° F. (about 82° C.);
(c) subjecting said parts to a first water rinse spraying treatment;
(d) spraying said parts with an aqueous ferric sulfate solution having a concentration of from about 0.5% to about 1% and a temperature of from about 155° F. to about 160° F. (about 68° C. to about 71° C.);
(e) subjecting said parts to a second water rinse spraying treatment;
(f) spraying said parts with an aqueous sulfuric acid solution having a concentration of about 2.5% and a temperature of about 140° F. (about 60° C.);
(g) subjecting said parts to a third water rinse spraying treatment;
(h) spraying said parts with an aqueous nickel sulfate solution and depositing on said aluminum killed steel parts a nickel adhesion layer of from about 0.04 to about 0.07 g./sq.ft.;
(i) spraying said parts with an aqueous sulfuric acid solution having a concentration of from about 0.35% to about 0.45% and a temperature of from about 130° F. to about 140° F. (about 54° C. to about 60° C.);
(j) spraying said parts with an alkaline neutralizer; and
(k) subjecting said parts to a final water rinse spraying treatment.

4,567,068

BLOW-MOLDED PLASTIC BODY

Ekkehard Weinberg, Schönwald, and Rolf Hameister, Hof/-Salle-Leimitz, both of Fed. Rep. of Germany, assignors to Rehau Plastiks AG & Co., Rehau, Fed. Rep. of Germany

Filed Mar. 9, 1984, Ser. No. 587,766
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308483
Int. Cl.⁴ B60R *13/00*
U.S. Cl. 428—31 **5 Claims**



1. In a blow-molded plastic hollow body including a bottom wall having an outer face adapted to be mounted on a base surface; the improvement comprising a plurality of defined, throughgoing apertures in said bottom wall; said apertures being spaced from one another by web-like parts of said bottom wall and having a total area of between 10% and 70% of the outer face of said bottom wall.

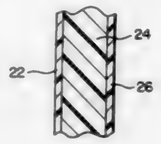
4,567,069

MULTILAYER CONTAINERS WITH IMPROVED STRESS CRACK PROPERTIES

Saleh A. Jabarin, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 18, 1984, Ser. No. 621,352
Int. Cl.⁴ B65D *23/00;* **B32B** *27/08*
U.S. Cl. 428—35 **21 Claims**

1. A thermoformed or molded container whose walls are of sufficient thickness to be self-sustaining when used in the packaging of solid and liquid products which comprises a container whose bottom and side walls are fabricated from a multilayer polymeric material characterized in that (a) the inner layer of said multilayer material is relatively thin and constitutes not more than about 40% of the thickness of said multilayer material and is a linear low density ethylene polymer having a density of less than about 0.94 gm/ml and having polymerized therein about 2–6 mol % of an alpha-monoolefin containing about 3–12 carbons and the balance ethylene; and (b) the principal layer of said multilayer material is relatively thick and constitutes at least about 60% of the thickness of said multilayer material and is a linear high density ethylene polymer having a density of at least about 0.94 gm/ml, a melt index of less than about 5.0 gm/10 min. and having polymerized therein at least about 98 mol % ethylene with any comonomer polymerized therein being an alpha-monoolefin containing about 3 to 12 carbon atoms.

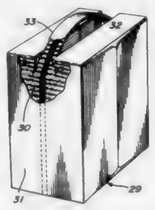


4,567,070

FIBROUS MATERIAL REINFORCING TAPE, METHOD OF MAKING THE SAME AND CONTAINERS REINFORCED BY SAID TAPE

Thomas J. Karass, 4645 Circle Rd., Montreal, Canada (H3W 1Z2)

Filed Jul. 20, 1984, Ser. No. 633,046
Int. Cl.⁴ B31B *1/72;* **B65D** *25/00*
U.S. Cl. 428—35 **18 Claims**



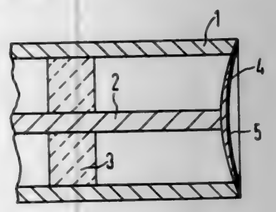
1. In combination, a container made of sheets of fibrous material, said sheets adhered together by glue, and a tape for reinforcing at least part of said container, said tape adhered flat to said fibrous material over substantially its entire length, said tape having a thickness lying between 0.05 and 0.30 millimeters, said tape being weftless and made of parallel yarn ends, each made of several fibers selected from the group consisting of polyester, rayon and polyamide fibers, and an adhesive bonding said yarn ends together, each said yarns end having a gauge range from 100 to 12,000 deniers, there being up to 350 yarn ends in the tape, said yarn ends being flattened with their major cross-sectional dimension parallel to the opposite main faces of the tape, said major cross-sectional dimension being greater than the diameter of the original round yarn ends used for making the tape by an amount varying between 35% and 100%, said adhesive filling the interstices between the yarn ends and providing a generally smooth surface at said main faces, said adhesive chosen to be compatible with said glue.

4,567,071

FAST-HEATING CATHODE

Erich Glass, Lindenweg 38, 8056 Neufahrn, and Hinrich Heynisch, Im Birket 7, 8032 Gräfelfing, both of Fed. Rep. of Germany

Filed Jun. 28, 1984, Ser. No. 625,720
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1983, 3323473
Int. Cl.⁴ H01J *1/14*
U.S. Cl. 428—35 **16 Claims**



1. Directly heated oxide cathode, especially for velocity-modulated tubes in pulse operation, which comprises a cylindrical outer conductor, an inner conductor coaxially arranged within the cylindrical outer conductor, a ceramic support disc supporting and spacing the inner conductor from the outer conductor, a metal layer connected on one end face of the cathode to the outer conductor and the inner conductor, and an electron-emitting oxide layer disposed on the metal plate.

4,567,072

ARTICLE EXHIBITING APPARENT LUMINESCENCE AND ITS METHOD OF MANUFACTURE

Ron P. Brainard, Columbus, and L. Wayne Cassidy, Groveport, both of Ohio, assignors to Murfin Incorporated, Columbus, Ohio

Filed Sep. 21, 1984, Ser. No. 652,931
Int. Cl.⁴ B05D *3/06;* **C09J** *7/02;* **B32B** *3/02*
U.S. Cl. 428—40 **20 Claims**



1. An article of manufacture comprising a base film of from 0.00025 to 0.375 inches in thickness and an ultra violet curable film of from 0.00025 to 0.010 inches in thickness on said base film, said ultraviolet curable film having a textured surface of randomly disposed elevated areas and depressed areas capable of appearing luminescent.

3. The article of manufacture of claim 1 wherein said base is transparent and is coated on the side opposite from the ultraviolet curable film with a transparent adhesive and a releasable backing strip.

4,567,073

COMPOSITE LOW SURFACE ENERGY LINER OF PERFLUOROPOLYETHER

James M. Larson, Minneapolis, and Allen L. Noreen, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 394,534, Jul. 2, 1982, abandoned. This application May 21, 1984, Ser. No. 612,475
Int. Cl.⁴ B32B *27/00;* **C09J** *7/02*
U.S. Cl. 428—40 **9 Claims**

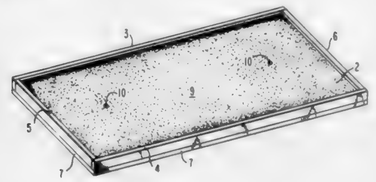
1. A substrate having a composite liner comprising
an inner layer of polymer insoluble in methyl ethyl ketone at 20° C. and made from polymerizable, film-forming monomer having a polymerization functionality greater than 1, and
an outer layer of polymer insoluble in 1,1,2-trichloro-2,2,1-trifluoroethane at 20° C., made from a polymerizable film-forming monomer copolymerizable with the monomer used to make said inner layer, and comprising a perfluoropolyether segment which comprises a plurality of $-C_aF_{2a}O-$ repeating units, where subscript a in each such unit is independently an integer from 1 to 4.

4,567,074

INSULATING TRAP DOOR COVER

Stephen H. Litaker, 5407 Autumn End Cir., Charlotte, N.C. 28212

Filed Mar. 21, 1985, Ser. No. 714,476
Int. Cl.⁴ B32B *1/04, 3/02;* **A62B** *3/00;* **E06C** *7/00*
U.S. Cl. 428—71 **5 Claims**



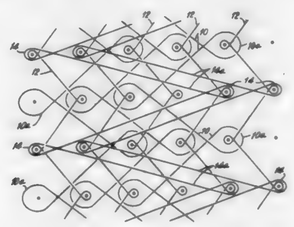
1. An insulating cover adapted to fit over a trap door comprising:
a. A slab of thermal insulating material made of rigid foam of a size sufficiently large to fit over the trap door;
b. A frame having side walls and said side walls having a lower face and the inside dimensions of the frame are of the same size as are the outside dimensions of the slab;
c. Molding means securely connected to the lower face of the side walls forming a lip extending inwardly and around the periphery of the frame whereby the slab is adhesively affixed to the lip; and
d. Fastening means for removably attaching said cover to said trap door.

4,567,075

DOUBLE FACED KNIT FABRIC AND METHOD

Simon W. Krawczyk, Forest Hills, N.Y., assignor to Fab Industries, Inc., New York, N.Y.

Filed May 20, 1983, Ser. No. 496,434
Int. Cl.⁴ B32B *33/00*
U.S. Cl. 428—91 **15 Claims**



1. A double faced knit fabric having particular utility as a bedding blanket, said fabric being of at least three bar construction and comprised of:
a support substrate of warp-knit yarns;
a first facing of warp knit, overfed looped and napped yarns knit into said support substrate; and,
an opposite facing of warp-knit napped floats of yarns, the

yarns of said opposite facing being knit into said support substrate at the ends of the floats;

the fibers of said substrate being substantially intact and unbroken, and providing longitudinal stability to said fabric;

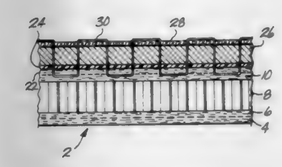
at least a portion of the fibers of said opposite facing being intact and unbroken and providing lateral stability to said fabric.

4,567,076

COMPOSITE MATERIAL STRUCTURE WITH INTEGRATED INSULATING BLANKET AND METHOD OF MANUFACTURE

Keith E. Therrien, Wausau, Wis., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 23, 1984, Ser. No. 592,539
Int. Cl.⁴ B32B *3/06*
U.S. Cl. 428—102 **8 Claims**



1. A load-bearing composite material structure with integral thermal and flame protection, said structure comprising:

a first ply of composite material, and an integral blanket bonded to said first ply;

said first ply including a thermosetting matrix material, and a fibrous material reinforcing the matrix material; and

said integral blanket including:

an inner face sheet formed by a second ply of composite material, said second ply including a thermosetting matrix material reinforced by a fibrous material;

an outer face sheet that is resistant to flame penetration;

a layer of insulation fill between said inner and outer face sheets of sufficient thickness and sufficiently low thermal conductivity to provide a predetermined degree of thermal insulation; and

high temperature resistant thread stitched through the layers of the blanket to sew such layers together;

said first and second plies being cured together, after the layers of the blanket are stitched together, to bond said plies together to in turn bond the blanket to said first ply and integrate the blanket into the structure.

4,567,077

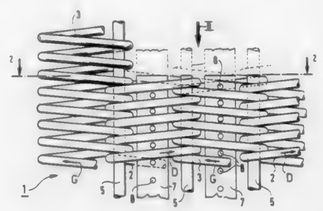
PAPERMAKER'S FABRIC CONSTITUTED BY PLASTIC SPIRALS

Maurice Gauthier, Hiersac, France, assignor to Cofpa, France

Continuation of Ser. No. 403,733, Jul. 14, 1982, abandoned. This application Mar. 22, 1985, Ser. No. 715,195
Claims priority, application PCT Int'l Appl., Nov. 13, 1980, PCT/FR81/00146; France, Nov. 14, 1980, 80 24221
Int. Cl.⁴ D21F *1/10;* **F26B** *13/08*
U.S. Cl. 428—114 **4 Claims**

1. In a papermaker's fabric comprising a plurality of transverse synthetic spirals connected together serially to define a supporting surface for transporting a paper web through papermaking machinery said supporting surface during a predetermined permeability, the improvement comprising:

generally flat synthetic bars disposed within said spirals, said flat synthetic bars including selectively sized apertures defined at regular intervals along the length of said bars



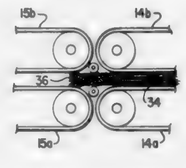
such that a desired reduction in the permeability of said papermaker's fabric is achieved.

4,567,078

PROCESS AND APPARATUS TO CRIMP FIBRES

Phillip W. Blackmore, Camlachie; William T. Fletcher, and Terry B. Burn, both of Sarnia, all of Canada, assignors to Fiberglas Canada Inc., Toronto, Canada

Filed Sep. 11, 1984, Ser. No. 649,556
Claims priority, application Canada, Jul. 3, 1984, 456851
Int. Cl.⁴ D04H *13/00*
U.S. Cl. 428—119 **30 Claims**



1. A method of producing a non-pleated reoriented glass fiber material having improved bending strength, said method comprising the steps of:

advancing a mat of glass fibers arranged in laminations extending at least substantially parallel to opposite major surfaces of said mat;

impregnating said mat with a heat-curable bonding substance;

passing said mat along a gap extending between successive driven elongate conveyor means which engage the opposite major surfaces of said mat to control the advance of said mat along said gap;

driving said conveyor means at progressively slower speeds along said gap while deforming said laminations of said mat in at least two separate stages into a non-pleated reorientation in which at least a major portion of said laminations extend across the thickness of said mat; and

subsequently heating said mat to cure said bonding substance.

4,567,079

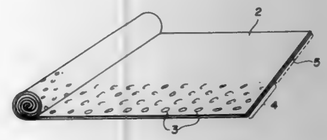
HIGH-STRENGTH BUILT-UP ROOFING USING IMPROVED PLY SHEETS

V. Robert Canfield, Martinsville; William J. Woodring, Bound Brook, and Mira C. Kubiak, North Brunswick, all of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Oct. 1, 1984, Ser. No. 656,213
Int. Cl.⁴ B32B *3/02, 3/10, 11/10*
U.S. Cl. 428—131 **12 Claims**

1. A BUR ply comprising a felt sheet having a restricted perforated marginal along one longitudinal edge said marginal area occupying from ¼ to 1/5 the width of the sheet and said

perforations within said area having offset center spacing of between about 0.5 and about 5 inches and being defined by a



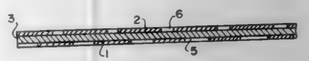
size and shape sufficient to allow ready flow through of a bitumen or coal tar bonding agent.

4,567,080

VAPOR BARRIER

Vagn Korsgaard, Horsholm, Denmark, assignor to V.I.K.-Consult ApS, Horsholm, Denmark

PCT No. PCT/DK84/00056, § 371 Date Feb. 20, 1985, § 102(e) Date Feb. 20, 1985, PCT Pub. No. WO85/00188, PCT Pub. Date Jan. 17, 1985
PCT Filed Jun. 19, 1984, Ser. No. 711,582
Claims priority, application Denmark, Jun. 20, 1983, 2840/83; Dec. 7, 1983, 5634/83
Int. Cl.⁴ B32B *3/10*
U.S. Cl. 428—137 **8 Claims**



1. Vapour barrier comprising a layer of a vapour-tight (vapour impervious) material connected with a layer of water absorbing material, openings permitting the passage of vapour and water being provided in the layer of vapour-tight material, characterized in that it comprises two vapour-tight layers (1,2;11) and a water absorbing layer (3,10) disposed therebetween, openings (5,6;12) being provided in both vapour-tight layers (1,2;11), the openings (5,12) in one layer (1,11) being arranged in displaced positions relatively to the openings (6,12) in the other layer (2,11).

4,567,081

SEPARATOR SHEETS FOR COLLATION WITH A STACK OF TRANSPARENCIES

Arthur C. VanHorne, Lake Oswego, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 18, 1984, Ser. No. 631,970
Int. Cl.⁴ B32B *3/24, 5/18*
U.S. Cl. 428—138 **1 Claim**



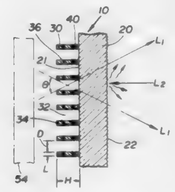
1. A collated stack for a reproduction machine having a vacuum paper handling mechanism, said collated stack comprising a plurality of substantially impermeable copier sheets made from a transparent thermoplastic material, and a plurality of permeable separator sheets provided with a plurality of holes covering substantially the entire surface area of said separator sheets, said separator sheets being alternately interleaved with said plurality of copier sheets.

4,567,082

NONREFLECTIVE AND LIMITATIVELY LIGHT-TRANSMITTING BOARD

Hiroshi Tabata, Yokohama, and Yasuaki Kai, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 8, 1985, Ser. No. 700,112
Claims priority, application Japan, Feb. 13, 1984, 59-22779
Int. Cl.⁴ B32B *3/24*
U.S. Cl. 428—138 **7 Claims**



1. A nonreflective and limitatively light-transmitting board suitable for use as a front cover of a vehicle instrument panel, the board comprising:

a transparent plate having a front major surface which is finished to a surface roughness in the range from 0.15 to 0.40 μm so as to become a diffusely reflective surface; and

an opaque shade film which is bonded to the back major surface of said transparent plate and is formed with a number of substantially uniformly distributed light-transmitting holes which are circular or polygonal in cross-sectional shape, the ratio of the diameter, or the diameter of the inscribed circle, of said holes to the depth of said holes being greater than 0.23 and smaller than 0.5, the ratio of said diameter to the distance of each of said holes from every adjacent one of said holes being greater than 1.2 and smaller than 25.

4,567,083

MAGNETIC RECORDING MEDIUM

Hiroyuki Arioka, Saku; Masaharu Nishimatsu, Komoro, and Akio Watanabe, Usuda, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Oct. 16, 1984, Ser. No. 661,499
Claims priority, application Japan, Oct. 17, 1983, 58-192562; Oct. 17, 1983, 58-192563
Int. Cl.⁴ G11B *5/72*
U.S. Cl. 428—141 **13 Claims**

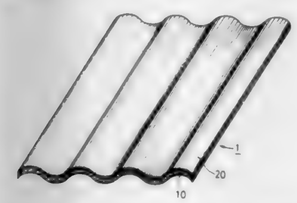
1. A magnetic recording medium comprising a magnetic layer formed on a plastic base and having a perpendicular magnetic anisotropy suited for perpendicular magnetization, a back coating being formed on the side of the base opposite the magnetic side, said back coating being a thermoset coating cured from a thermosetting composition comprising a vinyl chloride-vinyl acetate-vinyl alcohol copolymer, a polyurethane resin, and a polyisocyanate, or a radiation-cured coating cured from a radiation-curable composition containing at least one component having at least one acrylic, maleic, or allylic double bond, said back coating having an asperity in the range of 0.04 to 0.6 μm and wherein the asperity of the magnetic layer is of not more than 0.08 μm.

4,567,084

MULTILAYERED CORRUGATED ROOFING

Lin Juei Jse, 4th Fl., No. 37-39, Sec. 2, Shih Chuan Rd., Panchiao City, Taiwan

Filed Mar. 12, 1964, Ser. No. 588,943
Int. Cl.⁴ D06N *7/04;* **B32B** *3/28, 3/30;* **B05D** *3/02*
U.S. Cl. 428—150 **16 Claims**



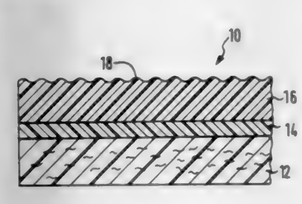
1. A multilayered corrugated roofing comprising:
a corrugated heat proof substrate; and
an exterior layer of a coherent substance on the top surface of said substrate, said dried substance constituted of effective amounts of dolomite, magnesite, and white cement.

4,567,085

FLOOR COVERING, ESPECIALLY FOR AIRPLANES

Mathias Gey, Buxtehude; Jürgen Grote, Hamburg; Horst Pittel, Munich; Gerd W. Samol, Heimenkirch, and Rainer Zelt, Lindau, all of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

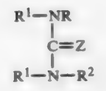
Filed Feb. 8, 1984, Ser. No. 578,280
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 3304232
Int. Cl.⁴ B32B *3/30, 25/02, 25/08, 25/20*
U.S. Cl. 428—163 **14 Claims**



1. Floor covering, comprising a substrate in the form of a resin based laminate having reinforcing fibers disposed therein, and a layer of fire-resistant polysiloxane composition vulcanized on the surface of said laminate, said polysiloxane composition comprising
(a) a diorganopolysiloxane of the formula

$$R_n'SiO_{\frac{4-n}{2}}$$

in which n is 1.9 to 2.05, and R^1 is an alkyl, alkenyl and/or aryl radical with 1–8 C-atoms,
(b) a finely divided silicic acid,
(c) finely divided TiO_2 with a surface area, measured by the BET method, greater than 20 m^2/g and a particle size less than 0.5 μm,
(d) platinum and/or one of its sulphur-free compounds,
(e) a curing agent, and
(f) a nitrogen compound selected from the group consisting of uric acid, guanine, melamine and a compound of the general formula



in which
R is H, phenyl, alkyl with 1–6 C atoms, tolyl, nitrile, $—NHR^2$, $—CH_2OR^2$, $—CH_2COOR^2$, $—C(=NH)NHR^2$, —CO—NH—R^2 or $(R^1)_2C—$,
R^1 is H, alkyl with 1–6 C atoms, $Si(CH_3)_3$— or R
R^2 is H or —CO—R and
Z is NH, O or NR, or a salt thereof.

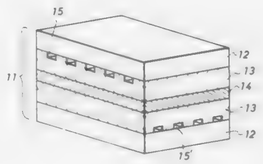
14. Floor covering according to claim 1, wherein said polysiloxane layer has an upper surface having grooves formed therein.

4,567,086

CARBONACEOUS, FIVE-LAYER FUEL CELL ELECTRODE SUBSTRATE WITH ELONGATED HOLES FOR FEEDING REACTANT GASES

Hiroyuki Fukuda; Masatomo Shigeta; Hisatsugu Kaji, all of Iwaki, and Kuniyuki Saitoh, Abiko, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1985, Ser. No. 718,382
Claims priority, application Japan, Apr. 4, 1984, 59-68059
Int. Cl.⁴ B32B *3/12, 9/00*
U.S. Cl. 428—166 **5 Claims**



1. An electrode substrate for fuel cells which comprises a porous carbonaceous layer, a dense carbonaceous layer having a bulk density larger than the porous layer, a separator, a dense carbonaceous layer having a bulk density larger than the porous layer, and a porous carbonaceous layer, and which further comprises a number of elongated holes for feeding reactant gases into a fuel cell in the interface between the porous layer and the dense layer.

4,567,087

SCUFF RESISTANCE IN ABRASION-RESISTANT LAMINATES

Robin D. O'Dell, Pasadena; Israel S. Ungar, and Herbert I. Scher, both of Randallstown, all of Md., assignors to Nevamar Corporation, Odenton, Md.

Filed Jun. 28, 1983, Ser. No. 508,629
The portion of the term of this patent subsequent to Dec. 12, 2002, has been disclaimed.
Int. Cl.⁴ B32B *3/00, 7/14, 5/18, 9/06*
U.S. Cl. 428—211 **20 Claims**

1. In a decor sheet for use as a decorative facing sheet in the manufacture of abrasion-resistant decorative laminates, said decor sheet having thereon an ultra-thin facing layer comprising abrasion-resistant particles and sufficient binder material for said particles to bind said abrasion-resistant particles to the surface of said decor sheet, said decor sheet being imprenated with a thermosetting resin compatible with said binder material, the improvement wherein
said ultra-thin layer also contains a solid, particulate lubricant, having a melting point of at least 140° F., in an amount sufficient such that, during use of the decor sheet

to make decorative laminate, the particular lubricant melts and blooms to the surface thereby providing an abrasion-resistant laminate having simultaneously good clarity, excellent abrasion resistance and improved stain and scuff resistance, with the proviso that said solid lubricant is not an oxidized wax or a silicone resin.

18. In a method of producing an abrasion-resistant decorative laminate from at least one backing layer and a thermosetting resin impregnated decor facing sheet, said laminate having enhanced abrasion resistance without an overlay layer, the method comprising providing a decorative facing sheet with an ultra-thin layer of abrasion-resistant particles and sufficient binder material for said particles to bind said particles to the suffface of said decor sheet and with an impregnant of a polyester or melamine-formaldehyde thermosetting resin; assembling said resin-impregnated and coated decor sheet over said backing layer; and subjecting said assembly to heat and pressure to consolidate said backing layer and said decor sheet to thereby provide said abrasion-resistant decorative laminate; the improvement wherein
said ultra-thin wet layer further includes a solid, particulate lubricant, having a melting point of at least 140° F., in an amount sufficient such that during said consolidation step, the particulate lubriant melts and blooms to the surface thereby providing an abrasion-resistant laminate having simultaneously good clarity, excellent abrasion resistance and improved stain and scuff resistance, with the proviso that said solid lubricant is not an oxidized wax or a silicone resin; wherein said consolidation step is carried out at a temperature greater than the melting temperature of said solid, particulate lubricant.

19. A method according to claim 18, wherein said decorative facing sheet is provided with said ultra-thin layer and with said impregnant by the steps of
coating said decorative facing sheet with said ultra-thin layer of said abrasion-resistant particles and said binder material in a wet layer, drying said wet layer on said decor sheet at a temperature of about 170°–190° F. but less than the melting temperature of said solid, particulate lubricant and thereby providing a dried ultra-thin layer in which said abrasion-resistant particles are bound to the surface of said decor sheet by said binder material, and impregnating said coated decor sheet with said thermosetting resin impregnant; and
wherein said solid particulate lubricant is a polyethylene wax having a particle size less than 30 microns, having a melting temperature of less than 260° F. and preferably 220°–230° F.

4,567,088

SANDWICH MATERIAL

Bengt G. Skogman; Hans T. Svensson, and Eduardo E. Torres, all of Karlstad, Sweden, assignors to Karlstad Vulk and Montage Aktiebolag, both of Karlstad, Sweden

Filed Oct. 23, 1984, Ser. No. 664,394
Claims priority, application Sweden, Nov. 11, 1983, 8306207
Int. Cl.⁴ B32B *7/02, 27/40*
U.S. Cl. 428—213 **15 Claims**



1. A shock absorbing and resilient composite comprising a first layer of predetermined thickness consisting essentially of a polymeric substance having a hardness of between 85° and 100° Shore A; a second layer of predetermined thickness consisting essentially of a rubber having a hardness of between 50° and 70° Shore A, but softer than said first layer; and a third layer of predetermined thickness consisting essentially of a rubber having a hardness of between 20° and 50° Shore A, but softer than said second layer; said second layer disposed between said first and said third layers; said second layer having a thickness greater than or equal to the thickness of said first layer and less than or equal to three times the thickness of said first layer; said third layer having a thickness greater than or equal to the thickness of said second layer and less than or equal to three times the thickness of said second layer.

15. A shock absorbing element to be arranged under a conveyor belt at the area of loading comprising a carrier provided with a shock absorbing coating facing the bottom side of the conveyor belt; said shock absorbing coating comprising a first layer of predetermined thickness consisting essentially of a polymeric substance having a hardness of between 85° and 100° Shore A, a second layer of predetermined thickness consisting essentially of a rubber having a hardness of between 50° and 70° Shore A, but softer than said first layer, and a third layer of predetermined thickness consisting essentially of a rubber having a hardness of between 20° and 50° Shore A, but softer than said second layer, said second layer disposed between said first and third layers, said second layer having a thickness greater than or equal to the thickness of said first layer and less than or equal to three times the thickness of said first layer, said third layer having a thickness greater than or equal to said second layer and less than or equal to three times the thickness of said second layer; said third layer adjacent said carrier.

4,567,089

THERMOFORMING PROPYLENE POLYMER LAMINATED SHEET

Satoru Hattori; Takao Yazaki; Kazuhide Hattori; Koji Nishida; Hideki Hattori, and Kazumasa Fujimura, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1984, Ser. No. 633,458
Int. Cl.⁴ B32B *7/02*
U.S. Cl. 428—213 **19 Claims**

1. A thermoforming propylene polymer laminated sheet consisting essentially of:
at least two layers, at least one of which is a surface layer A having a thickness of from 0.5 to 45% of the total thickness of the sheet, and wherein at least one other layer is layer B having a thickness of from 55 to 99.5% of the total thickness of the sheet, said layer A comprising from 100 to 95% by weight of a crystalline propylene polymer having a melt flow rate of from 1 to 8 g/10 min, a propylene content of at least 95% by weight and a Q value of at least 3.5 and from 0 to 5% by weight of an inorganic or organic nucleating agent, and said layer B being of a composition having a melt flow rate of no more than 2 g/10 min and comprising from 40 to 95 parts by weight of a resin component and from 60 to 5 parts by weight of an inorganic filler, said resin component comprising from 5 to 85% by weight of a crystalline propylene polymer having a Q value of at least 8 and from 95 to 15% by weight of an ethylene polymer having a Q value of no more than 9.

4,567,090

HEAT-RESISTANT LAMINATE FILM

Masaki Ohya, and Yoshihiro Matsukura, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1985, Ser. No. 721,793
Claims priority, application Japan, Aug. 21, 1979, 54-106584; Jul. 25, 1983, 58-124646; Apr. 11, 1984, 59-72433
Int. Cl.[4] B32B *7/02*
U.S. Cl. 428—214 5 Claims

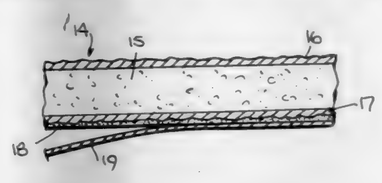
1. A heat-resistant laminate film comprising a gasbarrier layer of a copolymer of vinylidene chloride and at least one comonomer copolymerizable with vinylidene chloride, outer layers of polypropylene and two adhesive layers of polyolefin modified by acid and thermoplastic polyurethane disposed between any of the above layers and bonded with each other, the modified polyolefin adhesive layer being bonded to the outer layer and the thermoplastic polyurethane adhesive layer being bonded to the gas-barrier layer.

4,567,091

ADHESIVE SPORTS TAPE

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Jun. 27, 1985, Ser. No. 749,387
Int. Cl.[4] D03D *13/00*; B32B *1/00, 5/14*
U.S. Cl. 428—222 7 Claims



1. A sheath formed on a handle by helically winding an adhesive sports tape thereon in superposed convoluted layers to pneumatically cushion the handle, said tape comprising a flexible band having an open-cell foam plastic core and opposing facing skins integral with the core, the inner skin being coated with a layer of pressure-sensitive material, the skins being gas-impermeable and the cells in the core being filled with gas which is entrapped within the tape by the skins whereby when the sheath formed by the tape is compressed by the hand of the user, the gas is then compressed; and when the manual pressure is released, the expanding gas causes the sheath to rebound.

4,567,092

COMPOSITE MATERIAL AND ITS APPLICATION TO REINFORCEMENT IN INSULATING PANELS

Yves Catrain; Claude Guerrier, both of Brignoud, and Jacques Revol, Eaubonne, all of France, assignors to SCAL Societe de Conditionnements en Aluminium, Paris, France

Filed Oct. 7, 1983, Ser. No. 539,950
Claims priority, application France, Oct. 11, 1982, 82 17333
Int. Cl.[4] B32B *7/00*; D03D *3/00*; D04B *1/00*; D04H *1/00*
U.S. Cl. 428—246 4 Claims

1. A composite material comprising:
(i) an aluminum sheet, and
(ii) a reinforcement means formed of a fabric of glass mono- or multifiber yarn or an organic material;
wherein the aluminum sheet is bound to the reinforcement means by a thermofusible composition comprising an ethylene copolymer, polypropylene or a polypropylene copolymer; wherein the thermofusible composition further comprises a fire-resistant agent which is at least one member selected from the group consisting of a bromo-aromatic derivative, a chloro-organic derivative, aluminum trihydrate, antimony trioxide and an antioxidizing agent; said fire-resistant agent being used in an amount of 70 to 90% by weight in the thermofusible composition.

4,567,093

RUBBER COATED FABRIC

Yoji Sogabe, Ashikaga; Katsumi Uchida, Ohta, and Kunihiko Harada, Ashikaga, all of Japan, assignors to Achilles Corporation, Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 488,010
Int. Cl.[4] B32B *25/10, 25/02, 5/28*
U.S. Cl. 428—250 1 Claim

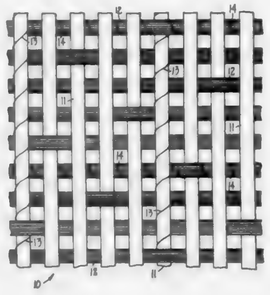
1. A rubber coated fabric comprising a base fabric and a coating material laminated on at least one side of said base fabric, said coating material comprising as its main ingredients, a product of reaction between liquid rubber and polyisocyanate wherein dusting powder is applied to the surface of said coating material, and said dusting powder is a reactive dusting powder containing a hydroxyl group capable of reacting with said polyisocyanate.

4,567,094

HIGH CONDUCTIVITY GRAPHITE MATERIAL AND METHOD OF WEAVING

Jordan Levin, Winona, Minn., assignor to Fiberite Corporation, Winona, Minn.

Division of Ser. No. 217,707, Dec. 18, 1980. This application Mar. 19, 1984, Ser. No. 590,640
Int. Cl.[4] D03D *15/00, 15/02*
U.S. Cl. 428—256 12 Claims



1. A method for preparing a woven, drapable, electrically conductive graphite fabric having warp elements and fill elements which comprises the steps of:
(a) Forming an electrically conductive weavable multifilament graphite element by wrapping around a parent multifilament graphite element, having from about 1,000 to about 200,000 graphite fibers, at least one electrically conductive filament having a diameter substantially less than the largest cross-section dimension of the multifilament graphite element, the electrically conductive filament thereby being combined with the graphite element such that the resultant composite graphite element member retains the high stiffness of the parent multifilament graphite element; and
(b) weaving the electrically conductive weavable multifilament graphite element with multifilament graphite elements which have not been wrapped with a conductive filament such that every electrically conductive weavable multifilament graphite element is immediately adjacent to a parallel, relatively non-conductive multifilament graphite element.

4,567,095

ASPHALT FOAM

Joseph A. Cogliano, Pasadena, Md., assignor to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 646,779, Sep. 4, 1984, Pat. No. 4,524,156. This application May 14, 1985, Ser. No. 734,009
Int. Cl.[4] B32B *3/26, 5/18*
U.S. Cl. 428—314.4 6 Claims

1. An insulated structure having a waterproofing layer and an insulating layer applied to its surface, the improvement comprising that said insulating layer is a porous structure comprising a foam of closed cellular configuration formed from a substantially homogeneous blend of from about 80 to 120 parts by weight asphalt and from about 5 to 25 parts by weight of a polyvalent metal salt of an anionic group containing polymer selected from polyvalent metal salt neutralized sulfonated polymers or neutralized carboxylated polymers; said foam having a bulk density of less than about 9 pounds per cubic foot and a pore volume of at least about 85 percent.

4,567,096

HYDRATED ALUMINA BINDER SYSTEM

Douglas H. Pittingsrud, and John C. S. Shen, both of Rochester, Minn.

Filed Mar. 21, 1985, Ser. No. 714,331
Int. Cl.[4] G11B *5/70*
U.S. Cl. 428—315.5 6 Claims

1. A rigid magnetic recording medium having finely divided magnetic particles dispersed in a thermosetting resin binder composition applied as a film having a thickness not exceeding one micron in thickness, closely adhered to a rigid nonmagnetic substrate wherein the coating composition includes 50 to 80 percent by weight of magnetic particles, 20 to 50 percent by weight of binder and comprises

finely comminuted hydrated alumina which release a controlled quantity of hydrated water molecules between 200° F. and 360° F. in a concentration of 1% to 5% by weight of magnetic particles;

said binder is formed of a blocked isocyanate that becomes deblocked at a temperature of 250 to 300 degrees F. and an oligomer wherein the NCO-OH ratio is 1.1 to 1.5, an additive for controlling porosity size in the cured binder which comprises 0.5% to 3% by weight of the total binder system; and

said coating composition is applied to said substrate and cured at 300 to 400 degrees F. until the cross linking reaction is complete, whereby the cured thermoset coating possesses liquid lubricant retention capability as a high porosity open cell structure wherein the individual voids do not exceed the magnetic bit cell size.

4,567,097

COMPOSITE HEAT-INSULATING MATERIAL

Takao Yazaki; Kazuhide Hattori; Takumi Matsuno; Kazuhide Hayama; Isao Ito, and Yukio Saito, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd. and Mitsubishi Yuka Fine Chemical Co., both of Tokyo, Japan

Filed Jan. 10, 1985, Ser. No. 690,253
Claims priority, application Japan, Jan. 12, 1984, 59-3800; Jun. 21, 1984, 59-128216
Int. Cl.[4] B32B *3/26, 7/12, 27/04*
U.S. Cl. 428—317.7 9 Claims



1. A composite heat-insulating material having the structure that an olefin- or styrene-based resin and a urethane foam are laminated with an adhesive, said adhesive comprising
(A) 20 to 100% by weight of a water-soluble or water-dispersible carboxyl group-containing polyolefin-based polymer;
(B) 0 to 80% by weight of a nitrogen-atom containing water-soluble polymer having an antistatic property; and
(C) 0 to 2% by weight of a fluorine-based surface active agent.

4,567,098

METALLIZED PAPER AND METHOD OF ITS PRODUCTION

Franz-Josef Becker; Erich Hübner, and Walter Lammerich, all of Bergisch Gladbach, Fed. Rep. of Germany, assignors to Zanders Feinpaiere AG, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,216
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1982, 3225658
Int. Cl.[4] B32B *23/08, 27/10, 15/10, 15/12*
U.S. Cl. 428—327 19 Claims

1. A high gloss metallized paper whose metal layer is deposited onto a non-enamelled cast-coated paper by evaporation in vacuo, said paper having a cast coating containing mineral pigments, synthetic polymer pigments, latex binders and conventional additives and being characterized in that the cast coating is made with a coating material having a pH value >7 and is present in an amount of 15–30 g/m^2, that the cast coating contains per 100 parts by weight of pigments from 95 to 20 parts by weight of mineral pigments and from 5 to 80 parts by weight of synthetic polymer pigment and that for each 100 parts by weight of pigment there are present 5–25 parts by weight of a film-binding binder, said metal layer being directly on said cast coating.

8. The metallized paper according to claim 7, characterized in that the cast coating contains up to 25 percent by weight of plasticizers relative to the synthetic polymer pigment.

4,567,099

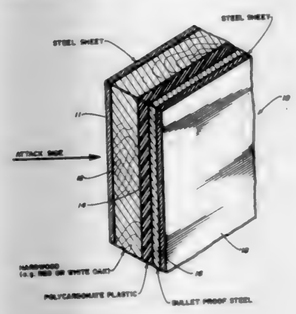
HIGH SOLIDS LATEXES FOR PAPER COATINGS

Ron L. Van Gilder, and Do I. Lee, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 21, 1984, Ser. No. 684,876
Int. Cl.[4] B32B *27/10*
U.S. Cl. 428—327 24 Claims

1. A high solids formulation for coating paper which comprises an aqueous medium having dispersed therein a functionally effective amount of a finely divided mineral filler and a high solids synthetic bimodal latex comprising two separate and distinct particle size distributions and comprising in polymerized form open chain conjugated diene and alkenyl mononuclear aromatic monomers; wherein each of said distributions comprises particles which are substantially uniform in diameter such that said latex, when mixed with said filler in said aqueous medium, provides a coating formulation which approaches a viscosity which is no longer manageable at a higher solids content than that solids content exhibited by a formulation comprising an aqueous medium, a filler and a monodisperse or highly multi-disperse latex; whereby the small latex particles of said distribution of the bimodal latex provides an increase in the solids content and a decrease in viscosity at high shear of the formulation over that of a formulation comprising a monodisperse latex of a particle size similar to that of the large latex particle distribution of the bimodal latex; and whereby the large latex particle distribution of the bimodal latex are heterogeneous in nature and are capable of increasing the solids content of the formulation at low shear over that of a formulation comprising a monodisperse latex of a particle size similar to that of the small latex particle distribution of the bimodal latex.

4,567,100
FORCED ENTRY AND BALLISTIC RESISTANT LAMINAR STRUCTURE
Teddy L. Pickett, and Gary R. Cook, both of Ventura, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 22, 1983, Ser. No. 525,340
Int. Cl.⁴ E04B *2/02*
U.S. Cl. 428—339 12 Claims



1. A composite laminar panel structure capable of resisting penetration from attack by cutting tools, heat, small arms, projectiles and explosive forces, consisting in order of sequence from an attack side to the back side of the panel structure:
a. a first relatively thin metal sheet which faces the direction of attack;
b. a relatively thick layer of penetration and flame resistant hardwood disposed behind and adhered to said first metal sheet; said hardwood layer being chemically treated to reduce flamability thereof and delay thermal attack tools;
c. a high ballistic resistant and flame resistant plastic sheet disposed and adhered to said panel of hardwood;
d. a second metal sheet consisting of a relatively thin layer of armor plate metal disposed behind and adhered to said high ballistic resistant plastic layer; said sequence of materials laminated in said specific order from the attack side of the panel structure providing a laminar wall system having higher penetration resistance over comparable thickness and weight prior ballistic resistant wall structures.

4,567,101
FERRIMAGNETIC SPINEL FIBERS
Lawrence D. David, Florham Park, and Richard M. Arons, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.
Division of Ser. No. 487,400, Apr. 21, 1983, Pat. No. 4,485,085.
This application Sep. 26, 1984, Ser. No. 654,474
Int. Cl.⁴ D02G *3/00*
U.S. Cl. 428—364 3 Claims

1. Ferrimagnetic spinel fibers comprising ferrite particles corresponding to the formula:

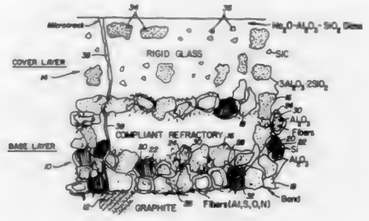
$$M_1Fe_2O_4$$

where M is manganese, iron, cobalt, nickel, copper, zinc, cadmium, magnesium, barium, strontium, or any combination thereof; and wherein the average size of the ferrite particles is less than about 1000 Angstroms.

4,567,102
HOT MELT SIZE
Jean-Claude Pollet, Granville; Gordon P. Armstrong, Newark, and Martin C. Flautt, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed May 24, 1984, Ser. No. 613,940
Int. Cl.⁴ B32B *9/00, 25/20*
U.S. Cl. 428—391 9 Claims

1. A glass fiber having on its surface a coating consisting of an ethylene-ethylacrylate copolymer, a low molecular weight polyethylene wax, a phenolic-modified terpene resin, and an organosilane.

4,567,103
CARBONACEOUS ARTICLES HAVING OXIDATION PROHIBITIVE COATINGS THEREON
Raymond V. Sara, Parma, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.
Continuation-in-part of Ser. No. 518,192, Jul. 28, 1983, abandoned. This application Jul. 12, 1984, Ser. No. 628,516
Int. Cl.⁴ B32B *9/00;* B05D *3/02, 5/12*
U.S. Cl. 428—408 102 Claims



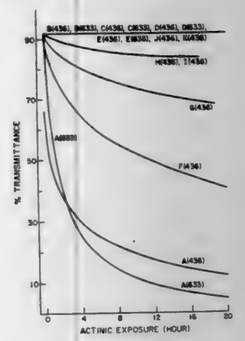
1. An article comprising a carbonaceous substrate and an oxidation prohibitive coating overlying and bonded to said substrate, said coating comprising a compliant, low strength, porous, particulate, sintered, ceramic, refractory material containing mullite as a major ingredient.

12. An article comprising a carbonaceous substrate and an oxidation prohibitive coating thereon, said coating comprising a base layer overlying and bonded to said substrate, said base layer being composed of a compliant, low strength, porous, sintered, particulate, ceramic, refractory material containing mullite as a major ingredient, said material having a tensile strength which is substantially less than the shear strength of the interfacial bond between said base layer and said substrate, and a cover layer overlying and bonded to said base layer comprising a rigid, glassy substance which is plastic and flowable at temperatures above about 750° C.

4,567,104
HIGH ENERGY BEAM COLORED GLASSES EXHIBITING INSENSITIVITY TO ACTINIC RADIATION
Che-Kuang Wu, Riverside, Calif., assignor to Canyon Materials Research & Engineering, Riverside, Calif.
Filed Jun. 24, 1983, Ser. No. 507,681
Int. Cl.⁴ C03C *15/00*
U.S. Cl. 428—410 114 Claims

1. A glass article comprising a body portion and an integral ion-exchanged surface layer (IIES layer), said glass article exhibiting the following properties:
(a) sensitivity to high energy beams; and
(b) insensitivity to at least a spectral portion of actinic radiation, and being insensitive to radiation of shorter wavelengths as concentration of TiO_2 in chloride containing glass composition of the glass article increases;
said body portion composed of a glass composition consisting essentially of, in mole percent on the oxide basis,
5–25% of one or more alkali metal oxides,

at least 1.5% TiO_2, but not exceeding 35% TiO_2, the composition containing at least an effective amount of TiO_2 to render the IIES layer insensitive to at least a spectral portion of actinic radiation,
up to 20% MgO,
up to 20% CaO,
up to 20% ZnO,
up to 15% Al_2O_3,
up to 20% PbO,
up to 20% BaO,
up to 25% B_2O_3,
up to 25% P_2O_5,
2–35% of at least one acid-durability-and-glass-network-strengthener (ADAGNS) selected from the group consisting of MgO, ZnO, Al_2O_3, PbO, and CaO,



up to 4% F,
up to 2% Br,
up to 2% I,
up to 6% Cl, and
50–89% SiO_2,
said IIES layer composed of a surface layer of said glass composition that has been ion exchanged with an acidic aqueous solution containing soluble ionic silver to diffuse silver ions into said IIES layer to render said IIES layer sensitive to high energy beams, said IIES layer comprising,
silver ions, and
water in a concentration greater than about 0.01% by weight H_2O.

4,567,105
MULTILAYER POLYCARBONATE ARTICLE
Harold F. Giles, Jr., Cheshire, Mass., assignor to General Electric Company, Mt. Vernon, Ind.
Filed Jul. 13, 1984, Ser. No. 630,870
Int. Cl.⁴ B32B *27/08, 27/36*
U.S. Cl. 428—412 9 Claims

1. A multilayer composition comprising an outer layer of aromatic polycarbonate, an outer layer of a polymer prepared from an olefinic monomer, said outer layers tied together with a layer comprising an admixture of an olefin acrylate polymer and poly-(4-methylpentene-1), the olefin acrylate and poly-(4-methylpentene-1) in such quantities that the adhesive strength and clarity of the tie layer is not significantly reduced after exposure to hydrolytic conditions at elevated temperatures.

4,567,106
METHOD OF FORMING A COATING ON POLYOLEFIN SUBSTRATE
Takashi Sano; Kazuo Kawabata, both of Kyoto, and Yoji Miya, Shimamotocho, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan
Filed Mar. 1, 1985, Ser. No. 707,129
Claims priority, application Japan, Mar. 7, 1984, 59-44733
Int. Cl.⁴ B32B *27/38;* B05D *3/02;* B32B *27/40*
U.S. Cl. 428—413 11 Claims

1. In a method of forming a coating on a polyolefin substrate comprising the steps of applying a primer coating onto the substrate and then applying a finish coating thereon, the improvement wherein said primer coating consists essentially of a polyurethane prepolymer containing a plurality of terminal free isocyanate groups derived from a polypropylene glycol having a molecular weight from about 400 to about 2,000 and an excess of diphenylmethane diisocyanate.

4,567,107
ACRYLIC RESIN HAVING PENDANT SILANE GROUPS THEREON, AND METHODS OF MAKING AND USING THE SAME
Sidky D. Rizk, Westfield; Harry W. S. Hsieh, Rahway, and Michael P. Mazzeo, Hightstown, all of N.J., assignors to Essex Specialty Products, Inc., Clifton, N.J.
Division of Ser. No. 374,989, May 5, 1982, Pat. No. 4,491,650.
This application Aug. 15, 1984, Ser. No. 641,051
Int. Cl.⁴ B32B *27/40;* B05D *3/02;* D05D *1/36*
U.S. Cl. 428—425.5 18 Claims

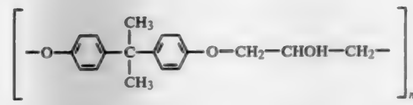
1. A method for forming a tenacious coating, resistant to weathering, on a substrate, which method comprises applying to said substrate a resinous composition comprising a poly(-meth)acrylate polymer having pendant hydrolyzable alkoxysilane groups grafted thereon, said poly(meth)acrylate polymer being a copolymer consisting essentially of one or more hydroxyalkyl acrylates or methacrylates and one or more alkyl acrylates or methacrylates, and then hydrolyzing said pendant hydrolyzable alkoxysilane groups in the presence of moisture.

4,567,108
MAGNETIC RECORDING MEDIA
August Lehner, Roedersheim-Gronau; Helmut Kopke, Weisenheim; Hermann Roller, Ludwigshafen; Werner Balz, Limburgerhof; Werner Grau, Bobenheim-Roxheim; Eberhard Koester, Frankenthal, and Friedrich Sommermann, Kehl, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Nov. 19, 1984, Ser. No. 672,635
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1983, 3341699
Int. Cl.⁴ G11B *5/70*
U.S. Cl. 428—425.9 1 Claim

1. A magnetic recording medium which consists of a non-magnetic base which is provided with a magnetic layer consisting of finely divided anisotropic magnetic material dispersed in binders and additives, and in which the binder is a mixture based on an OH-containing polyurethane, which is crosslinked with polyisocyanates, and further physically drying binders, wherein the binder mixture consists essentially of the components
1. from 20 to 70% by weight of a high molecular weight thermoplastic linear polyurethane which has a molecular weight of from 40,000 to 150,000, is soluble in tetrahydrofuran and is prepared from
1A. 1 mole of a polyesterol having a molecular weight of from 400 to 4,000,
1B. from 0.3 to 15 moles of a straightchain aliphatic diol of 2 to 10 carbon atoms,
1C. from 0 to 1.5 moles of a triol of 3 to 10 carbon atoms and
1D. from 1.25 to 17 moles of diisocyanate of 6 to 30 car-

bon atoms, the amount of NCO groups being roughly equivalent to the total amount of OH groups in components 1A to 1C, with the proviso that an unpigmented film formed of component 1 has a tensile strength of from 40 to 95 N/mm^2 and an elongation at break of from 100 to 1400%,

2. from 5 to 35% by weight of a polyvinylformal binder containing not less than 65% of vinylformal groups, or of a copolymer of from 50 to 95% by weight of vinyl chloride and from 5 to 50% by weight of a mono- or diester of an aliphatic diol of 2 to 4 carbon atoms with acrylic acid or methacrylic acid, or of a phenoxy resin of the formula



where n is about 100, or of a diester and/or a triester of cellulose with one or more carboxylic acids of 1 to 4 carbon atoms, or of a copolymer of 91% of vinyl chloride base units, 3% of vinyl acetate base units and 6% of vinyl alcohol base units, and

3. from 5 to 50% by weight of a low molecular weight OH-containing polyurea-urethane which contains not less than 4 OH groups, has an OH number of from 30 to 130 and a molecular weight of from 2,000 to 30,000 and is prepared from

3.1A 1 mole of a polydiol having a molecular weight of from 400 to 4,000,

3.1B from 0.2 to 10 moles of a diol of 2 to 18 carbon atoms,

3.1C from 0.1 to 4 moles of a primary or secondary aminoalcohol of 2 to 20 carbon atoms,

3.1D from 0 to 1 mole of a triol and

3.1I from 1.20 to 13 moles of a diisocyanate of 6 to 30 carbon atoms, the amount of NCO groups of the diisocyanate being from 65 to 95%, based on components 3.1A to 3.1D, of the number of equivalents of OH and NH groups, with the provision that an unpigmented film formed from component 3 readily undergoes plastic deformation at 70° C. under superatmospheric pressure.

4,567,109

MAGNETIC RECORDING MEDIA

August Lehner, Roedersheim-Gronau; Milan Velic, Ludwigshafen; Helmut Kopke, Weisenheim; Werner Balz, Limburgerhof; Werner Lenz, Bad Durkheim; Reinhold Baur, Offenburg, and Milena Meizer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 20, 1983, Ser. No. 515,463

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227161; Jul. 21, 1982, 3227163

Int. Cl.⁴ G11B *5/70*

U.S. Cl. 428—425.9 **4 Claims**

1. A magnetic recording medium which comprises a magnetic layer which is applied to a non-magnetic base and consists essentially of a dispersion of an anisotropic magnetic material in a mixture of an OH-containing polyurethane compound, which has been finally crosslinked with a polyisocyanate, and a physical drying binder, wherein the binder mixture consists essentially of

Component 1, which is a low molecular weight OH-containing polyurea-urethane which has an OH number of from 30 to 160 and an average number molecular weight of 1,500 to 40,000 and is obtained from

1.IA 1 mole of a polydiol having a molecular weight of from 400 to 4,000,

1.IB from 0.2 to 10 moles of a diol of 2 to 18 carbon atoms,

1.IC from 0.1 to 4 moles of a primary or secondary aminoalcohol of 2 to 20 carbon atoms, and

1.II from 1.20 to 13 moles of a diisocyanate of 6 to 30 carbon atoms, the proportion of NCO groups in the diisocyanate being from 65 to 95%, based on Components 1.IA to 1.IC, of the equivalent amount of OH and NH groups, with the proviso that the non-pigmented crosslinked film has a tensile strength greater than 15 N/mm^2, an elongation at break greater than 50%, a modulus of elasticity greater than 150 N/mm^2 and a pendulum hardness of from 30 to 140 sec,

and Component 2, which is a physically drying binder.

4,567,110

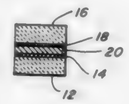
HIGH-TEMPERATURE BRAZED CERAMIC JOINTS

Philip O. Jarvinen, Amherst, N.H., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 93,576, Nov. 13, 1979, abandoned. This application Jul. 17, 1981, Ser. No. 284,583

Int. Cl.⁴ C23C *15/00;* **B32B** *15/04;* **B23K** *1/04*

U.S. Cl. 428—433 **4 Claims**



1. In the formation of a brazed ceramic joint suitable for use at temperatures over 1,000° C., the improvement of employing a metallized ceramic produced by vacuum sputtering substantially pure unalloyed nickel onto an aluminum oxide ceramic.

4,567,111

CONDUCTIVE PIGMENT-COATED SURFACES

Daniel S. Janikowski, Lake Geneva, Wis., and Ming S. Shum, Des Plaines, Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 439,166, Nov. 4, 1982, abandoned. This application May 14, 1984, Ser. No. 609,926

Int. Cl.⁴ H01B *1/02, 1/04*

U.S. Cl. 428—457 **18 Claims**

1. A conductive, water-resistant, pigment-coated surface wherein the coating comprises an alloy of a non-noble conductive metal and at least one oxidizable material in admixture with a lead alloy.

10. A process for the preparation of a conductive water-resistant, pigment-coated surface which comprises alloying a non-noble conductive metal with at least one oxidizable material, admixing the thus-formed alloy with a lead alloy, mixing the resultant admixture with an organic vehicle to form an ink, screening said ink onto a substrate, thereafter firing said ink in an oxidizing atmosphere at a temperature in excess of about 1000° F. for a period of time sufficient to oxidize said oxidizable material with oxidation of said non-noble metal, cooling the thus-fired product, and recovering the resultant conductive water-resistant, pigment-coated surface.

4,567,112

FLEXIBLE FOIL MATERIAL OR LAMINATE, PARTICULARLY FOR SOFT PACKAGING AND CAPPING

Marcel Bernhard, Selestat, France, assignor to Societe Alsacienne d'Aluminium, Saint Julien en Genevoix, France

Filed Apr. 5, 1984, Ser. No. 597,034

Claims priority, application France, Dec. 26, 1983, 83 20758

Int. Cl.⁴ B32B *15/08, 27/32*

U.S. Cl. 428—461 **5 Claims**

1. A flexible foil material or laminate useful for soft packaging and capping comprising a layer of synthetic material disposed between two thin aluminum foils, said synthetic material

comprising amorphous polypropylene or a composition containing amorphous polypropylene wherein said composition further contains a material selected from the group consisting of a soft microcrystalline wax, a terpolymer of ethylene, acrylic acid and acrylic acid ester and mixtures thereof wherein said layer has a basic weight of between 20 and 40 g/m2.

4,567,113

HEAT-SENSITIVE TRANSFERRING RECORDING MEDIUM

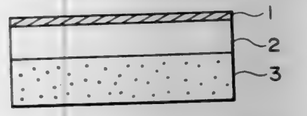
Tadatoshi Ohtsu, Hirakata, and Takashi Yamahata, Koriyama, both of Japan, assignors to General Company Limited, Osaka, Japan

Filed Sep. 6, 1984, Ser. No. 647,753

Claims priority, application Japan, Sep. 12, 1983, 58-140207[U]; Oct. 3, 1983, 58-184652; Mar. 21, 1984, 59-52416

Int. Cl.⁴ B41M *5/26*

U.S. Cl. 428—480 **12 Claims**



1. A heat-sensitive transferring recording medium which comprises a base film, a heat melting ink layer provided on the under surface of the base film, and a conveyance improving layer provided on the upper surface of the base film, said conveyance improving layer comprising a member selected from the group consisting of

(1) fatty acids,

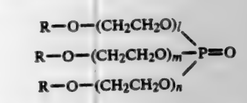
(2) fatty acid derivatives,

(3) fatty alcohols,

(4) alkali metal salts of mono- or di-alkyl phosphoric acid esters having 8–18 carbon atoms,

(5) polyester copolymers having a molecular weight of 3000 or more prepared by polycondensation of (a) an aromatic dicarboxylic acid compound or an aliphatic dicarboxylic acid compound, (b) a diol having 2–4 carbon atoms, and (c) a polyethyleneglycol compound of a molecular weight of 2000 or more,

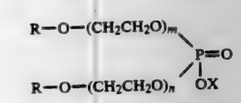
(6) tri(polyoxyethylenealkyl or alkenyl ether) phosphoric acid esters of the formula,



(I)

where R is alkyl or alkenyl of C_8–C_{25}, and l m, and n are integers of 1–10,

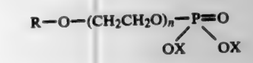
(7) phosphoric acid esters of the formula,



(II)

where R, m and n are as defined above and X is hydrogen or alkali metal,

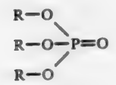
(8) phosphoric acid esters of the formula,



(III)

where R, n and X are as defined above,

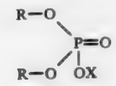
(9) phosphoric acid esters of the formula,



(IV)

where R is as defined above,

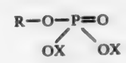
(10) phosphoric acid esters of the formula,



(V)

where R and X are as defined above, and

(11) phosphoric acid esters of the formula,



(VI)

where R and X are as defined above.

4,567,114

THERMAL DYE-TRANSFER TYPE RECORDING SHEET

Hiroyo Oshima; Isao Kano; Yutaka Kojima; Yoshihiko Shimura; Ken Ishiguro, and Koichi Nagai, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1983, Ser. No. 484,169

Claims priority, application Japan, Apr. 30, 1982, 57-71250

Int. Cl.⁴ B41M *5/26*

U.S. Cl. 428—480 **10 Claims**

1. Thermal dye-transfer type recording sheet having a coating layer, the coating layer being contacted with a coloring material layer containing sublimable dye on a substrate, the coloring material being selectively transferred onto the coating layer by heating, in which the coating layer comprises as a binder saturated polyester and as a pigment a precipitated calcium carbonate of at least 25,000 cm^2/g specific-surface-area measured by a permeability method.

4,567,115

PRESSURE IMPREGNATION OF WOOD POLES FOR PRESERVATION

William P. Trumble, Kanata, Canada, assignor to Bell Canada, Montreal, Canada

Continuation-in-part of Ser. No. 450,428, Dec. 16, 1982, abandoned. This application Jul. 30, 1984, Ser. No. 635,868

Int. Cl.⁴ B27K *3/36*

U.S. Cl. 428—541 **22 Claims**

1. A method of treating wood, comprising the step of exposing wood to an aqueous solution consisting essentially of water, hexavalent chromium, copper, arsenic and polyethylene glycol.

4,567,116

MAGNETIC RECORDING MEDIUM

Takeshi Sawada, Yokohama; Akira Shinmi, Kawasaki; Hiroshi Takagi, Yokohama; Kenji Suzuki; Fumio Kishi, both of Kawasaki, and Susumu Kozuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Tohoku Steel Co., Ltd., Miyagi, both of, Japan

Filed Jul. 27, 1984, Ser. No. 635,234

Claims priority, application Japan, Aug. 6, 1983, 58-144111; Aug. 6, 1983, 58-144112; Aug. 6, 1983, 58-144113

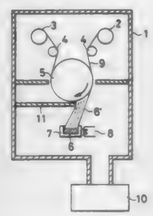
Int. Cl.⁴ G11B *5/64*

U.S. Cl. 428—694 **15 Claims**

1. A magnetic recording medium having a thin ferromag-

netic corrosion resistant metallic film formed by an oblique incidence deposition method, characterized in that a composition of the thin ferromagnetic metallic film is represented by the formula

$$(Fe_{1-x}Co_x)_{1-(a+b)}Ni_aX_b$$



wherein, X denotes Mn and/or Cu, x denotes a weight fraction satisfying $0<x<0.5$, a denotes a weight fraction satisfying $0.05<a<0.25$, and b denotes a weight fraction satisfying $0.01<b<0.20$.

4,567,117

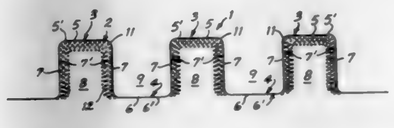
FUEL CELL EMPLOYING NON-UNIFORM CATALYST

Pinakin Patel, Danbury, Conn.; Dilip Dharia, Edison, N.J., and Hansraj Maru, Brookfield Center, Conn., assignors to Energy Research Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 396,399, Jul. 8, 1982, Pat. No. 4,467,050. This application Aug. 20, 1984, Ser. No. 642,375

Int. Cl.⁴ H01M *8/18*

U.S. Cl. 429—19 **20 Claims**



1. A fuel cell for receiving fuel having hydrocarbon content comprising:

an anode

a cathode

and means within said cell for reforming the hydrocarbon content of said fuel, said reforming means comprising: a passage in said cell, said passage having an input end for receiving said fuel and an output end; and a catalyst situated along the length of said passage between said input and output ends of endothermic reformation of said hydrocarbon content of said fuel, the amount and activity of said catalyst at points along said length being selected to promote uniform temperature distribution for said cell over said length.

4,567,118

CELL VENT

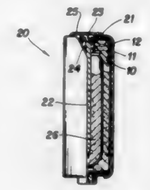
Robert L. Connelly, Pearl River, N.Y., assignor to Duracell Inc., Bethel, Conn.

Continuation of Ser. No. 512,806, Jul. 11, 1983, abandoned. This application Nov. 13, 1984, Ser. No. 671,056

Int. Cl.⁴ H01M *2/12*

U.S. Cl. 429—53 **13 Claims**

1. An electrochemical cell comprised of a cell container having an open end thereof closed by a sealing member having an aperture therein with a metal member extending therethrough, characterized in that an extrudible material substantially surrounds the portion of said metal member within said aperture and is sealingly engaged thereto, with said extrudible material adheringly securely sealingly engaging the wall defining said aperture; wherein said metal member is heat conductive whereby heat generated within the cell is conducted, by said metal member, to said extrudible material for softening thereof; and wherein a portion of said extrudible material is



interiorily exposed to pressure within said cell, and a cross sectional area of said softened extrudible material is sufficiently large to permit said extrudible material to extrude to relieve excessive internal pressure.

4,567,119

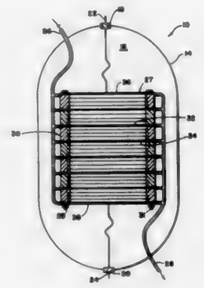
NICKEL-HYDROGEN BIPOLAR BATTERY

Hong S. Lim, Agoura, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Mar. 12, 1984, Ser. No. 588,620

Int. Cl.⁴ H01M *10/36*

U.S. Cl. 429—59 **18 Claims**



1. A bi-polar nickel-hydrogen battery comprising:

(a) a pressure vessel containing hydrogen gas; and

(b) a plurality of unit cells located within said pressure vessel, said unit cells being stacked adjacent one another for axial current flow wherein each unit cell comprises:

(1) walls defining a unit space;

(2) a hydrogen electrode located within said cell space;

(3) a nickel electrode located within said cell space having at least one opening extending therethrough to facilitate oxygen recombination by allowing oxygen gas evolved at said nickel electrode to reach said hydrogen electrode for recombination with hydrogen gas thereat to form water within said unit cell space and to prevent O_2 migration outside of the unit cell;

(4) a separator disposed between said nickel and hydrogen electrodes within said cell space having means for allowing oxygen gas evolved at said nickel electrode to reach said hydrogen electrode for recombination with hydrogen gas thereat and cooperating with the nickel electrode in preventing O_2 migration outside of the unit cell; and

(5) an electrolyte located in said cell space about said nickel and hydrogen electrodes and said separator to permit an electrochemical reaction between said nickel and hydrogen electrodes.

4,567,120

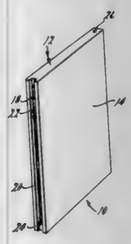
FLOW-THROUGH POROUS ELECTRODES

Jacob Jorne, Birmingham; Emad Roayaie, and Atul Shah, both of Detroit, all of Mich., assignors to Energy Development Associates, Inc., Greensboro, N.C.

Filed Oct. 1, 1984, Ser. No. 656,893

Int. Cl.⁴ H01M *4/00*

U.S. Cl. 429—72 **6 Claims**



1. An electrode assembly for metal-halogen pumped electrolyte battery comprising:

electrically conductive elongated bus member having generally opposing faces;

a porous unitary electrode having two generally planar opposing faces, each of which provide a reaction surface for electron-transfer reactions of the same polarity;

said electrode being generally rectangular and defining lengthwise and widthwise dimensions;

said porous electrode being connected by means of interference fit to one of said opposing faces of said bus member such that said lengthwise and widthwise dimensions are orthogonal to said bus member;

said porous electrode having first and second parallel sides extending lengthwise along said opposing faces, said first side contacting said bus member;

a channel formed along said first side and extending substantially the entire lengthwise dimension of said electrode, said channel having a barrier portion disposed in an end of said channel, said barrier portion cooperating with said bus bar to inhibit electrolyte flow through the bottom of said electrode;

a plurality of parallel passageways extending within the interior of said electrode and parallel to said widthwise dimension, said passageways communicating with said channel and terminating within the interior of said electrode and adjacent said second side;

a venting passageway extending within the interior of said electrode and parallel to said lengthwise dimension, said venting passageway communicating with said parallel passageways and adjacent said second side;

feed tube disposed at least partially within said channel for introducing electrolyte into said channel.

4,567,121

INSULATING SEAL FOR ELECTROCHEMICAL CELLS

Alexander Gilmour, Henley-On-Thames, England, assignor to Venture Technology Limited, Oxfordshire, England

Filed Jun. 5, 1985, Ser. No. 741,595

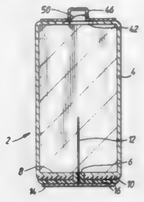
Claims priority, application United Kingdom, Jun. 8, 1984, 8414613

Int. Cl.⁴ H01M *2/02*

U.S. Cl. 429—181 **14 Claims**

1. An electrochemical cell including at least two electrically conductive parts which are sealed together by an organic polymer adhesive but electrically insulated from each other by a layer comprising aluminium oxide which is formed on a surface of one of the parts.

8. A method of sealing together electrically conductive parts of an electrochemical cell while retaining the said parts electrically insulated from each other, the method comprising the steps of forming a layer comprising aluminium oxide on a surface of one of the parts and adhering the parts together by



an organic polymer adhesive so that the layer electrically insulates the parts from each other.

4,567,122

PHOTOTROPIC MATERIALS

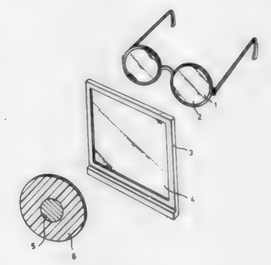
Peter J. Baldry, Surrey; John H. Collins, Essex; Daniel J. Morantz, Kent; Terence K. W. Overton, and David W. Wright, both of Essex, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, England

Filed Jan. 6, 1983, Ser. No. 456,283

Claims priority, application United Kingdom, Jan. 15, 1982, 8201127

Int. Cl.⁴ C09K *15/00*

U.S. Cl. 430—4 **13 Claims**



1. An irreversible phototropic material comprising a matrix of a polymeric material selected from the group consisting of polyvinyl chloride and the copolymer of vinyl chloride and vinylidene chloride in which is suspended a phototropic transition metal salt and an additive wherein the additive comprises a substance which inhibits the reduction of the transition metal in the transition metal salt from a higher to a lower oxidation level and thereby inhibits the production of haze in the phototropic material.

4,567,123

DIFFUSING PLATE

Keiji Ohtaka, Tokyo; Takashi Suzuki; Kiyoshi Iizuka, both of Yokohama, and Hidemasa Mizutani, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 514,306, Jul. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 351,991, Feb. 24, 1982, abandoned. This application Jan. 25, 1985, Ser. No. 694,910

Claims priority, application Japan, Mar. 11, 1981, 56-34712

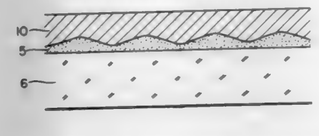
Int. Cl.⁴ G03F *7/00, 7/16;* **G02B** *11/00, 13/20*

U.S. Cl. 430—4 **3 Claims**

1. A method of making a diffusing plate having continuous roughness, said method comprising the steps of:

exposing a photosensitive material to image light of a mask having a regular fine pattern;

treating said photosensitive material to form regular, continuous roughness on the surface thereof;
forming a mold having said regular, continuous roughness



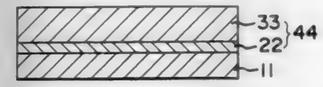
on the surface thereof by coating said regular, continuous roughness formed on the surface of said photosensitive material with metal; and
embossing an optical material on said metal mold.

4,567,124

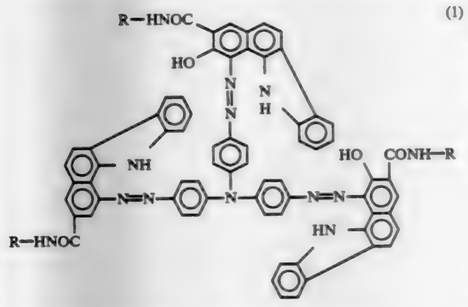
ELECTROPHOTOGRAPHIC ELEMENT WITH TRISAZO PHOTOCONDUCTOR AND AN AMINE SUBSTITUTED CHARGE TRANSFER MATERIAL

Masafumi Ohta; Masaomi Sasaki, both of Susono, and Masayuki Shoshi, Numazu, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1984, Ser. No. 670,176
Claims priority, application Japan, Nov. 14, 1983, 58-213836
Int. Cl.⁴ G03G *5/06, 5/14*
U.S. Cl. 430—59 **7 Claims**

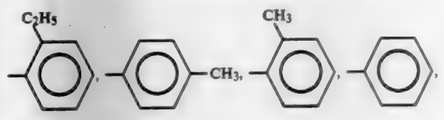


1. An electrophotographic element comprising a charge generating layer and a charge transfer layer formed on an electrically conductive substrate, wherein said charge generating layer contains a trisazo pigment having the formula (1):

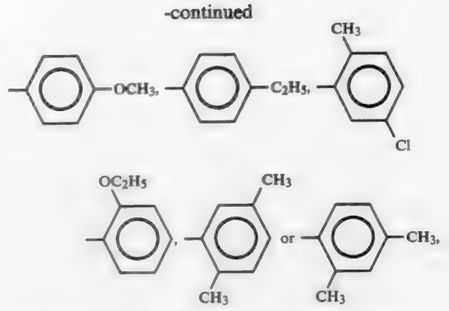


(1)

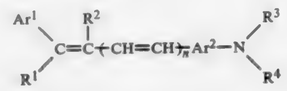
wherein R is selected from the group consisting of



-continued



and said charge transfer layer contains an α-substituted stilbene compound having the formula (2):



(2)

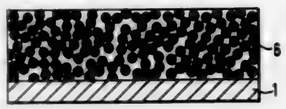
wherein R^1 is selected from the group consisting of substituted alkyl, unsubstituted alkyl, substituted aryl and unsubstituted aryl; R^2, R^3 and R^4 each is selected from the group consisting of hydrogen, substituted alkyl, unsubstituted alkyl, substituted aryl and unsubstituted aryl; Ar^1 is selected from the group consisting of substituted aryl and unsubstituted aryl; Ar^2 is selected from the group consisting of substituted arylene and unsubstituted arylene; or Ar^1 and R^1 are combined to form a ring; and n is 0 or 1, and a resinous binder, said charge generating layer having a thickness of from 0.01 to 5 μm and containing from 10 to 100 wt. % of said trisazo pigment, said charge transfer layer having a thickness of from 2 to 100 μm and containing from 10 to 80 wt. % of said stilbene compound.

4,567,125

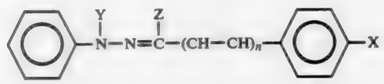
ELECTROPHOTOGRAPHIC RECORDING MATERIAL

Wilko Moroni, Heidelberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 6, 1983, Ser. No. 558,582
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3246036
Int. Cl.⁴ G03G *5/14, 5/06*
U.S. Cl. 430—58 **11 Claims**



1. An electrophotographic recording material comprising (i) an electrically conductive support, (ii) a charge generating layer comprising a diimide of perylenetetracarboxylic acid, and (iii) a charge-transporting layer comprising a polycarbonate binder and a compound of the formula



in which
x is selected from the group consisting of methyl and methoxyl,
n denotes zero or 1, and
Y and Z together denote a grouping represented by the formula

where
A is selected from the group consisting of phenyl and p-tolyl.

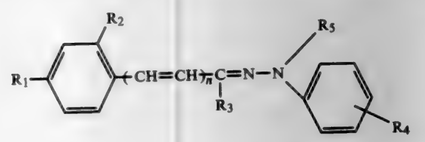
4,567,126

HYDRAZONE PHOTOCONDUCTIVE MATERIALS FOR ELECTROPHOTOGRAPHY

Kazuhiro Emoto, and Kozo Haino, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

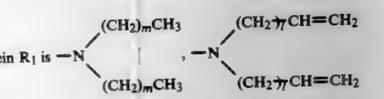
Filed Nov. 28, 1984, Ser. No. 675,743
Claims priority, application Japan, Dec. 1, 1983, 58-227172; Dec. 1, 1983, 58-227173
Int. Cl.⁴ G03G *5/06, 5/14*
U.S. Cl. 430—59 **16 Claims**

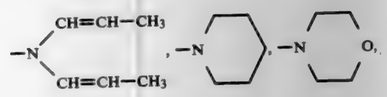
1. A photoconductive material for electrophotography comprising an electroconductive support and, formed thereon, a photoconductive layer incorporated with at least one hydrazone compound represented by the general formula (I):

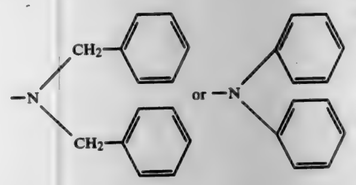


(I)

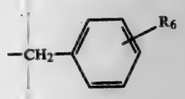
wherein R_1 is

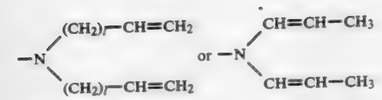




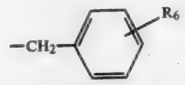


(wherein M is 0, 1, 2 or 3 and l is 1 or 2),
R_2 is a hydrogen atom, a lower alkyl group, a lower alkoxy group or a halogen atom,
R_3 is a hydrogen atom, a lower alkyl group or an aryl group,
R_4 is a hydrogen atom, a lower alkyl group, a lower alkoxy group or a halogen atom,
R_5 is an allyl group, propenyl group or





provided that R_1 must be



(wherein R_6 is a lower alkyl group, a lower alkoxy group or a halogen atom), and n is 0 or 1.

2. A photoconductive material for electrophotography according to claim 1, wherein the photoconductive layer contains a carrier transfer substance and a carrier generating substance and said carrier transfer substance is at least one hydrazone compound represented by the general formula (I).

13. A photoconductive material for electrophotography according to claim 2, wherein the photoconductive layer is of laminate structure comprising a carrier generating layer and a carrier transfer layer provided thereon.

4,567,127

PHOTOCONDUCTIVE MEMBER COMPRISING A HYDROGENATED OR HALOGENATED AMORPHOUS SILICON AND GERANIUM LAYER

Keishi Saitoh, Ibaraki; Yukihiko Ohnuki, Kawasaki, and Shigeru Ohno, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1984, Ser. No. 647,539
Claims priority, application Japan, Sep. 7, 1983, 58-164581; Sep. 8, 1983, 58-165655; Sep. 21, 1983, 58-175090; Oct. 11, 1983, 58-189595; Oct. 21, 1983, 58-197334; Oct. 27, 1983, 58-201229
Int. Cl.⁴ G03G *5/08*
U.S. Cl. 430—65 **48 Claims**

1. A photoconductive member comprising a substrate and a light receiving layer haivng photoconductivity which comprises an amorphous material containing at least one of hydrogen atoms and halogen atoms, said light receiving layer further containing silicon atoms and germanium atoms, the distribution of germanium atoms therein being nonuniform in the layer thickness direction, and carbon atoms being contained in the light receiving layer; said light receiving layer exhibiting an enhanced absorption coefficient for visible light from the longer wavelength side of the spectrum.

4,567,128

COVER SHEET IN A PHOTOSENSITIVE ELEMENT

Allyn N. Bennett, Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 368,126, Apr. 14, 1982, abandoned. This application Jul. 23, 1984, Ser. No. 634,129
Int. Cl.⁴ G03C *5/00*
U.S. Cl. 430—313 **16 Claims**

1. In a method of making a printed circuit board comprising the steps of:
(i) laminating a supported photosensitive layer which is photopolymerizable to a surface,
(ii) exposing imagewise the photosensitive layer to actinic radiation,
(iii) removing an area of the layer, and
(iv) modifying permanently by etching or plating a bared area of the surface;
wherein prior to step (i) the supported photosensitive layer is present in a photosensitive element comprising a flexible support bearing at least one layer of a photosensitive composition and a removable cover sheet, said support

having greater adhesion than the cover sheet to form the photosensitive element with the cover sheet being stripped from the photosensitive composition prior to laminating,

whereby the improvement comprises the cover sheet in the photosensitive element having a roughened finish on its surface which faces away from the photosensitive composition with the roughened finish having a peak to valley average distance of at least two microns.

4,567,129

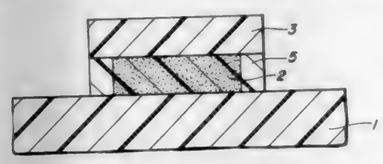
PROCESS FOR IMAGE FORMATION UTILIZING CHEMICALLY SOLUBLE PIGMENTS

Robert P. Held, Englishtown, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 27, 1984, Ser. No. 635,347

Int. Cl.⁴ G03C *1/68, 5/24, 5/38, 1/68*

U.S. Cl. 430—294 **11 Claims**



1. A process for the preparation of a dot-etched photopolymerizable lithographic film which comprises

(a) exposing imagewise to actinic radiation a photopolymerizable element consisting essentially of a support bearing, in order,

(1) a layer of caustic soluble photopolymerizable composition having dispersed therein a chemically soluble pigment, and

(2) a layer of clear, unpigmented caustic soluble photopolymerizable composition which is the same or different from the composition of layer (1);

(b) developing the exposed element with a caustic solution; and

(c) treating the developed image with a chemical solubilizing agent for the pigment whereby the size of the pigmented area is reduced by diffusion etching of the image without affecting the optical density of the image.

4,567,130

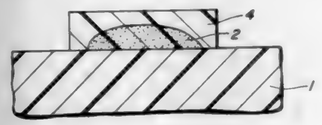
PROCESS FOR ETCHING SINGLE PHOTOPOLYMER LAYER UTILIZING CHEMICALLY SOLUBLE PIGMENTS

Robert P. Held, Englishtown, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 27, 1984, Ser. No. 635,348

Int. Cl.⁴ G03C *1/68, 5/16;* **G03F** *9/00*

U.S. Cl. 430—294 **10 Claims**



1. A process for the preparation of a dot-etched photopolymerizable lithographic film which comprises

(a) exposing imagewise to actinic radiation a photopolymerizable element consisting essentially of a support bearing a layer of a caustic soluble photopolymerizable composition having dispersed therein a chemically soluble pigment;

(b) developing the exposed element with a caustic solution to form at least one pigmented image area; and

(c) treating the developed element with a chemical solubilizing agent for the pigment whereby the size and density of the pigmented area is reduced by diffusion etching of the image.

4,567,131

LITHOGRAPHIC PRINTING PLATES

Philip J. Watkiss, Leeds, England, assignor to Vickers Plc, London, England

Filed Jul. 11, 1984, Ser. No. 629,878

Claims priority, application United Kingdom, Jul. 11, 1983, 8318686

Int. Cl.⁴ G03F *7/00;* **B41M** *5/00;* **C09D** *5/20*

U.S. Cl. 430—309 **10 Claims**

9. A method of treating a lithographic printing plate having image areas of metallic silver, the method comprising applying a proteolytic enzyme and subsequently or simultaneously applying a compound capable of rendering the image areas oleophilic.

4,567,132

MULTI-LEVEL RESIST IMAGE REVERSAL LITHOGRAPHY PROCESS

Edward C. Fredericks, Haymarket; Herbert L. Greenhaus; Madan M. Nanda, both of Reston, and Giorgio G. Via, McLean, all of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1984, Ser. No. 590,092

Int. Cl.⁴ G03F *7/26*

U.S. Cl. 430—312 **2 Claims**

1. A single development step, dual layer photoresist photolithographic process for forming hourglass shaped photoresist structures, comprising the steps of:

depositing a first layer of positive photoresist having a base composition of a phenol-formaldehyde resin with a diazonaphthoquinone sensitizer with a first solubility characteristic of becoming soluble in an aqueous alkaline developer solution after exposure to light and post baking;

depositing a second layer of negative photoresist having said base composition plus the addition of a cross linking agent 1-hydroxyethyl-2-alkyl imidazoline on top of said first photoresist layer, having a second solubility characteristic of becoming insoluble to said developer solution after said exposure to light and said post baking;

said positive photoresist and said negative photoresist mutually intermixing at said top of said first layer forming a gradation region where the solubility in said developer gradually changes from said first characteristic in the upper portion thereof to said second characteristic in the lower portion thereof;

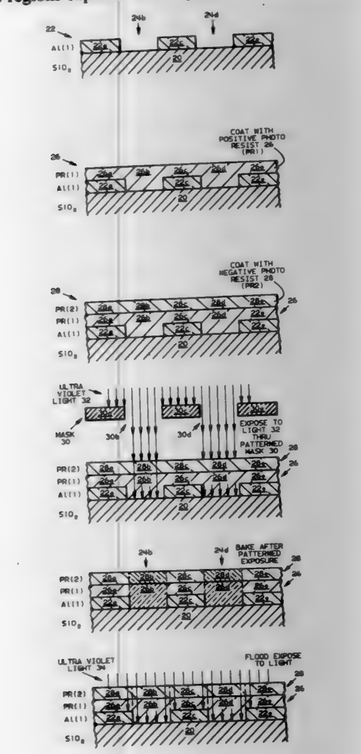
exposing said first and said second photoresist layers to a patterned light source;

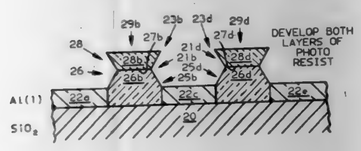
post baking said first and said second photoresist layers;

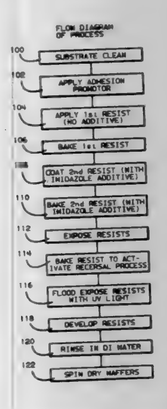
flood exposing said first and said second photoresist layers without a pattern to the flooding light;

developing said first and said second photoresist layers in said developer solution;

whereby a composite photoresist structure consisting of said first and said second layers of photoresist will remain in those regions exposed to said patterned light source, said







structure having well-defined upper edges and a recessed contour near the interface of said first and said second photoresist layers forming an hourglass shaped photoresist structure.

4,567,133

FILM FOR THERMAL IMAGING

Russell R. Isbrandt, White Bear Township, Ramsey County, and Chung I. Young, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 520,207, Aug. 4, 1983, abandoned. This application Jun. 26, 1984, Ser. No. 622,951

Int. Cl.⁴ B05D *3/02;* **B32B** *27/38*

U.S. Cl. 430—348 **13 Claims**

1. A film which can be imaged by thermal energy comprising:

(a) a substrate,

(b) a layer of thermally imageable material coated on at least one major surface of said substrate,

(c) an organopolysiloxane release coating, capable of releasing toner, coated over said layer of imageable material, said release coating being formed from a curable composition comprising a mixture of siloxanes consisting essentially of from 0.1 to 3% by weight of methylhydrogenpolysiloxane and from 97 to 99.9% by weight of a siloxane of the formula

$$(CH_3)_xSiO_{\frac{4-x}{2}}$$

in which x has a value from 1.9 to 2 inclusive and in which siloxane substantially all of the molecules have attached thereto at least a total of two silicon-bonded hydroxyl groups and/or alkoxy groups of less than 5 carbon atoms, a catalyst, and a cross-linking agent, said curable composition being curable at a temperature under 70° C. with a curing exposure time of under 3 minutes.

4,567,134

METHOD FOR PROCESSING OF LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shigeharu Koboshi, and Masayuki Kurematsu, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,634

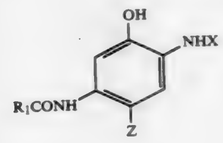
Claims priority, application Japan, Apr. 4, 1983, 58-57903

Int. Cl.⁴ G03C *7/40, 7/16, 7/00*

U.S. Cl. 430—372 **13 Claims**

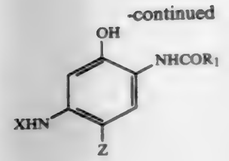
1. A method for processing of a light-sensitive silver halide color photographic material comprising imagewise exposing and developing said light-sensitive silver halide color photographic material, said developing comprising color developing and a continuous processing method comprising fixing or bleach-fixing and a stabilizing processing step involving substantially no water washing step after fixing or bleach-fixing, wherein said light-sensitive silver halide color photographic material contains at least one of cyan couplers represented by the formula [I] or [II] shown below, and the amount of stabilizing solution supplemented is 0.1 to 30 times the amount carried over from the bath for said fixing or bleach-fixing per unit area of said light-sensitive material to be processed:

Formula (I)

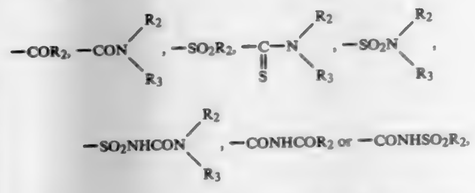


-continued

Formula (II)



wherein X represents



wherein R_2 is a substituted or unsubstituted alkyl group, alkenyl group, cycloalkyl group, aryl group or hetero ring; R_3 is a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group or a hetero ring; or R_2 and R_3 may be bonded together to form a 5- or 6-membered ring,

R_1 represents a ballast group and Z represents a hydrogen atom or an eliminable group through coupling with the oxidized product of an aromatic primary amine color developing agent, wherein said eliminable group represented by Z is a halogen atom; or an aryloxy group, a carbamoyloxy group, a carbamoylmethoxy group, an acyloxy group, a sulfonamide group or a succinimide group, of which oxygen atom or nitrogen atom is bonded directly to the coupling position.

4,567,135

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Jun Arakawa, and Toshiyuki Watanabe, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 19, 1984, Ser. No. 572,048

Claims priority, application Japan, Jan. 19, 1983, 58-7155

Int. Cl.⁴ G03C *1/46*

U.S. Cl. 430—505 **9 Claims**

1. A silver halide color photographic light-sensitive material, comprising:

a support based having thereon;

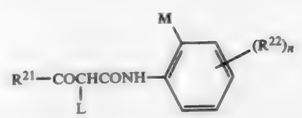
a silver halide emulsion layer;

a diffusing dye-forming coupler represented by the general formula (1):

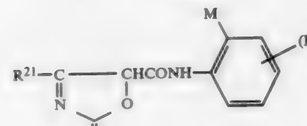
$$(C_p)_aX \quad (1)$$

which can form a dye capable of having moderate diffusibility in an emulsion layer through coupling with an oxidation product of a color developing agent; an wherein D_p represents a diffusible coupler component which allows a dye image to exhibit controlled smearing and improved granularity; X represents a ballast group containing from 8 to 32 carbon atoms which is bound to the coupler component at the coupling position and is released through reaction with an oxidation product of a color developing agent; and a is 1 or 2; and

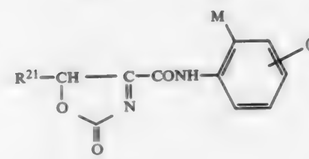
a high reaction rate coupler selected from the general formulae (CI)-(CV):



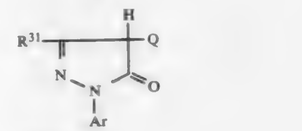
(CI)



(CII)



(CIII)



(CIV)



(CV)

which can form a dye of the same color as that of the diffusing dye-forming coupler and that has a coupling speed higher than that of the diffusing dye-forming coupler by a factor of 1.3 to

Wherein R^{21} is an alkyl group or an aryl group which may be substituted; R^{22} is a substituent which can be substituted for a hydrogen atom attached to the benzene ring of formula (CIII); and n represents 1 or 2; M represents a halogen atom, an alkoxy group or an aryloxy group; L represents a group capable of being released from coupler upon formation of a dye through oxidative coupling with an aromatic primary amine developer; R^{31} represents an amino group, an acylamino group or a ureido group; Q represents a group capable of being released from the coupler (CIV) upon the formation of a dye through oxidative coupling with an aromatic primary amine developer; Ar represents a phenyl group which may have one or more substituents; A represents an image forming coupler residue which has a naphthol or a phenol nucleus; m represents 1 or 2; and z represents a group which is attached to the coupling site of the above-described coupler residue A and is released from the coupler (CV) when a dye is formed through the oxidation coupling reaction with an aromatic primary amine developer.

4,567,136

ANALYTICAL ELEMENT

Kenichiro Okaniwa; Mikio Koyama, and Shozo Kikugawa, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 326,228, Dec. 1, 1981, abandoned. This application Jun. 7, 1984, Ser. No. 618,311

Claims priority, application Japan, Dec. 4, 1980, 55-171872

Int. Cl.⁴ C12Q *1/00, 1/28;* **G01N** *21/78, 33/52*

U.S. Cl. 435—4 **26 Claims**

1. An analytical element for the detection of a substance which generates hydrogen peroxide upon reaction with an enzyme which comprises a support and a reagent layer comprising a peroxidative substance, a diffusion-resistant phenol compound having been oil-protected, and an aromatic primary amine compound or salt thereof, said aromatic primary amine compound being capable of being oxidized to form an oxidized product, said oxidized product being capable of undergoing a coupling reaction with said diffusion-resistant phenol compound, to thereby produce a diffusion-resistant dyestuff.

4,567,137

SERUM THROMBIN TIME IN CLINICAL MEDICINE

Van B. Philpot, P.O. Box 312, East Houston, Miss. 38851

Continuation-in-part of Ser. No. 459,494, Jan. 20, 1983, Pat. No. 4,461,830. This application May 14, 1984, Ser. No. 609,817

The portion of the term of this patent subsequent to Jan. 20, 2000, has been disclaimed.

Int. Cl.⁴ G01N *33/48, 33/68, 33/86, 33/96*

U.S. Cl. 435—13 **6 Claims**

1. A method of diagnosing an abnormal body condition of a subject animal comprising the successive steps of:

(1) withdrawing a blood sample from the patient under study;

(2) allowing the sample obtained to form a clot;

(3) obtaining a sample of serum from the clot of step (2);

(4) adding a solution of purified, standardized fibrinogen to a sample of the serum of step (3) and allowing the resulting mixture to incubate and coagulate;

(5) measuring the time between the addition of the fibrinogen solution and coagulation to determine the serum thrombin time;

(6) comparing the serum thrombin time measured in step (5) with a serum thrombin time of a normal population of patients when treated under conditions similar to those of steps (1)–(5); and

(7) diagnosing an abnormal body condition of said subject in accordance with the values compared in step (6).

4,567,138

METHOD FOR DETERMINING γ-GLUTAMYLTRANSFERASE ACTIVITY AND KITS CONTAINING A NOVEL SUBSTRATE SOLUTION FOR USE THEREIN

James P. Beck, Newport Beach, and Carlos E. Luna, Placentia, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 413,042, Aug. 30, 1982, abandoned. This application Aug. 27, 1984, Ser. No. 644,647

Int. Cl.⁴ C12Q *1/48*

U.S. Cl. 435—15 **20 Claims**

1. A substantially anhydrous substrate solution comprising:

(a) a substrate selected from the group consisting of salts of L-γ-glutamyl-p-nitroanilide; and

(b) a polyol selected from the group consisting of alkyl polyols containing 2 to 10 carbon atoms and 2 to 10 hydroxy groups and polyethylene glycol having an average molecular weight of from about 200 to about 600 in an amount sufficient to solubilize and stabilize said substrate.

4,567,139

CHROMOGEN FOR MEASURING THE FORMATION OF HYDROGEN PEROXIDE BASED ON 1-SUBSTITUTED-AMINOANTIPYRIN COMPOUNDS

Hans-George Batz, Tutzing, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

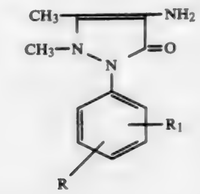
Division of Ser. No. 228,011, Jan. 23, 1981, Pat. No. 4,394,512. This application Feb. 24, 1983, Ser. No. 469,492

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004129; Oct. 7, 1980, 3039207; Jan. 31, 1981, 3100807

Int. Cl.⁴ C07D *231/46;* **C12Q** *1/28*

U.S. Cl. 435—28 **5 Claims**

1. In a method for the determination of enzymatically formed hydrogen peroxide of the type wherein phenol or other phenolic compound is oxidatively coupled with 4-aminoantipyrine as the chromogen, in the presence of peroxidase, by the action of hydrogen peroxide, to form a dye which is determined photometrically, the improvement comprising replacing the 4-aminoantipyrine with a compound of the formula



wherein R represents the group $N(R_2)_2$, in which R_2 represents an alkyl group of 1 to 3 carbon atoms or one R_2 is an acyl group of 1 to 3 carbon atoms and the other R_2 is hydrogen or an alkyl group of 1 to 3 carbon atoms, and R_1 has the same meaning as R or is a hydrogen atom or NH_2.

4,567,140

MICROBIAL POLYSACCHARIDES, PROCESS FOR THEIR PREPARATION, MICROORGANISMS SUITABLE FOR THIS AND USE OF THE POLYSACCHARIDES

Hartmut Voelskow, Hattersheim am Main, and Merten Schlingmann, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 487,019

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3214953

Int. Cl.⁴ C12P *39/00, 19/12;* **C08B** *37/00;* **B01J** *13/00;* **C12R** *1/01, 1/38*

U.S. Cl. 435—42 **15 Claims**

1. Extracellular polysaccharides containing glucose and galactose in a molar ratio of about 4:1 to about 8:1 as the main components and about 4 to about 9% by weight of pyruvate, about 5 to about 15% by weight of succinate, about 0.5 to about 7% by weight of rhamnose and about 0.2 to about 5% by weight of mannose as subsidiary components obtained by fermentation using a mixed culture of more than one microorganism of which at least one microorganism is capable of producing a polysaccharide in pure culture.

4,567,141

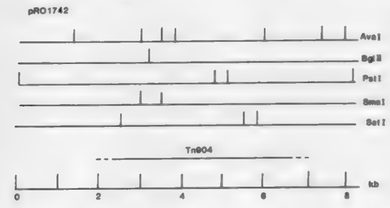
PLASMID VECTORS INCLUDING TN904

Ronald H. Olsen, Ann Arbor, Mich., assignor to Microlife Technics, Inc., Sarasota, Fla.

Filed Apr. 25, 1983, Ser. No. 488,036

Int. Cl.⁴ C12P *19/34;* **C12N** *15/00, 1/00*

U.S. Cl. 435—91 **25 Claims**



1. In a method including transposing a transposon by mating bacterial cells wherein the first cell contains the transposon in a first plasmid and the second cell contains a second plasmid which is receptive to the transposon the improvement which comprises:

(a) transposing transposon Tn904 in a first plasmid PLASMID-1::Tn904 to a second vector plasmid receptive to the

transposon to form a second transconjugant plasmid VECTOR PLASMID-2::Tn904, wherein Tn904 encodes for streptomycin resistance in a site cleaved by AvaI, wherein the second vector plasmid is selected from a Pseudomonas or Escherichia vector plasmids and wherein the VECTOR PLASMID-2::Tn904 is transformable; and

(b) cleaving the Tn904 with AvaI and ligating a segment of DNA into the cleaved site to produce a recombinant plasmid.

4,567,142

PROCESS FOR ISOMERIZING GLUCOSE

Norman E. Lloyd, Ridgefield, Conn., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 393,845, Jun. 30, 1982, Pat. No. 4,411,996. This application Oct. 24, 1983, Ser. No. 544,894

The portion of the term of this patent subsequent to Oct. 25, 2000, has been disclaimed.

Int. Cl.⁴ C12P *19/24*

U.S. Cl. 435—94 **40 Claims**

1. A process for isomerizing glucose to fructose which comprises contacting a glucose-containing feed liquor with chemically stabilized glucose isomerase at a temperature of from about 90° C. to about 140° C. at a pH of from about 3 to about 8, an actual contact time sufficient to attain a final content in said liquor of at least about 53 to about 60 weight percent of fructose based on the total carbohydrate content while controlling the degradation time at a value equal to less than the value calculated with the formula.

$$t_d = a \log (4300/T+273) - pH - 3.23) \quad (1)$$

in which T is the reaction temperature in ° C.; pH is the pH of the reaction mixture; and t_d is the degradation time in minutes; to preclude substantial formation of psicose and/or other non-fructose, non-glucose sugars.

4,567,143

PROCESS FOR PREPARING 4'-DESCHLOROREBECCAMYCIN

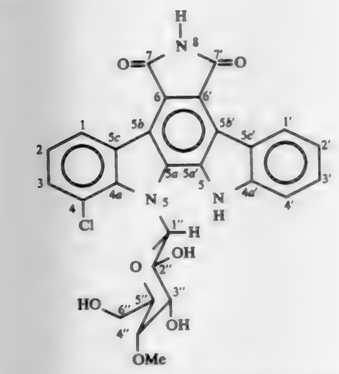
James A. Matson, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 646,673, Sep. 4, 1984, Pat. No. 4,524,145. This application Mar. 18, 1985, Ser. No. 690,271

Int. Cl.⁴ C12P *17/18*; C12R *1/365*

U.S. Cl. 435—119 **1 Claim**

1. a process for producing 4'-deschlororebeccamycin having the formula



which comprises cultivating a *Nocardia aerocolonigenes* ATCC 39243 or a 4'-deschlororebeccamycin-producing mutant thereof in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen under submerged aerobic conditions until a substantial amount of 4'-deschlororebeccamycin is produced by said organism in said culture medium and then isolating said 4'-deschlororebeccamycin from the culture medium in a substantially pure form.

4,567,144

METHOD OF PRODUCING LONG CHAIN WAX ESTERS FROM ETHANOL

Saul L. Neidleman, Oakland, and Jacqueline L. Ervin, Pinole, both of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Filed Aug. 16, 1982, Ser. No. 408,254

Int. Cl.⁴ C12P *7/64*; C12R *1/265*

U.S. Cl. 435—134 **6 Claims**

1. A process for producing a mixture of wax esters having the general formula RCO_2R', where R and R' are each radicals selected from the group consisting of:

I. $CH_3(CH_2)_aCH{=}CH(CH_2)_b{-}$, where a+b=12-14 for R and 13-15 for R', and

II. $CH_3(CH_2)_c{-}$, where c=14-16 for R and 15-17 for R',

said process comprising

aerobically incubating a culture of microorganisms of the genus Acinetobacter in an aqueous mineral salts solution containing ethanol as a primary food source, and

extracting the wax esters mixture produced by said incubating.

4,567,145

CONTINUOUS PRODUCTION OF ETHANOL BY USE OF RESPIRATION DEFICIENT MUTANT YEAST

Marcel Faber, Princeton, N.J.; Jerome D. Bernstein, New Hope, Pa., and Matthew Grossman, Piscataway, N.J., assignors to HRI, Inc., Gibbsboro, N.J.

Filed Nov. 15, 1982, Ser. No. 441,474

Int. Cl.⁴ C12P *7/06*; C12N *1/16*

U.S. Cl. 435—161 **18 Claims**

1. A continuous process for producing ethanol from D-sugars, comprising:

(a) inoculating a fermentation zone with a respiration-deficient mutant of a flocculating strain of *Saccharomyces uvarum*;

(b) feeding a mixture of a D-sugar, a nitrogen source, a vitamin source and a mineral source into said fermentation zone in the presence of an oxygen-containing gas;

(c) fermenting said D-sugar mixture for a sufficiently long period of time to yield an ethanol product; and

(d) separating said ethanol product as overflow from the mutant yeast cells.

16. A respiration deficient mutant of *Saccharomyces uvarum* strain ATCC 26602 for producing ethanol from D-sugar.

4,567,146

SYNTHETIC PLASMID AND BACTERIA CONTAINING IT

Nicholas J. Brewin, Cringleford, and Andrew W. B. Johnston, Little Melton, both of England, assignors to National Research Development Corporation, London

Filed Nov. 5, 1981, Ser. No. 318,417

Int. Cl.⁴ C12N *15/00, 1/20, 1/00*; C12P *13/00*; C12R *1/41*

U.S. Cl. 435—172.3 **14 Claims**

2. A method of preparing a culture of bacteria of the genus Rhizobium, which method is characterized in that

(1) in a first cross, a donor strain of Rhizobium, containing (a) a Rhizobium plasmid lacking genes coding for nodulation but which is transmissible, is crossed with a recipient strain of Rhizobium, carrying (b) a Rhizobium plasmid having Rhizobium genes coding for nodulation, nitrogen fixation and hydrogen uptake ability but which is non-transmissible, whereby a transconjugant strain carrying a plasmid which is formed from said plasmids (a) and (b) and is a conjugal precursor of a recombinant plasmid (c)

having genes coding for nodulation, nitrogen fixation and hydrogen uptake ability and being transmissible is obtained;

(2) said transconjugant strain is separated from donor and recipient strains and cultured to produce a substantially pure culture thereof;

(3) in a second cross, the transconjugant strain from the first cross is used as a donor strain and crossed with a plasmid-containing recipient strain whereby a transconjugant strain carrying a recombinant plasmid (c) is obtained; and

(4) said transconjugant strain from the second cross is separated from donor and recipient strains and cultured to produce a substantially pure culture thereof.

7. A method of imparting hydrogen uptake ability to bacteria of the genus Rhizobium, which method is characterized in that (1) a strain of *Rhizobium leguminosarum* NCIB 11684 or NCIB 11682, as a donor strain, is crossed with a recipient strain of *Rhizobium leguminosarum* to produce a kanamycin-resistant transconjugant strain, said recipient strain being one which permits selection of the transconjugant strain against the donor and recipient strains and which allows the transconjugant strain to be selected against when used as a donor in a subsequent cross with another strain of *Rhizobium leguminosarum*, (2) said transconjugant strain is separated from the donor and recipient strains and cultured to produce a substantially pure culture thereof; (3) in a second cross the transconjugant strain obtained from the first cross is used as a donor strain and crossed with a recipient strain of *Rhizobium leguminosarum* to produce a kanamycin-resistant transconjugant strain and (4) said transconjugant strain from the second cross is separated from the donor and recipient strains to produce a biologically pure culture thereof.

4,567,147

ATTENUATED SMALLPOX VACCINE STRAIN

Kiyoshi Ooi, Tokyo; Michio Morita, Chiba; Kazuyoshi Suzuki, Ichikawa; Soh Hashizume, Chiba, and Hanako Yoshizawa, Funabashi, all of Japan, assignors to Chiba Prefectural Government, Chiba, Japan

Filed Dec. 20, 1984, Ser. No. 683,867

Claims priority, application Japan, Mar. 28, 1984, 59-58502

Int. Cl.⁴ C12N *7/08*; A61K *39/285*

U.S. Cl. 435—237 **1 Claim**

1. An attenuated smallpox vaccine strain exhibiting no invasiveness caused by peripheral infection on the central nervous system of a mouse and little post-vaccinal side effects, which is prepared by subculturing a Lister strain of vaccinia virus in rabbit kidney cells over 36 generations at 30° C., plaque-purifying the strain thrice to isolate 50 clones, selecting a temperature-sensitive variant showing worst growth in Vero cells at 40° C. from said 50 clones, subculturing the temperature sensitive variant in rabbit kidney cells over six generations, plaque-purifying the variant twice to isolate a clone showing relatively small and uniform pocks on the chorioallantoic membrane of an embryonated egg, subculturing the clone in rabbit kidney cells over three generations at 30° C. and isolating a clone showing very small pocks on the chorioallantoic membrane of an embryonated egg.

4,567,148

METHOD FOR QUANTITATIVELY DETERMINING THE AMOUNT OF HEMOGLOBIN IN A BIOLOGICAL SAMPLE

Samuel Schwartz, St. Louis Park, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 190,399, Sep. 24, 1980, Pat. No. 4,378,971. This application Sep. 13, 1982, Ser. No. 418,282

Int. Cl.⁴ G01N *33/72*

U.S. Cl. 436—66 **22 Claims**

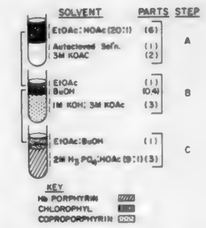
1. A method of quantitatively determining the amount of hemoglobin in a biological material comprising the steps of:

preparing a test sample of said biological material;

converting the hemoglobin in said test sample to hemoglobin derived porphyrins;

performing an extraction procedure for the purpose of separating the hemoglobin derived porphyrins from various contaminants in said test sample including mixing said test sample with a first extraction reagent comprising an organic solvent effective to separate the hemoglobin derived porphyrins from iron;

allowing said test sample and first extraction reagent mixture to separate into an aqueous phase containing iron and a supernatant containing hemoglobin-derived porphyrins;



mixing said supernatant with a second extraction reagent comprising an alkaline solvent containing a soluble salt effective to separate the hemoglobin derived porphyrins from naturally occurring porphyrins;

allowing said supernatant and second extraction reagent mixture to separate into a phase containing naturally occurring porphyrins and a second supernatant containing hemoglobin derived porphyrins; and

determining the amount of hemoglobin derived porphyrins.

4,567,149

BINDING ASSAY SYSTEM AND METHOD OF MAKING AND USING SAME

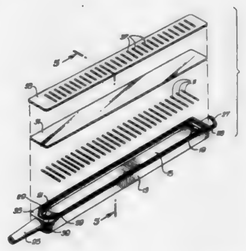
William J. Sell, San Francisco; David H. Riege, Newark, and Vincent A. Marinkovich, Palo Alto, all of Calif., assignors to Mast Immunosystems, Ltd., Mountain View, Calif.

Filed Mar. 17, 1983, Ser. No. 476,367

The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.

Int. Cl.⁴ G01N *33/053, 23/06*; C12M *1/00*; C01N *33/544*

U.S. Cl. 436—513 **17 Claims**



12. Apparatus for use in a system for the allergy screening of a liquid specimen through binding assays, the apparatus comprising:

a rigid plastic body having an elongated, shallow well formed therein, and a substantially flat land surrounding the well;

a plurality of cotton threads stretched tautly across the elongated well from the land on its opposite sides, the threads being oriented in spaced parallel relationship substantially perpendicular to the longitudinal axis of the elongated well and disposed for contacting the liquid

specimen, each thread coated with a different allergen or group of allergens for binding corresponding antibodies in the liquid specimen;

a substantially flat cover plate secured to the land of the rigid body, to enclose the elongated well, the cover plate including

a thin, transparent plastic sheet overlaying to the land of the rigid body, and

a thin metallic sheet overlaying the plastic sheet and having a plurality of elongated apertures aligned with each of the plurality of cotton threads; and

means defining a port at each end of the elongated elongated well, to facilitate insertion and removal of a liquid specimen in the well, for contact with the plurality of cotton threads.

4,567,150

METHOD FOR DETERMINING TRANSFERRIN AND COMPOSITION THEREFOR

Alessandro Tabacco, Siena; Paolo Tarli, Monteriggioni, and Paolo Neri, Siena, all of Italy, assignors to Sclavo, S.p.A., Siena, Italy

Continuation of Ser. No. 323,360, Nov. 20, 1981, abandoned. This application Jan. 18, 1984, Ser. No. 571,859

Int. Cl.⁴ G01N *33/90*

U.S. Cl. 436—87 **7 Claims**

1. A method for determining transferrin comprising the steps of adding to the sample being tested a reagent comprising a solution of a ferric salt adsorbed on an aqueous suspension buffered to a pH of between 8 and 9 of a solid substrate selected from the group consisting of basic magnesium carbonate and calcium carbonate, centrifuging the mixture thus obtained, and measuring the iron bonded by transferrin in the supernatant liquor.

4,567,151

BINDER GLASS OF Bi_2O_3-SiO_2-GeO_2-(PBO OPTIONAL) ADMIXED WITH ZNO/ZNO AND Bi_2O_3

Barry E. Taylor, Youngstown, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 639,384, Aug. 10, 1984, Pat. No. 4,532,075. This application Jan. 14, 1985, Ser. No. 690,885

Int. Cl.⁴ C03C *3/04, 3/12*

U.S. Cl. 501—15 **3 Claims**

1. A glass having a composition corresponding to the formula $Bi_4Si_{3-x}Ge_xO_{12}$, wherein $x=0.1$–2.9 having dissolved therein 0–100 pph by wt. PbO, basis glass.

4,567,152

CO-MATRIXED ZEOLITE AND P/ALUMINA

Lloyd A. Pine, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 13, 1984, Ser. No. 681,450

Int. Cl.⁴ B01J *29/06*

U.S. Cl. 502—64 **10 Claims**

1. A catalyst comprising: (a) a crystalline metallosilicate zeolite; (b) a non-zeolitic inorganic oxide matrix, said zeolite being dispersed in said matrix and (c) discrete particles of phosphorus-containing alumina also dispersed in said matrix, said discrete particles having been prepared by contacting alumina having a BET surface area greater than 50 square meters per gram with a phosphorus compound selected from the group consisting of phosphoric acid, a salt of phosphoric acid, phosphorous acid, a salt of phosphorous acid, and mixtures thereof, for a time sufficient to incorporate an effective amount of phosphorus in said alumina.

4,567,153

POLYMERIZATION CATALYST COMPRISING COPULVERIZED SOLID MAGNESIUM COMPOUND AND SOLID HALIDE OF SCANDIUM

Victoria Graves, Crosby, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 13, 1984, Ser. No. 639,879

Int. Cl.⁴ C08F *4/72, 4/64*

U.S. Cl. 502—113 **21 Claims**

1. A supported olefin polymerization catalyst prepared under anhydrous conditions by the steps of:

(a) mechanically copulverizing a solid magnesium compound and solid halide of scandium to form a solid copulverized product,

(b) treating said copulverized product with one or more compounds of a transition metal of Group 4b or 5b of the Periodic Table of Elements, and

(c) recovering solid catalyst.

8. The supported olefin polymerization catalyst according to claim 1 wherein said transition metal compound comprises a titanium compound and a vanadium compound.

4,567,154

MIXED METAL ALKYL CATALYST FOR OLEFIN POLYMERIZATION

Robert Bacskai, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 27, 1983, Ser. No. 508,435

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—114 **10 Claims**

1. A catalyst composition for use in polymerizing alpha olefins which comprises a solid supported titanium tetrahalide complex and a cocatalyst comprising a mixture of an alkyl aluminum halide and an alkyl lithium compound.

4,567,155

OLEFIN POLYMERIZATION CATALYST SYSTEM PRODUCING POLYMER WITH LOW ACTIVE CHLORIDE

Benjamin S. Tovrog; Charles R. Hoppin, both of Naperville, and Bryce V. Johnson, Elburn, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 24, 1984, Ser. No. 653,211

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—123 **19 Claims**

1. A catalyst system suitable for gas-phase polymerization of alpha-olefins to polymers containing essentially no active chloride comprising:

A. a titanium-containing component supported on a hydrocarbon-insoluble magnesium-containing compound in combination with an electron donor compound; and

B. a co-catalyst comprising (a) at least one trialkyl aluminum compound, (b) an aromatic acid ester, and (c) an unhindered secondary amine, such secondary amine having no more than one methyl group on a carbon atom adjacent to a nitrogen atom, optionally reacted with a dialkylaluminum hydride, in substantial absence of compounds containing an Al—Cl bond.

4,567,156

OIL SOLUBLE CHROMIUM CATALYST

Roby Bearden, Jr., and Clyde L. Aldridge, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 29, 1985, Ser. No. 728,485

Int. Cl.⁴ B01J *31/12;* C10G *47/06*

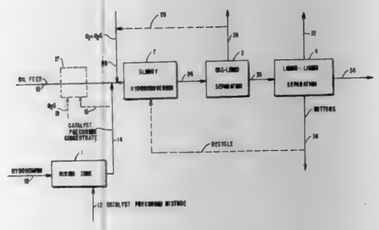
U.S. Cl. 502—173 **11 Claims**

1. A catalyst prepared by the steps which comprise:

(a) adding a water soluble aliphatic polyhydroxy compound to an aqueous solution of chromic acid (CrO_3);

(b) forming a mixture of a hydrocarbon material and at least a portion of the mixture resulting from step (a); and

(c) heating the mixture resulting from step (b) in the presence of a hydrogen sulfide-containing gas at conditions to



produce a slurry comprising said hydrocarbon material and a solid chromium-containing catalyst.

4,567,157

PRODUCTION OF PHENOLS AND CATALYST THEREFOR

Chiu T. Lam, Sewell, N.J., and David M. Shannon, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 17, 1982, Ser. No. 379,229

Int. Cl.⁴ B01J *27/14;* C01B *15/16;* C07C *37/00*

U.S. Cl. 502—208 **5 Claims**

1. A multicomponent catalyst consisting essentially of copper, phosphorus present in the form of phosphate, and a metal selected from the group consisting of vanadium, chromium, manganese, iron, cobalt, nickel and zinc.

4,567,158

PROCESS FOR PREPARING PHOSPHORUS-VANADIUM MIXED OXIDE OXIDATION CATALYSTS

James T. Wrobleski, St. Louis; James W. Edwards, Creve Coeur; Charles R. Graham, St. Charles; Robert A. Keppel, St. Louis, and Harold Raffelson, Olivette, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 28, 1983, Ser. No. 566,361

Int. Cl.⁴ B01J *27/14;* C07D *307/34*

U.S. Cl. 502—209 **66 Claims**

1. A process for the preparation of a phosphorus-vanadium mixed oxide oxidation catalyst for the production of maleic anhydride wherein the catalyst exhibits a weight/weight productivity to maleic anhydride of at least 70 g MAN/kg cat.-hr based upon a performance test conducted at a concentration of 1.5 mole percent hydrocarbon-in-air, a space velocity of 1450 hr^{-1} under a pressure of 1.055×10^2 kPa-G, and a temperature sufficient to maintain the hydrocarbon conversion within the range of 70 mole percent to 90 mole percent, which process comprises:

(a) introducing a substantially pentavalent vanadium-containing compound into an alcohol medium capable of reducing the vanadium to a valence state less than +5 to form a slurry;

(b) contacting the slurry with an effective amount of alcohol-modifying agent;

(c) effecting the reduction of at least a portion of the vanadium to a valence state of +4;

(d) adding a pentavalent phosphorus-containing compound to the vanadium-containing mixture before or after effecting the reduction to form a phosphorus-vanadium mixed oxide catalyst precursor;

(e) recovering the phosphorus-vanadium mixed oxide catalyst precursor;

(f) drying the catalyst precursor; and

(g) calcining the catalyst precursor at a temperature from about 250° C. to about 600° C.

4,567,159

OLEFIN METATHESIS CATALYST

Robert L. Banks, and Simon G. Kukes, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 536,819, Sep. 28, 1983, Pat. No. 4,504,694. This application Sep. 11, 1984, Ser. No. 649,341

Int. Cl.⁴ B01J *31/02, 27/14, 27/02, 27/06*

U.S. Cl. 502—219 **10 Claims**

1. A process for preparing a disproportionation catalyst comprising forming a catalytically effective amount of calcined composite comprising at least one metal oxide selected from molybdenum oxide and tungsten oxide and an inorganic refractory material, contacting the calcined composite with a promoting amount of at least one treating agent selected from chlorinated silicon compounds comprising monosilanes selected from the group consisting of monomethyl-Tri-chlorosilane, isobutyltrichorosilane, dimethyldichlorosilane, trimethyl monochlorosilane, n-decyldichlorosilane, trichloromethyltrichlorosilane, 4-methylphenyltrichlorsilane, monochloromethyltrichlorosilane, cyclohexyldichlorosilane, siloxanes, and polysilanes, thionyl chloride, and sulfuryl chloride, and subjecting same to conditions suitable for said treating agent to promote the activity of said molybdenum and tungsten oxides for the disproportionation of olefins.

4,567,160

CATALYST COMPOSITION FOR THE PRODUCTION OF ALCOHOLS FROM SYNTHESIS GAS

Barry Nay, Woking, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Jul. 5, 1983, Ser. No. 510,882

Claims priority, application United Kingdom, Jul. 9, 1982, 8220083

Int. Cl.⁴ B01J *23/58, 23/72, 23/89*

U.S. Cl. 502—326 **3 Claims**

1. A catalyst composition suitable for use in a process for the production of alcohols from synthesis gas which composition consists essentially of:

(a) cobalt,

(b) one or more of copper, silver, gallium, zirconium, zinc and thorium,

(c) one or more of palladium, platinum and nickel, and

(d) one or more alkali metals, in the atomic ratio of component (a): component (b); component (c) of 100:1 to 400:1 to 500, the alkali metal or metals forming up to 5% by weight of the composition and wherein said essential elements are present in the form of their oxides or in the form of salts which are decomposable by heat to oxides.

4,567,161

LIQUID ACTIVE INGREDIENT CONCENTRATES FOR PREPARATION OF MICROEMULSIONS

Ulrich Posanski, Freiburg; Miklos Ghyczy, Cologne; Kurt-Heinz Bauer, Freiburg, and Armin Wendel, Cologne, all of Fed. Rep. of Germany, assignors to A. Natterman & Cie GmbH, Fed. Rep. of Germany

Filed Jun. 28, 1983, Ser. No. 508,664

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1982, 3225706

Int. Cl.⁴ A61K *31/70, 31/685*

U.S. Cl. 514—23 **9 Claims**

1. Liquid formulations which contain a component or mixture of components selected from the group consisting of one or more pharmaceutically active substance, said component being insoluble or poorly soluble in water, and conventional additives and auxiliary substances in a lipophilic liquid or in a liquid mixture with a phospholipid selected from the group consisting of phosphatidyl choline, phosphatidyl ethanol amine, phosphatidic acid, phosphatidyl inositol, N-acylphosphatidyl ethanol amine and mixtures thereof, and an ethoxyl-

ated derivative of glycerin ester, with fatty acids as co-emulsifier, wherein the lipophilic liquid contains a lipophilic carrier liquid and the first or second OH groups of the glycerin or the glycerin ester are esterized by means of the fatty acids with hydrocarbon chains of from 8 to 16 C atoms and the third of remaining OH group of the glycerin body is etherized with the polyethyleneglycol with 6–30 ethyleneoxide units, the molar ratio of phospholipid to co-emulsifier being from 1:1 to 1:4.

4,567,162

BIOLOGICALLY ACTIVE HEPTAPEPTIDES

Robertó de Castiglione, Milan; Giuseppe Perseo, Desio; Mauro Gigli, and Barbara Hecht, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba, Milan, Italy

Filed Jun. 26, 1984, Ser. No. 624,820

Claims priority, application United Kingdom, Jul. 13, 1983, 8319174

Int. Cl.⁴ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—16 **23 Claims**

1. A peptide of the formula:

ti X-Val-Pro-Pro-Leu-Gly-Trp-A-Y

wherein

X is selected from the group consisting of a hydrogen atom or a terminal nitrogen protecting group selected from the group consisting of acyl, aliphatic urethane, aromatic urethane, alkyl, and aralkyl groups;

A is a neutral L-α-amino acid residue selected from the group consisting of Met, Nle, Leu and Phe; and

Y is selected from the group consisting of a hydroxy group, an amino group or a group of the formula OR, NHR, NR_2 or NH—NH—R′ wherein

(i) R represents a straight alkyl chain, a branched alkyl chain, a cyclic alkyl group, a fused alkyl ring, or a bridged alkyl ring, each having up to 11 carbon atoms and being unsubstituted or independently substituted by a hydroxy or an amino group or a halogen atom, or R represents an aralkyl group having from 7 to 14 carbon atoms or a phenyl group; and

(ii) R′ represents a hydrogen atom, a straight alkyl chain, a branched alkyl chain, a cyclic alkyl group, a fused alkyl ring, or a bridged alkyl ring, each having up to 11 carbon atoms and being unsubstituted or independently substituted by a hydroxy or an amino group or a halogen atom, or R′ represents an aralkyl group having from 7 to 14 carbon atoms or a phenyl group, or R′ represents a straight chain aliphatic acyl group, a branched chain aliphatic acyl group, or a cyclic aliphatic acyl group, each having from 1 to 11 carbon atoms and being unsubstituted or independently substituted by a hydroxy or an amino group or a halogen atom, an aromatic acyl group which is unsubstituted or independently substituted by a hydroxy or amino group or a halogen atom, a straight chain, a branched chain or a cyclic aliphatic urethane type group having from 3 to 11 carbon atoms, or an aromatic urethane group,

or a pharmaceutically or veterinarily acceptable salt thereof.

4,567,163

SALICYCLIC ACID DERIVATIVES OF N-ACETYLCYSTEINE AND PHARMACOLOGICAL USE THEREOF

Osvaldo Ponchiroli, Milan, Italy, assignor to Pietro Ismardi & C. S.p.A., Oneglia, Italy

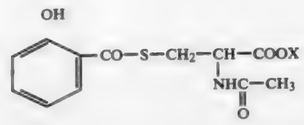
Filed Nov. 16, 1982, Ser. No. 442,044

Claims priority, application Italy, Nov. 20, 1981, 25198 A

Int. Cl.⁴ A61K *31/265, 31/71, 31/65;* **C07C** *153/023*

U.S. Cl. 514—29 **9 Claims**

1. A compound of the formula:



wherein X is selected from the group consisting of hydrogen, alkali metals, alkaline earth metals, and the radicals of organic bases.

7. A pharmaceutical composition having anti-pyretic, anti-inflammatory, analgesic and mucolytic activity, comprising an effective amount for said activity of the compound of claim 1.

4,567,164

PHARMACEUTICAL COMPOSITION FOR TREATING PROTOZOAN DISEASE CONTAINING AT LEAST ONE TETROCARCIN

Kenjiro Shimada; Masao Otomo, both of Tsuchiura; Fusao Tomita, Machida, and Shingo Ito, Tsuchiura, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1984, Ser. No. 583,695

Claims priority, application Japan, Mar. 4, 1983, 58-35563

Int. Cl.⁴ A61K *31/71*

U.S. Cl. 514—33 **5 Claims**

1. A method for treating piroplasma disease in mammals which comprises administering an effective amount of a pharmaceutical composition comprising at least one member selected from the group consisting of tetrocarcins A, B and C, alkali metals salts thereof, and alkaline earth metal salts thereof; and at least one pharmaceutical carrier useful for preparation of injection, powder, tablet, granular, capsule, suppository, suspension or emulsion.

4,567,165

N-METHANESULFONIC ACID DERIVATIVES OF 3-DEMETHOXYISTAMYCIN B

Hamao Umezawa, Tokyo, and Shinichi Kondo, Yokohama, both of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Japan

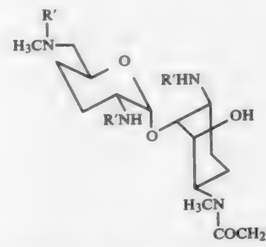
Filed May 8, 1984, Ser. No. 608,213

Int. Cl.⁴ A61K *31/71;* **C07H** *15/22*

U.S. Cl. 514—36 **7 Claims**

1. An N-methanesulfonic acid derivative of 3-demethoxyistamycin B represented by the formula

(III)



wherein one, two, three or four of the R′ groups denote(s) each a group —$CHRSO_3M$ and the remaining other R′ group(s) denote(s) each a hydrogen atom, where R is a hydrogen atom, an alkyl group, a phenyl group, and M is a hydrogen atom, an ammonium cation, an alkali metal atom or an alkaline earth metal atom.

7. An antibacterial pharmaceutical composition comprising an antibacterially effective amount of a derivative according to claim 1, in combination with a pharmaceutically acceptable carrier therefor.

4,567,166

AMINO AND SUBSTITUTED AMINO PHOSPHINYLALKANOYL COMPOUNDS USEFUL FOR TREATING HYPERTENSION

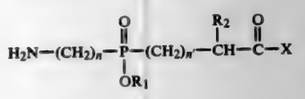
Donald S. Karanewsky, Princeton Junction, and Edward W. Petrillo, Jr., Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 398,052, Jul. 14, 1982, Pat. No. 4,444,765. This application Mar. 19, 1984, Ser. No. 591,290

Int. Cl.⁴ A61K *31/675;* **C07F** *9/60, 9/65*

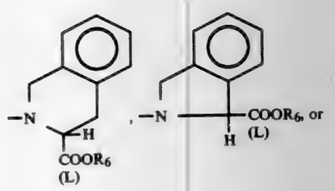
U.S. Cl. 514—82 **12 Claims**

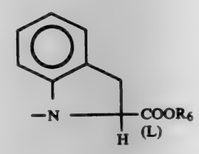
1. A compound of the formula



wherein

X is an imino acid of the formula



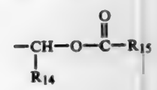


n is an integer of from 4 to 8;

n′ is zero or one;

R_2 is hydrogen, lower alkyl, halo substituted lower alkyl, benzyl or phenethyl;

R_1 and R_6 are independently selected from hydrogen, lower alkyl, benzyl, benzhydryl, or



wherein

R_{14} is hydrogen, lower alkyl, cycloalkyl or phenyl, and

R_{15} is hydrogen, lower alkyl, lower alkoxy, phenyl, or

R_{14} and R_{15} taken together are —$(CH_2)_2$—, —$(CH_2)_3$—, —CH=CH—, or



and when either or both of R_1 and R_6 are hydrogen a basic addition salt or an amino acid addition salt thereof.

11. A pharmaceutical composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and an effective amount of one or more compounds of claim 1 or pharmaceutically acceptable salts thereof.

12. The method of treating hypertension in a mammalian specie comprising administering an effective amount of the composition of claim 11.

4,567,167

CERTAIN 3-PHOSPHINYL-2-OXO-PIPERIDINE-1-ACETIC ACID DERIVATIVES HAVING ANTI-HYPERTENSIVE ACTIVITY

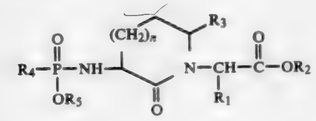
Donald S. Karanewsky, East Windsor, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 479,429, Mar. 28, 1983, Pat. No. 4,533,661. This application Nov. 28, 1984, Ser. No. 676,137

Int. Cl.⁴ C07F *9/65;* **A61K** *31/445*

U.S. Cl. 514—89 **7 Claims**

1. A compound of the formula

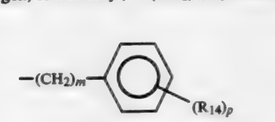


wherein

R_1 is hydrogen, lower alkyl, amino substituted lower alkyl, hydroxy substituted lower alkyl, or halo substituted lower alkyl;

n is 1;

R_3 is hydrogen, lower alkyl, —$(CH_2)_m$-cycloalkyl, or

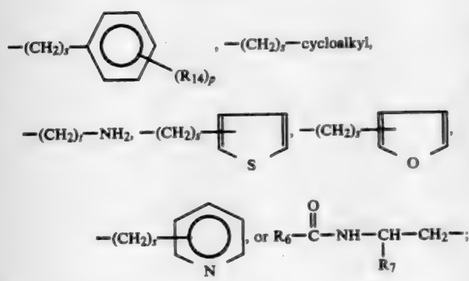


m is zero or an integer from 1 to 4;

R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, halo, trifluoromethyl, or hydroxy;

p is an integer from 1 to 3 provided that p is more than one only if R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro;

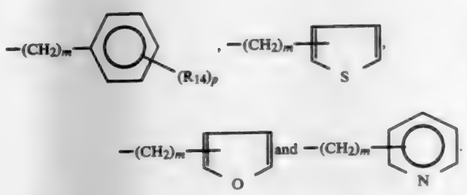
R_4 is alkyl of 1 to 10 carbons,



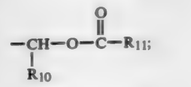
s is zero or an integer from 1 to 7;

t is an integer from 1 to 8;

R_6 and R_7 are independently selected from the group consisting of lower alkyl, halo substituted lower alkyl, —$(CH_2)_m$-cycloalkyl,



R_5 and R_2 are independently selected from the group consisting of hydrogen, lower alkyl, benzyl, benzhydryl, physiologically acceptable salt forming ion, and



R_{10} is hydrogen, lower alkyl, cycloalkyl, or phenyl; and R_{11} is hydrogen, lower alkyl, lower alkoxy, cycloalkyl, phenyl, benzyl, or phenethyl.

4,567,168

CYANOHYDRIN PHOSPHONATES AS PESTICIDES

Bernd-Wieland Krüger; Hans-Jochem Riebel, both of Wuppertal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

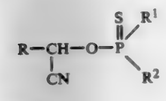
Filed Jan. 28, 1982, Ser. No. 344,268

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106475; Nov. 12, 1981, 3145009

Int. Cl.⁴ C07F *9/40*; A01N *57/02*

U.S. Cl. 514—89 **11 Claims**

1. A cyanohydrin phosphonate of the formula



in which

R is a hydrogen atom, an alkyl radical which is optionally substituted by halogen, C_1 to C_4 alkoxy, C_1 to C_4 alkylthio or C_1–C_4-alkylamino and which has 1 to 20 carbon atoms, an optionally halogen-substituted C_2 to C_5 alkenyl or C_2 to C_5 alkynyl radical, a C_3 to C_8 cycloalkyl radical which is optionally substituted by C_1 to C_4 alkyl, C_2 to C_4 alkoxycarbonyl, phenoxybenzyloxycarbonyl and/or halogen, a phenyl-C_1 or C_2 alkyl radical which is optionally substituted by halogen, optionally halogen-substituted C_1 to C_4 alkyl or optionally halogen-substituted C_1 to C_4 alkoxy, a phenyl radical which is optionally substituted by halogen, nitro, C_1 to C_4 alkyl, optionally halogen substituted C_1 to C_4 alkoxy, optionally halogen-substituted C_1 to C_4 alkylthio, trifluoromethyl and/or by optionally halogen substituted C_1 or C_2 alkylenedioxy, or a furyl, thienyl or pyridyl radical,

R^1 is an optionally halogen-substituted radical selected from C_1 to C_5 alkoxy, phenoxy, benzyloxy, C_1 to C_5 alkylthio, C_3 to C_5 alkenylthio, C_3 to C_5 alkynylthio, phenylthio, benzylthio and C_1 to C_5 alkylamino (monoalkylamino or dialkylamino), and

R^2 is an optionally halogen-or C_1 to C_4 alkylthio-substituted radical selected from C_1 to C_5 alkyl and phenyl

10. A method of combating pests comprising applying to the pests, or to a habitat thereof, a pesticidally effective amount of a compound according to claim 1.

4,567,169

NITROSOUREA SUBSTITUTED PHOSPHONATES AND PHARMACEUTICAL USE

Gilbert Lavielle, Orleans, and Claude Cudennec, La Celle Saint Cloud, both of France, assignors to ADIR, s.a.r.l., Neuilly-sur-Seine, France

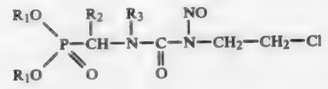
Filed Nov. 2, 1983, Ser. No. 547,881

Claims priority, application France, Nov. 17, 1982, 82 19199

Int. Cl.⁴ A61K *31/66, 31/675*; C07F *9/40, 9/58*

U.S. Cl. 514—089 **7 Claims**

1. Nitrosourea compound corresponding to the formula I



(I)

in which

R_1 represents hydrogen, alkyl having 1 to 6 carbon atoms or phenyl,

R_2 represents hydrogen, alkyl containing 1 to 6 carbon atoms, and which may carry a carboxy or alkoxycarbonyl radical including 2 to 6 carbon atoms; a thienyl, phenyl or benzyl radical which may carry a halogen atom or an alkyl or alkoxy radical containing 1 to 5 carbon atoms;

R_3 represents hydrogen, alkyl having 1 to 6 carbon atoms; or benzyl which may carry a halogen atom or an alkyl or alkoxy radical having 1 to 5 carbon atoms; or, alternatively,

R_2 and R_3 together represent a group $—(CH_2)_m—$ in which m has the value 3 or 4, in racemic form or in the form of optical isomers.

7. A method for treating a living animal body afflicted with a tumor responsive to such treatment, comprising the step of administering to the said living animal body having said tumor an amount of a compound of claim 1 which is effective for the alleviation of the said condition.

4,567,170

3-CHLORO-3-PHENYLPROP-2-ENYL THIOPHOSPHATES AND THEIR USE FOR CONTROLLING PESTS

Annegrit Baumann, Mannheim; Karl Kiehs, Lampertheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

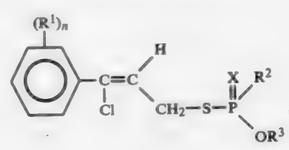
Filed Nov. 8, 1983, Ser. No. 550,025

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242281

Int. Cl.⁴ C07F *9/165*; A01N *57/14*

U.S. Cl. 514—128 **3 Claims**

1. A thiophosphate of the formula



I

where R^1 is hydrogen, or not more than 4 identical or different substituents R^1 may be present, each of which is fluorine, chlorine or bromine, straight-chain or branched alkyl of not more than 5 carbon atoms, alkoxy of not more than 3 carbon atoms or alkylthio of not more than 3 carbon atoms, R^2 is alkoxy, alkylthio or alkylamino, each of which is substituted by straight-chain or branched alkyl of not more than 5 carbon atoms, R^3 is alkyl of not more than 3 carbon atoms and X is oxygen or sulfur.

3. A process for combatting pests, wherein an effective amount of 3-chloro-3-phenylprop-2-enylthiophosphate of the formula I as defined in claim 1 is allowed to act on the pests and/or their habitat.

4,567,171

STABLE, CONCENTRATED, LIQUID DISPERSIONS OF ANIONIC DYESTUFFS

Thomas M. Mangum, Bayville, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 487,343, Apr. 21, 1983, abandoned. This application Mar. 20, 1984, Ser. No. 590,234

Int. Cl.⁴ D06P *1/90*

U.S. Cl. 514—150 **6 Claims**

1. A stable dyestuff composition which is a water solution of an anionic dye, containing a nonionic dispersing agent, and having dispersed therein undissolved particles of the dye which are 10μ or less in diameter, wherein the composition consists essentially of about 40% to about 80% by weight of water, about 15% to about 40% by weight of the dye and about 1% to about 25% by weight of the dispersing agent.

4,567,172

6α-METHYLPREDNISOLONE DERIVATIVES

Yoshiaki Kamano, Tempe, Ariz.; Saburo Sugai, Saitama, Japan; Tokuji Okazaki, Tokyo, Japan; Seiichiro Yoshida, Tokyo, Japan, and Sanya Akaboshi, Tokyo, Japan, assignors to Ohta Seiyaku Kabushiki Kaisha, Tokyo, Japan

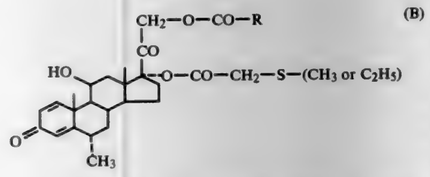
Filed May 27, 1983, Ser. No. 498,636

Claims priority, application Japan, May 31, 1982, 57-91389; Jul. 2, 1982, 57-114011; Apr. 15, 1983, 58-66872

Int. Cl.⁴ A61K *31/56*

U.S. Cl. 514—179 **12 Claims**

1. A 6α-methylprednisolone derivative which is a 21-acyloxy-11β-hydroxy-6α-methyl-17α- methyl- or -ethyl-thioacetoxy-1,4-pregnadiene-3,20-dione compound of the formula:



(B)

wherein R is a straight or once-branched chain C_1–C_4 alkyl group or a C_1–C_4 alkoxy- or alkylthio-methyl group.

4,567,173

PYRIDINE, 2,2'-(2-IMIDAZOLIDINYLIDENE)DI-, COPPER IRC[illegible] AND NICKEL COMPLEXES AND USE IN ANIMALS

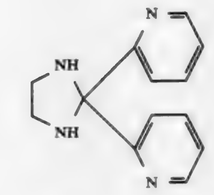
Kurt G. R. Sundelin, Modesto, Calif., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Apr. 1, 1982, Ser. No. 364,555

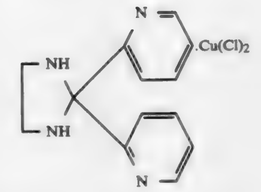
Int. Cl.⁴ C07F *15/02, 15/04, 1/08*; A61K *31/555*

U.S. Cl. 514—188 **7 Claims**

1. The reaction product of ethylene diamine and 2,2'-dipyridylketone said product being a compound of the formula



3. The compound



7. An animal feed additive comprising a compound of claim 5, claim 6, claim 2 or claim 1 in an amount effective to enhance feed efficiency.

4,567,174

BIS(1-SUBSTITUTED BIGUANIDE) DERIVATIVES

Philip N. Edwards, Bramhall, and Michael S. Large, Congleton, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed May 7, 1984, Ser. No. 607,703

Int. Cl.⁴ C07D *403/12*; A61K *31/445*; A01N *43/40*

U.S. Cl. 514—210 **8 Claims**

1. A bis(1-substituted biguanide) derivative of the formula V:

$$R^3R^4N.C(:NR^5)NH.C(:NR^9)NR^1—X—NR^2.C(:NR^9)NH.C(:NR^6)—NR^7R^8$$

or a tautomeric form thereof, wherein R^1, R^2 and R^9, which may be the same or different, are each hydrogen, a 1–16C alkyl radical, a 3–16C cycloalkyl radical, a (3–12C cycloalkyl)(1–4C alkyl) radical, a phenyl or naphthyl radical, a phenyl(1–4C) alkyl or naphthyl(1–4C)alkyl radical or a diphenylmethyl radical, wherein said phenyl or naphthyl radical, said phenyl (1–4C) alkyl or naphthyl(1–4C)alkyl radical, or said diphenylmethyl radical may each include optional substituents selected from halogen atoms, amino, carbamoyl, cyano, hydroxy, nitro and trifluoromethyl radicals, 1–6C alkyl, alkoxy, alkanoyl, alkylamino and alkanoylamino radicals and 2–6C alkoxy-carbonyl and dialkylamino radicals, provided that at least one of R^1, R^2 and R^9 is other than hydrogen; R^3, R^4, R^7 and R^8, which may be the same or different, are each hydrogen, or an alkyl, cycloalkyl, (cycloalkyl)alkyl, phenyl, naphthyl, phenylalkyl, naphthylalkyl, or diphenylmethyl radical as defined above, or a 2–16C alkoxyalkyl radical, or R^3, R^4 and the nitrogen atom to which they are attached, or R^7 and R^8 and the nitrogen atom to which they are attached, which may the same or different, are each a 1-azetidinyl, 1-pyrrolidinyl, piperidino, hexamethyleneimino, heptamethyleneimino, morpholino or 4-(1–8C alkanoyl)-1-piperazinyl radical, each of which may bear 1–3C alkyl substituents; R^5 and R^6, which may be the same or different, are each hydrogen or a 1–8C alkyl radical; and X is a 2–16C linking group which is a straight chain alkylene radical, or a straight chain alkylene radical bearing one or more 1–16C alkyl substituents, of which any pair or pairs which are attached to different carbon atoms, may be joined so as to form, together with the intervening carbon atom or atoms

of the alkylene radical a (5-7C)-cycloalkyl radical or radicals; and the acid addition salts thereof.

6. An antibacterial or antifungal composition comprising an effective antibacterial or antifungal amount of a compound as claimed in claim 1 and an inert diluent or carrier therefor.

4,567,175

8-CHLORO-1,5-BENZOTHIAZEPINE DERIVATIVES

Mikio Takeda, Urawa; Tokuro Oh-ishi, Tokyo; Hiromichi Nakajima, Urawa, and Taku Nagao, Tokyo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Japan

Filed May 16, 1984, Ser. No. 610,856

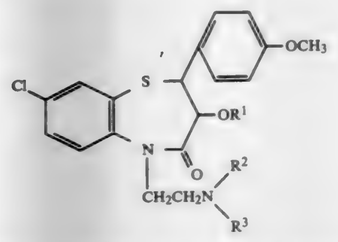
Claims priority, application United Kingdom, Jun. 3, 1983, 8315364; Jan. 14, 1984, 8400983

Int. Cl.⁴ C07D *281/10*; A61K *31/55*

U.S. Cl. 514—211 **20 Claims**

1. A compound of the formula:

(I)



wherein R^1 is hydrogen, lower alkyl or a group of the formula: R^4CO—, each of R^2 and R^3 is lower alkyl and R^4 is lower alkyl, or a pharmaceutically acceptable acid addition salt thereof.

15. A method of producing a hypotensive effect on a warm-blooded animal comprising administering to said warm-blooded animal an effective amount of the compound claimed in claims 1, 3, 6, 7, or 10 or.

4,567,176

4H-IMIDAZOL-4-ONES AND THEIR PHARMACEUTICAL USE

Thomas H. Brown, Tewin, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Apr. 18, 1984, Ser. No. 601,527

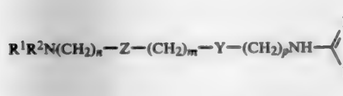
Claims priority, application United Kingdom, Apr. 27, 1983, 8311443

Int. Cl.⁴ A61K *31/55*; C07D *401/12*

U.S. Cl. 514—212 **24 Claims**

1. A compound of the formula (I):

(I)



or a pharmaceutically acceptable salt thereof, wherein:

R^1 and R^2 are independently hydrogen, C_{1-6}alkyl, phenyl(C_{1-6})alkyl, furanyl(C_{1-6})alkyl, thienyl(C_{1-6}) alkyl, C_{3-10}cycloalkyl, hydroxy(C_{2-6}) alkyl or halo(C_{2-6})alkyl (wherein said hydroxy and halo groups are not substituted on the carbon atom adjacent to the nitrogen atom); or

R^1 and R^2 together represent $—(CH_2)_q—$ wherein q is 4 to 7 to form together with the nitrogen atom to which they are attached a 5-8 membered saturated ring;

n is an integer from 1 to 6;

Z is 2,5-furanyl, 2,5-thienyl, 2,4-pyridyl wherein the $R^1R^2N(CH_2)_n$ group is in the 4-position, or 1,3- or 1,4-phenylene;

m is one; or if Z is pyridyl or phenylene m may also be zero;

Y is oxygen, sulphur or methylene;

p is two, three of four;

R_3 is hydrogen, or C_{1-6}alkyl optionally substituted by phenyl, hydroxy or C_{1-6}alkoxy (wherein said hydroxy and C_{1-6}alkoxy groups are not substituted on the carbon atom adjacent to the ring nitrogen atom); and

R^4 and R^5 are independently hydrogen, C_{1-6}alkyl optionally substituted by phenyl, or phenyl.

24. A method of blocking histamine H_2-receptors which comprises administering to a subject an effective amount to block said receptors of a compound according to claim 1.

4,567,177

IMIDAZOLINE DERIVATIVES AS α_2-ANTAGONISTS

Dennis Bigg, Jouy en Josas; Claude Morel, Magny-les-Hameaux, and Mireille Sevrin, Paris, all of France, assignors to Synthelabo, Paris, France

Filed Oct. 16, 1984, Ser. No. 661,483

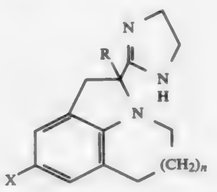
Claims priority, application France, Oct. 17, 1983, 83 16474; Feb. 9, 1984, 84 01997; Jun. 4, 1984, 84 08726

Int. Cl.⁴ A61K *31/55, 31/47*; C07D *471/06, 487/06*

U.S. Cl. 514—214 **4 Claims**

1. An imidazoline derivative, in the form of an enantiomer or a mixture thereof, of the formula (I)

(I)



in which n is 1 or 2, R is hydrogen, C_1–C_3 alkyl or allyl, and X is hydrogen, halogen, methyl or methoxy, or a pharmaceutically acceptable acid addition salts thereof.

2. A pharmaceutical composition for treating depression comprising an anti-depressant effective amount of an imidazoline derivative or salt as claimed in claim 1 and a pharmaceutically acceptable diluent therefor.

4,567,178

SUBSTITUTED 5,11-DIHYDRO-6H-DIBENZ[B,E]AZEPIN-6-ONES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Wolfgang Eberlein, Biberach; Günter Trummlitz, Warthausen; Wolfhard Engel; Günther Schmidt, both of Biberach, all of Fed. Rep. of Germany; Rüdolf Hammer, and Antonio Giachetti, both of Milan, Italy, assignors to Dr. Karl Thomae GmbH, Biberach an der Rias, Fed. Rep. of Germany

Filed Jan. 7, 1985, Ser. No. 689,325

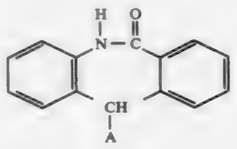
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1984, 3402060

Int. Cl.⁴ A61K *31/55*; C07D *403/12, 403/14*

U.S. Cl. 514—215 **6 Claims**

1. A compound of the formula

(I)



wherein

A represents a (1-methyl-4-piperidinyl)-acetyl, (4-methyl-1-piperazinyl)-acetyl, or [(1-methyl-4-piperidinyl)-amino]-carbonyl group,

or an entantiomer or pharmacologically acceptable addition salt thereof with an inorganic or organic acid.

6. A process for treating a gastrointestinal tract condition in a warm-blooded host in need of such treatment which comprises administering to said host an effective amount of a compound of claim 1.

4,567,179

ANTIINFLAMMATORY SALTS OF PIROXICAM

Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer, Inc., New York, N.Y.

Filed Oct. 11, 1984, Ser. No. 659,733

Int. Cl.⁴ C07D *279/02, 417/02*; A61K *31/54*

U.S. Cl. 514—225 **12 Claims**

1. A 1:1 doxepin salt of piroxicam.

4,567,180

CARBOXIMIDE DERIVATIVE AND MEDICINES CONTAINING SAME

Noriyasu Hirose, Tokyo; Shigeru Souda; Kazutoshi Miyake, both of Ibaraki; Shizuo Kuriyama, Saitama; Kazuyasu Usuki; Yasuhiro Akiyama, both of Tokyo; Naoko Nagaoka, and Hidetoshi Kawashima, both of Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

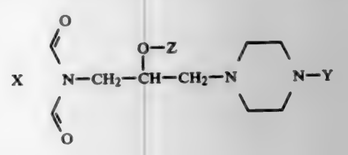
Filed Nov. 22, 1983, Ser. No. 555,211

Claims priority, application Japan, Nov. 25, 1982, 57-205545

Int. Cl.⁴ A61K *31/505, 31/495*; C07D *403/14, 403/06*

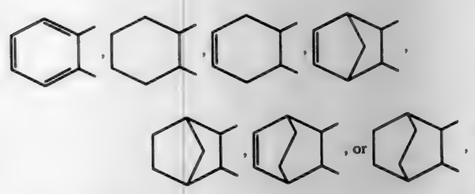
U.S. Cl. 514—253 **38 Claims**

38. A method for treating diabetes which comprises administering to a patient suffering from diabetes a therapeutically effective amount of a carboximide of the formula:



wherein

X is



Z is (1) alkyl of 1-10 carbon atoms, (2) benzyl in which the phenyl moiety is unsubstituted or is substituted by a halogen atom, (3) cyclohexyl, (4) cyclohexylmethyl, (5) allyl or (6) cinnamyl, and

Y is pyridyl, pyrimidyl or phenyl, said groups being unsubstituted or substituted by at least one member selected from the group consisting of halogen and methyl,

or a pharmaceutically acceptable acid addition salt thereof.

4,567,181

BICYCLO (4.2.0) 1,3,5-OCTATRIENE COMPOUNDS AND USE AS α-ADRENERGICS

Charles Malen, Fresnes; Jean-Louis Peglion, Chatou; Michel Laubie, Vaucresson, and Jean-Claude Poignant, Bures s/Yvette, all of France, assignors to ADIR, s.a.r.l., Neuilly-sur-Seine, France

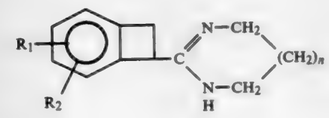
Continuation-in-part of Ser. No. 570,529, Jan. 13, 1984, abandoned. This application Apr. 5, 1984, Ser. No. 596,932

Int. Cl.⁴ A61K *31/505, 31/415*; C07D *239/02, 233/04*

U.S. Cl. 514—256 **8 Claims**

1. A bicyclo[4.2.0]1,3,5-octatriene selected from those corresponding to the formula:

I



in which:

R_1 and R_2 each represent hydrogen, halogen, alkyl and alkoxy, each having from 1 to 4 carbon atoms inclusive, sulphonamide possibly substituted by an alkyl having from 1 to 4 carbon atoms inclusive; or together represent methylenedioxy,

n is 0 or 1,

in racemic form or as an optical isomer thereof,

or an addition salt thereof with a pharmaceutically acceptable acid.

4. A method for treating a living animal body afflicted with a condition which is related to adrenoreceptor activity, which comprises the step of administering to the said living animal an amount of a compound of claim 1, which is effective for the alleviation of the said condition.

4,567,182

COMPOUNDS ENDOWED WITH IMMUNOMODULATING ACTIVITY

Paolo C. Ferraris, Genoa, Italy, assignor to Co Pharma Corporation s.r.l., Genoa, Italy

Filed Sep. 14, 1982, Ser. No. 418,189

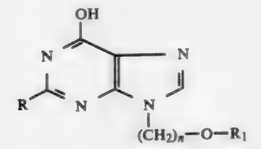
Claims priority, application Italy, Sep. 24, 1981, 24120 A/81; Aug. 13, 1982, 22848 A/82

Int. Cl.⁴ A61K *31/52*; C07D *473/30*

U.S. Cl. 514—262 **14 Claims**

1. A compound of formula I

(I)



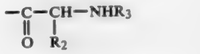
wherein:

R is hydrogen or NH_2;

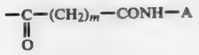
n is an integer from 1 to 6;

R_1 is a chain of formula

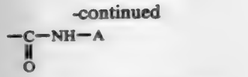
(a)



(b)

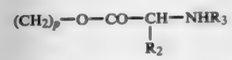


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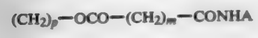


(c)

when n = 1, a chain of formula (d)



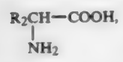
(e)



(f)

wherein

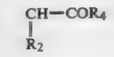
R_2 is the radical attached to the α-carbon atom of an α-aminoacid of formula



said aminoacid being glycine, alanine, valine, leucine, isoleucine, serine, threonine, aspartic acid, glutamic acid, arginine, lysine, cysteine, cystine, methionine, phenylalanine, tyrosine, tryptophan, proline or histidine;

R_3 is hydrogen; p1 m and p are integers ranging independently from 2 to 6,

A is a group of formula

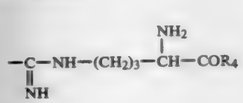


wherein

R_2 is as indicated hereinabove,

R_4 is OH or

A is a group of formula



wherein

R_4 is as indicated hereinabove.

4,567,183

ANALGESIC AND ANTI-INFLAMMATORY COMPOSITIONS COMPRISING XANTHINES AND METHODS OF USING SAME

Abraham Sunshine, New York; Eugene M. Laska, Larchmont, and Carole E. Siegel, Mamaroneck, all of N.Y., assignors to Analgesic Associates, Larchmont, N.Y.

Continuation-in-part of Ser. No. 474,358, Mar. 11, 1983, Pat. No. 4,486,436, which is a continuation of Ser. No. 400,597, Jul. 22, 1982, Pat. No. 4,420,483. This application Dec. 12, 1983, Ser. No. 560,460

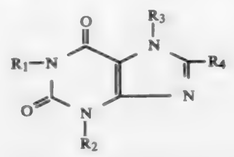
Int. Cl.⁴ A61K *31/19, 31/52*

U.S. Cl. 514—264 **75 Claims**

1. A method of eliciting an onset hastened and enhanced analgesic and anti-inflammatory response in a mammalian organism in need of such treatment, comprising administering to such organism:

(i) an analgesically and anti-inflammatorily effective amount of benoxaprofen, flurbiprofen, fenbufen, ketoprofen, pirprofen, carprofen, oxaprozin, pranoprofen, miroprofen, tioxaprofen, suprofen, alminoprofen, tiaprofenic acid, fluprofen, bucloxic acid, or pharmaceutically acceptable salts thereof, and

(ii) an amount of xanthine derivative sufficient to hasten the onset of and enhance the analgesic and anti-inflammatory response of component (i), said xanthine derivative having the formula:

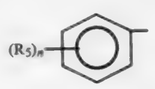


(I)

or a pharmaceutically acceptable non-toxic salt thereof wherein

R_1–R_3, inclusive, independently represent hydrogen, C_1–C_6alkyl, C_1–C_6alkoxy, C_1–C_6haloalkyl, C_3–C_6cycloalkyl, hydroxy (C_1–C_6)alkyl, halogen, hydroxy(C_1–C_4)alkylamino(C_1–C_4)alkyl, C_1–C_4(dialkyl)amino(C_1–C_4)alkyl, C_1–C_4alkylcarbonyl(C_1–C_4)alkyl, C_1–C_6alkylamino, C_1–C_6(dialkyl)amino, indolyl, phenyl or allyl:

R_4 is hydrogen, C_1–C_6alkyl, halo(C_1–C_6)alkyl, C_1–C_6alkylamino, C_1–C_6alkylthio, nitro, carboxy C_1–C_6(dialkyl)amino, C_3–C_6cycloalkyl, phenyl, naphthyl, ar(C_1–C_4)alkyl, or a group of the formula



(II)

where R_5 is halo, C_1–C_6alkyl, C_1–C_6alkoxy, C_1–C_6alkylthio, nitro or C_1–C_6alkylamino, and n is 1, 2 or 3 with the proviso that R_1, R_2 and R_3 cannot all be C_1alkyl when R_4 is hydrogen.

4,567,184

CERTAIN ARYL OR HETERO-ARYL DERIVATIVES OF 1-HYDROXY-PENTANE OR 1-HYDROXY-HEXANE WHICH ARE USEFUL FOR TREATING INFLAMMATION AND ALLERGIES

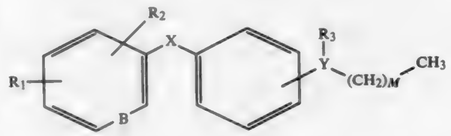
John H. Musser, Malvern, Pa., and Utpal R. Chakraborty, Orangeburg, N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Continuation-in-part of Ser. No. 445,876, Dec. 1, 1982. This application Sep. 9, 1983, Ser. No. 530,811

Int. Cl.⁴ C07D *213/30, 215/14;* **A61K** *31/44, 31/47*

U.S. Cl. 514—277 **16 Claims**

1. A compound of the formula:



and pharmaceutically acceptable salts thereof, wherein

R_1 and R_2 are each independently H, an alkyl group having from 1 to about 6 carbon atoms, and one of the terms R_1 and R_2 may comprise CF_3; COOH; COO-lower alkyl or R_1 and R_2 combine with the six-membered ring to which they are attached to form naphthyl; quinoline or isoquinoline;

B is C or N;

X is CH_2O

Y is $CHCH_2$ or $C(R_5)CH_2$ wherein R_5 is H or lower alkyl;

R_3 is OH;

M is an integer from about 2 to about 3.

16. A method of treating inflammatory and allergic conditions in a mammal by administering to said mammal an effective amount of a compound of claim 1.

4,567,185

ENDORPHIN BLOCKAGE

Marvin A. Sackner, Miami Beach, Fla., assignor to Key Pharmaceuticals, Inc., Miami Beach, Fla.

Continuation-in-part of Ser. No. 494,228, May 13, 1983, abandoned, which is a continuation-in-part of Ser. No. 480,439, Mar. 30, 1983, abandoned. This application Sep. 29, 1983, Ser. No. 537,182

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—282 **5 Claims**

1. A method of permitting restful sleep at high altitudes comprising administering to a patient susceptible to Cheyne-Stokes respiration at said high altitudes a pharmaceutically acceptable amount of 6-methylene-6-desoxy-N-cyclopropylmethyl-14-hydroxydihydronormorphone which is capable of blocking the action of endogenous endorphins, whereby sleep interruptions characteristic of Cheyne-Stokes respiration are alleviated.

4,567,186

5-HETERYL-1,6-NAPHTHYRIDIN-2(1H)-ONES, CARDIOTONIC USE THEREOF AND INTERMEDIATES THEREFOR

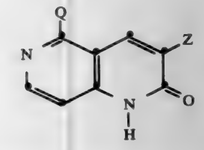
George Y. Lesher, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Jan. 14, 1985, Ser. No. 691,802

Int. Cl.⁴ A61K *31/435;* **C07D** *471/04, 213/24*

U.S. Cl. 514—300 **21 Claims**

1. 3-Z-5-Q-1,6-naphthyridin-2(1H)-one having the formula I



I

or acid-addition or cationic salt thereof, where Z is hydrogen, cyano or carboxy, and Q is 2(or 3)-furanyl, 2(or 3)-thienyl, 4(or 3)-pyridinyl or 4(or 3)-pyridinyl having one or two methyl substituents.

17. A method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such patient a cardiotonically effective amount of 3-Z-5-Q-1,6-naphthyridin-2(1H)-one of claim 1 or pharmaceutically acceptable acid-addition or cationic salt thereof, where Z is hydrogen or cyano, and Q is 2(or 3)-furanyl, 2(or 3)-thienyl, 4(or 3)-pyridinyl or 4(or 3)-pyridinyl having one or two methyl substituents.

4,567,187

CARBOSTYRIL DERIVATIVES AND ANTIHISTAMINIC AGENTS CONTAINING THE CARBOSTYRIL DERIVATIVES

Kazuo Banno; Takafumi Fujioka; Masaaki Osaki, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Japan

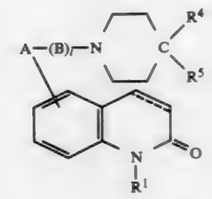
Division of Ser. No. 240,306, Mar. 4, 1981, abandoned. This application Apr. 7, 1982, Ser. No. 366,336

Claims priority, application Japan, Mar. 6, 1980, 55-28805; Aug. 20, 1980, 55-115022

Int. Cl.⁴ A61K *31/47;* **C07D** *215/22*

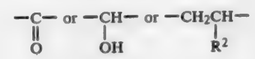
U.S. Cl. 514—312 **21 Claims**

1. A carbostyril derivative or a pharmaceutically acceptable salt thereof, wherein said carbostyril derivative is represented by the general formula (1),

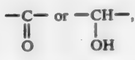


(1)

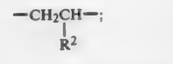
wherein R^1 is a hydrogen atom, a lower alkyl group, a phenyl-lower alkyl group, a lower alkenyl group or a lower alkynyl group; A is a group of the formula,



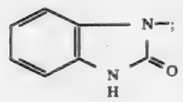
(wherein R^2 is a hydrogen atom or a lower alkyl group); B is a lower alkylene group; l is 1 when A is a group of the formula



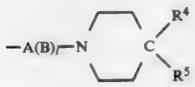
or l is 0 or 1 when A is a group of the formula



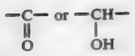
R^4 is an unsubstituted or substituted-phenyl group having 1 to 3 substituents, on the phenyl ring, selected from the group consisting of a halogen atom, a lower alkyl group and a lower alkoxy group; or R^4 is a substituted-phenyl group having a lower alkylene-dioxy group as the substituent, on the phenyl ring, a phenyl-lower alkyl group, 1,2,3,4-tetrahydronaphthyl group or a group of the formula,



R^5 is a hydrogen atom, a hydroxy group or a lower alkanoyl group; the carbon-carbon bond between the 3- and 4-positions in the piperidine ring of formula (1) may be a double bond, in which case R^5 does not exist; the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a single or double bond; provided that (a) when R^1 is a hydrogen atom, (b) when the substituted position of a group of the formula



is at the 6-position in the carbostyril skeleton (A is a group of the formula



B is a group of the formula



(wherein R is a hydrogen atom or a lower-alkyl group); R^4 is a phenyl-lower alkyl group or an unsubstituted phenyl group) and (c) when the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a single bond, then R^5 should not be a hydrogen atom.

21. A pharmaceutical composition comprising an antihistaminic agent containing an effective amount of at least one carbostyril derivative represented by the general formula (1) of claim 1, or a pharmaceutically acceptable salt thereof, as the active ingredient.

4,567,188

HYPOTENSIVE 2-NITRO-1,1-ETHENEDIAMINES

Ekkehard Niemers; Andreas Knorr, both of Wuppertal, and Bernward Garthoff, Hilden, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

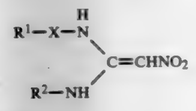
Filed Aug. 10, 1983, Ser. No. 522,069

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1982, 3232462

Int. Cl.⁴ C07D *213/74;* **C07C** *87/60;* **A61K** *31/44, 31/135*

U.S. Cl. 514—332 **10 Claims**

1. A compound of the formula



in which

R^1 is aryl with 6 to 10 carbon atoms optionally substituted up to three times by halogen, lower alkyl, lower alkoxy, trifluoromethyl, methylmercapto, nitro and/or cyano or is pyridyl optionally substituted by lower alkyl or halogen,

R^2 is alkyl with 1 to 10 carbon atoms optionally substituted by lower alkoxy or independently is any of the radicals of R^1, and

X is methylene radical optionally substituted by lower alkyl, or a direct bond but if X is a direct bond R^2 is not aryl,

or a physiologically acceptable acid addition salt thereof.

7. A composition for treating acute and chronic ischemic heart disease, for reducing high blood pressure or for treating disorders in cerebral and peripheral blood flow in which a hypotensive agent would be useful, comprising an amount effective therefor of a compound or salt according to claim 1 in admixture with a pharmaceutically acceptable diluent.

4,567,189

IMIDAZOLE DERIVATIVES USED IN ANTITHROMBOTIC METHOD

Peter J. Fellner, Marlow; Mun F. Lai, Maidenhead, and Thakorbhai P. Patel, High Wycombe, all of England, assignors to G. D. Searle & Co., Skokie, Ill.

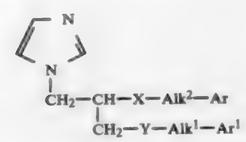
Continuation of Ser. No. 363,180, Mar. 29, 1982, abandoned. This application May 3, 1984, Ser. No. 606,808

Claims priority, application United Kingdom, Apr. 13, 1981, 8111614

Int. Cl.⁴ A61K *31/415, 31/44*

U.S. Cl. 514—338 **1 Claim**

1. A method of treating a patient suffering from or liable to suffer from a thrombotic condition which comprises administering to said patient an effective amount of a compound of the formula:



I

and acid addition salts therefore;

wherein Ar and Ar^1, independently represent an aromatic radical which may be substituted with one or more substituents selected from the class comprising:

halogen;
lower alkyl;
lower alkoxy;
alkylenedioxy;
aralkoxy;
argyloxy;
trihalomethyl;
carboxy;
carboxyalkyl;
cyano;
carboxamido;
di-lower alkylamino;
nitro; and
lower alkyl sulphonyl

provided that either Ar or Ar^1 is an aromatic radical having at least one substituent selected from the class comprising alkoxy, alkylenedioxy, carboxy or carboxyalkyl; and

wherein Alk^1 and Alk^2, independently represent an alkylene group containing from 1 to 8 carbon atoms which may be substituted one or more times by lower alkyl; X and Y which may be the same or different represent O, NH or S; and in which the imidazole ring may be substituted by one or more lower alkyl substituents.

4,567,190

PESTICIDAL PHENYLHYDRAZONOPYRROLIDINES

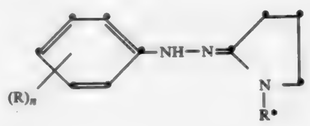
Jean-Claude Gehret, Aesch, and Walter Traber, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 21, 1984, Ser. No. 622,826

Int. Cl.⁴ C07D *401/12;* **A61K** *31/44*

U.S. Cl. 514—343 **10 Claims**

1. A substituted phenylhydrazonopyrrolidine compound of the formula I



(I)

wherein

R is halogen or C_1–C_4-alkyl,

n is zero, 1 or 2,

R^* is the group —CH=N—R_1 or



R_1 is a pyridine group which is bound by way of a carbon atom, and which is unsubstituted or substituted by a methyl group, or is a 2-thiazolyl group, and

R_2 is methyl or ethyl,

R_3 is C_1–C_4-alkyl, C_1–C_2-alkoxy or C_1–C_4-alkylthio, and

X is oxygen or sulfur,

including the acid addition salt of a compound of the formula I.

4,567,191

AMINO-PHENYL-THIADIAZOLEDIOXIDES AS GASTRIC SECRETION INHIBITORS

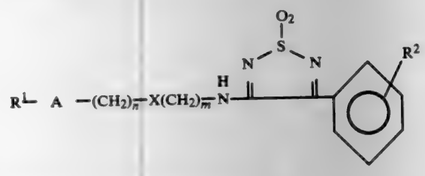
John J. Baldwin, Gwynedd Valley; Adolph Pietruszkiewicz, North Wales; William A. Bolhofer, Frederick, and William C. Lumma, Jr., Pennsburg, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 7, 1983, Ser. No. 501,943

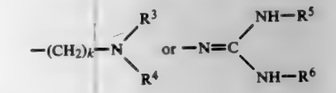
Int. Cl.⁴ C07D *285/10, 417/12;* **A61K** *31/41*

U.S. Cl. 514—362 **7 Claims**

1. Compounds having the formula:



wherein R^1 is hydrogen, loweralkyl,



wherein

R^3 and R^4 are independently hydrogen, loweralkyl, cycloloweralkyl or phenylloweralkyl or R^3 and R^4 may be joined to form, along with the nitrogen to which they are attached, a 5- or 6-membered heterocycle, which may also contain an oxygen, sulfur, SO, SO_2, or an N—R^7 linkage wherein R^7 is hydrogen or loweralkyl of from 1 to 3 carbon atoms;

R^5 and R^6 are independently hydrogen, loweralkyl, or 3,3,3-trifluoroethyl or R^5 and R^6 may be joined together to form a cyclic structure through a $—(CH_2)_m$-linkage;

n is 0 or 1;

m is 2 to 4;

k is 0 to 4;

X is oxygen, sulfur or methylene:

R^2 is hydrogen, halogen, loweralkyl, or loweralkoxy;

A is phenylene or a heterocycle selected from furan, thiophene, pyrrole, oxazole, oxadiazole, thiadiazole, thiazole, triazole, pyrazole, imidazole, pyridine, pyrimidine, pyrazine, benzofuran, benzoxazole and benzimidazole, provided that when A is a 5-membered heterocycle, or a benzo-fused 5-membered heterocycle containing one heteroatom, n is 1;

and, the physiologically acceptable salts and N-oxides thereof.

4,567,192

ACYLAMINOPHENOL DERIVATIVES

László Révész, Basel, and Trevor J. Petcher, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

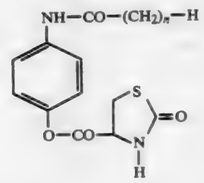
Filed Apr. 30, 1984, Ser. No. 605,138

Claims priority, application Switzerland, May 4, 1983, 2423/83

Int. Cl.⁴ C07D *277/56;* **A01K** *31/425*

U.S. Cl. 514—369 **6 Claims**

1. A compound of formula I



(I)

wherein n is an integer of from 1 to 5.

4,567,193

2-(FORMYLAMINO)-N-(1H-TETRAZOL-5-YL)BENZAMIDE AND USE AS ANTI-ALLERGICS

Norton P. Peet, and Shyam Sunder, both of Indianapolis, Ind., assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Jul. 22, 1983, Ser. No. 517,086

Int. Cl.⁴ A61K *31/41;* **C07D** *257/06*

U.S. Cl. 514—381 **3 Claims**

1. 2-(Formylamino)-N-(1H-tetrazol-5-yl)benzamide and the pharmaceutically acceptable salts thereof.

3. A method for inhibiting the result of antibody-antigen reactions in mammals which comprises administration to a mammal susceptible to allergic reaction of an effective amount of 2-(formylamino)-N-(1H-tetrazol-5-yl)benzamide or a pharmaceutically acceptable salt thereof.

4,567,194

2-ACYLIMIDAZOLE COMPOUNDS, THEIR SYNTHESIS AND USE AS MEDICINAL AGENTS

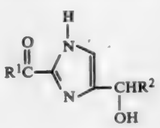
Udo Kroeplien, and Joachim Rosdorfer, both of Essen, Fed. Rep. of Germany, assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Mar. 10, 1983, Ser. No. 473,931

Int. Cl.⁴ C07D *233/64;* **A61K** *31/415*

U.S. Cl. 514—400 **25 Claims**

1. A 2-acylimidazole compound having the formula



its enantiomers, tautomers, and mixtures of optical isomers, wherein:

R^1 is an alkyl of 1 to 4 carbons, phenyl, benzyl, or phenylethyl; and

R^2 is alkyl of 1 to 6 carbons, hydroxyalkyl of 1 to 6 carbons, polyhydroxyalkyl of 1 to 6 carbons having up to one hydroxyl per carbon, phenyl, benzyl, or phenylethyl.

19. A method for preventing cell mediated, transplanted tissue rejection in an animal having a tissue transplant comprising lowering the vitamin B_6 blood level in the animal and administering to the animal a therapeutic amount of a compound of claim **1**.

20. A method for preventing or alleviating cell-mediated autoimmune disease in a patient with said disease comprising lowering the vitamin B_6 blood level in the patient and administering a therapeutic amount of a compound of claim 1.

4,567,195

AZAPROSTACYCLINS, THEIR PREPARATION AND PHARMACEUTICAL USE

Norbert Schwarz; Werner Skuballa; Helmut Vorbrueggen; Jorge Casals-Stenzel; Ekkehard Schillinger, and Michael H. Town, all of Berlin, Fed. Rep. of Germany, assignors to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

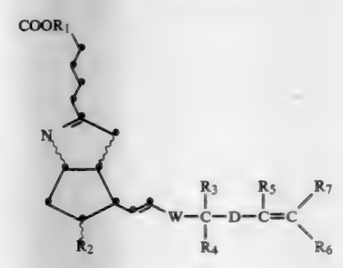
Division of Ser. No. 350,674, Feb. 22, 1982, Pat. No. 4,446,147. This application Mar. 21, 1984, Ser. No. 591,719

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3107100

Int. Cl.⁴ C07D *209/52;* **A61K** *31/40*

U.S. Cl. 514—419 **8 Claims**

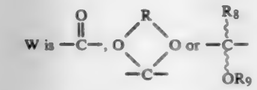
1. An azaprostacyclin of the formula



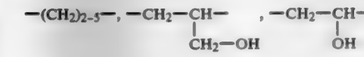
(I)

wherein

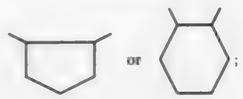
R_1 is (a) hydrogen, (b) C_{1-10} alkyl, (c) C_{1-10} alkyl substituted by halogen; C_{1-4} alkoxy; C_{6-10} aryl; C_{6-10} aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; di-C_{1-4}-alkylamino; or tri-C_{1-4}-alkylammonium; (d) C_{4-10} cycloalkyl, (e) C_{4-10} cycloalkyl substituted by C_{1-4} alkyl, (f) C_{6-10} aryl, (g) C_{6-10} aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group, (h) an aromatic heterocyclic of 5 or 6 ring atoms one of which is O, N or S, the remainder being carbon atoms, (i) phenacyl, or (j) phenacyl substituted on the phenyl ring by bromine, phenyl, C_{1-4}-alkoxy, or di-C_{1-4}-alkoxy,



wherein R_8 is hydrogen or alkyl of 1–5 carbon atoms, R_9 is hydrogen, tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl, tribenzylsilyl or an acyl group of a C_{1-15}-hydrocarbon carboxylic or sulfonic acid, the OR_9-group can be in the α- or β-position, and R is



-continued



R_2 is OH or OR_9,

R_3 and R_4 each independently is hydrogen, alkyl of 1–5 carbon atoms, or fluorine,

D is $—(CH_2)_2—$, or $—(CH_2)_2—$ substituted by C_{1-5}-alkyl R_5 together with R_6 forms a bond and R_7 is H or C_{1-2}-alkyl, or for the compounds wherein R_1 is H, a physiologically compatible salt thereof.

4,567,196

THIENO [2,3-b] PYRROLE COMPOUNDS AND THEIR USE IN ALLEVIATING PAIN

Michel Wierzbicki, Puteaux, France, assignor to ADIR, s.a.r.l., Neuilly-sur-Seine, France

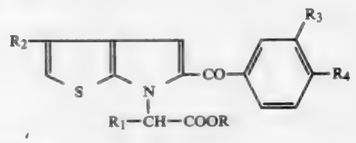
Filed Nov. 2, 1984, Ser. No. 667,909

Claims priority, application France, Nov. 10, 1983, 83 17866

Int. Cl.⁴ C07D *495/06;* **A61K** *31/38*

U.S. Cl. 514—422 **7 Claims**

1. A compound selected from the group consisting of: thieno[2,3-b]pyrrole compounds of the formula I:



(I)

in which

R is selected from the group consisting of hydrogen straight-chain and branched alkyl having from 1 to 5 carbon atoms inclusive, alkali and alkaline-earth metals, ammonium and mono-, di- and tri-alkylammonium in which the and each alkyl group contain from 1 to 5 carbon atoms inclusive,

R_1 is selected from the group consisting of hydrogen straight-chain and branched alkyl having from 1 to 5 carbon atoms inclusive,

R_2 is selected from the group consisting of hydrogen straight-chain and branched alkyl having from 1 to 5 carbon atoms inclusive, phenyl and phenylalkyl in which the alkyl groups are straight-chain or branched and contain from 1 to 5 carbon atoms inclusive,

R_3 and R_4, which are the same or different, are each selected from the group consisting of hydrogen, halogen and straight-chain and branched alkyl and alkoxy and each having from 1 to 5 carbon atoms inclusive, and

R_3 and R_4 together represent a radical of the formula: —CH=CH—CH=CH— in order to form with the phenyl group to which they are bonded a naphthyl group.

7. A method for treating a living animal body afflicted with pain comprising the step of administering to the said living animal an amount of a compound of claim 1 which is effective for the alleviation of the said condition.

4,567,197

1,3-DIOXAN-5-YLALKENOIC ACIDS

Andrew G. Brewster, and Peter W. R. Caulkett, both of Macclesfield, United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

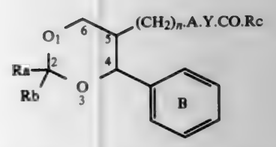
Filed May 6, 1983, Ser. No. 492,247

Claims priority, application United Kingdom, May 12, 1982, 8213702

Int. Cl.⁴ A61K *31/335;* **C07D** *319/06*

U.S. Cl. 514—452 **15 Claims**

1. A 4-phenyl-1,3-dioxan-cis-5-ylalkenoic acid derivative of the formula I



I

wherein Ra and Rb are independently hydrogen, (2–6C)alkenyl, (1–8C)alkyl optionally bearing up to three halogeno substituents, independently hydrogen, (2–6C)alkenyl, (1–8C)alkyl optionally bearing up to three halogeno substituents, pentafluorophenyl, aryl or aryl(1–4C)alkyl, the latter two of which may optionally bear up to three substituents selected from halogeno, (1–6C)alkyl, (1–6C)alkoxy, (1–6C)alkoxy, (1–4C-)alkylenedioxy, trifluoromethyl, cyano, nitro, hydroxy, (2–6C-)alkanoyloxy, (1–6C)alkylthio, (1–6C)alkanesulphonyl, (1–6C-)alkanoylamino, and oxapolymethylene of 2 to 4 carbon atoms, provided that when both Ra and Rb are alkyl or alkenyl, the total number of carbon atoms in Ra and Rb taken together is 8 or less; or Ra and Rb together form polymethylene of 2 to 7 carbon atoms, optionally bearing one or two (1–4C)alkyl substituents; Rc is hydroxy, (1–6C)alkanesulphonamido; n is the integer 1 or 2; A is ethylene or vinylene; Y is polymethylene of 2 to 5 atoms optionally bearing (1–4C)alkyl as a substituent; benzene ring B optionally bears one or two substituents selected from halogeno, (1–6C)alkyl, (1–6C)alkoxy, hydroxy, (2–6C)alkanoyloxy. (1–6C)alkanoylanino, trifluoromethyl and nitro; and the substituents at positions 4 and 5 of the dioxane ring have cis-relative stereochemistry; or for those compounds wherein Rc is hydroxy, a salt thereof with a base affording a physiologically acceptable cation.

11. A salt as claimed in claim 1 which is an alkali metal, alkaline earth metal, aluminium or ammonium salt, or a salt with an organic amine or quaternary base, forming a physiologically acceptable cation.

14. A pharmaceutical composition for use in antagonising one or more of the actions thromboxane A_2 in a warm-blooded animal requiring such treatment which comprises an antagonistically effective amount of a compound of formula I, or a salt thereof, as claimed in claim 1 together with a pharmaceutically acceptable diluent or carrier.

15. A method for antagonising one or more of the actions of thromboxane A_2 in a warm-blooded animal requiring such treatment which comprises administering to said animal an antagonistically effective amount of a thromboxane A_2 antagonistically active 4-phenyl-1,3-dioxan-cis-5-ylalkenoic acid derivative.

4,567,198

ETHANETHIOATES AND MERCAPTOAMIDES AND USE THEREOF AS ANALGESIC AND ENKEPHALINASE INHIBITORY COMPOUNDS

Francoisè Delevalleé , Vincennes; Roger Deraedt, Pavillons Sous Bois, and Odile Le Martret, Paris, all of France, assignors to Roussel Uclaf, Paris, France

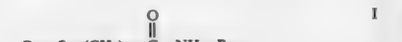
Filed Feb. 6, 1984, Ser. No. 577,032

Claims priority, application France, Feb. 7, 1983, 83-01863

Int. Cl.⁴ A61K *31/265, 31/16;* **C07C** *103/12, 153/023*

U.S. Cl. 514—513 **10 Claims**

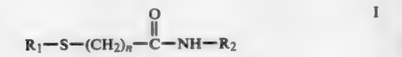
4. A method of relieving pain in warm-blooded animals comprising administering to warm-blooded animals an analgesically effective amount of at least one compound selected from the group consisting of compound of the formula



I

wherein R_1 is selected from the group consisting of hydrogen and acetyl, n is 1 or 2 and when n is 1, R_2 is selected from the group consisting of phenyl, p-chlorophenyl and m-trifluoromethylphenyl and when n is 2, R_2 is selected from the group consisting of phenyl, p-chlorophenyl and m-trifluoromethylphenyl and their salts with non-toxic, pharmaceutically acceptable acids and bases.

7. A method of inhibiting enkephalinase in warm-blooded animals comprising administering to warm-blooded animals an enkephalinase inhibitory amount of at least one compound selected from the group consisting of compound of the formula



I

wherein R_1 is selected from the group consisting of hydrogen and acetyl, n is 1 or 2 and when n is 1, R_2 is selected from the group consisting of phenyl, p-chlorophenyl and m-trifluoromethylphenyl and when n is 2, R_2 is selected from the group consisting of phenyl, p-chlorophenyl and m-trifluoromethylphenyl and their salts with non-toxic, pharmaceutically acceptable acids and bases.

10. A compound selected from the group consisting of ethanethioate of S-[2-(4-chlorophenylamino)-2-oxo-ethyl], ethanethioate of S-[3-oxo-3-phenylamino-propyl], ethanethioate of S-[3-(4-chlorophenylamino)-3-oxo-propyl], and their salts with non-toxic, pharmaceutically acceptable acids and bases.

4,567,199

HALOBENZYL ESTERS

Patrick J. Crowley, Bracknell, England, assignor to Imperial Chemical Industries PLC, London, England

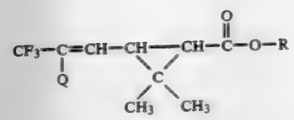
Continuation of Ser. No. 336,585, Jan. 4, 1982, abandoned. This application Oct. 6, 1983, Ser. No. 539,570

Claims priority, application United Kingdom, Jan. 21, 1981, 8101825; Aug. 27, 1981, 8126204

Int. Cl.⁴ C07C *69/743;* **A01N** *53/00*

U.S. Cl. 514—531 **6 Claims**

1. A method of combating rootworms of the genus Diabrotica at a locus which comprises treating the locus with an insecticidally effective amount of a composition comprising an insecticidally effective amount of a compound of the formula:



wherein Q represents fluoro or chloro and R is selected from the group consisting of 2-chloro-4-fluorobenzyl, 2-chloro-5-fluorobenzyl and 2-chloro-6-fluorobenzyl, and a carrier therefor.

4,567,200

ESTERS OF MERCAPTO ACYL-CARNITINES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Maria O. Tinti; Emma Quaresima; Carlo Bagolini, and Paolo deWitt, all of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

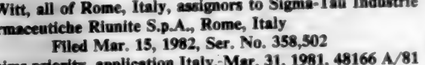
Filed Mar. 15, 1982, Ser. No. 358,502

Claims priority, application Italy, Mar. 31, 1981, 48166 A/81

Int. Cl.⁴ A61K *31/22, 31/23;* **C07C** *149/243*

U.S. Cl. 514—547 **11 Claims**

1. Mercapto acyl carnitine esters of the general formula



(I)

wherein:

X^- is a pharmacologically acceptable halogenide ion;

R is the mercapto acyl radical of a mercapto alkanoic acid having from 2 to 10 carbon atoms; and

R_1 is a straight or branched alkyl radical having from 1 to 5 carbon atoms.

4,567,201

DIPHENOXYPROPANE DERIVATIVES AND COMPOSITIONS OF ANTIASTHMATIC AND ANTIINFLAMMATORY AGENTS THEREOF

Akira Nohara, and Yoshitaka Maki, both of Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

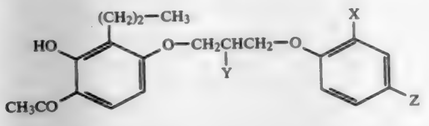
Filed Nov. 9, 1982, Ser. No. 440,297

Claims priority, application Japan, Nov. 25, 1981, 56-189812; Oct. 22, 1982, 57-186361

Int. Cl.⁴ A61K *31/41, 31/09;* **C07D** *257/06;* **C07C** *43/205*

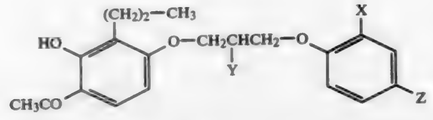
U.S. Cl. 514—571 **8 Claims**

1. A compound of the formula:



wherein X is a fluorine, chlorine, or bromine atom, Y is a hydrogen atom or a hydroxy group and Z is a carboxy group.

6. A member of the class consisting of antiasthmatic and antiinflammatory agents which contains an effective antiasthmatic amount in the case of the antiasthmatic agents and an effective amount in the case of the antiinflammatory agents of a compound of the formula



wherein X is a fluorine, chlorine, or bromine atom, Y is a hydrogen atom or a hydroxy group and Z is a carboxy group and a pharmaceutically acceptable carrier of vehicle therefore.

4,567,202

PHARMACEUTICAL AMITRIPTYLIN OXIDE PREPARATION AND PROCESS FOR ITS MANUFACTURE

Manfred Dürr, Pulheim-Dansweiler; Benedikt Gajdos, Cologne; Klaus-Dieter Gneuss, Cologne; Ekkehard Harhausen, Cologne, and Jürgen Seidel, Pulheim, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Fed. Rep. of Germany

Filed Nov. 3, 1983, Ser. No. 548,491

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247676

Int. Cl.⁴ A61K *31/135*

U.S. Cl. 514—656 **3 Claims**

1. A pharmaceutical composition containing a stabilized amitriptylin oxide dihydrate, an effective amount of an organic acid stabilizer selected from the group consisting of malic acid, tartaric acid and citric acid, and a pharmaceutically acceptable auxiliary or carrier, said stabilized amitriptylin oxide dihydrate being formed by dissolving amitriptylin oxide dihydrate and the organic acid acid either jointly or separately in water or an alcohol-water mixture, applying the resultant solution containing the amitriptylin oxide dihydrate and said organic acid to the auxiliary or carrier and evaporating the solvent.

4,567,203

COSMETICS INTEGRATED WITH EPICUTANEOUS SEBUM AND SEBUM-LIKE COMPOSITIONS

Igino Bonadeo, Via Cornalia 32, Milan, Italy

Continuation-in-part of Ser. No. 843,678, Oct. 19, 1977, abandoned. This application Jun. 22, 1979, Ser. No. 51,036

Int. Cl.⁴ A61K *47/00*

U.S. Cl. 514—844 **10 Claims**

1. A cosmetic composition comprising a mixture of constituents selected from the group consisting of fatty acids, fatty esters, fatty hydrocarbons and fatty alcohols, said mixture being in a percent by weight ratio to obtain a required value of emulsification (HLB_f) of between 10.4 and 10.7 for a face treatment and of between 12.4 and 12.8 for a hair treatment and an emulsification value (HLB) of between 10.4 and 10.7 for emulsifying sebaceous face film and of between 12.4 and 12.8 for emulsifying sebaceous hair film wherein said fatty acids have a HLB_f of between 12.7 and 17; said fatty esters have a HLB_f of between 8.2 and 12.7, said fatty hydrocarbons have a HLB_f of between 8.2 and 12; and said fatty alcohols have a HLB_f of between 9.4 and 12.7.

4,567,204

METHOD FOR MAKING METHANOL

R. Lawrence Mednick, Roslyn Heights, N.Y., and David B. Blum, Wayne, N.J., assignors to Chem Systems, Inc., Tarrytown, N.Y.

Continuation of Ser. No. 325,507, Nov. 27, 1981, abandoned, which is a continuation of Ser. No. 120,903, Feb. 12, 1980, abandoned. This application Jul. 23, 1984, Ser. No. 633,231

Int. Cl.⁴ C07C *29/16*

U.S. Cl. 518—700 **7 Claims**

1. A process for preparing methanol from synthesis gas containing hydrogen and carbon monoxide comprising the steps:

(a) entraining from about 5 to about 40 wt. % of methanol-forming catalyst particles in an inert liquid, said catalyst particles having an average particle size of from about 10 to about 125 microns;

(b) contacting said synthesis gas with said entrained catalyst in a reaction zone at a temperature of from 100° C. to 500° C. and at a pressure of from 200 to 10,000 psia;

(c) withdrawing from said reaction zone the inert liquid with said entrained catalyst and cooling the same in a cooling zone;

(d) recycling said inert liquid with said entrained catalyst particles back to said reaction zone; and

(e) withdrawing from said reaction zone methanol and unreacted synthesis gas.

4,567,205

RUTHENIUM CATALYSTS, AND USE THEREOF FOR FISCHER-TROPSCH SYNTHESIS

Kym B. Arcuri; Charles H. Mauldin, and Dave H. Shaw, all of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 626,024, Jun. 29, 1984. This application May 20, 1985, Ser. No. 735,783

Int. Cl.⁴ C07C *1/04*

U.S. Cl. 518—715 **15 Claims**

1. A process useful for the synthesis of hydrocarbons at reaction conditions from a feed constituting an admixture of carbon monoxide and hydrogen, which comprises contacting said feed with a catalyst which comprises ruthenium in catalytically active amount composited with titania, or titania-containing support, having a rutile:anatase ratio of at least about 2:3 and rhenium in amount sufficient to provide a weight ratio of rhenium:ruthenium which ranges from about 2:1 to about 1:4,sufficient at corresponding reaction conditions to obtain improved activity maintenance vis-a-vis a ruthenium catalyst otherwise similar except that it does not contain rhenium.

4,567,206

FLUOROCARBON POLYMERS AND PROCESSES FOR THEIR PREPARATION

Kiyohide Matsui, Sagamihara; Yoshiyuki Kikuchi, Tokyo; Tamejiro Hiyama, Sagamihara; Etsuko Tobita, Tokyo; Kiyoshi Kondo, Yamato; Akira Akimoto, Hohfu; Toru Seita, and Hiroyuki Watanabe, both of Shin-nanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo and Sagami Chemical Research Center, Tokyo, both of, Japan

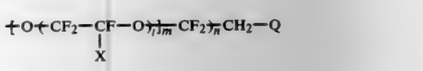
Filed Dec. 28, 1983, Ser. No. 566,431

Claims priority, application Japan, Dec. 28, 1982, 57-227443; Jun. 29, 1983, 58-116062; Oct. 17, 1983, 58-192473

Int. Cl.⁴ C08D *5/20;* **C08F** *226/06*

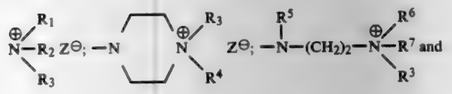
U.S. Cl. 521—27 **12 Claims**

1. A quaternary ammonium group containing fluorocarbon polymer comprising a perfluorocarbon main chain and a fluorinated pendant chain of the formula:

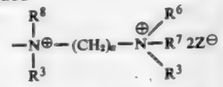


wherein:

X is fluorine, chlorine or $-CF_3$, l is an integer of 0 to 5, m is 0 or 1, n is an integer of 1 to 5 and Q is selected from the group consisting of:



-continued



wherein R^1 and R^2 are lower alkyl, aromatic, hydroxy lower alkyl or R^1 and R^2 together form tetramethylene or pentamethylene, R^3, R^4 and R^8 are lower alkyl, R^5 is hydrogen or lower alkyl or together form tetramethylene or pentamethylene, a is an integer of 3 to 5 and Z is a counter ion for the quaternary ammonium ion.

4,567,207

POLYMERIC MATERIAL ADAPTED FOR PHYSICO-CHEMICAL SEPARATION OF SUBSTANCES AND METHOD FOR PRODUCING SAME

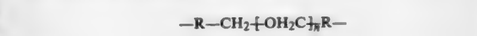
Nazar Y. Ljubman, ulitsa Dzhandosova, 166, kv. 38; Gulsara K. Imangazieva, ulitsa Dzhandosova, 69, kv. 112; Lyalya T. Nugmanova, Mikroraion Sairan, 10, kv. 48; Alexandr I. Uskov, 2 Mikroraion, 45, kv. 36; Tokhtobubu C. Sydykova, Mikroraion "Orbita-4", 6, kv. 41, and Zinaida I. Kim, ulitsa Dzhandosova, 69, kv. 47, all of Alma-Ata, U.S.S.R.

Filed Jul. 18, 1983, Ser. No. 514,480

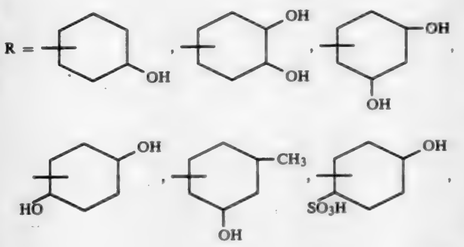
Int. Cl.⁴ C08G *520*

U.S. Cl. 521—35 **22 Claims**

1. A polymeric material adapted for physico-chemical separation of substances comprising a porous material of a three-dimensional structure in the state of a solid dispersion with a pore diameter of from 0.0025 to 10 μm and a permeability coefficient of from 2×10^{-7} to 2×10^{-2} cm·sec^{-1}, and containing a polymer with an elementary unit of the formula:



wherein



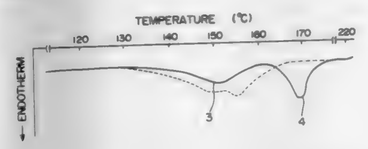
wherein n=0.2.

4,567,208

PRELIMINARILY FOAMED PARTICLES OF NON-CROSSLINKED POLYPROPYLENE-TYPE RESIN

Hideki Kuwabara, Hadano, and Yoshimi Sudo, Chigasaki, both of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

Filed Dec. 5, 1984, Ser. No. 678,679
Claims priority, application Japan, Dec. 7, 1983, 58-230956
Int. Cl.⁴ C08J *9/16;* **C08L** *23/20, 23/14*
U.S. Cl. 521—59 **6 Claims**



1. Preliminarily foamed particles of a non-crosslinked polypropylene copolymer resin comprising, as a base resin, a mixture of 10 to 95% by weight of an alpha-olefin/propylene random copolymer wherein the alpha-olefin has at least 4 carbom atoms and having an amount of the heat of crystallization of not more than 10 cal/g, as measured by differential scanning calorimetry, and 90 to 5% by weight of an ethylene/-propylene random copolymer having an ethylene content of from 3 to 15 mole%, said preliminarily foamed particles having been foamed under conditions such that the maximum temperature of the particles during foaming is in the range of from Tm−25° C. to Tm−5° C., wherein Tm is the temperature at which the melting of the resin particle ends, and wherein the crystal structure of the preliminarily foamed particles is such that when a differential scanning calorimetry thermogram is drawn by heating 1 to 3 mg of the preliminarily foamed particles to 220° C. at a rate of 10° C./min. by means of a differential scanning calorimeter, a high temperature peak is observed at a higher temperature than the temperature of the peak inherent to the base resin.

4,567,209

FOAMS OF IONICALLY ASSOCIATED BLENDS OF STYRENIC AND ETHYLENIC POLYMERS

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 24, 1984, Ser. No. 653,420
Int. Cl.⁴ C08J *9/08*
U.S. Cl. 521—81 **3 Claims**

1. A method for preparing a foam which comprises extruding a foamable resin composition comprising:
(a) at least about 60 parts by weight of a styrenic polymer having polymerized therein at least about 70 weight % of styrene or a ring alkyl-substituted styrene and about 1–30 weight % of an ethylenically unsaturated acid monomer polymerizable therewith;
(b) about 1–40 parts by weight of an ethylenic polymer having polymerized therein at least about 60 weight % ethylene and about 1–40 weight % of an ethylenically unsaturated acid monomer polymerizable therewith; and
(c) about 3–12 parts by weight, based upon 100 parts by weight of (a) and (b), of an alkali metal bicarbonate.

4,567,210

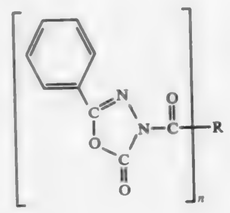
PROCESS FOR FOAMING THERMOPLASTIC AROMATIC POLYCARBONATES

Heinz Hammer, Cologne; Klaus Kircher, Leverkusen, and Rolf-Volker Meyer, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Feb. 4, 1985, Ser. No. 697,996
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1984, 3405418
Int. Cl.⁴ C08J *9/10*
U.S. Cl. 521—90 **6 Claims**

1. A process for foaming an aromatic thermoplastic polycarbonate at a temperature from 270° C. to 320° C., which also contains, if desired, a nucleating agent, in which a compound of the general formula

(I)



wherein
n is 1 and
R denotes C_1–C_{18}-alkoxy, C_6–C_{12}-cycloalkoxy, C_6–C_{18}-aryl, C_6–C_{12}-aryloxy, C_7–C_{18}-aralkyl, C_7–C_{18}-aralkoxy, C_7–C_{18}-alkaryl or C_7–C_{18}-alkaryloxy, or wherein
n is 2 and
R denotes C_6–C_{18}-arylene, C_6–C_{18}-arylene dioxy, isopropylidene-bis-(phenylene-oxy) or C_1–C_5-alkylene, or wherein
n is 2 and
R is a single bond,
and which must also have a decomposition temperature in bulk of at least 265° C., is used, in an amount of 0.02 to 5% by weight, based on the weight of thermoplastic polycarbonate, as a blowing agent in the presence of cyanuric acid in an amount of 0.0005 to 2% by weight, again based on the weight of thermoplastic polycarbonate.

4,567,211

NAPHTHALENIC DERIVATIZED PLASTICIZERS FOR POLYPHOSPHAZENE POLYMERS

Arthur E. Oberster, North Canton, Ohio, and John C. Vicic, Houston, Tex., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 4, 1985, Ser. No. 707,761
Int. Cl.⁴ C08K *5/01*
U.S. Cl. 521—98 **14 Claims**

8. A plasticized foam composition comprising a polyphosphazene polymer and a plasticizer of the formula:

$$AR—CH_2—AR—CH_2]_nAR$$

wherein n=1, 2, 3 or 4 and each AR group is an independently substituted alkylated naphthalene ring.

4,567,212

NONSLUMPING, FOAMABLE POLYORGANOSILOXANE COMPOSITIONS CONTAINING ORGANOSILOXANE GRAFT COPOLYMERS

Therese M. Bauman, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 720,768, Apr. 8, 1985, which is a continuation-in-part of Ser. No. 664,913, Oct. 26, 1984. This application Jun. 24, 1985, Ser. No. 747,597
Int. Cl.⁴ C08J *9/14*
U.S. Cl. 521—122 **11 Claims**

1. A foam obtained by dispensing and curing in the presence of atmospheric moisture a foamable composition obtained by mixing under substantially anhydrous conditions
(A) a moisture-curable RTV elastomeric organosiloxane composition comprising the product obtained by mixing in the absence of atmospheric moisture at least one polydiorganosiloxane curable in the presence of a moisture reactive crosslinker, a moisture reactive crosslinker and, optionally, a curing catalyst, the amount of said crosslinker being sufficient to cure said polymer;
(B) less than 12 percent by weight, based on the weight of said foamable composition of a finely divided filler;
(C) from 10 to 50 percent by weight of said foamable composition, of a liquified blowing agent sufficient to form a foam following release of said composition into an area under atmospheric pressure; and
(D) from 5 to 80 percent, based on the combined weight of all diorganosiloxane polymers present in said composition, of an organosiloxane graft copolymer obtained by the peroxide catalyzed polymerization of at least one ethylenically unsaturated organic monomer in the presence of a liquid, hydroxyl endblocked polydiorganosiloxane.

4,567,213

INK JET PRINTING COMPOSITION

Yog R. Bhatia, Glen Ellyn, and Herman Stallworth, Chicago, both of Ill., assignors to Videojet Systems International, Inc., Elk Grove Village, Ill.

Filed Oct. 20, 1983, Ser. No. 543,828
Int. Cl.⁴ C09D *11/02, 11/10*
U.S. Cl. 523—160 **9 Claims**

1. An ink composition for use in ink jet printing consisting essentially of:
(a) 5 to 25% by weight of a styrene-acrylic acid copolymer, said copolymer having a molar ratio of styrene to acrylic acid from 1 to about 4;
(b) 0.5 to 8% by weight of a soluble dye;
(c) a solvent system of a lower alkanol and a lower aliphatic ketone, said alkanol being present in an amount of 10 to 85% by weight, and said ketone being present in an amount of 10 to 60% by weight;
(d) 0 to about 50% by weight of at least one evaporation retardant;
said composition having a pH in the range of 1 to 7 and containing less than 5% by weight of water.

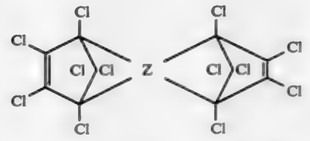
4,567,214

FLAME RETARDANT POLYOLEFIN COMPOSITIONS

Charles S. Ilardo, Tonawanda, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Sep. 14, 1984, Ser. No. 650,482
Int. Cl.⁴ C08K *3/10*
U.S. Cl. 523—216 **24 Claims**

1. A flame retardant polymer composition comprising, in percent by weight, (1) about 25 to about 75 percent of a polyolefin, (2) about 0.01 to about 3.0 percent of a compound of iron (3) about 1 to about 30 percent of a compound of antimony, (4) about 5 to about 50 percent of a non-basic compound of magnesium, and (5) about 2 to about 50 percent of a chlorinated organic compound of the formula



wherein Z is a tetravalent saturated cyclic radical having at least 4 carbon atoms which may be substituted by chlorine, bromine, fluorine or alkyl of 1 to 6 carbon atoms.

4,567,215

PRODUCT AND PROCESS RELATING TO HARDBOARD

Fred L. Jackson, Littleton, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed Mar. 8, 1985, Ser. No. 709,639
Int. Cl.⁴ C08K *3/34*
U.S. Cl. 523—218 **24 Claims**

1. A hardboard material comprising:
(a) about 1–40 wt % of a porous additive having a particle size in the range of about 0.1–2 mm;
(b) about 65–97 wt % of cellulose fibers;
(c) about 2–5 wt % binder; and
(d) about 1–4 wt % wax.

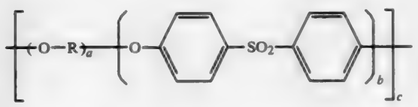
4,567,216

THERMOPLASTIC MODIFIED EPOXY COMPOSITIONS

Shahid Qureshi, Edison, and Hugh C. Gardner, Somerville, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 22, 1983, Ser. No. 564,393
Int. Cl.⁴ C08L *63/00;* **C08K** *3/00*
U.S. Cl. 523—400 **21 Claims**

1. A thermoplastic modified epoxy composition comprising:
(a) a bis(2,3-epoxycyclopentyl)ether.
(b) a diamine hardener selected from one or more of 4,4′-diaminodiphenyl ether, 4,4′-diaminodiphenyl methane, 3,3′-diaminodiphenyl methane, 4,4′-diaminodiphenyl sulfone, 3,3′-diaminodiphenyl sulfone, 3,3′-diaminobenzophenone, m-phenylenediamine, p-phenylenediamine, 4,4′-diaminodiphenylpropane, 4,4′-diaminodiphenyl sulfide, 1,4-bis(p-aminophenoxy)benzene, 1,4-bis(m-aminophenoxy)benzene, 1,3-bis-(m-aminophenoxy)benzene, 1,3-bis(p-aminophenoxy)benzene, adducts of epoxy resin with the above diamines, or the adducts of a bisphenol-A epoxy resin with a molar excess of 4,4-diaminodiphenyl sulfone, and
(c) a thermoplastic selected from one or more of the following: polycaprolactone, polyetherimide, phenoxy, polyarylether of the formula:



wherein R is selected from the residuum of hydroquinone, dihydroxydiphenyl sulfone or 4,4′-biphenol, a is 1, b is 1 or greater, and c is 5 to 100.

4,567,217

STEERING WHEEL MADE OF SOFT RESIN

Yoshio Yamazaki, Aichi; Masahiro Takimoto, Mie, and Satoshi Ohta, Aichi, all of Japan, assignors to Toyoda Gosei Co. Ltd., Aichi, Japan

Filed Jan. 24, 1985, Ser. No. 694,314
Claims priority, application Japan, Jan. 27, 1984, 59-11884
Int. Cl.[4] C08L *27/00;* B32B *15/08;* B62D *1/04;* C08K *5/10*
U.S. Cl. 524—296 4 Claims

1. A steering wheel produced by injection molding a resin composition comprising (i) a crosslinked vinyl chloride polymer having a gel fraction of at least 20% and an non-gelled portion having an average polymerization degree of from 2000 to 3000, (ii) an non-crosslinked vinyl chloride homopolymer having an average polymerization degree of from 800 to 1000, and (iii) a liquid plasticizer, wherein the weight ratio of polymer component (i) to polymer component (ii) is from 50/50 to 80/20 and (iii) the amount of liquid plasticizer is from 70 to 130 parts by weight per 100 parts by weight of the total amount of the two polymers (i) and (ii).

4,567,218

HALOGENATED BISPHENOL A ETHER FLAME RETARDANT FOR ABS POLYMERS

Thomas J. Petiet, Greenville, N.Y., assignor to Great Lakes Chemical Corporation, West Lafayette, Ind.

Continuation of Ser. No. 575,786, Feb. 1, 1984, abandoned, which is a continuation of Ser. No. 520,538, Aug. 5, 1983, abandoned, which is a continuation of Ser. No. 414,454, Sep. 2, 1982, abandoned, which is a continuation-in-part of Ser. No. 48,570, Jun. 14, 1979, abandoned. This application Feb. 27, 1985, Ser. No. 706,384
Int. Cl.[4] C08K *5/06*
U.S. Cl. 524—373 3 Claims

1. A flame-retardant acrylonitrile-butadiene-styrene copolymer composition comprising said copolymer and from about 5 to about 35 percent by weight of the total composition of bis(2,4,6-tribromophenoxyethyl)tetrabromobisphenol A ether.

4,567,219

COMPOSITION FOR COVER OF GOLF BALLS

Ichiro Tominaga, Kobe, and Taketo Matsuki, Nishinomiya, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Jul. 5, 1984, Ser. No. 627,718
Claims priority, application Japan, Jul. 6, 1983, 58-123899
Int. Cl.[4] A63B *37/12;* C08L *33/02*
U.S. Cl. 524—413 5 Claims

1. A cover composition for golf balls consisting essentially of an ionomer resin which is an ionic copolymer comprising units of an α-olefin and units of a monovalent or bivalent metal salt of an unsaturated monocarboxylic or dicarboxylic acid and 1 to 15 parts by weight of a linear low density polyethylene per 100 parts by weight of said ionomer resin.

4,567,220

PRODUCTION OF COPPER(II) HYDROXIDE PHOSPHATE WITH A LIGHT NATURAL COLOR AND AN AVERAGE GRAIN SIZE LESS THAN 10 MICRONS

Ralf Schüler, Recklinghausen, and Günther Maahs, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Oct. 25, 1984, Ser. No. 664,838
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1983, 3342292
Int. Cl.[4] C08K *3/10*
U.S. Cl. 524—413 8 Claims

1. In the process for producing copper(II) hydroxide phosphate from basic copper carbonate by treatment with phosphoric acid, the improvement comprising:
(a) selecting said basic copper carbonate having a bulk density less than 800 grams per liter;
(b) treating said selected basic copper carbonate in aqueous dispersion with at least stoichiometric quantities of said phosphoric acid to form a mixture at temperatures not exceeding 70° C.;
(c) mechanically agitating said mixture at said temperature not exceeding 70° C.;
(d) heating said agitated mixture to the boiling point thereof; and
(e) separating said copper(II) hydroxide phosphate having the formula $Cu_3(PO_4)_2{\cdot}Cu(OH)_2$ and a light, natural color with a mean grain size less than 10 microns from said boiled mixture.

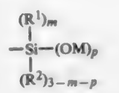
4,567,221

WATER RESISTANT COMPOSITIONS

Hitoshi Maruyama; Taku Tanaka, both of Kurashiki, and Takuji Okaya, Nagaokakyo, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 8, 1984, Ser. No. 587,564
Claims priority, application Japan, Mar. 31, 1983, 58-56902; Mar. 31, 1983, 58-56907
Int. Cl.[4] C08L *3/22*
U.S. Cl. 524—436 8 Claims

1. A composition which comprises a modified polyvinyl alcohol, having a silyl group in the molecule, and an inorganic substance selected from those containing aluminum, silica and magnesium; wherein the silyl group in the molecule is a silyl group of the formula (I)



(I)

wherein
m=0–2 and p=1–3, with the proviso that $m+p \leqq 3$;
M is a hydrogen atom or an alkali metal;
R^1 is (C_1–C_5) alkyl; and
R^2 is (C_1–C_{40}) alkoxyl, (C_1–C_{40}) acyloxyl, or (C_1–C_{40}) alkoxyl or (C_1–C_{40}) acyloxyl having a substituent containing oxygen; wherein the mixing ratio by weight of the modified polyvinyl alcohol having a silyl group in the molecule to the inorganic substance is in the range of about 5/95 to 99/1; wherein
the modified polyvinyl alcohol contains about 0.01–10 molar % of monomer unit containing a silyl group in the molecule.

4,567,222

PROCESS FOR PREPARING BITUMEN-POLYMER COMPOSITIONS, APPLICATION TO THESE COMPOSITIONS OF THE OBTENTION OF COVERINGS AND MOTHER SOLUTION OF POLYMER USABLE FOR THE OBTENTION OF THE SAID COMPOSITIONS

Germain Hagenbach, Vernaison; Paul Maldonado, St Symphorien d'Ozon, and Jacques Maurice, Pau, all of France, assignors to Elf France, Paris, France

Division of Ser. No. 502,827, Jun. 9, 1983, Pat. No. 4,554,313. This application Feb. 21, 1985, Ser. No. 703,916
Claims priority, application France, Jun. 10, 1982, 82 10095
Int. Cl.[4] C08K *5/01*
U.S. Cl. 524—476 22 Claims

1. A polymer mother solution for the preparation of bitumen-polymer compositions, comprising a hydrocarbon oil having a distillation range, at atmospheric pressure comprised between 100° C. and 450° C., and in solution in the oil, from about 5 to 40% by weight of the oil of a styrene conjugated diene copolymer and from about 0.1 to 15% by weight of the oil of a sulphur source, wherein the sulphur source comprises a polysulphide of the formula:



wherein:
R_1 and R_2 are each independently a C_1 to C_{20} saturated monovalent hydrocarbon radical, a C_1 to C_{20} unsaturated monovalent hydrocarbon radical or R_1 to R_2 can be linked to form a C_1 to C_{20} saturated divalent hydrocarbon radical or a C_1 to C_{20} unsaturated divalent hydrocarbon radical;
R is a C_1 to C_{20} saturated divalent hydrocarbon radical or a C_1 to C_{20} unsaturated divalent hydrocarbon radical;
$-(S)_m-$ is a divalent group of sulphur atoms, wherein m can be different for each group and represents a whole number of from 1 to 6 with at least m in one group being at least 2; and
x represents a whole number ranging from 0 to 10.

4,567,223

POLYOLEFIN CONTAINING HOT-MELT ADHESIVES HAVING SHORT SET TIME AND BOTH GOOD LOW AND HIGH TEMPERATURE BOND STRENGTH PROPERTIES

William A. Ames, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1984, Ser. No. 646,189
Int. Cl.[4] C08L *23/14, 23/06, 23/26, 51/06*
U.S. Cl. 524—489 8 Claims

1. A hot-melt adhesive composition having a viscosity of about 750 to about 4,000 cp. at 177° C. and a set time of less than about 10 seconds which provides bonds having good low and high temperature properties comprising a blend of
(a) about 70 to 50 percent by weight of at least one modified propylene/C_4 to C_{10} higher 1-olefin copolymer prepared by reacting the propylene/higher olefin with an unsaturated polycarboxylic acid, anhydride or monoester thereof and containing 95 to 70 mole percent having an acid number of at least 5 and having a melt viscosity of 1,500 to 20,000 centipoise at 177° C.,
(b) about 20 to about 35 percent by weight of at least one tackifier resin selected from the group consisting of hydrocarbon resin and polyterpene resins having a softening point of about 95° C. to about 135° C., and
(c) about 5 to about 15 percent by weight of a high density, low viscosity polyethylene wax having a melt viscosity of about 5 to 500 cp. at 150° C. and melting point of about 105° C. to 140° C.

4,567,224

BIAXIALLY ORIENTED CONTAINER EXCELLENT IN HEAT RESISTING PROPERTY AND PRESSURE RESISTING PROPERTY

Daiichi Aoki; Yoshinori Nakamura, and Hiroyuki Orimoto, all c/o Nissei ASB Machine Co., Ltd., 6100-1, Ohazaminamijo, Sakakimachi, Hanishina-gun, Nagano-, Japan

Filed Mar. 25, 1985, Ser. No. 715,276
Claims priority, application Japan, Mar. 30, 1984, 59-62655
Int. Cl.[4] C08K *3/40*
U.S. Cl. 524—494 6 Claims

1. A biaxially oriented container excellent in heat resisting property and pressure resisting property, said container being formed by biaxially orienting a thermoplastic resin containing glass fibers to a value more than 3 of area stretching magnification, characterized in that said container contains said glass fibers in an amount of 0.3 to 10 weight % and is thermally fixed in the range of temperature from 70° to 180° C.

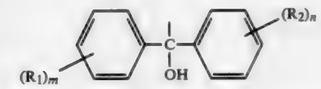
4,567,225

RUBBER COMPOSITION FOR TIRE TREADS

Makoto Misawa, Hiratsuka; Tetsuya Mizoguchi, Isehara; Kinya Kawakami, Ninomiyamachi, and Asahiro Ahagon, Fujisawa, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1985, Ser. No. 751,906
Int. Cl.[4] C08L *7/00, 9/00, 9/06*
U.S. Cl. 524—526 16 Claims

1. A rubber composition for tire treads, comprising a total of 100 parts by weight of rubber components including 50 to 90 parts by weight of natural rubber and/or polyisoprene rubber and 10 to 50 parts by weight of polybutadiene rubber, which rubber composition is characterized by said polybutadiene rubber having a 1,2-bond unit content in the range of 40 to 90 mol % and having at least one atomic group per one molecular chain of the polybutadiene rubber so that there is 0.05 to 1 part by weight of said atomic group per 100 parts by weight of the polybutadiene rubber on the average, said atomic group being represented by the following formula:



wherein R_1 and R_2 each denote a hydrogen atom or a substituent selected from the group consisting of an amino group, an alkylamino group, a dialkylamino group and combinations thereof and m and n each denote an integer in the range of 1 to 5, said atomic group being joined in the form of a carbon-carbon bond to the molecular chain of said polybutadiene rubber.

3. A rubber composition according to claim 1, wherein a softening agent is incorporated in an amount of 1 to 40 parts by weight and carbon black in an amount of 5 to 70 parts by weight, respectively based on a total of 100 parts by weight of rubber components.

4,567,226

ELASTOMERIC BLOCK COPOLYAMIDES

Ulrich Grigo, New Martinsville, W. Va.; Karl-Heinz Köhler; Rudolf Binsack, both of Krefeld, Fed. Rep. of Germany; Leo Morbitzer, Cologne, Fed. Rep. of Germany; Josef Merten, Korschenbroich, Fed. Rep. of Germany; Ludwig Trabert, Krefeld, Fed. Rep. of Germany, and Walter Heitz, Kirchhain, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,539
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1982, 3200020
Int. Cl.[4] C08F *8/30;* C08L *23/00, 51/00*
U.S. Cl. 524—538 13 Claims

1. Elastomeric block copolyamides produced from
I. 1 to 65%, by weight of the elastomeric block copolyamides, of hydrogenated diene polymers containing as end groups carbonate ester, —OH, $—NH_2$, carboxylic acid or carboxylic acid ester groups where said hydrogenated diene polymers have a degree of hydrogenation of at least 95 mole percent and have a molecular weight Mn of from about 400 to 6000 and
II. 99 to 35%, by weight of the elastomeric block copolyamides, of polyamides or polyamide-forming components.

4,567,227

BLEND OF WHOLLY AROMATIC POLYESTER AND POLY(ESTER-AMIDE) CAPABLE OF EXHIBITING AN ANISOTROPIC MELT PHASE

Gabor D. Kiss, Bedminster, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 13, 1984, Ser. No. 670,184
Int. Cl.[4] C08L 67/02, 77/12
U.S. Cl. 524—538 55 Claims

1. A polymer blend formed by melt-mixing which when molten is capable of exhibiting an anisotropic melt phase and which following injection-molding is capable of exhibiting at least one property selected from the group consisting of tensile strength, tensile modulus, flexural strength, and flexural modulus, which exceeds that of each of the polymeric components of the blend when separately injection-molded comprising:

(a) approximately 5 to approximately 95 percent by weight, based upon the total weight of components (a) and (b), of a melt-processable wholly aromatic polyester which is capable of forming an anisotropic melt phase and which is substantially free of amide linkages; and

(b) approximately 5 to approximately 95 percent by weight, based upon the total weight of components (a) and (b), of a melt-processable poly(ester-amide) which is capable of forming an anisotropic melt phase.

4,567,228

AQUEOUS DISPERSION, INTERNALLY SILYLATED AND DISPERSED POLYURETHANE RESINS, AND SURFACES CONTAINING SAME

Peter C. Gaa, and David E. Dana, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 21, 1984, Ser. No. 612,207
Int. Cl.[4] C08G 18/38
U.S. Cl. 524—588 36 Claims

1. Water dispersible, ungelled, silylated material comprising the polyerized reaction product of:

(a) organic polyisocyanate,

(b) active hydrogen-containing material having at least two active hydrogens per molecule,

(c) organosilane having at least one isocyanate reactable group on one organic moiety of the silane and having at least one alkoxy, acyloxy, or hydroxy group bonded to the silicon atom, wherein, said organic polyisocyanate and said reactive hydrogen-containing material are predominantly difunctional in the isocyanate polyaddition reaction, and where the polymerized reaction product is formed at a temperature less than 200° C. and in a substantially anhydrous medium and where the reaction product has a substantial number of siliconate anions selected from the group consisting of, [SiO^-], [$SiO^=$], [$SiO_3^{\equiv}$], and mixtures thereof.

4,567,229

ARYLOXY-ALKOXY SUBSTITUTED POLYPHOSPHAZENES

F. Alexander Pettigrew, and Harold R. Penton, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 18, 1984, Ser. No. 683,028
Int. Cl.[4] C08G 79/04
U.S. Cl. 524—610 12 Claims

1. A peroxide cured polyphosphazene composition having a non-flaming smoke rating below about 200 Dm as measured by the AMSI/ASTM E 662-79 method on a test specimen 76 mills thick, said composition comprising a cured polyphosphazene gum containing about 30–120 parts by weight of inorganic filler for each 100 parts of polyphosphazene and optionally other conventional compounding ingredients, said polyphosphazene gum having a $-P<=N-_n$ backbone in which n has an average value of about 100–1,000,000 or more and the phosphorus substituents comprise about 20–80 mole percent phenoxy, 20–80 mole percent lower alkylphenoxy and 2–30 mole percent alkoxy and said substituents are randomly distributed along said backbone.

4,567,230

1-COMPONENT COATING COMPOSITION, UTILIZATION THEREOF AND PROCESS FOR MANUFACTURING A PROTECTION COATING

Rainer-Leo Meyer; Reinmar John, both of Bühl; Rolf Nagel, Baden-Baden, and Günter Müller, Obersasbach, all of Fed. Rep. of Germany, assignors to BGB-Gesellschaft Reinmar John & Rainer Leo Meyer and Olga Meyer,, both of Buhl, Fed. Rep. of Germany

PCT No. PCT/EP83/00246, § 371 Date May 14, 1984, § 102(e) Date May 14, 1984, PCT Pub. No. WO84/01158, PCT Pub. Date Mar. 29, 1984
PCT Filed Sep. 15, 1983, Ser. No. 611,009
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1982, 3234262; Sep. 15, 1982, 3234261
Int. Cl.[4] C08K 3/08
U.S. Cl. 524—786 16 Claims

1. Moisture-setting single-component coating composition, comprising from about:

15 to 70 wt.-% polyurethane-forming isocyanate,

5 to 25 wt.-% light-colored, liquid, aromatic hydrocarbon resin of low molecular weight containing hydroxyl groups,

0.2 to 2 wt.-% antisettling agents,

10 to 35 wt.-% foliated fillers,

2 to 25 wt.-% tinting pigment,

1 to 5 wt.-% moisture-binding agent, balance, but not less than 5% by weight, of conventional paint solvent.

4,567,231

EMULSIONS OF REINFORCED POLYDIORGANOSILOXANE LATEX

David J. Huebner, and John C. Saam, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 25, 1984, Ser. No. 624,546
Int. Cl.[4] C08L 83/00; C08K 3/34; C08F 2/32; C08L 83/06
U.S. Cl. 524—837 21 Claims

1. A method of producing an aqueous latex of crosslinked polydiorganosiloxane consisting essentially of

(A) homogenizing immediately after admixing, a mixture consisting essentially of

(1) 100 parts by weight of polydiorganosiloxane of the formula

$$HO(R_2SiO)_xH$$

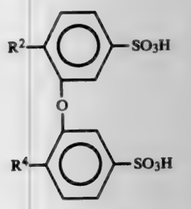
wherein each R is a radical selected from the group consisting of methyl, ethyl, propyl, phenyl, vinyl, allyl, and 3,3,3-trifluoropropyl, and x is an average value in the range of from 3 to 100 inclusive

(2) 0.5 to 15 parts by weight of an alkoxy silicon compound selected from the group consisting of silane of the formula

$$R'_aSi(OR^3)_{4-a}$$

where R' is a monovalent hydrocarbon radical having up to 12 carbon atoms, R^3 is an alkyl radical having from 1 to 6 inclusive carbon atoms, and a is 0 or 1; a partial hydrolyzate of the silane where the partial hydrolyzate is soluble in the polydiorganosiloxane (1); and mixtures of silane and partial hydrolyzate,

(3) from 15 to 100 millimoles of surface active anionic catalyst per kilogram of polydiorganosiloxane, where said catalyst is selected from the group consisting of a compound of the formula $R^2C_6H_4SO_3H$ wherein R^2 is a monovalent hydrocarbon radical of at least 6 carbon atoms; a compound of the formula R^2OSO_2OH wherein R^2 is as defined above; a compound of the formula



wherein R^2 is as defined above and R^4 is hydrogen or R^2; and mixtures thereof, and

(4) greater than 1 part by weight of colloidal silica present as an acidic sol in water, to yield an oil-in-water emulsion, then

(B) maintaining the emulsion produced in (A) at a temperature of from 15° to 30° C. for at least 5 hours at a pH of less than 5 until a crosslinked polymer is formed to yield a latex which produces an elastomer upon removal of the water at room temperature.

4,567,232

CONTINUOUS PREPARATION OF RUBBER-MODIFIED POLYMERS OF VINYL-AROMATICS

Adolf Echte, Ludwigshafen; Hermann Gausepohl, Mutterstadt; Juergen Hambrecht, Neckargemuend-Dilsberg, and Karl Gerberding, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 445,859, Dec. 1, 1982, abandoned, which is a continuation-in-part of Ser. No. 324,985, Nov. 25, 1981, abandoned. This application Sep. 13, 1984, Ser. No. 650,568
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 3047303
Int. Cl.[4] C08F 279/02
U.S. Cl. 525—53 2 Claims

1. A process for the continuous preparation of rubber-modified polymers of vinyl-aromatics, by polymerizing a mixture which contains

(a1) one or more monomeric aromatic vinyl compounds

(a2) one or more elastomeric polymers, in an amount of from 3 to 30% by weight, based on monomer (a1), with or without

(a3) a solvent in the presence of

(b) free radical initiators, with or without

(c) chain transfer agents, and with or without

(d) lubricants,

at from 80° to 180° C., with stirring, in a cascade comprising a first and second or more isothermally operated reaction zones consisting of stirred reactors, and one or more additional reaction zones, preferably tube reactors, and then freeing the polymer obtained, in a devolatilization zone, from vinyl-aromatic monomers and from solvents, if any, and recycling the solvents and any residual monomers to the process, wherein monomer conversion is adjusted so that the elastomer phase is the continuous phase in the first stirred reactor and the disperse phase in the second stirred reactor, and that the residence time of the reactants in the first stirred reactor is from 1 to 35 minutes.

4,567,233

HEAT AND IMPACT RESISTANT RESIN COMPOSITION

Hiromi Tomono, Yokkaichi; Takashi Kokubo, Suzuka; Kazuki Yamaguchi, Yokkaichi, and Sadao Ikuma, Suzuka, all of Japan, assignors to Mitsubishi Monsanto Chemical Company, Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 575,298
Claims priority, application Japan, Jun. 15, 1983, 58-107305
Int. Cl.[4] C08L 51/04, 53/04
U.S. Cl. 525—71 7 Claims

1. A heat and impact resistant resin composition which comprises from 10 to 90 parts by weight of a copolymer (A) comprising from 90 to 50% of residues of a vinyl aromatic compound selected from the group consisting of styrene, α-methylstyrene, p-methylstyrene, t-butylstyrene and a halogenated styrene, from 10 to 50% of residues of a maleimide compound and from 0 to 30% of residues of a vinyl compound copolymerizable therewith; from 0 to 50 parts by weight of a copolymer (B) comprising from 90 to 40% of residues of a vinyl aromatic compound as defined above and from 10 to 60% of residues of an unsaturated nitrile compound selected from the group consisting of acrylonitrile, methacrylonitrile and a mixture thereof; from 5 to 89 parts by weight of a graft copolymer (C) produced by polymerizing from 25 to 70% by weight of particles of a rubber latex selected from the group consisting of polybutadiene, a styrene-butadiene copolymer, an acrylonitrile-butadiene copolymer, a homopolymer or copolymer of an alkyl acrylate, an ethylene-propylene copolymer and an ethylene propylene-non-conjugated diene terpolymer, said rubber latex having a glass transition temperature of not higher than 0° C. and an average particle size of from 0.1 to 0.5 μm with from 75 to 30% by weight of a resin comprising from 90 to 40% of residues of the vinyl aromatic compound as defined for copolymer (A) and from 10 to 60% of residues of an unsaturated nitrile compound selected from the group consisting of acrylonitrile, methacrylonitrile and a mixture thereof; and from 1 to 45 parts by weight of a graft copolymer (D) produced by polymerizing from 2 to 17% by weight of particles of a rubber latex as defined above having a glass transition temperature of not higher than 0° C. and an average particle size of from 0.7 to 4 μm, with from 98 to 83% by weight of a resin comprising from 90 to to 40% of residues of the vinyl aromatic compound as defined for copolymer (A) and from 10 to 60% of residues of the unsaturated nitrile compound as defined for graft copolymer (C), wherein the amount of the graft copolymer (C) is from 97 to 50% by weight of the total amounts of the graft copolymers (C) and (D).

4,567,234

GRAFT COPOLYMERS OF ALKYL METHACRYLATES ONTO CROSS-LINKED BUTADIENE - ALKYL ACRYLATE COPOLYMERS AND THEIR USE AS IMPACT MODIFIERS

Gilles Meunier, Lescar, France, assignor to M&T Chemicals Inc., Woodbridge, N.J.

Filed Jun. 22, 1984, Ser. No. 623,645
Claims priority, application France, Aug. 31, 1983, 83 13998
Int. Cl.[4] C08L 39/04, 51/00
U.S. Cl. 525—73 30 Claims

1. A synthetic resin composition having improved impact strength which comprises

(a) a thermoplastic polymer

(b) from 0.5 to 50 parts by weight per 100 parts by weight of thermoplastic polymer of a graft copolymer impact additive which comprises:

(i) a backbone consisting essentially of a statistical copolymer of butadiene or isoprene with an alkyl acrylate of C_2 to C_{12} alkyl, and a polyfunctional crosslinking agent copolymerizable with the diene and alkyl acrylate, said polyfunctional cross-linking agent having at least two allyl or vinyl unsaturated [CH_2=C] groups and being present in a molar proportion of from about 0.02% to about 10%, and wherein the butadiene or isoprene represents from 0.5 to about 35% of the weight of the backbone, and

(ii) a polymer grafted onto said backbone, said grafted polymer consisting essentially of a polymer of a C1–C4 alkyl methacrylate said grafted polymer representing from 10 to 200% of the weight of the backbone.

4,567,235

POLYAMIDE-RUBBER BLENDED COMPOSITION

Koji Sasaki, and Junji Koizumi, both of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 31, 1984, Ser. No. 666,672
Claims priority, application Japan, Oct. 31, 1983, 58-204503
Int. Cl.[4] C08F 8/00; C08L 31/00
U.S. Cl. 525—113 10 Claims

1. An polyamide-rubber blended composition having improved resistance to ozone, stress whitening and gasoline prepared by mixing together with heating the following components:

(a) from 70 to 20 volume percent of a rubber composition consisting of:
(i) 30 to 70 volume percent of an acrylonitrile-butadiene copolymer rubber containing at least 0.7 weight percent of a carboxyl group in the polymer, and
(ii) 70 to 30 volume percent of an epichlorohydrin rubber;
(b) 30 to 80 volume percent of a polyamide resin; and
(c) at least 0.1 parts by weight of a polyepoxy compound in terms of the weight of the epoxy group per 100 parts by weight of the rubber composition of component (a).

4,567,236

NOVEL POLYMER BLENDS

David J. Goldwasser, Cheshire, and Richard W. Oertel, III, Guilford, both of Conn., assignors to The Upjohn Co., Midland, Mich.

Filed Jul. 18, 1983, Ser. No. 514,414
Int. Cl.[4] C08F 8/30; C08L 75/00
U.S. Cl. 525—127 8 Claims

1. A polymer blend characterized by high impact resistance, high flexural modulus and a heat deflection temperature of at least 50° C. at 264 psi which comprises a blend of:

(a) from 3 to 30 parts by weight, per 100 parts by weight of said blend, of a polymeric impact modifier which is incompatible with the major component of the blend and is a multiphase composite interpolymer based on a polyalkyl acrylate; and, as the balance of said blend,
(b) a polyurethane glass which is the product of reaction of:
(i) an organic polyisocyanate selected from the group consisting of 4,4'-methylenebis(phenyl isocyanate), mixtures of 4,4'-methylenebis(phenyl isocyanate) and 2,4'-methylenebis(phenyl isocyanate), and liquid forms of 4,4'-methylenebis(phenyl isocyanate);
(ii) at least one aliphatic glycol chain extender having a molecular weight from about 50 to about 400;
the proportions of said components (i), and (ii) being such that the overall ratio of isocyanate groups to active hydrogen groups is in the range of 0.95:1 to about 1.05:1.

4,567,237

ETHYLENICALLY UNSATURATED POLYESTERS

Gilbert C. Johnson, Lino Lakes, and Heather V. Landin, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 21, 1984, Ser. No. 673,870
Int. Cl.[4] C08F 8/00; C08L 67/00
U.S. Cl. 525—170 16 Claims

1. Ethylenically unsaturated polyester comprising the reaction product of (a) a polyhydroxy polyester which is the addition or condensation product of a saturated or unsaturated dicarboxylic acid and an acyclic or carboxylic organic diepoxide, with (b) polymerizable ethylenically unsaturated compound having a functional group reactive with the hydroxyl groups of the polyhydroxy polyester, said ethylenically unsaturated polyesters having an equivalent weight of less than about 330 per ethylenic groups.

4,567,238

POLYAMIDE-RUBBER BLENDED COMPOSITION

Koji Sasaki, and Junji Koizumi, both of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 31, 1984, Ser. No. 666,673
Claims priority, application Japan, Oct. 31, 1983, 58-204502
The portion of the term of this patent subsequent to Jan. 28, 2003, has been disclaimed.
Int. Cl.[4] C08F 8/00; C08L 31/00
U.S. Cl. 525—179 8 Claims

1. A polyamide-rubber blended composition having improved resistance to ozone, stress whitening and gasoline prepared by mixing together with heating the following componenta:

(a) from 70 to 20 volume percent of a rubber composition consisting of:
(i) 30 to 70 volume percent of an acrylonitrile-butadiene copolymer rubber containing at least 0.8 weight percent of an epoxy group in the polymer, and
(ii) 70 to 30 volume percent of an epichlorohydrin rubber;
(b) 30 to 80 volume percent of a polyamide resin; and
(c) at least 0.15 parts by weight of a carboxylic acid having a functional group calculated in terms of the weight of the carboxyl group per 100 parts by weight of the rubber composition of component (a).

4,567,239

COPOLYMERS OF TERMINALLY FUNCTIONAL POLYMERS

Paul A. Mancinelli, Aston, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 15, 1984, Ser. No. 620,974
Int. Cl.[4] C08L 257/02
U.S. Cl. 525—309 4 Claims

1. Copolymer formed by copolymerizing (a) from 1 to 95% by weight of a macromolecular monomer having the general formula

$$A\text{-}(Z)_n\text{-}CH_2CHS\text{-}_x R'$$
$$\quad\quad\quad

strained olefin within a cyclic group selected from compounds of the formula:



where X is $(CR_2)_y$, y is an integer from 1 to 2 and R is selected from H, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, or monocyclic aryl;

comprising the steps of mixing an excess of said monomer with Cp_2TiCH_2— where Cp is cyclopentadiene to form a titanacyclobutane complex of the formula:



heating the mixture to a temperature above the decomposition temperature of the complex and selectively opening said strained olefin ring to form a linear polymer containing repeating units of the formula:



4,567,245

SUBSTITUTED POLYACETYLENE COPOLYMER

Minoru Takamizawa; Akira Yamamoto, and Shigehiro Nagura, all of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1984, Ser. No. 681,861

Claims priority, application Japan, Dec. 22, 1983, 58-243609

Int. Cl.⁴ C08F *230/08, 238/00*

U.S. Cl. 526—279 **2 Claims**

1. A substituted polyacetylene copolymer composed of two types of the recurring monomeric units, of which the first type of the monomeric units is expressed by the formula

—C(—Me)=C(—$SiMe_3$)—

and the second type of the monomeric units is expressed by the formula

—C(—Me)=C(—$SiMe_2$—CH_2—$SiMe_3$)—,

in which Me is a methyl group, the molar ratio of the first type of the monomeric units to the second type of the monomeric units being in the range from 30:70 to 95:5.

4,567,246

WATER-SWELLABLE CROSSLINKED POLYMERIC MICROGEL PARTICLES AND AQUEOUS DISPERSIONS OF ORGANIC FILM-FORMING RESINS CONTAINING THE SAME

Chandrasen Gajria, Louisville, Ky., and Yehuda Ozari, Arcadia, Calif., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 449,887, Dec. 16, 1982, abandoned. This application Jan. 18, 1985, Ser. No. 692,476

Int. Cl.⁴ C08F *22/02*

U.S. Cl. 526—318.44 **8 Claims**

1. A polymeric microgel composition comprising discrete particles of crosslinked, aqueous emulsion polymerized copolymer comprising:

a. at least one polymerizable carboxylic acid group-free polymerizable vinyl monomer selected from the group consisting of polymerizable vinyl aromatic monomers, methacrylate ester monomers, nitrile monomers, vinyl halide monomers, mixtures thereof, and mixtures thereof with minor amounts of vinyl ester monomers and alkyl acrylate monomers in an amount of sufficient to provide a major portion of said copolymer;

b. from about 10 to 50%, based on the total monomer weight, of at least one polymerizable vinyl monomer selected from the group consisting of α,β-ethylenically unsaturated carboxylic acid monomers and mixtures thereof, said carboxylic acid monomers being substantially nongelling when copolymerized with said acid group-free monomers in an aqueous emulsion; and

c. from a small amount sufficient to crosslink the microgel particles up to about 5%, based on the total monomer weight, of a difunctional cross-linking monomer having at least two polymerizable double bonds;

said microgel particles being water-swellable and exhibiting a stability in aqueous media of at least one week when an aqueous dispersion of said microgel particles of about 20% solids content is maintained at 140° F.

4,567,247

PROCESS FOR FORMING THERMALLY STABLE THERMOTROPIC LIQUID CRYSTALLINE POLYESTERS OF PREDETERMINED CHAIN LENGTH UTILIZING AROMATIC HYDROXYL MONOMER AND/OR AROMATIC AMINE MONOMER

Hyun-Nam Yoon, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

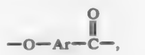
Filed May 17, 1984, Ser. No. 611,299

Int. Cl.⁴ C08G *63/06, 63/60, 69/44*

U.S. Cl. 528—190 **24 Claims**

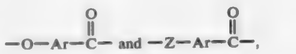
1. In a process for the formation within a polymerization zone of a polyester which is capable of forming an anisotropic melt phase and which optionally may include amide linkages through a polymerization reaction of ester-forming and optionally also amide-forming monomers to form a polymer having recurring moieties selected from the group consisting of the following where in each instance Ar may be the same or different and comprises at least one aromatic ring:

(a)



and

(b) a mixture of



where Z is NH or NR where R is an alkyl group of 1 to 6 carbon atoms or an aryl group;

the improvement of providing in the polymerization zone during the polymerization reaction an approximately 0.25 to 4 percent molar excess of an aromatic monomer selected from the group consisting of the following where in each instance Ar may be the same or different and comprises at least one aromatic ring:

(c) HO—Ar—OH, and/or an esterified derivative thereof,

(d) H_2N—Ar—NH_2, and/or an amidated derivative thereof,

(e) HO—Ar—NH_2, and/or an esterified and/or an amidated derivative thereof, and

(f) mixtures of the foregoing,

which during the polymerization reaction imparts units to the interior of the polymer chains selected from the group consisting of:

(g) dioxyaryl units,

(h) diaminoaryl units,

(i) oxyaminoaryl units, and

(j) mixtures of the foregoing,

and causes the polymer chains to end in groups selected from group consisting of:

(k) hydroxyl end groups and/or an esterified derivative thereof,

(l) amino end groups and/or an amidated derivative thereof, and

(m) mixtures of the foregoing,

wherein the polymer chains achieve a predetermined average chain length through the depletion of other monomers present in the polymerization zone to yield a polyester product which is substantially incapable of additional chain growth upon subsequent heating.

4,567,248

BRANCHED, HIGH MOLECULAR WEIGHT, THERMOPLASTIC POLYARYLENE ETHERS CONTAINING NITRILE GROUPS, AND THEIR PREPARATION

Gerd Blinne, Bobenheim; Herbert Bender, Boehl-Iggelheim, and Peter Neumann, Wiesloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 13, 1984, Ser. No. 681,243

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 3345416

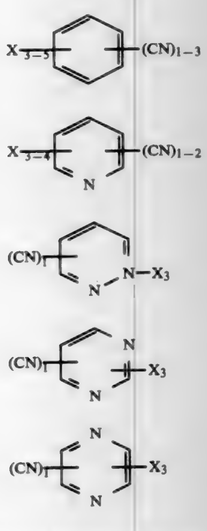
Int. Cl.⁴ C08G *65/40*

U.S. Cl. 528—211 **9 Claims**

1. A branched, high molecular weight, thermoplastic polyarylene ether which contains nitrile groups and repeating units of the formula I

—E_1—O—E_2—O, I

where E_1 is a halogen-free residuum of a dihalobenzene compound and E_2 is a HO-free residuum from a bisphenol, and contains from 0.01 to 5 mol %, based on the radical E_1, of one or more halogen-free residuum of polyhalo compounds of the formulae



where X is fluorine or chlorine.

4,567,249

MELT PREPARATION OF POLYAMIDE BY AMIDE ESTER INTERCHANGE

Daniel W. Fox, and Sheldon J. Shafer, both of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 18, 1983, Ser. No. 553,152

Int. Cl.³ C08G *69/28*

U.S. Cl. 528—347 **10 Claims**

1. A process for the preparation of a polyamide by esteramide interchange, said process consisting of heating a mixture of at least one diaryl ester of a dicarboxylic acid having at least 6 carbon atoms and at least one diamine having at least 4 carbon atoms, at a temperature above the melting point of said polyamide until formation of said polyamide is substantially complete.

4,567,250

PREPARATION OF FINELY DIVIDED ELECTRICALLY CONDUCTIVE PYRROLE POLYMERS

Herbert Naarmann, Wattenheim; Walter Heckmann, Weinheim; Gernot Köhler, and Petr Simak, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 18, 1984, Ser. No. 631,947

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1983, 3325892

Int. Cl.⁴ C08G *73/20;* **H01B** *1/12;* **C07D** *207/30*

U.S. Cl. 528—423 **3 Claims**

1. A process for the preparation of a finely divided electrically conductive pyrrole polymer, wherein monomers from the class consisting of the pyrroles, in solution and in the presence of a conductive salt, are treated with an oxygen-containing oxidizing agent at a temperature of 0°–100° C. and at a concentration of not less than 1 mole of conductive salt per 3 moles of monomer.

4,567,251

CATALYST PASSIVATION PROCESS

Jaroslav C. Balas, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 392,834, Jun. 28, 1982, abandoned. This application Feb. 8, 1984, Ser. No. 578,167

Int. Cl.⁴ C08F *6/08, 8/04*

U.S. Cl. 528—487 **4 Claims**

1. A method of treating solutions of hydrogenated polymers or copolymers of conjugated dienes, said solutions being contaminated with residues of nickel hydrogenation catalysts comprising nickel in the zero valence state, said method comprising:

(a) oxidizing said nickel residues to a higher valence state; and

(b) contacting the resulting oxidized nickel residues with a ligand selected from the group consisting of sodium dibutyldithiocarbamate, bis(O-ethyl(3,5 di-tert-butyl-4-hydroxybenzyl))phosphonic acid and potassium bis(O-ethyl(3,5 di-tert-butyl-4-hydroxybenzyl)phosphonate, which is capable of formng Ni chelates which are inert in redox reactions or are capable of catalyzing the decomposition of hydroperoxides only through nonradical-forming mechanisms.

4,567,252
WATER-INSOLUBLE NAPHTHOL MONOAZO DYESTUFF

Ulrich Bähler, Schöneck; Horst Tappe, Dietzenbach; Albert Bode, Schwalbach; Manfred Hähnke, Kelkheim, and Kurt Roth, Hofheim, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

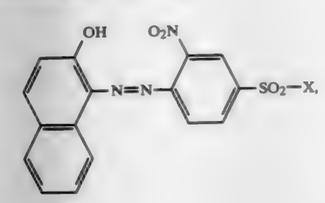
Filed May 6, 1983, Ser. No. 492,240

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1982, 3221504

Int. Cl.⁴ C09B *29/02, 29/34;* **D06P** *3/24, 3/52*

U.S. Cl. 534—882 **4 Claims**

1. Azo dyestuff of the formula



wherein

X is $-NR^1R^2$;

R^1 is hydrogen or alkyl having 1 to 10 carbon atoms which is unsubstituted or substituted by chloro, bromo, cyano, alkoxycarbonyl having 2 to 5 carbon atoms or phenyl;

R^2 is a polyether moiety of the formula

$$[AO]_m-[A']_n-R$$

wherein

A and A' independently of one another are linear or branched divalent, saturated hydrocarbyl moieties having 2 to 4 carbon atoms;

R is hydrogen, alkyl having 1 to 4 carbon atoms, cycloalkyl having 5 or 6 carbon atoms, alkenyl having 3 to 5 carbon atoms, phenyl, substituted phenyl, benzyl, phenethyl, alkylcarbonyl having 1 to 4 carbon atoms or benzoyl, said substituted phenyl being substituted by alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, chloro or bromo;

m is a number from 1 to 5; and

n is 0 or 1.

4,567,253
2-SUBSTITUTED DERIVATIVES OF PODOPHYLLOTOXIN AND ETOPOSIDE

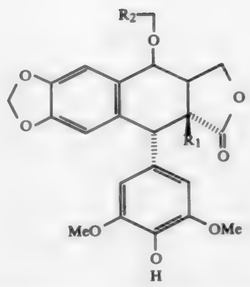
Tony Durst, 1956 Sharel Dr., Ottawa, Canada (K1H 6W2); Margaret B. Glinski-Oomen, 3-242 Charlotte St., Ottawa, Canada (K1N 8L3), and James C. Freed, 9 Centre St., Ovest, Aylmer, Canada (J9J 3A4)

Filed Feb. 3, 1984, Ser. No. 576,981

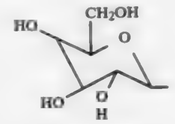
Int. Cl.⁴ C07H *15/20;* **C07D** *317/44*

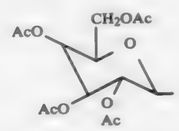
U.S. Cl. 536—18.1 **6 Claims**

2. A 2-substituted Etoposides corresponding to the formula:

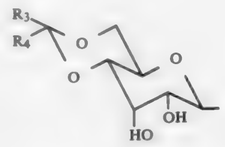


where R_1 is selected from the group consisting of halogen, lower alkyl, hydroxyl, and $-SR_5$ where R_5 is lower alkyl, and where R_2 is:





where AcO is acetyl; or



where R_3 is hydrogen and R_4 is alkyl, alkenyl, cycloalkyl, 2-furyl, 2-thienyl, aryl, or aralkyl, wherein the aromatic ring can be substituted by one or more hydroxyl, alkyl, alkoxy, nitro or halogen; or where R_3 and R_4 are both alkyl or where each of R_3 and R_4 taken together with the carbon atom to which they are attached signify a saturated cycloaliphatic ring having 5 or 6 carbon atoms; each alkyl, alkenyl or alkoxy above having no more than 10 carbon atoms and each aryl containing no more than 16 carbon atoms excluding substituents on the ring which are defined above.

4,567,254
METHOD FOR PREPARING N^6,8-DISUBSTITUTED 3',5'-CYCLIC ADENOSINE MONOPHOSPHATE AND SALT THEREOF

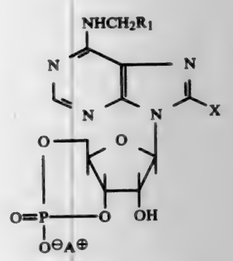
Shigehiro Kataoka; Takashi Nakamura; Nobuyuki Yamaji, all of Noda, and Seiichi Nasuno, Nagareyama, all of Japan, assignors to Kikkoman Corporation, Japan

Filed Sep. 19, 1984, Ser. No. 652,093

Int. Cl.⁴ C07H *15/12, 17/00*

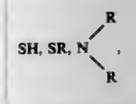
U.S. Cl. 536—27 **4 Claims**

1. A method for preparing an N^6,8-disubstituted 3',5'-cyclic adenosine monophosphate or salt thereof represented by the general formula

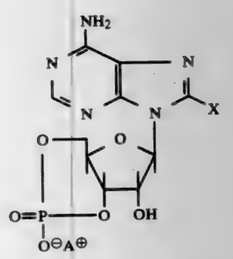


(I)

wherein X denotes a halogen atom, or



N_3, OH or OR, R being a methyl, ethyl, butyl, isobutyl, hexyl, octyl or benzyl group; $A^\oplus$ denotes a hydrogen ion, alkali metal ion, ammonium ion or organic ammonium ion; and R_1 denotes a methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, isopentyl, hexyl, isohexyl, heptyl, octyl, nonyl, decyl, undecyl, tridecyl, phenyl, methylphenyl, hydroxiphenyl, methoxyphenyl, chlorophenyl or furyl group, which method comprises reacting 8-substituted 3',5'-cyclic adenosine monophosphate or salt thereof represented by the general formula (II)

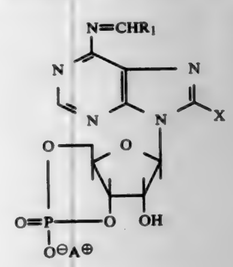


(II)

wherein X and $A^\oplus$ are as defined above, with an aldehyde represented by the general formula

$$R_1-CHO \qquad \text{(III)}$$

wherein R_1 is as defined above, in a solvent at a pH of 7.0 or less and at a temperature of $-20°$ to 120° C., the molar ratio of (II) to (III) being in the range of 1:2 to 1:40 to form an imine compound represented by the general formula



(IV)

wherein X, R_1 and $A^\oplus$ are as defined above, as an intermediate, and reducing the imine compound in the presence of a metal hydride, nascient hydrogen or a catalyst of nickel, iron, platinum or palladium at a temperature in the range of $-20°$ to 120° C., said reaction of the compound of the general formula (II) with the aldehyde of the general formula (III) to form the imine compound of formula (IV) and said reduction thereof to the compound of the general formula (I) being conducted for a period of time between about 1 to 200 hours.

4,567,255
METHOD OF PRODUCING CELLULOSE CARBAMATE

Vidar Eklund; Kurt Ekman; Olli Turunen; Jouko Huttunen, all of Porvoo; Johan-Fredrik Selin, Helsinki, and Jan Fors, Porvoo, all of Finland, assignors to Neste Oy, Finland

Filed Mar. 12, 1985, Ser. No. 710,689

Claims priority, application Finland, Mar. 12, 1984, 840999

Int. Cl.⁴ C08B *15/06*

U.S. Cl. 536—30 **14 Claims**

1. In the method for the manufacture of cellulose carbamate by the reaction of isocyanic acid with cellulose at elevated temperatures, the improvement which comprising heating at a temperature of at least 170° C. cellulose in contact with biuret in an amount sufficient to produce isocyanic acid in an adequate amount to react with cellulose to form cellulose carbamate, said heating being continued until said adequate amount of isocyanic acid is formed.

4,567,256
AMIDINE PROCESS

Dolatrai M. Vyas; Takushi Kaneko, and Terrence W. Doyle, all of Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

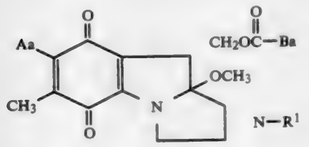
Division of Ser. No. 492,903, May 9, 1983, Pat. No. 4,487,769, which is a continuation-in-part of Ser. No. 385,149, Jun. 4, 1982, abandoned. This application Oct. 5, 1984, Ser. No. 658,236

Int. Cl.⁴ C07D *403/04*

U.S. Cl. 544—58.2 **9 Claims**

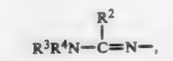
1. The process for preparing a compound of formula Ia

Formula Ia



wherein:

Aa is amino, methoxy, hydroxy, or the amidino group of the formula



Ba is the said amidino group,

R^1 is hydrogen, lower alkyl, lower alkanoyl, benzoyl or substituted benzoyl wherein said substituent is lower alkyl, lower alkoxy, halo, amino, or nitro,

R^2 is hydrogen, lower alkyl, phenyl, lower alkylphenyl, lower alkoxyphenyl, halophenyl, aminophenyl, nitrophenyl, thienyl, furyl, cyano, dilower alkylamino, lower alkoxy, or lower alkylthio,

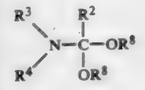
R^3 is lower alkyl or lower alkoxy,

R^4 is lower alkyl, or

R^3 and R^4 together with the nitrogen atom to which they are attached constitutes pyrrolidine, 2-, or 3-lower alkylpyrrolidine, piperidine, 2-, 3-, or 4-lower alkylpiperidine, 2,6-dilower alkylpiperidine, piperazine, 4-substituted piperazine (wherein said 4-substituent is alkyl, or carbalkoxy each having 1 to 8 carbon atoms, phenyl, methylphenyl, methoxyphenyl, halophenyl, nitrophenyl, or benzyl),

azepine, 2-, 3-, 4-, or 5-lower alkylazepine, morpholine, thiomorpholine, thiomorpholine-1-oxide, or thiomorpholine-1,1-dioxide,

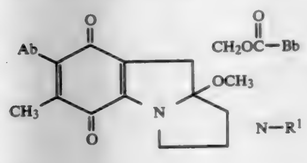
wherein each of the aforesaid lower alkyl, lower alkanoyl and lower alkoxy groups contains 1 to 6 carbon atoms which comprises reacting a compound selected from the group consisting of mitomycin C 7-hydroxy-9a-methoxymitosane, mitomycin A, or an N^{1a}-R^1-substituted derivative thereof with an amide acetal of the formula



wherein R^2, R^3, and R^4 are as defined above and each R^8 is independently lower alkyl, or cycloalkyl having up to 6 carbon atoms or together they are alkylene forming with the attached oxygen atoms and intervening carbon atom a cyclic structure having 5 or 6 ring members in solution in an anhydrous reaction compatible liquid organic reaction medium at 40° C. to 65° C. until a reaction product is formed in which Ba or both Aa and Ba are the said amidino group.

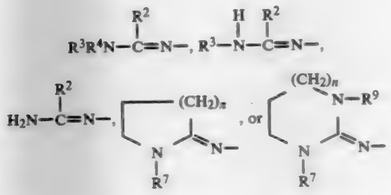
6. The process for preparing a compound of Formula Ib

Formula Ib



wherein:

Ab is (1-lower alkyl-2(1H)-pyridinylidene)amino, or a group of the formula



Bb is amino,

n is the integer of 0, 1, 2, or 3,

R^1 is hydrogen, lower alkyl, lower alkanoyl, benzoyl or substituted benzoyl wherein said substituent is lower alkyl, lower alkoxy, halo, amino, or nitro,

R^2 is hydrogen, lower alkyl, phenyl, lower alkylphenyl, lower alkoxyphenyl, halophenyl, aminophenyl, nitrophenyl, thienyl, furyl, cyano, dilower alkylamino, lower alkoxy, or lower alkylthio,

R^3 is lower alkyl or lower alkoxy,

R^4 is lower alkyl, or

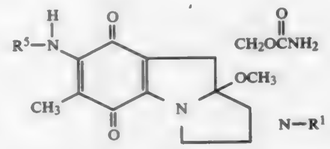
R^3 and R^4 together with the nitrogen atom to which they are attached constitutes pyrrolidine, 2-, or 3-lower alkylpyrrolidine, piperidine, 2-, 3-, or 4-lower alkylpiperidine, 2,6-dilower alkylpiperidine, piperazine, 4-substituted piperazine (wherein said 4-substituent is alkyl, or carbalkoxy each having 1 to 8 carbon atoms, phenyl, methylphenyl, methoxyphenyl, halophenyl, nitrophenyl, or benzyl), azepine, 2-, 3-, 4-, or 5-lower alkylazepine, morpholine, thiomorpholine, thiomorpholine-1-oxide, or thiomorpholine-1-dioxide,

R^7 and R^9 are independently H or lower alkyl

wherein each of the aforesaid lower alkyl, lower alkanoyl and lower alkoxy groups contains 1 to 6 carbon atoms which comprises reacting a dimethylformamide (or other compatible solvent) solution of N^{1a}-R^1-substituted mitomycin C with from 1.0 to 1.5 molecular proportions of sodium hydride thereby producing an anionic form thereof and reacting said anionic form with an iminoether, an iminothioether, a halomethyleniminium halide, or an iminohalide salt.

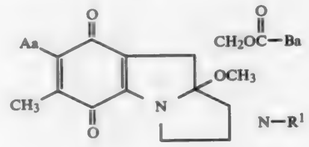
7. The process for preparing 7-substituted amino-9a-methoxymitosane of formula III

Formula III

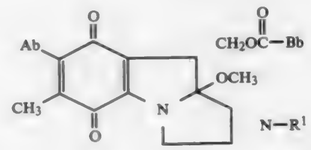


which comprises reacting a compound of Formula Ia or Ib

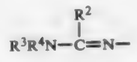
Formula Ia



Formula Ib



wherein Aa, Ba, and Ab are the said amidino group of the formula



and Bb is $—NH_2$ with a primary amine of the formula R^5NH_2 in an anhydrous reaction compatible liquid organic reaction medium at a temperature of from about −15° C. to +50° C. wherein R^5 in the foregoing formulas is the primary amino group attached substituent of an aliphatic, alicyclic, aromatic, heteroaromatic, or heteroalicyclic primary amine in which the carbon atom bearing the amino group bears at least one hydrogen atom and less than two aryl groups and is further characterized by the absence of functional substituents which are incompatible with the reaction conditions, and wherein:

R^1 is hydrogen, lower alkyl, lower alkanoyl, benzoyl or substituted benzoyl wherein said substituent is lower alkyl, lower alkoxy, halo, amino, or nitro,

R^2 is hydrogen, lower alkyl, phenyl, lower alkylphenyl, lower alkoxyphenyl, halophenyl, aminophenyl, nitrophenyl, thienyl, furyl, cyano, dilower alkylamino, lower alkoxy, or lower alkylthio,

R^3 is lower alkyl or lower alkoxy,

R^4 is lower alkyl, or

R^3 and R^4 together with the nitrogen atom to which they are attached constitute pyrrolidine, 2-, or 3-lower alkylpyrrolidine, piperidine, 2-, 3-, or 4-lower alkylpiperidine, 2,6-dilower alkylpiperidine, piperazine, 4-substituted piperazine (wherein said 4-substitutent is alkyl, or carbalkoxy each having 1 to 8 carbon atoms, phenyl, methylphenyl, methoxyphenyl, halophenyl, nitrophenyl, or benzyl), azepine, 2-, 3-, 4-, or 5-lower alkylazepine, morpholine, thiomorpholine, thiomorpholine-1-oxide, or thiomorpholine-1,1dioxide.

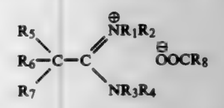
4,567,257

AMIDINIUM SALTS

Dale F. Regelman, Wallingford, Conn., assignor to The Upjohn Company, Midland, Mich.

Filed Jan. 16, 1984, Ser. No. 571,391
Int. Cl.⁴ C07C *123/00*; C07D *295/12*
U.S. Cl. 544—78 **12 Claims**

1. An amidinium salt having the formula



wherein R_1, R_2, R_3, and R_4, when taken individually, are independently selected from the group consisting of loweralkyl, aralkyl, cycloalkyl, and, when taken together with the respective nitrogen atoms to which they are attached R_1 together with R_2 and R_3 together with R_4 independently represent heterocyclic groups having 5 to 7 ring atoms, and R_5, R_6, R_7, and R_8 are independently selected from the group consisting of hydrogen, lower-alkyl, aryl, aralkyl, and cycloalkyl.

4,567,258

PROCESS AND APPARATUS FOR PRODUCING CYANURIC ACID

William B. Dodge, Montgomery Township, Somerset County, N.J., assignor to Olin Corporation, Cheshire, Conn.

Filed Apr. 18, 1985, Ser. No. 724,730
Int. Cl.⁴ C07D *251/32*
U.S. Cl. 544—192 **26 Claims**

1. A process for the production of cyanuric acid as a solution or slurry in an inert organic solvent by the pyrolysis of a compound selected from the group consisting of urea and/or biuret, said compound being dissolved as an aqueous solution comprising the steps of combining the aqueous solution of the compound with an inert organic solvent to form a combined solution of the compound in a mixed water and inert organic solvent, stripping water from the combined solution as it flows in one direction by contacting the combined solution with a countercurrent flow of vapors of the inert organic solvent thereby providing a solution of the compound in the solvent and a mixed water-inert organic solvent vapor flowing from and countercurrent to said solvent solution of the compound, rectifying the mixed water-inert organic solvent vapor by contacting the same with a countercurrent flow of aqueous reflux to thereby condense substantially all of the inert organic solvent and to provide a flow of aqueous vapors substantially free of the inert organic solvent, condensing said aqueous vapors and introducing a portion thereof as said reflux, heating at least a portion of the solvent solution of the compound to provide said flow of vapors of inert organic solvent countercurrent to and necessary for stripping the water from the combined solution, and maintaining the temperature of the solvent solution of the compound at not less than 180° C. to provide a solution or slurry comprised of cyanuric acid in inert organic solvent.

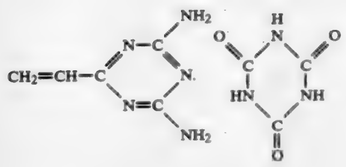
4,567,259

ISOCYANURIC ACID ADDUCT OF 2-VINYL-4,6-DIAMINO-S-TRIAZINE

Natsuo Sawa, Nakatado; Takeshi Masuda, Marugame, and Takashi Mizui, Kawagoe, all of Japan, assignors to Shikoku Chemicals Corp., Kagawa, Japan

Filed Jan. 25, 1985, Ser. No. 694,958
Claims priority, application Japan, Jan. 26, 1984, 59-13121
Int. Cl.⁴ C07D *403/12*
U.S. Cl. 544—207 **4 Claims**

1. An isocyanuric acid adduct of 2-vinyl-4,6-diamino-S-triazine represented by the following structural formula:



4,567,260

SYNTHESIS OF 5-DEAZARIBOFLAVINE

Fumio Yoneda, Kumamoto, Japan, assignor to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Jun. 30, 1983, Ser. No. 509,764
Claims priority, application Japan, Jul. 1, 1982, 57-115175
Int. Cl.⁴ C07D *471/04*, *239/54*
U.S. Cl. 544—250 **12 Claims**

1. A process for synthesizing 5-deazariboflavine comprising condensing 6-chloro 5-formyluracil with N-D-ribityl-3,4-xylidine in one step reaction in an organic solvent at a temperature at or below the boiling point of said solvent yielding greater than 80% of said 5-deazariboflavine.

4,567,261

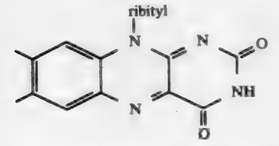
PREPARATION OF RIBOFLAVIN

Hansgeorg Ernst, Ludwigshafen; Wolfram Schmidt, Friedelsheim, and Joachim Paust, Neuhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 13, 1984, Ser. No. 570,457
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1983, 3302497
Int. Cl.⁴ C07D *475/14*
U.S. Cl. 544—251 **7 Claims**

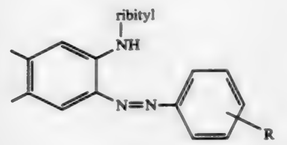
1. An improved process for the preparation of riboflavin of the formula I

(I)



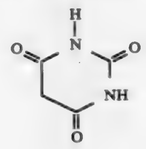
by condensing a 4,5-dimethyl-N-(D)-ribityl-2-phenylazoaniline of the formula II

(II)

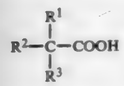


where R is H or —Cl, $—NO_2$ or $—CH_3$ in the o- or p-position, with barbituric acid of the formula III

(III)



in the presence of an acid as a condensing agent, wherein the acidic condensing agent used is an aliphatic or cycloaliphatic-/aliphatic tertiary carboxylic acid of the formula IV



(IV)

where R^1, R^2 and R^3 are each a lower alkyl group, R^1, R^2 and R^3 together containing 3 to 20, carbon atoms, and R^2 and R^3 together form a tetramethylene or pentamethylene group.

4,567,262

PURIFICATION OF RIBOFLAVIN

Johannes Grimmer, Grehaa, Denmark, and Hans C. Horn, Lambsheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 14, 1983, Ser. No. 561,467

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247381

Int. Cl.⁴ C07D *475/14*

U.S. Cl. 544—251 **5 Claims**

1. An improved process for the purification of crude riboflavin which has been prepared by condensation of an N-(D)-ribityl-2-arylazo-4,5-dimethylaniline and barbituric acid or another N-(D)-ribityl-4,5-dimethylaniline derivative with a barbituric acid derivative, by dissolving the crude riboflavin in sulfuric acid or phosphoric acid which has been diluted with water and oxidizing the impurities by treating the solution with hydrogen peroxide, or by dissolving the riboflavin in dilute nitric acid at elevated temperature and then isolating the pure riboflavin by precipitation with water, wherein the mineral acid solution of the riboflavin and the oxidizing agent, or the solution of the riboflavin in 20 to 70% strength by weight nitric acid, is heated extremely rapidly to a temperature at which the solution clearly changes color from greenish to yellow-orange, the solution is kept at this temperature for from 1 to 100 seconds and the oxidation reaction is then interrupted by addition of water.

4,567,263

7-AMINOAZOLO[1,5-A]-PYRIMIDINES AND FUNGICIDES CONTAINING THESE COMPOUNDS

Karl Eicken, Wachenheim; Klaus Scheib, Schauernheim; Hans Theobald; Ernst-Heinrich Pommer, both of Limburgerhof, and Eberhard Ammermann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

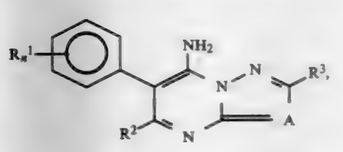
Continuation of Ser. No. 401,346, Jul. 23, 1982, abandoned. This application Sep. 18, 1984, Ser. No. 651,660

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130633

Int. Cl.⁴ C07D *471/02*

U.S. Cl. 544—263 **8 Claims**

1. A 7-amminoazolo[1,5-a]pyrimidine of the formula



I

where R^1 is unsubstituted alkyl of 1–12 carbons, halogen-substituted or alkoxy of 1–4 carbons-substituted alkyl of 1–12 carbons, halogen, alkoxy of 1–12 carbons, cyano, or cycloalkyl, or is phenyloxy, phenylthio, phenylalkyl, phenylalkoxy or phenylalkylthio wherein the alkyl is 1–6 carbons, each of which may be substituted by alkyl of 1–4 carbons, alkoxy of 1–4 carbons, halogen or cyano or is phenyl which is substituted by alkyl of 1–4 carbons, alkoxy of 1–4 carbons, halogen or cyano or is indane which may be substituted by alkyl of 1–4 carbons, alkoxy of 1–4 carbons, halogen or cyano and each of which is fused to the phenyl ring n is 1 or n is 2 when two substituents are in the 2,4- and 3,4 positions, R^2 and R^3 are each hydrogen, alkyl of 1–4 carbons or phenyl, and A is nitrogen or a CR^4 group, where R^4 has the meanings of R^2 and halogen, cyano or alkoxy-carbonyl, or together with R^3 is alkylene which may have up to two double bonds.

5. A 7-aminoazolo[1,5-a]pyrimidine as defined in claim 1, where R^2 is hydrogen or methyl, R^3 is hydrogen or methyl, and R^4 is hydrogen.

4,567,264

CARDIOSELECTIVE ARYLOXY- AND ARYLTHIO-HYDROXYPROPYLENE-PIPERAZINYL ACETANILIDES WHICH AFFECT CALCIUM ENTRY

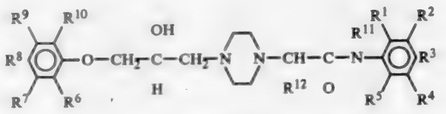
Arthur F. Kluge, Los Altos; Robin D. Clark, Palo Alto; Arthur M. Strosberg, Menlo Park, all of Calif.; Jean-Claude G. Pascal, Cachan, France, and Roger Whiting, Edinburgh, Scotland, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 18, 1983, Ser. No. 495,904

Int. Cl.⁴ C07D *241/04*; A61K *31/495*

U.S. Cl. 544—400 **3 Claims**

1. A compund of the formula:

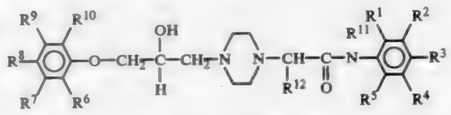


and the pharameutically acceptable esters and acid addition salts thereof, wherein:

R1 and R5 are each methyl

R^2 and R^3 and R^4 are each hydrogen and R^6 to R^{12} are each hydrogen, i.e., 1-[3-phenoxy-2-hydroxypropyl]-4-[2,6-dimethylphenyl)-aminocarbonylmethyl]-piperazine, and the pharaceutically acceptable esters and acid addition salts thereof.

2. A compound of the formula:

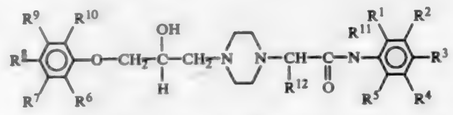


and the pharmaceutically acceptable esters and acid addition salts thereof, wherein:

R^1 and R^5 are each methyl

R^2, R^3, and R^4 are each hydrogen, R^6 is methoxy and R^7 to R^{12} are each hydrogen, i.e., 1-[3-(2-methoxyphenoxy)-2-hydroxypropyl]-4-[(2,6,-dimethylphenyl)-aminocarbonyl-methyl]-piperazine, and the pharaceutically acceptable esters and acid addition salts thereof.

3. A compound of the formula:



and the pharmaceutically acceptable esters and acid addition salts thereof, wherein:

R^1 and R^5 are each methyl;

R^2, R^3, and R^4 are each hydrogen, R^6 is cyano and R^7 to R^{12}

are each hydrogen, i.e., 1-[3-(2-cyanohenoxy)-2-hydroxy-propyl]-4-[2,6-dimethylphenyl)aminocarbonylmethyl]piperazine.

4,567,265

CYCLOPROPANOID CYANOESTERS AND METHOD OF MAKING SAME

James H. Babler, Evanston, Ill., assignor to Loyola University of Chicago, Chicago, Ill.

Filed Jan. 16, 1984, Ser. No. 570,874

Int. Cl.⁴ C07C *120/00, 121/46*; C07D *213/127, 211/26*

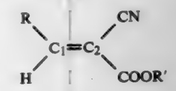
U.S. Cl. 546—16 **9 Claims**

1. A process for synthesis of a cyclopropanoid cyanoester comprising the following steps:

(A) forming a reaction mixture in a C_1 through C_4 monohydric alcohol solvent of

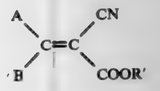
(i) 2-nitropropane,

(ii) a cyanoester selected from the group consisting of



(a)

and



(b)

wherein R' is methyl or ethyl, A, B represents a group having the formula $-(CH_2)_n-$ or $-(CH_2)_2-Y-(CH_2)_2-$, n=3, 4, or 5, Y being NCH_3, O, or S, and R can be selected from the class consisting of:

(1) alkyl, haloalkyl, alkenyl, haloalkenyl, cycloalkyl, carboalkoxy, and cycloalkenyl groups having up to ten carbons;

(2) a heterocyclic residue selected from the group consisting of furan, thiophene, pyridine, pyrrole and indole;

(3) phenyl and naphthyl groups; and,

(4) monosubstituted phenyl groups and disubstituted phenyl groups wherein the substituents are selected from the group consisting of alkyl, halogen, nitro, alkoxy, and haloalkyl;

provided that when R is alkenyl, R is not conjugated with the double bond between C_1 and C_2 and when R is a substituted phenyl group, at least one of the ortho carbons of said phenyl group is bonded to hydrogen; and

(iii) a base selected from the group consisting of alkali metal alkoxides and alkali metal carbonates;

(B) heating said reaction mixture in refluxing alcohol solvent; and

(C) isolating a cyclopropanoid cyanoester from said reaction mixture.

4,567,266

METHOD OF PREPARING OCTAHYDRO-1H(AND 2H)-PYRAZOLO[3,4-G]QUINOLINES

John M. Schaus, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 438,834, Nov. 3, 1982, abandoned. This application Aug. 2, 1984, Ser. No. 636,959

Int. Cl.⁴ C07D *487/04*

U.S. Cl. 546—82 **8 Claims**

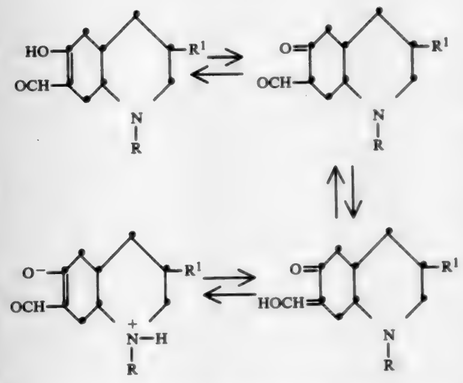
1. The method which comprises

(a) reacting a trans-dl-6-oxodecahydroquinoline of the formula



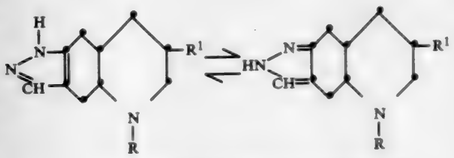
wherein R is C_{1-3} straight chain alkyl, allyl or benzyl, R^1 is H or COOZ and Z is C_{1-2} alkyl or phenyl-substituted C_{1-2} alkyl

with a lower alkyl formate in the presence of base in a mutual anhydrous solvent to yield a 7-formyl derivative of the tautomeric formulas substantially free of 5-formyl isomer



wherein R and R^1 have their previous significance and then

(b) reacting said α-formyl ketone with hydrazine in aqueous media to yield a mixture of tautomers of the formula



wherein R and R^1 have their previous significance.

4,567,267

α-PHENYL-2-(AZA)BENZOTHIAZOLYLTHIO-GLYCOLIC ACIDS AND DERIVATIVES THEREOF

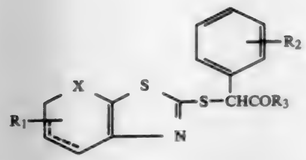
Peter H. L. Wei, Springfield, and Francis J. Gregory, Berwyn, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 273,826, Jun. 15, 1981, abandoned, which is a continuation-in-part of Ser. No. 130,483, Mar. 31, 1980, Pat. No. 4,275,065, which is a continuation-in-part of Ser. No. 50,847, Jun. 21, 1979, abandoned. This application Aug. 30, 1982, Ser. No. 413,275

Int. Cl.⁴ C07D *513/04, 417/12, 277/74*

U.S. Cl. 546—114 **24 Claims**

1. A compound having the formula:



wherein R_1 is hydrogen, halo, nitro, amino, lower alkyl, lower alkoxy, trifluoromethyl or hydroxy; R_2 is hydrogen, fluorine, chlorine, bromine, lower alkyl, lower alkoxy amino, nitro, or trifluoromethyl; R_3 is hydroxy, lower alkoxy, amino, (lower-)alkylamino, hydroxy(lower)alkyl amino, N-(lower)alkanoylamino(lower)alkoxy, N-arylcarbamoyl(lower)alkylthio, N,N-di(lower)alkylamino-N'-(lower)alkylamino, (lower)alkyl-N-(lower)alkanoylamino, cyano(lower)alkylamino, prolino, cysteino or piperidino(lower)alkylamino; X is CH or N, and where the dotted lines represent optional double bonds in the 5,6- and 7,8 positions, or a pharmacologically acceptable salt thereof.

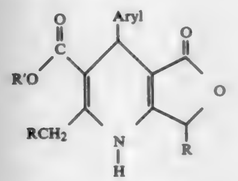
4,567,268

PROCESS FOR PREPARATION OF CERTAIN TETRAHYDROFURO[3,4-B]PYRIDINES

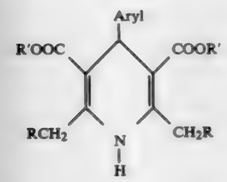
Steven D. Young, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 3, 1984, Ser. No. 596,333
Int. Cl.⁴ C07D *491/048*
U.S. Cl. 546—116 **6 Claims**

1. A process for preparing a tetrahydrofuro[3,4-b]pyridine compound having the formula



wherein R is hydrogen or methyl and R' is a residue of a hydroxy compound capable of forming esters with a carboxyl group, comprising reacting a 1,4-dihydropyridine diester compound having the formula



wherein R and R' are as above defined with a bromine generating agent in a dry inert dispersion medium.

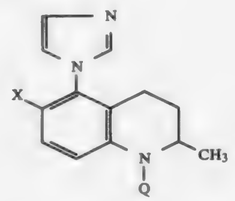
4,567,269

INTERMEDIATES FOR THE PREPARATION OF 6,7-DIHYDRO-8-(IMIDAZOL-1-YL)-5-METHYL-1-OXO-1H,5H-BENZO[IJ]QUINOLIZINE-2-CARBOXYLIC ACIDS

John F. Gerster, Woodbury, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

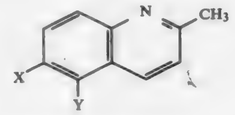
Division of Ser. No. 441,246, Nov. 12, 1982, Pat. No. 4,472,406. This application Jun. 25, 1984, Ser. No. 624,407
Int. Cl.⁴ C07D *215/04, 215/58*
U.S. Cl. 546—167 **2 Claims**

1. A compound of the formula



wherein X is hydrogen or halogen; and Q is hydrogen or $-CH{=}C(CO_2CH_2CH_3)_2$.

2. A compound of the formula



wherein X is hydrogen or halogen; and Y is imidazol-1-yl, 2-mercaptoimidazol-1-yl, $-N{=}C{=}S$ or,



wherein each R^1 is independently an alkyl group containing 1 to about 4 carbons.

4,567,270

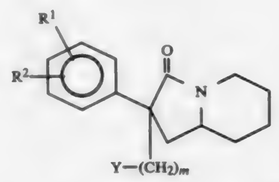
HEXAHYDROINDOLIZINONES USEFUL FOR TREATING CARDIAC ARRHYTHMIA, THROMBOTIC DISORDERS IN MAMMALS

Robert J. Chorvat, Arlington Heights; Kathleen A. Prodan, Buffalo Grove, and John A. Schulz, Lindenhurst, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Sep. 17, 1984, Ser. No. 651,210
Int. Cl.⁴ C07D *487/00*; A61K *31/435*
U.S. Cl. 546—183 **19 Claims**

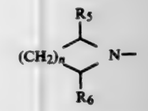
1. A compound of the formula:

I



wherein R^1 and R^2, each being the same or different, are:
(a) hydrogen;
(b) halogen;

(c) alkyl of 1 to 6 carbon atoms, inclusive;
(d) alkoxy of 1 to 6 carbon atoms, inclusive; or
(e) phenyl;
wherein Y is:
(a) R^3R^4N—; or
(b) a group of the formula



wherein R^3 and R^4, each being the same or different, are alkyl of 1 to 6 carbon atoms, inclusive; wherein R^5 and R^6, each being the same or different, are alkyl of 1 to 3 carbon atoms, inclusive; wherein m is an integer from 2 to 6, inclusive; wherein n is an integer from 2 to 4, inclusive; and the racemic mixtures and isomers thereof; and the pharmaceutically acceptable acid addition salts thereof.

12. A method for treating cardiac arrhythmias in mammals comprising administering a therapeutically effective amount of at least one compound of claim 1 to a mammal in need of such treatment.

16. A method for treating thrombotic disorders in mammals comprising administering a therapeutically effective amount of at least one compound of claim 1 to a mammal in need of such treatment.

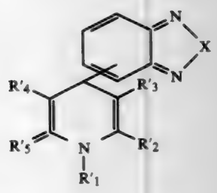
4,567,271

BENZOXADIAZOLES AND BENZOTHIADIAZOLES

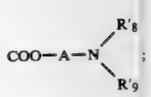
Peter Neumann, Berne, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Division of Ser. No. 359,751, Mar. 19, 1982, Pat. No. 4,466,972, which is a continuation of Ser. No. 173,305, Jul. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 101,591, Dec. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 915,858, Jun. 15, 1978, abandoned. This application May 29, 1984, Ser. No. 614,650
Claims priority, application Switzerland, Jun. 20, 1977, 7520/77
Int. Cl.⁴ A61K *31/44*; C07D *513/00*
U.S. Cl. 546—271 **4 Claims**

1. A compound having the formula



wherein
R_1' is hydrogen or C_{1-6} alkyl;
R_2' and R_5', independently, are hydrogen or C_{1-6} alkyl;
R_3' and R_4', independently, are $COOR_7'$ or



each R_7', independently, is C_{1-6} alkyl, C_{3-7}cycloalkyl, C_{7-10} phenylalkyl, C_{3-6} alkoxyalkyl, C_{2-6}-hydroxyalkyl or C_{4-8} hydroxyalkoxyalkyl;
A is C_{1-6} alkylene;
each R_8' and R_9', independently, is C_{1-6} alkyl or C_{7-10} phenylalkyl; and
X is oxygen or sulphur, with the proviso that at least one of R_3' and R_4' is $COOR_7'$
where R_7' is C_{2-6} hydroxyalkyl or C_{4-8}hydroxyalkoxyalkyl, or a pharmaceutically acceptable acid addition salt of a basic compound of the above formula.

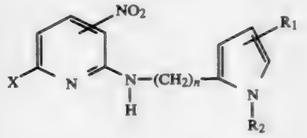
4,567,272

PYRROLE CONTAINING 2-AMINONITROPYRIDINE DERIVATIVES

Winfried Orth, Hassloch/Pfalz, and Werner Fickert, Mannheim, both of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 11, 1984, Ser. No. 649,336
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3334029
Int. Cl.⁴ C07D *401/12, 213/74, 213/61*
U.S. Cl. 546—281 **4 Claims**

1. A nitropyridine derivative represented by the structural formula:



in which
the nitro group is in the 3- or 5-position and X represents hydrogen, an alkoxy group with 1 to 3 C atoms or an unsubstituted or alkyl- or hydroxyalkyl substituted amino group, the alkyl portion of which has 1 to 3 C atoms,
R_1 and R_2 may be the same or different and represent hydrogen or a methyl-group and
n is 0, 1, 2 or 3.

4,567,273

LIQUID PHASE HALOGEN EXCHANGE OF (TRICHLOROMETHYL) PYRIDINES TO (TRIFLUOROMETHYL)PYRIDINES

Alexander P. Fung, Pleasant Hill, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 369,051, Apr. 16, 1982, abandoned. This application Mar. 14, 1984, Ser. No. 589,433
Int. Cl.⁴ C07D *213/26*
U.S. Cl. 546—345 **19 Claims**

1. A method of preparing a (trifluoromethyl)pyridine compound in a highly selective manner which comprises contacting in the liquid phase a (trichloromethyl)pyridine compound with a stoichiometric amount of HgF_2, Hg_2F_2, AgF or AgF_2 in the presence of from about 4 to about 18 molar equivalents of hydrogen fluoride per molar equivalent of (trichloromethyl)pyridine compound at a temperature of from −20° C. to 50° C.

4,567,274

CHLORINE EXCHANGE FOR FLUORINE IN 2-FLUOROPYRIDINE COMPOUNDS

Janice E. Gatlin, Antioch; Mark A. Van Dort, Pleasant Hill; Charles A. Wilson, Pittsburg, and Alexander P. Fung, Martinez, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 26, 1984, Ser. No. 675,036
Int. Cl.⁴ C07D *211/72*
U.S. Cl. 546—345 **10 Claims**

1. A method of exchanging a chlorine atom for a fluorine atom at the 2-position of a 2-fluoropyridine compound which comprises contacting a 2-fluoropyridine compound with a

halosubstituted or unsubstituted trichloromethyl or dichlorofluoromethyl alpha, beta or gamma picoline compound in liquid phase at a temperature of 50°-250° C. and a pressure of atmospheric to about 100 psig.

4,567,275

CEPHEM AND CEPHAM COMPOUNDS AND PROCESSES FOR PREPARATION THEREOF

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

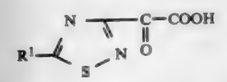
Division of Ser. No. 325,027, Nov. 25, 1981, Pat. No. 4,468,515, which is a division of Ser. No. 116,984, Jan. 20, 1980, Pat. No. 4,332,798, which is a continuation-in-part of Ser. No. 108,161, Dec. 28, 1979, abandoned. This application Jun. 12, 1984, Ser. No. 619,981

Claims priority, application United Kingdom, Dec. 29, 1978, 7850334; Oct. 12, 1979, 7935538; Denmark, Dec. 21, 1979, 5542/79

Int. Cl.⁴ C07D *285/08*

U.S. Cl. 548—128 **1 Claim**

1. A compound of the formula:



wherein R^1 is amino or a protected amino, and salts thereof.

4,567,276

β-ADRENERGIC 2-[4-(3-AMINO-2-HYDROXYPROPOXY)PHENYL-]IMIDAZOLES

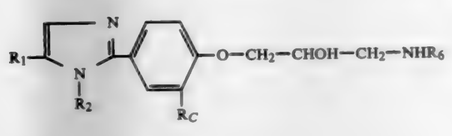
John J. Baldwin, Gwynedd Valley, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 255,202, Apr. 20, 1981, Pat. No. 4,440,774, which is a continuation-in-part of Ser. No. 184,501, Sep. 5, 1980, abandoned, which is a continuation of Ser. No. 801,120, May 27, 1977, abandoned, which is a continuation of Ser. No. 641,420, Dec. 17, 1975, Pat. No. 4,134,983, which is a continuation-in-part of Ser. No. 554,372, Mar. 3, 1975, abandoned. This application Jun. 13, 1983, Ser. No. 503,923

Int. Cl.⁴ C07D *233/64, 233/68, 233/90, 401/04*

U.S. Cl. 548—343 **15 Claims**

1. A compound having the formula:



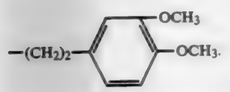
wherein

R_1 *L & H, CH₃*, tert.butyl or isopropyl,

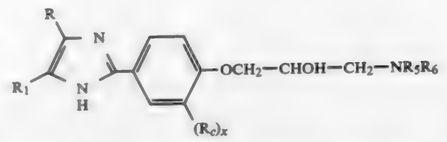
R_2 is H or CH_3

R_c is H, halo or OCH_3 and

R_6 is



5. A compound having the formula:



wherein R is hydrogen or an aromatic heterocyclic group selected from quinoline and those having 5–6 ring atoms, one to two of which is the hetero atom O, S, or N which heterocyclic group may be substituted on the carbon with 1 to 3 substituents selected from halo and lower alkyl and when the hetero atom is nitrogen may be substituted on the nitrogen with oxygen; R_c is selected from halogen, C_1–C_4 linear or branched alkyl, C_3–C_4 cycloalkyl, C_1–C_4 alkoxy, hydroxy or cyano; R_5 is H; R_6 is C_1–C_6 linear, branched, or cyclic alkyl or substituted C_1–C_6 linear or branched alkyl wherein said substitutent is phenyl or lower alkoxy-substituted phenyl, x=0 or 1; and R_1 is phenyl or substituted phenyl wherein said substituent is C_1–C_6 alkyl, C_1–C_6 alkoxy, cyano, halo, nitro, amino, carboxy, hydroxy, —SH, sulfamoyl, C_1–C_6 alkylthio and phenyl.

4,567,277

SALTS OF 2-(METHOXY-CARBONYLAMINO)-BENZIMIDAZOLE

Hans-Norbert Marx, Buehl-Weitenung, and Ernst-Heinrich Pommer, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 421,417, Sep. 22, 1982, abandoned. This application May 16, 1985, Ser. No. 734,823

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1981, 3138575

Int. Cl.⁴ C07D *235/32*

U.S. Cl. 548—306 **2 Claims**

1. A salt of 2-(methoxy-carbonylamino)-benzimidazole with 4-phenolsulfonic acid or with sulfamic acid.

4,567,278

PROCESS FOR RACEMIZING CERTAIN SPIRO COMPOUNDS

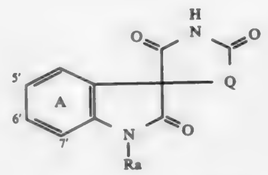
Geoffrey R. Bedford, Congleton; David R. Brittain, Rochdale, and Ronald Platt, MacClesfield, all of United Kingdom, assignors to Imperial Chemical Industries PLC, United Kingdom

Filed Mar. 26, 1984, Ser. No. 593,312

Int. Cl.⁴ C07D *487/10*

U.S. Cl. 548—309 **9 Claims**

1. A process for the manufacture of a compound of the formula I



in racemic form, wherein Ra is (2–12C)alkyl, or naphthylmethyl or cinnamyl optionally bearing one or two halogeno substituents, or benzyl optionally bearing one or two substituents independently selected from halogen, (1–4C)alkyl, (1–4C-)alkoxy, cyano, nitro and trifluoromethyl located in the 2-, 3-, 4- or 5-position of the phenyl moiety; benzene ring A optionally bears one or two substituents independently selected from halogeno, (1–4C)alkyl, trifluoromethyl and nitro; and Q is methylene or imino; but Ra is other than ethyl, n-propyl or

unsubstituted benzyl when benzene ring A is unsubstituted and Q is imino; characterised by heating an enantiomeric form of the compound of formula I; or a mixture of both enantiomeric forms of said compound containing an excess of one enantiomeric form over the other; at a temperature in the range 80° to 280° C.

4,567,279

DIARYLHYDROXY ALKANONES AND ALKENONES ANTIALLERGY AGENTS

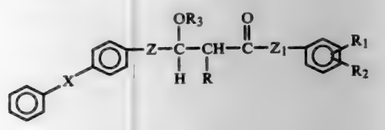
Wan-kit Chan, Yorktown Heights, N.Y., assignor to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Dec. 13, 1984, Ser. No. 681,409

Int. Cl.⁴ C07D *209/04;* **C07C** *69/76, 67/02*

U.S. Cl. 548—491 **18 Claims**

1. A compound of the formula:



wherein,

Z and Z_1 each are alkylene chains containing up to three carbon atoms in the principal chain and a total of up to five carbon atoms and include from 0–1 double bonds;

R is H or lower alkyl;

R_1 and R_2 each are H, lower alkyl, OH, lower alkoxy, benzyloxy, carboxy, alkylenecarboxy or alkylcarbonyl;

R_3 is H, lower alkyl, aryl or lower alkanoyl; and

X is $—O(CH_2)_n—$, $—CH{=}CH—$, $—(CH_2)_{n'}—$, $—S(CH_2)_n—$ or

wherein n=O and n'=1 or 2 .

4,567,280

PROCESS FOR PRODUCING IODO-AROMATIC COMPOUNDS

Hiroshi Itatani; Mikito Kashima, both of Chiba, and Yasutaka Tasaki, Narashino, all of Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Sep. 4, 1984, Ser. No. 646,749

Claims priority, application Japan, Sep. 6, 1983, 58-162637

Int. Cl.⁴ C07C *17/12*

U.S. Cl. 549—43 **10 Claims**

1. In a process for producing an iodo-aromatic compound which comprises iodinating an aromatic compound having an electron-donating substituent bonded to the benzene ring with iodine in the presence of a solvent, the improvement wherein the reaction is carried out in the presence of nitrogen dioxide which is added to the reaction system in the form of NO_2 in an amount of about ½ to about 10 moles NO_2, per mole of iodine added to the reaction system.

4,567,281

PREPARATION OF LACTONE-FUSED AROMATIC COMPOUNDS

Robert A. Dubois, Franklin, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 6, 1983, Ser. No. 501,741

Int. Cl.⁴ C07D *307/83, 311/20*

U.S. Cl. 549—288 **21 Claims**

1. A process for cyclizing an ortho-alkenyl arenol, wherein the double bond of the alkenyl moiety is one or two carbons removed from the aromatic ring, with carbon monoxide, wherein the process comprises contacting an ortho-alkenyl arenol with carbon monoxide in the presence of a catalytic amount of a catalyst comprising (1) a rhodium-carbonyl complex and (2) an amine with pK_a of 6 or greater, arsine, phosphine, stibine or mixture thereof, under conditions such that a lactone-fused aromatic compound is prepared.

4,567,282

METHOD OF PRODUCING (S)-GLYCERALDEHYDE ACETONIDE

Yukio Mizuno, Ibaraki, and Keiichi Sugimoto, Kawanishi, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 26, 1984, Ser. No. 665,435

Claims priority, application Japan, Oct. 28, 1983, 58-203145

Int. Cl.⁴ C07D *317/00*

U.S. Cl. 549—450 **6 Claims**

1. A method of producing (S)-glyceraldehyde acetonide, which comprises reacting 3,4-O-isopropylidene-L-threonic acid or a salt thereof with hypochlorite ion or hypochlorous acid under an acid condition.

2. A method of producing (S)-glyceraldehyde acetonide, which comprises reacting 5,6-O-isopropylidene-L-ascorbic acid or a salt thereof with an oxidizing agent to produce 3,4-O-isopropylidene-L-threonic acid or a salt thereof and then reacting the 3,4-O-isopropylidene-L-threonic acid or a salt thereof with hypochlorite ion or hypochlorous acid under an acid condition.

3. A method of producing (S)-glyceraldehyde acetonide, which comprises (1) reacting L-ascorbic acid or a salt thereof with acetone or a conventional equivalent thereof to produce 5,6-O-isopropylidene-L-ascorbic acid or a salt thereof, (2) reacting the 5,6-O-isopropylidene-L-ascorbic acid or a salt thereof with an oxidizing agent to produce 3,4-O-isopropylidene-L-threonic acid or a salt thereof, and (3) reacting the 3,4-O-isopropylidene-L-threonic acid or a salt thereof with hypochlorite ion or hypochlorous acid under an acid condition.

4,567,283

INTERMEDIATES FOR OXABICYCLOALKANE HERBICIDES

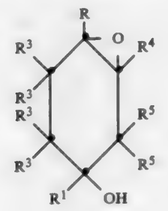
George B. Payne; Samuel B. Soloway, both of Modesto; James E. Powell, Ripon, all of Calif.; Steven A. Roman, Fulshear, Tex., and Willy D. Kollmeyer, Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 416,572, Sep. 13, 1982, which is a continuation-in-part of Ser. No. 331,094, Dec. 16, 1981, abandoned. This application Jun. 25, 1984, Ser. No. 624,551

Int. Cl.⁴ C07D *303/14, 303/46, 303/40, 303/34, 303/22*

U.S. Cl. 549—546 **5 Claims**

1. A compound of the formula If



wherein

R is a methyl;

R^1 is an alkyl group containing from 1 to 10 carbon atoms substituted by up to 3 halogen atoms, each having an atomic number of from 9 to 35, inclusive, or by a hydroxy group, a cyano group, an alkoxy group containing from 1 to 4 carbon atoms, a C_{1-6} alkylsulfonyl group, a C_{6-10}

arylsulfonyl group, a C_{7-11} aralkylsulfonyl group, a C_{1-6} alkoxycarbonyl group, or is a phenyl or benzyl group;
each R^3 is a hydrogen atom;
R^4 is a hydrogen atom;
each R^5 is a hydrogen atom;
and having the cis-stereoisomeric form.

4,567,284

COBALT COMPLEX OF N-ALKYLALKANOHYDROXAMIC ACID

Bruce F. Monzyk, Maryland Heights, and Arthur R. Henn, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 566,015, Dec. 27, 1983. This application Dec. 17, 1984, Ser. No. 682,117
Int. Cl.⁴ C07F *15/06*
U.S. Cl. 556—37 **9 Claims**

1. A cobalt complex of N-alkylalkanohydroxamic acid having 8–30 carbon atoms and a solubility in hydrocarbon solvents of at least 2% by weight and organic solutions of said complex.

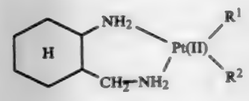
4,567,285

COMPLEX COMPOUNDS OF PLATINUM

Yoshinori Kidani, and Masahide Noji, both of Nagoya, Japan, assignors to Yoshinori Kidani, Nagoya, Japan

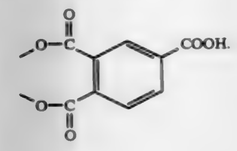
Filed Jul. 10, 1985, Ser. No. 753,537
Int. Cl.⁴ C07F *15/00*
U.S. Cl. 556—137 **7 Claims**

1. Complex compounds represented by the formula(I):



(I)

wherein one of R^1 and R^2 represents a group selected from the group consisting of (1) glucuronato groups whose hydroxyl groups may be acylated, (2) gluconato groups whose hydroxyl groups may be acylated, (3) pyruvato group and (4) nitrato group, and the other of R^1 and R^2 represents a group selected from the group consisting of (i) glucuronato groups whose hydroxyl groups may be acylated, (ii) gluconato groups whose hydroxyl groups may be acylated, (iii) pyruvato group and (iv) halogen atoms, or R^1 and R^2 represent together the group represented by the formula (II):



(II)

4,567,286

PREPARATION OF HYDROGENATED SILANES BY REDISTRIBUTION OF HYDROSILANES

Jean-Luc Lepage, Sainte-Foy-Les-Lyon, and Gerard Soula, Meyzieu, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Sep. 28, 1984, Ser. No. 655,722
Claims priority, application France, Sep. 28, 1983, 83 15403
Int. Cl.⁴ C07F *7/08, 7/12*
U.S. Cl. 556—469 **20 Claims**

1. A process for the preparation of a hydrogenosilane, comprising redistributing (1) a silane having the formula H_mSiX_{4-m} in which X is halogen or an alkoxy group and m is an integer equal to 0, 1, 2 or 3, by reacting said silane with (2) an alkyl or aryl hydrogenosilane having the formula $R_nH_pSiX'_{4-(n+p)}$ in which X' is halogen or an alkoxy group, R is at least one alkyl or aryl group, which may be identical or different, and n and p, which may be identical or different, are integers equal to 1, 2 or 3, with the proviso that $n+p \leqq 4$, in the presence of (3) a catalytically effective amount of a catalyst system which comprises (i) at least one ionic inorganic salt having the formula M^+A^- and (ii) a compound which complexes the M^+ cation of said salt (i) and at least partially solubilizes and dissociates same in the medium of reaction.

4,567,287

PREPARATION OF CARBAMATES FROM ORGANIC CARBONATES AND AROMATIC UREAS

Floro F. Frulla, Wallingford; Fred A. Stuber, North Haven, and Peter J. Whitman, Hamden, all of Conn., assignors to The Upjohn Co., Midland, Mich.

Filed Aug. 8, 1984, Ser. No. 638,800
Int. Cl.⁴ C07C *125/065, 125/073*
U.S. Cl. 560—024 **18 Claims**

1. In a process for the preparation of a carbamate by heating at a temperature of from about 75° C. to about 200° C. at least a molar equivalency of an organic carbonate selected from the group consisting of dialkyl, diaryl, diaralkyl, and cyclic esters of carbonic acid with each equivalent of a urea selected from the group consisting of an aromatic urea, an aromatic polyurea, and mixtures thereof in the presence of a catalyst, the improvement which comprises employing aluminum metal as catalyst with a promoter combination of a mercury salt and iodine.

4,567,288

1-ARYL 2-AMINOMETHYL CYCLOPROPANE CARBOXYLATES (Z)

Henri Cousse; Gilbert Mouzin; Bernard Bonnaud; Marie Charveron, all of Castres, and Francois Fauran, Castanet-Tolosan, all of France, assignors to Pierre Fabre S.A., Castres, France

Continuation of Ser. No. 390,811, Jun. 22, 1982, Pat. No. 4,507,318. This application Oct. 1, 1984, Ser. No. 656,443
Claims priority, application France, Jun. 23, 1981, 81 12311
The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.
Int. Cl.⁴ C07C *79/46, 101/30, 101/02*
U.S. Cl. 560—37 **8 Claims**

1. A 1-phenyl-1-lower-alkoxy carbonyl 2-aminomethyl cyclopropane (Z), wherein the 1-phenyl radical is substituted by hydroxy, methoxy, halo, amino, or nitro, and wherein aminomethyl is primary aminomethyl, monoloweralkylaminomethyl, or diloweralkylaminomethyl, or a pharmaceutically-acceptable acid addition salt thereof.

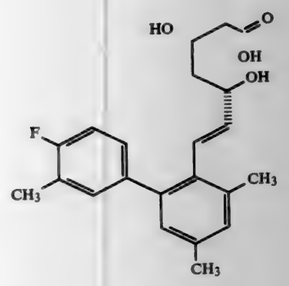
4,567,289

SUBSTITUTED PYRANONE INHIBITORS OF CHOLESTEROL SYNTHESIS

Alvin K. Willard, Wilmington, Del.; Frederick C. Novello, Berwyn; William F. Hoffman, and Edward J. Cragoe, Jr., both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 387,065, Jun. 10, 1982, Pat. No. 4,459,423, Division of Ser. No. 233,521, Feb. 11, 1981, Pat. No. 4,375,475, which is a continuation-in-part of Ser. No. 140,323, Apr. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 67,574, Aug. 1, 1979, abandoned. This application Apr. 25, 1984, Ser. No. 603,806
The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.
Int. Cl.⁴ C07C *69/76*
U.S. Cl. 560—059 **3 Claims**

1. The methyl, ethyl, n-propyl, 2-(acetylamino)ethyl, or 1-(2,3-dihydroxy)propyl ester of E-(3R,5S)-7-(4'-fluoro-3,3',5-trimethyl[1,1'-biphenyl]-2-yl)-3,5-dihydroxy-6-heptenoic acid of structural formula:



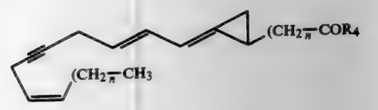
4,567,290

LEUKOTRIENE ANALOGUES

Kyriacos C. Nicolaou, Haverton; Nicos A. Petasis, and Steven P. Seitz, both of Philadelphia, all of Pa., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 325,553, Nov. 27, 1981, Pat. No. 4,442,099. This application Sep. 1, 1983, Ser. No. 528,733
Int. Cl.⁴ C07C *69/743*
U.S. Cl. 560—124 **1 Claim**

1. A compound of the formula



wherein n is 3;
m is 4; and
R_4 is methoxy.

4,567,291

2-METHYL-2-BUTEN-1-YL TIGLATE

Dietmar Lamparsky, Wangen, Switzerland, and Roman Kaiser, Clifton, N.J., assignors to Givaudan Corporation, Clifton, N.J.

Continuation of Ser. No. 52,175, Jun. 26, 1979, Pat. No. 4,500,729. This application Dec. 12, 1983, Ser. No. 560,353
Claims priority, application Switzerland, Jun. 28, 1978, 7037/78
The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.
Int. Cl.⁴ C07C *69/533*
U.S. Cl. 560—225 **1 Claim**

1. 2-Methyl-2-buten-1-yl tiglate provided it is not part of a naturally occurring mixture of compounds or part of a synthetic mixture which is the same as said naturally occurring mixture of compounds.

4,567,292

PROCESS FOR PRODUCTION OF ALLYL CARBOXYLATE

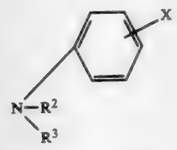
Nobuyuki Nagato, Saitama; Kenichiro Maki, Kanagawa; Tomoe Uematsu, Kanagawa, and Ryoji Ishioka, Kanagawa, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1985, Ser. No. 695,024
Int. Cl.⁴ C07C *67/05*
U.S. Cl. 560—245 **4 Claims**

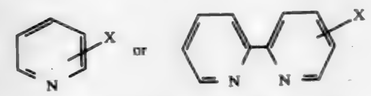
1. A process for producing an allyl carboxylate comprising the step of reacting propylene, oxygen or oxygen-containing gas, and a lower saturated carboxylic acid in the presence of a catalyst at a temperature of 100° C. to 300° C. and a pressure of 0 to 30 atm (gauge) in a vapor phase, said catalyst being prepared by supporting, on a carrier, at least one alkali metal acetate and at least one bivalent palladium salt in the presence of:
(A) at least one organic base selected from the group consisting of
(i) aliphatic amines having the formula:



wherein R^1, R^2, and R^3 may be the same or different and represent hydrogen, or an alkyl group having 1 to 10 carbon atoms or benzyl group optionally substituted with —CN, —OR, —COOR, or a $—N(R)_2$ group wherein R is H or an alkyl group having 1 to 3 carbon atoms, or any two groups of R^1, R^2, and R^3 may together form a ring provided that R^1, R^2, and R^3 are not simultaneously hydrogen;
(ii) aromatic amines having the formula:



wherein X represent —R, —CN, —OR, —COOR, $—NO_2$, or $—N(R)_2$ wherein R is the same as defined above, R^2 and R^3 are the same as defined above; and
(iii) nitrogen-containing cyclic compounds having the formula:



wherein X is the same as defined above; and/or
(B) at least one carboxylic acid having the formula:

$Y—(CH_2)_n\ COOH$

wherein Y represents —OR, —CN, —COOR, $—CH(R)NH_2$, —COR, $—N(CH_2COOH)_2$, —NHCH-$_2$COOH, or $—CH(R^1)X$ group wherein R, R^1, and X are the same as defined in (A) above, and n is an integer of 1 to 4.

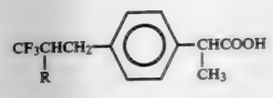
4,567,293

2-[PARA-(2-SUBSTITUTED OR UNSUBSTITUTED-3,3,3-TRI-FLUOROPROPYL)-PHENYL]PROPIONIC ACID OR A SALT THEREOF

Yoshiro Kobayashi, Tokyo; Itsumaro Kumadaki, Hachiohji; Takashi Yamauchi, and Akira Iizuka, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 430,779, Sep. 30, 1982, abandoned. This application Feb. 20, 1985, Ser. No. 702,861
Claims priority, application Japan, Oct. 14, 1981, 56-163872; Jan. 14, 1982, 57-4747; Aug. 6, 1982, 57-136937
Int. Cl.⁴ C07C *57/30, 53/134*
U.S. Cl. 562—496 **12 Claims**

1. A compound represented by the general formula (I):



(I)

wherein R is a hydrogen atom, a methyl group or a trifluoromethyl group, or a salt thereof.

4,567,294

PREPARATION OF AMMONIUM CARBAMATE

Manfred Dressel, Maxdorf; Heinrich Eberle, Ludwigshafen; Willi Ripperger, Frankenthal; Wolfgang Ruehenbeck, Birkenau, and Werner Zwick, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 684,063

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346719

Int. Cl.⁴ C07C *125/02*

U.S. Cl. 562—555 **4 Claims**

1. A process for the preparation of ammonium carbamate by reacting ammonia with carbon dioxide, wherein the reactants are introduced into a layer of ammonium carbamate which is kept in the fluidized state by means of gaseous ammonia or carbon dioxide, and the temperature is kept below 25° C. by cooling.

4,567,295

COMPOSITION ACTIVE AGAINST MITES, WHITEFLY AND THRIPS, PHARMACEUTICAL COMPOSITION, AND NEW BENZOYLUREA COMPOUNDS

Marius S. Brouwer, and Arnoldus C. Grosscurt, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

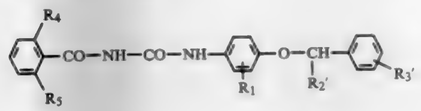
Filed Jan. 19, 1984, Ser. No. 572,144

Claims priority, application Netherlands, Jan. 24, 1983, 8300237

Int. Cl.⁴ C07G *127/19*

U.S. Cl. 564—44 **3 Claims**

1. A composition, active against mites, whitefly and thrips, characterized in that, in addition to a liquid or solid inert carrier material, the composition comprises a benzoylurea compound of the formula



(II)

wherein

R_1 is a hydrogen atom or represents 1 or 2 substituents which are selected from the group consisting of chlorine, methyl and trifluoromethyl;

R'_2 is a C_{3-4} cycloalkyl group;

R'_3 is a hydrogen atom or represents 1 or 2 substituents which are selected from the group consisting of halogen, haloalkyl and haloalkoxy having 1–4 carbon atoms; and

R_4 and R_5 are both fluorine atoms, or wherein

R_4 is a chlorine atom and R_5 is a hydrogen atom.

4,567,296

1-FLUORO-1,1,5-TRINITRO-3-OXA-5-AZAHEXANE AND METHOD OF PREPARATION

Theodore C. Adams, Jr., Beltsville, and Horst G. Adolph, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 29, 1984, Ser. No. 626,510

Int. Cl.⁴ C07C *111/00, 69/63;* C06B *25/34*

U.S. Cl. 564—111 **4 Claims**

1. 1-fluoro-1,1,5-trinitro-3-oxa-5-azahexane.

2. A method of preparing 1-fluoro-1,1,5-trinitro-3-oxa-5-azahexane comprising:

(1) reacting one mole of 2-nitro-2-azapropyl trifluoroacetate with one mole of 2-fluoro-2,2-dinitroethanol in a polar solvent at a temperature of from 0° C. to 40° C. to form 1-fluoro-1,1,5-trinitro-3-oxa-5azahexane, wherein the reaction is run under vacuum to remove trifluoroacetic acid generated by the reaction; and

(2) isolating the product 1-fluoro-1,1,5-trinitro-3oxa-5-azahexane.

4,567,297

PREPARATION OF AQUEOUS N-METHYLOL AMIDE SOLUTIONS

Peter Ball, Emmerting; Klaus Marquardt; Manfred Selig, both of Burghausen, and Günther Staudinger, Munich, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Fed. Rep. of Germany

Filed Oct. 11, 1984, Ser. No. 659,711

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1984, 3414525

Int. Cl.⁴ C07C *102/00*

U.S. Cl. 564—208 **8 Claims**

1. A process for the preparation of aqueous solutions of N-methylol-acrylamide and/or N-methylol-methacrylamide comprising forming a homogeneous mixture of aqueous solution of formaldehyde and aqueous solution of acrylamide and-/or methacrylamide and passing the homogeneous mixture through an ion-exchange resin bed based on a styrene-divinylbenzene polymer with tertiary amino groups at an elevated temperature so that the reaction is at least 80% theoretically completed when the mixture issues from the bed, characterized in that the ion exchanger is initially in the form of its free base, the initial temperature and velocity of homogeneous mixture being adjusted to maintain the bed temperature between 35° and 60° C. and continuing the passage of the homogeneous mixture through the exchanger bed until the bed temperature drops and/or the pH of the exiting solution is below 8.

4,567,298

POLY(DIPROPARGYLAMINE) AND DERIVATIVES THEREOF PER SE AND P-DOPED AND PROCESSES FOR PREPARING SAME

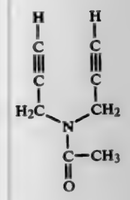
Yoshiyuki Okamoto, Fort Lee, N.J., and Edward F. Hwang, Brooklyn, N.Y., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 579,407, Feb. 13, 1984, Pat. No. 4,497,727. This application Aug. 10, 1984, Ser. No. 639,457

Int. Cl.⁴ C07C *103/127*

U.S. Cl. 564—215 **1 Claim**

1. A compound of the formula:



4,567,299

HERBICIDAL 2-HALOACETANILIDES

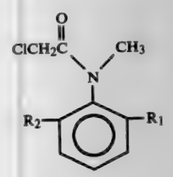
Gerhard H. Alt, University City, and James S. Bannon, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 24, 1984, Ser. No. 685,872

Int. Cl.⁴ C07C *103/34;* A01N *37/18*

U.S. Cl. 564—214 **12 Claims**

1. Compounds having the formula



wherein R_1 is n-butyl or sec-butyl and R_2 is methyl or ethyl, provided that when R_1 is n-butyl, R_2 is methyl.

4,567,300

PROCESS FOR PRODUCING N-SUBSTITUTED FORMAMIDES

Yoshikazu Murao, Machida; Shigeru Sawayama, and Kohichi Satoh, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

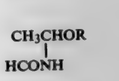
Filed Jan. 10, 1985, Ser. No. 690,252

Claims priority, application Japan, Jan. 14, 1984, 59-5232; Mar. 13, 1984, 59-47967

Int. Cl.⁴ C07C *103/127*

U.S. Cl. 564—215 **19 Claims**

1. A process for producing N-substituted formamide represented by the formula:



wherein R represents a hydrogen atom or the residual radical of a primary or secondary alcohol obtained by reacting N-(α-hydroxyethyl)formamide with such alcohol, as hereinafter specified, said process comprising the steps of reacting formamide with acetaldehyde in the presence of a basic catalyst and if required, further reacting the thus obtained N-(α-hydroxyethyl)formamide with a primary or secondary alcohol in the presence of an acid catalyst.

4,567,301

PERFLUORO (IMIDOYLAMIDINE) DIAMIDINES

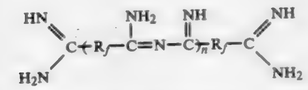
Robert W. Rosser; Timothy S. Chen, and Chung-Heng Cheng, all of San Jose, Calif., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 528,777, Sep. 2, 1983, abandoned, which is a division of Ser. No. 366,025, Apr. 6, 1982, Pat. No. 4,434,106. This application Jun. 5, 1985, Ser. No. 741,405

Int. Cl.⁴ C07C *123/00*

U.S. Cl. 564—243 **3 Claims**

1. A perfluoro(imidoylamidine)diamidine compound of the formula:



wherein n is a single number selected from 2 to 50 inclusive and wherein each R_f is selected from perfluorocarbons of the formula $-C_pF_{2p}-$ wherein p is a number from 2 to 18 inclusive, and oligomeric perfluoralkylethers of the formula:

$$-CFY(OCF_2CFY)_m-O-(CF_2)_q-O-(CFYCF_2O)_n-CFY-$$

Y is F or CF_3, q is a number from 1 to 18 and m and n are each numbers, the sum of which is from 2 to 7.

4,567,302

POLYMERIC QUATERNARY AMMONIUM SALTS POSSESSING ANTIMICROBIAL ACTIVITY AND METHODS FOR PREPARATION AND USE THEREOF

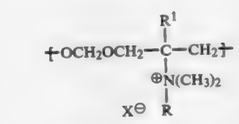
Kallidaikurichi N. Sivaramakrishnan, 4330 S. Sixth St., Terre Haute, Ind. 47802

Filed Jul. 20, 1984, Ser. No. 632,819

Int. Cl.⁴ C07C *93/04*

U.S. Cl. 564—286 **23 Claims**

1. The polymeric quaternary ammonium salt have the formula I:



(I)

wherein R is C_{1-20} alkyl, C_{5-7} cycloalkyl or aralkyl group, R^1 is methyl or ethyl and X is a halogen atom.

9. The method of preparing polymeric quaternary ammonium salts comprising the steps of:

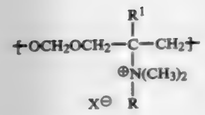
(a) initially reacting 2-nitro-2-methyl-1,3-propanediol or 2-nitro-2-ethyl-1,3-propanediol or a mixture thereof and trioxane in a solvent containing an acid to obtain a first product;

(b) reducing said first product by dissolving said first product in a solvent and maintaining the resulting solution under a hydrogen atmosphere in the presence of a reduction catalyst to obtain a second product;

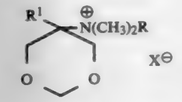
(c) alkylating said second product by maintaining said second product under a hydrogen atmosphere in the presence of a formaldehyde solution, a solvent and an alkylation catalyst to obtain a third product; and

(d) quaternizing said third product by reacting said third product with a halogenated hydrocarbon in the presence of a solvent to obtain quaternary ammonium salts.

23. The method of preparing quaternary ammonium salts as claimed as claim 9, wherein the quaternary ammonium salts comprise a mixture of a compound having the formula I:



and a compound of formula II:



wherein R is C_{1-20} alkyl, C_{5-7} cycloalkyl or aralkyl group, R^1 is methyl or ethyl, and X is a halogen.

4,567,303

PROCESS AND APPARATUS FOR PREPARING OR REACTING ALKANOLAMINES

Guenter Boettger, Bad Durkheim; Hans Hammer, Mannheim; Otto Hertel, Ludwigshafen; Gerhard Jeschek, Gruenstadt; Herbert Mueller, Frankenthal; Emil Scharf, Ludwigshafen, and Willibald Schoenleben, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 381,721, May 24, 1982, which is a division of Ser. No. 242,258, Mar. 10, 1981. This application Aug. 6, 1984, Ser. No. 638,522

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010105

Int. Cl.⁴ C07C *65/01*

U.S. Cl. 564—475 **7 Claims**

1. A process for preparing colorless alkanolamines and/or alkylenediamines which comprises thermally reacting ammonia or a reactive amine and an alkylene oxide or alkanolamine in a reactor in which the corrosion-sensitive parts of the reactor are made of substantially nickel-free stainless steel.

4,567,304

PROCESS FOR PREPARING ACETONE AND PHENOL

John W. Fulmer, Mt. Vernon, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 482,298, Apr. 5, 1983, Pat. No. 4,480,134. This application May 24, 1984, Ser. No. 614,124

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.⁴ C07C *45/53*

U.S. Cl. 568—385 **8 Claims**

1. A process for oxidatively preparing phenol and acetone from cumene including the steps of

a. cleaving cumene hydroperoxide to produce a mixture comprising phenol, acetone and side products including heavy residue;

b. separating acetone from phenol and heavy residue;

c. separating the heavy residue from the phenol;

d. treating the said heavy residue at elevated temperature;

e. separating lighter boiling material from heavier boiling material of the residue, said lighter boiling material comprising cumene, α-methylstyrene, and phenol;

f. separating the said lighter boiling material into two fractions, the lighter fraction comprising the bulk of benzene, toluene and ethylbenzene, the heavier fraction comprising the bulk of the phenol, cumene and α-methylstyrene; and

g. not recycling into the process streams any significant portion of the said lighter fraction.

4,567,305

(I) PROCESS FOR CONTINUOUS HYDROFORMYLATION OF ALLYL ALCOHOL

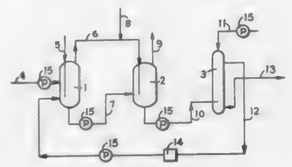
Mitsuo Matsumoto, Kurashiki; Shinichi Miura, Nakajyo; Koichi Kikuchi, Toyonaka; Masuhiko Tamura, Kurashiki; Hidetaka Kojima; Kunio Koga, both of Himeji, and Shigeru Yamashita, Arai, all of Japan, assignors to Kuraray Company, Ltd. and Daicel Chemical Industries, Ltd., both of Okayama, Japan

Filed Jun. 15, 1984, Ser. No. 621,016

Claims priority, application Japan, Jun. 24, 1983, 58-114549

Int. Cl.⁴ C07C *45/50*

(II) **U.S. Cl. 568—454** **6 Claims**



1. In the process of continuous hydroformylation of allyl alcohol which includes the steps of, in a reactor, hydroformylating allkyl alcohol with a gaseous mixture of hydrogen and carbon monoxide, in an aromatic hydrocarbon selected from the group consisting of benzene, toluene and xylene, in the presence of a rhodium complex selected from the group consisting of a rhodium complex of the formula $HRh(Co)(PR_3)_3$, wherein R is an aryl group, and a rhodium carbonyl cluster complex, and in the presence of a trisubstituted phosphine in an amount in excess of the amount of said rhodium complex, then separating hydroxybutyraldehydes from the resulting hydroformylation reaction mixture by extraction with an aqueous medium and recycling the extraction residue to the hydroformylation step as a catalyst-containing solution, the improvement which comprises: the hydroformylation reaction is continuously carried out under conditions such that the value of A defined by formula (I) given below is maintained within the range of 0.2 to 2.5 in substantially the entire reaction zone in which the hydroformylation reaction proceeds:

$$A=(5.67-3.129\times10^{-3}T+3.08\times10^{-5}T^2)\text{-}P_{co}-\alpha(\mu/T)^{0.5}(r_{co}/K_Y) \quad (I)$$

where T is the reaction temperature, in °K. and is within the range of 323° K. to 353° K., P_{co} is the logarithmic mean (in atmospheres absolute) between the partial pressure of carbon monoxide in the feed gas entering the reactor in which the hydroformylation reaction is conducted and the partial pressure of carbon monoxide in the effluent gas leaving said reactor and is within the range of 0.01 to 1.0 absolute atmosphere, α is 3,500 for cases where mechanical stirring is performed within the reactor and 1,200 for all other cases, is the viscosity (cp) of the reaction mixture at the reaction temperature and is within the range of 0.1 to 4.0 cp, r_{co} is the rate (moles/liter·hour) of consumption of carbon monoxide in the hydroformylation reaction and is within the range of 0.001 to 10 moles/liter·hour, and K_Y is the rate (millimoles/liter·hour) of absorption of oxygen in water as determined separately from and independently of the hydroformylation reaction by measuring the rate of oxidation of an aqueous sodium sulfite solution with air at 25° C. under atmospheric pressure in the reactor to be used for the hydroformylation reaction and K_Y is within the range of 5 to 500 millimoles/liter·hour, provided that in cases where the reactor in which the hydroformylation reaction is carried out comprises a plurality of reaction chambers, each reaction chamber is regarded as a single reactor and the above constant and variables are selected accordingly.

4,567,306

CONTINUOUS PROCESS FOR THE PRODUCTION OF ALDEHYDES BY HYDROFORMYLATION OF OLEFINS

Alan J. Dennis, Middlesbrough; George E. Harrison, Billericay, and James P. Wyber, Stockton-on-Tees, all of England, assignors to Davy Mckee (London) Limited, London, England

Filed Dec. 12, 1984, Ser. No. 680,834

Claims priority, application United Kingdom, Dec. 23, 1983, 8334359

Int. Cl.⁴ C07C *45/50*

U.S. Cl. 568—455 **17 Claims**

1. A continuous hydroformylation process for the production of an aldehyde selected from the group consisting of linear aldehydes and non-liner aldehydes by hydroformylation of an olefin selected from the group consisting of alpha-olefins, substituted alpha-olefins, internal olefins and substituted internal olefins, which comprises:

providing a hydroformylation zone containing a charge of a liquid reaction medium having dissolved therein (a) a complex rhodium hydroformylation catalyst comprising rhodium in complex combination with carbon monoxide and with a cyclic phosphite having a phosphorus atom linked to three oxygen atoms at least two of which form together with the phosphorus atom part of a ring and (b) a ligand stabilising amount of tertiary amine;

supplying said olefin to the hydroformylation zone;

maintaining in the hydroformylation zone a temperature in the range of from about 40° C. to about 160° C. and a pressure in the range of from about 4 bar to about 75 bar;

supplying make-up hydrogen and carbon monoxide to the hydroformylation zone; and

recovering from the liquid hydroformylation medium a hydroformylation product comprising at least one aldehyde selected from the group consisting of linear aldehydes and non-linear aldehydes.

4,567,307

TWO-STEP METHANE CONVERSION PROCESS

C. Andrew Jones, Newtown Square; John J. Leonard, Springfield, and John A. Sofranko, Malvern, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 522,925, Aug. 12, 1983, Pat. No. 4,443,649, and a continuation-in-part of Ser. No. 522,944, Aug. 12, 1983, Pat. No. 4,444,984, and a continuation-in-part of Ser. No. 522,942, Aug. 12, 1983, Pat. No. 4,443,648, and a continuation-in-part of Ser. No. 522,905, Aug. 12, 1983, Pat. No. 4,443,645, and a continuation-in-part of Ser. No. 522,877, Aug. 12, 1983, Pat. No. 4,443,647, and a continuation-in-part of Ser. No. 522,876, Aug. 12, 1983, Pat. No. 4,443,644, and a continuation-in-part of Ser. No. 522,906, Aug. 12, 1983, Pat. No. 4,443,646, and a continuation-in-part of Ser. No. 522,935, Aug. 12, 1983, and a continuation-in-part of Ser. No. 522,938, Aug. 12, 1983, said Ser. No. 522,925, is a continuation-in-part of Ser. No. 412,667, Aug. 30, 1982, abandoned, said Ser. No. 522,944, is a continuation-in-part of Ser. No. 412,655, Aug. 30, 1982, abandoned, said Ser. No. 522,942, is a continuation-in-part of Ser. No. 412,662, Aug. 30, 1982, abandoned, said Ser. No. 522,905, is a continuation-in-part of Ser. No. 412,663, Aug. 30, 1982, abandoned, said Ser. No. 522,877, is a continuation-in-part of Ser. No. 412,664, Aug. 30, 1982, abandoned, said Ser. No. 522,876, is a continuation-in-part of Ser. No. 412,665, Aug. 30, 1982, abandoned, said Ser. No. 522,906, is a continuation-in-part of Ser. No. 412,666, Aug. 30, 1982, abandoned, said Ser. No. 522,935, is a continuation-in-part of Ser. No. 412,649, Aug. 30, 1982, abandoned, said Ser. No. 522,938, is a continuation-in-part of Ser. No. 412,650, Aug. 30, 1982, abandoned. This application Apr. 16, 1984, Ser. No. 600,657

The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.

Int. Cl.⁴ C07C *2/02, 5/00*

U.S. Cl. 585—330 **15 Claims**

1. A process for converting methane to higher hydrocarbon products which comprises:

(a) contacting methane with a first agent at conditions effective to produce higher hydrocarbon products and water, said first agent comprising at least one reducible oxide of at least one metal which oxide when contacted with methane at a temperature in the range of about 500° C. to about 1000° C. is reduced and produces higher hydrocarbon products and water; and

(b) oligomerizing at least a portion of said higher hydrocarbon product to still higher hydrocarbon products in the presence of an effective amount of a second agent capable of promoting said oligomerization, provided that the composition of said first agent is different from the composition of said second agent.

4,567,308

PROCESS FOR PREPARING ALKYLCYCLOPENTADIENE DERIVATIVES

Zenichi Yoshida, 281, Ginza-cho 4-chome, Fushimi-ku, Kyoto-shi, Kyoto-fu; Susumu Kato; Yasuhiro Amemiya, both of Osaka, and Keisuke Yanai, Nara, all of Japan, assignors to Asahi Chemical Co., Ltd. and Zenichi Yoshida, both of, Japan

Filed Mar. 21, 1985, Ser. No. 714,261

Claims priority, application Japan, Mar. 26, 1984, 59-59070; Nov. 9, 1984, 59-237272; Feb. 18, 1985, 60-29927

Int. Cl.⁴ C07C *2/02*

U.S. Cl. 585—375 **8 Claims**

1. A method of alkylation of a cyclopentadiene derivative comprising the vapor-phase reaction of a cyclopentadiene derivative and an aliphatic lower alcohol in the presence of the following heterogeneous basic catalyst (A) or (B):

(A) at least one member selected from the group consisting of oxides, hydroxides and salts of alkaline earth metals or alkali metals, provided that the oxide or hydroxide of an alkali metal is not solely used and that a combination of these two compounds is not used,

(B) a mixture of the following (a) and (b):

(a) at least one member selected from the group consisting of oxides, hydroxides and salts of alkaline earth metals or alkali metals,

(b) at least one member selected from the group consisting of elements of groups (I) to (VIII), 2 to 7 periods of the periodic table, and oxides, hydroxides and carbonates of these elements, provided that oxides, hydroxides and carbonates of alkaline earth metals and alkali metals are excluded.

4,567,309

SEPARATION OF 1,3-BUTADIENE

Santi Kulprathipanja, Hoffman Estates, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 29, 1984, Ser. No. 614,935

Int. Cl.⁴ C07C *7/12*

U.S. Cl. 585—829 **5 Claims**

1. A process for separating 1,3-butadiene from a feed mixture comprising 1,3-butadiene butadiene and at least one other C_4 hydroarbon, which process comprises contacting said feed mixture, in liquid phase at adsorption conditions, with an adsorbent comprising activated or molecular sieve carbon which selectively adsorbs said 1,3-butadiene, removing the unabsorbed portion of said feed mixture form said adsorbent, and recovering said 1,3-butadiene by desorption thereof from the adsorbent with a liquid desorbent material comprising a C_3 or C_5 through C_{10} n-olifin, said feed mixture and said desorbent material having boiling points of at least 5° C. difference.

4,567,310

PREPARATION OF MODIFIED ZEOLITES AND THEIR UTILIZATION

Paul G. Rodewald, Rocky Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 526,764, Aug. 26, 1983, abandoned, which is a continuation of Ser. No. 355,419, Mar. 8, 1982, abandoned. This application Feb. 13, 1985, Ser. No. 701,313

Int. Cl.[4] C07C *1/20*

U.S. Cl. 585—408 25 Claims

12. In the process for the conversion of feed compositions of alkyl alcohols having up to four carbon atoms and ethers derived therefrom wherein said feed is contacted at elevated temperatures and pressures with a crystalline ZSM-5 type zeolite having a Constraint Index of about 1 to about 12 and a silica-to-alumina ratio no greater than 300, the improvement which comprises treating said ZSM-5 type zeolite with boron trifluoride in order to enhance its activity prior to said conversion of said feed.

4,567,311

CONVERSIONS OF LOW MOLECULAR WEIGHT HYDROCARBONS TO HIGHER MOLECULAR WEIGHT HYDROCARBONS USING A SILICON COMPOUND-CONTAINING CATALYST

Louis DeVires, Greenbrae, and P. R. Ryason, Santa Rosa, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 31, 1983, Ser. No. 547,697

Int. Cl.[4] C07C *2/00*

U.S. Cl. 585—415 9 Claims

1. A process for the production of higher molecular weight hydrocarbons from lower molecular hydrocarbons comprising the steps of:

(a) introducing into a reaction zone a lower molecular weight hydrocarbon-containing gas and contacting said gas in said zone with a silicon carbide-containing catalyst under C_2+ hydrocarbon synthesis conditions such that at least 15 mole percent of the lower molecular weight hydrocarbons in said gas are converted to higher molecular weight hydrocarbons, said conditions including a temperature of greater than 1000° C. and a gas hourly space velocity of greater than 3200 hr^{-1};

(b) withdrawing from said reaction zone a higher molecular weight hydrocarbon-containing stream.

4,567,312

PROCESS FOR PRODUCING ALKYLBENZENES

Stephen J. Miller, San Francisco, and Sue D. Pandey, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 470,425, Feb. 28, 1983, abandoned. This application Jan. 25, 1984, Ser. No. 573,741

Int. Cl.[4] C07C *2/52*

U.S. Cl. 585—419 11 Claims

1. A process for producing n-alkylbenzenes comprising contacting n-paraffins having a carbon number in excess of 15, with a dehydrocyclization catalyst, comprising a large-pore zeolite containing at least one Group VIII metal, under conditions which favor dehydrocyclization to produce said n-alkylbenzenes.

4,567,313

METHOD FOR ISOMERIZING ALKYLBENZENES

Ulf Blindheim, Skedsmokorset; Gerd S. Haegh, Rykkin, and Bjorn P. Nilsen, Sola, all of Norway, assignors to Sentralinstitutt for Industriell Forskning, Oslo, Norway

PCT No. PCT/NO83/00036, § 371 Date May 31, 1984, § 102(e) Date May 31, 1984, PCT Pub. No. WO84/01375, PCT Pub. Date Apr. 12, 1984

PCT Filed Sep. 26, 1983, Ser. No. 616,184

Claims priority, application Norway, Oct. 1, 1982, 823311

Int. Cl.[4] C07C *5/22, 5/23, 5/25*

U.S. Cl. 585—480 9 Claims

1. A method for isomerization of xylenes, which comprises contacting a feed comprising the xylenes, under isomerization conditions, with a heterogenous catalyst comprising an inorganic oxide support containing at least one mixed oxide compound of SiO_2 and Al_2O_3 at a temperature from 150° to 300° C. and under a pressure of at least about atmospheric pressure, wherein the catalyst is produced by reaction of the support with an aluminum alkyl compound of the formula AlR_yX_{3-y} where R is CH_3, C_2H_5 or C_3H_7, y is 1 or 2, and X is Cl.

4,567,314

PROCESS FOR PRODUCING DIOLEFINS

Paul R. Robinson, Costa Mesa, and Eric L. Moorehead, Diamond Bar, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 335,531, Dec. 29, 1981, Pat. No. 4,455,388, which is a continuation-in-part of Ser. No. 328,446, Dec. 7, 1981, Pat. No. 4,454,245. This application Mar. 30, 1984, Ser. No. 595,333

Int. Cl.[4] C07C *5/327*

U.S. Cl. 585—621 29 Claims

1. A method for producting diolefins from mono-olefins which comprises reacting a feedstream comprising a gas containing helium, molecular oxygen and a C_4 to C_8 mono-olefin under reaction conditions, in contact with an oxidative dehydrogenation catalyst defined by the formula:

$$Me_aV_bP_cSn_dO_eX$$

wherein X is crystalline silica, Me is an alkali metal, a is 0.10 to 2, b is 0.10 to 1, c is 1, d is 0.001 to 0.30 and e is a number which satisfies the valence requirements of the other elements present.

4,567,315

PROCESS FOR PURIFICATION OF LIQUID PARAFFINS

Fathi A. Owayss, Safat, and Rasheed S. Al-Ameeri, Bayan, both of Kuwait, assignors to Kuwait Institute for Scientific Research, Safat, Kuwait

Filed May 11, 1984, Ser. No. 609,121

Int. Cl.[4] C07C *7/13;* C10G *25/03*

U.S. Cl. 585—827 20 Claims

7. A liquid phase process for purifying a C_8–C_{24} liquid paraffin feedstock, which feedstock contains an undesirably high concentration of aromatic hydrocarbon impurities, comprising the steps of:

adjusting the temperature of the liquid paraffin feedstock to about 60° C.–120° C.;

contacting the liquid paraffin feedstock at a temperature of from about 60° C. to about 120° C. with an X-type zeolite molecular sieve material for selectively adsorbing the aromatic impurities therefrom;

recovering an aromatic hydrocarbon-deleted liquid paraffin product, in the liquid phase, from said X-type zeolite molecular sieve material, said aromatic hydrocarbon-depleted liquid paraffin product containing less than about 0.01% by weight aromatic hydrocarbons;

desorbing the adsorbed aromatic hydrocarbons from said zeolite molecular sieve material by passing a liquid desorbing solvent therethrough at a temperature of from about 60° C. to about 120° C.; and

washing the desorbed aromatic hydrocarbons from said zeolite molecular sieve material with a first liquid phase washing solvent.

4,567,316

SOLAR CELL MODULE

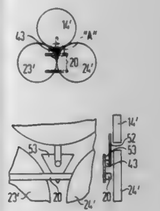
Reinhard Hollaus, Taufkirchen; Rudolf Zehetbauer, and Klaus Bednorz, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,875

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1983, 3307202

Int. Cl.[4] H01L *31/04*

U.S. Cl. 136—246 1 Claim



1. Solar cell module assembly, comprising a plurality of individual solar cells disposed in rows and at least partly electrically interconnected in series, at least one bypass diode shunted across at least some of said series-connected solar cells, said at least one diode being noramlly cut off during operation of said solar cell module and directly integrated into said solar cell module, a conductor ribbon electrically interconnecting two of said solar cells in series, and a sheet metal cooling body connected to said conductor ribbon, said at least one bypass diode being disposed on said cooling body and being connected between another of said solar cells and said conductor ribbon.

4,567,317

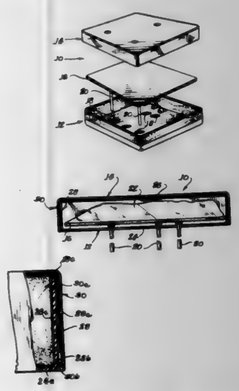
EMI/RFI PROTECTED ENCLOSURE

Stephen J. Ehrlich, and Edward I. Nelson, both of Sunrise, Fla., assignors to Computer Products, Inc., Pompano Beach, Fla.

Filed Jul. 7, 1983, Ser. No. 511,452

Int. Cl.[4] H05K *9/00*

U.S. Cl. 174—35 MS 13 Claims



1. A housing for providing EMI/RFI shielding for an electrical apparatus, comprising: complementary first and second shell members each including an end wall portion and an integrally formed circumferential side wall portion; each said side wall portion defining a substantially continuous and unbroken peripheral surface; the side wall portion of the second shell member being configured for an interference fit with said first shell member side wall portion; substantially the entire internally facing surfaces of both of said first and second shell members being electrically conductive for providing effective EMI/RFI shielding; substantial portions of the respective interference-fitted surfaces of said first and second shell members also being electrically conductive in a continuous fashion thereabout; electrically conductive means forming substantially continuous and uninterrupted electrical connections respectively between the interference-fitted surfaces and the internally facing surfaces of each of said shell members for defining continuity of said shielding; and substantially the entire externally facing surfaces of said first and second shell members being electrically non-conductive.

4,567,318

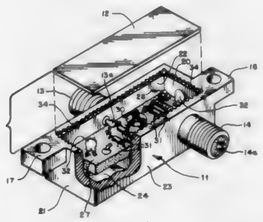
RF SHIELDED ELECTRONIC COMPONENT HOUSING

David F. Shu, Hoffman Estates, Ill., assignor to TDS, Inc., Elk Grove Village, Ill.

Filed Nov. 14, 1983, Ser. No. 551,084

Int. Cl.[4] H05K *9/00*

U.S. Cl. 174—35 GC 19 Claims



1. An electronic component housing comprising:

a base member defining an interior chamber opening to the exterior through an access aperture;

a cover plate member dimensioned to extend over said access aperture;

said base member including around the periphery of said access aperture a ledge portion dimensioned to receive said cover plate;

one of said members being formed of a relatively non-malleable material, the other of said members being formed of a relatively malleable material; and

said one of said members further including a plurality of engaging elements on said ledge portion in interference with said other of said members whereby said other of said members is deformed by said engaging elements to form a plurality of closely spaced mechanical and electrical engagement points providing a mechanical and electrically secure mounting for said cover plate member.

4,567,319

LIGHTWEIGHT CURRENT-CARRYING HOSE

Richard O. Finley, Upland, Calif., assignor to Plastiflex Company International, Fountain Valley, Calif.

Continuation-in-part of Ser. No. 454,035, Dec. 28, 1982, abandoned. This application Jun. 21, 1983, Ser. No. 506,375

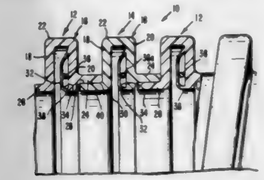
Int. Cl.[4] F16L *11/11, 11/12;* A47L *9/24*

U.S. Cl. 174—47 20 Claims

13. In a combination of a flexible tube with means defining at least one conductor of electromagnetic energy, wherein said tube comprises at least one elongated strip helically wound about an axis into tubular form and said conductor means has a length approximately that of said strip, wherein said strip includes at least two radially-extending components positioned generally normal to the tube axis and generally adjacent to one another, and wherein said strip before and after being helically wound into said tube has centers of mass which are differently

positioned, the improvement in said combination for enabling substantially all tensile and compressive forces exerted on or by said tube from being deleteriously exerted on said conductor means, comprising:

an enclosure on one of said radially-extending components for said conductor means extending along the length of said helically wound strip and having a dimension generally perpendicular to the axis for providing a generally central portion for said conductor mens when said tube is



relatively unbent and a radially-extending path for bidirectional movement of said conductor means that is greater than any movement thereon exerted on or by said tube which would otherwise deleteriously affect said conductor means, said enclosure dimension being at least equal to the distance between the centers of mass to permit movement of said conductor means in said enclosure in response to the tensile and compressive forces exerted on or by said tube.

4,567,320

REINFORCED ELECTRICAL CABLE AND METHOD OF FORMING THE CABLE

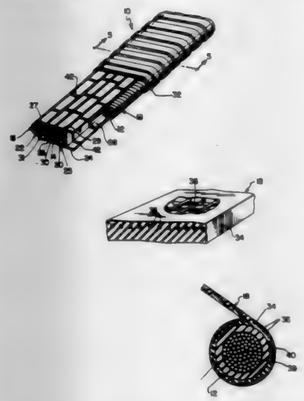
David H. Neuroth, Bethany, and Armand Moscovici, Woodbridge, both of Conn., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Apr. 26, 1983, Ser. No. 488,649

The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.

Int. Cl.⁴ H01B *7/18*

U.S. Cl. 174—103 **20 Claims**



1. A method of constructing a reinforced insulated conductor comprising the steps of

providing a conductor having a core of conducting material and a layer of insulating material surrounding the core, said insulating material being solidified and having an outer radius R at ambient temperatures,

forming a thin tape of unvulcanized thermosetting material imbedded with an open-mesh fabric defining a plurality of spaces therein, the inner side of the tape comprising a layer of the unvulcanized thermosetting material,

applying the tape directly over the exterior of the solidified layer of insulating material to completely cover the exterior thereof, with the thermosetting material contacting the insulating material,

heating the covered conductor for a sufficient period and at a sufficient temperature to allow the outer radius of the solidified insulating material to increase to R1 due to thermal expansion, thereby pushing the unvulcanized thermosetting material radially outwards so that at least part of it flows through the spaces in the open-mesh fabric to the other side thereof and resides there during vulcanization, and maintaining a heated condition until the thermosetting material becomes vulcanized, and

cooling the covered conductor,

the imbedded fabric as applied having a substantially fixed radius R2 that is equal to or greater than the outer radius R1 of the heated insulation.

20. An electrical cable comprising:

a plurality of insulated conductors;

a reinforcing layer applied directly around the exterior of each of said insulated conductors to completely cover said exteriors thereof,

said reinforcing layer comprising a thin tape formed of thermosetting material imbedded with an open-mesh fabric;

a force-resisting support member interposed between adjacent ones of said reinforcing layers, said support member being rigid in cross section for resisting transverse compressive forces;

a sheath enclosing said insulated conductors, reinforcing layers and support member; and

thermosetting material substantially filling the voids between said sheath and said reinforcing layers and support member.

4,567,321

FLEXIBLE FLAT CABLE

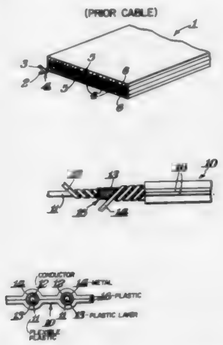
Chiharu Harayama, Atugi, Japan, assignor to Junkosha Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1984, Ser. No. 653,762

Claims priority, application Japan, Feb. 20, 1984, 59-23347

Int. Cl.⁴ H01B *7/04, 7/08*

U.S. Cl. 174—117 F **8 Claims**



1. An improved, highly flexible flat multi-conductor electrical cable comprising a plurality of conductor assemblies held in parallel relationship between layers of insulating coverings, the improvement comprising conductor assemblies having an elongate, non-conductive center core filament helically overwrapped along its longitudinal dimension by a first conductor in foil or tape form, this first tape conductor having an outer covering of a conductive, low friction material, said conductor covering being helically overwrapped along its longitudinal dimension by a second conductor in foil or tape form, said second foil conductor being wrapped having a lay different from that of said first conductor.

4,567,322

FACSIMILE APPARATUS

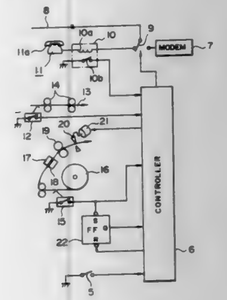
Shin Tsuda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1984, Ser. No. 572,849

Claims priority, application Japan, Jan. 27, 1983, 58-10532

Int. Cl.⁴ H04M *11/00;* **H04N** *1/00*

U.S. Cl. 179—2 A **5 Claims**



1. A facsimile apparatus comprising:

a manual switch for instructing start of one of an original image transmission mode, an image reception mode and a recording paper cutting mode;

communication detection means for detecting if said apparatus is available for communication;

original sheet detection means for detecting if an original sheet is present at a predetermined position;

a record paper detection means for detecting if a record paper is present at a predetermined position;

cut control means for controlling cutting of the record paper; and

means for selecting one of the three modes when said manual switch is operated, said selecting means selecting the recording paper cutting mode in the event (1) that said communication detection means detects that said apparatus is not available for communication, (2) said original sheet detection means does not detect an original sheet at its predetermined position, and (3) said record paper detection means detects that a record paper is at its predetermined position.

4,567,323

METHOD AND APPARATUS FOR PROVIDING A PLURALITY OF SPECIAL SERVICES

Rosanna M. Lottes, and Grant E. Swinehart, both of Naperville, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

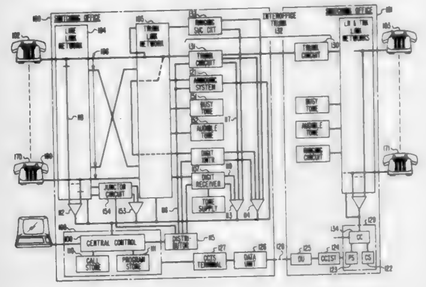
Filed Jul. 12, 1983, Ser. No. 513,079

Int. Cl.⁴ H04M *3/42*

U.S. Cl. 179—18 B **52 Claims**

1. For use with a telephone system serving a plurality of stations, a method for providing a plurality of special services; comprising the steps of:

responsive to a call between a particular one and a specific one of said stations, designating a memory dedicated to said particular station for at least a selected one of said special services; and



storing in said designated memory information related to said specific station for providing said selected service.

4,567,324

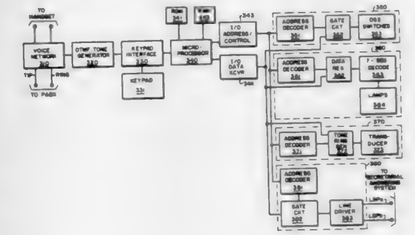
SECRETARIAL TELEPHONE STATION FOR USE WITH A SECRETARIAL ANSWERING SYSTEM

Louis W. Smith, St. Petersburg, Fla., and Janos I. Csapo, Oakton, Va., assignors to GTE Business Communication Systems, Inc., Northlake, Ill.

Filed Oct. 11, 1983, Ser. No. 540,465

Int. Cl.⁴ H04M *1/72, 3/50*

U.S. Cl. 179—27 FH **10 Claims**



1. A secretarial telephone answering station for use with a telephone switching system including a switching center, a plurality of subscriber telephone stations all connected to said switching center, each of which is operable as a calling or called subscriber station, and a secretarial answering system connected to said subscriber stations and operative to provide ringing, busy and idle detected messages, each including a ringing, busy or idle code, respectively, and a code identifying a called subscriber station, said secretarial station comprising:

a processing unit connected to said secretarial answering system and and said switching center; and

a plurality of lamp and switch pairs connected to said processing unit, each pair being associated with one of said subscriber stations;

said processing unit being operative in response to said code identifying a called subscriber station and said ringing, busy and idle detected messages to flash, light or darken, respectively, the lamp associated with said identified called subscriber section;

said processing unit being further operative in response to operation of a switch to apply to said switching center a directed call pick up message including a directed call pick up code and a code identifying said associated subscriber station;

said processing unit being further operative in response to subsequent operation of said switch to apply to said

switching center a call transfer message, including a call transfer code and said code identifying said associated subscriber station, and further operative, in response to said subsequent switch operation, to apply to said secretarial answering system, a buzzing requested message including said code identifying said associated subscriber station.

4,567,325

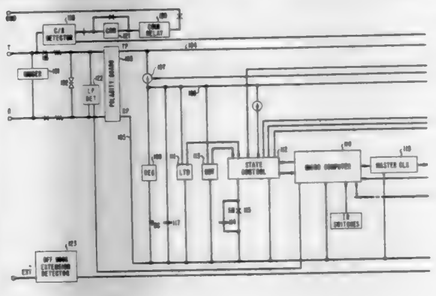
CONTROLLER FOR A COIN TELEPHONE SET

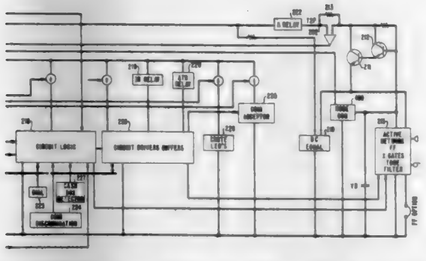
Paul E. Crouch, Freehold, N.J.; Joseph J. Nahas, Wyomissing Hills, Pa., and Howard Ng, Old Bridge, N.J., assignors to AT&T Technologies Inc. and AT&T Bell Laboratories, both of Murray Hill, N.J., a part interest

Filed Dec. 30, 1983, Ser. No. 567,052

Int. Cl.⁴ H04M *17/00*

U.S. Cl. 179—6.3 R **13 Claims**





1. A coin telephone station for making calls to a central office over a coin subscriber loop, the station comprising:

sensing means for detecting the level of current flow through the subscriber loop to the telephone station;

coin processing circuitry for recognizing the deposit of coins into the station and transmitting coin deposit information to the central office; and

control means operably responsive to a signal from the sensing means reflecting that the level of current flow has fallen below a predetermined level, the control means inhibiting the coin processing circuitry and causing all deposited coins to be returned to a customer, the coin telephone station retaining a dial and speech capability while the level of current flow is below the predetermined level.

4,567,326

TELEPHONE APPARATUS FOR SELECTIVE OPERATION IN A NORMAL AND REPERTORY DIAL MODE

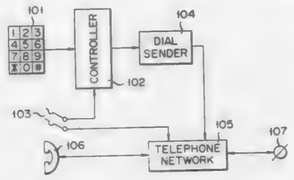
Yasuji Sato; Takao Yamamoto; Yoshikazu Sano, all of Tokyo, Japan, and Yasunobu Nakayama, Tustin, Calif., assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 17, 1982, Ser. No. 378,729

Claims priority, application Japan, May 28, 1981, 56-80099

Int. Cl.⁴ H04M *1/274*

U.S. Cl. 179—90 B **11 Claims**



1. A telephone apparatus comprising:

keyboard means having at least ten digit keys and at least two special keys for entering data to a telephone network;

controller means for operating said apparatus in (a) a first manual dial setting mode which is responsive to all of said keys and allows transmission of said digit keys to said network, (b) a second manual dial setting mode which allows transmission of said digit keys and said special keys to said network, and (c) an abbreviated dial mode under the control of said two special keys which allows previously stored sequences to be recalled by entering a sequence including said special keys; and

mode switching means including a variable-status hook switch for effecting the switching of said modes in said controller means in response to at least the status of said hook switch.

4,567,327

FLAT-DIAPHRAGM TRANSDUCER AND METHOD OF MANUFACTURING SUCH A TRANSDUCER

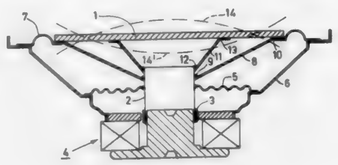
Urbanus P. M. Goossens, and Gustaaf E. M. Fierens, both of Dendermonde, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,274

Claims priority, application Netherlands, Feb. 4, 1982, 8200416

Int. Cl.⁴ H04R *7/12*

U.S. Cl. 179—115.5 R **17 Claims**



1. An electrodynamic transducer comprising:

a sound-radiating diaphragm having a substantially flat sound-radiating side, a magnet system having an air gap, a voice coil former with a voice coil mounted thereon and located in said air gap so as to cooperate with the magnet system, a first auxiliary cone for transmitting the movement of the voice coil former to the sound-radiating diaphragm, the first auxiliary cone having an inner rim secured to the voice-coil former and an outer rim secured to the sound-radiating diaphragm along the periphery of the sound-radiating diaphragm, at least one centering diaphragm connected to the outer rim of the auxiliary cone, and a further auxiliary cone having an inner rim secured to the voice-coil former and an outer rim secured to the sound-radiating diaphragm with the further auxiliary cone disposed inside of the first auxiliary cone.

4,567,328

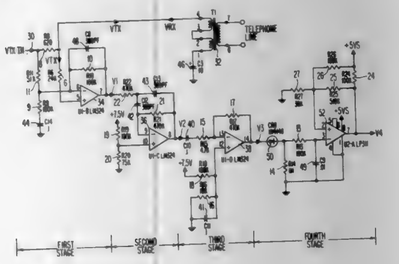
ENERGY DETECTION CIRCUIT FOR A FACSIMILE SYSTEM CONTROLLER

Francis P. Carrasco, Danbury; Gerard A. DeRome, New Milford, and David W. Fernekes, Danbury, all of Conn., assignors to Burroughs Corp., Detroit, Mich.

Filed May 23, 1984, Ser. No. 613,341

Int. Cl.⁴ H04M *11/00*

U.S. Cl. 179—2 A **18 Claims**



1. In a facsimile system controller, a circuit connected to a transmit-receive path of a transmission line to detect the presence of received energy on the transmission line, said circuit including a signal source coupled to a down line receiver; said circuit comprising:

first means, coupled to said signal source and said transmission line, for nulling out any signals from said signal source which are a component of the transmit-receive path of said transmission line, thereby said first means having a receive signal output solely indicating said received energy; and

energy detect means, receiving said receive signal, for producing a digital signal indicating the presence and absence of energy in said receive signal.

4,567,329

LINE CIRCUIT FOR NETWORK JUNCTOR

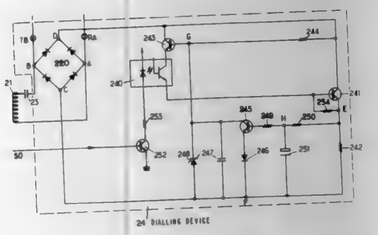
Francois P. Bailly, Palaiseau; Alain Bourgoin, Dourdan, and Renato Israel, Versailles, all of France, assignors to Societe Anonyme de Telecommunications, France

Filed May 14, 1984, Ser. No. 609,976

Claims priority, application France, May 18, 1983, 83 08186

Int. Cl.⁴ H04M *3/00*

U.S. Cl. 179—18 FA **4 Claims**



1. A line circuit for network junctor, comprising loop current interrupting means allowing dialling including regulating means for maintaining said loop current about a predetermined threshold and for presenting a high impedance for the telephone frequencies and a low impedance for the ringing currents, said regulating means comprising two transistors forming a Darlington assembly, the first transistor receiving on its base a loop opening or closure control pulse and being in series with a first resistor, the base of the second transistor and the collector of the first transistor being connected by a second resistor, and means for stabilizing the base voltage of said second transistor in order to raise the impedance of said regulating means in the telephone band, means for controlling said regulating means disposed in parallel on said first resistor and comprising a third transistor whose base is connected to the emitter of said first transistor and whose collector is connected to the base of said second transistor, the emitter of said third transistor being connected to said first resistor via a diode in order to improve the regulation for the low voltages.

4,567,330

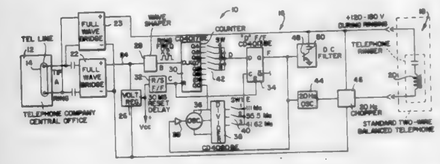
INTERFACE FOR CONNECTING STANDARD TELEPHONES TO PARTY LINES

Leonard E. Curtin, Houston, Tex., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 14, 1984, Ser. No. 620,735

Int. Cl.⁴ H04M *1/00*; H04Q *5/00*

U.S. Cl. 179—17 E **13 Claims**



1. A party line interface for connection at a party line subscriber's location between a party line connected to a central telephone office which provides a party line ringing signal of a different frequency to selectively ring each individual party line subscriber's telephone connected to the party line and a standard telephone which rings in response to the application of a single standard ringing frequency signal comprising:

(a) means for generating a ring command signal in response to the detection of a party line ringing signal of a single frequency, and being programmable to change the single frequency which must be detected to generate the ring command signal; and

(b) means for producing the single standard ringing frequency signal in response to the ring command signal.

4,567,331

ELECTRONIC HYBRID HAVING SYNTHESIZED IMPEDANCE CIRCUITRY

Philip T. Martin, Columbus, Ohio, assignor to ITT Corporation, New York, N.Y.

Filed Dec. 22, 1983, Ser. No. 564,637

Int. Cl.⁴ H04M *19/00*

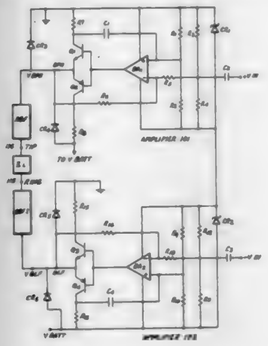
U.S. Cl. 179—170 NC **11 Claims**

1. A circuit for coupling a two-wire transmission path to a four-wire transmission path, said circuit comprising:

a first amplifier having inputs coupled to said two-wire transmission path and an output coupled to one side of said four-wire transmission path;

first and second circuitry means for each providing combined battery and voice signal injection to said two-wire path whereby a.c. voice signals are combined with d.c. battery potential, each having an input terminal coupled to the other side of said four-wire transmission path and each having an output terminal;

a first battery feed impedance coupled between said first circuit output terminal and one side of said two-wire path;
a second battery feed impedance coupled between said second circuit output terminal and the other side of said two-wire path;
each of said first and second circuits comprising a differential input amplifier having first and second inputs and an output, a first resistor coupled between said input terminal and said first input, a first feedback impedance coupled between said output terminal and said first input:



circuit means coupling said output to said output terminal, a second resistor having one end coupled to a voltage source terminal and its other end coupled to said output terminal via said circuit means, a second feedback impedance coupled between said second resistor other end and said second input, whereby said first and second circuit means each operate to provide an output impedance at the respective said output terminal which is approximately zero for d.c. and is a predetermined non-zero value at voice frequencies.

4,567,332

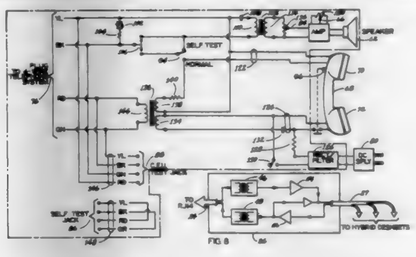
FOUR-WIRE TELEPHONE SYSTEM WITH SELF-TEST MEANS

William E. Jamison, 1459 Reale, St. Louis, Mo. 63138

Filed May 3, 1984, Ser. No. 606,897

Int. Cl.⁴ H04M *1/24*

U.S. Cl. 179—175 **13 Claims**



1. For use with a four-wire full duplex telephone system having at least two different location interconnected by an existing four-wire telephone circuit, a four-wire full duplex testset for at least one location for connection to said circuit to provide normal full duplex communication and also to provide testing of integrity of communications at such location, the improvement comprising a line cord including a line core plug for connection of said testset with said existing telephone circuit, self-test circuitry permitting the user of the testset to cause a test mode of operation providing user assurance of proper operation of said testset when testing the integrity of communications with said existing telephone circuit whereby existence of fault within said existing circuit may be readily ascertained with user certainty that fault does not exist within said tester and line cord.

4,567,333

ELECTRONIC TONE RINGER WITH DISTINCTIVE SIGNALING CIRCUITRY

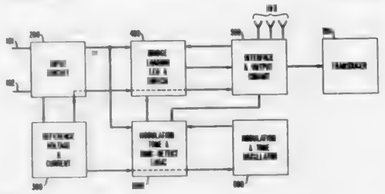
David M. Embree; David C. Goldthorp, both of Reading, Pa.; Howard H. Longenecker, and David R. Vogelpohl, both of Indianapolis, Ind., assignors to AT&T Technologies and AT&T Bell Laboratories, both of Murray Hill, N.J.

Division of Ser. No. 470,150, Feb. 28, 1983, Pat. No. 4,491,691.

This application Aug. 23, 1984, Ser. No. 643,343

Int. Cl.⁴ H04M *1/00*

U.S. Cl. 179—84 T **8 Claims**



1. A tone ringer having input lines and operatively responsive to the reception of ringing signals applied across said input lines, the ringer comprising:
an acoustic transducer for providing an audible output;
oscillatory generator means comprising a first and a second oscillator for activating the acoustic transducer;
the first oscillator providing a transducer activation signal, and the second oscillator providing modulation means for the transducer activation signal;
sensing means for distinguishing between valid and invalid ringing signals applied across the input lines and for applying a ring activation signal to the oscillatory generator means when a valid ringing signal is detected; and
frequency determining means connected to the oscillatory generator means for controlling the frequency of the transducer activation signal provided by the first oscillator, the frequency determining means including a switchable ratio current mirror for providing a control current to the oscillatory generator means, the current mirror providing a plurality of selectable current levels for a corresponding plurality of different frequency transducer activation signals from the oscillatory generator means.

4,567,334

SUSPENDED COMBINED ELECTRIC CURRENT COLLECTION AND TRACTION SYSTEMS

Thomas W. Wilcox, "Delway", 1 Astley Dr., Whitley Bay, Tyne & Wear NE26 4AE, United Kingdom

PCT No. PCT/GB82/00169, § 371 Date Feb. 7, 1983, § 102(e) Date Feb. 7, 1983, PCT Pub. No. WO82/04422, PCT Pub. Date Dec. 23, 1982

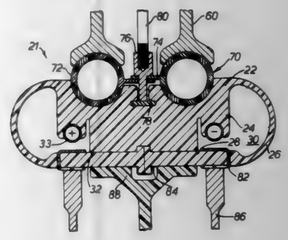
PCT Filed Jun. 8, 1982, Ser. No. 466,341

Claims priority, application United Kingdom, Jun. 9, 1981, 8117654

Int. Cl.⁴ B60M *1/08*

U.S. Cl. 191—21 **10 Claims**

1. A track for providing combined electric current and frictional traction for a suspended locomotive, comprising:
an elongate resilient shield,
at least one elongate conductor positioned within said shield,
a plurality of contact segments along the length of said shield, said segments extending from within said shield to the exterior of said shield and being normally spaced from said conductor within said shield,
at least one flexible elongate reinforcing member connected to said shield for supporting said track,
said at least one flexible elongate reinforcing member having a first exterior surface adapted to engage at least one reaction wheel of a locomotive,
said shield and said contact segments forming a second exterior surface adapted to be frictionally engaged by at least one drive wheel of the locomotive,
said first and second surfaces being on opposed sides of said track,



the zone of said track which is engaged by the reaction wheel and drive wheel of the locomotive compressing by deformation of said shield to cause the ones of said contact segments in said zone to engage said conductor to provide electricity to the locomotive,
said compression of said track and resilient shield causing substantial frictional engagement between said second exterior surface and the drive wheel of the locomotive to provide frictional engagement that drives the locomotive, through the drive wheel, along said second exterior surface.

4,567,335

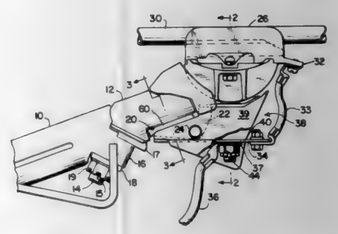
HIGH SPEED TROLLEY HARP ASSEMBLY

Thomas W. Griffiths, Lexington, Ohio, assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jul. 2, 1984, Ser. No. 626,715

Int. Cl.⁴ B60L *5/08*

U.S. Cl. 191—59.1 **7 Claims**



1. A high speed trolley harp assembly for use at the upper end of a trolley pole to maintain a current shoe in contact with an elongated conductor comprising the combination of
an upper body attached to the upper end of said pole, said body including a generally tubular sleeve and a central wall protruding therefrom;
a current shoe having a longitudinal recess for contacting a conductor;
support means for supporting said current shoe;
axle means for pivotally connecting said support means to said central wall so that said support means is pivotable relative to said upper body about an axis generally perpendicular to said central wall; and
a body of compressible elastomeric material contained in and protruding from said upper body adjacent said central wall and contacting a surface of said support means to maintain said shoe in contact with said conductor and absorb vibrational energy of said support means as said shoe moves along said conductor.

4,567,336

LOCKING MECHANISM FOR A BIPARTITE KEYBOARD HOUSING

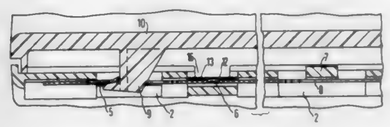
Josef Lemche, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,410

Claims priority, application Fed. Rep. of Germany, May 27, 1983, 3319334

Int. Cl.⁴ H01H *9/02*

U.S. Cl. 200—305 **4 Claims**



1. A locking mechanism for a bipartite keyboard housing consisting of upper and lower plastic parts having inwardly disposed shielding, comprising:
an elongated guide channel formed along at least one side of the lower part,
spaced clearances formed in said one side of the lower part to communicate with said channel,
spaced hooks secured to the upper part of the housing extendable into said clearances,
a lock rail disposed in said guide channel, said lock rail being longitudinally displaceable therein and being provided with upwardly bent contact tongues spaced to engage said hooks and with upwardly extending contact humps therebetween,
a web positioned above said channel and aligned with one of said clearaces in the lower part of the keyboard, and
an opening situated in the lock rail, the web and the opening being aligned with one another such that the lock rail is longitudinally displaceable by means of a tool engageable with said web against said opening.

4,567,337

FLEXIBLE EXTENSION DEVICE FOR TOGGLE SWITCHES

Karl E. Woods, I, 625 Cincinnati St., Toledo, Ohio 43611, and Evan Scott, Jr., 822 Anderson St., Northwood, Ohio 43619

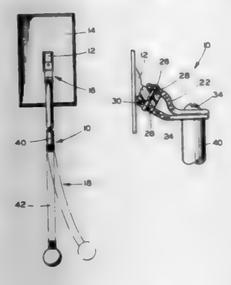
Filed Jan. 3, 1984, Ser. No. 568,031

Int. Cl.⁴ H01H *3/04*

U.S. Cl. 200—331 **12 Claims**

1. A light switch extension for facilitating operation of a toggle type wall switch comprising, in combination, means for engaging the switch toggle of a wall switch, said engaging means including a first flexible strap having a first surface for disposition against an upper surface of such toggle, a second flexible strap having a second surface generally parallel to said first surface for disposition against a lower surface of such toggle, means for retaining said engaging means on said toggle, said retaining means defining a first axis disposed normal to said first and said second surfaces, said engaging means further including a terminal portion and a flexible intermediate portion disposed between said first and second surfaces and said terminal portion, and an elongate operator means coupled to said terminal portion for applying bi-directional force to such toggle, said operator means including a rigid portion and a helical

spring coupled to said rigid portion and defining a second axis for bi-directionally transferring forces applied substantially



along said second axis and deforming in response to forces applied obliquely and perpendicularly to said axis.

4,567,338

CUP-SHAPED SWITCH CONTACT MEMBER FOR AN ELECTRIC VACUUM SWITCH

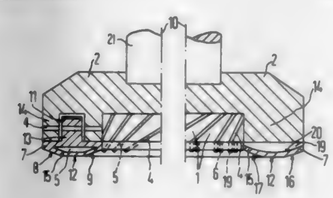
Gerhard Peche, Romrod, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 28, 1984, Ser. No. 625,721

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323627

Int. Cl.⁴ H01H *33/66*

U.S. Cl. 200—144 B **15 Claims**



1. Cup-shaped switch contact member for an electric vacuum switch having a lead post, a bottom connected to the lead post, a cylinder wall connected to the bottom, and a contact ring secured to the cylinder wall and formed of a material favoring interruption of an arc having a lower conductivity than that of the cylinder wall, the lead post having a diameter smaller than the inner diameter of the cylinder wall, the cylinder wall and the contact ring being at least partly slotted, the slots formed in the clinder wall extending at an angle to the axis of rotation of the switch contact member and merging with the slots formed in the contact ring, comprising a contact surface formed on the contact ring and having a pair of concentric annular zones overlying respective radially inner and radially outer marginal regions of an annular end face of the cylinder wall, said contact surface also having a middle annular zone disposed between said concentric annular zones and being farther removed from the cylinder wall than either of said concentric annular zones, a layer of the material of the contact ring having a thickness approximately equal to a depth of maximum melting occurring during switch-off or disconnection of the switch contact member, said layer being disposed in vicinity of the slots formed in the contact ring and extending continuously along said contact surface without being slotted, the contact ring being of such thickness as to be able to absorb maximum bending forces occurring during closing or switch-on of the switch contact member without impermissible deformation.

4,567,339

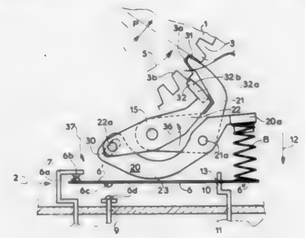
CAM OPERATED CONTROL DEVICE OF AN ELECTRICAL SWITCH

Jean Monie, Cluses, France, assignor to Societe Industrielle de Bellevaux, SIBEL, Cluses, France

Filed Jul. 6, 1984, Ser. No. 628,338

Int. Cl.⁴ H01H *19/62*

U.S. Cl. 200—153 LB **7 Claims**



1. A control device incorporating at least one electrical switch (2; 40) which can be actuated abruptly, for closing and opening, by a single rotary control cam (1), the said device incorporating a control cam (1) comprising a plurality of identical abrupt-drop notches (3) separated respectively by solid parts (4) identical to one another, and a lever system serving as an intermediary between the control cam (1) and the switch and comprising a first and a second lever (21, 22), each of which pivots about a fixed axle (15; 15*a*, 15*b*) and each of which possesses a nose (31, 32) intended to interact under the action of at least one elastic means (8; 8', 51) with the profile of the control cam (1), a link (20) being articulated, on the first lever (21) and, on the second lever (22) at points (21*a*, 22*a*) separate from the fixed pivot axles of the said levers, one of these points of articulation sliding in the link or in the respective lever in a direction transverse to the direction of displacement of the noses of the two levers, the respective noses (31, 32) of the two levers (21, 22) having such dimensions and positioned in such a way that the nose (31) of the first lever can drop into any one notch (3) of the control cam (1) a moment before the nose (32) of the second lever, said link (20) possessing a relief part (23) which is arranged opposite the switch and which has such dimensions and is positioned in such a way that it respectively opens and closes the switch abruptly when the nose (31) of the first lever abruptly drops into any one of the notches (3), and that it respectively closes and opens the switch abruptly when the nose (32) of the second lever abruptly drops into any one of the notches (3).

4,567,340

APPARATUS AND METHOD FOR DRYING SOLID MATERIALS

John W. Latchum, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 9, 1985, Ser. No. 690,084

Int. Cl.⁴ H05B *6/68, 6/60*

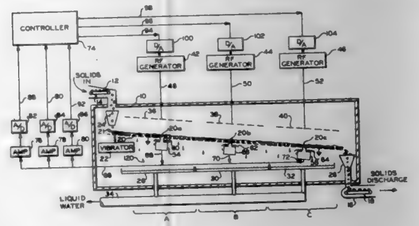
U.S. Cl. 219—10.41 **10 Claims**

5. A method of drying a solid material containing water comprising:

generating a radio frequency electromagnetic field in the vicinity of the solid material;

detecting the amount of moisture on the surface of the solid material, the surface moisture so detected being denoted as the surface moisture content;

controlling the field in response to said surface moisture detection so as to maintain a condition wherein water is



expelled from the solid material substantially as a liquid, and

collecting the liquid water expelled by the solid material.

4,567,341

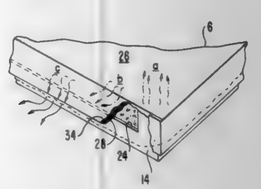
SIDE VENTED AND SHIELDED MICROWAVE PIZZA CARTON

Richard K. Brown, Appleton, Wis., assignor to James River-Norwalk, Inc., Norwalk, Conn.

Filed Aug. 2, 1984, Ser. No. 637,056

Int. Cl.⁴ H05B *6/64*

U.S. Cl. 219—10.55 E **11 Claims**



1. A carton for use in heating food in a microwave oven, comprising:

(a) a bottom portion having a bottom panel and at least a first side wall connected with and extending upwardly from said bottom panel;

(b) a top portion cooperating with said bottom portion to enclose a food receiving cavity, said top portion including a top panel and a second side wall panel connected with and extending downwardly from said top panel in laterally spaced apart relationship with said first side wall panel to form a generally vertically oriented passage;

(c) microwave reflecting means for reducing the amount of microwave energy entering the food receiving cavity through said top portion, said microwave reflecting means including a layer of microwave impervious material associated with said top portion; and

(d) vapor escape passage means for causing vapor generated within the food receiving cavity to be vented to the exterior of the carton by passing through said vertically oriented passage formed between said first and second side wall panels without passing through said microwave impervious layer.

4,567,342

METHOD AND APPARATUS FOR CONTROLLING DIRECTION REVERSAL IN ELECTRIC DISCHARGE MACHINES

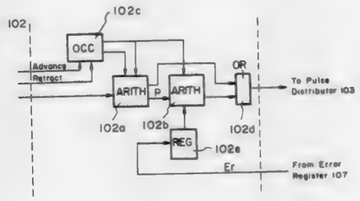
Ryoichiro Nozawa, Tokyo; Mitsuo Kinoshita, and Teruyuki Matsumura, both of Hachioji, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

Filed Jun. 24, 1983, Ser. No. 507,494

Claims priority, application Japan, Jun. 24, 1982, 57-108866

Int. Cl.⁴ B23P *1/12;* **G05B** *9/02*

U.S. Cl. 219—69 M **13 Claims**



1. A method of reversing a feed direction of an electric discharge machine having an electrode which is moved relative to a conductive workpiece in response to a command signal from a control means having an error computing and storing means for controlling the electrode, an arithmetic difference between the value of the command signal and a number of pulses, each of which is generated for each prescribed increment of movement of the electrode, is computed and stored as an error in the error computing and storing means, and the electrode is subsequently driven in accordance with the error stored in the error computing and storing means, the electrode machining the workpiece by an electric discharge developed across the electrode and the workpiece, said method comprising the steps of:

(a) generating, as the command signal in response to a short-circuit signal produced when the electrode contacts the workpiece, a reversal command value larger than the error stored in the error computing and storing means; and

(b) converting, using the reversal command value generated in step (a), the error stored in the error computing and storing means into a value for immediately reversing the direction of the electrice discharge machine.

4,567,343

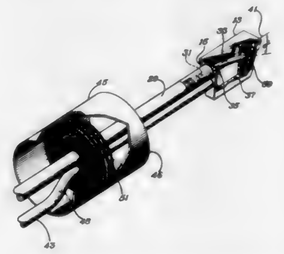
WELDING TORCH WITH DUAL GAS SHIELDING

Eric C. Sullivan, and Daniel W. Allford, both of Houston, Tex., assignors to Hughes Tool Company - USA, Houston, Tex.

Continuation-in-part of Ser. No. 607,091, May 4, 1984, abandoned. This application Mar. 13, 1985, Ser. No. 710,000

Int. Cl.⁴ B23K *9/16*

U.S. Cl. 219—74 **7 Claims**



1. A welding torch with improved gas shielding to prevent

atmospheric contamination or oxidation of the weld area for welds in confined spaces comprising:

a primary gas chamber having a diffusing wall therein;

a wire conduit adapted to receive a continuously advanced supply of welding wire, said wire conduit having an end portion mounted within said diffusing wall at an angle to the axis of said wire being advanced through said wire conduit to thereby change the direction of said welding wire being advanced through said wire conduit;

a primary gas conduit connected to said primary gas chamber for supplying pressurized gas to said chamber, said primary pressurized gas passing through said diffusing wall around said wire conduit to shield said welding wire during welding;

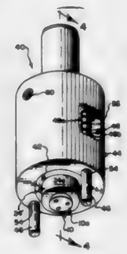
secondary shield gas means for supplying pressurized gas in the direction of said weld, said primary gas conduit being arranged to extend from within the direction of flow of said secondary shield gas means so that the flow of the secondary shield gas surrounds the flow of the primary shield gas and the flow of primary shield gas induces a change in direction in the flow of the secondary shield gas to further shield the weld area.

4,567,344

APPARATUS AND METHOD FOR WELDING A STUD TO THE SURFACE OF A WORKPIECE

William L. Michalski, Jr., 15 Springdale Ave., Jamestown, N.Y. 14701

Filed Aug. 27, 1984, Ser. No. 644,700
Int. Cl.⁴ B23K *9/20*
U.S. Cl. 219—98 **9 Claims**



1. A stud supporting and positioning unit for use with welding apparatus and in cooperation with a template having a pair of guide holes arranged adjacent a clearance opening for weld affixing a head end of a stud to a surface of a workpiece such that a shank end of said stud is disposed to upstand from said workpiece at a location defined by said guide holes, said unit including in combination:

a welding electrode having a bore opening through one end of said electrode for removably mounting said shank end of said stud with said head end disposed outwardly beyond said one end of said electrode, said electrode having an opposite end for mounting said unit on said welding apparatus;

electrical insulating means supported by said electrode;

a casing supported by said insulating means;

a pair of guide pins supported by said casing for reciprocating movement along paths of travel arranged parallel to said bore between an extended position and a retracted position, said guide pins having guide ends thereof projecting from said casing which are sized and spaced apart for receipt within said guide holes and arranged relative to said bore to position said one end of said electrode in alignment with said clearance opening when said guide pins are received within said guide holes, said casing is fixed in position axially of said electrode, whereby when said guide pins are in said extended position and said shank end of said stud is fully seated within said bore opening, said guide ends are disposed outwardly beyond said head end of said stud, said retracted position of said guide pins is determined by engagement of said head end of said stud with said surface of said workpiece; and

spring means for biasing said guide pins toward said extended position.

7. In a method of weld affixing a head end of a stud to a surface of a workpiece with a shank end of said stud arranged in alignment with a location on said surface of said workpiece, which employs a welding electrode provided with a bore opening for releasably supporting said shank end of said stud and a template removably fixed in engagement with said surface of said workpiece and formed with through openings for permitting passage of said head end of said stud through said template for engagement with said surface of said workpiece and alignment of said shank end of said stud with said location, as said electrode and said workpiece are moved relatively towards one another, the improvement comprising:

supporting a pair of guide pins on said electrode in an electrically non-conductive relationship therewith and with said guide pins arranged parallel to said bore opening and having a given spacing and orientation relative to said bore opening and said shank end of a stud supported therewithin;

forming a pilot hole in said template for alignment with said location;

using said pilot hole as a guide for forming a pair of guide holes sized to slidably receive said guide pins and having a given spacing and orientation relative to said location corresponding to said given spacing and orientation of said guide pins relative to said bore opening;

increasing the size of said pilot hole to define a clearance hole of a size and shape sufficient to prevent contact of said head end of said stud and said electrode with said template when said head end of said stud is passed through said clearance hole for engagement with said surface of said workpiece and said shank end of said stud is disposed in alignment with said location;

removably fixing said template in engagement with said surface of said workpiece to position said guide holes in said given spacing and orientation relative to said location; and

inserting said guide pins in said guide holes to constrain said shank end of said stud for alignment with said location incident to moving said electrode and said workpiece relatively towards one another to pass said head end of said stud through said clearance hole for engagement with said surface of said workpiece.

4,567,345

PROCESS AND APPARATUS FOR THE IN-LINE INSPECTION OF THE DEPTH OF A WELD BY A PULSE BEAM

Bernard Bachet, Marsonnay la Côte; Jean Daguet, Dijon, and Louis Dujardin, Fontaine les Dijon, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

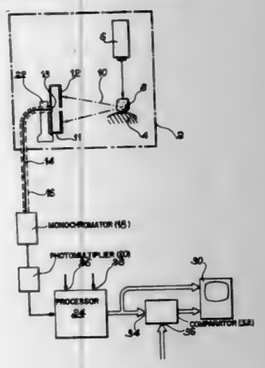
Filed Dec. 12, 1983, Ser. No. 560,580
Claims priority, application France, Dec. 17, 1982, 82 21206
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—121 PT **10 Claims**

1. A process for the in-line inspection of the depth of a weld carried out by a pulse beam in which, around its impact point on a workpiece consisting of one or more components, the pulse beam produces a welding plasma, said process comprising the steps of

optically collecting only during the emission of a welding beam pulse at least one selected monochromatic emission line of the welding plasma from a major component of said workpiece;

converting the energy of said lines into analog electrical signals;

digitally processing said analog signals;



generating reference signals; and

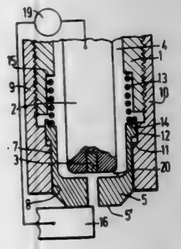
comparing said processed signals with said reference signals to produce an indication of the depth of said weld.

4,567,346

ARC-STRIKING METHOD FOR A WELDING OR CUTTING TORCH AND A TORCH ADAPTED TO CARRY OUT SAID METHOD

Gérard Marhic, Cergy, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Nov. 19, 1984, Ser. No. 672,503
Claims priority, application France, Dec. 7, 1983, 83 19554
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—121 PB **10 Claims**



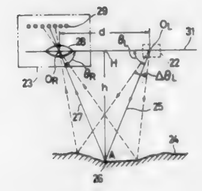
1. A cutting or welding torch for connection to an electric current source, the torch comprising a torch body, a metal nozzle mounted in said body and defining an orifice for guiding a gas, the nozzle being structurally isolated from said current source, an electrode coaxially disposed inside said nozzle and in alignment with said orifice, said electrode and said nozzle being mounted in said torch body in such manner as to be mutually axially movable between a maximum spacing position corresponding to a normal spacing in operation and a position of mutual contact, to provide freely slidable movement of said nozzle and said body, and resilient yieldable means cooperable with said nozzle for biasing said nozzle to a position in which it is spaced at a maximum distance from said electrode.

4,567,347

MEASUREMENT HEAD FOR WELDING MACHINES

Giichi Ito, Koganei; Ichizo Nakano, Kanagawa; Yuichi Shimizu, Koganei; Kosaku Mukai, Tokyo, and Saiju Suzuki, Chofu, all of Japan, assignors to NTT Gijutsu Iten Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1984, Ser. No. 592,651
Claims priority, application Japan, Dec. 15, 1983, 58-237476
Int. Cl.⁴ B23K *9/10*
U.S. Cl. 219—124.34 **23 Claims**



1. A measurement equipment for welding machines, comprising:

(a) a head body;

(b) light-emitting means mounted on said head body for projecting a laser light beam onto a surface of an object to form a bright spot thereon;

(c) modulating means for modulating the light intensity of said laser light beam with a modulating signal having a frequency of at least 50 KHz;

(d) means for periodically sweeping said laser light beam in a sweep plane so that a first angle at which said laser light beam is projected from said light-emitting means is changed during each sweep of said laser light beam;

(e) light receiving means mounted on said head body at a predetermined distance from said light-emitting means for detecting reflected light from said bright spot on the surface of said object and for converting the detected light into an electric signal, said light receiving means comprising a light receiving lens system for forming an image of said bright spot on an image forming plane of said lens system, and a linear array of photodiodes disposed in said image forming plane of said light receiving lens system, the line of said array lying in said sweep plane so that said image of the bright spot always lies on the line on which said linear array of photodiodes lies;

(f) scanning means for successively scanning the respective photodiodes of said array and successively deriving therefrom outputs as said electric signal so that a second angle at which said image of said bright spot is detected by said array of photodiodes is successively changed;

(g) demodulating means for demodulating a modulated component of said laser light beam from said electric signal supplied from said scanning means; and

(h) processing means for detecting a set of said first and second angles each time said modulated component of the light beam is derived from the output of said demodulating means and for computing successive positions of said bright spot on the surface of said object for each sweep of said laser light beam based on the principle of triangulation using the corresponding sets of said detected first and second angles in accordance with a predetermined program.

4,567,348

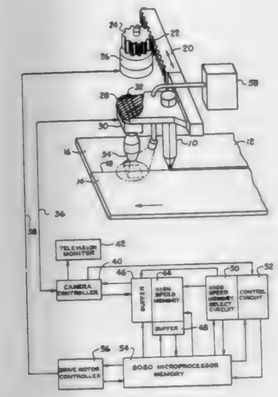
AUTOMATED WELD TORCH GUIDANCE CONTROL SYSTEM

Hubert E. Smith; William A. Wall, and Morrison R. Burns, Jr., all of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 460,733, Jan. 25, 1983, abandoned. This application Dec. 27, 1984, Ser. No. 685,607

Int. Cl.⁴ B23K *9/12*

U.S. Cl. 219—124.34 **16 Claims**



13. An apparatus for controlling the movement of a welding implement so that said welding implement is properly positioned relative to a joint of a work piece to be welded, comprising:

a movable support member adapted to be placed in a cross position of the joint to be welded:

a welding implement carried by said support member;

a camera means carried by said support member and adapter to track the joint to be welded;

said camera means having light sensing video elements arranged in a two-dimensional matrix of rows and columns which have a predetermined spaced position relative to one another to provide known tracking positions including a reference position, said reference position consisting of a single prescribed reference video element in a single prescribed row of said two-dimensional matrix, said video elements adapted to generate individual voltages according to the intensity of light incident on each of said light sensing video elements;

converting means for changing the individual voltages of said sensing video elements of said camera means into digital tracking information representing said tracking positions in said single prescribed row;

a light means carried by said support member, and adapted to direct a constant solid light onto an area about and including the joint of a work piece to be welded;

said joint is characterized by reflecting less light toward said camera means as compared with the surrounding area;

processor means for receiving said digital information representing the light intensity levels incident upon said light sensing video elements of said camera means and determining the positions of said light sensing video elements upon which said reflected light from said joint is incident upon and determining from said tracking information only from said prescribed row a deviation of said welding implement from said prescribed reference video element and the location of the joint to be welded, and for producing an error signal representative of the distance of said welding implement from its desired location relative to the joint to be welded;

actuating means for causing said support member to move in a cross direction to the joint to be welded;

said actuating means being activated by said error signal of said processor means so as to position said welding implement at a desired location relative to the joint to be welded.

4,567,349

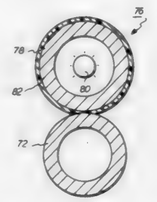
HEAT AND PRESSURE FUSER APPARATUS

Arnold W. Henry, Pittsford, and Rabin Moser, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 15, 1982, Ser. No. 441,583

Int. Cl.⁴ G03G *15/20*

U.S. Cl. 219—216 **9 Claims**



1. Heat and pressure fuser apparatus for fixing toner images to a copy substrate, said apparatus comprising:

a fuser member comprising a rigid metal core overcoated only with a solid abhesive material, the material being selected from the group consisting of fluorinated polymers and copolymers;

means for elevating the surface temperature of said fuser member;

a backup member adapted to be pressure engaged with said fuser member to thereby form a nip between the two members, said fuser member being deformable by said backup member whereby said fuser member contributes to the formation of said nip;

and means for conveying copy substrates through said nip without applying release agent material to said fuser member.

4,567,350

COMPACT HIGH FLOW RATE ELECTRIC INSTANTANEOUS WATER HEATER

Alvin E. Todd Jr., P. O. Box 924 Vickwood Hills, Pigeon Forge, Tenn. 37863

Filed Jan. 6, 1983, Ser. No. 456,327

Int. Cl.⁴ H05B *1/02, 3/82;* **F24H** *1/10*

U.S. Cl. 219—298 **7 Claims**

1. An instantaneous-type water heating apparatus comprising, in combination,

a cold water input pipe,

a hot water output pipe,

a plurality of water heating chambers connected in series flow relationship between the cold water input pipe and the hot water output pipe, said heating chambers having electrical heating elements for heating the water flowing through the chambers,

means in series flow relationship between each adjacent pair of water heating chambers for mixing the water and temporarily storing and exchanging heat as the water flows from one chamber to the next in the series of chambers so that the water tends to be evenly heated,

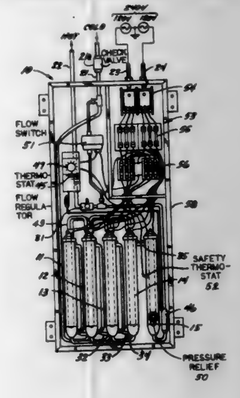
means responsive to the flow of water from the cold water input pipe through the heating chambers to the hot water output pipe for activating a flow switch in response to the flow exceeding a predetermined threshold,

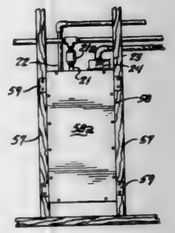
means responsive to the temperature of the water flowing out the hot water output pipe for activating a thermostat

switch in response to the temperature exceeding a preset adjustable threshold temperature, and

means for connecting the heating elements to a source of electrical power in reponse to the flow switch and the thermostat switch being simultaneously in their activated state,

wherein the means for connecting the heating elements to a source of electrical power has at least two independent





pairs of switch contacts and separate connections to both the building side and the service side of an electrical utility system supplying said source of electrical power, one pair of the switch contacts connecting at least one of the heating elements to the building side of the electrical utility system, and another pair connecting at least one other of the heating elements to the service side of the electrical utility system.

4,567,351

ELECTRIC SPACE HEATER EMPLOYING A VAPORIZABLE HEAT EXCHANGE FLUID

Yoshiaki Kitagawa, Osaka; Koichiro Ohki, Ibaraki, and Toshio Sarada, Moriguchi, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 5, 1983, Ser. No. 520,582

Int. Cl.⁴ H05B *1/02, 3/82;* **F24H** *3/08;* **F24D** *13/04*

U.S. Cl. 219—341 **3 Claims**

1. An electric space heater comprising a housing having:

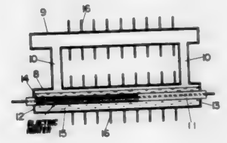
a substantially straight and uniform diameter main tube adapted to be disposed substantially horizontally,

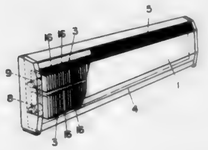
a substantially straight and uniform diameter secondary tube arranged to be above and in substantially parallel relationship with said main tube,

conduit pipe means extending upwardly from the main tube to the secondary tube and interconnecting the tubes to define a closed space within the tubes and conduit pipe means;

an elongated heat source extending axially through only the main tube, said heat source including an elongated protective pipe extending through the length of the main tube and having its end portions sealed respectively in end walls of the main tube and an electric resistance heating element extending the entire length of the protective pipe and having its ends projecting therefrom for connection to a power source, the secondary tube being empty;

a vaporizable working fluid in the space within the main tube and being in liquid phase at the operating tempera-





ture of the apparatus so as to entirely immerse only the heat source in the fluid, but having the remainder of the closed space empty for expansion of vaporized working fluid thereunto;

said main and secondary tubes being provided respectively with radiation fins evenly spaced along the length thereof, with the fins on the secondary tube being spaced at a wider clearance than those on the main tube; and

said working fluid in the main tube absorbing the heat from the heat source to vaporize and expand in all regions of said closed space and condensing on the inner surface forming the closed space so as to give up its latent heat of vaporization to the surrounding air and then returning through the conduit pipe means to the main tube.

4,567,352

FLASHLIGHT-RADIANT APPARATUS

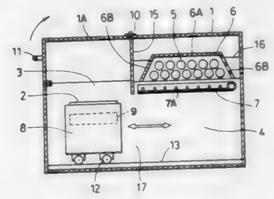
Yoshiki Mimura, Yokohama; Tetsuji Arai, Tachikawa, and Satoru Fukuda, Kawasaki, all of Japan, assignors to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1984, Ser. No. 582,260

Claims priority, application Japan, Mar. 29, 1983, 58-51673

Int. Cl.⁴ A21B *1/00, 1/22*

U.S. Cl. 219—405 **5 Claims**



1. A flashlight-radiant apparatus comprising:

a housing defining within an object-handling space and an

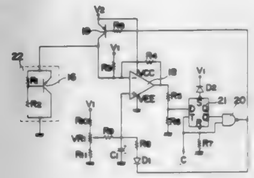
irradiation space located adjacent to the object-handling space;
a plurality of flash discharge lamps provided side by side in an upper part of the irradiation space;
a gas-discharging member provided in the upper part of the irradiation space for controlling the atmosphere in the housing; and
an object-supporting table movable reciprocatingly between the object-handling space and the irradiation space in the housing and equipped with built-in subsidiary heating means,
whereby an object supported on the object-supporting table can be preheated while the object-supporting table is located in the object-handling space.

4,567,353

HIGH-ACCURACY TEMPERATURE CONTROL

Masahiko Aiba, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 130,998, Mar. 17, 1980, abandoned, which is a continuation of Ser. No. 893,791, Apr. 5, 1978, abandoned. This application Jul. 30, 1984, Ser. No. 634,674
Claims priority, application Japan, Apr. 7, 1977, 52-40086
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 219—501 **2 Claims**



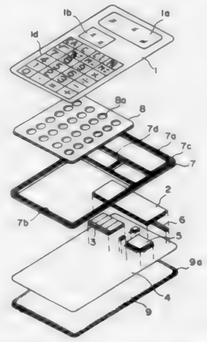
1. A temperature control means for accurately controlling the temperature of the ink supply in an ink jet printer comprising:
a single power transistor having a base, emitter and collector for generating heat in a heating mode and sensing temperature in a sensing mode, said power transistor producing a temperature related output voltage at its emitter when in said sensing mode and having its collector grounded;
a first resistor interconnecting the emitter and base of said single power transistor;
a second resistor interconnecting the collector and base of said single power transistor;
sensing means, connected to said single power transistor, for monitoring the temperature related output voltage of said single power transistor when in the sensing mode;
a power voltage source developing a heating voltage for application to said single power transistor when in a heating mode;
a switching transistor having a base, emitter and collector, said switching transistor having its emitter connected to said voltage source and its collector connected to said single power transistor, said switching transistor being turned on only when a power application pulse is applied to its base in the heating mode to apply said heating voltage to said single power transistor, said temperature control means being in said sensing mode when said power control signal is not developed;
a sensing voltage source developing a reference voltage representative of the desired temperature of said single power transistor;
a differential amplifier comparator having a first input terminal connected to said single power transistor to receive said temperature related output voltage and having a second input terminal connected to said sensing voltage source to receive said reference voltage, said comparator comparing said temperature related output voltage to said reference voltage and developing a power application signal when said sensed temperature of said single power transistor is less than the desired temperature represented by said reference voltage;
a clock signal generator generating a clock pulse train;
a bistable latch circuit having a toggle input to which said clock pulse train is introduced and having an information input to which said power application signal is introduced, said bistable latch circuit developing a power application pulse at its output when said power application signal is applied to said bistable latch circuit and said clock pulse train produces a clock pulse, said power application pulses being produced only during production of alternate clock pulses by said clock signal generator when said power application signal is present, said power application pulse placing said temperature control means in a heating mode;
a feedback compensation path including a serially connected third resistor and diode having an anode and cathode, the cathode of said diode being connected to the output of said bistable latch circuit, the anode of said diode being connected to said resistor which in turn is connected to said second input terminal of said comparator; and
heat exchanger means for transferring heat from said power transistor means to said ink supply;
said power application pulses being of fixed duration and variable frequency to thereby produce a pulse frequency modulated train of said power application pulse.

4,567,354

ELECTRONIC INSTRUMENT

Kazumi Sekine, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 525,211, Aug. 22, 1983, abandoned. This application Apr. 30, 1985, Ser. No. 728,161
Claims priority, application Japan, Aug. 30, 1982, 57-149170
Int. Cl.⁴ G06C *7/02*; H01H *9/26*
U.S. Cl. 235—145 R **7 Claims**



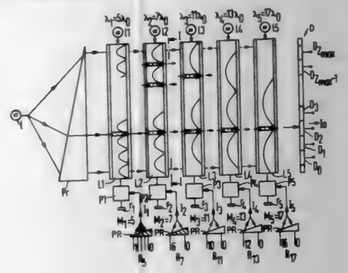
1. An electronic instrument that includes electrical components, said instrument comprising:
a key-input circuit;
a printed circuit substrate on which the electrical components and said key-input circuit are mounted, said substrate havinga front side and a back side;
frame means disposed on said front side of said printed circuit substrate, having a larger area than said printed circuit substrate, and having openings at least at positions corresponding to at least a portion of said electrical components including said key-input circuit;
flexible front sheet means having at least one transparent portion, a front face on which are printed symbols indicating key-input functions, a back face on which are formed electrodes adapted electrically to contact portions of said key-input circuit upon depression of said front sheet means at said printed symbols, and an adhesion area about the periphery thereof; said front sheet means being disposed with said back face in opposition to said front side of said substrate with said electrodes in opposition to said key-input circuit;
spacing means disposed at least in said opening corresponding to said key-input circuit between said back face of said front sheet means and the front side of said substrate for normally maintaining said electrodes in spaced relation from said key-input circuit when said front sheet means is not depressed;
back sheet means disposed on said back side of said printed circuit substrate and having an adhesion area on the surface thereof opposed to said back side of said substrate; and
an adhesive agent applied to the adhesion areas of said front sheet means and said back sheet means to cause said printed circuit substrate and said frame means to be sandwiched between said front sheet means and said back sheet means.

4,567,355

METHOD AND OPTICAL APPARATUS FOR CONVERTING RESIDUE NUMBERS INTO POSITIONALLY NOTATED NUMBERS

Dieter Schuoecker, Vienna, Austria, and Ekkehard Klement, Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 10, 1982, Ser. No. 386,902
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1981, 3126987
Int. Cl.⁴ G06F *3/00*
U.S. Cl. 235—310 **23 Claims**



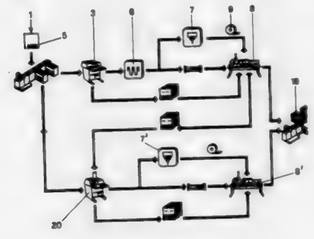
1. An optical device for processing residue numbers comprising one unit including an encoder means for converting differently encoded input numbers in parallel into residue numbers by selectively interrupting a plurality of light paths respectively allocated to each possible numeral in said residue number, an arithmetic means for airthmetically operating on said residue numbers, and a decoder means for converting a result of said residue numbers, and a decoder means for converting a result of said arithmetic operation into a positionally notated number, said decoder means comprising a light source and a plurality of linear periodic structures irradiated by said light source having respectively different constant periods for differently modulating light incident thereon and being disposed such that light modulated by each linear period structure is superimposed with light modulated by all of the other linear periodic structures, said linear periodic structures being respectively allocated to each module utilized for said residue numbers, a scale of equidistantly spaced positionally notated numbers on which said modulated light is superimposed, and a means for individually shifting said linear periodic structures with respect to said scale until an end of a period in each linear periodic structure is aligned with an end of a period in each of the other linear periodic structures, the period for each linear periodic structure being the product of the spacing between adjacent positionally notated numbers on said scale and the module allocated to the linear periodic structure and a reading on said scale when said ends of periods are aligned indicating a positionally notated number for said residue number.

4,567,356

PROCESS TO ESTABLISH AND CHECK THE MATCHING OF NEGATIVES AND PROCESSING ENVELOPES IN PHOTOGRAPHIC LABORATORIES

Roberto Signoretto, Olmo di Martellago, Italy, assignor to Photo Engineering International s.r.l., Venice, Italy

Filed Oct. 6, 1983, Ser. No. 539,420
Claims priority, application Italy, Sep. 29, 1983, 84143 A/82
Int. Cl.⁴ G06F *15/20*
U.S. Cl. 235—375 **6 Claims**



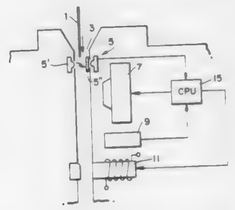
1. Process to establish and check matching of negatives and processing envelopes in photographic laboratories, wherein the negatives are of disk type with a bar code preprinted on the film and on the film cartridge, characterised in that:
the bar code printed on the film cartridge is automatically read and reproduced, at least in its significant part, in a machine legible code on the envelope (**1**),
the envelope (**1**) is separated from the cartridge and the film (**2**), extracted from this, is dispatched to the traditional developing and printing operations, and
an automatic comparison is carried out between the bar code (**4**) preprinted on the film (**2**) and the machine legible code reproduced on the envelope (**1**).

4,567,357

METHOD OF AND APPARATUS FOR AUTOMATIC LINE IDENTIFICATION FOR RECORDING ON EMPLOYEE TIME CARDS AND THE LIKE

Vincent Fedele, Concord, Mass., assignor to Kronos Incorporated, Boston, Mass.

Filed May 6, 1983, Ser. No. 492,401
Int. Cl.⁴ G06K *7/10*
U.S. Cl. 235—377 **2 Claims**



1. In a time card recording apparatus having card receiving, clamping and printing means, the improvement of means carried by the printing means to print distinctive line-identifying marks as well as time-in and time-out data entries on successive lines, one mark for time-in and a second for time-out; and means disposed as the card is presented to the receiving means,

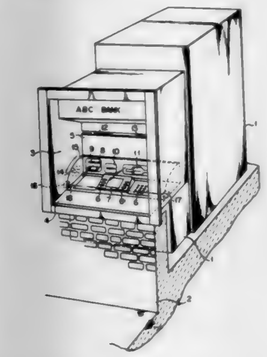
for sensing the presence of both marks and, in the event one mark only is present, actuating the clamping means on the same line as said one mark so that the next print by the printing means is on the same line; and, if both marks are present, actuating the clamping means to clamp the card at the next line.

4,567,358

AUTOMATIC TELLER SYSTEM

Satoru Takamatsu, and Takashi Sugimura, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 17, 1983, Ser. No. 542,606
Claims priority, application Japan, Oct. 18, 1982, 57-182541
Int. Cl.⁴ G06F *15/30*
U.S. Cl. 235—379 **6 Claims**



1. An automatic teller system comprising:
an automatic teller machine having means to read out a key number recorded on a recording medium, for automatically performing transactions such as a deposit and a payment;
an electronic data processing center, connected to said automatic teller machine and having a memory for storing a plurality of accounting numbers associated with said key number, for reading out said plurality of accounting numbers from said memory upon receipt of said key number;
first transmitting means, provided at the automatic teller machine side, for transmitting said key number to said electronic data processing center;
second transmitting means, provided at the electronic data processing center side, for transmitting said plurality of accounting numbers, associated with said key number, to said automatic teller machine;
displaying means for displaying said plurality of accounting numbers; and
selecting means for selecting a desired accounting number from said plurality of accounting numbers.

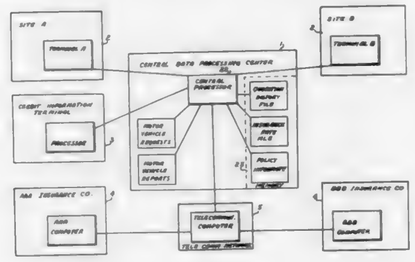
4,567,359

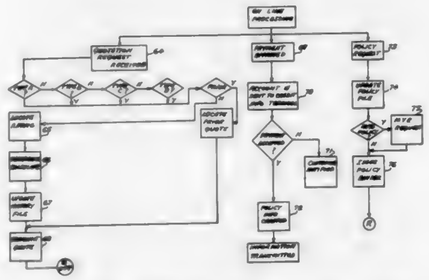
AUTOMATIC INFORMATION, GOODS AND SERVICES DISPENSING SYSTEM

Lawrence B. Lockwood, 5935 Folsom Dr., La Jolla, Calif. 92037

Filed May 24, 1984, Ser. No. 613,525
The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.
Int. Cl.⁴ G06F *15/00, 15/30*
U.S. Cl. 235—381 **8 Claims**

1. A system for automatically dispensing information, goods, and services for a plurality of institutions in a particular industry, comprising:
a central data processing center including means for storing service and price rate information for each institution and customer sales information;
at least one customer sales and information terminal including means for dispensing information and services to a customer and means for remotely linking said terminal to said central data processing center and for transmitting data back and forth between said data processing center and terminal; and
a data processing terminal associated with each institution and means for remotely linking each terminal to said central data processing center comprising means for transmitting information back and forth between said data processing terminal and said central data processing center, each data processing terminal including means for storing institution service and price rate information and customer sales information, and input means for user input of up-dated service and price rate information;
said sales and information terminal including:
audio-visual means for interaction with a customer, comprising:





means for storing a sequence of audio and video information to be selectively transmitted to a customer;
means for transmitting a selected sequence of said stored information to the customer;
customer operated input means for gathering information from a customer and for accepting customer orders for goods and services; and
means for controlling said storing and transmitting means in response to customer input to transmit a selected sequence of information to the customer;
said sales terminal further including:
means for storing information and orders input by a customer;
means for transmitting said information and customer orders via said remote linking means to said central data processing center;
means for receiving data comprising customer selected information and processed customer orders for services from said data processing center via said linking means;

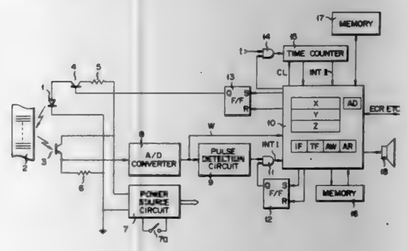
means responsive to said data receiving means for dispensing information and services to the customer;
and means for directing the operation of said audio visual means, data receiving and transmitting means, and dispensing means comprising means for holding an operational sequencing list and means responsive to the status of the various means for controlling their operation;
said central data processing center including:
means responsive to data received from said sales terminal for transmitting selected stored information to said terminal via said linking means;
means responsive to a customer sales order from said sales terminal for up-dating said sales information in said storage means, and transmitting said order to said terminal via said linking means for dispensing of the ordered services;
means for periodically accessing said institution terminals via said linking means for transmitting customer sales information for each institution to its associated terminal, and means for periodically accessing said institution linking means for collecting and storing service and price rate information from each institution terminal.

4,567,360

OPTICAL READING APPARATUS

Shigeru Yamada, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1983, Ser. No. 542,436
Claims priority, application Japan, Oct. 20, 1982, 57-182736
Int. Cl.⁴ G06K *7/10*
U.S. Cl. 235—455 **9 Claims**



1. An optical reading apparatus comprising:
a light source for emiting light for illuminating a recording medium on which data is recorded;
a light receiving unit for receiving the light reflected from said recording medium and for generating an electrical output signal corresponding to the amount of light;
light source driving means connected to said light source for driving said light source;
detecting means connected to said light receiving unit for detecting the level of the output signal of said light receiving unit and for generating a signal every time the level of the output signal of said light receiving unit changes;
time counting means for counting clock pulses and producing an output signal upon reaching a predetermined count;
memory means for storing data;
processing means including:
first flag register means for storing data for a predetermined time after receiving said output signal from said counting means, during which said driving means drives said light source;
second flag register means coupled to said light receiving unit for storing an indication that data is being read from said recording medium, and
means connected to said detecting means, said time counting means and said memory means for counting with said time counting means the duration of signals from said detecting means representative of the data being read from said recording medium, for causing said memory means to store counts from said counting means in response to said signals from said detecting means, for detecting that all data from said recording medium has been stored in said memory means, and upon detecting such storage for analyzing the counts stored in said memory means to determine if they represent valid data.

4,567,361

RETICLE BAR CODE AND METHOD AND APPARATUS FOR READING SAME

David Rosenthal, Lexington, Mass., assignor to GCA Corporation, Bedford, Mass.

Filed May 23, 1983, Ser. No. 496,819
Int. Cl.⁴ G06K *7/10*
U.S. Cl. 235—462 **3 Claims**



1. A reticle carrying a pattern for the microlithographic manufacture of integrated circuit devices having along one side thereof a bar code of light and dark bars including a succession of identifier characters identifying the pattern, said light and dark bars representing opposite polarities, said bar code comprising:
at each end of said code, a quiet zone being a dark bar of a width greater than the maximum allowable width of a bar;
adjacent each quiet zone, a synchronization block comprising a series of predetermined length of bars of equal nominal width and of alternating polarity;
adjacent one synchronization block, a preselected start character which is a terminator character distinct from any of said identifier characters;
adjacent the other synchronization block, a preselected stop character which is a terminator character distinct from any of said identifier characters;
between said terminator characters, a succession of identifier characters, each of said characters comprising three bars of each polarity, the width of each bar being an integral multiple of said nominal width, each character being ten times said nominal width, the number of width units of a given polarity in each character conforms to a preselected parity; and
adjacent said stop terminator characters, a check character, said check character having a value which is a function of the value of all the identifier characters.

4,567,362

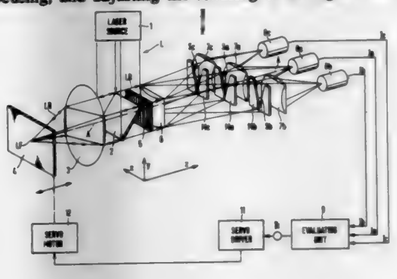
PROCESS AND APPARATUS FOR THE FOCUSING OF A BEAM OF LIGHT ON AN OBJECT

Rino E. Kunz, Steinmaur, Switzerland, assignor to GRETAG Aktiengesellschaft, Regensdorf, Switzerland

Filed Jun. 15, 1983, Ser. No. 504,602
Claims priority, application Switzerland, Jun. 25, 1982, 3923/82
Int. Cl.⁴ G01J *1/20*
U.S. Cl. 250—201 **42 Claims**

1. A process for focusing a light beam, in particular a laser beam, on an object, comprising the steps of producing by means of an optical system at least two images of a beam spot formed by the light beam on the object, providing a measuring diaphragm associated with each of said at least two images, said diaphragm being located in different positions relative to the desired position of the image of the beam spot in the case of optimum focusing, evaluating the intensities of the light not

blocked out by the measuring diaphragms as a measure of focusing, and adjusting the focusing of the light beam in response to the evaluation, said at least two images of the beam spot being produced by means of a diffraction grating.

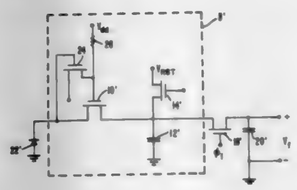


4,567,363

SWITCHED CAPACITOR TRANSRESISTANCE AMPLIFIER

Mark A. Goodnough, Goleta, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Jun. 20, 1983, Ser. No. 505,633
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—214 A **9 Claims**



1. A transresistance amplifier for measuring the amount of current flowing to a photovoltaic detector such that the average voltage across said detector is maintained at a value to minimize the electrical noise associated with said detector comprising:

a first MOSFET amplifier having a gate electrode and drain and source terminals;

a first MOSFET switch coupled to the drain terminal of said first MOSFET amplifier;

a first capacitor coupled to the drain terminal of said first amplifier, a switching signal of frequency f_s being coupled to said first switch for enabling a first source of voltage to be connected to said first capacitor for a first portion of said switching signal frequency cycle, the voltage across said first capacitor during the remaining portion of said cycle representing the current flowing to said detector through said first amplifier;

a second MOSFET amplifier having a gate electrode and drain and source terminals, the drain terminal of said second amplifier being connected to the gate electrode of said first amplifier, the gate electrode of said second amplifier being connected to said detector;

a second MOSFET switch coupled to the drain terminal of said second amplifier; and

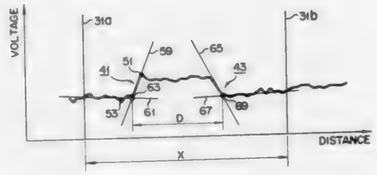
a second capacitor coupled to the output of said second amplifier, said switching signal being coupled to said second switch means for enabling a second source of voltage to be connected to said second capacitor for said first portion of said switching signal frequency cycle, the current flowing through said first amplifier being controlled in a manner such that the average current over a cycle of said switching frequency is of a value to maintain the average value of said detector voltage at said noise minimization value.

4,567,364

METHOD AND APPARATUS FOR MEASURING DIMENSION OF SECONDARY ELECTRON EMISSION OBJECT

Masaaki Kano, Kamakura; Hiroshi Yamaji, Yokohama; Shinji Nakao, Yokohama, and Katsuya Okumura, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1983, Ser. No. 554,717
Claims priority, application Japan, Nov. 29, 1982, 57-207698
Int. Cl.⁴ G01N *23/00*
U.S. Cl. 250—307 **10 Claims**



1. A method for measuring the dimensions of an object to be measured, which is included in a sample, comprising the steps of:

scanning an electron beam on the sample so as to obtain an image signal corresponding to the sample;

obtaining reference points defining two ends of a line corresponding to the dimension of the object in accordance with the image signal obtained in said scanning step by obtaining regression lines which in combination linearly calibrate a waveform of the image signal obtained in said scanning step by the method of least squares, and by determining the reference points based on intersections of the regression lines obtained in said step of obtaining the regression lines; and

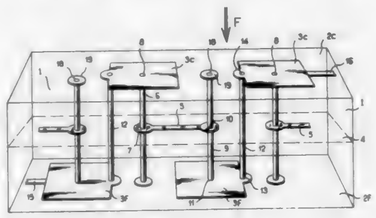
calculating the dimension of the object of the sample in accordance with the reference points obtained in said obtaining step.

4,567,365

SENSOR OF ENERGY FLUX, IN PARTICULAR HEAT FLUX AND VISIBLE AND INFRARED RADIATION

Michel Degenne, Clermont, France, assignor to Isover Saint-Gobain, Courbevoie, France

Filed Aug. 30, 1983, Ser. No. 527,843
Claims priority, application France, Aug. 30, 1982, 82 14767
Int. Cl.⁴ H01L *27/16*; G01J *5/14*
U.S. Cl. 250—338 **20 Claims**



1. An energy flux sensor, comprising:

a substrate of a thermal and electrical insulating material, said substrate having on each of first and second faces thereof, parallel and perpendicular to a flux, a plurality of first and second plates of a first metal or alloy, and having a first and second plurality of holes formed in said substrate, said first plurality of holes each respectively connecting one of said plurality of first plates solely to one of said plurality of second plates wherein walls of said first plurality of holes are coated with said first metal or alloy; and

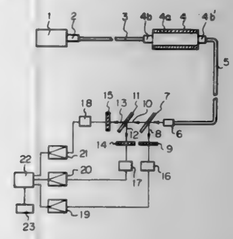
a plurality of separate connecting elements positioned in said substrate, and parallel to said first and second faces, wherein said separate connecting elements each further comprise a second metal or alloy having thermoelectric properties in relation to said first metal or alloy, and wherein said connecting elements include first and second points, constituting hot and cold junctions, respectively, of a thermocouple, said first and second points being respectively connected to said first and second plurality of plates by a coating of said first metal or alloy on walls of said second plurality of holes formed in said substrate and joining each of said hot and cold junctions to said first and second plates such that said first and second plates are connected by said coating on said walls of said second plurality of holes and the connecting elements.

4,567,366

METHOD AND APPARATUS FOR MEASURING METHANE CONCENTRATION IN GAS

Akio Shinohara, Fujisawa, Japan, assignor to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 536,051
Claims priority, application Japan, Sep. 25, 1982, 57-166836; May 18, 1983, 58-86770; Jul. 28, 1983, 58-136727
Int. Cl.⁴ G01J *5/08*
U.S. Cl. 250—339 **14 Claims**



1. A method for measuring the methane concentration in a gas, which comprises:

transmitting light having at least one wavelength band selected from a band of 1.6 μm and a band of 1.3 μm through an optical fiber having a small transmission loss in said wavelength bands to a measuring cell where a gas whose methane concentration is to be measured passes in and out,

absorbing the light in at least one characteristic absorption wavelength of methane gas, selected from a wavelength of 1.666 μm and a wavelength of 1.331 μm, in said measuring cell,

transmitting light passing through the measuring cell through an optical fiber having a small transmission loss in at least one wavelength band selected from a band of 1.6 μm and a band of 1.3 μm to a band-pass filter,

separating the light into at least one light having the methane gas absorption wavelength, to be measured, and at least two lights having other reference wavelengths,

determining the intensity ratio of the light having the wavelength to be measured to the lights having the reference wavelengths, and

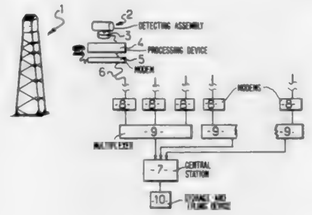
calculating the methane gas concentration in the measuring cell from the so-determined intensity ratio.

4,567,367

METHOD FOR DETECTING A SOURCE OF HEAT, MORE PARTICULARLY A FOREST FIRE IN A WATCHED AREA, AND SYSTEM FOR CARRYING OUT SAID METHOD

Francois P. D. Brown de Colstoun, 3 rue Joseph Bernard, 92100 Boulogne-Billancourt; Jean-Paul Chambaret, 161 Ave. Paul-Vaillant Couturier, 94250 Gentilly; Yves Chambaret, 77 Ave. Parmentier, 75011 Paris; Arnaud G. Le Saige de la Villesbrunne, 4 Blvd. du Roi, 78000 Versailles; Jean-Claude M. Moscovici, 68 rue de Bourgogne, 75005 Paris, and Michel Moscovici, 176 rue Théodore Honoré 94130 Nogent sur Marne, all of, France

Filed Jan. 12, 1984, Ser. No. 570,198
Claims priority, application France, Jan. 13, 1983, 83 00461
Int. Cl.⁴ G01J *1/00*; G08B *26/00, 17/12*
U.S. Cl. 250—340 **19 Claims**



1. A method for detecting sources of heat, more particularly forest fires in an area particularly of great extent, according to which said area is watched from at least one watching station having an infra-red detector detecting an infra-red radiation emitted by each source of heat and a device connected to the detector for processing and transmitting an information relating to the intensity of the received infra-red radiation of a detected source of heat; the information relating to the detected source of heat being transmitted to a central station through a transmission link, such as a telephone link; and the location of said source of heat being determined at said central station in accordance with the information received from the watching station, said infra-red detector being caused to accomplish, periodically and preferably permanently, angular movements for scanning the area to be watched; said method comprising the steps of:

transmitting to the central station through the transmission links the information relating to all the sources of heat detected by the infra-red detectors;

previously storing at the central station information relating to known sources of heat not to be taken into account;

automatically comparing at the central station each information received from all the infra-red detectors to the information previously stored at the central station;

determining the newly born sources of heat from the results of the comparison; and

emitting an alarm signal when at least one newly born source of heat is determined.

4,567,368

BIPOLAR PULSED ELECTRON CAPTURE DETECTORS

Gregory J. Wells, Suisan, and Richard K. Simon, Pittsburg, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jan. 19, 1984, Ser. No. 571,989
Int. Cl.⁴ G01N *27/66*
U.S. Cl. 250—379 **30 Claims**

1. An electron capture detector comprising:

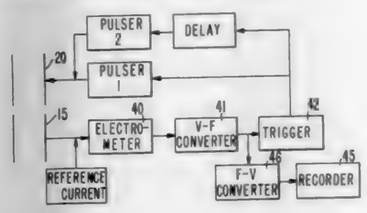
means defining a detection volume for accepting a carrier gas and a vaporized sample to be analyzed;

an anode communicating with said detection volume;

means for continuously ionizing said carrier gas to continuously produce free electrons in said volume, said free

electrons being available for attachment to said sample to produce anions;

means for applying to said detection volume a first electric pulse to move electrons toward said anode;



means for applying to said detection volume a second electric pulse following said first pulse sufficient to disperse anions away from said anode, but insufficient to clear said detection volume of said anions.

4,567,369

CORRECTION OF ASTIGMATISM IN ELECTRON BEAM INSTRUMENTS

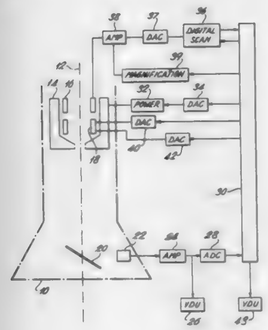
Kenneth C. A. Smith, Cambridge, England, and Stephen J. Erasmus, Mountain View, Calif., assignors to National Research Development Corporation, London, England

Filed Jun. 16, 1983, Ser. No. 504,947

Claims priority, application United Kingdom, Jun. 18, 1982, 8217643

Int. Cl.⁴ H01J *3/12*

U.S. Cl. 250—397 **11 Claims**



1. A method of correcting astigmatism in an electron beam instrument which is provided with an objective lens coil and stigmator coils comprising carrying out the following sequence of steps, namely: measuring the magnitudes of each of all of the sample points of an entire image and calculating the variance of the said measured magnitudes, adjusting the focusing of the objective lens of the instrument to give an optimum value of variance, and then adjusting the stigmator coils in succession for optimum variance.

4,567,370

AUTHENTICATION DEVICE

James J. Falls, Salem, N.H., assignor to Baird Corporation, Bedford, Mass.

Filed Feb. 21, 1984, Ser. No. 581,582

Int. Cl.⁴ G01N *21/64*

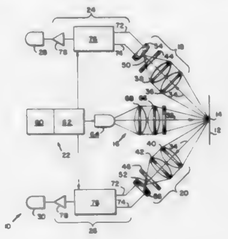
U.S. Cl. 250—461.1 **11 Claims**

1. An authentication device comprising:

(a) a sample treated with at least two luminophors each being ultra-violet energy excitable but emitting radiation at different spectral ranges;

(b) an excitation source to excite said treated sample;

(c) a pair of detectors for detecting said emitted radiation at said different spectral ranges; and



(d) a source of power coupled to said excitation source;

(e) said luminophors being each excitable by radiation at wavelength below 200 nanometers;

(f) one of said luminophors emitting in the visible range and the other of said luminophors emitting in the infrared range.

4,567,371

RADIATION IMAGE STORAGE PANEL

Akio Ishizuka, Fujinomiya; Hisashi Yamazaki, and Kikuo Yamazaki, both of Kaisei, all of Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Jul. 30, 1984, Ser. No. 635,835

Claims priority, application Japan, Feb. 8, 1983, 58-141458

Int. Cl.⁴ G03C *5/16*

U.S. Cl. 250—483.1 **8 Claims**

1. A radiation image storage panel comprising a support, a subbing layer and a phosphor layer which comprises a binder and a stimulable phosphor dispersed therein, superposed in this order, characterized in that said subbing layer contains fine particles having a size of 1–30 μm in an amount of 1–200% by weight of a resin constituting the subbing layer.

4,567,372

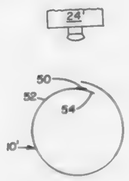
METHOD FOR CONTINUOUSLY MEASURING THE PERIMETER OF WRAPPED OBJECTS OF GENERALLY UNIFORM CROSS-SECTION

James W. Henry, Kingsport, and Robert C. Mumpower, Grey, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 409,754, Aug. 19, 1982, now Defensive Publication No.

Int. Cl.⁴ B31B *1/00*; A24C *1/00*

U.S. Cl. 250—560 **7 Claims**



1. Method of continuously determining the perimeter of an elongated object of generally uniform cross-section which comprises

forming on a flexible elongated sheet a single band of predetermined width and of contrasting color with respect to said sheet, said band being parallel to two opposite elongated and parallel edges of said sheet, and wrapping said elongated object with said sheet so that one of said opposite elongated edges is overwrapped with respect to the other of said elongated edges and overlies and obscures a portion of the width of said single band, said single band being generally axially parallel to said elongated object;

placing detection means in position to detect the unobscured portion of said single band on said elongated object, said detection means having means for determining the width of the unobscured portion of the single band;

moving said object and said detection means relative to each other in a manner such that continuous detection of the width of said unobscured portion of said single band occurs, and

correlating the measured width to the perimeter of said elongated object.

4,567,373

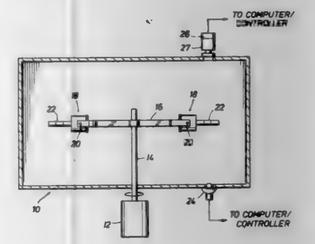
CENTRIFUGAL ANALYZER

Joseph D. O'Meara, Jr.; Herbert H. Yuan; William O. Lease, and Robert G. Stapleton, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 20, 1982, Ser. No. 435,430

Int. Cl.⁴ G01H *15/06*

U.S. Cl. 250—573 **11 Claims**



6. Apparatus for detecting fluid interfaces in a sample, comprising:

a centrifuge having a predetermined number of sample holders and capable of variable speeds of operation;

a source of electromagnetic energy positioned to radiate onto at least one preselected holder as it passes by said source;

a photodiode array positioned to detect electromagnetic energy emanating from said at least one preselected holder;

synchronizing means for preselecting said at least one preselected holder to be irradiated by said source and whose electromagnetic energy is to be detected by said array;

recorder means for recording the signals from said array; and

controller means for controlling the speed of operation of said centrifuge, said synchronizing means, and said recorder means.

4,567,374

PHOTOELECTRIC CONVERTING DEVICE WITH A PLURALITY OF DIVIDED ELECTRODES

Mutsuo Takenouchi; Takashi Ozawa; Toshihisa Hamano; Hisao Itoh; Mario Fuse, and Takeshi Nakamura, all of Hongo Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

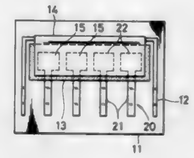
Continuation-in-part of Ser. No. 329,471, Dec. 10, 1981, Pat. No. 4,419,696. This application May 16, 1983, Ser. No. 494,666

Claims priority, application Japan, May 17, 1982, 57-82927

Int. Cl.⁴ H01L *27/14*; H04N *1/02*

U.S. Cl. 250—578 **5 Claims**

1. In a photoelectric converting device comprising an insulative base board, a plurality of divided electrodes, a photoelectric layer and a common electrode, said baseboard, divided electrodes, photoelectric layer and common electrode being placed one above another to form light beam receiving sections at overlapping areas between said divided electrodes and said common electrode, the improvement consisting in that the



width of a photoelectric current lead-out portion extending from each of said light beam receiving sections of the divided electrodes is dimensioned less than the width of its respective divided electrode.

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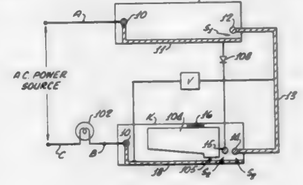
SOFT SWITCH WITH POSITIVE ON AND OFF STATES

Bruce D. Jimerson, 6415 Corsini Pl., Rancho Palos Verdes, Calif. 90274, and Henry H. Nakasone, 1672 Camrose Way, Anaheim, Calif. 92802

Filed Sep. 2, 1980, Ser. No. 182,996

Int. Cl.⁴ H01H *29/20, 35/02*

U.S. Cl. 307—98 **7 Claims**



1. A switching apparatus having an "on" state and an "off" state comprising:

actuating means for mechanically changing said switching apparatus from one state to another;

a first pair of contacts having a first electrode terminal and a second electrode terminal;

means for closing said first pair of contacts at the time said actuating means is operated to cause said switching apparatus to change from the "off" state to the "on" state;

a second pair of contacts having a first electrode terminal and a second electrode terminal;

means for delaying the closing of said second pair of contacts until after said first pair of contacts have closed;

a two terminal variable conduction angle network having a first terminal connected to the first electrode terminal of said first pair of contacts;

means for connecting first electrode terminal of said first pair of contacts to said first electrode terminal of said second pair of contacts;

means connecting said second terminal of said second pair of contacts to the second terminal of said two terminal variable conduction angle network.

4,567,376

SIGNAL GENERATOR

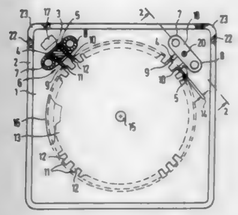
Manfred W. Zebisch, Georgensgmünd, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,669

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247446

Int. Cl.⁴ H03K *3/00*

U.S. Cl. 307—106 **5 Claims**



1. An adjustable apparatus used in generating a signal indicative of the rotation of a shaft in a machine of the type having a rotatable ferromagnetic disk that includes a plurality of teeth on the peripheral rim, comprising:

(a) a U-shaped member including a permanent magnet having a pair of magnetizable plates positioned on opposite sides thereof and extending therefrom,

(b) a housing havng a wall parallel to said disk including a mounting bracket adapted to receive said U-shaped member, including two post-like brackets perpendicular to said wall for positioning said U-shaped member with said magnetizable plates extending toward said teeth on the rim of said disk, and a web that bridges said post-like brackets with a threaded hole in the center thereof, and

(c) clamping means for securing said member to said bracket when the plates thereof have been located at a desired distance from said teeth, said clamping means comprising a set screw passing through said threaded hole in said web.

4,567,377

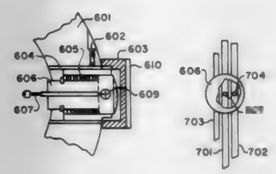
MECHANICAL SWITCHING MEANS FOR PROVIDING SHUNT CALIBRATION IN A ROTARY TRANSFORMER SYSTEM

Kish Amlani, and Sherif Gindy, both of Troy, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 26, 1982, Ser. No. 444,839

Int. Cl.⁴ G01L *3/00*; **H01H** *9/00*

U.S. Cl. 307—112 **11 Claims**



5. A system for simultaneously calibrating and monitoring a signal output of a transducer mounted in a rotary member while the rotary member is rotating, comprising:

(a) support means which is maintained in a stationary position with respect to the rotary member,

(b) first, second, third and fourth stationary terminals mounted on the support means,

(c) first intermittent rotary contact means mounted on the rotary member for making intermittent connection between the first stationary terminal and a first calibration point on the transducer in conjunction with a calibrating impedance means,

(d) second intermittent rotary contact means mounted on the rotary member for making intermittent connection between the second stationary terminal and a second calibration point on the transducer in conjunction with a calibrating impedance means, and

(e) switching means for switching the signal output of the transducer between the third and fourth stationary terminals, and switch driving means for driving the switching means from the third to the fourth stationary terminal only when intermittent contact is made to the first and second rotary contact means, the signal output for monitoring being supplied from the third stationary terminal and the single output for calibration being supplied from the fourth stationary terminal.

4,567,378

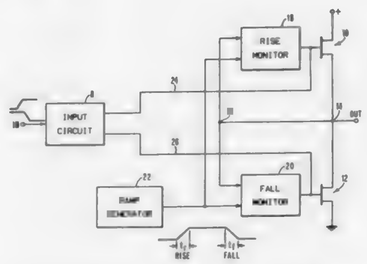
DRIVER CIRCUIT FOR CONTROLLING SIGNAL RISE AND FALL IN FIELD EFFECT TRANSISTOR PROCESSORS

Norman Raver, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1984, Ser. No. 620,235

Int. Cl.⁴ H03K *3/01, 17/687*

U.S. Cl. 307—270 **4 Claims**



1. A driver circuit for providing an output signal having a rise time adjusted in accordance with a rise time of a standard ramp signal comprising:

an input circuit responsive to an input signal of the type having a rising level, said input circuit providing a corresponding rising signal on an output lead therefrom,

an output circuit including at least one output device having an output connection, said at least one output device being connected to said output lead of said input circuit and responsive to said corresponding rising signal of said input circuit,

a ramp generator circuit connected to said output lead of said input circuit for providing an output signal having a desired rise time in response to said corresponding rising signal on said input circuit output lead,

a monitor circuit connected to said output connection of said at least one output device and to said ramp generator and responsive to said signals thereon to provide a feedback signal to said at least one output device when said output signal rises faster or slower than said ramp signal, said feedback signal adjusting said output signal in accordance with the rise time of said ramp signal.

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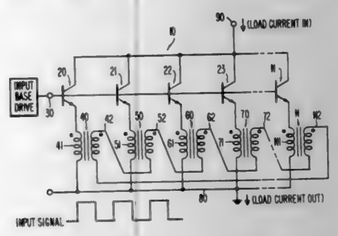
PARALLEL CURRENT SHARING SYSTEM

Philip D. Corey, San Diego, Calif., and Elise T. Atkins, Deerfield Beach, Fla., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 23, 1984, Ser. No. 613,315

Int. Cl.⁴ H03K *3/01, 17/687*

U.S. Cl. 307—270 **2 Claims**



1. A current sharing electronic circuit comprising:

a plurality of active current flow devices including first, second and third devices, each having base, emitter and collector electrodes;

all of said collector electrodes being connected together, means connecting together all of the base electrodes of said devices, said means having a terminal;

a transformer for each active device including a first transformer for said first device, a second transformer for said second device, and a third transformer for said third device, each transformer having a primary winding and a secondary winding, and all of said primary windings being substantially identical and all of said secondary windings being substantially identical to provide identically-rated active current flow devices;

all of said secondary windings being connected in series to form a single current flow path with the current flow in each secondary winding being opposite in direction to current flow in the associated primary winding and the series serial connection being such that the dot end of each secondary winding is connected to the non-dotted end of the succeeding transformer secondary winding;

each emitter electrode being coupled through the primary winding of its transformer to a common reference bus; and

means for applying a wave of turn-on pulses between said terminal and said common bus, and thus to all of the base electrodes of said devices;

whereby when a turn-on pulse is applied to said devices and said devices turn on, current flows from the collector to the emitter of each of said devices and through the associated primary transformer winding, said current flow through the first device and the first transformer winding generating a secondary current in the path made up of all of said secondary transformer windings, said secondary current causing the primary currents in all of said primary windings to be substantially proportional to the current-carrying capabilities of the active current flow devices.

4,567,380

SCHMITT TRIGGER CIRCUIT

Yasushi Yasuda, Machida; Hiromu Enomoto; Yoshiki Shimauchi, both of Kawasaki, and Akinori Tahara, Zushi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 24, 1983, Ser. No. 507,496

Claims priority, application Japan, Jun. 29, 1982, 57-110611

Int. Cl.⁴ H03K *3/295*

U.S. Cl. 307—290 **6 Claims**

1. A Schmitt trigger circuit operatively connected to receive an input voltage and an input current and operatively connected to a power source and ground, comprising:

an input stage comprising:

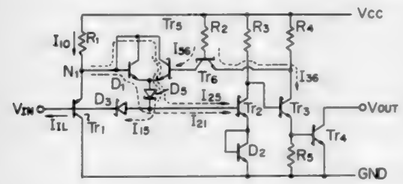
a first transistor having a base operatively connected to receive the input voltage, having a collector operatively connected to ground, and having an emitter operatively connected to the power source; and

a load resistor operatively connected between the emitter of said first transistor and the power source;

an output stage operatively connected to said input stage;

a second transistor operatively connected between said input stage and said output stage, having a base operatively connected to receive the input voltage, having an emitter operatively connected to ground, and having a collector operatively connected to the power source, said second transistor being turned on and off in dependence upon the input voltage, for controlling said output stage;

first circuit means including a first diode having a first terminal operatively connected to the emitter of said first transistor, and having a second terminal operatively connected to the base of said second transistor, the forward voltage drop of said first diode determining a threshold level of the input voltage to turn on said second transistor;



a third transistor, operatively connected in parallel with said first diode, having a collector operatively connected to the first terminal of said diode, having an emitter operatively connected to the second terminal of said diode, and having a base, for clamping the forward voltage of said first diode so as to determine a threshold level of the input voltage to turn off said second transistor;

second circuit means, operatively connected to said third transistor, for turning on said third transistor when said second transistor turns on;

third circuit means including a second diode having a cathode terminal operatively connected to the base of said first transistor and having an anode terminal operatively connected to the base of said second transistor, for discharing charges stored in the base of said second transistor; and

level shift means, operatively connected between the emitter of said third transistor and the anode terminal of said second diode, for preventing an abrupt increase in the input current when the input voltage decreases.

4,567,381

BIAS NETWORK HAVING ONE MODE FOR PRODUCING A REGULATED OUTPUT

Douglas S. Piasecki, Leonardo, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 1, 1983, Ser. No. 556,931

Int. Cl.⁴ H03K *17/16, 17/296, 17/60*

U.S. Cl. 307—296 R **10 Claims**

1. The combination comprising:

first and second power terminals for the application therebetween of an operating potential;

an output node;

a transistor having a base, an emitter and a collector;

means connecting said collector to said output node and said emitter to one of said first and second power terminals;

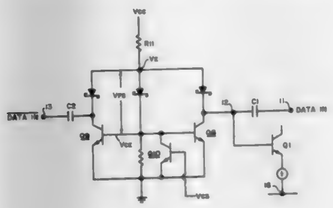
an intermediate node;

first and second diodes;

means connecting said first diode between said intermediate node and the base of said transistor, said first diode being

poled to conduct current in the same forward direction as the base-to-emitter of said transistor;

means connecting said second diode between said intermediate node and the collector of said transistor, said second diode being poled to conduct current in the same forward direction as the collector-to-emitter of said transistor; and





a current passing means coupled between the other one of said first and second power terminals and said intermediate node for supplying the base and collector currents of said transistor.

4,567,382

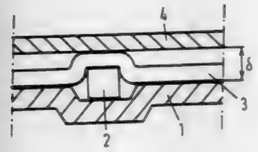
ELECTRET TRANSDUCER AND A METHOD FOR MANUFACTURING AN ASSEMBLY OF BACKPLATE, ELECTRET FOIL AND DIAPHRAGM PLATE

Aart Z. van Halteren, Zwaag, Netherlands, assignor to Microtel B.V., Amsterdam, Netherlands

Filed Apr. 10, 1984, Ser. No. 598,682

Int. Cl.⁴ G11C *13/02*

U.S. Cl. 307—400 **8 Claims**



5. An electret transducer comprising in combination: a casing and a motor assembly, said motor assembly comprising a diaphragm plate having a compliant surround at its periphery, a backplate, a plurality of apertures provided on said backplate, an electret foil disposed on said backplate, a plurality of substantially cylindrically shaped spacing disks, each being made of polyimide, and fixedly attached on said backplate respectively, said diaphragm plate through the intermediary of an electret foil portion being supported by said spacing disks.

4,567,383

FLUXOID TYPE SUPERCONDUCTING LOGIC ELEMENT

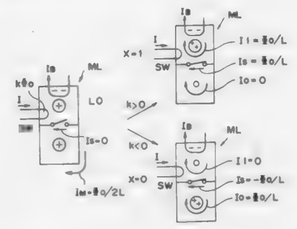
Eiichi Goto, and Hiroshi Ohta, both of Wako, Japan, assignors to Rikagaku Kenkyusho, Saitama, Japan

Filed Jan. 17, 1984, Ser. No. 571,464

Claims priority, application Japan, Jan. 20, 1983, 58-7975

Int. Cl.⁴ H03K *3/38, 19/195*

U.S. Cl. 307—415 **15 Claims**



1. A fluxoid type superconducting logic element characterized in that it comprises:

a base element including a single main superconductor loop ML and a switching element SW included in a superconductor extending across said main superconductor loop, thereby making it possible to magnetically separate said main superconductor loop into two subloops L1 and L0 when said switching element is closed;

means for applying a switch control signal to said switching element, thereby switching from the open position in which the critical current remains at a value small enough to repel any magnetic flux quantum unit from said main superconductor loop to the closed position in which the critical current is at a value large enough to sustain more than one magnetic flux quantum unit in said main superconductor loop;

means for applying a bias magnetic flux, the distribution of which tends to change in such a way that about a half of magnetic flux quantum unit ϕ_o may pass from one subloop to the other subloop when said switching element turns "off"; and

means for applying a relatively small amount of input magnetic flux to superpose itself on said bias magnetic flux,

whereby the distribution of an integer multiple (0, 1, −1) of magnetic flux quantum unit ϕ_o in said two subloops are varied by means of said input magnetic flux so as to represent a binary variable in terms of said distribution of an integer multiple of magnetic flux quantum unit.

4,567,384

VOLTAGE OFFSET PRODUCING CIRCUIT FOR USE WITH A LINE RECEIVER OR THE LIKE

Gary L. Stuhlmiller, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

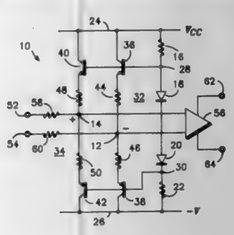
Filed Dec. 27, 1982, Ser. No. 453,387

Int. Cl.⁴ H03K *19/007, 19/092*

U.S. Cl. 307—442 **9 Claims**

1. Circuit for providing a voltage offset between first and second terminals, comprising first and second power supply conductors, bias circuit means coupled between said first and second power supply conductors and having first and second outputs at which first and second bias signals are provided respectively, first and second transistor circuit means each includes a first transistor and a second transistor of different conductivity type than said first transistor, said first and second transistors each having first, second and control electrodes, said control electrodes of said first and second transistors being coupled respectively to said first and second outputs of said bias circuit means, said first electrodes of said first and second transistors of said first transistor circuit means being coupled to

the first terminal, said first electrodes of said first and second transistor of said second transistor circuit means being coupled to the second terminal, said second electrodes of each of said



first transistors being coupled to said first power supply conductor, and said second electrodes of each of said second transistors being coupled to said second power supply conductor.

4,567,385

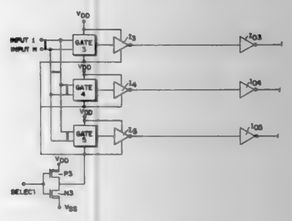
POWER SWITCHED LOGIC GATES

Scott L. Falater, and James D. Beasom, both of Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 22, 1983, Ser. No. 506,794

Int. Cl.⁴ H03K *19/003, 19/094, 19/20*

U.S. Cl. 307—443 **25 Claims**



1. A selectable logic circuit comprising:

circuit input means for receiving data input signals;

first and second circuit power terminals;

a plurality of logic means connected in parallel to said circuit input means for producing output signals at its output as a logical function of said data input signals and having first and second logic power leads;

a plurality of buffer means each connected to the output of a respective logic means and having first and second buffer power leads;

said first logic power lead and said first buffer power lead being continuously connected to said first circuit power terminal; and

select means having a select input and being connected to said first and second circuit power terminals and to the second logic power leads and the second buffer power lead for connecting said second logic and buffer power leads to said second circuit power terminal in response to a select signal and to said first circuit power terminal in response to a deselect signal.

4,567,386

INTEGRATED LOGIC CIRCUIT INCORPORATING FAST SAMPLE CONTROL

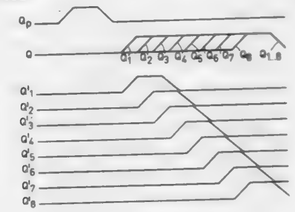
Nico F. Benschop, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

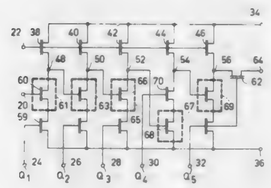
Filed Aug. 4, 1983, Ser. No. 520,382

Claims priority, application Netherlands, Aug. 10, 1982, 8203148

Int. Cl.⁴ H03K *19/096, 19/017, 19/20*

U.S. Cl. 307—481 **5 Claims**





1. A multiphase MOS integrated circuit comprising a plurality of groups of combinatory logic elements for forming in each group an associated AND/OR/INVERSION function, at least one data output terminal of each group being coupled to a data input terminal of at least one other group, the groups thereby being connected in a cascade of groups, said integrated circuit comprising clock means for generating multiphase clock pulse signals each having a leading edge with a finite rise time, at least one clock pulse per cycle controlling a sample operation, said circuit comprising a plurality of precharge transistors each having a control input for receiving a precharge control pulse in a first clock phase from said clock means for precharging a plurality of nodes, the circuit having a plurality of clock inputs for receiving from said clock means associated respective clock pulses during successive clock pulse phases as sample clock pulses for associated successive groups, so that within said cascade of groups a preceding group in the cascade is always sampled in an earlier phase than any successive group in the cascade, and said clock means having a plurality of delay means for generating said successive clock pulse phases at intervals with a lower bound that is substantially equal to the length of the leading edge of a sample clock pulse.

4,567,387

LINEAR SENSE AMPLIFIER

Ihor T. Wacyk, Bridgewater, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 30, 1983, Ser. No. 509,787

Int. Cl.⁴ H03K *5/153;* **G11C** *7/06, 11/40;* **H03F** *3/16*

U.S. Cl. 307—530 **12 Claims**

5. A sense amplifier comprising:

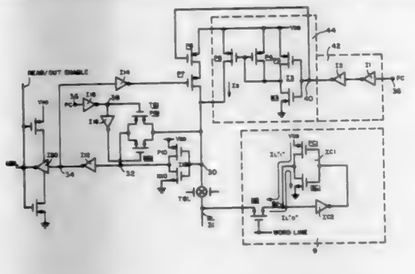
means for receiving recurrent precharge pulses;

an inverter having a signal input terminal, a signal output terminal, and first and second power terminals for receiving an operating potential therebetween, said inverter exhibiting a voltage transition point having a value be-

tween a first voltage level representing a first logic condition and a second voltage level representing a second logic condition, said output signal terminal of said inverter being driven toward one of said first and second voltage levels depending on whether a particular voltage being applied to its signal input terminal is above or below said voltage transition point;

selectively enabled feedback means responsive to each precharge pulse for completing a feedback connection from the output signal terminal of said inverter to its input signal terminal and placing said inverter at, or close to, said transition point during each precharge pulse occurence;

means including a selectively enabled gating transistor for selectively coupling signals to be sensed to the input signal terminal of said inverter, at selected times, each of which



times follows the inception of a precharge pulse and lasts for a period of time T_s following the termination of each precharge pulse, the applied signals to be sensed having either one binary value characterized by a relatively large current I_1 of one polarity or the other binary value characterized by a relatively small current I_2 of opposite polarity to said one polarity; and

selectively enabled bias means responsive to each precharge pulse, said bias means being enabled after the inception of each precharge pulse for a period T_s following the termination of each precharge pulse, said bias means including a current mirror for applying a bias current to the input of said inverter having a value intermediate said I1 and I2 and of same polarity as I2, and the amplitude of said bias current being set by a transistor of like conductivity type to said gating transistor for causing said bias current to vary in a similar manner as I1 and I2.

4,567,388

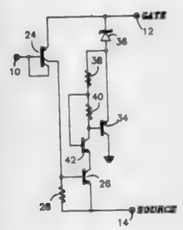
CLAMP CIRCUIT

Robert B. Jarrett, Tempe; W. Eric Main, Mesa, and Robert A. Neidorff, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1983, Ser. No. 538,241

Int. Cl.⁴ H03K *5/08*

U.S. Cl. 307—540 **5 Claims**



1. A circuit for clamping the voltage across first and second terminals, between which said circuit is coupled, to a desired voltage in response to receipt of an input signal, comprising:

input means for generating a current in response to receipt of said input signal;

switching means coupled to said input means and to said first terminal for turning on when said current reaches a predetermined value and producing a first voltage drop thereacross;

buffer means coupled to said switching means and to a first source of supply voltage for turning on and providing a second voltage drop thereacross when said switching means turns on, said buffer means including

a PNP buffer transistor having a collector coupled to a first source of supply voltage, an emitter, and a base;

first and second series coupled resistors having a first end coupled to the base of said buffer transistor and having a second end; and

an additional NPN transistor having an emitter coupled to said switching means, a collector coupled to the base of said buffer transistor, and a base coupled to the junction of said first and second series coupled resistors; and

controlled voltage drop circuit means coupled between said second terminal, the emitter of said buffer transistor and said second end of said series coupled resistors for conducting current to produce a third voltage drop thereacross in series with said first and second voltage drop when said switching means and said buffer means are on, the emitter of said buffer transistor being coupled to said controlled voltage drop circuit means.

4,567,389

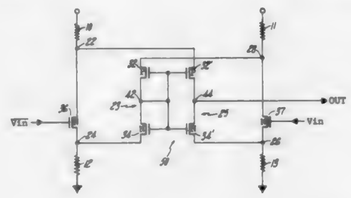
CMOS DIFFERENTIAL AMPLIFIER

Hiep Van Tran, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Jul. 5, 1984, Ser. No. 627,998

Int. Cl.⁴ G11C *7/00*; H03F *3/45*

U.S. Cl. 307—530 **6 Claims**



1. A field-effect-transistor sense amplifier for responding to first and second input signals comprising:

a first side comprising a first upper transistor and a first lower transistor connected in series in a first current path between a supply voltage and ground, the drain of said first lower transistor being connected to the source of said first upper transistor at a gate node; and

a second side comprising a second upper transistor and a second lower transistor, connected in series in a second current path between said supply voltage and ground, the drain of said second lower transistor being connected to the source of said second upper transistor at an output node; characterized in that:

all of the gates of said first and second upper and lower transistors are connected to said gate node and said amplifier further includes;

first input means responsive to said first input signal for applying opposite-sense signals to the drain of said second upper transistor and the source of said first lower transistor; and

second input means responsive to said second input signal for applying opposite-sense signals to the drain of said first upper transistor and the source of said second lower transistor, whereby each of said first and second input means couples signals to both of said first and second sides.

4,567,390

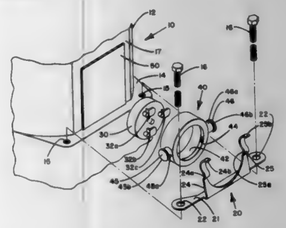
INTERNAL LINE BREAK ASSEMBLY

Robert S. Stewart, North Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 2, 1984, Ser. No. 637,239

Int. Cl.⁴ H02K *11/00*; H01H *37/04*

U.S. Cl. 310—68 C **2 Claims**



1. An internal line break assembly for a hermetic compressor comprising:

a protector means for sensing the temperature of a motor winding and for cutting off electric power to the motor responsive thereto;

a protector mount means having a recess formed therein for receiving said protector means;

resiliently deformable bracket means coacting with said protector mount means having said protector means therein to bias said protector means into thermal contact with said motor winding; and

said protector mount means further having a pair of diametrically extending ears each including a cylindrical portion and a flange portion with said cylindrical portions coacting with said bracket means in the nature of a wedge to cause said protector means to be held in biased thermal contract with said motor winding.

4,567,391

PERMANENT MAGNET DISC ROTOR MACHINE

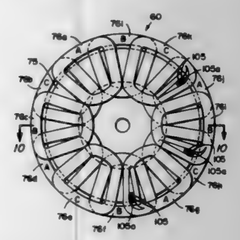
Hartwell F. Tucker, Los Altos; Jeffrey R. Tucker, Mountain View; Dennis Roos, San Leandro, and Jeffrey G. Knirck, San Jose, all of Calif., assignors to Octa, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 409,845, Aug. 20, 1982, Pat. No. 4,443,906. This application Apr. 23, 1984, Ser. No. 603,206

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.⁴ H02K *21/12*

U.S. Cl. 310—156 **13 Claims**



1. An electric motor comprising:

(a) a stator housing;

(b) armature winding supported by said stator housing, said armature winding having a annular configuration with an axis, said armature winding including an array of radially disposed coils with the axial extent of said coils less than the radial extent of said coils taken respectively;

(c) a rotor housing journalled for rotation about an axis coincident with the axis of said armature winding;

(d) an array of radially disposed permanent magnets supported by said rotor housing concentric therewith for concurrent movement, said permanent magnets having alternate magnetic fields in succession with the axial extent of said permanent magnets less than the radial extent of said permanent magnets taken respectively;

(e) a plurality of sensors in said stator housing disposed concentrically with said armature winding and responsive to the rotation of said rotor housing; and

(f) a switching circuit responsive to said sensors and connected to said armature winding to impart rotation to said rotor housing,

(g) said armature winding comprising juxtaposed layers of coils, each of said layers of coils comprising a plurality of coils wound in juxtaposed relation and disposed in a radial plane, the coils of one layer being arranged to interweave with the coils of another layer.

4,567,392

SEZAWA SURFACE-ACOUSTIC-WAVE DEVICE USING ZnO(0001)/SiO₂/ Si(100)(011)

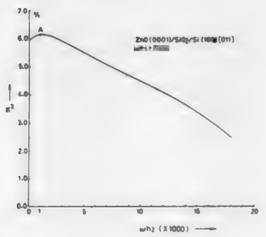
Ryuichi Asai; Takeshi Okamoto, and Shoichi Minagawa, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1984, Ser. No. 677,712

Claims priority, application Japan, Dec. 9, 1983, 58-232444; Dec. 9, 1983, 58-232445

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—313 A **20 Claims**



1. A surface acoustic wave device comprising:

a silicon substrate which is cut by a surface equivalent to the (100)-crystalline surface;

a silicon dioxide layer provided on said silicon sub- strate;

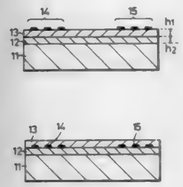
a zinc oxide layer provided on said silicon dioxide layer so that a surface thereof substantially equivalent to the (0001)-crystalline surface is parallel to said cut surface of said silicon substrate, said surface acoustic wave entered from said input electrode being propagated in a direction substantially equivalent to the [011]-axis of said silicon substrate up to said output electrode.

4,567,393

SURFACE ACOUSTIC WAVE DEVICE HAVING AlN AND ZnO LAYERS ON A Si SUBSTRATE

Ryuichi Asai; Takeshi Okamoto, and Shoichi Minagawa, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1984, Ser. No. 618,971
Claims priority, application Japan, Jun. 14, 1983, 58-107436
Int. Cl.⁴ H03H *9/25*
U.S. Cl. 310—313 A **15 Claims**



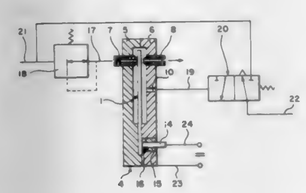
1. A surface acoustic wave device which comprises:
a silicon substrate having a major surface;
an aluminum nitride layer provided on said major surface of said silicon substrate;
a zinc oxide layer provided on said aluminum nitride layer; and
electrodes provided on said zinc oxide layer;
wherein said major surface of said silicon substrate has substantially (100)-, (110)-, (111)- or (112)-crystalline orientation.

4,567,394

ELECTRO-PNEUMATIC SIGNAL CONVERTER

Herbert Frisch, Vienna, Austria, assignor to ENFO Grundlagenforschungs AG, Dottingen, Switzerland

Filed Jan. 11, 1984, Ser. No. 569,958
Claims priority, application Austria, Jan. 13, 1983, A 101/83
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—330 **9 Claims**



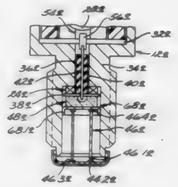
1. An electro-pneumatic signal converter, comprising a sealed casing having an air inlet thereto, an air outlet therefrom opposite said air inlet, both with a seating, and a signal output therefrom, a piezoelectric bending element which bends when an electrical voltage is applied to the signal converter, the bending element being securely clamped in a clamping area remote from said air inlet and outlet seatings to be centered in said casing and pressed against a contact surface thereof by a spring member controlling the air inlet seating and the air outlet seating to control the passage of air through the signal converter, the bending element being pretensioned against the air inlet seating and, in the absence of electrical voltage, bearing on the latter in a sealing manner, and when an electrical voltage is supplied to the signal converter, separating from the air inlet seating, bending towards the air outlet seating and closing the latter.

4,567,395

PIEZOELECTRIC PRESSURE TRANSMITTER FOR AN INTERNAL COMBUSTION ENGINE

Eshwarahalli S. Pundarika, Cambridge, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 26, 1984, Ser. No. 665,426
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—338 **7 Claims**



1. A device for providing an electrical signal corresponding to pressure in a cylinder of an internal combustion engine during normal running operation of the engine comprising
piezoelectric means for providing an electrical signal in response to application of presssure, and
means for mounting the piezoelectric means to be responsive to pressure in a cylinder of the engine, the mounting means including a body having a chamber opening at one end of the body accommodating the piezoelectric means therein, means for sealing said one body end in an engine well communicating with the cylinder, and diaphragm means secured over the chamber opening at said one body end to be movable in response to variations in fluid pressure in the engine cylinder to transfer forces to the piezoelectric means to provide an electrical signal corresponding to said cylinder pressure variation while shielding the piezoelectric means from an environment within the cylinder,
first rigid motion transfer means of a metal material having a portion of a cross section of relatively lesser area than said diaphragm, and
second rigid motion transfer means of a material of relatively lower thermal conductivity then said first motion transfer means,
the first and second motion transfer means being arranged in sequence between the metal diaphragm and the piezoelectric means to be freely movable with the diaphragm to transfer movements of the diaphragm to the piezoelectric means to provide said electrical signal while retarding the transfer of heat from the diaphragm through the motion transfer means to the piezoelectric means.

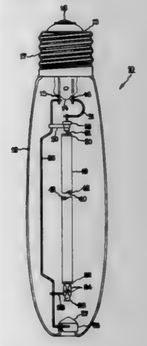
4,567,396

INCREASED EFFICACY HIGH PRESSURE SODIUM LAMP YIELDED BY INCREASED WALL TEMPERATURE OPERATION

Charles I. McVey, Shaker Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 444,777, Nov. 26, 1982, abandoned. This application Dec. 17, 1984, Ser. No. 682,806
Int. Cl.⁴ H01J *61/20, 61/34*
U.S. Cl. 313—25 **3 Claims**

1. An improved high pressure metal vapor lamp having an outer vitreous envelope enclosing an inner arc tube having thermionic electrodes sealed in its ends and containing a charge of vaporable metal including the addition of a metal buffer gas such as mercury vapor with an operating pressure range of 0.1 to 5 atmospheres and having an emitting species of sodium at a typical operating pressure of 60 Torr, an inert starting gas such as xenon having a cold filling pressure in the range of 7 to 350 Torr, and an operating wall temperature in the range of 1000° C. to 1400° C., said inner arc tube comprising:
an optically translucent polycrystalline aluminum oxide ceramic formed of a composition of MgO and having an additive selected from the group consisting of ZrO_2, HfO_2 and mixtures thereof, and;



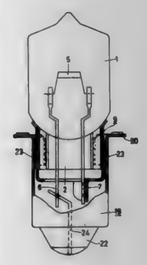
said inner arc tube in cooperation with the given buffer gas, sodium, and inert gas pressures as well as the wall temperature range being effective to reduce the typically expected operational sodium losses while increasing the efficacy of said high pressure metal vapor lamp.

4,567,397

ELECTRIC LAMP HAVING A LIGHT SOURCE ALIGNED TO A CAP

Dieter Wilhelm, Eschweiler; Werner Schlagheck, Aachen-Laurensberg, and René Toussaint, Herzogenrath, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 25, 1983, Ser. No. 497,986
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221290
Int. Cl.⁴ H01J *5/48, 5/58, 5/60*
U.S. Cl. 313—318 **21 Claims**



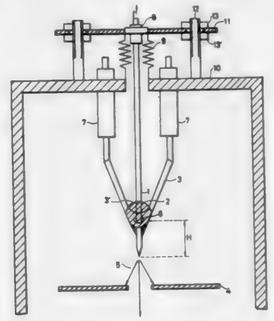
1. An electric lamp comprising a generally circular-cross-section tubular cap formed mainly of metal and defining an axis; a lamp envelope having a pinch, an electric light source arranged in the envelope, and source current conductors extending through the pinch to the envelope exterior and electrically connected to the cap; and a metal sleeve having an outer surface and secured in the cap, the pinch being received with a clamping fit in the sleeve,
characterized in that the cap has at least three inwardly directed depressions which lie generally in a plane perpendicular to the cap axis and are distributed around the cap circumference with each depression forming a point of contact with the outer surface of the sleeve,
aside from the depressions, the inner diameter of the cap is larger than the outer surface of the sleeve over the whole length of the cap opposite the sleeve such that prior to securement of said sleeve to said cap the lamp envelope together with said sleeve can not only be longitudinally displaced and rotated with respect to the cap but can also be pivoted with the depressions serving as points of rotation so that the light source can be aligned in three dimensions with respect to the cap,
said at least three depressions being secured to said sleeve to maintain the alignment.

4,567,398

LIQUID METAL ION SOURCE

Tohru Ishitani, Sayama; Hifumi Tamura, Hachioji, and Akira Shimase, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 11, 1983, Ser. No. 474,473
Claims priority, application Japan, Apr. 14, 1982, 57-61063
Int. Cl.⁴ H05H *1/00;* **H01J** *1/02*
U.S. Cl. 313—362.1 **2 Claims**



1. A liquid metal ion source comprising an electrode with a fore end formed in the shape of a needle, a reservoir for holding a source material to be ionized in a molten state, an extractor for applying a high electric field to the fore end of the needle electrode wetted with the molten source to extract ions of said source material from said fore end of said needle electrode, a vacuum chamber enveloping said reservoir, said extractor and at least the fore end of said electrode, and means for finely adjusting a distance between said reservoir and said fore end of said needle electrode from outside said vacuum chamber whereby the amount of the source material supplied from said reservoir to the fore end of said electrode can be balanced with the amount of the source material ionized from the fore end of said electrode.

4,567,399

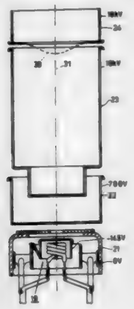
CATHODE RAY TUBE WITH SPHERICAL ABERRATION CORRECTION MEANS

Aart A. van Gorkum, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,231
Claims priority, application Netherlands, Feb. 22, 1982, 8200691
Int. Cl.⁴ H01J *29/56*
U.S. Cl. 313—449 **9 Claims**

1. In a cathode ray tube comprising an evacuated envelope containing a target and an electron gun for producing an electron beam directed along a longitudinal axis of the gun and for focusing said electron beam onto said target, said electron gun including, in the direction of propagation of the electron beam, first and second adjacent electrodes disposed coaxially around said axis for producing an accelerating electron lens,
the improvement comprising means for effecting a prede-

fined correction of spherical aberration of said lens, said means including a conductive, electron penetrable member extending across and electrically-connected to an end



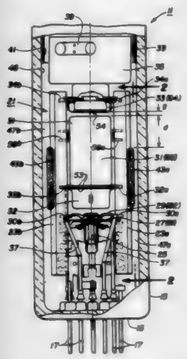
of the second electrode which is nearby the first electrode, said member being curved toward said first electrode, the curvature of said member initially decreasing with distance from said axis.

4,567,400

CRT COMPRISING METALLIZED GLASS BEADS FOR SUPPRESSING ARCING THEREIN

Stephen T. Opresko, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 28, 1983, Ser. No. 470,561
Int. Cl.⁴ H01J *29/82*
U.S. Cl. 313—457 **7 Claims**



1. In a cathode-ray tube comprising a glass neck and an electron-gun mount assembly in said neck, said mount assembly comprising an electron beam source and a plurality of successively spaced-apart electrodes including an end electrode, means for applying an anode voltage to said end electrode, an adjacent focus electrode, means for applying a focus voltage to said focus electrode, said end electrode and said focus electrode defining a gap of predetermined width, at least two glass beads peripheral to said electrodes for supporting said electrodes at predetermined spacings, said focus electrode comprising outwardly-extending claws embedded in said beads, and an electrically-conductive coating on the outwardly-facing surface of each of said beads, the improvement wherein said coatings are located opposite said focus electrode and are at least four times said gap width away from positions on said outwardly-facing surfaces that are opposite said gap between said end electrode and said focus electrode, and said claws of the focus electrode are not opposite coated portions of said beads that are located up to half the distance between the ends of said focus electrode away from said gap.

4,567,401

WIDE-BAND DISTRIBUTED RF COUPLER

Larry R. Barnett, Manassas, Va.; Yue-Ying Lau, Silver Spring, Md.; Kwo R. Chu, Annandale, Va., and Victor L. Granatstein, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 12, 1982, Ser. No. 389,132
Int. Cl.⁴ H01J *25/38, 25/34*
U.S. Cl. 315—5 **13 Claims**



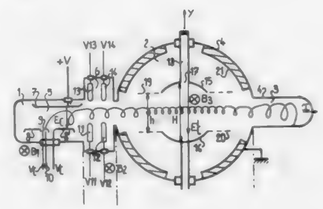
1. An rf traveling-wave amplifier including:
a tapered interaction waveguide wherein the cross-section thereof gradually increases from a small first end thereof to a larger second end for propagating electromagnetic energy in a broad frequency band therein;
an input waveguide disposed external to said interaction waveguide for providing electromagnetic waves to be amplified;
a multiplexer distributed coupler circuit disposed external to said interaction waveguide for coupling electromagnetic energy from said input waveguide to said interaction waveguide comprising a plurality of channel frequency filters disposed outside said interaction waveguide, with each filter tuned to a different frequency passband, with each filter coupled to said interaction waveguide at a different appropriate cross-sectional position along the tapered length thereof such that the interaction waveguide cutoff frequency at that position approximately matches the wave frequency propagated by said filter so that electromagnetic energy propagated by the given filter will excite the desired mode of electromagnetic energy to propagate toward said larger second end of said interaction waveguide.

4,567,402

ELECTRON BEAM INJECTION DEVICE FOR AN ULTRA-HIGH FREQUENCY RADIO ELECTRIC WAVE GENERATOR

Georges Mourier, Le Port Marly, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 2, 1984, Ser. No. 595,663
Claims priority, application France, Apr. 6, 1983, 83 05604
Int. Cl.⁴ H01J *25/34*
U.S. Cl. 315—39.3 **3 Claims**



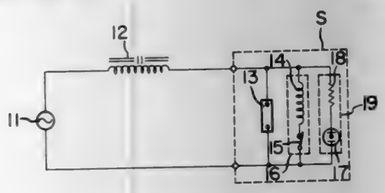
1. A device for injecting into an interaction zone an electron beam propagating along an axis (x) in a helical path under the action of a continuous electric field and a static magnetic field (B) perpendicular to the axis of a propagation and to the electric field, comprising an electron gun placed in a weak magnetic field and means, placed in a magnetic field (B_2) increasing progressively along the axis of propagation of the beam, for creating in this zone a continuous electric field having two components (E_X, E_Y) in the plane perpendicular to the magnetic field to compensate the movement perpendicular to the axis due to the increasing of the magnetic field, said means being located between the gun and the interaction zone.

4,567,403

HIGH PRESSURE DISCHARGE LAMP WITH INCORPORATED STARTER

Yoshio Ohtsgaki, Gyoda; Masafumi Ochi, Kounosu; Motonobu Masui, Kumagaya; Kanichi Tachibana, Saitama, and Akio Uchida, Yokose, all of Japan, assignors to Iwasaki Electric Co., Ltd. and Mitsubishi Mining & Cement Company, Ltd., both of Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 349,969
Int. Cl.⁴ H01J *7/44, 17/34, 19/78, 29/96*
U.S. Cl. 315—47 **10 Claims**



1. A discharge lamp device comprising a discharge lamp, an inductive stabilier connected in series with discharge lamp, starting circuit means, including a resistor and a bimetal switch in series connected to said discharge lamp for providing a starting voltage waveform including repetitive high voltage pulses, and
pulse wave conversion means having a micro-gap element comprising an insulating member of high relative dielectric constant, a conductive layer divided into separate zone formed on said insulating member and electrodes respectively connected to separate ones of said zones, and air-tight container enclosing the micro-gap element and filled with a rare or inert gas, and a resistor connected in series with the micro-gap element, the micro-gap element being constructed to be rendered conductive at a voltage lower than the starting voltage of the discharge lamp but higher than the secondary load-free voltage of the stabilizer, and the resistor having a value such that said pulse waveform conversion means converts said starting voltage waveform from an oscillatory waveform to a damped waveform having wider half value width.

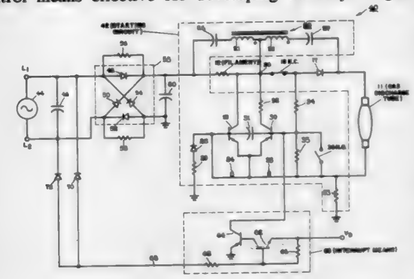
4,567,404

BALLAST CIRCUIT HAVING ELECTROMAGNETIC INTERFERENCE (EMI) REDUCING MEANS FOR AN IMPROVED LIGHTING UNIT

David Flugan, Hudson, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,919
Int. Cl.⁴ H05B *37/00, 39/00, 41/14*
U.S. Cl. 315—205 **6 Claims**

1. In a lighting unit having a gas discharge tube as the main light source, a filament serving as a supplementary light source and as a resistive ballast element, and a ballast circuit comprising means for coupling conduction inducing triggering pulses to said gas discharge tube, said ballast circuit being adapted to accept across its first and second input terminals an applied alternating current (A.C.) voltage, said first and second input terminals having connected thereacross rectifying means comprising four diodes arranged in a full-wave configuration and having at its output stage a filter capacitor, the improvement comprising:
control means effective for developing an output signal



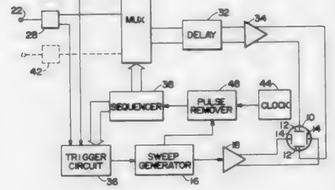
indicative that at least one of said diodes of said rectifying means is in a forward-biased condition, and;
interrupt means responsive to said output signal of said control means and effective for generating a disabling signal to inhibit the coupling of said conduction inducing triggering pulses to said gas discharge tube.

4,567,405

OSCILLOGRAPHIC DEVICE FOR DISPLAYING MULTIPLE CONTINUOUS WAVEFORMS

Lloyd R. Bristol, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 28, 1983, Ser. No. 555,785
Int. Cl.⁴ G01R *13/28*
U.S. Cl. 315—392 **12 Claims**



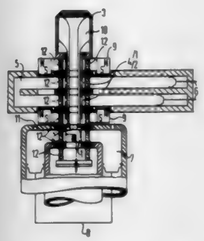
1. An oscillographic device for providing a display of repetitive waveform phenomena, said device comprising:
first beam deflection means for deflecting an electron beam in a first sense to portray amplitude input signal information and orthogonal deflection means for concurrently deflecting said beam in a second sense for representing time,
time base means for providing a sweep signal to said orthogonal deflection means,
and switching means for receiving plural input signals and consecutively and repetitively employing said plural input signals for operating said first deflection means, said switching means having a switching rate sufficiently rapid to provide the effect of substantially simultaneous display of the plural input waveforms,
including means for automatically varying switching times of said switching means during display of said waveforms to avoid gaps in waveform presentation when the period of said sweep signal is near a multiple of the switching period of said switching means.

4,567,406

HIGH-GAIN KLYSTRON-TETRODE

Hinrich Heynisch, Gräfelfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 609,788
Claims priority, application Fed. Rep. of Germany, May 16, 1983, 3317788
Int. Cl.[4] H01J 23/08
U.S. Cl. 315—5.33 2 Claims



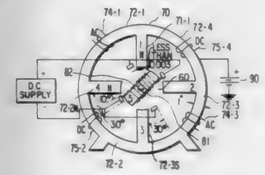
1. High-gain klystron-tetrode, comprising a tube for accomodating a hollow beam; a ring cathode with a heater, two resonator gap apertures and a collector for generating the hollow beam; a ring grid for current-modulating the hollow beam; an external cavity resonator for current modulation, said external cavity resonator having a tuning slider of a grid-cathode circuit for operating the klystron-tetrode; and a re-entrant output cavity resonator, said reentrant cavity resonator having two independent tuning sliders for generating HF power by setting the resonator frequency and optimizing the phase between said resonator gap apertures for inphase and substantially in-phase operation, and said re-entrant cavity resonator having magnets integrated therein for focussing the hollow beam.

4,567,407

BIASED UNITIZED MOTOR ALTERNATOR WITH STATIONARY ARMATURE AND FIELD

John W. Ecklin, 6143K Edsall Rd., Alexandria, Va. 22304

Filed Jun. 25, 1982, Ser. No. 392,102
Int. Cl.[4] H02P 7/66; H02K 47/04
U.S. Cl. 318—140 8 Claims



1. A unitized motor alternator for generating alternating current energy comprising in combination,

a flux switch alternator having an stator with a plurality of pole pieces therein, AC output windings on said stator, a rotor having a high magnetic permeability and low magnetic retentivity,

motor winding means on said stator,

means for energizing said motor winding means to apply a conservative force to said rotor of said flux switch alternator and simultaneously induce AC voltage in said AC output windings and,

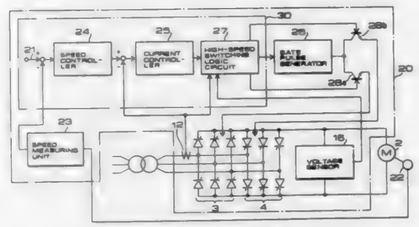
means for coupling a load to said AC output windings.

4,567,408

DIGITALLY CONTROLLED RECTIFYING SYSTEM FOR DRIVING A MOTOR

Masamichi Mitsuhashi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 616,475, Jun. 1, 1984, abandoned. This application Dec. 28, 1984, Ser. No. 687,025
Claims priority, application Japan, Jun. 3, 1983, 58-99676
Int. Cl.[4] H02P 5/16
U.S. Cl. 318—317 3 Claims



1. A digitally controlled rectifying system used for driving a direct current (d.c.) motor through a forward and reverse converters connected in an anti-parallel fashion so as to block a circulation current, said system comprising:

(a) a pulse generator coupled to the drive shaft of said motor;

(b) a speed measuring means which counts pulses generated by said pulse generator and produces a digital value in correspondence to the rotational speed of said motor;

(c) a speed controller which receives a speed command signal and the output of said speed measuring means;

(d) a current controller which receives the output of said speed controller and the output of a current transformer coupled to an alternating current (a.c.) input power line to said converters;

(e) logic means which receives the output of said current transformer and the output of a voltage sensor connected to detect the output voltage of said converters, said logic means operating on the firing phase angle of said converters to shift by 180° at a time of gate switching operation so that the load current is forced to become zero, said logic means operating on the firing phase angle of said converters to shift following the gate switching operation so that the load current is substantially zero; and switch means operated by said logic means to supply gate pulses to one of said forward and reverse converters.

4,567,409

CONTROL CIRCUIT FOR MOTOR

Masahiko Ogawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,102
Claims priority, application Japan, Jun. 16, 1983, 58-108488
Int. Cl.[4] G05B 5/00
U.S. Cl. 318—327 2 Claims

1. A circuit arrangement for controlling a motor having a rotor and a winding for driving the rotor in response to a supplied electrical current, comprising:

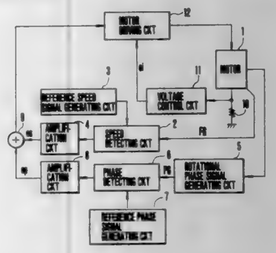
(A) a first reference signal generating circuit for generating a first reference signal indicative of a predetermined rotational speed to which the rotational speed of said rotor is to be adjusted;

(B) a second reference signal generating circuit for generating a second reference signal indicative of a predetermined rotational phase to which the rotational phase of said rotor is to be adjusted;

(C) a first detection circuit for detecting deviation of the rotational speed of said rotor from said predetermined speed and for producing a first control signal corresponding to said speed deviation;

(D) a second detection circuit for detecting deviation of the rotational phase of said rotor from said predetermined phase and for producing a second control signal corresponding to said phase deviation;

(E) a third detection circuit for detecting the level of the electrical current flowing through said winding and for producing a third control signal corresponding to said current level; and



(F) a control circuit responsive to said first, second and third control signals for controlling the electrical current and voltage to be supplied to said winding;

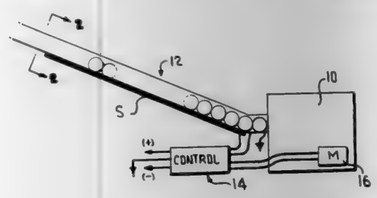
said control circuit being arranged to increase the level of the voltage to be applied to said winding when an increase in the level of the electrical current flowing through the winding is indicated by said third control signal.

4,567,410

CAPACITIVE ARTICLE DENSITY MONITOR

Ralph E. Martin, Oak Lawn, and Heino Puidak, Hoffman Estates, both of Ill., assignors to Continental Can Company, Inc., Stamford, Conn.

Filed Dec. 3, 1984, Ser. No. 677,411
Int. Cl.[4] H02P 5/00; B65G 43/00
U.S. Cl. 318—332 22 Claims



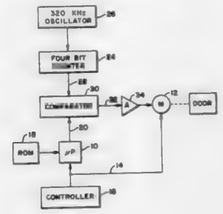
1. A capacitive article density monitor comprising an elongated sensor, a compensator in the form of a bank of capacitors including a plurality of individual capacitors each having a selector switch, a power supply, a pulsed control unit providing control pulses at different intervals, a first selector gate unit controlled by selected ones of said control pulses to sequentially connect said power supply to said sensor and to said compensator, a second selector gate unit for selecting between the outputs of said sensor and the output of said compensator, and an integrator for receiving the selected outputs of said second selector gate unit for providing a voltage output in accordance with the article density sensed by said sensor.

4,567,411

HIGH FREQUENCY PULSE WIDTH MODULATION

Kurt Reimann; Bernd Ackermann; Rüediger Löeb, all of Berlin, and Claus Ruther, Munich, all of Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Mar. 22, 1985, Ser. No. 715,130
Int. Cl.[4] H02P 3/00; B66B 1/30
U.S. Cl. 318—341 1 Claim



1. A high frequency pulse width modulation circuit for controlling a door drive motor atop an elevator car in response to a low frequency microprocessor, comprising:

a controller (16) for providing a state signal indicative of "door open" or "door close";

ROM means (18) for storing a velocity signal indicative of the desired velocity profile of the door drive motor;

a microprocessor (10) having a slow duty cycle, responsive to the state signal for providing the velocity signal from the ROM to a first line (20);

high frequency oscillator means (26) for providing a high frequency signal;

counter means (24) for providing an incrementing count signal on a second line (28) several times during the duty cycle of the microprocessor in response to the high frequency signal;

comparator means (30), connected at its inputs to the first line (20) and to the second line (28), for providing an output signal on a third line (32) which is High when the velocity signal is greater than the incrementing count signal and which is Low when the incrementing count signal is greater than or equal to the velocity signal, so that the High:Low ratio of the output signal is proportional to the velocity signal from the microprocessor;

amplification means (34), connected at its input to the third line (32) for providing an output at power levels for operating the door drive motor (12) in response to the comparator means output, wherein the door drive motor speed is proportional to the High:Low ratio of the output signal.

4,567,412

AUTOMATIC WIPER ACTUATOR FOR A VEHICLE WINDOW

Donald E. Graham, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1984, Ser. No. 676,385
Int. Cl.[4] H02P 1/04
U.S. Cl. 318—483 1 Claim

1. A control system for a motor driven wiper on a vehicle window comprising, in combination:

an oscillator effective to generate a rectangular voltage wave of supply and ground voltage levels having a substantially constant frequency and duty cycle;

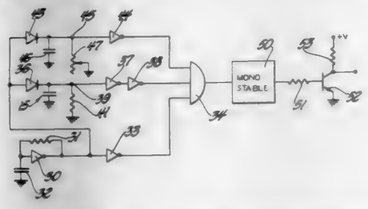
an AND gate with three inputs and an output;

an inverter effective to invert the rectangular voltage wave and apply the inverted rectangular voltage wave to the first AND gate input;

first wave transformation means comprising a series diode and inverter with a first capacitor and first resistor connected from the junction of the diode and inverter to ground, the resistance of the first resistor being variably

controllable by an operator of the vehicle, the first wave transformation means being connected from the oscillator to the second AND gate input, whereby it applies to said input the rectangular voltage inverted and delayed by a first time period;

second wave transformation means comprising a diode followed by two series inverters with a parallel second capacitor and second resistor connected from the junction of the diode and one of the series inverters to ground, the second wave transformation means being connected from the oscillator to the third AND gate input, the second capacitor being located adjacent the lower edge of the wiped portion of the vehicle window and responsive in capacitance to the presence of moisture on said wiped



portion, whereby the second wave transfomation means applies to the third AND gate input the rectangular wave delayed by a second time period varying with said capacitance and thus with the moisture on the window;

a retriggerable monostable multivibrator connected to the output of the AND gate and effective, when triggered by common supply voltage levels on all three inputs, to generate an energized output of period longer than a cycle of the rectangular voltage wave; and

means responsive to the energized output of the retriggerable monostable multivibrator to activate the motor driven wiper to perform a wipe cycle, whereby the wiper system is automatically activated in response to moisture on the windshield and is further adjustable by the vehicle operator in sensitivity to moisture.

4,567,413

METHOD AND DEVICE FOR CONTROLLING POWER STEERING APPARATUS

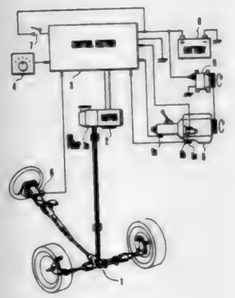
Hideo Yabe, Hiki, and Ichiro Koike, Higashimatsuyama, both of Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 619,873

Claims priority, application Japan, Jun. 28, 1983, 58-116635

Int. Cl.⁴ H02P 7/29

U.S. Cl. 318—489 **6 Claims**



1. A device for controlling a power steering apparatus having an oil pump driven by a motor, said device comprising:

first detecting means for detecting that the motor is imposed with a high load;

second detecting means for detecting that the motor is imposed with an overload;

an alarm unit for generating an alarm in response to an output from said first detecting means; and

controlling means for inhibiting supply of current to the motor for a predetermined period of time upon reception of an output from said second detecting means and for enabling supply of current to the motor after said predetermined period of time has elapsed, said controlling means including a timer for generating an output when a time interval has elapsed after said second detecting means generates an output, an integrator for integrating the output from said second detecting means, an AND gate for receiving outputs from said timer and said integrator, and means for opening a switch inserted between the motor and a power supply for the predetermined period of time in response to an output from said AND gate.

4,567,414

METHOD AND A DEVICE FOR CONTROLLING A BRUSH-COMMUTATOR ASSEMBLY OF AN ELECTRIC MACHINE

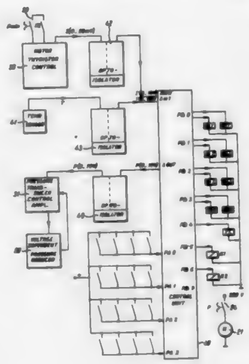
Josephus B. M. Berings, Padlaan 11, 1561 Za Krommenie, Netherlands

Filed Jul. 11, 1983, Ser. No. 512,894

Claims priority, application Netherlands, Jul. 12, 1982, 8202816

Int. Cl.⁴ H01R 39/42

U.S. Cl. 318—542 **17 Claims**



1. A method for controlling a brush-commutator assembly of a commutator machine under application of an electrical processing and control unit, by sensing one or more operating parameters of the commutator machine; the sensing values being processed and converted into one or more control signals controlling the operation of the brush-commutator assembly to provide an optimal commutation process of the machine current, said brush-commutator assembly including two more brush tracks for the brushes, whereby the machine current is sensed and the pressure exerted on the brushes is continuously regulated by a fluid under pressure, the brush tracks being engaged and disengaged to redistribute the machine current—upon an increase and decrease of the machine current respectively—for maintaining an optimal current density in the brushes and to change over the brush tracks in a cyclical and preferential manner to provide equal brush wear.

5. A device for controlling a brush-commutator assembly of a commutator machine, comprising one or more sensors, including a machine current sensor, for sensing operating parameters of the commutator machine, an electrical processing and control unit to process the signals sensed by the sensors and to

supply control signals to one or more control means controlling the operation of the brush-commutator assembly for an optimal commutation process of the machine current, said brush-commutator assembly comprising sets of brush holders, divided into two or more brush tracks, whereby said device includes a fluid control circuit provided with an electrically controllable pressure system and a plurality, at least corresponding to the number of the brush tracks, of solonoid valves capable of continuously regulating the pressure exerted on the brushes in the brush holders and the engagement and disengagement of the brush tracks, to redistribute the machine current and to change over the brush tracks, by means of the fluid under pressure under the control of the electrical processing and control unit.

4,567,415

SYSTEM FOR CONTROLLING THE MOVEMENT OF AN INDUSTRIAL MANIPULATOR

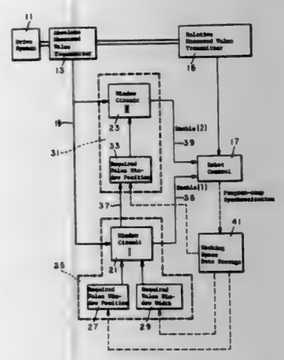
Karl-Heinz Friederichs, Kiel, and Joachim Schlapkohl, Klausdorf, both of Fed. Rep. of Germany, assignors to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

Filed Apr. 11, 1984, Ser. No. 599,177

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1983, 3312939

Int. Cl.⁴ G05B 23/02

U.S. Cl. 318—565 **11 Claims**



1. A movement control system for use with an industrial manipulator having drive means for movement in at least one degree of freedom comprising:

an absolute value transmitter means operably associated with said industrial manipulator, said absolute value transmitter generating a first output signal reflective of the movement in at least one degree of freedom;

a relative value transmitter means operably associated with said industrial manipulator, said relative value transmitter generating a second output signal reflective of several reference marks within said at least one degree of freedom;

a first window circuit defining a first predetermined positional range and a second window circuit defining a second predetermined positional range which second range lies within the first range, responsive to said first output signal, said window circuits transmitting releasing signals which permit actuation of the drive means when the position of the industrial manipulator is within said predetermined positional range.

4,567,416

DEVICE FOR CONTROLLING AN ELECTRIC MOTOR

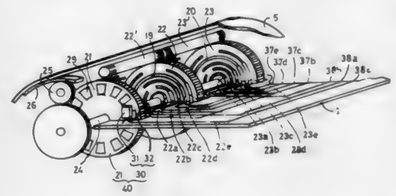
Charles Brunier-Coulin, Sallanches, France, assignor to Somfy, France

Filed Apr. 15, 1983, Ser. No. 485,230

Claims priority, application France, Apr. 23, 1982, 82 07020

Int. Cl.⁴ G05B 19/29

U.S. Cl. 318—602 **2 Claims**



1. A device for controlling an electric motor adapted for rotating a drive shaft of a movable member, the device comprising:

a hybrid encoder, including means for generating a pulse output signal in response to the rotation of the drive shaft, and a shaft position encoder;

the pulse signal generating means including a rotatable apertured disc operatively linked to the drive shaft to rotate therewith, the apertured disc including a plurality of apertures arranged circumferentially thereabout, the apertures being formed through the thickness of the disc, the apertured disc having opposite flat sides; and an optoelectronic emitter and receiver arranged on opposite flat sides of the apertured disc and in alignment with the apertures, the emitter being adapted to emit a light beam through the apertures and the receiver being adapted to receive the light beam, the apertured disc being interposed between the emitter and the receiver to periodically interrupt the light beam upon rotation of the apertured disc,

the shaft position encoder including at least two rotatable encoder discs arranged coaxially with the apertured disc, the apertured disc and each of the at least two encoder discs being mechanically linked to proportionally rotate at different speeds so that a complete revolution of the apertured disc will result in a partial revolution of one of the at least two encoder discs, and a complete revolution of said one of the at least two encoder discs will result in a partial revolution of the other of the at least two encoder discs;

each of the at least two encoder discs including at least one electrically conductive continuous emitting track mounted thereon and at least one electrically conductive discontinuous receiving track mounted thereon; and electrically conductive contacts positioned adjacent to and in contact with each of the emitting and receiving tracks of each encoder disc, the shaft encoder providing an output signal representative of the angular position of the drive shaft;

means for regulating a desired angular stopping position, the stopping position regulating means including switching means, the switching means providing an output signal;

means for controlling the rotation of the motor, the motor controlling means including switching means, the switching means of the motor controlling means providing an output signal;

a logic processing unit responsive to the output signals of the pulse signal generating means and the shaft encoder of the hybrid encoder and to the output signals of the switching means of the regulating means and the motor controlling means, the logic processing unit providing a control signal to the electric motor, the logic processing unit including a working memory for storing a desired angular stopping position, the logic processing unit being provided for analyzing the output signal of the pulse signal generating

means, for calculating the angular position of the drive shaft, for comparing the angular position of the drive shaft with the desired stopping position, and for interrupting the rotation of the motor when the angular position of the drive shaft is equal to the desired stopping position; and

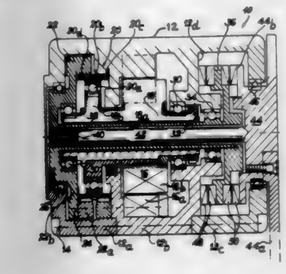
an erasable and non-volatile memory for protectively storing the desired angular stopping position in the event of a power failure, the non-volatile memory being connected to the logic processing unit.

4,567,417

ACTUATOR

Daniél Francois, and Gilles Mercey, both of Vendome, France, assignors to La Calhene, Societe Anonyme, Bezons, France

Filed Nov. 16, 1982, Ser. No. 442,160
Claims priority, application France, Nov. 24, 1981, 81 21968
Int. Cl.⁴ G05B *11/01*
U.S. Cl. 318—632 **9 Claims**



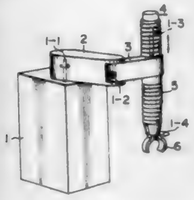
1. An actuator, comprising a box or case, an electric motor having a stator fixed within the said box or case, a speed reducing gear located in the box or case and having a leading part driven by the rotor of the electric motor, an actuating part outside the box or case and connected to a led part of the reducing gear by angularly flexible mechanical connection means, first means for detecting a first angular displacement between the actuating part and the led part, and second means for detecting a second angular displacement between the led part and the box or case.

4,567,418

OPERATION CONTROL APPARATUS FOR ROBOTS

Akinobu Takemoto; Kenzo Takeichi, both of Tochigi; Yuhiko Yabe, Kasukabe, and Yoshiaki Yoshikawa, Tochigi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 15, 1984, Ser. No. 640,884
Claims priority, application Japan, Aug. 29, 1983, 58-156242
Int. Cl.⁴ G05B *19/40*
U.S. Cl. 318—685 **5 Claims**



1. A robot operation control apparatus having control signal generating means and driver means for driving arms of a robot in a predetermined point-to-point movement in response to a control signal of said control signal generating means, wherein

each robot arm is provided with a stepping motor and said driver means, said arm being driven by said stepping motor, said stepping motor being excited by said driver means, said control signal generating means being associated with each said driver means,

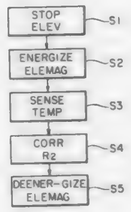
said control signal generating means being provided for controlling each said driver means so that said driver means excites said stepping motor in 1–2-phase excitation mode at a predetermined low-speed range and in 2-phase excitation mode at a predetermined intermediate and high speed ranges, wherein a change from the 1–2-phase excitation mode to the 2-phase excitation mode occurs when two phases of said stepping motor are excited at a same time.

4,567,419

CONTROL APPARATUS FOR ELEVATOR

Eiki Watanabe, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1984, Ser. No. 627,655
Claims priority, application Japan, Jul. 6, 1983, 58-122614
Int. Cl.⁴ H02P *5/40*; B66B *1/30*
U.S. Cl. 318—798 **15 Claims**



1. A control apparatus for an elevator wherein an induction motor having secondary windings included in a rotary member for driving a cage is controlled using a power conversion device operative to vary voltage and frequencies supplied to said motor, said control apparatus comprising temperature sensor means for sensing temperatures of said rotary member of said induction motor during stoppage of said rotary member to stop the cage, and a voltage/frequency control device operated in accordance with resistance variations of said secondary windings based on temperature changes of said rotary member sensed by said temperature sensor means to vector-control said power conversion device for enhancing the control of said elevator.

4,567,420

SEMI-CONDUCTOR MOTOR CONTROL SYSTEM

William H. Beck, Rancho Palos Verdes, Calif., assignor to Ross Hill Controls Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 496,688, May 20, 1983, abandoned. This application Apr. 9, 1984, Ser. No. 597,902
Int. Cl.⁴ H02P *5/40*
U.S. Cl. 318—803 **4 Claims**

1. An electrical circuit for varying the operation of a three phase electrical ac motor comprising,

an input circuit for providing a dc current output,

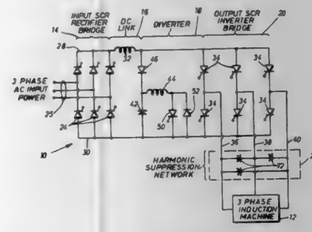
an output inverter bridge having six silicon controlled rectifiers for receiving dc current and converting the dc current to three phase ac power for operating a three phase electrical motor,

a diverter network means connected between the input circuit and the output inverter activated periodically for temporarily diverting the dc current output from the inverter in order that six silicon controlled rectifiers may be turned off,

said diverter network includes,

a tank circuit having a capacitor and inductor connected across the dc current output through a first diode,

an additional silicon controlled rectifier connected to said tank circuit for shunting off the dc current from the inverter and applying a reverse voltage to the inverter for turning off all of the silicon controlled rectifiers of the inverter, and



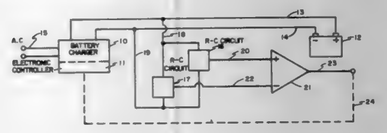
a second diode connected in parallel with the additional silicon controlled rectifier for providing a full cycle resonance of the tank circuit.

4,567,421

BATTERY DISCONNECT SENSING CIRCUIT FOR BATTERY CHARGING SYSTEMS

Donald P. Dattilo, 11621 Electron Dr., Louisville, Ky. 40299

Filed Oct. 6, 1983, Ser. No. 539,385
Int. Cl.⁴ H02J *7/00, 7/10*
U.S. Cl. 320—30 **10 Claims**



1. A battery disconnect sensing circuit for battery charging systems having a pair of cables adapted to be connected to a battery to charge it, said sensing circuit comprising a first R-C circuit adapted to connect across said cables, a second R-C circuit adapted to connect across said cables, the time constant of said first R-C circuit being substantially greater than that of said second RC circuit, and means connected to said RC circuits for producing a momentary control signal in response to disconnection of said cables from a battery being charged.

6. In a battery charging system including a source of charging current whose voltage output is controlled at a predetermined value when connected to a battery and increases to a higher value when disconnected from said battery, and controller means connected with said source to activate the battery charging system automatically in response to electrical connection thereof to said battery, the improvement which comprises:

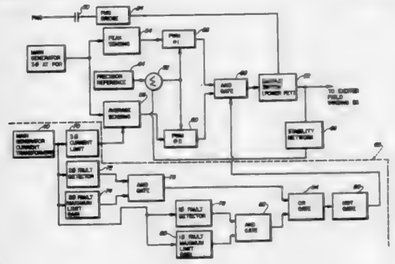
means for momentarily effecting reversal of the higher voltage value, and battery disconnect sensing means connected said charging source and to said controller means for sensing said reversed higher voltage upon disconnection of said battery charger system from said battery and for responding thereto by automatically deactivating said battery charging system.

4,567,422

VOLTAGE REGULATOR WITH MAXIMUM CURRENT LIMIT

Cecil Sims, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Continuation-in-part of Ser. No. 648,301, Sep. 7, 1984. This application Jul. 12, 1985, Ser. No. 754,426
Int. Cl.⁴ H02P *9/30*
U.S. Cl. 322—25 **13 Claims**



1. A voltage regulator for a generating system having a main generator and an exciter providing field current to the main generator, comprising:

means coupled to the main generator for sensing first, second and third operating parameters thereof;

means coupled to the sensing means for generating first, second and third pulse width modulated (PWM) signals based upon the first, second and third sensed operating parameters, respectively;

means coupled to the sensing means for developing a signal for modifying one of the first or second PWM signals based upon the third operating parameter thereof;

means coupled to the generating means for comparing first, second and third PWM signals and developing a fourth PWM signal responsive to the first, second or third PWM signal having the narrowest pulse width; and

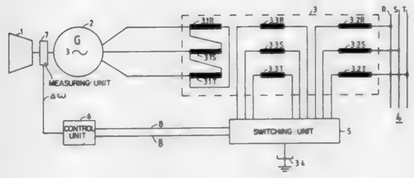
means responsive to the comparing means for controlling the exciter to in turn regulate the output of the main generator.

4,567,423

PHASE SHIFTING TRANSFORMER ARRANGEMENT FOR DAMPING SUBSYNCHRONOUS OSCILLATIONS

Josip Dobsa, Oberrohrdorf, and Adel Hammad, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 9, 1984, Ser. No. 598,503
Claims priority, application Switzerland, Apr. 8, 1983, 1907/83
Int. Cl.⁴ H02P *9/00*
U.S. Cl. 322—58 **8 Claims**



1. A switching arrangement for increasing stability and damping subsynchronous oscillations in a polyphase power system, comprising:

a control winding that can be selectively connected in series with each phase winding of the power system, the control

voltages induced in said windings being phase displaced with respect to the voltages of the windings in the power system;

a switching unit for selectively connecting the control windings to the phase windings of the power system;

a measuring device for generating a measurement signal representative of a physical parameter of subsynchronous oscillations; and

control means responsive to said measurement signal for controlling said switching unit such that, when said control windings are connected to said phase windings, the net voltage across said phase windings is alternately phase shifted in two opposite directions of displacement in accordance with the polarity of said measurement signal.

4,567,424

REACTIVE POWER COMPENSATOR WITH CAPACITOR AND CAPACITOR DISCHARGE CIRCUIT

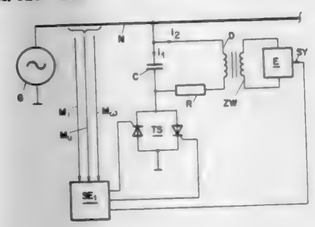
Josip Dobsa, Oberrohrdorf; Peter Mauchle, Wettingen; Walter Pfyl, Ennetbaden, all of Switzerland, and Kadry Sadek, Lauchringen, Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 2, 1984, Ser. No. 576,275

Claims priority, application European Pat. Off., Feb. 8, 1983, 83200196.0; Jan. 9, 1984, 84100127.4

Int. Cl.⁴ H02J *3/18*

U.S. Cl. 323—210 **30 Claims**



1. A reactive power compensator comprising:

at least one thyristor switch;

a capacitor connected in series with said thyristor switch;

a capacitor discharge circuit having at least one inductive reactive impedance continuously connected in parallel with said capacitor, said inductive reactive impedance having a variable inductance such that its value is greater when the thyristor switch is closed and is smaller when the thyristor switch is open; and

a control unit for the thyristor switch for generating triggering pulses for the thyristor switch from current and voltage measurement signals of an alternating-voltage network to be compensated.

4,567,425

METHOD OF AND APPARATUS FOR HALF-CYCLE-AVERAGE OR R.M.S. LOAD VOLTAGE CONTROL

Milton D. Bloomer, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,494

Int. Cl.⁴ G05F *1/44*

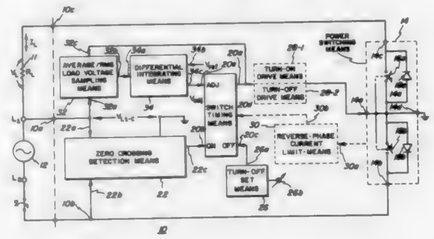
U.S. Cl. 323—237 **24 Claims**

1. A method for controlling a selected one of the half-cycle-average and RMS magnitude of an A.C. voltage applied across a load from a higher-magnitude A.C. source, comprising the steps of:

(a) providing switching means connected in series between the source and the load for selectively completing the circuit therebetween;

(b) enabling the switching means to allow a flow of current through the load for at least one time interval during each source A.C. waveform cycle;

(c) sampling the magnitude of the voltage across the load once during only one half-cycle of each source waveform cycle to provide an adjustment signal; and



(d) adjusting, responsive to the adjustment signal, the time interval during which the switching means allows the flow of load current to vary the selected one of the half-cycle-average and RMS load voltage magnitude to a value substantially equal to a desired value.

4,567,426

CURRENT STABILIZER WITH STARTING CIRCUIT

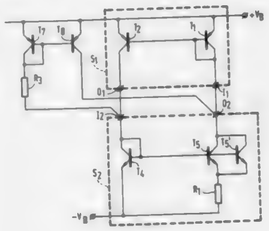
Rudy J. van de Plassche, Sunnyvale, Calif., and Peter J. M. Sijbers, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,062

Claims priority, application Netherlands, Apr. 5, 1983, 8301186

Int. Cl.⁴ G05F *3/16*

U.S. Cl. 323—315 **4 Claims**



1. A current stabilizing arrangement comprising a first and a second current path between a first and a second common terminal, a first current-dividing circuit comprising transistors of a first conductivity type and having an input circuit with a low input impedance and an output circuit with a high output impedance, and a second current-dividing circuit comprising transistors of a second conductivity type and also having an input circuit with a low input impedance and an output circuit with a high output impedance, the first current-dividing circuit defining the ratio between currents flowing in the two current paths and the second current-dividing circuit defining the absolute values of the currents flowing in the two current paths and having a semiconductor junction connected in parallel with a series arrangement of a semiconductor junction and a first resistor, which current-stabilizing arrangement also comprises means for starting the current-stabilizing arrangement, characterized in that the means comprises a first current-supply circuit which supplies a current to the input circuit of the second current-dividing circuit and a second current-supply circuit which supplies a current to the output circuit of the second current-dividing circuit, the currents supplied by the first and the second current-supply circuit having a ratio which is equal to the ratio between the currents in the two current paths as defined by the first current-dividing circuit.

4,567,427

METHOD NON-DESTRUCTIVELY IDENTIFYING DIFFERENT KINDS OF ROLLED STEEL FOR STRUCTURAL PURPOSES

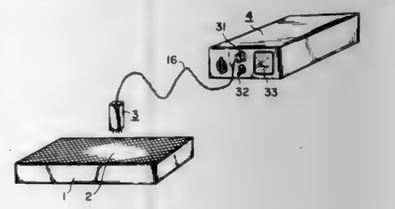
Takeo Hattori, Yokohama, and Tohru Sasakura, Tokyo, both of Japan, assignors to Samtec Company Limited, Tokyo, Japan

Filed Dec. 30, 1983, Ser. No. 567,321

Claims priority, application Japan, Apr. 25, 1983, 58-71541

Int. Cl.⁴ G01R *27/14*

U.S. Cl. 324—64 **6 Claims**



1. A method of non-destructively identifying different kinds of rolled steel for structural purposes comprising the steps of:

removing the coating film and/or oxide film of part of the surface of structural rolled steel under test to provide an exposed measuring surface;

holding the tips of four resistivity measuring terminal probes in forced contact with said measuring surface in along a straight line and at a uniform interval;

passing a current at a low frequency between the opposite end terminal probes in the row;

detecting the potential difference between the other two terminal probes than the opposite end terminal probes;

determining a resistivity corresponding to said detected potential difference;

determining a silicon content of the steel under test according to said determined resistivity;

and identifying the kind of the steel under test from said determined silicon content.

4,567,428

DETECTION OF CATASTROPHIC FAILURE OF DIELECTRIC, IMPROPER CONNECTION, AND TEMPERATURE OF A PRINTED CIRCUIT ASSEMBLY VIA ONE WIRE

Terry B. Zbinden, Maple Grove, Minn., assignor to Sperry Corporation, New York, N.Y.

Division of Ser. No. 395,511, Jul. 6, 1982, Pat. No. 4,504,782. This application Nov. 26, 1984, Ser. No. 675,050

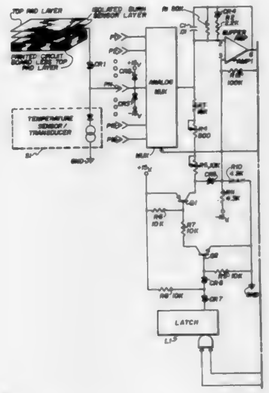
Int. Cl.⁴ H05K *1/00;* **G01R** *15/12*

U.S. Cl. 324—73 PC **5 Claims**

1. A multilayer printed circuit board comprising:

a plurality of electrically conductive layers, and

a plurality of electrically insulating layers, wherein one of said plurality of electrically conductive layers is an electrically isolated conductive layer normally of high resistance to all other voltages, signals, and grounds as exist upon other ones of said plurality of electrically conductive layers of said multilayer printed circuit board, but which said one electrically isolated conductive layer assumes a lower resistance to one or ones of said other voltages, signals and grounds if the electrically insulating dielectric of said multilayer printed circuit board is subject to carbonization by burning;



wherein said one electrically isolated conductive layer is suitable as a sensor to detect the failure of the electrically insulating dielectric of said printed circuit board.

4,567,429

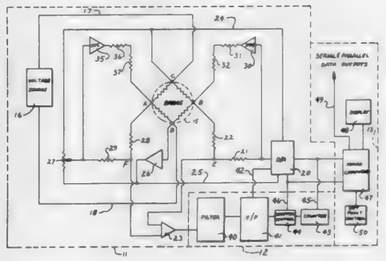
DIGITAL SERVO INDICATOR

Robert A. Livsey, Richmond Hts., Ohio, assignor to Quest Corporation, Macedonia, Ohio

Filed Feb. 2, 1982, Ser. No. 344,940

Int. Cl.⁴ G01R *17/06*

U.S. Cl. 324—99 D **8 Claims**



1. A digital servo indicator for producing an indication representing the measurement of an unknown voltage, comprising:

digital-to-analog conversion means including means for producing a variable known voltage from a constant reference voltage using a cascading series of circuits, each circuit having

a precision resistance element, and

a pair of solid-state, low-resistance switching elements for selectively connecting the constant reference voltage to the output through the resistance element to produce a desired known voltage;

means connecting the known voltage in opposition to the unknown voltage to produce an error signal from the difference therebetween;

voltage-to-frequency conversion means for producing a series of pulses from the error signal, the series of pulses having a repetition rate which maintains a constant proportionality to the magnitude of the error signal;

a bidirectional counter which counts the pulses and provides

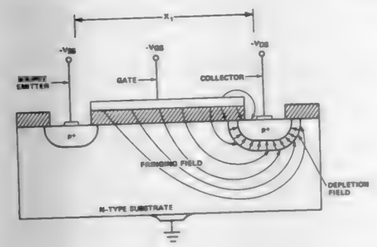
a binary signal for continuously controlling the digital-to-analog conversion means;
means responsive to the polarity of the error signal for enabling the counter to be incremented by the pulses for one polarity and decremented by the pulses for the opposite polarity; and
a microcomputer means connected to the digital-to-analog conversion means for receiving the binary signal from the counter and for converting the binary signal to data representing the measurement of the unknown voltage.

4,567,430

SEMICONDUCTOR DEVICE FOR AUTOMATION OF INTEGRATED PHOTOARRAY CHARACTERIZATION

William N. Carr, Dallas, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

Continuation of Ser. No. 299,759, Sep. 8, 1981, abandoned, which is a continuation of Ser. No. 68,828, Aug. 22, 1979, abandoned. This application Feb. 26, 1985, Ser. No. 705,843
Int. Cl.⁴ G01R *31/26*
U.S. Cl. 324—158 D **3 Claims**



1. A method of determining the output current of a photodiode array fabricated on a semiconductor wafer comprising the steps of:
forming on the semiconductor wafer a field effect transistor having source, gate, and drain electrodes;
forming an opaque shield over the field effect transistor to prevent ambient light from affecting the drain current of the field effect transistor;
injecting a source current at the source electrode of the field effect transistor and measuring a drain current at the drain electrode of the field effect transistor; and
determining a nominal output current for the photodiode array by correlating the measured drain current of the field effect transistor with the nominal photodiode output current.

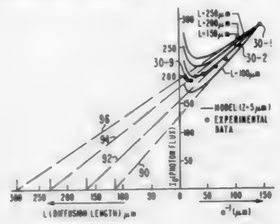
4,567,431

METHOD FOR REVEALING SEMICONDUCTOR SURFACE DAMAGE USING SURFACE PHOTOVOLTAGE (SPV) MEASUREMENTS

Alvin M. Goodman, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 31, 1983, Ser. No. 547,326
Int. Cl.⁴ G01R *31/26*
U.S. Cl. 324—158 R **10 Claims**

1. A method for revealing the presence of damage in the bulk surface region of a body of semiconductor crystalline material comprising the steps of:
(a) preparing a layer of the surface region to develop a stable inversion layer at the body surface;
(b) measuring the photon flux (I_o) as a function of the optical wavelength (λ) at a constant surface photovoltage to provide a plurality of data points forming a plot of photon flux (I_o) versus reciprocal optical absorption coefficient (α^{-1}); and



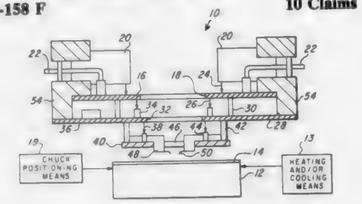
(c) determining the existence of curvature from said plot of said data points as an indicator of crystallographic damage in the material of said bulk surface region.

4,567,432

APPARATUS FOR TESTING INTEGRATED CIRCUITS

Douglas A. Buol, Dallas; Dean N. Mize; John W. Pattschull, both of Garland, and Robert M. Wallace, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 9, 1983, Ser. No. 490,001
Int. Cl.⁴ G01R *1/06, 31/26*
U.S. Cl. 324—158 F **10 Claims**



1. Apparatus for testing integrated circuits on a semiconductor wafer, comprising:
a first planar support having upper and lower surfaces with a centrally located first opening therethrough at least as large as an integrated circuit to be tested for visual observation of the integrated circuits on the wafer and including a plurality of first connectors affixed to the upper and lower surfaces thereof peripherally about said first opening;
a second planar support having an upper surface spaced from the lower surface of said first support and having a centrally located second opening therethrough concentric with said first opening at least as large as an integrated circuit to be tested for visual observation of the integrated circuits on the wafer, said second planar support including a plurality of second connectors affixed to the upper surface thereof and located peripherally about said second opening, said second connectors being detachably coupled to said first connectors and thermally and mechanically isolated from said first support;
a plurality of probe supports affixed to the upper surface of said second support at the periphery of said second opening and extending radially inwardly therefrom;
a plurality of probes each affixed to a respective one of said plurality of probe supports and each having one end connected to a respective one of said plurality of second connectors, and the other end extending through said second opening below the lower surface of said second support to form a predetermined probe configuration;
means for positioning each integrated circuit of the semiconductor wafer so that predetermined locations of said integrated circuits are successively brought into contact with said plurality of probes;

a third planar support spaced apart from the upper surface of said first support and having a centrally located third opening therethrough concentric with said first and second openings, at least as large as an integrated circuit to be tested for visual observation of the integrated circuits, including a plurality of third connectors affixed to upper and lower surfaces thereof peripherally about said third opening, said lower surface third connectors being connected to said upper surface second connectors and being thermally and mechanically isolated from said first and second supports; and
means associated with said first, second, and third planar support means and said integrated circuit positioning means for thermally isolating said integrated circuits to enable said integrated circuits to be heated to about 100° C. and cooled to about 0° C. without affecting the temperature of said first, second and third planar support means.

4,567,433

COMPLEX PROBE CARD FOR TESTING A SEMICONDUCTOR WAFER

Masao Ohkubo, and Yasuro Yoshimitsu, both of Tokyo, Japan, assignors to Nihon Denshi Zairo Kabushiki Kaisha, Hyogo, Japan

Division of Ser. No. 266,054, May 21, 1981, Pat. No. 4,523,144. This application May 23, 1984, Ser. No. 613,346
Claims priority, application Japan, May 27, 1980, 55-73548[U]; Jul. 3, 1980, 55-91356
Int. Cl.⁴ G01R *1/06, 31/02*
U.S. Cl. 324—158 P **1 Claim**



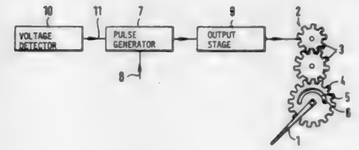
1. A probe card for testing semiconductor wafers, comprising:
at least upper and lower printed circuit plates arranged in a stack, said printed circuit plates having inner central portions with apertures at their respective centers and also having outer peripheries with a plurality of bores therethrough,
said apertures being increasingly larger from the upper to the lower printed circuit plates so as to allow each central portion of said printed circuit plates to be exposed through said apertures,
probe needles arranged in radial arrays around said apertures, each of said radial arrays having multiple layers of probe needles,
said probe needles having tapered terminal tips aligned on a plane in parallel with but spaced from said printed circuit plates and also having opposite uniformly thick terminal ends,
each of a plurality of terminal rods passing through one of the plurality of bores in the outer peripheries of the printed circuit plates, and
a plurality of conductors spaced apart from each other and connecting each one of the terminal ends of the probe needles to a different one of the plurality of terminal rods, said plurality of conductors being aligned on parallel planes alternating with said printed circuit plates,
thereby enabling each of said terminal tips of said probe needles to be externally viewed from above through each of said apertures in the central portions of the printed circuit plates.

4,567,434

ANALOG DISPLAY DEVICE, PARTICULARLY A TACHOMETER

Christian Lindig, Kelkheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 424,671, Sep. 27, 1982, Pat. No. 4,475,082. This application Aug. 1, 1984, Ser. No. 636,531
Int. Cl.⁴ G01P *3/42;* **G05B** *19/40*
U.S. Cl. 324—160 **7 Claims**



7. In an analog display device, particularly a tachometer, having a pointer driven by a stepping motor and being resettable against a mechanical stop, a drive circuit for the stepping motor comprising:
a generator of electric pulses for energizing the motor to rotate through an increment of rotation for each of said pulses until said stop is reached, the torque of said motor varying inversely with a repetition frequency of said pulses in a sequence of the pulses,
means coupled to said generator for varying said repetition frequency from a relatively low value to a relatively high value so as to reduce the torque of said motor upon a reaching of said stop during a driving of said pointer towards said stop, and
means responsive to voltage from an ignition lock of a vehicle employing the display device for activating said generator.

4,567,435

METHOD AND APPARATUS FOR CONTINUOUSLY MEASURING DISTANCE UTILIZING EDDY CURRENT AND HAVING TEMPERATURE DIFFERENCE INFLUENCE ELIMINATION

Takeo Yamada, Yokohama; Tomohisa Yamamoto, Kawasaki; Seigo Ando, Yokohama, and Yoshihiro Kawase, Kawasaki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1984, Ser. No. 583,021
Claims priority, application Japan, Mar. 9, 1983, 58-37259
Int. Cl.⁴ G01B *7/14;* **G01F** *23/00;* **G01R** *33/12*
U.S. Cl. 324—207 **2 Claims**

2. In an apparatus for continuously measuring a distance utilizing an eddy current, which comprises:
a probe comprising a bobbin, a primary coil provided coaxially with said bobbin at the center thereof, and a pair of secondary coils each provided at each of the end portions of said bobbin coaxially therewith on the both sides of said primary coil at equal distances therefrom, said probe being arranged substantially vertically to a high-temperature electro-conductive object of measurement at a distance therefrom; a positive feedback amplifier for exciting said primary coil by means of an output voltage (e_{out}) of said positive feedback amplifier, an AC voltage (e_1) and an AC voltage (e_2) being induced respectively in said pair of secondary coils by means of an AC magnetic field of said excited primary coil, an eddy current being generated in said object of measurement by means of said AC magnetic field of said primary coil, and another AC magnetic field in the direction opposite to that of said AC magnetic field of said primary coil being generated by means of said eddy current to produce a value of difference (e_3), caused by

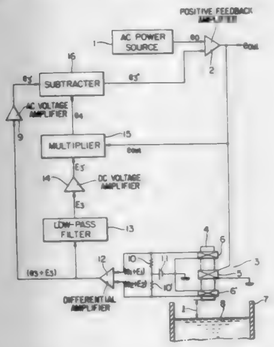
said another AC magnetic field generated by means of said eddy current, between said AC voltage (e_1) and said AC voltage (e_2) of said pair of secondary coils, said detected value of difference (e_3) varying in response to variation in the distance (1) between the tip of said probe and said object of measurement; and an AC power source for impressing an AC voltage having a prescribed frequency and a prescribed amplitude onto said positive feedback amplifier;

the improvement comprising:

a DC power source (11) for impressing an equal DC voltage through a DC resistance (10, 10') having an equal resistance value onto each of said pair of secondary coils (6, 6'), a DC voltage (E_1) and a DC voltage (E_2) being generated respectively in said pair of secondary coils (6, 6') by means of said DC voltage of said DC power source (11);

a differential amplifier (12) for continuously calculating a value of difference (e_3+E_3) between a composite voltage (e_1+E_1) of said AC voltage (e_1) and said DC voltage (E_1) of one (6) of said pair of secondary coils (6, 6'), on the one hand, and a composite voltage (e_2+E_2) of said AC voltage (e_2) and said DC voltage (E_2) of the other one (6') of said pair of secondary coils (6, 6'), on the other hand;

a low-pass filter (13) for passing only a value of difference (E_3) between said DC voltage (E_1) and said DC voltage (E_2), out of said value of difference (e_3+E_3) between said composite voltage (e_1+E_1) and said composite voltage (e_2+E_2);



a DC voltage amplifier (14) for amplifying said value of difference (E_3) between said DC voltage (E_1) and said DC voltage (E_2), which has passed through said low-pass filter (13);

another means (15) for continuously calculating an error voltage (e_4) corresponding to the difference in temperature between said pair of secondary coils (6, 6'), on the basis of the thus amplified value of difference (E_3') of said value of difference (E_3) between said DC voltage (E_1) and said DC voltage (E_2), and said output voltage (e_{out}) of said positive feedback amplifier (2);

a further another means (9) for passing only said value of difference (e_3) between said AC voltage (e_1) and said AC voltage (e_2) of said pair of secondary coils (6, 6'), out of said value of difference (e_3+E_3) calculated by said differential amplifier (12); and

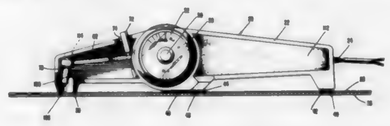
a subtracter (16) for continuously calculating a value of difference ($e_{3''}$) between said calculated error voltage (e_4) corresponding to said difference in temperature between said pair of secondary coils (6, 6'), on the one hand, and said value of difference (e_3), which has passed through said another means (9), between said AC voltage (e_1) and said AC voltage (e_2) of said pair of secondary coils (6, 6'), on the other hand, said value of difference ($e_{3''}$) calculated by said subtracter (16) being fed back to said positive feedback amplifier (2), to continuously determine said output voltage (e_{out}) of said positive feedback amplifier (2), from which the influence of said difference in temperature between said pair of secondary coils (6, 6') has been eliminated, whereby the distance (l) between the tip of said probe (3) and said object of measurement (8) is continuously and accurately measured by using said determined output voltage (e_{out}) of said positive feedback amplifier (2).

4,567,436

MAGNETIC THICKNESS GAUGE WITH ADJUSTABLE PROBE

Frank Koch, Ogdensburg, N.Y., assignor to Linda Koch, Ottawa, Canada

Filed Jan. 21, 1982, Ser. No. 341,337
Int. Cl.[4] G01B 7/10; G01R 33/12
U.S. Cl. 324—230 17 Claims



1. A gauge for magnetically measuring the thickness of a coating, comprising:

a housing;

a balance arm mounted to said housing about a pivot;

means for selectively urging one end of said balance arm into contact with said coating to be measured;

resilient means for providing a biasing force to urge said balance arm away from said coating to be measured;

probe means on said balance arm for providing a magnetically attracting force urging said one end of said balance arm toward said coating to be measured, said probe means comprising a contact member for contacting said coating, a magnet and an adjustable mount for selectively moving said magnet toward and away from said contact member, whereby said magnetically attracting force can be calibrated;

means for selectively varying the biasing force provided by said resilient means; and

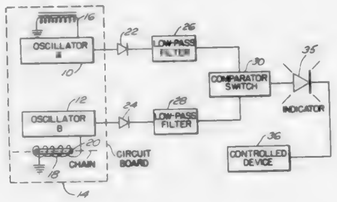
means for indicating the thickness of said coating to be measured.

4,567,437

DUAL OSCILLATOR METHOD FOR DETECTING FLAWS IN A MOVING CHAIN

Lincoln W. Hubbard, 52 Parkview Ave., Warwick, R.I. 02805

Filed Jun. 10, 1983, Ser. No. 502,938
Int. Cl.[4] G01N 27/82; G01R 35/00
U.S. Cl. 324—237 1 Claim



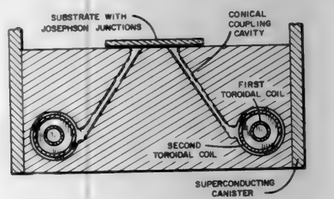
1. A method of detecting a flaw in a moving chain comprising the steps of providing two oscillators with ringing circuits having capacitive and inductive components; placing a brass core in the inductive component of the first oscillator; placing a perfect chain in the other inductive component; adjusting the oscillatory amplitude of the first oscillator to be slightly greater than the other oscillator; noting the position of the brass core; replacing the perfect chain with a faulty chain and readjusting the brass core to the same output as before; noting the new position of the brass core and adjusting the core to a position between the noted positions to establish a threshold signal for a faulty chain; removing the faulty chain; providing a comparator and feeding the output of the two oscillators to the comparator; passing a moving chain through the said other inductive component to check for flaws whereby a faulty chain will cause a different output of the two oscillators and an output of the comparator as an indicator of the presence of a faulty chain.

4,567,438

SQUID CANISTER WITH CONICAL COUPLING CAVITY

Meir Gershenson; Mark F. Sweeny, both of St. Paul; Dennis D. Long, Pine City, and David L. Fleming, Edine, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Apr. 4, 1983, Ser. No. 482,093
Int. Cl.[4] G01R 33/02; H03K 3/38
U.S. Cl. 324—248 5 Claims



1. A substantially solid superconducting canister holding within a first cavity a first circular electrical item of small circumference, and holding within a second cavity a circular second electrical item of circumference large relative to said small circumference of said first circular electrical item, and providing via a dielectric-filled coupling cavity between said first cavity and said second cavity an electromagnetically inductive intercommunication between said first circular electrical item and said second circular electrical item characterized in that:

said dielectric-filled coupling cavity is substantially of conical shape, meaning being of the three dimensional shape of a dunce's cap, wherein the vertex of said cavity of conical shape, or the circular cross section of said cavity of conical shape as truncated near said vertex, substantially subtends said first electrical item of small circumference, and wherein the circular base of said cavity of conical shape substantially subtends said second electrical item of circumference large relative to said small circumference of said first circular electrical item;

whereby the areas of said coupling cavity at any distance to either of said circular electrical items are minimized by said conical shape.

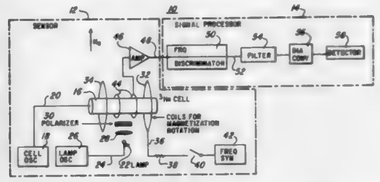
4,567,439

APPARATUS FOR MEASURING THE MAGNITUDE OF A MAGNETIC FIELD

Douglas D. McGregor, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 23, 1983, Ser. No. 535,200
Int. Cl.[4] G01R 33/08
U.S. Cl. 324—304 7 Claims

1. Apparatus for rotating nuclear magnetization comprising a cell means containing a longitudinal nuclear magnetized substance, and a moment rotation producing means operatively connected to the cell, said moment rotation producing means including a switch for turning on and off the moment rotation producing means for establishing in the cell during the on time an oscillatory magnetic field in the substance substantially normal to the direction of the ambient field and for free precession during the off time.

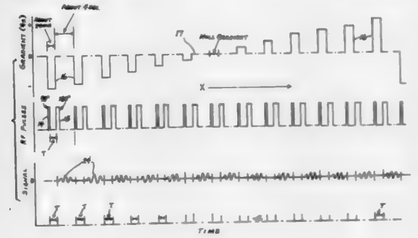


4,567,440

VIVO P-31 NMR IMAGING OF PHOSPHORUS METABOLITES

John C. Haselgrove, Johnson Research Foundation, School of Medicine, University of Pennsylvania, Philadelphia, Pa. 19104

Filed Jun. 9, 1983, Ser. No. 502,513
Int. Cl.[4] G01R 33/22; G01N 24/06
U.S. Cl. 324—309 12 Claims



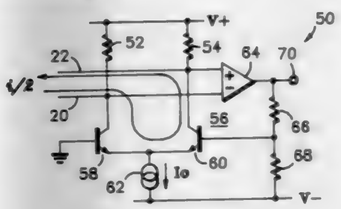
8. In an apparatus for obtaining spatial metabolite spectral information from a living body specimen, an NMR spectrometer including a hollow longitudinally extended main field magnet with a substantially uniform mangetic field therein and having a longitudinal axis, means to support a living body specimen in said magnet, and RF probe means mounted in said magnet in a position to be electromagnetically coupled to a specimen on said support means, said probe means being provided with means to sequentially apply RF resonance excitation pulses to such specimen and means to collect RF echo signals due to the refocussing of spins of atoms in the specimen generated responsive to the RF excitation pulses, and means to apply a timed series of discrete different-amplitude magnetic field gradient pulses to the interior of the main magnet adjacent said support means concurrently with the RF excitation pulses and being oriented so as to phase-encode nuclei of interest in the specimen at different points along a line adjacent to said probe means perpendicular to said longitudinal axis respectively in accordance with the amplitudes of said gradient pulses, wherein said series of gradient pulses are substantially linearly equally incremented in amplitude and includes one zero-amplitude stage relative to the uniform magnetic field strength of the NMR main magnet, and wherein the zero-amplitude stage occurs at the intermediate portion of the series of gradient pulses.

4,567,441

CIRCUIT AND METHOD FOR LINEARIZING THE OUTPUT SIGNAL OF AN FM DETECTOR

William E. Main, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1984, Ser. No. 595,871
Int. Cl.⁴ H03D *3/06*
U.S. Cl. 329—103 **9 Claims**



1. Load circuit for linearizing the output signal produced at the differential outputs of a quadrature detector comprising load means coupled to the differential outputs of the quadrature detector, said load means having a non-linear transfer characteristic for producing a voltage at an output thereof that is a more linear version of the output signal appearing at the differential outputs of the quadrature detector, said load means including differential amplifier means having first and second inputs and outputs, said first and second outputs being coupled to the differential outputs of the quadrature detector respectively, said first input being coupled to a terminal at which is supplied a reference potential; and

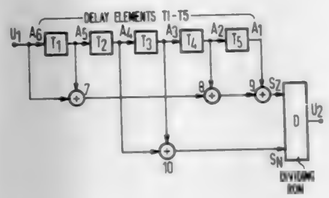
feedback circuit means coupled between said first and second outputs of said differential amplifier means and said second input thereof for providing an amplified output signal at an output of said feedback circuit means which is said more linear version of the output signal produced at the differential outputs of the quadrature detector.

4,567,442

METHOD AND APPARATUS FOR DEMODULATING TIME-DISCRETE FREQUENCY-MODULATED SIGNALS

Wolfgang Haussmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 15, 1982, Ser. No. 441,856
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145919
Int. Cl.⁴ H03D *1/00*
U.S. Cl. 329—145 **4 Claims**



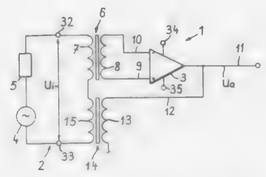
1. Method for demodulating a frequency-modulated signal, wherein said frequency-modulated signal is sampled at equidistant discrete times and several first and second sampled values are added to form first and second vector sums respectively, whereby the selection of the first and second sample values is made under the condition that in a mathematical vector representation of these sample values the difference in phase between the first and second vector sum is n times pi wherein n is any integer, and wherein, for obtaining an output signal which is proportional to the instantaneous frequency of the signal in the region of zero crossings the first vector sum is divided by the second vector sum.

4,567,443

LOW-DISTORTION AUDIO AMPLIFIER CIRCUIT ARRANGEMENT

Paul Zwicky, Dielsdorf, Switzerland, assignor to Willi Studer AG, Regensdorf, Switzerland

Filed Mar. 4, 1985, Ser. No. 708,171
Claims priority, application Switzerland, Mar. 21, 1984, 1415/84
Int. Cl.⁴ H03F *1/26*
U.S. Cl. 330—149 **12 Claims**



1. A low-distortion audio amplifier circuit arrangement comprising:

an amplifier;

a source circuit;

said source circuit containing a current-voltage source;

a transformer operatively interconnecting said amplifier and said source circuit:

a negative feedback circuit operatively associated with said amplifier and coupled back to said source circuit;

a further transformer connected in series with said current-voltage source; and

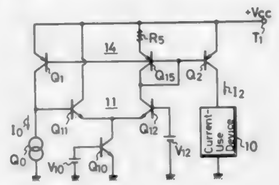
said further transformer coupling said negative feedback circuit to said current-voltage source of said source circuit.

4,567,444

CURRENT MIRROR CIRCUIT WITH CONTROL MEANS FOR ESTABLISHING AN INPUT-OUTPUT CURRENT RATIO

Taiwa Okanobu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 22, 1984, Ser. No. 612,893
Claims priority, application Japan, May 26, 1983, 58-92698
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—257 **3 Claims**



1. A current mirror circuit for use with a reference potential and source of constant current, comprising:

first transistor means having an emitter connected to said reference potential and a collector connected to said source of constant current;

second transistor means of a polarity the same as said first transistor means and having an emitter connected to said reference potential and a base connected to a base of said first transistor;

differential amplifier means including third and fourth transistor means of polarity opposite that of said first and second transistor means, a base of said third transistor being connected to the collector of said first transistor;

bias voltage source means providing a bias voltage to a base of said fourth transistor and a collector of said fourth transistor being connected to the common base connection of said first and second transistors, whereby output current flowing in the collector of said second transistor has a predetermined ratio with the current flowing in said collector of said first transistor to which is connected said constant current source; and

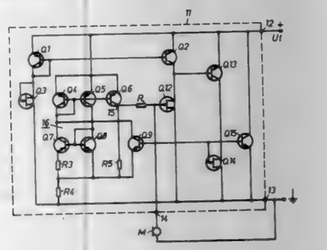
fifth transistor means, a base of said fifth transistor means being connected to the common base connection of said first and second transistor means and a collector of said fifth transistor means being connected to the collector of said fourth transistor means.

4,567,445

HIGH INPUT IMPEDANCE LOW OUTPUT IMPEDANCE AMPLIFIER

Bengt O. Berg, Solna, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE83/00355, § 371 Date May 18, 1984, § 102(e) Date May 18, 1984, PCT Pub. No. WO84/01678, PCT Pub. Date Apr. 26, 1984
PCT Filed Oct. 19, 1983, Ser. No. 616,212
Claims priority, application Sweden, Oct. 20, 1982, 83/00355; Oct. 20, 1982, 8205967
Int. Cl.⁴ H03F *3/16*
U.S. Cl. 330—300 **2 Claims**



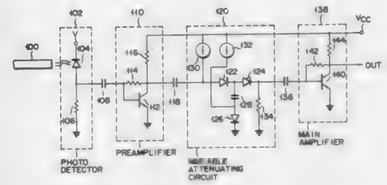
1. An amplifier circuit powered by a low supply voltage source including an amplifier with a field-first effect transistor, a bipolar transistor and means for interconnecting the first field-effect transistor and the bipolar transistor to the low supply voltage source in such a manner that the base-emitter circuit of the bipolar transistor and the source-drain circuit of the first field-effect transistor are connected in series across the low supply voltage source, the improvement comprising that the first field-effect transistor is included in the first branch of a current mirror circuit also having an identical second branch which is a current generator branch including a second field-effect transistor identical to said first field-effect transistor, the gate of said second field-effect transistor being directly to the source of said second field-effect transistor, whereby the drain of said first field-effect transistor always follows the gate of said second field-effect transistor, and that the gate of the first field-effect transistor is connected to a biasing means having a temperature coefficient with the same absolute value but opposite in sign as the temperature coefficient of the base-emitter voltage of the bipolar transistor.

4,567,446

LIGHT-RECEIVING DEVICE FOR OPTICAL DATA TRANSFER SYSTEM

Kuniyoshi Konishi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 26, 1983, Ser. No. 535,629
Claims priority, application Japan, Sep. 29, 1982, 57-170354
Int. Cl.⁴ H03F *17/00*
U.S. Cl. 330—308 **4 Claims**



1. A light-receiving device which comprises:

photo-detecting means which converts a received light signal to a current signal;

a preamplifier for amplifying a current signal produced from said photo-detecting means;

varible attenuating means, which includes a variable resistance means, for attenuating a current signal produced from said preamplifier in accordance with the resistance of said variable resistance means and for sending forth a current signal thus attenuated; and

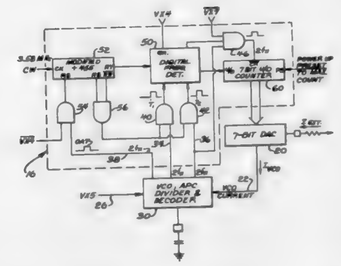
a main amplifier for amplifying said current signal produced from said variable attenuating means and issuing a signal thus amplified in the form of a voltage signal.

4,567,447

AUTO TUNING FOR AN OSCILLATOR

Gopal K. Srivastava, Buffalo Grove, and Ronald B. Lee, Skokie, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 3, 1983, Ser. No. 500,654
Int. Cl.⁴ H03L *7/00*
U.S. Cl. 331—1 A **27 Claims**



1. An automatic tuning circuit for adjusting the free-running frequency of a controllable oscillator in a receiver comprising:

reference means for generating a stable reference signal;

means for free-running said controllable oscillator;

means coupled to said controllable oscillator for providing, based on the output of said oscillator, a derived signal comprising two timing signals representing the output of said oscillator at different phases and including test logic circuits for gating said two timing circuits to provide test times T1 and T2;

a detector circuit coupled to receive said reference signal and responsive to said test times T1 and T2 for determining if said oscillator is operating in a given frequency

range by detecting the presence of a desired relationship between the test times and the reference signal and providing an error signal indicative of said presence; and

adjustment means responsive to said error signal and controllingly coupled to the oscillator for adjusting its frequency based on said error signal.

4,567,448

VARIABLE FREQUENCY OSCILLATOR

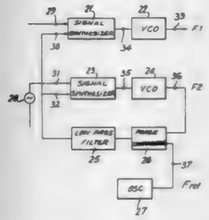
Masayuki Ikeda, Shiojiri, Japan, assignor to Epson Corporation, Suwa and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Aug. 4, 1983, Ser. No. 520,270

Claims priority, application Japan, Aug. 5, 1982, 57-136683; Aug. 5, 1982, 57-136684

Int. Cl.⁴ H03L *7/00*

U.S. Cl. 331—25 **12 Claims**



1. A voltage-controlled oscillator circuit comprising:

first signal synthesizing means having first and second terminals receiving respective signals, said first synthesizing means combining said signals into one signal and delivering said combined signal;

second signal synthesizing means having the same characteristics as said first synthesizing means and having a first input terminal receiving a reference level signal and a second terminal;

a first oscillator circuit whose frequency of oscillation is controlled by said combined signal from said first synthesizing means;

a second oscillator circuit having the same characteristics as said oscillator circuit and controlled by a signal from said second synthesizing means; and

means for generating a reference frequency signal,

an output from said second oscillator circuit being compared in phase with said reference frequency signal by phase comparison means, the resultant signal being applied to said second terminal of said second synthesizing means to control the output frequency of said second oscillator circuit, said resultant signal also being applied to said second terminal of said first synthesizing means,

said first input terminal of said first synthesizing means acting as the control terminal of said voltage-controlled oscillator circuit, the output of said first oscillator circuit acting as the output of said voltage-controlled oscillator circuit.

4,567,449

LOW NOISE OSCILLATOR OPERATING IN THE ULTRA-HIGH FREQUENCY RANGE

Alain Bert, and Marc Camiade, both of Paris, France, assignors to Thomson-CSF, Paris, France

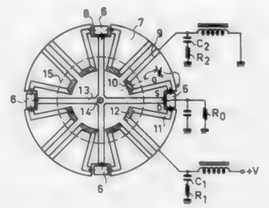
Filed Jun. 29, 1983, Ser. No. 508,914

Claims priority, application France, Jul. 2, 1982, 82 11659

Int. Cl.⁴ H03B *7/12*

U.S. Cl. 331—56 **11 Claims**

1. A low noise oscillator, operating in the ultra-high frequency range, comprising a plurality of transistors stabilized by a dielectric resonator coupled to a tuned microstrip line, wherein the plurality of transistors is grouped on the periphery of an insulating substrate plate, which supports said dielectric resonator, centered on the insulating substrate and of smaller size than the latter, and wherein each transistor is connected to at least one microstrip line supported by the substrate, said line



having a broken U-configuration, such that the two end portions of the microstrip line are parallel to the field lines of the resonator and the central portion, covered by the resonator and perpendicular to its field lines, is coupled to said resonator.

4,567,450

FIN-LINE OSCILLATOR

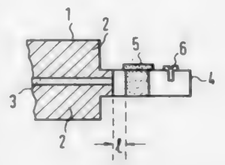
Laszlo Szabo, Korntal, and Klaus Schünemann, Braunschweig, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 16, 1983, Ser. No. 523,530

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1982, 3230831

Int. Cl.⁴ H03B *7/00*; **H01P** *1/00*

U.S. Cl. 331—107 DP **4 Claims**



1. Fin-line oscillator comprising a waveguide containing a fin line having fins, a diode as an active element which is housed in a package (5), and an impedance-matching network for matching the diode to a load and determining the frequency, characterized in that the waveguide (1) containing the fin line is connected with a cutoff waveguide (4), that the fins (2) of the fin line extend into the cutoff waveguide (4), that the diode package (5) is disposed in the cutoff waveguide and electrically connected to the top or bottom side of the cutoff waveguide, and that a suitable distance (l) between the fin ends and the diode package and a suitable width of the slot between the fins as well as a suitable value of capacitance in the cutoff waveguide are chosen to determine the frequency and match the diode to the load.

4,567,451

RESONATOR HAVING OPTICAL FEEDBACK COUPLING

John C. Greenwood, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

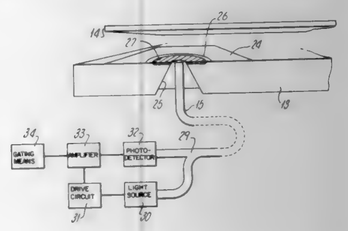
Filed Jun. 1, 1983, Ser. No. 500,129

Claims priority, application United Kingdom, Jun. 10, 1982, 8216846

Int. Cl.⁴ G01L *1/10*; **H03B** *5/30*

U.S. Cl. 331—155 **9 Claims**

1. In a resonator device of the type having: a substrate; a pair of end mount means both secured to said substrate; filament means mounted between said end mount means for torsional vibration; paddle means integral with said filament means and located intermediate said end mount means to participate in said torsional vibration; and oscillation driving means for driving said paddle means to perform said torsional vibration, and including means for sensing said torsional vibration, and in



response thereto providing positive feedback to sustain said torsional vibration; the improvement wherein:

said filament means is integral with said mount means; and

said filament means comprises a plurality of individual filaments, each of which is integral with said end mount means and said paddle means.

4,567,452

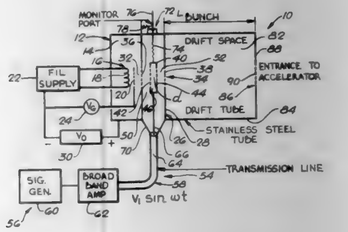
BROAD-BAND BEAM BUNCHER

David A. Goldberg, Walnut Creek; William S. Flood, Berkeley; Allan A. Arthur, Martinez, and Ferdinand Voelker, Orinda, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 20, 1984, Ser. No. 591,651

Int. Cl.⁴ H01J *25/10*

U.S. Cl. 332—7 **10 Claims**



1. A broad-band beam buncher, comprising:

a housing adapted to be evacuated,

an electron gun in said housing for producing a beam of electrons,

buncher means in said housing forming a buncher cavity having an entrance opening for receiving the electron beam and an exit opening through which the electron beam passes out of said buncher cavity,

a drift tube electrode in said buncher cavity and disposed between said entrance opening and said exit opening with first and second gaps between said drift tube electrode and said entrance and exit openings,

said drift tube electrode having a first drift space therein through which the electron beam passes in traveling between said entrance and exit openings,

modulating means for supplying an ultrahigh frequency modulating signal to said drift tube electrode for producing velocity modulation of the electrons in the electron beam as the electrons pass through said buncher cavity and said drift tube electrode between said entrance opening and said exit opening,

drift space means in said housing forming a second drift space for receiving the velocity modulated electron beam from said exit opening,

said velocity modulated electron beam being bunched as it passes along said second drift space,

said drift space means having a discharge opening through which the electron beam is discharged from said second drift space after being bunched therein,

said modulating means comprising a signal source for producing an ultrahigh frequency signal,

a transmission line connected between said signal source and said drift tube electrode, and

terminating means connected to said drift tube electrode for terminating said transmission line in approximately its characteristic impedance to afford a broad response band with minimum variations therein.

4,567,453

ACOUSTIC SURFACE WAVE DEVICE

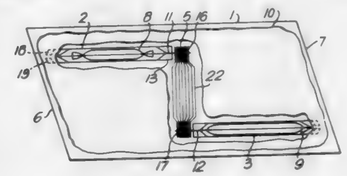
John Schofield, Coulsdon, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 16, 1983, Ser. No. 532,877

Claims priority, application United Kingdom, Sep. 20, 1982, 8226703

Int. Cl.⁴ H03H *9/145, 9/64, 9/42*

U.S. Cl. 333—194 **29 Claims**

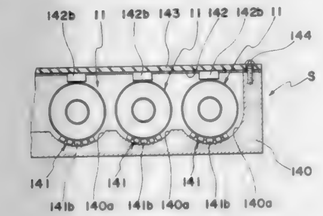


1. An acoustic surface wave device comprising a piezoelectric substrate for propagating a surface acoustic wave at a surface thereof, transducer means for launching surface acoustic wave energy into a first propagation track at said surface and for converting surface acoustic wave energy propagating along a second non-overlapping propagation track into an electrical signal, and a multistrip coupler comprising a first array of electrically conductive strips arranged in said first track and a second array of electrically conductive strips arranged in said second track, each array comprising discrete parallel electrically conductive strips electrically insulated from one another, said discrete conductive strips of one array being electrically connected by means of corresponding electrically conductive connecting strips to respective said discrete conductive strips of the other array, surface acoustic wave energy launched by said transducer means along said first track being received by said first array and at least a part of that energy being relaunched as surface acoustic wave energy into said second track so as to be received by said transducer means, characterized in that adjacent boundaries of said first and second propagation tracks, as defined by the aperture of the corresponding transducer means, are spaced from one another, and the spacing of said electrically conductive connecting strips is different throughout the major portion of the length of each said connecting strip from the wide-aperture-beam spacing of the electrically conductive strips in either array such that the amount of acoustic wave energy launched in the substrate region between said first and second arrays within the desired pass-band of the device is substantially reduced or minimized with respect to the acoustic energy that would be launched if the spacing were equivalent to that in either said first or said second array.

4,567,454
RESONATOR DEVICE

Koji Saito, Takatsuki, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Apr. 27, 1984, Ser. No. 604,494
Claims priority, application Japan, May 2, 1983, 58-66686[U]
Int. Cl.⁴ H01P *1/205, 7/04*
U.S. Cl. 333—206 **11 Claims**



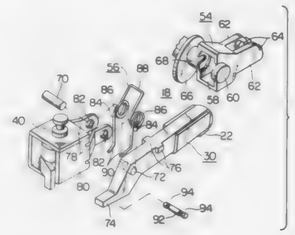
1. A resonator device, comprising;
an electrically conductive mounting member;
at least one axially extending dielectric coaxial resonator having an electrically open axial end and an opposite end axially opposite said electrically open end, including a dielectric member formed with an axially extending bore, an inner conductor member formed on a radial periphery of said bore, and an outer conductor member formed on a radially outer periphery of said dielectric member;
means, including an elastic member located between said dielectric coaxial resonator and said mounting member, for securing said dielectric coaxial resonator to said mounting member only elastically, through said elastic member and electrically pressing said dielectric coaxial resonator into electrical contact with said mounting member; and
an elastic piece interposed between said opposite end of said dielectric coaxial resonator and said mounting member;
said mounting member being formed with a stopper projection contacting said electrically open end of said dielectric coaxial resonator;
said dielectric coaxial resonator being secured between said elastic piece and said stopper projection so as to be prevented from being displaced axially.

4,567,455
CIRCUIT INTERRUPTER

Setsuo Hosogai; Hiroshi Fujii; Shigemi Tamaru; Junichi Terachi; Takuo Takatsuka, all of Fukuyama, and Hideo Suhara, Fukayasu, all of Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed May 10, 1984, Ser. No. 608,982
Claims priority, application Japan, May 16, 1983, 58-74205[U]; May 16, 1983, 58-74206[U]; May 16, 1983, 58-74207[U]; May 16, 1983, 58-74208[U]; May 16, 1983, 58-74209[U]; May 16, 1983, 58-74210[U]; May 16, 1983, 58-74211[U]
Int. Cl.⁴ H01H *75/12*
U.S. Cl. 335—16 **11 Claims**

1. A circuit interrupter comprising in an electrically insulating housing:
a pair of separable contact structures each including a contact element, at least one of said contact structures being movable between a closed position and an open position relative to the other contact structure for opening and closing an electric circuit extending through the circuit interrupter;
said movable contact structure having an arm support that is pivotal about an axis, a movable contact arm pivotally supported on said arm support, and a biasing means connected between said arm support and said movable contact arm for biasing said movable contact arm to a predetermined position with respect to said arm support; and
an operating mechanism connected to said arm support of said movable contact structure for separating said movable contact structure from said other contact structure;

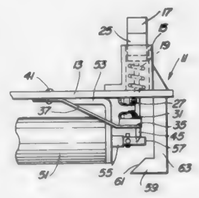


said housing having formed therein a stopper surface, and
said movable contact arm having a stopper projecting from said movable contact arm and engageable with said stopper surface on said housing for limiting the range of movement of said movable contact arm.

4,567,456
RESETTABLE CIRCUIT CLOSING DEVICE

Raymond H. Legatti, Clearwater, Fla., assignor to Technology Research Corporation, Clearwater, Fla.

Filed Jun. 13, 1983, Ser. No. 503,868
Int. Cl.⁴ H01H *73/00, 83/00, 3/00*
U.S. Cl. 335—20 **16 Claims**

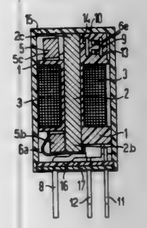


1. A resettable circuit closing device that is opened in the event of an undervoltage condition comprising:
contact means biased to a normally open position;
mechanical actuating means for mechanically forcing said contact means to a closed position when in a flexed position;
adjusting cam means flexing said actuating means to said flexed position; and
electrically energized holding means engaging said actuating means to permit closing of said contact means, by keeping said actuating means in the flexed position after flexing by said adjusting means only when a voltage applied across said holding means exceeds a predetermined level.

4,567,457
ELECTROMAGNETIC RELAY

Helmut Schedele, Diessen, and Rolf-Dieter Kimpel, Unterschweinbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 7, 1984, Ser. No. 638,497
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1983, 3329239
Int. Cl.⁴ H01H *51/06, 67/02*
U.S. Cl. 335—128 **11 Claims**

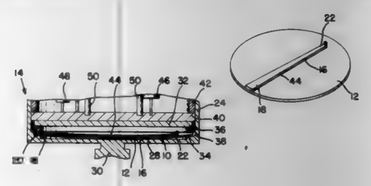


1. An electromagnetic relay comprising:
a base body carrying a coil winding,
a core yoke having its center section embedded in said base body and which has a yoke leg extending perpendicular to the coil axis at both ends outside of said coil winding;
a U-shaped armature seated on said core yoke, the central part thereof residing parallel to the coil axis and embracing said coil winding, and its two lateral legs extending essentially perpendicular to said coil axis;
said armature having its first lateral leg seated on the first yoke leg so as to be pivotable around an axis perpendicular to said coil axis and having its second lateral leg forming a working air gap relative to the second yoke leg; and
a contact spring secured to the middle part of said armature, the free end of said contact spring carrying a contact piece embracing said armature and said core yoke and interacting at that side of said core yoke opposite said armature with a least one cooperating contact plate anchored in said base body.

4,567,458
THERMOSTATIC SWITCH

Richard L. Englund, King County, Wash., assignor to Index Industries, Inc., Bellevue, Wash.

Filed Aug. 15, 1984, Ser. No. 641,038
Int. Cl.⁴ H01H *37/54*
U.S. Cl. 337—365 **21 Claims**

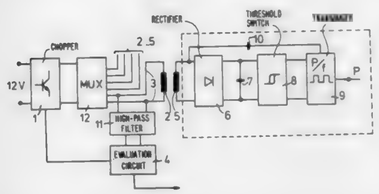


1. A thermostatic switch, comprising:
a conductive plate;
a bimetallic disc positioned adjacent to said plate and spaced therefrom, said disc being movable between two oppositely dished configurations with a snap action in response to changes in temperature; and
an electrically conductive, resilient arm of a different metallic composition than said disc, said arm being fixedly attached by an anchored end to said disc at a perimeter portion thereof and having a movable contact end, said movable contact end having no separate contact element and moving with said disc between two positions corresponding to said disc configurations, said movable contact end yieldably engaging said plate in one position and said disc in the other position, whereby the natural frequency of said arm is increased and the vibration sensitivity of the switch is decreased.

4,567,459
TRANSMISSION METHOD FOR VARIABLE MEASURED VALUES FROM VEHICLE WHEELS UTILIZING AMBIENT TEMPERATURE COMPENSATION

Josef Folger, Munich; Hans-Dieter Fournell, Haar; Hans-Rudolf Hein, Munich; Karl Kapfhammer, Germering; Josef Rambock, and Michael Weber, both of Munich, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

PCT No. PCT/EP81/00113, § 371 Date Apr. 5, 1982, § 102(e) Date Apr. 5, 1982
PCT Filed Aug. 5, 1981, Ser. No. 367,234
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 3029563
Int. Cl.⁴ B60C *23/00*
U.S. Cl. 340—58 **10 Claims**



1. In combination, a system for sending an information signal indicative of variable measured values from wheels of a vehicle, wherein energy is transmitted from a primary coil to a secondary coil mounted concentrically on at least one of said wheels during excitation of said primary coil mounted external of said wheels and fixedly connected with the vehicle, and said information signal, which is a function of the output signal of a sensor means located in said at least one of said wheels, is fed back from said secondary coil to the primary coil,
the improvement comprising compensation means responsive to said primary coil for temperature-compensating said information signal, said compensation means including
ambient temperature sensor means located external of said wheels for producing a set value indicative of ambient temperature about said vehicle; and
an evaluation circuit for comparing the information signal with said set value whereby to correct representations of information signal due to changes in temperature.

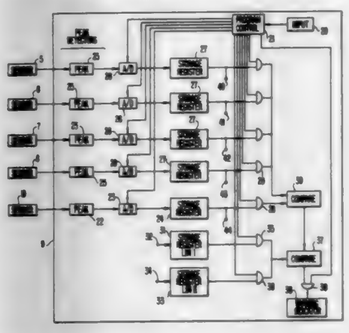
4,567,460
TESTING DEVICE APPARATUS AND METHOD FOR TIRE PRESSURE OF AUTOMOTIVE VEHICLE WHEELS

Eugen Gebler, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Dec. 20, 1982, Ser. No. 451,274
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151254
Int. Cl.⁴ B60C *23/00, 23/02*
U.S. Cl. 340—58 **10 Claims**

1. A testing apparatus for wheeled road vehicles having suspension members for the wheels comprising
first means mounted at the suspension members for sensing a

characteristic of the suspension member adjacent each wheel with respect to the road,
calibration means for sensing tire pressure of at least the tire of one of said wheels, and



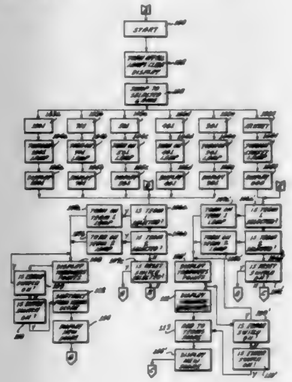
second means responsive to an output signal from said first means and to a signal from said calibration means for producing an output warning signal.

4,567,461

ELECTRONIC DART GAME SCOREBOARD

Robert D. Honekman, 5014 Blackhorse Rd., Palos Verdes, Calif. 90274, and Curt Fisher, Palos Verdes, Calif., assignors to Robert D. Honekman, Rancho Palos Verdes, Calif.

Filed Feb. 22, 1983, Ser. No. 468,172
Int. Cl.⁴ G08B *23/00*
U.S. Cl. 340—323 R **7 Claims**



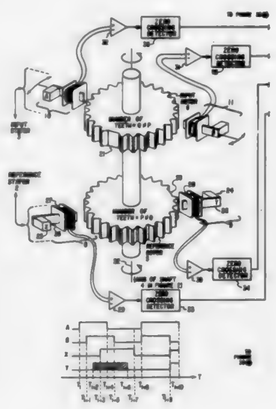
1. An electronic dart game scorer comprising in combination:
first and second numerical score display means;
a plurality of game select switches including a cricket game select switch;
computer means responsive to actuation of any one of said game select switches for displaying a particular beginning score associated with each of said switches on both said first and second display means; and
team select means for selecting one of said first and second display means for score updating; and
score entry means connected to said computer means for updating said beginning score to derive successive intermediate game scores on said selected display means;
auxiliary input means connected to said computer means and associated with said cricket game select switch, said auxiliary input means being actuatable for registering dart landings in particular beds of a dartboard;
auxiliary display means associated with said auxiliary input means for displaying each such registered dart landing apart from said numerical score display means.
said updating consisting of either addition or subtraction of individual numerical throw score entries made through said score entry means, actuation of a particular game select switch being operative for presetting said computer means to perform either said addition or subtraction of all throw score entries made subsequent to actuation of the particular game select switch.

4,567,462

METHOD AND APPARATUS FOR REDUCING CROSSTALK EFFECTS UPON PHASE MEASUREMENT

Robert W. Leiby, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 25, 1983, Ser. No. 479,046
Int. Cl.⁴ G08C *9/06*
U.S. Cl. 340—347 P **8 Claims**



1. A transducer comprising:
first and second rotors journalled for simultaneous and identical rotation about an axis, each having a different number of poles along respective first and second peripheries;
means for rotating the first and second rotors about the axis;
first sensor means disposed adjacent the first periphery and responsive to the passage of poles thereon for producing a periodic first sensor signal as the first rotor rotates; and
second sensor means disposed adjacent the second periphery, journalled for orbital revolution about the axis and around the second periphery and responsive to the passage of poles thereon for producing a periodic second sensor signal whose phase relative to the first sensor signal is a function of the orbital position of the second sensor means.

4,567,463

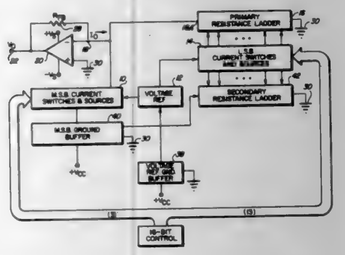
CIRCUIT FOR IMPROVING THE PERFORMANCE OF DIGITAL TO ANALOG CONVERTERS

Jimmy R. Naylor, Tucson, Ariz., assignor to Burr-Brown Corporation, Tucson, Ariz.

Filed Feb. 23, 1982, Ser. No. 351,542
Int. Cl.⁴ H03K *13/02*
U.S. Cl. 340—347 DA **11 Claims**

1. A digital to analog converter comprising:
most significant bit current switches and sources;

least significant bit current switches and sources;
a primary resistance network coupled to said least significant bit current switches and sources and to a ground terminal, said primary resistance network having an output coupled to said most significant bit current switches, each of said least significant bit current switches and sources applying current to said primary resistance network when said each least significant bit current switches and sources are in a first state;
most significant bit ground buffer means coupled to said most significant bit current switches and sources for reducing a current flowing from analog ground through said most significant bit current switches; and



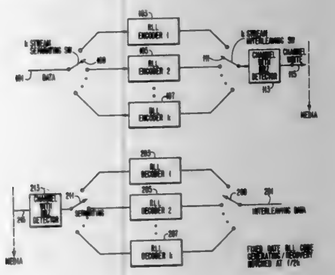
secondary resistance network means coupled to said least significant bit current switches and sources and to said ground terminal, each of said least significant bit current switches and sources applying current to said secondary resistance means, said secondary resistance network means for providing an analog ground current contribution when said each least significant bit current switch and source is in a second state generally equal to an analog ground current contribution.

4,567,464

FIXED RATE CONSTRAINED CHANNEL CODE GENERATING AND RECOVERY METHOD AND MEANS HAVING SPECTRAL NULLS FOR PILOT SIGNAL INSERTION

Paul H. Siegel, Palo Alto, Calif., and Stephen J. Todd, Winchester, United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1983, Ser. No. 461,842
Int. Cl.⁴ H03K *13/24*
U.S. Cl. 340—347 DD **4 Claims**



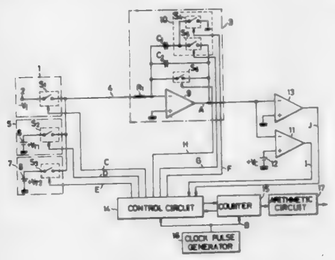
1. A method for frequency band limited encoding of a datastream such that the encoded representation exhibits a spectrum notched at selected frequencies within the band, comprising the steps of:
forming a concordance of selected state transitions of a lattice-type finite state transition encoding space with selected run length limited (RLL) encoded symbols such that any succession of transitions is well correlated with an RLL symbol stream, the spectrum of the NRZ representation of each RLL stream being notched at the selected frequencies;
one-to-one mapping of each datastream into an RLL symbol stream by fixed rate length-oriented recursive arithmetic encoding of ssaid datastream according to the concordance; and
transforming each mapped RLL symbol stream into an NRZ representation.

4,567,465

METHOD AND APPARATUS FOR CONVERTING ANALOG SIGNAL INTO DIGITAL SIGNAL

Koji Komiya, Hachioji, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed May 11, 1983, Ser. No. 493,610
Claims priority, application Japan, May 25, 1982, 57-88504; Apr. 6, 1983, 58-61314
Int. Cl.⁴ H03K *13/02*
U.S. Cl. 340—347 AD **16 Claims**



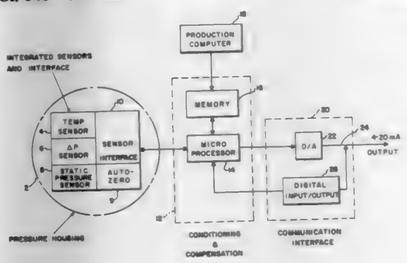
1. A method of converting an analog voltage of a polarity to a digital value, which comprises:
(a) providing an integrator having a predetermined normal output voltage and including first and second integrating capacitors;
(b) integrating an analog input voltage for a preassigned period of time by the integrator;
(c) integrating a first reference input, opposite in polarity to the analog input voltage, by the integrator after the lapse of the preassigned period of time, until the output voltage of the integrator reaches a predetermined level;
(d) transferring a charge on the first integrating capacitor to the second integrating capacitor, and electrically isolating the first integrating capacitor from the integrator, when the output voltage of the integrator reaches the predetermined level;
(e) integrating a second reference input by the integrator with use of the second integrating capacitor upon completion of the charge transfer from the first to the second integrating capacitor, until the output voltage of the integrator becomes equal to the predetermined normal output voltage thereof;
(f) measuring the periods of time during which the first and second reference inputs are being integrated; and
(g) providing a digital output corresponding to the analog input voltage on the bases of the preassigned period of time during which the analog input voltage has been integrated, the measured periods of time during which the first and second reference inputs have been integrated, and the values of the first and second reference inputs.

4,567,466

SENSOR COMMUNICATION SYSTEM

Theodore B. Bozarth, Perkasie; Anthony M. Demark, Plymouth Meeting; Edward F. Finn, Warminster, and Frank Lynch, Hatboro, all of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 8, 1982, Ser. No. 447,818
Int. Cl.⁴ H03M *1/10*
U.S. Cl. 340—347 AD 4 Claims



1. An analog signal communication system comprising

an input multiplexer for selecting one of a plurality of analog input signals, one of said analog input signals being a compensation signal obtained from a temperature responsive circuit,

a variable gain amplifier means for amplifying an output signal from said input multiplexer,

a free running triangle wave generator,

a comparator means connected to said amplifier and said generator for comparing an output signal from said variable gain amplifier and said generator to produce a variable duty cycle output signal representative of the amplitude of the output signal from said variable gain amplifier,

means for converting said variable duty cycle output signal to a digital word,

an input selector for controlling said input multiplexer to select said analog input signals,

a range selector for selecting a gain level of said variable gain amplifier, and

a digital signal handling means connected to said means for converting to receive said digital word and for concurrently controlling said input selector and said range selector whereby said input selector is controlled by said signal handling means to select said compensation signal for each gain level selected by said range selector wherein said variable gain amplifier means includes a pair of amplifiers arranged to receive an output signal from said input multiplexer and each having a variable feedback impedance controlled concurrently by said range selector.

4,567,467

ANGULAR ROTARY POSITION ENCODER

Wayne T. Wiblin, Ashtabula; Grant C. Melocik, Chardon; Edward V. Leskovec, Eastlake, and William Pickering, University Heights, all of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Feb. 21, 1984, Ser. No. 582,113
Int. Cl.⁴ H03K *13/18*
U.S. Cl. 340—347 P 14 Claims

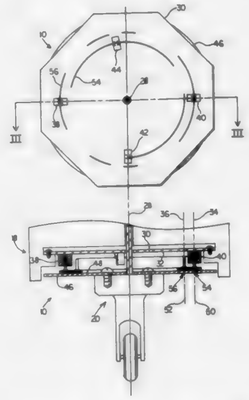
1. Apparatus for encoding the position of a steerable wheel portion of a vehicle relative to a non-steerable portion of said vehicle, said steerable wheel portion being rotatable left and right of a central position about an axis, comprising:

a first mounting member having a first planar surface and first and second curvilinear sensor pathways, said first mounting member being connected to said non-steerable portion of said vehicle, said first planar surface being substantially perpendicular to said axis, and said first and second sensor pathways being concentrically positioned about said axis on said first planar surface;

first and second sensors positioned diametrically opposite one another along one of said first and second curvilinear sensor pathways;

third and fourth sensors positioned other than diametrically opposite one another along the other of said first and second curvilinear sensor pathways;

a second mounting member having a second planar surface and third and fourth curvilinear sensor pathways, said



second mounting member being connected to said steerable wheel portion of said vehicle and rotatable about said axis, said second planar surface being substantially parallel to and facing said first planar surface, and said third and fourth sensor pathways being concentrically positioned about said axis on said second planar surface; and,

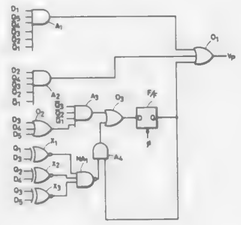
first and second pluralities of sensible light blocking members extending outward from said second planar surface and being respectively positioned along said third and fourth sensor pathways.

4,567,468

MODULATION CIRCUIT OF A DIGITAL-TO-ANALOG CONVERTER

Shinichi Tanaka, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 23, 1983, Ser. No. 535,310
Claims priority, application Japan, Sep. 24, 1982, 57-166853
Int. Cl.⁴ H03K *13/02*
U.S. Cl. 340—347 DA 18 Claims



1. A method of converting a data train of digital data codes into an analog representation thereof, said digital data codes including an N bit higher order code portion and an M bit lower order code portion, where N and M are natural numbers, comprising the steps of:

converting each said digital data code into a code train of pulses, said code train of pulses being developed over a predetermined time period, a said digital data code representative of zero being converted by said step of converting into an absence of pulses during said predetermined time period; and

integrating each said code train of pulses developed by said step of converting to develop an analog valve associated therewith and thereby develop an analog waveform from said data train;

said step of converting including the steps of,

pulse number modulating said M bit lower order code portion of each said digital data code to develop a number of pulses in said code train of pulses equal to the digital value of said M bit lower order code portion,

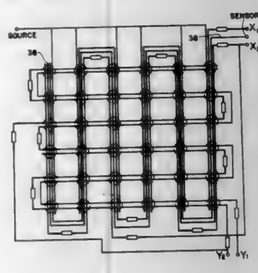
pulse width modulating said N bit higher order code portion of each said digital data code to develop a plurality of width modulated pulses in said code train of pulses one greater in number than the maximum number of pulses developed by said step of pulse number modulating, each of said plurality of width modulated pulses increasing in width in relation to the digital value of said N bit higher order code portion.

4,567,469

MATRIX KEYBOARD

Sherif Danish, and Hugh H. Aiken, both of Tulsa, Okla., assignors to Polytel Corp., Sunnyvale, Calif.

Filed Jan. 14, 1983, Ser. No. 458,132
Int. Cl.⁴ G06F *3/02*
U.S. Cl. 340—365 S 11 Claims



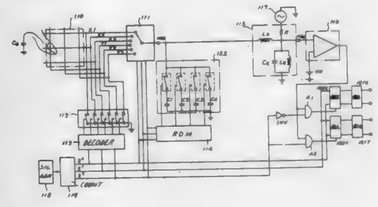
1. In a multikey keyboard for inputting data to a computer wherein the X and Y rank of the pressed key is determined by the closing of a corresponding key switch that brings into the X and Y keyboard output circuits selected portions of at least a pair of separate series of electrical elements whose respective cumulative values are subsequently measured by the computer to uniquely establish the coordinates of the pressed key, the specific improvement comprising: providing said keyboard with a sensor circuit means comprising a keyboard output sensor terminal electrically connected to a first additional conductor circuit wherein said conductor circuit is operatively connected to each of said key switches; and further providing said keyboard with a signal source circuit means comprising a keyboard input signal terminal electrically connected to a second additional conductor circuit wherein said second additional conductor circuit is operatively connected to each of said key switches, such that when a key is pressed, said signal source circuit means is brought into circuit with said sensor circuit means thus triggering the computer to measure said cumulative values that establish the coordinates of the pressed key.

4,567,470

TOUCH SENSING DEVICE

Kazuo Yoshikawa; Hisashi Yamaguchi, and Toru Asano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 25, 1983, Ser. No. 488,399
Claims priority, application Japan, Apr. 30, 1982, 57-73785
Int. Cl.⁴ G06F *3/02*
U.S. Cl. 340—365 C 4 Claims



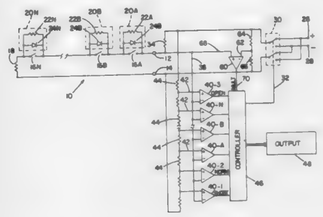
1. In a touch sensing device comprising a plurality of sensing electrodes positioned to correspond to locations to be sensed, and a sensing circuit for sensing when a selected one of said sensing electrodes is activated, wherein said sensing circuit senses the activation of a sensing electrode by sensing a change in the electrical characteristics of said sensing electrode when said sensing electrode is activated, the improvement comprising a compensating circuit means for compensating for fluctuations in the electrical characteristics of each sensing electrode, said compensating circuit means comprising a plurality of compensating elements, wherein the number of said compensating elements is less than the number of said sensing electrodes; memory means for storing data for selecting predetermined ones of said compensating elements for providing the compensation required for each of said sensing electrodes; and connecting means coupled to said compensating elements and to said memory means for connecting said predetermined ones of said compensating elements to said sensing circuit, whereby the fluctuations of the electrical characteristics of said activated sensing element sensed by said sensing circuit, is compensated for.

4,567,471

MONITORING SYSTEM

Mustafa Acar, Syosset, N.Y., assignor to Pittway Corporation, Syosset, N.Y.

Filed Aug. 8, 1983, Ser. No. 521,615
Int. Cl.⁴ G08B *29/00*
U.S. Cl. 340—513 15 Claims



1. A monitoring system for a protection loop that has a plurality of switches in series comprising

a monitoring module connected across each said switch, each said monitoring module including first and second devices connected in parallel with one another, each said first device having an asymmetric response characteristic and each said second device having a symmetrical re-

sponse characteristic, said modules being connected across said switches so that each said first device is poled in the same direction,

means to apply first and second interrogating signals alternately to said protection loop, each said first device having a response to said each first interrogating signal that is less significant than the response of its paralleled second device to said first interrogating signal and a response to said second interrogating signal that is more significant than the response of said paralleled second device to said second interrogating signal;

first comparator circuit means operative to provide an output in response to said first interrogating signal when one of said monitored switches in said protection loop is open as indicated by the response of said second devices to said first interrogating signal, and

second comparator circuit means operative to provide an output in response to said second interrogating signal when more than one of said monitored switches in said protection loop is open as indicated by the response of said first devices to said second interrogating signal, and

means responsive to the outputs of said comparator circuit means for indicating the status of said monitored switches in said protection loop.

4,567,472

SECURITY-ENSURING APPARATUS HAVING AN OPERATIONAL GUIDANCE FUNCTION

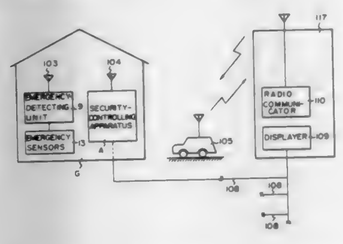
Shiro Shirai, Tachikawa; Shunji Ogahara, Musashino, and Miyuki Kubo, Tokyo, all of Japan, assignors to Secom Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 503,739, Jun. 13, 1983, Pat. No. 4,536,749. This application May 14, 1985, Ser. No. 734,315

Claims priority, application Japan, Jun. 14, 1982, 57-100749

Int. Cl.⁴ G08B *25/00*

U.S. Cl. 340—525 **4 Claims**



1. An information-displaying security-ensuring apparatus having an operational guidance function for displaying information regarding the security of protected areas as well information regarding operating procedures for said apparatus, said apparatus being accommodated in a single casing and adapted for use in an alarm system having emergency sensors for sensing emergency conditions occurring in a plurality of predetermined protected areas being monitored for security by a central station, one said apparatus being installed in each of said plurality of predetermined protected areas and comprising in combination:

detecting means for detecting emergency signals sensed by said emergency sensors;

memory means for storing therein display information including information on the type and location of said emergency sensors in a protected area;

emergency-discriminating means operably coupled to said detecting means and said memory means for discriminating the type and site of an emergency condition on the basis of detected signals from said detecting means and said information on the type and location of said emergency sensors supplied thereto from said memory means; and

display means operably coupled to said emergency-discriminating means for displaying said type and site of said emergency condition discriminated by said emergency-discriminating means and for displaying information regarding operating procedures for said apparatus.

4,567,473

RESONANT TAG AND DEACTIVATOR FOR USE IN AN ELECTRONIC SECURITY SYSTEM

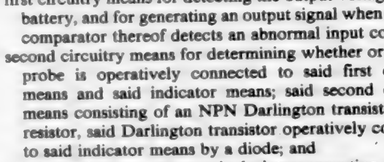
George J. Lichtblau, 13 Tannery Hill Rd., Ridgefield, Conn. 06877

Continuation of Ser. No. 376,777, May 10, 1982. This application Nov. 20, 1984, Ser. No. 673,265

The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.

Int. Cl.⁴ G08B *13/24*

U.S. Cl. 340—572 **27 Claims**



1. For use in an electronic security system which includes means for providing in a controlled area an electromagnetic field of a frequency which is swept within a predetermined range, and means for detecting the presence of a resonant tag circuit having a resonant frequency within said range, a resonant tag circuit comprising:

a planar substrate of dielectric material;

a tuned circuit on said substrate in circuit configuration and resonant at said frequency;

said tuned circuit having a pair of conductive areas on respective opposite surfaces of the substrate to define a capacitor of the tuned circuit; and

means within the conductive areas defining a path between the conductive areas and through the substrate at which an arc discharge will preferentially occur in response to an electromagnetic field at said frequency of sufficient energy, and operative to destroy the resonant properties of the tuned circuit.

4,567,474

FREEZER ACCIDENTAL DEFROST WARNING DEVICE

Dale Wolin, Eagle, Id., assignor to Temco Products Corporation, Boise, Id.

Filed Jun. 6, 1983, Ser. No. 501,757

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—584 **10 Claims**

1. A temperature indicating device comprising:

a battery;

indicator means;

a temperature probe comprising a negative temperature coefficient thermistor;

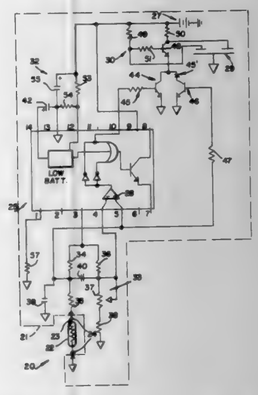
first circuitry means for detecting the output voltage of said battery, and for generating an output signal when an input comparator thereof detects an abnormal input condition;

second circuitry means for determining whether or not said probe is operatively connected to said first circuitry means and said indicator means; said second circuitry means consisting of an NPN Darlington transistor and a resistor, said Darlington transistor operatively connected to said indicator means by a diode; and

third circuitry means operatively interconnecting said battery, indicator means, and first and second circuitry means for actuating said indicator means should said battery output voltage be below a predetermined value, or should said temperature probe be operatively disconnected, or

should the temperature sensed by the temperature probe rise above a predetermined value;

said third circuitry means including, in combination with said probe, adjustable voltage measuring means operatively connected to said input comparator of said first circuitry means for allowing adjustment of the temperature at said probe at which said indicator means is actuated, and for effecting actuation of said indicator means when the temperature at said probe is within about ±3 percent of the adjusted temperature setting, wherein said adjustable voltage measuring means comprises a voltage



measurement bridge comprising a variable side including first and second resistors and said thermistor, and a reference side including third and fourth resistors and a variable resistor, wherein each of said resistors of said voltage measurement bridge are accurate to about one percent; and

high and low pass filter capacitors operatively connected to said voltage measurement bridge, said high pass filter capacitor being operatively connected to said voltage measurement bridge variable side at a point between said first and second resistors, and connected to said reference side at a point between said third and variable resistors.

4,567,475

GAS OR VAPOR ALARM SYSTEM INCLUDING SCANNING GAS SENSORS

Stanislaw Bukowiecki, Uerikon; Gustav Pfister, Uetikon; Alfons Reis, Stäfa; Alan P. Troup, Männedorf, and Hans-Peter Ulli, Zurich, all of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Apr. 1, 1983, Ser. No. 481,375

Claims priority, application Switzerland, Apr. 15, 1982, 2290/82

Int. Cl.⁴ G08B *17/10*

U.S. Cl. 340—634 **13 Claims**

1. A gas or vapor alarm system comprising:

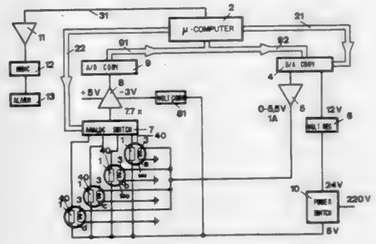
at least one heatable sensor element for generating an output signal in dependency upon the presence of a gas or vapor;

heating means for continuously changing the temperature of said sensor element through at least two temperature cycles from a starting value to an upper threshold value in accordance with a predetermined pattern and thereafter back to said starting value according to a preselected pattern, which patterns are optimized with respect to selective ones of said gases or vapors;

said output signal of said sensor element varying during said temperature cycles as a function of the composition of said gas or vapor;

an electronic circuit for receiving the output signals of the sensor element; and

said electronic circuit comparing the variation of said output signal during said temperature cycle of said sensor element with stored ones of such variations which are characteristic for the presence of predetermined components of said gas or vapor.



4,567,476

METHOD AND CIRCUIT FOR OPTICAL AND/OR ACOUSTIC INDICATION OF THE CHARGE STATE OF A BATTERY OR A STORAGE BATTERY

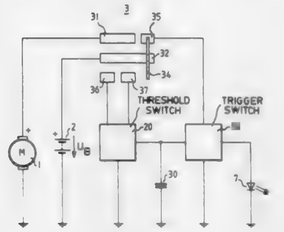
Gerhard Lang, Altweilnau, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Dec. 30, 1983, Ser. No. 567,098

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1983, 3300284

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—636 **10 Claims**



1. A circuit for monitoring the charge state of a storage battery (2) for supplying energy to an electrical consumer preferably a direct current motor (1) through a mode selector switch (3) being movable between an OFF-state wherein said electrical consumer (1) is disconnected from said battery (2) and at least one ON-state wherein said electrical consumer (1) is connected with said battery (2), said circuit comprising a threshold switch (20) an input of which is connected to said battery (2) in the ON-state of said selector switch (3) and the output of which is connected to both a capacitor (30) and a control input of a trigger switch (50),

an input of said trigger switch (50) being connected to said battery (2) when said mode selector switch (3) is in the OFF-state and an output of said trigger switch (50) being connected to a display device (7),

said threshold switch (20) being applied with the voltage of said battery (2) when said mode selector switch (3) is in the ON-state whereby said threshold switch (20) sets said trigger switch (50) when the voltage of said battery (2) has dropped below a predetermined value, said trigger switch (50) after having been actuated by said threshold switch (20) actuates said display device (7) for a predetermined period when said mode selector switch (3) is in the OFF-state.

4,567,477

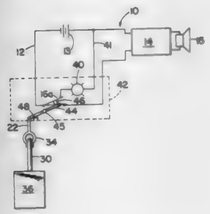
SMOKE DETECTOR SWITCH INDICATOR

Laurent L. Cormier, 484 Trudeau St., Ville LaSalle, Quebec, Canada (H8R 3C4)

Continuation-in-part of Ser. No. 504,607, Jun. 15, 1983, abandoned. This application Sep. 4, 1984, Ser. No. 647,266

Int. Cl.⁴ G08B *21/00, 17/10*

U.S. Cl. 340—644 **5 Claims**



1. In a fire alarm system including a circuit connecting a smoke detector with an alarm and having a power source connected in the circuit for energizing the alarm when the smoke detector senses an unsafe smoke condition, a temporary disabling and warning device for disabling the alarm and indicating the disabled condition comprising:

an electrical switch in the circuit having an open circuit condition to prevent the alarm from sounding in the presence of a smoke condition, and a normally closed circuit condition in which the system is operative; and

weighted disabling and indicating means operatively associated with the electrical switch and including a weight sensitive operating member connected with the electrical switch to actuate the switch between the normally closed and the open circuit condition, and a weighted actuating and indicating member releasably engageable with the weight sensitive operating member by means of a resilient coupling to actuate the electrical switch from the normally closed to the open circuit condition when the weight of the actuating and indicating member is supported by the operating member through the coupling, the resilient coupling having a resilient member maintaining the weighted actuating member and the operating member coupled together in a freely suspended condition of the actuating member, and resiliently releasing the actuating member from the operating member upon the application of a downwardly directed force to the actuating and indicating member in the suspended condition to thereby allow the electrical switch to assume the normally closed condition, the actuating and indicating member also having a visual indicator visible when the weight of the member is supported by the operating member and the circuit of the smoke detector is open.

4,567,478

LIQUID-CRYSTAL DISPLAY FOR MICROSCOPES

Klaus Schwab, Heidenheim, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkichen, Fed. Rep. of Germany

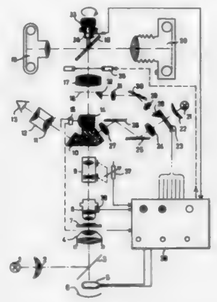
Filed Feb. 25, 1983, Ser. No. 469,754

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1982, 3208917

Int. Cl.⁴ G09G *3/02*

U.S. Cl. 340—705 **9 Claims**

1. A photomicroscope, comprising an objective, a camera, a viewing ocular, optical means including a beam splitter and determining a first intermediate-image plane in a path to said camera and a second intermediate-image plane in a separate path to said viewing ocular, a luminous display field including means for displaying thereon a plurality of indicia some of which are to be presented at the ocular-viewed field and others of which are to be presented at the photographic field of said camera, first optical-imaging means built into the microscope and imaging a first localized area of said display field at both said intermediate-image planes, and second optical means built



into the microscope and imaging a second localized area of said display field at one to the exclusion of the other of said intermediate-image planes.

4,567,479

DIRECTIONAL CONTROLLER APPARATUS FOR A VIDEO OR COMPUTER INPUT

Barry S. Boyd, 4649 N. 23rd St., Arlington, Va. 22207

Filed Dec. 23, 1982, Ser. No. 452,687

Int. Cl.⁴ G09G *3/02*

U.S. Cl. 340—709 **1 Claim**

1. A cranially supported computer input device for use with a computer, comprising a switch control housing having a first set of position-responsive switches and a second set of position-responsive switches arranged relative to said first set of position responsive switches, a vacuum-pressure-operated switch in said housing, means in said housing for adjusting a position of one set of said sets of switches to a horizontal position, cranial support means for cranially supporting said housing, and circuit means connecting said sets of switches and said vacuum-pressure-operated switch to said computer, whereby different functions of said computer are controlled by the position of said switches and the state of said vacuum-pressure-operated switch.

4,567,480

TOUCH-SENSITIVE OVERLAY

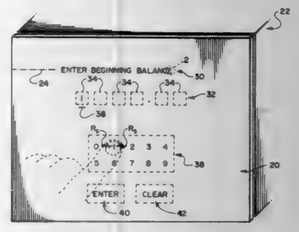
Randall D. Blanchard, Woodinville, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Dec. 13, 1982, Ser. No. 448,947

Int. Cl.⁴ G09G *1/00*

U.S. Cl. 340—712 **34 Claims**

1. A touch-sensitive overlay for placement on a visual display including a system for illuminating areas at a plurality of locations in said display and responsive to an electrical signal to provide an indication of an illuminated area location in said display, comprising: a substantially transparent sheet having a plurality of discrete photoreactive transducer means distributed thereon and placeable over said illuminated area location, the photoreactive transducer means having at least one photoelectric characteristic which varies as a function of incident light from said illuminated area location in said display impinging said transducer means, and circuit means for obtaining from said transducer means said electrical signal in response to a variation of said photoelectric characteristic due to incident light from said illuminated area in said display at said transducer means coincident with an external touch of said overlay to identify the location of said touch relative to said display.



4,567,481

MEASURING INSTRUMENT DISPLAY WITH EXCHANGEABLE LEGENDS FOR DIFFERENT LANGUAGES OR OPERATING MODES

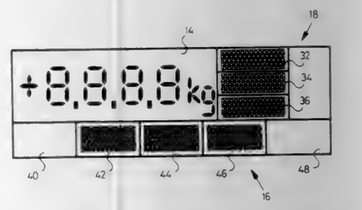
Linus Meier, Saland, and Roland Hanselmann, Hegnau, both of Switzerland, assignors to Mettler Instrumente AG, Greifensee, Switzerland

Filed Jan. 27, 1983, Ser. No. 461,439

Claims priority, application Switzerland, Mar. 19, 1982, 1710/82; Sep. 10, 1982, 5391/82

Int. Cl.⁴ G09G *3/02, 3/18, 3/36*

U.S. Cl. 340—784 **17 Claims**



1. Display for a measuring instrument, comprising

symbol carrying means carrying at least one alpha-numeric symbol in a predetermined area, said at least one alpha-numeric symbol constituting a legend to be displayed;

substantially planar blocking means having a preselected area aligned with said predetermined area, said preselected area including an electrode configuration having a light blocking or light transmissive state in accordance with the absence or presence of a control signal applied thereto, said electrode configuration defining a pattern of conductive regions connected to one another, which in turn define a plurality of non-conductive zones between said conductive regions, respectively, thereby permitting said symbol carrying means to be viewed, or covered from view, respectively,; and

means for applying said control signal to said blocking means only when said measuring instrument is in a predetermined operating condition, whereby said at least one alpha-numeric symbol is displayed only when said measuring instrument is in said predetermined operating condition, whereby both an effective light blockage, as well as a relatively low power consumption of said blocking means is realized.

4,567,482

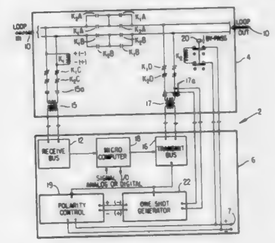
BYPASS CONTROL FOR STATIONS IN A COMMUNICATION SYSTEM

Philip C. Dolsen, Richmond Heights, Ohio; Satish Chandra, Springfield, Va.; Gordon R. Hammon, and William J. Uren, both of Mentor, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 12, 1982, Ser. No. 440,910

Int. Cl.⁴ H04Q *9/00;* **H04J** *3/02*

U.S. Cl. 340—825.05 **6 Claims**



1. A communication system for transmitting intelligence by means of high frequency bits between a control station and a series of remote stations having the ability to remotely bypass selected remote stations comprising:

a communication loop having the control station and the remote stations serially connected therein;

each remote station having a bypass module physically separated from a communications module but electrically coupled thereto;

each communication module having means for generating a D.C. pulse of forward or reverse polarity in response to a control signal from the control station and transmitting said polarity signal to the bypass module of the next serially connected remote station;

each bypass module having means for electrically disconnecting and reconnecting its associated communication module from said communication loop while itself remaining in said loop responsive to said forward or reverse polarity signal from the communication module of the preceeding remote station.

4,567,483

POSITION BASED GROUND PROXIMITY WARNING SYSTEM FOR AIRCRAFT

Charles D. Bateman; Michael M. Grove; Lyle J. Noland, and Wallace E. Ward, all of Bellevue, Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Dec. 10, 1982, Ser. No. 448,862

Int. Cl.⁴ G08B *23/00;* **G01S** *13/00*

U.S. Cl. 340—970 **29 Claims**

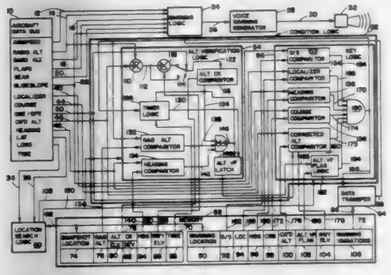
1. A ground proximity warning system for aircraft comprising:

a source of signals representing aircraft flight parameters;

warning logic means operatively connected to said source of flight parameter signals for comparing said flight parameter signals and generating a warning signal in response to predetermined relationships between selected flight parameter signals;

a source of position signals representing the position of the aircraft; and

condition logic means operationally connected to said warning logic means and said source of position signals for



varying said predetermined relationships when the aircraft is in a predetermined warning location.

4,567,484

DOPPLER RADAR MEASURING APPARATUS

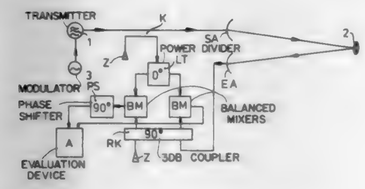
Wolfram Schilz, Norderstedt, and Burkhard Schiek, Bochum/-Querenburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 491,005, May 3, 1983, abandoned, which is a continuation of Ser. No. 216,466, Dec. 15, 1980, abandoned. This application May 18, 1984, Ser. No. 611,926

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950626

Int. Cl.⁴ G01S *13/00, 13/26, 13/34*

U.S. Cl. 343—14 **2 Claims**



1. A doppler radar apparatus for surveillance of an area lying within a predetermined operating range, comprising:

(a) a transmitter for producing a radio frequency signal at an output thereof;

(b) a modulator coupled to the transmitter for momentarily modulating said radio frequency signal during succesive periods of duration T at a predetermined modulation frequency, said modulation frequency corresponding to a wavelength which is at least four times the operating range of the apparatus;

(c) a transmit antenna coupled to the transmitter for transmitting the modulated radio frequency signal across the area;

(d) a receive antenna for receiving a reflection of the transmitted signal from an object within the area;

(e) mixer means coupled to said transmitter output and to said receive antenna for mixing the transmitted and received signals and for producing a difference frequency signal representing the range of said object, said mixer means comprising:

(1) a power divider for coupling the transmitter output to first and second outputs thereof;

(2) a 90° coupler having an input coupled to the receive antenna and having first and second outputs for providing 90° phase-shifted replicas of the received signal;

(3) a first balanced mixer coupled to the first output of each of the power divider and the 90° coupler for mixing the transmitted signal and one of the replicas of the received signal, and for producing at an output thereof a first difference frequency signal;

(4) a second balanced mixer coupled to the second output of each of the power divider and the 90° coupler for mixing the transmitted signal and the other one of the replicas of the received signal, and for producing at an output thereof a second difference frequency signal; and

(5) a 90° phase shifter coupled to the output of the first balanced mixer for producing at an output of the phase shifter a 90° phase-shifted replica of the first difference signal; and

(f) an evaluation device, coupled to the outputs of the 90° phase shifter and the second balance mixer, for sampling the difference frequency signal during each period at a predetermined instant when the difference frequency signal amplitude is a maximum.

4,567,485

EARTH STATION TRANSMISSION POWER CONTROL SYSTEM FOR KEEPING AN EIRP OF DOWN LINK SIGNALS CONSTANT IRRESPECTIVE OF WEATHER

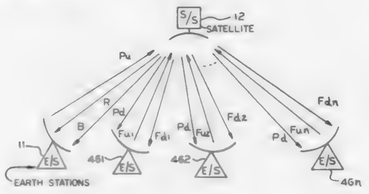
Goro Oshima; Satoru Ono, and Yasuhisa Shimada, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 441,617, Nov. 15, 1982, abandoned. This application Apr. 23, 1985, Ser. No. 725,528

Claims priority, application Japan, Nov. 16, 1981, 56-183294; Nov. 16, 1981, 56-183295; Nov. 16, 1981, 56-183297

Int. Cl.⁴ H04B *7/185*

U.S. Cl. 343—358 **2 Claims**



1. A transmission power control system for use in at least one first earth station of a satellite network which includes at least one second earth station for sending a pilot signal to a satellite, said transmission power control system comprising first means responsive to a gain control signal for amplifying a test or transmission signal with a variable gain and sending to said satellite the test or transmission signal with a controllable transmission power dependent upon said variable gain, second means for receiving and detecting the pilot signal transmitted via said satellite to said first earth station, third means for receiving and detecting the test or transmission signal transmitted via said satellite to said first earth station, fourth means for comparing the outputs of said second and third means and for providing said gain control signal responsive thereto, thereby making said satellite radiate a signal with an effective isotropically radiated power kept substantially constant irrespective of a rain loss.

4,567,486

PHASE DIFFERENCE MEASUREMENT TECHNIQUE FOR VOR

Arlen E. Breiholz, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 7, 1983, Ser. No. 464,229

Int. Cl.⁴ G01S *1/44*

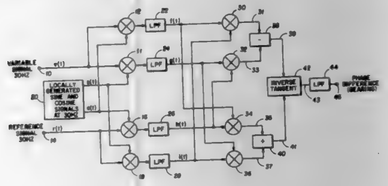
U.S. Cl. 343—401 **12 Claims**

1. A signal processing system comprising:

means for receiving a first signal;

means for receiving a second signal having a phase difference with respect to said first signal;

means for multiplying each of said first and second signals with a sine and cosine signal to produce a plurality of product outputs;



means for combining said product outputs to produce sine and cosine outputs of the phase difference between said first and second signal; and

means for providing an output of the inverse tangent of the sine output divided by the cosine output as a representation of the phase difference between said first and second signal.

4,567,487

VIBRATION-TOLERANT WHIP ANTENNA

Charles W. Creaser, Jr., Hollis, N.H., assignor to Chu Associates, Inc., Littleton, Mass.

Filed Jun. 15, 1984, Ser. No. 620,874

Int. Cl.⁴ H01Q *1/10, 1/20*

U.S. Cl. 343—900 **9 Claims**



1. A mechanical vibration-tolerant whip antenna having, in combination, a multi-section conical metal tube having successive sections joined by internal rigid reinforcing member means tightly fitting within corresponding recesses in the respective ends of adjacent sections and with the outer metal surfaces of the successive sections providing a continuous smooth external metal surface transition, the lengths of the sections being selected to locate mechanical vibration stress points at their adjacent ends, and each reinforcing member means extending sufficiently above and below such stress points to provide rigid support to the same.

4,567,488

THERMAL HEAD DRIVE DEVICE

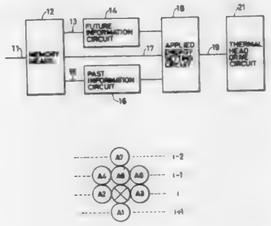
Haruhiko Moriguchi; Toshiharu Inui; Masayuki Hisatake, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1984, Ser. No. 686,936

Claims priority, application Japan, Dec. 28, 1983, 58-245420

Int. Cl.⁴ H05B *1/00*

U.S. Cl. 346—76 PH **9 Claims**



1. A thermal head drive device for applying to an aimed data heater element of a thermal head a pulse to record aimed data in one of several lines of picture data, said device comprising:

first means for storing data representing lines of said picture data already recorded;

second means for storing data representing lines of said picture data intended to be recorded after the line of said picture data containing said aimed data is printed, and

means, coupled to said first and second storing means, for determining, from the line of said picture data containing said aimed data and from said data stored in said first and second storing means, the amount of energy in said pulse to be applied to said aimed data heater element to record said aimed data.

4,567,489

THERMAL PRINTHEAD FOR THERMOGRAPHIC PRINTER

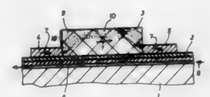
Günther Obstfelder, Panoramastrasse 28, 6940 Weinheim-Lützelsachsen; Gerhard Kreutze, Kirchenstrasse 38, and Winfried Lüttig, Lange Acker 16, both of 6901 Neckarsteinach, all of Fed. Rep. of Germany

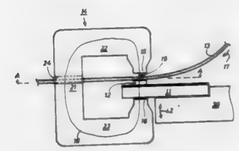
Filed Jan. 4, 1984, Ser. No. 568,095

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1983, 3300104

Int. Cl.⁴ H05B *1/00*

U.S. Cl. 346—76 PH **19 Claims**





1. A thermal printhead for a thermal printer comprising:

(a) an electrically-insulating substrate;

(b) resistors arranged on an electrically-insulating substrate in a print line to form impression points;

(c) current supply and current discharge leads bonded to the resistors; and

(d) means for forming a magnetic field to act upon the resistors in the immediate proximity of the resistors and along the resistor print line, the magnetic field being directed such that when current flows through the resistors, the current paths within the resistors are deflected upwardly into the upper portion of the resistor to the surface thereof.

4,567,490

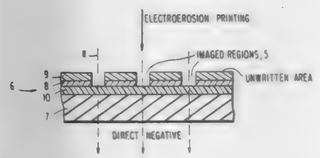
ELECTROEROSION RECORDING MEDIUM OF IMPROVED LUBRICITY

Ali Afzali-Ardakani, Katonah; Mitchell S. Cohen, Ossining; Keith S. Pennington, Somers, and Krishna G. Sachdev, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,300

Int. Cl.[4] G01D *15/34;* **B05D** *5/12;* **B32B** *5/16;* **G03C** *5/24*

U.S. Cl. 346—135.1 **17 Claims**



1. Electroerosion recording material comprising: a non-conductive support member, a thin conductive member, said conductive member being evaporable in response to arcing and high local temperatures obtained in an electroerosion recording process, and an overlayer of protective lubricant composition applied from a liquid onto the stylus-contacting surface of said conductive member, said lubricant composition comprising discrete graphite fluoride particles alone as a solid lubricant or in combination with conductive particles of high lubricity dispersed in a polymeric binder, the particle sizes of said graphite fluoride being in the range 0.05–5 micrometers and the particle size of the conductive particles being in the range 0.05–5 micrometers, the density of said overlayer being from about 2 to 20 micrograms per square centimeter, and the ratio of binder to lubricant particles in said overlayer being sufficient substantially to provide smudge resistance and prevent flake-off during handling and use of said material.

4,567,491

PINCH ROLLER ASSEMBLY

James Lawrence, Irvine, Calif., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Jul. 23, 1984, Ser. No. 633,171

Int. Cl.[4] G01D *15/28*

U.S. Cl. 346—136 **5 Claims**

1. In a graphics plotter having a rotatable drum, a pinch roller for holding a writing medium against the surface of the drum for longitudinal movement thereby, and a carriage track disposed above and parallel to the drum for supporting a pen block carriage for traverse movement, the improvement comprising:

(a) a supplemental track carried by the carriage track and extending downward therefrom, said supplemental track being an inverted T-shape in cross section;

(b) a pinch roller carriage having a pair of spaced parallel side members, each having a pair of facing L-shaped gripping members extending upward therefrom, said gripping members being adapted to fit loosely about said supplemental track whereby said pinch roller carriage hangs therefrom and is easily slideable traversely along said supplemental track;

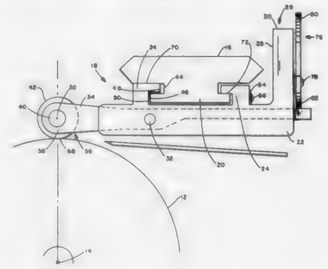
(c) a first pivot pin disposed between said side members and normal thereto at about the location of the ones of said gripping members closest to the drum;

(d) a pivot arm pivotally mounted on said first pivot pin and extending between said side members, one end of said pivot arm terminating above the drum in a yoke having a pair of parallel spaced side pieces lying in planes normal to said pivot pin, the other end of said pivot arm extending past the portion of said supplemental track furthest from the drum;

(e) a second pivot pin disposed between said side pieces and normal thereto;

(f) a pinch roller mounted on said second pivot pin for rotational movement;

(g) first bias means carried by said pinch roller carriage for pushing against said supplemental track to urge said gripping members closest to said drum against the edge of said supplemental track closest to the drum whereby said second pivot pin is placed in longitudinally parallel alignment with the longitudinal axis of the drum, said urging being with a force sufficiently small to allow the easy translational sliding of said pinch roller carriage along said supplemental track;



(h) second bias means operably connected between said pinch roller carriage and said pivot arm for urging said pinch roller down against the surface of the drum and said gripping members into pinching engagement with said supplemental track with sufficient force to prevent translational movement of said pinch roller carriage; and,

(i) bias release means for selectively holding said pinch roller off said drum and releasing said pinching engagement against the force of said second bias means to allow translational movement of said pinch roller carriage and thereby the position of said pinch roller along the length of the drum.

4,567,492

PAPER TRANSPORT DEVICE FOR A RECORDER

Bengt Skafvenstedt, Stockholm, and Sture Ahlgren, Vaellingby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 413,168

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1981, 3138517

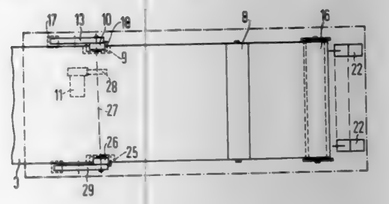
Int. Cl.[4] G01D *15/26;* **B41J** *11/42;* **B65H** *25/26*

U.S. Cl. 346—136 **6 Claims**

1. A paper transport device combined with a recorder means, said transport device having a means for supporting clean paper, a means for forwardly guiding the paper past said recording means, and a motor-driven means for moving said paper:

p0 at least two driven rollers each mounted on an axle, said axle being driven by said motor and said drive rollers being disposed a distance from one another at right angles relative to a direction of paper forward feed,

means for mounting said drive rollers on said axle permitting said drive rollers to freely rotate at a same or faster speed than said axle in the same direction of rotation as said axle for automatically preventing skewed transport of said paper



through said device, and locking said rollers when attempted to be rotated in an opposite direction; and

two idler rollers mounted adjacent to and respectively associated with each drive roller for forming a paper-receiving nip.

4,567,493

LIQUID JET RECORDING HEAD

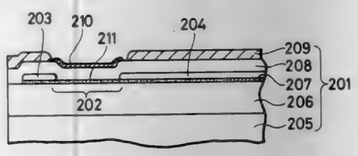
Masami Ikeda, Machida; Hiroto Matsuda, Ebina; Makoto Shibata, and Hiroto Takahashi, both of Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1984, Ser. No. 598,974

Claims priority, application Japan, Apr. 20, 1983, 58-69585

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R **15 Claims**



1. A liquid jet recording head comprising:

a liquid discharge portion including an orifice for discharging a liquid to form a flying liquid droplet and a liquid flow path communicating with said orifice including a heat applying portion for applying thermal energy to the liquid to form the liquid droplet;

an electro-thermal transducer including at least a pair of opposing electrodes electrically connected to a heat generating resistive layer formed on a base and a heat generating portion formed between said electrodes;

a first upper protection layer of an inorganic insulative material and a second upper protection layer of an organic material overlying at least a portion of said first upper protection layer, said layer being provided on at least said electrodes; and

said first upper protection layer and a third upper protection layer of an inorganic material different from the inorganic material of said first upper protection layer provided on at least said heat generating portion.

4,567,494

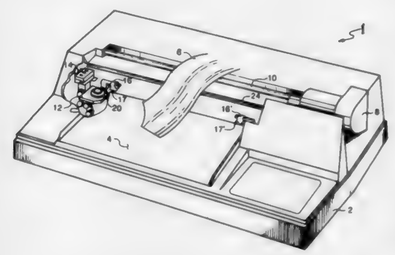
NOZZLE CLEANING, PRIMING AND CAPPING APPARATUS FOR THERMAL INK JET PRINTERS

Bret K. Taylor, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 29, 1984, Ser. No. 626,000

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R **4 Claims**



1. Ink jet printing apparatus comprising:

(A) a printhead including an ink-ejecting orifice plate, said printhead being adapted to move in a predetermined direction;

(B) a suction cup assembly;

(C) a carriage member for said cup assembly;

(D) a pantograph-like linkage assembly connected to and supporting said carriage member whereby upon engagement of said carriage member by said printhead, said carriage member is moved by said printhead in said predetermined direction and in a direction toward said printhead by said linkage assembly to bring said cup assembly into contact with said orifice plate;

(E) and vacuum means connected to said cup assembly for sucking ink from said orifice plate into said cup assembly.

4,567,495

RECORD HEAD CLEANING DEVICE FOR IMAGE RECORDING APPARATUS

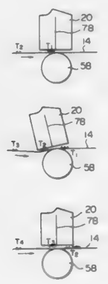
Kazuhiro Yuasa, Zama, and Kenya Komada, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 21, 1983, Ser. No. 477,463

Claims priority, application Japan, Mar. 30, 1982, 57-51710; Apr. 2, 1982, 57-55169

Int. Cl.[4] G02D *15/06*

U.S. Cl. 346—153.1 **6 Claims**



1. A device for cleaning a record head having a stylus means in a transfer type image recording apparatus which includes a rotating recording medium having an endless recording surface and means for developing and cleaning the recording surface, comprising:

a drive source for generating a driving force;
a transmission mechanism for transforming the driving force into a pivotal motion and applying the pivotal motion to the record head;
means for positioning the stylus means of the record head relative to the recording surface of the recording medium; and
operation control means for controlling the timing for the transmission of the pivotal motion to the record head such that an angle of the stylus means relative to the recording medium is periodically changed during intervals between recording cycles of the recording apparatus with no substantial toner layer between the stylus means and the surface of the recording medium thereby residual toner particles from the recording medium stuck on the record head are removed from the record head solely the rotating recording medium.

4,567,496

PRESSURE-SENSITIVE RECORDING SHEETS

Yasuhiro Ogata, and Masakazu Maekawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 17, 1983, Ser. No. 505,510
Claims priority, application Japan, Jun. 18, 1982, 57-105161
Int. Cl.⁴ B41M *5/1, 5/22*
U.S. Cl. 346—200 **12 Claims**

1. A pressure-sensitive recording sheet comprising a paper substrate which contains therein a succinic acid derivative having an alkenyl or alkyl group, or a salt thereof, said group containing from 4 to 18 carbon atoms and a layer containing an electron-donating color former and/or an electron-accepting color developer, wherein the succinic acid derivative or salt thereof is present in an amount within the range of 0.01 to 10% based on the weight of the paper substrate and wherein said succinic acid derivative or salt thereof is added to a pulp slurry and fixed to the pulp with a fixer, whereafter said paper substrate is formed.

4,567,497

HEAT-SENSITIVE RECORDING PAPER

Shigehisa Tamagawa, and Tetsuro Fuchizawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 5, 1985, Ser. No. 708,456
Claims priority, application Japan, Mar. 5, 1984, 59-41735
Int. Cl.⁴ B41M *5/18*
U.S. Cl. 346—200 **6 Claims**

1. A heat-sensitive recording paper comprising a paper support and a heat-sensitive color-forming layer on the paper support, wherein the paper support contains a cationic softening agent.

4,567,498

RECORD MATERIAL

Kenneth J. Shanton, Beaconsfield, England, assignor to The Wiggins Teape Group Limited, Hampshire, England

Filed Jun. 15, 1984, Ser. No. 621,195
Claims priority, application United Kingdom, Jun. 15, 1983, 8316232
Int. Cl.⁴ B41M *5/16, 5/18, 5/22*
U.S. Cl. 346—216 **7 Claims**

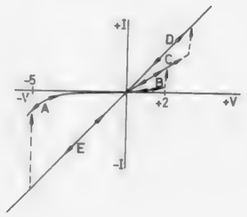
1. Pressure sensitive record material in which the colour forming reaction is produced from a substantially colourless chromogenic material capable of acquiring a positive charge to produce its coloured form and an oxime colour developer capable of engendering the acquisition of a positive charge by the chromogenic material, the chromogenic material and the colour developer being isolated from each other by a pressure sensitive barrier.

4,567,499

MEMORY DEVICE

Peter J. Hockley, Swindon, and Michael J. Thwaites, Hook, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed May 12, 1983, Ser. No. 494,009
Claims priority, application United Kingdom, May 15, 1982, 8214204
Int. Cl.⁴ H01L *45/00*
U.S. Cl. 357—2 **6 Claims**



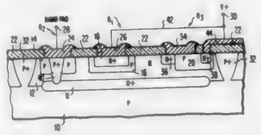
1. A memory device comprising an electrically conducting substrate and layers of i and p and/or n type amorphous or microcrystalline semiconducting material which have been conditioned by the application of a voltage sufficiently large to cause the structure to be permanently modified to reduce the electrical resistance of the layers wherein no p and n layers are adjacent in the device.

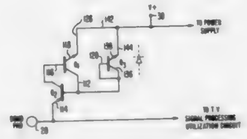
4,567,500

SEMICONDUCTOR STRUCTURE FOR PROTECTING INTEGRATED CIRCUIT DEVICES

Leslie R. Avery, Flemington, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 326,219, Dec. 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 230,357, Jan. 30, 1981, abandoned. This application Aug. 27, 1984, Ser. No. 644,452
Int. Cl.⁴ H01L *29/74*
U.S. Cl. 357—38 **10 Claims**





1. In an semiconductor structure for protecting an integrated utilization circuit having a substrate, a bond pad, the utilization circuit including a signal terminal connected to the bond pad, a single semiconductor layer of a first conductivity type disposed on the substrate, the semiconductor layer having a surface, a first semiconductor region of a second conductivity type disposed in PN junction forming relation with the semiconductor layer, a second semiconductor region of the first conductivity type disposed in PN junction forming relation within the first semiconductor region; the improvement comprising:

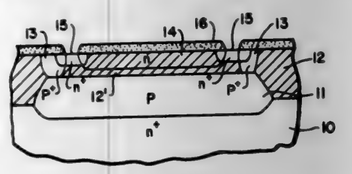
a third semiconductor region of the second conductivity type disposed in PN junction forming relation with the semiconductor layer;
a fourth semiconductor region of the first conductivity type disposed in the semiconductor layer, the fourth semiconductor region being spaced adjacent to the first semiconductor region;
a fifth semiconductor region of the same conductivity type as the semiconductor layer and positioned solely beneath the first and third semiconductor regions and disposed between the semiconductor layer and the substrate, the fifth semiconductor region having a lower resistivity than that of the semiconductor layer;
first conductive means for connecting the bond pad to the third semiconductor region;
a power supply terminal; and
second conductive means for connecting the second semiconductor region to the fourth semiconductor region and to the power supply terminal.

4,567,501

RESISTOR STRUCTURE IN INTEGRATED INJECTION LOGIC

Takeshi Fukuda, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 179,936, Aug. 20, 1980, abandoned. This application Dec. 22, 1983, Ser. No. 563,887
Claims priority, application Japan, Aug. 27, 1979, 54-108938
Int. Cl.⁴ H01L *27/04*
U.S. Cl. 357—51 **2 Claims**



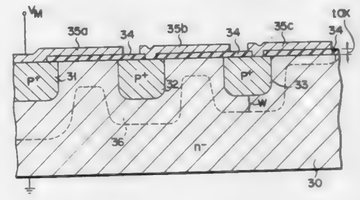
1. A semiconductor device including an integrated injection logic device and a resistor element comprising:
a semiconductor substrate of a first conductivity type;
a semiconductor layer of said first conductivity type formed on said semiconductor substrate;
a buried layer of a second conductivity type opposite to said first conductivity type formed between said semiconductor substrate and said semiconductor layer;
a ring shaped diffused region of said second conductivity type reaching to said buried layer and surrounding an area of said semiconductor layer on said buried layer;
a resistor semiconductor region of said first conductivity type formed in said area;
a pair of diffused regions of the first conductivity type formed in said area and contacting said resistor region; and
means for electrically connecting said pair of diffused regions to wirings of said semiconductor device;
said integrated injection logic device including a pair of spaced apart regions of said second conductivity type and being located in said semiconductor layer and spaced from said substrate, and an additional region of said first conductivity type positioned within one of said pair of spaced apart regions.

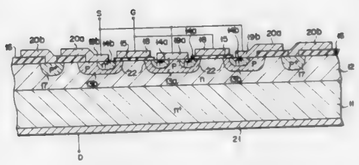
4,567,502

PLANAR TYPE SEMICONDUCTOR DEVICE WITH A HIGH BREAKDOWN VOLTAGE

Akio Nakagawa, Amherst, Mass.; Tadashi Utagawa, Yokohama, and Tsuneo Tsukakoshi, Zushi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 335,345, Dec. 29, 1981. This application Mar. 14, 1984, Ser. No. 587,879
Claims priority, application Japan, Mar. 28, 1981, 56-45773
Int. Cl.⁴ H01L *29/40*
U.S. Cl. 357—53 **2 Claims**





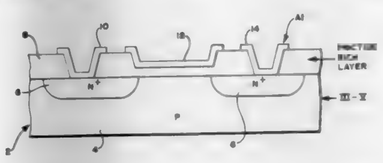
1. A planar type semiconductor device having a high breakdown voltage, including:
a diffusion region of a second conductivity type formed in a selected surface portion of a semiconductor layer of a first conductivity type;
at least a first guard ring region of the second conductivity type formed in another surface portion of said semiconductor layer surrounding said diffusion region at a given distance;
an insulating film covering a given portion of the surface of said semiconductor layer;
a first conductive layer provided on that portion of said insulating film formed on the surface of said semiconductor layer between said diffusion region and said guard ring region, said first conductive layer kept at a potential equal to that of said diffusion region and covering the entire surface of that portion of said insulating film which is between said diffusion region and said guard ring region; and
a second conductive layer provided on that portion of said insulating film formed on the surface of said semiconductor layer surrounding the first guard ring region, said second conductive layer kept at a potential equal to that of said first guard ring region and away from said diffusion region extending outwardly.

4,567,503

MIS DEVICE EMPLOYING ELEMENTAL PNICTIDE OR POLYPHOSPHIDE INSULATING LAYERS

Diego Olego, Croton-on-Hudson; David G. Brock, Mt. Kisco; John A. Baumann, Ossining, all of N.Y., and William E. Spicer, Stanford, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 29, 1983, Ser. No. 509,210
Int. Cl.⁴ H01L *29/34, 29/78, 29/20, 29/161*
U.S. Cl. 357—54 **16 Claims**



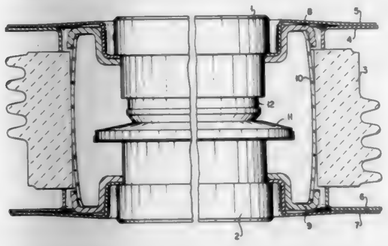
4. A metal insulating semiconductor device comprising:
a substrate formed from a semiconductor material, and
an insulating layer formed from an elemental pniotide material on said substrate.

4,567,504

SEMICONDUCTOR COMPONENT WITH A DISC-SHAPED CASE

Werner Egerbacher, Munich, and Dieter Wunderlich, Geiselbullach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 141,255, Apr. 18, 1980, abandoned.
This application Mar. 14, 1984, Ser. No. 589,392
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2915862
Int. Cl.⁴ H01L *21/447, 21/603, 23/10*
U.S. Cl. 357—79 **5 Claims**



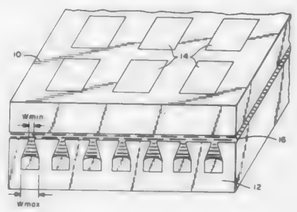
1. Semiconductor component with a case having an interior, comprising a ceramic ring having an inner surface and end faces, two metal discs having peripheries, metal ring members connecting said metal discs to said ceramic ring, a semiconductor body disposed in the case between said metal discs, additional metal ring members each being respectively fastened to the periphery of one of said metal discs in the case, said additional metal ring member having outer edges and sides facing toward the interior of the case, said side of at least one of said additional metal ring members having an indentation formed therein defining a concave surface facing toward the interior of the case, said outer edge of said at least one additional metal ring member overlapping an end face of said ceramic ring, and at least one electrically and thermally insulating one-piece foil having a high energy of evaporation disposed between the simiconductor body and said ceramic ring covering said inner surface of said ceramic ring, overlapping said additional metal ring members and extending into said indentation.

4,567,505

HEAT SINK AND METHOD OF ATTACHING HEAT SINK TO A SEMICONDUCTOR INTEGRATED CIRCUIT AND THE LIKE

Roger F. Pease; David B. Tuckerman, both of Stanford, and Richard M. Swanson, Los Altos, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Oct. 27, 1983, Ser. No. 546,158
Int. Cl.⁴ H01L *23/36*
U.S. Cl. 357—81 **12 Claims**



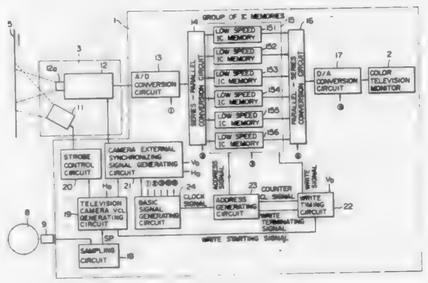
1. A combination comprising
a first body having a major generally planar surface,
a second body having a major generally planar surface, said surface of said second body having a first plurality of microscopic grooves therein, each groove having reentrant surfaces and providing a liquid reservoir, and
a liquid material which partially fills and wets the groove surfaces and said major surfaces,
said major surface of said first body being in abutment with said major surface of said second body with said fluid material being therebetween and partially filling said grooves and thereby maintaining said major surfaces in abutment.

4,567,506

MONITORING APPARATUS FOR COLOR PRINTING

Morimasa Shinoda, and Takamasa Takahashi, both of Tokyo, Japan, assignors to Nippon Univac Supply Kaisha, Ltd. and Limited Company of Shinoda Sekkei Jimusho, both of Tokyo, Japan

Filed Apr. 10, 1984, Ser. No. 598,790
Claims priority, application Japan, Apr. 28, 1983, 58-74088
Int. Cl.⁴ H04N *7/18, 11/04*
U.S. Cl. 358—11 **1 Claim**



1. A monitoring apparatus for color printing, comprising:
a stroboscope for illuminating printed matter moving at a high speed with extremely short pulse-like strobe light;
a color television camera for receiving an image formed by light reflected from or transmitted through said printed matter, said light being from said stroboscope;

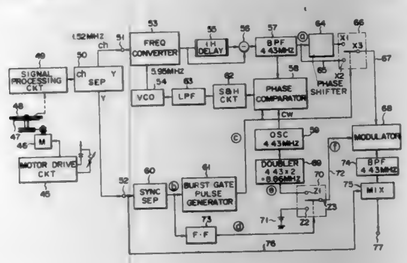
an A/D conversion circuit connected to said camera for converting a composite video signal from said camera resulting from a lag of a projected image formed on a camera tube of said color television camera, said composite video signal including a vertical synchronizing signal and a video signal;
a serial to parallel conversion circuit connected to said A/D conversion circuit for converting a serial digital output signal from said A/D conversion circuit into a parallel digital signal;
an IC memory connected to said serial to parallel conversion circuit for storing signals of both a first field portion and a second field portion of said composite video signal;
an address control circuit connected to said IC memory for causing said IC memory to repeatedly output video signals for said field portions stored in said IC memory in an order of: one—a vertical synchronizing signal of said first field, two—a video signal of said first field, three—a vertical synchronizing signal of said second field, and four—a video signal of said first field, and
a color television monitor connected to an output of a D/A conversion circuit which is connected to an output of a parallel to serial conversion circuit which is connected to an output of said IC memory for displaying a signal output from said IC memory by said address control circuit as a stationary image of said printed matter, said signal output being transmitted through said parallel to serial conversion circuit and said D/A conversion circuit.

4,567,507

COLOR TELEVISION SIGNAL CONVERSION DEVICE

Tetsuo Kusakabe; Tetsuro Sakai, and Kazuhiko Honda, all of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 17, 1983, Ser. No. 476,403
Claims priority, application Japan, Mar. 19, 1982, 57-42693
Int. Cl.⁴ H04M *9/42*
U.S. Cl. 358—11 **9 Claims**



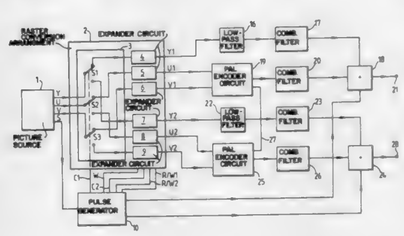
1. Color television converting apparatus comprising:
first signal generating means for generating a color television signal including at least a luminance signal having a line synchronization signal and a first carrier chrominance signal whose frequency has been converted into a lower one than a standard carrier frequency and on which two color signal components (B-Y) and (R-Y) are quadrature-modulated;
chrominance/luminance signal separator means, connected to said first signal generating means, for receiving said color television signal and separating it into said luminance signal and said first carrier chrominance signal;
luminance signal processing means for separating said line synchronization signal from said luminance signal and producing from said line synchronization signal a burst gate pulse signal and a switching control signal whose frequency is half the frequency of said line synchronization signal;
controllable oscillator means for providing a predetermined local frequency signal;
frequency converting means for converting said first carrier chrominance signal into a second carrier chrominance signal having said standard carrier frequency by mixing said predetermined local frequency signal with said first carrier chrominance signal;
burst signal processing means including 45 degrees phase shift means having an input, and first switching means having a first signal terminal connected via said phase shift means to said frequency converting means, and a second signal terminal connected between said frequency converting means and said phase shift means input, said burst signal processing means being controlled by said burst gate signal in such a manner that during a color burst period, only a color burst signal contained in said second carrier chrominance signal is phase-shifted by 45 degrees by said phase shift means so as to provide a third carrier chrominance signal in which a color burst signal is delayed with respect to an axis of said signal component (B-Y);
second signal generating means for producing a carrier signal whose frequency is twice as high as said standard carrier frequency;
modulator means for modulating said third carrier chrominance signal with said carrier signal;
second switching means response to said switching control signal for selectively supplying said second carrier signal to said modulator means for every other line.

4,567,508

TWO-CHANNEL COMPATIBLE TELEVISION TRANSMISSION SYSTEM FOR WIDE PICTURE FORMATS

Michael G. Hulyer, Crawley Down, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1983, Ser. No. 552,540
Claims priority, application United Kingdom, Dec. 22, 1982, 8236369
Int. Cl.⁴ H04N *11/20, 11/06*
U.S. Cl. 358—11 **12 Claims**



1. A method for simultaneously transmitting television signals depicting the same scene, for standard and wide picture formats of, respectively, a standard aspect ratio and a wider than standard aspect ratio, in which both picture formats have the same height, said method comprising the steps: converting a wide-band television signal, which represents the full width of the wide picture format and has n lines per picture, into a first narrower-band television signal, which also represents the full width of the wide picture format and has m lines per picture, where m is substantially $\frac{1}{2}$n and both said wide-band and said first narrower-band television signals have the same field and picture rates, in which said conversion comprises deriving respective adjacent lines of a field of said first narrower-band television signal from respective alternate lines in a field of said wide-band television signal, characterized in that said method further comprises converting said wide-band television signal into a second narrower-band television signal representing the width of the standard picture format and having the same number of lines and the field and picture rates as said first narrower-band television signal, in which said conversion comprises deriving respective adjacent lines of a correspond-

ing field of said second narrower-band television signal from the respective intervening lines of the field of said wide-band television signal, and transmitting said first and second narrower-band television signals by way of respective first and second transmission paths, wherein the transmissions from said first and second transmission paths may be received together and a wide-band television signal having n lines per picture reconstituted from said first and second narrower-band television signals for reproduction as a wide picture format television display or the transmission from the second transmission path may be received alone for reproduction as a television display of standard picture format and normal quality as herein defined.

4,567,509

TELEVISION CAMERA WITH COLOR BALANCE

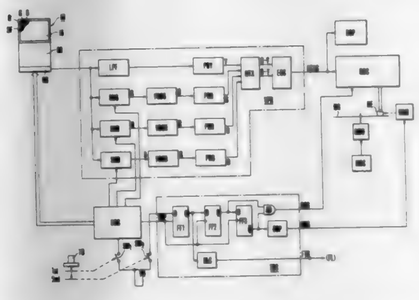
Makoto Takayama, Kanagawa; Tomotaka Muramoto, Tokyo, and Akimasa Nishimura, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 467,348, Feb. 17, 1983, Pat. No. 4,499,487. This application Sep. 18, 1984, Ser. No. 652,171

Claims priority, application Japan, Feb. 26, 1982, 57-31228

Int. Cl.[4] H04N 9/73

U.S. Cl. 358—29 10 Claims



1. A color video camera for use with a detachable electronic flash device which is arranged to produce an indication signal indicating the completion of preparation for flash emission, said camera comprising:

(A) color image pick-up means for producing an electrical signal corresponding to a received color image;

(B) circuit means for receiving the electrical signal and for producing a color video signal including color signal components;

(C) color balance adjusting means for adjusting color balance of the color signal components in the color video signal;

(D) receptacle means for receiving the flash device; and

(E) control means responsive to the indication signal produced by the flash device for causing said adjusting means to adjust the color balance of the color signal components in the color video signal to a condition suited for said image pick-up means under illumination by the flash emitted from the flash device.

4,567,510

SOLID STATE COLOR IMAGING APPARATUS

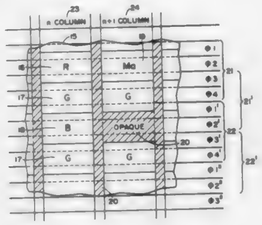
Nobuyoshi Tanaka; Seiji Hashimoto, and Tetsuro Kuwayama, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 679,096, Dec. 6, 1984, abandoned, which is a continuation of Ser. No. 526,897, Aug. 26, 1983, abandoned, which is a continuation of Ser. No. 233,096, Feb. 10, 1981, Pat. No. 4,437,112. This application May 20, 1985, Ser. No. 736,410

Claims priority, application Japan, Feb. 15, 1980, 55-17968; Apr. 18, 1980, 55-51224; Apr. 21, 1980, 55-53302; Apr. 21, 1980, 55-53309

Int. Cl.[4] H04N 9/07

U.S. Cl. 358—44 37 Claims



1. An imaging apparatus comprising:

imaging means for converting an optical image into an output electrical signal, said imaging means including a solid-state image sensor and having a predetermined saturation level;

detecting means for detecting an excess of at least one portion of an output electric signal level of said imaging means above a predetermined level related to the saturation and for producing an output representing the detection; and

limit means for limiting one part of the output electric signal of said imaging means in response to the output of said detecting means, said limit means limiting the output electric signal of said imaging means to a predetermined fixed level.

4,567,511

TRANSMITTING AND STORING DATA RELATING TO TELEVISION VIEWING

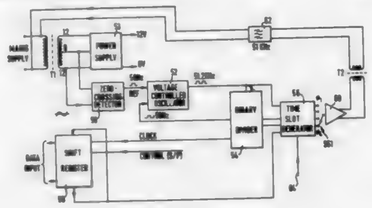
Peter E. Smith, Reading, and Raymond Laxton, Maidenhead, both of United Kingdom, assignors to AGB Research PLC, London, England

Filed May 24, 1984, Ser. No. 614,320

Claims priority, application United Kingdom, May 25, 1983, 8314468

Int. Cl.[4] H04H 9/00

U.S. Cl. 358—84 10 Claims



1. An arrangement for transmitting data from a plurality of units for monitoring the channels to which a plurality of televisions are tuned to a plurality of respective data storage devices, the arrangement comprising:

means for receiving the data from the monitoring units; and

means for transmitting the data, as multi-bit digital words, to the respective data storage devices by way of a domestic mains wiring system having a voltage supply which fluctuates about a baseline at mains supply frequency, the transmission means having

means for defining a plurality of time slots in each half cycle of the voltage supply and referenced to baseline crossings of the voltage supply,

means for generating a carrier signal for the unit,

means for gating the carrier signal "on" and "off" according to the bit values of the digital word,

means for selecting one of the plurality of time slots for the transmission of the carrier signal when gated "on", whereby, the time slots are selectable to correspond uniquely to the respective monitoring units and

means for transmitting the carrier signal, when gated "on", onto the writing system in the selected time slot.

4,567,512

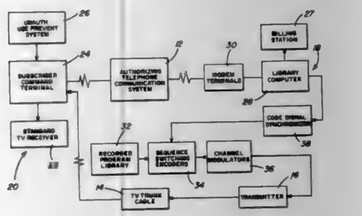
RECORDED PROGRAM COMMUNICATION SYSTEM

Nicholas F. Abraham, Cape Coral, Fla., assignor to World Video Library, Inc., Tex.

Continuation-in-part of Ser. No. 409,566, Aug. 19, 1982, Pat. No. 4,521,806, which is a continuation-in-part of Ser. No. 383,604, Jun. 1, 1982. This application Sep. 28, 1983, Ser. No. 536,660

Int. Cl.[3] H04N 7/18

U.S. Cl. 358—86 10 Claims



1. In a communication system including a program library having a broadcast transmitter, a plurality of modulators connected to the transmitter, program record player means connected to said modulators for transmission of a plurality of discrete recordings of broadcast signals during periodically repeated time segments and computer means for generating information relating to identification of said discrete recordings and the time segments associated therewith; telephone means linked to the computer means of the program library through a plurality of terminals, a plurality of subscriber command units connected to the telephone means at associated subscriber stations, and standard broadcast signal receivers at said subscriber stations connected to the command units, each of said command units having selection data entry means for dialing from said terminals through the telephone means to initially establish a telephone link with the computer means through which the computer generated information is transmitted and memory means for storing the computer generated information transmitted through the telephone link established by the dialing means, broadcast means connected to the transmitter of the program library for transmission of the broadcast signals and converter means in each of the command units at the subscriber stations for coupling the broadcast means to the standard receiver under control of the computer generated information stored in the memory means.

4,567,513

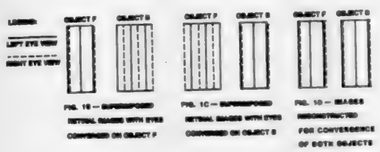
THREE DIMENSIONAL TELEVISION SYSTEM

Donald J. Imsand, 308 Jonquil Ave., Fort Walton Beach, Fla. 32548

Filed Nov. 2, 1983, Ser. No. 547,897

Int. Cl.[4] H04N 13/02

U.S. Cl. 358—92 30 Claims



1. A method of displaying a stereo pair of images to present a single, three dimensional, sharply focused, flicker-free image to human visual perception comprising the steps of:

(a) positioning a pair of video cameras in stereo relation to each other to view a scene,

(b) displaying the video signal from first one camera,

(c) displaying the video signal from the second camera in registration with the display of the first signal, in binocular relationship to the first signal and for approximately the same period as the first signal,

(d) switching between display of the first and second signals at a rate between 3 and 25 of each image per second, and

(e) monitoring the light level of the scene and increasing the rate of switching between display of the first and second signals responsive to higher light levels.

4,567,514

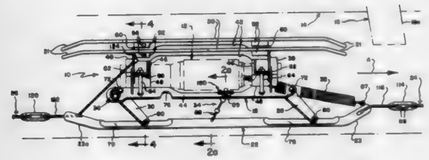
CAMERA CARRYING CONDUIT INSPECTION SLED

William C. Morgan, and Richard A. Wagner, Sr., both of Amherst, N.Y., assignors to Wag-Mor Corporation, Amherst, N.Y.

Filed Feb. 27, 1984, Ser. No. 583,700

Int. Cl.[4] H04N 7/18

U.S. Cl. 358—100 8 Claims



1. A conduit inspection sled including cage means for carrying a camera or the like, peripherally spaced upper and lower support means mounted on the upper and lower sides respectively of said cage means, and cable means connected to said sled for transporting the same along the conduit, wherein the improvement comprises: link means pivotally connecting said cage means and lower support means for relative movement toward and away from each other into retracted and extended sled positions respectively; and resilient means connecting and normally biasing said cage means and lower support means into said extended sled position, wherein said lower support means movably contact the inner periphery of the conduit and thereby normally center the camera or the like substantially along the central longitudinal axis of the conduit; said resilient means also permitting said relative movement into said retracted sled position, wherein the sled is allowed to clear an obstacle within the conduit; one of said cage means and lower support means being provided with stop means engageable with retainer means on the other of said cage means and lower support means, for limiting said relative movement to said extended position; one of said cage means and link means being

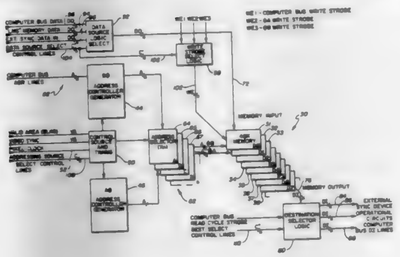
provided with latch means removably engagable with keeper means on the other of said cage means and link means for locking said sled in fully retracted position; and said cable means including a cable connected to and extending in one direction from said lower support means, and a cable connected to and extending in the opposite direction from said cage means, whereby pulling on one of said cables while tensioning the other of said cables collapses said sled into said fully retracted position, in order to facilitate retrieval of said sled by reversely transporting the same past an obstruction already cleared.

4,567,515

MULTIPLE IMAGE GENERATION AND ANALYSIS SYSTEM

Peter M. Schumacher, Great Falls, Mont., assignor to Measuronics Corporation, Charlotte, N.C.

Filed Apr. 20, 1983, Ser. No. 486,767
Int. Cl.⁴ H04N *7/18*
U.S. Cl. 358—107 **37 Claims**



1. A multiple image generation and analysis system for use with an analog video signal in raster format comprising:

means for storing data comprising a plurality of addressable memrory locations, each memory location having a plurality of bit locations so that each memory location is capable of storing a plurality of data bits;

input means for providing data to be stored in the plurality of memory locations;

means for selectively entering the data in any one of the plurality of bit locations during and synchronized with the raster scan of the video signal;

means for selectively accessing data stored in any of the bit locations; and

means for selectively displaying data from any of the bit locations.

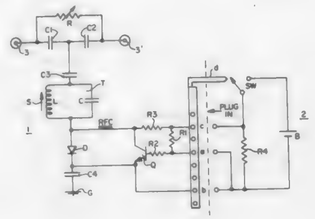
4,567,516

SPECIAL PROGRAM DECODING OF SCRAMBLED SUBSCRIPTION TELEVISION TRANSMISSIONS

George Scherer, East Brunswick; Walter Joswick, Metuchen, and Isaac S. Blonder, Morganville, all of N.J., assignors to Blonder-Tongue Laboratories, Inc., Old Bridge, N.J.

Filed Aug. 30, 1982, Ser. No. 412,780
Int. Cl.⁴ H04N *7/16*; H04K *1/00*
U.S. Cl. 358—114 **21 Claims**

1. Decoding apparatus for subscription scrambled television programs of specialized nature and limited period of time reception, having, in combination, a base unit comprising passive electronic circuit means adapted, when energized, to decode the scrambling of a received television program transmission; a disposable energizing unit comprising a limited life voltage source connected in circuit with normally open switching means and dissipation means for bleeding the voltage of the voltage source when the switching means is closed; means for plugging the energizing unit into the base unit; means operable upon such plug-in for closing the switching means and connecting the voltage source to the base unit electronic circuit to energize the same and permit the decoding of the scrambled television program for the duration of the life of the voltage source; the dissipation means being adjusted so that upon the plug-in of the energizing unit, the voltage source



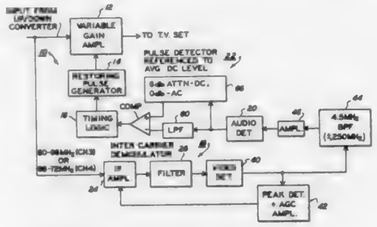
is sufficiently dissipated to insure insufficient life to energize the base unit electronic circuit after the limited period of time of the specialized television program.

4,567,517

DESCRAMBLER FOR SYNC-SUPPRESSED TV SIGNALS

Joseph G. Mobley, Dunwoody, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Feb. 15, 1983, Ser. No. 466,699
Int. Cl.⁴ H04N *7/16*; H04B *1/04*
U.S. Cl. 358—120 **16 Claims**



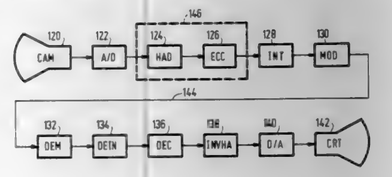
1. A descrambler for a sync suppressed TV signal having a picture carrier and a sound signal carrier which is transmitted with timing pulses as amplitude modulation of said sound signal, which comprises means operating upon said TV signal when it is above its baseband frequency range for intercarrier demodulating said sound carrier against said picture carrier to produce a video baseband signal, including said sound signal, means for detecting said timing pulses in said baseband sound signal, said detecting means including means for amplitude demodulating said sound signal to produce a signal representing the envelope thereof and translating said envelope into first and second signals wherein said pulses are present and absent respectively, and means for outputting said timing pulses when said first signal is a predetermined ratio of said second signal, and means responsive to said detected timing pulses for restoring said sync pulses in said TV signal thereby descrambling said TV signal.

4,567,518

SYSTEM FOR DECODING AND DISPLAYING ENCODED TELEVISION PICTURES

Leonardus M. H. E. Driessen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 451,685, Dec. 20, 1982. This application Jun. 27, 1985, Ser. No. 749,682
Claims priority, application Netherlands, Dec. 23, 1981, 8105799
Int. Cl.⁴ H04N *7/12*
U.S. Cl. 358—133 **5 Claims**



1. In a system receiving encoded data for reconstructing a television picture constituted by a plurality of subpictures, said encoded data comprising subpicture data transformed by transformation functions each having a series of a coefficient bits including a most significant bit, said transformation functions having associated frequencies including a lowest frequency, said series of coefficients being encoded in subsets of k bits of said a coefficient bits into code words comprising larger groups of n bits by a predetermined code having a first minimum Hamming distance of four for allowing at least single error correction, double error detection within said k bits, said code further having a second minimum Hamming distance of five for allowing double error correction within an error protected subset of at least two of said k bits, and wherein said k bits contain at least one bit constituting said most significant bit of said coefficient associated with said transformation function having said lowest frequency, decoding apparatus comprising

means for receiving each of said code words and generating a syndrome word indicative of errors therein on a first output and a plurality of the most significant code bits of said code word on a second output;

error indication means having an input connected to said first output and a first error indication output for furnishing a plurality of primary error indication bits indicative of errors detected in a corresponding plurality of said most significant code bits;

logic means having a first input connected to said first error indication output and a second input connected to said second output of said receiving and generating means for adding said primary error indication bits to said most significant code bits thereby creating a plurality of repaired code bits; and

means connected to said logic means for generating reconstructed data words in response to said repaired code bits.

4,567,519

PROCESS FOR THE ADAPTATIVE CODING AND THE DECODING OF A TELEVISION PICTURE AND DEVICES FOR PERFORMING THIS PROCESS

Christian Richard, Noyal sur Vilaine, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 20, 1984, Ser. No. 591,479
Claims priority, application France, Mar. 22, 1983, 83 04671
Int. Cl.⁴ H04N *7/12*
U.S. Cl. 358—135 **6 Claims**

1. A process for the adaptative coding and the decoding of a television picture, each point in said picture being represented by its brightness value and in which coding consists of:

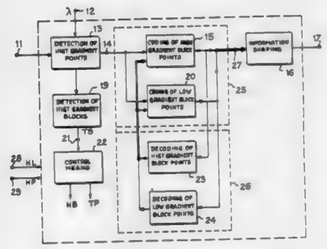
regrouping the points of the picture in blocks of N_P consecutive points of the same line, N_P being a fixed integer,

detecting the points, called high brightness gradient points, whose brightness values differ at least by a value λ from that of one of the adjacent points on the same line or on the preceding line;

coding each block, called high brightness gradient blocks, containing at least one high gradient point, by calculating the difference between the brightness value of each point and a value obtained by coding and then decoding the brightness value of the immediately preceding point and by quantifying this difference according to a first non-linear quantification scale,

coding each block, called low brightness gradient block, containing no high gradient point, by calculating for at least one point of the block the difference between the brightness value of this point and a value obtained by coding and then decoding the brightness value of a so-called reference point from among the points which have previously been coded, followed by the quantification of the value of this difference according to a second non-linear quantification scale, such that the quantification error is smaller for the low values than for the high values of the difference,

distinguishing by a logic indicator, the coded data corresponding to the high gradient blocks on the one hand and those corresponding to the low gradient blocks on the other,



and wherein decoding consists of:

identifying the coded data corresponding to the high gradient blocks on the one hand and those corresponding to the low gradient blocks on the other, on the basis of the value of the logic indicator,

decoding each high gradient block by determining a decoded value of the brightness of each of its points by a quantification of its coded value in accordance with a reverse scale compared with the first quantification scale used for coding, and by an addition of the thus obtained value and the decoded value of the brightness of the immediately preceding point,

decoding each low gradient block by determining a decoded value of the brightness of each point having been coded and belonging to said block by a quantification of its coded value, in accordance with a reverse scale compared with the second quantification scale used for coding, and by an addition of the thus obtained value and the decoded value of the brightness of the corresponding reference point, and by determining a decoded value of the brightness of each point not having been coded and belonging to said block, by an interpolation as a function of the decoded values of the brightness of adjacent points on the same line and on the preceding line.

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TELEVISION CIRCUIT ARRANGEMENT FOR DETERMINING IN A VIDEO SIGNAL FRAME PERIODS COMPRISING TWO FIELD PERIODS

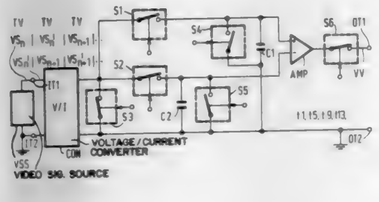
Leendert J. van de Polder, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 10, 1984, Ser. No. 578,915

Claims priority, application Netherlands, Feb. 17, 1983, 8300592

Int. Cl.⁴ H04N *17/00*

U.S. Cl. 358—139 **4 Claims**



1. A television circuit arrangement for determining in a video signal, frame periods comprising two field periods, whereby a video signal comprising a picture signal is present at an input terminal and originates from a signal source for supplying a picture signal repeated in cycles of two successive field periods and with a possible change of picture content, characterized in that the television circuit arrangement is provided with a switching circuit, a first and a second signal integration circuit and a signal comparison circuit connected thereto, the first and the second signal integration circuits being coupled via the switching circuit alternately every other field period to the signal source, during at least a part of a field period, after an operation of resetting to a reference value, while further, before one of the said resetting operations takes place, the signal comparison circuit is operative for supplying a voltage depending upon the comparison of the two signal integrations to an output terminal of the television circuit arrangement.

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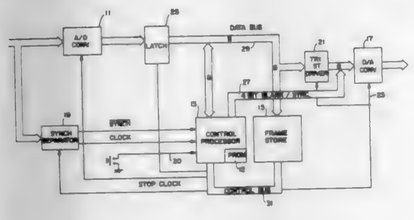
PROCESSOR CONTROLLED DIGITAL VIDEO SYNC GENERATION

Mario de la Guardia, and Ming-Luh Kao, both of Miami, Fla., assignors to Racal Data Communications Inc., Miami, Fla.

Filed Jun. 28, 1983, Ser. No. 509,173

Int. Cl.⁴ H04N *5/06*

U.S. Cl. 358—150 **5 Claims**



3. In a digital video processor, an apparatus for generating an output sync pulse train comprising:

a digital-to-analog converter means; and

means for controlling said converter means to produce said output sync pulse train; wherein said controlling means comprises:

storage means for storing transition times corresponding to transitions between black and blacker-than-black levels in a desired sync signal,

counting means for counting time intervals,

comparing means for comparing the counted intervals to said stored times in order to detect a match between one of said counted time intervals and one of said stored transition times; and

means for producing control signals to said digital-to-analog converter means upon detection of said match between one of said counted time intervals and one of said stored transition times.

4,567,522

LINE SYNCHRONIZING CIRCUIT FOR A PICTURE DISPLAY DEVICE

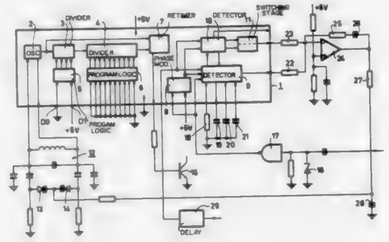
Martinus V. C. Stroomer, and Frederick M. Boekhorst, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 405,125, Aug. 4, 1982, abandoned. This application Jan. 16, 1985, Ser. No. 691,780

Claims priority, application Netherlands, Aug. 6, 1981, 8103705

Int. Cl.⁴ H04N *7/00*

U.S. Cl. 358—158 **7 Claims**



1. In a video system having a picture display device and a horizontal deflection circuit,

apparatus for creating a circuit synchronizing a locally generated line frequency signal to a received line synchronizing signal by modification of a high frequency synthesizing circuit constituted by an integrated circuit having stabilized reference oscillator means for generating a signal having a frequency higher than line frequency, controllable divider means connected to said stabilized reference oscillator means, a retiming circuit connected to said divider means, said frequency synthesizing circuit further having phase detector means, said apparatus comprising

means connected to said divider means for maintaining said divider means at a predetermined constant divider ratio;

means connecting said retiming means to said horizontal deflection circuit of said picture display device, whereby said horizontal deflection circuit generates said locally generated line frequency signal;

means for applying said locally generated line frequency signal and said received line synchronizing signal to said phase detector means;

filter means connected to said phase detector means for furnishing a filtered control signal indicative of the phase difference between said received line synchronizing signal and said locally generated line frequency signal;

and means for applying said filtered control signal to said oscillator means, whereby said locally generated line frequency signal is synchronized to said received line synchronization signal.

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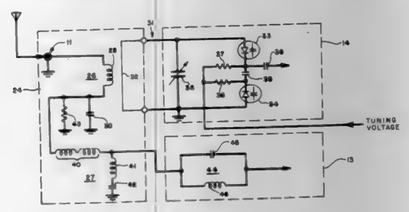
TELEVISION RECEIVER INPUT CIRCUIT

David R. Hiday, Dandridge, and Charles G. Larsen, Knoxville, both of Tenn., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Dec. 5, 1983, Ser. No. 558,226

Int. Cl.⁴ H04N *5/44;* **H03H** *7/38*

U.S. Cl. 358—191.1 **10 Claims**



7. An input circuit for use in a television receiver of the type having a VHF tuner section, a UHF tuner section and a single receiver input terminal, for separating the VHF and UHF components of a combined VHF-UHF signal applied to said receiver input terminal and for applying the VHF and UHF components to the VHF and UHF input of respective VHF and UHF tuner circuits, comprising:

a constant-k low-pass filter section having an input electrically connected to said receiver input terminal and including at least one inductor element;

means for electromagnetically coupling said at least one inductor element to said UHF input of said UHF tuner circuit; and

a low pass m-derived filter section having its input electrically connected to the output of said constant-k filter section and having its output connected to said VHF input of said VHF tuner circuit.

4,567,524

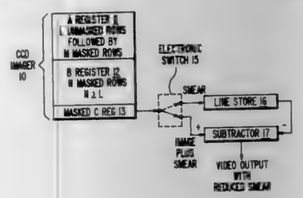
SMEAR REDUCTION IN CCD IMAGERS USING EMPTY WELL CLOCKING

Peter A. Levine, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 407,926, Aug. 13, 1982, which is a continuation-in-part of Ser. No. 393,733, Jun. 30, 1982, abandoned. This application Nov. 21, 1983, Ser. No. 554,085

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213 **17 Claims**



1. A method for reducing transfer smear in video output signal originating from a CCD imager of field transfer type, which method comprises the steps of:

continuing to clock the image or A register of the CCD imager after its entire contents at the time that field transfer clocking began, including samples of image charge, are clocked from the A register to the field store or B register during field retrace time, for introducing a line of empty well samples into said A register from a non-existent or phantom row register and advancing them across said A register to accumulate a line of smear samples;

storing, for at least the ensuing field trace time, a line of smear charge samples clocked from the A register during said continued clocking, and

using the stored smear charge samples to reduce the smear in samples of image charge taken from the B register during that ensuing field trace time.

4,567,525

CCD PICTURE ELEMENT DEFECT COMPENSATING APPARATUS

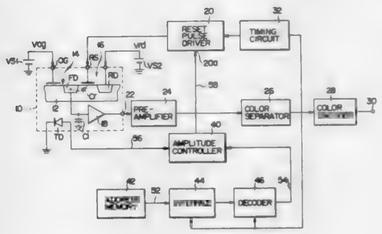
Yukio Endo; Nozomu Harada, and Okio Yoshida, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 15, 1984, Ser. No. 661,050

Claims priority, application Japan, Oct. 18, 1983, 58-195074

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213 **12 Claims**



1. A solid-state image sensing apparatus comprising:

(a) solid-state image sensor means for generating signal charges in response to incident image light thereto to produce an electrical CCD output signal at its output terminal, said CCD output signal including an image signal component corresponding to the signal charges and a reset pulse signal component arising due to the mixing of a reset pulse signal supplied to said image sensor means into the CCD output signal; and

(b) picture element compensating means for, when said image sensor means contains a defective picture element, detecting in an analog manner an increment of a signal level corresponding to a dark current generated at the defective picture element, and for compensating the picture element defect in such a way as to reduce, by the increment of said detected signal level, the mixed reset pulse component contained in the CCD output signal produced from said defective picture element, whereby the output signal from said image sensor means is substantially equivalent to that of a normal image sensor.

4,567,526

SERVO CONTROL CIRCUIT MODULE FOR USE IN A TELEVISION CAMERA

Kazumichi Tsuchiya, Saitama, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Oct. 15, 1982, Ser. No. 434,636

Claims priority, application Japan, Oct. 17, 1981, 56-166052

Int. Cl.⁴ H04N *5/232;* **G03B** *1/00*

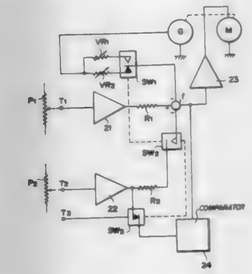
U.S. Cl. 358—227 **13 Claims**

1. A servo control circuit module for use in a television camera having a zoom lens and a focussing lens, which comprises:

servo control circuit means operable in either a speed control mode or a position control mode for controlling the respective speed or position of one of said lenses in response to speed or position signals, respectively;

said servo control circuit means having several elements in

common which are operative in both said speed control mode and said position control mode, said common elements including a servo motor for driving said one of said lenses, a servo drive amplifier whose output drives said



servo motor, and feedback circuit means coupled between said servo motor and said servo drive amplifier; and

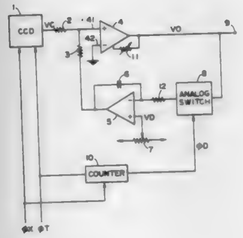
mode selection means connected to said servo circuit means for selecting said speed control mode or said position control mode.

4,567,527

IMAGE READING APPARATUS

Yoshikazu Yokomizo, Kawagoe, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 197,637, Oct. 16, 1980, abandoned.
This application Nov. 16, 1984, Ser. No. 672,160
Claims priority, application Japan, Oct. 20, 1979, 54-135442
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—282 **6 Claims**



1. An image reading apparatus, comprising:

means for generating clock pulses;

a solid-state imaging device connected to be driven by clock pulses, generated by said generating means, to read an original image and to produce an output representative thereof, said imaging device including a linear array of photoreceptor cells;

means for amplifying the output of said imaging device;

a feedback circuit for correcting the output of said imaging device, said feedback circuit including means for comparing the output of said amplifying means, when said imaging device is driven to read a reference image density, with a predetermined reference value and for producing a correction signal in accordance with the comparison, and means for applying a signal correction to said output of said imaging device at the input of said amplifying means in accordance with said correction signal;

means for counting said clock pulses generated by said generating means;

switching means provided in said feedback circuit and connected to said counting means to operate at a timing determined by counting of said pulses by said counting means to close said feedback circuit for the production of said correction signal when said imaging device reads said reference image density; and

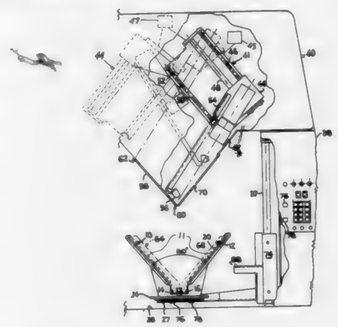
means for retaining said signal correction for a predetermined time.

4,567,528

DOCUMENT SCANNERS

Hugh Wilman, 76 Mount Grace Rd., Potters Bar, Hertfordshire, and James Brotton, 1 Moss Dr., Haslingfield, Cambridgeshire, both of England

Filed Nov. 4, 1983, Ser. No. 549,197
Claims priority, application United Kingdom, Nov. 5, 1982, 8231679
Int. Cl.⁴ H04N *1/04, 1/02*
U.S. Cl. 358—285 **12 Claims**



1. A document scanner for scanning the opened pages of a book comprises:

(i) a housing having a downfacing wedge section with windows in two adjoining faces thereof which can be positioned with the ridge of the wedge in the gutter of a partially opened book,

(ii) at least one lamp means within the housing for illuminating pages positioned against the two windows,

(iii) at least one scanning camera hereinafter referred to as a scanner adapted to scan in turn each of the two pages which are visible through the said windows, to generate electrical video signals corresponding to the information carried by each of the pages in turn,

(iv) a V-shaped trough in which the book will rest, the angle of the trough corresponding to the included angle of the wedge shaped housing and aligned therewith so that a partially opened book resting in the trough can be sandwiched between the windowed faces of the wedge and the sides of the trough, and

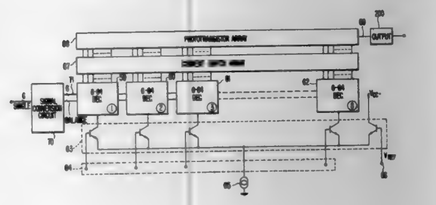
(v) means for effecting relative movement between the housing and the trough to permit movement apart to a first position which permits a book to be positioned in or removed from the trough and pages to be turned and movement together to a second position at which the book is sandwiched therebetween for scanning.

4,567,529

IMAGE SENSOR

Kazufumi Yamaguchi, Yao, and Takahiko Murata, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 5, 1984, Ser. No. 617,566
Claims priority, application Japan, Oct. 26, 1983, 58-200294; Jan. 6, 1984, 59-976
Int. Cl.⁴ H04N *1/02, 1/10, 3/14*
U.S. Cl. 358—294 **20 Claims**



1. A self scanning type image sensor for converting an optical signal to an electric signal comprising:

a photo transistor array composed of a plurality of phototransistors for converting an optical signal to an electric current signal;

a first current switch array composed of a plurality of current switches which are connected with said plurality of phototransistors respectively;

a plurality of decoder circuits each for selecting one of said plurality of current switches of said first current switch array according to a first control signal;

a second current switch array composed of a plurality of current switches for selecting one of said plurality of decoder circuits according to a second control signal;

a current source circuit for supplying a current to said selected one of said plurality of decoder circuits through selected one of said plurality of current switches of said second current switch array;

a drive circuit for producing said first control signal applied to each of said plurality of decoder circuits and said second control signal applied to said second current switch array; and

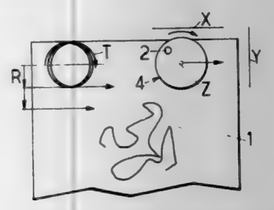
an output circuit for converting said current signal from said phototransistor array to a voltage signal.

4,567,530

READ-OUT DEVICES OF ELECTRIC CHARGE DISTRIBUTIONS ON DIELECTRIC SURFACES

Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint Cloud, France, and Georges Charpak, 14, rue di Clos, Geneve, Switzerland

Filed Apr. 18, 1983, Ser. No. 486,208
Claims priority, application France, Apr. 19, 1982, 82 06675
Int. Cl.⁴ H04N *1/18*
U.S. Cl. 358—295 **13 Claims**



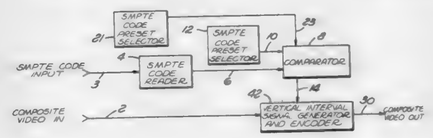
1. A read-out device for providing read-out of electric charges carried by a dielectric sheet, said device comprising a probe, means for providing relative displacement between said probe and sheet, said displacement taking place parallel to the sheet with said probe in close proximity to said sheet, and an electronic circuit for producing at each instant an electrical signal s the amplitude of which is related to the charge induced at this instant on the probe by the charges to be read-out which are carried by the sheet over a region facing the probe, said device further including a rotating head supporting, at one of the axial ends thereof the probe in out of center relationship with respect to the rotation axis Z of said head; means for rotating said head around the rotation axis thereof at a high speed; means for displacing the head parallel to the sheet; means for determining at each instant the angular coordinate a of the probe around the Z axis thereof, as well as the coordinates x and y of this axis in two directions X and Y; and means for transmitting at each instant the values s, a, x and y obtained at this instant, computing and visualization means for receiving the transmitted values s, a, x and y obtained during scanning of the surface of the sheet by the probe and for producing a visible image each point of which, as defined by the coordinates a, x and y, has an intensity dependent on the amplitude of the corresponding signal s.

4,567,531

VERTICAL INTERVAL SIGNAL ENCODING UNDER SMPTE CONTROL

George K. Tabata, Wilmington, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Jul. 26, 1982, Ser. No. 401,587
Int. Cl.⁴ H04N *5/92*
U.S. Cl. 358—335 **26 Claims**



1. A method for vertical interval signal encoding of a composite video program signal having at least a video program portion with sequential fields separated by vertical intervals, said program signal having associated therewith sequential field related identification code signals, said method comprising the steps of:

generating a desired field related identification code at which encoding of said composite video program signal is to commence;

generating continuously recurring vertical interval code signals, signal-compatible with said program signal and synchronous therewith, at predetermined intervals corresponding to like intervals between groups of fields of said program signal;

comparing said field related identification code signals associated with said program signal with the selected desired field related identification code; and

upon the occurence of a match of identification codes in said comparing step, signal-mixing said composite video program signal and said vertical interval code signals in timed relationship so as to insert said vertical interval code signals in time corresponding vertical intervals of said program signal.

4,567,532

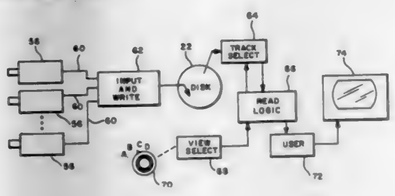
SELECTABLE VIEW VIDEO RECORD/PLAYBACK SYSTEM

Ralph H. Baer, Manchester, N.H., and David Allen, Scituate, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Sep. 16, 1983, Ser. No. 532,874

Int. Cl.⁴ H04N *5/76*

U.S. Cl. 358—342 **3 Claims**



1. A video record and playback system comprising:

(a) a plurality of video cameras positioned to view a particular scene from different vantage points for simultaneously receiving images and generating electrical video signals at respective outputs thereof at standard television frame rates representing the received images from the multiple vantage points;

(b) a recording medium having a plurality of recording tracks thereon for recording video signals;

(c) interleaving writing means connected to respective ones of said outputs of said cameras for receiving and writing said electrical video signals onto said recording tracks in a pre-established interleaved addressing pattern so that each addressable "track" is comprised of a plurality of "subtracks" equal to the number of vantage points which are respective ones of said recording tracks with one said subtrack for each said video signal from each said camera;

(d) reading means for subsequently reading the recorded signal on ones of said subtracks corresponding to a particular one of said vantage points sequentially from respective ones of said tracks and for generating an output video signal at standard television frame rates from said read signal;

(e) video display means operably connected to receive said output video signal for displaying a visual representation thereof; and,

(f) vantage point changing means for selectively changing said ones of said subtracks being read by said reading means to enable viewing of another of said vantage points.

4,567,533

APPARATUS FOR READING A DISK-SHAPED OPTICAL RECORD CARRIER

Gerardus J. Assink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1983, Ser. No. 559,065

Claims priority, application Netherlands, Aug. 31, 1983, 8303029

Int. Cl.⁴ H04N *5/781*

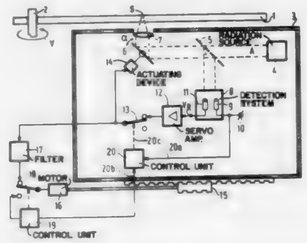
U.S. Cl. 358—342 **4 Claims**

1. An apparatus for reading a disk-shaped record carrier containing a video signal recorded in generally parallel tracks, said apparatus comprising:

an optical read unit, said read unit including means for projecting a read beam of radiation onto said record carrier so as to read the video signal recorded in said tracks, a deflection element for varying the position of the said read beam on said record carrier in a direction transverse to the direction of said tracks, said deflection element being movable in two opposite directions relative to a center position in response to a control signal, means for deriving the video signal from said read beam after cooperation with said record carrier, and means for measuring radial deviation of said read beam relative to a desired track, said measuring means producing said control signal in dependence on said radial deviation measured thereby,

means for radially moving said read unit relative to said record carrier,

a servo control loop for controlling the radial position of said read beam on said record carrier, said control loop including said deflection element and said measuring means and further comprising switching means for rendering said servo control inoperative during controlled time intervals and means for moving said deflection element at least towards said center position during said controlled time intervals, and



means for controlling said switching means, said controlling means including means, coupled to said deriving means, for detecting field pulses or synchronizing signals in the video signal read from said record carrier, which synchronizing signals are time correlated to said pulses, and means for generating, in response to a given field pulse or synchronizing signal detected by said detecting means, a periodic signal which controls said switching means so as to alternately render said servo control loop operative and inoperative in a predetermined relationship with said given pulse or synchronizing signal in response to which said periodic signal is generated.

4,567,534

APPARATUS FOR READING A DISC-SHAPED RECORD CARRIER

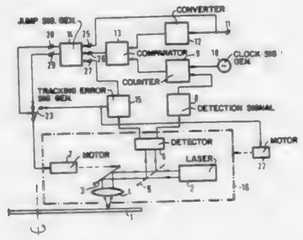
Robertus W. C. Groen; Cornelis A. M. de Jonge; Lawrence M. Schwartz, and Johannes C. van Lier, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1983, Ser. No. 559,064

Claims priority, application Netherlands, Jan. 9, 1983, 8303046

Int. Cl.⁴ H04N *5/85*

U.S. Cl. 358—342 **3 Claims**



1. Apparatus for reading a disc-shaped record carrier in which video signals are recorded in substantially spiral tracks in such a way that corresponding picture elements of consecutive pictures are situated at substantially the same circumferential position on said record carrier, an address code being contained in at least one of two fields of each video picture in said video signals at a predetermined position in a field-blanking interval following a field-synchronizing pulse, said apparatus comprising:

means for projecting a light beam onto the record carrier so as to form a landing spot thereon for reading the video signals recorded in the tracks, said light beam being modulated by the record carrier upon relative movement therebetween,

means for recovering the video signal from said modulated light,

means for determining the radial position of said landing spot relative to a track being read, said position determining means generating a radial tracking error signal indicative of the position of said landing spot relative to said track being read during read out of the video signal,

means for moving said beam relative to said record carrier in a direction transverse to the track direction, said beam moving means being responsive to said radial error tracking signal so as to maintain said landing spot on said track being read,

first means, coupled to said video signal recovering means, for generating a first signal which gives a continuous indication of the duration of a time period up to a reference point in the field-blanking interval which precedes the next address code in the video signal recorded in the track being read,

means for receiving a jump command signal which is indicative of the number of tracks to be jumped,

second means for generating, in response to said jump command signal, a second signal indicative of anticipated duration of said jump to be performed in response to said command signal,

means for comparing said first and second signals, said comparing means generating a start signal when said duration of said time period up to said reference point is substantially equal to said anticipated duration of said jump, and

third means for generating, in response to said start signal and said command signal, a control signal which is applied to said beam moving means and causes said beam moving means to shift said beam over a radial distance corresponding to the number of tracks to be jumped.

4,567,535

RECORDING AND/OR REPRODUCING APPARATUS

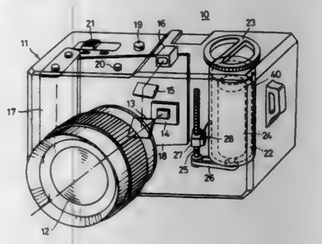
Hisao Kinjo, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,442

Claims priority, application Japan, Oct. 27, 1981, 56-171868; Aug. 8, 1982, 57-137742

Int. Cl.⁴ G11B *5/004, 19/00*

U.S. Cl. 360—87 **21 Claims**



1. A recording and/or reproducing apparatus for recording and/or reproducing an information signal on and/or from a recording medium which is user-interchangeably loadable into said recording and/or reproducing apparatus, said recording medium having a truncated cone shape and comprising a hollow, conical part having an outer peripheral surface and opposite ends, said hollow part being open at one of said ends, and a recording surface formed on said peripheral surface of said hollow part, said hollow, conical part having only slight taper so as to be almost cylindrical, said recording and/or reproducing apparatus comprising:

a rotational motor including a rotary shaft and magnetic coupling means on said rotary shaft to rotatably couple said recording medium to said shaft, said motor being mounted so as to be substantially surrounded by said hollow part of said recording medium when said recording medium is loaded into said recording and/or reproducing apparatus, said magnetic coupling means supporting and magnetically coupling the other end of the loaded recording medium to the rotary shaft to allow said recording medium to be detached from the drive of said rotational motor;

a magnetic recording and/or reproducing transducer for recording and/or reproducing an information signal on and/or from said recording surface of said recording medium with the latter rotationally driven by said magnetic coupling means of said motor; and

feeding means for feeding said recording and/or reproducing transducer along said recording surface of said recording medium.

4,567,536

ADAPTER FOR A MINIATURE TYPE TAPE CASSETTE

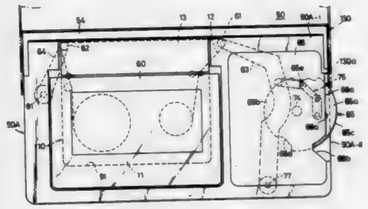
Eiichi Tsuchiya, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 18, 1983, Ser. No. 495,808

Claims priority, application Japan, May 31, 1982, 57-80452[U]; May 31, 1982, 57-80453[U]

Int. Cl.⁴ G11B *15/66*

U.S. Cl. 360—94 **8 Claims**



1. An adapter for a miniature type tape cassette having an external form and size smaller than those of a standard type tape cassette, said miniature type tape cassette being used with a recording and/or reproducing apparatus of a type different from a standard type recording and/or reproducing apparatus primarily designed for carrying out recording and/or reproduction with said standard type tape cassette, said standard type recording and/or reproducing apparatus comprising an inserting part into which said standard type tape cassette or said adapter is inserted, said miniature type tape cassette comprising a cassette case smaller than said standard type tape cassette, and a tape accommodated within said cassette case and forming a tape path along a front of said cassette case when said miniature type tape cassette is not in use, said adapter comprising:

an adapter case having an external form and size substantially identical to those of said standard type tape cassette;

an accommodating part for accommodating said miniature type tape cassette; and

tape draw-out means provided within said adapter case, for drawing out the tape from said miniature type tape cassette so as to form a predetermined tape path within said adapter case;

said tape draw-out means comprising tape draw-out mem-

bers relatively entering on an inner side of the tape path along the front of said cassette case when accommodating said miniature type tape cassette within said accommodating part, and a manipulation part for operating said tape draw-out members so as to form said predetermined tape path within said adapter,

said manipulation part projecting outside said adapter case to such an extent that said manipulation part hits said inserting part of said standard type recording and/or reproducing apparatus and prevents insertion of said adapter into said inserting part before and during manipulation of said manipulation part, and receding within said adapter case to permit insertion of said adapter through said inserting part after manipulation of said manipulation part is completed.

4,567,537

TRANSISTOR-CONTROLLED-LOAD, SHORT-CIRCUIT-PROTECTED CURRENT-SUPPLY CIRCUIT

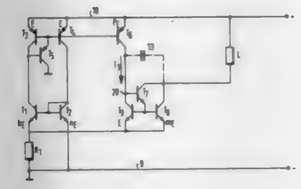
Bernd Kalkhof, Reutlingen, and Karl Nagel, Gomaringen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,295

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3238880

Int. Cl.⁴ H02H *7/20*

U.S. Cl. 361—18 **8 Claims**



1. Load short circuit protected current supply circuit, adapted for connection to a load (L) and being supplied with electrical power from a pair of power terminals (+,−) having

an output transistor (T7, T8);

a dropping or current control resistor (R1),

the emitter-collector path of the output transistor, and of the dropping resistor being connected in a series circuit which, in turn, is serially connected to the load (L) and to the power terminals;

and a current supply circuit (T1–T6) coupled to the base of the output transistor (T7, T8) to control current flow therethrough independently of supply voltage, said current supply circuit being connected to include said dropping resistor (R1) for controlled current flow to the base of the output transistor as a function of, and as determined by, the value of said resistor;

wherein the output transistor comprises a transistor pair including a first transistor (T8) and a second transistor (T7) both transistors of the pair being of the same conductivity type (npn); and

a third transistor (T9) having the same conductivity type as the transistors (T8, T7) of said transistor pair,

the emitter-base path of the third transistor being connected in parallel to the emitter-base path of the first transistor (T8), the collector of the third transistor being connected to the base of the second transistor,

said three transistors (T7, T8, T9) forming a current mirror circuit, the input to the current mirror circuit being formed by the base of the second transistor (T7) and the output of the current mirror circuit being formed by the commonly connected collectors of the first and second transistors (T8, T7).

4,567,538

ALTERNATING CURRENT LIMITING APPARATUS

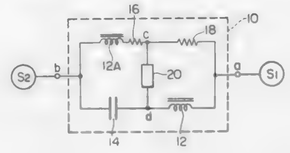
Satomi Arimoto, Nishinomiya; Hiroyuki Hirakawa, Minoo, and Hiroshi Maekawa, Suita, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1984, Ser. No. 571,528

Claims priority, application Japan, Feb. 2, 1983, 58-16584

Int. Cl.⁴ H02H *9/02*

U.S. Cl. 361—58 **6 Claims**



1. An alternating current limiting apparatus comprising:

a first series circuit connected between different kinds of power system lines and formed of first and second components;

a second series circuit connected in parallel with said first series circuit and formed of a third component and two resistors serially connected to each other; and,

a closing device inserted across the interconnection of said first and second components and the interconnection of both of said resistors;

said closing device being normally maintained in its open state to form a series resonance circuit with said first and second components, while, upon the occurrence of a fault of either of said power systems, said closing device is closed to form a parallel resonance circuit with said first and third components.

4,567,539

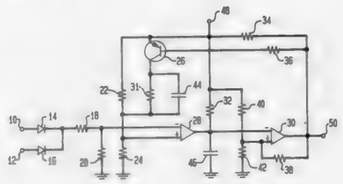
POWER INTERRUPTION AND BROWNOUT DETECTOR

Howard Sinberg, Coral Springs, Fla., assignor to Siemens Corporate Research & Support, Inc., Iselin, N.J.

Filed Mar. 23, 1984, Ser. No. 592,681

Int. Cl.⁴ H02H *3/24*

U.S. Cl. 361—92 **5 Claims**



1. A power interruption and brownout detector for an alternating current voltage source, comprising:

(a) rectifier means for converting the alternating current voltage source output to pulsating direct current voltage;

(b) a direct current voltage source which provides first and second reference voltages;

(c) a first comparator which compares the output of the rectification means with the first reference voltage, the first comparator being of the type for providing two output states, a first state providing a grounding condition and a second state for providing no output voltage contribution;

(d) a voltage storage device associated with the first comparator, the device being charged by the direct current voltage source when the output of the rectifier means is less than the first reference voltage and discharged during the first state of the first comparator;

(e) a second comparator which compares the voltage storage device voltage with the second reference voltage; and

(f) means, associated with the second comparator, for indicating a power interruption or brownout condition when the voltage storage device voltage is greater than the second reference voltage.

4,567,540

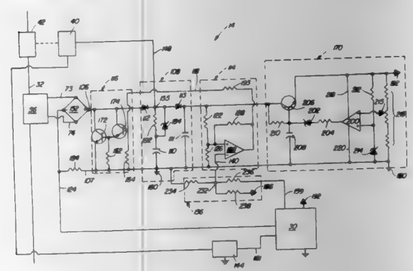
POWER SUPPLY FOR A CIRCUIT INTERRUPTER

Joseph W. Ruta, Elmhurst, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Jun. 22, 1983, Ser. No. 506,944

Int. Cl.⁴ H02H *3/08*

U.S. Cl. 361—93 **19 Claims**



1. A power supply for a circuit interrupter in an alternating current line, the circuit interrupter having a trip signal generator for generating a trip signal when the current in the line satisfies a predetermined condition, said power supply comprising:

current-producing means for producing output current proportional to the current in the line;

energy storage means for storing energy derived from said output current and for providing a source of energy to operate the circuit interrupter in response to generation of a trip signal by the trip signal generator;

reference signal means responsive to said trip signal for providing a reference signal, said reference signal being in a first state when no trip signal is generated and in a second state when a trip signal is generated;

control signal means responsive to said reference signal and to the amount of energy stored by said energy storage means for generating a control signal, wherein when said reference signal is in the first state, said control signal is in a first state when the amount of stored energy is less than a first predetermined level and in a second state when the amount of stored energy exceeds a second predetermined level, and wherein when said reference signal is in the second state, said control signal is in the first state when the amount of stored energy is less than a third predetermined level and in the second state when the amount of stored energy exceeds a fourth predetermined level; and

switch means responsive to said control signal, said switch means being in the off state when said control signal is in the first state and in the on state when said control signal is in the second state, said switch means diverting said output current away from said energy storage means when in the on state and allowing output current to flow to said energy storage means when on the off state, thereby maintaining the energy stored in said energy storage means between said first and second predetermined levels when said reference signal is in the first state, and maintaining the energy stored in said energy storage means between said third and fourth predetermined levels when said reference signal is in the second state.

4,567,541

ELECTRIC POWER SOURCE FOR USE IN ELECTROSTATIC PRECIPITATOR

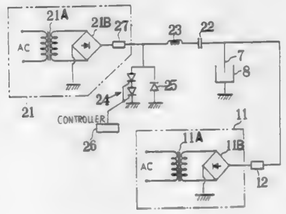
Hiroshi Terai, Hiratsuka, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Feb. 3, 1984, Ser. No. 576,664

Claims priority, application Japan, Feb. 7, 1983, 58-18578; May 20, 1983, 58-89790

Int. Cl.⁴ H01T *23/00*

U.S. Cl. 361—235 **20 Claims**



1. An electric power source for use in an electrostatic precipitator having a discharge electrode, comprising a first high voltage DC source having an output terminal adapted to be connected to the discharge electrode of the electrostatic precipitator, an inductor having one end connected through a coupling capacitor to said output terminal, a controlled rectifier having its anode connected to the other end of said inductor and its cathode connected to ground, a diode connected in reversed parallel to said controlled rectifier, a second high voltage DC source having a high output impedance and connected to said inductor, and a controller which can supply a trigger pulse to the gate of said controlled rectifier, wherein said controller is an independently operated pulse generator, wherein said second high voltage DC source is connected to said other end of said inductor, and wherein said second high voltage DC source includes a power transformer having a primary winding connected to an AC power source and a secondary winding of a high impedance connected through a rectifier bridge to said inductor.

4,567,542

MULTILAYER CERAMIC SUBSTRATE WITH INTERLAYERED CAPACITOR

Yuzo Shimada; Kazuaki Utsumi; Teruyuki Ikeda, and Masanori Suzuki, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

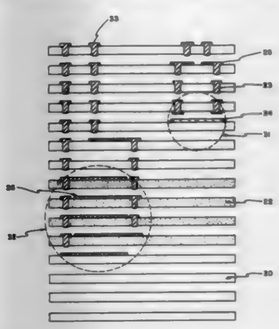
Filed Apr. 23, 1984, Ser. No. 603,109

Int. Cl.⁴ H01G *4/10;* **H01L** *19/00*

U.S. Cl. 361—321 **7 Claims**

5. A hybrid ceramic structure comprising a plurality of glass-ceramic insulator layers sandwiching at least one dielectric layer with interposed circuit patterns, wherein each glass-ceramic insulator layer has a composition consisting essentially of oxides in the ranges of: 40 through 60 percent by weight of aluminum oxide, 1 through 40 percent by weight of lead oxide, 1 through 30 percent by weight of boron oxide, 2 through 40 percent be weight of silicon dioxide, zero through 2.5 percent by weight of at least one oxide selected from oxides of chemical elements in Group I of the periodic table, 0.01 through 25 percent by weight of at least one oxide selected from oxides of

chemical elements in Group II of the periodic table, and 0.01 through 10 percent by weight of at least one oxide selected



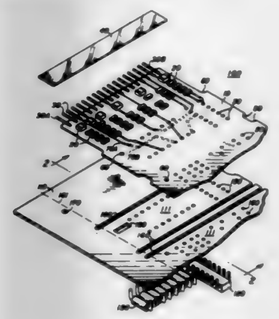
from oxides of chemical elements in Group IV of the periodic table except for carbon, silicon, and lead.

4,567,543

DOUBLE-SIDED FLEXIBLE ELECTRONIC CIRCUIT MODULE

Jay J. Miniet, Fort Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 15, 1983, Ser. No. 466,466
Int. Cl.⁴ H05K *1/00*
U.S. Cl. 361—398 **7 Claims**



1. A double-sided flexible electronic circuit module having a plurality of leadless components and components having leads comprising:

a flexible circuit board having co-planar conductive circuitry affixed to both first and second sides;

first means for electrically connecting certain conductors of said circuitry on said first side with certain conductors of said circuitry on said second side;

non-conductive adhesive disposed between said leadless components and said first side, said leadless components being located within a first predetermined area on said flexible circuit board;

an insulative carrier member mounted to said second side in a second predetermined area on said flexible circuit board contiguously supporting said components with leads, said second predetermined area spaced apart from and not overlapping said first predetermined area, said carrier having a first set of holes receiving said leads and said flexible circuit board having a second set of holes in alignment with said first set of holes with said leads passing through said carrier member to said first side of said flexible circuit board;

solder connecting said leadless components and components with leads to selected conductors on said first side of said flexible circuit board; and

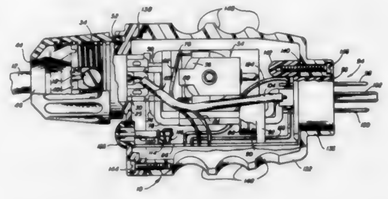
second means for providing electrical connections to said conductors.

4,567,544

PLUG-IN GROUND FAULT CIRCUIT INTERRUPTER MODULE

DeHertburn N. Ronemus, North Syracuse, and Victor M. Tice, Manlius, both of N.Y., assignors to Pass & Seymour, Inc., Solvay, N.Y.

Filed Oct. 5, 1983, Ser. No. 539,154
Int. Cl.⁴ H05K *5/06*
U.S. Cl. 361—399 **6 Claims**



1. A substantially waterproof ground fault circuit interrupter module for attachment to the wires of a line cord extending from an electrical load, said module including plug blades for insertion in an electrical receptacle to connect said load to a power source, said module comprising:

(a) a hollow, one-piece body member enclosed on four sides and having openings at opposite ends;

(b) a plug subassembly including said blades and a solid plug member through which said blades extend in sealed engagement;

(c) a relay subassembly including a coil and movable contacts;

(d) a circuit board subassembly including ground fault responsive means;

(e) a cover subassembly including a wall member with a circular collar extending from one side thereof;

(f) means interconnecting said plug, relay, circuit board and cover subassemblies for mutual support to form a complete assembly;

(g) said assembly being inserted into said body member with said plug and wall members in sealing engagement with said openings at opposite ends of said body member, whereby said relay and circuit board subassemblies are entirely enclosed in a first, watertight compartment defined by said body, plug and wall members with said collar and blades extending outwardly in opposite directions therefrom;

(h) a cap member releasably engageable with said collar in covering relation to form a second compartment, said cap member having an opening therein for passage of a line cord;

(i) terminal means extending in sealing engagement through the portion of said wall member surrounded by said collar between said first and second compartments for attachment thereto of the wires of a line cord within said second compartment; and

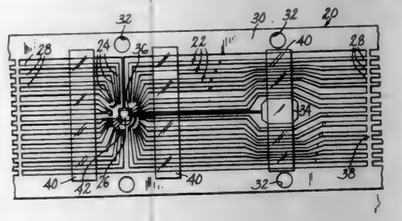
(j) a resilient grommet having an opening through which a line cord passes, said grommet being positioned within said second compartment in sealing engagement with said cap member opening to render said second compartment watertight when said module is attached to a line cord.

4,567,545

INTEGRATED CIRCUIT MODULE AND METHOD OF MAKING SAME

Rollin W. Mettler, Jr., 4 Tumblebrook Ct., Cheshire, Conn. 06410

Filed May 18, 1983, Ser. No. 495,693
Int. Cl.⁴ H05K *1/18, 7/02;* **H01J** *5/00*
U.S. Cl. 361—401 **30 Claims**



1. An inetgrated circuit module adapted to connect an IC chip to a printed circuit board edge connector, comprising:

a nonconductive substantially planar circuit board substrate having first and second surfaces and a contact edge for connection to the printed circuit board edge connector;

a conductive lead frame having a first set of leads laminated to the first surface of the substrate and a second set of leads wrapped around an edge of the substrate and laminated to the second surface of the substrate, said first and second set of leads having inner tips for connection to the IC chip and outer contact ends for contacting the printed circuit board edge connector;

wherein the contact ends of the first set of leads are laminated to the first surface of the substrate in spaced relation along the contact edge, and the contact ends of the second set of leads are laminated to the second surface of the substrate in spaced relation long the contact edge; and

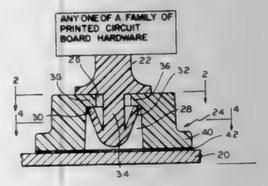
whereby the contact ends of the first and second set of leads are presented along the contact edge for contacting the printed circuit board edge connector.

4,567,546

ANCHOR BASE MOUNTING BLOCK

John C. Zeller, Schaumburg, and Peter M. Wells, Jr., Sycamore, both of Ill., assignors to All States Plastic Mfg. Co., Inc., Chicago, Ill.

Filed Nov. 8, 1982, Ser. No. 440,250
Int. Cl.⁴ H05K *7/04*
U.S. Cl. 361—420 **14 Claims**



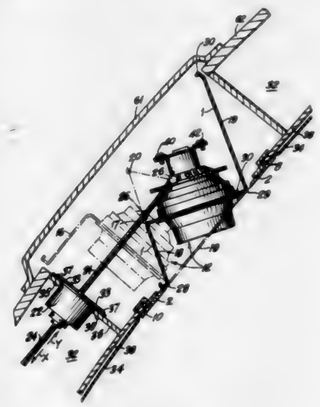
1. A plastic mounting block which receives and captures an anchor base of a type used for mounting electronic components on a metal chassis said anchor base having a somewhat arrowhead shape with resilient interferring protrusion barbs extending therefrom, said mounting block comprising a block having upper and lower surfaces with side walls therebetween to form a cavity, said mounting block being slightly larger than said anchor base and said cavity being shaped and dimensioned to receive and contain only said anchor base, a single anchor base mounting hole in said upper surface, said hole being centrally located over and communicating with said cavity, said hole being formed in the top of said block in the size and shape required to receive and capture said anchor base while deflecting said barbs inwardly, whereby said hole and cavity comprise means receiving and capturing said anchor base, a flange formed by the top of said cavity and the upper surface of the block through which said hole passes, said flange capturing the barbs when they relax from the deflected position, said anchor base being free to rotate over at least a substantial arc when in the cavity, and attachment means on the lower surface of said mounting block for securing it to said chassis, whereby said mounting block enables said anchor base to be mounted on said chassis without requiring a mounting hole in said chassis.

4,567,547

AIR AND LIGHT UTILITY ASSEMBLIES

Enrique Alie, Brooklyn; Arthur H. Gilmore, New York, both of N.Y., and Henry J. Mack, Jr., Levittown, Pa., assignors to Falcon Jet Corporation, Teterboro, N.J.

Filed Sep. 28, 1984, Ser. No. 655,709
Int. Cl.⁴ F21V *33/00*
U.S. Cl. 362—154 **8 Claims**



1. A utility assembly, comprising:

a housing having an opening therein;

a utility mechanism to provide light or air functions;

a substantially Z-shaped support member pivotally supported at least partially within said housing, said utility mechanism being mounted in the cross member extending between the substantially parallel members of the Z-shaped member, one of said substantially parallel members mating with said opening to substantially close the opening whereby when the opening is closed the utility mechanism is enclosed within the housing; and

linear movement means cooperating with said Z-shaped support member for causing said Z-shaped support member to pivot in such a manner that said Z-shaped support member pivots to expose the utility mechanism through said opening.

4,567,548

CANDLE-SHAPED LUMINARY

Peter Schneeberger, Etzmattenstrasse 40, 7800 Freiburg, Fed. Rep. of Germany

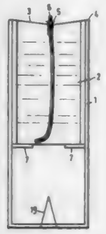
Filed Nov. 21, 1984, Ser. No. 673,677
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1983, 3343595
Int. Cl.⁴ F21L *19/00*
U.S. Cl. 362—161 **23 Claims**

1. A candle-shaped luminary, comprising:

a cylindrical pipe having an outer coating;

a container to receive liquid fuel exchangeably mounted inside of said cylindrical pipe;

an upper cover for said container corresponding to the approximate width of said cylindrical pipe so that said upper cover abuts seamlessly against the upper edge of said pipe after said container is inserted therein; and



a wick-guiding tube inserted in said upper cover, and having a wick passing therethrough so that said wick reaches into said container and contacts said liquid fuel, said wick protruding from the upper side of said container that is mounted exchangeably in said pipe, said luminary thereby providing an image of the upper area of a natural candle and an increased burning time.

4,567,549

AUTOMATIC TAKEUP AND OVERLOAD PROTECTION DEVICE FOR SHAPE MEMORY METAL ACTUATOR

Charles D. Lemme, Tucson, Ariz., assignor to Blazer International Corp., Franklin Park, Ill.

Filed Feb. 21, 1985, Ser. No. 703,895
Int. Cl.⁴ F03G *7/06*; H01H *61/04*
U.S. Cl. 362—279 **10 Claims**

1. An automatic takeup and overload protection device for a shape memory metal actuator for the type comprising an actuator mechanism movable between first and second positions, said device comprising:

a biasing element;

a linkage element defining first and second ends and comprising at least one section of shape memory metal material; said first end fastened to said biasing element and said second end fastened to said actuator mechanism; said section of shape memory metal material operating to move said actuator mechanism to said second position when said shape memory metal material is placed at a selected temperature; and

a restraining element comprising a friction generating surface in physical contact with said linkage element;

said surface cooperating with said linkage element to generate frictional forces of sufficient magnitude to prevent said first end of said linkage element from moving with respect to said surface during movement of said actuator mechanism to said second position and to protect said linkage element from excessive tension by allowing said first end of said linkage element to move with respect to said surface when excessive forces are applied to said linkage element by said actuator mechanism;

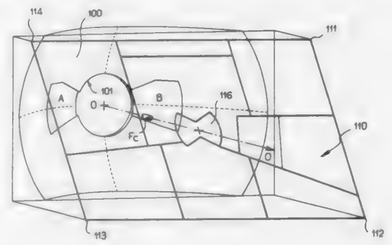
said surface further cooperating with said linkage element to allow said biasing element to move said first end of said linkage element with respect to said surface to substantially maintain a minimum tension of said linkage element between said surface and said actuator mechanism.

4,567,550

AUTOMOBILE HEADLAMP WITH INCLINED FRONT GLASS

Marc Stephano, Gargan, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Apr. 27, 1984, Ser. No. 604,737
Claims priority, application France, Apr. 27, 1983, 83 06945
Int. Cl.⁴ F21V *7/09*
U.S. Cl. 362—297 **1 Claim**



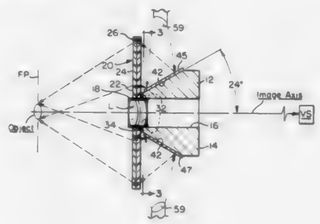
1. An automobile headlamp of the type comprising at least one light source, at least one principal reflector of generally parabolic form having a main focus and a central aperture, said light source being a dipped filament close to said main focus and cooperating with said principal reflector, a front glass which is greatly inclined with respect to the vertical, said reflector having selected critical zones, said zones having an elliptical shape with one focus in the proximity of said light source and the other focus in the proximity of the centre of said glass, said critical zones being formed by two circular sectors arranged to the left and to the right of said principal reflector adjacent said central aperture, the the central zone of said glass corresponding to said critical zones being substantially smooth whereby light rays reflected by said critical zones of said reflector pass through said glass without significant deflection in spite of the inclination of the glass.

4,567,551

MULTI-DIRECTIONAL SURFACE ILLUMINATOR

Albert G. Choate, Honeoye Falls, N.Y., assignor to Automation Gages, Inc., Rochester, N.Y.

Filed Feb. 27, 1984, Ser. No. 583,626
Int. Cl.⁴ G02B *21/10*
U.S. Cl. 362—398 **17 Claims**



1. A multi-directional surface illuminator, comprising

a housing,

means mounted in a bore in said housing to project therethrough the image of an object located in a predetermined position beyond one end of said housing,

a plurality of light sources arrayed around the outside of said housing,

reflective means interposed between said sources and said housing and registering with said sources to reflect light therefrom away from said housing, and

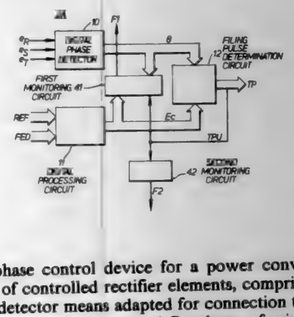
a condenser lens extending transversely of said housing bore with one side thereof confronting on said reflective means to receive therefrom light reflected from said sources, and with the other side thereof facing said predetermined position to focus light from said reflective means obliquely onto an object located in said predetermined position.

4,567,552

PHASE CONTROL DEVICE FOR A POWER CONVERTER

Syunichi Hirose, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 8, 1984, Ser. No. 669,373
Claims priority, application Japan, Nov. 18, 1983, 58-217251
Int. Cl.⁴ H02M *7/155*; H02P *13/24*
U.S. Cl. 363—87 **5 Claims**



1. A phase control device for a power converter with a plurality of controlled rectifier elements, comprising:

phase detector means adapted for connection to said power converter to receive an AC voltage of said power converter for detecting a phase of said AC voltage to produce a phase signal, said phase signal including a phase synchronizing signal and a phase judging signal;

processing means adapted for connection to said power converter to receive an electrical quantity appearing at one of an AC side and a DC side of said power converter as a feedback signal for comparing said feedback signal with a reference signal to produce a phase control signal so that said feedback signal becomes equal to said reference signal, said phase control signal including a control signal and an angle signal; and

firing pulse determination means connected to receive said phase signal from said phase detector means and said phase control signal from said processing means for comparing said phase signal with said phase control signal to produce a plurality of firing pulses based on the comparison result, said firing pulses being adapted to be connected to selected of said controlled rectifier elements to fire each of said controlled rectifier elements, said firing pulses outputted at a time determined by the result of the comparison of said phase synchronizing signal with said control signal, wherein it is determined which of said firing pulses is connected to which of said controlled rectifier elements by the result of the comparison of said phase judging signal with said angle signal;

said processing means being connected to receive one of said firing pulses from said firing pulse determination means as a specific firing pulse and said phase signal from said phase detector means and including monitoring means; and

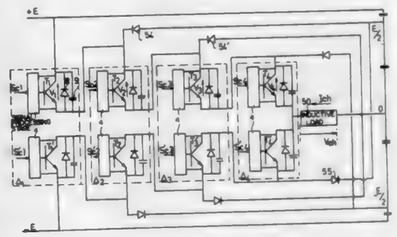
said monitoring means being connected to receive said phase synchronizing signal, said control signal and said specific firing pulse for judging whether or not said phase control device has failed based on said phase synchronizing signal and said control signal upon reception of said specific firing pulse to produce a fault indicating signal based on the judgment result.

4,567,553

STATIC SEMI-CONDUCTOR ELECTRICAL ENERGY CONVERTER ASSEMBLY

Henri Foch, and Jacques Roux, both of Toulouse, France, assignors to Agence Nationale pour la Valorisation et la Recherche (A.N.V.A.R.), Paris, France

Filed Aug. 15, 1983, Ser. No. 523,193
Claims priority, application France, Aug. 16, 1982, 82 14249
Int. Cl.⁴ H02P *13/20*
U.S. Cl. 363—98 **8 Claims**



1. A static semi-conductor electrical energy conversion assembly intended to convert a continuous input voltage into an alternating voltage having a peak-to-peak amplitude lower than or equal to said continuous voltage, said assembly comprising:

(a) at least two apparatus wherein,

(i) each apparatus is formed by the association of two converters, each of said converters comprising at least one power stage having at least one controlled blocking static interrupter with a collector, a base and an emitter, and a commutation assist circuit associated with each static interrupter operative to reduce conduction of its collector current during blocking commutations thereof; a control stage adapted to generate a control signal for each static interrupter; an intermediate processing stage associated with each static interrupter having an input connected to the control stage to receive said control signal; and another input connected to said power stage to detect a collector-emitter voltage of each said static interrupter and an output connected to the base of each said static interrupter to trigger the commutations thereof; said intermediate processing stage being adapted to drive the base of each said interrupter so as to interrupt conduction in the single case where, at the same time, said control signal has a value corresponding to a placing in conduction and said collector-emitter voltage is approximately zero whereby reverse polarization of each said interrupter base occurs in all other cases in order to block said interrupter;

(ii) each apparatus formed by the association of said two converters further comprises four power terminals connected to power electrodes of said two static interrupters, said terminals comprising a first collector and a first emitter of the first of said two interrupters and a second collector and a second emitter of the second of said two interrupters, wherein said at least two said apparatus are located in a series, such that said first emitter and said second collector of one apparatus are respectively connected to said first collector and said second emitter of another apparatus, wherein said first collector and said second emitter of said one apparatus

receive said continuous input voltage and wherein said first emitter and said second collector of said another apparatus are connected to each other to form a first output terminal of said assembly for connection to a load;

(b) a voltage distribution stage connected to said first collector and said second emitter of each of said apparatus;

(c) a common control stage for controlling in opposition the two converters of each of said apparatus, wherein said common control stage is adapted to generate, for said two static interrupters of said converters, two control signals of opposite phase and of an appropriate form for the conversion to be performed; and

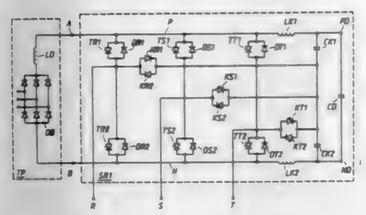
(d) a centralized control unit adapted to provide a delay in said two control signals applied to each of said apparatus, wherein said centralized control unit drives each of said apparatus.

4,567,554

STATIC CONVERTOR MEANS

Gunnar Zetterberg, Västerås, and Lennart Ängquist, Enköping, both of Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Jun. 10, 1983, Ser. No. 503,115
Claims priority, application Sweden, Jun. 23, 1982, 8203898
Int. Cl.⁴ H02M *1/06*
U.S. Cl. 363—138 **5 Claims**



1. In a convertor means comprising:

a first convertor including at least two phase groups with forced commutation connected between two busbars;

a series connection comprising a d.c. voltage capacitor connected in series with and between two commutating inductors, common to the phase groups, said series connection being connected between said busbars, each phase group having two series-connected branch portions, the point of connection therebetween constituting a phase terminal of the group, each branch portion comprising a semiconductor means which is controllable in one direction and conducting in the other direction; and

second converter means comprising a second convertor provided with a smoothing inductor being connected to the first convertor for transporting energy between the second convertor means and the first convertor, said second convertor means being connected directly to the busbars.

4,567,555

CURRENT-TYPE GTO INVERTER WITH SURGE ENERGY RESTORATION

Kohki Matsuse, Tama; Hitoshi Hashimoto, Nagoya, and Toshiaki Sezaki, Zushi, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Jul. 17, 1984, Ser. No. 631,809
Claims priority, application Japan, Feb. 24, 1984, 59-33804
Int. Cl.⁴ H02M *7/515*
U.S. Cl. 363—138 **1 Claim**

1. In a current type gate turn-off thyristor inverter having AC source terminals for driving an induction motor, comprising:

(a) a GTO bridge-connected inverter;

(b) a thyristor bridge-connected rectifier;

(c) a diode bridge-connected commutation surge voltage rectifier connected to said GTO bridge-connected inverter;

(d) a capacitor connected to said diode bridge-connected commutation surge voltage rectifier for storing a commutation surge voltage energy generated when each of the thyristors of said GTO bridge-connected inverter is turned off;

(e) a cumulative reator having a first winding a positive side of which is connected to a positive terminal of said inverter and a second winding a negative side of which is connected to a negative terminal of said inverter;

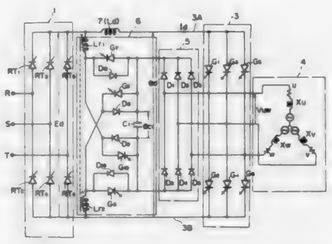
(f) a DC reactor connected between said rectifier and said inverter;

(g) a first gate turn-off thyristor a cathode of which is connected to a negative side of the first winding of said cumulative reactor and an anode of which is connected to a positive side of said capacitor;

(h) a second gate turn-off thyristor a cathode of which is connected to a negative side of said capacitor and an anode of which is connected to a positive side of the second winding of said cumulative reactor;

(i) a first diode an anode of which is connected to the positive side of the second winding of said cumulative reactor and a cathode of which is connected to the positive side of said capacitor; and

(j) a second diode an anode of which is connected to the



negative side of said capacitor and a cathode of which is connected to the negative side of the first winding,

the improvement wherein said first gate turn-off thyristor is turned on during steady state intervals of inverter commutation and off during transient state intervals of inverter commutation, and

said second gate turn-off thyristor is turned on during steady state intervals of inverter commutation and off during transient state intervals of inverter commutation,

and wherein said current type gate turn-off thyristor inverter further comprises:

(k) a third gate turn-off thyristor an anode of which is connected to the positive side of said capacitor and a cathode of which is connected to the positive side of said second winding of said reactor, said third gate turn-off thyristor being turned on while the voltage charged in said capacitor exceeds a predetermined value;

(l) a fourth gate turn-off thyristor an anode of which is connected to the negative side of said first winding of said reactor and a cathode of which is connected to the negative side of said capacitor, said fourth gate turn-off thyristor being turned on while the voltage charged in said capacitor exceeds a predetermined value;

(m) a third diode an anode of which is connected to the negative side of said first winding of said reactor and a cathode of which is connected to the positive side of said capacitor; and

(n) a fourth diode an anode of which is connected to the negative side of said capacitor and a cathode of which is connected to the positive side of said second winding of said reactor,

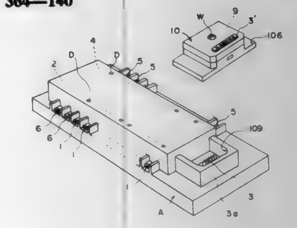
whereby the commutation surge voltage energy stored in said capacitor during transient state of motor-driving operation is restored to the positive and negative terminals of said inverter through said first and second gate turn-off thyristors during steady state intervals of inverter commutation, magnetic energy stored in said reactor during transient state of motor-driving operation is recharged to said capacitor through said diode bridge-connected commutation surge voltage rectifier after said first and second gate turn-off thyristors have been turned off, the motor kinetic energy generated during motor-braking operation is stored in said capacitor through said first and second diodes and regenerated to the AC source terminal of said inverter through said third and fourth gate turn-off thyristors when the voltage across said capacitor exceeds a predetermined value, and magnetic energy stored in said reactor during motor-braking operation is recharged to said capacitor through said third and fourth diodes after the said third and fourth gate turn-off thyristors have been turned off.

4,567,556

SEQUENCE CONTROLLING APPARATUS

Toshiro Onogi; Kenichi Yoda, and Masahiko Kitamura, all of Mie, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 3, 1982, Ser. No. 354,369
Claims priority, application Japan, Mar. 17, 1981, 56-39070
Int. Cl.⁴ G06F *13/00*; H05K *5/00*
U.S. Cl. 364—140 **8 Claims**



1. A sequence controlling apparatus including a control unit and a memory unit detachably mounted to the control unit,

said control unit comprising:

a body having a recess surrounded by a surrounding wall formed integrally with said body;

a plurality of input terminals for receiving a plurality of input signals,

an input circuit connected to said input terminals,

an output circuit,

a plurality of output terminals connected to said output circuit to supply said output signals, and

a first connector connected to said input circuit and said output circuit;

said memory unit comprising:

a second connector selectively connected to said first connector to electrically connect said memory unit to said control unit,

programmable read only memory means disposed in a case and being connected to said input circuit and said output circuit of said control unit via said second connector and said first connector for performing all sequence logical operations in response to said input signals and for providing sequence signals to said output circuit in response thereto, said programmable read only memory having an erasable portion;

said case having a window positioned in juxtaposition to said erasable portion when said programmable read only memory is housed in said case, and

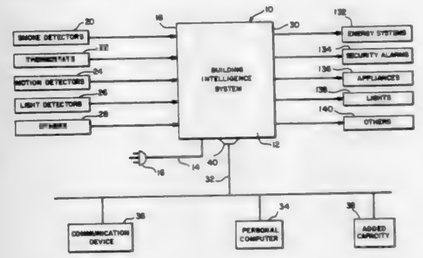
said window being positioned such that incoming light is interrupted by said surrounding wall when said first and second connectors are connected to each other, whereby an undesired erasure of said erasable programmable read only memory is prevented.

4,567,557

BUILDING INTELLIGENCE SYSTEM

Martin J. Burns, 30-4 Farm Rd., Somerville, N.J. 08876

Filed Feb. 23, 1983, Ser. No. 469,122
Int. Cl.⁴ G06F *15/56*
U.S. Cl. 364—145 **11 Claims**



1. An intelligence system for montioring and controlling a plurality of electrical systems, mechanical devices, power-line carrier devices and output devices in a building comprising

input board means to connect a plurality of hard-wired devices to input information from the hard-wired devices;

power-line carrier transmitter means adjacent to the input board means to individually communicate with a plurality of power-line carrier devices;

dedicated computer means mounted adjacent to the input board means and the power-line carrier transmitter means to receive the information from the hard-wired devices and to communicate with the power-line carrier devices through the power-line carrier transmitter means,

the dedicated computer means comprising a first and second plurality of uniformly operating register means to receive information about the building and to store information about the building;

output board means adjacent to the input board means to connect a plurality of output devices, the output board means being in communication with the dedicated computer means to control the operation of the output devices,

the dedicated computer means comprising a third plurality of uniformly operating register means to transmit control information to the output devices;

power supply means to furnsih an uninterruptible power supply to the input board means, the power-line carrier transmitter means, the dedicated computer means and the output board means; and

interface means comprising an interconnection and a personal computer to permit communication between the dedicated computer means and the personal computer.

4,567,558

ELEVATOR TRAFFIC DEMAND ANALYZING SYSTEM

Yasukazu Umeda, Kasugai, and Katsunori Takabe, Inazawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1983, Ser. No. 482,057
Claims priority, application Japan, Apr. 6, 1982, 57-56868; Apr. 6, 1982, 57-56869
Int. Cl.⁴ G06F *15/46*; B66B *1/00, 1/18*
U.S. Cl. 364—148 **6 Claims**

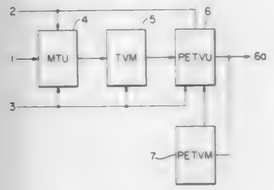
1. A system for controlling a plurality of elevator cars according to a varying traffic demand wherein the demand is

divided into a plurality of time cycles which, in turn, are divided into a plurality of corresponding time periods, said system comprising:

means for generating in each cycle a value indicative of the measured traffic demand in at least one period in the cycle, the periods for which the measured values are generated corresponding from one cycle to another;

first storage means for storing in each cycle the measured values for at least the immediately preceding corresponding period;

means for generating in each cycle a value indicative of an



estimated traffic demand for a corresponding period subsequent to the preceding corresponding period, said estimated value generating means including first estimating means for generating an estimated value in accordance with the measured value in the first storage means, second estimating means for generating an estimated value equal to a previously generated estimted value, and means for selecting between the first estimating means and the second estimating means; and

means for selectively controlling at least one elevator car in accordance with the estimated value generated by the estimated value generating means.

4,567,559

APPARATUS FOR REGULATING A PARAMETER BY ADMITTING AN ADDITIVE INTO A MEDIUM

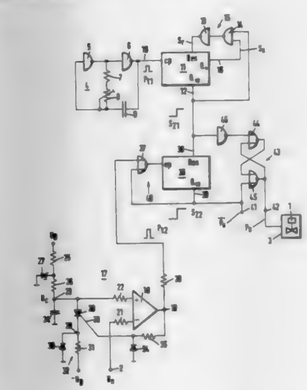
Hermann Berger, and Franz Ernst, both of Heidelberg, Fed. Rep. of Germany, assignors to Chemie und Filter GmbH Verfahrenstechnik KG, Heidelberg, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,267

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221365

Int. Cl.⁴ G05B *15/02, 19/29;* **G01N** *15/00*

U.S. Cl. 364—183 **9 Claims**



1. Apparatus for regulating a parameter which at times deviates from a predetermined norm by admitting an additive to a medium, comprising a control signal generator for generating a control signal which is dependent on the departure from said norm and a regulating element which effects the admission of additive for the duration of the control signal, said control signal generator comprising a first timing pulse generator having a constant frequency, a first counter having an input for receiving timing pulses from the first timing pulse generator and an output for generating and transmitting a first counter overflow signal after elapse of a predetermined period during which said input receives a predetermined number of timing pulses, a second timing pulse generator the frequency of which is inversely proportional to said norm, and a second counter having an input for receiving timing pulses from said second timing pulse generator and an output for generating and transmitting a second counter overflow signal after receiving a predetermined number of second timing pulses, said first and second counters being arranged to start counting the signals which are transmitted to their respective inputs in synchronism with one another and said second counter further having a resetting input connected to the output of said first counter, and said control signal generator further comprising a circuit which logically interconnects the first and second counter overflow signals in such a way that the first counter determines the frequency and a time frame in which said additive is added and the second counter determines the duration, within said time frame, for which the additive is added.

4,567,560

MULTIPROCESSOR SUPERVISORY CONTROL FOR AN ELEVATOR SYSTEM

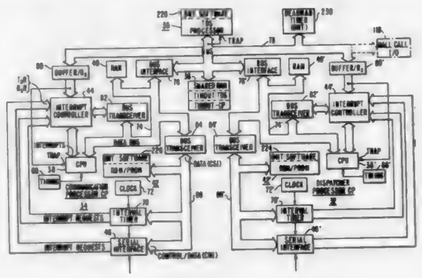
Marjorie J. Polis, Morris Township, Morris County, and Alan L. Husson, Hackettstown, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 9, 1983, Ser. No. 530,808

The portion of the term of this patent subsequent to Sep. 25, 2001, has been disclaimed.

Int. Cl.⁴ G05B *15/02;* **B66B** *1/00;* **G06F** *11/16*

U.S. Cl. 364—184 **3 Claims**



1. An elevator system, comprising:

a plurality of elevator cars;

a control system for controlling said plurality of elevator cars including a dispatcher processor, a communication processor for polling the elevator cars for information for use by said dispatcher processor, and for selecting an elevator car to receive information from said dispatcher processor, a memory, a system bus interconnecting said dispatcher processor, said communication processor, and said memory, with said memory being shared by said master processor and said communication processor via said system bus;

said dispatcher processor including means for preparing car mode information for said elevator cars, and means for writing said car mode information into said shared memory;

said communication processor including means for reading said shared memory to obtain car mode information, and means for transmitting said car mode information to associated elevator cars;

said elevator cars including means for providing car status information;

said communication processor including means for obtaining car status information from the elevator cars, and means for writing said car status information into said shared memory;

said dispatcher processor including means for reading said shared memory to obtain said car status information;

a selected one of the dispatcher and communication processors being a master processor, with the non-selected processor being a slave processor;

said slave processor including storage means, and program means stored in said storage means for periodically setting a predetermined location of said shared memory;

said master processor including storage means, and diagnostic program means stored in said storage means, said diagnostic program means including checking means for periodically checking said predetermined location to determine if it is set or reset, resetting means for resetting the predetermined location each time the checking means finds said predetermined location set, detecting means for periodically determining if the operation of the master processor is normal or abnormal, and trigger signal means for providing trigger signals;

said trigger signal means providing a trigger signal responsive to the checking means finding said predetermined location of said shared memory set and the detecting means detecting normal operation of the master processor, with said trigger signals being provided by trigger signal means at a predetermined triggering rate when the checking and detecting means continue to respectively find said predetermined location of the shared memory set, and normal operation of the master processor;

and a single retriggerable hardware timer in communication with said master processor via said system bus, said hardware timer being responsive to the trigger signals provided by the trigger signal means of said master processor;

said hardware timer having a predetermined timing period when triggered by a trigger signal, with said predetermined timing period being selected such that the predetermined triggering rate of the trigger signals prevents said hardware timer from reaching the end of said predetermined timing period;

said trigger signal means of the master processor ceasing to provide trigger signals as a function of either said checking means finding said first predetermined location of said shared memory reset or the detecting means detecting abnormal operation of said master processor,

said hardware timer applying an interrupt signal to said system bus when it reaches the end of its timing period;

said master processor and said slave processor including first and second interrupt responsive program means, respectively, which reinitialize the master processor and slave processor in response to the interrupt signal being placed on the system bus by said hardware timer.

4,567,561

LARGE SCALE INTEGRATION DATA PROCESSOR SIGNAL TRANSFER MECHANISM

Virgil D. Wyatt, Lighthouse Point; Wayne R. Kraft, Coral Springs, and Nandor G. Thoma, Boca Raton, all of Fla., assignors to International Business Machines Corp., Purchase, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,185

Int. Cl.⁴ G06F *9/00*

U.S. Cl. 364—200 **10 Claims**

1. In large scale integration data processor circuitry formed on an integrated circuit chip, a signal transfer mechanism comprising:

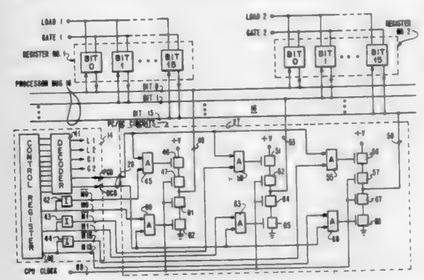
a plural-bit bus formed on the integrated circuit chip for transferring plural-bit binary signals between different locations on the chip;

a microword control storage mechanism responsive to each processor instruction for producing a sequence of microwords for each processor instruction for controlling the execution of each processor instruction;

control circuitry responsive one at a time to the microwords from the control storage mechanism for producing for each microword a plurality of control point signals for controlling the operation of the data processor for one microword cycle;

plural-bit signal source circuitry formed on the integrated circuit chip and coupled to the plural-bit bus for supplying plural-bit binary signals thereto;

circuitry for supplying a control point signal produced during a first microword cycle to the signal source circuitry



for enabling it to put its plural-bit binary signal onto the plural-bit bus during this first microword cycle;

plural-bit signal destination circuitry formed on the integrated circuit chip and coupled to the plural-bit bus for receiving plural-bit binary signals therefrom;

and circuitry for supplying a control point signal produced during a second and different microword cycle to the signal destination circuitry for enabling it to take in during this second microword cycle the plural-bit binary signal put out by the signal source circuitry;

the inherent capacitance of the plural-bit bus serving to store the plural-bit binary signal during the first and second and any intervening microword cycles.

4,567,562

CONTROLLER FOR CONTROLLING ACCESS TO A PLURALITY OF RECORDS THAT CAN BE ACCESSED AND CHANGED BY SEVERAL INDEPENDENT PROCESSORS

Charles J. Fassbender, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 21, 1983, Ser. No. 515,769

Int. Cl.⁴ G06F *15/16, 12/06*

U.S. Cl. 364—200 **9 Claims**

1. A controller, for controlling access to a plurality of records that can be accessed and changed by several independent processors, comprising:

a plurality of flip-flops corresponding in number to said plurality of records with each flip-flop representing a particular record;

a means for receiving a control word from any of said processors which identifies multiple records, up to a maximum number, of which access is sought;

a means, coupled to said means for receiving and said flips-flops, for selecting in parallel and logically ANDing output signals from all of those flip-flops which correspond to said identified records;

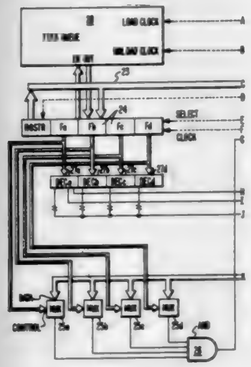
a means, coupled to said means for selecting, for sending a signal if said ANDing operation yields a logical ONE to the processor which sent said control word signaling that it may access and change said identified records;

a means, coupled to said means for selecting and said flip-flops, for setting all of those flip-flops which correspond

to said identified records if said ANDing operation yields a logical ONE;

a means, coupled to said means for receiving and said means for selecting, for storing said control word if said ANDing operation yields a logical ZERO; and

a means for registering another control word from any of said processors which identifies multiple records, up to said maximum number, and indicates access to them is complete;



a means for resetting all of those flip-flops which correspond to the records that said another control word identifies a means, coupled to said means for storing and said means for receiving, for moving a control word from said means for storing into said means for receiving in response to the resetting of any one of said flip-flops by one of said processors; said means for selecting, means for sending, means for setting, and means for storing operating on such moved control word in the same manner as if it was received directly from one of said processors.

4,567,563

IRRIGATION CONTROL SYSTEM

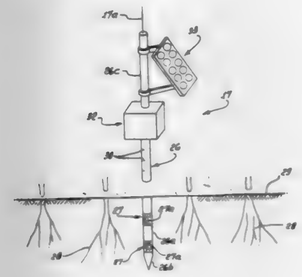
Michael Hirsch, Pacific Palisades, Calif., assignor to Energy Management Corporation, Los Alamitos, Calif.

Continuation-in-part of Ser. No. 221,519, Dec. 30, 1980, Pat. No. 4,396,149. This application Jul. 11, 1983, Ser. No. 512,667

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.⁴ A01G *25/16*; B05B *12/12*; G06F *15/54*

U.S. Cl. 364—420 **28 Claims**



1. In irrigation control apparatus, the combination comprising

(a) a mast having a lower portion adapted to be removably inserted into the earth, and an upper portion operatively connected with said lower portion and adapted to be deflected laterally when struck,

(b) soil moisture sensing means to be inserted into the earth to controlled depth to sense moisture at said depth,

(c) and data transmitting means on an upper portion of the mast and operatively connected with said sensing means for transmitting to a central station substantially continous measurement data corresponding to moisture levels continuously sensed by said (b) means at the location of the mast.

4,567,564

ARRANGEMENT FOR THE ATTITUDE STABILIZATION OF FLEXIBLE VEHICLES WITH WEAKLY-DAMPENED STRUCTURAL VIBRATIONS AND DISCONTINUOUS CONTROL INTERVENTION

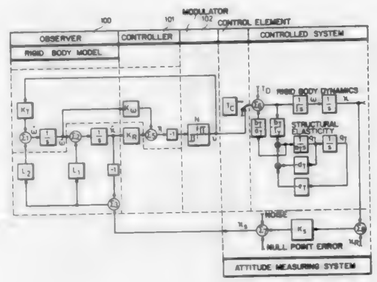
Helmut Bittner, Munich; Eveline Gottzein, Oberpframmern, and Michael Surauer, Chieming, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Jun. 19, 1981, Ser. No. 275,359

Claims priority, application European Pat. Off., Aug. 19, 1980, 80104916.4

Int. Cl.⁴ B64G *1/20*

U.S. Cl. 364—434 **19 Claims**



2. In an arrangement for the attitude stabilization of flexible vehicles, such as aircraft and spacecraft, which, due to their lightweight construction and/or large spatial extension or their high degree of slenderness, have, structurally, weakly-dampened, bending vibrations and/or torsional vibrations, and in which, for generating the forces and moments required for stabilization of the vehicle, discontinuously operating actuators are used, the improvement comprising that for each vehicle axis, there are:

(a) only a single observer means responsive to signals representing attitude measurements for providing signals representing estimated values of the state variables of the vehicle system to be controlled, said observer means having a transfer function of at most third order;

(b) state controller means, responsive to the observer means, for providing signals for controlling the state variables;

(c) means, responsive to the state controller means, for modulating the signal produced by the state controller means, and having a relay characteristic;

(d) means for supplying a feedback signal from the input of the modulating means to the observer means; and

(e) a low pass filter at the output side of the state controller means and at the input side of the modulating means, said filter having either a pair of low pass filter sections with first order transfer functions or a single low pass filter section with at least a second order transfer function, the break-point frequencies of the first order transfer functions or second order transfer functions being between the natural resonance frequency for position stabilization and the natural resonant frequency of vibration stabilization for the vehicle axis to be stabilized;

wherein the actuators are responsive to said modulating means and act upon the vehicle with the stabilization forces and moments, respectively, produced by the actuators.

4,567,565

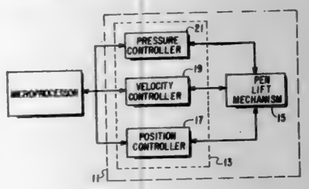
APPARATUS AND METHOD FOR PEN-LIFT SYSTEM

Robert D. Haselby, Escondido; Samuel R. Haugh, Mountain View, and Lowell J. Stewart, San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 3, 1981, Ser. No. 317,980

Int. Cl.⁴ G05B *19/18*

U.S. Cl. 364—520 **25 Claims**



11. A method for vertically positioning a plotter pen relative to a platen supporting a recording medium thereon, comprising the steps of:

determining a horizontal pen movement desired distance; and

comparing the desired distance to a predetermined critical distance and raising the pen to a short height if the desired distance is less than or equal to the critical distance and raising the pen to a long height if the desired distance is greater than the critical distance.

4,567,566

DEMAND ESTIMATION APPARATUS

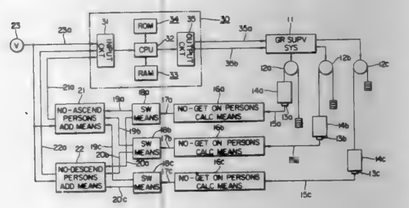
Shinji Araya, Takarazuka, and Shintaro Tsuji, Nagoya, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Mar. 8, 1983, Ser. No. 473,359

Claims priority, application Japan, Jun. 28, 1982, 57-111165

Int. Cl.⁴ G06F *15/56, 15/46*; B66B *1/20*

U.S. Cl. 364—554 **8 Claims**



1. A demand estimation apparatus for controlling machines wherein a cycle of a substantially cyclically fluctuating demand is divided into a plurality of sections of given time width and wherein an estimated value of the demand in each section is found on the basis of a measured result of the demand in the section, said apparatus comprising:

means for setting ad adjusting section having a time width smaller than said given time width of said adjoining sections to include a boundary between sections adjoining each other,

means for comparing an estimated demand value of said adjusting section obtained from a measured result of the demand for a predetermined period in said adjusting section, with estimated demand values of said two sections adjoining the adjusting section and for correcting said boundary in one direction or the opposite direction in accordance with the comparison so that the average estimated demand value in the adjusting section is substantially intermediate the estimated demand values of both adjoining sections, delivering means for delivering the adjusted estimated demand values of the adjoining sections with the corrected boundary, and means for controlling machines in accordance with the adjusted values.

4,567,567

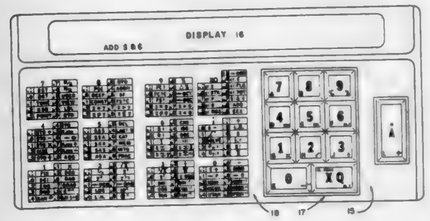
COMPUTER KEYBOARD DISPLAYING MANY OPERATING INSTRUCTIONS WITH FEW KEYS

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Jan. 21, 1983, Ser. No. 459,997

Int. Cl.³ G06F *3/027*

U.S. Cl. 364—709 **7 Claims**



1. A computer for performing a plurality of calculations with few keyboard keys on a keyboard having a register for retaining numerical digits of a numerical word, numerical digit entry keys and a decimal point key, said computer being of the type having a numerical entry mode for entering in sequence a set of numerical digits to form a numerical word and characterized by means employing the decimal point key as a control key for terminating and entering the numerical word into said register of the computer by establishing a mode of operation of the decimal point key in response to means detecting the second occurrence of a decimal point keystroke by said decimal point key within a word to initiate a control mode for entering that word into the computer register.

4,567,568

APPARATUS FOR DIVIDING THE ELEMENTS OF A GALOIS FIELD

Jun Inagawa, Yokohama; Masahide Nagumo, Kawasaki, and Tadashi Kojima, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 10, 1983, Ser. No. 473,767

Claims priority, application Japan, Jun. 15, 1982, 57-102804; Jun. 15, 1982, 57-102807

Int. Cl.⁴ G06F *7/52*

U.S. Cl. 364—761 **2 Claims**

1. An apparatus for dividing one element α^i of a Galois field GF(2^m), consisting of 2^m elements divided into n groups, by another element α^j, thus performing a division of:

$\alpha^i \div \alpha^j (=\alpha^{i-j})$, where α is the root of a modulus polynomial $F(x)$, said apparatus comprising:

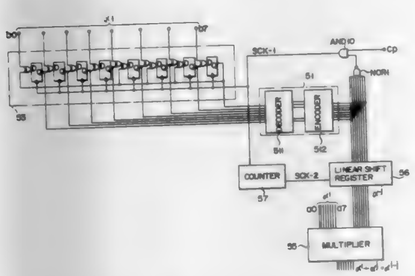
reciprocal data memory means for storing data representing reciprocals of n elements located at specific positions respectively in n groups;

a first linear shift register for storing data representing the element α^j;

comparator means for comparing the data stored in said first linear shift register with the data stored in said reciprocal

data memory means, to thereby deliver data representing the reciprocal of the data stored in said reciprocal data memory means;

first shifting means for detecting the number of times said reciprocal data memory means produces no output when said comparator means performs the data comparison, and for generating a shift signal to shift said first linear shift register by N times according to the detecting result;



a second linear shift register for storing data $\alpha^{-(j+N)}$ from said reciprocal data memory means;

second shifting means for counting said shift signal from said first shifting means and shifting said second linear shift register a number of times determined by the counting result and;

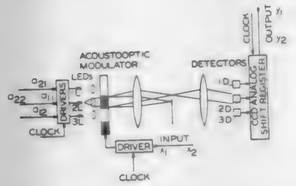
multiplier means for multiplying $\alpha^{-(j+N)+N}=\alpha^{-j}$, output from said second linear shift register, by said element α^{i}, thereby providing an output of α^{i-j}, where $0 \leqq N \leqq n-1$.

4,567,569

OPTICAL SYSTOLIC ARRAY PROCESSING

Henry J. Caulfield, Huntsville, Ala., and William T. Rhodes, Atlanta, Ga., assignors to Battelle Development Corporation, Columbus, Ohio

Filed Dec. 15, 1982, Ser. No. 450,153
Int. Cl.⁴ G06G *9/00, 7/16;* G02B *6/10*
U.S. Cl. 364—845 **12 Claims**



1. A method for providing a series of analog quantities that are proportional respectively to the components of a third array that is the product of a first array of components multiplied by a second array of components in a predetermined order, comprising,

directing light of intensity proportional to the first component of the first array to the light side of modulating means whose output light intensity is proportional to a known function of an electrical signal applied to it,

applying to the modulating means, while the light is passing through it, a signal proportional to a function of the first component of the second array such that the intensity of the output light from the modulating means is proportional to a known function of the product of the two first components,

then, after a predetermined time:

directing light of intensity proportional to the second component of the first array to the input side of modulating means whose output light intensity is proportional to a known function of an electrical signal applied to it,

applying to the modulating means, while the light is passing through it, a signal proportional to a function of the second component of the second array such that the intensity of the output light from the modulating means is proportional to a known function of the product of the two second components, and so on, in the same manner, and finally with the last component of the first array and the last component of the second array to provide an electrical signal that is proportional to a known function of the product of the two last components, and

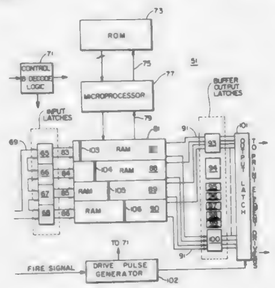
providing a series of output signals responsive to the sums of predetermined groups of output light intensities and proportional respectively to the components of the third array.

4,567,570

ELECTRONIC CONTROL SYSTEM FOR A LINEARLY SLANTED PRINT HEAD

Thomas R. Peer, New Milford, Conn., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 16, 1983, Ser. No. 467,040
Int. Cl.⁴ G06F *3/12*
U.S. Cl. 364—900 **18 Claims**



1. In a matrix printer including a print head consisting of J print elements linearly arranged on a slant relative to a horizontal plane, an electronic system for processing vertical columns of imaging data bits inputted from a data processor to produce control signals for operating said print head, for printing a desired image on a print medium in the same vertical orientation as said inputted image data, during times of relative movement between said print head and print medium, comprising:

controller means programmed for controlling the operation of said electronic system;

input memory means responsive to said controller means initialized at the beginning of each line of print, and operable for receiving and storing said columns of imaging data bits in equal distribution between L banks of said memory means, wherein each bank stores a different 1/L column portion of each one of said vertical columns of imaging data bits, the related L columns in said banks of memory being skewed from one another by the equivalent of the number of columns of print capability I times J/L, thereby pre-skewing or partially skewing said imaging data;

output memory means responsive to said controller means for completing or fully skewing said image data by making Q successive fetches from said input memory means during each cycle of printing, where Q=J/L, and where on a first fetch the first bits of each one of said L different preskewed columns of data bits in said L banks of said input memory means, respectively, that form the full column of data bits at the appropriate fetched memory address from said input memory means, are written into a

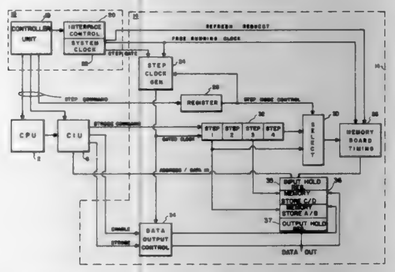
first portion of said output memory means, on a second fetch decrementing by I from the initial input memory means address of said first fetch, for writing into a second portion of said output memory means immediately following said first portion, the second bits of each one of said L column segments of data at said decremented address, respectively, followed by decrementing by 2I from the initial input memory means address for fetching the third bits of each column or byte of data at this decremented address, respectively, and writing these third bits into a third portion adjacent said second portion of said output memory means, and continuing in an iterative manner until Q fetches and (Q−1) decrements have been made, where Q=J/L, for writing into said output memory means the successive data bits required, for providing the necessary control signals for printing the portions of image data columns under the print head at that given time.

4,567,571

MEMORY CONTROL FOR REFRESHING IN A STEP MODE

Richard C. Moffett, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Phoenix, Ariz.

Continuation of Ser. No. 415,130, Sep. 7, 1982, abandoned. This application Feb. 15, 1985, Ser. No. 702,112
Int. Cl.⁴ G06F *13/00*
U.S. Cl. 364—900 **2 Claims**



1. A computer system, having a memory unit which includes a volatile memory store, and a memory control circuit connected to said memory unit for permitting the computer system to be operated in a step mode, said memory control circuit comprising:

(a) step clock generator means, having a first, second, and third input terminal adapted to receive a free running clock signal, a step gate signal, and a step mode control signal, respectively, for generating a gated clock signal, said gated clock signal coupled to at least said volatile memory store, said free running clock signal supplying a basic timing for said computer system;

(b) register means, having an input terminal for receiving a step command signal, said step command signal being an indication from said computer system that the memory unit is to be operated in the step mode, for generating the step mode control signal in response to said step command signal, said step mode control signal being coupled to the third input terminal of said step clock generator means;

(c) shift register means having a plurality of stages, further having an input terminal for receiving a strobe command signal from the computer system, said strobe command signal indicating a request for a memory cycle, and having a second input terminal operatively connected to the step clock generator means for receiving said gated clock signal, a first stage of said shift register means having an output operatively connected to said volatile memory store for delaying the strobe command signal, each stage of said shift register means representing a successive step when the computer system is operated in the step mode;

(d) selector means, having a first input terminal operatively connected to said first stage of said shift register means to receive said delayed strobe command signal, and having a second input terminal operatively connected to a second stage of said shift register means to receive a further delayed strobe command signal, for selecting between said delayed strobe command signal and said further delayed strobe command signal to output a selected strobe command signal in response to the step mode control signal; and

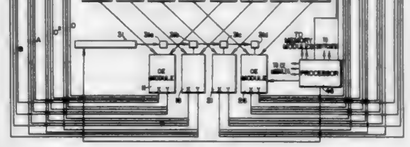
(e) memory unit timing means, operatively connected to said selector means to receive the selected strobe command signal, and having a first and second input terminal which receive the free running clock signal, and a refresh request signal, respectively, for correlating the selected strobe command signal to the refresh request signal to output an initiate cycle signal thereby initiating the memory cycle requested by the computer system and a memory refresh cycle of said volatile memory store when said correlation occurs.

4,567,572

FAST PARALLEL SORTING PROCESSOR

S. Brent Morris, Columbia, and Richard A. Wisniewski, West Friendship, both of Md., assignors to The United States of America as represented by the Director of the National Security Agency, Washington, D.C.

Filed Feb. 22, 1983, Ser. No. 468,423
Int. Cl.⁴ G06F *7/16*
U.S. Cl. 364—900 **3 Claims**



1. Apparatus for sorting 2^v words, where v is an integer of value equal to or greater than k, comprising:

a programmed processor;

2^k memory modules, where k is an integer of value greater than one, each comprising an input, an output, and means for storing 2^{v-k} words to be sorted;

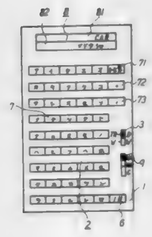
2^{k-1} means connected to the outputs of said memory modules for comparing a word in the Mth memory module with a word in the $M+2^{k-1}th$ memory module, for $0 \leqq M < 2^{k-1}$, and for providing a first selected one of said words to a first output of said comparing means and for providing a second selected one of said words to a second output of said comparing means in response to first control signals from said processor;

2^k switches, each having an output coupled to the input of a separate one of said memory modules, and a plurality of inputs coupled to the outputs of selected ones of said comparing means, said switches responding to second control signals from said processor for effecting interconnections between the outputs of said comparing means and the inputs of said memory modules according to an algorithm being processed by said processor and predetermined by the values of v and k.

4,567,573
ELECTRONIC LANGUAGE INTERPRETER WITH FACULTIES FOR MEMORIZING AND ERASING NEW WORDS EXTERNALLY APPLIED THERETO

Shintaro Hashimoto, Ikoma, and Akira Tanimoto, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 110,689, Jan. 9, 1980, abandoned. This application Mar. 4, 1983, Ser. No. 472,269
Claims priority, application Japan, Jan. 10, 1979, 54-1824
Int. Cl.⁴ G06F *15/38*
U.S. Cl. 364—900 12 Claims



1. An electronic dictionary and language interpreter comprising:

read/write memory means for storing source word data and associated translation data, said source word data representing a source word in a first language and said translation data representing a translation word which is a translation of said source word in a second language;

input means for introducing said source word data and translation data into said read/write memory means when said interpreter is in a storage mode;

said input means further introducing data into said interpreter representative of a desired word in said first language to be translated when said interpreter is in a translation mode;

said interpreter further having a word cancellation mode;

means, operatively interconnected to said input means, for selecting between said storage mode, said word cancellation mode and said translation mode;

read only memory means for containing a volume of source word data and associated translation data;

search means for comparing said desired word data introduced by said input means with said source word data within said read only memory means and said read/write memory means and, upon detection of a coincidence therebetween, for recalling the translation data associated with said source word data from said read/write or said read only memory means;

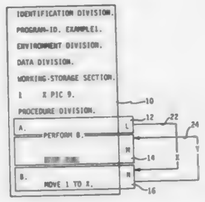
means responsive to said search means for outputting said translation data recalled by said search means to thereby provide a translation of said desired word; and

means for selectively cancelling source word and translation data in a particular portion of said read/write memory means, said means for selectively cancelling being responsive to said mode selection means to select and cancel the source word and translation data corresponding to a desired word entered by said input means.

4,567,574
OPTIMIZING COBOL OBJECT CODE INSTRUCTION PATH LENGTH WITH RESPECT TO PERFORM STATEMENTS

Henry Y. Saadé , San Jose, and William N. J. Tindall, San Martin, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 14, 1983, Ser. No. 474,909
Int. Cl.⁴ G06F *9/00, 9/30*
U.S. Cl. 364—900 3 Claims



1. A method for execution on a digital computer for optimizing the instruction path length in the compilation of COBOL source code, said source code including PERFORM statements and preselected procedures associated therewith, an improvement comprising the steps of:

(a) ascertaining the control transfer relationship among PERFORM statements and their associated procedures, and characterizing said ascertained relationship in a vector of attributes for each PERFORM statement including whether an associated procedure is OPEN or CLOSED; and

(b) interpreting the vectors such that if the vector for any given PERFORM statement indicates that:

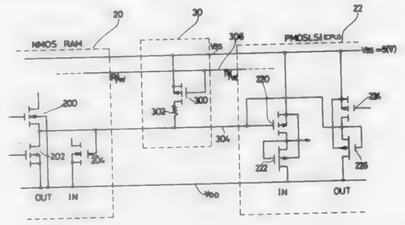
(1) the procedure associated therewith is CLOSED, then the code constituting the procedure is substituted for the code constituting the PERFORM statement, or

(2) the procedure associated therewith is OPEN, then a simplified transfer and return of control code is substituted for the original code constituting the transfer and return of control.

4,567,575
VOLTAGE LEVEL COMPENSATING INTERFACE CIRCUIT FOR INTER-LOGIC CIRCUIT DATA TRANSMISSION SYSTEM

Mitsuo Morihisa, Nara, and Hideyuki Akao, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 309,047, Oct. 6, 1981, abandoned. This application Apr. 26, 1985, Ser. No. 726,933
Claims priority, application Japan, Oct. 14, 1980, 55-146710[U]
Int. Cl.⁴ G06F *3/04*
U.S. Cl. 364—900 4 Claims



1. A data signal transmission system in an electronic apparatus comprising:

at least two semiconductor logic circuits;

said at least two semiconductor logic circuits including:

a first semiconductor logic circuit in which an output voltage level of a logic "high" bears a first voltage level; and

a second semiconductor logic circuit in which an input voltage level of a logic "high" bears a second voltage level, wherein said second voltage level is higher than said first voltage level;

interface circuit means disposed between said at least two semiconductor logic circuits for transferring data signals between said first and second semiconductor logic circuits in either direction;

said interface circuit means consisting essentially of:

a single signal transmission line interconnecting said first and second semiconductor circuits for transfer of each information bit;

pull-up circuit means for pulling up said signal transmission line to a desired voltage level so that when said output voltage level of said first semiconductor logic circuit is a logic "high" the level on said signal transmission line is raised at least to said second voltage level; and

a switching element operatively interconnected between said signal transmission line and said pull-up circuit means; and

a control system for switching said switching element so that said signal transmission line is connected to said pull-up circuit means only when a said data signal is transferred from said first semiconductor logic circuit to said second semiconductor logic circuit.

4,567,576
METHOD FOR PRODUCING A MAGNETIC BIAS FIELD

Yoshio Tawara; Ken Ohashi, both of Fukui, and Hideaki Kikuchi, Tokyo, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 425,956, Sep. 28, 1982, abandoned. This application Feb. 14, 1984, Ser. No. 579,996
Claims priority, application Japan, Oct. 2, 1981, 56-156988
Int. Cl.⁴ G11C *5/02*
U.S. Cl. 365—2 4 Claims

1. A method for producing a magnetic bias field in a magnetic bubble domain memory device, said method comprising coupling a magnetic bubble domain element with a permanent magnet, said permanent magnet being formed of a rare earth metal-containing alloy having the general formula

$$R(Co_{1-x-y}Cu_xNi_y)_z$$

in which R is a rare earth element and x, y and z are each positive numbers, x ranges from 0.001 to 0.4, y ranges from 0.001 to 0.6, and z ranges from 4.0 to 9.0, with the proviso that x+y is less than 1.

4,567,577
IMPEDANCE MODULATED CMOS RAM CELL

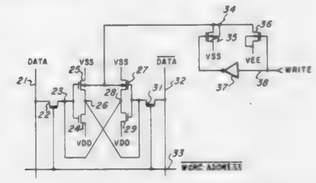
Arthur B. Oliver, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 4, 1982, Ser. No. 439,161
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—156 4 Claims

1. A random access memory cell of complementary field effect transistors comprising:

a latch for storing bit information connected to a word address line and a data line to receive bit information from said data line when said word address line is active, said latch including first and second inverter circuits, each of said inverter circuits having an output coupled to the input of the other inverter circuit;

switching means connected to said latch for enabling new data information to be stored in said latch by disabling a

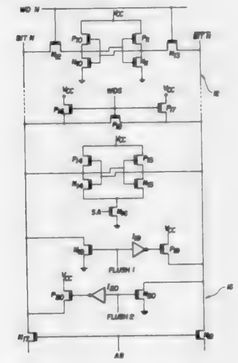


portion of each of said first and second inverter circuits of said latch.

4,567,578
CACHE MEMORY FLUSH SCHEME

Paul Cohen, Ashland, Mass., and William R Young, Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 8, 1982, Ser. No. 416,034
Int. Cl.⁴ G11C *11/40, 7/00*
U.S. Cl. 365—189 6 Claims



1. In a memory having a memory array, a word decoder and a bit decoder, the improvement comprising:

said word decoder including for each word line a word line switch means for connecting a word line signal to said word line when activated by said word decoder in response to a word address and a word precharge means for activating said word line switch prior to word decoding; and

write means activating said word precharge means in response to an all write signal for connecting a word line signal to said word line and for writing a specific logic value in all the memory locations in said memory array simultaneously in response to said all write signal without addressing said word and bit decoders.

4,567,579
DYNAMIC MEMORY WITH HIGH SPEED NIBBLE MODE

Pravin P. Patel, and Chitranjan N. Reddy, both of Sugarland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 8, 1983, Ser. No. 512,076
Int. Cl.⁴ G11C *13/00*
U.S. Cl. 365—189 15 Claims

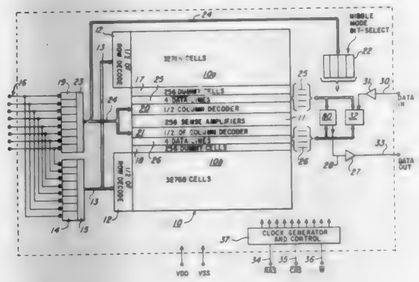
1. A semiconductor memory device having an array of N rows and M columns of memory cells, and M column lines coupled to said columns of cells, the column lines being groups

of B columns per group, and addressing means for selecting a particular row and column based upon an address, comprising:

output lines extending to all of said groups of columns, there being B output lines to simultaneously provide B bits of data from selected memory cells,

selector means in said addressing means for selecting only one of said groups of columns to connect to said B output lines,

sequential output selection means receiving bits of said address to select one of said B output lines as a beginning bit and to sequence through the remaining B output lines for



output of data therefrom, said selection means including decoder means responsive to said address, shift register means for circulating a bit from a starting point determined by said decoder means, and control latch means to temporarily hold outputs of the decoder means and shift registers means,

a plurality of B output data latches each coupled to one of said output lines and holding all of the B bits of data,

and means for coupling said B bits of data from said output data latches to a single output terminal in a sequence determined by the contents of said control latch means.

4,567,580

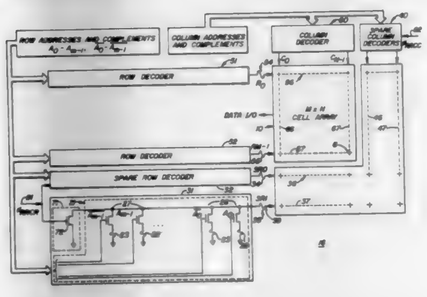
REDUNDANCY ROLL CALL TECHNIQUE

Ramesh C. Varshney, San Jose, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Jun. 29, 1983, Ser. No. 508,782

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—200 **12 Claims**



1. For use in an integrated circuit having addressable elements coupled to decoders, combinations of elements and decoders capable of being replaced through substitution of at least one redundant element and at least one redundant decoder connected to the redundant element, apparatus for disabling the redundant decoder comprising:

a test circuit for generating a control signal, the test circuit responsive to an out-of-normal-range test signal applied to an external terminal of the integrated circuit coupled to the test circuit; and

a disabling circuit connected to receive the control signal and connected to the redundant decoder for disabling the redundant decoder in response to the control signal.

4,567,581

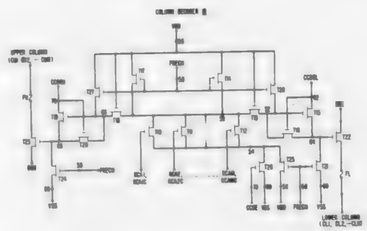
COLUMN DECODER CIRCUIT FOR USE WITH MEMORY USING MULTIPLEXED ROW AND COLUMN ADDRESS LINES

Austin C. Dumbri, Easton, and Frank J. Procyk, Center Valley, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 22, 1982, Ser. No. 452,156

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—230 **17 Claims**



17. Address decoding circuitry which is for use in a memory which is supplied with both row and column address information of which only the column address information is intended to activate the circuit comprising a plurality of decoding transistors, the number of which being determined by the length of address, each comprising a control terminal to which the address information is applied and first and second output terminals comprising:

means for setting the first output terminal of each transistor at a first potential level prior to the application of all input address information to the control terminal of the transistor:

means for setting the potential of the second output terminal of each transistor to a second level which is different from the first level prior to or during or after the application of column input address information whereby each transistor is activated for decoding; and

means for setting the potential of the second output terminal of each transistor to the first level prior to the application of row input address information.

4,567,582

DIRECT DETERMINATION OF STACKING VELOCITIES IN THREE DIMENSIONAL SEISMIC PROSPECTING

Milos J. Kuhn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 6, 1982, Ser. No. 395,207

Int. Cl.⁴ G01V *1/36*

U.S. Cl. 367—56 **7 Claims**

4. A method for determining the stacking velocity in any direction around a common midpoint M comprising the steps of:

generating acoustic waves in the earth at a first seismic source location on a first line which originates at said common midpoint M;

establishing a first output signal representative of the output of a first seismic receiver located on a second line which is an extension of said first line from said common midpoint M, wherein said first seismic source location and said first seismic receiver are substantially equidistantly spaced from said common midpoint M;

generating acoustic waves in the earth at a second seismic source location on said first line;

establishing a second output signal representative of the output of a second seismic receiver located on said second line wherein said second seismic source location and said second seismic receiver are substantially equidistantly spaced from said point M;

generating acoustic waves in the earth at a third seismic source location on a third line which originates at said common midpoint M;

establishing a third output signal representative of the output of a third seismic receiver located on a fourth line which is an extension of said third line from said common midpoint M, wherein said third seismic source location and said third seismic receiver are substantially equidistantly spaced from said common midpoint M;

generating acoustic waves in the earth at a fourth seismic source location on said third line;

establishing a fourth output signal representative of the output of a fourth seismic receiver located on said fourth line, wherein said fourth seismic source location and said fourth seismic receiver are substantially equidistantly spaced from said common midpoint M;

generating acoustic waves in the earth at a fifth seismic source location on a fifth line which originates at said common midpoint M;

establishing a fifth output signal representative of the output



of a fifth seismic receiver located on a sixth line which is an extension of said fifth line from said common midpoint M, wherein said fifth seismic source location and said fifth seismic receiver are substantially equidistantly spaced from said common midpoint M;

generating acoustic waves in the earth at a sixth seismic source location on said fifth line which originates at said common midpoint M;

establishing a sixth output signal representative of the output of a sixth seismic receiver located on said sixth line, wherein said sixth seismic source location and said sixth seismic receiver are substantially equidistantly spaced from said common midpoint M;

determining a first stacking velocity in the direction of said first and second lines in response to said first and second output signals;

determining a second stacking velocity in the direction of said third and fourth lines in response to said third and fourth output signals;

determining a third stacking velocity in the direction of said fifth and sixth lines in response to said fifth and sixth output signals; and

determining the equation of an ellipse based on the magnitude of said first stacking velocity, the magnitude of said second stacking velocity and the magnitude of said third stacking velocity, wherein the equation of said ellipse determines the stacking velocity in any direction about said common midpoint M.

4,567,583

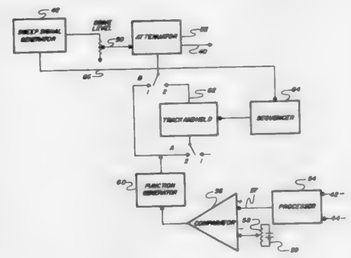
ADAPTIVE PRESET FORCE LEVEL CONTROL FOR A SEISMIC VIBRATOR

Ralph A. Landrum, Jr., Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed Sep. 23, 1983, Ser. No. 535,215

Int. Cl.⁴ G01V *1/14*

U.S. Cl. 367—190 **5 Claims**



1. In a seismic vibrator for shaking the earth at a plurality of stations along a line of survey, the vibrator including at least an earth-contacting base plate that is reciprocably driven relative to an inertia mass by an electrohydraulic, servo-controlled linear actuator in response to an input sweep signal having a desired time duration, a method for adaptively modulating the level of selected portions of said input sweep signal, comprising:

(a) generating a control signal having a level that is a function of the force applied to the earth by said base plate;

(b) modulating the level of the input sweep signal by use of said control signal, during a first sweep;

(c) sampling the level of said control signal during a desired portion of said first sweep and storing said sample to define a preset signal;

(d) modulating the level of the input sweep signal of a subsequent sweep by the so-defined preset signal derived from the first sweep only during an initial portion of said subsequent sweep.

4,567,584

AUTOCHANGER TYPE DISC PLAYER

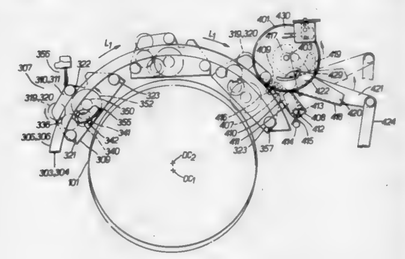
Hiroshi Kawakami, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jun. 8, 1984, Ser. No. 618,944

Claims priority, application Japan, Jun. 13, 1983, 58-105296; Dec. 27, 1983, 58-244465

Int. Cl.⁴ G11B *17/22*

U.S. Cl. 369—38 **12 Claims**



1. An autochanger type disc player for automatically accessing, playing and storing at least one disc having a curved periphery, the autochanger type disc player comprising:

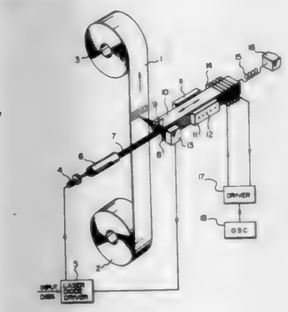
a disc storage section including means for supporting said at least one disc;
a disc playback section;
a disc transferring passage coupled between said disc storage section and said disc playback section for transferring said at least one disc between said disc storage section and said disc playback section; and
means for moving said at least one disc from said disc storage section into said disc transferring passage or from said disc transferring passage to said disc storage section by imparting rotational force to said at least one disc along the periphery thereof said disc moving means including means for traveling along an arcuate path substantially corresponding to the periphery of said predetermined disc.

4,567,585

OPTICAL TAPE RECORDER USING LINEAR SCANNING

Daniel Gelbart, 4616 Garden Grove Dr., Burnaby, B.C., Canada (V5G-3V3)

Filed Oct. 31, 1983, Ser. No. 547,329
Int. Cl.⁴ G11B *7/00, 27/00*
U.S. Cl. 369—97 **4 Claims**



1. An optical data recorder comprising:
a laser modulated according to incoming data;
a tape made of light sensitive material;
a slide constrained to move in a straight line reciprocally and transversly to said tape;
a mirror mounted on said slide onto which said modulated laser beam impinges;
a lens mounted on said slide to focus laser light reflected from said mirror into a small spot on said tape causing a permanent mark when said laser is turned on;
means for accurately measuring the position of said slide;
means for placing said marks on said tape in accordance with the measured position of said slide;
and means for moving said tape slowly in a direction transverse to motion of said slide.

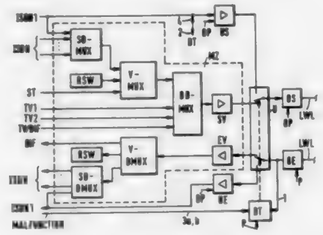
4,567,586

SERVICE INTEGRATED DIGITAL TRANSMISSION SYSTEM

Klaus Koeck, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,508
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045875
Int. Cl.⁴ H04B *9/00*
U.S. Cl. 370—4 **10 Claims**

1. In a service integrated, time multiplex digital signal transmission system for transmitting narrowband and broadband signals between a central exchange terminal and a subscriber terminal, which system includes means defining a light conductor path connected between the terminals, a transmitter device at one terminal composed of sources of such narrowband and broadband signals and signal processing means conductively connected to the sources for receiving the signals provided by the sources and for combining the signals provided by the sources into a multiplex signal and for supplying such multiplex signal to the light conductor path, and a receiver device at the other terminal composed of signal processing means connected to the light conducting path for receiving multiplex signals from that path and separating the received multiplex signals into narrowband signals and broadband signals, the device at the subscriber terminal being normally supplied with operating power by local utility mains, a charge accumulator at the subscriber terminal conductively connected to the device at the subscriber terminal for supplying operating power thereto in the event of interruption of the power supply provided by the local mains, and means connected to the device at the one terminal for switching the system into an operating state in which the system effects signal transmission at a re-



duced bit rate in the event of such local mains power interruption, the improvement wherein:
one of said devices comprises emergency transmitting means for producing a narrowband signal and connected in signal conducting relation to the light conductor path for supplying such signal to the light conductor path;
the other of said devices comprises emergency receiving means for receiving the narrowband signal produced by said emergency transmitting means and connected in signal conducting relation to the light conductor path for receiving such signal from the light conductor path; and
said switching means comprise detector means located at one of the terminals for detecting a local mains power interruption, and switching members connected between said detector means and said device at said one terminal for responding to detection of such power interruption to deactivate said signal processing means at said one terminal and activate said emergency means at said one terminal.

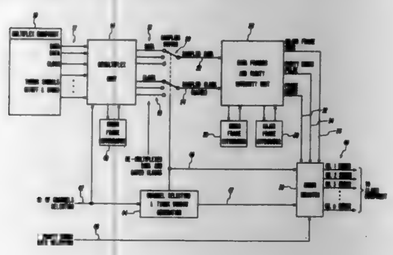
4,567,587

MULTIPLEX EQUIPMENT MONITORING APPARATUS

Thomas C. McDermott, Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 27, 1983, Ser. No. 565,261
Int. Cl.⁴ H04J *1/16, 3/06*
U.S. Cl. 370—13 **5 Claims**

1. The method of checking for data transmission errors generated by high speed multiplexing equipment at a transmitter end of a communication system comprising the steps of:
demultiplexing a multiplexed data stream to regenerate time duration nonsymmetrical data along with nonsymmetrical associated clock timing signals both having irregular timing due to removal of overhead information bits from data stream;
detecting framing information from the regenerated data and generating frame fault error signals when said framing information is not detected; and



detecting parity of said regenerated data and generating parity error signals when indicated parity is not correct for a given channel of data.

4,567,588

SYNCHRONIZATION SYSTEM FOR USE IN DIRECT SEQUENCE SPREAD SPECTRUM SIGNAL RECEIVER

John W. Jerrim, Lilburn, Ga., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed Mar. 23, 1984, Ser. No. 592,667
Int. Cl.⁴ H04J *13/00*
U.S. Cl. 370—18 **5 Claims**

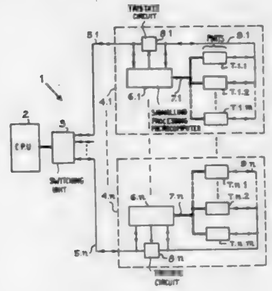
1. In a direct sequence spread spectrum code division multiplex system, including a plurality of transmitters synchronized to a common timing signal and each transmitting a data signal spread by a bipolar pseudo-random code which is a different assigned shift of a common bipolar sequence:
a receiver synchronized to said timing signal for receiving said transmitted signal spread by a bipolar pseudo-random code having a predetermined assigned code sequence shift, said receiver including a plurality of correlation detectors and means for applying to each of the correlation detectors (1) a first reference bipolar pseudo-random sequence that is a replica of the common bipolar pseudo-random sequence and has a code shift that is within one code chip of the assigned shift of a predetermined transmitter and is displaced from the common bipolar pseudo-random code sequence applied to the other correlation detectors by a fraction of a code chip less than unity, and (2) a second reference bipolar pseudo-random code that is a replica of the transmitted common bipolar pseudo-random code and has an unassigned code sequence shift, each of said correlation detectors including first means for obtaining the product of the transmitted sequences and the first reference bipolar pseudo-random sequences; second means for obtaining the product of the transmitted sequences and the second reference bipolar pseudo-random sequence and third means for obtaining a difference between the products obtained by the first and second means; synchronous integrator means for integrating the difference; means for synchronously sampling an output of the integrator means and signal processor means responsive to outputs of said correlation detectors to synchronize said receiver to said predetermined transmitter;
wherein each of said correlation detectors includes means for generating an in-phase correlation signal that is at a maximum and a quadrature-phase correlation signal that is at a minimum when said receiver and said predetermined transmitter are synchronized to each other:
an improvement wherein said processor means includes means for measuring said in-phase and quadrature-phase correlation signals and further for obtaining an absolute value of the ratio of said in-phase and quadrature-phase correlation signals, and means for shifting receiver synchronization timing relative to said timing signal by a predetermined about depending upon the magnitude of said ratio to achieve synchronization with said predetermined transmitter.

4,567,589

ELECTRONIC DIGITAL PCM TIME-DIVISION EXCHANGE WITH DECENTRALIZED ARCHITECTURE

Daniel Lecomte, Paris, and Michel Gibaud, Herblay, both of France, assignors to Thomson CSF-Telephone, Paris, France

Filed Oct. 24, 1983, Ser. No. 545,009
Claims priority, application France, Oct. 26, 1982, 8217914
Int. Cl.⁴ H04Q *11/04*
U.S. Cl. 370—58 **10 Claims**



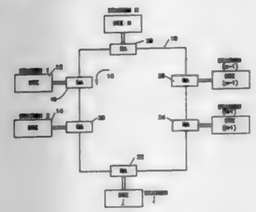
1. An electronic digital PCM time division exchange connecting subscribers to each other and to said exchange, comprising:
a central processing unit;
a switching network connected to said central processing unit; and
at least one rack connected to said switching network, each rack including:
a first PCM bidirectional junction connecting said rack to said switching network;
a tri-state circuit connected to said first PCM bidirectional junction;
at least one port card, each including at least one port adapted to connect subscribers to said exchange;
a second PCM bidirectional junction connecting said at least one port card to said tri-state circuit; and
a message processing microcontroller, connected to said at least one port card and to said tri-state circuit and to said first and second PCM bidirectional junctions.

4,567,590

MESSAGE STRIPPING PROTOCOL FOR A RING COMMUNICATION NETWORK

Seymour Bederman, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,789
Int. Cl.⁴ H04J *3/16*
U.S. Cl. 370—86 **19 Claims**



19. A method for stripping expended messages from a communications network comprising the steps of:

(a) transmitting from a first station a message including an identification label and a control indicia being set in a first state;

(b) receiving the message at a recipient station;

(c) stripping a portion of the message at the recipient station only if the identification label correlates with an identification characteristics of said recipient station;

(d) receiving a remaining portion of the message at a second station; and

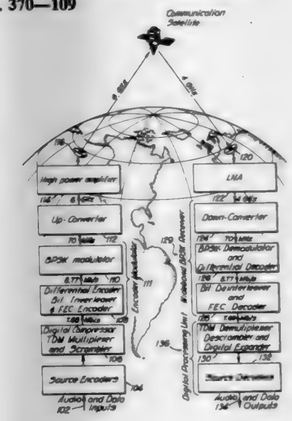
(e) stripping the remaining portion of said message only if the control indicia is set to a second state.

4,567,591

DIGITAL AUDIO SATELLITE TRANSMISSION SYSTEM

James S. Gray, 4718 Pine Acres Ct., Dunwoody, Ga. 30338; James W. Chamberlin, 368 Omega Dr.; Alan L. McBride, 2974 Moore Ave., both of, Lawrenceville, Ga. 30245, and Peter G. Schreiner, III, 1281 Brockett Rd., Apartment 23D, Clarkston, Ga. 30021

Filed Aug. 1, 1983, Ser. No. 519,268
Int. Cl.⁴ H04J *3/00*
U.S. Cl. 370—109 **15 Claims**



1. A system for processing analog audio and digital data signals and modulating an intermediate frequency carrier for subsequent conversion to a transmission frequency, amplification and transmission comprising:

(1) a source encoder for converting the analog audio portions of said signals to digital form;

(2) a digital compressor for compressing the digitized analog audio signals to reduce their data rates;

(3) a multiplexer for combining into a single data stream the compressed signals output by the compressor;

(4) a forward error correction encoder for encoding the data stream output by the multiplexer utilizing a convolutional self orthogonal code;

(5) a bit interleaver for interleaving the bits contained in the data stream output by the forward error correction encoder;

(6) a differential encoder for differentially encoding the data stream output by the bit interleaver; and

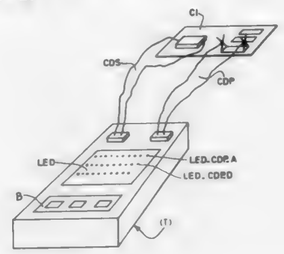
(7) a binary phase shift key modulator for modulating the data stream output by the differential encoder at an intermediate frequency.

4,567,592

METHOD AND APPARATUS FOR THE STEPWISE STATIC TESTING OF THE RESPECTIVE CONNECTIONS AND INTEGRATED SUBSYSTEMS OF A MICROPROCESSOR-BASED SYSTEM FOR USE BY THE GENERAL PUBLIC

Jean Minicilli, Torcy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,378
Claims priority, application France, Sep. 8, 1982, 82 15235
Int. Cl.⁴ G01R *31/28*; G06F *11/00*
U.S. Cl. 371—20 **6 Claims**



1. A method for testing a microprocessor-based system in case of a malfunction in said system, said system having a data bus with a first plurality of bit lines in parallel, an address bus with a second plurality of bit lines in parallel, and a third plurality of control bit lines for interconnecting said microprocessor with respective peripheral circuits (ROM, RAM) thereof, said method comprising the steps of:

(a) verifying whether a significant general power supply level for said system is present;

(b) verifying the presence of a correct clock signal for said system as provided by a clock signal procurement means;

(c) replacing the system microprocessor by another, non-defective, microprocessor of the same type to determine whether the original system microprocessor is defective; and

in case of a sufficient general supply level and a correct clock signal and the presence of said non-defective microprocessor, said system is still malfunctioning, the following steps are executed:

(d) removing the non-defective microprocessor while steering all said peripheral circuits to their high-impedance output states with respect to respective ones of said first, second, and third pluralities of bit lines connected to said peripheral circuits;

(e) feeding said first, second and third pluralities of bit lines with a sequence of quasi-static signal patterns for implementing the following steps for testing a predetermined peripheral circuit interconnection;

(f) applying a sequence of binary signals to each bit line associated to said peripheral circuit and verifying the presence of said binary signal on the corresponding package input of said peripheral circuit;

(g) verifying of the absence of short circuits between the various bit lines and/or between a line and the power supply by applying a binary signal of high level via a single bus line and a binary signal of low level via all other bus lines, and verifying that said binary signal of high level does not arrive on a bus line other than the line on which it has been dispatched, followed by the successive application of said binary high signal via all other bus lines in order to perform the same verification as before by simple permutation of signal values;

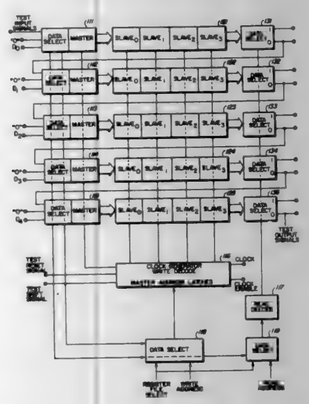
(h) verifying of the absence of short circuits between the various bus lines and/or between a line and ground by dispatching a binary signal of low level (connected to ground) via a single bus line and a binary signal of high level via all other bus lines, and verifying that said other than the line on which it has been dispatched, followed by the successive application of said binary signal of low level on all other bus lines in order to perform the same verification as before by simple permutation of signal values.

4,567,593

APPARATUS FOR VERIFICATION OF A SIGNAL TRANSFER IN A PRESELECTED PATH IN A DATA PROCESSING SYSTEM

Lawrence D. Bashaw, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Oct. 6, 1983, Ser. No. 539,356
Int. Cl.⁴ G06F *11/00*
U.S. Cl. 371—25 **3 Claims**



1. Apparatus for verifying the operation of a data processing system, comprising:

(a) maintenance means, having a maintenance processor and a maintenance memory, for controlling the execution of a test operation of the data processing system;

(b) coupling means for coupling the maintenance processor to the data processing system;

(c) test control means, operatively connected to said coupling means, for controlling the distribution of an input test signal, the distribution of a plurality of control signals, and the distribution of a clock signal to said data processing system; and

(d) register means, operatively connected to said test control means, said register means being associated with the data processing system, said register means including:

(i) at least one register of a master/slave type having at least one register position, the register having data select logic before a master latch associated with said register which can select normal input, configure the register as a shifting register, or reset the register in response to one of said control signals; or

(ii) at least one register file having a plurality of registers of at least one register position, and further having a master latch, a slave register, and a data selector for each of the plurality of registers, the data selector selecting a normal input mode, a shifting mode, or a reset mode in response to one of said control signals;

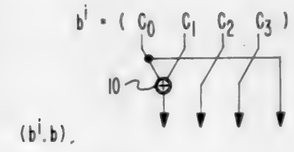
preselected register means being placed in the shifting mode in response to one of said control signals, the input test signal being shifted through the preselected register means in response to a shift control signal, the input test signal being analyzed by the maintenance processor after the input test signal has been shifted through the preselected register means to determine if the input test signal has an expected result, the shifting configuration of said register means providing for inversion between each register position wherein each bit of the input test signal is inverted as it is shifted, thereby permitting the analysis to identify a shift path failure.

4,567,594

REED-SOLOMON ERROR DETECTING AND CORRECTING SYSTEM EMPLOYING PIPELINED PROCESSORS

Shirish P. Deodhar, Canoga Park, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 7, 1983, Ser. No. 502,046
Int. Cl.⁴ G06F *11/12*
U.S. Cl. 371—38 **12 Claims**



1. In a disk storage system, a machine implemented method for providing error detection and correction of digital data read from said disk, said method comprising:

providing a disk having a track wherein the track is in turn divided into a plurality of sectors and wherein data is recorded in each sector as a plurality of interleaved code words along with check data having values determined in accordance with Reed-Solomon decoding principles;

sequentially reading sectors of data from said disk; and

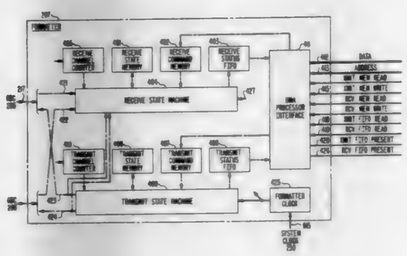
detecting and correcting errors in sectors of data read from said disk by consecutively performing a sequence of processing steps chosen in accordance with said Reed-Solomon decoding principles, wherein each step is performed by a separate processor, and wherein these processors perform said steps in a pipelined manner with respect to sequentially read sectors and at a rate which provides essentially real-time correction of data errors in sectors read from said disk.

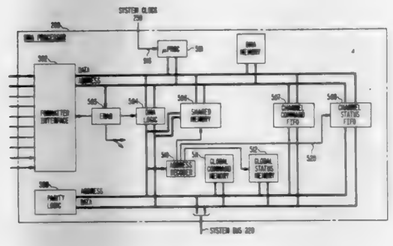
4,567,595

MULTILINE ERROR DETECTION CIRCUIT

Kurt A. Hedlund, Chicago, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1983, Ser. No. 481,058
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—49 **12 Claims**





1. In a data transmission system having a plurality of transmitting units with associated serial transmission links and central control means for sequentially selecting one of said transmitting units to serially transmit data signals to said central control means via one of said associated transmission links and other ones of said units only transmitting data signals of an idle data type, an arrangement for the detection of the transmission of data signals other than said idle data type by any of said other ones of said transmitting units comprising

means for selecting serial data signals from said selected one of said transmitting units via said one of said associated transmission links;

means responsive to all data signals transmitted from all of said transmitting units via all of said transmission links for generating error check signals of a first error type upon said selected serial data signals being idle data type and another error type upon said selected serial data signals being of non-idle data type; and

means responsive to said error check signals not being equal to predefined bit signals for generating an error occurrence signal.

4,567,596

LASER APPARATUS

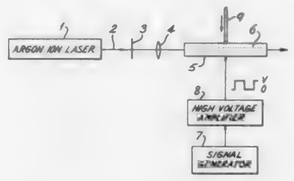
Amyand D. Buckingham, Cambridge, England, and David P. Shelton, Toronto, Canada, assignors to National Research Development Corporation, London, England

Filed Jun. 18, 1982, Ser. No. 390,117
Claims priority, application United Kingdom, Jul. 2, 1981, 8120441
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—22 **7 Claims**

1. A laser apparatus including:

means for enabling a beam of coherent electromagnetic radiation to be propagated along a path; and

electric field directing means for applying a plurality of directional electric fields across the path, the fields being spaced apart in sequence along the path and successive fields being directed oppositely, said electric field direct-



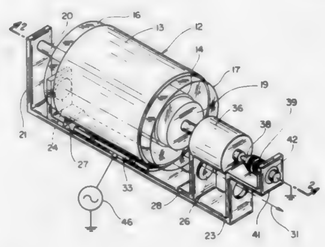
ing means comprising a plurality of pairs of electrodes positioned on opposite sides of the path and means for applying electric potential difference between the electrodes of a pair, the spacing between the fields being such that at a predetermined speed of propagation of the radiation a predetermined harmonic frequency of the radiation is enhanced.

4,567,597

HIGH POWER LASER SYSTEM

Michael J. Mandella, 460-B Tyrella Ave., Mountain View, Calif. 94043

Filed Oct. 15, 1982, Ser. No. 434,491
Int. Cl.⁴ H01S *3/04*
U.S. Cl. 372—34 **13 Claims**



1. A high power laser comprising

an annular lasing medium contained within an envelope having transparent end walls

means defining a resonant region in an active portion of said annular lasing medium between said transparent end walls

means for exciting said active portion of said resonant region of said annular lasing medium and for generating a population inversion in said active portion of said resonant region;

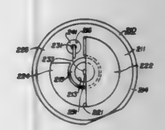
means for rotating said annular lasing medium such that a non-excited or cooled portion of sad lasing medium is rotated into said resonant region and said excited active portion of said excited lasing medium is rotated out of said resonant region to transfer heat generated during excitation of said active portion of said lasing medium to the surrounds.

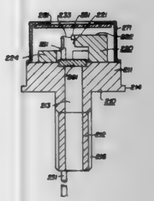
4,567,598

OPTOELECTRONIC SEMICONDUCTOR DEVICES IN HERMETICALLY SEALED PACKAGES

Shozo Noguchi; Yasunobu Oshima, and Tohru Kamata, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1983, Ser. No. 468,316
Claims priority, application Japan, Feb. 23, 1982, 57-27603
Int. Cl.⁴ H01S *3/04;* **H01L** *23/36*
U.S. Cl. 372—36 **6 Claims**





1. Optoelectronic semiconductor apparatus comprising:

an optoelectronic semiconductor device having a pair of electrodes;

a circular stud for providing an electric connection to one electrode of said device, said stud having a coaxial hole to pass light propagated to or from said device;

a transparent window provided on said circular stud to cover said coaxial hole;

a lead penetrating said stud adjacent said window for providing an electric connection to the other electrode of said device;

an insulating means for electrically insulating said lead from said stud, said insulating means maintaining hermetic sealing for said lead and stud;

a mounting block secured onto said stud and having a thermal expansion coefficiency different from that of said stud, said block having a C-shaped portion in contact with said stud such that said C-shaped portion surrounds said transparent window in a plan view except for a gap and said lead is positioned in the gap of said C-shaped portion, said block further including a protruding portion extending from said C-shaped portion in a direction away from said stud, said protruding portion being electrically and thermally attached to said device and being positioned to provide light propagation to or from said device in a direction axially of said stud, said C-shaped portion having inner and outer edges substantially coaxial to said circular stud; and

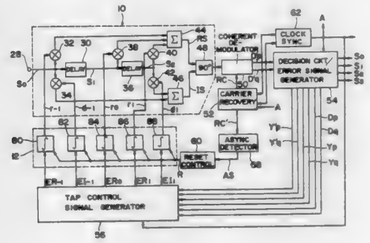
a cap with a window substantially transparent to light directed to or from said device, said cap being secured to said stud to form a sealed enclosure for said device.

4,567,599

AUTOMATIC ADAPTIVE EQUALIZER HAVING IMPROVED RESET FUNCTION

Shoichi Mizoguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 30, 1983, Ser. No. 537,602
Claims priority, application Japan, Oct. 1, 1982, 57-173653
Int. Cl.⁴ H04L *25/03, 7/04;* **H03K** *5/135*
U.S. Cl. 375—14 **8 Claims**



1. An automatic adaptive equalizer comprising:

an equalizer for equalizing an incoming signal in response to a control signal;

a demodulator;

an asynchronism detector for detecting asynchronism in said demodulator;

a control loop for producing said control signal according to the output of said equalizer, said control loop including a tap control signal generator and a plurality of resettable integrators;

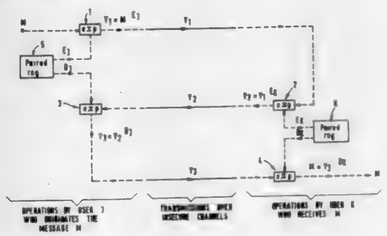
a reset control circuit provided between said asynchronism detector and said plurality of resettable integrators, and responsive to the output of said asynchronism detector for intermittently issuing a reset signal which is applied to said plurality of resettable integrators.

4,567,600

METHOD AND APPARATUS FOR MAINTAINING THE PRIVACY OF DIGITAL MESSAGES CONVEYED BY PUBLIC TRANSMISSION

James L. Massey, Zurich, Switzerland, and Jimmy K. Omura, Culver City, Calif., assignors to Omnet Associates, Sunnyvale, Calif.

Filed Sep. 14, 1982, Ser. No. 418,038
Claims priority, application European Pat. Off., Feb. 2, 1982, 82100739.0
Int. Cl.⁴ H04L *9/04*
U.S. Cl. 375—2.1 **26 Claims**



23. The method for maintaining the privacy of a digital message M conveyed by public transmission between a sender and a receiver wherein private transmission of said digital message M requires the actual transmission of a first public digital message Y_1, a second public digital message Y_2 and a

third public digital message Y_3 for each private digital message M over public transmission means, said private digital message M and said three public digital messages Y_1, Y_2 and Y_3 each represented by a vector of m binary digits where m is an integer equal to or greater than 2, and each normal basis representations of an element of the finite field $GF(2^m)$ containing 2^m elements other than the elements 0 and 1 of said finite field, said three public messages Y_1, Y_2 and Y_3 being the elements of $GF(2^m)$ determined by the equations

$$Y_1 = M^{E1}$$

$$Y_2 = Y_1^{E2}$$

$$Y_3 = Y_2^{D1}$$

and said private message M being determined by $M = Y_3^{D2}$, where E_1, D_1, E_2 and D_2 are each integers of m binary digits between 1 and 2^m-2 inclusive whose products $E_1D_1 = E_2D_2 = 1$ modulo 2^m-1, said first public message Y_1 being transmitted from said sending station to said receiving station, said second public message Y_2 being transmitted as the reply from said receiving station to said sending station, and said third public message Y_3 being transmitted as the reply to said message Y_2 from said sending station to said receiving station, said receiving station then calculating said private message M according to the equation $M = Y_3^{D2}$, comprising the steps of:

(a) generating in random integer generating means at said sending station a first random integer of m binary digits;

(b) computing in means for computing at said sending station a pair of integers E_1 and D_1 each between 1 and 2^m-2 inclusive, and each of m binary digits such that their product E_1D_1 equals 1 modulo 2^m-1 when presented with said first random integer;

(c) exponentiating in means for exponentiating at said sending station said private message M to the E_1 power to obtain said public message Y_1;

(d) transmitting said message Y_1 over said public transmission means to said receiving station;

(e) generating in random integer generating means at said receiving station a second random integer of m binary digits;

(f) computing in means for computing at said receiving station a pair of integers E_2 and D_2 each between 1 and 2^m-2 inclusive and each of m binary digits such that their product E_2D_2 equals 1 modulo 2^m-1 when presented with said second random integer;

(g) exponentiating in means for exponentiating at said receiving station said public message Y_1 to the E_2 power to obtain said public message Y_2;

(h) transmitting said message Y_2 over said public transmission means to said sending station;

(i) exponentiating in said means for exponentiating at said sending station said public message Y_2 to the D_1 power to obtain said public message Y_3;

(j) transmitting said public message Y_3 over said public transmission means to said receiving station; and

(k) exponentiating in said means for exponentiating at said receiving station said public message Y_3 to the D_2 power to obtain said private message M.

4,567,601

THREE-TO-TWO LEVEL DIGITAL SIGNAL CONVERSIONS AND VICE VERSA

Peter J. Mountain, The Hague, Netherlands, assignor to British Telecommunications, London, England

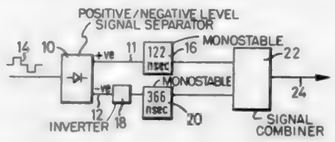
Filed Jul. 18, 1983, Ser. No. 514,956

Claims priority, application United Kingdom, Jul. 19, 1982, 8220836

Int. Cl.⁴ H03K *13/02*

U.S. Cl. 375—22 **6 Claims**

1. A method of converting a three level signal for transmission through a bi-level digital device comprising separating the opposite polarity parts of the three level signal and inverting one part, converting one said part to pulses having a first pulse length and converting the other said part to pulses having a second pulse length which is different from said first pulse



length, combining and transmitting said pulses through the digital device and decoding said pulses to regenerate the three level signal.

4,567,602

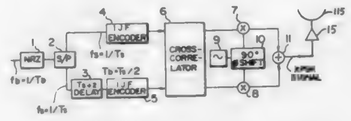
CORRELATED SIGNAL PROCESSOR

Shuzo Kato, Yokohama, Japan, and Kamilo Feher, Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Jun. 13, 1983, Ser. No. 503,574

Int. Cl.⁴ H03K *1/02;* **H04L** *27/20*

U.S. Cl. 375—60 **14 Claims**



1. A cross-corrected signal processor comprising:

(a) means for providing in-phase and quadrature phase shifted NRZ digital input signals,

(b) means for cross-correlating each two symbols of the in-phase signal with each two symbols of the quadrature signal, every half symbol and providing in-phase and quadrature phase shifted intersymbol-interference and jitter free (IJF) encoded output signals having amplitudes modified from the peak amplitudes of IJF encoded signals according to the following schedule:

(i) when the in-phase channel signal is zero, the quadrature shifted signal is the maximum IJF amplitude according to its wave shape,

(ii) when the in-phase channel signal is non-zero, the maximum magnitude of the quadrature shifted signal is reduced from 1 normalized to A, where

$$\frac{1}{\sqrt{2}} \leq A \leq 1,$$

(iii) when the quadrature channel signal is zero, the in-phase signal is the maximum IJF amplitude according to its wave shape,

(iv) when the quadrature channel signal is non-zero, the in-phase signal is reduced from 1 (normalized) to A, where

$$\frac{1}{\sqrt{2}} \leq A \leq 1,$$

(c) and means for quadrature modulating the in-phase and quadrature output signals, to provide a cross-correlated modulated output signal.

4,567,603

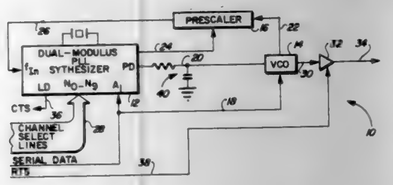
FSK MODULATOR AND METHOD FOR NRZ DATA TRANSMISSION UTILIZING PLL FREQUENCY SYNTHESIS

William J. Howell, Tempe, and John D. Hatchett, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 9, 1983, Ser. No. 502,778

Int. Cl.⁴ H03C *3/06*

U.S. Cl. 375—65 **10 Claims**



1. A frequency generator for providing an FSK modulated RF signal comprising:

a PLL frequency synthesizer having frequency and divide inputs thereto and a phase detector output thereof;

a VCO having error and modulation inputs thereto, said error input being connected to said phase detector output of said PLL frequency synthesizer and an output thereof being coupled to said frequency input of said PLL frequency synthesizer; and

means connected to said PLL frequency synthesizer for directly applying a serial data stream to said divide input of said PLL frequency synthesizer and said modulation input of said VCO

whereby said FSK modulated RF signal is provided at said output of said VCO in response to said serial data stream.

4,567,604

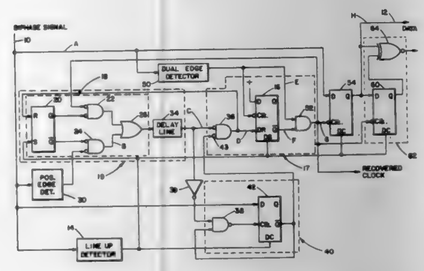
BIPHASE SIGNAL RECEIVER

Barry H. Jacksier, Wheeling, Ill., assignor to AT&T Teletype Corporation, Skokie, Ill.

Filed Aug. 29, 1983, Ser. No. 526,940

Int. Cl.⁴ H04L *27/22*

U.S. Cl. 375—87 **5 Claims**



1. A receiver for generating digital output signals in response to received messages encoded in a biphase signal coding format, each message comprising a spacing portion, a preamble portion and a data portion, the receiver comprising:

an input terminal (**10**) for accepting an incoming message,

a first detection means (**19**) responsive to said incoming message signal for generating a first control signal,

a second detection means (**40**) responsive to said first control signal and said preamble portion of said incoming message signal for generating a second control signal,

means (**17**) connected to said input terminal and first (**10**) and second (**40**) detection means for generating a third control signal in response to said first and second control signals and for generating a sampling signal in response to said first and second control signals and voltage level transitions of said message signal,

said first detection means (**19**) including a switch (**18**) responsive to said third control signal for switching the generation of said first control signal from response to said incoming message signal to response of said sampling signal, and

means connected to said input terminal (**10**) and said sampling means (**17**) for generating digital output signals in response to said sampling signal and said message signal.

4,567,605

X-RAY ANALYSIS APPARATUS COMPRISING A FOUR-CRYSTAL MONOCHROMATOR

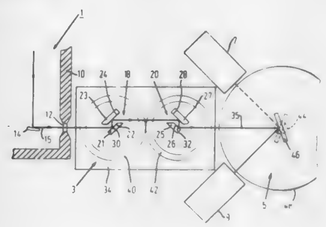
Willem J. Bartels, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,274

Claims priority, application Netherlands, Nov. 25, 1982, 8204584

Int. Cl.⁴ G01N *23/20*

U.S. Cl. 378—85 **11 Claims**



1. In an X-ray analysis apparatus comprising in order an X-ray source providing an X-ray beam, a monochromator, a specimen holder, and detecting means for detecting X-rays from a specimen on said specimen holder, the improvement comprising said monochromator including

four crystal faces positioned as pairs of crystal faces, said faces of each pair being parallel to one another, and said faces being arranged so that an emergent X-ray beam is colinear to an incident X-ray beam,

wherein said pairs are rotatably in a coupled manner to change Bragg angle while maintaining collinearity.

4,567,606

DATA PROCESSING APPARATUS AND METHOD FOR USE IN SPEECH RECOGNITION

George Vensko, Ramona; Lawrence Carlin, San Diego; John Potter, Ramona, and Allen R. Smith, Poway, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 3, 1982, Ser. No. 439,018

Int. Cl.⁴ G10L *1/00*

U.S. Cl. 381—43 **10 Claims**

1. A distributed processing apparatus for performing a continuous speech recognition function comprising:

a plurality of processing means coupled by a remote bus and each having a shared memory associated therewith and each for performing local processing on data stored in said associated shared memory; and

data transfer means associated with each of said processing means and with said associated shared memory and coupled thereto for transferring at least a portion of said data between said shared memories across said remote bus;

direct memory access circuit means (DMA) for preventing interference with local processing of the remaining portions of said data by said plurality of processing means during said transfer of data.

4,567,607

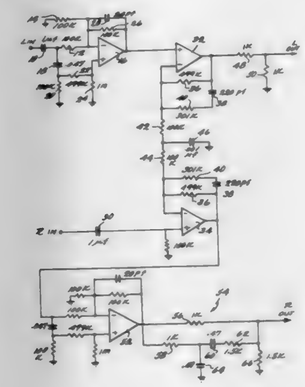
STEREO IMAGE RECOVERY

Paul F. Bruney, Silver Spring, and Robert S. Bugash, Wheaton, both of Md., assignors to Stereo Concepts, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 491,297, May 3, 1983, Pat. No. 4,495,637, which is a continuation-in-part of Ser. No. 401,211, Jul. 23, 1982, abandoned. This application Nov. 22, 1983, Ser. No. 554,385

Int. Cl.⁴ H04R 5/00

U.S. Cl. 381—1 **43 Claims**



1. An audio signal processing circuit for processing plural channels of related audio signals, said circuit comprising:

a first audio signal processing channel;

a second audio signal processing channel;

cross-feed means for feeding signal levels from the first to second channel and from the second to first channel in an out-of-phase, phase difference relationship with respect to related audio signals already passing through a given channel, said relationship of phase difference versus frequency having not more than one frequency wherein phrase differences for frequencies directly adjacent said one frequency are less than the phase difference at said one frequency; and

means for limiting said cross-feeding to components of said signal levels below a predetermined frequency;

said first channel including first means for reversing the phase of low frequency signals with respect to high frequency signals, said first reversing means processing signals before said cross-feed means;

one of said first and second channels including second means for reversing the phase of low frequency signals with respect to high frequency signals, said second reversing means processing signals after said cross-feed means.

40. A method of processing plural channels of related audio signals comprising the steps of:

first reversing the phase of low frequency components of one of said audio signals with respect to high frequency components;

after said first reversing step, feeding signal levels from a first channel receiving the output of said reversing step to a second channel receiving another of said audio signals and from said second channel to said first channel and combining the cross-fed signal components in an out-of-phase, phase difference relationship with respect to related audio signals already passing through a given channel; and

after said feeding step, reversing the phase of low frequency components of signals from said second channel with respect to high frequency components.

4,567,608

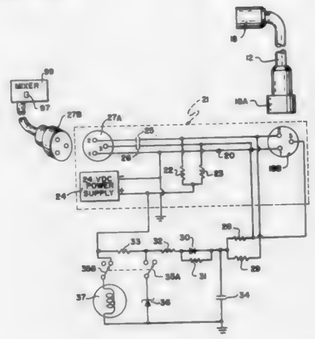
MICROPHONE FOR USE ON LOCATION

Alan R. Watson, Niles, and John P. Overley, Buchanan, both of Mich., assignors to Electro-Voice, Incorporated, Buchanan, Mich.

Filed Mar. 23, 1984, Ser. No. 592,411

Int. Cl.⁴ H04R 3/00

U.S. Cl. 381—122 **8 Claims**



1. A device for connecting a microphone to a microphone cable system, the cable system being adapted to conduct audio signals and having at least two conductors and a direct current source connected across the two conductors, comprising an audio amplifier having an input adapted to be coupled to the microphone and an output, said amplifier having two terminals for connection to a direct current source of power, coupling means connected to the output of the amplifier and adapted to be connected to the microphone cable system for coupling audio signals from the amplifier to the microphone cable system, said coupling means isolating the direct current power of the microphone cable system from the output of the amplifier and including a diode connected to one of the amplifier power input terminals, said diode being connected to pass current from the microphone cable system to said amplifier to power the amplifier, a light emitting diode and a zener diode connected in series across the power input terminals of the amplifier, the zener diode being polarized against the flow of current to the light emitting diode and having a breakdown potential below the potential of the direct current source of the microphone cable system.

4,567,609

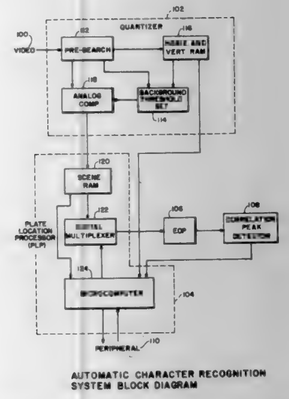
AUTOMATIC CHARACTER RECOGNITION SYSTEM

Travis W. Metcalf, Lemon Grove, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1983, Ser. No. 479,372

Int. Cl.⁴ G06K 9/34

U.S. Cl. 382—9 **45 Claims**



AUTOMATIC CHARACTER RECOGNITION SYSTEM BLOCK DIAGRAM

1. An apparatus for automatic location and recognition of alphanumeric characters in a bounded area of known size within a scene viewed by a raster-scan type video sensor which comprises:

means, connected to receive a video signal from the raster-scanned type sensor, for converting said video signal into a digital binary signal whereby the alphanumeric characters are represented by one of the binary signals and the background data is represented by the other binary signal;

means, disposed to receive the output of the converting means, for locating a known bounded area containing alphanumeric characters in the scene viewed;

means, connected to the locating means, for recognizing the alphanumeric characters contained in the known bounded area; and

means, disposed to receive the output of the recognizing means, for further processing and displaying of the recognized alphanumeric characters;

wherein the converting means comprises:

means, disposed to receive the analog video signal from the video sensor, for presearching the scene viewed to locate probable bounded areas containing alphanumeric characters, wherein said means for presearching identifies horizontal and vertical coordinates representing the location of each probable bounded area containing alphanumeric characters;

means, connected to receive a signal from the output of the presearching means, for setting a threshold to represent the background signal level;

means, connected to the presearching means, for storing the horizontal and vertical coordinates representing the location of each probable bounded area containing alphanumeric characters; and

means, connected to receive the analog video signal from the video sensor and also connected to receive the output analog signal from the threshold setting means, for digitizing those signals pertaining to probable bounded areas containing alphanumeric characters in a manner that signals pertaining to alphanumeric characters are set as a first binary coded signal level and the background signals are set at the second binary coded signal level;

the apparatus further comprising:

a threshold setting means which adjusts the threshold reference signal to relate in an absolute manner to analog signals pertaining to probable alphanumeric characters in a manner that possible alphanumeric characters are always treated similarly in relation to the background level whether the alphanumeric characters are light colored on a dark background or dark colored on a light background; and

an analog comparator as the digitizing means, said analog comparator outputting a digital logic binary signal of "1" for data pertaining to alphanumeric characters and a digital logic signal of "0" for data caused by background signals;

wherein the presearching means comprises:

an input for receiving the video signals from the video sensor;

a bit clock generator;

a first analog delay circuit connected to receive the video sensor input, said delay circuit causing a delay of time length equal to one horizontal video line scan;

a first analog differential comparator which receives input signals from the first analog delay circuit and from the video sensor input, said comparator outputting a signal when the input signals differ;

a first AND gate which receives one input from the bit clock generator and a second input from the output of the first analog differential comparator, said AND gate emitting an output signal when signals occur simultaneously at both inputs;

a first counter connected to receive the output of the first AND gate, said counter accumulating a total count representing the period during which the first AND gate is outputting a pulse signal;

a first digital comparator connected to receive the count output (A) from the first counter and to compare this accumulating count against a preset test count (B) which represents the expected horizontal width of a single alphanumeric character, said comparator outputting a signal when A is less than or equal to B;

a first D-flip flop unit connected to receive the output signal from the first digital comparator, said flip flop unit outputs a signal after it has been triggered by a first output signal from the first digital converter;

a second D-flip flop unit connected to receive the output of the first D-flip flop unit and to receive the output signals from the first digital comparator, said second D-flip flop unit being activated by the output signal from the first D-flip flop unit which occurs when the first flip flop unit is activated by the first output signal emitted from the first comparator, and then is caused to emit a signal at its output when a second consecutive signal is emitted from the first comparator;

a second counter connected to receive inputs from the bit clock generator which causes the counter to accumulate counts;

a second digital comparator connected to receive the count output (C) from the second counter, and to compare this accumulating count against a preset test count (D) which represents the expected horizontal width of the area containing all alphanumeric characters of interest, said comparator outputting a signal when C is greater than or equal to D;

a second AND gate which receives inputs from the second digital comparator and the second D-flip flop unit, said AND gate emitting an output signal when its input's both simultaneously hold an input signal, whereby the tentative detection of a field of alphanumeric characters of interest against a clear background has been accomplished;

a second analog delay circuit connected to receive the output of the first analog delay circuit, said second circuit causing a delay of time length equal to 10 bits along a horizontal video line scan;

a second analog differential comparator connected to receive the output of the second analog delay circuit and the output of the first analog delay circuit, said second analog

differential comparator outputting a signal when its input signals differ, said second differential comparator being connected to feed this output signal to the second counter and the first and second D-flip flop units whereby these respective devices are reset to restart their active functions over;

a first OR gate connected to receive the output signals from the first and second analog differential comparators, said OR gate emitting a signal when either of the signals input from said first and second comparators exist, and said output of the OR gate connected to the first counter whereby this counter is reset to the start position when a signal from the OR gate output occurs; and

a third analog delay circuit connected to receive the output video signal from said first analog delay circuit, said third delay circuit causing a delay of time length equal to one horizontal video line scan.

4,567,610

METHOD OF AND APPARATUS FOR PATTERN RECOGNITION

Robert K. McConnell, Arlington, Mass., assignor to Wayland Research Inc., Wayland, Mass.

Filed Jul. 22, 1982, Ser. No. 400,948
Int. Cl.⁴ G06K *9/80*
U.S. Cl. 382—18 **52 Claims**

1. A method of recognizing a pattern in a test object, said method comprising the steps of:

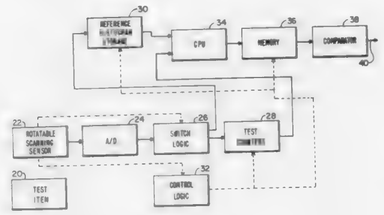
specifying properties characteristic of said pattern;

specifying discrete ranges of values of said properties;

measuring the values of said properties in said test object;

arranging the measured values in at least one test histogram;

determining a reference set of values of said properties and arranging said set as at least a first reference histogram; and



comparing said test and reference histograms by determination of the value of a function which provides a measure of the amount of information necessary to express said at least one test histogram in terms of the optimum code for describing at least said first reference histogram.

DESIGNS

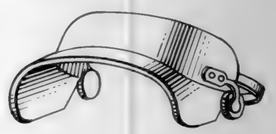
JANUARY 28, 1986

282,308

COMBINED EYE SHADE AND EAR PROTECTOR

John W. Kain, 1976 Cambridge Dr., Crofton, Md. 21114

Filed Aug. 23, 1983, Ser. No. 525,684
Term of patent 14 years
U.S. Cl. D2—247



282,309

LADYBIRD BOOT

Peter Valori, London, England, assignor to Button Fronts (London) Limited, London, England

Filed Dec. 12, 1983, Ser. No. 560,175
Claims priority, application United Kingdom, Jun. 10, 1983, 1013499
Term of patent 14 years
U.S. Cl. D2—273



282,310

BOOT

Peter Valori, London, England, assignor to Button Fronts (London) Ltd., London, England

Filed Aug. 26, 1983, Ser. No. 526,875
Term of patent 14 years
U.S. Cl. D2—273



282,311

CUFF LINK OR SIMILAR ARTICLE

John R. Parks, and Thomas W. Tozzer, both of 3696 Sunnyside Dr., Riverside, Calif. 92506

Filed Apr. 11, 1984, Ser. No. 483,639
Term of patent 14 years
U.S. Cl. D2—417

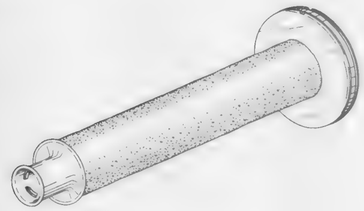


282,312

YARN BOBBIN

H. Wayne Dick, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 18, 1983, Ser. No. 514,405
Term of patent 14 years
U.S. Cl. D3—24

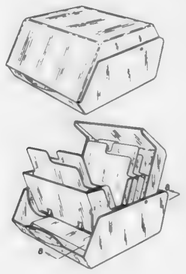


282,313

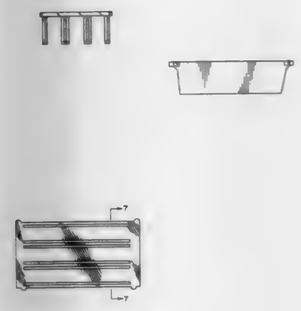
DISKETTE STORAGE CONTAINER

Jerry M. Long, Scotts Valley, and James A. Womack, Los Gatos, both of Calif., assignors to Innovative Concepts, Inc., San Jose, Calif.

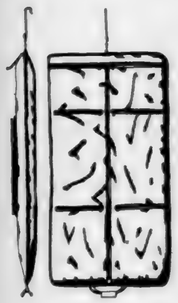
Filed Feb. 3, 1983, Ser. No. 445,088
Term of patent 14 years
U.S. Cl. D3—35



282,314
HOLDER FOR CASSETTE TAPES
Fred O. Hoese, Rte. 3, Box 3350, Bulverde, Tex. 78163
Filed Jul. 28, 1983, Ser. No. 517,909
Term of patent 14 years
U.S. Cl. D3—35



282,315
EXPANDABLE BAG
James H. Allen, Covington, Ky., assignor to 'totes', incorporated, Loveland, Ohio
Division of Ser. No. 365,082, Apr. 2, 1982, abandoned, Continuation-in-part of Ser. No. 172,478, Jul. 25, 1980, abandoned. This application Apr. 6, 1983, Ser. No. 482,456
Term of patent 14 years
U.S. Cl. D3—71



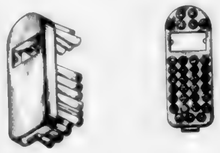
282,316
BRUSH HOLDER
Ronald Herzfeld, Kirchenstrasse 65, D-8034 Germering (BRD), Fed. Rep. of Germany
Filed Aug. 2, 1983, Ser. No. 519,632
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 13 405; Apr. 1, 1983, 13 407
Term of patent 14 years
U.S. Cl. D4—104



282,317
BRUSH AND HOLDER
Ronald Herzfeld, Kirchenstrasse 65, D-8034 Germering (BRD), Fed. Rep. of Germany
Filed Aug. 2, 1983, Ser. No. 519,633
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 13 405; Apr. 1, 1983, 13 407
Term of patent 14 years
U.S. Cl. D4—104



282,318
BRUSH
Ronald Herzfeld, Kirchenstrasse 65, D-8034 Germering (BRD), Fed. Rep. of Germany
Filed Aug. 2, 1983, Ser. No. 519,638
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 13 405; Apr. 1, 1983, 13 407
Term of patent 14 years
U.S. Cl. D4—104



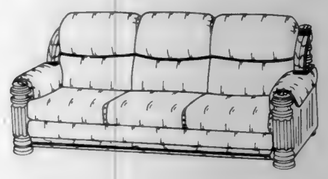
282,319
BRUSH ASSEMBLY
Ronald Herzfeld, Kirchenstrasse 65, D-8034 Germering (BRD), Fed. Rep. of Germany
Filed Aug. 2, 1983, Ser. No. 519,637
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 13 405; Apr. 1, 1983, 13 407
Term of patent 14 years
U.S. Cl. D4—115



282,320
EXTENDABLE TRIPOD UNIT
Charles Anderson, P.O. Box 53, Potter Valley, Calif. 95469
Filed Mar. 14, 1983, Ser. No. 475,131
Term of patent 14 years
U.S. Cl. D6—300



282,321
SEAT
Carol Christa, and Patrick Waldron, both of Dunwoody, Ga., assignors to The Bean Station Furniture Factory, Bean Station, Tenn.
Filed Jul. 25, 1983, Ser. No. 516,717
Term of patent 14 years
U.S. Cl. D6—381



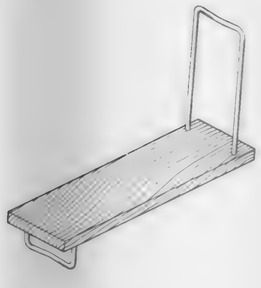
282,322
EXTENDIBLE PEDESTAL TABLE
Fredrick Lambiase, 467 Terrace Ave., Hasbrouck Hts., N.J. 07604
Filed Aug. 8, 1983, Ser. No. 521,378
Term of patent 14 years
U.S. Cl. D6—430



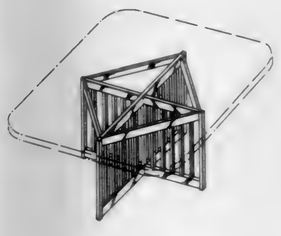
282,323
PAN LID HOLDER
Lowell L. Fetty, 4603 S. Route 47, Woodstock, Ill. 60098
Division of Ser. No. 380,529, May 21, 1982, abandoned. This application Jul. 26, 1984, Ser. No. 634,778
Term of patent 14 years
U.S. Cl. D6—462



282,324
BOOKSTAND
Kenneth A. Ellis, R.R. 1, Evansville, Wis. 53536
Filed Jul. 13, 1983, Ser. No. 513,345
Term of patent 14 years
U.S. Cl. D6—475



282,325
TABLE BASE
Richard Meier, New York, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Filed Sep. 15, 1982, Ser. No. 418,477
Term of patent 14 years
U.S. Cl. D6—495



282,326
MERCHANDISE DISPLAY RACK
Ted A. Bell, Coshocton, Ohio, assignor to Pretty Products, Inc., Coshocton, Ohio
Filed Apr. 26, 1983, Ser. No. 488,772
Term of patent 14 years
U.S. Cl. D6—566



282,327
STORAGE UNIT
Paul J. Neff, 1143 Mississauga Rd., Mississauga, Ontario, Canada (L5H 2J1)
Filed Jan. 5, 1983, Ser. No. 455,638
Claims priority, application Canada, Nov. 26, 1982, 26-11-82-9
Term of patent 14 years
U.S. Cl. D6—570



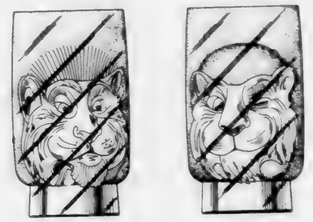
282,328
WALL MOUNTED SHELF UNIT
Anthony J. Brescia, Liverpool, and Shurley Harris, Syracuse, both of N.Y., assignors to Syroco, Inc., Syracuse, N.Y.
Filed Apr. 11, 1983, Ser. No. 483,438
Term of patent 14 years
U.S. Cl. D6—570







282,329
TUMBLER OR SIMILAR ARTICLE
Philippe J. Durand, Les Daneaux-Chemin de la Garenne, 62510 Arques, France
Filed Aug. 19, 1983, Ser. No. 524,593
Term of patent 14 years
U.S. Cl. D7—8





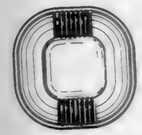
282,330
CUP
James McBride, Seattle, Wash., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Oct. 13, 1983, Ser. No. 541,502
Term of patent 14 years
U.S. Cl. D7—9



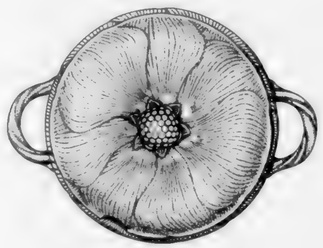
282,331
BEVERAGE TUMBLER
Ambrogio Pozzi, Gallarate, Italy, assignor to F.Lli Guzzini S.p.A., Recanati, Italy
Filed Jan. 3, 1983, Ser. No. 455,021
Claims priority, application Italy, Jul. 16, 1982, 22421/82 [U]
Term of patent 14 years
U.S. Cl. D7—14





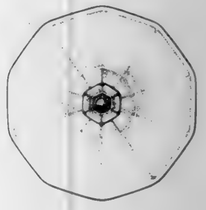


282,332
TUREEN
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 27, 1983, Ser. No. 517,894
Term of patent 14 years
U.S. Cl. D7—17





282,333
SUGAR BOWL
Alfred Blake, Hillsdale, N.J., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Sep. 23, 1983, Ser. No. 535,346
Term of patent 14 years
U.S. Cl. D7—18



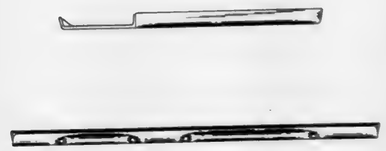


282,334
PLATE OR THE LIKE
Ming-Ter Chen, 1232-1236 E. Factory Pl., Los Angeles, Calif. 90013
Filed Jun. 13, 1983, Ser. No. 492,887
Term of patent 14 years
U.S. Cl. D7—36



282,335
FOOD SERVICE TRAY
Malcolm J. Dodd, and Joseph A. Juhas, both of Litchfield, Conn., assignors to PTC Aerospace Inc., Bantam, Conn.
Filed Mar. 17, 1983, Ser. No. 476,179
Term of patent 14 years
U.S. Cl. D7—38





282,336
CONDIMENT HOLDER AND ORGANIZER
Harry F. Collins, Minneapolis, Minn., assignor to Service Ideas, Inc., Minneapolis, Minn.
Filed May 19, 1983, Ser. No. 496,187
Term of patent 14 years
U.S. Cl. D7—58

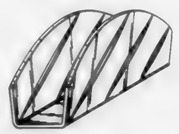


282,337
ADJUSTABLE CARRIER FOR CONTAINERS
Augusto A. Picozza, Johnston, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed May 11, 1983, Ser. No. 493,476
Term of patent 14 years
U.S. Cl. D7—70

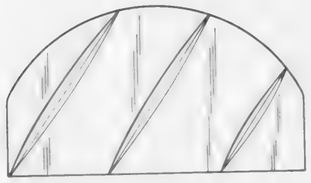




282,338
TACO HOLDER
Arthur G. Putt, 5901 Cornell Blvd., North Ridgeville, Ohio 44039
Filed Jun. 1, 1982, Ser. No. 384,036
Term of patent 14 years
U.S. Cl. D7—76



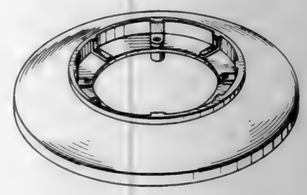


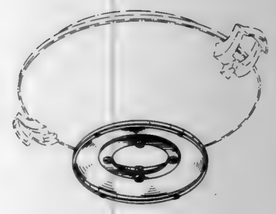


282,339
INSULATED BEVERAGE BOTTLE
Yung-Kuan Wei, Tainan, Taiwan, assignor to Chung-Yi Wu, Tainan, Taiwan
Filed Dec. 2, 1982, Ser. No. 446,210
Term of patent 14 years
U.S. Cl. D7—77



282,340
BASE FOR A COOKING POT OR THE LIKE
Yanta Lam, Kowloon, Hong Kong, assignor to Meyer Manufacturing Company Ltd., Hong Kong
Filed May 20, 1983, Ser. No. 496,615
Term of patent 14 years
U.S. Cl. D7—387

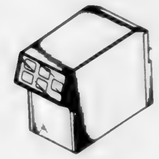




282,341
MEAT GRINDING TABLE
Larry H. Dvorak, Box 57, Manning, N. Dak. 58642
Filed Jul. 11, 1983, Ser. No. 512,883
Term of patent 14 years
U.S. Cl. D7—372



282,342
BEVERAGE DISPENSER VALVE
William J. Saunders, Atlanta; Robert D. Bruffey, Jr., Lilburn, both of Ga.; Edwin Pounder, La Canada; Richard E. Morrison, Temple City, and Carlos Cojulun, Los Angeles, all of Calif., assignors to The Coca-Cola Company, Atlanta, Ga. and Transdynamics, Inc., El Monte, Calif.
Filed Mar. 11, 1983, Ser. No. 474,624
Term of patent 14 years
U.S. Cl. D7—398

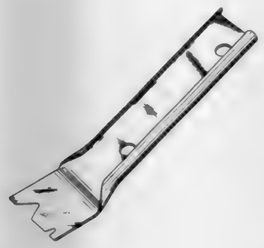




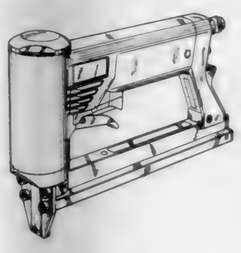
282,343
BOTTLE OPENER
Kenwood E. Pinder, 7634 Garrett Dr., Delta, British Columbia, Canada (V4C 7P5)
Filed Mar. 21, 1983, Ser. No. 477,231
Claims priority, application Canada, Nov. 10, 1982, 10-11-82-3
Term of patent 14 years
U.S. Cl. D8—40

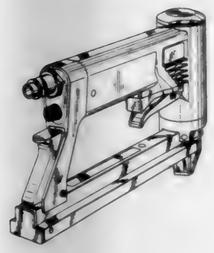


282,344
AUTOMOTIVE TRIM CLIP TOOL
Henry B. Wilcox, 927 N. Macomb St., Apt. 12C, Monroe, Mich. 48161
Filed Feb. 28, 1983, Ser. No. 457,735
Term of patent 14 years
U.S. Cl. D8—16

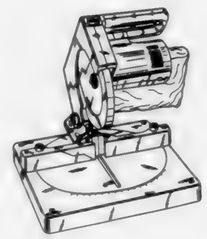


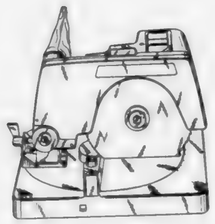
282,345
PNEUMATIC FASTENER DRIVING TOOL
Hellmüth Fehrs, Haldesdorferstr. 22, 2000 Hamburg 71, Fed. Rep. of Germany
Filed Jul. 29, 1983, Ser. No. 518,667
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, DM/002 462
Term of patent 14 years
U.S. Cl. D8—49



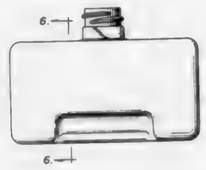


282,346
CHOP SAW
Peter-Paul Ploch, Idstein, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.
Filed Sep. 22, 1983, Ser. No. 534,727
Claims priority, application Fed. Rep. of Germany, May 6, 1983, URA 530/83; Jun. 25, 1983, URA 721/83
Term of patent 14 years
U.S. Cl. D8—66

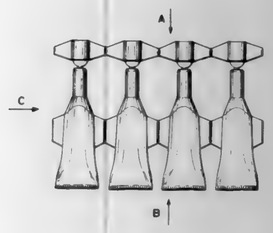




282,347
SOAP CONTAINER
Robert L. Steiner, Chicago, Ill., assignor to Steiner Company, Inc., Salt Lake City, Utah
Filed Sep. 30, 1982, Ser. No. 430,135
The portion of the term of this patent subsequent to May 21, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—403



282,348
MULTI-UNIT PACKAGE OF CONTAINERS FOR PHARMACEUTICAL PRODUCTS
Alberto Federighi, Viareggio, Italy, assignor to FARMIGEA S.p.A., Pisa, Italy
Filed Nov. 17, 1982, Ser. No. 442,314
Claims priority, application Italy, May 21, 1982, 53315182[U]
Term of patent 14 years
U.S. Cl. D9—341



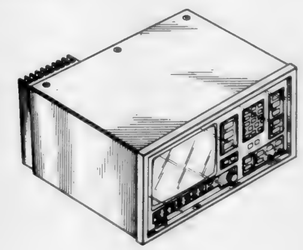
282,349
PLASTIC BOTTLE
Craig A. Larson, Westfield Court, and Richard C. Darr, Seville, both of Ohio, assignors to Plastipak Packaging, Inc., Plymouth, Mich.
Filed May 9, 1983, Ser. No. 492,728
Term of patent 14 years
U.S. Cl. D9—395



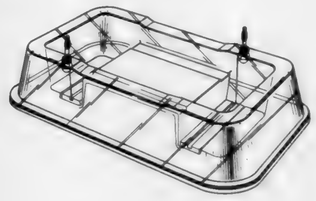
282,350
PORTABLE RECEIVER UNIT FOR A METALLIC OBJECT DETECTOR
Richard C. Thomas, Cramlington, and David J. Daniels, Ponteland, both of England, assignors to British Gas Corporation, London, England
Filed Jul. 19, 1983, Ser. No. 515,070
Claims priority, application United Kingdom, Jan. 21, 1983, 1010939
Term of patent 14 years
U.S. Cl. D10—47



282,351
DIGITAL OSCILLOSCOPE
Russell H. Nord, Fort Atkinson; Garry A. Williams, Lake Mills, and Frederick A. Rose, Fort Atkinson, all of Wis., assignors to Norland Corporation, Fort Atkinson, Wis.
Filed Oct. 11, 1983, Ser. No. 540,784
Term of patent 14 years
U.S. Cl. D10—76



282,352
HORIZONTAL GEL SLAB ELECTROPHORESIS UNIT
Peter S. Hoefer, and Eric Coates, both of San Francisco, Calif., assignors to Hoefer Scientific Instruments, San Francisco, Calif.
Filed Jul. 8, 1983, Ser. No. 511,914
Term of patent 14 years
U.S. Cl. D10—81



282,353
PENDANT
Christine C. L. Wong, 110 Soy Street, 11th Floor, Flat D, Mongkok, Kowloon, Hong Kong
Filed Oct. 3, 1983, Ser. No. 538,167
Term of patent 14 years
U.S. Cl. D11—82



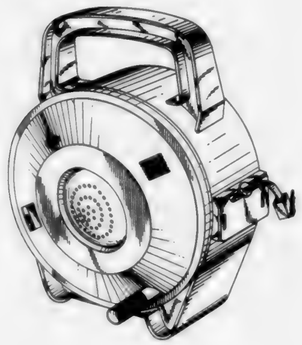
282,354
LAPEL PIN
Frederic P. Merrels, Box 907 LOW, Locust Grove, Va. 22580
Filed Jun. 29, 1983, Ser. No. 508,928
Term of patent 14 years
U.S. Cl. D11—96



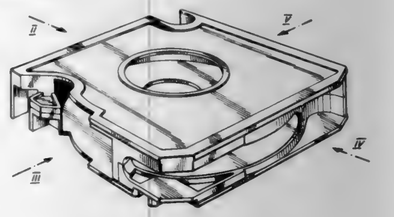
282,355
WOOD PLAQUE
James R. Hartzell, 2570 Troy-Sidney Rd., Troy, Ohio 45373
Filed Dec. 23, 1983, Ser. No. 564,933
Term of patent 14 years
U.S. Cl. D11—132



282,356
TELEPHONE ANSWERING UNIT OR SIMILAR ARTICLE
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electronic Products, Inc., Providence, R.I.
Filed Oct. 25, 1983, Ser. No. 543,814
Term of patent 14 years
U.S. Cl. D14—4



282,357
MICROFILM CARTRIDGE OR SIMILAR ARTICLE
Peter L. Gell, Redfern, Australia, assignor to Plastex Technology (Curacao) N.V., Curacao, Netherlands Antilles
Filed Sep. 30, 1983, Ser. No. 537,577
Term of patent 14 years
U.S. Cl. D14—11



282,358
TELECOMMUNICATIONS SYSTEM CONSOLE OR SIMILAR ARTICLE
John S. Campbell; John G. Engstrom, both of Indianapolis, Ind., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Information Systems Inc., Holmdel, N.J.
Filed Apr. 21, 1983, Ser. No. 487,016
Term of patent 14 years
U.S. Cl. D14—52



282,359
TELEPHONE OR SIMILAR ARTICLE
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Oct. 25, 1983, Ser. No. 543,813
Term of patent 14 years
U.S. Cl. D14—53

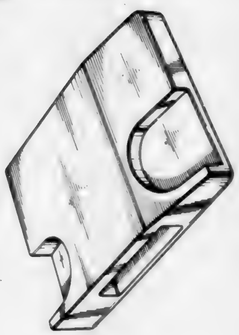


282,360
INTERCOMMUNICATION UNIT
Hiroshi Yamagata, and Kendo Makihara, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed May 25, 1983, Ser. No. 497,876
Claims priority, application Japan, Nov. 30, 1982, 57-54179
Term of patent 14 years
U.S. Cl. D14—59

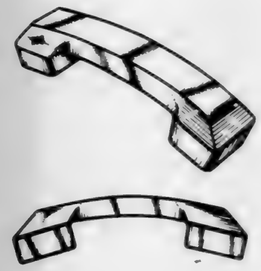




282,361
TELEPHONE SET BASE
Michael Brown, Nepean; Clifford D. Read, Almonte, and Warren K. Ellis, Constance Bay, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Feb. 15, 1983, Ser. No. 466,421
Term of patent 14 years
U.S. Cl. D14—60



282,362
HOUSING FOR A TELEPHONE HANDSET
Michael Brown, Nepean; Clifford D. Read, Almonte, and Warren K. Ellis, Constance Bay, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Feb. 15, 1983, Ser. No. 466,419
Term of patent 14 years
U.S. Cl. D14—63



282,363
TELEPHONE HANDSET
Henry Kapper, Raleigh, N.C.; Walter F. Kraus, LaGrangeville, N.Y., and Joel M. Wittkamp, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 12, 1983, Ser. No. 522,450
Term of patent 14 years
U.S. Cl. D14—63



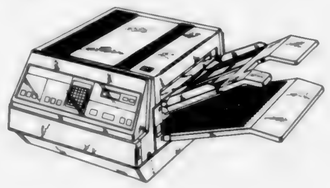


282,364
WIRELESS TELEPHONE HANDSET
Hiroshi Takahashi; Shu Arai; Yasuhiro Kishimoto, and Kiyoshi Tomimatsu, all of Tottori, Japan, assignors to Sanyo Electric Co., Ltd., Japan
Filed Jun. 8, 1983, Ser. No. 502,075
Term of patent 14 years
U.S. Cl. D14—64

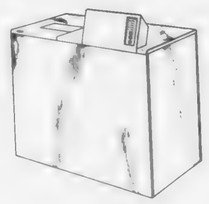




282,365
FACSIMILE TRANSCEIVER
Nobuhiro Hayashida, Kanagawa, Japan, assignor to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan
Filed Nov. 17, 1983, Ser. No. 552,875
Claims priority, application Japan, May 18, 1983, 58-20915
Term of patent 14 years
U.S. Cl. D14—94



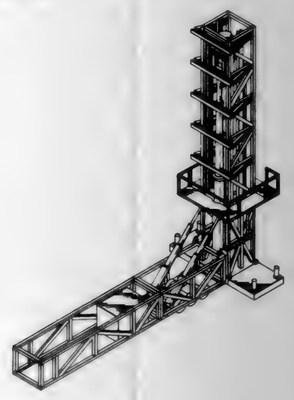
282,366
DATA PROCESSOR
Wayne L. Aderman, Zambro Falls, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 12, 1983, Ser. No. 493,846
Term of patent 14 years
U.S. Cl. D14—102

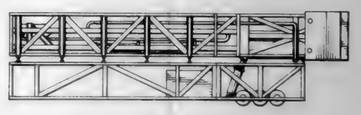


282,367
GRAIN SORTER
Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan
Filed Sep. 20, 1983, Ser. No. 533,974
Claims priority, application Japan, Jun. 30, 1983, 58-28576
Term of patent 14 years
U.S. Cl. D15—10

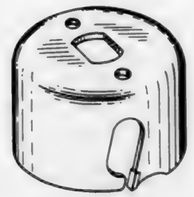


282,368
COMBINED ERECTABLE HYDRAULIC DRILLING RIG AND TRANSPORT TRAILER
Albert W. Smith, #1 Chamberlain Center; P.O. Box 8735, Tyler, Tex. 74711
Filed Jun. 6, 1983, Ser. No. 501,135
Term of patent 14 years
U.S. Cl. D15—21

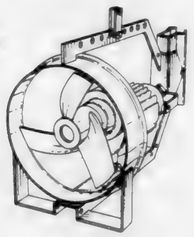




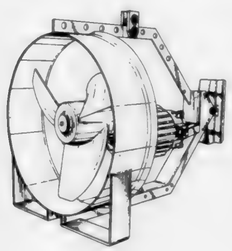
282,369
HOLE SAW
Simon de Villiers, Tigard, Oreg., assignor to Omark Industries, Portland, Oreg.
Filed Feb. 7, 1983, Ser. No. 464,470
Term of patent 14 years
U.S. Cl. D15—139



282,370
COMBINED SUBMERSIBLE SUSPENSION MIXER AND RACK
Lars Ogren, Vasby, Sweden, assignor to ITT Industries, Inc., New York, N.Y.
Filed Jul. 7, 1983, Ser. No. 511,699
Claims priority, application Sweden, Jan. 28, 1983, 83000241
Term of patent 14 years
U.S. Cl. D15—147



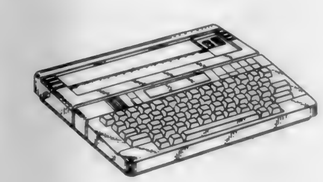
282,371
COMBINED SUBMERSIBLE SUSPENSION MIXER AND RACK
Gunnar Johansson, Marsta, Sweden, assignor to ITT Industries, Inc., New York, N.Y.
Filed Jul. 7, 1983, Ser. No. 511,698
Claims priority, application Sweden, Jan. 28, 1983, 83000240
Term of patent 14 years
U.S. Cl. D15—147



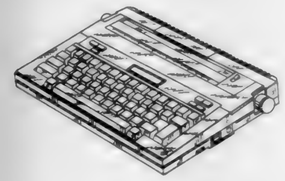
282,372
SUNGLASSES
Josef Blaimschein, Piberbach, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Dec. 23, 1983, Ser. No. 565,034
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1983, 11AR2759/83
Term of patent 14 years
U.S. Cl. D16—102



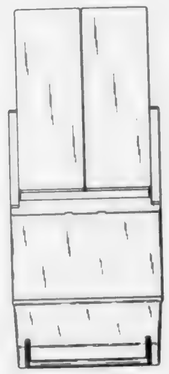
282,373
ELECTRONIC TYPEWRITER
Masaki Takahashi, Yamato, and Osamu Murakami, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 19, 1984, Ser. No. 571,825
Claims priority, application Japan, Jul. 25, 1983, 58-32621
Term of patent 14 years
U.S. Cl. D18—1

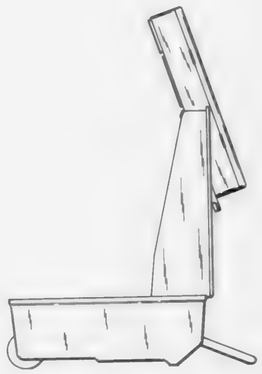


282,374
ELECTRONIC TYPEWRITER
Tomohiro Maekawa, Yokohama, and Richard Nibley, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 28, 1983, Ser. No. 555,524
Claims priority, application Japan, Jun. 1, 1983, 58-23456
Term of patent 14 years
U.S. Cl. D18—1



282,375
PORTABLE VOTING BOOTH
Richard G. Dolson, Canton, Conn., assignor to Veeder Industries Inc., Hartford, Conn.
Filed Oct. 19, 1983, Ser. No. 543,395
Term of patent 14 years
U.S. Cl. D18—6

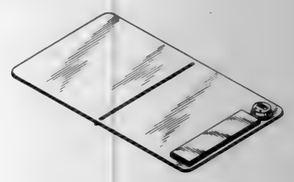




282,376
DESK-TOP ELECTRONIC CALCULATOR
Nobuo Kikuchi, Tokyo, and Kazuyoshi Odagawa, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 22, 1983, Ser. No. 534,670
Claims priority, application Japan, Apr. 6, 1983, 58-14731
Term of patent 14 years
U.S. Cl. D18—7



282,377
FOLDER WITH CLOCK AND MEMO PAD OR THE LIKE
William W. Curran, Manhasset, N.Y., assignor to Balance House, Ltd., New York, N.Y.
Filed May 9, 1983, Ser. No. 492,615
Term of patent 14 years
U.S. Cl. D19—26

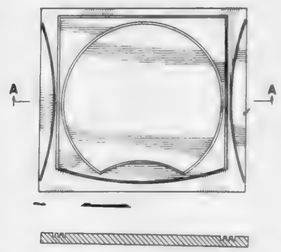


282,378
MARKING PEN
Toshiharu Ohyabu, and Masayuki Hasegawa, both of Nagoya, Japan, assignors to Shachihata Industry Co., Ltd., Nagoya, Japan
Filed Oct. 5, 1983, Ser. No. 539,289
Claims priority, application Japan, Apr. 16, 1983, 58-016212
Term of patent 14 years
U.S. Cl. D19—43





282,379
DRAWING BOARD
Joseph Smith, 177A Hobson St., Auckland, and Colin W. Rogers, 42 Estuary Rd., Weymouth, Auckland, both of New Zealand
Filed Jun. 17, 1983, Ser. No. 506,020
Claims priority, application New Zealand, Dec. 17, 1982, 18162
Term of patent 14 years
U.S. Cl. D19—52

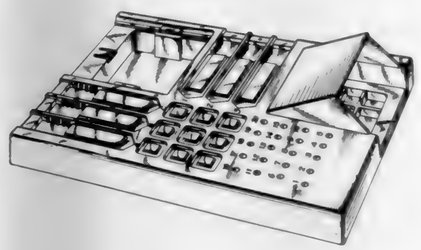


282,380
HOLDER FOR RETAINING SMALL METAL OBJECTS MAGNETICALLY
Feather W. King, Ashland, Oreg., assignor to Blue Feather Products, Inc., Ashland, Oreg.
Continuation-in-part of Ser. No. 133,434, Mar. 24, 1980, Pat. No. Des. 266,934. This application Nov. 16, 1982, Ser. No. 442,156
The portion of the term of this patent subsequent to Nov. 16, 1996, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—75

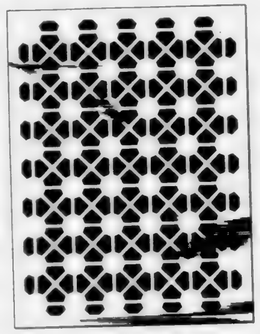




282,381
GAME FOR A MATCHING GAME
Jane C. Dyar, New York, N.Y., assignor to CBS Inc., New York, N.Y.
Filed Apr. 4, 1983, Ser. No. 481,686
Term of patent 14 years
U.S. Cl. D21—20



282,382
GAME BOARD
Robert L. Bender, and Annie L. Bender, both of 513 W. Ferry St., Berrien Springs, Mich. 49103
Filed Jul. 26, 1983, Ser. No. 517,391
Term of patent 14 years
U.S. Cl. D21—34



282,383
MUSICAL TOY
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Hiroaki Matsuda, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Nov. 16, 1983, Ser. No. 552,598
Claims priority, application Japan, Jun. 10, 1983, 58-25034
Term of patent 14 years
U.S. Cl. D21—63



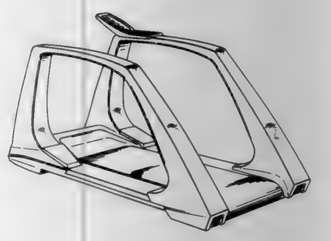
282,384
RIDING TOY
Kenzou Kasai, Higashishimizu, Japan, assignor to Kasai Kabushiki Kaisha, Osaka, Japan
Filed Oct. 21, 1983, Ser. No. 544,378
Claims priority, application Japan, Apr. 28, 1983, 58-18130
Term of patent 14 years
U.S. Cl. D21—78



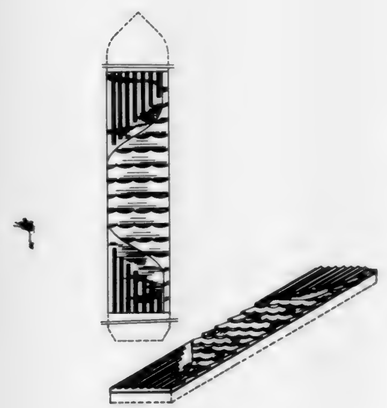
282,385
TOY ZOO
Augusto Argandona, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 9, 1984, Ser. No. 578,583
Term of patent 14 years
U.S. Cl. D21—115



282,386
TREADMILL
Michael J. Dealey, and Ian G. G. Fowell, both of Birmingham, England, assignors to Sport Engineering Limited, Birmingham, England
Filed Dec. 28, 1983, Ser. No. 566,315
Claims priority, application United Kingdom, Oct. 21, 1985, 1015800
Term of patent 14 years
U.S. Cl. D21—192



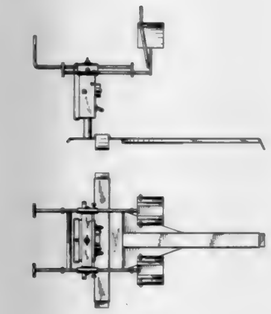
282,387
APPLIQUE FOR CROSS COUNTRY SKIS
Oswald Pichler, Hohenbrunn-Riemerling, Fed. Rep. of Germany, assignor to Trak Sportartikel GmbH, Taufkirchen, Fed. Rep. of Germany
Filed Aug. 3, 1982, Ser. No. 404,969
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1982, MR 12 855
Term of patent 14 years
U.S. Cl. D21—230



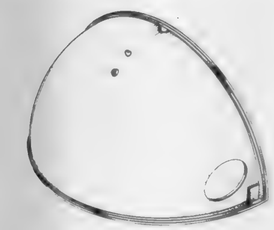
282,388
RIFLE BOLT
Neal K. Pashman, Wichita Falls, Tex., assignor to Wichcraft Prodco, Inc., Wichita Falls, Tex.
Filed Aug. 1, 1983, Ser. No. 519,409
Term of patent 14 years
U.S. Cl. D22—7



282,389
SIGNALLING DEVICE FOR FISHING
Clarence E. Hill, Tipton, Mo., assignor to Sportsman's Enterprises, St. Joseph, Mo.
Filed Sep. 6, 1983, Ser. No. 529,377
Term of patent 14 years
U.S. Cl. D22—13



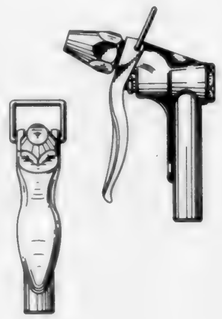
282,390
RODENT CONTROL DEVICE
Harold A. Ford, Claremont, and Cecil G. Young, La Canada, both of Calif., assignors to Ace Termite & Pest Control, Culver City, Calif.
Filed Jun. 21, 1983, Ser. No. 506,458
Term of patent 14 years
U.S. Cl. D22—18



282,391
FISHING LURE
Gene A. Trisch, 3310 Remington Rd., Caro, Mich. 48723
Filed Aug. 11, 1983, Ser. No. 521,982
Term of patent 14 years
U.S. Cl. D22—29



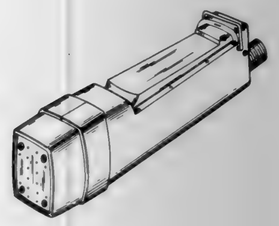
282,392
SPRAY GUN
Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060
Filed Jan. 28, 1983, Ser. No. 461,874
Term of patent 14 years
U.S. Cl. D23—17



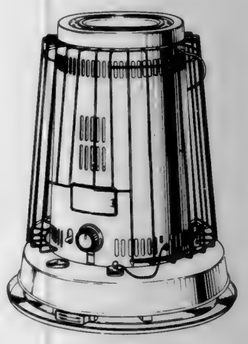
282,393
COMBINED PRESSURE RELIEF VALVE AND CLAMP
Wendell D. Johnson, Fairport, N.Y., assignor to Qualitrol Corporation, Fairport, N.Y.
Filed Apr. 1, 1983, Ser. No. 481,258
Term of patent 14 years
U.S. Cl. D23—20



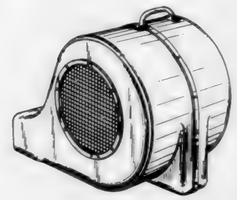
282,394
SPRAY HEAD
Ralph Ettlinger, Glencoe, Ill., assignor to Amco Corporation, Chicago, Ill.
Filed Sep. 19, 1983, Ser. No. 533,292
Term of patent 14 years
U.S. Cl. D23—37



282,395
STOVE
Hideo Nishikawa; Kenzo Okamoto; Koichi Sakai, all of Osaka, and Fumihiko Kitada, Neyagawa, all of Japan, assignors to Imanishi Kinzoku Kogyo Kabushiki Kaisha (Imarflex Mfg. Co., Ltd.), Osaka, Japan
Filed Jun. 21, 1983, Ser. No. 506,310
Claims priority, application Japan, Apr. 22, 1983, 58-17357
Term of patent 14 years
U.S. Cl. D23—121



282,396
CARPET DRYER
Lloyd J. Weaver, Rapid City, S. Dak., assignor to Lloyd's Carpet & Furniture Cleaning, Inc., Rapid City, S. Dak.
Filed Dec. 6, 1982, Ser. No. 447,293
Term of patent 14 years
U.S. Cl. D23—162



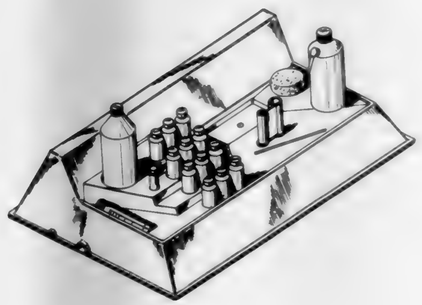
282,397
X-RAY VIEWER
Ed Martin, Charlotte, and Dan Truette, Pineville, both of N.C., assignors to Pelton & Crane Company, Charlotte, N.C.
Filed Jul. 18, 1983, Ser. No. 514,732
Term of patent 14 years
U.S. Cl. D24—2



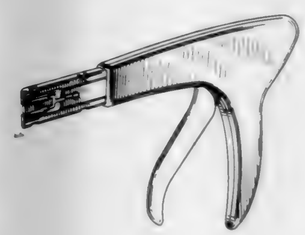
282,398
STIRRUP FOR MEDICAL EXAMINATION TABLE
Leonard J. Yindra, Manitowoc, Wis., assignor to Hamilton Industries, Two Rivers, Wis.
Filed Sep. 29, 1983, Ser. No. 537,342
Term of patent 14 years
U.S. Cl. D24—7



282,399
WATER ANALYSIS LABORATORY
David A. Stafford, Dayton, Ohio, assignor to Miami Products & Chemicals Co., Dayton, Ohio
Filed Apr. 18, 1983, Ser. No. 485,995
Term of patent 14 years
U.S. Cl. D24—17



282,400
SURGICAL SKIN STAPLER
Thomas D. Guy, Trumbull; Paul O. Rawson, Easton, and Richard H. Yagnani, Bridgewater, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed May 5, 1982, Ser. No. 375,002
Term of patent 14 years
U.S. Cl. D24—26



282,401
DISPOSABLE CARTRIDGE FOR A LINEAR SURGICAL STAPLER
Herbert W. Korthoff, Wilton, and Thomas Tompkins, Trumbull, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Mar. 30, 1983, Ser. No. 480,444
Term of patent 14 years
U.S. Cl. D24—26



282,402
SURGICAL KNIFE BLADE
Friedrich W. Schmidt, Ephrata, and Lester W. Moll, Wyomissing Hills, both of Pa., assignors to Sharpoint, Inc., Reading, Pa.
Filed Dec. 22, 1982, Ser. No. 452,093
Term of patent 14 years
U.S. Cl. D24—29



282,403
SUCTION COAGULATOR
John T. Shackelford, Longmouat, Colo., assignor to Aspen Laboratories, Inc., Englewood, Colo.
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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF JANUARY, 1986

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Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,567,307, Cl. 585-330.000.
Mancinelli, Paul A., 4,567,239, Cl. 525-309.000.

Attinger, Karl: *See—*
Maier, Peter; Attinger, Karl; Sigel, Albert; Hansel, Gernot; Kutscher, Erwin; and Walter, Hartmut, 4,566,830, Cl. 409-182.000.

Autodynamics Corporation of America: *See—*
Clarke, Robert A., 4,566,842, Cl. 414-462.000.

Autoloc Corporation: *See—*
Wodeslavsky, Josef, 4,566,556, Cl. 180-287.000.

Automation Gages, Inc.: *See—*
Choate, Albert G., 4,567,551, Cl. 362-398.000.

Automotive Products plc: *See—*
Leigh-Monstevens, Keith V.; and Wrobleski, David L., 4,566,578, Cl. 192-98.000.

Avco Corporation: *See—*
Miller, Jule A.; Lee, Jack W.; and Thyssen, Jeffrey, 4,566,939, Cl. 156-655.000.

Avery, Leslie R., to RCA Corporation. Semiconductor structure for protecting integrated circuit devices. 4,567,500, Cl. 357-38.000.

Ayer, Donald E., to Upjohn Company, The. 11-Difluoromethylene steroids. 4,567,000, Cl. 260-397.300.

Azionaria Costruzioni Macchine Automatiche - A.C.M.A. - S.p.A.: *See—*
Aiuola, Franco; and Nipoti, Paolo, 4,566,491, Cl. 137-625.660.

B. F. Goodrich Company, The: *See—*
Arner, Russell E.; Emrich, Ronald J.; Gianelos, James; and Haynes, Marlon L., 4,566,293, Cl. 62-514.00R.
Masler, William F., III; and Amjad, Zahid, 4,566,973, Cl. 210-701.000.
Masler, William F., III; and Amjad, Zahid, 4,566,974, Cl. 210-701.000.

Baba, Kiyokazu; Shirao, Shojiro; Nishida, Kenji; and Kiyosawa, Hiroshi, to Kabushiki Kaisha Komatsu Seisakusho. Automatic palletizing system. 4,566,834, Cl. 414-27.000.

Babcock & Wilcox Company, The: *See—*
Dolsen, Philip C.; Chandra, Satish; Hammon, Gordon R.; and Uren, William J., 4,567,482, Cl. 340-825.050.

Babler, James H., to Loyola University of Chicago. Cyclopropanoid cyanoesters and method of making same. 4,567,265, Cl. 546-16.000.

Bachet, Bernard; Daguet, Jean; and Dujardin, Louis, to Commissariat a l'Energie Atomique. Process and apparatus for the in-line inspection of the depth of a weld by a pulse beam. 4,567,345, Cl. 219-121.0PT.

Bacskai, Robert, to Chevron Research Company. Mixed metal alkyl catalyst for olefin polymerization. 4,567,154, Cl. 502-114.000.

Badenhop, Charles T.; and Fischer, Joachim, to Seitz Filter Werke Theo & Geo Seitz GmbH & Co. Production of microfiltration membrane filter. 4,567,009, Cl. 264-41.000.

Badewien, Reinhard, to Plantorgan Werk Heinrich G. E. Christensen KG. Vapor inhalation device. 4,566,451, Cl. 128-200.210.

Baer, Ralph H.; and Allen, David, to Sanders Associates, Inc. Selectable view video record/playback system. 4,567,532, Cl. 358-342.000.

Baerenwald, Philip M.; Mohnach, Michael G.; and Plisky, John J., to Anderson Company of Indiana, The. Clip for a wiper blade refill. 4,566,147, Cl. 15-250.420.

Bagley, James T.; and Simon, Maurice L., to Schlumberger Technology Corporation. Firing system for tubing conveyed perforating gun. 4,566,544, Cl. 175-4.560.

Bagolini, Carlo: *See—*
Tinti, Maria O.; Quaresima, Emma; Bagolini, Carlo; and deWitt, Paolo, 4,567,200, Cl. 514-547.000.

Bailly, Francois P.; Bourgoin, Alain; and Israel, Renato, to Societe Anonyme de Telecommunications. Line circuit for network junctor. 4,567,329, Cl. 179-18.0FA.

Baird Corporation: *See—*
Falls, James J., 4,567,370, Cl. 250-461.100.

Baker, John E.; and Fowler, David P., to Frito-Lay, Inc. Method for producing snacks from dough. 4,567,051, Cl. 426-438.000.

Baker, John G.: *See—*
Bennison, John J.; Longworth, Stuart W.; and Baker, John G., 4,566,972, Cl. 210-698.000.

Baker, John R.; Chenoweth, David V.; and McStravick, David M., to Baker Oil Tools, Inc. Concentric walled conduit for a tubular conduit string. 4,566,495, Cl. 138-149.000.

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Baker, John R.; Chenoweth, David V.; and McStravick, David M., 4,566,495, Cl. 138-149.000.
Peterson, Elmer R., 4,566,538, Cl. 166-278.000.

Balas, Jaroslav C., to Shell Oil Company. Catalyst passivation process. 4,567,251, Cl. 528-487.000.

Baldry, Peter J.; Collins, John H.; Morantz, Daniel J.; Overton, Terence K. W.; and Wright, David W., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Phototropic materials. 4,567,122, Cl. 430-4.000.

Baldwin, John J.; Pietruszkiewicz, Adolph; Bolhofer, William A.; and Lumma, William C., Jr., to Merck & Co., Inc. Amino-phenylthiadiazoledioxides as gastric secretion inhibitors. 4,567,191, Cl. 514-362.000.

Baldwin, John J., to Merck & Co., Inc. β-Adrenergic 2-[4-(3-amino-2-hydroxypropoxy)phenyl]imidazoles. 4,567,276, Cl. 548-343.000.

Ball, Peter; Marquardt, Klaus; Selig, Manfred; and Staudinger, Gunther, to Wacker-Chemie GmbH. Preparation of aqueous N-methylol amide solutions. 4,567,297, Cl. 564-208.000.

Ballard, John R.; Timmis, Peter H.; and Buller, Michael J., to Rolls-Royce Limited. Gas turbine engine infra-red radiation suppressor. 4,566,270, Cl. 60-264.000.

Balz, Werner: *See—*
Lehner, August; Kopke, Helmut; Roller, Hermann; Balz, Werner; Grau, Werner; Koester, Eberhard; and Sommermann, Friedrich, 4,567,108, Cl. 428-425.900.
Lehner, August; Velic, Milan; Kopke, Helmut; Balz, Werner; Lenz, Werner; Baur, Reinhold; and Melzer, Milena, 4,567,109, Cl. 428-425.900.

Ban, Keisuke; and Ohashi, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Method of making a connecting rod. 4,566,519, Cl. 164-97.000.

Banks, Robert L.; and Kukes, Simon G., to Phillips Petroleum Company. Olefin metathesis catalyst. 4,567,159, Cl. 502-219.000.

Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives and antihistaminic agents containing the carbostyril derivatives. 4,567,187, Cl. 514-312.000.

Bannon, James S.: *See*—
Alt, Gerhard H.; and Bannon, James S., 4,567,299, Cl. 564-214.000.

Baran, Walter J., Jr.: *See*—
Comeau, Roger J.; and Baran, Walter J., Jr., 4,566,851, Cl. 415-139.000.

Barchus, David D., to Barchus, David Duane. Overhead pivotal mounting assembly for television set. 4,566,663, Cl. 248-324.000.

Barchus, David Duane: *See*—
Barchus, David D., 4,566,663, Cl. 248-324.000.

Barker, Charles A.; and Rau, Jim L., to TRW Inc. Fluid flow control apparatus. 4,566,477, Cl. 137-101.000.

Barnaby, Harold T., to Core Laboratories, Inc. Mercury pump. 4,566,311, Cl. 73-19.000.

Barnett, Larry R.; Lau, Yue-Ying; Chu, Kwo R.; and Granatstein, Victor L., to United States of America, Navy. Wide-band distributed rf coupler. 4,567,401, Cl. 315-5.000.

Barrett, Arthur M., Jr. Ring binder. 4,566,817, Cl. 402-38.000.

Bartels, Willem J., to U.S. Philips Corporation. X-Ray analysis apparatus comprising a four-crystal monochromator. 4,567,605, Cl. 378-85.000.

Barthelemy, Herve : *See*—
Minier, Jean; Barthelemy, Herve ; and Foglia, Vincent, 4,566,824, Cl. 405-202.000.

Bartlett, Robert L.; Haas, Charles J.; and Legler, John G., to Shopsmith, Inc. Workpiece support system for a power tool. 4,566,510, Cl. 144-1.00C.

Bartolles, Rolf, to Rheinmetall GmbH. Leak detector for seal ring of gun breech mechanism. 4,566,368, Cl. 89-26.000.

Barzantny, Joachim: *See*—
Thissen, Klaus; and Barzantny, Joachim, 4,566,859, Cl. 417-50.000.

BASF Aktiengesellschaft: *See*—
Baumann, Annegrit; Kiehs, Karl; and Adolphi, Heinrich, 4,567,170, Cl. 514-128.000.
Bettinger, Guenter; Pfefferkorn, Dietmar; and Pavelka, Bozidar, 4,566,653, Cl. 242-199.000.
Blinne, Gerd; Bender, Herbert; and Neumann, Peter, 4,567,248, Cl. 528-211.000.
Boettger, Guenter; Hammer, Hans; Hertel, Otto; Jeschek, Gerhard; Mueller, Herbert; Scharf, Emil; and Schoenleben, Willibald, 4,567,303, Cl. 564-475.000.
Dressel, Manfred; Eberle, Heinrich; Ripperger, Willi; Ruehenbeck, Wolfgang; and Zwick, Werner, 4,567,294, Cl. 562-555.000.
Echte, Adolf; Gausepohl, Hermann; Hambrecht, Juergen; and Gerberding, Karl, 4,567,232, Cl. 525-53.000.
Eicken, Karl; Scheib, Klaus; Theobald, Hans; Pommer, Ernst-Heinrich; and Ammermann, Eberhard, 4,567,263, Cl. 544-263.000.
Ernst, Hansgeorg; Schmidt, Wolfram; and Paust, Joachim, 4,567,261, Cl. 544-251.000.
Grimmer, Johannes; and Horn, Hans C., 4,567,262, Cl. 544-251.000.
Lehner, August; Kopke, Helmut; Roller, Hermann; Balz, Werner; Grau, Werner; Koester, Eberhard; and Sommermann, Friedrich, 4,567,108, Cl. 428-425.900.
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Marx, Hans-Norbert; and Pommer, Ernst-Heinrich, 4,567,277, Cl. 548-306.000.
Naarmann, Herbert, 4,566,955, Cl. 204-59.00R.
Naarmann, Herbert; Heckmann, Walter; Kohler, Gernot; and Simak, Petr, 4,567,250, Cl. 528-423.000.
Plath, Peter; Schirmer, Ulrich; Reissenweber, Gernot; Wuerzer, Bruno; and Retzlaff, Guenter, 4,566,900, Cl. 71-100.000.

BASF Farben Fasern AG: *See*—
Ott, Gunther; Dobbelstein, Arnold; Geist, Michael; Schon, Georg; and Ahlers, Klaas, 4,566,963, Cl. 204-181.700.

Bashaw, Lawrence D., to Honeywell Information Systems Inc. Apparatus for verification of a signal transfer in a preselected path in a data processing system. 4,567,593, Cl. 371-25.000.

Basmajian, Vahan V., to Megatech Corporation. Geothermal heat transfer. 4,566,532, Cl. 165-45.000.

Bateman, Charles D.; Grove, Michael M.; Noland, Lyle J.; and Ward, Wallace E., to Sundstrand Data Control, Inc. Position based ground proximity warning system for aircraft. 4,567,483, Cl. 340-970.000.

Battelle Development Corporation: *See*—
Caulfield, Henry J.; and Rhodes, William T., 4,567,569, Cl. 364-845.000.
McGinniss, Vincent, 4,566,962, Cl. 204-180.900.

Batz, Hans-George, to Boehringer Mannheim GmbH. Chromogen for measuring the formation of hydrogen peroxide based on 1-substituted-aminoantipyrin compounds. 4,567,139, Cl. 435-28.000.

Bauer, Charles E.; and Bold, William A., to Tektronix, Inc. Multilayer interconnect circuitry using photoimageable dielectric. 4,566,186, Cl. 29-852.000.

Bauer, Kurt-Heinz: *See*—
Posanski, Ulrich; Ghyczy, Miklos; Bauer, Kurt-Heinz; and Wendel, Armin, 4,567,161, Cl. 514-23.000.

Bauer, Otto; Eberl, Lernhard; Geyer, Gerhard; and Straubel, Max, to Robert Bosch GmbH. Apparatus for the rpm-dependent adjustment of the timing of an injection pump. 4,566,421, Cl. 123-502.000.

Bauman, Therese M.; and Lee, Chi-Long, to Dow Corning Corporation. Nonslumping, foamable polyorganosiloxane compositions containing organosiloxane graft copolymers. 4,567,212, Cl. 521-122.000.

Baumann, Annegrit; Kiehs, Karl; and Adolphi, Heinrich, to BASF Aktiengesellschaft. 3-Chloro-3-phenylprop-2-enyl thiophosphates and their use for controlling pests. 4,567,170, Cl. 514-128.000.

Baumann, John A.: *See*—
Olego, Diego; Brock, David G.; Baumann, John A.; and Spicer, William E., 4,567,503, Cl. 357-54.000.

Baumeler, Markus, to Sulzer Brothers Limited. Pneumatic servomotor. 4,566,273, Cl. 60-415.000.

Baur, Reinhold: *See*—
Lehner, August; Velic, Milan; Kopke, Helmut; Balz, Werner; Lenz, Werner; Baur, Reinhold; and Melzer, Milena, 4,567,109, Cl. 428-425.900.

Bayer Aktiengesellschaft: *See*—
Blank, Heinz U.; and Wolters, Erich, 4,567,004, Cl. 260-465.00R.
Grigo, Ulrich; Kohler, Karl-Heinz; Binsack, Rudolf; Morbitzer, Leo; Merten, Josef; Trabert, Ludwig; and Heitz, Walter, 4,567,226, Cl. 524-538.000.
Hammer, Heinz; Kircher, Klaus; and Meyer, Rolf-Volker, 4,567,210, Cl. 521-90.000.
Kruger, Bernd-Wieland; Riebel, Hans-Jochem; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,567,168, Cl. 514-89.000.
Niemers, Ekkehard; Knorr, Andreas; and Garthoff, Bernward, 4,567,188, Cl. 514-332.000.

Bayerische Motoren Werke AG: *See*—
Gebler, Eugen, 4,567,460, Cl. 340-58.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Folger, Josef; Fournell, Hans-Dieter; Hein, Hans-Rudolf; Kapfhammer, Karl; Rambock, Josef; and Weber, Michael, 4,567,459, Cl. 340-58.000.

Bazan, Alberto; and Murphy, Donald M. Dual diaphragm pump. 4,566,867, Cl. 417-393.000.

BBC Aktiengesellschaft Brown, Boveri & Cie: *See*—
Hoffeins, Hans; Kalbfuss, Richard; and Ipek, Bora, 4,566,268, Cl. 60-39.463.

BBC Brown, Boveri & Company, Limited: *See*—
Dobsa, Josip; and Hammad, Adel, 4,567,423, Cl. 322-58.000.
Dobsa, Josip; Mauchle, Peter; Pfyl, Walter; and Sadek, Kadry, 4,567,424, Cl. 323-210.000.

Beales, Keith J.; Day, Clive R.; Ainslie, Benjamin J.; and Rush, James D., to British Telecommunications. Optical fibres. 4,566,754, Cl. 350-96.300.

Bearden, Roby, Jr.; and Aldridge, Clyde L., to Exxon Research and Engineering Co. Oil soluble chromium catalyst. 4,567,156, Cl. 502-173.000.

Beasom, James D.: *See*—
Falater, Scott L.; and Beasom, James D., 4,567,385, Cl. 307-443.000.

Beau, Jean F.; and Gauthier, Michel, to Societe Nationale Industrielle et Aerospatiale. Kinetic wheel arrangement incorporating magnetic suspension provided with means for caging its rotor. 4,566,740, Cl. 308-10.000.

Beaver, Richard P.: *See*—
Hostler, Jonathan E.; and Beaver, Richard P., 4,566,890, Cl. 65-12.000.

Becht, Carl T., to Sencorp. Means for associating a driver, constituting a part of a replaceable fastener containing magazine, with the driver operating mechanism of a fastener driving tool. 4,566,621, Cl. 227-109.000.

Beck, James P.; and Luna, Carlos E., to Beckman Instruments, Inc. Method for determining γ-glutamyltransferase activity and kits containing a novel substrate solution for use therein. 4,567,138, Cl. 435-15.000.

Beck, William H., to Ross Hill Controls Corporation. Semi-conductor motor control system. 4,567,420, Cl. 318-803.000.

Becker, Franz-Josef; Hubner, Erich; and Lammerich, Walter, to Zanders Feinpaiere AG. Metallized paper and method of its production. 4,567,098, Cl. 428-327.000.

Beckman Instruments, Inc.: *See*—
Beck, James P.; and Luna, Carlos E., 4,567,138, Cl. 435-15.000.

Beckwith, Bruce R.: *See*—
Kulig, Constantine W.; Kingsbury, Charles M.; and Beckwith, Bruce R., 4,566,894, Cl. 65-304.000.

Bederman, Seymour, to International Business Machines Corp. Message stripping protocol for a ring communication network. 4,567,590, Cl. 370-86.000.

Bedford, Geoffrey R.; Brittain, David R.; and Platt, Ronald, to Imperial Chemical Industries PLC. Process for racemizing certain spiro compounds. 4,567,278, Cl. 548-309.000.

Bednorz, Klaus: *See*—
Hollaus, Reinhard; Zehetbauer, Rudolf; and Bednorz, Klaus, 4,567,316, Cl. 136-246.000.

Beehive Machinery, Inc.: *See*—
McFarland, Archie R.; and Preece, Bruce L., 4,566,640, Cl. 241-74.000.

Bege, Dietmar: *See*—
Friesner, Karl; Bege, Dietmar; Erbse, Dietmar; and Meininger, Siegfried, 4,566,204, Cl. 34-15.000.

Bell Canada: *See*—
Trumble, William P., 4,567,115, Cl. 428-541.000.

Beloit Corporation: *See*—
Ewald, James L.; and Rodal, Jose J. A., 4,566,945, Cl. 162-343.000.

Benchcraft, Inc.: *See*—
Dahlin, Robert D., 4,566,243, Cl. 52-584.000.

Bencuya, Izak; and Cogan, Adrian I., to GTE Laboratories Incorporated. Method of fabricating a static induction type recessed junction field effect transistor. 4,566,172, Cl. 29-571.000.

Bender, Herbert: *See*—
Blinne, Gerd; Bender, Herbert; and Neumann, Peter, 4,567,248, Cl. 528-211.000.

Benjamin, Abraham: *See*—
German, John G.; Benjamin, Abraham; and Stirling, James F., 4,566,336, Cl. 73-772.000.

Benjamin, Kenneth A., to Leesona Corporation. Take-up machine motor control. 4,566,646, Cl. 242-45.000.

Benjamins, Elmo I.: *See*—
Medema, Pieter W.; and Benjamins, Elmo I., 4,566,374, Cl. 99-281.000.

Bennett, Allyn N., to Du Pont de Nemours, E. I., and Company. Cover sheet in a photosensitive element. 4,567,128, Cl. 430-313.000.

Bennison, John J.; Longworth, Stuart W.; and Baker, John G., to Dearborn Chemicals, Ltd. Treatment of aqueous systems. 4,566,972, Cl. 210-698.000.

Benschop, Nico F., to U.S. Philips Corporation. Integrated logic circuit incorporating fast sample control. 4,567,386, Cl. 307-481.000.

Benteler-Werke AG Werk Neuhaus: *See*—
Vaubel, Gert, 4,566,523, Cl. 164-420.000.

Berchtold, Max, to Stanadyne, Inc. Accumulator nozzle fuel injection system. 4,566,416, Cl. 123-458.000.

Berg, Bengt O., to Telefonaktiebolaget LM Ericsson. High input impedance low output impedance amplifier. 4,567,445, Cl. 330-300.000.

Berg, Lloyd; and Yeh, An-I. Separation of isopropyl ether from isopropanol and water by extractive distillation. 4,566,948, Cl. 203-51.000.

Berg, Norman J.: *See*—
Abramovitz, Irwin J.; Berg, Norman J.; and Casseday, Michael W., 4,566,760, Cl. 350-358.000.

Bergandi Manufacturing Co., Inc.: *See*—
Rohrbacher, Herbert E., 4,566,501, Cl. 140-1.000.

Berger, Hermann; and Ernst, Franz, to Chemie und Filter GmbH Verfahrenstechnik KG. Apparatus for regulating a parameter by admitting an additive into a medium. 4,567,359, Cl. 364-183.000.

Berger, Maurice; Bernasconi, Jean-Francois; and Juillerat, Michel R., to Fabriques de Tabac Reunies, S.A. Apparatus for handling packed goods. 4,566,836, Cl. 414-57.000.

Berger, Terry A., to Hewlett-Packard Company. Method of operating a self cleaning electrochemical detector. 4,566,949, Cl. 204-1.00T.

Bergwerksverband GmbH: *See*—
Knoblauch, Karl; Harder, Burkhard; Heimbach, Heinrich; and Cosentino, Charles F., 4,566,282, Cl. 62-48.000.
Richter, Ekkehard; Knoblauch, Karl; Schlegel, Rolf; and Korbacher, Werner, 4,566,881, Cl. 55-25.000.

Berings, Josephus B. M. Method and a device for controlling a brush-commutator assembly of an electric machine. 4,567,414, Cl. 318-542.000.

Bernard, Alain M.; Le Clerc, Georges-Marie J.; and Foulon, Bernard M., to Office National d'Etudes et de Recherche Aerospatiales (ONERA). Electrostatic-suspension accelerometers. 4,566,328, Cl. 73-517.00B.

Bernasconi, Jean-Francois: *See*—
Berger, Maurice; Bernasconi, Jean-Francois; and Juillerat, Michel R., 4,566,836, Cl. 414-57.000.

Berner, James P.: *See*—
Berner, John M.; Derus, Patricia M.; and Berner, James P., 4,566,440, Cl. 128-25.00R.

Berner, John M.; Derus, Patricia M.; and Berner, James P., to Empi, Inc. Orthosis for leg movement with virtual hip pivot. 4,566,440, Cl. 128-25.00R.

Bernhard, Marcel, to Societe Alsacienne d'Aluminium. Flexible foil material or laminate, particularly for soft packaging and capping. 4,567,112, Cl. 428-461.000.

Bernstein, Jerome D.: *See*—
Faber, Marcel; Bernstein, Jerome D.; and Grossman, Matthew, 4,567,145, Cl. 435-161.000.

Bert, Alain; and Camiade, Marc, to Thomson-CSF. Low noise oscillator operating in the ultra-high frequency range. 4,567,449, Cl. 331-56.000.

Bertsch, Carl F.: *See*—
Pafford, Bernie J.; and Bertsch, Carl F., 4,566,966, Cl. 208-113.000.

Beson, John. Gate valve having a secondary seal. 4,566,671, Cl. 251-159.000.

Bessard, Michel, to Rexroth Sigma. Fluid distributing device, more especially for remote control. 4,566,492, Cl. 137-636.100.

Bethlehem Steel Corporation: *See*—
Keiper, Tilghman H., Jr., 4,566,630, Cl. 238-292.000.

Bettinger, Guenter; Pfefferkorn, Dietmar; and Pavelka, Bozidar, to BASF Aktiengesellschaft. Tape cassette comprising a substantially rectangular two-part housing. 4,566,653, Cl. 242-199.000.

BGB-Gesellschaft Reinmar John & Rainer Leo Meyer: *See*—
Meyer, Rainer-Leo; John, Reinmar; Nagel, Rolf; and Muller, Gunter, 4,567,230, Cl. 524-786.000.

Bhatia, Yog R.; and Stallworth, Herman, to Videojet Systems International, Inc. Ink jet printing composition. 4,567,213, Cl. 523-160.000.

BICC Public Limited Company: *See*—
McKenna, Owen P., 4,566,303, Cl. 72-262.000.

Bierwirth, Adolf P.; and Zielinski, Erich, to Rheinmetall GmbH. Loading tray mechanism for a tank cannon. 4,566,369, Cl. 89-45.000.

Bigg, Dennis; Morel, Claude; and Sevrin, Mireille, to Synthelabo. Imidazoline derivatives as α_2-antagonists. 4,567,177, Cl. 514-214.000.

Bihler, Franz; and Abele, Anton, to Kleindienst GmbH. Easy-adjust stair climber for wheelchair. 4,566,706, Cl. 280-5.220.

Billingsley, Henry C.; and DuBois, Chester G., to Outboard Marine Corporation. Flexible coupling for carburetors. 4,566,424, Cl. 123-583.000.

Binning, Ronald L.; and Sieder, Burton C., to Intech Systems, Inc. Accumulator pan transfer device. 4,566,838, Cl. 414-278.000.

Binsack, Rudolf: *See*—
Grigo, Ulrich; Kohler, Karl-Heinz; Binsack, Rudolf; Morbitzer, Leo; Merten, Josef; Trabert, Ludwig; and Heitz, Walter, 4,567,226, Cl. 524-538.000.

Bio Mobuchi Co. Ltd.: *See*—
Mabuchi, Kenichi; and Yagi, Masao, 4,566,442, Cl. 128-52.000.

Birkenbach, Alfred, to ITT Industries, Inc. Pressurized fluid supplying arrangement particularly a master cylinder of a clutch. 4,566,277, Cl. 60-587.000.

Bishop, Mary F.: *See*—
Meska, Robert J.; and Bishop, Mary F., 4,566,666, Cl. 248-558.000.

Bittner, Helmut; Gottzein, Eveline; and Surauer, Michael, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Arrangement for the attitude stabilization of flexible vehicles with weakly-dampened structural vibrations and discontinuous control intervention. 4,567,564, Cl. 364-434.000.

Bizot, Henri; Dautremont, Jean; and Sylvian, Alain, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.-M.A.". Process and apparatus for the precision measurement of rotor blade-height. 4,566,225, Cl. 51-165.720.

Bjorshol, Kolbjorn. Apparatus for the release of a fish hook from a snood head. 4,566,215, Cl. 43-4.000.

Black, John W.: *See*—
Acree, William M.; Edwards, Bobby; and Black, John W., 4,567,042, Cl. 424-89.000.
Acree, William M.; Edwards, Bobby; and Black, John W., 4,567,043, Cl. 424-89.000.

Blackmore, Phillip W.; Fletcher, William T.; and Burn, Terry B., to Fiberglas Canada Inc. Process and apparatus to crimp fibres. 4,567,078, Cl. 428-119.000.

Blanchard, Randall D., to John Fluke Mfg. Co., Inc. Touch-sensitive overlay. 4,567,480, Cl. 340-712.000.

Blank, Heinz U.; and Wolters, Erich, to Bayer Aktiengesellschaft. Process for the preparation of monomethyl-substituted methylene compounds. 4,567,004, Cl. 260-465.00R.

Blazer International Corp.: *See*—
Lemme, Charles D., 4,567,549, Cl. 362-279.000.

Blindheim, Ulf; Haegh, Gerd S.; and Nilsen, Bjorn P., to Sentralinstitutt for Industriell Forskning. Method for isomerizing alkylbenzenes. 4,567,313, Cl. 585-480.000.

Blinne, Gerd; Bender, Herbert; and Neumann, Peter, to BASF Aktiengesellschaft. Branched, high molecular weight, thermoplastic polyarylene ethers containing nitrile groups, and their preparation. 4,567,248, Cl. 528-211.000.

Blohm & Voss AG: *See*—
Friederichs, Karl-Heinz; and Schlapkohl, Joachim, 4,567,415, Cl. 318-565.000.

Blonder, Isaac S.: *See*—
Scherer, George; Joswick, Walter; and Blonder, Isaac S., 4,567,516, Cl. 358-114.000.

Blonder-Tongue Laboratories, Inc.: *See*—
Scherer, George; Joswick, Walter; and Blonder, Isaac S., 4,567,516, Cl. 358-114.000.

Bloom, William G.; and Geschwind, Gary I., to Raychem Corporation. Method for making bi-polar electrocautery needle. 4,566,183, Cl. 29-825.000.

Bloomer, Milton D., to General Electric Company. Method of and apparatus for half-cycle-average or R.M.S. load voltage control. 4,567,425, Cl. 323-237.000.

Blum, David B.: *See*—
Mednick, R. Lawrence; and Blum, David B., 4,567,204, Cl. 518-700.000.

Bochinski, Rolf; Eimer, Klaus; Littek, Harald; and Nasse, Johannes, to Taprogge Gesellschaft mbH. Apparatus for cleaning heat exchanger pipes and methods of operating an apparatus of this type. 4,566,533, Cl. 165-95.000.

Bode, Albert: *See*—
Buhler, Ulrich; Tappe, Horst; Bode, Albert; Hahnke, Manfred; and Roth, Kurt, 4,567,252, Cl. 534-882.000.

Bodine, Albert G. Sonic device for extracting minerals from ore. 4,566,800, Cl. 366-118.000.

Boehmer, Dennis A.: *See*—
Edwards, Floyd V.; and Boehmer, Dennis A., 4,566,493, Cl. 137-846.000.

Boehringer Mannheim GmbH: *See*—
Batz, Hans-George, 4,567,139, Cl. 435-28.000.

Boeing Company, The: *See*—
Konsevich, Francis X., 4,566,231, Cl. 52-145.000.
Therrien, Keith E., 4,567,076, Cl. 428-102.000.

Boekhorst, Frederick M.: *See*—
Stroomer, Martinus V. C.; and Boekhorst, Frederick M., 4,567,522, Cl. 358-158.000.

Boese, Roland, to Nicolet Instrument Corporation. Low temperature device for cooling small samples. 4,566,283, Cl. 62-49.000.

Boettger, Guenter; Hammer, Hans; Hertel, Otto; Jeschek, Gerhard; Mueller, Herbert; Scharf, Emil; and Schoenleben, Willibald, to BASF Aktiengesellschaft. Process and apparatus for preparing or reacting alkanolamines. 4,567,303, Cl. 564-475.000.

Bogl, Emil: *See*—
Rotte, Hermann J.; and Bogl, Emil, 4,566,479, Cl. 137-312.000.

Bohrer, Philip J., to Honeywell, Inc. Fluid flow sensing means with ambient temperature compensation. 4,566,320, Cl. 73-204.000.

Bold, William A.: *See—*
Bauer, Charles E.; and Bold, William A., 4,566,186, Cl. 29-852.000.

Bolenbaugh, Daniel L.; and Herzog, Robert E., to Allied Corporation. Disc brake assembly. 4,566,564, Cl. 188-73.330.

Bolhofer, William A.: *See—*
Baldwin, John J.; Pietruszkiewicz, Adolph; Bolhofer, William A.; and Lumma, William C., Jr., 4,567,191, Cl. 514-362.000.

Boliden Aktiebolag: *See—*
Allgulin, Torkel, 4,566,975, Cl. 210-711.000.

Bomgardner, Charles T., to Halliburton Company. Cushioning unit shaft seal. 4,566,701, Cl. 277-58.000.

Bonadeo, Igino. Cosmetics integrated with epicutaneous sebum and sebum-like compositions. 4,567,203, Cl. 514-844.000.

Bonnaud, Bernard: *See—*
Cousse, Henri; Mouzin, Gilbert; Bonnaud, Bernard; Charveron, Marie; and Fauran, Francois, 4,567,288, Cl. 560-37.000.

Boothe, Leland H., to Little Giant Industries, Inc. Ladder hinge and multi-position locking mechanism therefor. 4,566,150, Cl. 16-332.000.

Borg, Siegbert, to Seitz Enzinger Noll Maschinenbau Aktiengesellschaft. Method of regenerating alkali-containing wash solutions utilized for cleaning containers. 4,566,912, Cl. 134-13.000.

Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., to Combustion Engineering, Inc. Integrated coal cleaning process. 4,566,394, Cl. 110-347.000.

Borio, Richard W.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,566,394, Cl. 110-347.000.

Bos, Philip J., to Tektronix, Inc. Rapid starting, high-speed liquid crystal variable optical retarder. 4,566,758, Cl. 350-346.000.

Bosdet, Charles L. Mount for supporting camera having elongated lens. 4,566,768, Cl. 354-81.000.

Boshard, Ernst, to Sulzer Brothers Limited. Frame for storing nuclear fuel elements. 4,567,015, Cl. 376-272.000.

Bottcher, Rolf; and Lindner, Hans-Jurgen, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Collating machine with error-indicating rejection device. 4,566,681, Cl. 270-58.000.

Bourgoin, Alain: *See—*
Bailly, Francois P.; Bourgoin, Alain; and Israel, Renato, 4,567,329, Cl. 179-18.0FA.

Bowlin, Stanley L., to North American Philips Corporation. Method of trimming precision resistors. 4,566,936, Cl. 156-627.000.

Bowyer, Edward E., to Ethyl Molded Products Company. Self-draining closure. 4,566,508, Cl. 141-381.000.

Boyd, Barry S. Directional controller apparatus for a video or computer input. 4,567,479, Cl. 340-709.000.

Boykin, John C., to Electronic Flo-Meters, Inc. Pipeline flow measurement proving system. 4,566,307, Cl. 73-3.000.

Bozarth, Theodore B.; Demark, Anthony M.; Finn, Edward F.; and Lynch, Frank, to Honeywell Inc. Sensor communication system. 4,567,466, Cl. 340-347.0AD.

Brackmann, Warren A., to Rothmans of Pall Mall Canada Limited. Tobacco leaf processing. 4,566,470, Cl. 131-312.000.

Brady, Leon; and Spector, George. Long rulers. 4,566,200, Cl. 33-161.000.

Brainard, Ron P.; and Cassidy, L. Wayne, to Murfin Incorporated. Article exhibiting apparent luminescence and its method of manufacture. 4,567,072, Cl. 428-40.000.

Brand, Elizabeth: *See—*
Ciaudelli, Joseph P.; and Brand, Elizabeth, 4,567,038, Cl. 424-59.000.

Brand-Rex Company: *See—*
Johnston, James J., 4,566,749, Cl. 339-95.00D.

Brands, George, to American Roller Company. Stretcher/expander roller. 4,566,162, Cl. 26-105.000.

Brandt, Siegfried: *See—*
Panoch, Hans J.; Feldmann, Rainer; Hinn, Hans; Brandt, Siegfried; and Haage, Hans-Jurgen. 4,566,931, Cl. 156-330.900.

Brandyberry, Dennis R.; and Rye, Grover W., to Goodyear Tire & Rubber Company, The. Metallic cable and apparatus for manufacturing the same. 4,566,261, Cl. 57-212.000.

Brasen, Daniel; DiGiuseppe, Michael A.; Lourenco, Jose A.; and Mahajan, Subhash, to AT&T Bell Laboratories. Cleaning technique for LPE melt ingots. 4,566,934, Cl. 156-622.000.

Braun Aktiengesellschaft: *See—*
Lang, Gerhard, 4,567,476, Cl. 340-636.000.

Braunfeld, Walter; Gottling, Helmut; Moller, Rudolf; Muller, Peter; and Scharnowski, Gerhard, to WABCO Westinghouse Steuerungstechnik GmbH & Co. Variable point position determining arrangement. 4,566,196, Cl. 33-125.00R.

Break, Douglas G.: *See—*
Van Cleave, Eugene H.; and Break, Douglas G., 4,566,304, Cl. 72-319.000.

Breiholz, Arlen E., to Rockwell International Corporation. Phase difference measurement technique for VOR. 4,567,486, Cl. 343-401.000.

Breneman Company, The: *See—*
Simon, Terry L., 4,566,517, Cl. 160-263.000.

Brennan, William E.: *See—*
Gavagan, James A.; and Brennan, William E., 4,566,160, Cl. 24-637.000.

Brentham, Jerry D. Computerized exercising device. 4,566,692, Cl. 272-130.000.

Brewin, Alfred R., III: *See—*
Cramer, Clarence W.; and Brewin, Alfred R., III, 4,566,506, Cl. 141-160.000.

Brewin, Nicholas J.; and Johnston, Andrew W. B., to National Research Development Corporation. Synthetic plasmid and bacteria containing it. 4,567,146, Cl. 435-172.300.

Brewster, Andrew G.; and Caulkett, Peter W. R., to Imperial Chemical Industries PLC. 1,3-Dioxan-5-ylalkenoic acids. 4,567,197, Cl. 514-452.000.

Briar, Thomas J.; and Retsch, William H., to PPG Industries, Inc. Fin cooler clamp. 4,566,891, Cl. 65-12.000.

Bristol, Lloyd R., to Tektronix, Inc. Oscillographic device for displaying multiple continuous waveforms. 4,567,405, Cl. 315-392.000.

Bristol-Myers Company: *See—*
Matson, James A., 4,567,143, Cl. 435-119.000.
Vyas, Dolatrai M.; Kaneko, Takushi; and Doyle, Terrence W., 4,567,256, Cl. 544-58.200.

British Gas Corporation: *See—*
Collingwood, John C., 4,566,332, Cl. 73-639.000.

British Petroleum Company p.l.c., The: *See—*
Diaz, Henri; Jorgensen, Pierre; and Vernet, Pierre, 4,566,961, Cl. 204-168.000.
Hockley, Peter J.; and Thwaites, Michael J., 4,567,499, Cl. 357-2.000.
Nay, Barry; and Stewart, David G., 4,567,160, Cl. 502-326.000.

British Telecommunications: *See—*
Beales, Keith J.; Day, Clive R.; Ainslie, Benjamin J.; and Rush, James D., 4,566,754, Cl. 350-96.300.
Mountain, Peter J., 4,567,601, Cl. 375-22.000.

Britt, James E.; Laskowski, Kenneth W.; Sisson, Jeffrey L.; and Rinehart, Stephen A., to Xerox Corporation. Very high speed duplicator with finishing function using dual copy set transports. 4,566,782, Cl. 355-14.0SH.

Brittain, David R.: *See—*
Bedford, Geoffrey R.; Brittain, David R.; and Platt, Ronald, 4,567,278, Cl. 548-309.000.

Broadfoot, William D.: *See—*
Egan, Paul F.; Broadfoot, William D.; and Alden, Peter, 4,566,820, Cl. 404-14.000.

Brock, David G.: *See—*
Olego, Diego; Brock, David G.; Baumann, John A.; and Spicer, William E., 4,567,503, Cl. 357-54.000.

Brockelsby, Norman D. Variable speed transmission for portable winch. 4,566,872, Cl. 474-101.000.

Brodsky, Marc H.; and Weinberg, Zeev A., to International Business Machines Corporation. Rapid thermal annealing of silicon dioxide for reduced electron trapping. 4,566,913, Cl. 148-1.500.

Bronson, James C.; and Wright, Donald C., Jr., to Lakeland Rubber Stamp Company, Inc. Line coder system for use on either side of conveyor line. 4,566,382, Cl. 101-35.000.

Brooks, George D.: *See—*
Aloi, Anthony J.; Brooks, George D.; and Prince, Ronald E., 4,566,580, Cl. 193-48.000.

Brossman, Harold A., Jr. Device to discourage growth of respiratory viruses. 4,566,450, Cl. 128-200.110.

Brotton, James: *See—*
Wilman, Hugh; and Brotton, James, 4,567,528, Cl. 358-285.000.

Brotzmann, Karl: *See—*
von Bogdandy, Ludwig; and Brotzmann, Karl, 4,566,904, Cl. 75-38.000.

Brouwer, Marius S.; and Grosscurt, Arnoldus C., to Duphar International Research B.V. Composition active against mites, whitefly and thrips, pharmaceutical composition, and new benzoylurea compounds. 4,567,295, Cl. 564-44.000.

Brown, Boveri & Cie AG: *See—*
Klein, Erwin, 4,566,529, Cl. 165-32.000.

Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., to AMP Incorporated. Apparatus for connecting electrical connectors to flat multi-conductor cable. 4,566,164, Cl. 29-33.00M.

Brown de Colstoun, Francois P. D.; Chambaret, Jean-Paul; Chambaret, Yves; Le Saige de la Villesbrunne, Arnaud G.; Moscovici, Jean-Claude M.; and Moscovici, Michel. Method for detecting a source of heat, more particularly a forest fire in a watched area, and system for carrying out said method. 4,567,367, Cl. 250-340.000.

Brown, Keith C.; and Corbett, John F., to Clairol Incorporated. Metaphenylenediamine coupler compounds and oxidative hair dye compositions and methods using same. 4,566,876, Cl. 8-411.000.

Brown, Richard K., to James River-Norwalk, Inc. Side vented and shielded microwave pizza carton. 4,567,341, Cl. 219-10.55E.

Brown, Ronald L.: *See—*
Wolniak, Stanley C.; Kincaid, Herbert; Spencer, Elbert M.; and Brown, Ronald L., 4,566,167, Cl. 29-437.000.

Brown, Thomas H., to Smith Kline & French Laboratories Limited. 4H-Imidazol-4-ones and their pharmaceutical use. 4,567,176, Cl. 514-212.000.

Brown, Trevor P., to Pandrol Limited. Electrically insulating railway rails from rail-fastening means. 4,566,631, Cl. 238-349.000.

Brown & Williamson Tobacco Corporation: *See—*
Sachleben, Leroy R.; Korte, Kevin R.; Snyder, Daniel D.; and Allen, Terry L., 4,566,468, Cl. 131-297.000.

Brumen, Claudio, to United Technologies Corporation. Locking of rotor blades on a rotor disk. 4,566,857, Cl. 416-220.00R.

Bruner, Andrew L. Adjustable boat seat pedestal. 4,566,734, Cl. 297-346.000.

Bruney, Paul F.; and Bugash, Robert S., to Stereo Concepts, Inc. Stereo image recovery. 4,567,607, Cl. 381-1.000.

Brunier-Coulin, Charles, to Somfy. Device for controlling an electric motor. 4,567,416, Cl. 318-602.000.

Bruno, Leonard C.; and Bruno, Mark M., to Applied Biochemists, Inc. Method of cleaning using liquid compositions comprising stabilized mixtures of enzymes. 4,566,985, Cl. 252-174.120.

Bruno, Mark M.: *See—*
Bruno, Leonard C.; and Bruno, Mark M., 4,566,985, Cl. 252-174.120.

Bryan, Horace. Device and method for firming-up a plug-socket connection. 4,566,185, Cl. 29-845.000.

Brzozowski, Jan. Method for the mounting of gems and resulting product. 4,566,294, Cl. 63-15.000.

Bucher, Heinz, to Metronic Electronic GmbH. Air bubble hydromassaging apparatus. 4,566,443, Cl. 128-66.000.

Buckingham, Amyand D.; and Shelton, David P., to National Research Development Corporation. Laser apparatus. 4,567,596, Cl. 372-22.000.

Buckley, John T., to Holland Hitch Company. Fifth wheel. 4,566,715, Cl. 280-434.000.

Buczek, Carl J., to Ford Aerospace & Communications Corporation. Detector array. 4,566,788, Cl. 356-4.000.

Budapesti Muszaki Egyetem: *See—*
Greguss, Pal, 4,566,763, Cl. 350-441.000.

Bugash, Robert S.: *See—*
Bruney, Paul F.; and Bugash, Robert S., 4,567,607, Cl. 381-1.000.

Buhler, Ulrich; Tappe, Horst; Bode, Albert; Hahnke, Manfred; and Roth, Kurt, to Cassella Aktiengesellschaft. Water-insoluble naphthol monoazo dyestuff. 4,567,252, Cl. 534-882.000.

Bukowiecki, Stanislaw; Pfister, Gustav; Reis, Alfons; Troup, Alan P.; and Ulli, Hans-Peter, to Cerberus AG. Gas or vapor alarm system including scanning gas sensors. 4,567,475, Cl. 340-634.000.

Buller, Michael J.: *See—*
Ballard, John R.; Timmis, Peter H.; and Buller, Michael J., 4,566,270, Cl. 60-264.000.

Buol, Douglas A.; Mize, Dean N.; Pattschull, John W.; and Wallace, Robert M., to Texas Instruments Incorporated. Apparatus for testing integrated circuits. 4,567,432, Cl. 324-158.00F.

Burdick, William S.: *See—*
Mehl, Thomas L.; and Burdick, William S., 4,566,454, Cl. 128-303.130.

Burgard, Jeffrey E.: *See—*
Greenwood, Arthur R.; Burgard, Jeffrey E.; and Throndson, Roger L., 4,567,023, Cl. 422-192.000.

Burgess, Douglas: *See—*
Williams, Gilmer A.; and Burgess, Douglas, 4,566,498, Cl. 139-26.000.

Burgin, Kermit H. Acrylooptic examination device with auxiliary light. 4,566,439, Cl. 128-6.000.

Burke, Edmund T. Crutch. 4,566,474, Cl. 135-69.000.

Burn, Terry B.: *See—*
Blackmore, Phillip W.; Fletcher, William T.; and Burn, Terry B., 4,567,078, Cl. 428-119.000.

Burns, Martin J. Building intelligence system. 4,567,557, Cl. 364-145.000.

Burns, Morrison R., Jr.: *See—*
Smith, Hubert E.; Wall, William A.; and Burns, Morrison R., Jr., 4,567,348, Cl. 219-124.340.

Buro Patent AG: *See—*
Pforte, Karl W., 4,566,390, Cl. 104-88.000.

Burr-Brown Corporation: *See—*
Naylor, Jimmy R., 4,567,463, Cl. 340-347.0DA.

Burr, Donald N. Gas turbine engine combustor splash ring construction. 4,566,280, Cl. 60-757.000.

Burroughs Corp.: *See—*
Carrasco, Francis P.; DeRome, Gerard A.; and Fernekes, David W., 4,567,328, Cl. 179-2.00A.
Corey, Philip D.; and Atkins, Elise T., 4,567,379, Cl. 307-270.000.
Deodhar, Shirish P., 4,567,594, Cl. 371-38.000.
Fassbender, Charles J., 4,567,562, Cl. 364-200.000.

Bush, Rodney D., to Procter & Gamble Company, The. Ether polycarboxylates. 4,566,984, Cl. 252-140.000.

Butler, Robert M., to Microglass, Inc. Semiconductor wafer diffusion boat and method. 4,566,839, Cl. 414-404.000.

Buxton, Inc.: *See—*
Friedman, Harvey W.; Kohli, Jerry L.; and DeMur, Cynthia L., 4,566,721, Cl. 281-31.000.

California Institute of Technology: *See—*
Grubbs, Robert H.; and Gilliom, Laura R., 4,567,244, Cl. 526-160.000.

Camco, Incorporated: *See—*
Going, Walter S., III, 4,566,534, Cl. 166-66.400.
Pringle, Ronald E.; and Eatwell, William D., 4,566,540, Cl. 166-317.000.

Camiade, Marc: *See—*
Bert, Alain; and Camiade, Marc, 4,567,449, Cl. 331-56.000.

Campbell Soup Company: *See—*
Cramer, Clarence W.; and Brewin, Alfred R., III, 4,566,506, Cl. 141-160.000.

Campin, Joseph C. Bucket for material. 4,566,844, Cl. 414-726.000.

Canadian Patents and Development Limited: *See—*
Kato, Shuzo; and Feher, Kamilo, 4,567,602, Cl. 375-60.000.

Canadian Patents & Development Ltd. Societe Canadienne des Brevets et d'Exploitation Limited: *See—*
German, John G.; Benjamin, Abraham; and Stirling, James F., 4,566,336, Cl. 73-772.000.

Canfield, V. Robert; Woodring, William J.; and Kubiak, Mira C., to GAF Corporation. High-strength built-up roofing using improved ply sheets. 4,567,079, Cl. 428-131.000.

Canon Kabushiki Kaisha: *See—*
Furukawa, Hideaki, 4,566,547, Cl. 177-46.000.
Honda, Haruhisa; Onoda, Shigeyoshi; and Nishino, Fumio, 4,566,777, Cl. 355-3.00R.
Ikeda, Masami; Matsuda, Hiroto; Shibata, Makoto; and Takahashi, Hiroto, 4,567,493, Cl. 346-140.00R.
Kaneda, Naoya, 4,566,773, Cl. 354-403.000.
Maetani, Masami, 4,566,654, Cl. 242-204.000.
Ogawa, Masahiko, 4,567,409, Cl. 318-327.000.
Ohtaka, Keiji; Suzuki, Takashi; Iizuka, Kiyoshi; and Mizutani, Hidemasa, 4,567,123, Cl. 430-4.000.
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,567,127, Cl. 430-65.000.
Sawada, Takeshi; Shinmi, Akira; Takagi, Hiroshi; Suzuki, Kenji; Kishi, Fumio; and Kozuki, Susumu, 4,567,116, Cl. 428-694.000.
Sekine, Kazumi, 4,567,354, Cl. 235-145.00R.
Takayama, Makoto; Muramoto, Tomotaka; and Nishimura, Akimasa, 4,567,509, Cl. 358-29.000.
Tanaka, Nobuyoshi; Hashimoto, Seiji; and Kuwayama, Tetsuro, 4,567,510, Cl. 358-44.000.
Tsuda, Shin, 4,567,322, Cl. 179-2.00A.
Tsunekawa, Tokuichi, 4,566,775, Cl. 354-432.000.
Uehara, Haruo, 4,566,930, Cl. 156-280.000.
Yokomizo, Yoshikazu, 4,567,527, Cl. 358-282.000.

Canyon Materials Research & Engineering: *See—*
Wu, Che-Kuang, 4,567,104, Cl. 428-410.000.

Caputo, Jeffrey C.: *See—*
Caputo, Mario A.; and Caputo, Jeffrey C., 4,566,597, Cl. 211-87.000.

Caputo, Mario A.; and Caputo, Jeffrey C. Modular support unit. 4,566,597, Cl. 211-87.000.

Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See—*
Schwab, Klaus, 4,567,478, Cl. 340-705.000.

Carlin, Lawrence: *See—*
Vensko, George; Carlin, Lawrence; Potter, John; and Smith, Allen R., 4,567,606, Cl. 381-43.000.

Carlsen, W. John; and Melman, Paul, to GTE Laboratories Incorporated. Birefringent optical wavelength multiplexer/demultiplexer. 4,566,761, Cl. 350-401.000.

Carlson, William G.: *See—*
Radford, Kenneth C.; and Carlson, William G., 4,566,989, Cl. 252-478.000.

Carossino, Patricia. Universal tool-holder. 4,566,357, Cl. 81-177.200.

Carpenter, James H., Jr., to Kennecott Corporation. Impact blasting system for etching metal surfaces. 4,566,230, Cl. 51-420.000.

Carr, William N., to Recognition Equipment Incorporated. Semiconductor device for automation of integrated photoarray characterization. 4,567,430, Cl. 324-158.00D.

Carrasco, Francis P.; DeRome, Gerard A.; and Fernekes, David W., to Burroughs Corp. Energy detection circuit for a facsimile system controller. 4,567,328, Cl. 179-2.00A.

Carrier Corporation: *See—*
Pandeya, Prakash N.; and Chu, Tsuwei, 4,566,869, Cl. 418-15.000.
Stewart, Robert S., 4,567,390, Cl. 310-68.00C.

Cars & Concepts, Inc.: *See—*
Theodore, Chris P., 4,566,728, Cl. 296-76.000.

Cartwright, Willard E., to Kliklok Corporation. Carton transfer apparatus with effective constant length inverting arm. 4,566,846, Cl. 414-742.000.

Casals-Stenzel, Jorge: *See—*
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,567,195, Cl. 514-419.000.

Casio Computer Co., Ltd.: *See—*
Arai, Yoneaki, 4,566,363, Cl. 84-1.080.
Yamada, Shigeru, 4,567,360, Cl. 235-455.000.

Casseday, Michael W.: *See—*
Abramovitz, Irwin J.; Berg, Norman J.; and Casseday, Michael W., 4,566,760, Cl. 350-358.000.

Cassella Aktiengesellschaft: *See—*
Buhler, Ulrich; Tappe, Horst; Bode, Albert; Hahnke, Manfred; and Roth, Kurt, 4,567,252, Cl. 534-882.000.

Cassidy, L. Wayne: *See—*
Brainard, Ron P.; and Cassidy, L. Wayne, 4,567,072, Cl. 428-40.000.

Castelli, Fabio: *See—*
Villa, Ferruccio; and Castelli, Fabio, 4,566,599, Cl. 212-160.000.

Castera, Jean P.; and Meunier, Paul L., to Thomson CSF. Vectorial force sensor with elastic surface waves. 4,566,329, Cl. 73-597.000.

Catrain, Yves; Guerrier, Claude; and Revol, Jacques, to SCAL Societe de Conditionnements en Aluminium. Composite material and its application to reinforcement in insulating panels. 4,567,092, Cl. 428-246.000.

Caulfield, Henry J.; and Rhodes, William T., to Battelle Development Corporation. Optical systolic array processing. 4,567,569, Cl. 364-845.000.

Caulkett, Peter W. R.: *See—*
Brewster, Andrew G.; and Caulkett, Peter W. R., 4,567,197, Cl. 514-452.000.

Cavanaugh, Glenn L.; and Raffield, William C., to Trio Corporation; and Cavanaugh Marine Corp. Crew boat. 4,566,397, Cl. 114-56.000.

Cavanaugh Marine Corp.: *See—*
Cavanaugh, Glenn L.; and Raffield, William C., 4,566,397, Cl. 114-56.000.

Celanese Corporation: *See—*
David, Lawrence D.; and Arons, Richard M., 4,567,101, Cl. 428-364.000.
Gajria, Chandrasen; and Ozari, Yehuda, 4,567,246, Cl. 526-318.440.
Kiss, Gabor D., 4,567,227, Cl. 524-538.000.
Yoon, Hyun-Nam, 4,567,247, Cl. 528-190.000.

Celluloid S.A.: *See—*
Wachtel, Jean-Louis, 4,566,145, Cl. 15-201.000.

CEM Corporation: *See—*
Collins, Michael J.; and Goetchius, Ronald J., 4,566,312, Cl. 73-32.00A.
Collins, Michael J.; and Hargett, Wyatt P., Jr., 4,566,804, Cl. 374-14.000.

Cerberus AG: *See—*
Bukowiecki, Stanislaw; Pfister, Gustav; Reis, Alfons; Troup, Alan P.; and Ulli, Hans-Peter, 4,567,475, Cl. 340-634.000.

Cetus Corporation: *See—*
Neidleman, Saul L.; and Ervin, Jacqueline L., 4,567,144, Cl. 435-134.000.

Chaki, Takao, to Clarion Co., Ltd. Clutch mechanism in pushbutton tuner. 4,566,344, Cl. 74-10.330.

Chakraborty, Utpal R.: *See—*
Musser, John H.; and Chakraborty, Utpal R., 4,567,184, Cl. 514-277.000.

Chalke, Brian J.: *See—*
French, Geoffrey R.; Peltret, Pierre H.; and Chalke, Brian J., 4,566,271, Cl. 60-286.000.

Chambaret, Jean-Paul: *See—*
Brown de Colstoun, Francois P. D.; Chambaret, Jean-Paul; Chambaret, Yves; Le Saige de la Villesbrunne, Arnaud G.; Moscovici, Jean-Claude M.; and Moscovici, Michel, 4,567,367, Cl. 250-340.000.

Chambaret, Yves: *See—*
Brown de Colstoun, Francois P. D.; Chambaret, Jean-Paul; Chambaret, Yves; Le Saige de la Villesbrunne, Arnaud G.; Moscovici, Jean-Claude M.; and Moscovici, Michel, 4,567,367, Cl. 250-340.000.

Chamberlin, James W.: *See—*
Gray, James S.; Chamberlin, James W.; McBride, Alan L.; and Schreiner, Peter G., III, 4,567,591, Cl. 370-109.000.

Chan, Wan-kit, to USV Pharmaceutical Corp. Diarylhydroxy alkanones and alkenones antiallergy agents. 4,567,279, Cl. 548-491.000.

Chandra, Satish: *See—*
Dolsen, Philip C.; Chandra, Satish; Hammon, Gordon R.; and Uren, William J., 4,567,482, Cl. 340-825.050.

Chang, Long F., to Owens-Illinois, Inc. Plastic container. 4,566,600, Cl. 215-1.00C.

Charles C. Worth Corporation: *See—*
Young, John N., 4,566,655, Cl. 242-215.000.

Charles, Isabel; and Robinson, Malcolm, to E. R. Squibb & Sons, Inc. Esters of diatrizoic acid as X-ray contrast agents. 4,567,034, Cl. 424-5.000.

Charpak, Georges: *See—*
Lewiner, Jacques; and Charpak, Georges, 4,567,530, Cl. 358-295.000.

Charveron, Marie: *See—*
Cousse, Henri; Mouzin, Gilbert; Bonnaud, Bernard; Charveron, Marie; and Fauran, Francois, 4,567,288, Cl. 560-37.000.

Chauveau, Jean-Marc; and Schmitt, Michel, to Lucas Industries Limited. Combined live axles and brake assemblies for vehicles. 4,566,563, Cl. 188-18.00A.

Chavanoz S.A.: *See—*
Durand, Marc, 4,566,259, Cl. 57-6.000.

Chem Systems, Inc.: *See—*
Mednick, R. Lawrence; and Blum, David B., 4,567,204, Cl. 518-700.000.

Chemie und Filter GmbH Verfahrenstechnik KG: *See—*
Berger, Hermann; and Ernst, Franz, 4,567,559, Cl. 364-183.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Panoch, Hans J.; Feldmann, Rainer; Hinn, Hans; Brandt, Siegfried; and Haage, Hans-Jurgen, 4,566,931, Cl. 156-330.900.
Schuler, Ralf; and Maahs, Gunther, 4,567,220, Cl. 524-413.000.

Chemplex Company: *See—*
Pullukat, Thomas J.; Hwang, Yu-Tang; and Dombro, Robert A., 4,567,243, Cl. 526-128.000.

Chen, Kun S. Method for fixing electric cord and an electrical connector. 4,566,187, Cl. 29-857.000.

Chen, Timothy S.: *See—*
Rosser, Robert W.; Chen, Timothy S.; and Cheng, Chung-Heng, 4,567,301, Cl. 564-243.000.

Cheng, Chung-Heng: *See—*
Rosser, Robert W.; Chen, Timothy S.; and Cheng, Chung-Heng, 4,567,301, Cl. 564-243.000.

Chenoweth, David V.: *See—*
Baker, John R.; Chenoweth, David V.; and McStravick, David M., 4,566,495, Cl. 138-149.000.

Chernysh, Mikhail M.: *See—*
Vinogradov, Georgy V.; Deinega, Jury F.; Yanovsky, Jury G.; Vasilieva, Olga V.; Konstantinov, Alexandr A.; and Chernysh, Mikhail M., 4,566,324, Cl. 73-60.000.

Chesnut, M. Gaines. Cartridge clip. 4,566,212, Cl. 42-50.000.

Chevron Research Company: *See—*
Bacskai, Robert, 4,567,154, Cl. 502-114.000.
DeVires, Louis; and Ryason, P. R., 4,567,311, Cl. 585-415.000.
Miller, Stephen J.; and Pandey, Sue D., 4,567,312, Cl. 585-419.000.
Schmadel, Donald C., Jr., 4,566,889, Cl. 65-3.200.
Schneider, Ronald A., 4,566,988, Cl. 252-373.000.

Chia, E. Henry; and Adams, Ronald D., to Southwire Company. Method of and apparatus for casting a compound metal bar. 4,566,524, Cl. 164-461.000.

Chiba Prefectural Government: *See—*
Ooi, Kiyoshi; Morita, Michio; Suzuki, Kazuyoshi; Hashizume, Soh; and Yoshizawa, Hanako, 4,567,147, Cl. 435-237.000.

Chille, Joseph R.: *See—*
Streeper, Leonard W.; and Chille, Joseph R., 4,566,154, Cl. 19-296.000.

Choate, Albert G., to Automation Gages, Inc. Multi-directional surface illuminator. 4,567,551, Cl. 362-398.000.

Choi, Charles H.: *See—*
Jelsma, Richard K.; Choi, Charles H.; and Hynes, Thomas G., 4,566,445, Cl. 128-70.000.

Chorvat, Robert J.; Prodan, Kathleen A.; and Schulz, John A., to G. D. Searle & Co. Hexahydroindolizinones useful for treating cardiac arrhythmia, thrombotic disorders in mammals. 4,567,270, Cl. 546-183.000.

Chow, Peter C. M.; and Connolly, Walter L., to Grove Valve and Regulator Company. Multi-stage pressure reducing system. 4,566,488, Cl. 137-613.000.

Chu Associates, Inc.: *See—*
Creaser, Charles W., Jr., 4,567,487, Cl. 343-900.000.

Chu, Kwo R.: *See—*
Barnett, Larry R.; Lau, Yue-Ying; Chu, Kwo R.; and Granatstein, Victor L., 4,567,401, Cl. 315-5.000.

Chu, Tsuwei: *See—*
Pandeya, Prakash N.; and Chu, Tsuwei, 4,566,869, Cl. 418-15.000.

Chubachi, Noriyoshi; Kushibiki, Junichi; and Nakanishi, Kouichi, to Honda, Keisuke; Chubachi, Noriyoshi; and Kushibiki, Junichi. Focusing ultrasonic transducer element. 4,566,333, Cl. 73-642.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Kumano, Masafumi; Kawashima, Ikue; Hirama, Masayuki; and Tsuji, Yasuhiro, 4,566,453, Cl. 128-303.100.

Chugoku Marine Paints (USA) Inc.: *See—*
McGinniss, Vincent D.; and Dick, Richard J., 4,566,906, Cl. 106-15.050.

Ciaudelli, Joseph P., to Revlon, Inc. Fatty acid diesters. 4,567,037, Cl. 424-59.000.

Ciaudelli, Joseph P.; and Brand, Elizabeth, to Revlon, Inc. Sunscreen composition for hair protection. 4,567,038, Cl. 424-59.000.

Ciba-Geigy Corporation: *See—*
Gehret, Jean-Claude; and Traber, Walter, 4,567,190, Cl. 514-343.000.
Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, 4,566,874, Cl. 8-103.000.
Mangum, Thomas M., 4,567,171, Cl. 514-150.000.
Martin, Henry; and Fricker, Urs, 4,566,901, Cl. 71-105.000.
Nyfeler, Robert, 4,567,052, Cl. 426-532.000.

Cibie Projecteurs: *See—*
Stephano, Marc, 4,567,550, Cl. 362-297.000.

Cipriano, Robert A., to Dow Chemical Company, The. Electrochemical conversion of soluble salts of insoluble acids to their acid form. 4,566,956, Cl. 204-72.000.

Citizen Watch Co., Ltd.: *See—*
Kimura, Sosaku, 4,566,226, Cl. 51-165.720.

Claas Ohg: *See—*
Clostermeyer, Gerhard; and Muller, Werner, 4,566,380, Cl. 100-89.000.

Clairol Incorporated: *See—*
Brown, Keith C.; and Corbett, John F., 4,566,876, Cl. 8-411.000.
Varco, Joseph J.; and Williams, Carl E., 4,567,040, Cl. 424-70.000.

Clarion Co., Ltd.: *See—*
Asai, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, 4,567,392, Cl. 310-313.00A.
Asai, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, 4,567,393, Cl. 310-313.00A.
Chaki, Takao, 4,566,344, Cl. 74-10.330.

Clark, Robin D.: *See—*
Kluge, Arthur F.; Clark, Robin D.; Strosberg, Arthur M.; Pascal, Jean-Claude G.; and Whiting, Roger, 4,567,264, Cl. 544-400.000.

Clarke, Robert A., to Autodynamics Corporation of America. Wheelchair dockage and storage system. 4,566,842, Cl. 414-462.000.

Clements, Thomas: *See—*
Fallon, Merton R.; and Clements, Thomas, 4,566,476, Cl. 137-71.000.

Cleveland, William C., Jr.: *See—*
Sobczak, Isidore F.; Cleveland, William C., Jr.; and Pons, Robert L., 4,566,432, Cl. 126-438.000.

Clinton Industries, Inc.: *See—*
Tummino, John, 4,566,395, Cl. 112-292.000.

Clostermeyer, Gerhard; and Muller, Werner, to Claas Ohg. Round baling press for agricultural products. 4,566,380, Cl. 100-89.000.

Co Pharma Corporation s.r.l.: *See—*
Ferraris, Paolo C., 4,567,182, Cl. 514-262.000.

Coca-Cola Company, The: *See—*
Kroeplien, Udo; and Rosdorfer, Joachim, 4,567,194, Cl. 514-400.000.

Cofpa: *See—*
Gauthier, Maurice, 4,567,077, Cl. 428-114.000.

Cogan, Adrian I.: *See—*
Bencuya, Izak; and Cogan, Adrian I., 4,566,172, Cl. 29-571.000.

Cogliano, Joseph A., to W. R. Grace & Co. Asphalt foam. 4,567,095, Cl. 428-314.400.

Cognet, Louis; Argoud, Christian; Matray, Francois; and Mallevialle, Joel, to Societe Lyonnaise des Eaux et de l'Enclairage. Apparatus for liquid-liquid extraction using a mixing/settling process. 4,567,020, Cl. 422-101.000.

Cohen, Mitchell S.: *See—*
Afzali-Ardakani, Ali; Cohen, Mitchell S.; Pennington, Keith S.; and Sachdev, Krishna G., 4,567,490, Cl. 346-135.100.

Cohen, Paul; and Young, William R, to Harris Corporation. Cache memory flush scheme. 4,567,578, Cl. 365-189.000.

Cohen, Serge; and Nguyen, Gilbert H. K., to Framatome & Cie. Method of inspecting the operation of a valve and mechanical test bench for performing the method. 4,566,310, Cl. 73-9.000.

Coli, Giuseppe; and Rattin, Luciano, to Ing. C. Olivetti & C., S.p.A. Reproducing machine having a removable process unit. 4,566,779, Cl. 355-3.00R.

Collingwood, John C., to British Gas Corporation. Wheel probe. 4,566,332, Cl. 73-639.000.

Collins, John H.: *See—*
Baldry, Peter J.; Collins, John H.; Morantz, Daniel J.; Overton, Terence K. W.; and Wright, David W., 4,567,122, Cl. 430-4.000.

Collins, Michael J.; and Goetchius, Ronald J., to CEM Corporation. Apparatus and process for automatically determining fat contents of foods. 4,566,312, Cl. 73-32.00A.

Collins, Michael J.; and Hargett, Wyatt P., Jr., to CEM Corporation. Apparatuses, processes and articles for controllably heating and drying materials by microwave radiation. 4,566,804, Cl. 374-14.000.

Combustion Engineering, Inc.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,566,394, Cl. 110-347.000.
Deve, Vagn, 4,566,637, Cl. 241-23.000.
Radcliff, Frank T., 4,567,012, Cl. 376-245.000.
Riley, Brian, 4,567,031, Cl. 423-593.000.

Comeau, Roger J.; and Baran, Walter J., Jr., to United Technologies Corporation. First stage turbine vane support structure. 4,566,851, Cl. 415-139.000.

Comerford, Matthias, to Hollis Automation, Inc. Mass wave soldering system. 4,566,624, Cl. 228-180.100.

Commissariat a l'Energie Atomique: *See—*
Al Mouhamed, Mayez; Csakvary, Etienne; De Cosnac, Bertrand; and Noel, Jean-Paul, 4,566,845, Cl. 414-735.000.
Bachet, Bernard; Daguet, Jean; and Dujardin, Louis, 4,567,345, Cl. 219-121.0PT.
Dubost, Rene ; Fiori, Robert; and Seyfried, Philippe, 4,566,361, Cl. 83-454.000.
Minier, Jean; Barthelemy, Herve ; and Foglia, Vincent, 4,566,824, Cl. 405-202.000.

Compagnie Francaise des Petroles: *See—*
Moussy, Jacques L.; and Lescoeur, Jean A., 4,566,541, Cl. 166-318.000.

Compton, Arthur M. Chair for work environment. 4,566,733, Cl. 297-284.000.

Compton, William H.; and Likozar, Joseph M., to Comptrol Incorporated. Force transducer. 4,566,340, Cl. 73-862.480.

Comptrol Incorporated: *See—*
Compton, William H.; and Likozar, Joseph M., 4,566,340, Cl. 73-862.480.

Computer Products, Inc.: *See—*
Ehrlich, Stephen J.; and Nelson, Edward I., 4,567,317, Cl. 174-35.0MS.

Concast, Incorporated: *See—*
Fastert, Herbert; and Langner, Carl, 4,566,526, Cl. 164-478.000.

Connell, Ralph M.; and Dawson, Edward O. Wood-waste burner system. 4,566,393, Cl. 110-261.000.

Connelly, Robert L., to Duracell Inc. Cell vent. 4,567,118, Cl. 429-53.000.

Connolly, Walter L.: *See—*
Chow, Peter C. M.; and Connolly, Walter L., 4,566,488, Cl. 137-613.000.

Continental Can Company, Inc.: *See—*
Martin, Ralph E.; and Puidak, Heino, 4,567,410, Cl. 318-332.000.

Continental Conveyor & Equipment Co., Inc., The: *See—*
Robertson, Tommie E., 4,566,586, Cl. 198-628.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Kuhn, Heinz, 4,566,515, Cl. 152-402.000.
Mauk, Gerhard; and Huinink, Heinrich, 4,566,514, Cl. 152-209.00R.

Continental Plastic Containers, Inc.: *See—*
Szajna, John L., 4,566,509, Cl. 141-381.000.

Cook, Gary R.: *See—*
Pickett, Teddy L.; and Cook, Gary R., 4,567,100, Cl. 428-339.000.

Cooley, Jack S., to Mead Corporation, The. Packaging apparatus and method. 4,566,248, Cl. 53-48.000.

Cooper Industries, Inc.: *See—*
Maros, Ronald R., 4,566,745, Cl. 339-14.00P.

Copeland, Kenneth G.: *See—*
Winrow, Donald; and Copeland, Kenneth G., 4,566,210, Cl. 40-449.000.

Corbett, John F.: *See—*
Brown, Keith C.; and Corbett, John F., 4,566,876, Cl. 8-411.000.

Cordis Corporation: *See—*
DeHaan, Abel, 4,566,467, Cl. 128-784.000.
Koning, Gerrit; and Schroeppel, Edward A., 4,566,456, Cl. 128-419.0PG.

Core Laboratories, Inc.: *See—*
Barnaby, Harold T., 4,566,311, Cl. 73-19.000.

Corey, Philip D.; and Atkins, Elise T., to Burroughs Corporation. Parallel current sharing system. 4,567,379, Cl. 307-270.000.

Cormier, Laurent L. Smoke detector switch indicator. 4,567,477, Cl. 340-644.000.

Corning Glass Works: *See—*
Covington, Arthur K.; and Sibbald, Alastair, 4,567,006, Cl. 264-22.000.

Correnti, Albert D.; and Potechin, James, to AT&T Technologies, Inc. Method and apparatus for handling semiconductor wafers. 4,566,726, Cl. 294-64.300.

Cosentino, Charles F.: *See—*
Knoblauch, Karl; Harder, Burkhard; Heimbach, Heinrich; and Cosentino, Charles F., 4,566,282, Cl. 62-48.000.

Cossin, George E. Fish line knot tying jig. 4,566,213, Cl. 43-1.000.

Costabile, Arvid B.: *See—*
Costabile, John J.; Costabile, Arvid B.; and Costabile, Ernest, 4,566,855, Cl. 416-134.00R.

Costabile, Ernest: *See—*
Costabile, John J.; Costabile, Arvid B.; and Costabile, Ernest, 4,566,855, Cl. 416-134.00R.

Costabile, John J.; Costabile, Arvid B.; and Costabile, Ernest. Shock absorbing clutch assembly for marine propeller. 4,566,855, Cl. 416-134.00R.

Costain Petrocarbon Limited: *See—*
Openshaw, Ronald D., 4,566,887, Cl. 62-21.000.

Coulter Systems Corporation: *See—*
Kuehnle, Manfred R., 4,566,781, Cl. 355-10.000.

Coupland, Keith: *See—*
Habeeb, Jacob J.; and Coupland, Keith, 4,566,982, Cl. 252-33.600.

Cousse, Henri; Mouzin, Gilbert; Bonnaud, Bernard; Charveron, Marie; and Fauran, Francois, to Pierre Fabre S.A. 1-Aryl 2-aminomethyl cyclopropane carboxylates (Z). 4,567,288, Cl. 560-37.000.

Covington, Arthur K.; and Sibbald, Alastair, to Corning Glass Works. Method for encapsulating microelectronic sensor devices. 4,567,006, Cl. 264-22.000.

Cowan, Ben. Liquid piston compression systems for compressing steam. 4,566,860, Cl. 417-102.000.

Cragoe, Edward J., Jr.: *See—*
Willard, Alvin K.; Novello, Frederick C.; Hoffman, William F.; and Cragoe, Edward J., Jr., 4,567,289, Cl. 560-059.000.

Cramer, Clarence W.; and Brewin, Alfred R., III, to Campbell Soup Company. System for dispensing flowable food materials. 4,566,506, Cl. 141-160.000.

Crane & Co., Inc.: *See—*
Klein, Max, 4,566,969, Cl. 210-387.000.

Crankshaw, Michael; and Allen, George A., to Label-Aire Inc. Label applicator for multiple panel wrapping. 4,566,933, Cl. 156-444.000.

Creaser, Charles W., Jr., to Chu Associates, Inc. Vibration-tolerant whip antenna. 4,567,487, Cl. 343-900.000.

Creative Products Resource Associates, Ltd.: *See—*
Smith, James A., 4,566,980, Cl. 252-8.600.

Cronan, Ronald E.: *See—*
Link, Julian V., Jr.; and Cronan, Ronald E., 4,566,558, Cl. 181-210.000.

Crouch, Paul E.; Nahas, Joseph J.; and Ng, Howard, to AT&T Technologies Inc.; and AT&T Bell Laboratories, a part interest. Controller for a coin telephone set. 4,567,325, Cl. 179-6.30R.

Crowley, Patrick J., to Imperial Chemical Industries PLC. Halobenzyl esters. 4,567,199, Cl. 514-531.000.

Csakvary, Etienne: *See—*
Al Mouhamed, Mayez; Csakvary, Etienne; De Cosnac, Bertrand; and Noel, Jean-Paul, 4,566,845, Cl. 414-735.000.

Csapo, Janos I.: *See—*
Smith, Louis W.; and Csapo, Janos I., 4,567,324, Cl. 179-27.0FH.

Cucuzza, Joseph R., to Richards Aerospace Research Corporation. Flying apparatus and method. 4,566,699, Cl. 244-12.200.

Cudennec, Claude: *See—*
Lavielle, Gilbert; and Cudennec, Claude, 4,567,169, Cl. 514-089.000.

Curths, Gary: *See—*
Van der Loon, Dwain; and Curths, Gary, 4,566,349, Cl. 74-475.000.

Curtin, Leonard E., to Harris Corporation. Interface for connecting standard telephones to party lines. 4,567,330, Cl. 179-17.00E.

Custom-Bilt Machinery, Inc.: *See—*
Faltin, Hans G., 4,566,687, Cl. 271-202.000.

Czabaffy, Andras: *See—*
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,566,797, Cl. 356-402.000.

Czumak, Frank M.; and Wright, Joseph H., to Polaroid Corporation. Mount for transparency film frame. 4,566,770, Cl. 354-276.000.

D. L. Auld Company, The: *See—*
Waugh, Robert E., 4,566,929, Cl. 156-242.000.

Daguet, Jean: *See—*
Bachet, Bernard; Daguet, Jean; and Dujardin, Louis, 4,567,345, Cl. 219-121.0PT.

Dahlin, Robert D., to Benchcraft, Inc. Plank grating assembly. 4,566,243, Cl. 52-584.000.

Dahlstrom, D. Richard: *See—*
Gustafson, John A.; and Dahlstrom, D. Richard, 4,566,211, Cl. 40-605.000.

Dahlstrom Display, Inc.: *See—*
Gustafson, John A.; and Dahlstrom, D. Richard, 4,566,211, Cl. 40-605.000.

Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Nishibori, Setsuo; Komori, Hirohito; Saeki, Syuji; and Kinoshita, Hiromitsu, 4,567,242, Cl. 525-534.000.
Sano, Takashi; Kawabata, Kazuo; and Miya, Yoji, 4,567,106, Cl. 428-413.000.

Daicel Chemical Industries, Ltd.: *See—*
Matsumoto, Mitsuo; Miura, Shinichi; Kikuchi, Koichi; Tamura, Masuhiko; Kojima, Hidetaka; Koga, Kunio; and Yamashita, Shigeru, 4,567,305, Cl. 568-454.000.

Daikin Kogyo Co., Ltd.: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; and Kitahara, Takahiro, 4,566,755, Cl. 350-96.340.

Daimler-Benz Aktiengesellschaft: *See—*
Maly, Rudolf, 4,566,413, Cl. 123-256.000.
Stolz, Albert, 4,566,531, Cl. 165-42.000.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Matsumoto, Katsutoshi, 4,566,384, Cl. 101-170.000.

Dana Corporation: *See—*
Flotow, Richard A.; and Tennant, William M., 4,566,572, Cl. 192-70.120.
Lane, Wendell C., Jr., 4,566,573, Cl. 192-70.180.
Yant, Kenneth B., 4,566,568, Cl. 192-53.00F.

Dana, David E.: *See—*
Gaa, Peter C.; and Dana, David E., 4,567,228, Cl. 524-588.000.

Danfoss A/S: *See—*
Petersen, Hans C.; and Kyster, Erik, 4,566,272, Cl. 60-384.000.

Danieli & C. Officine Meccaniche S.p.A.: *See—*
Gigante, Sergio, 4,566,833, Cl. 414-30.000.

Danish, Sherif; and Aiken, Hugh H., to Polytel Corp. Matrix keyboard. 4,567,469, Cl. 340-365.00S.

Data Motion, Inc.: *See—*
Seitz, Alan F.; and Seitz, Karl G., 4,566,618, Cl. 226-74.000.

Dattilo, Donald P. Battery disconnect sensing circuit for battery charging systems. 4,567,421, Cl. 320-30.000.

Dautel, Heinz: *See—*
Schulze, Werner; Gerich, Josef; Scheef, Emil; and Dautel, Heinz, 4,566,723, Cl. 285-86.000.

Dautremont, Jean: *See—*
Bizot, Henri; Dautremont, Jean; and Sylvian, Alain, 4,566,225, Cl. 51-165.720.

David, Lawrence D.; and Arons, Richard M., to Celanese Corporation. Ferrimagnetic spinel fibers. 4,567,101, Cl. 428-364.000.

Davidson, Marion A.; and Kiss, David B., to Southern Systems, Inc. Chain pull monitor system. 4,566,339, Cl. 73-862.390.

Davis, Eugene E., to Johnsen & Jorgensen (Plastics) Limited. Tamper-resistant closure. 4,566,602, Cl. 215-256.000.

Davison, Charles F., to Norwood Marking & Equipment Co., Inc. Hot ink imprinter with swinging print head. 4,566,386, Cl. 101-305.000.

Davy Mckee (London) Limited: *See—*
Dennis, Alan J.; Harrison, George E.; and Wyber, James P., 4,567,306, Cl. 568-455.000.

Dawson, Edward O.: *See—*
Connell, Ralph M.; and Dawson, Edward O., 4,566,393, Cl. 110-261.000.

Day, Clive R.: *See—*
Beales, Keith J.; Day, Clive R.; Ainslie, Benjamin J.; and Rush, James D., 4,566,754, Cl. 350-96.300.

Daya, Shiraz: *See—*
Pompei, Francesco; and Daya, Shiraz, 4,566,808, Cl. 374-124.000.

de la Guardia, Mario; and Kao, Ming-Luh, to Racal Data Communications Inc. Processor controlled digital video sync generation. 4,567,521, Cl. 358-150.000.

Dearborn Chemicals, Ltd.: *See—*
Bennison, John J.; Longworth, Stuart W.; and Baker, John G., 4,566,972, Cl. 210-698.000.

Deaton, Thomas M., to Otis Engineering Corporation. Well safety and kill valve. 4,566,478, Cl. 137-112.000.

DeBondt, Dick. Method and device for controlling the curing rate of concrete. 4,566,806, Cl. 374-53.000.

de Castiglione, Roberto ; Perseo, Giuseppe; Gigli, Mauro; and Hecht, Barbara, to Farmitalia Carlo Erba. Biologically active heptapeptides. 4,567,162, Cl. 514-16.000.

Decoene, Frans J. G. C.; and Vansteelant, Marc G., to Sperry Corporation. Round baler with vertically elongated starting chamber. 4,566,379, Cl. 100-89.000.

De Cosnac, Bertrand: *See—*
Al Mouhamed, Mayez; Csakvary, Etienne; De Cosnac, Bertrand; and Noel, Jean-Paul, 4,566,845, Cl. 414-735.000.

Degenne, Michel, to Isover Saint-Gobain. Sensor of energy flux, in particular heat flux and visible and infrared radiation. 4,567,365, Cl. 250-338.000.

DeGroot, Alice A. Training halter for canines. 4,566,255, Cl. 54-24.000.

Deguchi, Takahiko: *See—*
Miyagi, Masahiro; Uehara, Katsuharu; Nozawa, Yoshio; and Deguchi, Takahiko, 4,566,359, Cl. 83-23.000.

DeHaan, Abel, to Cordis Corporation. Electrical connection between coiled lead conductor and lead tip electrode. 4,566,467, Cl. 128-784.000.

Deinega, Jury F.: *See—*
Vinogradov, Georgy V.; Deinega, Jury F.; Yanovsky, Jury G.; Vasilieva, Olga V.; Konstantinov, Alexandr A.; and Chernysh, Mikhail M., 4,566,324, Cl. 73-60.000.

Deis, Bert C., to United States of America, National Aeronautics and Space Administration. Drop foot corrective device. 4,566,447, Cl. 128-80.00E.

de Jonge, Cornelis A. M.: *See—*
Groen, Robertus W. C.; de Jonge, Cornelis A. M.; Schwartz, Lawrence M.; and van Lier, Johannes C., 4,567,534, Cl. 358-342.000.

Delevallee , Francoise ; Deraedt, Roger; and Le Martret, Odile, to Roussel Uclaf. Ethanethioates and mercaptoamides and use thereof as analgesic and enkephalinase inhibitory compounds. 4,567,198, Cl. 514-513.000.

Demark, Anthony M.: *See—*
Bozarth, Theodore B.; Demark, Anthony M.; Finn, Edward F.; and Lynch, Frank, 4,567,466, Cl. 340-347.0AD.

Demizu, Akira, to Mitsubishi Denki Kabushiki Kaisha. Diesel engine glow plug controlling device. 4,566,410, Cl. 123-179.0BG.

DeMur, Cynthia L.: *See—*
Friedman, Harvey W.; Kohli, Jerry L.; and DeMur, Cynthia L., 4,566,721, Cl. 281-31.000.

Dennis, Alan J.; Harrison, George E.; and Wyber, James P., to Davy Mckee (London) Limited. Continuous process for the production of aldehydes by hydroformylation of olefins. 4,567,306, Cl. 568-455.000.

Deodhar, Shirish P., to Burroughs Corporation. Reed-Solomon error detecting and correcting system employing pipelined processors. 4,567,594, Cl. 371-38.000.

Deraedt, Roger: *See—*
Delevallee , Francoise ; Deraedt, Roger; and Le Martret, Odile, 4,567,198, Cl. 514-513.000.

de Reinach Hirtzbach, Francois: *See—*
Ambrosi, Dominique; and de Reinach Hirtzbach, Francois, 4,566,899, Cl. 71-93.000.

DeRome, Gerard A.: *See—*
Carrasco, Francis P.; DeRome, Gerard A.; and Fernekes, David W., 4,567,328, Cl. 179-2.00A.

Derus, Patricia M.: *See—*
Berner, John M.; Derus, Patricia M.; and Berner, James P., 4,566,440, Cl. 128-25.00R.

DeSantis, Richard W., to Victory Lane Ltd. Liniment composition. 4,567,044, Cl. 424-94.000.

Design & Manufacturing Corporation: *See—*
Keal, Charles, Jr., 4,567,067, Cl. 427-328.000.

Detournay, Jacquy J. C.; and Sterckx, Jozef V. M., to Metallurgie Hoboken-Overpelt. Process for defluorinating an acid sulphate solution. 4,567,027, Cl. 423-101.000.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Wiegand, Herbert, 4,566,634, Cl. 239-410.000.

Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH: *See—*
Popp, Franz-Wolfgang; and Feuring, Kurt, 4,567,014, Cl. 376-272.000.

Deve, Vagn, to Combustion Engineering, Inc. Thermal sand reclamation system. 4,566,637, Cl. 241-23.000.

DeVires, Louis; and Ryason, P. R., to Chevron Research Company. Conversions of low molecular weight hydrocarbons to higher molecular weight hydrocarbons using a silicon compound-containing catalyst. 4,567,311, Cl. 585-415.000.

De Witt, Nick; and Greene, Lindsey C., to X-Ten Corporation. Universal chassis for hauling containers. 4,566,714, Cl. 280-404.000.

deWitt, Paolo: *See—*
Tinti, Maria O.; Quaresima, Emma; Bagolini, Carlo; and deWitt, Paolo, 4,567,200, Cl. 514-547.000.

Dharia, Dilip: *See—*
Patel, Pinakin; Dharia, Dilip; and Maru, Hansraj, 4,567,117, Cl. 429-19.000.

Diaz, Henri; Jorgensen, Pierre; and Vernet, Pierre, to British Petroleum Company p.l.c., The. Electric arc conversion process. 4,566,961, Cl. 204-168.000.

Dick, Richard J.: *See—*
McGinniss, Vincent D.; and Dick, Richard J., 4,566,906, Cl. 106-15.050.

Dickenson, Donald E.: *See—*
Zimmerman, Garyx; and Dickenson, Donald E., 4,567,054, Cl. 426-548.000.

Dickinson, Lawrence C. Adjustable insert support. 4,566,826, Cl. 407-37.000.

Didier-Werke AG: *See—*
Schnabel, Jurgen; and Plath, Jurgen, 4,566,925, Cl. 156-86.000.

DiGiovanniantonio, Perry R.; and Zimmer, William J., to United States of America, Navy. Aircraft barricade. 4,566,658, Cl. 244-110.00R.

DiGiuseppe, Michael A.: *See—*
Brasen, Daniel; DiGiuseppe, Michael A.; Lourenco, Jose A.; and Mahajan, Subhash, 4,566,934, Cl. 156-622.000.

DiNozzi, Robert D.: *See—*
Sleger, Leon F.; and DiNozzi, Robert D., 4,566,594, Cl. 209-539.000.

Discovision Associates: *See—*
Tabata, George K., 4,567,531, Cl. 358-335.000.

Disko, Harry: *See—*
Kuiesza, Ralph J.; Wozniak, Walter J.; Disko, Harry; and Meyer, Burton C., 4,566,195, Cl. 33-27.110.

Display Components, Inc.: *See—*
Sawyer, Carleton E.; and Masterman, Hugh C., 4,566,179, Cl. 29-596.000.

Ditcher, Jack, to A-Lok Products, Inc. Drop manhole precast encasement. 4,566,483, Cl. 137-372.000.

Dobbelstein, Arnold: *See—*
Ott, Gunther; Dobbelstein, Arnold; Geist, Michael; Schon, Georg; and Ahlers, Klaas, 4,566,963, Cl. 204-181.700.

Dobsa, Josip; and Hammad, Adel, to BBC Brown, Boveri & Company, Limited. Phase shifting transformer arrangement for damping subsynchronous oscillations. 4,567,423, Cl. 322-58.000.

Dobsa, Josip; Mauchle, Peter; Pfyl, Walter; and Sadek, Kadry, to BBC Brown, Boveri & Company, Limited. Reactive power compensator with capacitor and capacitor discharge circuit. 4,567,424, Cl. 323-210.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Peter, Dietmar, 4,566,407, Cl. 123-41.480.

Dr. Karl Thomae GmbH: *See—*
Eberlein, Wolfgang; Trummlitz, Gunter; Engel, Wolfhard; Schmidt, Gunther; Hammer, Rudolf; and Giachetti, Antonio, 4,567,178, Cl. 514-215.000.

Dodge, William B., to Olin Corporation. Process and apparatus for producing cyanuric acid. 4,567,258, Cl. 544-192.000.

Dohren, Hans: *See—*
Seipenbusch, Jurgen; and Dohren, Hans, 4,566,880, Cl. 48-73.000.

Dolan, Donald T., to Pitney Bowes Inc. Method of producing a light emiting diode array. 4,566,170, Cl. 29-569.00L.

Doliner, Herbert: *See—*
Tappert, Hans-Jurgen; Naumann, Johannes; Forster, Karl-Heinz; Doliner, Herbert; Pieper, Fritz; Frenzel, Werner; and Schanze, Klaus, 4,566,385, Cl. 101-183.000.

Dolsen, Philip C.; Chandra, Satish; Hammon, Gordon R.; and Uren, William J., to Babcock & Wilcox Company, The. Bypass control for stations in a communication system. 4,567,482, Cl. 340-825.050.

Dombro, Robert A.: *See—*
Pullukat, Thomas J.; Hwang, Yu-Tang; and Dombro, Robert A., 4,567,243, Cl. 526-128.000.

Dombroski, Robert M.: *See—*
Elliott, Kirk W.; Garver, Christian J.; Kayser, John P.; and Dombroski, Robert M., 4,566,560, Cl. 184-15.100.

Donald, Jimmie W. Rotatable mounting unit. 4,566,664, Cl. 248-349.000.

Donaldson, Dwight L.: *See—*
Ostergaard, James R., II; and Donaldson, Dwight L., 4,566,732, Cl. 297-174.000.

Donelson, Richard K., to Allis-Chalmers Corporation. Method for manufacturing a stay ring bearing stationary guide vanes for a non-gated turbine. 4,566,166, Cl. 29-156.80R.

Donetsky Nauchno-Issledovatelsky Ugolny Institut: *See—*
Gorlov, Viktor M.; Kiselev, Evgeny I.; Levin, Alexandr G.; Kutovoi, Valentin I.; Tverezy, Jury F.; and Spivak, Igor V., 4,566,587, Cl. 198-732.000.

Dover Corporation: *See—*
Atkey, Richard E., 4,566,561, Cl. 187-20.000.

Dow Chemical Company, The: *See—*
Cipriano, Robert A., 4,566,956, Cl. 204-72.000.
Dubois, Robert A., 4,567,281, Cl. 549-288.000.
Fung, Alexander P., 4,567,273, Cl. 546-345.000.
Gatlin, Janice E.; Van Dort, Mark A.; Wilson, Charles A.; and Fung, Alexander P., 4,567,274, Cl. 546-345.000.
Kitchens, John D.; and Novak, Leo R., 4,567,241, Cl. 525-352.000.
Koolen, Johannes L. A., 4,566,807, Cl. 374-112.000.
Lam, Chiu T.; and Shannon, David M., 4,567,157, Cl. 502-208.000.
Park, Chung P., 4,567,209, Cl. 521-81.000.
Van Gilder, Ron L.; and Lee, Do I., 4,567,099, Cl. 428-327.000.
Woo, Edmund P., 4,567,005, Cl. 260-465.00D.

Dow Corning Corporation: *See—*
Bauman, Therese M.; and Lee, Chi-Long, 4,567,212, Cl. 521-122.000.
Huebner, David J.; and Saam, John C., 4,567,231, Cl. 524-837.000.

Doyle, Terrence W.: *See—*
Vyas, Dolatrai M.; Kaneko, Takushi; and Doyle, Terrence W., 4,567,256, Cl. 544-58.200.

Draft Systems, Inc.: *See—*
Fallon, Merton R.; and Clements, Thomas, 4,566,476, Cl. 137-71.000.

Draper, Reed T.; and Pol, Kenneth J., to Draper Technologies, Inc. System for converting stack access newspaper vending machines and the like to apparatus for dispensing products one at a time. 4,566,608, Cl. 221-229.000.

Draper Technologies, Inc.: *See—*
Draper, Reed T.; and Pol, Kenneth J., 4,566,608, Cl. 221-229.000.
Martin, Dennis R., 4,566,581, Cl. 194-248.000.

Drechsler, Herbert: *See—*
Turtschan, Alfons; and Drechsler, Herbert, 4,566,591, Cl. 206-427.000.

Dreher, Ulrich; and Reitz, Helmut, to Institut Dr. Friedrich Forster. Self-centering driver for oblong material. 4,566,585, Cl. 198-624.000.

Dressel, Manfred; Eberle, Heinrich; Ripperger, Willi; Ruehenbeck, Wolfgang; and Zwick, Werner, to BASF Aktiengesellschaft. Preparation of ammonium carbamate. 4,567,294, Cl. 562-555.000.

Dresser Industries, Inc.: *See—*
Kidd, Harry A.; and Edwards, Thomas R., 4,566,266, Cl. 60-39.060.

Driessen, Leonardus M. H. E., to U.S. Philips Corporation. System for decoding and displaying encoded television pictures. 4,567,518, Cl. 358-133.000.

Duane, Michael P.: *See—*
Smayling, Michael C.; and Duane, Michael P., 4,566,175, Cl. 29-576.00B.

DuBois, Chester G.: *See—*
Billingsley, Henry C.; and DuBois, Chester G., 4,566,424, Cl. 123-583.000.

Dubois, Robert A., to Dow Chemical Company, The. Preparation of lactone-fused aromatic compounds. 4,567,281, Cl. 549-288.000.

Dubost, Rene ; Fiori, Robert; and Seyfried, Philippe, to Commissariat a l'Energie Atomique. Apparatus for shearing irradiated fuel assemblies. 4,566,361, Cl. 83-454.000.

Ducanis, Paul. Bar stock guide arrangement for screw machines. 4,566,358, Cl. 82-38.00A.

Ductmate Industries, Inc.: *See—*
Arnoldt, Peter J.; and Greiner, Waldemar H., 4,566,724, Cl. 285-364.000.

Dufft, Jurgen, to Lucas Industries Limited. Method of producing a metal tube and flange assembly. 4,566,623, Cl. 228-138.000.

Duguet, Jean, to L'Etat Francais represente par le Delegue Ministeriel pour L'Armement. Priming composition which is sensitive to percussion and a method for preparing it. 4,566,921, Cl. 149-22.000.

Dujardin, Louis: *See—*
Bachet, Bernard; Daguet, Jean; and Dujardin, Louis, 4,567,345, Cl. 219-121.0PT.

Dumbri, Austin C.; and Procyk, Frank J., to AT&T Bell Laboratories. Column decoder circuit for use with memory using multiplexed row and column address lines. 4,567,581, Cl. 365-230.000.

Dunsworth, Charles L., to Metalines, Inc. Smoke and heat barrier. 4,566,242, Cl. 52-573.000.

Duphar International Research B.V.: *See—*
Brouwer, Marius S.; and Grosscurt, Arnoldus C., 4,567,295, Cl. 564-44.000.

Duplo Manufacturing Corporation: *See—*
Matsushita, Ken; and Onishi, Tetsuo, 4,566,383, Cl. 101-121.000.

Duplo Seiko Corporation: *See—*
Matsushita, Ken; and Onishi, Tetsuo, 4,566,383, Cl. 101-121.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bennett, Allyn N., 4,567,128, Cl. 430-313.000.
Fan, Roxy N., 4,567,062. Cl. 427-96.000.
Held, Robert P., 4,567,129, Cl. 430-294.000.
Held, Robert P., 4,567,130, Cl. 430-294.000.
Reap, James J., 4,566,898, Cl. 71-93.000.
Resnick, Paul R., 4,567,003, Cl. 260-458.00F.
Taylor, Barry E., 4,567,151, Cl. 501-15.000.

Duracell Inc.: *See—*
Connelly, Robert L., 4,567,118, Cl. 429-53.000.

Durand, Marc, to Chavanoz S.A. Method and apparatus for the manufacture of fancy yarns. 4,566,259, Cl. 57-6.000.

Durr, Manfred; Gajdos, Benedikt; Gneuss, Klaus-Dieter; Harhausen, Ekkehard; and Seidel, Jurgen, to A. Nattermann & Cie GmbH. Pharmaceutical amitriptylin oxide preparation and process for its manufacture. 4,567,202, Cl. 514-656.000.

Durst, Tony; Glinski-Oomen, Margaret B.; and Freed, James C. 2-Substituted derivatives of podophyllotoxin and etoposide. 4,567,253, Cl. 536-18.100.

E. R. Squibb & Sons, Inc.: *See—*
Charles, Isabel; and Robinson, Malcolm, 4,567,034, Cl. 424-5.000.
Karanewsky, Donald S.; and Petrillo, Edward W., Jr., 4,567,166, Cl. 514-82.000.
Karanewsky, Donald S., 4,567,167, Cl. 514-89.000.

E. Ruter GmbH: *See—*
Ruter, Ewald, 4,566,245, Cl. 52-645.000.

Eastern Company, The: *See—*
Wolniak, Stanley C.; Kincaid, Herbert; Spencer, Elbert M.; and Brown, Ronald L., 4,566,167, Cl. 29-437.000.

Eastman Kodak Company: *See—*
Ames, William A., 4,567,223, Cl. 524-489.000.
Haas, Daniel D., 4,566,798, Cl. 356-448.000.
Henry, James W.; and Mumpower, Robert C., 4,567,372, Cl. 250-560.000.

Eaton Corporation: *See—*
Amlani, Kish; and Gindy, Sherif, 4,567,377, Cl. 307-112.000.
Kenny, Andrew A.; Sokalski, Robert G.; Egle, Lawrence E.; and Stahly, Daniel C., 4,566,423, Cl. 123-571.000.

Eatwell, William D.: *See—*
Pringle, Ronald E.; and Eatwell, William D., 4,566,540, Cl. 166-317.000.

Eberl, Lernhard: *See—*
Bauer, Otto; Eberl, Lernhard; Geyer, Gerhard; and Straubel, Max, 4,566,421, Cl. 123-502.000.

Eberle, Heinrich: *See—*
Dressel, Manfred; Eberle, Heinrich; Ripperger, Willi; Ruehenbeck, Wolfgang; and Zwick, Werner, 4,567,294, Cl. 562-555.000.

Eberlein, Wolfgang; Trummlitz, Gunter; Engel, Wolfhard; Schmidt, Gunther; Hammer, Rudolf; and Giachetti, Antonio, to Dr. Karl Thomae GmbH. Substituted 5,11-dihydro-6H-dibenz[b,e]azepin-6-ones and pharmaceutical compositions containing same. 4,567,178, Cl. 514-215.000.

Ebey, Edward; and Richter, Karl E., to Fulton Manufacturing Corporation. Neutral winch. 4,566,674, Cl. 254-345.000.

Echols, Sylvia S. Nursing blouse with hidden opening. 4,566,136, Cl. 2-104.000.

Echte, Adolf; Gausepohl, Hermann; Hambrecht, Juergen; and Gerberding, Karl, to BASF Aktiengesellschaft. Continuous preparation of rubber-modified polymers of vinyl-aromatics. 4,567,232, Cl. 525-53.000.

Ecklin, John W. Biased unitized motor alternator with stationary armature and field. 4,567,407, Cl. 318-140.000.

Edwards, Bobby: *See—*
Acree, William M.; Edwards, Bobby; and Black, John W., 4,567,042, Cl. 424-89.000.
Acree, William M.; Edwards, Bobby; and Black, John W., 4,567,043, Cl. 424-89.000.

Edwards, Floyd V.; and Boehmer, Dennis A., to Vernay Laboratories, Inc. Valve assembly. 4,566,493, Cl. 137-846.000.

Edwards, James W.: *See—*
Wrobleski, James T.; Edwards, James W.; Graham, Charles R.; Keppel, Robert A.; and Raffelson, Harold, 4,567,158, Cl. 502-209.000.

Edwards, Philip N.; and Large, Michael S., to Imperial Chemical Industries PLC. Bis(1-substituted biguanide) derivatives. 4,567,174, Cl. 514-210.000.

Edwards, Thomas R.: *See—*
Kidd, Harry A.; and Edwards, Thomas R., 4,566,266, Cl. 60-39.060.

Egan, Paul F.; Broadfoot, William D.; and Alden, Peter. Cateye mountings. 4,566,820, Cl. 404-14.000.

Egerbacher, Werner; and Wunderlich, Dieter, to Siemens Aktiengesellschaft. Semiconductor component with a disc-shaped case. 4,567,504, Cl. 357-79.000.

Egle, Lawrence E.: *See—*
Kenny, Andrew A.; Sokalski, Robert G.; Egle, Lawrence E.; and Stahly, Daniel C., 4,566,423, Cl. 123-571.000.

Ehara, Kohei: *See—*
Itsumi, Manabu; Ehara, Kohei; Muramoto, Susumu; and Matsuo, Seitaro, 4,566,940, Cl. 156-643.000.

Ehm, Karl H.; and Orendi, Roderich R., to Tremag Trennmaschinen-Gesellschaft mbH. Method of clamping tube-like members and apparatus for carrying out the method. 4,566,679, Cl. 269-23.000.

Ehrat, Kurt. Magnetic game. 4,566,694, Cl. 273-1.0GB.

Ehrlich, Stephen J.; and Nelson, Edward I., to Computer Products, Inc. EMI/RFI Protected enclosure. 4,567,317, Cl. 174-35.0MS.

Eicken, Karl; Scheib, Klaus; Theobald, Hans; Pommer, Ernst-Heinrich; and Ammermann, Eberhard, to BASF Aktiengesellschaft. 7-Aminoazolo[1,3-a]-pyrimidines and fungicides containing these compounds. 4,567,263, Cl. 544-263.000.

Eimer, Klaus: *See—*
Bochinski, Rolf; Eimer, Klaus; Littek, Harald; and Nasse, Johannes, 4,566,533, Cl. 165-95.000.

Eiringhaus, Wilhelm: *See—*
Altwicker, Gerd; and Eiringhaus, Wilhelm, 4,566,182, Cl. 29-715.000.

Eisai Co., Ltd.: *See—*
Hirose, Noriyasu; Souda, Shigeru; Miyake, Kazutoshi; Kuriyama, Shizuo; Usuki, Kazuyasu; Akiyama, Yasuhiro; Nagaoka, Naoko; and Kawashima, Hidetoshi, 4,567,180, Cl. 514-253.000.

Eklund, Vidar; Ekman, Kurt; Turunen, Olli; Huttunen, Jouko; Selin, Johan-Fredrik; and Fors, Jan, to Neste Oy. Method of producing cellulose carbamate. 4,567,255, Cl. 536-30.000.

Ekman, Kurt: *See—*
Eklund, Vidar; Ekman, Kurt; Turunen, Olli; Huttunen, Jouko; Selin, Johan-Fredrik; and Fors, Jan, 4,567,255, Cl. 536-30.000.

Electro-Nite Co.: *See—*
Theuwis, Alfons L.; and Maes, Joseph M., 4,566,343, Cl. 73-864.590.

Electro-Nucleonics, Inc.: *See—*
Mandle, Richard M., 4,566,790, Cl. 356-246.000.

Electro-Voice, Incorporated: *See—*
Watson, Alan R.; and Overley, John P., 4,567,608, Cl. 381-122.000.

Electronic Flo-Meters, Inc.: *See—*
Boykin, John C., 4,566,307, Cl. 73-3.000.

Elf France: *See—*
Hagenbach, Germain; Maldonado, Paul; and Maurice, Jacques, 4,567,222, Cl. 524-476.000.

Elhaus, Friedrich W. Profile extruder including pull measuring means. 4,566,298, Cl. 72-6.000.

Eli Lilly and Company: *See—*
Schaus, John M., 4,567,266, Cl. 546-82.000.

Elliott, Kirk W.; Garver, Christian J.; Kayser, John P.; and Dombroski, Robert M., to Madison-Kipp Corporation. Movable lubricator apparatus. 4,566,560, Cl. 184-15.100.

Embree, David M.; Goldthorp, David C.; Longenecker, Howard H.; and Vogelpohl, David R., to AT&T Technologies; and AT&T Bell Laboratories. Electronic tone ringer with distinctive signaling circuitry. 4,567,333, Cl. 179-84.00T.

Emhart Industries, Inc.: *See—*
Kulig, Constantine W.; Kingsbury, Charles M.; and Beckwith, Bruce R., 4,566,894, Cl. 65-304.000.

Emoto, Kazuhiro; and Haino, Kozo, to Mitsubishi Paper Mills, Ltd. Hydrazone photoconductive materials for electrophotography. 4,567,126, Cl. 430-59.000.

Empi, Inc.: *See—*
Berner, John M.; Derus, Patricia M.; and Berner, James P., 4,566,440, Cl. 128-25.00R.

Emrich, Ronald J.: *See—*
Arner, Russell E.; Emrich, Ronald J.; Gianelos, James; and Haynes, Marlon L., 4,566,293, Cl. 62-514.00R.

Endo, Yukio; Harada, Nozomu; and Yoshida, Okio, to Kabushiki Kaisha Toshiba. CCD Picture element defect compensating apparatus. 4,567,525, Cl. 358-213.000.

Energy Development Associates, Inc.: *See—*
Jorne, Jacob; Roayaie, Emad; and Shah, Atul, 4,567,120, Cl. 429-72.000.

Energy Management Corporation: *See—*
Hirsch, Michael, 4,567,563, Cl. 364-420.000.

Energy Research Corporation: *See—*
Patel, Pinakin; Dharia, Dilip; and Maru, Hansraj, 4,567,117, Cl. 429-19.000.

ENFO Grundlagenforschungs AG: *See—*
Frisch, Herbert, 4,567,394, Cl. 310-330.000.

Engel, Wolfhard: *See—*
Eberlein, Wolfgang; Trummlitz, Gunter; Engel, Wolfhard; Schmidt, Gunther; Hammer, Rudolf; and Giachetti, Antonio, 4,567,178, Cl. 514-215.000.

Engelmann, Axel, to Hoechst Aktiengesellschaft. Process for the preparation of acid dyestuffs of low electrolyte content of the triphenylmethane series. 4,566,999, Cl. 260-392.000.

Englund, Richard L., to Index Industries, Inc. Thermostatic switch. 4,567,458, Cl. 337-365.000.

Enk, William A.; and Migis, Ronald P., to Enk, William A. Fire protection system for aircraft. 4,566,542, Cl. 169-62.000.

Enomoto, Fukumasa: *See—*
Tsunoda, Teruo; Numauchi, Hiromitsu; Kurata, Hironobu; Kawaguchi, Yoichi; Ishii, Satoshi; Seki, Masanori; Iwasaki, Masahiro; and Enomoto, Fukumasa, 4,566,194, Cl. 33-18.100.

Enomoto, Hiromu: *See—*
Yasuda, Yasushi; Enomoto, Hiromu; Shimauchi, Yoshiki; and Tahara, Akinori, 4,567,380, Cl. 307-290.000.

Enomoto, Masaki; and Ozawa, Michihiro, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Core construction of nuclear reactor. 4,567,018, Cl. 376-435.000.

Enthone, Incorporated: *See—*
Schultz, Paul B.; and Yarkosky, Eugene F., 4,567,066, Cl. 427-305.000.

Epson Corporation: *See—*
Ikeda, Masayuki, 4,567,448, Cl. 331-25.000.

Erasmus, Stephen J.: *See—*
Smith, Kenneth C. A.; and Erasmus, Stephen J., 4,567,369, Cl. 250-397.000.

Erbse, Dietmar: *See—*
Friesner, Karl; Bege, Dietmar; Erbse, Dietmar; and Meininger, Siegfried, 4,566,204, Cl. 34-15.000.

Ergenics, Inc.: *See—*
Sandrock, Gary D.; and Snape, Edwin, 4,566,281, Cl. 62-48.000.

Erikson, Keith W.: *See—*
Erikson, Kenneth W.; and Erikson, Keith W., 4,566,345, Cl. 74-89.150.

Erikson, Kenneth W.; and Erikson, Keith W. Tool carrier assembly. 4,566,345, Cl. 74-89.150.

Eriksson, Leif K. S., to Saab-Scania Aktiebolag. Synchronizing mechanism in a vehicle gearbox. 4,566,569, Cl. 192-53.00G.

Eriksson, Stig; Granberg, Bengt; and Westberg, Erik, to ASEA Aktiebolag. Supervisory desk. 4,566,741, Cl. 312-194.000.

Ernst, Franz: *See—*
Berger, Hermann; and Ernst, Franz, 4,567,559, Cl. 364-183.000.

Ernst, Hanageorg; Schmidt, Wolfram; and Paust, Joachim, to BASF Aktiengesellschaft. Preparation of riboflavin. 4,567,261, Cl. 544-251.000.

Ernst Winter & Sohn (GmbH & Co): *See—*
Schleich, Heinrich; and Yegenoglu, Kemal, 4,566,426, Cl. 125-11.00R.

Ertel, Gerhard, to Schott Glaswerke. Method for forming glass to metal seals in structural members. 4,566,892, Cl. 65-59.240.

Ervin, Jacqueline L.: *See—*
Neidleman, Saul L.; and Ervin, Jacqueline L., 4,567,144, Cl. 435-134.000.

Esco Metallwaren Martin Huhnken: *See—*
Ghibely, Bruno, 4,566,622, Cl. 227-120.000.

Esmil Hubert B.V.: *See—*
van Buytene, Arie J., 4,566,377, Cl. 99-474.000.

Essex Specialty Products, Inc.: *See—*
Rizk, Sidky D.; Hsieh, Harry W. S.; and Mazzeo, Michael P., 4,567,107, Cl. 428-425.500.

Ethyl Corporation: *See—*
Pettigrew, F. Alexander; and Penton, Harold R., 4,567,229, Cl. 524-610.000.

Ethyl Molded Products Company: *See—*
Bowyer, Edward E., 4,566,508, Cl. 141-381.000.

Evans, Robert W. Single acting hydraulic fishing jar. 4,566,546, Cl. 175-297.000.

Ewald, James L.; and Rodal, Jose J. A., to Beloit Corporation. Headbox trailing element. 4,566,945, Cl. 162-343.000.

Ex-Cell-O Corporation: *See—*
Spisak, Anthony F.; Stefanovic, Sava; and Pawloski, Curtis H., 4,566,251, Cl. 53-167.000.

Exergen Corporation: *See—*
Pompei, Francesco; and Daya, Shiraz, 4,566,808, Cl. 374-124.000.

Exxon Research and Engineering Co.: *See—*
Arcuri, Kym B.; Mauldin, Charles H.; and Shaw, Dave H., 4,567,205, Cl. 518-715.000.
Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,567,156, Cl. 502-173.000.
Graves, Victoria, 4,567,153, Cl. 502-113.000.
Habeeb, Jacob J.; and Coupland, Keith, 4,566,982, Cl. 252-33.600.
Olmstead, William N., 4,566,965, Cl. 208-11.00R.
Pafford, Bernie J.; and Bertsch, Carl F., 4,566,966, Cl. 208-113.000.
Peer, Thomas R., 4,567,570, Cl. 364-900.000.
Pine, Lloyd A., 4,567,152, Cl. 502-64.000.

Fab Industries, Inc.: *See—*
Krawczyk, Simon W., 4,567,075, Cl. 428-91.000.

Faber, Marcel; Bernstein, Jerome D.; and Grossman, Matthew, to HRI, Inc. Continuous production of ethanol by use of respiration deficient mutant yeast. 4,567,145, Cl. 435-161.000.

Fabian, Rainer; Marold, Freimut; and Latzin, Dieter, to Linde Aktiengesellschaft. Process and apparatus for obtaining pure CO. 4,566,886, Cl. 62-11.000.

Fabriques de Tabac Reunies, S.A.: *See—*
Berger, Maurice; Bernasconi, Jean-Francois; and Juillerat, Michel R., 4,566,836, Cl. 414-57.000.

Facet Enterprises, Inc.: *See—*
Sekella, T. Curran, 4,566,575, Cl. 192-84.00C.

FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf Aktien: *See—*
Schmucker, Wolfgang, 4,566,262, Cl. 57-264.000.
Smuda, Siegfried; Horner, Peter; Kogel, Karl; and Zeitler, Peter, 4,566,673, Cl. 254-84.000.

Fairchild Camera & Instrument Corporation: *See—*
Koh, Yun B., 4,567,058, Cl. 427-55.000.
Varshney, Ramesh C., 4,567,580, Cl. 365-200.000.

Falater, Scott L.; and Beasom, James D., to Harris Corporation. Power switched logic gates. 4,567,385, Cl. 307-443.000.

Falcon Jet Corporation: *See—*
Alie, Enrique; Gilmore, Arthur H.; and Mack, Henry J., Jr., 4,567,547, Cl. 362-154.000.

Fallenius, Kai B.: *See—*
Kivisto, Tuomo V. J.; Fallenius, Kai B.; and Niitti, Timo U., 4,566,968, Cl. 210-221.100.

Fallon, Merton R.; and Clements, Thomas, to Draft Systems, Inc. Flow control device. 4,566,476, Cl. 137-71.000.

Falls, James J., to Baird Corporation. Authentication device. 4,567,370, Cl. 250-461.100.

Faltin, Hans G., to Custom-Bilt Machinery, Inc. Transferring newspapers or the like from a moving belt to a series of clamps. 4,566,687, Cl. 271-202.000.

Fan, Roxy N., to Du Pont de Nemours, E. I., and Company. Process for photoformed plastic multistrate using two layer film. 4,567,062, Cl. 427-96.000.

Fanuc Ltd: *See—*
Nozawa, Ryoichiro; Kinoshita, Mitsuo; and Matsumura, Teruyuki, 4,567,342, Cl. 219-69.00M.

Farmitalia Carlo Erba: *See—*
de Castiglione, Roberto ; Perseo, Giuseppe; Gigli, Mauro; and Hecht, Barbara, 4,567,162, Cl. 514-16.000.

Farr, Glyn P. R., to Lucas Industries Public Limited Company. Hydraulic boosters for vehicle braking systems. 4,566,275, Cl. 60-554.000.

Farr, James I., deceased (by Farr, May S., administrator), to American Hospital Supply Corporation. Nebulizer. 4,566,452, Cl. 128-200.210.

Farr, May S., administrator: *See—*
Farr, James I., deceased, 4,566,452, Cl. 128-200.210.

Fassbender, Charles J., to Burroughs Corporation. Controller for controlling access to a plurality of records that can be accessed and changed by several independent processors. 4,567,562, Cl. 364-200.000.

Fastert, Herbert; and Langner, Carl, to Concast, Incorporated. Method and apparatus for semi-horizontal continuous casting. 4,566,526, Cl. 164-478.000.

Fasth, Ulf K. F. Positioning apparatus. 4,566,738, Cl. 308-3.00A.

Fauran, Francois: *See—*
Cousse, Henri; Mouzin, Gilbert; Bonnaud, Bernard; Charveron, Marie; and Fauran, Francois, 4,567,288, Cl. 560-37.000.

Fedele, Vincent, to Kronos Incorporated. Method of and apparatus for automatic line identification for recording on employee time cards and the like. 4,567,357, Cl. 235-377.000.

Feher, Kamilo: *See—*
Kato, Shuzo; and Feher, Kamilo, 4,567,602, Cl. 375-60.000.

Feldmann, Rainer: *See—*
Panoch, Hans J.; Feldmann, Rainer; Hinn, Hans; Brandt, Siegfried; and Haage, Hans-Jurgen, 4,566,931, Cl. 156-330.900.

Feliz, Jack M. Stair-climbing conveyance. 4,566,551, Cl. 180-9.100.

Fellner, Peter J.; Lai, Mun F.; and Patel, Thakorbhai P., to G. D. Searle & Co. Imidazole derivatives used in antithrombotic method. 4,567,189, Cl. 514-338.000.

Ferag AG: *See—*
Reist, Walter, 4,566,686, Cl. 271-201.000.

Fergg, Berthold: *See—*
Fursich, Manfred; Treiber, Helmut; Fergg, Berthold; Findeis, Gunter; and Zahn, Wolfgang, 4,566,786, Cl. 355-77.000.

Fernekes, David W.: *See—*
Carrasco, Francis P.; DeRome, Gerard A.; and Fernekes, David W., 4,567,328, Cl. 179-2.00A.

Ferraris, Paolo C., to Co Pharms Corporation s.r.l. Compounds endowed with immunomodulating activity. 4,567,182, Cl. 514-262.000.

Feuring, Kurt: *See—*
Popp, Franz-Wolfgang; and Feuring, Kurt, 4,567,014, Cl. 376-272.000.

Fiberglas Canada Inc.: *See—*
Blackmore, Phillip W.; Fletcher, William T.; and Burn, Terry B., 4,567,078, Cl. 428-119.000.

Fiberite Corporation: *See—*
Levin, Jordan, 4,567,094, Cl. 428-256.000.

Fickert, Werner: *See—*
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Fierens, Gustaaf E. M.: *See—*
Goossens, Urbanus P. M.; and Fierens, Gustaaf E. M., 4,567,327, Cl. 179-115.50R.

Filshtinsky, Michael: *See—*
Story, Arthur L.; and Filshtinsky, Michael, 4,566,545, Cl. 175-226.000.

Findeis, Gunter: *See—*
Fursich, Manfred; Treiber, Helmut; Fergg, Berthold; Findeis, Gunter; and Zahn, Wolfgang, 4,566,786, Cl. 355-77.000.

Fink, Roland; and Klingenstein, Walter, to Oskar Frech GmbH and Co. Hot chamber die casting machine. 4,566,522, Cl. 164-316.000.

Finley, Richard O., to Plastiflex Company International. Lightweight current-carrying hose. 4,567,319, Cl. 174-47.000.

Finn, Edward F.: *See—*
Bozarth, Theodore B.; Demark, Anthony M.; Finn, Edward F.; and Lynch, Frank, 4,567,466, Cl. 340-347.0AD.

Fiori, Robert: *See—*
Dubost, Rene ; Fiori, Robert; and Seyfried, Philippe, 4,566,361, Cl. 83-454.000.

Firestone Tire & Rubber Company, The: *See—*
Oberster, Arthur E.; and Vicic, John C., 4,567,211, Cl. 521-98.000.

Firth, Milton D. Garden pest barrier. 4,566,219, Cl. 43-107.000.

Firth, William C., Jr., to Union Camp Corporation. Method and media for stimulating growth in foliage plants. 4,566,896, Cl. 71-24.000.

Fischer, Joachim: *See—*
Badenhop, Charles T.; and Fischer, Joachim, 4,567,009, Cl. 264-41.000.

Fisher, Curt: *See—*
Honekman, Robert D.; and Fisher, Curt, 4,567,461, Cl. 340-323.00R.

Fitzwater, Edwin, to Regina Corporation. Cam latch for cleaning devices. 4,566,149, Cl. 15-320.000.

Fives-Cail Babcock: *See—*
Georget, Jean-Pierre, 4,566,165, Cl. 29-121.600.

Flanigen, Edith M.: *See—*
Wilson, Stephen T.; and Flanigen, Edith M., 4,567,029, Cl. 423-306.000.

Flautt, Martin C.: *See—*
Pollet, Jean-Claude; Armstrong, Gordon P.; and Flautt, Martin C., 4,567,102, Cl. 428-391.000.

Fleissner, Gerold, to Vepa Aktiengesellschaft. Apparatus for hooping a fiber bale in a fiber bale press. 4,566,378, Cl. 100-26.000.

Fleming, David L.: *See—*
Gershenson, Meir; Sweeny, Mark F.; Long, Dennis D.; and Fleming, David L., 4,567,438, Cl. 324-248.000.

Fleming, William J.; and Raceu, Dumitru, to TRW Inc. Noncontact torque sensor. 4,566,338, Cl. 73-862.360.

Fletcher, William T.: *See—*
Blackmore, Phillip W.; Fletcher, William T.; and Burn, Terry B., 4,567,078, Cl. 428-119.000.

Flink, Claes H., to Aktiebolaget IRO. Pressure medium driven machine tool. 4,566,849, Cl. 415-92.000.

Flood, William S.: *See—*
Goldberg, David A.; Flood, William S.; Arthur, Allan A.; and Voelker, Ferdinand, 4,567,452, Cl. 332-7.000.

Flotow, Richard A.; and Tennant, William M., to Dana Corporation. Clutch with a piloted and spring loaded driven disc hub. 4,566,572, Cl. 192-70.120.

Flugan, David, to General Electric Company. Ballast circuit having electromagnetic interference (EMI) reducing means for an improved lighting unit. 4,567,404, Cl. 315-205.000.

FMC Corporation: *See—*
Villa, Ferruccio; and Castelli, Fabio, 4,566,599, Cl. 212-160.000.

Foch, Henri; and Roux, Jacques, to Agence Nationale pour la Valorisation et la Recherche (A.N.V.A.R.). Static semi-conductor electrical energy converter assembly. 4,567,553, Cl. 363-98.000.

Fogarty, Terence M., to Mentor Corporation. Penile prosthesis device. 4,566,446, Cl. 128-79.000.

Foglia, Vincent: *See—*
Minier, Jean; Barthelemy, Herve ; and Foglia, Vincent, 4,566,824, Cl. 405-202.000.

Folger, Josef; Fournell, Hans-Dieter; Hein, Hans-Rudolf; Kapfhammer, Karl; Rambock, Josef; and Weber, Michael, to Bayerische Motoren Werke Aktiengesellschaft. Transmission method for variable measured values from vehicle wheels utilizing ambient temperature compensation. 4,567,459, Cl. 340-58.000.

Fontenot, John E., Jr.: *See—*
Rao, M. Vikram; and Fontenot, John E., Jr., 4,566,318, Cl. 73-151.000.

Force, Louis W. Methane - carbon dioxide scrubbing method and system. 4,566,278, Cl. 60-618.000.

Ford Aerospace & Communications Corporation: *See—*
Buczek, Carl J., 4,566,788, Cl. 356-4.000.
Sobczak, Isidore F.; Cleveland, William C., Jr.; and Pons, Robert L., 4,566,432, Cl. 126-438.000.

Foret S.A.: *See—*
Ochoa, Victor M.; and Pueyo, Ricardo, 4,566,998, Cl. 260-369.000.

Fors, Henry, to Forss Union AB. Arrangement in display and storage racks. 4,566,598, Cl. 211-96.000.

Fors, Jan: *See—*
Eklund, Vidar; Ekman, Kurt; Turunen, Olli; Huttunen, Jouko; Selin, Johan-Fredrik; and Fors, Jan, 4,567,255, Cl. 536-30.000.

Forss Union AB: *See—*
Fors, Henry, 4,566,598, Cl. 211-96.000.

Forster, Karl-Heinz: *See—*
Tappert, Hans-Jurgen; Naumann, Johannes; Forster, Karl-Heinz; Doliner, Herbert; Pieper, Fritz; Frenzel, Werner; and Schanze, Klaus, 4,566,385, Cl. 101-183.000.

Foulon, Bernard M.: *See—*
Bernard, Alain M.; Le Clerc, Georges-Marie J.; and Foulon, Bernard M., 4,566,328, Cl. 73-517.00B.

Fourcadier, Chantal: *See—*
Grollier, Jean F.; and Fourcadier, Chantal, 4,566,875, Cl. 8-406.000.

Fournell, Hans-Dieter: *See—*
Folger, Josef; Fournell, Hans-Dieter; Hein, Hans-Rudolf; Kapfhammer, Karl; Rambock, Josef; and Weber, Michael, 4,567,459, Cl. 340-58.000.

Fournier, Eugene, to Sovonics Solar Systems. Apparatus for microwave glow discharge deposition. 4,566,403, Cl. 118-718.000.

Fowler, David P.: *See—*
Baker, John E.; and Fowler, David P., 4,567,051, Cl. 426-438.000.

Fox, Daniel W.; and Shafer, Sheldon J., to General Electric Company. Melt preparation of polyamide by amide ester interchange. 4,567,249, Cl. 528-347.000.

Fox, Mark A.: *See—*
Lewis, Edward L.; Parr, Jack E.; Fox, Mark A.; and Fuson, Robert L., 4,566,138, Cl. 623-22.000.

Framatome & Cie: *See—*
Cohen, Serge; and Nguyen, Gilbert H. K., 4,566,310, Cl. 73-9.000.

Francois, Daniel; and Mercey, Gilles, to La Calhene, Societe Anonyme. Actuator. 4,567,417, Cl. 318-632.000.

Franz Haas Waffelmaschinen Industriegesellschaft m.b.H.: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,567,049, Cl. 426-275.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef; and Oellerer, Friedrich, 4,566,389, Cl. 104-3.000.

Fredericks, Edward C.; Greenhaus, Herbert L.; Nanda, Madan M.; and Via, Giorgio G., to International Business Machines Corporation. Multi-level resist image reversal lithography process. 4,567,132, Cl. 430-312.000.

Freed, James C.: *See—*
Durst, Tony; Glinski-Oomen, Margaret B.; and Freed, James C., 4,567,253, Cl. 536-18.100.

French, Geoffrey R.; Peltret, Pierre H.; and Chalke, Brian J., to Lucas Industries public limited company. Engine systems. 4,566,271, Cl. 60-286.000.

Frenzel, Werner: *See—*
Tappert, Hans-Jurgen; Naumann, Johannes; Forster, Karl-Heinz; Doliner, Herbert; Pieper, Fritz; Frenzel, Werner; and Schanze, Klaus, 4,566,385, Cl. 101-183.000.

Fricker, Urs: *See—*
Martin, Henry; and Fricker, Urs, 4,566,901, Cl. 71-105.000.

Friederichs, Karl-Heinz; and Schlapkohl, Joachim, to Blohm & Voss AG. System for controlling the movement of an industrial manipulator. 4,567,415, Cl. 318-565.000.

Friedman, Harvey W.; Kohli, Jerry L.; and DeMur, Cynthia L., to Buxton, Inc. Folder with rewritable surface for checkbooks and the like. 4,566,721, Cl. 281-31.000.

Friedman, Robert H., to Texaco Inc. Method of recovering hydrocarbon from oil shale. 4,566,964, Cl. 208-8.0LE.

Friesner, Karl; Bege, Dietmar; Erbse, Dietmar; and Meininger, Siegfried, to Kraftwerk Union Aktiengesellschaft. Treating weak-to medium-active ion exchanger resins in a drying vessel. 4,566,204, Cl. 34-15.000.

Frisch, Herbert, to ENFO Grundlagenforschungs AG. Electropneumatic signal converter. 4,567,394, Cl. 310-330.000.

Frito-Lay, Inc.: *See—*
Baker, John E.; and Fowler, David P., 4,567,051, Cl. 426-438.000.

Frobose, James W., to Jasper Corporation, The. Upholstered seat for clean rooms. 4,566,735, Cl. 297-452.000.

Frosch, Werner, to Hollingsworth GmbH. Universal textile machine for optionally manufacturing longitudinally oriented or randomly oriented fibre fleeces. 4,566,153, Cl. 19-98.000.

Frulla, Floro F.; Stuber, Fred A.; and Whitman, Peter J., to Upjohn Co., The. Preparation of carbamates from organic carbonates and aromatic ureas. 4,567,287, Cl. 560-024.000.

Frykendahl, Bjorn. Casting nozzle. 4,566,614, Cl. 222-603.000.

Fuchizawa, Tetsuro: *See—*
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Fuchs, Uwe: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
Akisada, Masahide; Ookawa, Norio; and Takamura, Yuji, 4,566,767, Cl. 354-76.000.
Arakawa, Jun; and Watanabe, Toshiyuki, 4,567,135, Cl. 430-505.000.
Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, 4,567,371, Cl. 250-483.100.
Iwamoto, Shoji; and Kubota, Kazuo, 4,566,647, Cl. 242-67.10R.
Mazuyama, Kenichi; Okutu, Toshimitu; Miyoshi, Takahito; Ogawa, Hiroshi; Utumi, Masahiro; Fujiyama, Masaaki; and Tada, Sugihiko, 4,567,057, Cl. 427-48.000.
Miyoshi, Takahito; Okutu, Toshimitu; Utumi, Masahiro; and Fujiyama, Masaaki, 4,567,063, Cl. 427-128.000.
Ogata, Yasuhiro; and Maekawa, Masakazu, 4,567,496, Cl. 346-200.000.
Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, 4,567,497, Cl. 346-200.000.

Fuji Photo Optical Co., Ltd.: *See—*
Tsuchiya, Kazumichi, 4,567,526, Cl. 358-227.000.

Fuji Xerox Co., Ltd.: *See—*
Moriguchi, Haruhiko; Inui, Toshiharu; Hisatake, Masayuki; and Ohmori, Takashi, 4,567,488, Cl. 346-76.0PH.
Takenouchi, Mutsuo; Ozawa, Takashi; Hamano, Toshihisa; Itoh, Hisao; Fuse, Mario; and Nakamura, Takeshi, 4,567,374, Cl. 250-578.000.

Fujii, Hiroshi: *See—*
Hosogai, Setsuo; Fujii, Hiroshi; Tamaru, Shigemi; Terachi, Junichi; Takatsuka, Takuo; and Suhara, Hideo, 4,567,455, Cl. 335-16.000.

Fujii, Tadashi; and Hayakawa, Yoshinori, to Terumo Kabushiki Kaisha. Ultrasonic measurement method, and apparatus therefor. 4,566,330, Cl. 73-599.000.

Fujimura, Kazumasa: *See—*
Hattori, Satoru; Yazaki, Takao; Hattori, Kazuhide; Nishida, Koji; Hattori, Hideki; and Fujimura, Kazumasa, 4,567,089, Cl. 428-213.000.

Fujioka, Kazuyoshi, to Nissan Motor Co., Ltd. Clutch drum of automatic transmission. 4,566,571, Cl. 192-70.200.

Fujioka, Takafumi: *See—*
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,567,187, Cl. 514-312.000.

Fujisawa, Hideya: *See—*
Ninomiya, Masakazu; Fujisawa, Hideya; Omori, Norio; and Suzuki, Atsushi, 4,566,419, Cl. 123-489.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,567,275, Cl. 548-128.000.

Fujita, Takashi: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,566,897, Cl. 71-88.000.

Fujitsu Limited: *See—*
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Sato, Takuso; Ichida, Nobuyuki; and Miwa, Hirohide, 4,566,460, Cl. 128-660.000.
Yasuda, Yasushi; Enomoto, Hiromu; Shimauchi, Yoshiki; and Tahara, Akinori, 4,567,380, Cl. 307-290.000.
Yoshikawa, Kazuo; Yamaguchi, Hisashi; and Asano, Toru, 4,567,470, Cl. 340-365.00C.

Fujiyama, Masaaki: *See—*
Masuyama, Kenichi; Okutu, Toshimitu; Miyoshi, Takahito; Ogawa, Hiroshi; Utumi, Masahiro; Fujiyama, Masaaki; and Tada, Sugihiko, 4,567,057, Cl. 427-48.000.
Miyoshi, Takahito; Okutu, Toshimitu; Utumi, Masahiro; and Fujiyama, Masaaki, 4,567,063, Cl. 427-128.000.

Fukano, Sakuzo: *See—*
Kawamura, Jun; and Fukano, Sakuzo, 4,566,518, Cl. 164-53.000.

Fukuda, Hiroyuki; Shigeta, Masatomo; Kaji, Hisatsugu; and Saitoh, Kuniyuki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Carbonaceous, five-layer fuel cell electrode substrate with elongated holes for feeding reactant gases. 4,567,086, Cl. 428-166.000.

Fukuda, Satoru: *See—*
Mimura, Yoshiki; Arai, Tetsuji; and Fukuda, Satoru, 4,567,352, Cl. 219-405.000.

Fukuda, Takeshi, to Fujitsu Limited. Resistor structure in integrated injection logic. 4,567,501, Cl. 357-51.000.

Fukuda, Tatemi: *See—*
Miyazaki, Tsutomu; Fukuda, Tatemi; and Yoshimine, Kazuya, 4,566,263, Cl. 57-276.000.

Fulmer, John W., to General Electric Company. Process for preparing acetone and phenol. 4,567,304, Cl. 568-385.000.

Fulton Manufacturing Corporation: *See—*
Ebey, Edward; and Richter, Karl E., 4,566,674, Cl. 254-345.000.

Funakoshi, Yasunobu: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,566,897, Cl. 71-88.000.

Fung, Alexander P., to Dow Chemical Company, The. Liquid phase halogen exchange of (trichloromethyl) pyridines to (trifluoromethyl)-pyridines. 4,567,273, Cl. 546-345.000.

Fung, Alexander P.: *See—*
Gatlin, Janice E.; Van Dort, Mark A.; Wilson, Charles A.; and Fung, Alexander P., 4,567,274, Cl. 546-345.000.

Furrow, Roger W.; and Hartsell, Hal C., to Gilbarco Inc. Insertion tube liquid evacuator system for vapor recovery hose. 4,566,504, Cl. 141-59.000.

Fursich, Manfred; Treiber, Helmut; Fergg, Berthold; Findeis, Gunter; and Zahn, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Method of copying color exposures. 4,566,786, Cl. 355-77.000.

Furukawa, Hideaki, to Canon Kabushiki Kaisha. Remaining amount indicator. 4,566,547, Cl. 177-46.000.

Furukawa, Yoshimi; and Sano, Shoichi, to Honda Giken Kogyo Kabushiki Kaisha. Steering system for vehicles. 4,566,710, Cl. 280-91.000.

Furukawa, Yoshimi: *See—*
Koizumi, Yusuke; Furukawa, Yoshimi; and Sano, Shoichi, 4,566,711, Cl. 280-91.000.

Fuse, Mario: *See—*
Takenouchi, Mutsuo; Ozawa, Takashi; Hamano, Toshihisa; Itoh, Hisao; Fuse, Mario; and Nakamura, Takeshi, 4,567,374, Cl. 250-578.000.

Fusek, Richard L.; Harris, James S.; and Harding, Kevin G., to University of Dayton. Holographic optical processing method and apparatus. 4,566,757, Cl. 350-162.120.

Fuson, Robert L.: *See—*
Lewis, Edward L.; Parr, Jack E.; Fox, Mark A.; and Fuson, Robert L., 4,566,138, Cl. 623-22.000.

Fustier, Guy. Device for classifying handled objects. 4,566,595, Cl. 209-545.000.

G. A. Platon Limited: *See—*
Smart, Michael G., 4,566,337, Cl. 73-861.560.

G. D. Searle & Co.: *See—*
Chorvat, Robert J.; Prodan, Kathleen A.; and Schulz, John A., 4,567,270, Cl. 546-183.000.
Feilner, Peter J.; Lai, Mun F.; and Patel, Thakorbhai P., 4,567,189, Cl. 514-338.000.

G & J Industries, Inc.: *See—*
Arthur, Gregory L.; and Hunnicutt, Wayne E., 4,566,717, Cl. 280-701.000.

Gaa, Peter C.; and Dana, David E., to PPG Industries, Inc. Aqueous dispersion, internally silylated and dispersed polyurethane resins, and surfaces containing same. 4,567,228, Cl. 524-588.000.

GAF Corporation: *See—*
Canfield, V. Robert; Woodring, William J.; and Kubiak, Mira C., 4,567,079, Cl. 428-131.000.
Waxman, Burton H.; and Lin, I. Sioun, 4,567,035, Cl. 424-47.000.

Gajdos, Benedikt: *See—*
Durr, Manfred; Gajdos, Benedikt; Gneuss, Klaus-Dieter; Harhausen, Ekkehard; and Seidel, Jurgen, 4,567,202, Cl. 514-656.000.

Gajria, Chandrasen; and Ozari, Yehuda, to Celanese Corporation. Water-swellable crosslinked polymeric microgel particles and aqueous dispersions of organic film-forming resins containing the same. 4,567,246, Cl. 526-318.440.

Ganz, Josef: *See—*
Honegger, Heinz; and Ganz, Josef, 4,566,143, Cl. 14-16.500.

Gardner, Hugh C.: *See—*
Qureshi, Shahid; and Gardner, Hugh C., 4,567,216, Cl. 523-400.000.

Garner, John N., to Northern Telecom Limited. Manufacture of telecommunications cable core units. 4,566,264, Cl. 57-314.000.

Garthoff, Bernward: *See—*
Niemers, Ekkehard; Knorr, Andreas; and Garthoff, Bernward, 4,567,188, Cl. 514-332.000.

Garver, Christian J.: *See—*
Elliott, Kirk W.; Garver, Christian J.; Kayser, John P.; and Dombroski, Robert M., 4,566,560, Cl. 184-15.100.

Gasti-Verpackungsmachinen GmbH: *See—*
Turtschan, Alfons; and Drechsler, Herbert, 4,566,591, Cl. 206-427.000.

Gatlin, Janice E.; Van Dort, Mark A.; Wilson, Charles A.; and Fung, Alexander P., to Dow Chemical Company, The. Chlorine exchange for fluorine in 2-fluoropyridine compounds. 4,567,274, Cl. 546-345.000.

Gausepohl, Hermann: *See—*
Echte, Adolf; Gausepohl,. Hermann; Hambrecht, Juergen; and Gerberding, Karl, 4,567,232, Cl. 525-53.000.

Gauthier, Maurice, to Cofpa. Papermaker's fabric constituted by plastic spirals. 4,567,077, Cl. 428-114.000.

Gauthier, Michel: *See—*
Beau, Jean F.; and Gauthier, Michel, 4,566,740, Cl. 308-10.000.

Gavagan, James A.; and Brennan, William E., to Irvin Industries, Inc. End release inverse clevis buckle. 4,566,160, Cl. 24-637.000.

GCA Corporation: *See—*
Rosenthal, David, 4,567,361, Cl. 235-462.000.

Geary, Nelse, Sr. Bait casting device and method. 4,566,217, Cl. 43-19.000.

Gebelius, Sven R. V. Method for the manufacture of a conical tubular member. 4,566,300, Cl. 72-63.000.

Gebler, Eugen, to Bayerische Motoren Werke AG. Testing device apparatus and method for tire pressure of automotive vehicle wheels. 4,567,460, Cl. 340-58.000.

Gehret, Jean-Claude; and Traber, Walter, to Ciba-Geigy Corporation. Pesticidal phenylhydrazonopyrrolidines. 4,567,190, Cl. 514-343.000.

Geist, Michael: *See—*
Ott, Gunther; Dobbelstein, Arnold; Geist, Michael; Schon, Georg; and Ahlers, Klaas, 4,566,963, Cl. 204-181.700.

Geisthoff, Hubert, to Jean Walterscheid GmbH. Overload clutch. 4,566,570, Cl. 192-56.00R.

Gelbart, Daniel. Optical tape recorder using linear scanning. 4,567,585, Cl. 369-97.000.

Gendron, Wilfred H., to Westvaco Corporation. Tamper detection envelope. 4,566,627, Cl. 229-81.000.

General Company Limited: *See—*
Ohtsu, Tadatoshi; and Yamahata, Takashi, 4,567,113, Cl. 428-480.000.

General Dynamics Pomona Division: *See—*
Maudal, Inge; Niemeier, Byron M.; and Wedertz, Larry D., 4,566,656, Cl. 244-3.110.

General Electric Company: *See—*
Aloi, Anthony J.; Brooks, George D.; and Prince, Ronald E., 4,566,580, Cl. 193-48.000.
Bloomer, Milton D., 4,567,425, Cl. 323-237.000.
Flugan, David, 4,567,404, Cl. 315-205.000.
Fox, Daniel W.; and Shafer, Sheldon J., 4,567,249, Cl. 528-347.000.
Fulmer, John W., 4,567,304, Cl. 568-385.000.
Giles, Harold F., Jr., 4,567,105, Cl. 428-412.000.
Liu, Nan-I; and van der Meer, Roelof, 4,566,990, Cl. 252-503.000.
McVey, Charles I., 4,567,396, Cl. 313-25.000.

General Motors Corporation: *See—*
Graham, Donald E., 4,567,412, Cl. 318-483.000.
Wicke, Brian G., 4,566,565, Cl. 188-322.210.

General Pneumatics Corporation: *See—*
Halavais, Richard A., 4,566,291, Cl. 62-402.000.
Halavais, Richard A., 4,566,862, Cl. 417-189.000.

General Signal Corporation: *See—*
Salzman, Ronald N., 4,566,801, Cl. 366-343.000.

Georget, Jean-Pierre, to Fives-Cail Babcock. Method of manufacturing a cylinder for a sugar mill. 4,566,165, Cl. 29-121.600.

Geotechnical Digital Systems Limited: *See—*
Menzies, Bruce K., 4,566,868, Cl. 417-572.000.

Gerberding, Karl: *See—*
Echte, Adolf; Gausepohl, Hermann; Hambrecht, Juergen; and Gerberding, Karl, 4,567,232, Cl. 525-53.000.

Gerich, Josef: *See—*
Schulze, Werner; Gerich, Josef; Scheef, Emil; and Dautel, Heinz, 4,566,723, Cl. 285-86.000.

German, John G.; Benjamin, Abraham; and Stirling, James F., to Canadian Patents & Development Ltd. Societe Canadienne des Brevets et d'Exploitation Limited. Navigational aid alerting system. 4,566,336, Cl. 73-772.000.

Gershenson, Meir; Sweeny, Mark F.; Long, Dennis D.; and Fleming, David L., to Sperry Corporation. SQUID Canister with conical coupling cavity. 4,567,438, Cl. 324-248.000.

Gerster, John F., to Riker Laboratories, Inc. Intermediates for the preparation of 6,7-dihydro-8-(imidazol-1-yl)-5-methyl-1-oxo-1H,5H-benzo[ij]quinolizine-2-carboxylic acids. 4,567,269, Cl. 546-167.000.

Geschwind, Gary I.: *See—*
Bloom, William G.; and Geschwind, Gary I., 4,566,183, Cl. 29-825.000.

Gey, Mathias; Grote, Jurgen; Pittel, Horst; Samol, Gerd W.; and Zelt, Rainer, to Metzeler Kautschuk GmbH. Floor covering, especially for airplanes. 4,567,085, Cl. 428-163.000.

Geyer, Gerhard: *See—*
Bauer, Otto; Eberl, Lernhard; Geyer, Gerhard; and Straubel, Max, 4,566,421, Cl. 123-502.000.

Ghibely, Bruno, to Esco Metallwaren Martin Huhnken. Striking apparatus for fasteners. 4,566,622, Cl. 227-120.000.

Ghyczy, Miklos: *See—*
Posanski, Ulrich; Ghyczy, Miklos; Bauer, Kurt-Heinz; and Wendel, Armin, 4,567,161, Cl. 514-23.000.

Giachetti, Antonio: *See—*
Eberlein, Wolfgang; Trummlitz, Gunter; Engel, Wolfhard; Schmidt, Gunther; Hammer, Rudolf; and Giachetti, Antonio, 4,567,178, Cl. 514-215.000.

Gianelos, James: *See—*
Arner, Russell E.; Emrich, Ronald J.; Gianelos, James; and Haynes, Marlon L., 4,566,293, Cl. 62-514.00R.

Gibaud, Michel: *See—*
Lecomte, Daniel; and Gibaud, Michel, 4,567,589, Cl. 370-58.000.

Giebeler, James F. Pressure balanced ball valve. 4,566,672, Cl. 251-192.000.

Giess, Jean: *See—*
Irvine, Stuart J. C.; Mullin, John B.; and Giess, Jean, 4,566,918, Cl. 148-175.000.

Gigante, Sergio, to Danieli & C. Officine Meccaniche S.p.A. Device to bundle rolled bars or rolled sections. 4,566,833, Cl. 414-30.000.

Gigli, Mauro: *See—*
de Castiglione, Roberto ; Perseo, Giuseppe; Gigli, Mauro; and Hecht, Barbara, 4,567,162, Cl. 514-16.000.

Gilbarco Inc.: *See—*
Furrow, Roger W.; and Hartsell, Hal C., 4,566,504, Cl. 141-59.000.

Giles, Harold F., Jr., to General Electric Company. Multilayer polycarbonate article. 4,567,105, Cl. 428-412.000.

Gilliom, Laura R.: *See—*
Grubbs, Robert H.; and Gilliom, Laura R., 4,567,244, Cl. 526-160.000.

Gilmore, Arthur H.: *See—*
Alie, Enrique; Gilmore, Arthur H.; and Mack, Henry J., Jr., 4,567,547, Cl. 362-154.000.

Gilmour, Alexander, to Venture Technology Limited. Insulating seal for electrochemical cells. 4,567,121, Cl. 429-181.000.

Gindy, Sherif: *See—*
Amlani, Kish; and Gindy, Sherif, 4,567,377, Cl. 307-112.000.

Gingras, Richard E., to United Technologies Corporation. Jet engine removable support assembly. 4,566,269, Cl. 60-226.100.

Githens, Charles J., to Githens, Charles J. Stable mixture of crosslinkable components promptly activatable as acting treating agents. 4,566,979, Cl. 252-8.55C.

Givaudan Corporation: *See—*
Lamparsky, Dietmar; and Kaiser, Roman, 4,567,291, Cl. 560-225.000.

Glass, Erich; and Heynisch, Hinrich. Fast-heating cathode. 4,567,071, Cl. 428-35.000.

Glenn, W. K., III: *See—*
Jones, John E.; and Glenn, W. K., III, 4,566,884, Cl. 55-357.000.

Gliemeroth, Georg; Speit, Burkhard; and Krolla, Hans-Georg, to Schott-Glaswerke. Scintillation glass. 4,566,987, Cl. 252-301.40F.

Glinski-Oomen, Margaret B.: *See—*
Durst, Tony; Glinski-Oomen, Margaret B.; and Freed, James C., 4,567,253, Cl. 536-18.100.

Gneuss, Klaus-Dieter: *See—*
Durr, Manfred; Gajdos, Benedikt; Gneuss, Klaus-Dieter; Harhausen, Ekkehard; and Seidel, Jurgen, 4,567,202, Cl. 514-656.000.

Goetchius, Ronald J.: *See—*
Collins, Michael J.; and Goetchius, Ronald J., 4,566,312, Cl. 73-32.00A.

Going, Walter S., III, to Camco, Incorporated. Solenoid actuated well safety valve. 4,566,534, Cl. 166-66.400.

Goldberg, David A.; Flood, William S.; Arthur, Allan A.; and Voelker, Ferdinand, to United States of America, Energy. Broad-band beam buncher. 4,567,452, Cl. 332-7.000.

Goldman, Michael B.; and Price, Frederick, to Wessel Company, The. Booklet with detachable envelope. 4,566,720, Cl. 281-15.00R.

Goldsmith, Herbert, to Pacific Scientific Company. Fluid sample cell comprising Fresnel sectors. 4,566,791, Cl. 356-246.000.

Goldthorp, David C.: *See—*
Embree, David M.; Goldthorp, David C.; Longenecker, Howard H.; and Vogelpohl, David R., 4,567,333, Cl. 179-84.00T.

Goldwasser, David J.; and Oertel, Richard W., III, to Upjohn Co., The. Novel polymer blends. 4,567,236, Cl. 525-127.000.

Gooden, Richmond A., to United Aircraft Products, Inc. Pressure operated shuttle valve. 4,566,530, Cl. 165-36.000.

Gooding, Elwyn R. Inflatable baffled liner for protective headgear and other protective equipment. 4,566,137, Cl. 2-413.000.

Goodman, Alvin M., to RCA Corporation. Method for revealing semiconductor surface damage using surface photovoltage (SPV) measurements. 4,567,431, Cl. 324-158.00R.

Goodnough, Mark A., to Santa Barbara Research Center. Switched capacitor transresistance amplifier. 4,567,363, Cl. 250-214.00A.

Goodyear Aerospace Corporation: *See—*
Turner, Patrick E., 4,566,237, Cl. 52-269.000.

Goodyear Tire & Rubber Company, The: *See—*
Brandyberry, Dennis R.; and Rye, Grover W., 4,566,261, Cl. 57-212.000.

Goossens, Urbanus P. M.; and Fierens, Gustaaf E. M., to U.S. Philips Corporation. Flat-diaphragm transducer and method of manufacturing such a transducer. 4,567,327, Cl. 179-115.50R.

Gorlov, Viktor M.; Kiselev, Evgeny I.; Levin, Alexandr G.; Kutovoi, Valentin I.; Tverezy, Jury F.; and Spivak, Igor V., to Donetsky Nauchno-Issledovatelsky Ugolny Institut. Angle scraper chain face conveyor. 4,566,587, Cl. 198-732.000.

Gossler, Werner; Strube, Anneliese; and Zurheide, Manfred, to International Business Machines Corporation. Gate insulation layer and method of producing such a structure. 4,566,173, Cl. 29-571.000.

Goto, Eiichi; and Ohta, Hiroshi, to Rikagaku Kenkyusho. Fluxoid type superconducting logic element. 4,567,383, Cl. 307-415.000.

Goto, Jiro: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,567,275, Cl. 548-128.000.

Goto, Kunifumi; Sugiura, Manabu; and Suzuki, Shinichi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Rotary compressor operable under a partial delivery capacity. 4,566,863, Cl. 417-295.000.

Goto, Sumio: *See—*
Sakuma, Kuniharu; and Goto, Sumio, 4,566,396, Cl. 112-302.000.

Gottlieb Guhring: *See—*
Reinauer, Josef, 4,566,828, Cl. 407-48.000.

Gottling, Helmut: *See—*
Brausfeld, Walter; Gottling, Helmut; Moller, Rudolf; Muller, Peter; and Scharnowski, Gerhard, 4,566,196, Cl. 33-125.00R.

Gottzein, Eveline: *See—*
Bittner, Helmut; Gottzein, Eveline; and Surauer, Michael, 4,567,564, Cl. 364-434.000.

Goudsche Machinefabriek B.V.: *See—*
van der Schoot, Peter W. C., 4,566,375, Cl. 99-348.000.

Graham, Charles R.: *See—*
Wrobleski, James T.; Edwards, James W.; Graham, Charles R.; Keppel, Robert A.; and Raffelson, Harold, 4,567,158, Cl. 502-209.000.

Graham, Donald E., to General Motors Corporation. Automatic wiper actuator for a vehicle window. 4,567,412, Cl. 318-483.000.

Graham, John A. Rotatable platforms. 4,566,405, Cl. 119-14.040.

Grain Processing Corporation: *See—*
Hubbard, E. Daniel; Harvey, Richard D.; and Hogen, Mark L., 4,566,910, Cl. 127-70.000.

Granatstein, Victor L.: *See—*
Barnett, Larry R.; Lau, Yue-Ying; Chu, Kwo R.; and Granatstein, Victor L., 4,567,401, Cl. 315-5.000.

Granberg, Bengt: *See—*
Eriksson, Stig; Granberg, Bengt; and Westberg, Erik, 4,566,741, Cl. 312-194.000.

Grapha-Holding Aktiengesellschaft: *See—*
Linder, Heinz, 4,566,582, Cl. 198-367.000.

Graphic Controls Corporation: *See—*
Lawton, William R., 4,567,019, Cl. 422-57.000.

Grau, Werner: *See—*
Lehner, August; Kopke, Helmut; Roller, Hermann; Balz, Werner; Grau, Werner; Koester, Eberhard; and Sommermann, Friedrich, 4,567,108, Cl. 428-425.900.

Graves, Victoria, to Exxon Research & Engineering Co. Polymerization catalyst comprising copulverized solid magnesium compound and solid halide of scandium. 4,567,153, Cl. 502-113.000.

Gray, James S.; Chamberlin, James W.; McBride, Alan L.; and Schreiner, Peter G., III. Digital audio satellite transmission system. 4,567,591, Cl. 370-109.000.

Great Lakes Chemical Corporation: *See—*
Petiet, Thomas J., 4,567,218, Cl. 524-373.000.

Green, David T.; and Aranyi, Ernie, to United States Surgical Corporation. Articulated surgical fastener applying apparatus. 4,566,620, Cl. 227-19.000.

Greene, Lindsey C.: *See—*
De Witt, Nick; and Greene, Lindsey C., 4,566,714, Cl. 280-404.000.

Greenhaus, Herbert L.: *See—*
Fredericks, Edward C.; Greenhaus, Herbert L.; Nanda, Madan M.; and Via, Giorgio G., 4,567,132, Cl. 430-312.000.

Greenwood, Arthur R., to UOP Inc. Apparatus for facilitating sampling of particulate matter passing from one treatment zone to another. 4,567,022, Cl. 422-144.000.

Greenwood, Arthur R.; Burgard, Jeffrey E.; and Throndson, Roger L., to UOP Inc. Multiple-stage reactor system for a moving catalyst bed. 4,567,023, Cl. 422-192.000.

Greenwood, John C., to International Standard Electric Corporation. Resonator having optical feedback coupling. 4,567,451, Cl. 331-155.000.

Gregory, Francis J.: *See—*
Wei, Peter H. L.; and Gregory, Francis J., 4,567,267, Cl. 546-114.000.

Gregusa, Pal, to Budapesti Muszaki Egyetem. Panoramic imaging block for three-dimensional space. 4,566,763, Cl. 350-441.000.

Greiner, Waldemar H.: *See—*
Arnoldt, Peter J.; and Greiner, Waldemar H., 4,566,724, Cl. 285-364.000.

GRETAG Aktiengesellschaft: *See—*
Kunz, Rino E., 4,567,362, Cl. 250-201.000.

Griffiths, Anthony C. M., to Hyman International Limited. Production of foams. 4,567,008, Cl. 264-40.500.

Griffiths, Thomas W., to Harvey Hubbell Incorporated. High speed trolley harp assembly. 4,567,335, Cl. 191-59.100.

Grigo, Ulrich; Kohler, Karl-Heinz; Binsack, Rudolf; Morbitzer, Leo; Merten, Josef; Trabert, Ludwig; and Heitz, Walter, to Bayer Aktiengesellschaft. Elastomeric block copolyamides. 4,567,226, Cl. 524-538.000.

Grimmer, Johannes; and Horn, Hans C., to BASF Aktiengesellschaft. Purification of riboflavin. 4,567,262, Cl. 544-251.000.

Groen, Robertus W. C.; de Jonge, Cornelis A. M.; Schwartz, Lawrence M.; and van Lier, Johannes C., to U.S. Philips Corporation. Apparatus for reading a disc-shaped record carrier. 4,567,534, Cl. 358-342.000.

Groll, Hartmut. Tile block. 4,566,235, Cl. 52-220.000.

Grollier, Jean F.; and Fourcadier, Chantal, to L'Oreal. Two-stage process for dyeing keratin fibres and composition for use therein. 4,566,875, Cl. 8-406.000.

Grosscurt, Arnoldus C.: *See—*
Brouwer, Marius S.; and Grosscurt, Arnoldus C., 4,567,295, Cl. 564-44.000.

Grossman, Matthew: *See—*
Faber, Marcel; Bernstein, Jerome D.; and Grossman, Matthew, 4,567,145, Cl. 435-161.000.

Grote, Jurgen: *See—*
Gey, Mathias; Grote, Jurgen; Pittel, Horst; Samol, Gerd W.; and Zelt, Rainer, 4,567,085, Cl. 428-163.000.

Groth, John P., to Andersen Corporation. Shock absorbent dunnage device. 4,566,831, Cl. 410-117.000.

Grove, Michael M.: *See—*
Bateman, Charles D.; Grove, Michael M.; Noland, Lyle J.; and Ward, Wallace E., 4,567,483, Cl. 340-970.000.

Grove Valve and Regulator Company: *See—*
Chow, Peter C. M.; and Connolly, Walter L., 4,566,488, Cl. 137-613.000.

Grow, Harlow B. Span loaded flying wing control. 4,566,657, Cl. 244-90.00A.

Grubbs, Robert H.; and Gilliom, Laura R., to California Institute of Technology. Ring opening polymerization of mono-olefin ring compounds. 4,567,244, Cl. 526-160.000.

Gruetzmacher, Gordon D., to Pfizer Inc. Indigoid dyes. 4,567,048, Cl. 426-250.000.

Gruhler, Siegfried; and Wolf, Michael, to Societe Anonyme des Ets. Pierre Roch. Sliding caliper. 4,566,199, Cl. 33-143.00M.

Grzina, Anthony, to Warman International Limited. Pump. 4,566,850, Cl. 415-128.000.

GTE Business Communication Systems, Inc.: *See—*
Smith, Louis W.; and Caapo, Janos I., 4,567,324, Cl. 179-27.0FH.

GTE Laboratories Incorporated: *See—*
Bencuya, Izak; and Cogan, Adrian I., 4,566,172, Cl. 29-571.000.
Carlsen, W. John; and Melman, Paul, 4,566,761, Cl. 350-401.000.

Guerrier, Claude: *See—*
Catrain, Yves; Guerrier, Claude; and Revol, Jacques, 4,567,092, Cl. 428-246.000.

Gur Optics and Systems, Ltd.: *See—*
Gur, Yehoshua, 4,566,766, Cl. 353-122.000.

Gur, Yehoshua, to Gur Optics and Systems, Ltd. Image transmission devices. 4,566,766, Cl. 353-122.000.

Gussis, Gene L., to Atlantic Richfield Co. Heavy oil recovery. 4,566,537, Cl. 166-261.000.

Gustafson, John A.; and Dahlstrom, D. Richard, to Dahlstrom Display, Inc. Modular display unit. 4,566,211, Cl. 40-605.000.

Gysling, Walter, to National Computer Systems. Automatic sheet feed mechanism. 4,566,684, Cl. 271-117.000.

Haage, Hans-Jurgen: *See—*
Panoch, Hans J.; Feldmann, Rainer; Hinn, Hans; Brandt, Siegfried; and Haage, Hans-Jurgen, 4,566,931, Cl. 156-330.900.

Haak, Frederik W., to Shell Oil Company. Gas liquefaction process. 4,566,885, Cl. 62-9.000.

Haas, Charles J.: *See—*
Bartlett, Robert L.; Haas, Charles J.; and Legler, John G., 4,566,510, Cl. 144-1.00C.

Haas, Daniel D., to Eastman Kodak Company. Method for calibrating a reflectometer containing black and white references displaced from the sample position. 4,566,798, Cl. 356-448.000.

Haas, Franz, Jr.: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,567,049, Cl. 426-275.000.

Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, to Franz Haas Waffelmaschinen Industriegesellschaft m.b.H. Process and apparatus for producing filled wafer blocks. 4,567,049, Cl. 426-275.000.

Haas, Johann: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,567,049, Cl. 426-275.000.

Habeeb, Jacob J.; and Coupland, Keith, to Exxon Research and Engineering Co. Metal dithiobenzoates as lubricant additives. 4,566,982, Cl. 252-33.600.

Haberl, Karl; and Resch, Klaus, to Schmidle & Fitz, Film-Gerate-Verleih. Support wheel for a camera dolly. 4,566,391, Cl. 105-215.00R.

Hacker, Jay P.: *See—*
Hoffman, Lawrence A.; Hacker, Jay P.; and Miller, William M., 4,566,552, Cl. 180-69.210.

Hackleman, David E.; Adams, Richard F.; and Richling, Wayne P., to Hewlett-Packard Company. Use of an electronic vernier for evaluation of alignment in semiconductor processing. 4,566,193, Cl. 33-1.00D.

Haegh, Gerd S.: *See—*
Blindheim, Ulf; Haegh, Gerd S.; and Nilsen, Bjorn P., 4,567,313, Cl. 585-480.000.

Hagenbach, Germain; Maldonado, Paul; and Maurice, Jacques, to Elf France. Process for preparing bitumen-polymer compositions, application to these compositions of the obtention of coverings and mother solution of polymer usable for the obtention of the said compositions. 4,567,222, Cl. 524-476.000.

Hahnke, Manfred: *See—*
Buhler, Ulrich; Tappe, Horst; Bode, Albert; Hahnke, Manfred; and Roth, Kurt, 4,567,252, Cl. 534-882.000.

Haino, Kozo: *See—*
Emoto, Kazuhiro; and Haino, Kozo, 4,567,126, Cl. 430-59.000.

Halavais, Richard A., to General Pneumatics Corporation. Closed cycle cryogenic cooling apparatus. 4,566,291, Cl. 62-402.000.

Halavais, Richard A., to General Pneumatics Corporation. Fluid apparatus and methods, as for inflating inflatable structures. 4,566,862, Cl. 417-189.000.

Hale, Gilbert L.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,566,394, Cl. 110-347.000.

Hall, John H., to Micro Power Systems, Inc. Method of forming localized epitaxy and devices formed therein. 4,566,914, Cl. 148-1.500.

Halliburton Company: *See—*
Bomgardner, Charles T., 4,566,701, Cl. 277-58.000.
Stromberg, James L., 4,566,168, Cl. 29-517.000.

Hamaguchi, Iwao: *See—*
Hayashi, Yutaka; Hamaguchi, Iwao; and Kobayashi, Kiyohiko, 4,567,061, Cl. 427-93.000.

Hamano, Toshihisa: *See—*
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Hameister, Rolf: *See—*
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Hammann, Ingeborg: *See—*
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Hammer, Hans: *See—*
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Eberlein, Wolfgang; Trummlitz, Gunter; Engel, Wolfhard; Schmidt, Gunther; Hammer, Rudolf; and Giachetti, Antonio, 4,567,178, Cl. 514-215.000.

Hammon, Gordon R.: *See—*
Dolsen, Philip C.; Chandra, Satish; Hammon, Gordon R.; and Uren, William J., 4,567,482, Cl. 340-825.050.

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Harding, Kevin G.: *See—*
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Cohen, Paul; and Young, William R, 4,567,578, Cl. 365-189.000.
Curtin, Leonard E., 4,567,330, Cl. 179-17.00E.
Falater, Scott L.; and Beasom, James D., 4,567,385, Cl. 307-443.000.
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Harrison, George E.: *See—*
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Hartsell, Hal C.: *See—*
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Griffiths, Thomas W., 4,567,335, Cl. 191-59.100.
Neuroth, David H.; and Moscovici, Armand, 4,567,320, Cl. 174-103.000.

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Havstad, Harold R., to Hudson Oxygen Therapy Sales Co. Percussor subassembly for generating gas bursts. 4,566,441, Cl. 128-40.000.
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v Engelenburg, Hendrik; and Heemskerk, Rugerus S., 4,566,744, Cl. 339-8.00L.
Hefty, Arpad: *See*—
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Heijnemans, Werner A. L., to U.S. Philips Corporation. Projection screen. 4,566,756, Cl. 350-126.000.
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Held, Kurt. Window frame with laminated surfaces. 4,566,234, Cl. 52-209.000.
Held, Robert P., to Du Pont de Nemours, E. I., and Company. Process for image formation utilizing chemically soluble pigments. 4,567,129, Cl. 430-294.000.
Held, Robert P., to Du Pont de Nemours, E. I., and Company. Process for etching single photopolymer layer utilizing chemically soluble pigments. 4,567,130, Cl. 430-294.000.
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Helmle, Theodor; and Weber, Kurt, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co KG. Regulator circuit for vehicle air conditioner. 4,566,528, Cl. 165-26.000.
Hemmer, Valentine J., to Allied Corporation. Contact assembly for an electrical connector. 4,566,752, Cl. 339-262.00R.
Henn, Arthur R.: *See*—
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Henriott, Jay M., to Kimball International, Inc. Drawer slide clip. 4,566,743, Cl. 312-350.000.
Henry, Arnold W.; and Moser, Rabin, to Xerox Corporation. Heat and pressure fuser apparatus. 4,567,349, Cl. 219-216.000.
Henry, James W.; and Mumpower, Robert C., to Eastman Kodak Company. Method for continuously measuring the perimeter of wrapped objects of generally uniform cross-section. 4,567,372, Cl. 250-560.000.
Herb, Armin, to Hilti Aktiengesellschaft. Hand-held device for dispensing a multi-component substance. 4,566,610, Cl. 222-137.000.
Hergenrother, Paul M.; and Havens, Stephen J., to United States of America, National Aeronautics and Space Administration. Ethynyl terminated ester oligomers and polymers therefrom. 4,567,240, Cl. 525-328.100.
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Hermes, Julius, to Martin Processing, Inc. Apparatus for winding yarn. 4,566,645, Cl. 242-35.50R.
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Herota, Rosh N., to Tateyama, Tom; and K & H Distributors. Ratchet wrench assembly. 4,566,356, Cl. 81-62.000.
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Hertzler, Merle E., to RCA Corporation. Device for positioning and orienting kinescopes. 4,566,848, Cl. 414-749.000.
Herzog, Robert E.: *See*—
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Hackleman, David E.; Adams, Richard F.; and Richling, Wayne P., 4,566,193, Cl. 33-1.00D.
Haselby, Robert D.; Haugh, Samuel R.; and Stewart, Lowell J., 4,567,565, Cl. 364-520.000.
Leiby, Robert W., 4,567,462, Cl. 340-347.00P.
Taylor, Bret K., 4,567,494, Cl. 346-140.00R.
Heynisch, Hinrich, to Siemens Aktiengesellschaft. High-gain Klystrontetrode. 4,567,406, Cl. 315-5.330.
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Hickey, Christopher D. D., to Underwater Storage Limited. Underwater weapon systems. 4,566,367, Cl. 89-1.810.
Hiday, David R.; and Larsen, Charles G., to North American Philips Consumer Electronics Corp. Television receiver input circuit. 4,567,523, Cl. 358-191.100.
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Higuchi, Yoshiro: *See*—
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Iizuka, Kenichi; Uzuhashi, Hideo; Uneyama, Yoshihisa; Matuda, Michiya; and Kobayashi, Minoru, 4,566,289, Cl. 62-228.400.
Ishitani, Tohru; Tamura, Hifumi; and Shimase, Akira, 4,567,398, Cl. 313-362.100.
Iwatsuka, Nobuyoshi; Tomizawa, Fumio; Sato, Chikara; Ozaki, Norihiko; Ichikawa, Yoshiaki; and Sadakane, Kenichiro, 4,566,843, Cl. 414-680.000.
Koyama, Hiroshi; and Saito, Keiji, 4,566,299, Cl. 72-8.000.
Miyagi, Masahiro; Uehara, Katsuharu; Nozawa, Yoshio; and Deguchi, Takahiko, 4,566,359, Cl. 83-23.000.
Miyauchi, Tateoki; Hongo, Mikio; Mizukoshi, Katsuro; Yamaguchi, Hiroshi; and Shimase, Akira, 4,566,765, Cl. 350-619.000.
Nogami, Tadahiko; and Nishino, Tadashi, 4,566,954, Cl. 204-28.000.
Sakamoto, Masahide; and Shida, Masami, 4,566,420, Cl. 123-489.000.
Takemoto, Akinobu; Takeichi, Kenzo; Yabe, Yuhiko; and Yoshikawa, Yoshiaki, 4,567,418, Cl. 318-685.000.
Tohyama, Shigeo, 4,566,793, Cl. 356-319.000.
Umemura, Shinichiro; Katakura, Kageyoshi; and Ogawa, Toshio, 4,566,459, Cl. 128-660.000.
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Hockley, Peter J.; and Thwaites, Michael J., to British Petroleum Company p.l.c., The. Memory device. 4,567,499, Cl. 357-2.000.
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Mohr, Dieter, 4,566,959, Cl. 204-129.750.
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Schwierz, Peter P.; Rebhan, Adolf; and Moraw, Roland, 4,566,783, Cl. 355-14.0FU.
Sprintschnik, Gerhard; Niderstatter, Walter; and Stroszynski, Joachim, 4,566,952, Cl. 204-27.000.
Voelskow, Hartmut; and Schlingmann, Merten, 4,567,140, Cl. 435-42.000.
Hoffeins, Hans; Kalbfuss, Richard; and Ipek, Bora, to BBC Aktiengesellschaft Brown, Boveri & Cie. Multifuel burner. 4,566,268, Cl. 60-39.463.
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Hoffmann, Harald; Henrich, Gunter; and Waldhecker, Heinz-Dieter, to Klockner-Humboldt-Deutz AG. Filter for cleaning gases. 4,566,882, Cl. 55-100.000.
Hoffmeister, Lawrence D., to United States of America, Army. Composite tankage arrangement for liquid fuel expulsion. 4,566,609, Cl. 222-130.000.
Hofmeister, Helmut; Laurent, Henry; Annen, Klaus; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Process for the preparation of 17-haloethynyl steroids, and novel 17-haloethynyl steroids. 4,567,002, Cl. 260-397.400.
Hogen, Mark L.: *See*—
Hubbard, E. Daniel; Harvey, Richard D.; and Hogen, Mark L., 4,566,910, Cl. 127-70.000.
Hohmann, Hans: *See*—
Klein, Hans-Christof; and Hohmann, Hans, 4,566,805, Cl. 374-16.000.
Hojo, Yoshikata: *See*—
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,566,897, Cl. 71-88.000.
Holland Hitch Company: *See*—
Buckley, John T., 4,566,715, Cl. 280-434.000.
Hollaus, Reinhard; Zehetbauer, Rudolf; and Bednorz, Klaus, to Siemens Aktiengesellschaft. Solar cell module. 4,567,316, Cl. 136-246.000.
Hollingsworth GmbH: *See*—
Frosch, Werner, 4,566,153, Cl. 19-98.000.
Hollis Automation, Inc.: *See*—
Comerford, Matthias, 4,566,624, Cl. 228-180.100.
Holmes, Billy G., to Mobil Oil Corporation. Method for operating an injection well in an in-situ combustion oil recovery using oxygen. 4,566,536, Cl. 166-251.000.
Holz, Emil; and Hutzler, Hagen, to Hermann Finckh Maschinenfabrik GmbH & Co. Method of and apparatus for treating waste paper. 4,566,942, Cl. 162-4.000.
Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, to Ciba-Geigy Corporation. Water-soluble zinc and aluminium phthalocyanines and use thereof as photoactivators. 4,566,874, Cl. 8-103.000.
Homeyer, Bernhard: *See*—
Kruger, Bernd-Wieland; Riebel, Hans-Jochem; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,567,168, Cl. 514-89.000.
Hon, David T., to Hon Folder Development Ltd. Folding bicycle with releasable brace assembly. 4,566,713, Cl. 280-287.000.
Hon Folder Development Ltd.: *See*—
Hon, David T., 4,566,713, Cl. 280-287.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ban, Keisuke; and Ohashi, Yasuo, 4,566,519, Cl. 164-97.000.
Furukawa, Yoshimi; and Sano, Shoichi, 4,566,710, Cl. 280-91.000.
Koizumi, Yusuke; Furukawa, Yoshimi; and Sano, Shoichi, 4,566,711, Cl. 280-91.000.
Sano, Shoichi, 4,566,709, Cl. 280-91.000.
Tsuboi, Masaharu, 4,566,577, Cl. 192-85.0CA.
Honda, Haruhisa; Onoda, Shigeyoshi; and Nishino, Fumio, to Canon Kabushiki Kaisha. Process kit for image forming apparatus. 4,566,777, Cl. 355-3.00R.
Honda, Kazuhiko: *See*—
Kusakabe, Tetsuo; Sakai, Tetsuro; and Honda, Kazuhiko, 4,567,507, Cl. 358-11.000.
Honda, Keisuke: *See*—
Chubachi, Noriyoshi; Kushibiki, Junichi; and Nakanishi, Kouichi, 4,566,333, Cl. 73-642.000.
Honda, Takenobu: *See*—
Suzuki, Katsuhiko; and Honda, Takenobu, 4,566,562, Cl. 187-22.000.
Hone, Norbert; Horwege, Claus; and Rosenkranz, Otto, to Krupp Corpoplast Maschinenbau GmbH. Apparatus for making a parison for blowmolding of a hollow article. 4,566,871, Cl. 425-525.000.
Honegger, Heinz; and Ganz, Josef, to Honel Holding AG. Bridging system for expansion gaps. 4,566,143, Cl. 14-16.500.
Honekman, Robert D.; and Fisher, Curt, to Honekman, Robert D. Electronic dart game scoreboard. 4,567,461, Cl. 340-323.00R.
Honel Holding AG: *See*—
Honegger, Heinz; and Ganz, Josef, 4,566,143, Cl. 14-16.500.
Honeywell, Inc.: *See*—
Bohrer, Philip J., 4,566,320, Cl. 73-204.000.
Bozarth, Theodore B.; Demark, Anthony M.; Finn, Edward F.; and Lynch, Frank, 4,567,466, Cl. 340-347.0AD.
Hanse, Joel G., 4,566,794, Cl. 356-350.000.
Honeywell Information Systems Inc.: *See*—
Bashaw, Lawrence D., 4,567,593, Cl. 371-25.000.
Moffett, Richard C., 4,567,571, Cl. 364-900.000.
Hongo, Mikio: *See*—
Miyauchi, Tateoki; Hongo, Mikio; Mizukoshi, Katsuro; Yamaguchi, Hiroshi; and Shimase, Akira, 4,566,765, Cl. 350-619.000.
Hoover, Lonnie D.: *See*—
House, Roy F.; and Hoover, Lonnie D., 4,566,976, Cl. 252-8.50A.
Hopkins, Maxwell M.; and Miller, Arthur, to RCA Corporation. Method for fabricating a glass CRT panel. 4,566,893, Cl. 65-69.000.
Hoppin, Charles R.: *See*—
Tovrog, Benjamin S.; Hoppin, Charles R.; and Johnson, Bryce V., 4,567,155, Cl. 502-123.000.
Horgen, Floyd D. Golf club swing training method. 4,566,696, Cl. 273-193.00A.
Horn, Hans C.: *See*—
Grimmer, Johannes; and Horn, Hans C., 4,567,262, Cl. 544-251.000.
Hornbeck, Larry J., to Texas Instruments Incorporated. Spatial light modulator and method. 4,566,935, Cl. 156-626.000.
Horner, Peter: *See*—
Smuda, Siegfried; Horner, Peter; Kogel, Karl; and Zeitler, Peter, 4,566,673, Cl. 254-84.000.
Horodysky, Andrew G., to Mobil Oil Company. Fuels containing sulfurized organic acid diamine salts. 4,566,879, Cl. 44-71.000.
Horvath, Lorand: *See*—
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,566,797, Cl. 356-402.000.

Horwege, Claus: *See—*
Hone, Norbert; Horwege, Claus; and Rosenkranz, Otto, 4,566,871, Cl. 425-525.000.

Hoshi, Akira: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; Takahashi, Yoshimi; Hoshi, Akira; and Mizutani, Uichiro, 4,566,323, Cl. 73-295.000.

Hosogai, Setsuo; Fujii, Hiroshi; Tamaru, Shigemi; Terachi, Junichi; Takatsuka, Takuo; and Suhara, Hideo, to Mitsubishi Denki K.K. Circuit interrupter. 4,567,455, Cl. 335-16.000.

Hosono, Akira: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,566,897, Cl. 71-88.000.

Hospital Therapy Products, Inc.: *See—*
Roberts, Timothy J.; Roberts, Thomas J., Jr.; Roberts, Thomas J., Sr.; and Marinier, Robert P., Jr., 4,566,142, Cl. 4-604.000.

Hostler, Jonathan E.; and Beaver, Richard P., to PPG Industries, Inc. Self purging fin cooler. 4,566,890, Cl. 65-12.000.

House, Roy F.; and Hoover, Lonnie D., to NL Industries, Inc. Viscous heavy brines. 4,566,976, Cl. 252-8.50A.

Howell, William J.; and Hatchett, John D., to Motorola, Inc. FSK Modulator and method for NRZ data transmission utilizing PLL frequency synthesis. 4,567,603, Cl. 375-65.000.

Howells, Richard D., to Minnesota Mining and Manufacturing Company. Fluorochemicals and fibrous substrates treated therewith: compositions of cationic and non-ionic fluorochemicals. 4,566,981, Cl. 252-8.800.

HRI, Inc.: *See—*
Faber, Marcel; Bernstein, Jerome D.; and Grosaman, Matthew, 4,567,145, Cl. 435-161.000.

Hsieh, Harry W. S.: *See—*
Rizk, Sidky D.; Hsieh, Harry W. S.; and Mazzeo, Michael P., 4,567,107, Cl. 428-425.500.

Hubbard, E. Daniel; Harvey, Richard D.; and Hogen, Mark L., to Grain Processing Corporation. Starch phosphates and amphoteric starch phosphates. 4,566,910, Cl. 127-70.000.

Hubbard, Lincoln W. Dual oscillator method for detecting flaws in a moving chain. 4,567,437, Cl. 324-237.000.

Huber, Johann; and Lorenz, Lutz, to Uhde GmbH. Pipe joint construction for remotely controlled connection and disconnection. 4,566,722, Cl. 285-18.000.

Hubner, Erich: *See—*
Becker, Franz-Josef; Hubner, Erich; and Lammerich, Walter, 4,567,098, Cl. 428-327.000.

Hudson Oxygen Therapy Sales Co.: *See—*
Havstad, Harold R., 4,566,441, Cl. 128-40.000.

Huebner, David J.; and Saam, John C., to Dow Corning Corporation. Emulsions of reinforced polydiorganosiloxane latex. 4,567,231, Cl. 524-837.000.

Huggins, Thomas B.: *See—*
Raymond, Theodore E.; Huggins, Thomas B.; and Vining, George E., 4,566,835, Cl. 414-53.000.

Hughes Aircraft Company: *See—*
Lim, Hong S., 4,567,119, Cl. 429-59.000.

Hughes, H. Mervin, II: *See—*
Kramer, Robert W., 4,566,455, Cl. 128-380.000.

Hughes Tool Company - USA: *See—*
Sullivan, Eric C.; and Allford, Daniel W., 4,567,343, Cl. 219-74.000.

Huinink, Heinrich: *See—*
Mauk, Gerhard; and Huinink, Heinrich, 4,566,514, Cl. 152-209.00R.

Hulyer, Michael G., to U.S. Philips Corporation. Two-channel compatible television transmission system for wide picture formats. 4,567,508, Cl. 358-11.000.

Humes, Dennis W.: *See—*
Leopold, Wilbur R., Jr.; and Humes, Dennis W., 4,566,481, Cl. 137-296.000.

Hunnicutt, Wayne E.: *See—*
Arthur, Gregory L.; and Hunnicutt, Wayne E., 4,566,717, Cl. 280-701.000.

Husson, Alan L.: *See—*
Polis, Marjorie J.; and Husson, Alan L., 4,567,560, Cl. 364-184.000.

Huston, Roy E., Jr. Chord playing attachment for stringed musical instruments. 4,566,365, Cl. 84-317.000.

Hutton, Denis A.; and Millar, Malcolm H., to Interox Chemicals Limited. Granulation. 4,567,010, Cl. 264-117.000.

Huttunen, Jouko: *See—*
Eklund, Vidar; Ekman, Kurt; Turunen, Olli; Huttunen, Jouko; Selin, Johan-Fredrik; and Fors, Jan, 4,567,255, Cl. 536-30.000.

Hutzler, Hagen: *See—*
Holz, Emil; and Hutzler, Hagen, 4,566,942, Cl. 162-4.000.

Hwang, Edward F.: *See—*
Okamoto, Yoshiyuki; and Hwang, Edward F., 4,567,298, Cl. 564-215.000.

Hwang, Yu-Tang: *See—*
Pullukat, Thomas J.; Hwang, Yu-Tang; and Dombro, Robert A., 4,567,243, Cl. 526-128.000.

Hydril Company: *See—*
Roche, Joseph R., 4,566,494, Cl. 137-872.000.

Hygolet AG: *See—*
Hefty, Dipl.-Ing. B.; and Hefty, Arpad, 4,566,648, Cl. 242-67.30R.

Hyman International Limited: *See—*
Griffiths, Anthony C. M., 4,567,008, Cl. 264-40.500.

Hyman, Richard M. Air baffled hairbrush. 4,566,473, Cl. 132-120.000.

Hynes, Thomas G.: *See—*
Jelsma, Richard K.; Choi, Charles H.; and Hynes, Thomas G., 4,566,445, Cl. 128-70.000.

Ibau Barcelona, S.A.: *See—*
Klein-Albenhausen, Heinrich, 4,566,232, Cl. 52-195.000.

Ichida, Nobuyuki: *See—*
Sato, Takuso; Ichida, Nobuyuki; and Miwa, Hirohide, 4,566,460, Cl. 128-660.000.

Ichikawa, Yoshiaki: *See—*
Iwatsuka, Nobuyoshi; Tomizawa, Fumio; Sato, Chikara; Ozaki, Norihiko; Ichikawa, Yoshiaki; and Sadakane, Kenichiro, 4,566,843, Cl. 414-680.000.

Ichikawa, Yoshimitu: *See—*
Watanabe, Hideyuki; and Ichikawa, Yoshimitu, 4,566,252, Cl. 53-410.000.

Ihm, Werner: *See—*
Muller, Jurgen; and Ihm, Werner, 4,566,682, Cl. 271-90.000.

Iijima, Katsumi: *See—*
Yoshioka, Takatoshi; Kirihara, Seishin; Shiga, Masao; Iijima, Katsumi; Hisano, Katsukuni; and Kaneko, Ryoichi, 4,566,810, Cl. 384-280.000.

Iizuka, Akira: *See—*
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Yamauchi, Takashi; and Iizuka, Akira, 4,567,293, Cl. 562-496.000.

Iizuka, Kenichi; Uzuhashi, Hideo; Uneyama, Yoshihisa; Matuda, Michiya; and Kobayashi, Minoru, to Hitachi, Ltd. Refrigerator control system. 4,566,289, Cl. 62-228.400.

Iizuka, Kiyoshi: *See—*
Ohtaka, Keiji; Suzuki, Takashi; Iizuka, Kiyoshi; and Mizutani, Hidemasa, 4,567,123, Cl. 430-4.000.

Ikari Corporation: *See—*
Kurosawa, Toshishige; Ishisaka, Satoru; Yasutomi, Kazuki; and Ishiwatari, Takanobu, 4,566,218, Cl. 43-58.000.

Ikeda, Masami; Matsuda, Hiroto; Shibata, Makoto; and Takahashi, Hiroto, to Canon Kabushiki Kaisha. Liquid jet recording head. 4,567,493, Cl. 346-140.00R.

Ikeda, Masayuki, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Variable frequency oscillator. 4,567,448, Cl. 331-25.000.

Ikeda, Teruyuki: *See—*
Shimada, Yuzo; Utsumi, Kazuaki; Ikeda, Teruyuki; and Suzuki, Masanori, 4,567,542, Cl. 361-321.000.

Ikuma, Sadao: *See—*
Tomono, Hiromi; Kokubo, Takashi; Yamaguchi, Kazuki; and Ikuma, Sadao, 4,567,233, Cl. 525-71.000.

Ikushima, Kazuo; Itoh, Yoshio; and Iahihara, Toshiaki, to NGK Insulators, Ltd. Process for producing an age-hardening copper titanium alloy strip. 4,566,915, Cl. 148-11.50C.

Ilardo, Charles S., to Occidental Chemical Corporation. Flame retardant polyolefin compositions. 4,567,214, Cl. 523-216.000.

Imamura, Haruo: *See—*
Akanuma, Shigetake; Nakajima, Minoru; Takashima, Satoshi; Imamura, Haruo; Ojiro, Yoshitaka; Kakuta, Hiroshi; and Matsumoto, Masato, 4,566,736, Cl. 299-23.000.

Imangazieva, Gulsara K.: *See—*
Ljubman, Nazar Y.; Imangazieva, Gulsara K.; Nugmanova, Lyalya T.; Uskov, Alexandr I.; Sydykova, Tokhtobubu C.; and Kim, Zinaida I., 4,567,207, Cl. 521-35.000.

Imperial Chemical Industries PLC: *See—*
Bedford, Geoffrey R.; Brittain, David R.; and Platt, Ronald, 4,567,278, Cl. 548-309.000.
Brewster, Andrew G.; and Caulkett, Peter W. R., 4,567,197, Cl. 514-452.000.
Crowley, Patrick J., 4,567,199, Cl. 514-531.000.
Edwards, Philip N.; and Large, Michael S., 4,567,174, Cl. 514-210.000.

Imaand, Donald J. Three dimensional television system. 4,567,513, Cl. 358-92.000.

Inagawa, Jun; Nagumo, Masahide; and Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for dividing the elements of a Galois field. 4,567,568, Cl. 364-761.000.

Index Industries, Inc.: *See—*
Englund, Richard L., 4,567,458, Cl. 337-365.000.

Indianapolis Center for Advanced Research: *See—*
Schroeder, Eugene, 4,566,331, Cl. 73-632.000.

Industra Products, Inc.: *See—*
Witwer, Keith A.; and Walker, Robert G., 4,566,180, Cl. 29-596.000.

Industrie Zanussi S.p.A.: *See—*
Piai, Dino; Rigoni, Renzo; and Paruzzolo, Giovanni, 4,566,970, Cl. 210-409.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Coli, Giuseppe; and Rattin, Luciano, 4,566,779, Cl. 355-3.00R.

Ing. Erich Pfeiffer GmbH & Co., Firma: *See—*
Sukopp, Hans, 4,566,611, Cl. 222-153.000.

Ingersoll Cutting Tool Company: *See—*
Neumueller, Ronald L., 4,566,827, Cl. 407-42.000.

Inoue, Akihisa: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; Takahashi, Yoshimi; Hoshi, Akira; and Mizutani, Uichiro, 4,566,323, Cl. 73-295.000.

Inoue, Akira, to Olympus Optical Co., Ltd. Power supply unit for electronic flash. 4,566,769, Cl. 354-145.100.

Inoue, Seijiro; and Ota, Shigenori, to Kyowa Hakko Kogyo Co., Ltd. Bread or other cereal-based food improver composition involving the addition of phospholipase A to the flour. 4,567,046, Cl. 426-20.000.

Institut de Recherches de la Siderurgie Francaise: *See—*
Pazdej, Richard; and Pavinato, Albert, 4,566,877, Cl. 44-51.000.

Institut Dr. Friedrich Forster: *See—*
Dreher, Ulrich; and Reitz, Helmut, 4,566,585, Cl. 198-624.000.

Instone, Giles A.; and Instone, Jeremy A., to Solindo Equipment Leasing Ltd. Animal conveyance capable of conversion into an air freight container. 4,566,404, Cl. 119-8.000.

Instone, Jeremy A.: *See—*
Instone, Giles A.; and Instone, Jeremy A., 4,566,404, Cl. 119-8.000.

Intech Systems, Inc.: *See—*
Binning, Ronald L.; and Sieder, Burton C., 4,566,838, Cl. 414-278.000.

Interatom Internationale Atomreaktorbau GmbH: *See—*
Thissen, Klaus; and Barzantny, Joachim, 4,566,859, Cl. 417-50.000.

Interco Incorporated: *See—*
Sitzes, Fred B., 4,566,197, Cl. 36-011.000.

International Business Machines Corporation: *See—*
Afzali-Ardakani, Ali; Cohen, Mitchell S.; Pennington, Keith S.; and Sachdev, Krishna G., 4,567,490, Cl. 346-135.100.
Bederman, Seymour, 4,567,590, Cl. 370-86.000.
Brodsky, Marc H.; and Weinberg, Zeev A., 4,566,913, Cl. 148-1.500.
Fredericks, Edward C.; Greenhaus, Herbert L.; Nanda, Madan M.; and Via, Giorgio G., 4,567,132, Cl. 430-312.000.
Gossler, Werner; Strube, Anneliese; and Zurheide, Manfred, 4,566,173, Cl. 29-571.000.
Raver, Norman, 4,567,378, Cl. 307-270.000.
Saade , Henry Y.; and Tindall, William N. J., 4,567,574, Cl. 364-900.000.
Siegel, Paul H.; and Todd, Stephen J., 4,567,464, Cl. 340-347.0DD.
Wyatt, Virgil D.; Kraft, Wayne R.; and Thoma, Nandor G., 4,567,561, Cl. 364-200.000.

International Harvester Company: *See—*
Hoffman, Lawrence A.; Hacker, Jay P.; and Miller, William M., 4,566,552, Cl. 180-69.210.

International Minerals & Chemical Corp.: *See—*
Sundelin, Kurt G. R., 4,567,173, Cl. 514-188.000.

International Standard Electric Corporation: *See—*
Greenwood, John C., 4,567,451, Cl. 331-155.000.
Szabo, Laszlo; and Schunemann, Klaus, 4,567,450, Cl. 331-107.0DP.
Zebisch, Manfred W., 4,567,376, Cl. 307-106.000.

International Telephone and Telegraph Corporation: *See—*
Vensko, George; Carlin, Lawrence; Potter, John; and Smith, Allen R., 4,567,606, Cl. 381-43.000.

InterNorth, Inc.: *See—*
Lisowyj, Bohdan, 4,567,026, Cl. 423-81.000.

Interox Chemicals Limited: *See—*
Hutton, Denis A.; and Millar, Malcolm H., 4,567,010, Cl. 264-117.000.

Inui, Toshiharu: *See—*
Moriguchi, Haruhiko; Inui, Toshiharu; Hisatake, Masayuki; and Ohmori, Takashi, 4,567,488, Cl. 346-76.0PH.

Ipek, Bora: *See—*
Hoffeins, Hans; Kalbfuss, Richard; and Ipek, Bora, 4,566,268, Cl. 60-39.463.

IRECO Incorporated: *See—*
Jessop, Harvey A., 4,566,919, Cl. 149-20.000.

Irmen, Wolfgang, to W. Schlafhorst & Co. Pneumatic yarn splicing device. 4,566,260, Cl. 57-22.000.

Irvin Industries, Inc.: *See—*
Gavagan, James A.; and Brennan, William E., 4,566,160, Cl. 24-637.000.
Petersen, Carl M., III, 4,566,649, Cl. 242-107.40A.

Irvine, Robert; Roetter, Frank T.; and Stearns, Willis R., to Pitney Bowes Inc. Document feeding device. 4,566,685, Cl. 271-150.000.

Irvine, Stuart J. C.; Mullin, John B.; and Giess, Jean, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Utilizing interdiffusion of sequentially deposited links of HgTe and CdTe. 4,566,918, Cl. 148-175.000.

Isakson, Stig A. Reciprocating blade cutting device. 4,566,190, Cl. 30-373.000.

Isbrandt, Russell R.; and Young, Chung I., to Minnesota Mining and Manufacturing Company. Film for thermal imaging. 4,567,133, Cl. 430-348.000.

Ishiguro, Ken: *See—*
Oshima, Hiroyo; Kano, Isao; Kojima, Yutaka; Shimura, Yoshihiko; Ishiguro, Ken; and Nagai, Koichi, 4,567,114, Cl. 428-480.000.

Ishihara, Takao, to Mitsubishi Jukogyo Kabushiki Kaisha. Slag tap combustion apparatus. 4,566,392, Cl. 110-165.00R.

Ishihara, Toshiaki: *See—*
Ikushima, Kazuo; Itoh, Yoshio; and Ishihara, Toshiaki, 4,566,915, Cl. 148-11.50C.

Ishii, Munenori, to Mitutoyo Mfg. Co., Ltd. Digital indicating type dimension measuring instrument. 4,566,201, Cl. 33-172.00E.

Ishii, Satoshi: *See—*
Tsunoda, Teruo; Numauchi, Hiromitsu; Kurata, Hironobu; Kawaguchi, Yoichi; Ishii, Satoshi; Seki, Masanori; Iwasaki, Masahiro; and Enomoto, Fukumasa, 4,566,194, Cl. 33-18.100.

Ishikawa, Toshio: *See—*
Yamamoto, Yosizi; and Ishikawa, Toshio, 4,566,864, Cl. 417-353.000.

Ishioka, Ryoji: *See—*
Nagato, Nobuyuki; Maki, Kenichiro; Uematsu, Tomoe; and Ishioka, Ryoji, 4,567,292, Cl. 560-245.000.

Ishisaka, Satoru: *See—*
Kurosawa, Toshishige; Ishisaka, Satoru; Yasutomi, Kazuki; and Ishiwatari, Takanobu, 4,566,218, Cl. 43-58.000.

Ishitani, Tohru; Tamura, Hifumi; and Shimase, Akira, to Hitachi, Ltd. Liquid metal ion source. 4,567,398, Cl. 313-362.100.

Ishiwatari, Takanobu: *See—*
Kurosawa, Toshishige; Ishisaka, Satoru; Yasutomi, Kazuki; and Ishiwatari, Takanobu, 4,566,218, Cl. 43-58.000.

Ishizuka, Akio; Yamazaki, Hisashi; and Yamazaki, Kikuo, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 4,567,371, Cl. 250-483.100.

Isover Saint-Gobain: *See—*
Degenne, Michel, 4,567,365, Cl. 250-338.000.

Israel, Renato: *See—*
Bailly, Francois P.; Bourgoin, Alain; and Israel, Renato, 4,567,329, Cl. 179-18.0FA.

Itatani, Hiroshi; Kashima, Mikito; and Tasaki, Yasutaka, to UBE Industries, Ltd. Process for producing iodo-aromatic compounds. 4,567,280, Cl. 549-43.000.

Ito, Giichi; Nakano, Ichizo; Shimizu, Yuichi; Mukai, Kosaku; and Suzuki, Saiju, to NTT Gijutsu Iten Kabushiki Kaisha. Measurement head for welding machines. 4,567,347, Cl. 219-124.340.

Ito, Hiroshi: *See—*
Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, 4,566,348, Cl. 74-359.000.

Ito, Isao: *See—*
Yazaki, Takao; Hattori, Kazuhide; Matsuno, Takumi; Hayama, Kazuhide; Ito, Isao; and Saito, Yukio, 4,567,097, Cl. 428-317.700.

Ito, Shingo: *See—*
Shimada, Kenjiro; Otomo, Masao; Tomita, Fusao; and Ito, Shingo, 4,567,164, Cl. 514-33.000.

Ito, Takeshi: *See—*
Yashiro, Yoshinobu; and Ito, Takeshi, 4,566,409, Cl. 123-65.0PE.

Ito, Yasuro; and Higuchi, Yoshiro, to Ito, Yasuro; and Taisei Corporation. Apparatus for adjusting the quantity of liquid deposited on fine granular materials and method of preparing mortar or concrete. 4,566,799, Cl. 366-1.000.

Itoh, Hisao: *See—*
Takenouchi, Mutsuo; Ozawa, Takashi; Hamano, Toshihisa; Itoh, Hisao; Fuse, Mario; and Nakamura, Takeshi, 4,567,374, Cl. 250-578.000.

Itoh, Yoshio: *See—*
Ikushima, Kazuo; Itoh, Yoshio; and Ishihara, Toshiaki, 4,566,915, Cl. 148-11.50C.

Itsumi, Manabu; Ehara, Kohei; Muramoto, Susumu; and Matsuo, Seitaro, to Nippon Telegraph and Telephone Public Corporation. Manufacturing process for semiconductor integrated circuits. 4,566,940, Cl. 156-643.000.

ITT Corporation: *See—*
Martin, Philip T., 4,567,331, Cl. 179-170.0NC.

ITT Industries, Inc.: *See—*
Birkenbach, Alfred, 4,566,277, Cl. 60-587.000.
Kahrs, Manfred, 4,566,870, Cl. 418-30.000.
Klein, Hans-Christof; and Hohmann, Hans, 4,566,805, Cl. 374-16.000.

Iwai, Tomio; and Torigai, Katsumi, to Sanshin Kogyo Kabushiki Kaisha. Speed controller for marine propulsion device. 4,566,415, Cl. 123-361.000.

Iwamoto, Shoji; and Kubota, Kazuo, to Fuji Photo Film Co., Ltd. Decorative winding method for magnetic tape or the like. 4,566,647, Cl. 242-67.10R.

Iwamoto, Yogaku: *See—*
Kadotani, Kanichi; and Iwamoto, Yogaku, 4,566,435, Cl. 126-443.000.

Iwasaki Electric Co., Ltd.: *See—*
Ohtagaki, Yoshio; Ochi, Masafumi; Masui, Motonobu; Tachibana, Kanichi; and Uchida, Akio, 4,567,403, Cl. 315-47.000.

Iwasaki, Masahiro: *See—*
Tsunoda, Teruo; Numauchi, Hiromitsu; Kurata, Hironobu; Kawaguchi, Yoichi; Ishii, Satoshi; Seki, Masanori; Iwasaki, Masahiro; and Enomoto, Fukumasa, 4,566,194, Cl. 33-18.100.

Iwatani & Co., Ltd.: *See—*
Kotani, Masutoshi, 4,566,543, Cl. 172-4.000.

Iwatsu Electric Co., Ltd.: *See—*
Komiya, Koji, 4,567,465, Cl. 340-347.0AD.

Iwatsuka, Nobuyoshi; Tomizawa, Fumio; Sato, Chikara; Ozaki, Norihiko; Ichikawa, Yoshiaki; and Sadakane, Kenichiro, to Hitachi, Ltd. Multiarticulated manipulator. 4,566,843, Cl. 414-680.000.

J-M Manufacturing Company, Inc.: *See—*
Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., 4,566,496, Cl. 138-154.000.

Jabarin, Saleh A., to Owens-Illinois, Inc. Multilayer containers with improved stress crack properties. 4,567,069, Cl. 428-35.000.

Jachimowicz, Felek: *See—*
Hansson, Per E. A.; and Jachimowicz, Felek, 4,566,943, Cl. 162-168.200.

Jacksier, Barry H., to AT&T Teletype Corporation. Biphase signal receiver. 4,567,604, Cl. 375-87.000.

Jackson, Fred L., to Manville Service Corporation. Product and process relating to hardboard. 4,567,215, Cl. 523-218.000.

Jackson, W. Shaun. Seat pack assembly. 4,566,617, Cl. 224-275.000.

James Hardie Industries Limited: *See—*
Musgrove, Neil R., 4,566,140, Cl. 4-324.000.

James River-Norwalk, Inc.: *See—*
Brown, Richard K., 4,567,341, Cl. 219-10.55E.

Jamison, William E. Four-wire telephone system with self-test means. 4,567,332, Cl. 179-175.000.

Janikowski, Daniel S.; and Shum, Ming S., to UOP Inc. Conductive pigment-coated surfaces. 4,567,111, Cl. 428-457.000.

Janopaul, Peter, Jr. Energy conserving concrete masonry unit, wall construction and method. 4,566,238, Cl. 52-407.000.

Janssen, Herbert F., to School of Medicine Texas Tech. Univ. Health Servcs. Ctr. Venous pressure measuring method and apparatus. 4,566,462, Cl. 128-677.000.

Janssen, Robert L., to Padco, Inc. Pressure fed paint roller. 4,566,816, Cl. 401-219.000.

Japan Styrene Paper Corporation: *See*—
Kuwabara, Hideki; and Sudo, Yoshimi, 4,567,208, Cl. 521-59.000.

Japan Tobacco & Salt Public Co., The: *See*—
Kumasako, Takeo; Sato, Kiyomi; Kawakatsu, Akira; Sato, Akinori; and Mamiya, Isamu, 4,566,471, Cl. 131-317.000.

Jarrett, Robert B.; Main, W. Eric; and Neidorff, Robert A., to Motorola, Inc. Clamp circuit. 4,567,388, Cl. 307-540.000.

Jarvinen, Philip O., to Massachusetts Institute of Technology. High-temperature brazed ceramic joints. 4,567,110, Cl. 428-433.000.

Jasper Corporation, The: *See*—
Frobose, James W., 4,566,735, Cl. 297-452.000.

Jean Walterscheid GmbH: *See*—
Geisthoff, Hubert, 4,566,570, Cl. 192-56.00R.

Jeantet, Lucien: *See*—
Marechal, Roger; and Jeantet, Lucien, 4,566,427, Cl. 125-16.00R.

Jelsma, Richard K.; Choi, Charles H.; and Hynes, Thomas G. Stretcher for persons with spinal injuries. 4,566,445, Cl. 128-70.000.

Jeng, Chi-Cheng. Piston plunger. 4,566,139, Cl. 4-255.000.

Jenkins, Jerome D.; and Schultz, Neal G. Transfer roll with ceramic-fluorocarbon coating containing cylindrical ink holes with round, beveled entrances. 4,566,938, Cl. 156-643.000.

Jenny, Werner, to TBT Tiefbohrtechnik GmbH & Co. KG. Tool retainer having axially and radially movable clamping members. 4,566,705, Cl. 279-4.000.

Jerrim, John W., to Sangamo Weston, Inc. Synchronization system for use in direct sequence spread spectrum signal receiver. 4,567,588, Cl. 370-18.000.

Jeschek, Gerhard: *See*—
Boettger, Guenter; Hammer, Hans; Hertel, Otto; Jeschek, Gerhard; Mueller, Herbert; Scharf, Emil; and Schoenleben, Willibald, 4,567,303, Cl. 564-475.000.

Jessop, Harvey A., to IRECO Incorporated. Sensitized cast emulsion explosive composition. 4,566,919, Cl. 149-20.000.

Jidosha Kiki Co., Ltd.: *See*—
Yabe, Hideo; and Koike, Ichiro, 4,567,413, Cl. 318-489.000.

Jimerson, Bruce D.; and Nakasone, Henry H. Soft switch with positive on and off states. 4,567,375, Cl. 307-98.000.

John Fluke Mfg. Co., Inc.: *See*—
Blanchard, Randall D., 4,567,480, Cl. 340-712.000.

John, Reinmar: *See*—
Meyer, Rainer-Leo; John, Reinmar; Nagel, Rolf; and Muller, Gunter, 4,567,230, Cl. 524-786.000.

Johnsen & Jorgensen (Plastics) Limited: *See*—
Davis, Eugene E., 4,566,602, Cl. 215-256.000.

Johnson, Allan S., to Tapmatic Corporation. Tapping attachment and indexing mechanism therefor. 4,566,829, Cl. 408-239.00R.

Johnson, Bryce V.: *See*—
Tovrog, Benjamin S.; Hoppin, Charles R.; and Johnson, Bryce V., 4,567,155, Cl. 502-123.000.

Johnson, Earl R., to Loffland Brothers Company. Multiple biscuit clutch or brake with circulated immersion cooling. 4,566,579, Cl. 192-113.00B.

Johnson, Gilbert C.; and Landin, Heather V., to Minnesota Mining and Manufacturing Company. Ethylenicaliy unsaturated polyesters. 4,567,237, Cl. 525-170.000.

Johnson, James R. Boot with expanding webs. 4,566,209, Cl. 36-116.000.

Johnson, John E.: *See*—
Seidentop, Alfred T.; and Johnson, John E., 4,566,693, Cl. 272-144.000.

Johnson, Leighton C., to Miles Laboratories, Inc. Apparatus and method useful for removing liquid from the outer surface of cylindrical pipette tube or the like. 4,566,203, Cl. 34-9.000.

Johnston, Andrew W. B.: *See*—
Brewin, Nicholas J.; and Johnston, Andrew W. B., 4,567,146, Cl. 435-172.300.

Johnston, James J., to Brand-Rex Company. Electrical connector receptacle. 4,566,749, Cl. 339-95.00D.

Johnston, Ronald J., to Aluma Systems, Incorporated. Clamp for shoring and scaffolding frames. 4,566,819, Cl. 403-385.000.

Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., to Atlantic Richfield Company. Two-step methane conversion process. 4,567,307, Cl. 585-330.000.

Jones, John E.; and Glenn, W. K., III, to Singer Company, The. Vacuum cleaner bag support. 4,566,884, Cl. 55-357.000.

Jones, Robert W., to Kliklok Corporation. Packaging system with interdigitating film advance. 4,566,253, Cl. 53-451.000.

Jorgensen, Pierre: *See*—
Diaz, Henri; Jorgensen, Pierre; and Vernet, Pierre, 4,566,961, Cl. 204-168.000.

Jorgensen, Ray B.; and Ackerman, Robert T., to Nicholson Manufacturing Company. Variable pneumatic pressure force-transmitting mechanism. 4,566,371, Cl. 92-92.000.

Jorne, Jacob; Roayaie, Emad; and Shah, Atul, to Energy Development Associates, Inc. Flow-through porous electrodes. 4,567,120, Cl. 429-72.000.

Joseph, Ady; Mayer, Lily; and Miutel, Alexander, to Metafuse Limited. Solutions for the fusion of one metal to another. 4,566,992, Cl. 252-518.000.

Joswick, Walter: *See*—
Scherer, George; Joswick, Walter; and Blonder, Isaac S., 4,567,516, Cl. 358-114.000.

Juei Jse, Lin. Multilayered corrugated roofing. 4,567,084, Cl. 428-150.000.

Juillerat, Michel R.: *See*—
Berger, Maurice; Bernasconi, Jean-Francois; and Juillerat, Michel R., 4,566,836, Cl. 414-57.000.

Jujo Paper Co., Ltd.: *See*—
Oshima, Hiroyo; Kano, Isao; Kojima, Yutaka; Shimura, Yoshihiko; Ishiguro, Ken; and Nagai, Koichi, 4,567,114, Cl. 428-480.000.

Junkosha Co., Ltd.: *See*—
Harayama, Chiharu, 4,567,321, Cl. 174-117.00F.

Justice, Steve, to Williams, Clarence Orville. Insect trap. 4,566,220, Cl. 43-113.000.

K & H Distributors: *See*—
Herota, Rosh N., 4,566,356, Cl. 81-62.000.

Kabivitrum AB: *See*—
Lyons, Robert T., 4,567,045, Cl. 424-195.100.

Kabushiki Kaisha Daini Seikosha: *See*—
Maeda, Takashi; and Sato, Masayuki, 4,566,847, Cl. 414-744.00R.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Akanuma, Shigetake; Nakajima, Minoru; Takashima, Satoshi; Imamura, Haruo; Ojiro, Yoshitaka; Kakuta, Hiroshi; and Matsumoto, Masato, 4,566,736, Cl. 299-23.000.
Baba, Kiyokazu; Shirao, Shojiro; Nishida, Kenji; and Kiyosawa, Hiroshi, 4,566,834, Cl. 414-27.000.
Kadotani, Kanichi; and Iwamoto, Yogaku, 4,566,435, Cl. 126-443.000.

Kabushiki Kaisha Meidensha: *See*—
Matsuse, Kohki; Hashimoto, Hitoshi; and Suzuki, Toshiaki, 4,567,555, Cl. 363-138.000.

Kabushiki Kaisha Naka Gijutsu Kenkyusho: *See*—
Naka, Hiromitsu, 4,566,233, Cl. 52-208.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Ikeda, Masayuki, 4,567,448, Cl. 331-25.000.

Kabushiki Kaisha Toshiba: *See*—
Endo, Yukio; Harada, Nozomu; and Yoshida, Okio, 4,567,525, Cl. 358-213.000.
Hirose, Syunichi, 4,567,552, Cl. 363-87.000.
Kawakami, Hiroshi, 4,567,584, Cl. 369-38.000.
Nishitsuji, Kazuichi; Aikawa, Eiichi; and Haraguchi, Yukio, 4,566,865, Cl. 417-363.000.
Shimazaki, Takashi, 4,566,402, Cl. 118-653.000.
Yoshida, Yukimasa; and Watanabe, Tohru, 4,566,941, Cl. 156-643.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Goto, Kunifumi; Sugiura, Manabu; and Suzuki, Shinichi, 4,566,863, Cl. 417-295.000.
Miyazaki, Tsutomu; Fukuda, Tatemi; and Yoshimine, Kazuya, 4,566,263, Cl. 57-276.000.

Kadotani, Kanichi; and Iwamoto, Yogaku, to Kabushiki Kaisha Komatsu Seisakusho. Solar heat collecting apparatus. 4,566,435, Cl. 126-443.000.

Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, to Kozponti Elelmiszeripari Kutato Intezet. Spectrophotometer operating at discrete wavelengths. 4,566,797, Cl. 356-402.000.

Kagota, Nobuhiro, to Mitsubishi Paper Mills, Ltd. Color-developing ink for non-carbon copying paper. 4,566,907, Cl. 106-21.000.

Kahrs, Manfred, to ITT Industries, Inc. Adjustable vane-type pump. 4,566,870, Cl. 418-30.000.

Kai, Yasuaki: *See*—
Tabata, Hiroshi; and Kai, Yasuaki, 4,567,082, Cl. 428-138.000.

Kaiser, Roman: *See*—
Lamparsky, Dietmar; and Kaiser, Roman, 4,567,291, Cl. 560-225.000.

Kaji, Hisatsugu: *See*—
Fukuda, Hiroyuki; Shigeta, Masatomo; Kaji, Hisatsugu; and Saitoh, Kuniyuki, 4,567,086, Cl. 428-166.000.

Kajita, Hiroshi; and Nakajima, Tadanobu, to Mita Industrial Co., Ltd. Shell-type electrostatic copying apparatus. 4,566,780, Cl. 355-3.00R.

Kakuta, Hiroshi: *See*—
Akanuma, Shigetake; Nakajima, Minoru; Takashima, Satoshi; Imamura, Haruo; Ojiro, Yoshitaka; Kakuta, Hiroshi; and Matsumoto, Masato, 4,566,736, Cl. 299-23.000.

Kalbfuss, Richard: *See*—
Hoffeins, Hans; Kalbfuss, Richard; and Ipek, Bora, 4,566,268, Cl. 60-39.463.

Kalk, Heinz: *See*—
Rau, Karl; Kalk, Heinz; and Metzger, Gerhard, 4,566,322, Cl. 73-295.000.

Kalkhof, Bernd; and Nagel, Karl, to Robert Bosch GmbH. Transistor-controlled-load, short-circuit-protected current-supply circuit. 4,567,537, Cl. 361-18.000.

Kamano, Yoshiaki; Sugai, Saburo; Okazaki, Tokuji; Yoshida, Seiichiro; and Akaboshi, Sanya, to Ohta Seiyaku Kabushiki Kaisha. 6α-Methylprednisolone derivatives. 4,567,172, Cl. 514-179.000.

Kamata, Tohru: *See*—
Noguchi, Shozo; Oshima, Yasunobu; and Kamata, Tohru, 4,567,598, Cl. 372-36.000.

Kanai, Seita; and Kanazawa, Hirotaka, to Mazda Motor Corporation. Suspension and steering control of motor vehicles. 4,566,718, Cl. 280-708.000.

Kanamori, Hiromitsu: *See*—
Hasegawa, Katsumi; and Kanamori, Hiromitsu, 4,566,643, Cl. 242-18.00R.

Kanazawa, Hirotaka: *See*—
Kanai, Seita; and Kanazawa, Hirotaka, 4,566,718, Cl. 280-708.000.

Kanebo Limited: *See*—
Tomita, Yogi; Yamamoto, Hisashi; and Kitagawa, Susumu, 4,566,911, Cl. 134-6.000.

Kaneda, Naoya, to Canon Kabushiki Kaisha. Focus detecting device. 4,566,773, Cl. 354-403.000.

Kaneko, Ryoichi: *See*—
Yoshioka, Takatoshi; Kirihara, Seishin; Shiga, Masao; Iijima, Katsumi; Hisano, Katsukuni; and Kaneko, Ryoichi, 4,566,810, Cl. 384-280.000.

Kaneko, Takushi: *See*—
Vyas, Dolatrai M.; Kaneko, Takushi; and Doyle, Terrence W., 4,567,256, Cl. 544-58.200.

Kaneko, Yoshio: *See*—
Hara, Kunio; Tanaka, Toshie; Shibayama, Teruji; Morisaki, Minoru; and Kaneko, Yoshio, 4,566,924, Cl. 156-73.500.

Kano, Isao: *See*—
Oshima, Hiroyo; Kano, Isao; Kojima, Yutaka; Shimura, Yoshihiko; Ishiguro, Ken; and Nagai, Koichi, 4,567,114, Cl. 428-480.000.

Kano, Masaaki; Yamaji, Hiroshi; Nakao, Shinji; and Okumura, Katsuya, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for measuring dimension of secondary electron emission object. 4,567,364, Cl. 250-307.000.

Kao, Ming-Luh: *See*—
de la Guardia, Mario; and Kao, Ming-Luh, 4,567,521, Cl. 358-150.000.

Kapfhammer, Karl: *See*—
Folger, Josef; Fournell, Hans-Dieter; Hein, Hans-Rudolf; Kapfhammer, Karl; Rambock, Josef; and Weber, Michael, 4,567,459, Cl. 340-58.000.

Karanewsky, Donald S.; and Petrillo, Edward W., Jr., to E. R. Squibb & Sons, Inc. Amino and substituted amino phosphinylalkanoyl compounds useful for treating hypertension. 4,567,166, Cl. 514-82.000.

Karanewsky, Donald S., to E. R. Squibb & Sons, Inc. Certain 3-phosphinyl-2-oxo-piperidine-1-acetic acid derivatives having anti-hypertensive activity. 4,567,167, Cl. 514-89.000.

Karass, Thomas J. Fibrous material reinforcing tape, method of making the same and containers reinforced by said tape. 4,567,070, Cl. 428-35.000.

Karlstad Vulk: *See*—
Skogman, Bengt G.; Svensson, Hans T.; and Torres, Eduardo E., 4,567,088, Cl. 428-213.000.

Karol, Thomas J.; and Sung, Rodney L., to Texaco Inc. Reaction product of Beta-mercaptoethanol and coconut oil as diesel fuel antiwear additive. 4,566,878, Cl. 44-57.000.

Kashima, Mikito: *See*—
Itatani, Hiroshi; Kashima, Mikito; and Tasaki, Yasutaka, 4,567,280, Cl. 549-43.000.

Kataczynski, Nachman, to Urdan Industries Ltd. Ammunition storage system and container for use therein. 4,566,588, Cl. 206-3.000.

Katakura, Kageyoshi: *See*—
Umemura, Shinichiro; Katakura, Kageyoshi; and Ogawa, Toshio, 4,566,459, Cl. 128-660.000.

Kataoka, Shigehiro; Nakamura, Takashi; Yamaji, Nobuyuki; and Nasuno, Seiichi, to Kikkoman Corporation. Method for preparing N^6,8-disubstituted 3',5'-cyclic adenosine monophosphate and salt thereof. 4,567,254, Cl. 536-27.000.

Kato, Kinya, to Nippon Kogaku K.K. Dual focus optical system. 4,566,762, Cl. 350-411.000.

Kato, Shuzo; and Feher, Kamilo, to Canadian Patents and Development Limited. Correlated signal processor. 4,567,602, Cl. 375-60.000.

Kato, Susumu: *See*—
Yoshida, Zenichi; Kato, Susumu; Amemiya, Yasuhiro; and Yanai, Keisuke, 4,567,308, Cl. 585-375.000.

Kato, Yuichi: *See*—
Miyamoto, Issei; and Kato, Yuichi, 4,566,350, Cl. 74-526.000.

Katoh, Mitsumi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument controlling a tone waveshape by key scaling. 4,566,364, Cl. 84-1.190.

Kawabata, Kazuo: *See*—
Sano, Takashi; Kawabata, Kazuo; and Miya, Yoji, 4,567,106, Cl. 428-413.000.

Kawagoe, Takashi: *See*—
Shiomi, Tadataka; Nabika, Kouichi; and Kawagoe, Takashi, 4,566,837, Cl. 414-222.000.

Kawaguchi, Yoichi: *See*—
Tsunoda, Teruo; Numauchi, Hiromitsu; Kurata, Hironobu; Kawaguchi, Yoichi; Ishii, Satoshi; Seki, Masanori; Iwasaki, Masahiro; and Enomoto, Fukumasa, 4,566,194, Cl. 33-18.100.

Kawai, Kazuhide: *See*—
Yoshida, Ryuichi; Suzuki, Shigeru; Koishikawa, Hirotoshi; Miyamoto, Yoshimi; and Kawai, Kazuhide, 4,566,751, Cl. 339-218.00S.

Kawakami, Hiroshi, to Kabushiki Kaisha Toshiba. Autochanger type disc player. 4,567,584, Cl. 369-38.000.

Kawakami, Kinya: *See*—
Misawa, Makoto; Mizoguchi, Tetsuya; Kawakami, Kinya; and Ahagon, Asahiro, 4,567,225, Cl. 524-526.000.

Kawakatsu, Akira: *See*—
Kumasako, Takeo; Sato, Kiyomi; Kawakatsu, Akira; Sato, Akinori; and Mamiya, Isamu, 4,566,471, Cl. 131-317.000.

Kawamura, Jun; and Fukano, Sakuzo, to Aikoh Co., Ltd. Method of heat retention in a blind riser. 4,566,518, Cl. 164-53.000.

Kawano, Hikaru; and Sato, Koji, to Musashi Engineering Kabushiki Kaisha; and Hitachi Denshi Engineering Kabushiki Kaisha. Paper sheet grip and transfer apparatus. 4,566,244, Cl. 53-588.000.

Kawase, Yoshihiro: *See*—
Yamada, Takeo; Yamamoto, Tomohisa; Ando, Seigo; and Kawase, Yoshihiro, 4,567,435, Cl. 324-207.000.

Kawashima, Hidetoshi: *See*—
Hirose, Noriyasu; Souda, Shigeru; Miyake, Kazutoshi; Kuriyama, Shizuo; Usuki, Kazuyasu; Akiyama, Yasuhiro; Nagaoka, Naoko; and Kawashima, Hidetoshi, 4,567,180, Cl. 514-253.000.

Kawashima, Ikue: *See*—
Kumano, Masafumi; Kawashima, Ikue; Hirama, Masayuki; and Tsuji, Yasuhiro, 4,566,453, Cl. 128-303.100.

Kayser, John P.: *See*—
Elliott, Kirk W.; Garver, Christian J.; Kayser, John P.; and Dombroski, Robert M., 4,566,560, Cl. 184-15.100.

Keal, Charles, Jr., to Design & Manufacturing Corporation. Method of surface treatment of aluminum killed steel in preparation for porcelain coating. 4,567,067, Cl. 427-328.000.

Keenan, Charles E.; Mattern, Richard E.; and Vaccaro, Charles A., to Schulmerich Carillons, Inc. Handbell. 4,566,400, Cl. 116-171.000.

Keiper, Tilghman H., Jr., to Bethlehem Steel Corporation. Boltless, friction-fit, adjustable rail brace. 4,566,630, Cl. 238-292.000.

Keller, Paul. Automatic ice hopper. 4,566,286, Cl. 62-135.000.

Kelley, Robert G.: *See*—
Ruf, Walter; and Kelley, Robert G., 4,566,505, Cl. 141-83.000.

Kellogg, James A., to Lockheed Corporation. Wire-guide latching device for a wire-harness assembly form board. 4,566,502, Cl. 140-92.100.

Kemmner, Ulrich, to Robert Bosch GmbH. Aggregate for feeding of fuel to internal combustion engine particularly of power vehicle. 4,566,866, Cl. 417-366.000.

Kennecott Corporation: *See*—
Carpenter, James H., Jr., 4,566,230, Cl. 51-420.000.

Kenny, Andrew A.; Sokalski, Robert G.; Egle, Lawrence E.; and Stahly, Daniel C., to Eaton Corporation. Electronic feedback EGR valve. 4,566,423, Cl. 123-571.000.

Kensinger, Lex D.: *See*—
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,566,164, Cl. 29-33.00M.

Keppel, Robert A.: *See*—
Wrobleski, James T.; Edwards, James W.; Graham, Charles R.; Keppel, Robert A.; and Raffelson, Harold, 4,567,158, Cl. 502-209.000.

Kesten, Arthur S., to United Technologies Corporation. Low-energy method for freeing chemically bound hydrogen. 4,567,033, Cl. 423-648.00R.

Key Pharmaceuticals, Inc.: *See*—
Sackner, Marvin A., 4,567,185, Cl. 514-282.000.

Kidani, Yoshinori; and Noji, Masahide, to Yoshinori Kidani. Complex compounds of platinum. 4,567,285, Cl. 556-137.000.

Kidd, Harry A.; and Edwards, Thomas R., to Dresser Industries, Inc. Automatic temperature compensated fuel flow regulation. 4,566,266, Cl. 60-39.060.

Kiehs, Karl: *See*—
Baumann, Annegrit; Kiehs, Karl; and Adolphi, Heinrich, 4,567,170, Cl. 514-128.000.

Kiesel Co., The: *See*—
Kleinholz, Edward O., 4,566,619, Cl. 227-8.000.

Kikkoman Corporation: *See*—
Kataoka, Shigehiro; Nakamura, Takashi; Yamaji, Nobuyuki; and Nasuno, Seiichi, 4,567,254, Cl. 536-27.000.

Kikuchi, Hideaki: *See*—
Tawara, Yoshio; Ohashi, Ken; and Kikuchi, Hideaki, 4,567,576, Cl. 365-2.000.

Kikuchi, Koichi: *See*—
Matsumoto, Mitsuo; Miura, Shinichi; Kikuchi, Koichi; Tamura, Masuhiko; Kojima, Hidetaka; Koga, Kunio; and Yamashita, Shigeru, 4,567,305, Cl. 568-454.000.

Kikuchi, Yoshiyuki: *See*—
Matsui, Kiyohide; Kikuchi, Yoshiyuki; Hiyama, Tamejiro; Tobita, Etsuko; Kondo, Kiyoshi; Akimoto, Akira; Seita, Toru; and Watanabe, Hiroyuki, 4,567,206, Cl. 521-27.000.

Kikugawa, Shozo: *See*—
Okaniwa, Kenichiro; Koyama, Mikio; and Kikugawa, Shozo, 4,567,136, Cl. 435-4.000.

Kikumoto, Tadao, to Roland Corporation. Synchronizing signal generator. 4,566,362, Cl. 84-1.030.

Kim, Hyo-gun: *See*—
Sibilia, John P.; Kim, Hyo-gun; and Paterson, Arthur R., 4,566,991, Cl. 252-512.000.

Kim, Tae Y., to AT&T Technologies, Inc. Pulse plating of nickel-antimony films. 4,566,953, Cl. 204-28.000.

Kim, Zinaida I.: *See*—
Ljubman, Nazar Y.; Imangazieva, Gulsara K.; Nugmanova, Lyalya T.; Uskov, Alexandr I.; Sydykova, Tokhtobubu C.; and Kim, Zinaida I., 4,567,207, Cl. 521-35.000.

Kimball International, Inc.: *See*—
Henriott, Jay M., 4,566,743, Cl. 312-350.000.

Kimpel, Rolf-Dieter: *See*—
Schedele, Helmut; and Kimpel, Rolf-Dieter, 4,567,457, Cl. 335-128.000.

Kimura, Sosaku, to Citizen Watch Co., Ltd. System for correcting the position of a spindle for a processing machine. 4,566,226, Cl. 51-165.720.

Kincaid, Herbert: *See—*
Wolniak, Stanley C.; Kincaid, Herbert; Spencer, Elbert M.; and Brown, Ronald L., 4,566,167, Cl. 29-437.000.

Kingsbury, Charles M.: *See—*
Kulig, Constantine W.; Kingsbury, Charles M.; and Beckwith, Bruce R., 4,566,894, Cl. 65-304.000.

Kinjo, Hisao, to Victor Company of Japan, Ltd. Recording and/or reproducing apparatus. 4,567,535, Cl. 360-87.000.

Kinki Denki Co., Ltd.: *See—*
Tomita, Masao, 4,566,401, Cl. 116-207.000.

Kinnaer, Lucien: *See—*
Vandeplas, Paul; and Kinnaer, Lucien, 4,566,430, Cl. 126-433.000.

Kinoshita, Hiromitsu: *See—*
Nishibori, Setsuo; Komori, Hirohito; Saeki, Syuji; and Kinoshita, Hiromitsu, 4,567,242, Cl. 525-534.000.

Kinoshita, Mitsuo: *See—*
Nozawa, Ryoichiro; Kinoshita, Mitsuo; and Matsumura, Teruyuki, 4,567,342, Cl. 219-69.00M.

Kircher, Klaus: *See—*
Hammer, Heinz; Kircher, Klaus; and Meyer, Rolf-Volker, 4,567,210, Cl. 521-90.000.

Kiriake, Masaharu, to Murata Kikai Kabushiki Kaisha. System for supplying various kinds of cops to winder. 4,566,644, Cl. 242-35.50A.

Kirihara, Seishin: *See—*
Yoshioka, Takatoshi; Kirihara, Seishin; Shiga, Masao; Iijima, Katsumi; Hisano, Katsukuni; and Kaneko, Ryoichi, 4,566,810, Cl. 384-280.000.

Kiselev, Evgeny I.: *See—*
Gorlov, Viktor M.; Kiselev, Evgeny I.; Levin, Alexandr G.; Kutovoi, Valentin I.; Tverezy, Jury F.; and Spivak, Igor V., 4,566,587, Cl. 198-732.000.

Kishi, Fumio: *See—*
Sawada, Takeshi; Shinmi, Akira; Takagi, Hiroshi; Suzuki, Kenji; Kishi, Fumio; and Kozuki, Susumu, 4,567,116, Cl. 428-694.000.

Kiss, David B.: *See—*
Davidson, Marion A.; and Kiss, David B., 4,566,339, Cl. 73-862.390.

Kiss, Gabor D., to Celanese Corporation. Blend of wholly aromatic polyester and poly(ester-amide) capable of exhibiting an anisotropic melt phase. 4,567,227, Cl. 524-538.000.

Kitagawa, Hiroshi; Sato, Masaaki; Sawai, Mitsumasa; Yamamoku, Takeo; Akatsuka, Koichi; and Metoki, Toshio, to Mitsubishi Rayon Co., Ltd.; and Yamada Dobby Co., Ltd. Jacquard mechanism. 4,566,499, Cl. 139-59.000.

Kitagawa, Susumu: *See—*
Tomita, Yogi; Yamamoto, Hisashi; and Kitagawa, Susumu, 4,566,911, Cl. 134-6.000.

Kitagawa, Yoshiaki; Ohki, Koichiro; and Sarada, Toshio, to Matsushita Electric Works, Ltd. Electric space heater employing a vaporizable heat exchange fluid. 4,567,351, Cl. 219-341.000.

Kitahara, Takahiro: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; and Kitahara, Takahiro, 4,566,755, Cl. 350-96.340.

Kitamura, Masahiko: *See—*
Onogi, Toshiro; Yoda, Kenichi; and Kitamura, Masahiko, 4,567,556, Cl. 364-140.000.

Kitamura, Seiichi: *See—*
Sasaki, Masahiko; Watanabe, Kenji; and Kitamura, Seiichi, 4,566,398, Cl. 114-293.000.

Kitazawa, Noboru: *See—*
Matsumura, Wakuo; Kitazawa, Noboru; and Ohigashi, Yoshiaki, 4,566,250, Cl. 53-128.000.

Kitchens, John D.; and Novak, Leo R., to Dow Chemical Company, The. Modification of polymer surfaces. 4,567,241, Cl. 525-352.000.

Kivisto, Tuomo V. J.; Fallenius, Kai B.; and Niitti, Timo U., to Outokumpu Oy. Apparatus for leading off froth from the tank of a flotation cell. 4,566,968, Cl. 210-221.100.

Kiyosawa, Hiroshi: *See—*
Baba, Kiyokazu; Shirao, Shojiro; Nishida, Kenji; and Kiyosawa, Hiroshi, 4,566,834, Cl. 414-27.000.

Klaschka, Rudolf: *See—*
Wolf, Franz J.; and Klaschka, Rudolf, 4,566,604, Cl. 220-68.000.

Klein-Albenhausen, Heinrich, to Iban Barcelona, S.A. Large volume silo for bulk material, particularly raw cement powder. 4,566,232, Cl. 52-195.000.

Klein, David, to Almet Hardware Limited. Deadlock mechanism. 4,566,725, Cl. 292-191.000.

Klein, Erwin, to Brown, Boveri & Cie AG. Cooling device, in which converters or rectifiers or other semiconductor components are immersed in boiling liquor. 4,566,529, Cl. 165-32.000.

Klein, Hans-Christof; and Hohmann, Hans, to ITT Industries, Inc. Device for determining and checking condition state and other parameters of a pressure fluid. 4,566,805, Cl. 374-16.000.

Klein, Max, to Crane & Co., Inc., a part interest. Rolling filter apparatus. 4,566,969, Cl. 210-387.000.

Kleindienst GmbH: *See—*
Bihler, Franz; and Abele, Anton, 4,566,706, Cl. 280-5.220.

Kleinholz, Edward O., to Kiesel Co., The. Pneumatic fastener-driving tool and method. 4,566,619, Cl. 227-8.000.

Klement, Ekkehard: *See—*
Schuoecker, Dieter; and Klement, Ekkehard, 4,567,355, Cl. 235-310.000.

Kliklok Corporation: *See—*
Cartwright, Willard E., 4,566,846, Cl. 414-742.000.
Jones, Robert W., 4,566,253, Cl. 53-451.000.

Kling, Thord. Dispenser for containing and dispensing a premoistened web of material. 4,566,606, Cl. 221-25.000.

Klingenstein, Walter: *See—*
Fink, Roland; and Klingenstein, Walter, 4,566,522, Cl. 164-316.000.

Klockner CRA Technologie GmbH: *See—*
von Bogdandy, Ludwig; and Brotzmann, Karl, 4,566,904, Cl. 75-38.000.

Klockner-Humboldt-Deutz AG: *See—*
Hoffmann, Harald; Henrich, Gunter; and Waldhecker, Heinz-Dieter, 4,566,882, Cl. 55-100.000.
Melcher, Gerhard; Megerle, Friedrich; and Wuth, Wolfgang, 4,566,903, Cl. 75-26.000.

Klopp, Gregory S.: *See—*
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,566,164, Cl. 29-33.00M.

Kluge, Arthur F.; Clark, Robin D.; Strosberg, Arthur M.; Pascal, Jean-Claude G.; and Whiting, Roger, to Syntex (U.S.A.) Inc. Cardioselective aryloxy- and arylthio- hydroxypropylene-piperazinyl acetanilides which affect calcium entry. 4,567,264, Cl. 544-400.000.

Klukos, Colette M. Decorative package. 4,566,592, Cl. 206-449.000.

Knabe, Martin; and Anzenhofer, Wolfgang, to Webasto-Werk W. Baier GmbH & Co. Sliding roof for vehicles. 4,566,730, Cl. 296-221.000.

Knapp, Caroline M.: *See—*
Knapp, Frank W.; and Knapp, Caroline M., 4,566,489, Cl. 137-614.000.

Knapp, Frank W.; and Knapp, Caroline M. Quick disconnect coupling apparatus. 4,566,489, Cl. 137-614.000.

Knight, Derek I.; and Sullivan, Gilbert, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Conformable fascine. 4,566,821, Cl. 404-35.000.

Knirck, Jeffrey G.: *See—*
Tucker, Hartwell F.; Tucker, Jeffrey R.; Ross, Dennis; and Knirck, Jeffrey G., 4,567,391, Cl. 310-156.000.

Knoblauch, Karl; Harder, Burkhard; Heimbach, Heinrich; and Cosentino, Charles F., to Bergwerksverband GmbH; and Nitrotec Corporation. Method and apparatus for inerting transport containers. 4,566,282, Cl. 62-48.000.

Knoblauch, Karl: *See—*
Richter, Ekkehard; Knoblauch, Karl; Schlegel, Rolf; and Korbacher, Werner, 4,566,881, Cl. 55-25.000.

Knorr, Andreas: *See—*
Niemers, Ekkehard; Knorr, Andreas; and Garthoff, Bernward, 4,567,188, Cl. 514-332.000.

Knothe, Erich: *See—*
Sodler, Walter; Knothe, Erich; Maaz, Gunther; and Madge, Joachim, 4,566,548, Cl. 177-229.000.

Kobayashi, Kiyohiko: *See—*
Hayashi, Yutaka; Hamaguchi, Iwao; and Kobayashi, Kiyohiko, 4,567,061, Cl. 427-93.000.

Kobayashi, Minoru: *See—*
Iizuka, Kenichi; Uzuhashi, Hideo; Uneyama, Yoshihisa; Matuda, Michiya; and Kobayashi, Minoru, 4,566,289, Cl. 62-228.400.

Kobayashi, Toyohiro; Mochizuki, Shoji; Murata, Mitsuru; Tsuboi, Shunji; and Sakurai, Hideto, to Mitsubishi Denki Kabushiki Kaisha. Dot-matrix print controller. 4,566,813, Cl. 400-120.000.

Kobayashi, Yoshiro; Kumadaki, Itsumaro; Yamauchi, Takashi; and Iizuka, Akira, to Kureha Kagaku Kogyo Kabushiki Kaisha. 2-[Para-(2-substituted or unsubstituted-3,3,3-tri-fluoropropyl)phenyl]propionic acid or a salt thereof. 4,567,293, Cl. 562-496.000.

Koboshi, Shigeharu; and Kurematsu, Masayuki, to Konishiroku Photo Industry Co., Ltd. Method for processing of light-sensitive silver halide color photographic material. 4,567,134, Cl. 430-372.000.

Koch, Frank, to Koch, Linda. Magnetic thickness gauge with adjustable probe. 4,567,436, Cl. 324-230.000.

Koch, Linda: *See—*
Koch, Frank, 4,567,436, Cl. 324-230.000.

Kochakis, Donald G. Padlock security cover. 4,566,296, Cl. 70-56.000.

Koeck, Klaus, to Licentia Patent-Verwaltungs-GmbH. Service integrated digital transmission system. 4,567,586, Cl. 370-4.000.

Koehler, Gerald C., to Worldtronics International, Inc. Electronic cycle timer for a household appliance. 4,566,802, Cl. 368-9.000.

Koester, Eberhard: *See—*
Lehner, August; Kopke, Helmut; Roller, Hermann; Balz, Werner; Grau, Werner; Koester, Eberhard; and Sommermann, Friedrich, 4,567,108, Cl. 428-425.900.

Koga, Kunio: *See—*
Matsumoto, Mitsuo; Miura, Shinichi; Kikuchi, Koichi; Tamura, Masuhiko; Kojima, Hidetaka; Koga, Kunio; and Yamashita, Shigeru, 4,567,305, Cl. 568-454.000.

Kogel, Karl: *See—*
Smuda, Siegfried; Horner, Peter; Kogel, Karl; and Zeitler, Peter, 4,566,673, Cl. 254-84.000.

Koh, Yun B., to Fairchild Camera & Instrument Corporation. Method for controlling lateral diffusion of silicon in a self-aligned $TiSi_2$ process. 4,567,058, Cl. 427-55.000.

Kohler, Gernot: *See—*
Naarmann, Herbert; Heckmann, Walter; Kohler, Gernot; and Simak, Petr, 4,567,250, Cl. 528-423.000.

Kohler, Karl-Heinz: *See—*
Grigo, Ulrich; Kohler, Karl-Heinz; Binsack, Rudolf; Morbitzer, Leo; Merten, Josef; Trabert, Ludwig; and Heitz, Walter, 4,567,226, Cl. 524-538.000.

Kohli, Jerry L.: *See—*
Friedman, Harvey W.; Kohli, Jerry L.; and DeMur, Cynthia L., 4,566,721, Cl. 281-31.000.

Kohno, Yoshiki: *See—*
Hasegawa, Hiroshi; Shinzawa, Akira; and Kohno, Yoshiki, 4,566,994, Cl. 252-574.000.

Koike, Ichiro: *See—*
Yabe, Hideo; and Koike, Ichiro, 4,567,413, Cl. 318-489.000.

Koishikawa, Hirotoshi: *See—*
Yoshida, Ryuichi; Suzuki, Shigeru; Koishikawa, Hirotoshi; Miyamoto, Yoshimi; and Kawai, Kazuhide, 4,566,751, Cl. 339-218.00S.

Koizumi, Junji: *See—*
Sasaki, Koji; and Koizumi, Junji, 4,567,235, Cl. 525-113.000.
Sasaki, Koji; and Koizumi, Junji, 4,567,238, Cl. 525-179.000.

Koizumi, Yusuke; Furukawa, Yoshimi; and Sano, Shoichi, to Honda Giken Kogyo Kabushiki Kaisha. Steering system for vehicles. 4,566,711, Cl. 280-91.000.

Kojima, Hidetaka: *See—*
Matsumoto, Mitsuo; Miura, Shinichi; Kikuchi, Koichi; Tamura, Masuhiko; Kojima, Hidetaka; Koga, Kunio; and Yamashita, Shigeru, 4,567,305, Cl. 568-454.000.

Kojima, Tadashi: *See—*
Inagawa, Jun; Nagumo, Masahide; and Kojima, Tadashi, 4,567,568, Cl. 364-761.000.

Kojima, Yutaka: *See—*
Oshima, Hiroyo; Kano, Isao; Kojima, Yutaka; Shimura, Yoshihiko; Ishiguro, Ken; and Nagai, Koichi, 4,567,114, Cl. 428-480.000.

Kokubo, Takashi: *See—*
Tomono, Hiromi; Kokubo, Takashi; Yamaguchi, Kazuki; and Ikuma, Sadao, 4,567,233, Cl. 525-71.000.

Kokusan Denki Co., Ltd.: *See—*
Nitou, Hiroyasu; Shirai, Kiyoshi; and Takahashi, Osamu, 4,566,425, Cl. 123-600.000.

Kollmeyer, Willy D.: *See—*
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,567,283, Cl. 549-546.000.

Komada, Kenya: *See—*
Yuasa, Kazuhiro; and Komada, Kenya, 4,567,495, Cl. 346-153.100.

Komiya, Koji, to Iwatsu Electric Co., Ltd. Method and apparatus for converting analog signal into digital signal. 4,567,465, Cl. 340-347.0AD.

Komori, Hirohito: *See—*
Nishibori, Setsuo; Komori, Hirohito; Saeki, Syuji; and Kinoshita, Hiromitsu, 4,567,242, Cl. 525-534.000.

Komori Printing: *See—*
Tsunoda, Teruo; Numauchi, Hiromitsu; Kurata, Hironobu; Kawaguchi, Yoichi; Ishii, Satoshi; Seki, Masanori; Iwasaki, Masahiro; and Enomoto, Fukumasa, 4,566,194, Cl. 33-18.100.

Komori, Toshihisa: *See—*
Uzaki, Nagato; Komori, Toshihisa; Matui, Kazuharu; and Toyoda, Shigehiro, 4,566,521, Cl. 164-160.100.

Komorizono, Junichi; and Miwa, Akihiko, to Aisin Seiki Kabushiki Kaisha. Inlet assembly for a brake master cylinder. 4,566,276, Cl. 60-585.000.

Kondo, Kiyoshi: *See—*
Matsui, Kiyohide; Kikuchi, Yoshiyuki; Hiyama, Tamejiro; Tobita, Etsuko; Kondo, Kiyoshi; Akimoto, Akira; Seita, Toru; and Watanabe, Hiroyuki, 4,567,206, Cl. 521-27.000.

Kondo, Shinichi: *See—*
Umezawa, Hamao; and Kondo, Shinichi, 4,567,165, Cl. 514-36.000.

Kondoh, Shiroh, to Ricoh Company, Ltd. Magnetic toner developing device. 4,566,776, Cl. 355-3.0DD.

Kone Oy: *See—*
Nikulainen, Matti J., 4,566,381, Cl. 100-121.000.

Koning, Gerrit; and Schroeppel, Edward A., to Cordis Corporation. Apparatus and method for adjusting heart/pacer rate relative to right ventricular systolic pressure to obtain a required cardiac output. 4,566,456, Cl. 128-419.0PG.

Konishi, Kuniyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Light-receiving device for optical data transfer system. 4,567,446, Cl. 330-308.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Koboshi, Shigeharu; and Kurematsu, Masayuki, 4,567,134, Cl. 430-372.000.
Koyama, Mikio; and Okaniwa, Kenichiro, 4,567,024, Cl. 422-56.000.
Okaniwa, Kenichiro; Koyama, Mikio; and Kikugawa, Shozo, 4,567,136, Cl. 435-4.000.
Shiozawa, Kazuo; and Suzuki, Kijiro, 4,566,774, Cl. 354-413.000.

Konsevich, Francis X., to Boeing Company, The. Vibration damping stiffener. 4,566,231, Cl. 52-145.000.

Konstantinov, Alexandr A.: *See—*
Vinogradov, Georgy V.; Deinega, Jury F.; Yanovsky, Jury G.; Vasilieva, Olga V.; Konstantinov, Alexandr A.; and Chernysh, Mikhail M., 4,566,324, Cl. 73-60.000.

Koolen, Johannes L. A., to Dow Chemical Company, The. Apparatus and method for accurately measuring temperatures and temperature differences. 4,566,807, Cl. 374-112.000.

Kopke, Helmut: *See—*
Lehner, August; Kopke, Helmut; Roller, Hermann; Balz, Werner; Grau, Werner; Koester, Eberhard; and Sommermann, Friedrich, 4,567,108, Cl. 428-425.900.
Lehner, August; Velic, Milan; Kopke, Helmut; Balz, Werner; Lenz, Werner; Baur, Reinhold; and Melzer, Milena, 4,567,109, Cl. 428-425.900.

Koponen, Martti; and Tapio, Olli, to Valmet Oy. Transfer arrangement for guiding the paper web from the press section of a paper machine to it's drying section. 4,566,946, Cl. 162-359.000.

Koppenberg, Bruce G. Apparatus for casting concrete. 4,566,668, Cl. 249-60.000.

Koppers Company, Inc.: *See—*
Wallace, William E.; and Yu, Gui Y., 4,567,032, Cl. 423-644.000.

Korbacher, Werner: *See—*
Richter, Ekkehard; Knoblauch, Karl; Schlegel, Rolf; and Korbacher, Werner, 4,566,881, Cl. 55-25.000.

Korsgaard; Vagn, to V.I.K.-Consult ApS. Vapor barrier. 4,567,080, Cl. 428-137.000.

Korte, Kevin R.: *See—*
Sachleben, Leroy R.; Korte, Kevin R.; Snyder, Daniel D.; and Allen, Terry L., 4,566,468, Cl. 131-297.000.

Koshino, Yutaka: *See—*
Yasuda, Seiji; Koshino, Yutaka; and Yonezawa, Toshio, 4,566,174, Cl. 29-576.00W.

Kossin, Jacqualine. Flower support for wedding bouquets and the like. 4,566,221, Cl. 47-41.120.

Kotani, Masutoshi, to Iwatani & Co., Ltd. Aerator carried by automotive vehicle and control system therefor. 4,566,543, Cl. 172-4.000.

Kotobuki Engineering & Manufacturing Co., Ltd.: *See—*
Toda, Toshiyuki, 4,566,873, Cl. 494-53.000.

Kotone, Yoshiharu; and Hiraoka, Masaaki, to Nippon Pneumatic Manufacturing Co., Ltd. Control device for an air hoist. 4,566,675, Cl. 254-360.000.

Kovacs, Sandor, to Vasipari Kutato es Fejleszto Vallalat. Electromechanical measuring converter pin. 4,566,341, Cl. 73-862.650.

Koyama, Hiroshi; and Saito, Keiji, to Hitachi, Ltd. Control method and apparatus for rolling mill. 4,566,299, Cl. 72-8.000.

Koyama, Mikio; and Okaniwa, Kenichiro, to Konishiroku Photo Industry Co., Ltd. Analytical element. 4,567,024, Cl. 422-56.000.

Koyama, Mikio: *See—*
Okaniwa, Kenichiro; Koyama, Mikio; and Kikugawa, Shozo, 4,567,136, Cl. 435-4.000.

Koyo Seiko Company Limited: *See—*
Miyatake, Kiyoshi, 4,566,567, Cl. 192-45.000.

Kozponti Elelmiszeripari Kutato Intezet: *See—*
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,566,797, Cl. 356-402.000.

Kozuki, Susumu: *See—*
Sawada, Takeshi; Shinmi, Akira; Takagi, Hiroshi; Suzuki, Kenji; Kishi, Fumio; and Kozuki, Susumu, 4,567,116, Cl. 428-694.000.

Kraft, Wayne R.: *See—*
Wyatt, Virgil D.; Kraft, Wayne R.; and Thoma, Nandor G., 4,567,561, Cl. 364-200.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Friesner, Karl; Bege, Dietmar; Erbse, Dietmar; and Meininger, Siegfried, 4,566,204, Cl. 34-15.000.
Muller, Rainer; and Schiffers, Ulrich, 4,566,267, Cl. 60-39.070.

Kramer, Robert W., to Hughes, H. Mervin, II. Skin temperature control. 4,566,455, Cl. 128-380.000.

Krawczyk, Simon W., to Fab Industries, Inc. Double faced knit fabric and method. 4,567,075, Cl. 428-91.000.

Kreutze, Gerhard: *See—*
Obstfelder, Gunther; Kreutze, Gerhard; and Luttig, Winfried, 4,567,489, Cl. 346-76.0PH.

Kroeplien, Udo; and Rosdorfer, Joachim, to Coca-Cola Company, The. 2-Acylimidazole compounds, their synthesis and use as medicinal agents. 4,567,194, Cl. 514-400.000.

Krolla, Hans-Georg: *See—*
Gliemeroth, Georg; Speit, Burkhard; and Krolla, Hans-Georg, 4,566,987, Cl. 252-301.40F.

Krones AG Hermann Kronseder, Maschinenfabrik: *See—*
Schneider, Egon, 4,566,583, Cl. 198-459.000.

Kronogard, Clas O.: *See—*
Kronogard, Sven O., deceased; Kronogard, Clas O.; and Kronogard, Hakan, 4,566,279, Cl. 60-718.000.

Kronogard, Hakan: *See—*
Kronogard, Sven O., deceased; Kronogard, Clas O.; and Kronogard, Hakan, 4,566,279, Cl. 60-718.000.

Kronogard, Sven O., deceased (by Linden, Allen, administrator); Kronogard, Clas O.; and Kronogard, Hakan, to AB Volvo. Vehicle propulsion plant. 4,566,279, Cl. 60-718.000.

Kronos Incorporated: *See—*
Fedele, Vincent, 4,567,357, Cl. 235-377.000.

Kruger, Bernd-Wieland; Riebel, Hans-Jochem; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Cyanohydrin phosphonates as pesticides. 4,567,168, Cl. 514-89.000.

Krupp Corpoplast Maschinenbau GmbH: *See—*
Hone, Norbert; Horwege, Claus; and Rosenkranz, Otto, 4,566,871, Cl. 425-525.000.

Kubiak, Mira C.: *See—*
Canfield, V. Robert; Woodring, William J.; and Kubiak, Mira C., 4,567,079, Cl. 428-131.000.

Kubo, Miyuki: *See—*
Shirai, Shiro; Ogahara, Shunji; and Kubo, Miyuki, 4,567,472, Cl. 340-525.000.

Kubota, Kazuo: *See—*
Iwamoto, Shoji; and Kubota, Kazuo, 4,566,647, Cl. 242-67.10R.

Kuehnle, Manfred R., to Coulter Systems Corporation. Method of apparatus for liquid developing of electrostatic images in an electrophotographic imaging system including a looped image carrier. 4,566,781, Cl. 355-10.000.

Kuenzig, Ernest O. Tamperproof container neck construction. 4,566,601, Cl. 215-31.000.

Kuhn, Heinz, to Continental Gummi-Werke Aktiengesellschaft. Wheel and solid tire assembly having locking ring. 4,566,515, Cl. 152-402.000.

Kuhn, Milos J., to Phillips Petroleum Company. Direct determination of stacking velocities in three dimensional seismic prospecting. 4,567,582, Cl. 367-56.000.

Kukes, Simon G.: *See*—
Banks, Robert L.; and Kukes, Simon G., 4,567,159, Cl. 502-219.000.

Kulesza, Ralph J.; Wozniak, Walter J.; Disko, Harry; and Meyer, Burton C., to Marvin Glass & Associates. Magnetic drawing toy. 4,566,195, Cl. 33-27.110.

Kulig, Constantine W.; Kingsbury, Charles M.; and Beckwith, Bruce R., to Emhart Industries, Inc. Deflector adjustment for a glassware forming machine. 4,566,894, Cl. 65-304.000.

Kulprathipanja, Santi, to UOP Inc. Separation of 1,3-butadiene. 4,567,309, Cl. 585-829.000.

Kumadaki, Itsumaro: *See*—
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Yamauchi, Takashi; and Iizuka, Akira, 4,567,293, Cl. 562-496.000.

Kumano, Masafumi; Kawashima, Ikue; Hirama, Masayuki; and Tsuji, Yasuhiro, to Tohoku Ricoh Co., Ltd.; and Chugai Seiyaku Kabushiki Kaisha. Vascular anastomosis apparatus. 4,566,453, Cl. 128-303.100.

Kumano, Mikio: *See*—
Suzuki, Yutaka; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Naito, Takashi; Kumano, Mikio; Nakamura, Tetsuya; Haseda, Satoshi; and Masuda, Akira, 4,566,417, Cl. 123-478.000.

Kumasako, Takeo; Sato, Kiyomi; Kawakatsu, Akira; Sato, Akinori; and Mamiya, Isamu, to Japan Tobacco & Salt Public Co., The; and Tokyo Shisetsu Kogyo Kabushiki Kaisha. Cutting apparatus. 4,566,471, Cl. 131-317.000.

Kumo, Ichiro: *See*—
Yamazaki, Chikayasu; Torikai, Jun; and Kumo, Ichiro, 4,566,319, Cl. 73-360.000.

Kumura, Haruyoshi; Abo, Keiju; Tanaka, Yoshikazu; Hirano, Hiroyuki; Yamamuro, Sigeaki; and Morimoto, Yoshiro, to Nissan Motor Co., Ltd. Method and apparatus for controlling reduction ratio of continuously variable transmission with engine coolant temperature compensation. 4,566,354, Cl. 74-866.000.

Kunz, Rino E., to GRETAG Aktiengesellschaft. Process and apparatus for the focusing of a beam of light on an object. 4,567,362, Cl. 250-201.000.

Kupper, Wilhelm, to W. Schlafhorst & Co. Assembly of a support and thread tensioners for a bobbin creel. 4,566,651, Cl. 242-150.00R.

Kuraray Co., Ltd.: *See*—
Maruyama, Hitoshi; Tanaka, Taku; and Okaya, Takuji, 4,567,221, Cl. 524-436.000.
Matsumoto, Mitsuo; Miura, Shinichi; Kikuchi, Koichi; Tamura, Masuhiko; Kojima, Hidetaka; Koga, Kunio; and Yamashita, Shigeru, 4,567,305, Cl. 568-454.000.

Kurashima, Hideo. Separable spring-latched cufflink with transversally pressable release lever. 4,566,155, Cl. 24-41.000.

Kurata, Hironobu: *See*—
Tsunoda, Teruo; Numauchi, Hiromitsu; Kurata, Hironobu; Kawaguchi, Yoichi; Ishii, Satoshi; Seki, Masanori; Iwasaki, Masahiro; and Enomoto, Fukumasa, 4,566,194, Cl. 33-18.100.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Fukuda, Hiroyuki; Shigeta, Masatomo; Kaji, Hisatsugu; and Saitoh, Kuniyuki, 4,567,086, Cl. 428-166.000.
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Yamauchi, Takashi; and Iizuka, Akira, 4,567,293, Cl. 562-496.000.
Ohya, Masaki; and Matsukura, Yoshihiro, 4,567,090, Cl. 428-214.000.

Kurematsu, Masayuki: *See*—
Koboshi, Shigeharu; and Kurematsu, Masayuki, 4,567,134, Cl. 430-372.000.

Kuriyama, Shizuo: *See*—
Hirose, Noriyasu; Souda, Shigeru; Miyake, Kazutoshi; Kuriyama, Shizuo; Usuki, Kazuyasu; Akiyama, Yasuhiro; Nagaoka, Naoko; and Kawashima, Hidetoshi, 4,567,180, Cl. 514-253.000.

Kuroaawa, Toshishige; Ishisaka, Satoru; Yasutomi, Kazuki; and Ishiwatari, Takanobu, to Ikari Corporation. Apparatus for automatically trapping and processing rats or the like. 4,566,218, Cl. 43-58.000.

Kurz, Jerome L. Isokinetic extractive sampling probe. 4,566,342, Cl. 73-863.030.

Kusakabe, Masayoshi, to Nippon Electric Glass Company, Limited. Molds used for blowing glass articles. 4,566,895, Cl. 65-319.000.

Kusakabe, Tetsuo; Sakai, Tetsuro; and Honda, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Color television signal conversion device. 4,567,507, Cl. 358-11.000.

Kushibiki, Junichi: *See*—
Chubachi, Noriyoshi; Kushibiki, Junichi; and Nakanishi, Kouichi, 4,566,333, Cl. 73-642.000.

Kusumoto, Koshi: *See*—
Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, 4,567,030, Cl. 423-326.000.

Kutovoi, Valentin I.: *See*—
Gorlov, Viktor M.; Kiselev, Evgeny I.; Levin, Alexandr G.; Kutovoi, Valentin I.; Tverezy, Jury F.; and Spivak, Igor V., 4,566,587, Cl. 198-732.000.

Kutscher, Erwin: *See*—
Maier, Peter; Attinger, Karl; Sigel, Albert; Hansel, Gernot; Kutscher, Erwin; and Walter, Hartmut, 4,566,830, Cl. 409-182.000.

Kuwabara, Hideki; and Sudo, Yoshimi, to Japan Styrene Paper Corporation. Preliminarily foamed particles of non-crosslinked polypropylene-type resin. 4,567,208, Cl. 521-59.000.

Kuwait Institute for Scientific Research: *See*—
Owayss, Fathi A.; and Al-Ameeri, Rasheed S., 4,567,315, Cl. 585-827.000.

Kuwayama, Tetsuro: *See*—
Tanaka, Nobuyoshi; Hashimoto, Seiji; and Kuwayama, Tetsuro, 4,567,510, Cl. 358-44.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Inoue, Seijiro; and Ota, Shigenori, 4,567,046, Cl. 426-20.000.
Shimada, Kenjiro; Otomo, Masao; Tomita, Fusao; and Ito, Shingo, 4,567,164, Cl. 514-33.000.

Kyster, Erik: *See*—
Petersen, Hans C.; and Kyster, Erik, 4,566,272, Cl. 60-384.000.

La Calhene, Societe Anonyme: *See*—
Francois, Daniel; and Mercey, Gilles, 4,567,417, Cl. 318-632.000.

Label-Aire Inc.: *See*—
Crankshaw, Michael; and Allen, George A., 4,566,933, Cl. 156-444.000.

Lai, Mun F.: *See*—
Fellner, Peter J.; Lai, Mun F.; and Patel, Thakorbhai P., 4,567,189, Cl. 514-338.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Marhic, Gerard, 4,567,346, Cl. 219-121.0PB.

Laitram Corporation, The: *See*—
Lapeyre, James M., 4,567,567, Cl. 364-709.000.

Lakeland Rubber Stamp Company, Inc.: *See*—
Bronson, James C.; and Wright, Donald C., Jr., 4,566,382, Cl. 101-35.000.

Lam, Chiu T.; and Shannon, David M., to Dow Chemical Company, The. Production of phenols and catalyst therefor. 4,567,157, Cl. 502-208.000.

Lammerich, Walter: *See*—
Becker, Franz-Josef; Hubner, Erich; and Lammerich, Walter, 4,567,098, Cl. 428-327.000.

Lampersky, Dietmar; and Kaiser, Roman, to Givaudan Corporation. 2-Methyl-2-buten-1-yl tiglate. 4,567,291, Cl. 560-225.000.

Lamparter, Hansruedi: *See*—
Sommer, Hans-Jorg; Lamparter, Hansruedi; and Wermelinger, Maurizio, 4,566,642, Cl. 242-18.00R.

Landfors, Arthur A., to Varian Associates, Inc. Method of and apparatus for operating a diffusion pump. 4,566,861, Cl. 417-54.000.

Landin, Heather V.: *See*—
Johnson, Gilbert C.; and Landin, Heather V., 4,567,237, Cl. 525-170.000.

Landrum, Ralph A., Jr., to Western Geophysical Company of America. Adaptive preset force level control for a seismic vibrator. 4,567,583, Cl. 367-190.000.

Lane, Wendell C., Jr., to Dana Corporation. Pressure plate strap drive apparatus and method. 4,566,573, Cl. 192-70.180.

Lang, Gerhard, to Braun Aktiengesellschaft. Method and circuit for optical and/or acoustic indication of the charge state of a battery or a storage battery. 4,567,476, Cl. 340-636.000.

Lang, Hans-Jorg: *See*—
Schwerdtel, Ernst; and Lang, Hans-Jorg, 4,566,249, Cl. 53-55.000.

Langner, Carl: *See*—
Fastert, Herbert; and Langner, Carl, 4,566,526, Cl. 164-478.000.

Lapeyre, James M. Internal combustion engine. 4,566,408, Cl. 123-51.00B.

Lapeyre, James M., to Laitram Corporation, The. Computer keyboard displaying many operating instructions with few keys. 4,567,567, Cl. 364-709.000.

Large, Michael S.: *See*—
Edwards, Philip N.; and Large, Michael S., 4,567,174, Cl. 514-210.000.

Larsen, Charles G.: *See*—
Hiday, David R.; and Larsen, Charles G., 4,567,523, Cl. 358-191.100.

Larson, James M.; and Noreen, Allen L., to Minnesota Mining and Manufacturing Company. Composite low surface energy liner of perfluoropolyether. 4,567,073, Cl. 428-40.000.

Laska, Eugene M.: *See*—
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,567,183, Cl. 514-264.000.

Laskowski, Kenneth W.: *See*—
Britt, James E.; Laskowski, Kenneth W.; Sisson, Jeffrey L.; and Rinehart, Stephen A., 4,566,782, Cl. 355-14.0SH.

Latarius, Hans R., to Tekmar Angewandte Elektronik GmbH & Co. KG. Method of and system for controlling the ratio between the water flow rate in the primary circuit and the water flow rate in the secondary circuit of a hot water heating system. 4,566,628, Cl. 237-8.00C.

Latchum, John W., Jr., to Phillips Petroleum Company. Apparatus and method for drying solid materials. 4,567,340, Cl. 219-10.410.

Latzin, Dieter: *See*—
Fabian, Rainer; Marold, Freimut; and Latzin, Dieter, 4,566,886, Cl. 62-11.000.

Lau, Wah. Adjustable buckle. 4,566,158, Cl. 24-580.000.

Lau, Yue-Ying: *See*—
Barnett, Larry R.; Lau, Yue-Ying; Chu, Kwo R.; and Granatstein, Victor L., 4,567,401, Cl. 315-5.000.

Laubie, Michel: *See*—
Malen, Charles; Peglion, Jean-Louis; Laubie, Michel; and Poignant, Jean-Claude, 4,567,181, Cl. 514-256.000.

Laurent, Henry: *See*—
Hofmeister, Helmut; Laurent, Henry; Annen, Klaus; and Wiechert, Rudolf, 4,567,002, Cl. 260-397.400.

Lavielle, Gilbert; and Cudennec, Claude, to ADIR, s.a.r.l. Nitrosourea substituted phosphonates and pharmaceutical use. 4,567,169, Cl. 514-089.000.

Lawrence, James, to Sanders Associates, Inc. Pinch roller assembly. 4,567,491, Cl. 346-136.000.

Lawton, William R., to Graphic Controls Corporation. Color reversing compositions. 4,567,019, Cl. 422-57.000.

Laxton, Raymond: *See*—
Smith, Peter E.; and Laxton, Raymond, 4,567,511, Cl. 358-84.000.

Lease, William O.: *See*—
O'Meara, Joseph D., Jr.; Yuan, Herbert H.; Lease, William O.; and Stapleton, Robert G., 4,567,373, Cl. 250-573.000.

Le Clerc, Georges-Marie J.: *See*—
Bernard, Alain M.; Le Clerc, Georges-Marie J.; and Foulon, Bernard M., 4,566,328, Cl. 73-517.00B.

Lecomte, Daniel; and Gibaud, Michel, to Thomson CSF-Telephone. Electronic digital PCM time-division exchange with decentralized architecture. 4,567,589, Cl. 370-58.000.

Lee, Chi-Long: *See*—
Bauman, Therese M.; and Lee, Chi-Long, 4,567,212, Cl. 521-122.000.

Lee, Do I.: *See*—
Van Gilder, Ron L.; and Lee, Do I., 4,567,099, Cl. 428-327.000.

Lee, Jack W.: *See*—
Miller, Jule A.; Lee, Jack W.; and Thyssen, Jeffrey, 4,566,939, Cl. 156-655.000.

Lee, Richard J. Hand held cartridge reloading press. 4,566,366, Cl. 86-24.000.

Lee, Ronald B.: *See*—
Srivastava, Gopal K.; and Lee, Ronald B., 4,567,447, Cl. 331-1.00A.

Leebrick, David H., to Harris Corporation. Method of determining position on a wafer. 4,566,796, Cl. 356-401.000.

Leesona Corporation: *See*—
Benjamin, Kenneth A., 4,566,646, Cl. 242-45.000.

Legatti, Raymond H., to Technology Research Corporation. Resettable circuit closing device. 4,567,456, Cl. 335-20.000.

Legler, John G.: *See*—
Bartlett, Robert L.; Haas, Charles J.; and Legler, John G., 4,566,510, Cl. 144-1.00C.

Lehmann, Gunthart, to Maschinenbau Oppenweiler GmbH. Cutting device for sheets with at least one rotating cutting knife and conveyer. 4,566,360, Cl. 83-409.000.

Lehner, August; Kopke, Helmut; Roller, Hermann; Balz, Werner; Grau, Werner; Koester, Eberhard; and Sommermann, Friedrich, to BASF Aktiengesellschaft. Magnetic recording media. 4,567,108, Cl. 428-425.900.

Lehner, August; Velic, Milan; Kopke, Helmut; Balz, Werner; Lenz, Werner; Baur, Reinhold; and Melzer, Milena, to BASF Aktiengesellschaft. Magnetic recording media. 4,567,109, Cl. 428-425.900.

Leiby, Robert W., to Hewlett-Packard Company. Method and apparatus for reducing crosstalk effects upon phase measurement. 4,567,462, Cl. 340-347.00P.

Leigh-Monstevens, Keith V.; and Wrobleski, David L., to Automotive Products plc. Clutch throw-out bearing and bearing carrier assembly. 4,566,578, Cl. 192-98.000.

Leland Stanford Junior University, The Board of Trustees of the: *See*—
Pease, Roger F.; Tuckerman, David B.; and Swanson, Richard M., 4,567,505, Cl. 357-81.000.

Lemaitre, Guy. Flat acoustic diffuser. 4,566,557, Cl. 181-150.000.

Le Martret, Odile: *See*—
Delevallee , Francoise ; Deraedt, Roger; and Le Martret, Odile, 4,567,198, Cl. 514-513.000.

Lemche, Josef, to Siemens Aktiengesellschaft. Locking mechanism for a bipartite keyboard housing. 4,567,336, Cl. 200-305.000.

Lemme, Charles D., to Blazer International Corp. Automatic takeup and overload protection device for shape memory metal actuator. 4,567,549, Cl. 362-279.000.

Lenz, Werner: *See*—
Lehner, August; Velic, Milan; Kopke, Helmut; Balz, Werner; Lenz, Werner; Baur, Reinhold; and Melzer, Milena, 4,567,109, Cl. 428-425.900.

Leonard, John J.: *See*—
Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,567,307, Cl. 585-330.000.

Leopold, Wilbur R., Jr.; and Humes, Dennis W., to Mueller Co. Tamperproof fire hydrants. 4,566,481, Cl. 137-296.000.

Lepage, Jean-Luc; and Soula, Gerard, to Rhone-Poulenc Specialites Chimiques. Preparation of hydrogenated silanes by redistribution of hydrosilanes. 4,567,286, Cl. 556-469.000.

Le Pierres, Gildas, to Vibrachoc. Vibration damper and in particular frequency adapter for a helicopter blade. 4,566,677, Cl. 267-140.100.

Leroux, Jacques. Safety clasp for a necklace or bracelet chain. 4,566,159, Cl. 24-599.000.

Le Saige de la Villesbrunne, Arnaud G.: *See*—
Brown de Colstoun, Francois P. D.; Chambaret, Jean-Paul; Chambaret, Yves; Le Saige de la Villesbrunne, Arnaud G.; Moscovici, Jean-Claude M.; and Moscovici, Michel, 4,567,367, Cl. 250-340.000.

Lescoeur, Jean A.: *See*—
Moussy, Jacques L.; and Lescoeur, Jean A., 4,566,541, Cl. 166-318.000.

Lesher, George Y.; and Singh, Baldev, to Sterling Drug Inc. 5-Heteryl-1,6-naphthyridin-2(1H)-ones, cardiotonic use thereof and intermediates therefor. 4,567,186, Cl. 514-300.000.

Leskovec, Edward V.: *See*—
Wiblin, Wayne T.; Melocik, Grant C.; Leskovec, Edward V.; and Pickering, William, 4,567,467, Cl. 340-347.00P.

L'Etat Francais represente par le Delegue Ministeriel pour L'Armement: *See*—
Duguet, Jean, 4,566,921, Cl. 149-22.000.

LeVeen, Eric G.: *See*—
Piccone, Vincent A.; Piccone, John N.; Piccone, Louis A.; LeVeen, Robert F.; and LeVeen, Eric G., 4,566,464, Cl. 128-732.000.

LeVeen, Robert F.: *See*—
Piccone, Vincent A.; Piccone, John N.; Piccone, Louis A.; LeVeen, Robert F.; and LeVeen, Eric G., 4,566,464, Cl. 128-732.000.

Lever Brothers Company: *See*—
Schmidt, Werner J., 4,567,056, Cl. 426-607.000.

Levin, Alexandr G.: *See*—
Gorlov, Viktor M.; Kiselev, Evgeny I.; Levin, Alexandr G.; Kutovoi, Valentin I.; Tverezy, Jury F.; and Spivak, Igor V., 4,566,587, Cl. 198-732.000.

Levin, Jordan, to Fiberite Corporation. High conductivity graphite material and method of weaving. 4,567,094, Cl. 428-256.000.

Levine, Peter A., to RCA Corporation. Smear reduction in CCD imagers using empty well clocking. 4,567,524, Cl. 358-213.000.

Lewiner, Jacques; and Charpak, Georges. Read-out devices of electric charge distributions on dielectric surfaces. 4,567,530, Cl. 358-295.000.

Lewis, Edward L.; Parr, Jack E.; Fox, Mark A.; and Fuson, Robert L., to Zimmer, Inc. Prosthetic device with spacers. 4,566,138, Cl. 623-22.000.

Li, Hsin L.; Morris, Thomas K.; Seal, David B.; and Limoncelli, Edward V., to Allied Corporation. Nozzle assembly. 4,566,525, Cl. 164-463.000.

Libouton, Jean-Claude; Waterlot, Lucien; and Van Roy, Georges. Compositions of the explosive emulsion type, process for their manufacture and application of these compositions. 4,566,920, Cl. 149-21.000.

Licentia Patent-Verwaltungs-GmbH: *See*—
Koeck, Klaus, 4,567,586, Cl. 370-4.000.

Lichtblau, George J. Resonant tag and deactivator for use in an electronic security system. 4,567,473, Cl. 340-572.000.

Liese, Grover J.; and Pong, William. Fiber-optic stylet for needle tip localization. 4,566,438, Cl. 128-6.000.

Likhite, Vilas V. Mutant strain of *Listeria monocytogenes* and its use in production of IgM antibodies and as an immunotherapeutic agent. 4,567,041, Cl. 424-87.000.

Likitanupak, Chalerm. Windmill. 4,566,853, Cl. 416-117.000.

Likozar, Joseph M.: *See*—
Compton, William H.; and Likozar, Joseph M., 4,566,340, Cl. 73-862.480.

Lillie, James D.; and Skibbe, Rodney D. Honing tool. 4,566,229, Cl. 51-241.0VS.

Lim, Hong S., to Hughes Aircraft Company. Nickel-hydrogen bipolar battery. 4,567,119, Cl. 429-59.000.

Limited Company of Shinoda Sekkei Jimusho: *See*—
Shinoda, Morimasa; and Takahashi, Takamasa, 4,567,506, Cl. 358-11.000.

Limoncelli, Edward V.: *See*—
Li, Hsin L.; Morris, Thomas K.; Seal, David B.; and Limoncelli, Edward V., 4,566,525, Cl. 164-463.000.

Lin, I. Sioun: *See*—
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Linde Aktiengesellschaft: *See*—
Fabian, Rainer; Marold, Freimut; and Latzin, Dieter, 4,566,886, Cl. 62-11.000.
Reimann, Hans; and Fuchs, Uwe, 4,566,971, Cl. 210-616.000.

Linden, Allen, administrator: *See*—
Kronogard, Sven O., deceased; Kronogard, Clas O.; and Kronogard, Hakan, 4,566,279, Cl. 60-718.000.

Lindenbauer, Leo K. Solar energy collector. 4,566,434, Cl. 126-440.000.

Linder, Heinz, to Grapha-Holding Aktiengesellschaft. Apparatus for changing the direction of advancement of a stream of paper sheets or the like. 4,566,582, Cl. 198-367.000.

Lindig, Christian, to VDO Adolf Schindling AG. Analog display device, particularly a tachometer. 4,567,434, Cl. 324-160.000.

Lindley, Michael G., to Tate & Lyle Public Limited Company. Method of inhibiting sweetness. 4,567,053, Cl. 426-538.000.

Lindner, Hans-Jurgen: *See*—
Bottcher, Rolf; and Lindner, Hans-Jurgen, 4,566,681, Cl. 270-58.000.

Lindstrom, John W., to Hi-Speed Checkweigher Co., Inc. Weighing conveyor. 4,566,584, Cl. 198-504.000.

Link, Julian V., Jr.; and Cronan, Ronald E., to Marine Systems, Inc. Noise barrier. 4,566,558, Cl. 181-210.000.

Lisowyj, Bohdan, to InterNorth, Inc. Method for extraction of iron aluminum and titanium from coal ash. 4,567,026, Cl. 423-81.000.

Litaker, Stephen H. Insulating trap door cover. 4,567,074, Cl. 428-71.000.

Littek, Harald: *See*—
Bochinski, Rolf; Eimer, Klaus; Littek, Harald; and Nasse, Johannes, 4,566,533, Cl. 165-95.000.

Little Giant Industries, Inc.: *See*—
Boothe, Leland H., 4,566,150, Cl. 16-332.000.

Liu, Nan-I; and van der Meer, Roelof, to General Electric Company. Synergistic effect of metal flake and metal or metal coated fiber on EMI shielding effectiveness of thermoplastics. 4,566,990, Cl. 252-503.000.
Livsey, Robert A., to Quest Corporation. Digital servo indicator. 4,567,429, Cl. 324-99.00D.
Ljubman, Nazar Y.; Imangazieva, Gulsara K.; Nugmanova, Lyalya T.; Uskov, Alexandr I.; Sydykova, Tokhtobubu C.; and Kim, Zinaida I. Polymeric material adapted for physico-chemical separation of substances and method for producing same. 4,567,207, Cl. 521-35.000.
Lloyd, Norman E., to Nabisco Brands, Inc. Process for isomerizing glucose. 4,567,142, Cl. 435-94.000.
Lockheed Corporation: *See—*
Kellogg, James A., 4,566,502, Cl. 140-92.100.
Lockwood, Lawrence B. Automatic information, goods and services dispensing system. 4,567,359, Cl. 235-381.000.
Loeb, Ruediger: *See—*
Reimann, Kurt; Ackermann, Bernd; Loeb, Ruediger; and Ruther, Claus, 4,567,411, Cl. 318-341.000.
Loefqvist, Johan, to HB Varix. Method for applying and/or keeping an ischaemic area during surgery on the limbs. 4,566,436, Cl. 128-1.00R.
Loffland Brothers Company: *See—*
Johnson, Earl R., 4,566,579, Cl. 192-113.00B.
Lohausen, Viktor. Jointed arm mechanism for an awning. 4,566,516, Cl. 160-22.000.
Lombardino, Joseph G., to Pfizer, Inc. Antiinflammatory salts of piroxicam. 4,567,179, Cl. 514-225.000.
Long, Alden O., Jr.: *See—*
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,566,164, Cl. 29-33.00M.
Long, Dennis D.: *See—*
Gershenson, Meir; Sweeny, Mark F.; Long, Dennis D.; and Fleming, David L., 4,567,438, Cl. 324-248.000.
Longenecker, Howard H.: *See—*
Embree, David M.; Goldthorp, David C.; Longenecker, Howard H.; and Vogelpohl, David R., 4,567,333, Cl. 179-84.00T.
Longworth, Stuart W.: *See—*
Bennison, John J.; Longworth, Stuart W.; and Baker, John G., 4,566,972, Cl. 210-698.000.
L'Oreal: *See—*
Grollier, Jean F.; and Fourcadier, Chantal, 4,566,875, Cl. 8-406.000.
Lorenz, Lutz: *See—*
Huber, Johann; and Lorenz, Lutz, 4,566,722, Cl. 285-18.000.
Lotterbach, Gerhard: *See—*
van Belzen, David; Lotterbach, Gerhard; van Woudenberg, Jan F.; and Zucker, Udo, 4,566,309, Cl. 73-4.00R.
Lottes, Rosanna M.; and Swinehart, Grant E., to AT&T Bell Laboratories. Method and apparatus for providing a plurality of special services. 4,567,323, Cl. 179-18.00B.
Lotz, Alexander, to M.A.N. Maschinenfabrik Augsburg-Nurnberg. Cylindrical piston-type slide valve for pneumatic jigging machines. 4,566,487, Cl. 137-597.000.
Lotz, Horst K. Short tip for a torch and a torch type tool. 4,566,676, Cl. 266-48.000.
Lourenco, Jose A.: *See—*
Brasen, Daniel; DiGiuseppe, Michael A.; Lourenco, Jose A.; and Mahajan, Subhash, 4,566,934, Cl. 156-622.000.
Lowell, Seymour, to Quantachrome Corporation. Automatic volumetric sorption analyzer. 4,566,326, Cl. 73-432.0PS.
Loyd, Lew W., Jr., to Space Age Manufacturing Co., Inc. Method of making fireworks. 4,566,388, Cl. 102-361.000.
Loyola University of Chicago: *See—*
Babler, James H., 4,567,265, Cl. 546-16.000.
LTV Aerospace and Defense Company: *See—*
Harder, Isaac E., 4,567,007, Cl. 264-29.500.
Lubell, Michael; and Marks, Stephen. Health fitness monitor. 4,566,461, Cl. 128-668.000.
Lubrizol Corporation, The: *See—*
Hayashi, Katsumi, 4,566,983, Cl. 252-56.00R.
Lucas Industries Limited: *See—*
Chauveau, Jean-Marc; and Schmitt, Michel, 4,566,563, Cl. 188-18.00A.
Dufft, Jurgen, 4,566,623, Cl. 228-138.000.
Lucas Industries Public Limited Company: *See—*
Farr, Glyn P. R., 4,566,275, Cl. 60-554.000.
French, Geoffrey R.; Peltret, Pierre H.; and Chalke, Brian J., 4,566,271, Cl. 60-286.000.
Luckachina, John C., to United States of America, Navy. Pivotable support rescue hoist. 4,566,659, Cl. 244-137.00R.
Lullau, Georg. Photocopying machine. 4,566,787, Cl. 355-100.000.
Lumma, William C., Jr.: *See—*
Baldwin, John J.; Pietruszkiewicz, Adolph; Bolhofer, William A.; and Lumma, William C., Jr., 4,567,191, Cl. 514-362.000.
Luna, Carlos E.: *See—*
Beck, James P.; and Luna, Carlos E., 4,567,138, Cl. 435-15.000.
Lundgren, Bengt, to SKF Nova AB. Device for sealing a self-aligning rolling bearing. 4,566,811, Cl. 384-484.000.
Lundin, Sven-Ake; and Svensson, Arvid, to Svedala-Arbra AB. Cone crusher. 4,566,638, Cl. 241-37.000.
Luttig, Winfried: *See—*
Obstfelder, Gunther; Kreutze, Gerhard; and Luttig, Winfried, 4,567,489, Cl. 346-76.0PH.
Lynch, Frank: *See—*
Bozarth, Theodore B.; Demark, Anthony M.; Finn, Edward F.; and Lynch, Frank, 4,567,466, Cl. 340-347.0AD.
Lyons, Robert T., to Kabivitrum AB. Isotonic glycerol free intravenous fat emulsion. 4,567,045, Cl. 424-195.100.
M.A.N. Maschinenfabrik Augsburg-Nurnberg: *See—*
Lotz, Alexander, 4,566,487, Cl. 137-597.000.
M&T Chemicals Inc.: *See—*
Meunier, Gilles, 4,567,234, Cl. 525-73.000.
Maahs, Gunther: *See—*
Schuler, Ralf; and Maahs, Gunther, 4,567,220, Cl. 524-413.000.
Maaz, Gunther: *See—*
Sodler, Walter; Knothe, Erich; Maaz, Gunther; and Madge, Joachim, 4,566,548, Cl. 177-229.000.
Mabuchi, Kenichi; and Yagi, Masao, to Bio Mobuchi Co. Ltd. Massager. 4,566,442, Cl. 128-52.000.
MAC Valves, Inc.: *See—*
Neff, James A., 4,566,490, Cl. 137-625.650.
Mack, Henry J., Jr.: *See—*
Alie, Enrique; Gilmore, Arthur H.; and Mack, Henry J., Jr., 4,567,547, Cl. 362-154.000.
Madge, Joachim: *See—*
Sodler, Walter; Knothe, Erich; Maaz, Gunther; and Madge, Joachim, 4,566,548, Cl. 177-229.000.
Madison-Kipp Corporation: *See—*
Elliott, Kirk W.; Garver, Christian J.; Kayser, John P.; and Dombroski, Robert M., 4,566,560, Cl. 184-15.100.
Maeda, Takashi; and Sato, Masayuki, to Kabushiki Kaisha Daini Seikosha. Industrial robot. 4,566,847, Cl. 414-744.00R.
Maekawa, Hiroshi: *See—*
Arimoto, Satomi; Hirakawa, Hiroyuki; and Maekawa, Hiroshi, 4,567,538, Cl. 361-58.000.
Maekawa, Masakazu: *See—*
Ogata, Yasuhiro; and Maekawa, Masakazu, 4,567,496, Cl. 346-200.000.
Maekawa, Norio: *See—*
Okamoto, Magoji; and Maekawa, Norio, 4,566,641, Cl. 241-200.000.
Maes, Joseph M.: *See—*
Theuwis, Alfons L.; and Maes, Joseph M., 4,566,343, Cl. 73-864.590.
Maetani, Masami, to Canon Kabushiki Kaisha. Web transport device. 4,566,654, Cl. 242-204.000.
Magnino, Toney L. Quick erection tent for pickup trucks. 4,566,729, Cl. 296-159.000.
Mahajan, Subhash: *See—*
Brasen, Daniel; DiGiuseppe, Michael A.; Lourenco, Jose A.; and Mahajan, Subhash, 4,566,934, Cl. 156-622.000.
Mahnke, Parker E., to Marcy Gymnasium Equipment Co. Exercise bench. 4,566,691, Cl. 272-123.000.
Mahoney, Morgan D. Swimming pool wall construction in pools of the type using a metal side wall. 4,566,141, Cl. 4-506.000.
Maier & Co.: *See—*
Vesely, Gottfried, 4,566,169, Cl. 29-560.000.
Maier, Peter; Attinger, Karl; Sigel, Albert; Hansel, Gernot; Kutscher, Erwin; and Walter, Hartmut. Router with quick depth of cut adjustment. 4,566,830, Cl. 409-182.000.
Main, W. Eric: *See—*
Jarrett, Robert B.; Main, W. Eric; and Neidorff, Robert A., 4,567,388, Cl. 307-540.000.
Main, William E., to Motorola, Inc. Circuit and method for linearizing the output signal of an FM detector. 4,567,441, Cl. 329-103.000.
Maki, Kenichiro: *See—*
Nagato, Nobuyuki; Maki, Kenichiro; Uematsu, Tomoe; and Ishioka, Ryoji, 4,567,292, Cl. 560-245.000.
Maki, Yoshitaka: *See—*
Nohara, Akira; and Maki, Yoshitaka, 4,567,201, Cl. 514-571.000.
Makino, Syozaburo; Yoshikawa, Keiji; and Nakasho, Tukayo, to Nippon Selen Co., Ltd. Automatic supervisory system for a warper. 4,566,163, Cl. 28-187.000.
Maldonado, Paul: *See—*
Hagenbach, Germain; Maldonado, Paul; and Maurice, Jacques, 4,567,222, Cl. 524-476.000.
Malen, Charles; Peglion, Jean-Louis; Laubie, Michel; and Poignant, Jean-Claude, to ADIR, s.a.r.l. Bicyclo (4.2.0) 1,3,5-octatriene compounds and use as α-adrenergics. 4,567,181, Cl. 514-256.000.
Mallevialle, Joel: *See—*
Cognet, Louis; Argoud, Christian; Matray, Francois; and Mallevialle, Joel, 4,567,020, Cl. 422-101.000.
Maly, Rudolf, to Daimler-Benz Aktiengesellschaft. Mixture-compression internal combustion engine. 4,566,413, Cl. 123-256.000.
Mamiya, Isamu: *See—*
Kumasako, Takeo; Sato, Kiyomi; Kawakatsu, Akira; Sato, Akinori; and Mamiya, Isamu, 4,566,471, Cl. 131-317.000.
Mancinelli, Paul A., to Atlantic Richfield Company. Copolymers of terminally functional polymers. 4,567,239, Cl. 525-309.000.
Mandella, Michael J. High power laser system. 4,567,597, Cl. 372-34.000.
Mandle, Richard M., to Electro-Nucleonics, Inc. Cuvette array. 4,566,790, Cl. 356-246.000.
Mangum, Thomas M., to Ciba-Geigy Corporation. Stable, concentrated, liquid dispersions of anionic dyestuffs. 4,567,171, Cl. 514-150.000.
Mannesmann Rexroth GmbH: *See—*
Rotte, Hermann J.; and Bogl, Emil, 4,566,479, Cl. 137-312.000.
Manning, Larry F.; and Stanley, Andrea. Recorded and printed message carrier. 4,566,590, Cl. 206-232.000.
Mannschke, Lothar, to U.S. Philips Corporation. Optical star coupler. 4,566,753, Cl. 350-96.160.

Manville Service Corporation: *See—*
Jackson, Fred L., 4,567,215, Cl. 523-218.000.
Map Mikrofilm Apparatebau Dr. Poehler GmbH & Co. KG: *See—*
Walczak, Andrzej, 4,566,739, Cl. 308-3.00R.
Marchesini, Sisto, to Royal Plastic S.A. Dismountable folding chair. 4,566,731, Cl. 297-45.000.
Marcy Gymnasium Equipment Co.: *See—*
Mahnke, Parker E., 4,566,691, Cl. 272-123.000.
Marechal, Roger; and Jeantet, Lucien, to Rocamat. Device for cutting blocks of granite, marble, stone and the like materials. 4,566,427, Cl. 125-16.00R.
Marhic, Gerard, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Arc-striking method for a welding or cutting torch and a torch adapted to carry out said method. 4,567,346, Cl. 219-121.0PB.
Marine Systems, Inc.: *See—*
Link, Julian V., Jr.; and Cronan, Ronald E., 4,566,558, Cl. 181-210.000.
Marinier, Robert P., Jr.: *See—*
Roberts, Timothy J.; Roberts, Thomas J., Jr.; Roberts, Thomas J., Sr.; and Marinier, Robert P., Jr., 4,566,142, Cl. 4-604.000.
Marinkovich, Vincent A.: *See—*
Sell, William J.; Riege, David H.; and Marinkovich, Vincent A., 4,567,149, Cl. 436-513.000.
Marks, Stephen: *See—*
Lubell, Michael; and Marks, Stephen, 4,566,461, Cl. 128-668.000.
Marold, Freimut: *See—*
Fabian, Rainer; Marold, Freimut; and Latzin, Dieter, 4,566,886, Cl. 62-11.000.
Maros, Ronald R., to Cooper Industries, Inc. Connector assembly. 4,566,745, Cl. 339-14.00P.
Marozzi, Alfred A. Article imprinter and cartridge inker. 4,566,387, Cl. 101-330.000.
Marquardt, Klaus: *See—*
Ball, Peter; Marquardt, Klaus; Selig, Manfred; and Staudinger, Gunther, 4,567,297, Cl. 564-208.000.
Marshall, Jeffrey F., to PT Components, Inc. Multiple-disc electromagnetic clutch. 4,566,574, Cl. 192-84.00C.
Martin, Dennis R., to Draper Technologies, Inc. Coin operated dispensers for dispensing horizontally disposed articles such as newspapers from the upper end of a stack. 4,566,581, Cl. 194-248.000.
Martin, Henry; and Fricker, Urs, to Ciba-Geigy Corporation. Novel oxime ethers, the preparation thereof, compositions containing them and the use thereof. 4,566,901, Cl. 71-105.000.
Martin, Philip T., to ITT Corporation. Electronic hybrid having synthesized impedance circuitry. 4,567,331, Cl. 179-170.0NC.
Martin Processing, Inc.: *See—*
Hermes, Julius, 4,566,645, Cl. 242-35.50R.
Martin, Ralph E.; and Puidak, Heino, to Continental Can Company, Inc. Capacitive article density monitor. 4,567,410, Cl. 318-332.000.
Martinez, Manuel T. Method and apparatus for removing defective corrugated board by splicing. 4,566,922, Cl. 156-64.000.
Maru, Hansraj: *See—*
Patel, Pinakin; Dharia, Dilip; and Maru, Hansraj, 4,567,117, Cl. 429-19.000.
Maruyama, Hitoshi; Tanaka, Taku; and Okaya, Takuji, to Kuraray Co., Ltd. Water resistant compositions. 4,567,221, Cl. 524-436.000.
Marvin Glass & Associates: *See—*
Kulesza, Ralph J.; Wozniak, Walter J.; Disko, Harry; and Meyer, Burton C., 4,566,195, Cl. 33-27.110.
Marx, Hans-Norbert; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. Salts of 2-(methoxy-carbonylamino)-benzimidazole. 4,567,277, Cl. 548-306.000.
Masaki, Syouichi; Tamura, Kimio; Wakao, Teruyoshi; Nakashima, Noriyuki; Asami, Ken; and Sakai, Kazunori, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Antiskid control with wheel-speed difference compensation. 4,566,737, Cl. 303-109.000.
Maschinenbau Oppenweiler GmbH: *See—*
Lehmann, Gunthart, 4,566,360, Cl. 83-409.000.
Masler, William F., III; and Amjad, Zahid, to B. F. Goodrich Company, The. Scale inhibition in water systems. 4,566,973, Cl. 210-701.000.
Masler, William F., III; and Amjad, Zahid, to B. F. Goodrich Company, The. Method of inhibiting scale with copolymer. 4,566,974, Cl. 210-701.000.
Mason, Anthony, to Whirlpool Corporation. Neutral pump-out for automatic washer. 4,566,295, Cl. 68-12.00R.
Massachusetts Institute of Technology: *See—*
Jarvinen, Philip O., 4,567,110, Cl. 428-433.000.
Massey, James L.; and Omura, Jimmy K., to Omnet Associates. Method and apparatus for maintaining the privacy of digital messages conveyed by public transmission. 4,567,600, Cl. 375-2.100.
Mast Immunosystems, Ltd.: *See—*
Sell, William J.; Riege, David H.; and Marinkovich, Vincent A., 4,567,149, Cl. 436-513.000.
Masterman, Hugh C.: *See—*
Sawyer, Carleton E.; and Masterman, Hugh C., 4,566,179, Cl. 29-596.000.
Masuda, Akira: *See—*
Suzuki, Yutaka; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Naito, Takashi; Kumano, Mikio; Nakamura, Tetsuya; Haseda, Satoshi; and Masuda, Akira, 4,566,417, Cl. 123-478.000.
Masuda, Takeshi: *See—*
Sawa, Natsuo; Masuda, Takeshi; and Mizui, Takashi, 4,567,259, Cl. 544-207.000.
Masui, Motonobu: *See—*
Ohtagaki, Yoshio; Ochi, Masafumi; Masui, Motonobu; Tachibana, Kanichi; and Uchida, Akio, 4,567,403, Cl. 315-47.000.
Masumoto, Tsuyoshi; Inoue, Akihisa; Takahashi, Yoshimi; Hoshi, Akira; and Mizutani, Uichiro, to Aisin Seiki Kabushiki Kaisha. Liquid helium level indicating gauge. 4,566,323, Cl. 73-295.000.
Masuyama, Kenichi; Okutu, Toshimitu; Miyoshi, Takahito; Ogawa, Hiroshi; Utumi, Masahiro; Fujiyama, Masaaki; and Tada, Sugihiko, to Fuji Photo Film Co., Ltd. Method of making magnetic recording medium. 4,567,057, Cl. 427-48.000.
Matray, Francois: *See—*
Cognet, Louis; Argoud, Christian; Matray, Francois; and Mallevialle, Joel, 4,567,020, Cl. 422-101.000.
Matson, James A., to Bristol-Myers Company. Process for preparing 4'-deschlororebeccamycin. 4,567,143, Cl. 435-119.000.
Matsuda, Hiroto: *See—*
Ikeda, Masami; Matsuda, Hiroto; Shibata, Makoto; and Takahashi, Hiroto, 4,567,493, Cl. 346-140.00R.
Matsuda, Ikuo: *See—*
Tadokoro, Tomoo; Okimoto, Haruo; and Matsuda, Ikuo, 4,566,422, Cl. 123-559.000.
Matsui, Kiyohide; Kikuchi, Yoshiyuki; Hiyama, Tamejiro; Tobita, Etsuko; Kondo, Kiyoshi; Akimoto, Akira; Seita, Toru; and Watanabe, Hiroyuki, to Toyo Soda Manufacturing Co., Ltd.; and Sagami Chemical Research Center. Fluorocarbon polymers and processes for their preparation. 4,567,206, Cl. 521-27.000.
Matsuki, Taketo: *See—*
Tominaga, Ichiro; and Matsuki, Taketo, 4,567,219, Cl. 524-413.000.
Matsukura, Yoshihiro: *See—*
Ohya, Masaki; and Matsukura, Yoshihiro, 4,567,090, Cl. 428-214.000.
Matsumoto, Hiroshi, to Seikosha Co., Ltd. Structure for mounting roller on shaft. 4,566,815, Cl. 400-641.000.
Matsumoto, Katsutoshi, to Dainippon Screen Mfg. Co., Ltd.; and Toray Industries, Inc. Intaglio printing plate and printing method. 4,566,384, Cl. 101-170.000.
Matsumoto, Masato: *See—*
Akanuma, Shigetake; Nakajima, Minoru; Takashima, Satoshi; Imamura, Haruo; Ojiro, Yoshitaka; Kakuta, Hiroshi; and Matsumoto, Masato, 4,566,736, Cl. 299-23.000.
Matsumoto, Mitsuo; Miura, Shinichi; Kikuchi, Koichi; Tamura, Masuhiko; Kojima, Hidetaka; Koga, Kunio; and Yamashita, Shigeru, to Kuraray Company, Ltd.; and Daicel Chemical Industries, Ltd. Process for continuous hydroformylation of allyl alcohol. 4,567,305, Cl. 568-454.000.
Matsumura, Kiyotoshi: *See—*
Torii, Sigeru; Tanaka, Hideo; Shiroi, Takashi; Sasaoka, Michio; Saito, Norio; and Matsumura, Kiyotoshi, 4,566,996, Cl. 260-239.00A.
Matsumura, Teruyuki: *See—*
Nozawa, Ryoichiro; Kinoshita, Mitsuo; and Matsumura, Teruyuki, 4,567,342, Cl. 219-69.00M.
Matsumura, Wakuo; Kitazawa, Noboru; and Ohigashi, Yoshiaki, to Unitika Ltd. Method and apparatus for producing bag-shaped packages with cap body and content. 4,566,250, Cl. 53-128.000.
Matsuno, Takumi: *See—*
Yazaki, Takao; Hattori, Kazuhide; Matsuno, Takumi; Hayama, Kazuhide; Ito, Isao; and Saito, Yukio, 4,567,097, Cl. 428-317.700.
Matsuo, Hirohumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Wide-angle lens. 4,566,764, Cl. 350-459.000.
Matsuo, Seitaro: *See—*
Itsumi, Manabu; Ehara, Kohei; Muramoto, Susumu; and Matsuo, Seitaro, 4,566,940, Cl. 156-643.000.
Matsuse, Kohki; Hashimoto, Hitoshi; and Suzuki, Toshiaki, to Kabushiki Kaisha Meidensha. Current-type GTO inverter with surge energy restoration. 4,567,555, Cl. 363-138.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Yamaguchi, Kazufumi; and Murata, Takahiko, 4,567,529, Cl. 358-294.000.
Matsushita Electric Works, Ltd.: *See—*
Kitagawa, Yoshiaki; Ohki, Koichiro; and Sarada, Toshio, 4,567,351, Cl. 219-341.000.
Onogi, Toshiro; Yoda, Kenichi; and Kitamura, Masahiko, 4,567,556, Cl. 364-140.000.
Tanishi, Tokio; and Yokoyama, Hideki, 4,566,748, Cl. 339-95.00D.
Matsushita, Ken; and Onishi, Tetsuo, to Duplo Seiko Corporation; and Duplo Manufacturing Corporation. Winding apparatus for removing used stencil. 4,566,383, Cl. 101-121.000.
Matsuura, Toshio; and Suwa, Kyoichi, to Nippon Kogaku K.K. Alignment apparatus. 4,566,795, Cl. 356-400.000.
Mattern, Richard E.: *See—*
Keenan, Charles E.; Mattern, Richard E.; and Vaccaro, Charles A., 4,566,400, Cl. 116-171.000.
Matuda, Michiya: *See—*
Iizuka, Kenichi; Uzuhashi, Hideo; Uneyama, Yoshihisa; Matuda, Michiya; and Kobayashi, Minoru, 4,566,289, Cl. 62-228.400.
Matui, Kazuharu: *See—*
Uzaki, Nagato; Komori, Toshihisa; Matui, Kazuharu; and Toyoda, Shigehiro, 4,566,521, Cl. 164-160.100.
Matusik, Frank J.; and Nelson, Donald W., to National Metal and Refining Company, Ltd. Rotational vibratory viscometer transducer and circuit. 4,566,181, Cl. 29-602.00R.
Mauchle, Peter: *See—*
Dobsa, Josip; Mauchle, Peter; Pfyl, Walter; and Sadek, Kadry, 4,567,424, Cl. 323-210.000.

Maudal, Inge; Niemeier, Byron M.; and Wedertz, Larry D., to General Dynamics Pomona Division. Steering mechanism for an explosively fired projectile. 4,566,656, Cl. 244-3.110.

Mauk, Gerhard; and Huinink, Heinrich, to Continental Gummi-Werke Aktiengesellschaft. Pneumatic vehicle tire. 4,566,514, Cl. 152-209.00R.

Mauldin, Charles H.: *See—*
Arcuri, Kym B.; Mauldin, Charles H.; and Shaw, Dave H., 4,567,205, Cl. 518-715.000.

Mauranen, Pekka; and Vedenpaa , Timo, to Valmet Oy. Apparatus for cutting a lead-in strip from a paper web in a paper machine. 4,566,944, Cl. 162-286.000.

Maurice, Jacques: *See—*
Hagenbach, Germain; Maldonado, Paul; and Maurice, Jacques, 4,567,222, Cl. 524-476.000.

May, George N. Curb extrusion apparatus with interchangeable molds. 4,566,823, Cl. 404-98.000.

Mayer, Lily: *See—*
Joseph, Ady; Mayer, Lily; and Miutel, Alexander, 4,566,992, Cl. 252-518.000.

Mazda Motor Corporation: *See—*
Kanai, Seita; and Kanazawa, Hirotaka, 4,566,718, Cl. 280-708.000.
Tadokoro, Tomoo; Shiraishi, Hideo; and Okimoto, Haruo, 4,566,412, Cl. 123-216.000.
Tadokoro, Tomoo; Okimoto, Haruo; and Matsuda, Ikuo, 4,566,422, Cl. 123-559.000.

Mazzeo, Michael P.: *See—*
Rizk, Sidky D.; Hsieh, Harry W. S.; and Mazzeo, Michael P., 4,567,107, Cl. 428-425.500.

McBride, Alan L.: *See—*
Gray, James S.; Chamberlin, James W.; McBride, Alan L.; and Schreiner, Peter G., III, 4,567,391, Cl. 370-109.000.

McConnell, Robert K., to Wayland Research Inc. Method of and apparatus for pattern recognition. 4,567,610, Cl. 382-18.000.

McCoy, Randall E.: *See—*
Moldovan, Anton G.; and McCoy, Randall E., 4,566,224, Cl. 51-56.00R.

McCrory, Michael L.; and McCrory, Roy E. Feeding wildfowl decoy. 4,566,214, Cl. 43-3.000.

McCrory, Roy E.: *See—*
McCrory, Michael L.; and McCrory, Roy E., 4,566,214, Cl. 43-3.000.

McCutcheon, Arnold E. Agricultural work vehicle. 4,566,553, Cl. 180-237.000.

McDermott, Thomas C., to Rockwell International Corporation. Multiplex equipment monitoring apparatus. 4,567,587, Cl. 370-13.000.

McDonnell, Damien G.; and Smith, Robert A., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Laterally fluorinated liquid crystal materials and frequency change devices. 4,566,759, Cl. 350-346.000.

McFarland, Archie R.; and Preece, Bruce L., to Beehive Machinery, Inc. Separating machine having overlapping screw pump. 4,566,640, Cl. 241-74.000.

McGinniss, Vincent, to Battelle Development Corporation. Electrodeposited continuous thin film transfer process for producing film functional as barrier coatings. 4,566,962, Cl. 204-180.900.

McGinniss, Vincent D.; and Dick, Richard J., to Chugoku Marine Paints (USA) Inc. Anti-fouling paint containing leaching agent stabilizers. 4,566,906, Cl. 106-15.050.

McGregor, Douglas D., to Texas Instruments Incorporated. Apparatus for measuring the magnitude of a magnetic field. 4,567,439, Cl. 324-304.000.

McGuire, Hugh K. Flexible duct forming apparatus. 4,566,932, Cl. 156-429.000.

McKenna, Owen P., to BICC Public Limited Company. Extrusion machinery. 4,566,303, Cl. 72-262.000.

McOrmond, Philip M.: *See—*
O'Brien, Robert N.; McOrmond, Philip M.; Hocking, Martin B.; and Thornton, Kenneth R., 4,566,315, Cl. 73-61.400.

McStravick, David M.: *See—*
Baker, John R.; Chenoweth, David V.; and McStravick, David M., 4,566,495, Cl. 138-149.000.

McVey, Charles I., to General Electric Company. Increased efficacy high pressure sodium lamp yielded by increased wall temperature operation. 4,567,396, Cl. 313-25.000.

Mead Corporation, The: *See—*
Cooley, Jack S., 4,566,248, Cl. 53-48.000.
Muller, Rolf, 4,566,593, Cl. 206-611.000.
Wood, Prentice J.; Oliff, James R.; and Watkins, Richard K., 4,566,626, Cl. 229-37.00R.

Measuronics Corporation: *See—*
Schumacher, Peter M., 4,567,515, Cl. 358-107.000.

Mecilec: *See—*
Arnaud, Robert, 4,566,809, Cl. 374-126.000.

Medema, Pieter W.; and Benjamins, Elmo I., to U.S. Philips Corporation. Coffee maker. 4,566,374, Cl. 99-281.000.

Mednick, R. Lawrence; and Blum, David B., to Chem Systems, Inc. Method for making methanol. 4,567,204, Cl. 518-700.000.

Megatech Corporation: *See—*
Basmajian, Vahan V., 4,566,532, Cl. 165-45.000.

Megerle, Friedrich: *See—*
Melcher, Gerhard; Megerle, Friedrich; and Wuth, Wolfgang, 4,566,903, Cl. 75-26.000.

Mehl, Thomas L.; and Burdick, William S., to Mehl, Thomas L. Selected frequency hair removal device and method. 4,566,454, Cl. 128-303.130.

Mehta, Arun K.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,566,394, Cl. 110-347.000.

Meier, Linus; and Hanselmann, Roland, to Mettler Instrumente AG. Measuring instrument display with exchangeable legends for different languages or operating modes. 4,567,481, Cl. 340-784.000.

Meininger, Siegfried: *See—*
Friesner, Karl; Bege, Dietmar; Erbse, Dietmar; and Meininger, Siegfried, 4,566,204, Cl. 34-15.000.

Melby, Phillip J. Game racket having adjustable string mounts. 4,566,695, Cl. 273-73.00D.

Melcher, Gerhard; Megerle, Friedrich; and Wuth, Wolfgang, to Klockner-Humboldt-Deutz AG. Method for the pyrometallurgical treatment of fine grained solids to produce molten products. 4,566,903, Cl. 75-26.000.

Melman, Paul: *See—*
Carlsen, W. John; and Melman, Paul, 4,566,761, Cl. 350-401.000.

Melocik, Grant C.: *See—*
Wiblin, Wayne T.; Melocik, Grant C.; Leskovec, Edward V.; and Pickering, William, 4,567,467, Cl. 340-347.00P.

Melzer, Milena: *See—*
Lehner, August; Velic, Milan; Kopke, Helmut; Balz, Werner; Lenz, Werner; Baur, Reinhold; and Melzer, Milena, 4,567,109, Cl. 428-425.900.

Mentor Corporation: *See—*
Fogarty, Terence M., 4,566,446, Cl. 128-79.000.

Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., to J-M Manufacturing Company, Inc. Tubular plastics objects. 4,566,496, Cl. 138-154.000.

Menzies, Bruce K., to Geotechnical Digital Systems Limited. Pressure source. 4,566,868, Cl. 417-572.000.

Mercey, Gilles: *See—*
Francois, Daniel; and Mercey, Gilles, 4,567,417, Cl. 318-632.000.

Merck & Co., Inc.: *See—*
Baldwin, John J.; Pietruszkiewicz, Adolph; Bolhofer, William A.; and Lumma, William C., Jr., 4,567,191, Cl. 514-362.000.
Baldwin, John J., 4,567,276, Cl. 548-343.000.
Willard, Alvin K.; Novello, Frederick C.; Hoffman, William F.; and Cragoe, Edward J., Jr., 4,567,289, Cl. 560-059.000.
Young, Steven D., 4,567,268, Cl. 546-116.000.

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Meska, Robert J.; and Bishop, Mary F. Small appliance wall bracket. 4,566,666, Cl. 248-558.000.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Bittner, Helmut; Gottzein, Eveline; and Surauer, Michael, 4,567,564, Cl. 364-434.000.

Mestler, Donald C. Folding table support. 4,566,661, Cl. 248-171.000.

Metafuse Limited: *See—*
Joseph, Ady; Mayer, Lily; and Miutel, Alexander, 4,566,992, Cl. 252-518.000.

Metalines, Inc.: *See—*
Dunsworth, Charles L., 4,566,242, Cl. 52-573.000.

Metallurgie Hoboken-Overpelt: *See—*
Detournay, Jacquy J. C.; and Sterckx, Jozef V. M., 4,567,027, Cl. 423-101.000.

Metcalf, Travis W., to United States of America, Navy. Automatic character recognition system. 4,567,609, Cl. 382-9.000.

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Kitagawa, Hiroshi; Sato, Masaaki; Sawai, Mitsumasa; Yamamoku, Takeo; Akatsuka, Koichi; and Metoki, Toshio, 4,566,499, Cl. 139-59.000.

Metronic Electronic GmbH: *See—*
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Mettler Instrumente AG: *See—*
Meier, Linus; and Hanselmann, Roland, 4,567,481, Cl. 340-784.000.

Mettler, Rollin W., Jr. Integrated circuit module and method of making same. 4,567,545, Cl. 361-401.000.

Metzeler Kautschuk GmbH: *See—*
Gey, Mathias; Grote, Jurgen; Pittel, Horst; Samol, Gerd W.; and Zelt, Rainer, 4,567,085, Cl. 428-163.000.

Metzger, Gerhard: *See—*
Rau, Karl; Kalk, Heinz; and Metzger, Gerhard, 4,566,322, Cl. 73-295.000.

Meunier, Gilles, to M&T Chemicals Inc. Graft copolymers of alkyl methacrylates onto cross-linked butadiene - alkyl acrylate copolymers and their use as impact modifiers. 4,567,234, Cl. 525-73.000.

Meunier, Paul L.: *See—*
Castera, Jean P.; and Meunier, Paul L., 4,566,329, Cl. 73-597.000.

Meyer, Burton C.: *See—*
Kulesza, Ralph J.; Wozniak, Walter J.; Disko, Harry; and Meyer, Burton C., 4,566,195, Cl. 33-27.110.

Meyer, Olga: *See—*
Meyer, Rainer-Leo; John, Reinmar; Nagel, Rolf; and Muller, Gunter, 4,567,230, Cl. 524-786.000.

Meyer, Rainer-Leo; John, Reinmar; Nagel, Rolf; and Muller, Gunter, to BGB-Gesellschaft Reinmar John & Rainer Leo Meyer; and Meyer, Olga. 1-Component coating composition, utilization thereof and process for manufacturing a protection coating. 4,567,230, Cl. 524-786.000.

Meyer, Rolf-Volker: *See—*
Hammer, Heinz; Kircher, Klaus; and Meyer, Rolf-Volker, 4,567,210, Cl. 521-90.000.

Michalski, William L., Jr. Apparatus and method for welding a stud to the surface of a workpiece. 4,567,344, Cl. 219-98.000.

Micro Power Systems, Inc.: *See—*
Hall, John H., 4,566,914. Cl. 148-1.500.

Microdot Inc.: *See—*
Peers, Robert P., 4,566,747, Cl. 339-74.00R.
Zitting, Gordon T., 4,566,703, Cl. 277-165.000.

Microglass, Inc.: *See—*
Butler, Robert M., 4,566,839, Cl. 414-404.000.

Microlife Technics, Inc.: *See—*
Olsen, Ronald H., 4,567,141, Cl. 435-91.000.

Micropure, Incorporated: *See—*
Sachar, Kenneth S.; and Rich, Stanley R., 4,566,636, Cl. 239-698.000.

Microtel B.V.: *See—*
van Halteren, Aart Z., 4,567,382, Cl. 307-400.000.

Migis, Ronald P.: *See—*
Enk, William A.; and Migis, Ronald P., 4,566,542, Cl. 169-62.000.

Miki, Joh: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,566,897, Cl. 71-88.000.

Mikiya, Toshio: *See—*
Takeuchi, Hirosato; and Mikiya, Toshio, 4,566,431, Cl. 126-437.000.

Mikuni Kogyo Kabushiki Kaisha: *See—*
Yamamoto, Minato; and Takahashi, Shunji, 4,566,418, Cl. 123-479.000.

Miles Laboratories, Inc.: *See—*
Johnson, Leighton C., 4,566,203, Cl. 34-9.000.

Miles, Ronald C., to Olin Corporation. Method of monitoring an electrolytic cell. 4,566,950, Cl. 204-1.00T.

Millar, Malcolm H.: *See—*
Hutton, Denis A.; and Millar, Malcolm H., 4,567,010, Cl. 264-117.000.

Miller, Arthur: *See—*
Hopkins, Maxwell M.; and Miller, Arthur, 4,566,893, Cl. 65-69.000.

Miller, Charles P., to Miller Formless Co., Inc. Construction machine. 4,566,822, Cl. 404-84.000.

Miller Formless Co., Inc.: *See—*
Miller, Charles P., 4,566,822, Cl. 404-84.000.

Miller, Gordon G., to United Technologies Corporation. Helicopter gimbal rotor. 4,566,856, Cl. 416-134.00A.

Miller, Jule A.; Lee, Jack W.; and Thyssen, Jeffrey, to Avco Corporation. Surface preparation of nickel base alloys for brazing. 4,566,939, Cl. 156-655.000.

Miller, Robert G.: *See—*
Schwartz, Victor M.; and Miller, Robert G., 4,566,818, Cl. 403-172.000.

Miller, Stephen J.; and Pandey, Sue D., to Chevron Research Company. Process for producing alkylbenzenes. 4,567,312, Cl. 585-419.000.

Miller, William M.: *See—*
Hoffman, Lawrence A.; Hacker, Jay P.; and Miller, William M., 4,566,552, Cl. 180-69.210.

Mimura, Yoshiki; Arai, Tetsuji; and Fukuda, Satoru, to Ushio Denki Kabushiki Kaisha. Flashlight-radiant apparatus. 4,567,352, Cl. 219-405.000.

Minagawa, Shoichi: *See—*
Asai, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, 4,567,392, Cl. 310-313.00A.
Asai, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, 4,567,393, Cl. 310-313.00A.

Miner Enterprises: *See—*
Anderson, David G., 4,566,678, Cl. 267-141.100.

Minicilli, Jean, to U.S. Philips Corporation. Method and apparatus for the stepwise static testing of the respective connections and integrated subsystems of a microprocessor-based system for use by the general public. 4,567,592, Cl. 371-20.000.

Minier, Jean; Barthelemy, Herve ; and Foglia, Vincent, to Commissariat a l'Energie Atomique. System for drilling from a water surface, which is insensitive to the swell. 4,566,824, Cl. 405-202.000.

Miniet, Jay J., to Motorola, Inc. Double-sided flexible electronic circuit module. 4,567,543, Cl. 361-398.000.

Ministry of International Trade & Industry: *See—*
Hayashi, Yutaka; Hamaguchi, Iwao; and Kobayashi, Kiyohiko, 4,567,061, Cl. 427-93.000.

Minnesota Mining and Manufacturing Company: *See—*
Howells, Richard D., 4,566,981, Cl. 252-8.800.
Isbrandt, Russell R.; and Young, Chung I., 4,567,133, Cl. 430-348.000.
Johnson, Gilbert C.; and Landin, Heather V., 4,567,237, Cl. 525-170.000.
Larson, James M.; and Noreen, Allen L., 4,567,073, Cl. 428-40.000.

Miotto, Mirella: *See—*
Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, 4,566,874, Cl. 8-103.000.

Mirsberger, Heimut; and Popp, Franz, to Hilti Aktiengesellschaft. Sleeve-shaped expansion dowel. 4,566,832, Cl. 411-21.000.

Misawa, Makoto; Mizoguchi, Tetsuya; Kawakami, Kinya; and Ahagon, Asahiro, to Yokohama Rubber Co., Ltd., The. Rubber composition for tire treads. 4,567,225, Cl. 524-526.000.

Misawa, Rintaro, to Sunwa Sharyo Manufacturing Co., Ltd. Stair-climbing wheelchair carrier. 4,566,550, Cl. 180-8.200.

Mita Industrial Co., Ltd.: *See—*
Kajita, Hiroshi; and Nakajima, Tadanobu, 4,566,780, Cl. 355-3.00R.
Nakatani, Kaname; Miyakawa, Nobuhiro; Higashiguchi, Teruaki; and Nakagama, Syoji, 4,566,908, Cl. 106-308.00N.

Mitsubishi Chemical Industries Limited: *See—*
Murao, Yoshikazu; Sawayama, Shigeru; and Satoh, Kohichi, 4,567,300, Cl. 564-215.000.

Mitsubishi Denki K.K.: *See—*
Hosogai, Setsuo; Fujii, Hiroshi; Tamaru, Shigemi; Terachi, Junichi; Takatsuka, Takuo; and Suhara, Hideo, 4,567,455, Cl. 335-16.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Araya, Shinji; and Tsuji, Shintaro, 4,567,566, Cl. 364-554.000.
Arimoto, Satomi; Hirakawa, Hiroyuki; and Maekawa, Hiroshi, 4,567,538, Cl. 361-58.000.
Demizu, Akira, 4,566,410, Cl. 123-179.0BG.
Kobayashi, Toyohiro; Mochizuki, Shoji; Murata, Mitsuru; Tsuboi, Shunji; and Sakurai, Hideto, 4,566,813, Cl. 400-120.000.
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Suzuki, Katsuhiko; and Honda, Takenobu, 4,566,562, Cl. 187-22.000.
Umeda, Yasukazu; and Takabe, Katsunori, 4,567,558, Cl. 364-148.000.
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Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Mitsubishi Mining & Cement Company, Ltd.: *See—*
Ohtagaki, Yoshio; Ochi, Masafumi; Masui, Motonobu; Tachibana, Kanichi; and Uchida, Akio, 4,567,403, Cl. 315-47.000.

Mitsubishi Monsanto Chemical Company: *See—*
Tomono, Hiromi; Kokubo, Takashi; Yamaguchi, Kazuki; and Ikuma, Sadao, 4,567,233, Cl. 525-71.000.

Mitsubishi Paper Mills, Ltd.: *See—*
Emoto, Kazuhiro; and Haino, Kozo, 4,567,126, Cl. 430-59.000.
Kagota, Nobuhiro, 4,566,907, Cl. 106-21.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Hattori, Satoru; Yazaki, Takao; Hattori, Kazuhide; Nishida, Koji; Hattori, Hideki; and Fujimura, Kazumasa, 4,567,089, Cl. 428-213.000.
Yazaki, Takao; Hattori, Kazuhide; Matsuno, Takumi; Hayama, Kazuhide; Ito, Isao; and Saito, Yukio, 4,567,097, Cl. 428-317.700.

Mitsubishi Rayon Co., Ltd.: *See—*
Kitagawa, Hiroshi; Sato, Masaaki; Sawai, Mitsumasa; Yamamoku, Takeo; Akatsuka, Koichi; and Metoki, Toshio, 4,566,499, Cl. 139-59.000.

Mitsubishi Yuka Fine Chemical Co.: *See—*
Yazaki, Takao; Hattori, Kazuhide; Matsuno, Takumi; Hayama, Kazuhide; Ito, Isao; and Saito, Yukio, 4,567,097, Cl. 428-317.700.

Mitsuhashi, Masamichi, to Mitsubishi Denki Kabushiki Kaisha. Digitally controlled rectifying system for driving a motor. 4,567,408, Cl. 318-317.000.

Mitsui Engineering & Shipbuilding Co., Ltd.: *See—*
Sasaki, Masahiko; Watanabe, Kenji; and Kitamura, Seiichi, 4,566,398, Cl. 114-293.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Yoshimoto, Takeo; Hosono, Akira; Miki, Joh; Funakoshi, Yasunobu; Fujita, Takashi; and Hojo, Yoshikata, 4,566,897, Cl. 71-88.000.

Mitutoyo Mfg. Co., Ltd.: *See—*
Ishii, Munenori, 4,566,201, Cl. 33-172.00E.

Miura, Shinichi: *See—*
Matsumoto, Mitsuo; Miura, Shinichi; Kikuchi, Koichi; Tamura, Masuhiko; Kojima, Hidetaka; Koga, Kunio; and Yamashita, Shigeru, 4,567,305, Cl. 568-454.000.

Miutel, Alexander: *See—*
Joseph, Ady; Mayer, Lily; and Miutel, Alexander, 4,566,992, Cl. 252-518.000.

Miwa, Akihiko: *See—*
Komorizono, Junichi; and Miwa, Akihiko, 4,566,276, Cl. 60-585.000.

Miwa, Hirohide: *See—*
Sato, Takuso; Ichida, Nobuyuki; and Miwa, Hirohide, 4,566,460, Cl. 128-660.000.

Miya, Yoji: *See—*
Sano, Takashi; Kawabata, Kazuo; and Miya, Yoji, 4,567,106, Cl. 428-413.000.

Miyagi, Masahiro; Uehara, Katsuharu; Nozawa, Yoshio; and Deguchi, Takahiko, to Hitachi, Ltd. Method of stacking fins of heat exchangers. 4,566,359, Cl. 83-23.000.

Miyakawa, Nobuhiro: *See—*
Nakatani, Kaname; Miyakawa, Nobuhiro; Higashiguchi, Teruaki; and Nakagama, Syoji, 4,566,908, Cl. 106-308.00N.

Miyake, Kazutoshi: *See—*
Hirose, Noriyasu; Souda, Shigeru; Miyake, Kazutoshi; Kuriyama, Shizuo; Usuki, Kazuyasu; Akiyama, Yasuhiro; Nagaoka, Naoko; and Kawashima, Hidetoshi, 4,567,180, Cl. 514-253.000.

Miyamoto, Issei; and Kato, Yuichi, to Ohi Seisakusho Co., Ltd. Lever assembly. 4,566,350, Cl. 74-526.000.

Miyamoto, Yoshimi: *See—*
Yoshida, Ryuichi; Suzuki, Shigeru; Koishikawa, Hirotoshi; Miyamoto, Yoshimi; and Kawai, Kazuhide, 4,566,751, Cl. 339-218.00S.

Miyata, Tsutomu: *See—*
Ohmura, Kenji; Miyata, Tsutomu; Yamashita, Yoshihiro; and Noda, Minoru, 4,566,841, Cl. 414-417.000.

Miyatake, Kiyoshi, to Koyo Seiko Company Limited. Overrunning roller clutch. 4,566,567, Cl. 192-45.000.

Miyauchi, Tateoki; Hongo, Mikio; Mizukoshi, Katsuro; Yamaguchi, Hiroshi; and Shimase, Akira, to Hitachi, Ltd. Apparatus for summing several ring-shape laser beams. 4,566,765, Cl. 350-619.000.

Miyazaki, Tsutomu; Fukuda, Tatemi; and Yoshimine, Kazuya, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Device for storage of empty bobbins for a spinning frame. 4,566,263, Cl. 57-276.000.

Miyoshi, Takahito; Okutu, Toshimitu; Utumi, Masahiro; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Process for producing magnetic recording media. 4,567,063, Cl. 427-128.000.

Miyoshi, Takahito: *See*—
Masuyama, Kenichi; Okutu, Toshimitu; Miyoshi, Takahito; Ogawa, Hiroshi; Utumi, Masahiro; Fujiyama, Masaaki; and Tada, Sugihiko, 4,567,057, Cl. 427-48.000.

Mize, Dean N.: *See*—
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Mizoguchi, Shoichi, to NEC Corporation. Automatic adaptive equalizer having improved reset function. 4,567,599, Cl. 375-14.000.

Mizoguchi, Tetsuya: *See*—
Misawa, Makoto; Mizoguchi, Tetsuya; Kawakami, Kinya; and Ahagon, Asahiro, 4,567,225, Cl. 524-526.000.

Mizui, Takashi: *See*—
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Mizukoshi, Katsuro: *See*—
Miyauchi, Tateoki; Hongo, Mikio; Mizukoshi, Katsuro; Yamaguchi, Hiroshi; and Shimase, Akira, 4,566,765, Cl. 350-619.000.

Mizuno, Yukio; and Sugimoto, Keiichi, to Takeda Chemical Industries, Ltd. Method of producing (S)-glyceraldehyde acetonide. 4,567,282, Cl. 549-450.000.

Mizutani, Hidemasa: *See*—
Ohtaka, Keiji; Suzuki, Takashi; Iizuka, Kiyoshi; and Mizutani, Hidemasa, 4,567,123, Cl. 430-4.000.

Mizutani, Uichiro: *See*—
Masumoto, Tsuyoshi; Inoue, Akihisa; Takahashi, Yoshimi; Hoshi, Akira; and Mizutani, Uichiro, 4,566,323, Cl. 73-295.000.

Mobil Oil Company: *See*—
Horodysky, Andrew G., 4,566,879, Cl. 44-71.000.

Mobil Oil Corporation: *See*—
Holmes, Billy G., 4,566,536, Cl. 166-251.000.
Rodewald, Paul G., 4,567,310, Cl. 585-408.000.

Mobley, Joseph G., to Scientific-Atlanta, Inc. Descrambler for sync-suppressed TV signals. 4,567,517, Cl. 358-120.000.

Mochida, Haruo: *See*—
Moriya, Masaichi; Mochida, Haruo; and Takeda, Yoshimitsu, 4,566,576, Cl. 192-84.00C.

Mochizuki, Shoji: *See*—
Kobayashi, Toyohiro; Mochizuki, Shoji; Murata, Mitsuru; Tsuboi, Shunji; and Sakurai, Hideto, 4,566,813, Cl. 400-120.000.

Modat, Bernard, to Renault Vehicules Industriels. Device for connecting a tractor to a semitrailer. 4,566,716, Cl. 280-439.000.

Moe, Per H. Method for diffusion welding. 4,566,625, Cl. 228-265.000.

Moffett, Richard C., to Honeywell Information Systems, Inc. Memory control for refreshing in a step mode. 4,567,571, Cl. 364-900.000.

Mohnach, Michael G.: *See*—
Baerenwald, Philip M.; Mohnach, Michael G.; and Plisky, John J., 4,566,147, Cl. 15-250.420.

Mohr, Dieter, to Hoechst Aktiengesellschaft. Process for the electrochemical roughening of aluminum useful for printing plate supports, in an aqueous mixed electrolyte. 4,566,959, Cl. 204-129.750.

Mohr, Dieter, to Hoechst Aktiengesellschaft. Process for electrochemical roughening of aluminum useful for printing plate supports, in an aqueous mixed electrolyte. 4,566,960, Cl. 204-129.750.

Moldovan, Anton G.; and McCoy, Randall E., to RCA Corporation. Lapping apparatus. 4,566,224, Cl. 51-56.00R.

Moller, Rudolf: *See*—
Brausfeld, Walter; Gottling, Helmut; Moller, Rudolf; Muller, Peter; and Scharnowski, Gerhard, 4,566,196, Cl. 33-125.00R.

Mominee, David E.: *See*—
Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., 4,566,496, Cl. 138-154.000.

Monica, Thomas A. Actuation for spring mounted hobby horse. 4,566,688, Cl. 272-53.100.

Monie, Jean, to Societe Industrielle de Bellevaux, SIBEL. Cam operated control device of an electrical switch. 4,567,339, Cl. 200-153.0LB.

Monsanto Company: *See*—
Alt, Gerhard H.; and Bannon, James S., 4,567,299, Cl. 564-214.000.
Monzyk, Bruce F.; and Henn, Arthur R., 4,567,284, Cl. 556-37.000.
Wrobleski, James T.; Edwards, James W.; Graham, Charles R.; Keppel, Robert A.; and Raffelson, Harold, 4,567,158, Cl. 502-209.000.

Montage Aktiebolag: *See*—
Skogman, Bengt G.; Svensson, Hans T.; and Torres, Eduardo E., 4,567,088, Cl. 428-213.000.

Monten, Gordon A. Water vessel leak detector and method of detecting leaks. 4,566,313, Cl. 73-40.700.

Monzyk, Bruce F.; and Henn, Arthur R., to Monsanto Company. Cobalt complex of N-alkylalkanohydroxamic acid. 4,567,284, Cl. 556-37.000.

Moore, Carl O., to A. E. Staley Manufacturing Company. Extruded confections. 4,567,055, Cl. 426-578.000.

Moore, David N., to Phoenix Closures, Inc. Linerless closure. 4,566,603, Cl. 215-329.000.

Moore, Kenneth P., to Xerox Corporation. Sheet feeding apparatus and valve therefor. 4,566,683, Cl. 271-98.000.

Moorehead, Eric L.: *See*—
Robinson, Paul R.; and Moorehead, Eric L., 4,567,314, Cl. 585-621.000.

Moors, Petrus M. A. W.; and Uittenbogaard, Teunis H., to U.S. Philips Corporation. Method of manufacturing transistors. 4,566,176, Cl. 29-578.000.

Morantz, Daniel J.: *See*—
Baldry, Peter J.; Collins, John H.; Morantz, Daniel J.; Overton, Terence K. W.; and Wright, David W., 4,567,122, Cl. 430-4.000.

Moraw, Roland: *See*—
Schwierz, Peter P.; Rebhan, Adolf; and Moraw, Roland, 4,566,783, Cl. 355-14.0FU.

Morbitzer, Leo: *See*—
Grigo, Ulrich; Kohler, Karl-Heinz; Binsack, Rudolf; Morbitzer, Leo; Merten, Josef; Trabert, Ludwig; and Heitz, Walter, 4,567,226, Cl. 524-538.000.

Morel, Claude: *See*—
Bigg, Dennis; Morel, Claude; and Sevrin, Mireille, 4,567,177, Cl. 514-214.000.

Morgan, William C.; and Wagner, Richard A., Sr., to Wag-Mor Corporation. Camera carrying conduit inspection sled. 4,567,514, Cl. 358-100.000.

Moriguchi, Haruhiko; Inui, Toshiharu; Hisatake, Masayuki; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Thermal head drive device. 4,567,488, Cl. 346-76.0PH.

Morihisa, Mitsuo; and Akao, Hideyuki, to Sharp Kabushiki Kaisha. Voltage level compensating interface circuit for inter-logic circuit data transmission system. 4,567,575, Cl. 364-900.000.

Morimoto, Yoshiro: *See*—
Kumura, Haruyoshi; Abo, Keiju; Tanaka, Yoshikazu; Hirano, Hiroyuki; Yamamuro, Sigeaki; and Morimoto, Yoshiro, 4,566,354, Cl. 74-866.000.

Morinaga, Masaru, to NSK-Warner K.K. Emergency-locking type retractor provided with a take-up force locking mechanism. 4,566,650, Cl. 242-107.40A.

Morisaki, Minoru: *See*—
Hara, Kunio; Tanaka, Toshie; Shibayama, Teruji; Morisaki, Minoru; and Kaneko, Yoshio, 4,566,924, Cl. 156-73.500.

Morita, Michio: *See*—
Ooi, Kiyoshi; Morita, Michio; Suzuki, Kazuyoshi; Hashizume, Soh; and Yoshizawa, Hanako, 4,567,147, Cl. 435-237.000.

Moriya, Masaichi; Mochida, Haruo; and Takeda, Yoshimitsu, to Ohi Seisakusho Co., Ltd.; and Nissan Motor Co., Ltd. Reduction gear having a magnet clutch mechanism. 4,566,576, Cl. 192-84.00C.

Moroni, Wilko, to Hoechst Aktiengesellschaft. Electrophotographic recording material. 4,567,125, Cl. 430-58.000.

Morris, S. Brent; and Wisniewski, Richard A., to United States of America, National Security Agency. Fast parallel sorting processor. 4,567,572, Cl. 364-900.000.

Morris, Thomas K.: *See*—
Li, Hsin L.; Morris, Thomas K.; Seal, David B.; and Limoncelli, Edward V., 4,566,525, Cl. 164-463.000.

Moscovici, Armand: *See*—
Neuroth, David H.; and Moscovici, Armand, 4,567,320, Cl. 174-103.000.

Moscovici, Jean-Claude M.: *See*—
Brown de Colstoun, Francois P. D.; Chambaret, Jean-Paul; Chambaret, Yves; Le Saige de la Villesbrunne, Arnaud G.; Moscovici, Jean-Claude M.; and Moscovici, Michel, 4,567,367, Cl. 250-340.000.

Moscovici, Michel: *See*—
Brown de Colstoun, Francois P. D.; Chambaret, Jean-Paul; Chambaret, Yves; Le Saige de la Villesbrunne, Arnaud G.; Moscovici, Jean-Claude M.; and Moscovici, Michel, 4,567,367, Cl. 250-340.000.

Moseley, John B., to Torrington Company, The. X-Y Position indicator for a display system. 4,566,191, Cl. 33-1.00M.

Moser, Rabin: *See*—
Henry, Arnold W.; and Moser, Rabin, 4,567,349, Cl. 219-216.000.

Mostek Corporation: *See*—
Van Tran, Hiep, 4,567,389, Cl. 307-530.000.

Motorola, Inc.: *See*—
Howell, William J.; and Hatchett, John D., 4,567,603, Cl. 375-65.000.
Jarrett, Robert B.; Main, W. Eric; and Neidorff, Robert A., 4,567,388, Cl. 307-540.000.
Main, William E., 4,567,441, Cl. 329-103.000.
Miniet, Jay J., 4,567,543, Cl. 361-398.000.
Stuhlmiller, Gary L., 4,567,384, Cl. 307-442.000.

Motrenec, Donald L. Steering stabilizer for vehicles. 4,566,712, Cl. 280-272.000.

Mountain, Peter J., to British Telecommunications. Three-to-two level digital signal conversions and vice versa. 4,567,601, Cl. 375-22.000.

Mourier, Georges, to Thomson-CSF. Electron beam injection device for an ultra-high frequency radio electric wave generator. 4,567,402, Cl. 315-39.300.

Moussy, Jacques L.; and Lescoeur, Jean A., to Compagnie Francaise des Petroles. Production tubes for use in the completion of an oil well. 4,566,541, Cl. 166-318.000.

Mouzin, Gilbert: *See*—
Cousse, Henri; Mouzin, Gilbert; Bonnaud, Bernard; Charveron, Marie; and Fauran, Francois, 4,567,288, Cl. 560-37.000.

Moyer, Carl L.: *See*—
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,566,164, Cl. 29-33.00M.

Mueller Co.: *See*—
Leopold, Wilbur R., Jr.; and Humes, Dennis W., 4,566,481, Cl. 137-296.000.

Mueller, Herbert: *See*—
Boettger, Guenter; Hammer, Hans; Hertel, Otto; Jeschek, Gerhard; Mueller, Herbert; Scharf, Emil; and Schoenleben, Willibald, 4,567,303, Cl. 564-475.000.

Mueller, Martin, to Osgood Industries, Inc. Method and apparatus for preforming and applying a heat-shrinkable member to a container. 4,566,923, Cl. 156-69.000.

Mueller, Siegfried; and Schafer, Eberhard. Apparatus for applying a color medium to hair. 4,566,472, Cl. 132-112.000.

Mukai, Kosaku: *See*—
Ito, Giichi; Nakano, Ichizo; Shimizu, Yuichi; Mukai, Kosaku; and Suzuki, Saiju, 4,567,347, Cl. 219-124.340.

Muller, Gunter: *See*—
Meyer, Rainer-Leo; John, Reinmar; Nagel, Rolf; and Muller, Gunter, 4,567,230, Cl. 524-786.000.

Muller, Jurgen; and Ihm, Werner, to Agfa-Gevaert AG. Arrangement for removing photosensitive sheets from a container. 4,566,682, Cl. 271-90.000.

Muller, Peter: *See*—
Brausfeld, Walter; Gottling, Helmut; Moller, Rudolf; Muller, Peter; and Scharnowski, Gerhard, 4,566,196, Cl. 33-125.00R.

Muller, Rainer; and Schiffers, Ulrich, to Kraftwerk Union Aktiengesellschaft. Power generating plant with an integrated coal gasification plant. 4,566,267, Cl. 60-39.070.

Muller, Rolf, to Mead Corporation, The. Carton formed from a plurality of packages. 4,566,593, Cl. 206-611.000.

Muller, Werner: *See*—
Clostermeyer, Gerhard; and Muller, Werner, 4,566,380, Cl. 100-89.000.

Mullin, John B.: *See*—
Irvine, Stuart J. C.; Mullin, John B.; and Giess, Jean, 4,566,918, Cl. 148-175.000.

Mumpower, Robert C.: *See*—
Henry, James W.; and Mumpower, Robert C., 4,567,372, Cl. 250-560.000.

Muramoto, Susumu: *See*—
Itsumi, Manabu; Ehara, Kohei; Muramoto, Susumu; and Matsuo, Seitaro, 4,566,940, Cl. 156-643.000.

Muramoto, Tomotaka: *See*—
Takayama, Makoto; Muramoto, Tomotaka; and Nishimura, Akimasa, 4,567,509, Cl. 358-29.000.

Murao, Yoshikazu; Sawayama, Shigeru; and Satoh, Kohichi, to Mitsubishi Chemical Industries Limited. Process for producing N-substituted formamides. 4,567,300, Cl. 564-215.000.

Murata Kikai Kabushiki Kaisha: *See*—
Kiriake, Masaharu, 4,566,644, Cl. 242-35.50A.
Shiomi, Tadataka; Nabika, Kouichi; and Kawagoe, Takashi, 4,566,837, Cl. 414-222.000.

Murata Manufacturing Co., Ltd.: *See*—
Saito, Koji, 4,567,454, Cl. 333-206.000.

Murata, Mitsuru: *See*—
Kobayashi, Toyohiro; Mochizuki, Shoji; Murata, Mitsuru; Tsuboi, Shunji; and Sakurai, Hideto, 4,566,813, Cl. 400-120.000.

Murata, Takahiko: *See*—
Yamaguchi, Kazufumi; and Murata, Takahiko, 4,567,529, Cl. 358-294.000.

Murfin Incorporated: *See*—
Brainard, Ron P.; and Cassidy, L. Wayne, 4,567,072, Cl. 428-40.000.

Murphy, Donald M.: *See*—
Bazan, Alberto; and Murphy, Donald M., 4,566,867, Cl. 417-393.000.

Musashi Engineering Kabushiki Kaisha: *See*—
Kawano, Hikaru; and Sato, Koji, 4,566,244, Cl. 53-588.000.

Musgrove, Neil R., to James Hardie Industries Limited. Selective flush cistern. 4,566,140, Cl. 4-324.000.

Musser, John H.; and Chakraborty, Utpal R., to USV Pharmaceutical Corporation. Certain aryl or hetero-aryl derivatives of 1-hydroxy-pentane or 1-hydroxy-hexane which are useful for treating inflammation and allergies. 4,567,184, Cl. 514-277.000.

Muto, Goro. Filament-type trimming apparatus. 4,566,189, Cl. 30-276.000.

Naarmann, Herbert, to BASF Aktiengesellschaft. Preparation of finely divided electrically conductive pyrrole polymers. 4,566,955, Cl. 204-59.00R.

Naarmann, Herbert; Heckmann, Walter; Kohler, Gernot; and Simak, Petr, to BASF Aktiengesellschaft. Preparation of finely divided electrically conductive pyrrole polymers. 4,567,250, Cl. 528-423.000.

Nabika, Kouichi: *See*—
Shiomi, Tadataka; Nabika, Kouichi; and Kawagoe, Takashi, 4,566,837, Cl. 414-222.000.

Nabisco Brands, Inc.: *See*—
Lloyd, Norman E., 4,567,142, Cl. 435-94.000.

Nadai, Bela: *See*—
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,566,797, Cl. 356-402.000.

Nagai, Koichi: *See*—
Oshima, Hiroyo; Kano, Isao; Kojima, Yutaka; Shimura, Yoshihiko; Ishiguro, Ken; and Nagai, Koichi, 4,567,114, Cl. 428-480.000.

Nagano, Kyoichi; Naganuma, Hiroshi; Shinada, Koichi; Tamura, Motonori; and Soneda, Shigenobu, to Nippon Steel Corporation. Low-hydrogen, low-nitrogen, low-oxygen welding flux. 4,566,916, Cl. 148-26.000.

Naganuma, Hiroshi: *See*—
Nagano, Kyoichi; Naganuma, Hiroshi; Shinada, Koichi; Tamura, Motonori; and Soneda, Shigenobu, 4,566,916, Cl. 148-26.000.

Nagao, Taku: *See*—
Takeda, Mikio; Oh-ishi, Tokuro; Nakajima, Hiromichi; and Nagao, Taku, 4,567,175, Cl. 514-211.000.

Nagaoka, Naoko: *See*—
Hirose, Noriyasu; Souda, Shigeru; Miyake, Kazutoshi; Kuriyama, Shizuo; Usuki, Kazuyasu; Akiyama, Yasuhiro; Nagaoka, Naoko; and Kawashima, Hidetoshi, 4,567,180, Cl. 514-253.000.

Nagato, Nobuyuki; Maki, Kenichiro; Uematsu, Tomoe; and Ishioka, Ryoji, to Showa Denko Kabushiki Kaisha. Process for production of allyl carboxylate. 4,567,292, Cl. 560-245.000.

Nagel, Karl: *See*—
Kalkhof, Bernd; and Nagel, Karl, 4,567,537, Cl. 361-18.000.

Nagel, Reimer. Bit for horses. 4,566,254, Cl. 54-8.000.

Nagel, Rolf: *See*—
Meyer, Rainer-Leo; John, Reinmar; Nagel, Rolf; and Muller, Gunter, 4,567,230, Cl. 524-786.000.

Nagumo, Masahide: *See*—
Inagawa, Jun; Nagumo, Masahide; and Kojima, Tadashi, 4,567,568, Cl. 364-761.000.

Nagura, Shigehiro: *See*—
Takamizawa, Minoru; Yamamoto, Akira; and Nagura, Shigehiro, 4,567,245, Cl. 526-279.000.

Nahas, Joseph J.: *See*—
Crouch, Paul E.; Nahas, Joseph J.; and Ng, Howard, 4,567,325, Cl. 179-6.30R.

Naito, Takashi: *See*—
Suzuki, Yutaka; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Naito, Takashi; Kumano, Mikio; Nakamura, Tetsuya; Haseda, Satoshi; and Masuda, Akira, 4,566,417, Cl. 123-478.000.

Naka, Hiromitsu, to Kabushiki Kaisha Naka Gijutsu Kenkyusho. Ceiling construction. 4,566,233, Cl. 52-208.000.

Nakagama, Syoji: *See*—
Nakatani, Kaname; Miyakawa, Nobuhiro; Higashiguchi, Teruaki; and Nakagama, Syoji, 4,566,908, Cl. 106-308.00N.

Nakagawa, Akio; Utagawa, Tadashi; and Tsukakoshi, Tsuneo, to Tokyo Shibaura Denki Kabushiki Kaisha. Planar type semiconductor device with a high breakdown voltage. 4,567,502, Cl. 357-53.000.

Nakagawa, Kazuyuki: *See*—
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,567,187, Cl. 514-312.000.

Nakahira, Tomotake. Apparatus for turning a circular knit hose inside out and sectioning same into unit hoses. 4,566,615, Cl. 223-43.000.

Nakajima, Hiromichi: *See*—
Takeda, Mikio; Oh-ishi, Tokuro; Nakajima, Hiromichi; and Nagao, Taku, 4,567,175, Cl. 514-211.000.

Nakajima, Minoru: *See*—
Akanuma, Shigetake; Nakajima, Minoru; Takashima, Satoshi; Imamura, Haruo; Ojiro, Yoshitaka; Kakuta, Hiroshi; and Matsumoto, Masato, 4,566,736, Cl. 299-23.000.

Nakajima, Tadanobu: *See*—
Kajita, Hiroshi; and Nakajima, Tadanobu, 4,566,780, Cl. 355-3.00R.

Nakamura, Takashi: *See*—
Kataoka, Shigehiro; Nakamura, Takashi; Yamaji, Nobuyuki; and Nasuno, Seiichi, 4,567,254, Cl. 536-27.000.

Nakamura, Takeshi: *See*—
Takenouchi, Mutsuo; Ozawa, Takashi; Hamano, Toshihisa; Itoh, Hisao; Fuse, Mario; and Nakamura, Takeshi, 4,567,374, Cl. 250-578.000.

Nakamura, Tetsuya: *See*—
Suzuki, Yutaka; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Naito, Takashi; Kumano, Mikio; Nakamura, Tetsuya; Haseda, Satoshi; and Masuda, Akira, 4,566,417, Cl. 123-478.000.

Nakamura, Yoshinori: *See*—
Aoki, Daiichi; Nakamura, Yoshinori; and Orimoto, Hiroyuki, 4,567,224, Cl. 524-494.000.

Nakanishi, Kouichi: *See*—
Chubachi, Noriyoshi; Kushibiki, Junichi; and Nakanishi, Kouichi, 4,566,333, Cl. 73-642.000.

Nakano, Ichizo: *See*—
Ito, Giichi; Nakano, Ichizo; Shimizu, Yuichi; Mukai, Kosaku; and Suzuki, Saiju, 4,567,347, Cl. 219-124.340.

Nakao, Shinji: *See*—
Kano, Masaaki; Yamaji, Hiroshi; Nakao, Shinji; and Okumura, Katsuya, 4,567,364, Cl. 250-307.000.

Nakashima, Noriyuki: *See*—
Masaki, Syouichi; Tamura, Kimio; Wakao, Teruyoshi; Nakashima, Noriyuki; Asami, Ken; and Sakai, Kazunori, 4,566,737, Cl. 303-109.000.

Nakasho, Tukayo: *See*—
Makino, Syozaburo; Yoshikawa, Keiji; and Nakasho, Tukayo, 4,566,163, Cl. 28-187.000.

Nakasone, Henry H.: *See*—
Jimerson, Bruce D.; and Nakasone, Henry H., 4,567,375, Cl. 307-98.000.

Nakatani, Kaname; Miyakawa, Nobuhiro; Higashiguchi, Teruaki; and Nakagama, Syoji, to Mita Industrial Company, Limited. Azoic pigments having a silica core. 4,566,908, Cl. 106-308.00N.

Nakayama, Yasunobu: *See*—
Sato, Yasuji; Yamamoto, Takao; Sano, Yoshikazu; and Nakayama, Yasunobu, 4,567,326, Cl. 179-90.00B.

Nalle, George S., Jr. Manufacture of helical nets. 4,567,011, Cl. 264-504.000.

Nanba, Isao: *See*—
Waniisi, Tetuya; Sato, Hiroshi; and Nanba, Isao, 4,566,803, Cl. 368-66.000.

Nanda, Madan M.: *See*—
Fredericks, Edward C.; Greenhaus, Herbert L.; Nanda, Madan M.; and Via, Giorgio G., 4,567,132, Cl. 430-312.000.

Nasse, Johannes: *See*—
Bochinski, Rolf; Eimer, Klaus; Littek, Harald; and Nasse, Johannes, 4,566,533, Cl. 165-95.000.

Nasuno, Seiichi: *See*—
Kataoka, Shigehiro; Nakamura, Takashi; Yamaji, Nobuyuki; and Nasuno, Seiichi, 4,567,254, Cl. 536-27.000.

National Computer Systems: *See*—
Gysling, Walter, 4,566,684, Cl. 271-117.000.

National Gypsum Company: *See*—
Schneller, Joseph W., 4,566,241, Cl. 52-481.000.

National Metal and Refining Company, Ltd.: *See*—
Matusik, Frank J.; and Nelson, Donald W., 4,566,181, Cl. 29-602.00R.

National Molding Corporation: *See*—
Anscher, Joseph; and Smous, Dale, 4,566,660, Cl. 248-74.200.

National Research Development Corporation: *See*—
Brewin, Nicholas J.; and Johnston, Andrew W. B., 4,567,146, Cl. 435-172.300.
Buckingham, Amyand D.; and Shelton, David P., 4,567,596, Cl. 372-22.000.
Smith, Kenneth C. A.; and Erasmus, Stephen J., 4,567,369, Cl. 250-397.000.

Naumann, Johannes: *See*—
Tappert, Hans-Jurgen; Naumann, Johannes; Forster, Karl-Heinz; Doliner, Herbert; Pieper, Fritz; Frenzel, Werner; and Schanze, Klaus, 4,566,385, Cl. 101-183.000.

Nay, Barry; and Stewart, David G., to British Petroleum Company p.l.c., The. Catalyst composition for the production of alcohols from synthesis gas. 4,567,160, Cl. 502-326.000.

Naylor, Geoffrey, to Rieter-Scragg Limited. Textile processing apparatus. 4,566,265, Cl. 57-336.000.

Naylor, Jimmy R., to Burr-Brown Corporation. Circuit for improving the performance of digital to analog converters. 4,567,463, Cl. 340-347.0DA.

NEC Corporation: *See*—
Mizoguchi, Shoichi, 4,567,599, Cl. 375-14.000.
Shimada, Yuzo; Utsumi, Kazuaki; Ikeda, Teruyuki; and Suzuki, Masanori, 4,567,542, Cl. 361-321.000.

Neff, James A., to MAC Valves, Inc. Direct solenoid operated valve with minimal tolerance accumulation. 4,566,490, Cl. 137-625.650.

Nei Canada Limited: *See*—
Winrow, Donald; and Copeland, Kenneth G., 4,566,210, Cl. 40-449.000.

Neidleman, Saul L.; and Ervin, Jacqueline L., to Cetus Corporation. Method of producing long chain wax esters from ethanol. 4,567,144, Cl. 435-134.000.

Neidorff, Robert A.: *See*—
Jarrett, Robert B.; Main, W. Eric; and Neidorff, Robert A., 4,567,388, Cl. 307-540.000.

Nelson, Donald W.: *See*—
Matusik, Frank J.; and Nelson, Donald W., 4,566,181, Cl. 29-602.00R.

Nelson, Edward I.: *See*—
Ehrlich, Stephen J.; and Nelson, Edward I., 4,567,317, Cl. 174-35.0MS.

Nelson Irrigation Corporation: *See*—
Sesser, George L., 4,566,632, Cl. 239-230.000.

Nelson, Ronald J.; and Wilson, Randall B., to AT&T Bell Laboratories. Elimination of mask undercutting in the fabrication of InP/InGaAsP BH devices. 4,566,171, Cl. 29-569.00L.

Nepomuceno, Bienvenido: *See*—
Papp, John E.; and Nepomuceno, Bienvenido, 4,566,814, Cl. 400-354.100.

Neri, Paolo: *See*—
Tabacco, Alessandro; Tarli, Paolo; and Neri, Paolo, 4,567,150, Cl. 436-87.000.

Neste Oy: *See*—
Eklund, Vidar; Ekman, Kurt; Turunen, Olli; Huttunen, Jouko; Selin, Johan-Fredrik; and Fors, Jan, 4,567,255, Cl. 536-30.000.

Neumann, Peter, to Sandoz Ltd. Benzoxadiazoles and benzothiadiazoles. 4,567,271, Cl. 546-271.000.

Neumann, Peter: *See*—
Blinne, Gerd; Bender, Herbert; and Neumann, Peter, 4,567,248, Cl. 528-211.000.

Neumueller, Ronald L., to Ingersoll Cutting Tool Company. Ballnose end mill and insert therefor. 4,566,827, Cl. 407-42.000.

Neuroth, David H.; and Moscovici, Armand, to Harvey Hubbell Incorporated. Reinforced electrical cable and method of forming the cable. 4,567,320, Cl. 174-103.000.

Nevamar Corporation: *See*—
O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., 4,567,087, Cl. 428-211.000.

Newall Engineering Company Limited, The: *See*—
Wheeler, Stanley G., 4,566,228, Cl. 51-238.00S.

Ng, Howard: *See*—
Crouch, Paul E.; Nahas, Joseph J.; and Ng, Howard, 4,567,325, Cl. 179-6.30R.

NGK Insulators, Ltd.: *See*—
Ikushima, Kazuo; Itoh, Yoshio; and Ishihara, Toshiaki, 4,566,915, Cl. 148-11.50C.
Okamoto, Magoji; and Maekawa, Norio, 4,566,641, Cl. 241-200.000.

Nguyen, Gilbert H. K.: *See*—
Cohen, Serge; and Nguyen, Gilbert H. K., 4,566,310, Cl. 73-9.000.

Nicholson Manufacturing Company: *See*—
Jorgensen, Ray B.; and Ackerman, Robert T., 4,566,371, Cl. 92-92.000.

Nicolaou, Kyriacos C.; Petasis, Nicos A.; and Seitz, Steven P., to Research Corporation. Leukotriene analogues. 4,567,290, Cl. 560-124.000.

Nicolet Instrument Corporation: *See*—
Boese, Roland, 4,566,283, Cl. 62-49.000.

Niderstatter, Walter: *See*—
Sprintschnik, Gerhard; Niderstatter, Walter; and Stroszynski, Joachim, 4,566,952, Cl. 204-27.000.

Niemeier, Byron M.: *See*—
Maudal, Inge; Niemeier, Byron M.; and Wedertz, Larry D., 4,566,656, Cl. 244-3.110.

Niemers, Ekkehard; Knorr, Andreas; and Garthoff, Bernward, to Bayer Aktiengesellschaft. Hypotensive 2-nitro-1,1-ethenediamines. 4,567,188, Cl. 514-332.000.

Nifco, Inc.: *See*—
Hara, Kunio; Tanaka, Toshie; Shibayama, Teruji; Morisaki, Minoru; and Kaneko, Yoshio, 4,566,924, Cl. 156-73.500.

Nihon Denshi Zairo Kabushiki Kaisha: *See*—
Ohkubo, Masao; and Yoshimitsu, Yasuro, 4,567,433, Cl. 324-158.00P.

Niitti, Timo U.: *See*—
Kivisto, Tuomo V. J.; Fallenius, Kai B.; and Niitti, Timo U., 4,566,968, Cl. 210-221.100.

Nikkiso Co., Ltd.: *See*—
Akiba, Takashi, 4,566,858, Cl. 417-22.000.

Nikulainen, Matti J., to Kone Oy. Drum press for separating liquid from solid substance. 4,566,381, Cl. 100-121.000.

Nilsen, Bjorn P.: *See*—
Blindheim, Ulf; Haegh, Gerd S.; and Nilsen, Bjorn P., 4,567,313, Cl. 585-480.000.

Ninomiya, Masakazu; Fujisawa, Hideya; Omori, Norio; and Suzuki, Atsushi, to Nippondenso Co., Ltd. Apparatus and method for controlling air-to-fuel ratio for an internal combustion engine. 4,566,419, Cl. 123-489.000.

Nipoti, Paolo: *See*—
Aiuola, Franco; and Nipoti, Paolo, 4,566,491, Cl. 137-625.660.

Nippon Colin Co., Ltd.: *See*—
Taniguchi, Satoru; Nishibayashi, Hideo; and Uemura, Masahiro, 4,566,463, Cl. 128-682.000.

Nippon Electric Co., Ltd.: *See*—
Noguchi, Shozo; Oshima, Yasunobu; and Kamata, Tohru, 4,567,598, Cl. 372-36.000.
Oshima, Goro; Ono, Satoru; and Shimada, Yasuhisa, 4,567,485, Cl. 343-358.000.

Nippon Electric Glass Company, Limited: *See*—
Kusakabe, Masayoshi, 4,566,895, Cl. 65-319.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Katoh, Mitsumi, 4,566,364, Cl. 84-1.190.

Nippon Kogaku K.K.: *See*—
Kato, Kinya, 4,566,762, Cl. 350-411.000.
Matsuura, Toshio; and Suwa, Kyoichi, 4,566,795, Cl. 356-400.000.

Nippon Kokan Kabushiki Kaisha: *See*—
Yamada, Takeo; Yamamoto, Tomohisa; Ando, Seigo; and Kawase, Yoshihiro, 4,567,435, Cl. 324-207.000.

Nippon Oil Co., Ltd.: *See*—
Hasegawa, Hiroshi; Shinzawa, Akira; and Kohno, Yoshiki, 4,566,994, Cl. 252-574.000.
Satoh, Hisatake; and Ota, Shinichi, 4,566,997, Cl. 260-105.000.

Nippon Oil and Fats Co., Ltd.: *See*—
Akashi, Tamotsu; and Araki, Masatada, 4,566,905, Cl. 75-244.000.

Nippon Pneumatic Manufacturing Co., Ltd.: *See*—
Kotone, Yoshiharu; and Hiraoka, Masaaki, 4,566,675, Cl. 254-360.000.

Nippon Seiko Kabushiki Kaisha: *See*—
Takei, Kenji; and Akabane, Yukihiro, 4,566,812, Cl. 384-484.000.

Nippon Selen Co., Ltd.: *See*—
Makino, Syozaburo; Yoshikawa, Keiji; and Nakasho, Tukayo, 4,566,163, Cl. 28-187.000.

Nippon Steel Corporation: *See*—
Nagano, Kyoichi; Naganuma, Hiroshi; Shinada, Koichi; Tamura, Motonori; and Soneda, Shigenobu, 4,566,916, Cl. 148-26.000.

Nippon Telegraph and Telephone Public Corporation: *See*—
Iisumi, Manabu; Ehara, Kohei; Muramoto, Susumu; and Matsuo, Seitaro, 4,566,940, Cl. 156-643.000.

Nippon Univac Supply Kaisha, Ltd.: *See*—
Shinoda, Morimasa; and Takahashi, Takamasa, 4,567,506, Cl. 358-11.000.

Nippondenso Co., Ltd.: *See*—
Masaki, Syouichi; Tamura, Kimio; Wakao, Teruyoshi; Nakashima, Noriyuki; Asami, Ken; and Sakai, Kazunori, 4,566,737, Cl. 303-109.000.
Ninomiya, Masakazu; Fujisawa, Hideya; Omori, Norio; and Suzuki, Atsushi, 4,566,419, Cl. 123-489.000.
Suzuki, Yutaka; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Naito, Takashi; Kumano, Mikio; Nakamura, Tetsuya; Haseda, Satoshi; and Masuda, Akira, 4,566,417, Cl. 123-478.000.

Yamamoto, Yosizi; and Ishikawa, Toshio, 4,566,864, Cl. 417-353.000.

Nishibayashi, Hideo: *See*—
Taniguchi, Satoru; Nishibayashi, Hideo; and Uemura, Masahiro, 4,566,463, Cl. 128-682.000.

Nishibori, Setsuo; Komori, Hirohito; Saeki, Syuji; and Kinoshita, Hiromitsu, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Flame retarder for organic high molecular compounds prepared from polycondensates of halogenated phenols. 4,567,242, Cl. 525-534.000.

Nishida, Kenji: *See*—
Baba, Kiyokazu; Shirao, Shojiro; Nishida, Kenji; and Kiyosawa, Hiroshi, 4,566,834, Cl. 414-27.000.

Nishida, Koji: *See*—
Hattori, Satoru; Yazaki, Takao; Hattori, Kazuhide; Nishida, Koji; Hattori, Hideki; and Fujimura, Kazumasa, 4,567,089, Cl. 428-213.000.

Nishimatsu, Masaharu: *See*—
Arioka, Hiroyuki; Nishimatsu, Masaharu; and Watanabe, Akio, 4,567,083, Cl. 428-141.000.

Nishimura, Akimasa: *See*—
Takayama, Makoto; Muramoto, Tomotaka; and Nishimura, Akimasa, 4,567,509, Cl. 358-29.000.

Nishino, Fumio: *See*—
Honda, Haruhisa; Onoda, Shigeyoshi; and Nishino, Fumio, 4,566,777, Cl. 355-3.00R.

Nishino, Tadashi: *See*—
Nogami, Tadahiko; and Nishino, Tadashi, 4,566,954, Cl. 204-28.000.

Nishitsuji, Kazuichi; Aikawa, Eiichi; and Haraguchi, Yukio, to Kabushiki Kaisha Toshiba. Closed type compressor. 4,566,865, Cl. 417-363.000.

Nissan Motor Co., Ltd.: *See*—
Fujioka, Kazuyoshi, 4,566,571, Cl. 192-70.200.
Kumura, Haruyoshi; Abo, Keiju; Tanaka, Yoshikazu; Hirano, Hiroyuki; Yamamuro, Sigeaki; and Morimoto, Yoshiro, 4,566,354, Cl. 74-866.000.
Moriya, Masaichi; Mochida, Haruo; and Takeda, Yoshimitsu, 4,566,576, Cl. 192-84.00C.
Ohashi, Toshio, 4,566,373, Cl. 98-2.010.
Sugano, Kazuhiko, 4,566,355, Cl. 74-869.000.
Suzuki, Kunihiko, 4,566,554, Cl. 180-249.000.
Tabata, Hiroshi; and Kai, Yasuaki, 4,567,082, Cl. 428-138.000.
Takeuchi, Kiyoshi, 4,566,316, Cl. 73-754.000.

Nitou, Hiroyasu; Shirai, Kiyoshi; and Takahashi, Osamu, to Kokusan Denki Co., Ltd. Ignition system of the condensor-discharge type for internal combustion engine. 4,566,425, Cl. 123-600.000.

Nitrotec Corporation: *See*—
Knoblauch, Karl; Harder, Burkhard; Heimbach, Heinrich; and Cosentino, Charles F., 4,566,282, Cl. 62-48.000.

Nitsch, Wilhelm, to Agfa-Gevaert Aktiengesellschaft. Photographic roller copying apparatus with a device for threading a new paper tape. 4,566,784, Cl. 355-72.000.

Nitto Kohki Co., Ltd.: *See*—
Takeuchi, Hirosato; and Mikiya, Toshio, 4,566,431, Cl. 126-437.000.

Nitzberg, Leonard R. Wheel chair. 4,566,707, Cl. 180-8.200.

NL Industries, Inc.: *See*—
House, Roy F.; and Hoover, Lonnie D., 4,566,976, Cl. 252-8.50A.
Rao, M. Vikram; and Fontenot, John E., Jr., 4,566,318, Cl. 73-151.000.

Noda, Minoru: *See*—
Ohmura, Kenji; Miyata, Tsutomu; Yamashita, Yoshihiro; and Noda, Minoru, 4,566,841, Cl. 414-417.000.

Noel, Jean-Paul: *See*—
Al Mouhamed, Mayez; Csakvary, Etienne; De Cosnac, Bertrand; and Noel, Jean-Paul, 4,566,845, Cl. 414-735.000.

Nogami, Tadahiko; and Nishino, Tadashi, to Hitachi, Ltd. Method of and apparatus for split rolling of steel sheet. 4,566,954, Cl. 204-28.000.

Noguchi, Shozo; Oshima, Yasunobu; and Kamata, Tohru, to Nippon Electric Co., Ltd. Optoelectronic semiconductor devices in hermetically sealed packages. 4,567,598, Cl. 372-36.000.

Nohara, Akira; and Maki, Yoshitaka, to Takeda Chemical Industries, Ltd. Diphenoxypropane derivatives and compositions of antiasthmatic and antiinflammatory agents thereof. 4,567,201, Cl. 514-571.000.

Noji, Masahide: *See*—
Kidani, Yoshinori; and Noji, Masahide, 4,567,285, Cl. 556-137.000.

Noland, Lyle J.: *See*—
Bateman, Charles D.; Grove, Michael M.; Noland, Lyle J.; and Ward, Wallace E., 4,567,483, Cl. 340-970.000.

Norberg, Gustav S. I.; Segerstrom, Kjell E. L.; and Ahl, Tommy E., to Wenmec AB. Method for cleaning cathode or anode plates. 4,566,951, Cl. 204-12.000.

Nordlund, Sven, to Wm Regele AB. Fluid pressure actuator having position setting means. 4,566,670, Cl. 251-58.000.

Noreen, Allen L.: *See*—
Larson, James M.; and Noreen, Allen L., 4,567,073, Cl. 428-40.000.

Noritsu Kenkyu Center Co., Ltd.: *See*—
Takenouchi, Toru, 4,566,785, Cl. 355-72.000.

North American Philips Consumer Electronics Corp.: *See*—
Hiday, David R.; and Larsen, Charles G., 4,567,523, Cl. 358-191.100.

North American Philips Corporation: *See*—
Bowlin, Stanley L., 4,566,936, Cl. 156-627.000.

Northern Telecom Limited: *See*—
Garner, John N., 4,566,264, Cl. 57-314.000.

Norton Christensen, Inc.: *See*—
Story, Arthur L.; and Filshtinsky, Michael, 4,566,545, Cl. 175-226.000.

Norwood Marking & Equipment Co., Inc.: *See*—
Davison, Charles F., 4,566,386, Cl. 101-305.000.

Novak, Leo R.: *See*—
Kitchens, John D.; and Novak, Leo R., 4,567,241, Cl. 525-352.000.

Novello, Frederick C.: *See*—
Willard, Alvin K.; Novello, Frederick C.; Hoffman, William F.; and Cragoe, Edward J., Jr., 4,567,289, Cl. 560-059.000.

Nozawa, Ryoichiro; Kinoshita, Mitsuo; and Matsumura, Teruyuki, to Fanuc Ltd. Method and apparatus for controlling direction reversal in electric discharge machines. 4,567,342, Cl. 219-69.00M.

Nozawa, Yoshio: *See*—
Miyagi, Masahiro; Uehara, Katsuharu; Nozawa, Yoshio; and Deguchi, Takahiko, 4,566,359, Cl. 83-23.000.

NSK-Warner K.K.: *See*—
Morinaga, Masaru, 4,566,650, Cl. 242-107.40A.

NTT Gijutsu Iten Kabushiki Kaisha: *See*—
Ito, Giichi; Nakano, Ichizo; Shimizu, Yuichi; Mukai, Kosaku; and Suzuki, Saiju, 4,567,347, Cl. 219-124.340.

Nugmanova, Lyalya T.: *See*—
Ljubman, Nazar Y.; Imangazieva, Gulsara K.; Nugmanova, Lyalya T.; Uskov, Alexandr I.; Sydykova, Tokhtobubu C.; and Kim, Zinaida I., 4,567,207, Cl. 521-35.000.

Numauchi, Hiromitsu: *See*—
Tsunoda, Teruo; Numauchi, Hiromitsu; Kurata, Hironobu; Kawaguchi, Yoichi; Ishii, Satoshi; Seki, Masanori; Iwasaki, Masahiro; and Enomoto, Fukumasa, 4,566,194, Cl. 33-18.100.

Nydahl, John E.: *See*—
Pell, Kynric M.; and Nydahl, John E., 4,566,527, Cl. 165-1.000.

Nyfeler, Robert, to Ciba-Geigy Corporation. 3-Phenyl-4-cyanopyrrole derivatives, the preparation thereof, and method of use thereof as microbicides. 4,567,052, Cl. 426-532.000.

Oberster, Arthur E.; and Vicic, John C., to Firestone Tire & Rubber Company, The. Naphthalenic derivatized plasticizers for polyphosphazene polymers. 4,567,211, Cl. 521-98.000.

O'Brien, Robert N.; McOrmond, Philip M.; Hocking, Martin B.; and Thornton, Kenneth R., to University of Victoria. Meter for measuring erythrocyte settling rates. 4,566,315, Cl. 73-61.400.

Obstfelder, Gunther; Kreutze, Gerhard; and Luttig, Winfried. Thermal printhead for thermographic printer. 4,567,489, Cl. 346-76.0PH.

Occidental Chemical Corporation: *See*—
Ilardo, Charles S., 4,567,214, Cl. 523-216.000.

Ochi, Masafumi: *See*—
Ohtagaki, Yoshio; Ochi, Masafumi; Masui, Motonobu; Tachibana, Kanichi; and Uchida, Akio, 4,567,403, Cl. 315-47.000.

Ochoa, Victor M.; and Pueyo, Ricardo, to Foret S.A. Production of hydrogen peroxide. 4,566,998, Cl. 260-369.000.

Octa, Inc.: *See*—
Tucker, Hartwell F.; Tucker, Jeffrey R.; Ross, Dennis; and Knirck, Jeffrey G., 4,567,391, Cl. 310-156.000.

O'Dell, Donald E., to Aqua-Chem, Inc. Method and means of manufacturing spirally fluted tubes. 4,566,301, Cl. 72-75.000.

O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., to Nevamar Corporation. Scuff resistance in abrasion-resistant laminates. 4,567,087, Cl. 428-211.000.

O'Donnell & Associates, Inc.: *See*—
Secemski, Isaac I.; and Podgorsky, Joseph J., 4,566,993, Cl. 252-559.000.

Oellerer, Friedrich: *See*—
Theurer, Josef; and Oellerer, Friedrich, 4,566,389, Cl. 104-3.000.

Oertel, Richard W., III: *See*—
Goldwasser, David J.; and Oertel, Richard W., III, 4,567,236, Cl. 525-127.000.

Office National d'Etudes et de Recherche Aerospatiales (ONERA): *See*—
Bernard, Alain M.; Le Clerc, Georges-Marie J.; and Foulon, Bernard M., 4,566,328, Cl. 73-517.00B.

Ogahara, Shunji: *See*—
Shirai, Shiro; Ogahara, Shunji; and Kubo, Miyuki, 4,567,472, Cl. 340-525.000.

Ogata, Yasuhiro; and Maekawa, Masakazu, to Fuji Photo Film Co., Ltd. Pressure-sensitive recording sheets. 4,567,496, Cl. 346-200.000.

Ogawa, Hiroshi: *See*—
Masuyama, Kenichi; Okutu, Toshimitu; Miyoshi, Takahito; Ogawa, Hiroshi; Utumi, Masahiro; Fujiyama, Masaaki; and Tada, Sugihiko, 4,567,057, Cl. 427-48.000.

Ogawa, Masahiko, to Canon Kabushiki Kaisha. Control circuit for motor. 4,567,409, Cl. 318-327.000.

Ogawa, Toshio: *See*—
Umemura, Shinichiro; Katakura, Kageyoshi; and Ogawa, Toshio, 4,566,459, Cl. 128-660.000.

Ogden, Ralph, to Ajay Enterprises Corporation. Adjustable motor mount arrangement for exercise treadmills. 4,566,689, Cl. 272-69.000.

Oh-ishi, Tokuro: *See*—
Takeda, Mikio; Oh-ishi, Tokuro; Nakajima, Hiromichi; and Nagao, Taku, 4,567,175, Cl. 514-211.000.

O'Handley, Robert C., to Allied Corporation. Low magnetostriction amorphous metal alloys. 4,566,917, Cl. 148-31.550.

Ohashi, Ken: *See*—
Tawara, Yoshio; Ohashi, Ken; and Kikuchi, Hideaki, 4,567,576, Cl. 365-2.000.

Ohashi, Toshio, to Nissan Motor Co., Ltd. Ventilation arrangement for automotive vehicle or the like. 4,566,373, Cl. 98-2.010.

Ohashi, Yasuo: *See*—
Ban, Keisuke; and Ohashi, Yasuo, 4,566,519, Cl. 164-97.000.

Ohi Seisakusho Co., Ltd.: *See*—
Miyamoto, Isei; and Kato, Yuichi, 4,566,350, Cl. 74-526.000.
Moriya, Masaichi; Mochida, Haruo; and Takeda, Yoshimitsu, 4,566,576, Cl. 192-84.00C.

Ohigashi, Yoshiaki: *See*—
Matsumura, Wakuo; Kitazawa, Noboru; and Ohigashi, Yoshiaki, 4,566,250, Cl. 53-128.000.

Ohki, Koichiro: *See*—
Kitagawa, Yoshiaki; Ohki, Koichiro; and Sarada, Toshio, 4,567,351, Cl. 219-341.000.

Ohkubo, Masao; and Yoshimitsu, Yasuro, to Nihon Denshi Zairo Kabushiki Kaisha. Complex probe card for testing a semiconductor wafer. 4,567,433, Cl. 324-158.00P.

Ohmori, Akira; Tomihashi, Nobuyuki; and Kitahara, Takahiro, to Daikin Kogyo Co., Ltd. Copolymers for optical fibers. 4,566,755, Cl. 350-96.340.

Ohmori, Takashi: *See*—
Moriguchi, Haruhiko; Inui, Toshiharu; Hisatake, Masayuki; and Ohmori, Takashi, 4,567,488, Cl. 346-76.0PH.

Ohmura, Kenji; Miyata, Tsutomu; Yamashita, Yoshihiro; and Noda, Minoru. Wafery works receiving or delivering device. 4,566,841, Cl. 414-417.000.

Ohno, Hideki: *See*—
Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, 4,567,030, Cl. 423-326.000.

Ohno, Shigeru: *See*—
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,567,127, Cl. 430-65.000.

Ohnuki, Yukihiko: *See*—
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,567,127, Cl. 430-65.000.

Ohta, Hiroshi: *See*—
Goto, Eiichi; and Ohta, Hiroshi, 4,567,383, Cl. 307-415.000.

Ohta, Masafumi; Sasaki, Masaomi; and Shoshi, Masayuki, to Ricoh Co., Ltd. Electrophotographic element with trisazo photoconductor and an amine substituted charge transfer material. 4,567,124, Cl. 430-59.000.

Ohta, Satoshi: *See*—
Yamazaki, Yoshio; Takimoto, Masahiro; and Ohta, Satoshi, 4,567,217, Cl. 524-296.000.

Ohta Seiyaku Kabushiki Kaisha: *See*—
Kamano, Yoshiaki; Sugai, Saburo; Okazaki, Tokuji; Yoshida, Seiichiro; and Akaboshi, Sanya, 4,567,172, Cl. 514-179.000.

Ohtagaki, Yoshio; Ochi, Masafumi; Masui, Motonobu; Tachibana, Kanichi; and Uchida, Akio, to Iwasaki Electric Co., Ltd.; and Mitsubishi Mining & Cement Company, Ltd. High pressure discharge lamp with incorporated starter. 4,567,403, Cl. 315-47.000.

Ohtaka, Keiji; Suzuki, Takashi; Iizuka, Kiyoshi; and Mizutani, Hidemasa, to Canon Kabushiki Kaisha. Diffusing plate. 4,567,123, Cl. 430-4.000.

Ohtsu, Tadatoshi; and Yamahata, Takashi, to General Company Limited. Heat-sensitive transferring recording medium. 4,567,113, Cl. 428-480.000.

Ohya, Masaki; and Matsukura, Yoshihiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Heat-resistant laminate film. 4,567,090, Cl. 428-214.000.

Ojiro, Yoshitaka: *See*—
Akanuma, Shigetake; Nakajima, Minoru; Takashima, Satoshi; Imamura, Haruo; Ojiro, Yoshitaka; Kakuta, Hiroshi; and Matsumoto, Masato, 4,566,736, Cl. 299-23.000.

Okabayashi, Minahiro: *See*—
Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, 4,567,030, Cl. 423-326.000.

Okamoto, Magoji; and Mackawa, Norio, to NGK Insulators, Ltd. Sheet breaking apparatus. 4,566,641, Cl. 241-200.000.

Okamoto, Takeshi: *See*—
Asai, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, 4,567,392, Cl. 310-313.00A.
Asai, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, 4,567,393, Cl. 310-313.00A.

Okamoto, Tetsuhiko: *See*—
Tanino, Hiroshi; Okamoto, Tetsuhiko; and Ueyama, Shinichiro, 4,567,028, Cl. 423-300.000.

Okamoto, Yoshiyuki; and Hwang, Edward F., to W. R. Grace & Co. Poly(dipropargylamine) and derivatives thereof per se and p-doped and processes for preparing same. 4,567,298, Cl. 364-215.000.

Okaniwa, Kenichiro; Koyama, Mikio; and Kikugawa, Shozo, to Konishiroku Photo Industry Co., Ltd. Analytical element. 4,567,136, Cl. 435-4.000.

Okaniwa, Kenichiro: *See*—
Koyama, Mikio; and Okaniwa, Kenichiro, 4,567,024, Cl. 422-56.000.

Okanobu, Taiwa, to Sony Corporation. Current mirror circuit with control means for establishing an input-output current ratio. 4,567,444, Cl. 330-257.000.

Okaya, Takuji: *See*—
Maruyama, Hitoshi; Tanaka, Taku; and Okaya, Takuji, 4,567,221, Cl. 524-436.000.

Okazaki, Tokuji: *See*—
Kamano, Yoshiaki; Sugai, Saburo; Okazaki, Tokuji; Yoshida, Seiichiro; and Akaboshi, Sanya, 4,567,172, Cl. 514-179.000.

Okimoto, Haruo: *See*—
Tadokoro, Tomoo; Shiraishi, Hideo; and Okimoto, Haruo, 4,566,412, Cl. 123-216.000.
Tadokoro, Tomoo; Okimoto, Haruo; and Matsuda, Ikuo, 4,566,422, Cl. 123-559.000.

Okumura, Katsuya: *See*—
Kano, Masaaki; Yamaji, Hiroshi; Nakao, Shinji; and Okumura, Katsuya, 4,567,364, Cl. 250-307.000.

Okutu, Toshimitu: *See*—
Masuyama, Kenichi; Okutu, Toshimitu; Miyoshi, Takahito; Ogawa, Hiroshi; Utumi, Masahiro; Fujiyama, Masaaki; and Tada, Sugihiko, 4,567,057, Cl. 427-48.000.
Miyoshi, Takahito; Okutu, Toshimitu; Utumi, Masahiro; and Fujiyama, Masaaki, 4,567,063, Cl. 427-128.000.

Olego, Diego; Brock, David G.; Baumann, John A.; and Spicer, William E., to Stauffer Chemical Company. MIS Device employing elemental pnictide or polyphosphide insulating layers. 4,567,503, Cl. 357-54.000.

Oliff, James R.: *See*—
Wood, Prentice J.; Oliff, James R.; and Watkins, Richard K., 4,566,626, Cl. 229-37.00R.

Olin Corporation: *See*—
Dodge, William B., 4,567,258, Cl. 544-192.000.
Miles, Ronald C., 4,566,950, Cl. 204-1.00T.

Oliver, Arthur B., to Texas Instruments Incorporated. Impedance modulated CMOS RAM cell. 4,567,577, Cl. 365-156.000.

Olmstead, William N., to Exxon Research & Engineering Company. Removal of nitrogen and sulfur from oil-shale. 4,566,965, Cl. 208-11.00R.

Olsen, Ronald H., to Microlife Technics, Inc. Plasmid vectors including Tn904. 4,567,141, Cl. 435-91.000.

Olympus Optical Co., Ltd.: *See*—
Inoue, Akira, 4,566,769, Cl. 354-145.100.
Sakagami, Toshio, 4,567,021, Cl. 422-102.000.
Yamaguchi, Tatuya, 4,566,437, Cl. 128-4.000.

O'Meara, Joseph D., Jr.; Yuan, Herbert H.; Lease, William O.; and Stapleton, Robert G., to Shell Oil Company. Centrifugal analyzer. 4,567,373, Cl. 250-573.000.

Omnet Associates: *See*—
Massey, James L.; and Omura, Jimmy K., 4,567,600, Cl. 375-2.100.

Omori, Norio: *See*—
Ninomiya, Masakazu; Fujisawa, Hideya; Omori, Norio; and Suzuki, Atsushi, 4,566,419, Cl. 123-489.000.

Omron Tateisi Electronics Co.: *See*—
Waniisi, Tetuya; Sato, Hiroshi; and Nanba, Isao, 4,566,803, Cl. 368-66.000.

Omura, Jimmy K.: *See*—
Massey, James L.; and Omura, Jimmy K., 4,567,600, Cl. 375-2.100.

O'Neal, Andrew W. Energy saving head pressure control system. 4,566,288, Cl. 62-196.100.

Onishi, Tetsuo: *See*—
Matsushita, Ken; and Onishi, Tetsuo, 4,566,383, Cl. 101-121.000.

Ono, Satoru: *See*—
Oshima, Goro; Ono, Satoru; and Shimada, Yasuhisa, 4,567,485, Cl. 343-358.000.

Onoda, Shigeyoshi: *See*—
Honda, Haruhisa; Onoda, Shigeyoshi; and Nishino, Fumio, 4,566,777, Cl. 355-3.00R.

Onogi, Toshiro; Yoda, Kenichi; and Kitamura, Masahiko, to Matsushita Electric Works, Ltd. Sequence controlling apparatus. 4,567,556, Cl. 364-140.000.

Ooi, Kiyoshi; Morita, Michio; Suzuki, Kazuyoshi; Hashizume, Soh; and Yoshizawa, Hanako, to Chiba Prefectural Government. Attenuated smallpox vaccine strain. 4,567,147, Cl. 435-237.000.

Ookawa, Norio: *See*—
Akisada, Masahide; Ookawa, Norio; and Takamura, Yuji, 4,566,767, Cl. 354-76.000.

Openshaw, Ronald D., to Costain Petrocarbon Limited. Production of pure nitrogen. 4,566,887, Cl. 62-21.000.

Opresko, Stephen T., to RCA Corporation. CRT Comprising metallized glass beads for suppressing arcing therein. 4,567,400, Cl. 313-457.000.

Orendi, Roderich R.: *See*—
Ehm, Karl H.; and Orendi, Roderich R., 4,566,679, Cl. 269-23.000.

Orii, Masaru, to Yugengaisha Kyodogiken. Method and apparatus for feeding materials to be presaed. 4,566,306, Cl. 72-346.000.

Orimoto, Hiroyuki: *See*—
Aoki, Daiichi; Nakamura, Yoshinori; and Orimoto, Hiroyuki, 4,567,224, Cl. 524-494.000.

Orth, Winfried; and Fickert, Werner, to Rutgerswerke Aktiengesellschaft. Pyrrole containing 2-aminonitropyridine derivatives. 4,567,272, Cl. 546-281.000.

Osaki, Masaaki: *See*—
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,567,187, Cl. 514-312.000.

Osgood Industries, Inc.: *See*—
Mueller, Martin, 4,566,923, Cl. 156-69.000.

Oshima, Goro; Ono, Satoru; and Shimada, Yasuhisa, to Nippon Electric Co., Ltd. Earth station transmission power control system for keeping an EIRP of down link signals constant irrespective of weather. 4,567,485, Cl. 343-358.000.

Oshima, Hiroyo; Kano, Isao; Kojima, Yutaka; Shimura, Yoshihiko; Ishiguro, Ken; and Nagai, Koichi, to Jujo Paper Co., Ltd. Thermal dye-transfer type recording sheet. 4,567,114, Cl. 428-480.000.

Oshima, Yasunobu: *See*—
Noguchi, Shozo; Oshima, Yasunobu; and Kamata, Tohru, 4,567,598, Cl. 372-36.000.

Oshima, Yasushi, to Yamato Scale Company, Limited. Weighing hopper cleaning device. 4,566,549, Cl. 177-245.000.

Oskar Frech GmbH and Co.: *See*—
Fink, Roland; and Klingenstein, Walter, 4,566,522, Cl. 164-316.000.

Ostergaard, James R., Sr.: *See*—
Ostergaard, James R., II; and Donaldson, Dwight L., 4,566,732, Cl. 297-174.000.

Ostergaard, James R., II; and Donaldson, Dwight L., to Ostergaard, James R., Sr., a part interest. Adjustable wheelchair table. 4,566,732, Cl. 297-174.000.

Ota, Shigenori: *See*—
Inoue, Seijiro; and Ota, Shigenori, 4,567,046, Cl. 426-20.000.

Ota, Shinichi: *See*—
Satoh, Hisatake; and Ota, Shinichi, 4,566,997, Cl. 260-105.000.

Otis Elevator Company: *See*—
Reimann, Kurt; Ackermann, Bernd; Loeb, Ruediger; and Ruther, Claus, 4,567,411, Cl. 318-341.000.

Otis Engineering Corporation: *See*—
Deaton, Thomas M., 4,566,478, Cl. 137-112.000.

Otomo, Masao: *See*—
Shimada, Kenjiro; Otomo, Masao; Tomita, Fusao; and Ito, Shingo, 4,567,164, Cl. 514-33.000.

Otsuka Pharmaceutical Co., Ltd.: *See*—
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,567,187, Cl. 514-312.000.

Otsuke Kagaku Yakuhin Kabushiki Kaisha: *See*—
Torii, Sigeru; Tanaka, Hideo; Shiroi, Takashi; Sasaoka, Michio; Saito, Norio; and Matsumura, Kiyotoshi, 4,566,996, Cl. 260-239.00A.

Ott, Gunther; Dobbelstein, Arnold; Geist, Michael; Schon, Georg; and Ahlers, Klaas, to BASF Farben Fasern AG. Water-dispersible binders based on modified epoxide/amine adducts, and their preparation and use. 4,566,963, Cl. 204-181.700.

Otterbein, Roy T., to Arvin Industries, Inc. Capillary fin media. 4,566,290, Cl. 62-304.000.

Outboard Marine Corporation: *See*—
Billingsley, Henry C.; and DuBois, Chester G., 4,566,424, Cl. 123-583.000.
Shebuski, Robert C., 4,566,520, Cl. 164-131.000.

Outokumpu Oy: *See*—
Kivisto, Tuomo V. J.; Fallenius, Kai B.; and Niitti, Timo U., 4,566,968, Cl. 210-221.100.

Over, William R.: *See*—
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,566,164, Cl. 29-33.00M.

Overbo, Gordon I. Captive column. 4,566,247, Cl. 52-732.000.

Overley, John P.: *See*—
Watson, Alan R.; and Overley, John P., 4,567,608, Cl. 381-122.000.

Overton, Terence K. W.: *See*—
Baldry, Peter J.; Collins, John H.; Morantz, Daniel J.; Overton, Terence K. W.; and Wright, David W., 4,567,122, Cl. 430-4.000.

Owaysi, Fathi A.; and Al-Ameeri, Rasheed S., to Kuwait Institute for Scientific Research. Process for purification of liquid paraffins. 4,567,315, Cl. 585-827.000.

Owens-Corning Fiberglas Corporation: *See*—
Pollet, Jean-Claude; Armstrong, Gordon P.; and Flautt, Martin C., 4,567,102, Cl. 428-391.000.

Owens-Illinois, Inc.: *See*—
Chang, Long F., 4,566,600, Cl. 215-1.00C.
Jabarin, Saleh A., 4,567,069, Cl. 428-35.000.

Ozaki, Norihiko: *See*—
Iwatsuka, Nobuyoshi; Tomizawa, Fumio; Sato, Chikara; Ozaki, Norihiko; Ichikawa, Yoshiaki; and Sadakane, Kenichiro, 4,566,843, Cl. 414-680.000.

Ozari, Yehuda: *See*—
Gajria, Chandrasen; and Ozari, Yehuda, 4,567,246, Cl. 526-318.440.

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Brown, Trevor P., 4,566,631, Cl. 238-349.000.

Panoch, Hans J.; Feldmann, Rainer; Hinn, Hans; Brandt, Siegfried; and Haage, Hans-Jurgen, to Chemische Werke Huls Aktiengesellschaft. Heat sealing textiles with copolyamides. 4,566,931, Cl. 156-330.900.

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Parham, Allan M. Medical stopcock valve assembly. 4,566,480, Cl. 137-271.000.

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Lewis, Edward L.; Parr, Jack E.; Fox, Mark A.; and Fuson, Robert L., 4,566,138, Cl. 623-22.000.

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Heller, Martin G.; Pecha, Edward; Smith, Douglas; and Alcock, Philip, 4,566,503, Cl. 140-140.000.

Peche, Gerhard, to Siemens Aktiengesellschaft. Cup-shaped switch contact member for an electric vacuum switch. 4,567,338, Cl. 200-144.00B.

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Peers, Robert P., to Microdot Inc. Electrical connection system. 4,566,747, Cl. 339-74.00R.

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Peglion, Jean-Louis: *See*—
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Permut, Ronald, to Storage Technology Corporation. Tape drive having swing arm buffers and automatic threading. 4,566,652, Cl. 242-189.000.

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Persson, Hans A. W. Ultrasonic detector device. 4,566,334, Cl. 73-649.000.
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Nicolaou, Kyriacos C.; Petasis, Nicos A.; and Seitz, Steven P., 4,567,290, Cl. 560-124.000.
Petcher, Trevor J.: *See*—
Revesz, Laszlo ; and Petcher, Trevor J., 4,567,192, Cl. 514-369.000.
Peter, Dietmar, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Cooling arrangement for an automotive vehicle, especially a passenger car. 4,566,407, Cl. 123-41.480.
Petersen, Carl M., III, to Irvin Industries Inc. Conversion control for combination VSI and ALR retractor. 4,566,649, Cl. 242-107.40A.
Petersen, Hans C.; and Kyster, Erik, to Danfoss A/S. Hydraulic control apparatus for a servo-motor, particularly for vehicle steering. 4,566,272, Cl. 60-384.000.
Peterson, Elmer R., to Baker Oil Tools, Inc. Fail-safe one trip perforating and gravel pack system. 4,566,538, Cl. 166-278.000.
Peterson, Steven H.; and Phillips, D. Colin, to Westinghouse Electric Corp. Chemical separation method for uranium isotopes. 4,567,025, Cl. 204-157.200.
Petiet, Thomas J., to Great Lakes Chemical Corporation. Halogenated bisphenol A ether flame retardant for ABS polymers. 4,567,218, Cl. 524-373.000.
Petiteau, Maurice R. Automated tool manipulating structure with X-Y movement including a belt and pulley drive arrangement. 4,566,346, Cl. 74-89.220.
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Gruetzmacher, Gordon D., 4,567,048, Cl. 426-250.000.
Lombardino, Joseph G., 4,567,179, Cl. 514-225.000.
Stong, Randel E.; and Walinsky, Stanley W., 4,566,978, Cl. 252-8.50C.
Pforte, Karl W., to Buro Patent AG. Code-resetting device for a car-type transporter. 4,566,390, Cl. 104-88.000.
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Kuhn, Milos J., 4,567,582, Cl. 367-56.000.
Latchum, John W., Jr., 4,567,340, Cl. 219-10.410.
Philpot, Van B. Serum thrombin time in clinical medicine. 4,567,137, Cl. 435-13.000.
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Moore, David N., 4,566,603, Cl. 215-329.000.
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Piccone, Vincent A.; Piccone, John N.; Piccone, Louis A.; LeVeen, Robert F.; and LeVeen, Eric G., 4,566,464, Cl. 128-732.000.
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Wiblin, Wayne T.; Melocik, Grant C.; Leskovec, Edward V.; and Pickering, William, 4,567,467, Cl. 340-347.00P.
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Pitney Bowes Inc.: *See*—
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Irvine, Robert; Roetter, Frank T.; and Stearns, Willis R., 4,566,685, Cl. 271-150.000.
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Pitts, John R., to United States of America, Energy. Electron beam enhanced surface modification for making highly resolved structures. 4,566,937, Cl. 156-628.000.
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Plisky, John J.: *See*—
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Wright, Joseph H., 4,566,771, Cl. 354-283.000.
Polis, Marjorie J.; and Husson, Alan L., to Westinghouse Electric Corp. Multiprocessor supervisory control for an elevator system. 4,567,560, Cl. 364-184.000.
Pollet, Jean-Claude; Armstrong, Gordon P.; and Flautt, Martin C., to Owens-Corning Fiberglas Corporation. Hot melt size. 4,567,102, Cl. 428-391.000.
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Pompei, Francesco; and Daya, Shiraz, to Exergen Corporation. Scanning radiation detector. 4,566,808, Cl. 374-124.000.
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Posanski, Ulrich; Ghyczy, Miklos; Bauer, Kurt-Heinz; and Wendel, Armin, to A. Natterman & Cie GmbH. Liquid active ingredient concentrates for preparation of microemulsions. 4,567,161, Cl. 514-23.000.
Poschinger, Udo. Gas container. 4,566,589, Cl. 206-0.600.
Potechin, James: *See*—
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Gaa, Peter C.; and Dana, David E., 4,567,228, Cl. 524-588.000.
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Procter & Gamble Company, The: *See*—
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Puidak, Heino: *See*—
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Lowell, Seymour, 4,566,326, Cl. 73-432.0PS.
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Qureshi, Shahid; and Gardner, Hugh C., to Union Carbide Corporation. Thermoplastic modified epoxy compositions. 4,567,216, Cl. 523-400.000.
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Raceu, Dumitru: *See*—
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Radcliff, Frank T., to Combustion Engineering, Inc. Dual isotope method to radiograph structures in nuclear steam supply systems. 4,567,012, Cl. 376-245.000.
Radford, Kenneth C.; and Carlson, William G., to Westinghouse Electric Corp. Burnable neutron absorbers. 4,566,989, Cl. 252-478.000.
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Raffield, William C.: *See*—
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Randall, Thomas G. Ice fishing rig. 4,566,216, Cl. 43-17.000.
Rante, John. Hands-on inspection board for printed circuit cards. 4,566,325, Cl. 73-432.00R.
Rao, M. Vikram; and Fontenot, John E., Jr., to NL Industries, Inc. Method for optimizing the tripping velocity of a drill string. 4,566,318, Cl. 73-151.000.

Rattin, Luciano: *See*—
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Rau, Jim L.: *See*—
Barker, Charles A.; and Rau, Jim L., 4,566,477, Cl. 137-101.000.
Rau, Karl; Kalk, Heinz; and Metzger, Gerhard, to VDO Adolf Schindling AG. Apparatus for electrically measuring the level of a liquid in a container, particularly in the gasoline tank of a vehicle. 4,566,322, Cl. 73-295.000.
Rauchwerger, George P. Liquid beverage dispenser. 4,566,507, Cl. 141-271.000.
Rausing, Hans A., to Tetra Pak International AB. Method of manufacturing packing container having tear-up opening arrangement. 4,566,928, Cl. 156-217.000.
Raver, Norman, to International Business Machines Corporation. Driver circuit for controlling signal rise and fall in field effect transistor processors. 4,567,378, Cl. 307-270.000.
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Hopkins, Maxwell M.; and Miller, Arthur, 4,566,893, Cl. 65-69.000.
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Opresko, Stephen T., 4,567,400, Cl. 313-457.000.
Piasecki, Douglas S., 4,567,381, Cl. 307-296 00R.
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Reddy, Chitranjan N.: *See*—
Patel, Pravin P.; and Reddy, Chitranjan N., 4,567,579, Cl. 365-189.000.
Regelman, Dale F., to Upjohn Company, The. Amidinium salts. 4,567,257, Cl. 544-78.000.
Regina Corporation: *See*—
Fitzwater, Edwin, 4,566,149, Cl. 15-320.000.
Rehau Plastiks AG & Co.: *See*—
Weisberg, Ekkehard; and Hameister, Rolf, 4,567,068, Cl. 428-31.000.
Reimann, Hans; and Fuchs, Uwe, to Linde Aktiengesellschaft. Process and apparatus for the biological purification of wastewater. 4,566,971, Cl. 210-616.000.
Reimann, Kurt; Ackermann, Bernd; Loeb, Ruediger; and Ruther, Claus, to Otis Elevator Company. High frequency pulse width modulation. 4,567,411, Cl. 318-341.000.
Reinauer, Josef, to Gottlieb Guhring. Ball track milling cutter tool. 4,566,828, Cl. 407-48.000.
Reinert, Gerhard: *See*—
Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, 4,566,874, Cl. 8-103.000.
Reis, Alfons: *See*—
Bukowiecki, Stanislaw; Pfister, Gustav; Reis, Alfons; Troup, Alan P.; and Ulli, Hans-Peter, 4,567,475, Cl. 340-634.000.
Reissenweber, Gernot: *See*—
Plath, Peter; Schirmer, Ulrich; Reissenweber, Gernot; Wuerzer, Bruno; and Retzlaff, Guenter, 4,566,900, Cl. 71-100.000.
Reist, Walter, to Ferag AG. Apparatus for forming a spiral-layered coiled stack from substantially two-dimensional flat structures continuously arriving in imbricated formation. 4,566,686, Cl. 271-201.000.
Reitz, Helmut: *See*—
Dreher, Ulrich; and Reitz, Helmut, 4,566,585, Cl. 198-624.000.
Reliance Incorporated: *See*—
Toshishige, Yoshinori, 4,566,662, Cl. 248-222.100.
Renault Vehicules Industriels: *See*—
Modat, Bernard, 4,566,716, Cl. 280-439.000.
Resch, Klaus: *See*—
Haberl, Karl; and Resch, Klaus, 4,566,391, Cl. 105-215.00R.
Research Corporation: *See*—
Nicolaou, Kyriacos C.; Petasis, Nicos A.; and Seitz, Steven P., 4,567,290, Cl. 560-124.000.
Resnick, Paul R., to Du Pont de Nemours, E. I., and Company. 2,3-Dibromo-pentafluoropropyl fluorosulfate. 4,567,003, Cl. 260-458.00F.
Retsch, William H.: *See*—
Briar, Thomas J.; and Retsch, William H., 4,566,891, Cl. 65-12.000.
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Plath, Peter; Schirmer, Ulrich; Reissenweber, Gernot; Wuerzer, Bruno; and Retzlaff, Guenter, 4,566,900, Cl. 71-100.000.
Revesz, Laszlo ; and Petcher, Trevor J., to Sandoz Ltd. Acylaminophenol derivatives. 4,567,192, Cl. 514-369.000.
Revlon, Inc.: *See*—
Ciaudelli, Joseph P., 4,567,037, Cl. 424-59.000.
Ciaudelli, Joseph P.; and Brand, Elizabeth, 4,567,038, Cl. 424-59.000.

Stadnick, Richard P.; and Schnetzinger, Richard W., 4,567,039, Cl. 132-70.000.

Revol, Jacques: *See—*
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Bessard, Michel, 4,566,492, Cl. 137-636.100.

Reyes, Pablo: *See—*
Hecht, William; and Reyes, Pablo, 4,566,178, Cl. 29-594.000.

Rheinmetall GmbH: *See—*
Bartollen, Rolf, 4,566,368, Cl. 89-26.000.
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Rhone-Poulenc Agrochimie: *See—*
Ambrosi, Dominique; and de Reinach Hirtzbach, Francois, 4,566,899, Cl. 71-93.000.

Rhone-Poulenc Specialites Chimiques: *See—*
Lepage, Jean-Luc; and Soula, Gerard, 4,567,286, Cl. 556-469.000.

Rich, Stanley R.: *See—*
Sachar, Kenneth S.; and Rich, Stanley R., 4,566,636, Cl. 239-698.000.

Richard, Christian, to Thomson-CSF. Process for the adaptative coding and the decoding of a television picture and devices for performing this process. 4,567,519, Cl. 358-135.000.

Richards Aerospace Research Corporation: *See—*
Cucuzza, Joseph R., 4,566,699, Cl. 244-12.200.

Richling, Wayne P.: *See—*
Hackleman, David E.; Adams, Richard F.; and Richling, Wayne P., 4,566,193, Cl. 33-1.00D.

Richter, Ekkehard; Knoblauch, Karl; Schlegel, Rolf; and Korbacher, Werner, to Bergwerksverband GmbH. Process and apparatus for producing oxygen with a low proportion of argon from air. 4,566,881, Cl. 55-25.000.

Richter, Karl E.: *See—*
Ebey, Edward; and Richter, Karl E., 4,566,674, Cl. 254-345.000.

Ricoh Company, Ltd.: *See—*
Kondoh, Shiroh, 4,566,776, Cl. 355-3.0DD.
Ohta, Masafumi; Sasaki, Masaomi; and Shoshi, Masayuki, 4,567,124, Cl. 430-59.000.
Yusa, Kazuhiro; and Komada, Kenya, 4,567,495, Cl. 346-153.100.

Rider, Billie F., to Rockwell International Corporation. System and technique for bandwidth improvement in multifunction sensors. 4,566,327, Cl. 73-510.000.

Riebel, Hans-Jochem: *See—*
Kruger, Bernd-Wieland; Riebel, Hans-Jochem; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,567,168, Cl. 514-89.000.

Riege, David H.: *See—*
Sell, William J.; Riege, David H.; and Marinkovich, Vincent A., 4,567,149, Cl. 436-513.000.

Rieter Machine Works: *See—*
Zuend, Marcel, 4,566,152, Cl. 19-81.000.

Rieter Machine Works Ltd.: *See—*
Sommer, Hans-Jorg; Lamparter, Hansruedi; and Wermelinger, Maurizio, 4,566,642, Cl. 242-18.00R.

Rieter-Scragg Limited: *See—*
Naylor, Geoffrey, 4,566,265, Cl. 57-336.000.

Rigoni, Renzo: *See—*
Piai, Dino; Rigoni, Renzo; and Paruzzolo, Giovanni, 4,566,970, Cl. 210-409.000.

Rikagaku Kenkyusho: *See—*
Goto, Eiichi; and Ohta, Hiroshi, 4,567,383, Cl. 307-415.000.

Riker Laboratories, Inc.: *See—*
Gerster, John F., 4,567,269, Cl. 546-167.000.

Riley, Brian, to Combustion Engineering, Inc. Process for preparing mixed metal oxides. 4,567,031, Cl. 423-593.000.

Rinehart, Stephen A.: *See—*
Britt, James E.; Laskowski, Kenneth W.; Sisson, Jeffrey L.; and Rinehart, Stephen A., 4,566,782, Cl. 355-14.0SH.

Rinkewich, Isaac. Long range sprinkler with controlled application rate. 4,566,633, Cl. 239-237.000.

Ripperger, Willi: *See—*
Dressel, Manfred; Eberle, Heinrich; Ripperger, Willi; Ruehenbeck, Wolfgang; and Zwick, Werner, 4,567,294, Cl. 562-555.000.

Ripple, Dale B.; and Smith, David W. Surgical instrument. 4,566,466, Cl. 128-781.000.

Rise, Leif. Containers and holders for use in securing such containers to belts. 4,566,616, Cl. 224-253.000.

Rivoli, Anthony L.: *See—*
Hankins, Kevin T.; and Rivoli, Anthony L., 4,566,192, Cl. 33-1.00B.

Rizk, Sidky D.; Hsieh, Harry W. S.; and Mazzeo, Michael P., to Essex Specialty Products, Inc. Acrylic resin having pendant silane groups thereon, and methods of making and using the same. 4,567,107, Cl. 428-425.500.

Roayaie, Emad: *See—*
Jorne, Jacob; Roayaie, Emad; and Shah, Atul, 4,567,120, Cl. 429-72.000.

Robert Bosch GmbH: *See—*
Bauer, Otto; Eberl, Lernhard; Geyer, Gerhard; and Straubel, Max, 4,566,421, Cl. 123-502.000.
Heiser, Joachim; and Weigle, Dieter, 4,566,274, Cl. 60-444.000.
Kalkhof, Bernd; and Nagel, Karl, 4,567,537, Cl. 361-18.000.
Kemmner, Ulrich, 4,566,866, Cl. 417-366.000.
Sieber, Albrecht, 4,566,414, Cl. 123-357.000.
Trachte, Dietrich, 4,566,635, Cl. 239-533.800.
van Belzen, David; Lotterbach, Gerhard; van Woudenberg, Jan F.; and Zucker, Udo, 4,566,309, Cl. 73-4.00R.

Roberts, Thomas J., Jr.: *See—*
Roberts, Timothy J.; Roberts, Thomas J., Jr.; Roberts, Thomas J., Sr.; and Marinier, Robert P., Jr., 4,566,142, Cl. 4-604.000.

Roberts, Thomas J., Sr.: *See—*
Roberts, Timothy J.; Roberts, Thomas J., Jr.; Roberts, Thomas J., Sr.; and Marinier, Robert P., Jr., 4,566,142, Cl. 4-604.000.

Roberts, Timothy J.; Roberts, Thomas J., Jr.; Roberts, Thomas J., Sr.; and Marinier, Robert P., Jr., to Hospital Therapy Products, Inc. Seat shower. 4,566,142, Cl. 4-604.000.

Robertson, Tommie E., to Continental Conveyor & Equipment Co., Inc., The. Pressure device for conveyor. 4,566,586, Cl. 198-628.000.

Robinson, James L. Sander attachment for rotary power saw. 4,566,511, Cl. 144-1.00F.

Robinson, Malcolm: *See—*
Charles, Isabel; and Robinson, Malcolm, 4,567,034, Cl. 424-5.000.

Robinson, Paul R.; and Moorehead, Eric L., to Union Oil Company of California. Process for producing diolefins. 4,567,314, Cl. 585-621.000.

Rocamat: *See—*
Marechal, Roger; and Jeantet, Lucien, 4,566,427, Cl. 125-16.00R.

Roche, Joseph R., to Hydril Company. Vent line system. 4,566,494, Cl. 137-872.000.

Rockwell International Corporation: *See—*
Breiholz, Arlen E., 4,567,486, Cl. 343-401.000.
Higgins, J. Aiden; and Walton, Emory R., Jr., 4,566,184, Cl. 29-840.000.
McDermott, Thomas C., 4,567,587, Cl. 370-13.000.
Rider, Billie F., 4,566,327, Cl. 73-510.000.
Skipor, Eugen, 4,566,351, Cl. 74-606.00R.

Rodal, Jose J. A.: *See—*
Ewald, James L.; and Rodal, Jose J. A., 4,566,945, Cl. 162-343.000.

Rodewald, Paul G., to Mobil Oil Corporation. Preparation of modified zeolites and their utilization. 4,567,310, Cl. 585-408.000.

Rodgers, Franklin, to Aktiengesellschaft Adolph Saurer. Apparatus for the constrained actuation of the clamping system of filling-yarn insertion devices in shuttleless weaving machines. 4,566,500, Cl. 139-446.000.

Roetter, Frank T.: *See—*
Irvine, Robert; Roetter, Frank T.; and Stearns, Willis R., 4,566,685, Cl. 271-150.000.

Rogers, J. David, to Amhil Enterprises Ltd. Lid for drinks container. 4,566,605, Cl. 220-90.200.

Rohr, William L., Jr. Ligament tensor and distal femoral resector guide. 4,566,448, Cl. 128-92.00H.

Rohrbacher, Herbert E., to Bergandi Manufacturing Co., Inc. Automatic end coating attachment for a chain link weaver. 4,566,501, Cl. 140-1.000.

Roland Corporation: *See—*
Kikumoto, Tadao, 4,566,362, Cl. 84-1.030.

Rolin, Oskar L. Device for scraping off liquid. 4,566,148, Cl. 15-257.050.

Roller, Hermann: *See—*
Lehner, August; Kopke, Helmut; Roller, Hermann; Balz, Werner; Grau, Werner; Koester, Eberhard; and Sommermann, Friedrich, 4,567,108, Cl. 428-425.900.

Rolls-Royce Limited: *See—*
Ballard, John R.; Timmis, Peter H.; and Buller, Michael J., 4,566,270, Cl. 60-264.000.

Roman, Steven A.: *See—*
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kolimeyer, Willy D., 4,567,283, Cl. 549-546.000.

Romberg, Felix B. Pedal actuated gate. 4,566,223, Cl. 49-264.000.

Ronemus, DeHertburn N.; and Tice, Victor M., to Pass & Seymour, Inc. Plug-in ground fault circuit interrupter module. 4,567,544, Cl. 361-399.000.

Rosdorfer, Joachim: *See—*
Kroeplien, Udo; and Rosdorfer, Joachim, 4,567,194, Cl. 514-400.000.

Rosenkranz, Otto: *See—*
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Rosenthal, David, to GCA Corporation. Reticle bar code and method and apparatus for reading same. 4,567,361, Cl. 235-462.000.

Ross, Dennis: *See—*
Tucker, Hartwell F.; Tucker, Jeffrey R.; Ross, Dennis; and Knirck, Jeffrey G., 4,567,391, Cl. 310-156.000.

Ross Hill Controls Corporation: *See—*
Beck, William H., 4,567,420, Cl. 318-803.000.

Rosser, Robert W.; Chen, Timothy S.; and Cheng, Chung-Heng, to United States of America, Administrator, National Aeronautics and Space Administration. Perfluoro (Imidoylamidine) diamidines. 4,567,301, Cl. 564-243.000.

Roth, Eldon N. Method for processing meat products. 4,567,050, Cl. 426-417.000.

Roth, Kurt: *See—*
Buhler, Ulrich; Tappe, Horst; Bode, Albert; Hahnke, Manfred; and Roth, Kurt, 4,567,252, Cl. 534-882.000.

Rothmans of Pall Mall Canada Limited: *See—*
Brackman, Warren A., 4,566,470, Cl. 131-312.000.

Rotte, Hermann J.; and Bogl, Emil, to Mannesmann Rexroth GmbH. Spool member of a multi-way-valve. 4,566,479, Cl. 137-312.000.

Rottmayr, Josef, to Assmann, Aloisius, a part interest. Mold for casting reinforced concrete panel assembly elements. 4,566,669, Cl. 249-160.000.

Roujon, Auguste. Wire saw for shaping granite and other stone. 4,566,428, Cl. 125-21.000.

Roussel Uclaf: *See—*
Delevallee , Francoise ; Deraedt, Roger; and Le Martret, Odile, 4,567,198, Cl. 514-513.000.

Roux, Jacques: *See—*
Foch, Henri; and Roux, Jacques, 4,567,553, Cl. 363-98.000.

Royal Plastic S.A.: *See—*
Marchesini, Sisto, 4,566,731, Cl. 297-45.000.

Ruehenbeck, Wolfgang: *See—*
Dressel, Manfred; Eberle, Heinrich; Ripperger, Willi; Ruehenbeck, Wolfgang; and Zwick, Werner, 4,567,294, Cl. 562-555.000.

Ruf, Walter; and Kelley, Robert G., to St. Regis Corporation. Packaging machine. 4,566,505, Cl. 141-83.000.

Ruhle, James L. Free-floating neutrally-buoyant reciprocating pump valve for abrasive fluids. 4,566,485, Cl. 137-375.000.

Ruhrkohle AG: *See—*
Seipenbusch, Jurgen; and Dohren, Hans, 4,566,880, Cl. 48-73.000.

Rush, James D.: *See—*
Beales, Keith J.; Day, Clive R.; Ainslie, Benjamin J.; and Rush, James D., 4,566,754, Cl. 350-96.300.

Ruta, Joseph W., to S&C Electric Company. Power supply for a circuit interrupter. 4,567,540, Cl. 361-93.000.

Ruter, Ewald, to E. Ruter GmbH. Collapsible construction assembly. 4,566,245, Cl. 52-645.000.

Rutgerswerke Aktiengesellschaft: *See—*
Orth, Winfried; and Fickert, Werner, 4,567,272, Cl. 546-281.000.

Ruther, Claus: *See—*
Reimann, Kurt; Ackermann, Bernd; Loeb, Ruediger; and Ruther, Claus, 4,567,411, Cl. 318-341.000.

Ryason, P. R.: *See—*
DeVires, Louis; and Ryason, P. R., 4,567,311, Cl. 585-415.000.

Rye, Grover W.: *See—*
Brandyberry, Dennis R.; and Rye, Grover W., 4,566,261, Cl. 57-212.000.

Rynearson, Fred L. Adjustable hanger. 4,566,665, Cl. 248-495.000.

S&C Electric Company: *See—*
Ruta, Joseph W., 4,567,540, Cl. 361-93.000.

S. Schmied & Co., elektrotechnische Bedarfsartikel en gros, ASM-Tableaubau: *See—*
Schmied, Samuel, 4,566,742, Cl. 312-257.0SK.

Saab-Scania Aktiebolag: *See—*
Eriksson, Leif K. S., 4,566,569, Cl. 192-53.00G.

Saade , Henry Y.; and Tindall, William N. J., to International Business Machines Corporation. Optimizing cobol object code instruction path length with respect to perform statements. 4,567,574, Cl. 364-900.000.

Saam, John C.: *See—*
Huebner, David J.; and Saam, John C., 4,567,231, Cl. 524-837.000.

Sachar, Kenneth S.; and Rich, Stanley R., to Micropure, Incorporated. Producing liquid droplets bearing electrical charges. 4,566,636, Cl. 239-698.000.

Sachdev, Krishna G.: *See—*
Afzali-Ardakani, Ali; Cohen, Mitchell S.; Pennington, Keith S.; and Sachdev, Krishna G., 4,567,490, Cl. 346-135.100.

Sachleben, Leroy R.; Korte, Kevin R.; Snyder, Daniel D.; and Allen, Terry L., to Brown & Williamson Tobacco Corporation. Process and system for making a blended tobacco product. 4,566,468, Cl. 131-297.000.

Sackner, Marvin A., to Key Pharmaceuticals, Inc. Endorphin blockage. 4,567,185, Cl. 514-282.000.

Sadakane, Kenichiro: *See—*
Iwatsuka, Nobuyoshi; Tomizawa, Fumio; Sato, Chikara; Ozaki, Norihiko; Ichikawa, Yoshiaki; and Sadakane, Kenichiro, 4,566,843, Cl. 414-680.000.

Sadek, Kadry: *See—*
Dobsa, Josip; Mauchle, Peter; Pfyl, Walter; and Sadek, Kadry, 4,567,424, Cl. 323-210.000.

Saeki, Syuji: *See—*
Nishibori, Setsuo; Komori, Hirohito; Saeki, Syuji; and Kinoshita, Hiromitsu, 4,567,242, Cl. 525-534.000.

Sagami Chemical Research Center: *See—*
Matsui, Kiyohide; Kikuchi, Yoshiyuki; Hiyama, Tamejiro; Tobita, Etsuko; Kondo, Kiyoshi; Akimoto, Akira; Seita, Toru; and Watanabe, Hiroyuki, 4,567,206, Cl. 521-27.000.

St. Regis Corporation: *See—*
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Saito, Keiji: *See—*
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Saito, Koji, to Murata Manufacturing Co., Ltd. Resonator device. 4,567,454, Cl. 333-206.000.

Saito, Norio: *See—*
Torii, Sigeru; Tanaka, Hideo; Shiroi, Takashi; Sasaoka, Michio; Saito, Norio; and Matsumura, Kiyotoshi, 4,566,996, Cl. 260-239.00A.

Saito, Yukio: *See—*
Yazaki, Takao; Hattori, Kazuhide; Matsuno, Takumi; Hayama, Kazuhide; Ito, Isao; and Saito, Yukio, 4,567,097, Cl. 428-317.700.

Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Photoconductive member comprising a hydrogenated or halogenated amorphous silicon and geranium layer. 4,567,127, Cl. 430-65.000.

Saitoh, Kuniyuki: *See—*
Fukuda, Hiroyuki; Shigeta, Masatomo; Kaji, Hisatsugu; and Saitoh, Kuniyuki, 4,567,086, Cl. 428-166.000.

Sakagami, Toshio, to Olympus Optical Company Limited. U-Shaped reaction tube made of elastic material. 4,567,021, Cl. 422-102.000.

Sakai, Kazunori: *See—*
Masaki, Syouichi; Tamura, Kimio; Wakao, Teruyoshi; Nakashima, Noriyuki; Asami, Ken; and Sakai, Kazunori, 4,566,737, Cl. 303-109.000.

Sakai, Tetsuro: *See—*
Kusakabe, Tetsuo; Sakai, Tetsuro; and Honda, Kazuhiko, 4,567,507, Cl. 358-11.000.

Sakamoto, Masahide; and Shida, Masami, to Hitachi, Ltd. Electronic control apparatus for internal combustion engine. 4,566,420, Cl. 123-489.000.

Sakane, Kazuo: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,567,275, Cl. 548-128.000.

Sakuma, Kuniharu; and Goto, Sumio, to Tokyo Juki Industrial Co., Ltd. Thread feed mechanism in sewing machine. 4,566,396, Cl. 112-302.000.

Sakurai, Hideto: *See—*
Kobayashi, Toyohiro; Mochizuki, Shoji; Murata, Mitsuru; Tsuboi, Shunji; and Sakurai, Hideto, 4,566,813, Cl. 400-120.000.

Salzman, Ronald N., to General Signal Corporation. Submersible mixer alignable in a horizontal or vertical mode. 4,566,801, Cl. 366-343.000.

Samol, Gerd W.: *See—*
Gey, Mathias; Grote, Jurgen; Pittel, Horst; Samol, Gerd W.; and Zelt, Rainer, 4,567,085, Cl. 428-163.000.

Samtec Company Limited: *See—*
Hattori, Takeo; and Sasakura, Tohru, 4,567,427, Cl. 324-64.000.

Sanders Associates, Inc.: *See—*
Baer, Ralph H.; and Allen, David, 4,567,532, Cl. 358-342.000.
Lawrence, James, 4,567,491, Cl. 346-136.000.

Sandoz Ltd.: *See—*
Neumann, Peter, 4,567,271, Cl. 546-271.000.
Revesz, Laszlo ; and Petcher, Trevor J., 4,567,192, Cl. 514-369.000.

Sandrock, Gary D.; and Snape, Edwin, to Ergenics, Inc. Reaction heat storage method for hydride tanks. 4,566,281, Cl. 62-48.000.

Sanford, Lawrence. Dual packer apparatus and method. 4,566,535, Cl. 166-113.000.

Sangamo Weston, Inc.: *See—*
Jerrim, John W., 4,567,588, Cl. 370-18.000.

Sanger, George F. Modular structure assemblies. 4,566,246, Cl. 52-648.000.

Sano, Shoichi, to Honda Giken Kogyo Kabushiki Kaisha. Steering system for vehicles. 4,566,709, Cl. 280-91.000.

Sano, Shoichi: *See—*
Furukawa, Yoshimi; and Sano, Shoichi, 4,566,710, Cl. 280-91.000.
Koizumi, Yusuke; Furukawa, Yoshimi; and Sano, Shoichi, 4,566,711, Cl. 280-91.000.

Sano, Takashi; Kawabata, Kazuo; and Miya, Yoji, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Method of forming a coating on polyolefin substrate. 4,567,106, Cl. 428-413.000.

Sano, Yoshikazu: *See—*
Sato, Yasuji; Yamamoto, Takao; Sano, Yoshikazu; and Nakayama, Yasunobu, 4,567,326, Cl. 179-90.00B.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Iwai, Tomio; and Torigai, Katsumi, 4,566,415, Cl. 123-361.000.

Santa Barbara Research Center: *See—*
Goodnough, Mark A., 4,567,363, Cl. 250-214.00A.

Sara, Raymond V., to Union Carbide Corporation. Carbonaceous articles having oxidation prohibitive coatings thereon. 4,567,103, Cl. 428-408.000.

Sarada, Toshio: *See—*
Kitagawa, Yoshiaki; Ohki, Koichiro; and Sarada, Toshio, 4,567,351, Cl. 219-341.000.

Sarasue, Hirotaka; and Tsubokawa, Yoshitoki, to Yoshida Kogyo K.K. Slide fastener. 4,566,156, Cl. 24-398.000.

Sartorius GmbH: *See—*
Sodler, Walter; Knothe, Erich; Maaz, Gunther; and Madge, Joachim, 4,566,548, Cl. 177-229.000.

Sasaki, Koji; and Koizumi, Junji, to Toyoda Gosei Co., Ltd. Polyamide-rubber blended composition. 4,567,235, Cl. 525-113.000.

Sasaki, Koji; and Koizumi, Junji, to Toyoda Gosei Co., Ltd. Polyamide-rubber blended composition. 4,567,238, Cl. 525-179.000.

Sasaki, Masahiko; Watanabe, Kenji; and Kitamura, Seiichi, to Mitsui Engineering & Shipbuilding Co., Ltd. Anchoring apparatus. 4,566,398, Cl. 114-293.000.

Sasaki, Masaomi: *See—*
Ohta, Masafumi; Sasaki, Masaomi; and Shoshi, Masayuki, 4,567,124, Cl. 430-59.000.

Sasaki, Yoshitaka, to Hitachi Metals, Ltd. Pressure fixing device. 4,566,778, Cl. 355-3.0FU.

Sasakura, Tohru: *See—*
Hattori, Takeo; and Sasakura, Tohru, 4,567,427, Cl. 324-64.000.

Sasaoka, Michio: *See—*
Torii, Sigeru; Tanaka, Hideo; Shiroi, Takashi; Sasaoka, Michio; Saito, Norio; and Matsumura, Kiyotoshi, 4,566,996, Cl. 260-239.00A.

Sasazawa, Kazuo: *See—*
Yamaoka, Nobutatsu; and Sasazawa, Kazuo, 4,567,059, Cl. 427-79.000.

Sasson, Sabar: *See—*
Simonovitch, Chaim; Hoffman, Theodor; and Sasson, Sabar, 4,566,995, Cl. 260-239.30B.

Sato, Akinori: *See—*
Kumasako, Takeo; Sato, Kiyomi; Kawakatsu, Akira; Sato, Akinori; and Mamiya, Isamu, 4,566,471, Cl. 131-317.000.

Sato, Chikara: *See*—
Iwatsuka, Nobuyoshi; Tomizawa, Fumio; Sato, Chikara; Ozaki, Norihiko; Ichikawa, Yoshiaki; and Sadakane, Kenichiro, 4,566,843, Cl. 414-680.000.

Sato, Hiroshi: *See*—
Waniisi, Tetuya; Sato, Hiroshi; and Nanba, Isao, 4,566,803, Cl. 368-66.000.

Sato, Kiyomi: *See*—
Kumasako, Takeo; Sato, Kiyomi; Kawakatsu, Akira; Sato, Akinori; and Mamiya, Isamu, 4,566,471, Cl. 131-317.000.

Sato, Koji: *See*—
Kawano, Hikaru; and Sato, Koji, 4,566,244, Cl. 53-588.000.

Sato, Masaaki: *See*—
Kitagawa, Hiroshi; Sato, Masaaki; Sawai, Mitsumasa; Yamamoku, Takeo; Akatsuka, Koichi; and Metoki, Toshio, 4,566,499, Cl. 139-59.000.

Sato, Masayuki: *See*—
Maeda, Takashi; and Sato, Masayuki, 4,566,847, Cl. 414-744.00R.

Sato, Takuso; Ichida, Nobuyuki; and Miwa, Hirohide, to Fujitsu Limited. Measuring method and apparatus for non-linear parameter of acoustic medium and its application. 4,566,460, Cl. 128-660.000.

Sato, Yasuji; Yamamoto, Takao; Sano, Yoshikazu; and Nakayama, Yasunobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Telephone apparatus for selective operation in a normal and repertory dial mode. 4,567,326, Cl. 179-90.00B.

Satoh, Hisatake; and Ota, Shinichi, to Nippon Oil Co., Ltd. Process for preparing resin metal salts. 4,566,997, Cl. 260-105.000.

Satoh, Kohichi: *See*—
Murao, Yoshikazu; Sawayama, Shigeru; and Satoh, Kohichi, 4,567,300, Cl. 564-215.000.

Sawa, Natsuo; Masuda, Takeshi; and Mizui, Takashi, to Shikoku Chemicals Corp. Isocyanuric acid adduct of 2-vinyl-4,6-diamino-S-triazine. 4,567,259, Cl. 544-207.000.

Sawada, Takeshi; Shinmi, Akira; Takagi, Hiroshi; Suzuki, Kenji; Kishi, Fumio; and Kozuki, Susumu, to Canon Kabushiki Kaisha; and Tohoku Steel Co., Ltd. Magnetic recording medium. 4,567,116, Cl. 428-694.000.

Sawai, Mitsumasa: *See*—
Kitagawa, Hiroshi; Sato, Masaaki; Sawai, Mitsumasa; Yamamoku, Takeo; Akatsuka, Koichi; and Metoki, Toshio, 4,566,499, Cl. 139-59.000.

Sawayama, Shigeru: *See*—
Murao, Yoshikazu; Sawayama, Shigeru; and Satoh, Kohichi, 4,567,300, Cl. 564-215.000.

Sawyer, Carleton E.; and Masterman, Hugh C., to Display Components, Inc. Core element for electrodynamic rotary machine. 4,566,179, Cl. 29-596.000.

SCAL Societe de Conditionnements en Aluminium: *See*—
Catrain, Yves; Guerrier, Claude; and Revol, Jacques, 4,567,092, Cl. 428-246.000.

Scandpower, Inc.: *See*—
Smith, Robert, 4,567,013, Cl. 376-247.000.

Schachenmann, Andreas, to Sulzer Brothers Limited. Air discharge device for a weaving machine. 4,566,497, Cl. 139-1.00C.

Schaefer, William L., to PPG Industries, Inc. Bushing construction. 4,566,888, Cl. 65-1.000.

Schafer, Eberhard: *See*—
Mueller, Siegfried; and Schafer, Eberhard, 4,566,472, Cl. 132-112.000.

Schanze, Klaus: *See*—
Tappert, Hans-Jurgen; Naumann, Johannes; Forster, Karl-Heinz; Doliner, Herbert; Pieper, Fritz; Frenzel, Werner; and Schanze, Klaus, 4,566,385, Cl. 101-183.000.

Scharf, Emil: *See*—
Boettger, Guenter; Hammer, Hans; Hertel, Otto; Jeschek, Gerhard; Mueller, Herbert; Scharf, Emil; and Schoenleben, Willibald, 4,567,303, Cl. 564-475.000.

Scharnowski, Gerhard: *See*—
Brausfeld, Walter; Gottling, Helmut; Moller, Rudolf; Muller, Peter; and Scharnowski, Gerhard, 4,566,196, Cl. 33-125.00R.

Schaus, John M., to Eli Lilly and Company. Method of preparing octahydro-1H(and 2H)-pyrazolo[3,4-g]quinolines. 4,567,266, Cl. 546-82.000.

Schedele, Helmut; and Kimpel, Rolf-Dieter, to Siemens Aktiengesellschaft. Electromagnetic relay. 4,567,457, Cl. 335-128.000.

Scheef, Emil: *See*—
Schulze, Werner; Gerich, Josef; Scheef, Emil; and Dautel, Heinz, 4,566,723, Cl. 285-86.000.

Scheib, Klaus: *See*—
Eicken, Karl; Scheib, Klaus; Theobald, Hans; Pommer, Ernst-Heinrich; and Ammermann, Eberhard, 4,567,263, Cl. 544-263.000.

Scher, Herbert I.: *See*—
O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., 4,567,087, Cl. 428-211.000.

Scherer, George; Joswick, Walter; and Blonder, Isaac S., to Blonder-Tongue Laboratories, Inc. Special program decoding of scrambled subscription television transmissions. 4,567,516, Cl. 358-114.000.

Schering Aktiengesellschaft: *See*—
Hofmeister, Helmut; Laurent, Henry; Annen, Klaus; and Wiechert, Rudolf, 4,567,002, Cl. 260-397.400.
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,567,195, Cl. 514-419.000.

Schering-Prebbles Limited: *See*—
Anscomb, Timothy, 4,566,613, Cl. 222-541.000.

Schiek, Burkhard: *See*—
Schilz, Wolfram; and Schiek, Burkhard, 4,567,484, Cl. 343-14.000.

Schiffers, Ulrich: *See*—
Muller, Rainer; and Schiffers, Ulrich, 4,566,267, Cl. 60-39.070.

Schilger, Herbert K. Composite floor system. 4,566,240, Cl. 52-414.000.

Schillinger, Ekkehard: *See*—
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,567,195, Cl. 514-419.000.

Schilz, Wolfram; and Schiek, Burkhard, to U.S. Philips Corporation. Doppler radar measuring apparatus. 4,567,484, Cl. 343-14.000.

Schirmer, Ulrich: *See*—
Plath, Peter; Schirmer, Ulrich; Reissenweber, Gernot; Wuerzer, Bruno; and Retzlaff, Guenter, 4,566,900, Cl. 71-100.000.

Schlagel, Lester. Grain drying and storage structure. 4,566,205, Cl. 34-232.000.

Schlagheck, Werner: *See*—
Wilhelm, Dieter; Schlagheck, Werner; and Toussaint, Rene , 4,567,397, Cl. 313-318.000.

Schlanger, Samuel L. Vehicle control safety system. 4,566,555, Cl. 180-274.000.

Schlapkohl, Joachim: *See*—
Friederichs, Karl-Heinz; and Schlapkohl, Joachim, 4,567,415, Cl. 318-565.000.

Schlegel GmbH: *See*—
Schlegel, Wolfgang; Wilke, Arthur; and Stein, Roland, 4,566,680, Cl. 269-74.000.

Schlegel, Rolf: *See*—
Richter, Ekkehard; Knoblauch, Karl; Schlegel, Rolf; and Korbacher, Werner, 4,566,881, Cl. 55-25.000.

Schlegel, Wolfgang; Wilke, Arthur; and Stein, Roland, to Schlegel GmbH. Vertically adjustable device. 4,566,680, Cl. 269-74.000.

Schleich, Heinrich; and Yegenoglu, Kemal, to Ernst Winter & Sohn (GmbH & Co). Method and device for sharpening a grinding disk. 4,566,426, Cl. 125-11.00R.

Schlingmann, Merten: *See*—
Voelskow, Hartmut; and Schlingmann, Merten, 4,567,140, Cl. 435-42.000.

Schlumberger Technology Corporation: *See*—
Bagley, James T.; and Simon, Maurice L., 4,566,544, Cl. 175-4.560.
Shakra, Farid J., 4,566,317, Cl. 73-155.000.

Schmadel, Donald C., Jr., to Chevron Research Company. Process of fabricating a portion of an optical fiber capable of reflecting predetermined wavelength bands of light. 4,566,889, Cl. 65-3.200.

Schmidle & Fitz, Film-Gerate-Verleih: *See*—
Haberl, Karl; and Resch, Klaus, 4,566,391, Cl. 105-215.00R.

Schmidt, Gunther: *See*—
Eberlein, Wolfgang; Trummlitz, Gunter; Engel, Wolfhard; Schmidt, Gunther; Hammer, Rudolf; and Giachetti, Antonio, 4,567,178, Cl. 514-215.000.

Schmidt, Patrick J.: *See*—
Schmidt, Richard J.; Schmidt, Ronald R.; Schmidt, Walter E.; and Schmidt, Patrick J., 4,566,287, Cl. 62-188.000.

Schmidt, Richard J.; Schmidt, Ronald R.; Schmidt, Walter E.; and Schmidt, Patrick J. Post mix dispensing machine. 4,566,287, Cl. 62-188.000.

Schmidt, Ronald R.: *See*—
Schmidt, Richard J.; Schmidt, Ronald R.; Schmidt, Walter E.; and Schmidt, Patrick J., 4,566,287, Cl. 62-188.000.

Schmidt, Walter E.: *See*—
Schmidt, Richard J.; Schmidt, Ronald R.; Schmidt, Walter E.; and Schmidt, Patrick J., 4,566,287, Cl. 62-188.000.

Schmidt, Werner J., to Lever Brothers Company. Edible fat and a process for producing such fat. 4,567,056, Cl. 426-607.000.

Schmidt, Wolfram: *See*—
Ernst, Hansgeorg; Schmidt, Wolfram; and Paust, Joachim, 4,567,261, Cl. 544-251.000.

Schmied, Samuel, to S. Schmied & Co., elektrotechnische Bedarfsartikel en gros, ASM-Tableaubau. Construction set for the erection of mounting structures. 4,566,742, Cl. 312-257.0SK.

Schmitt, Michel: *See*—
Chauveau, Jean-Marc; and Schmitt, Michel, 4,566,563, Cl. 188-18.00A.

Schmucker, Wolfgang, to FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf Aktien. Method and apparatus for monitoring the operation of a friction false-twisting unit. 4,566,262, Cl. 57-264.000.

Schnabel, Jurgen; and Plath, Jurgen, to Didier-Werke AG. Method of mounting a metal band about a cover plate. 4,566,925, Cl. 156-86.000.

Schneeberger, Peter. Candle-shaped luminary. 4,567,548, Cl. 362-161.000.

Schneider, Egon, to Krones AG Hermann Kronseder, Maschinenfabrik. Vessel separating apparatus for use in particular in vessel handling machines. 4,566,583, Cl. 198-459.000.

Schneider, Ronald A., to Chevron Research Company. Process for the oxidation of gaseous hydrocarbons. 4,566,988, Cl. 252-373.000.

Schneiderman, Charles I. Dispenser gloves and stockinetts and methods of manufacturing same. 4,567,065, Cl. 427-230.000.

Schneller, Joseph W., to National Gypsum Company. Progressive demountable partition. 4,566,241, Cl. 52-481.000.

Schnetzinger, Richard W.: *See*—
Stadnick, Richard P.; and Schnetzinger, Richard W., 4,567,039, Cl. 132-70.000.

Schoenleben, Willibald: *See*—
Boettger, Guenter; Hammer, Hans; Hertel, Otto; Jeschek, Gerhard; Mueller, Herbert; Scharf, Emil; and Schoenleben, Willibald, 4,567,303, Cl. 564-475.000.

Schofield, John, to U.S. Philips Corporation. Acoustic surface wave device. 4,567,453, Cl. 333-194.000.

Schon, Georg: *See*—
Ott, Gunther; Dobbelstein, Arnold; Geist, Michael; Schon, Georg; and Ahlers, Klaas, 4,566,963, Cl. 204-181.700.

Schook, Michael N. Dumbell and barbell exercise equipment. 4,566,690, Cl. 272-123.000.

School of Medicine Texas Tech. Univ. Health Servcs. Ctr.: *See*—
Janssen, Herbert F., 4,566,462, Cl. 128-677.000.

Schott Glaswerke: *See*—
Ertel, Gerhard, 4,566,892, Cl. 65-59.240.
Gliemeroth, Georg; Speit, Burkhard; and Krolla, Hans-Georg, 4,566,987, Cl. 252-301.40F.

Schreiner, Peter G., III: *See*—
Gray, James S.; Chamberlin, James W.; McBride, Alan L.; and Schreiner, Peter G., III, 4,567,591, Cl. 370-109.000.

Schroeder, Eugene, to Indianapolis Center for Advanced Research. Ultrasonic driver and receiver. 4,566,331, Cl. 73-632.000.

Schroeppel, Edward A.: *See*—
Koning, Gerrit; and Schroeppel, Edward A., 4,566,456, Cl. 128-419.0PG.

Schuler, Ralf; and Maahs, Gunther, to Chemische Werke Huls Aktiengesellschaft. Production of copper(II) hydroxide phosphate with a light natural color and an average grain size less than 10 microns. 4,567,220, Cl. 524-413.000.

Schulmerich Carillons, Inc.: *See*—
Keenan, Charles E.; Mattern, Richard E.; and Vaccaro, Charles A., 4,566,400, Cl. 116-171.000.

Schultz, Neal G.: *See*—
Jenkins, Jerome D.; and Schultz, Neal G., 4,566,938, Cl. 156-643.000.

Schultz, Paul B.; and Yarkosky, Eugene F., to Enthone, Incorporated. Electroless nickel plating of aluminum. 4,567,066, Cl. 427-305.000.

Schulz, John A.: *See*—
Chorvat, Robert J.; Prodan, Kathleen A.; and Schulz, John A., 4,567,270, Cl. 546-183.000.

Schulze, Werner; Gerich, Josef; Scheef, Emil; and Dautel, Heinz, to Alfred Karcher GmbH & Co. Coupler for hose lines of high-pressure cleaning and spraying equipment. 4,566,723, Cl. 285-86.000.

Schumacher, Peter M., to Measuronics Corporation. Multiple image generation and analysis system. 4,567,515, Cl. 358-107.000.

Schunemann, Klaus: *See*—
Szabo, Laszlo; and Schunemann, Klaus, 4,567,450, Cl. 331-107.0DP.

Schuoecker, Dieter; and Klement, Ekkehard, to Siemens Aktiengesellschaft. Method and optical apparatus for converting residue numbers into positionally notated numbers. 4,567,355, Cl. 235-310.000.

Schwab, Klaus, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Liquid-crystal display for microscopes. 4,567,478, Cl. 340-705.000.

Schwartz, Lawrence M.: *See*—
Groen, Robertus W. C.; de Jonge, Cornelis A. M.; Schwartz, Lawrence M.; and van Lier, Johannes C., 4,567,534, Cl. 358-342.000.

Schwartz, Samuel, to University of Minnesota, Regents of the. Method for quantitatively determining the amount of hemoglobin in a biological sample. 4,567,148, Cl. 436-66.000.

Schwartz, Victor M.; and Miller, Robert G., to Timberline Geodesics, Inc. Ledger hanger for geodesic domes. 4,566,818, Cl. 403-172.000.

Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., to Schering, Aktiengesellschaft. Azaprostacyclins, their preparation and pharmaceutical use. 4,567,195, Cl. 514-419.000.

Schwerdtel, Ernst; and Lang, Hans-Jorg. Apparatus for the dosed filling of highly viscous material. 4,566,249, Cl. 53-55.000.

Schwierz, Peter P.; Rebhan, Adolf; and Moraw, Roland, to Hoechst Aktiengesellschaft. Fixing device. 4,566,783, Cl. 355-14.0FU.

Scientific-Atlanta, Inc.: *See*—
Mobley, Joseph G., 4,567,517, Cl. 358-120.000.

Sclavo, S.p.A.: *See*—
Tabacco, Alessandro; Tarli, Paolo; and Neri, Paolo, 4,567,150, Cl. 436-87.000.

SCM Corporation. Cheese-containing confectionary-like coating. 4,567,047, Cl. 426-94.000.

Scott, Evan, Jr.: *See*—
Woods, Karl E., I; and Scott, Evan, Jr., 4,567,337, Cl. 200-331.000.

Scott Paper Company: *See*—
Streeper, Leonard W.; and Chille, Joseph R., 4,566,154, Cl. 19-296.000.

Seal, David B.: *See*—
Li, Hsin L.; Morris, Thomas K.; Seal, David B.; and Limoncelli, Edward V., 4,566,525, Cl. 164-463.000.

Secemski, Isaac I.; and Podgorsky, Joseph J., to O'Donnell & Associates, Inc. Liquid detergents containing cellulose ethers stabilized by glycerol. 4,566,993, Cl. 252-559.000.

Secom Co., Ltd.: *See*—
Shirai, Shiro; Ogahara, Shunji; and Kubo, Miyuki, 4,567,472, Cl. 340-525.000.

Segerstrom, Kjell E. L.: *See*—
Norberg, Gustav S. I.; Segerstrom, Kjell E. L.; and Ahl, Tommy E., 4,566,951, Cl. 204-12.000.

Seidel, Jurgen: *See*—
Durr, Manfred; Gajdos, Benedikt; Gneuss, Klaus-Dieter; Harhausen, Ekkehard; and Seidel, Jurgen, 4,567,202, Cl. 514-656.000.

Seidentop, Alfred T.; and Johnson, John E., to Stretch Forming Corporation. Gravity traction apparatus. 4,566,693, Cl. 272-144.000.

Seikosha Co., Ltd.: *See*—
Matsumoto, Hiroshi, 4,566,815, Cl. 400-641.000.

Seipenbusch, Jurgen; and Dohren, Hans, to Ruhrkohle AG. Reactor for coal gasification. 4,566,880, Cl. 48-73.000.

Seita, Toru: *See*—
Matsui, Kiyohide; Kikuchi, Yoshiyuki; Hiyama, Tamejiro; Tobita, Etsuko; Kondo, Kiyoshi; Akimoto, Akira; Seita, Toru; and Watanabe, Hiroyuki, 4,567,206, Cl. 521-27.000.

Seitz, Alan F.; and Seitz, Karl G., to Data Motion, Inc. Paper feed tractor with compensating pulley assembly utilizing cantable insert. 4,566,618, Cl. 226-74.000.

Seitz Enzinger Noll Maschinenbau Aktiengesellschaft: *See*—
Borg, Siegbert, 4,566,912, Cl. 134-13.000.

Seitz Filter Werke Theo & Geo Seitz GmbH & Co.: *See*—
Badenhop, Charles T.; and Fischer, Joachim, 4,567,009, Cl. 264-41.000.

Seitz, Karl G.: *See*—
Seitz, Alan F.; and Seitz, Karl G., 4,566,618, Cl. 226-74.000.

Seitz, Steven P.: *See*—
Nicolaou, Kyriacos C.; Petasis, Nicos A.; and Seitz, Steven P., 4,567,290, Cl. 560-124.000.

Sekella, T. Curran, to Facet Enterprises, Inc. Self-adjusting electromagnetic cone brake. 4,566,575, Cl. 192-84.00C.

Seki, Masanori: *See*—
Tsunoda, Teruo; Numauchi, Hiromitsu; Kurata, Hironobu; Kawaguchi, Yoichi; Ishii, Satoshi; Seki, Masanori; Iwasaki, Masahiro; and Enomoto, Fukumasa, 4,566,194, Cl. 33-18.100.

Sekine, Kazumi, to Canon Kabushiki Kaisha. Electronic instrument. 4,567,354, Cl. 235-145.00R.

Selig, Manfred: *See*—
Ball, Peter; Marquardt, Klaus; Selig, Manfred; and Staudinger, Gunther, 4,567,297, Cl. 564-208.000.

Selin, Johan-Fredrik: *See*—
Eklund, Vidar; Ekman, Kurt; Turunen, Olli; Huttunen, Jouko; Selin, Johan-Fredrik; and Fors, Jan, 4,567,255, Cl. 536-30.000.

Sell, William J.; Riege, David H.; and Marinkovich, Vincent A., to Mast Immunosystems, Ltd. Binding assay system and method of making and using same. 4,567,149, Cl. 436-513.000.

Semp, Bernard A.; and Teng, Daniel M., to Philip Morris Incorporated. Process for dissimilatory denitrification of tobacco materials. 4,566,469, Cl. 131-308.000.

Sencorp: *See*—
Becht, Carl T., 4,566,621, Cl. 227-109.000.

Sentralinstitutt for Industriell Forskning: *See*—
Blindheim, Ulf; Haegh, Gerd S.; and Nilsen, Bjorn P., 4,567,313, Cl. 585-480.000.

Sesser, George L., to Nelson Irrigation Corporation. Step-by-step rotary sprinkler head with improved stream diffusing assembly. 4,566,632, Cl. 239-230.000.

Sethi, Amar J.: *See*—
Yong, Raymond N.; and Sethi, Amar J., 4,566,909, Cl. 127-33.000.

Sevrin, Mireille: *See*—
Bigg, Dennis; Morel, Claude; and Sevrin, Mireille, 4,567,177, Cl. 514-214.000.

Seyfried, Philippe: *See*—
Dubost, Rene ; Fiori, Robert; and Seyfried, Philippe, 4,566,361, Cl. 83-454.000.

Shafer, Sheldon J.: *See*—
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Shaffner, Richard L. Toe protector. 4,566,208, Cl. 36-110.000.

Shah, Atul: *See*—
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Shakra, Farid J., to Schlumberger Technology Corporation. Borehole flow meter. 4,566,317, Cl. 73-155.000.

Shannon, David M.: *See*—
Lam, Chiu T.; and Shannon, David M., 4,567,157, Cl. 502-208.000.

Shanton, Kenneth J., to Wiggins Teape Group Limited, The. Record material. 4,567,498, Cl. 346-216.000.

Sharp Kabushiki Kaisha: *See*—
Aiba, Masahiko, 4,567,353, Cl. 219-501.000.
Hashimoto, Shintaro; and Tanimoto, Akira, 4,567,573, Cl. 364-900.000.
Hayakawa, Toshiro; Suyama, Takahiro; and Yamamoto, Saburo, 4,567,060, Cl. 427-87.000.
Morihisa, Mitsuo; and Akao, Hideyuki, 4,567,575, Cl. 364-900.000.
Tanaka, Shinichi, 4,567,468, Cl. 340-347.0DA.

Shaw, Dave H.: *See*—
Arcuri, Kym B.; Mauldin, Charles H.; and Shaw, Dave H., 4,567,205, Cl. 518-715.000.

Shebuski, Robert C., to Outboard Marine Corporation. Method and apparatus for removing a casting from a sandbox. 4,566,520, Cl. 164-131.000.

Shell Oil Company: *See*—
Balas, Jaroslav C., 4,567,251, Cl. 528-487.000.
Haak, Frederik W., 4,566,885, Cl. 62-9.000.
O'Meara, Joseph D., Jr.; Yuan, Herbert H.; Lease, William O.; and Stapleton, Robert G., 4,567,373, Cl. 250-573.000.
Paardekooper, Stephanus; and Pek, Johan J. B., 4,566,883, Cl. 55-329.000.
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,567,283, Cl. 549-546.000.
Singhal, Surendra N., 4,566,335, Cl. 73-849.000.

Shelton, David P.: *See*—
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Shen, John C. S.: *See—*
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Shibata, Makoto: *See—*
Ikeda, Masami; Matsuda, Hiroto; Shibata, Makoto; and Takahashi, Hiroto, 4,567,493, Cl. 346-140.00R.

Shibayama, Teruji: *See—*
Hara, Kunio; Tanaka, Toshie; Shibayama, Teruji; Morisaki, Minoru; and Kaneko, Yoshio, 4,566,924, Cl. 156-73.300.

Shida, Masami: *See—*
Sakamoto, Masahide; and Shida, Masami, 4,566,420, Cl. 123-489.000.

Shiembob, Lawrence T., to United Technologies Corporation. Abrasive/abradable gas path seal system. 4,566,700, Cl. 277-53.000.

Shiga, Masao: *See—*
Yoshioka, Takatoshi; Kirihara, Seishin; Shiga, Masao; Iijima, Katsumi; Hisano, Katsukuni; and Kaneko, Ryoichi, 4,566,810, Cl. 384-280.000.

Shigeta, Masatomo: *See—*
Fukuda, Hiroyuki; Shigeta, Masatomo; Kaji, Hisatsugu; and Saitoh, Kuniyuki, 4,567,086, Cl. 428-166.000.

Shikoku Chemicals Corp.: *See—*
Sawa, Natsuo; Masuda, Takeshi; and Mizui, Takashi, 4,567,259, Cl. 544-207.000.

Shima, Masanori: *See—*
Hirai, Yoshihisa; Shima, Masanori; and Aoki, Hirohiko, 4,566,825, Cl. 405-267.000.

Shimada, Kenjiro; Otomo, Masao; Tomita, Fusao; and Ito, Shingo, to Kyowa Hakko Kogyo Co., Ltd. Pharmaceutical composition for treating protozoan disease containing at least one tetrocarcin. 4,567,164, Cl. 514-33.000.

Shimada, Yasuhisa: *See—*
Oshima, Goro; Ono, Satoru; and Shimada, Yasuhisa, 4,567,485, Cl. 343-358.000.

Shimada, Yuzo; Utsumi, Kazuaki; Ikeda, Teruyuki; and Suzuki, Masanori, to NEC Corporation. Multilayer ceramic substrate with interlayered capacitor. 4,567,542, Cl. 361-321.000.

Shimadzu Corporation: *See—*
Suzuki, Jugoro, 4,566,792, Cl. 356-319.000.

Shimase, Akira: *See—*
Ishitani, Tohru; Tamura, Hifumi; and Shimase, Akira, 4,567,398, Cl. 313-362.100.
Miyauchi, Tateoki; Hongo, Mikio; Mizukoshi, Katsuro; Yamaguchi, Hiroshi; and Shimase, Akira, 4,566,765, Cl. 350-619.000.

Shimauchi, Yoshiki: *See—*
Yasuda, Yasushi; Enomoto, Hiromu; Shimauchi, Yoshiki; and Tahara, Akinori, 4,567,380, Cl. 307-290.000.

Shimazaki, Takashi, to Kabushiki Kaisha Toshiba. Developing apparatus. 4,566,402, Cl. 118-653.000.

Shimizu, Yuichi: *See—*
Ito, Giichi; Nakano, Ichizo; Shimizu, Yuichi; Mukai, Kosaku; and Suzuki, Saiju, 4,567,347, Cl. 219-124.340.

Shimura, Yoshihiko: *See—*
Oshima, Hiroyo; Kano, Isao; Kojima, Yutaka; Shimura, Yoshihiko; Ishiguro, Ken; and Nagai, Koichi, 4,567,114, Cl. 428-480.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Takamizawa, Minoru; Yamamoto, Akira; and Nagura, Shigehiro, 4,567,245, Cl. 526-279.000.
Tawara, Yoshio; Ohashi, Ken; and Kikuchi, Hideaki, 4,567,576, Cl. 365-2.000.

Shin Nisso Kako Co., Ltd.: *See—*
Tanino, Hiroshi; Okamoto, Tetsuhiko; and Ueyama, Shinichiro, 4,567,028, Cl. 423-300.000.

Shinada, Koichi: *See—*
Nagano, Kyoichi; Naganuma, Hiroshi; Shinada, Koichi; Tamura, Motonori; and Soneda, Shigenobu, 4,566,916, Cl. 148-26.000.

Shinmi, Akira: *See—*
Sawada, Takeshi; Shinmi, Akira; Takagi, Hiroshi; Suzuki, Kenji; Kishi, Fumio; and Kozuki, Susumu, 4,567,116, Cl. 428-694.000.

Shinoda, Morimasa; and Takahashi, Takamasa, to Nippon Univac Supply Kaisha, Ltd.; and Limited Company of Shinoda Sekkei Jimusho. Monitoring apparatus for color printing. 4,567,506, Cl. 358-11.000.

Shinohara, Akio, to Showa Denko Kabushiki Kaisha. Method and apparatus for measuring methane concentration in gas. 4,567,366, Cl. 250-339.000.

Shinzawa, Akira: *See—*
Hasegawa, Hiroshi; Shinzawa, Akira; and Kohno, Yoshiki, 4,566,994, Cl. 252-574.000.

Shiomi, Tadataka; Nabika, Kouichi; and Kawagoe, Takashi, to Murata Kikai Kabushiki Kaisha. Automatic work exchanging apparatus. 4,566,837, Cl. 414-222.000.

Shiozawa, Kazuo; and Suzuki, Kijiro, to Koniahiroku Photo Industry Co., Ltd. Automatic exposure camera. 4,566,774, Cl. 354-413.000.

Shirai, Kiyoshi: *See—*
Nitou, Hiroyasu; Shirai, Kiyoshi; and Takahashi, Osamu, 4,566,425, Cl. 123-600.000.

Shirai, Shiro; Ogahara, Shunji; and Kubo, Miyuki, to Secom Co., Ltd. Security-ensuring apparatus having an operational guidance function. 4,567,472, Cl. 340-525.000.

Shiraishi, Hideo: *See—*
Tadokoro, Tomoo; Shiraishi, Hideo; and Okimoto, Haruo, 4,566,412, Cl. 123-216.000.

Shirso, Shojiro: *See—*
Baba, Kiyokazu; Shirao, Shojiro; Nishida, Kenji; and Kiyosawa, Hiroshi, 4,566,834, Cl. 414-27.000.

Shiroi, Takashi: *See—*
Torii, Sigeru; Tanaka, Hideo; Shiroi, Takashi; Sasaoka, Michio; Saito, Norio; and Matsumura, Kiyotoshi, 4,566,996, Cl. 260-239.00A.

Shopsmith, Inc.: *See—*
Bartlett, Robert L.; Haas, Charles J.; and Legler, John G., 4,566,510, Cl. 144-1.00C.

Shoshi, Masayuki: *See—*
Ohta, Masafumi; Sasaki, Masaomi; and Shoshi, Masayuki, 4,567,124, Cl. 430-59.000.

Showa Denko Kabushiki Kaisha: *See—*
Nagato, Nobuyuki; Maki, Kenichiro; Uematsu, Tomoe; and Ishioka, Ryoji, 4,567,292, Cl. 560-245.000.
Shinohara, Akio, 4,567,366, Cl. 250-339.000.

Shu, David F., to TDS, Inc. RF Shielded electronic component housing. 4,567,318, Cl. 174-35.0GC.

Shum, Ming S.: *See—*
Janikowski, Daniel S.; and Shum, Ming S., 4,567,111, Cl. 428-457.000.

Sibbald, Alastair: *See—*
Covington, Arthur K.; and Sibbald, Alastair, 4,567,006, Cl. 264-22.000.

Sibilia, John P.; Kim, Hyo-gun; and Paterson, Arthur R., to Allied Corporation. Process for preparing conducting polymeric compositions. 4,566,991, Cl. 252-512.000.

Sieber, Albrecht, to Robert Bosch GmbH. Control system for an internal combustion engine. 4,566,414, Cl. 123-357.000.

Sieder, Burton C.: *See—*
Binning, Ronald L.; and Sieder, Burton C., 4,566,838, Cl. 414-278.000.

Siegel, Carole E.: *See—*
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,567,183, Cl. 514-264.000.

Siegel, Paul H.; and Todd, Stephen J., to International Business Machines Corporation. Fixed rate constrained channel code generating and recovery method and means having spectral nulls for pilot signal insertion. 4,567,464, Cl. 340-347.0DD.

Siemens Aktiengesellschaft: *See—*
Egerbacher, Werner; and Wunderlich, Dieter, 4,567,504, Cl. 357-79.000.
Haussmann, Wolfgang, 4,567,442, Cl. 329-145.000.
Heynisch, Hinrich, 4,567,406, Cl. 315-5.330.
Hildebrand, Reinhard; and Waldmann, Bernd, 4,566,399, Cl. 116-28.00R.
Hollaus, Reinhard; Zehetbauer, Rudolf; and Bednorz, Klaus, 4,567,316, Cl. 136-246.000.
Lemche, Josef, 4,567,336, Cl. 200-305.000.
Peche, Gerhard, 4,567,338, Cl. 200-144.00B.
Schedele, Helmut; and Kimpel, Rolf-Dieter, 4,567,457, Cl. 335-128.000.
Schuoecker, Dieter; and Klement, Ekkehard, 4,567,355, Cl. 235-310.000.
Skafvenstedt, Bengt; and Ahlgren, Sture, 4,567,492, Cl. 346-136.000.

Siemens Corporate Research & Support, Inc.: *See—*
Sinberg, Howard, 4,567,539, Cl. 361-92.000.

Sigel, Albert: *See—*
Maier, Peter; Attinger, Karl; Sigel, Albert; Hansel, Gernot; Kutscher, Erwin; and Walter, Hartmut, 4,566,830, Cl. 409-182.000.

Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See—*
Tinti, Maria O.; Quaresima, Emma; Bagolini, Carlo; and deWitt, Paolo, 4,567,200, Cl. 514-547.000.

Signetics Corporation: *See—*
van de Ven, Everhardus P. G. T.; and Towner, Janet M., 4,566,177, Cl. 29-590.000.

Signoretto, Roberto, to Photo Engineering International s.r.l. Process to establish and check the matching of negatives and processing envelopes in photographic laboratories. 4,567,356, Cl. 235-375.000.

Sijbers, Peter J. M.: *See—*
van de Plassche, Rudy J.; and Sijbers, Peter J. M., 4,567,426, Cl. 323-315.000.

Silverman, Daniel, to Walters, William R. Liquid level control apparatus. 4,566,484, Cl. 137-403.000.

Simak, Petr: *See—*
Naarmann, Herbert; Heckmann, Walter; Kohler, Gernot; and Simak, Petr, 4,567,250, Cl. 528-423.000.

Simmons U.S.A. Corporation: *See—*
Stumpf, Walter, 4,566,926, Cl. 156-165.000.

Simon, Gilbert I.; and Witkin, Roy T. Chemotherapeutic method for treating periodontal disease, and composition therefore. 4,567,036, Cl. 424-51.000.

Simon, Maurice L.: *See—*
Bagley, James T.; and Simon, Maurice L., 4,566,544, Cl. 175-4.560.

Simon, Richard K.: *See—*
Wells, Gregory J.; and Simon, Richard K., 4,567,368, Cl. 250-379.000.

Simon, Terry L., to Breneman Company, The. Window shade roller with manual severing means. 4,566,517, Cl. 160-263.000.

Simonovitch, Chaim; Hoffman, Theodor; and Sasson, Sabar, to ABIC Ltd. Process for the preparation of benzothiazepine derivatives. 4,566,995, Cl. 260-239.30B.

Sims, Cecil, to Sundstrand Corporation. Voltage regulator with maximum current limit. 4,567,422, Cl. 322-25.000.

Sinberg, Howard, to Siemens Corporate Research & Support, Inc. Power interruption and brownout detector. 4,567,539, Cl. 361-92.000.

Singer Company, The: *See—*
Jones, John E.; and Glenn, W. K., III, 4,566,884, Cl. 55-357.000.

Singh, Baldev: *See—*
Lesher, George Y.; and Singh, Baldev, 4,567,186, Cl. 514-300.000.

Singhal, Surendra N., to Shell Oil Company. Method and apparatus for testing fiber reinforced plastic laminates. 4,566,335, Cl. 73-849.000.

Sintokogio Ltd.: *See—*
Uzaki, Nagato; Komori, Toshihisa; Matui, Kazuharu; and Toyoda, Shigehiro, 4,566,521, Cl. 164-160.100.

Sisson, Jeffrey L.: *See—*
Britt, James E.; Laskowski, Kenneth W.; Sisson, Jeffrey L.; and Rinehart, Stephen A., 4,566,782, Cl. 355-14.0SH.

Sitzes, Fred B., to Interco Incorporated. Shoe construction. 4,566,197, Cl. 36-011.000.

Sivaramakrishnan, Kallidaikurichi N. Polymeric quaternary ammonium salts possessing antimicrobial activity and methods for preparation and use thereof. 4,567,302, Cl. 564-286.000.

Skafvenstedt, Bengt; and Ahlgren, Sture, to Siemens Aktiengesellschaft. Paper transport device for a recorder. 4,567,492, Cl. 346-136.000.

SKF Industrial Trading & Development Company B.V.: *See—*
v Engelenburg, Hendrik; and Heemskerk, Rugerus S., 4,566,744, Cl. 339-8.00L.

SKF Nova AB: *See—*
Lundgren, Bengt, 4,566,811, Cl. 384-484.000.

Skibbe, Rodney D.: *See—*
Lillie, James D.; and Skibbe, Rodney D., 4,566,229, Cl. 51-241.0VS.

Skipor, Eugen, to Rockwell International Corporation. Gear housing device for preventing oil leakage. 4,566,351, Cl. 74-606.00R.

Skogman, Bengt G.; Svensson, Hans T.; and Torres, Eduardo E., to Karlstad Vulk; and Montage Aktiebolag. Sandwich material. 4,567,088, Cl. 428-213.000.

Skuballa, Werner: *See—*
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,567,195, Cl. 514-419.000.

Sieger, Leon F.; and DiNozzi, Robert D., to USM Corporation. Component verifier. 4,566,594, Cl. 209-539.000.

Slezak, Ray J. Wind rotor. 4,566,854, Cl. 416-119.000.

Smart, Michael G., to G. A. Platon Limited. Opto-electronic position sensing. 4,566,337, Cl. 73-861.560.

Smayling, Michael C.; and Duane, Michael P., to Texas Instruments Incorporated. Method of making insulated gate field effect transistor with a lightly doped drain using oxide sidewall spacer and double implantations. 4,566,175, Cl. 29-576.00B.

Smigel, Robert L.; and Paliwoda, Kenneth J. Insulation system. 4,566,239, Cl. 52-407.000.

Smith, Allen R.: *See—*
Vensko, George; Carlin, Lawrence; Potter, John; and Smith, Allen R., 4,567,606, Cl. 381-43.000.

Smith, David L. Bag dispenser. 4,566,607, Cl. 221-155.000.

Smith, David W.: *See—*
Ripple, Dale B.; and Smith, David W., 4,566,466, Cl. 128-781.000.

Smith, Douglas: *See—*
Heller, Martin G.; Pecha, Edward; Smith, Douglas; and Alcock, Philip, 4,566,503, Cl. 140-140.000.

Smith, Fred T., to Heil Co., The. Mechanism for dumping a container into a refuse collection vehicle. 4,566,840, Cl. 414-408.000.

Smith, Hubert E.; Wall, William A.; and Burns, Morrison R., Jr., to United States of America, National Aeronautics and Space Administration. Automated weld torch guidance control system. 4,567,348, Cl. 219-124.340.

Smith, James A., to Creative Products Resource Associates, Ltd. Carpet treating composition. 4,566,980, Cl. 252-8.600.

Smith, Jan E. Elevated infant positioner. 4,566,449, Cl. 128-133.000.

Smith, Kenneth C. A.; and Erasmus, Stephen J., to National Research Development Corporation. Correction of astigmatism in electron beam instruments. 4,567,369, Cl. 250-397.000.

Smith Kline & French Laboratories Limited: *See—*
Brown, Thomas H., 4,567,176, Cl. 514-212.000.

Smith, Louis W.; and Csapo, Janos I., to GTE Business Communication Systems, Inc. Secretarial telephone station for use with a secretarial answering system. 4,567,324, Cl. 179-27.0FH.

Smith, Peter E.; and Laxton, Raymond, to AGB Research PLC. Transmitting and storing data relating to television viewing. 4,567,511, Cl. 358-84.000.

Smith, Robert, to Scandpower, Inc. Hydrogen measuring device. 4,567,013, Cl. 376-247.000.

Smith, Robert A.: *See—*
McDonnell, Damien G.; and Smith, Robert A., 4,566,759, Cl. 350-346.000.

Smous, Dale: *See—*
Anscher, Joseph; and Smous, Dale, 4,566,660, Cl. 248-74.200.

Smuda, Siegfried; Horner, Peter; Kogel, Karl; and Zeitler, Peter, to FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf Aktien. Hydraulic device for rerailing vehicles. 4,566,673, Cl. 254-84.000.

Snape, Edwin: *See—*
Sandrock, Gary D.; and Snape, Edwin, 4,566,281, Cl. 62-48.000.

Sneden, Marcia A. Character identity game. 4,566,698, Cl. 273-249.000.

Snyder, Daniel D.: *See—*
Sachleben, Leroy R.; Korte, Kevin R.; Snyder, Daniel D.; and Allen, Terry L., 4,566,468, Cl. 131-297.000.

Sobczak, Isidore F.; Cleveland, William C., Jr.; and Pons, Robert L., to Ford Aerospace & Communications Corporation. Method for mass producing solar radiation reflectors. 4,566,432, Cl. 126-438.000.

Societe Alsacienne d'Aluminium: *See—*
Bernhard, Marcel, 4,567,112, Cl. 428-461.000.

Societe Alsacienne de Construction de Material Textile: *See—*
Vuillet, Jean-Pierre, 4,566,566, Cl. 192-24.000.

Societe Anonyme de Telecommunications: *See—*
Bailly, Francois P.; Bourgoin, Alain; and Israel, Renato, 4,567,329, Cl. 179-18.0FA.

Societe Anonyme des Ets. Pierre Roch: *See—*
Gruhler, Siegfried; and Wolf, Michael, 4,566,199, Cl. 33-143.00M.

Societe Industrielle de Bellevaux, SIBEL: *See—*
Monie, Jean, 4,567,339, Cl. 200-153.0LB.
Thomas, Francis, 4,566,347, Cl. 74-125.000.

Societe Lyonnaise des Eaux et de l'Enclairage: *See—*
Cognet, Louis; Argoud, Christian; Matray, Francois; and Malevialle, Joel, 4,567,020, Cl. 422-101.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.": *See—*
Bizot, Henri; Dautremont, Jean; and Sylvian, Alain, 4,566,225, Cl. 51-165.720.

Societe Nationale Industrielle et Aerospatiale: *See—*
Beau, Jean F.; and Gauthier, Michel, 4,566,740, Cl. 308-10.000.

Sodler, Walter; Knothe, Erich; Maaz, Gunther; and Madge, Joachim, to Sartorius GmbH. Analytical balance. 4,566,548, Cl. 177-229.000.

Sofranko, John A.: *See—*
Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,567,307, Cl. 585-330.000.

Sogabe, Yoji; Uchida, Katsumi; and Harada, Kunihiko, to Achilles Corporation. Rubber coated fabric. 4,567,093, Cl. 428-250.000.

Sokalski, Robert G.: *See—*
Kenny, Andrew A.; Sokalski, Robert G.; Egle, Lawrence E.; and Stahly, Daniel C., 4,566,423, Cl. 123-571.000.

Solindo Equipment Leasing Ltd.: *See—*
Instone, Giles A.; and Instone, Jeremy A., 4,566,404, Cl. 119-8.000.

Soloway, Samuel B.: *See—*
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,567,283, Cl. 549-546.000.

Somfy: *See—*
Brunier-Coulin, Charles, 4,567,416, Cl. 318-602.000.

Sommer, Hans-Jorg; Lamparter, Hansruedi; and Wermelinger, Maurizio, to Rieter Machine Works Ltd. Method and apparatus for monitoring chuck overspeed. 4,566,642, Cl. 242-18.00R.

Sommermann, Friedrich: *See—*
Lehner, August; Kopke, Helmut; Roller, Hermann; Balz, Werner; Grau, Werner; Koester, Eberhard; and Sommermann, Friedrich, 4,567,108, Cl. 428-425.900.

Soneda, Shigenobu: *See—*
Nagano, Kyoichi; Naganuma, Hiroshi; Shinada, Koichi; Tamura, Motonori; and Soneda, Shigenobu, 4,566,916, Cl. 148-26.000.

Sonneville International Corporation: *See—*
Sonneville, Roger P., 4,566,629, Cl. 238-117.000.

Sonneville, Roger P., to Sonneville International Corporation. Structure for fixing a rail to a tie. 4,566,629, Cl. 238-117.000.

Sony Corporation: *See—*
Okanobu, Taiwa, 4,567,444, Cl. 330-257.000.

Souda, Shigeru: *See—*
Hirose, Noriyasu; Souda, Shigeru; Miyake, Kazutoshi; Kuriyama, Shizuo; Usuki, Kazuyasu; Akiyama, Yasuhiro; Nagaoka, Naoko; and Kawashima, Hidetoshi, 4,567,180, Cl. 514-253.000.

Soula, Gerard: *See—*
Lepage, Jean-Luc; and Soula, Gerard, 4,567,286, Cl. 556-469.000.

Sousek, Eugene A., to Piper Industries, Inc. Safety interlock mechanism for corn head assembly. 4,566,256, Cl. 56-10.200.

Southern Systems, Inc.: *See—*
Davidson, Marion A.; and Kiss, David B., 4,566,339, Cl. 73-862.390.

Southwire Company: *See—*
Chia, E. Henry; and Adams, Ronald D., 4,566,524, Cl. 164-461.000.

Sovonics Solar Systems: *See—*
Fournier, Eugene, 4,566,403, Cl. 118-718.000.

Space Age Manufacturing Co., Inc.: *See—*
Loyd, Lew W., Jr., 4,566,388, Cl. 102-361.000.

Specie, Roy L. General purpose dolly for campgrounds. 4,566,708, Cl. 280-47.13R.

Spector, Donald. Adhesive sports tape. 4,567,091, Cl. 428-222.000.

Spector, George: *See—*
Brady, Leon; and Spector, George, 4,566,200, Cl. 33-161.000.

Speit, Burkhard: *See—*
Gliemeroth, Georg; Speit, Burkhard; and Krolla, Hans-Georg, 4,566,987, Cl. 252-301.40F.

Spencer, Elbert M.: *See—*
Wolniak, Stanley C.; Kincaid, Herbert; Spencer, Elbert M.; and Brown, Ronald L., 4,566,167, Cl. 29-437.000.

Sperry Corporation: *See—*
Decoene, Frans J. G. C.; and Vansteelant, Marc G., 4,566,379, Cl. 100-89.000.
Gershenson, Meir; Sweeny, Mark F.; Long, Dennis D.; and Fleming, David L., 4,567,438, Cl. 324-248.000.
Zbinden, Terry B., 4,567,428, Cl. 324-73.0PC.

Spicer, William E.: *See—*
Olego, Diego; Brock, David G.; Baumann, John A.; and Spicer, William E., 4,567,503, Cl. 357-54.000.

Spisak, Anthony F.; Stefanovic, Sava; and Pawloski, Curtis H., to Ex-Cell-O Corporation. Carton forming, sterilizing, filling and sealing machine. 4,566,251, Cl. 53-167.000.

Spivak, Igor V.: *See—*
Gorlov, Viktor M.; Kiselev, Evgeny I.; Levin, Alexandr G.; Kutovoi, Valentin I.; Tverezy, Jury F.; and Spivak, Igor V., 4,566,587, Cl. 198-732.000.

Spolyar, John L. Portable roentgenographic cephalostat. 4,566,444, Cl. 128-303.00B.

Sprintschnik, Gerhard; Niderstatter, Walter; and Stroszynski, Joachim, to Hoechst Aktiengesellschaft. Two-stage process for the production of anodically oxidized aluminum planar materials and use of these materials in manufacturing offset-printing plates. 4,566,952, Cl. 204-27.000.

Srivastava, Gopal K.; and Lee, Ronald B., to Zenith Electronics Corporation. Auto tuning for an oscillator. 4,567,447, Cl. 331-1.00A.

Stadnick, Richard P.; and Schnetzinger, Richard W., to Revlon, Inc. Hair conditioning composition and method. 4,567,039, Cl. 132-70.000.

Stahly, Daniel C.: *See—*
Kenny, Andrew A.; Sokalski, Robert G.; Egle, Lawrence E.; and Stahly, Daniel C., 4,566,423, Cl. 123-571.000.

Stallworth, Herman: *See—*
Bhatia, Yog R.; and Stallworth, Herman, 4,567,213, Cl. 523-160.000.

Stanadyne, Inc.: *See—*
Berchtold, Max, 4,566,416, Cl. 123-458.000.

Standard Oil Company (Indiana): *See—*
Tovrog, Benjamin S.; Hoppin, Charles R.; and Johnson, Bryce V., 4,567,155, Cl. 502-123.000.

Standard Precision, Inc.: *See—*
Papp, John E.; and Nepomuceno, Bienvenido, 4,566,814, Cl. 400-354.100.

Stanley, Andrea: *See—*
Manning, Larry F.; and Stanley, Andrea, 4,566,590, Cl. 206-232.000.

Stapleton, Robert G.: *See—*
O'Meara, Joseph D., Jr.; Yuan, Herbert H.; Lease, William O.; and Stapleton, Robert G., 4,567,373, Cl. 250-573.000.

Staudinger, Gunther: *See—*
Ball, Peter; Marquardt, Klaus; Selig, Manfred; and Staudinger, Gunther, 4,567,297, Cl. 564-208.000.

Stauffer Chemical Company: *See—*
Olego, Diego; Brock, David G.; Baumann, John A.; and Spicer, William E., 4,567,503, Cl. 357-54.000.

Stearns, Willis R.: *See—*
Irvine, Robert; Roetter, Frank T.; and Stearns, Willis R., 4,566,685, Cl. 271-150.000.

Stefanovic, Sava: *See—*
Spisak, Anthony F.; Stefanovic, Sava; and Pawloski, Curtis H., 4,566,251, Cl. 53-167.000.

Stein, Roland: *See—*
Schlegel, Wolfgang; Wilke, Arthur; and Stein, Roland, 4,566,680, Cl. 269-74.000.

Stemple, Gunter. Defibrillator circuit and electrodes therefor. 4,566,457, Cl. 128-419.00D.

Stendel, Wilhelm: *See—*
Kruger, Bernd-Wieland; Riebel, Hans-Jochem; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,567,168, Cl. 514-89.000.

Stephano, Marc, to Cibie Projecteurs. Automobile headlamp with inclined front glass. 4,567,550, Cl. 362-297.000.

Sterckx, Jozef V. M.: *See—*
Detournay, Jacquy J. C.; and Sterckx, Jozef V. M., 4,567,027, Cl. 423-101.000.

Stereo Concepts, Inc.: *See—*
Bruney, Paul F.; and Bugash, Robert S., 4,567,607, Cl. 381-1.000.

Sterling Drug Inc.: *See—*
Lesher, George Y.; and Singh, Baldev, 4,567,186, Cl. 514-300.000.

Stewart, David G.: *See—*
Nay, Barry; and Stewart, David G., 4,567,160, Cl. 502-326.000.

Stewart, Lowell J.: *See—*
Haselby, Robert D.; Haugh, Samuel R.; and Stewart, Lowell J., 4,567,565, Cl. 364-520.000.

Stewart, Robert S., to Carrier Corporation. Internal line break assembly. 4,567,390, Cl. 310-68.00C.

Stiff, Bernard. Rotary shaft control apparatus. 4,566,352, Cl. 74-640.000.

Stiff, Bernard. Rotary shaft control apparatus. 4,566,353, Cl. 74-710.500.

Stirling, James F.: *See—*
German, John G.; Benjamin, Abraham; and Stirling, James F., 4,566,336, Cl. 73-772.000.

Stolz, Albert, to Daimler-Benz Aktiengesellschaft. Vehicle air conditioning arrangement. 4,566,531, Cl. 165-42.000.

Stong, Randel E.; and Walinsky, Stanley W., to Pfizer Inc. High temperature drilling fluids. 4,566,978, Cl. 252-8.50C.

Storage Technology Corporation: *See—*
Permut, Ronald, 4,566,652, Cl. 242-189.000.

Story, Arthur L.; and Filshtinsky, Michael, to Norton Christensen, Inc. Coring device with an improved core sleeve and anti-gripping collar with a collective core catcher. 4,566,545, Cl. 175-226.000.

Straubel, Max: *See—*
Bauer, Otto; Eberl, Lernhard; Geyer, Gerhard; and Straubel, Max, 4,566,421, Cl. 123-502.000.

Streeper, Leonard W.; and Chille, Joseph R., to Scott Paper Company. Nonwoven web spreader. 4,566,154, Cl. 19-296.000.

Stretch Forming Corporation: *See—*
Seidentop, Alfred T.; and Johnson, John E., 4,566,693, Cl. 272-144.000.

Stromberg, James L., to Halliburton Company. Quick connect adapter. 4,566,168, Cl. 29-517.000.

Stroomer, Martinus V. C.; and Boekhorst, Frederick M., to U.S. Philips Corporation. Line synchronizing circuit for a picture display device. 4,567,522, Cl. 358-158.000.

Strosberg, Arthur M.: *See—*
Kluge, Arthur F.; Clark, Robin D.; Strosberg, Arthur M.; Pascal, Jean-Claude G.; and Whiting, Roger, 4,567,264, Cl. 544-400.000.

Stroszynski, Joachim: *See—*
Sprintschnik, Gerhard; Niderstatter, Walter; and Stroszynski, Joachim, 4,566,952, Cl. 204-27.000.

Strube, Anneliese: *See—*
Gossler, Werner; Strube, Anneliese; and Zurheide, Manfred, 4,566,173, Cl. 29-571.000.

Struntz, Bernard J. Sports shoe. 4,566,207, Cl. 36-50.000.

Stuber, Fred A.: *See—*
Frulla, Floro F.; Stuber, Fred A.; and Whitman, Peter J., 4,567,287, Cl. 560-024.000.

Studiecentrum voor Kernenergie, "S.C.K." : *See—*
Vandeplas, Paul; and Kinnaer, Lucien, 4,566,430, Cl. 126-433.000.

Stuhlmiller, Gary L., to Motorola, Inc. Voltage offset producing circuit for use with a line receiver or the like. 4,567,384, Cl. 307-442.000.

Stumpf, Walter, to Simmons U.S.A. Corporation. Method and apparatus for manufacturing innerspring constructions. 4,566,926, Cl. 156-165.000.

Stunkard, Gerald A. Top entry trunnion ball valve. 4,566,482, Cl. 137-315.000.

Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co KG: *See—*
Helmle, Theodor; and Weber, Kurt, 4,566,528, Cl. 165-26.000.

Sudo, Yoshimi: *See—*
Kuwabara, Hideki; and Sudo, Yoshimi, 4,567,208, Cl. 521-59.000.

Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Hauser, Kurt, 4,566,852, Cl. 415-182.000.

Sugai, Saburo: *See—*
Kamano, Yoshiaki; Sugai, Saburo; Okazaki, Tokuji; Yoshida, Seiichiro; and Akaboshi, Sanya, 4,567,172, Cl. 514-179.000.

Sugano, Kazuhiko, to Nissan Motor Co., Ltd. Shift valve for automatic transmission. 4,566,355, Cl. 74-869.000.

Sugimoto, Keiichi: *See—*
Mizuno, Yukio; and Sugimoto, Keiichi, 4,567,282, Cl. 549-450.000.

Sugimura, Takashi: *See—*
Takamatsu, Satoru; and Sugimura, Takashi, 4,567,358, Cl. 235-379.000.

Sugiura, Manabu: *See—*
Goto, Kunifumi; Sugiura, Manabu; and Suzuki, Shinichi, 4,566,863, Cl. 417-295.000.

Suhara, Hideo: *See—*
Hosogai, Setsuo; Fujii, Hiroshi; Tamaru, Shigemi; Terachi, Junichi; Takatsuka, Takuo; and Suhara, Hideo, 4,567,455, Cl. 335-16.000.

Sukopp, Hans, to Ing. Erich Pfeiffer GmbH & Co., Firma. Metering or atomizing pump with a pump casing and an operating pusher. 4,566,611, Cl. 222-153.000.

Sulesky, Donald J.; and Wright, Joseph H., to Polaroid Corporation. Film processor for premounted transparency frames. 4,566,772, Cl. 354-303.000.

Sullivan, Eric C.; and Allford, Daniel W., to Hughes Tool Company - USA. Welding torch with dual gas shielding. 4,567,343, Cl. 219-74.000.

Sullivan, Gilbert: *See—*
Knight, Derek I.; and Sullivan, Gilbert, 4,566,821, Cl. 404-35.000.

Sulzbacher, Horst, to Voest-Alpine Aktiengesellschaft. Process for removing sulfur during melting of pig iron. 4,566,902, Cl. 75-26.000.

Sulzer Brothers Limited: *See—*
Baumeler, Markus, 4,566,273, Cl. 60-415.000.
Boshard, Ernst, 4,567,015, Cl. 376-272.000.
Schachenmann, Andreas, 4,566,497, Cl. 139-1.00C.

Sumitomo Heavy Industries, Ltd.: *See—*
Terai, Hiroshi, 4,567,541, Cl. 361-235.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Tominaga, Ichiro; and Matsuki, Taketo, 4,567,219, Cl. 524-413.000.

Summerlin, Frederick A. Split cycle engine. 4,566,411, Cl. 123-213.000.

Suncor, Inc.: *See—*
Yong, Raymond N.; and Sethi, Amar J., 4,566,909, Cl. 127-33.000.

Sundberg, Erik, to Weller Innovation AB. Arrangements in barking machines. 4,566,513, Cl. 144-208.00E.

Sundelin, Kurt G. R., to International Minerals & Chemical Corp. Pyridine, 2,2'-(2-imidazolidinylidene)di-, copper iron and nickel complexes and use in animals. 4,567,173, Cl. 514-188.000.

Sunder, Shyam: *See—*
Peet, Norton P.; and Sunder, Shyam, 4,567,193, Cl. 514-381.000.

Sundstrand Corporation: *See—*
Sims, Cecil, 4,567,422, Cl. 322-25.000.

Sundstrand Data Control, Inc.: *See—*
Bateman, Charles D.; Grove, Michael M.; Noland, Lyle J.; and Ward, Wallace E., 4,567,483, Cl. 340-970.000.

Sung, Rodney L.: *See—*
Karol, Thomas J.; and Sung, Rodney L., 4,566,878, Cl. 44-57.000.

Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., to Analgesic Associates. Analgesic and anti-inflammatory compositions comprising xanthines and methods of using same. 4,567,183, Cl. 514-264.000.

Sunwa Sharyo Manufacturing Co., Ltd.: *See—*
Misawa, Rintaro, 4,566,550, Cl. 180-8.200.

Surauer, Michael: *See—*
Bittner, Helmut; Gottzein, Eveline; and Surauer, Michael, 4,567,564, Cl. 364-434.000.

Suvanto, Antti, to AB Asea-Atom. Treatment prior to disposal of a sheathing tube of a spent fuel box of a nuclear reactor fuel assembly. 4,566,302, Cl. 72-146.000.

Suwa, Kyoichi: *See—*
Matsuura, Toshio; and Suwa, Kyoichi, 4,566,795, Cl. 356-400.000.

Suyama, Takahiro: *See—*
Hayakawa, Toshiro; Suyama, Takahiro; and Yamamoto, Saburo, 4,567,060, Cl. 427-87.000.

Suzuki, Atsushi: *See—*
Ninomiya, Masakazu; Fujisawa, Hideya; Omori, Norio; and Suzuki, Atsushi, 4,566,419, Cl. 123-489.000.

Suzuki, Jugoro, to Shimadzu Corporation. Multi-channel spectrophotometric measuring device. 4,566,792, Cl. 356-319.000.

Suzuki, Katsuhiko; and Honda, Takenobu, to Mitsubishi Denki Kabushiki Kaisha. Traction elevator apparatus. 4,566,562, Cl. 187-22.000.

Suzuki, Katsumi: *See—*
Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, 4,567,030, Cl. 423-326.000.

Suzuki, Kazuyoshi: *See—*
Ooi, Kiyoshi; Morita, Michio; Suzuki, Kazuyoshi; Hashizume, Soh; and Yoshizawa, Hanako, 4,567,147, Cl. 435-237.000.

Suzuki, Kenji: *See—*
Sawada, Takeshi; Shinmi, Akira; Takagi, Hiroshi; Suzuki, Kenji; Kishi, Fumio; and Kozuki, Susumu, 4,567,116, Cl. 428-694.000.

Suzuki, Kijiro: *See—*
Shiozawa, Kazuo; and Suzuki, Kijiro, 4,566,774, Cl. 354-413.000.

Suzuki, Kunihiko, to Nissan Motor Co., Ltd. Four wheel drive system with center differential unlock control responsive to steering angle. 4,566,554, Cl. 180-249.000.

Suzuki, Masanori: *See—*
Shimada, Yuzo; Utsumi, Kazuaki; Ikeda, Teruyuki; and Suzuki, Masanori, 4,567,542, Cl. 361-321.000.

Suzuki, Saiju: *See—*
Ito, Giichi; Nakano, Ichizo; Shimizu, Yuichi; Mukai, Kosaku; and Suzuki, Saiju, 4,567,347, Cl. 219-124.340.

Suzuki, Shigeru: *See—*
Yoshida, Ryuichi; Suzuki, Shigeru; Koishikawa, Hirotoshi; Miyamoto, Yoshimi; and Kawai, Kazuhide, 4,566,751, Cl. 339-218.00S.

Suzuki, Shinichi: *See—*
Goto, Kunifumi; Sugiura, Manabu; and Suzuki, Shinichi, 4,566,863, Cl. 417-295.000.

Suzuki, Takashi: *See—*
Ohtaka, Keiji; Suzuki, Takashi; Iizuka, Kiyoshi; and Mizutani, Hidemasa, 4,567,123, Cl. 430-4.000.

Suzuki, Toshiaki: *See—*
Matsuse, Kohki; Hashimoto, Hitoshi; and Suzuki, Toshiaki, 4,567,555, Cl. 363-138.000.

Suzuki, Yutaka; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Naito, Takashi; Kumano, Mikio; Nakamura, Tetsuya; Haseda, Satoshi; and Masuda, Akira, to Nippondenso Co., Ltd. Fuel injection control apparatus for diesel engines. 4,566,417, Cl. 123-478.000.

Svedala-Arbra AB: *See—*
Lundin, Sven-Ake; and Svensson, Arvid, 4,566,638, Cl. 241-37.000.

Svensson, Arvid: *See—*
Lundin, Sven-Ake; and Svensson, Arvid, 4,566,638, Cl. 241-37.000.

Svensson, Hans T.: *See—*
Skogman, Bengt G.; Svensson, Hans T.; and Torres, Eduardo E., 4,567,088, Cl. 428-213.000.

Swanson, Richard M.: *See—*
Pease, Roger F.; Tuckerman, David B.; and Swanson, Richard M., 4,567,505, Cl. 357-81.000.

Sweeny, Mark F.: *See—*
Gershenson, Meir; Sweeny, Mark F.; Long, Dennis D.; and Fleming, David L., 4,567,438, Cl. 324-248.000.

Swinehart, Grant E.: *See—*
Lottes, Rosanna M.; and Swinehart, Grant E., 4,567,323, Cl. 179-18.00B.

Sydykova, Tokhtobubu C.: *See—*
Ljubman, Nazar Y.; Imangazieva, Gulsara K.; Nugmanova, Lyalya T.; Uskov, Alexandr I.; Sydykova, Tokhtobubu C.; and Kim, Zinaida I., 4,567,207, Cl. 521-35.000.

Sylvian, Alain: *See—*
Bizot, Henri; Dautremont, Jean; and Sylvian, Alain, 4,566,225, Cl. 51-165.720.

Syntex (U.S.A.) Inc.: *See—*
Kluge, Arthur F.; Clark, Robin D.; Strosberg, Arthur M.; Pascal, Jean-Claude G.; and Whiting, Roger, 4,567,264, Cl. 544-400.000.

Synthelabo: *See—*
Bigg, Dennis; Morel, Claude; and Sevrin, Mireille, 4,567,177, Cl. 514-214.000.

Szabo, Laszlo; and Schunemann, Klaus, to International Standard Electric Corporation. Fin-line oscillator. 4,567,450, Cl. 331-107.0DP.

Szajna, John L., to Continental Plastic Containers, Inc. Closure unit including measuring cup. 4,566,509, Cl. 141-381.000.

Tabacco, Alessandro; Tarli, Paolo; and Neri, Paolo, to Sclavo, S.p.A. Method for determining transferrin and composition therefor. 4,567,150, Cl. 436-87.000.

Tabata, George K., to Discovision Associates. Vertical interval signal encoding under SMPTE control. 4,567,531, Cl. 358-335.000.

Tabata, Hiroshi; and Kai, Yasuaki, to Nissan Motor Co., Ltd. Nonreflective and limitatively light-transmitting board. 4,567,082, Cl. 428-138.000.

Tachibana, Kanichi: *See—*
Ohtagaki, Yoshio; Ochi, Masafumi; Masui, Motonobu; Tachibana, Kanichi; and Uchida, Akio, 4,567,403, Cl. 315-47.000.

Tachikawa Spring Co., Ltd.: *See—*
Yanagisawa, Hiroshi, 4,566,667, Cl. 248-561.000.

Tada, Sugihiko: *See—*
Masuyama, Kenichi; Okutu, Toshimitu; Miyoshi, Takahito; Ogawa, Hiroshi; Utumi, Masahiro; Fujiyama, Masaaki; and Tada, Sugihiko, 4,567,057, Cl. 427-48.000.

Tadokoro, Tomoo; Shiraishi, Hideo; and Okimoto, Haruo, to Mazda Motor Corporation. Intake system for rotary piston engine. 4,566,412, Cl. 123-216.000.

Tadokoro, Tomoo; Okimoto, Haruo; and Matsuda, Ikuo, to Mazda Motor Corporation. Fuel intake system for a supercharged engine. 4,566,422, Cl. 123-559.000.

Tahara, Akinori: *See—*
Yasuda, Yasushi; Enomoto, Hiromu; Shimauchi, Yoshiki; and Tahara, Akinori, 4,567,380, Cl. 307-290.000.

Taisei Corporation: *See—*
Ito, Yasuro; and Higuchi, Yoshiro, 4,566,799, Cl. 366-1.000.

Taiyo Shokai Co., Ltd.: *See—*
Watanabe, Hideyuki; and Ichikawa, Yoshimitu, 4,566,252, Cl. 53-410.000.

Taiyo Yuden Co., Ltd.: *See—*
Yamaoka, Nobutatsu; and Sasazawa, Kazuo, 4,567,059, Cl. 427-79.000.

Takabe, Katsunori: *See—*
Umeda, Yasukazu; and Takabe, Katsunori, 4,567,558, Cl. 364-148.000.

Takagi, Hiroshi: *See—*
Sawada, Takeshi; Shinmi, Akira; Takagi, Hiroshi; Suzuki, Kenji; Kishi, Fumio; and Kozuki, Susumu, 4,567,116, Cl. 428-694.000.

Takahashi, Hiroto: *See—*
Ikeda, Masami; Matsuda, Hiroto; Shibata, Makoto; and Takahashi, Hiroto, 4,567,493, Cl. 346-140.00R.

Takahashi, Osamu: *See—*
Nitou, Hiroyasu; Shirai, Kiyoshi; and Takahashi, Osamu, 4,566,425, Cl. 123-600.000.

Takahashi, Shunji: *See—*
Yamamoto, Minato; and Takahashi, Shunji, 4,566,418, Cl. 123-479.000.

Takahashi, Takamasa: *See—*
Shinoda, Morimasa; and Takahashi, Takamasa, 4,567,506, Cl. 358-11.000.

Takahashi, Yoshimi: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; Takahashi, Yoshimi; Hoshi, Akira; and Mizutani, Uichiro, 4,566,323, Cl. 73-295.000.

Takamatsu, Satoru; and Sugimura, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic teller system. 4,567,358, Cl. 235-379.000.

Takamizawa, Minoru; Yamamoto, Akira; and Nagura, Shigehiro, to Shin-Etsu Chemical Co., Ltd. Substituted polyacetylene copolymer. 4,567,245, Cl. 526-279.000.

Takamura, Yuji: *See—*
Akisada, Masahide; Ookawa, Norio; and Takamura, Yuji, 4,566,767, Cl. 354-76.000.

Takashima, Satoshi: *See—*
Akanuma, Shigetake; Nakajima, Minoru; Takashima, Satoshi; Imamura, Haruo; Ojiro, Yoshitaka; Kakuta, Hiroshi; and Matsumoto, Masato, 4,566,736, Cl. 299-23.000.

Takatsuka, Takuo: *See—*
Hosogai, Setsuo; Fujii, Hiroshi; Tamaru, Shigemi; Terachi, Junichi; Takatsuka, Takuo; and Suhara, Hideo, 4,567,455, Cl. 335-16.000.

Takayama, Makoto; Muramoto, Tomotaka; and Nishimura, Akimasa, to Canon Kabushiki Kaisha. Television camera with color balance. 4,567,509, Cl. 358-29.000.

Takeda Chemical Industries, Ltd.: *See—*
Mizuno, Yukio; and Sugimoto, Keiichi, 4,567,282, Cl. 549-450.000.
Nohara, Akira; and Maki, Yoshitaka, 4,567,201, Cl. 514-571.000.

Takeda, Mikio; Oh-ishi, Tokuro; Nakajima, Hiromichi; and Nagao, Taku, to Tanabe Seiyaku Co., Ltd. 8-Chloro-1,5-benzothiazepine derivatives. 4,567,175, Cl. 514-211.000.

Takeda, Yoshimitsu: *See—*
Moriya, Masaichi; Mochida, Haruo; and Takeda, Yoshimitsu, 4,566,576, Cl. 192-84.00C.

Takei, Kenji; and Akabane, Yukihiro, to Nippon Seiko Kabushiki Kaisha. Sealing means for a bearing for strut-type suspension. 4,566,812, Cl. 384-484.000.

Takeichi, Kenzo: *See—*
Takemoto, Akinobu; Takeichi, Kenzo; Yabe, Yuhiko; and Yoshikawa, Yoshiaki, 4,567,418, Cl. 318-685.000.

Takemoto, Akinobu; Takeichi, Kenzo; Yabe, Yuhiko; and Yoshikawa, Yoshiaki, to Hitachi, Ltd. Operation control apparatus for robots. 4,567,418, Cl. 318-685.000.

Takenouchi, Mutsuo; Ozawa, Takashi; Hamano, Toshihisa; Itoh, Hisao; Fuse, Mario; and Nakamura, Takeshi, to Fuji Xerox Co., Ltd. Photoelectric converting device with a plurality of divided electrodes. 4,567,374, Cl. 250-578.000.

Takenouchi, Toru, to Noritsu Kenkyu Center Co., Ltd. Magazine for supplying a strip of photographic printing paper. 4,566,785, Cl. 355-72.000.

Takeuchi, Hirosato; and Mikiya, Toshio, to Nitto Kohki Co., Ltd. Spontaneous circulation type solar heat collector. 4,566,431, Cl. 126-437.000.

Takeuchi, Kiyoshi, to Nissan Motor Co., Ltd. Washer type pressure sensor. 4,566,316, Cl. 73-754.000.

Takimoto, Masahiro: *See—*
Yamazaki, Yoshio; Takimoto, Masahiro; and Ohta, Satoshi, 4,567,217, Cl. 524-296.000.

Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, to Fuji Photo Film Co., Ltd. Heat-sensitive recording paper. 4,567,497, Cl. 346-200.000.

Tamaru, Shigemi: *See—*
Hosogai, Setsuo; Fujii, Hiroshi; Tamaru, Shigemi; Terachi, Junichi; Takatsuka, Takuo; and Suhara, Hideo, 4,567,455, Cl. 335-16.000.

Tamura, Hifumi: *See—*
Ishitani, Tohru; Tamura, Hifumi; and Shimase, Akira, 4,567,398, Cl. 313-362.100.

Tamura, Kimio: *See—*
Masaki, Syouichi; Tamura, Kimio; Wakao, Teruyoshi; Nakashima, Noriyuki; Asami, Ken; and Sakai, Kazunori, 4,566,737, Cl. 303-109.000.

Tamura, Masuhiko: *See—*
Matsumoto, Mitsuo; Miura, Shinichi; Kikuchi, Koichi; Tamura, Masuhiko; Kojima, Hidetaka; Koga, Kunio; and Yamashita, Shigeru, 4,567,305, Cl. 568-454.000.

Tamura, Motonori: *See—*
Nagano, Kyoichi; Naganuma, Hiroshi; Shinada, Koichi; Tamura, Motonori; and Soneda, Shigenobu, 4,566,916, Cl. 148-26.000.

Tanabe Seiyaku Co., Ltd.: *See—*
Takeda, Mikio; Oh-ishi, Tokuro; Nakajima, Hiromichi; and Nagao, Taku, 4,567,175, Cl. 514-211.000.

Tanaka, Hideo: *See—*
Torii, Sigeru; Tanaka, Hideo; Shiroi, Takashi; Sasaoka, Michio; Saito, Norio; and Matsumura, Kiyotoshi, 4,566,996, Cl. 260-239.00A.

Tanaka, Nobuyoshi; Hashimoto, Seiji; and Kuwayama, Tetsuro, to Canon Kabushiki Kaisha. Solid state color imaging apparatus. 4,567,510, Cl. 358-44.000.

Tanaka, Shinichi, to Sharp Kabushiki Kaisha. Modulation circuit of a digital-to-analog converter. 4,567,468, Cl. 340-347.0DA.

Tanaka, Taku: *See—*
Maruyama, Hitoshi; Tanaka, Taku; and Okaya, Takuji, 4,567,221, Cl. 524-436.000.

Tanaka, Toshie: *See—*
Hara, Kunio; Tanaka, Toshie; Shibayama, Teruji; Morisaki, Minoru; and Kaneko, Yoshio, 4,566,924, Cl. 156-73.500.

Tanaka, Yoshikazu: *See—*
Kumura, Haruyoshi; Abo, Keiju; Tanaka, Yoshikazu; Hirano, Hiroyuki; Yamamuro, Sigeaki; and Morimoto, Yoshiro, 4,566,354, Cl. 74-866.000.

Taniguchi, Satoru; Nishibayashi, Hideo; and Uemura, Masahiro, to Nippon Colin Co., Ltd. Apparatus for automatically measuring blood pressure. 4,566,463, Cl. 128-682.000.

Tanimoto, Akira: *See—*
Hashimoto, Shintaro; and Tanimoto, Akira, 4,567,573, Cl. 364-900.000.

Tanino, Hiroshi; Okamoto, Tetsuhiko; and Ueyama, Shinichiro, to Shin Nisso Kako Co., Ltd. Process for the preparation of phosphonitrile chloride oligomer. 4,567,028, Cl. 423-300.000.

Tanishi, Tokio; and Yokoyama, Hideki, to Matsushita Electric Works, Ltd. Connector. 4,566,748, Cl. 339-95.00D.

Tapio, Olli: *See—*
Koponen, Martti; and Tapio, Olli, 4,566,946, Cl. 162-359.000.

Tapmatic Corporation: *See—*
Johnson, Allan S., 4,566,829, Cl. 408-239.00R.

Tappe, Horst: *See—*
Buhler, Ulrich; Tappe, Horst; Bode, Albert; Hahnke, Manfred; and Roth, Kurt, 4,567,252, Cl. 534-882.000.

Tappert, Hans-Jurgen; Naumann, Johannes; Forster, Karl-Heinz; Doliner, Herbert; Pieper, Fritz; Frenzel, Werner; and Schanze, Klaus, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Hydraulic drive for multi-color sheet-fed rotary printing machines. 4,566,385, Cl. 101-183.000.

Taprogge Gesellschaft mbH: *See—*
Bochinski, Rolf; Eimer, Klaus; Littek, Harald; and Nasse, Johannes, 4,566,533, Cl. 165-95.000.

Tarli, Paolo: *See—*
Tabacco, Alessandro; Tarli, Paolo; and Neri, Paolo, 4,567,150, Cl. 436-87.000.

Tasaki, Yasutaka: *See—*
Itatani, Hiroshi; Kashima, Mikito; and Tasaki, Yasutaka, 4,567,280, Cl. 549-43.000.

Tate & Lyle Public Limited Company: *See—*
Lindley, Michael G., 4,567,053, Cl. 426-538.000.

Tateyama, Tom: *See—*
Herota, Rosh N., 4,566,356, Cl. 81-62.000.

Tawara, Yoshio; Ohashi, Ken; and Kikuchi, Hideaki, to Shin-Etsu Chemical Co., Ltd. Method for producing a magnetic bias field. 4,567,576, Cl. 365-2.000.

Taylor, Barry E., to Du Pont de Nemours, E. I., and Company. Binder glass of Bi_2O_3-SiO_2-GeO_2 (-PbO optional) admixed with ZnO/ZnO and Bi_2O_3. 4,567,151, Cl. 501-15.000.

Taylor, Bret K., to Hewlett-Packard Company. Nozzle cleaning, priming and capping apparatus for thermal ink jet printers. 4,567,494, Cl. 346-140.00R.

Taylor, Julian S.; and Taylor, Wesley L. Soft seat for safety valve. 4,566,486, Cl. 137-469.000.

Taylor, Wesley L.: *See—*
Taylor, Julian S.; and Taylor, Wesley L., 4,566,486, Cl. 137-469.000.

TBT Tiefbohrtechnik GmbH & Co. KG: *See—*
Jenny, Werner, 4,566,705, Cl. 279-4.000.

TDK Corporation: *See—*
Arioka, Hiroyuki; Nishimatsu, Masaharu; and Watanabe, Akio, 4,567,083, Cl. 428-141.000.

TDS, Inc.: *See—*
Shu, David F., 4,567,318, Cl. 174-35.0GC.

Technology Research Corporation: *See—*
Legatti, Raymond H., 4,567,456, Cl. 335-20.000.

Tekmar Angewandte Elektronik GmbH & Co. KG: *See—*
Latarius, Hans R., 4,566,628, Cl. 237-8.00C.

Tektronix, Inc.: *See—*
Bauer, Charles E.; and Bold, William A., 4,566,186, Cl. 29-852.000.
Bos, Philip J., 4,566,758, Cl. 350-346.000.
Bristol, Lloyd R., 4,567,405, Cl. 315-392.000.
VanHorne, Arthur C., 4,567,081, Cl. 428-138.000.

Telefonaktiebolaget LM Ericsson: *See—*
Berg, Bengt O., 4,567,445, Cl. 330-300.000.

Temco Products Corporation: *See—*
Wolin, Dale, 4,567,474, Cl. 340-584.000.

Temple, John D.: *See—*
Ashworth, Roger A.; Aiston, Brian E.; and Temple, John D., 4,566,161, Cl. 24-642.000.

Teng, Daniel M.: *See—*
Semp, Bernard A.; and Teng, Daniel M., 4,566,469, Cl. 131-308.000.

Tennant, William M.: *See—*
Flotow, Richard A.; and Tennant, William M., 4,566,572, Cl. 192-70.120.

Terachi, Junichi: *See—*
Hosogai, Setsuo; Fujii, Hiroshi; Tamaru, Shigemi; Terachi, Junichi; Takatsuka, Takuo; and Suhara, Hideo, 4,567,455, Cl. 335-16.000.

Terai, Hiroshi, to Sumitomo Heavy Industries, Ltd. Electric power source for use in electrostatic precipitator. 4,567,541, Cl. 361-235.000.

Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem and cepham compounds and processes for preparation thereof. 4,567,275, Cl. 548-128.000.

Tershak, Andrew T.; and Thieneman, Michael D., to Whirlpool Corporation. Refrigerator door ajar alarm with variable delay. 4,566,285, Cl. 62-129.000.

Terumo Kabushiki Kaisha: *See—*
Fujii, Tadashi; and Hayakawa, Yoshinori, 4,566,330, Cl. 73-599.000.

Tetra Pak International AB: *See—*
Rausing, Hans A., 4,566,928, Cl. 156-217.000.

Texaco Inc.: *See—*
Friedman, Robert H., 4,566,964, Cl. 208-8.0LE.
Karol, Thomas J.; and Sung, Rodney L., 4,566,878, Cl. 44-57.000.

Texas Instruments Incorporated: *See—*
Buol, Douglas A.; Mize, Dean N.; Pattschull, John W.; and Wallace, Robert M., 4,567,432, Cl. 324-158.00F.
Hornbeck, Larry J., 4,566,935, Cl. 156-626.000.
McGregor, Douglas D., 4,567,439, Cl. 324-304.000.
Oliver, Arthur B., 4,567,577, Cl. 365-156.000.
Patel, Pravin P.; and Reddy, Chitranjan N., 4,567,579, Cl. 365-189.000.
Pundarika, Eshwarahalli S., 4,567,395, Cl. 310-338.000.
Smayling, Michael C.; and Duane, Michael P., 4,566,175, Cl. 29-576.00B.

Theobald, Hans: *See—*
Eicken, Karl; Scheib, Klaus; Theobald, Hans; Pommer, Ernst-Heinrich; and Ammermann, Eberhard, 4,567,263, Cl. 544-263.000.

Theodore, Chris P., to Cars & Concepts, Inc. Hatchback vehicle body including hatch having opening with soft top convertible closure. 4,566,728, Cl. 296-76.000.

Therrien, Keith E., to Boeing Company, The. Composite material structure with integrated insulating blanket and method of manufacture. 4,567,076, Cl. 428-102.000.

Theurer, Josef; and Oellerer, Friedrich, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile apparatus and method for receiving and transporting an assembled track section. 4,566,389, Cl. 104-3.000.

Theuwis, Alfons L.; and Maes, Joseph M., to Electro-Nite Co. Sampling and/or measuring apparatus for immersion in molten metal. 4,566,343, Cl. 73-864.590.

Thieneman, Michael D.: *See—*
Tershak, Andrew T.; and Thieneman, Michael D., 4,566,285, Cl. 62-129.000.

Thissen, Klaus; and Barzantny, Joachim, to Interatom Internationale Atomreaktorbau GmbH. Method for carrying liquid metal by two series-connected electric magnet pumps. 4,566,859, Cl. 417-50.000.

Thoma, Nandor G.: *See—*
Wyatt, Virgil D.; Kraft, Wayne R.; and Thoma, Nandor G., 4,567,561, Cl. 364-200.000.

Thomas, Francis, to Societe Industrielle de Bellevaux, SIBEL. Programmer. 4,566,347, Cl. 74-125.000.

Thomson-CSF: *See—*
Bert, Alain; and Camiade, Marc, 4,567,449, Cl. 331-56.000.
Castera, Jean P.; and Meunier, Paul L., 4,566,329, Cl. 73-597.000.
Mourier, Georges, 4,567,402, Cl. 315-39.300.
Richard, Christian, 4,567,519, Cl. 358-135.000.

Thomson CSF-Telephone: *See—*
Lecomte, Daniel; and Gibaud, Michel, 4,567,589, Cl. 370-58.000.

Thornton, Kenneth R.: *See—*
O'Brien, Robert N.; McOrmond, Philip M.; Hocking, Martin B.; and Thornton, Kenneth R., 4,566,315, Cl. 73-61.400.

Throndson, Roger L.: *See—*
Greenwood, Arthur R.; Burgard, Jeffrey E.; and Throndson, Roger L., 4,567,023, Cl. 422-192.000.

Thurston, George B. Device and method of measuring the viscosity and/or visco-elasticity of a fluid. 4,566,314, Cl. 73-55.000.

Thwaites, Michael J.: *See—*
Hockley, Peter J.; and Thwaites, Michael J., 4,567,499, Cl. 357-2.000.

Thyssen, Jeffrey: *See—*
Miller, Jule A.; Lee, Jack W.; and Thyssen, Jeffrey, 4,566,939, Cl. 156-655.000.

Tice, Victor M.: *See—*
Ronemus, DeHertburn N.; and Tice, Victor M., 4,567,544, Cl. 361-399.000.

Timberline Geodesics, Inc.: *See—*
Schwartz, Victor M.; and Miller, Robert G., 4,566,818, Cl. 403-172.000.

Timmis, Peter H.: *See—*
Ballard, John R.; Timmis, Peter H.; and Buller, Michael J., 4,566,270, Cl. 60-264.000.

Tindall, William N. J.: *See—*
Saade , Henry Y.; and Tindall, William N. J., 4,567,574, Cl. 364-900.000.

Tinti, Maria O.; Quaresima, Emma; Bagolini, Carlo; and deWitt, Paolo, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Esters of mercapto acyl-carnitines and pharmaceutical compositions containing same. 4,567,200, Cl. 514-547.000.

Toa Harbor Works Co., Ltd.: *See—*
Hirai, Yoshihisa; Shima, Masanori; and Aoki, Hirohiko, 4,566,825, Cl. 405-267.000.

Tobita, Etsuko: *See—*
Matsui, Kiyohide; Kikuchi, Yoshiyuki; Hiyama, Tamejiro; Tobita, Etsuko; Kondo, Kiyoshi; Akimoto, Akira; Seita, Toru; and Watanabe, Hiroyuki, 4,567,206, Cl. 521-27.000.

Toda, Toshiyuki, to Kotobuki Engineering & Manufacturing Co., Ltd. Screw decanter type centrifugal concentrating machine. 4,566,873, Cl. 494-53.000.

Todd Jr., Alvin E. Compact high flow rate electric instantaneous water heater. 4,567,350, Cl. 219-298.000.

Todd, Stephen J.: *See—*
Siegel, Paul H.; and Todd, Stephen J., 4,567,464, Cl. 340-347.0DD.

Tohoku Ricoh Co., Ltd.: *See—*
Kumano, Masafumi; Kawashima, Ikue; Hirama, Masayuki; and Tsuji, Yasuhiro, 4,566,453, Cl. 128-303.100.

Tohoku Steel Co., Ltd.: *See—*
Sawada, Takeshi; Shinmi, Akira; Takagi, Hiroshi; Suzuki, Kenji; Kishi, Fumio; and Kozuki, Susumu, 4,567,116, Cl. 428-694.000.

Tohyama, Shigeo, to Hitachi, Ltd. Recording apparatus for a spectrophotometer. 4,566,793, Cl. 356-319.000.

Tokai Electric Wire Company Limited: *See—*
Yoshida, Ryuichi; Suzuki, Shigeru; Koishikawa, Hirotoshi; Miyamoto, Yoshimi; and Kawai, Kazuhide, 4,566,751, Cl. 339-218.00S.

Tokuyama Soda Kabushiki Kaisha: *See—*
Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, 4,567,030, Cl. 423-326.000.

Tokyo Juki Industrial Co., Ltd: *See—*
Sakuma, Kuniharu; and Goto, Sumio, 4,566,396, Cl. 112-302.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Inagawa, Jun; Nagumo, Masahide; and Kojima, Tadashi, 4,567,568, Cl. 364-761.000.
Kano, Masaaki; Yamaji, Hiroshi; Nakao, Shinji; and Okumura, Katsuya, 4,567,364, Cl. 250-307.000.
Konishi, Kuniyoshi, 4,567,446, Cl. 330-308.000.
Kusakabe, Tetsuo; Sakai, Tetsuro; and Honda, Kazuhiko, 4,567,507, Cl. 358-11.000.
Nakagawa, Akio; Utagawa, Tadashi; and Tsukakoshi, Tsuneo, 4,567,502, Cl. 357-53.000.
Sato, Yasuji; Yamamoto, Takao; Sano, Yoshikazu; and Nakayama, Yasunobu, 4,567,326, Cl. 179-90.00B.
Takamatsu, Satoru; and Sugimura, Takashi, 4,567,358, Cl. 235-379.000.
Yasuda, Seiji; Koshino, Yutaka; and Yonezawa, Toshio, 4,566,174, Cl. 29-576.00W.

Tokyo Shisetsu Kogyo Kabushiki Kaisha: *See—*
Kumasako, Takeo; Sato, Kiyomi; Kawakatsu, Akira; Sato, Akinori; and Mamiya, Isamu, 4,566,471, Cl. 131-317.000.

Tomihashi, Nobuyuki: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; and Kitahara, Takahiro, 4,566,755, Cl. 350-96.340.

Tominaga, Ichiro; and Matsuki, Taketo, to Sumitomo Rubber Industries, Ltd. Composition for cover of golf balls. 4,567,219, Cl. 524-413.000.

Tomita, Fusao: *See—*
Shimada, Kenjiro; Otomo, Masao; Tomita, Fusao; and Ito, Shingo, 4,567,164, Cl. 514-33.000.

Tomita, Masao, to Kinki Denki Co., Ltd. Dynamic current interruption-type indicators and method therefor. 4,566,401, Cl. 116-207.000.

Tomita, Yogi; Yamamoto, Hisashi; and Kitagawa, Susumu, to Kanebo Limited. Method for cleaning article by scrubbing with cleaning roll. 4,566,911, Cl. 134-6.000.

Tomizawa, Fumio: *See—*
Iwatsuka, Nobuyoshi; Tomizawa, Fumio; Sato, Chikara; Ozaki, Norihiko; Ichikawa, Yoshiaki; and Sadakane, Kenichiro, 4,566,843, Cl. 414-680.000.

Tomono, Hiromi; Kokubo, Takashi; Yamaguchi, Kazuki; and Ikuma, Sadao, to Mitsubishi Monsanto Chemical Company. Heat and impact resistant resin composition. 4,567,233, Cl. 525-71.000.

Tong, Long S. Venting means for nuclear reactors. 4,567,016, Cl. 376-283.000.

Toray Industries, Inc.: *See—*
Hasegawa, Katsumi; and Kanamori, Hiromitsu, 4,566,643, Cl. 242-18.00R.
Matsumoto, Katsutoshi, 4,566,384, Cl. 101-170.000.
Yamazaki, Chikayasu; Torikai, Jun; and Kumo, Ichiro, 4,566,319, Cl. 73-160.000.

Torigai, Katsumi: *See—*
Iwai, Tomio; and Torigai, Katsumi, 4,566,415, Cl. 123-361.000.

Torii, Sigeru; Tanaka, Hideo; Shiroi, Takashi; Sasaoka, Michio; Saito, Norio; and Matsumura, Kiyotoshi, to Otsuke Kagaku Yakuhin Kabushiki Kaisha. Process for preparing azetidinone derivatives. 4,566,996, Cl. 260-239.00A.

Torikai, Jun: *See—*
Yamazaki, Chikayasu; Torikai, Jun; and Kumo, Ichiro, 4,566,319, Cl. 73-160.000.

Torres, Eduardo E.: *See—*
Skogman, Bengt G.; Svensson, Hans T.; and Torres, Eduardo E., 4,567,088, Cl. 428-213.000.

Torrington Company, The: *See—*
Moseley, John B., 4,566,191, Cl. 33-1.00M.

Toshishige, Yoshinori, to Reliance Incorporated. Bath accessories, and decorative wall flanges thereof. 4,566,662, Cl. 248-222.100.

Toussaint, Rene : *See—*
Wilhelm, Dieter; Schlagheck, Werner; and Toussaint, Rene , 4,567,397, Cl. 313-318.000.

Tovrog, Benjamin S.; Hoppin, Charles R.; and Johnson, Bryce V., to Standard Oil Company (Indiana). Olefin polymerization catalyst system producing polymer with low active chloride. 4,567,155, Cl. 502-123.000.

Towmotor Corporation: *See—*
Wiblin, Wayne T.; Melocik, Grant C.; Leskovec, Edward V.; and Pickering, William, 4,567,467, Cl. 340-347.00P.

Town, Michael H.: *See—*
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,567,195, Cl. 514-419.000.

Towner, Janet M.: *See—*
van de Ven, Everhardus P. G. T.; and Towner, Janet M., 4,566,177, Cl. 29-590.000.

Toyo Jozo Kabushiki Kaisha: *See—*
Yoneda, Fumio, 4,567,260, Cl. 544-250.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Matsui, Kiyohide; Kikuchi, Yoshiyuki; Hiyama, Tamejiro; Tobita, Etsuko; Kondo, Kiyoshi; Akimoto, Akira; Seita, Toru; and Watanabe, Hiroyuki, 4,567,206, Cl. 521-27.000.

Toyoda Gosei Co., Ltd.: *See—*
Sasaki, Koji; and Koizumi, Junji, 4,567,235, Cl. 525-113.000.
Sasaki, Koji; and Koizumi, Junji, 4,567,238, Cl. 525-179.000.
Yamazaki, Yoshio; Takimoto, Masahiro; and Ohta, Satoshi, 4,567,217, Cl. 524-296.000.

Toyoda, Shigehiro: *See—*
Uzaki, Nagato; Komori, Toshihisa; Matui, Kazuharu; and Toyoda, Shigehiro, 4,566,521, Cl. 164-160.100.

Toyota Jidosha Kabushiki Kaisha: *See—*
Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, 4,566,348, Cl. 74-359.000.
Masaki, Syouichi; Tamura, Kimio; Wakao, Teruyoshi; Nakashima, Noriyuki; Asami, Ken; and Sakai, Kazunori, 4,566,737, Cl. 303-109.000.

Traber, Walter: *See—*
Gehret, Jean-Claude; and Traber, Walter, 4,567,190, Cl. 514-343.000.

Trabert, Ludwig: *See—*
Grigo, Ulrich; Kohler, Karl-Heinz; Binsack, Rudolf; Morbitzer, Leo; Merten, Josef; Trabert, Ludwig; and Heitz, Walter, 4,567,226, Cl. 524-538.000.

Trachte, Dietrich, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,566,635, Cl. 239-533.800.

Transamerica Delaval Inc.: *See—*
Zacchio, Joseph M., 4,566,321, Cl. 73-290.00R.

Traub, Henry A., to W. S. Shamban & Company. Seal assembly with improved low pressure sealing ring. 4,566,702, Cl. 277-121.000.

Treiber, Helmut: *See—*
Fursich, Manfred; Treiber, Helmut; Fergg, Berthold; Findeis, Gunter; and Zahn, Wolfgang, 4,566,786, Cl. 355-77.000.

Tremag Trennmaschinen-Gesellschaft mbH: *See—*
Ehm, Karl H.; and Orendi, Roderich R., 4,566,679, Cl. 269-23.000.

Trio Corporation: *See—*
Cavanaugh, Glenn L.; and Raffield, William C., 4,566,397, Cl. 114-56.000.

Trocciola, John C., to United Technologies Corporation. Use of gas depolarized anodes for the electrochemical production of adiponitrile. 4,566,957, Cl. 204-73.00A.

Troup, Alan P.: *See—*
Bukowiecki, Stanislaw; Pfister, Gustav; Reis, Alfons; Troup, Alan P.; and Ulli, Hans-Peter, 4,567,475, Cl. 340-634.000.

Trumble, William P., to Bell Canada. Pressure impregnation of wood poles for preservation. 4,567,115, Cl. 428-541.000.

Trummlitz, Gunter: *See—*
Eberlein, Wolfgang; Trummlitz, Gunter; Engel, Wolfhard; Schmidt, Gunther; Hammer, Rudolf; and Giachetti, Antonio, 4,567,178, Cl. 514-215.000.

TRW Inc.: *See—*
Barker, Charles A.; and Rau, Jim L., 4,566,477, Cl. 137-101.000.
Fleming, William J.; and Raceu, Dumitru, 4,566,338, Cl. 73-862.360.

Tsuboi, Masaharu, to Honda Giken Kogyo Kabushiki Kaisha. Clutch release device for motorized cycles. 4,566,577, Cl. 192-85.0CA.

Tsuboi, Shunji: *See—*
Kobayashi, Toyohiro; Mochizuki, Shoji; Murata, Mitsuru; Tsuboi, Shunji; and Sakurai, Hideto, 4,566,813, Cl. 400-120.000.

Tsubokawa, Yoshitoki: *See—*
Sarssue, Hirotaka; and Tsubokawa, Yoshitoki, 4,566,156, Cl. 24-398.000.

Tsuchiya, Eiichi, to Victor Company of Japan, Ltd. Adapter for a miniature type tape cassette. 4,567,536, Cl. 360-94.000.

Tsuchiya, Kazumichi, to Fuji Photo Optical Co., Ltd. Servo control circuit module for use in a television camera. 4,567,526, Cl. 358-227.000.

Tsuda, Shin, to Canon Kabushiki Kaisha. Facsimile apparatus. 4,567,322, Cl. 179-2.00A.

Tsuji, Shintaro: *See—*
Araya, Shinji; and Tsuji, Shintaro, 4,567,566, Cl. 364-554.000.

Tsuji, Yasuhiro: *See—*
Kumano, Masafumi; Kawashima, Ikue; Hirama, Masayuki; and Tsuji, Yasuhiro, 4,566,453, Cl. 128-303.100.

Tsukakoshi, Tsuneo: *See—*
Nakagawa, Akio; Utagawa, Tadashi; and Tsukakoshi, Tsuneo, 4,567,502, Cl. 357-53.000.

Tsunekawa, Tokuichi, to Canon Kabushiki Kaisha. Exposure control apparatus based on a multimetering system. 4,566,775, Cl. 354-432.000.

Tsunoda, Teruo; Numauchi, Hiromitsu; Kurata, Hironobu; Kawaguchi, Yoichi; Ishii, Satoshi; Seki, Masanori; Iwasaki, Masahiro; and Enomoto, Fukumasa, to Komori Printing. Press plate positioning apparatus for automatic drawing machine. 4,566,194, Cl. 33-18.100.

Tsuruta, Hidemasa. Method of separating a mixed liquid into light and heavy fractions by distillation. 4,566,947, Cl. 203-26.000.

Tsuzuki, Yoshihiko: *See—*
Suzuki, Yutaka; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Naito, Takashi; Kumano, Mikio; Nakamura, Tetsuya; Haseda, Satoshi; and Masuda, Akira, 4,566,417, Cl. 123-478.000.

Tucker, Hartwell F.; Tucker, Jeffrey R.; Ross, Dennis; and Knirck, Jeffrey G., to Octa, Inc. Permanent magnet disc rotor machine. 4,567,391, Cl. 310-156.000.

Tucker, Jeffrey R.: *See—*
Tucker, Hartwell F.; Tucker, Jeffrey R.; Ross, Dennis; and Knirck, Jeffrey G., 4,567,391, Cl. 310-156.000.

Tuckerman, David B.: *See—*
Pease, Roger F.; Tuckerman, David B.; and Swanson, Richard M., 4,567,505, Cl. 357-81.000.

Tummino, John, to Clinton Industries, Inc. Sewing machine needle thread capturing and severing mechanism. 4,566,395, Cl. 112-292.000.

Turner, Patrick E., to Goodyear Aerospace Corporation. Armored panel. 4,566,237, Cl. 52-269.000.

Turner Quick Lift Corporation: *See—*
Van Denberg, Ervin K., 4,566,719, Cl. 280-711.000.

Turtschan, Alfons; and Drechsler, Herbert, to Gasti-Verpackungsmaschinen GmbH. Multiple packaging device. 4,566,591, Cl. 206-427.000.

Turunen, Olli: *See—*
Eklund, Vidar; Ekman, Kurt; Turunen, Olli; Huttunen, Jouko; Selin, Johan-Fredrik; and Fors, Jan, 4,567,255, Cl. 536-30.000.

Tverezy, Jury F.: *See—*
Gorlov, Viktor M.; Kiselev, Evgeny I.; Levin, Alexandr G.; Kutovoi, Valentin I.; Tverezy, Jury F.; and Spivak, Igor V., 4,566,587, Cl. 198-732.000.

Tyler, Arnold L.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,566,394, Cl. 110-347.000.

UBE Industries, Ltd.: *See—*
Itatani, Hiroshi; Kashima, Mikito; and Tasaki, Yasutaka, 4,567,280, Cl. 549-43.000.

Uchida, Akio: *See—*
Ohtagaki, Yoshio; Ochi, Masafumi; Masui, Motonobu; Tachibana, Kanichi; and Uchida, Akio, 4,567,403, Cl. 315-47.000.

Uchida, Katsumi: *See—*
Sogabe, Yoji; Uchida, Katsumi; and Harada, Kunihiko, 4,567,093, Cl. 428-250.000.

Uehara, Haruo, to Canon Kabushiki Kaisha. Process for producing optical members. 4,566,930, Cl. 156-280.000.

Uehara, Katsuharu: *See—*
Miyagi, Masahiro; Uehara, Katsuharu; Nozawa, Yoshio; and Deguchi, Takahiko, 4,566,359, Cl. 83-23.000.

Uematsu, Tomoe: *See—*
Nagato, Nobuyuki; Maki, Kenichiro; Uematsu, Tomoe; and Ishioka, Ryoji, 4,567,292, Cl. 560-245.000.

Uemura, Masahiro: *See—*
Taniguchi, Satoru; Nishibayashi, Hideo; and Uemura, Masahiro, 4,566,463, Cl. 128-682.000.

Ueyama, Shinichiro: *See—*
Tanino, Hiroshi; Okamoto, Tetsuhiko; and Ueyama, Shinichiro, 4,567,028, Cl. 423-300.000.

Uhde GmbH: *See—*
Huber, Johann; and Lorenz, Lutz, 4,566,722, Cl. 285-18.000.

Uittenbogaard, Teunis H.: *See—*
Moors, Petrus M. A. W.; and Uittenbogaard, Teunis H., 4,566,176, Cl. 29-578.000.

Ulli, Hans-Peter: *See—*
Bukowiecki, Stanislaw; Pfister, Gustav; Reis, Alfons; Troup, Alan P.; and Ulli, Hans-Peter, 4,567,475, Cl. 340-634.000.

Umeda, Yasukazu; and Takabe, Katsunori, to Mitsubishi Denki Kabushiki Kaisha. Elevator traffic demand analyzing system. 4,567,558, Cl. 364-148.000.

Umemura, Shinichiro; Katakura, Kageyoshi; and Ogawa, Toshio, to Hitachi, Ltd. Ultrasonic diagnosis system. 4,566,459, Cl. 128-660.000.

Umezawa, Hamao; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. N-Methanesulfonic acid derivatives of 3-demethoxyistamycin B. 4,567,165, Cl. 514-36.000.

Umezu, Hideo. Plastic insert-mold element containing a metal-piece insert. 4,566,750, Cl. 339-126.00R.

Underwater Storage Limited: *See—*
Hickey, Christopher D. D., 4,566,367, Cl. 89-1.810.

Uneyama, Yoshihisa: *See—*
Iizuka, Kenichi; Uzuhashi, Hideo; Uneyama, Yoshihisa; Matuda, Michiya; and Kobayashi, Minoru, 4,566,289, Cl. 62-228.400.

Ungar, Israel S.: *See—*
O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., 4,567,087, Cl. 428-211.000.

Union Camp Corporation: *See—*
Firth, William C., Jr., 4,566,896, Cl. 71-24.000.

Union Carbide Corporation: *See—*
Hatfield, James C., 4,566,977, Cl. 252-8.50C.
Qureshi, Shahid; and Gardner, Hugh C., 4,567,216, Cl. 523-400.000.
Sara, Raymond V., 4,567,103, Cl. 428-408.000.
Wilson, Stephen T.; and Flanigen, Edith M., 4,567,029, Cl. 423-306.000.

Union Oil Company of California: *See—*
Robinson, Paul R.; and Moorehead, Eric L., 4,567,314, Cl. 585-621.000.

United Aircraft Products, Inc.: *See—*
Gooden, Richmond A., 4,566,530, Cl. 165-36.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Baldry, Peter J.; Collins, John H.; Morantz, Daniel J.; Overton, Terence K. W.; and Wright, David W., 4,567,122, Cl. 430-4.000.
Irvine, Stuart J. C.; Mullin, John B.; and Giess, Jean, 4,566,918, Cl. 148-175.000.
Knight, Derek I.; and Sullivan, Gilbert, 4,566,821, Cl. 404-35.000.
McDonnell, Damien G.; and Smith, Robert A., 4,566,759, Cl. 350-346.000.

United States of America
Administrator, National Aeronautics and Space Administration: *See—*
Rosser, Robert W.; Chen, Timothy S.; and Cheng, Chung-Heng, 4,567,301, Cl. 564-243.000.
Army: *See—*
Abramovitz, Irwin J.; Berg, Norman J.; and Casseday, Michael W., 4,566,760, Cl. 350-358.000.
Hoffmeister, Lawrence D., 4,566,609, Cl. 222-130.000.
Energy: *See—*
Goldberg, David A.; Flood, William S.; Arthur, Allan A.; and Voelker, Ferdinand, 4,567,452, Cl. 332-7.000.
Pitts, John R., 4,566,937, Cl. 156-628.000.
Vaidyanathan, Swaminathan; and Adamson, Martyn G., 4,567,017, Cl. 376-417.000.
National Aeronautics and Space Administration: *See—*
Deis, Bert C., 4,566,447, Cl. 128-80.00E.
Hergenrother, Paul M.; and Havens, Stephen J., 4,567,240, Cl. 525-328.100.
Smith, Hubert E.; Wall, William A.; and Burns, Morrison R., Jr., 4,567,348, Cl. 219-124.340.
National Security Agency: *See—*
Morris, S. Brent; and Wisniewski, Richard A., 4,567,572, Cl. 364-900.000.
Navy: *See—*
Adams, Theodore C., Jr.; and Adolph, Horst G., 4,567,296, Cl. 564-111.000.
Barnett, Larry R.; Lau, Yue-Ying; Chu, Kwo R.; and Granatstein, Victor L., 4,567,401, Cl. 315-5.000.
DiGiovanniantonio, Perry R.; and Zimmer, William J., 4,566,658, Cl. 244-110.00R.
Luckachina, John C., 4,566,659, Cl. 244-137.00R.
Metcalf, Travis W., 4,567,609, Cl. 382-9.000.
Pickett, Teddy L.; and Cook, Gary R., 4,567,100, Cl. 428-339.000.

U.S. Philips Corporation: *See—*
Assink, Gerardus J., 4,567,533, Cl. 358-342.000.
Bartels, Willem J., 4,567,605, Cl. 378-85.000.
Benschop, Nico F., 4,567,386, Cl. 307-481.000.
Driessen, Leonardus M. H. E., 4,567,518, Cl. 358-133.000.
Goossens, Urbanus P. M.; and Fierens, Gustaaf E. M., 4,567,327, Cl. 179-115.50R.
Groen, Robertus W. C.; de Jonge, Cornelis A. M.; Schwartz, Lawrence M.; and van Lier, Johannes C., 4,567,534, Cl. 358-342.000.
Heijnemans, Werner A. L., 4,566,756, Cl. 350-126.000.
Hulyer, Michael G., 4,567,508, Cl. 358-11.000.
Mannschke, Lothar, 4,566,753, Cl. 350-96.160.
Medema, Pieter W.; and Benjamins, Elmo I., 4,566,374, Cl. 99-281.000.
Minicilli, Jean, 4,567,592, Cl. 371-20.000.
Moors, Petrus M. A. W.; and Uittenbogaard, Teunis H., 4,566,176, Cl. 29-578.000.
Schilz, Wolfram; and Schiek, Burkhard, 4,567,484, Cl. 343-14.000.
Schofield, John, 4,567,453, Cl. 333-194.000.

Stroomer, Martinus V. C.; and Boekhorst, Frederick M., 4,567,522, Cl. 358-158.000.
van de Plassche, Rudy J.; and Sijbers, Peter J. M., 4,567,426, Cl. 323-315.000.
van de Polder, Leendert J., 4,567,520, Cl. 358-139.000.
van Gorkum, Aart A., 4,567,399, Cl. 313-449.000.
Wilhelm, Dieter; Schlagheck, Werner; and Toussaint, Rene , 4,567,397, Cl. 313-318.000.

United States Surgical Corporation: *See—*
Green, David T.; and Aranyi, Ernie, 4,566,620, Cl. 227-19.000.

United Technologies Corporation: *See—*
Brumen, Claudio, 4,566,857, Cl. 416-220.00R.
Comeau, Roger J.; and Baran, Walter J., Jr., 4,566,851, Cl. 415-139.000.
Gingras, Richard E., 4,566,269, Cl. 60-226.100.
Kesten, Arthur S., 4,567,033, Cl. 423-648.00R.
Miller, Gordon G., 4,566,856, Cl. 416-134.00A.
Shiembob, Lawrence T., 4,566,700, Cl. 277-53.000.
Trocciola, John C., 4,566,957, Cl. 204-73.00A.

Unitika Ltd.: *See—*
Matsumura, Wakuo; Kitazawa, Noboru; and Ohigashi, Yoshiaki, 4,566,250, Cl. 53-128.000.

Universite Rene Descartes Paris V: *See—*
Arhan, Pierre J.; and Hero, Marc R., 4,566,465, Cl. 128-778.000.

University of Dayton: *See—*
Fusek, Richard L.; Harris, James S.; and Harding, Kevin G., 4,566,757, Cl. 350-162.120.

University of Minnesota, Regents of the: *See—*
Schwartz, Samuel, 4,567,148, Cl. 436-66.000.

University of Victoria: *See—*
O'Brien, Robert N.; McOrmond, Philip M.; Hocking, Martin B.; and Thornton, Kenneth R., 4,566,315, Cl. 73-61.400.

UOP Inc.: *See—*
Greenwood, Arthur R., 4,567,022, Cl. 422-144.000.
Greenwood, Arthur R.; Burgard, Jeffrey E.; and Throndson, Roger L., 4,567,023, Cl. 422-192.000.
Janikowski, Daniel S.; and Shum, Ming S., 4,567,111, Cl. 428-457.000.
Kulprathipanja, Santi, 4,567,309, Cl. 585-829.000.

Upjohn Company, The: *See—*
Ayer, Donald E., 4,567,000, Cl. 260-397.300.
Frulla, Floro F.; Stuber, Fred A.; and Whitman, Peter J., 4,567,287, Cl. 560-024.000.
Goldwasser, David J.; and Oertel, Richard W., III, 4,567,236, Cl. 525-127.000.
Regelman, Dale F., 4,567,257, Cl. 544-78.000.
VanRheenen, Verlan H., 4,567,001, Cl. 260-397.300.

Uraca Pumpenfabrik GmbH & Co. KG: *See—*
Hanafi, Nabil, 4,566,370, Cl. 92-59.000.

Urdan Industries Ltd.: *See—*
Kataczynski, Nachman, 4,566,588, Cl. 206-3.000.

Uren, William J.: *See—*
Dolsen, Philip C.; Chandra, Satish; Hammon, Gordon R.; and Uren, William J., 4,567,482, Cl. 340-825.050.

Ushio Denki Kabushiki Kaisha: *See—*
Mimura, Yoshiki; Arai, Tetsuji; and Fukuda, Satoru, 4,567,352, Cl. 219-405.000.

Uskov, Alexandr I.: *See—*
Ljubman, Nazar Y.; Imangazieva, Gulsara K.; Nugmanova, Lyalya T.; Uskov, Alexandr I.; Sydykova, Tokhtobubu C.; and Kim, Zinaida I., 4,567,207, Cl. 521-35.000.

USM Corporation: *See—*
Sieger, Leon F.; and DiNozzi, Robert D., 4,566,594, Cl. 209-539.000.

Usuki, Kazuyasu: *See—*
Hirose, Noriyasu; Souda, Shigeru; Miyake, Kazutoshi; Kuriyama, Shizuo; Usuki, Kazuyasu; Akiyama, Yasuhiro; Nagaoka, Naoko; and Kawashima, Hidetoshi, 4,567,180, Cl. 514-253.000.

USV Pharmaceutical Corp.: *See—*
Chan, Wan-kit, 4,567,279, Cl. 548-491.000.
Musser, John H.; and Chakraborty, Utpal R., 4,567,184, Cl. 514-277.000.

Utagawa, Tadashi: *See—*
Nakagawa, Akio; Utagawa, Tadashi; and Tsukakoshi, Tsuneo, 4,567,502, Cl. 357-53.000.

Utsumi, Kazuaki: *See—*
Shimada, Yuzo; Utsumi, Kazuaki; Ikeda, Teruyuki; and Suzuki, Masanori, 4,567,542, Cl. 361-321.000.

Utumi, Masahiro: *See—*
Masuyama, Kenichi; Okutu, Toshimitu; Miyoshi, Takahito; Ogawa, Hiroshi; Utumi, Masahiro; Fujiyama, Masaaki; and Tada, Sugihiko, 4,567,057, Cl. 427-48.000.
Miyoshi, Takahito; Okutu, Toshimitu; Utumi, Masahiro; and Fujiyama, Masaaki, 4,567,063, Cl. 427-128.000.

Uzaki, Nagato; Komori, Toshihisa; Matui, Kazuharu; and Toyoda, Shigehiro, to Sintokogio Ltd. Moulding apparatus for making gas hardened sand mould. 4,566,521, Cl. 164-160.100.

Uzuhashi, Hideo: *See—*
Iizuka, Kenichi; Uzuhashi, Hideo; Uneyama, Yoshihisa; Matuda, Michiya; and Kobayashi, Minoru, 4,566,289, Cl. 62-228.400.

v Engelenburg, Hendrik; and Heemskerk, Rugerus S., to SKF Industrial Trading & Development Company B.V. Current collector for rotating shaft. 4,566,744, Cl. 339-8.00L.

V.I.K.-Consult ApS: *See—*
Korsgaard, Vagn, 4,567,080, Cl. 428-137.000.

Vaccaro, Charles A.: *See—*
Keenan, Charles E.; Mattern, Richard E.; and Vaccaro, Charles A., 4,566,400, Cl. 116-171.000.

Vaidyanathan, Swaminathan; and Adamson, Martyn G., to United States of America, Energy. Fuel pin cladding. 4,567,017, Cl. 376-417.000.

Valmet Oy: *See—*
Koponen, Martti; and Tapio, Olli, 4,566,946, Cl. 162-359.000.
Mauranen, Pekka; and Vedenpaa , Timo, 4,566,944, Cl. 162-286.000.

Van Cleave, Eugene H.; and Break, Douglas G., to Van Mark Products Corporation. Sheet metal bending brake. 4,566,304, Cl. 72-319.000.

Van Mark Products Corporation: *See—*
Van Cleave, Eugene H.; and Break, Douglas G., 4,566,304, Cl. 72-319.000.

van Asten, Christianus M. A. J. Sawing trestle. 4,566,559, Cl. 182-224.000.

van Belzen, David; Lotterbach, Gerhard; van Woudenberg, Jan F.; and Zucker, Udo, to Robert Bosch GmbH. Apparatus and method for monitoring a pressure sensor. 4,566,309, Cl. 73-4.00R.

van Buytene, Arie J., to Esmil Hubert B.V. Apparatus for storing and ventilating cheeses. 4,566,377, Cl. 99-474.000.

Vance, Gilbert W.: *See—*
Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., 4,566,496, Cl. 138-154.000.

Van Denberg, Ervin K., to Turner Quick Lift Corporation. Spaced axle-to-beam connection for suspension of the rigid beam type. 4,566,719, Cl. 280-711.000.

Vandeplas, Paul; and Kinnaer, Lucien, to Studiecentrum voor Kernenergie, "S.C.K." . Sun heating equipment. 4,566,430, Cl. 126-433.000.

van de Plassche, Rudy J.; and Sijbers, Peter J. M., to U.S. Philips Corporation. Current stabilizer with starting circuit. 4,567,426, Cl. 323-315.000.

van de Polder, Leendert J., to U.S. Philips Corporation. Television circuit arrangement for determining in a video signal frame periods comprising two field periods. 4,567,520, Cl. 358-139.000.

Van der Loon, Dwain; and Curths, Gary, to Aloft Manufacturing Company. Chatterless shifter. 4,566,349, Cl. 74-475.000.

van der Meer, Roelof: *See—*
Liu, Nan-I; and van der Meer, Roelof, 4,566,990, Cl. 252-503.000.

van der Schoot, Peter W. C., to Goudsche Machinefabriek B.V. Cover construction for a steam peeling apparatus. 4,566,375, Cl. 99-348.000.

van de Ven, Everhardus P. G. T.; and Towner, Janet M., to Signetics Corporation. Formation of electromigration resistant aluminum alloy conductors. 4,566,177, Cl. 29-590.000.

van Dongeren, Jan P., to Wavin B. V. Sealing body for a pipe connection. 4,566,704, Cl. 277-207.00A.

Van Dort, Mark A.: *See—*
Gatlin, Janice E.; Van Dort, Mark A.; Wilson, Charles A.; and Fung, Alexander P., 4,567,274, Cl. 546-345.000.

Van Gilder, Ron L.; and Lee, Do I., to Dow Chemical Company, The. High solids latexes for paper coatings. 4,567,099, Cl. 428-327.000.

van Gorkum, Aart A., to U.S. Philips Corporation. Cathode ray tube with spherical aberration correction means. 4,567,399, Cl. 313-449.000.

van Halteren, Aart Z., to Microtel B.V. Electret transducer and a method for manufacturing an assembly of backplate, electret foil and diaphragm plate. 4,567,382, Cl. 307-400.000.

VanHorne, Arthur C., to Tektronix, Inc. Separator sheets for collation with a stack of transparencies. 4,567,081, Cl. 428-138.000.

van Lier, Johannes C.: *See—*
Groen, Robertus W. C.; de Jonge, Cornelis A. M.; Schwartz, Lawrence M.; and van Lier, Johannes C., 4,567,534, Cl. 358-342.000.

VanRheenen, Verlan H., to Upjohn Company, The. 16-Methylene-17α-hydroxy-progesterones. 4,567,001, Cl. 260-397.300.

Van Roy, Georges: *See—*
Libouton, Jean-Claude; Waterlot, Lucien; and Van Roy, Georges, 4,566,920, Cl. 149-21.000.

Vansteelant, Marc G.: *See—*
Decoene, Frans J. G. C.; and Vansteelant, Marc G., 4,566,379, Cl. 100-89.000.

Van Tran, Hiep, to Mostek Corporation. CMOS Differential amplifier. 4,567,389, Cl. 307-530.000.

van Woudenberg, Jan F.: *See—*
van Belzen, David; Lotterbach, Gerhard; van Woudenberg, Jan F.; and Zucker, Udo, 4,566,309, Cl. 73-4.00R.

Varco, Joseph J.; and Williams, Carl E., to Clairol Incorporated. Stabilized hair spray composition and process. 4,567,040, Cl. 424-70.000.

Varian Associates, Inc.: *See—*
Landfors, Arthur A., 4,566,861, Cl. 417-54.000.
Wells, Gregory J.; and Simon, Richard K., 4,567,368, Cl. 250-379.000.

Varshney, Ramesh C., to Fairchild Camera & Instrument Corporation. Redundancy roll call technique. 4,567,580, Cl. 365-200.000.

Vasilieva, Olga V.: *See—*
Vinogradov, Georgy V.; Deinega, Jury F.; Yanovsky, Jury G.; Vasilieva, Olga V.; Konstantinov, Alexandr A.; and Chernysh, Mikhail M., 4,566,324, Cl. 73-60.000.

Vasipari Kutato es Fejleszto Vallalat: *See—*
Kovacs, Sandor, 4,566,341, Cl. 73-862.650.

Vaubel, Gert, to Benteler-Werke AG Werk Neuhaus. Adjustable sliding mold for multiple-strand casting devices. 4,566,523, Cl. 164-420.000.

VDO Adolf Schindling AG: *See—*
Lindig, Christian, 4,567,434, Cl. 324-160.000.

Rau, Karl; Kalk, Heinz; and Metzger, Gerhard, 4,566,322, Cl. 73-295.000.

VEB Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
Bottcher, Rolf; and Lindner, Hans-Jurgen, 4,566,681, Cl. 270-58.000.
Tappert, Hans-Jurgen; Naumann, Johannes; Forster, Karl-Heinz; Doliner, Herbert; Pieper, Fritz; Frenzel, Werner; and Schanze, Klaus, 4,566,385, Cl. 101-183.000.

Vedenpaa , Timo: *See—*
Mauranen, Pekka; and Vedenpaa , Timo, 4,566,944, Cl. 162-286.000.

Velic, Milan: *See—*
Lehner, August; Velic, Milan; Kopke, Helmut; Balz, Werner; Lenz, Werner; Baur, Reinhold; and Melzer, Milena, 4,567,109, Cl. 428-425.900.

Vensko, George; Carlin, Lawrence; Potter, John; and Smith, Allen R., to International Telephone and Telegraph Corporation. Data processing apparatus and method for use in speech recognition. 4,567,606, Cl. 381-43.000.

Venture Technology Limited: *See—*
Gilmour, Alexander, 4,567,121, Cl. 429-181.000.

Vepa Aktiengesellschaft: *See—*
Fleissner, Gerold, 4,566,378, Cl. 100-26.000.

Vernay Laboratories, Inc.: *See—*
Edwards, Floyd V.; and Boehmer, Dennis A., 4,566,493, Cl. 137-846.000.

Vernet, Pierre: *See—*
Diaz, Henri; Jorgensen, Pierre; and Vernet, Pierre, 4,566,961, Cl. 204-168.000.

Vesely, Gottfried, to Maier & Co. Set of parts for building small machine tools. 4,566,169. Cl. 29-560.000.

Via, Giorgio G.: *See—*
Fredericks, Edward C.; Greenhaus, Herbert L.; Nanda, Madan M.; and Via, Giorgio G., 4,567,132, Cl. 430-312.000.

Vibrachoc: *See—*
Le Pierres, Gildas, 4,566,677, Cl. 267-140.100.

Vicic, John C.: *See—*
Oberster, Arthur E.; and Vicic, John C., 4,567,211, Cl. 521-98.000.

Vickers, Kenny B. Western game of skill and risk. 4,566,697, Cl. 273-241.000.

Vickers Plc: *See—*
Watkiss, Philip J., 4,567,131, Cl. 430-309.000.

Victor Company of Japan, Ltd.: *See—*
Kinjo, Hisao, 4,567,535, Cl. 360-87.000.
Tsuchiya, Eiichi, 4,567,536, Cl. 360-94.000.

Victory Lane Ltd.: *See—*
DeSantis, Richard W., 4,567,044, Cl. 424-94.000.

Videojet Systems International, Inc.: *See—*
Bhatia, Yog R.; and Stallworth, Herman, 4,567,213, Cl. 523-160.000.

Villa, Ferruccio; and Castelli, Fabio, to FMC Corporation. Telecontrol system for cranes. 4,566,599, Cl. 212-160.000.

Vining, George E.: *See—*
Raymond, Theodore E.; Huggins, Thomas B.; and Vining, George E., 4,566,835, Cl. 414-53.000.

Vinogradov, Georgy V.; Deinega, Jury F.; Yanovsky, Jury G.; Vasilieva, Olga V.; Konstantinov, Alexandr A.; and Chernysh, Mikhail M. Method and device for determination of rheological characteristics of polymer and disperse systems. 4,566,324, Cl. 73-60.000.

Vitale, Ralph A. Tape square. 4,566,198, Cl. 33-138.000.

Voelker, Ferdinand: *See—*
Goldberg, David A.; Flood, William S.; Arthur, Allan A.; and Voelker, Ferdinand, 4,567,452, Cl. 332-7.000.

Voelskow, Hartmut; and Schlingmann, Merten, to Hoechst Aktiengesellschaft. Microbial polysaccharides, process for their preparation, microorganisms suitable for this and use of the polysaccharides. 4,567,140, Cl. 435-42.000.

Voest-Alpine Aktiengesellschaft: *See—*
Sulzbacher, Horst, 4,566,902, Cl. 75-26.000.

Vogelpohl, David R.: *See—*
Embree, David M.; Goldthorp, David C.; Longenecker, Howard H.; and Vogelpohl, David R., 4,567,333, Cl. 179-84.00T.

von Bogdandy, Ludwig; and Brotzmann, Karl, to Klockner CRA Technologie GmbH. Process for the production of iron. 4,566,904, Cl. 75-38.000.

von Kreuter, Alan, to Popaicle Industries, Inc. Apparatus for dispensing flowable material. 4,566,612, Cl. 222-309.000.

Vorbrueggen, Helmut: *See—*
Schwarz, Norbert; Skuballa, Werner; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; and Town, Michael H., 4,567,195, Cl. 514-419.000.

Vuillet, Jean-Pierre, to Societe Alsacienne de Construction de Material Textile. Device for temporarily uncoupling two coaxial rotating elements. 4,566,566, Cl. 192-24.000.

Vyas, Dolatrai M.; Kaneko, Takushi; and Doyle, Terrence W., to Bristol-Myers Company. Amidine process. 4,567,256, Cl. 544-58.200.

W. R. Grace & Co.: *See—*
Cogliano, Joseph A., 4,567,095, Cl. 428-314.400.
Hansson, Per E. A.; and Jachimowicz, Felek, 4,566,943, Cl. 162-168.200.
Okamoto, Yoshiyuki; and Hwang, Edward F., 4,567,298, Cl. 564-215.000.

W. S. Shamban & Company: *See—*
Traub, Henry A., 4,566,702, Cl. 277-121.000.

W. Schlafhorst & Co.: *See—*
Irmen, Wolfgang, 4,566,260, Cl. 57-22.000.

Kupper, Wilhelm, 4,566,651, Cl. 242-150.00R.

WABCO Westinghouse Steuerungstechnik GmbH & Co.: *See—*
Brausfeld, Walter; Gottling, Helmut; Moller, Rudolf; Muller, Peter; and Scharnowski, Gerhard, 4,566,196, Cl. 33-125.00R.

Wachtel, Jean-Louis, to Celluloid S.A. Hairbrush. 4,566,145, Cl. 15-201.000.

Wacker-Chemie GmbH: *See—*
Ball, Peter; Marquardt, Klaus; Selig, Manfred; and Staudinger, Gunther, 4,567,297, Cl. 564-208.000.

Wacyk, Ihor T., to RCA Corporation. Linear sense amplifier. 4,567,387, Cl. 307-530.000.

Wag-Mor Corporation: *See—*
Morgan, William C.; and Wagner, Richard A., Sr., 4,567,514, Cl. 358-100.000.

Wagner, Richard A., Sr.: *See—*
Morgan, William C.; and Wagner, Richard A., Sr., 4,567,514, Cl. 358-100.000.

Wakao, Teruyoshi: *See—*
Masaki, Syouichi; Tamura, Kimio; Wakao, Teruyoshi; Nakashima, Noriyuki; Asami, Ken; and Sakai, Kazunori, 4,566,737, Cl. 303-109.000.

Walczak, Andrzej, to Map Mikrofilm Apparatebau Dr. Poehler GmbH & Co. KG. Cross-slide guide for a microfilm reader. 4,566,739, Cl. 308-3.00R.

Waldhecker, Heinz-Dieter: *See—*
Hoffmann, Harald; Henrich, Gunter; and Waldhecker, Heinz-Dieter, 4,566,882, Cl. 55-100.000.

Waldmann, Bernd: *See—*
Hildebrand, Reinhard; and Waldmann, Bernd, 4,566,399, Cl. 116-28.00R.

Waldmann, John J. Flocculating agents and processes for making them. 4,566,986, Cl. 252-175.000.

Walinsky, Stanley W.: *See—*
Stong, Randel E.; and Walinsky, Stanley W., 4,566,978, Cl. 252-8.50C.

Walker, Robert G.: *See—*
Witwer, Keith A.; and Walker, Robert G., 4,566,180, Cl. 29-596.000.

Wall, William A.: *See—*
Smith, Hubert E.; Wall, William A.; and Burns, Morrison R., Jr., 4,567,348, Cl. 219-124.340.

Wallace, Robert M.: *See—*
Buol, Douglas A.; Mize, Dean N.; Pattschull, John W.; and Wallace, Robert M., 4,567,432, Cl. 324-158.00F.

Wallace, William E.; and Yu, Gui Y., to Koppers Company, Inc. Zirconium-manganese-iron alloys. 4,567,032, Cl. 423-644.000.

Walter, Hartmut: *See—*
Maier, Peter; Attinger, Karl; Sigel, Albert; Hansel, Gernot; Kutscher, Erwin; and Walter, Hartmut, 4,566,830, Cl. 409-182.000.

Walter, Herman D.: *See—*
Brown, Christopher K.; Kensinger, Lex D.; Klopp, Gregory S.; Long, Alden O., Jr.; Moyer, Carl L.; Over, William R.; and Walter, Herman D., 4,566,164, Cl. 29-33.00M.

Walters, William R.: *See—*
Silverman, Daniel, 4,566,484, Cl. 137-403.000.

Walton, Emory R., Jr.: *See—*
Higgins, J. Aiden; and Walton, Emory R., Jr., 4,566,184, Cl. 29-840.000.

Waniisi, Tetuya; Sato, Hiroshi; and Nanba, Isao, to Omron Tateisi Electronics Co. Power source off delay timer with liquid crystal display. 4,566,803, Cl. 368-66.000.

Ward, Wallace E.: *See—*
Bateman, Charles D.; Grove, Michael M.; Noland, Lyle J.; and Ward, Wallace E., 4,567,483, Cl. 340-970.000.

Warman International Limited: *See—*
Grzina, Anthony, 4,566,850, Cl. 415-128.000.

Warren, Sanford E. Poultry defeathering apparatus and process. 4,566,151, Cl. 17-47.000.

Watanabe, Akio: *See—*
Arioka, Hiroyuki; Nishimatsu, Masaharu; and Watanabe, Akio, 4,567,083, Cl. 428-141.000.

Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for elevator. 4,567,419, Cl. 318-798.000.

Watanabe, Hideyuki; and Ichikawa, Yoshimitu, to Taiyo Shokai Co., Ltd. Method for automatic packing of articles capable of providing plastics packing bag with reinforced handle portion. 4,566,252, Cl. 53-410.000.

Watanabe, Hiroyuki: *See—*
Matsui, Kiyohide; Kikuchi, Yoshiyuki; Hiyama, Tamejiro; Tobita, Etsuko; Kondo, Kiyoshi; Akimoto, Akira; Seita, Toru; and Watanabe, Hiroyuki, 4,567,206, Cl. 521-27.000.

Watanabe, Kenji: *See—*
Sasaki, Masahiko; Watanabe, Kenji; and Kitamura, Seiichi, 4,566,398, Cl. 114-293.000.

Watanabe, Tohru: *See—*
Yoshida, Yukimasa; and Watanabe, Tohru, 4,566,941, Cl. 156-643.000.

Watanabe, Toshiyuki: *See—*
Arakawa, Jun; and Watanabe, Toshiyuki, 4,567,135, Cl. 430-505.000.

Waterlot, Lucien: *See—*
Libouton, Jean-Claude; Waterlot, Lucien; and Van Roy, Georges, 4,566,920, Cl. 149-21.000.

Watkins, Richard K.: *See—*
Wood, Prentice J.; Oliff, James R.; and Watkins, Richard K., 4,566,626, Cl. 229-37.00R.

Watkiss, Philip J., to Vickers Plc. Lithographic printing plates. 4,567,131, Cl. 430-309.000.

Watson, Alan R.; and Overley, John P., to Electro-Voice, Incorporated. Microphone for use on location. 4,567,608, Cl. 381-122.000.

Waugh, Robert E., to D. L. Auld Company, The. Process for making a trim strip for automobile bodies. 4,566,929, Cl. 156-242.000.

Wavin B. V.: *See—*
van Dongeren, Jan P., 4,566,704, Cl. 277-207.00A.

Waxman, Burton H.; and Lin, I. Sioun, to GAF Corporation. Low molecular weight hair spray. 4,567,035, Cl. 424-47.000.

Wayland Research Inc.: *See—*
McConnell, Robert K., 4,567,610, Cl. 382-18.000.

Webasto-Werk W. Baier GmbH & Co.: *See—*
Knabe, Martin; and Anzenhofer, Wolfgang, 4,566,730, Cl. 296-221.000.

Webb, Wells A. System for producing crisp fruit chips. 4,566,376, Cl. 99-468.000.

Weber, Kurt: *See—*
Helmle, Theodor; and Weber, Kurt, 4,566,528, Cl. 165-26.000.

Weber, Michael: *See—*
Folger, Josef; Fournell, Hans-Dieter; Hein, Hans-Rudolf; Kapfhammer, Karl; Rambock, Josef; and Weber, Michael, 4,567,459, Cl. 340-58.000.

Weber, Milton N. Shoe heel spring support. 4,566,206, Cl. 36-7.800.

Weber, William E., to Radiation Equipment Company, Inc. Panoramic view bore examining apparatus. 4,566,789, Cl. 356-241.000.

Wedertz, Larry D.: *See—*
Maudal, Inge; Niemeier, Byron M.; and Wedertz, Larry D., 4,566,656, Cl. 244-3.110.

Wei, Peter H. L.; and Gregory, Francis J., to American Home Products Corporation. α-Phenyl-2-(aza)benzothiazolylthioglycolic acids and derivatives thereof. 4,567,267, Cl. 546-114.000.

Weigle, Dieter: *See—*
Heiser, Joachim; and Weigle, Dieter, 4,566,274, Cl. 60-444.000.

Weinberg, Ekkehard; and Hameister, Rolf, to Rehau Plastiks AG & Co. Blow-molded plastic body. 4,567,068, Cl. 428-31.000.

Weinberg, Marc S. Thorax protector. 4,566,458, Cl. 128-478.000.

Weinberg, Zeev A.: *See—*
Brodsky, Marc H.; and Weinberg, Zeev A., 4,566,913, Cl. 148-1.500.

Weller Innovation AB: *See—*
Sundberg, Erik, 4,566,513, Cl. 144-208.00E.

Wells, Gregory J.; and Simon, Richard K., to Varian Associates, Inc. Bipolar pulsed electron capture detectors. 4,567,368, Cl. 250-379.000.

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Western Geophysical Company of America: *See—*
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Appleman, Robert H., 4,566,406, Cl. 122-405.000.
Peterson, Steven H.; and Phillips, D. Colin, 4,567,025, Cl. 204-157.200.
Polis, Marjorie J.; and Husson, Alan L., 4,567,560, Cl. 364-184.000.
Radford, Kenneth C.; and Carlson, William G., 4,566,989, Cl. 252-478.000.
Raymond, Theodore E.; Huggins, Thomas B.; and Vining, George E., 4,566,835, Cl. 414-53.000.

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Mason, Anthony, 4,566,295, Cl. 68-12.00R.
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Hofmeister, Helmut; Laurent, Henry; Annen, Klaus; and Wiechert, Rudolf, 4,567,002, Cl. 260-397.400.

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Wilson, Basil L. R. Router attachment. 4,566,512, Cl. 144-134.00D.

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Henry, Arnold W.; and Moser, Rabin, 4,567,349, Cl. 219-216.000.
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Yabe, Hideo; and Koike, Ichiro, to Jidosha Kiki Co., Ltd. Method and device for controlling power steering apparatus. 4,567,413, Cl. 318-489.000.

Yabe, Yuhiko: *See*—
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Yamada, Shigeru, to Casio Computer Co., Ltd. Optical reading apparatus. 4,567,360, Cl. 235-455.000.

Yamada, Takeo; Yamamoto, Tomohisa; Ando, Seigo; and Kawase, Yoshihiro, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for continuously measuring distance utilizing eddy current and having temperature difference influence elimination. 4,567,435, Cl. 324-207.000.

Yamaguchi, Hiroshi: *See*—
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Yamaguchi, Kazufumi; and Murata, Takahiko, to Matsushita Electric Industrial Co., Ltd. Image sensor. 4,567,529, Cl. 358-294.000.

Yamaguchi, Kazuki: *See*—
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Yamaguchi, Tatuya, to Olympus Optical Co., Ltd. Endoscope. 4,566,437, Cl. 128-4.000.

Yamahata, Takashi: *See*—
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Yamaji, Hiroshi: *See*—
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Yamamoto, Minato; and Takahashi, Shunji, to Mikuni Kogyo Kabushiki Kaisha. Electronically controlled internal combustion engine provided with an accelerator position sensor. 4,566,418, Cl. 123-479.000.

Yamamoto, Saburo: *See*—
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Yamamuro, Sigeaki: *See*—
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Yamaoka, Nobutatsu; and Sasazawa, Kazuo, to Taiyo Yuden Co., Ltd. Electronconductive paste to be baked on ceramic bodies to provide capacitors, varistors or the like. 4,567,059, Cl. 427-79.000.

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Yamazaki, Chikayasu; Torikai, Jun; and Kumo, Ichiro, to Toray Industries, Inc. Process and apparatus for measuring thermal shrinkage properties of yarn. 4,566,319, Cl. 73-160.000.

Yamazaki, Hisashi: *See*—
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Yamazaki, Yoshio; Takimoto, Masahiro; and Ohta, Satoshi, to Toyoda Gosei Co. Ltd. Steering wheel made of soft resin. 4,567,217, Cl. 524-296.000.

Yanagisawa, Hiroshi, to Tachikawa Spring Co., Ltd. Seat suspension. 4,566,667, Cl. 248-561.000.

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Yashiro, Yoshinobu; and Ito, Takeshi. Two-cycle engine. 4,566,409, Cl. 123-65.0PE.

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Yasuda, Yasushi; Enomoto, Hiromu; Shimauchi, Yoshiki; and Tahara, Akinori, to Fujitsu Limited. Schmitt trigger circuit. 4,567,380, Cl. 307-290.000.

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Yong, Raymond N.; and Sethi, Amar J., to Suncor, Inc. Hydrolyzed yam starch flocculants. 4,566,909, Cl. 127-33.000.

Yoon, Hyun-Nam, to Celanese Corporation. Process for forming thermally stable thermotropic liquid crystalline polyesters of predetermined chain length utilizing aromatic hydroxyl monomer and/or aromatic amine monomer. 4,567,247, Cl. 528-190.000.

Yoshida Kogyo K.K.: *See*—
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Yoshida, Ryuichi; Suzuki, Shigeru; Koishikawa, Hirotoshi; Miyamoto, Yoshimi; and Kawai, Kazuhide, to Tokai Electric Wire Company Limited. Distributor cap with ignition cable. 4,566,751, Cl. 339-218.00S.

Yoshida, Seiichiro: *See*—
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Yoshida, Yukimasa; and Watanabe, Tohru, to Kabushiki Kaisha Toshiba. Reactive ion etching method. 4,566,941, Cl. 156-643.000.

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Yoshikawa, Kazuo; Yamaguchi, Hisashi; and Asano, Toru, to Fujitsu Limited. Touch sensing device. 4,567,470, Cl. 340-365.00C.

Yoshikawa, Keiji: *See*—
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Yoshioka, Takatoshi; Kirihara, Seishin; Shiga, Masao; Iijima, Katsumi; Hisano, Katsukuni; and Kaneko, Ryoichi, to Hitachi, Ltd. Steam turbine rotor shaft. 4,566,810, Cl. 384-280.000.

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Young, Steven D., to Merck & Co., Inc. Process for preparation of certain tetrahydrofuro[3,4-b]pyridines. 4,567,268, Cl. 546-116.000.

Young, William R: *See*—
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Yu, Gui Y.: *See*—
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Yuan, Herbert H.: *See*—
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Yuasa, Kazuhiro; and Komada, Kenya, to Ricoh Company, Ltd. Record head cleaning device for image recording apparatus. 4,567,495, Cl. 346-153.100.

Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, to Tokuyama Soda Kabushiki Kaisha. Amorphous, spherical inorganic compound and process for preparation thereof. 4,567,030, Cl. 423-326.000.

Yuda, Lawrence F. Robotic gripper. 4,566,727, Cl. 294-88.000.

Yugengaisha Kyodogiken: *See*—
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Zacchio, Joseph M., to Transamerica Delaval Inc. Microwave tank-contents level measuring assembly with lens-obturated wall-opening. 4,566,321, Cl. 73-290.00R.

Zahn, Wolfgang: *See*—
Fursich, Manfred; Treiber, Helmut; Fergg, Berthold; Findeis, Gunter; and Zahn, Wolfgang, 4,566,786, Cl. 355-77.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; and Kondo, Shinichi, 4,567,165, Cl. 514-36.000.

Zandel, Adam; and Zeitlin, Alexander, to A. Zeitlin & Associates. Pressure seal for ultra-high pressure apparatus. 4,566,372, Cl. 92-168.000.

Zanders Feinpaiere AG: *See*—
Becker, Franz-Josef; Hubner, Erich; and Lammerich, Walter, 4,567,098, Cl. 428-327.000.

Zbinden, Terry B., to Sperry Corporation. Detection of catastrophic failure of dielectric, improper connection, and temperature of a printed circuit assembly via one wire. 4,567,428, Cl. 324-73.0PC.

Zebisch, Manfred W., to International Standard Electric Corporation. Signal generator. 4,567,376, Cl. 307-106.000.

Zehetbauer, Rudolf: *See*—
Hollaus, Reinhard; Zehetbauer, Rudolf; and Bednorz, Klaus, 4,567,316, Cl. 136-246.000.

Zeitler, Peter: *See*—
Smuda, Siegfried; Horner, Peter; Kogel, Karl; and Zeitler, Peter, 4,566,673, Cl. 254-84.000.

Zeitlin, Alexander: *See*—
Zandel, Adam; and Zeitlin, Alexander, 4,566,372, Cl. 92-168.000.

Zeller, John C.; and Wells, Peter M., Jr., to All States Plastic Mfg. Co., Inc. Anchor base mounting block. 4,567,546, Cl. 361-420.000.

Zelt, Rainer: *See*—
Gey, Mathias; Grote, Jurgen; Pittel, Horst; Samol, Gerd W.; and Zelt, Rainer, 4,567,085, Cl. 428-163.000.

Zenith Electronics Corporation: *See*—
Srivastava, Gopal K.; and Lee, Ronald B., 4,567,447, Cl. 331-1.00A.

Zetterberg, Gunnar; and Angquist, Lennart, to ASEA Aktiebolag. Static convertor means. 4,567,554, Cl. 363-138.000.

Zielinski, Erich: *See*—
Bierwirth, Adolf P.; and Zielinski, Erich, 4,566,369, Cl. 89-45.000.

Zimmer, Inc.: *See*—
Lewis, Edward L.; Parr, Jack E.; Fox, Mark A.; and Fuson, Robert L., 4,566,138, Cl. 623-22.000.

Zimmer, William J.: *See*—
DiGiovanniantonio, Perry R.; and Zimmer, William J., 4,566,658, Cl. 244-110.00R.

Zimmerman, Garyx; and Dickenson, Donald E. Sweetener composition. 4,567,054, Cl. 426-548.000.

Zitting, Gordon T., to Microdot Incorporated. Seal assembly. 4,566,703, Cl. 277-165.000.

Zucker, Udo: *See*—
van Belzen, David; Lotterbach, Gerhard; van Woudenberg, Jan F.; and Zucker, Udo, 4,566,309, Cl. 73-4.00R.

Zuend, Marcel, to Rieter Machine Works. Method of removing flocks from fiber bales. 4,566,152, Cl. 19-81.000.

Zurheide, Manfred: *See*—
Gossler, Werner; Strube, Anneliese; and Zurheide, Manfred, 4,566,173, Cl. 29-571.000.

Zwick, Werner: *See*—
Dressel, Manfred; Eberle, Heinrich; Ripperger, Willi; Ruehenbeck, Wolfgang; and Zwick, Werner, 4,567,294, Cl. 562-555.000.

Zwicky, Paul, to Willi Studer AG. Low-distortion audio amplifier circuit arrangement. 4,567,443, Cl. 330-149.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF JANUARY, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bennett, Richard N., to National Instrument Company, Inc. High-speed filling machine. Re. 32,074, Cl. 141-169.000.

Brown, David A.: *See*—
Harrison, Joel N.; Daniels, Donald V.; and Brown, David A., Re. 32,075, Cl. 360-77.000.

Chiddix, Max E., to GAF Corporation. Process of producing a distilled butanediol product of high quality in high yield. Re. 32,072, Cl. 568-861.000.

Daniels, Donald V.: *See*—
Harrison, Joel N.; Daniels, Donald V.; and Brown, David A., Re. 32,075, Cl. 360-77.000.

GAF Corporation: *See*—
Chiddix, Max E., Re. 32,072, Cl. 568-861.000.

Harrison, Joel N.; Daniels, Donald V.; and Brown, David A., to Quantum Corporation. Data transducer position control system for rotating disk data storage equipment. Re. 32,075, Cl. 360-77.000.

Minnesota Mining and Manufacturing Company: *See*—
Randklev, Ronald M., Re. 32,073, Cl. 523-117.000.

National Instrument Company, Inc.: *See*—
Bennett, Richard N., Re. 32,074, Cl. 141-169.000.

Quantum Corporation: *See*—
Harrison, Joel N.; Daniels, Donald V.; and Brown, David A., Re. 32,075, Cl. 360-77.000.

Randklev, Ronald M., to Minnesota Mining and Manufacturing Company. Dental filling composition utilizing zinc-containing inorganic filler. Re. 32,073, Cl. 523-117.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Albrecht, Paul N.: *See*—
Schuller, James T.; Albrecht, Paul N.; and Canizares, Hugo M., B1 4,231,105, Cl. 364-900.000.

B. F. Goodrich Company, The: *See*—
Oetzel, John T., B1 4,251,648, Cl. 525-187.000.

Baker International Corporation: *See*—
McStravick, David M.; and Roberts, William M., B1 4,270,606, Cl. 166-181.000.

Berecz, Imre, to Kaynar Mfg. Co., Inc. Systematized apparatus for driving fasteners. B1 3,750,257, 1-28-86, Cl. 29-813.000.

Canizares, Hugo M.: *See*—
Schuller, James T.; Albrecht, Paul N.; and Canizares, Hugo M., B1 4,231,105, Cl. 364-900.000.

Kaynar Mfg. Co., Inc.: *See*—
Berecz, Imre, B1 3,750,257, Cl. 29-813.000.

McStravick, David M.; and Roberts, William M., to Baker International Corporation. Apparatus for selective disengagement of a fluid transmission conduit and for control of fluid transmission from a well zone. B1 4,270,606, 1-28-86, Cl. 166-181.000.

Oetzel, John T., to B. F. Goodrich Company, The. Peroxide cured epihalohydrin polymers. B1 4,251,648, 1-28-86, Cl. 525-187.000.

Roberts, William M.: *See*—
McStravick, David M.; and Roberts, William M., B1 4,270,606, Cl. 166-181.000.

Schuller, James T.; Albrecht, Paul N.; and Canizares, Hugo M., to UMC Industries, Inc. Vendor control circuit. B1 4,231,105, 1-28-86, Cl. 364-900.000.

UMC Industries, Inc.: *See*—
Schuller, James T.; Albrecht, Paul N.; and Canizares, Hugo M., B1 4,231,105, Cl. 364-900.000.

LIST OF DESIGN PATENTEES

Ace Termite & Pest Control: *See*—
Ford, Harold A.; and Young, Cecil G., 282,390, Cl. D22-18.000.

Aderman, Wayne L., to International Business Machines Corporation. Data processor. 282,366, 1-28-86, Cl. D14-102.000.

Allen, James H., to 'totes', incorporated. Expandable bag. 282,315, 1-28-86, Cl. D3-71.000.

Amco Corporation: *See*—
Ettlinger, Ralph, 282,394, Cl. D23-37.000.

American Commercial, Incorporated: *See*—
Blake, Alfred, 282,333, Cl. D7-18.000.
Laslo, Larry R., 282,332, Cl. D7-17.000.
McBride, James, 282,330, Cl. D7-9.000.

Anderson, Charles. Extendable tripod unit. 282,320, 1-28-86, Cl. D6-300.000.

Arai, Shu: *See*—
Takahashi, Hiroshi; Arai, Shu; Kishimoto, Yasuhiro; and Tomimatsu, Kiyoshi, 282,364, Cl. D14-64.000.

Argandona, Augusto, to Quaker Oats Company, The. Toy zoo. 282,385, 1-28-86, Cl. D21-115.000.

Aspen Laboratories, Inc.: *See*—
Shackelford, John T., 282,403, Cl. D24-54.000.

AT&T Information Systems Inc.: *See*—
Campbell, John S.; Engstrom, John G.; and McGarvey, John N., 282,358, Cl. D14-52.000.

Balance House, Ltd.: *See*—
Curran, William W., 282,377, Cl. D19-26.000.

Bean Station Furniture Factory, The: *See*—
Christa, Carol; and Waldron, Patrick, 282,321, Cl. D6-381.000.

Bell, Ted A., to Pretty Products, Inc. Merchandise display rack. 282,326, 1-28-86, Cl. D6-566.000.

Bender, Annie L.: *See*—
Bender, Robert L.; and Bender, Annie L., 282,382, Cl. D21-34.000.

Bender, Robert L.; and Bender, Annie L. Game board. 282,382, 1-28-86, Cl. D21-34.000.

Black & Decker Inc.: *See*—
Pioch, Peter-Paul, 282,346, Cl. D8-66.000.

Blaimschein, Josef, to Optyl Eyewear Fashion International Corporation. Sunglasses. 282,372, 1-28-86, Cl. D16-102.000.

Blake, Alfred, to American Commercial, Incorporated. Sugar bowl. 282,333, 1-28-86, Cl. D7-18.000.

Blue Feather Products, Inc.: *See*—
King, Feather W., 282,380, Cl. D19-75.000.

Brescia, Anthony J.; and Harris, Shurley, to Syroco, Inc. Wall mounted shelf unit. 282,328, 1-28-86, Cl. D6-570.000.

British Gas Corporation: *See*—
Thomas, Richard C.; and Daniels, David J., 282,350, Cl. D10-47.000.

Brown, Michael; Read, Clifford D.; and Ellis, Warren K., to Northern Telecom Limited. Telephone set base. 282,361, 1-28-86, Cl. D14-60.000.

Brown, Michael; Read, Clifford D.; and Ellis, Warren K., to Northern Telecom Limited. Housing for a telephone handset. 282,362, 1-28-86, Cl. D14-63.000.

Bruffey, Robert D., Jr.: *See*—
Saunders, William J.; Bruffey, Robert D., Jr.; Pounder, Edwin; Morrison, Richard E.; and Cojulun, Carlos, 282,342, Cl. D7-398.000.

Button Fronts (London) Limited: *See*—
Valori, Peter, 282,309, Cl. D2-273.000.
Valori, Peter, 282,310, Cl. D2-273.000.

Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W., 282,359, Cl. D14-53.000.

Cable Electronic Products, Inc.: *See*—
Schwartz, Frederic W., 282,356, Cl. D14-4.000.

Campbell, John S.; Engstrom, John G.; and McGarvey, John N., to AT&T Information Systems Inc. Telecommunications system console or similar article. 282,358, 1-28-86, Cl. D14-52.000.

Canon Kabushiki Kaisha: *See*—
Kikuchi, Nobuo; and Odagawa, Kazuyoshi, 282,376, Cl. D18-7.000.
Maekawa, Tomohiro; and Nibley, Richard, 282,374, Cl. D18-1.000.
Takahashi, Masaki; and Murakami, Osamu, 282,373, Cl. D18-1.000.

CBS Inc.: *See*—
Dyar, Jane C., 282,381, Cl. D21-20.000.

Chen, Ming-Ter. Plate or the like. 282,334, 1-28-86, Cl. D7-36.000.

Christa, Carol; and Waldron, Patrick, to Bean Station Furniture Factory, The. Seat. 282,321, 1-28-86, Cl. D6-381.000.

Coates, Eric: *See*—
Hoefer, Peter S.; and Coates, Eric, 282,352, Cl. D10-81.000.

Coca-Cola Company, The: *See*—
Saunders, William J.; Bruffey, Robert D., Jr.; Pounder, Edwin; Morrison, Richard E.; and Cojulun, Carlos, 282,342, Cl. D7-398.000.

Cojulun, Carlos: *See*—
Saunders, William J.; Bruffey, Robert D., Jr.; Pounder, Edwin; Morrison, Richard E.; and Cojulun, Carlos, 282,342, Cl. D7-398.000.

Collins, Harry F., to Service Ideas, Inc. Condiment holder and organizer. 282,336, 1-28-86, Cl. D7-58.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, 282,383, Cl. D21-63.000.

Curran, William W., to Balance House, Ltd. Folder with clock and memo pad or the like. 282,377, 1-28-86, Cl. D19-26.000.

Daniels, David J.: *See*—
Thomas, Richard C.; and Daniels, David J., 282,350, Cl. D10-47.000.

Darr, Richard C.: *See*—
Larson, Craig A.; and Darr, Richard C., 282,349, Cl. D9-395.000.

Dart Industries Inc.: *See*—
Picozza, Augusto A., 282,337, Cl. D7-70.000.

Dealey, Michael J.; and Fowell, Ian G. G., to Sport Engineering Limited. Treadmill. 282,386, 1-28-86, Cl. D21-192.000.

de Villiers, Simon, to Omark Industries. Hole saw. 282,369, 1-28-86, Cl. D15-139.000.

Dick, H. Wayne, to PPG Industries, Inc. Yarn bobbin. 282,312, 1-28-86, Cl. D3-24.000.

Dodd, Malcolm J.; and Juhas, Joseph A., to PTC Aerospace Inc. Food service tray. 282,335, 1-28-86, Cl. D7-38.000.

Dolson, Richard G., to Veeder Industries Inc. Portable voting booth. 282,375, 1-28-86, Cl. D18-6.000.

Durand, Philippe J. Tumbler or similar article. 282,329, 1-28-86, Cl. D7-8.000.

Dvorak, Larry H. Meat grinding table. 282,341, 1-28-86, Cl. D7-372.000.

Dyar, Jane C., to CBS Inc. Game for a matching game. 282,381, 1-28-86, Cl. D21-20.000.

Ellis, Kenneth A. Bookstand. 282,324, 1-28-86, Cl. D6-475.000.

Ellis, Warren K.: *See*—
Brown, Michael; Read, Clifford D.; and Ellis, Warren K., 282,361, Cl. D14-60.000.
Brown, Michael; Read, Clifford D.; and Ellis, Warren K., 282,362, Cl. D14-63.000.

Engstrom, John G.: *See*—
Campbell, John S.; Engstrom, John G.; and McGarvey, John N., 282,358, Cl. D14-52.000.

Ettlinger, Ralph, to Amco Corporation. Spray head. 282,394, 1-28-86, Cl. D23-37.000.

F.Lli Guzzini S.p.A.: *See*—
Pozzi, Ambrogio, 282,331, Cl. D7-14.000.

FARMIGEA S.p.A.: *See*—
Federighi, Alberto, 282,348, Cl. D9-341.000.

Federighi, Alberto, to FARMIGEA S.p.A. Multi-unit package of containers for pharmaceutical products. 282,348, 1-28-86, Cl. D9-341.000.

Fehrs, Hellmuth. Pneumatic fastener driving tool. 282,345, 1-28-86, Cl. D8-49.000.

Fetty, Lowell L. Pan lid holder. 282,323, 1-28-86, Cl. D6-462.000.

Ford, Harold A.; and Young, Cecil G., to Ace Termite & Pest Control. Rodent control device. 282,390, 1-28-86, Cl. D22-18.000.

Fowell, Ian G. G.: *See*—
Dealey, Michael J.; and Fowell, Ian G. G., 282,386, Cl. D21-192.000.

Gell, Peter L., to Plastex Technology (Curacao) N.V. Microfilm cartridge or similar article. 282,357, 1-28-86, Cl. D14-11.000.

Guy, Thomas D.; Rawson, Paul O.; and Yagami, Richard H., to United States Surgical Corporation. Surgical skin stapler. 282,400, 1-28-86, Cl. D24-26.000.

Hamilton Industries: *See*—
Yindra, Leonard J., 282,398, Cl. D24-7.000.

Harris, Shurley: *See*—
Brescia, Anthony J.; and Harris, Shurley, 282,328, Cl. D6-570.000.

Hartzell, James R. Wood plaque. 282,355, 1-28-86, Cl. D11-132.000.

Hasegawa, Masayuki: *See*—
Ohyabu, Toshiharu; and Hasegawa, Masayuki, 282,378, Cl. D19-43.000.

Hayashida, Nobuhiro, to Matsushita Graphic Communication Systems, Inc. Facsimile transceiver. 282,365, 1-28-86, Cl. D14-94.000.

Hengesbach, Robert W. Spray gun. 282,392, 1-28-86, Cl. D23-17.000.

Herzfeld, Ronald. Brush holder. 282,316, 1-28-86, Cl. D4-104.000.

Herzfeld, Ronald. Brush and holder. 282,317, 1-28-86, Cl. D4-104.000.

Herzfeld, Ronald. Brush. 282,318, 1-28-86, Cl. D4-104.000.

Herzfeld, Ronald. Brush assembly. 282,319, 1-28-86, Cl. D4-115.000.

Hill, Clarence E., to Sportsman's Enterprises. Signalling device for fishing. 282,389, 1-28-86, Cl. D22-13.000.

Hoefer, Peter S.; and Coates, Eric, to Hoefer Scientific Instruments. Horizontal gel slab electrophoresis unit. 282,352, 1-28-86, Cl. D10-81.000.

Hoefer Scientific Instruments: *See*—
Hoefer, Peter S.; and Coates, Eric, 282,352, Cl. D10-81.000.

Hoese, Fred O. Holder for cassette tapes. 282,314, 1-28-86, Cl. D3-35.000.

Imanishi Kinzoku Kogyo Kabushiki Kaisha (Imarflex Mfg. Co., Ltd.): *See*—
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, 282,395, Cl. D23-121.000.

Innovative Concepts, Inc.: *See*—
Long, Jerry M.; and Womack, James A., 282,313, Cl. D3-35.000.

International Business Machines Corporation: *See*—
Aderman, Wayne L., 282,366, Cl. D14-102.000.
Kapper, Henry; Kraus, Walter F.; and Wittkamp, Joel M., 282,363, Cl. D14-63.000.

Ishii, Yoshiyasu: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, 282,383, Cl. D21-63.000.

ITT Industries, Inc.: *See*—
Johansson, Gunnar, 282,371, Cl. D15-147.000.
Ogren, Lars, 282,370, Cl. D15-147.000.

Johansson, Gunnar, to ITT Industries, Inc. Combined submersible suspension mixer and rack. 282,371, 1-28-86, Cl. D15-147.000.

Johnson, Wendell D., to Qualitrol Corporation. Combined pressure relief valve and clamp. 282,393, 1-28-86, Cl. D23-20.000.

Juhas, Joseph A.: *See*—
Dodd, Malcolm J.; and Juhas, Joseph A., 282,335, Cl. D7-38.000.

Kain, John W. Combined eye shade and ear protector. 282,308, 1-28-86, Cl. D2-247.000.

Kapper, Henry; Kraus, Walter F.; and Wittkamp, Joel M., to International Business Machines Corporation. Telephone handset. 282,363, 1-28-86, Cl. D14-63.000.

Kassai Kabushiki Kaisha: *See*—
Kassai, Kenzou, 282,384, Cl. D21-78.000.

Kassai, Kenzou, to Kassai Kabushiki Kaisha. Riding toy. 282,384, 1-28-86, Cl. D21-78.000.

Kikuchi, Nobuo; and Odagawa, Kazuyoshi, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 282,376, 1-28-86, Cl. D18-7.000.

King, Feather W., to Blue Feather Products, Inc. Holder for retaining small metal objects magnetically. 282,380, 1-28-86, Cl. D19-75.000.

Kishimoto, Yasuhiro: *See*—
Takahashi, Hiroshi; Arai, Shu; Kishimoto, Yasuhiro; and Tomimatsu, Kiyoshi, 282,364, Cl. D14-64.000.

Kitada, Fumihiko: *See*—
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, 282,395, Cl. D23-121.000.

Knoll International, Inc.: *See*—
Meier, Richard, 282,325, Cl. D6-495.000.

Korthoff, Herbert W.; and Tompkins, Thomas, to United States Surgical Corporation. Disposable cartridge for a linear surgical stapler. 282,401, 1-28-86, Cl. D24-26.000.

Kraus, Walter F.: *See*—
Kapper, Henry; Kraus, Walter F.; and Wittkamp, Joel M., 282,363, Cl. D14-63.000.

Lam, Yanta, to Meyer Manufacturing Company Ltd. Base for a cooking pot or the like. 282,340, 1-28-86, Cl. D7-387.000.

Lambiase, Fredrick. Extendible pedestal table. 282,322, 1-28-86, Cl. D6-430.000.

Larson, Craig A.; and Darr, Richard C., to Plastipak Packaging, Inc. Plastic bottle. 282,349, 1-28-86, Cl. D9-395.000.

Laslo, Larry R., to American Commercial, Incorporated. Tureen. 282,332, 1-28-86, Cl. D7-17.000.

Lloyd's Carpet & Furniture Cleaning, Inc.: *See*—
Weaver, Lloyd J., 282,396, Cl. D23-162.000.

Long, Jerry M.; and Womack, James A., to Innovative Concepts, Inc. Diskette storage container. 282,313, 1-28-86, Cl. D3-35.000.

Maekawa, Tomohiro; and Nibley, Richard, to Canon Kabushiki Kaisha. Electronic typewriter. 282,374, 1-28-86, Cl. D18-1.000.

Makihara, Kendo: *See*—
Yamagata, Hiroshi; and Makihara, Kendo, 282,360, Cl. D14-59.000.

Martin, Ed; and Truette, Dan, to Pelton & Crane Company. X-ray viewer. 282,397, 1-28-86, Cl. D24-2.000.

Matsuda, Hiroaki: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, 282,383, Cl. D21-63.000.

Matsushita Graphic Communication Systems, Inc.: *See*—
Hayashida, Nobuhiro, 282,365, Cl. D14-94.000.

McBride, James, to American Commercial Incorporated. Cup. 282,330, 1-28-86, Cl. D7-9.000.

McGarvey, John N.: *See*—
Campbell, John S.; Engstrom, John G.; and McGarvey, John N., 282,358, Cl. D14-52.000.

Meier, Richard, to Knoll International, Inc. Table base. 282,325, 1-28-86, Cl. D6-495.000.
Merrels, Frederic P. Lapel pin. 282,354, 1-28-86, Cl. D11-96.000.
Meyer Manufacturing Company Ltd.: *See—*
Lam, Yanta, 282,340, Cl. D7-387.000.
Miami Products & Chemicals Co.: *See—*
Stafford, David A., 282,399, Cl. D24-17.000.
Moll, Lester W.: *See—*
Schmidt, Friedrich W.; and Moll, Lester W., 282,402, Cl. D24-29.000.
Morrison, Richard E.: *See—*
Saunders, William J.; Bruffey, Robert D., Jr.; Pounder, Edwin; Morrison, Richard E.; and Cojulun, Carlos, 282,342, Cl. D7-398.000.
Murakami, Osamu: *See—*
Takahashi, Masaki; and Murakami, Osamu, 282,373, Cl. D18-1.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, to Combi Co., Ltd. Musical toy. 282,383, 1-28-86, Cl. D21-63.000.
Neff, Paul J. Storage unit. 282,327, 1-28-86, Cl. D6-570.000.
Nibley, Richard: *See—*
Maekawa, Tomohiro; and Nibley, Richard, 282,374, Cl. D18-1.000.
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, to Imanishi Kinzoku Kogyo Kabushiki Kaisha (Imarflex Mfg. Co., Ltd.). Stove. 282,395, 1-28-86, Cl. D23-121.000.
Nord, Russell H.; Williams, Garry A.; and Rose, Frederick A., to Norland Corporation. Digital oscilloscope. 282,351, 1-28-86, Cl. D10-76.000.
Norland Corporation: *See—*
Nord, Russell H.; Williams, Garry A.; and Rose, Frederick A., 282,351, Cl. D10-76.000.
Northern Telecom Limited: *See—*
Brown, Michael; Read, Clifford D.; and Ellis, Warren K., 282,361, Cl. D14-60.000.
Brown, Michael; Read, Clifford D.; and Ellis, Warren K., 282,362, Cl. D14-63.000.
Odagawa, Kazuyoshi: *See—*
Kikuchi, Nobuo; and Odagawa, Kazuyoshi, 282,376, Cl. D18-7.000.
Ogren, Lars, to ITT Industries, Inc. Combined submersible suspension mixer and rack. 282,370, 1-28-86, Cl. D15-147.000.
Ohyabu, Toshiharu; and Hasegawa, Masayuki, to Shachihata Industry Co., Ltd. Marking pen. 282,378, 1-28-86, Cl. D19-43.000.
Okamoto, Kenzo: *See—*
Nishikawa, Hideo; Okamoto, Kenzo; Sakai, Koichi; and Kitada, Fumihiko, 282,395, Cl. D23-121.000.
Omark Industries: *See—*
de Villiers, Simon, 282,369, Cl. D15-139.000.
Optyl Eyewear Fashion International Corporation: *See—*
Blaimschein, Josef, 282,372, Cl. D16-102.000.
Parks, John R.; and Tozzer, Thomas W. Cuff link or similar article. 282,311, 1-28-86, Cl. D2-417.000.
Pashman, Neal K., to Wichcraft Prodco, Inc. Rifle bolt. 282,388, 1-28-86, Cl. D22-7.000.
Pelton & Crane Company: *See—*
Martin, Ed; and Truette, Dan, 282,397, Cl. D24-2.000.
Pichler, Oswald, to Trak Sportartikel GmbH. Applique for cross country skis. 282,387, 1-28-86, Cl. D21-230.000.
Picozza, Augusto A., to Dart Industries Inc. Adjustable carrier for containers. 282,337, 1-28-86, Cl. D7-70.000.
Pinder, Kenwood E. Bottle opener. 282,343, 1-28-86, Cl. D8-40.000.
Pioch, Peter-Paul, to Black & Decker Inc. Chop saw. 282,346, 1-28-86, Cl. D8-66.000.
Plastex Technology (Curacao) N.V.: *See—*
Gell, Peter L., 282,357, Cl. D14-11.000.
Plastipak Packaging, Inc.: *See—*
Larson, Craig A.; and Darr, Richard C., 282,349, Cl. D9-395.000.
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CLASS 166

66.4 4,566,534
113 4,566,535
181 B1 4,270,606
251 4,566,536
261 4,566,537
278 4,566,538
307 4,566,539
317 4,566,540
318 4,566,541

CLASS 169

62 4,566,542

CLASS 172

4 4,566,543

CLASS 174

35 GC 4,567,318
35 MS 4,567,317
47 4,567,319
103 4,567,320
117 F 4,567,321

CLASS 175

4.56 4,566,544
226 4,566,545
297 4,566,546

CLASS 177

48 4,566,547
229 4,566,548
245 4,566,549

CLASS 179

2 A 4,567,322
4,567,328
6.3 R 4,567,325
17 E 4,567,330
18 B 4,567,323
18 FA 4,567,329
27 FH 4,567,324
84 T 4,567,333
90 B 4,567,326
115.5 R 4,567,327
170 NC 4,567,331
175 4,567,332

CLASS 180

8.2 4,566,550
4,566,707
9.1 4,566,551
69.21 4,566,552
237 4,566,553
249 4,566,554
274 4,566,555
287 4,566,556

CLASS 181

150 4,566,557
210 4,566,558

CLASS 182

224 4,566,559

CLASS 184

15.1 4,566,560

CLASS 187

20 4,566,561
22 4,566,562

CLASS 188

18 A 4,566,563
73.33 4,566,564
322.21 4,566,565

CLASS 191

21 4,567,334
59.1 4,567,335

CLASS 192

24 4,566,566
45 4,566,567
53 F 4,566,568
53 G 4,566,569
56 R 4,566,570
70.12 4,566,572
70.18 4,566,573
70.2 4,566,571
84 C 4,566,574
4,566,575
85 CA 4,566,577
98 4,566,578
113 B 4,566,579

CLASS 193

48 4,566,580

CLASS 194

248 4,566,581

CLASS 198

367 4,566,582
459 4,566,583
504 4,566,584
624 4,566,585
625 4,566,586
732 4,566,587

CLASS 200

144 B 4,567,338
153 LB 4,567,339
305 4,567,336
331 4,567,337

CLASS 203

26 4,566,947
51 4,566,948

CLASS 204

1 T 4,566,949
4,566,950
12 4,566,951
27 4,566,952
28 4,566,953
4,566,954
59 R 4,566,955
72 4,566,956
73 A 4,566,957
129.75 4,566,958
4,566,959
4,566,960
157.2 4,567,025
168 4,566,961
180.9 4,566,962
181.7 4,566,963

CLASS 206

0.6 4,566,589
3 4,566,588
232 4,566,590
427 4,566,591
449 4,566,592
611 4,566,593

CLASS 208

8 LE 4,566,964
11 R 4,566,965
113 4,566,966
135 4,566,967

CLASS 209

539 4,566,594
545 4,566,595

CLASS 210

221.1 4,566,968
387 4,566,969
409 4,566,970
616 4,566,971
698 4,566,972
701 4,566,973
4,566,974
711 4,566,975

CLASS 211

59.2 4,566,596
87 4,566,597
96 4,566,598

CLASS 212

160 4,566,599

CLASS 215

1 C 4,566,600
31 4,566,601
256 4,566,602
329 4,566,603

CLASS 219

10.41 4,567,340
10.55 E 4,567,341
69 M 4,567,342
74 4,567,343
98 4,567,344
121 PB 4,567,346
121 PT 4,567,345
124.34 4,567,347
4,567,348
4,567,349
216 4,567,350
298 4,567,351
341 4,567,352
405 4,567,353
501

CLASS 220

68 4,566,604
90.2 4,566,605

CLASS 221

25 4,566,606
155 4,566,607
229 4,566,608

CLASS 222

130 4,566,609
137 4,566,610
153 4,566,611
309 4,566,612
541 4,566,613
603 4,566,614

CLASS 223

43 4,566,615

CLASS 224

253 4,566,616
275 4,566,617

CLASS 226

74 4,566,618

CLASS 227

8 4,566,619
19 4,566,620
109 4,566,621
120 4,566,622

CLASS 228

138 4,566,623
180.1 4,566,624
265 4,566,625

CLASS 229

37 R 4,566,626
81 4,566,627

CLASS 235

145 R 4,567,354
310 4,567,355
375 4,567,356
377 4,567,357
379 4,567,358
381 4,567,359
455 4,567,360
462 4,567,361

CLASS 237

8 C 4,566,628

CLASS 238

117 4,566,629
292 4,566,630
349 4,566,631

CLASS 239

230 4,566,632
237 4,566,633
410 4,566,634
533.8 4,566,635
698 4,566,636

CLASS 241

23 4,566,637
37 4,566,638
52 4,566,639
74 4,566,640
200 4,566,641

CLASS 242

18 R 4,566,642
4,566,643
35.5 A 4,566,644
35.5 R 4,566,645
45 4,566,646
67.1 R 4,566,647
67.3 R 4,566,648
107.4 A 4,566,649
4,566,650
150 R 4,566,651
180 4,566,652
199 4,566,653
204 4,566,654
215 4,566,655

CLASS 244

3.11 4,566,656
12.2 4,566,699
90 A 4,566,657
110 R 4,566,658
137 R 4,566,659

CLASS 248

74.2 4,566,660
171 4,566,661
222.1 4,566,662
324 4,566,663
349 4,566,664
495 4,566,665
558 4,566,666
561 4,566,667

CLASS 249

60 4,566,668
160 4,566,669

CLASS 250

201 4,567,362
214 A 4,567,363
307 4,567,364
338 4,567,365
339 4,567,366
340 4,567,367
379 4,567,368
397 4,567,369
461.1 4,567,370
483.1 4,567,371
560 4,567,372
573 4,567,373
578 4,567,374

CLASS 251

48 4,566,670
159 4,566,671
192 4,566,672

CLASS 252

8.5 A 4,566,976
8.5 C 4,566,977
4,566,978
8.55 C 4,566,979
8.6 4,566,980
8.8 4,566,981
33.6 4,566,982
56 R 4,566,983
140 4,566,984
174.12 4,566,985
175 4,566,986
301.4 F 4,566,987
373 4,566,988
478 4,566,989
503 4,566,990
512 4,566,991
518 4,566,992
559 4,566,993
574 4,566,994

CLASS 254

84 4,566,673
345 4,566,674
360 4,566,675

CLASS 260

105 4,566,997
239 A 4,566,996
239.3 B 4,566,995
369 4,566,998
392 4,566,999
397.3 4,567,000
4,567,001
397.4 4,567,002
458 F 4,567,003
465 D 4,567,005
465 R 4,567,004

CLASS 264

22 4,567,006
29.5 4,567,007
40.5 4,567,008
41 4,567,009
117 4,567,010
504 4,567,011

CLASS 266

48 4,566,676

CLASS 267

140.1 4,566,677
141.1 4,566,678

CLASS 269

23 4,566,679
74 4,566,680

CLASS 270

58 4,566,681

CLASS 271

180 4,566,682
98 4,566,683
117 4,566,684
150 4,566,685
201 4,566,686
202 4,566,687

CLASS 272

53.1 4,566,688
69 4,566,689
123 4,566,690
4,566,691
130 4,566,692
144 4,566,693

CLASS 273

1 GB 4,566,694
73 D 4,566,695
193 A 4,566,696
241 4,566,697
249 4,566,698

CLASS 277

53 4,566,700
58 4,566,701
121 4,566,702
165 4,566,703
207 A 4,566,704

CLASS 279

4 4,566,705

CLASS 280

5.22 4,566,706
47.13 R 4,566,708
91 4,566,709
4,566,710
4,566,711
272 4,566,712
287 4,566,713
404 4,566,714
434 4,566,715
439 4,566,716
701 4,566,717
708 4,566,718
711 4,566,719

CLASS 281

15 R 4,566,720
31 4,566,721

CLASS 285

18 4,566,722
86 4,566,723
364 4,566,724

CLASS 292

191 4,566,725

CLASS 294

64.3 4,566,726
88 4,566,727

CLASS 296

76 4,566,728
159 4,566,729
221 4,566,730

CLASS 297

45 4,566,731
174 4,566,732
284 4,566,733
346 4,566,734
452 4,566,735

CLASS 299

23 4,566,736

CLASS 303

109 4,566,737

CLASS 307

98 4,567,375
106 4,567,376
112 4,567,377
270 4,567,378
4,567,379
290 4,567,380
296 R 4,567,381
400 4,567,382
415 4,567,383
442 4,567,384
443 4,567,385
481 4,567,386
530 4,567,387
4,567,389
540 4,567,388

CLASS 308

3 A 4,566,738
3 R 4,566,739
10 4,566,740

CLASS 310

68 C 4,567,390
156 4,567,391
313 A 4,567,392
4,567,393
330 4,567,394
338 4,567,395

CLASS 312

194 4,566,741
257 SK 4,566,742
350 4,566,743

CLASS 313

25 4,567,396
318 4,567,397
362.1 4,567,398
449 4,567,399
457 4,567,400

CLASS 315

5 4,567,401
5.33 4,567,406
39.3 4,567,402
47 4,567,403
205 4,567,404
392 4,567,405

CLASS 318

140 4,567,407
317 4,567,408
327 4,567,409
332 4,567,410
341 4,567,411
483 4,567,412
489 4,567,413
542 4,567,414
565 4,567,415
602 4,567,416
632 4,567,417
685 4,567,418
798 4,567,419
803 4,567,420

CLASS 320

30 4,567,421

CLASS 322

25 4,567,422
58 4,567,423

CLASS 323

210 4,567,424
237 4,567,425
315 4,567,426

CLASS 324

64 4,567,427
73 PC 4,567,428
99 D 4,567,429
158 D 4,567,430
158 F 4,567,432
158 P 4,567,433
158 R 4,567,431
160 4,567,434
207 4,567,435
230 4,567,436
237 4,567,437
248 4,567,438
304 4,567,439
309 4,567,440

CLASS 329

103 4,567,441
145 4,567,442

CLASS 330

149 4,567,443
257 4,567,444
300 4,567,445
308 4,567,446

CLASS 331

1 A 4,567,447
25 4,567,448
56 4,567,449
107 DP 4,567,450
155 4,567,451

CLASS 332

7 4,567,452

CLASS 333

194 4,567,453
206 4,567,454

CLASS 335

16 4,567,455
20 4,567,456
128 4,567,457

CLASS 337

365 4,567,458

CLASS 339

8 L 4,566,744
14 P 4,566,745
60 R 4,566,746
74 R 4,566,747
95 D 4,566,748
4,566,749
126 R 4,566,750
218 S 4,566,751
262 R 4,566,752

CLASS 340

58 4,567,459
4,567,460
323 R 4,567,461
347 AD 4,567,465
4,567,466
347 DA 4,567,463
4,567,468
347 DD 4,567,464
347 P 4,567,462
4,567,467
365 C 4,567,470
365 S 4,567,469
513 4,567,471
525 4,567,472
572 4,567,473
584 4,567,474
634 4,567,475
636 4,567,476
644 4,567,477
705 4,567,478
709 4,567,479
712 4,567,480
784 4,567,481
825.05 4,567,482
970 4,567,483

CLASS 343

14 4,567,484
358 4,567,485
401 4,567,486
900 4,567,487

CLASS 346

76 PH 4,567,488
4,567,489
135.1 4,567,490
136 4,567,491
4,567,492
140 R 4,567,493
4,567,494
153.1 4,567,495
200 4,567,496
4,567,497
216 4,567,498

CLASS 350

96.16 4,566,753
96.30 4,566,754
96.34 4,566,755
126 4,566,756
162.12 4,566,757
346 4,566,758
4,566,759
358 4,566,760
401 4,566,761
411 4,566,762
441 4,566,763
459 4,566,764
619 4,566,765

CLASS 353

122 4,566,766

CLASS 354

76 4,566,767
81 4,566,768
145.1 4,566,769
276 4,566,770
283 4,566,771
303 4,566,772
403 4,566,773
413 4,566,774
432 4,566,775

CLASS 355

3 DD 4,566,776
3 FU 4,566,778
3 R 4,566,777
4,566,779
4,566,780
10 4,566,781
14 FU 4,566,783
14 SH 4,566,782
72 4,566,784
4,566,785
77 4,566,786
100 4,566,787

CLASS 356

4 4,566,788
241 4,566,789
246 4,566,790
4,566,791
319 4,566,792
4,566,793
350 4,566,794
400 4,566,795
401 4,566,796
402 4,566,797
448 4,566,798

CLASS 357

2 4,567,499
38 4,567,500
51 4,567,501
53 4,567,502
54 4,567,503
79 4,567,504
81 4,567,505

CLASS 358

11 4,567,506
4,567,507
4,567,508
29 4,567,509
44 4,567,510
84 4,567,511
86 4,567,512
92 4,567,513
100 4,567,514
107 4,567,515
114 4,567,516
120 4,567,517
133 4,567,518
135 4,567,519
139 4,567,520
150 4,567,521
158 4,567,522
191.1 4,567,523
213 4,567,524
4,567,525
227 4,567,526
282 4,567,527
285 4,567,528
294 4,567,529
295 4,567,530
335 4,567,531
342 4,567,532
4,567,533
4,567,534

CLASS 360

Re.32,075
87 4,567,535
94 4,567,536

CLASS 361

18 4,567,537
58 4,567,538
92 4,567,539
93 4,567,540
235 4,567,541
321 4,567,542
398 4,567,543
399 4,567,544
401 4,567,545
420 4,567,546

CLASS 362

154 4,567,547
161 4,567,548
279 4,567,549
297 4,567,550
398 4,567,551

CLASS 363

87 4,567,552
98 4,567,553
138 4,567,554
4,567,555

CLASS 364

140 4,567,556
145 4,567,557
148 4,567,558
183 4,567,559
184 4,567,560
200 4,567,561
4,567,562
420 4,567,563
434 4,567,564
520 4,567,565
554 4,567,566
709 4,567,567
761 4,567,568
845 4,567,569
900 4,567,570
4,567,571
4,567,572
4,567,573
4,567,574
4,567,575
B1 4,231,105

CLASS 365

2 4,567,576
156 4,567,577
189 4,567,578
4,567,579
200 4,567,580
230 4,567,581

CLASS 366

1 4,566,799
118 4,566,800
343 4,566,801

CLASS 367

56 4,567,582
190 4,567,583

CLASS 368

9 4,566,802
66 4,566,803

CLASS 369

38 4,567,584
97 4,567,585

CLASS 370

4 4,567,586
13 4,567,587
18 4,567,588
58 4,567,589
86 4,567,590
109 4,567,591

CLASS 371

20 4,567,592
25 4,567,593
38 4,567,594
49 4,567,595

CLASS 372

22 4,567,596
34 4,567,597
36 4,567,598

CLASS 374

14 4,566,804
16 4,566,805
53 4,566,806
112 4,566,807
124 4,566,808
126 4,566,809

CLASS 375

2.1 4,567,600
14 4,567,599
22 4,567,601
60 4,567,602
65 4,567,603
87 4,567,604

CLASS 376

245 4,567,012
247 4,567,013
272 4,567,014
4,567,015
283 4,567,016
417 4,567,017
435 4,567,018

CLASS 378

85 4,567,605

CLASS 381

1 4,567,607
43 4,567,606
122 4,567,608

CLASS 382

9 4,567,609
18 4,567,610

CLASS 384

280 4,566,810
484 4,566,811
4,566,812

CLASS 400

120 4,566,813
354.1 4,566,814
641 4,566,815

CLASS 401

219 4,566,816

CLASS 402

38 4,566,817

CLASS 403

172 4,566,818
385 4,566,819

CLASS 404

14 4,566,820
35 4,566,821
84 4,566,822
98 4,566,823

CLASS 405

202 4,566,824
267 4,566,825

CLASS 407

37 4,566,826
42 4,566,827
48 4,566,828

CLASS 408

239 R 4,566,829

CLASS 409

182 4,566,830

CLASS 410

117 4,566,831

CLASS 411

21 4,566,832

CLASS 414

27 4,566,834
30 4,566,833
53 4,566,835
57 4,566,836
222 4,566,837
278 4,566,838
404 4,566,839
408 4,566,840
417 4,566,841
462 4,566,842
680 4,566,843
726 4,566,844
735 4,566,845
742 4,566,846
744 R 4,566,847
749 4,566,848

CLASS 415

92 4,566,849
128 4,566,850
139 4,566,851
182 4,566,852

CLASS 416

117 4,566,853
119 4,566,854
134 A 4,566,856
134 R 4,566,855
220 R 4,566,857

CLASS 417

22 4,566,858
50 4,566,859
54 4,566,861
102 4,566,860
189 4,566,862
295 4,566,863
353 4,566,864
363 4,566,865
366 4,566,866
393 4,566,867
572 4,566,868

CLASS 418

15 4,566,869
30 4,566,870

CLASS 422

56 4,567,024
57 4,567,019
101 4,567,020
102 4,567,021
144 4,567,022
192 4,567,023

CLASS 423

81 4,567,026
101 4,567,027
300 4,567,028
306 4,567,029
326 4,567,030
593 4,567,031
644 4,567,032
648 R 4,567,033

CLASS 424

5 4,567,034
47 4,567,035
51 4,567,036
59 4,567,037
4,567,038
70 4,567,040
87 4,567,041
89 4,567,042
4,567,043
94 4,567,044
195.1 4,567,045

CLASS 425

525 4,566,871

CLASS 426

20 4,567,046
94 4,567,047
250 4,567,048
275 4,567,049
417 4,567,050
438 4,567,051
532 4,567,052
538 4,567,053
548 4,567,054
578 4,567,055
607 4,567,056

CLASS 427

48 4,567,057
55 4,567,058
79 4,567,059
87 4,567,060
93 4,567,061
96 4,567,062
128 4,567,063
157 4,567,064
230 4,567,065
305 4,567,066
328 4,567,067

CLASS 428

31 4,567,068
35 4,567,069
4,567,070
4,567,071
40 4,567,072
4,567,073
71 4,567,074
91 4,567,075
102 4,567,076
114 4,567,077
119 4,567,078
131 4,567,079
137 4,567,080
138 4,567,081
4,567,082
141 4,567,083
150 4,567,084
163 4,567,085
166 4,567,086
211 4,567,087
213 4,567,088
4,567,089
214 4,567,090
222 4,567,091
246 4,567,092
250 4,567,093
256 4,567,094
314.4 4,567,095
315.5 4,567,096
317.7 4,567,097
327 4,567,098
4,567,099
339 4,567,100
364 4,567,101
391 4,567,102
408 4,567,103
410 4,567,104
412 4,567,105
413 4,567,106
425.5 4,567,107
425.9 4,567,108
4,567,109
433 4,567,110
457 4,567,111
461 4,567,112
480 4,567,113
4,567,114
4,567,115
694 4,567,116

CLASS 429

19 4,567,117
53 4,567,118
59 4,567,119
72 4,567,120
181 4,567,121

CLASS 430

4 4,567,122
4,567,123
4,567,125
59 4,567,124
4,567,126
65 4,567,127
294 4,567,129
4,567,130
4,567,131
312 4,567,132
313 4,567,128
348 4,567,133
372 4,567,134
505 4,567,135

CLASS 435

4 4,567,136
13 4,567,137
15 4,567,138
28 4,567,139
42 4,567,140
91 4,567,141
94 4,567,142
119 4,567,143
134 4,567,144
161 4,567,145
172.3 4,567,146
237 4,567,147

CLASS 436

66 4,567,148
87 4,567,150
513 4,567,149

CLASS 474

101 4,566,872

CLASS 494

53 4,566,873

CLASS 501

15 4,567,151

CLASS 502

64 4,567,152
113 4,567,153
114 4,567,154
123 4,567,155
173 4,567,156
208 4,567,157
209 4,567,158
219 4,567,159
326 4,567,160

CLASS 514

16 4,567,162
23 4,567,161
29 4,567,163
33 4,567,164
36 4,567,165
82 4,567,166
89 4,567,167
4,567,168
089 4,567,169
128 4,567,170
150 4,567,171
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513 4,567,198
531 4,567,199
547 4,567,200
571 4,567,201
656 4,567,202
844 4,567,203

CLASS 518

700 4,567,204
715 4,567,205

CLASS 521

27 4,567,206
35 4,567,207
59 4,567,208
81 4,567,209
90 4,567,210
98 4,567,211
122 4,567,212

CLASS 523

117 Re.32,073
160 4,567,213
216 4,567,214
218 4,567,215

CLASSIFICATION OF PATENTS

400	4,567,216	113	4,567,235		CLASS 534	114	4,567,267	137	4,567,285	286	4,567,302
	CLASS 524	127	4,567,236	882	4,567,252	116	4,567,268	469	4,567,286	475	4,567,303
296	4,567,217	170	4,567,237		CLASS 536	167	4,567,269		CLASS 560		CLASS 568
373	4,567,218	179	4,567,238	18.1	4,567,253	183	4,567,270	37	4,567,288	385	4,567,304
413	4,567,219	187	B1 4,251,648	27	4,567,254	271	4,567,271	024	4,567,287	454	4,567,305
	4,567,220	309	4,567,239	30	4,567,255	281	4,567,272	059	4,567,289	455	4,567,306
436	4,567,221	328.1	4,567,240		CLASS 544	345	4,567,273	124	4,567,290	861	Re.32,072
476	4,567,222	352	4,567,241	58.2	4,567,256		4,567,274	225	4,567,291		CLASS 585
489	4,567,223	534	4,567,242	78	4,567,257		CLASS 548	245	4,567,292	330	4,567,307
494	4,567,224		CLASS 526	192	4,567,258	128	4,567,275		CLASS 562	375	4,567,308
526	4,567,225	128	4,567,243	207	4,567,259	306	4,567,277	496	4,567,293	408	4,567,310
538	4,567,226	160	4,567,244	250	4,567,260	309	4,567,278	555	4,567,294	415	4,567,311
	4,567,227	279	4,567,245	251	4,567,261	343	4,567,276		CLASS 564	419	4,567,312
588	4,567,228	318.44	4,567,246		4,567,262	491	4,567,279	44	4,567,295	480	4,567,313
610	4,567,229		CLASS 528	263	4,567,263		CLASS 549	111	4,567,296	621	4,567,314
786	4,567,230	190	4,567,247	400	4,567,264	43	4,567,280	208	4,567,297	827	4,567,315
837	4,567,231	211	4,567,248		CLASS 546	288	4,567,281	214	4,567,299	829	4,567,309
	CLASS 525	347	4,567,249	16	4,567,265	450	4,567,282	215	4,567,298		CLASS 623
53	4,567,232	423	4,567,250	82	4,567,266	546	4,567,283		4,567,300	22	4,566,138
71	4,567,233	487	4,567,251				CLASS 556	243	4,567,301		
73	4,567,234					37	4,567,284				

CLASSIFICATION OF DESIGNS

D2—	247	282,308		475	282,324		372	282,341	D14—	4	282,356	D16—	102	282,372	D22—	7	282,388
	273	282,309		495	282,325		387	282,340		11	282,357	D18—	1	282,373		13	282,389
		282,310		566	282,326		398	282,342		52	282,358			282,374		18	282,390
	417	282,311		570	282,327	D8—	16	282,344		53	282,359		6	282,375		29	282,391
D3—	24	282,312			282,328		40	282,343		59	282,360		7	282,376	D23—	17	282,392
	35	282,313	D7—	8	282,329		49	282,345		60	282,361	D19—	26	282,377		20	282,393
		282,314		9	282,330		66	282,346		63	282,362		43	282,378		37	282,394
	71	282,315		14	282,331	D9—	341	282,348			282,363		52	282,379		121	282,395
D4—	104	282,316		17	282,332		395	282,349		66	282,364		75	282,380		162	282,396
		282,317		18	282,333		403	282,347		94	282,365	D21—	20	282,381	D24—	2	282,397
		282,318		36	282,334	D10—	47	282,350		102	282,366		34	282,382		7	282,398
	115	282,319		38	282,335		76	282,351	D15—	10	282,367		63	282,383		17	282,399
D6—	300	282,320		58	282,336		81	282,352		21	282,368		78	282,384		26	282,400
	381	282,321		70	282,337	D11—	82	282,353		139	282,369		115	282,385			282,401
	430	282,322		76	282,338		96	282,354		147	282,370		192	282,386		29	282,402
	462	282,323		77	282,339		132	282,355			282,371		230	282,387		54	282,403

CLASSIFICATION OF PLANTS

P.—	11	5,645	15	5,647	33	5,649	38	5,650	39	5,651	89	5,652
	12	5,646	23	5,648								

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
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Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,566,586		4,566,672		4,567,464		4,567,328		4,566,167		4,566,572
	4,566,609		4,566,691		4,567,491		4,567,473		4,566,195		4,566,666
	4,567,348		4,566,693		4,567,505		4,567,545		4,566,211		4,566,678
	4,567,569		4,566,702		4,567,531		4,567,570		4,566,229		4,566,689
02 :	4,566,219		4,566,712		4,567,562	10 :	4,566,898		4,566,257		4,566,743
04 :	4,566,237		4,566,713		4,567,563		4,567,003		4,566,325		4,566,953
	4,566,290		4,566,714		4,567,565		4,567,289		4,566,351		4,566,990
	4,566,434		4,566,732		4,567,574	12 :	4,566,178		4,566,386		4,567,067
	4,566,839		4,566,768		4,567,580		4,566,192		4,566,423		4,567,193
	4,566,855		4,566,788		4,567,594		4,566,198		4,566,424		4,567,266
	4,567,172		4,566,800		4,567,597		4,566,213		4,566,481		4,567,302
	4,567,384		4,566,814		4,567,606		4,566,243		4,566,509		4,567,304
	4,567,388		4,566,818		4,567,609		4,566,287		4,566,603	19 :	4,566,327
	4,567,441		4,566,829		3,750,257		4,566,358		4,566,720		4,566,473
	4,567,463		4,566,840	08 :	4,566,205		4,566,382		4,566,745		4,566,695
	4,567,549		4,566,846		4,566,212		4,566,393		4,566,746		4,566,854
	4,567,571		4,566,914		4,566,652		4,566,397		4,566,789		4,566,910
	4,567,593		4,566,932		4,566,857		4,566,433		4,566,802		4,567,486
	4,567,603		4,566,933		4,566,937		4,566,454		4,566,817	20 :	4,566,512
05 :	4,566,664		4,566,988		4,567,215		4,566,467		4,566,822	21 :	4,566,445
	4,566,734		4,567,017		4,567,462		4,566,696		4,566,827		4,566,468
06 :	Re.32,075		4,567,045	09 :	4,566,170		4,566,708		4,566,923		4,567,246
	4,566,144		4,567,050		4,566,191		4,566,796		4,567,022		4,567,421
	4,566,183		4,567,054		4,566,202		4,566,838		4,567,023	22 :	4,566,408
	4,566,184		4,567,058		4,566,280		4,567,185		4,567,055		4,566,966
	4,566,222		4,567,100		4,566,321		4,567,317		4,567,155		4,567,152
	4,566,236		4,567,104		4,566,394		4,567,324		4,567,213		4,567,156
	4,566,238		4,567,119		4,566,612		4,567,385		4,567,243		4,567,205
	4,566,255		4,567,138		4,566,618		4,567,456		4,567,265		4,567,229
	4,566,296		4,567,144		4,566,620		4,567,512		4,567,270		4,567,567
	4,566,297		4,567,149		4,566,659		4,567,513		4,567,309	23 :	4,566,216
	4,566,313		4,567,154		4,566,685		4,567,521		4,567,318	24 :	Re.32,074
	4,566,342		4,567,173		4,566,700		4,567,539		4,567,323		4,566,230
	4,566,356		4,567,244		4,566,749		4,567,543		4,567,410		4,566,596
	4,566,376		4,567,264		4,566,856		4,567,561		4,567,422		4,566,629
	4,566,432		4,567,273		4,566,876	13 :	4,566,136		4,567,447		4,566,760
	4,566,448		4,567,274		4,566,878		4,566,208		4,567,540		4,566,791
	4,566,449		4,567,283		4,566,894		4,566,248		4,567,546		4,566,889
	4,566,452		4,567,301		4,566,939		4,566,253		4,567,595		4,566,943
	4,566,476		4,567,311		4,566,957		4,566,292		4,567,604		4,567,013
	4,566,485		4,567,312		4,566,978		4,566,365	18 :	4,566,138		4,567,016
	4,566,488		4,567,314		4,567,031		4,566,524		4,566,146		4,567,065
	4,566,496		4,567,319		4,567,033		4,566,626		4,566,147		4,567,087
	4,566,501		4,567,359		4,567,040		4,566,688		4,566,166		4,567,095
	4,566,502		4,567,363		4,567,048		4,566,867		4,566,180		4,567,296
	4,566,507		4,567,368		4,567,066		4,566,926		4,566,285		4,567,572
	4,566,551		4,567,375		4,567,117		4,567,517		4,566,331		4,567,607
	4,566,590		4,567,379		4,567,142		4,567,588		4,566,439	25 :	4,566,172
	4,566,616		4,567,391		4,567,179		4,567,591		4,566,477		4,566,179
	4,566,619		4,567,420		4,567,236	15 :	4,566,438		4,566,508		4,566,269
	4,566,655		4,567,426		4,567,257	16 :	4,567,474		4,566,517		4,566,352
	4,566,656		4,567,452		4,567,287	17 :	4,566,142		4,566,552		4,566,353
	4,566,657		4,567,461		4,567,320		4,566,162		4,566,564		4,566,458

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26 : 4,566,137
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